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HANFORD WORKS MONTHLY REPORT

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MAY 1951

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June 21, 1951

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Date 5/15/73

HANFORD WORKS

RICHLAND, WASHINGTON

Operated for the Atomic Energy Commission

by the

General Electric Company

under

Contract # W-31-1C

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HANFORD WORKS
MONTHLY REPORT

GENERAL SUMMARY

MANUFACTURING DIVISIONS

Uranium Preparation

A total of 76 tons of acceptable pieces was canned at a yield of 73.8 percent. The machining yield dropped from a previous average of approximately 80 percent to 71.5 percent due to inferior rod quality.

The melt plant produced 26 tons of billets at a record yield of 88.9 percent and a record solid metal yield of 95.5 percent.

There have been no autoclave failures since April 19, 1951.

Irradiation

A total of 79.57 tons of metal was discharged during the month at 92 percent of forecast production due to the occurrence of five ruptured slugs; however, 96.9 percent of forecast production was discharged.

The average time operated efficiency for five pile operation was 86.6 percent.

Separations

A total of 129 charges of a scheduled 130 was started in the canyon buildings. The difference resulted from necessary repairs to equipment in B plant canyon and concentration buildings. Four acid washes were started and two were completed during the month.

In addition to two acid washes, a total of 134 regular charges was completed through the concentration buildings.

The isolation facility completed 134 regular runs, two acid washes, and one master recycle run.

Average cooling time for metal processes was 45 days with a minimum of 42 days.

The average purity of completed charges was 98.9 percent.

Plant Maintenance and Utility Services

The electric power demands for the month were:

Process	-	5-11-51	(11:30 A.M. - 12:00 Noon)	66,650 KW.
Village	-	5-7-51	(7:30 A.M. - 8:00 A.M.)	19,150 KW.

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The decline is in line with seasonal expectations. Unscheduled electrical outages occurred as follows:

1. May 6 Lightning storms caused a series of disturbances on the Bonneville Power Administration System which resulted in Scramming the 105-F Unit and tripping off supply and exhaust fans at Building 234-5.
2. May 23 At 12:50 A.M. high winds caused the boom of an idle sub-contractor's construction crane to swing into a 13.8 KV line in the 200-W Area.

A high speed oscilloscopic pile temperature mapping device has been demonstrated experimentally and plans are proceeding for fabrication of a full size unit for Project C-431.

TECHNICAL DIVISIONS

Pile Technology Division

A new section to be known as the Pile Applications Section was formed this month. The Area Physics Group, Area Engineering Group, and the special request program were transferred to this section. The general assigned duties include 100 Areas plant assistance and those parts of research and development programs which use a pile as an experimental facility.

Exponential pile measurements of the thermal neutron diffusion length in a standard lattice loaded with lithium-aluminum alloy slugs are in disagreement with pile theory which casts considerable doubt on present methods of calculation.

The critical mass facilities are being modified and some of the equipment replaced.

Measurements of solid graphite cores removed from tube blocks indicate that the original undercutting of tube blocks in the DR and H Piles is contributing significantly to the elimination of overall pile expansion.

Heat transfer and water quality studies included evaluation of larger outlet fittings, changed header pressures, emergency process pump requirements, and corrosion of process tubes and slugs.

The design of a double diffraction spectrometer for x-ray work on radioactive materials has been completed.

Metallurgical studies of irradiated uranium slugs, aluminum tubes, and P-10 alloy slugs are being continued.

Non-destructive tests are being investigated for detecting stainless steel welds which are low in chromium and nickel.

Flow cup corrosion tests on aluminum, zirconium, stainless steels, and other materials are being investigated.

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A "stopped extraction" technique was used giving a much improved recovery of product.

Extraction and separation of tritium in the metal process equipment was begun. Certain difficulties were experienced in the extraction step and the recycle system used for operating the toepler pumps. Production data and visual observations indicate that adverse temperature variations exist in the furnace pot during extraction. Several proposed remedies are being evaluated.

Separations Technology Division

Production testing of reduced Bismuth Phosphate process volumes has been suspended temporarily in an effort to improve decontamination and thus reduce the high activity of PR cans. Replacement of two of the Isolation Building filters has reduced product hold-ups to normal values. The production capacity of the casting hood in Building 234-5 has been approximately doubled by the "nesting" of two crucible assemblies in the furnace. The use of a four-hour cold outgassing cycle (formerly 16 hours) prior to coating has been adopted for a three-month test period.

In redox and TBP process development, Technical Manual preparation has continued to 81 percent completion of the Redox Manual and 31 percent completion of the TBP Manual. The third group of 14 "S" Division supervisors and 25 operators started a 6-week training period in the 321 Building. Large-scale Purex and pulse column studies for O.R.N.L. were essentially completed during the period. Testing of TBP production pumps was initiated to determine suitable shaft bearing materials.

In the research laboratory, it was determined that 75 percent of the iodine carried into the oxidizer will be removed during the scavenging step. The coupling of Redox product to the 234-5 process by means of a plutonium ammonium sulfate precipitate was found promising. A rapid scouting study to determine the feasibility of electroless coating in an alkaline bath indicated failure for all conditions studied.

A study of the suitability of one and two peroxide strikes for coupling Redox product solution to 234-5 was initiated using a simulated 2BP solution prepared in the cold semi-works. A study of the oxalate purification process has demonstrated the feasibility of reducing the HI requirements by 40 percent and the oxalic acid by 28 percent. Samples of PuF_3 prepared from the oxalate were reduced to give metal yields of 83.5 and 92.7%. It appears that further improvement can be made.

Sampling of the silver reactor effluent gases indicates that the 4-5L unit at B Plant is functioning at 99.9+ efficiency but that the remaining units may be removing iodine to the extent of 90-99%.

Technical Services Division

On May 2, the Technical Divisions accepted Building 222-S, the Redox Analytical and Plant Assistance Laboratory, with certain exceptions. The latter included the installation of hoods and balancing of the ventilation system. A.E.C. authorization was received for the Phase II of this project, under which certain unassigned space will be made into chemical laboratories.

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In the Works Laboratory Area, erection of the structural steel framing for the Mechanical Development Building was started by the Dix Steel Company on May 28. Phase II design and estimation consideration is under way with Dix as a preliminary to negotiating the required extension to their subcontract.

Lump-sum bids for construction of the Radiochemistry Building were opened on May 29, with Sound Construction and Engineering Company the apparent low bidder at \$3,744,213. This figure was slightly under the fair cost estimate.

A Part III of Project C-394 covering the construction phase of the outside services for the Works Laboratory Area was approved by the A & B Committee and forwarded to the A. E. C. Similar action was accorded the Part II proposal for Project C-385 which covers construction of the Radiometallurgy Building.

A.E.C. Authorization was received for construction of the originally unexcavated portion of the basement of the Pile Technology Building. This additional space will serve for exponential pile studies. Final prints for this building, as well as for the Library and Files Building, were received from C. T. Main, the architect-engineer.

In view of the materially higher estimates recently made for the Radiometallurgy Building and the Plot Plan & Utilities projects, the total cost of the Works Laboratory Program is now expected to exceed the \$14,563,000 budgeted. However, indications are that this cost will stay well within the 15% overrun allowable under the regulations as listed in the Construction Rider to the Appropriations Act of 1951.

The press of service work in support of the Technical development programs and new building equipment needs made it necessary to continue the following groups on a six-day work week: Equipment Design, Technical Shops, IBM Computing Laboratory, and the contact engineers engaged in New Laboratory Planning.

Agreement has been reached whereby the Manufacturing Divisions will assume responsibility for the craftsmen and craft supervision in the Building, 101 Shops, effective July 1. Under this arrangement, these personnel will be on the Manufacturing Divisions' rolls, but the shops will otherwise be under Technical Divisions administration on a "captive" basis.

Analytical Division

A working manual has been prepared for the analytical control of the Redox and TBP processes. This manual contains information on type, volume, frequency and radiation levels of the samples expected, constituents present and determinations required on each sample and detailed procedures for the analytical methods to be employed. A detailed review of these procedures has been initiated as a final check on their state of readiness for plant control use.

A recently developed Leeds and Northrup Direct Recording Spectrochemical Analyzer has been tested on a field trial basis at Hanford for determination of hydrogen isotope ratios. Numerous difficulties and instrument failures have been observed and corrected, and sampling and sample excitation operations modified. The instrument and analytical procedure are now under satisfactory control and will allow the determination of hydrogen to tritium ratios in P-10 product. Using 3cc. of sample per hour at 1000 micron pressure, a precision of $\pm 0.04\%$ and a bias of 0.3% are observed; the bias may be readily eliminated by minor adjustment of conditions.

Shipment of the second mass spectrometer purchased for P-10 Project service has been delayed by the General Engineering Laboratories in Schenectady but steps have been taken to expedite delivery with improvement features to be added later.

Preliminary experiments have indicated that isotopic analysis of a mixture of xenon and krypton is possible using the present mass spectrometer, in spite of the fact that the instrument was not specifically designed to handle m/e ratios greater than 60. Advantage is taken of the peaks due to Kr++ and Xe+++.

Successful analytical methods have been developed for the determination of TBP in aqueous solutions and of uranium in aluminum-silicon bath. The former employs carbon tetrachloride extraction and subsequent infrared absorption measurement. The latter employs conversion of the metal sample to the chlorides in a dry chlorine atmosphere, chromatographic separation of uranium, and determination by alpha counting. Methods for the determination of silicon and titanium in 234-5 Building pickling and stripping solutions have been put into control laboratory use.

Work schedules were revised from a two-shift to four-shift operation in the 234-5 Building Laboratory. This necessitated the appointment of two new supervisors. A special five-day work week schedule was set up in the 231 Building Laboratory to provide analytical service to the 231 Building operations which are conducted on a six-day work week, Monday through Saturday.

ENGINEERING AND CONSTRUCTION DIVISIONS

The Engineering and Construction Divisions are currently working on 123 projects; 64 of these projects have authorized funds in excess of \$20,000 and have to do with increasing production, reclaiming of waste materials, and the beneficiation of manufacturing processes and their attendant facilities. The 59 other projects have been authorized funds that range up to \$20,000. These latter projects have to do with miscellaneous work items, engineering requests, and similar authorizations.

Four projects, having a total estimated cost of \$4,861,000 were completed this month. They were (1) C-187-E, Redox Analytical and Plant Assistance Laboratory, and Associated Waste Disposal Facilities, (2) C-290, Spectrometer Fabrication, (3) C-339, Rolling Mill (Design and Engineering Report only), (4) C-366, Auxiliary Hood Enclosure for Part 1, 234 Building.

A comprehensive study has been completed of Plant Manpower Forecasts in order to provide a firm basis for requesting additional housing. Improved and more economical methods of reproduction of documents and their accountability by individuals using them are continuing with gratifying results.

Control of tools purchased by the subcontractor is being improved. During the month 16 contracts were approved and signed; 13 will involve the expenditure of \$1,331,299.86, one a decrease of \$3,241.05 and two do not involve any money.

A slight increase in actual completion percentages as compared with estimated completion percentages is noted this month.

Some improvement in material procurement and fabrication is noted this month. Promised delivery dates of "B" Block and Gun Barrel Steel have been revised and are, at present, on a satisfactory basis.

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The Controlled Material Plan becomes effective July 1, 1951. Our participation in this plan includes the compliance with governmental requirements for statistical information, forecasts, schedules, and other pertinent information.

Such participation is necessary to obtain critical government controlled construction materials with which to successfully complete our construction projects. Meetings have been held both locally and in Washington, D. C. to acquaint our personnel with the proper procedures.

Craft labor figures show that there are more open requisitions for Fitters than for any other craft. Likewise, this craft carries the highest "quit rate". However, the overall picture here compares favorably with the national "quit rate" as reported in Business Week.

The use of one of the many safety devices provided at Hanford Works demonstrated its great value. A severe facial burn which resulted in a lost time injury for the individual would have, without the use of "flash goggles" resulted in permanent total blindness.

Poor housekeeping, failure of supervision to give workmen proper instruction, failure to follow instructions given, lack of personal safety consciousness and mechanical failure were the principal sources of injuries this month. To date, the major frequency rate of 4.23 and the severity rate of 1.77 remains a very low figure as compared to national rates for construction workers.

All persons in Engineering and Construction Divisions engaged in work that might reasonably be expected to result in inventions or discoveries advise that to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report except as listed below. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

<u>Inventor</u>	<u>Subject</u>	<u>Report of Invention (Date)</u>
F. H. Ames, Jr. (Project C-198)	Plug Type Gauge Utilizing replaceable glass cylinders as gauge.	May 31, 1951
T. H. Edwards M-12254-MD	Electro-magnetic Control for a positive displacement all metal mercury pump	May 10, 1951
H. R. Hughes M-754-MD	Air Raid Shelters	May 11, 1951

HEALTH INSTRUMENT DIVISIONS

There was an unusual density of special hazards incidents, with seven informal and six formal Class I investigations. However, there was no case which involved actual overexposure of personnel.

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Extensive contamination of a Richland residence occurred for the first time, and received much attention in the local and national press.

Surveys by the Operational Division showed no significant deviation from expected findings, except in the matter of tritium concentrations in the atmosphere.

Concentration of radioiodine in the atmosphere exceeded appropriate limits for extended operation. The cause was detected, and steps taken to reduce it. In other respects, there was no significant change from previous results in the control programs of the Biology and Development Divisions.

Research and development activities showed satisfactory progress.

PLANT SECURITY AND SERVICES DIVISIONS

There was one major injury during the month making a total of three for the year to date and a frequency rate of 0.45.

There were seven fires in the industrial areas with a loss of \$6.00.

Plant Laundry volume increased approximately 20% during the month. It is anticipated that an additional shift will be added during July in order to handle expected additional volume.

A 4:00 P.M. to 12:00 shift was added in Printing and Duplicating in order to handle increased volume of orders and reduce backlog.

Procedures analysis and Forms Control activities resulted in savings of \$12,523 of which \$12,000 will be on an annually recurring basis.

The recently established Non-Technical Document Review Board held its first meeting on May 2, 1951.

EMPLOYEE AND COMMUNITY RELATIONS DIVISIONS

The number of applicants interviewed increased from 1,221 in April to 1,274 in May. Of these applicants, 448 were individuals who applied for employment with the General Electric Company for the first time. In addition, 246 new applications were submitted through the mail. Open, nonexempt, nontechnical requisitions decreased from 599 at the beginning of the month to 562 at month end. Total plant roll increased from 8,198 to 8,336. Turnover rate decreased from 2.51% in April to 1.71% in May. During May, 69 new requests for transfers to other type of work were received in the Employment Office, and 31 transfers were effected. A representative of the Employment Group spoke to 15 graduating seniors of the Pasco High School commercial class on May 22. To aid in the selection of new patrolmen, a learning ability test is being administered for purpose of validation to 50 new patrolmen. By month end, 41 new patrolmen had been tested. Through five aptitude tests and records of achievement in high school, thirteen people, of which two are women, have been selected and have accepted offers to enter the drafting training school which is scheduled to commence June 11, 1951. At the direction of the Atomic Energy Commission, a Manpower Inventory, to provide the Commission with information on the composition and utilization of manpower engaged in the Atomic Energy program, was commenced the latter part of May. In order to complete the necessary information, Manpower Inventory Questionnaires have been forwarded to each employee for his completion and return. After completion of the initial inventory, the Personnel

Records Group will be responsible for keeping the inventory on a current basis by quarterly reports to the Commission.

Two employee deaths occurred during May, and three employees retired. Two-hundred and fifty-seven visits were made to employees confined to Kadlec Hospital and 44 salary checks were delivered to employees confined at the hospital or at home. At month end, participation in the Pension Plan was 95.1%, in the Insurance Plan 96.7% and in the Employee and Stock Bonus Plan 36.3%. As of the end of May, there were 778 employees registered under the Selective Service Act, and 667 military reservists on the rolls. Since August 1, 1950, 136 employees have terminated to enter military service.

A total of 37 members of supervisory-management, enrolled from 10 major divisions, attended the Supervisors' 40-Hour Training Program during the week of May 14-18. PMS groups 13 and 15 completed conferences during the month of May. PMS Groups 14 and 16 will complete PMS conferences early in June. A special dinner will be established for Groups 13 and 15, to be held early in June, while a dinner for Groups 14 and 16 will be held the latter part of June. Additional PMS groups will be started in August or September. A total of 144 HOBSO conferences have been conducted for nonexempt employees, beginning in April. An estimated 3,776 employees attended, or approximately 51% of the entire nonexempt roll. Comments received regarding this program were very favorable. A total of 1,481 of the 1,500 Supervisor's Handbooks prepared for Hanford Works have been issued to date. Two revisions, "Rating of Employees-Nonexempt" and "Accidents to Vehicles" were issued to Handbook holders in May. On May 25, four members of the Training staff attended the first Northwest Training Conference held in Seattle, which was conducted by members of the Washington State Training Directors Society. Some 30 organizations of the Northwest were represented with a total of 57 members present. A Hanford Works SAGE was issued on May 16, to all supervisors. During May, orientation was given to two re-engaged, one transferred, and 251 new employees; a total of 254. In accordance with the responsibilities charged to J. A. Wood, as Chairman of a subcommittee to the Education Committee, a study was made, and a complete six-week 1951 Introductory Program for new Technical Employees was submitted to the Education Committee on May 14. This program is designed to give proper introduction to the General Electric Company for some 200 new Technical Graduates reporting for work in June, 1951. All members of the Training Staff will be involved in dissemination of information for this program beginning June 18, 1951.

Three elections were conducted by the NLRB on May 1, 2 and 3. The Building Service Employees International Union voted in favor of negotiating a union security clause with the Company; Richland and North Richland Village Firemen voted in favor of representation by the HAMTC, with negotiations scheduled to begin on June 4; employees of the HAMTC voted against negotiating a union shop clause with the Company. Shortly after the election, the HAMTC filed a protest with the NLRB, asking that the union shop election be nullified and a substitute election scheduled as soon as possible. The Chemical Workers International Union, Local 369, petitioned the NLRB, seeking representation of all Chief Operators in the "S", "P" and "TS" Divisions. On May 25, a preliminary meeting was held with representatives of the Guards Union to discuss contract negotiation plans.

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Electrician Linemen refused to work any overtime for less than double time; therefore, only Maintenance Linemen are scheduled to work six days. Isolation pay issue returned to Davis Panel from local negotiations. Asbestos workers rate of \$2.925 agreed to in December was approved by the Wage Stabilization Board. Subsequently agreed rate of \$2.90 placed into effect by Jenkins Company (Atkinson-Jones subcontractor). Plasters' demand of \$3 (rate now \$2.50) agreed to contingent upon Wage Stabilization Board approval and verification of prevailing rate by area wage survey. Operating Engineers granted new rate of \$2.80 (now \$2.45) for operating crane in Building 221-U, and new classification "Air Compressor (two or more within 100 ft. radius)" at same rate (\$2.10) as "Air Compressor (1,000 CF stationary)". Teamsters granted a rate of \$2 for "Transit Mix Truck over five yards." Premium rate of \$2.57 negotiated with Painters for "Swinging Scaffold and Boatswain Chair (15 cents over Brush Painter). Operating Engineer arbitration hearing conducted on May 28 and 29; briefs to be submitted by Employer and Union.

A revised reimbursement request was submitted to the Atomic Energy Commission for Designers and Draftsmen, incorporating changes in rates resulting from the recent nine cents per hour offer to all nonexempt employees. Our application for the increase for Community Firemen will be submitted to the Wage Stabilization Board after the general increase has been approved for other company employees. A reimbursement request was submitted to the AEC concerning the nine-cent increase for nonexempt personnel excluding the Community Firemen. Instrument Division supervision, representatives of the HAMTC and the Wage Rate Division participated in a review of all work performed by Instrument Division field employees during the period January 1, 1951, to April 1, 1951. A review of the various platoon schedules was started in anticipation of union demands as a result of the Community Firemen representation election. An over-all review of nonexempt, non-unit job classifications in the Municipal, Real Estate and General Services Divisions was begun.

The News Bureau distributed 40 releases during May, three of which were long feature stories -- the drafting school, women at Hanford Works, and Health Instrument Divisions. The News Bureau assisted in arranging a press conference for the Health Instrument Divisions Manager, at which he explained to newsmen the situation concerning the patrolman who came in contact with some radioactive material. The resulting story received nation-wide attention. Ten stories written by the women's activities feature writer for the Parks and Recreation Division were released.

During the month of April, 364 column inches and 19 photographs concerning Richland and Hanford Works were printed in newspapers throughout the Northwest.

The Community Relations supervisor served as "Career Day" Committee Chairman for Kiwanis Club and the local high school. He arranged interviews for approximately 50 students with 25 G-E people employed in fields the youngsters are interested in entering.

A letter to tenants who want to move to a different house was written for the Housing Division, at that group's request, which explained the new procedure for making such moves.

Thirteen speeches were delivered during the month, one of which was a HOBSO presentation. A slide film was prepared for one of the speeches. Three papers by Hanford Works people were cleared for publication. Eleven G-E films, "Pattern for Survival", and a safety film were booked for showing during the

month. A film of the 1950 World Series was secured from the Seattle POST-INTELLIGENCER for the Municipal Parks and Recreation Division.

Public Functions cooperated with Treasury Department representatives in coordinating the Defense Bond Parade and ceremonies in the park. This group also performed the following services in connection with this activity: one minute spot announcements and three interviews were recorded and released to local radio stations. Arrangements were made to broadcast the ceremonies over KWIE, and tape recordings and delayed broadcast of the ceremonies were presented over KALE and KPKW. All tape recordings by local radio stations were secured from the local stations and copied for the State Director, U. S. Treasury Department.

The HW Photo House produced 7,129 prints during the month.

Art work, lettering, and layout were performed for: Records Center folder; Records Center clerical forms mounted for photographic reproduction; Records Center booklet; monthly health bulletin; safety booklet; attendance award poster; "You and G.E. at Hanford Works"; editorial cartoons; sketches of G.E. Monogram.

Special Programs performed the following work: five Union Relations News columns for H.W. NEWS, employee news letter, personnel recruitment display advertisements, June Health Bulletin, news stories concerning Medical Divisions, revision of "You and G.E. at Hanford Works," "This Way....Please" revision, a letter to supervisors; and the security booklet and safety booklet were sent to the printer for final production.

Hanford Works NEWS carried the following during the month: publicity for "Defenders of Freedom Day" celebration; information on drafting course for draftsmen; sports activities of Hanford Works people; information on new houses in Richland.

A complete change in the format of the Works NEWS was the most drastic step made during the month. The change was made following an editor's conference in Boston which the Editor attended.

High school journalism students prepared two pages of one issue of the Works NEWS during their one-day visit to the Community and Public Relations Divisions during the month.

The women's activities feature writer spent three weeks in May substituting as editor of the Works NEWS while the editor was on a combined business and vacation trip. Two women's pages prepared by this writer were published in the Works NEWS during the month.

PURCHASING AND STORES DIVISIONS

The number of purchase requisitions processed during the month increased by 100. However, actual dollar value of orders placed increased from \$2,937,566.06 in April to \$3,467,367.66 in May or \$529,801.60.

Of the total value of orders placed during the month, \$2,755,339.38 was for construction materials.

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Commitments to date applied against Project C-431 amount to \$6,435,934.46. Uninterrupted purchasing of equipment for this project for the next four to six weeks will be possible due to appropriation of additional funds.

The Project Engineering Division requested that the Special Procurement Procedure be used for critical items required for Project C-412. Concurrence with the request was obtained from the Atomic Energy Commission. However, the procedure was not invoked as two-thirds of the requisitions on the critical list had been placed and the remaining one-third had been submitted for bids. These were subsequently placed using normal methods. Close follow-up and priority assistance, when necessary, is maintained to meet construction schedules. Development of the Controlled Materials Plan has progressed steadily during the past month.

The work load in the Inspection and Expediting Sections continues to increase due primarily to the approaching completion of MJ-1, and also to vendors reaching the stage of completion on orders for MJ-4.

Status reports on all major projects are being issued.

Liaison and advisory assistance will be given in the shipment and installation of production tooling to be used by the Puget Sound Naval Shipyard for fabrication of shielding for Project C-431-B.

Contracts were awarded covering yearly requirements for chemicals, as follows: Rock Salt - Leslie Salt Co.; Potassium Hydroxide - Neagara Alkali Co.; Sodium Bismuthate - General Chemical Division, Allied Chemical & Dye Corp.

Requests for quotations for new contracts were sent out on Soda Ash and Sulfamic Acid.

Firm completion schedules of Redox and TBP storage facilities were received. Contracts and orders are being placed for early delivery of essential materials for these projects.

Shipments of 778,400 pounds of stainless steel were made from the Pittsburgh warehouse.

Out of 2,536 purchase requisitions processed through screening, 1,400 items were furnished from plant sources. Thirty-three items of stainless steel not immediately available on the open market were furnished to fabricators from plant sources.

Maintenance materials and supplies disbursed from operations inventories amounted to \$281,086.39.

Receipts of shipments reached a new high with 6,612 receiving reports issued.

Material and equipment valued at \$228,062.20 were withdrawn from excess inventories for project use.

Three formal excess lists, totaling \$38,358.06 were submitted to the Commission for disposition. Excess materials and equipment valued at \$268,979.12 were shipped from the project as directed by the Commission.

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Preliminary plans of the proposed Stores Warehouse have been received from the Commission for review and comment.

Twenty-two representatives of government and private business were escorted through warehouses and scrap yards for the purpose of negotiating the sale of scrap and transfer of excess property.

Effective May 1, 1951, demurrage charges on all freight cars will include Saturdays. In response to this ruling by the Interstate Commerce Commission, HW Instructions Letter No. 152, Revised, was issued.

As a result of rate reductions obtained from carriers, a total savings of freight charges for the month amounting to \$35,187.01 was effected.

MUNICIPAL, REAL ESTATE AND GENERAL SERVICES DIVISIONS

The Richland Public Library held "Open House" on April 29, 1951, inaugurating the opening of the library.

Collection of residential garbage and trash was placed on a twice-weekly basis effective May 1, and will continue on this schedule through September 30.

During May, Richland was advised that they had won first place in the traffic law enforcement contest for cities from 10,000 to 25,000 population, as sponsored by the International Association of Chiefs of Police.

Total housing applications pending - 502.

MEDICAL DIVISIONS

Dr. Norwood attended the A.E.C. conference of Bio Medical Directors in Chicago, May 28 and 29.

Miss Albright, nursing supervisor, attended the annual meeting of the Association of Western Hospitals held in Los Angeles, April 30 - May 3.

Our sanitarian attended a conference in Pullman, Washington on "Sanitary Operation of Swimming Pools."

Two members of the Appeal Board for the Washington State Department of Labor-Industrial Insurance were visitors.

Two hearing consultants from the State Department of Health visited the public health section. The Chief of Division of Public Health Engineering for the State and the chairman of the Streams Pollution Committee visited concerning some minor sanitation problems which were solved.

An assistant professor, "University of Washington" School of Public Health Nursing and the head of the Health Education section, State Department of Health made a visit in regard to prevention of dental caries by fluoridation of public water supplies.

A comprehensive study of numerous new cases of Radium Poisoning in the Chicago area adds much to our knowledge of this subject. Since allowable plutonium exposure is based to a considerable degree on a comparison of relative toxicities of plutonium and radium, this new data is of assistance in evaluating the plutonium hazard. The toxicity status of plutonium appears to be little

changed by the radium study.

By a bare majority of 3, the 71 employees of Kadlec hospital represented by Building Service Employees International Union, Local #201, A.F.L., authorized the union to negotiate for a "Union Shop"

A comprehensive survey of 13 northwest hospitals, of comparable size to Kadlec indicated an average of 2.084 employees per adult patient day as compared to 1.881 for Kadlec. Costs per patient day at Kadlec were higher by 3.7% due to higher rates of pay and continuity of service expense.

Revenue of the average Pacific Northwest hospital was found to be \$1.54 more per adult patient day than that of Kadlec and this difference has been greatly increased by rate increases of about 25% subsequent to January 1, 1951 which was the end of the period covered by the present study.

Communicable diseases reported were 735 as compared to 288 for April. The increase was largely due to regular measles, which appeared to be on the wane at the end of the month. No serious complications were reported.

Home nursing visits increased by 60% due to this epidemic.

A warning by the Medical Service Corps Officer of Camp Hanford that certain restaurants of North Richland would be declared "out of bounds" if sanitary conditions were not corrected has resulted in marked improvement.

The net costs of operating the Medical Divisions, before assessments to other divisions was \$87,353, an increase of \$8,364 and \$8,718 below the budget figure.

Gross costs decreased by \$4,578 largely due to the shorter month. However revenue decreased by \$12,942, of which \$8,953 was due to seasonal decline in sickness and \$3,989 was due to reduced service to Waale-Campbell Co. for employment examinations.

GENERAL ACCOUNTING DIVISION

Reviews of cost accounting methods, procedures and reporting, with a view toward improvement, were conducted throughout the month. Recommendations and proposals developed by the Cost Accounting Committee in their weekly meetings were thoroughly studied and are being incorporated in the contemplated revision of Cost Accounting methods. Consideration was given to cost accounts, development of revised cost reporting, and distribution of costs to the end product. Considerable time was devoted to the recasting of prior months' costs in order that the affect of considered revisions in procedures could be determined.

With the preparation and submission to AEC of additional schedules relative to balance sheet accounts and a breakdown by quarters of FY 1952 budget estimate, all work was completed this month concerning the Budget for FY 1953 and Revision of the Budget for FY 1952.

All accounting work in connection with Technical Divisions Budgets, Operating Costs and Research and Development Costs which had been handled by General Accounting personnel through April 30 was transferred to Technical, Engineering and Construction Accounting Division on May 1, 1951. On May 21, 1951, five employees who had been handling this work were transferred to the Technical, Engineering and Construction Accounting Division.

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The documenting of General Accounting procedures currently in effect was begun this month. Procedures for Accounts Payable, Accounts Receivable (Including Kadlec Hospital), Travel Expenses, and Cash Controls were nearing completion at the end of the month.

Internal Auditors continued work in connection with Stores inventories. Letters were written to Stores supervision relative to procedures covering inventory adjustments and instructions were issued covering the handling of adjustments resulting from incorrect unit pricing and the recording of returnable container deposits.

Report was issued by the Medical Divisions Accountant reflecting comparisons of Kadlec Hospital operating costs, number of personnel, and various operating procedures and policies with those of thirteen other Pacific Northwest hospitals which were visited during a recent survey.

The Plant Accounting supervisor visited the Oak Ridge, Tennessee plant and observed methods in use at that location for the accounting for plant and equipment. Details of his observations are covered in a separate report.

Approximately 520 man hours were expended in connection with the Spring Payroll Review for exempt employees.

In connection with a study and analysis of payroll practices and procedures, an opportunity was given a National Cash Register Company representative to study the present system to determine whether full use was being made of the equipment now in use and to determine if it would be advantageous to use additional NCR equipment for the purpose of calculating gross payroll and labor cost distribution. The NCR representative's report, received in May, and information obtained through visits to NCR Payroll installations is being reviewed and will be taken into consideration in arriving at a decision with respect to further mechanization of payroll operations.

Advances from AEC increased from \$4 500 000 as of April 30, 1951 to \$5 000 000 as of May 31, 1951. Advances are accounted for as follows:

	<u>May</u>	<u>April</u>
Cash in Bank - Contract Accounts	\$4 003 389	\$3 871 689
Cash in Bank - Salary Accounts	50 000	50 000
Cash in Transit	496 611	153 311
Advances to Subcontractors	300 000	300 000
Travel Advance Funds	150 000	125 000
	<hr/>	<hr/>
Total	\$5 000 000	\$4 500 000

Hanford Works cash disbursements and cash receipts, excluding advances from Atomic Energy Commission for the month of May 1951 as compared with April 1951 may be summarized as follows:

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	<u>May</u>	<u>April</u>
<u>Disbursements</u>		
Material and Freight - GE	\$ 2 941 959	\$ 2 544 983
Payrolls - GE (Net)	2 182 126	2 057 080
Payments to Subcontractors	4 993 065	4 436 526
Payroll Tax	409 565	737 409
General & Administrative Expenses	200 000	200 000
U. S. Savings Bonds	139 392	162 146
Special Payments for 1950	114 779	-0-
Others	280 260	307 323
	<hr/>	<hr/>
Total	\$11 261 146	\$10 445 467
	<hr/>	<hr/>
	<u>May</u>	<u>April</u>
<u>Receipts</u>		
Rents	\$ 132 880	\$ 125 428
Refunds from vendors	1 766	843
Hospital	63 972	68 809
Telephone	16 294	14 324
Miscellaneous Accounts Receivable	13 514	11 975
Bus Fares	9 807	9 461
Scrap Sales	7 109	4 946
Sales to AEC Cost-type Contractors	6 054	41 435
Other	13 139	14 935
	<hr/>	<hr/>
Total	\$ 264 535	\$ 292 156
	<hr/>	<hr/>
Net Disbursements	\$10 996 611	\$10 153 311

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STAFF

General Manager G. R. Prout

Manager, Schenectady Office B. R. Prentice

Assistant General Manager F. K. McCune

Assistant to the General Manager W. I. Patnode
(Technical and Education Matters)

Assistant to the General Manager J. R. Rue

Assistant to the General Manager and Manager of
the Plant Security and Services Divisions . . . G. G. Lail

Department Comptroller F. E. Baker

Counsel G. C. Butler

Manager, Technical, Engineering and Construction
Divisions A. B. Greninger

Manager, Engineering and Construction Divisions . . . R. E. Davison

Manager, Technical Divisions O. H. Greager

Manager, Manufacturing Divisions C. N. Gross

Manager, Municipal, Real Estate and General Services
Divisions L. F. Huck

Manager, Health Instrument Divisions H. M. Parker

Manager, Medical Divisions W. D. Norwood, M.D.

Manager, Employee and Community Relations Divisions . . H. E. Callahan

Manager, Purchasing and Stores Divisions W. A. Jeffrey

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FOUO REPORT

MAY 1951

	EXEMPT		NON EXEMPT		TOTAL	
	4-30-51	5-31-51	4-30-51	5-31-51	4-30-51	5-31-51
<u>GENERAL</u>	20	21	30	31	50	52
<u>LAW</u>	2	2	3	3	5	5
<u>TECH. ENGR. & CONST. DIV.</u>						
Construction	1	0	27	27	28	27
Const. Acctg.	10	11	73	77	83	88
Design	233	246	248	251	481	497
No. Richland Realty	19	18	96	104	115	122
Proj. Engr. --MJ	38	20	20	21	58	41
Proj. Engr. --MD	52	50	77	80	129	130
<u>Technical Divs.</u>						
Administrative	4	6	3	3	7	9
Pile Tech.	114	119	102	120	216	239
Separations Tech.	103	103	43	43	146	146
Technical Services	32	32	126	149	158	181
Analytical Services	97	98	216	213	313	311
<u>MANUFACTURING DIVISIONS</u>						
Mfg. General	13	15	4	5	17	20
Mfg. Acctg.	8	9	61	58	69	67
Industrial Engr.	12	10	7	7	19	17
<u>Production Divs.</u>						
"P"	76	76	294	296	370	372
"S"	155	162	495	519	650	681
<u>Plant Utilities & Maint.</u>						
Power	93	92	482	479	575	571
Maintenance	54	55	314	309	368	364
Electrical	53	56	251	254	304	310
Instrument	58	56	235	235	293	291
Transportation	57	58	549	554	606	612
<u>MEDICAL</u>	45	45	243	240	288	285
<u>HEALTH INSTRUMENT DIVS.</u>						
General	6	6	4	4	10	10
Operational	54	59	180	175	234	234
Development	42	41	82	90	124	131
Biology	33	32	44	41	77	73
<u>ACCOUNTING DIVISIONS</u>	26	28	172	177	198	205
<u>EMPL. & COMM. RELATIONS</u>	36	38	74	72	110	110
<u>PLANT SEC. & SERVICES</u>						
Patrol & Sec.	55	58	584	581	639	639
Safety & Fire	42	42	106	105	148	147
Gen. & Off. Services	24	26	236	253	260	279
<u>PURCHASING & STORES DIVISIONS</u>						
Purchasing	72	71	99	106	171	177
Stores	18	20	198	204	216	224
<u>COMMUNITY DIVISIONS</u>	209	207	454	462	663	669
<u>TOTAL</u>	1966	1988	6232	6348	8198	8336

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PERSONNEL DISTRIBUTION - MAY 1951

	100-B	100-D	100-F	100-H	101	200-F	200-W	300	Plant	3000	700-1100	Total
	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area
GENERAL	-	-	-	-	-	-	-	-	-	-	21	21
Clerical	-	-	-	-	-	-	-	-	-	-	31	31
Total	-	-	-	-	-	-	-	-	-	-	52	52
LAW	-	-	-	-	-	-	-	-	-	-	2	2
Clerical	-	-	-	-	-	-	-	-	-	-	3	3
Total	-	-	-	-	-	-	-	-	-	-	5	5
TECH. ENGR. & CONST. DIVS.	-	-	-	-	-	-	-	-	-	-	-	-
CONSTRUCTION	-	-	-	-	-	-	-	-	-	-	-	-
Supervisors	-	-	-	-	-	-	-	-	-	-	-	-
Clerical	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-	-	-
DESIGN	-	-	-	-	-	-	-	-	-	-	-	-
Supervisors	-	-	-	-	-	-	6	-	-	23	35	64
Other Exempt	-	-	-	-	-	-	76	-	-	24	82	182
Draftsmen & Designers	-	-	-	-	-	-	-	-	-	-	55	55
Clerical	-	-	-	-	-	-	10	-	-	52	109	171
Others	-	-	-	-	-	-	-	-	-	25	-	25
Total	-	-	-	-	-	-	92	-	-	124	281	497
CONST. ACCTG.	-	-	-	-	-	-	-	-	-	-	-	-
Supervisors	-	-	-	-	-	-	-	-	-	11	-	11
Clerical	-	-	-	-	-	-	-	-	-	77	-	77
Total	-	-	-	-	-	-	-	-	-	88	-	88

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	100-B		100-D		100-F		100-H		101		200-F		200-W		300		Plant		3000		700-1100		Total
	Area		Area		Area		Area		Area		Area		Area		Area		General		Area		Area		
SEPARATIONS TECH.																							
Supervisors	-		-		-		-		-		-		1	5	15		-		-		-		21
Chemists & Chem. Engrs	-		-		-		-		-		5		12	63	63		-		-		-		82
Tech. Grads.	-		-		-		-		-		-		2	5	5		-		-		-		7
Clerical	-		-		-		-		-		-		3	8	8		-		-		1		12
Others	-		-		-		-		-		-		4	20	20		-		-		-		24
Total	-		-		-		-		-		6		26	113	113		-		-		1		146

	100-B		100-D		100-F		100-H		101		200-F		200-W		300		Plant		3000		700-1100		Total
	Area		Area		Area		Area		Area		Area		Area		Area		General		Area		Area		
TECH. SERVICES																							
Supervisors	-		-		-		-		4		-		1	8	8		-		-		3		16
Other exempt	-		-		-		-		7		-		-	4	4		-		-		5		16
Technologist, Tech. Grads.	-		-		-		-		1		-		-	3	3		-		-		-		4
Clerical	-		-		-		-		4		-		-	35	35		-		-		45		85
Others	-		-		-		-		34		-		1	24	24		-		-		2		60
Total	-		-		-		-		49		-		2	74	74		-		-		55		181
ANALYTICAL TECH.																							
Supervisors	1		-		-		2		-		6		15	15	15		-		-		-		39
Chemists & Engrs.	8		1		1		2		1		2		8	36	36		-		-		-		59
Technologists, Tech. Grads.	3		-		-		1		-		5		20	15	15		-		-		-		44
Laboratory Assts.	4		-		-		6		-		31		69	42	42		-		-		-		152
Clerical	1		-		-		1		-		2		2	11	11		-		-		-		17
Total	17		1		1		12		1		46		114	119	119		-		-		-		311

	100-B		100-D		100-F		100-H		101		200-F		200-W		300		Plant		3000		700-1100		Total
	Area		Area		Area		Area		Area		Area		Area		Area		General		Area		Area		
MANUFACTURING DIVISIONS																							
GENERAL																							
Supervisors	-		-		-		-		-		-		-	-	-		-		-		7		7
Engineers	-		-		-		-		-		-		-	-	-		-		-		8		8
Clerical	-		-		-		-		-		-		-	-	-		-		-		5		5
Total	-		-		-		-		-		-		-	-	-		-		-		20		20

MFG. ACCTG.		100-B	100-D	100-F	100-H	101	200-E	200-W	300	Plant	3000	700-1100	Total
		Area	Area	Area	Area	Area	Area	Area	Area	General	Area	Area	Total
Supervisors	-	-	-	-	-	-	-	-	-	-	-	8	8
Other Exempt	-	-	-	-	-	-	-	-	-	-	-	1	1
Clerical	-	-	-	-	-	-	-	-	-	-	-	58	58
Total	-	-	-	-	-	-	-	-	-	-	-	67	67

INDUSTRIAL ENGR.

Supervisors	-	-	-	-	-	-	-	-	-	-	-	1	1
Engrs. & Other Exempt	-	-	3	-	-	-	-	2	-	-	-	-	9
Clerical	-	-	-	-	-	-	-	-	-	-	-	1	1
Others	-	-	1	-	-	-	-	3	-	-	-	1	6
Total	-	-	4	-	-	-	-	5	-	-	-	3	17

PRODUCTION DIVISIONS
"P"

Supervisors	8	16	9	10	-	-	-	-	-	-	-	3	60
Supv. in training	1	1	-	-	-	-	-	-	-	-	-	-	3
Engineers	3	-	1	-	-	-	-	-	-	-	-	8	13
Operators	34	64	34	34	-	-	-	-	-	-	-	-	271
Clerical	1	3	2	2	-	-	-	-	-	-	-	6	18
Others	1	1	1	1	-	-	-	-	-	-	-	2	7
Total	48	85	47	47	-	-	-	-	-	-	-	19	372

"S"

Supervisors	-	-	-	-	-	-	18	44	17	-	-	5	84
Supv. In Training	-	-	-	-	-	-	2	21	7	-	-	1	31
Engineers	-	-	-	-	-	-	4	35	-	-	-	8	47
Operators	-	-	-	-	-	-	160	272	52	-	-	-	484
Clerical	-	-	-	-	-	-	6	21	-	-	-	4	31
Others	-	-	-	-	-	-	-	4	-	-	-	-	4
Total	-	-	-	-	-	-	190	397	76	-	-	18	681

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PLANT UTILITIES & MAINT.									
<u>POWER</u>									
	100-B	100-D	100-F	100-H	101	200-E	200-W	300	3000
	Area	Area	Area	Area	Area	Area	Area	Plant	700-1100
								General	Area
									Total
Supervisors	12	17	12	12	-	7	6	5	1
Engineers	-	-	-	-	-	-	9	-	2
Operators	73	111	72	67	9	23	67	12	-
Clerical	1	1	1	1	-	-	1	-	2
Coal Handlers & Leaders	4	5	4	5	-	-	5	1	-
Total	90	134	89	85	9	30	88	18	5
								23	571
<u>MAINTENANCE</u>									
Supervisors	1	7	7	2	-	3	17	4	1
Other Exempt	-	-	2	-	-	-	3	1	5
Craftsmen	19	53	44	14	-	29	90	41	-
Clerical	-	1	2	1	-	1	4	2	2
Others	-	-	-	-	-	-	1	-	-
Total	20	61	55	17	-	33	115	48	8
								7	364
<u>ELECTRICAL</u>									
Supervisors	1	2	2	3	-	1	6	2	11
Other Exempt	-	-	-	1	-	-	1	1	4
Craftsmen	14	16	13	12	2	10	25	10	29
Clerical	-	1	1	1	-	-	1	1	26
Operators	4	4	4	4	-	-	-	-	-
Others	-	-	-	1	-	-	1	-	1
Total	19	23	20	22	2	11	34	14	71
								94	310

INSTRUMENT	100-B	100-D	100-F	100-H	101	200-E	200-W	300	Plant	3000	700-1100	Total
	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area
Supervisors	2	6	2	2	-	1	8	8	1	-	3	33
Engineers	1	1	-	-	-	1	2	10	1	-	7	23
Craftsmen	18	22	17	11	-	18	53	49	2	-	10	200
Clerical	1	2	1	1	-	1	5	6	3	-	4	24
Draftsmen	-	-	-	-	-	-	-	2	-	-	-	2
Others	2	-	-	-	-	-	1	2	-	-	-	9
Total	24	31	20	14	-	21	69	80	7	-	25	291

TRANSPORTATION

Supervisors	2	4	1	2	-	2	2	1	8	-	32	54
Other Exempt	-	-	-	-	-	-	-	-	-	-	4	4
Bus Drivers	-	-	-	-	-	-	-	-	-	-	168	168
Journeyman	3	4	3	10	-	1	5	-	10	-	64	100
Trainmen	-	-	-	-	-	-	-	-	26	-	-	26
Servicemen	1	5	1	2	-	3	5	1	20	-	19	57
Clerical	1	1	1	1	-	1	1	1	1	-	25	33
Equipment Operators	4	8	3	4	-	5	8	4	19	-	27	82
Others	9	10	2	4	-	8	2	2	13	-	35	88
Total	20	32	11	23	-	20	26	9	97	-	374	612

MEDICAL

Supervisors	-	-	-	-	-	-	-	-	-	1	25	26
Physicians	-	-	-	-	-	-	-	-	1	2	10	13
Other Exempt	-	-	-	-	-	-	-	-	-	-	6	6
Technicians	-	-	-	-	-	-	-	1	-	3	14	18
Nurses	2	4	4	1	-	4	9	2	-	3	61	90
Clerical	-	-	-	-	-	-	-	-	3	7	47	57
Others	-	-	-	-	-	-	-	-	-	1	74	75
Total	2	4	4	1	-	4	9	3	4	17	237	285

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HEALTH INSTRUMENT DIVISIONS									
	100-B	100-D	100-F	100-H	101	200-E	200-W	300	700-1100
	Area	Area	Area	Area	Area	Area	Area	Area	Area
GENERAL									
Supervisors	-	-	-	-	-	-	-	-	3
Engrs.	-	-	-	-	-	-	-	-	3
Clerical	-	-	-	-	-	-	-	-	4
Total	-	-	-	-	-	-	-	-	10
OPERATIONAL									
Supervisors	1	1	1	2	-	1	5	8	21
Other Exempt	5	4	6	5	-	5	10	3	38
Clerical	-	-	-	1	-	-	1	1	4
Others	16	17	13	13	23	43	42	-	171
Total	22	22	20	21	23	49	61	12	234
DEVELOPMENT									
Supervisors	-	-	-	-	-	2	8	4	15
Other exempt	-	-	-	-	-	2	11	12	26
Clerical	-	-	-	-	-	1	2	2	5
Other Non-Exempt	-	-	-	-	-	22	38	13	85
Total	-	-	-	-	-	27	59	31	131
BIOLOGY									
Supervisors	-	-	7	-	-	-	-	-	7
Other Exempt	-	-	25	-	-	-	-	-	25
Clerical	-	-	3	-	-	-	-	-	3
Others	-	-	38	-	-	-	-	-	38
Total	-	-	73	-	-	-	-	-	73

ACCOUNTING DIVISIONSGEN. ACCTG. PAYROLL

	100-B	100-D	100-F	100-H	101	200-E	200-W	300	Plant	3000	700-1100	Total
	Area	Area	Area	Area	Area	Area	Area	Area	General	Area	Area	
Supervisors	-	-	-	-	-	-	-	-	-	-	6	6
Other Exempt	-	-	-	-	-	-	-	-	-	-	3	3
Clerical	-	-	-	-	-	-	-	-	-	-	89	89
Total	-	-	-	-	-	-	-	-	-	-	98	98

GEN. ACCTG. ACCTG.

	Supervisors	Other Exempt	Clerical	Total
Supervisors	-	-	-	8
Other Exempt	-	-	-	11
Clerical	-	-	-	88
Total	-	-	-	107

EMPLOYEE & COMM. RELATIONS

	Supervisors	Empl. Rel. Counselor	Other Exempt	Clerical	Others	Total
Supervisors	-	-	-	-	-	25
Empl. Rel. Counselor	-	-	-	-	-	1
Other Exempt	-	-	-	-	-	12
Clerical	-	-	-	-	-	58
Others	-	-	-	-	-	14
Total	-	-	-	-	-	110

PLANT SEC. & SERVICESPATROL & SECURITY

	Supervisors	Other Exempt	Patrolman	Clerical	Seamstress	Total
Supervisors	5	6	6	5	9	35
Other Exempt	-	-	-	-	-	4
Patrolman	64	48	67	41	155	561
Clerical	-	-	-	-	-	2
Seamstress	-	-	-	-	-	18
Total	69	54	73	46	164	639

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	100-B	100-D	100-F	100-H	101	200-E	200-W	300	Plant	3000	700-1100	Total
	Area	Area	Area	Area	Area	Area	Area	Area	General	Area	Area	
Supervisors	14	-	-	-	4	-	4	4	7	-	-	33
Engineers	1	2	-	1	-	2	-	2	-	-	1	9
Firemen	46	-	-	-	8	-	20	15	10	-	-	99
Clerical	-	1	-	1	-	1	-	1	-	-	2	6
Total	61	3	-	2	12	3	24	22	17	-	3	147

GEN. & OFF. SERVICES.

Supervisors	-	-	1	-	-	1	2	1	1	-	19	25
Supv. in Training	-	-	-	-	-	-	-	-	-	-	1	1
Laundry Operators	1	-	-	-	-	-	1	-	-	-	-	2
Janitors & Servicemen	6	5	5	6	3	5	20	13	-	-	49	112
Clerical	-	-	-	-	-	-	-	-	-	-	40	40
Others	-	-	-	-	-	-	34	-	-	-	65	99
Total	7	5	6	6	3	6	57	14	1	-	174	279

PURCHASING & STORES DIVISIONS

Supervisors	-	-	-	-	-	-	-	-	-	-	16	16
Other Exempt	-	-	-	-	-	-	-	-	26	-	29	55
Clerical	-	-	-	-	-	-	-	-	-	-	96	96
Rotational Trainee	-	-	-	-	-	-	-	-	10	-	-	10
Total	-	-	-	-	-	-	-	-	36	-	141	177

STORES

Supervisors	2	-	-	-	-	-	-	-	-	3	15	20
Clerical	12	-	-	-	-	-	-	-	-	24	50	86
Others	23	-	-	-	-	-	1	1	-	8	85	118
Total	37	-	-	-	-	-	1	1	-	35	150	224

	100-B		100-D		100-F		100-H		101		200-E		200-W		300		3000		700-1100		Total
	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	
MUN. REAL ESTATE GEN. SERV. GOVERNMENT ACCT. ENGR.																					
Supervisors	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	121	135		
Other Exempt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	15		
Firemen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	34	57		
Patrolmen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	22	39		
Journeymen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	171	171		
Serviceemen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	52		
Truck Drivers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	30		
Power Operators	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	33		
Clerical	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79	79		
Others	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58	58		
Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	615	669		
GRAND TOTAL	511	468	430	317	135	514	1345	943	321	640	2712	8336									

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MANUFACTURING DIVISIONS

MAY 1951

SUMMARY

Uranium Preparation

A total of 76 tons of acceptable pieces was canned at a yield of 73.8 percent. The machining yield dropped from a previous average of approximately 80 percent to 71.5 percent due to inferior rod quality.

The melt plant produced 26 tons of billets at a record yield of 88.9 percent and a record solid metal yield of 95.5 percent.

There have been no autoclave failures since April 19, 1951.

Irradiation

A total of 79.57 tons of metal was discharged during the month at 92 percent of forecast production due to the occurrence of five ruptured slugs; however, 96.9 percent of forecast production was discharged.

The average time operated efficiency for five pile operation was 86.6 percent.

Separations

A total of 129 charges of a scheduled 130 was started in the canyon buildings. The difference resulted from necessary repairs to equipment in B plant canyon and concentration buildings. Four acid washes were started and two were completed during the month.

In addition to two acid washes a total of 134 regular charges was completed through the concentration buildings.

The isolation facility completed 134 regular runs, two acid washes, and one master recycle run.

Average cooling time for metal processes was 45 days with a minimum of 42 days.

The average purity of completed charges was 98.9 percent.

Plant Maintenance and Utility Services

The electric power demands for the month were:

Process - 5-11-51 (11:30 A.M. - 12:00 Noon) 66,650 KW.
Village - 5-7-51 (7:30 A.M. - 8:00 A.M.) 19,150 KW.

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Manufacturing Divisions

Plant Maintenance and Utility Services (Cont'd.)

The decline is in line with seasonal expectations. Unscheduled electrical outages occurred as follows:

1. May 6. Lightning storms caused a series of disturbances on the Bonneville Power Administration System which resulted in scrambling the 105-F Unit and tripping off supply and exhaust fans at Building 234-5.
2. May 23. At 12:50 A.M. high winds caused the boom of an idle sub-contractor's construction crane to swing into a 13.8 KV line in the 200-W Area.

A high speed oscilloscopic pile temperature mapping device has been demonstrated experimentally and plans are proceeding for fabrication of a full size unit for Project C-431.



C. N. GROSS, MANAGER
MANUFACTURING DIVISIONS

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MANUFACTURING DIVISIONS

PATENT REPORT SUMMARY
FOR
MONTH OF MAY 1951

Richland, Washington
June 8, 1951

All persons engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report except as listed below. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

INVENTOR

N O N E

TITLE

N O N E

C. N. Gross

C. N. GROSS, MANAGER

MANUFACTURING DIVISIONS

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Section 10 Approved By V. D. Donihee
V. D. Donihee
Accountability Representative

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MANUFACTURING ACCOUNTING
MAY, 1951

SUMMARY

The growing volume of work scheduled through Manufacturing Accounting and the necessity for continual systems and procedures study were pointed up by events in May. Procedure for distribution of monthly salary costs on IBM went into effect, cost recasting for the Cost Accounting Committee was continued, and systems studies on the bus system cash accountability were instituted. High-lights of the month are discussed below:

Inventory Control

Acquisition of additional cost personnel in recent months has enabled us to institute a program of field study and analytical reporting on Manufacturing inventories. A man was assigned full time to field audit, reconciliation and reporting procedures now in effect. Reports to date have been completed on Road Aggregate, Instrument Tubes, and Overhead Line Materials. Recommendations were well received by operating personnel and worth-while procedural improvements have been effected through cooperative effort.

Bus System Cash Control

In connection with audit recommendations on the cash accountability system of the plant bus system made by the Internal Audit Section, a man was loaned to the Area Engineer for system study and installation.

The purpose of the work was to provide maximum fund security at minimum cost. Consideration of the physical security of the Dispatch Building (which must be open at all times to accommodate the business of an around-the-clock bus operation) prompted us to make two suggestions looking toward minimizing possible loss from planned theft. These suggestions involved use of a bank night depository for holiday and weekend revenue deposits, and substitution of a single rotating shift cashiers fund for the present funds checked out to the four cashiers. Cash content of the Dispatch Office will be decreased from 30% to 60% per day through these measures. With the concurrence of the Area Engineer these routines are planned for installation in June. The above was aside from the subject of the audit, which dealt with internal controls only. Other studies directly related to the audit are being pursued.

Distribution of Monthly Salary Costs

Prior to May this function was performed manually by payroll. Cost distribution on Monthly Salaries in this month was entered on a current calendar month basis as contrasted with the prior method of entering cost coding covering from the 16th of the previous month

[REDACTED]

to the 15th of the current month. As under the new method Monthly Attendance reports would not be available until the end of the current month, and time for processing and distribution is seriously limited. This difficulty was overcome by pre-punching standard non-confidential payroll information prior to month-end, later to be combined with confidential information by payroll personnel in such a way that final run-off displayed only codes and amounts with no reference to the employee paid. This machine application was made particularly complex through the necessity of tight control of confidential information. The problem was worked out cooperatively with Payroll on the basis of a routine evolved by the Statistic Section.

Disbursements

Vouchers paid and entered for the eleven month period ending May 31, 1951 exceeded the corresponding 1949-1950 period by 2000 or 11 %.

Distribution of Power Costs

The Analysis and Reports Group has completed development of a unit cost system for billing steam and water costs to customer divisions. Application of this principle to operating costs will help eliminate seasonal fluctuations in power costs, and simplify billing procedure. Also contributing to lessening seasonal fluctuation of power costs is the currently operating procedure of charging expense of on plant coal car movement to power costs in proportion to coal consumption rather than movement of coal cars. This latter procedure was instituted in April and covered in that months report.

Budgets

Formal submission to the A.E.C. was made on May 1st and 2nd of Operating Budgets for FY 1953 and Revision FY 1952. Several additional schedules were prepared during the month detailing General Division budgeted charges and quarterly cost breakdowns for Automotive and other equipment. Breakdown of budget figures for use on FY 1952 operating reports was delayed pending Cost Accounting Committee decisions affecting distribution of servicing costs and Operating Report form.

Organization and Personnel

Beginning of Month	68
Acquisitions	2
Transfers Out	3
End of Month	67

	<u>Current Month</u>	<u>Year to Date</u>
Yearly Turnover Rate	54 %	51 %

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The above figures are based on total separations from the Division rather than from Hanford Works. The high turnover is mainly composed of women, who comprise approximately 50% of our working force and are employed mainly on routine clerical and stenographic work. Efforts have continually been made toward placement of clerks with good continuity expectancy in positions of a critical nature.

Considerable overtime was again necessary for preparation of information for the Cost Accounting Committee and meeting closing dates. Budget overtime was discontinued upon submission of required schedules to the A.E.C. in early May.

June 11, 1951

P DIVISION

MAY, 1951

I. GENERAL

A total increase of 29 MW over previously established maximum levels in the pile areas was achieved during the month of May; however, slug failures adversely affected the total production.

During May, five slug failures occurred which required outages for remedial action. Four of the failures were uranium slugs and one was a P-10 target slug. A total downtime of 225.8 hours was required to discharge the ruptured slugs.

The average time operated efficiency for 5-pile operation was 86.6%. The total number of outage hours for all piles was 498.1 hours. Of this amount, 68.4% is chargeable to plutonium production and 31.6% is chargeable to other irradiation programs.

Operation of the 300 Area manufacturing facilities was continued on a 6-day week basis during May. Record billet and solid yields of 88.9% and 95.5%, respectively, were established in the Melt Plant facility.

The production and yield of canned slugs for the month decreased appreciably as a result of stringent process inspection standards introduced to minimize the frequency of slug failures in the 100 Areas.

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P Division

II. ORGANIZATION AND PERSONNEL

Number of Employees on Payroll - May, 1951	
Beginning of Month -	369
End of Month	373
Net Increase	4

Four operators were hired for the 300 Area and one steno-typist for the Contact Engineering Group. One 300 Area operator terminated voluntarily and one steno-typist was granted a leave of absence.

At month end, a total of five rotational pool employees were assigned to the P Division. During the month, three new employees were assigned to the division and one was transferred to the Pile Technology Division for further training.

H. L. Henry, Assistant Chief Supervisor, transferred to the Pile Technology Division effective May 1. R. G. Clough assumed duties as Acting Assistant Chief Supervisor, 100-D Area, vice Mr. Henry.

R. O. Mehann was promoted to the new position of Assistant Superintendent - Process effective May 1. Mr. Mehann will be responsible for those divisional matters which relate to the establishment, control and improvement of the pile and metal fabrication processes.

W. W. Windsheimer, Chief Supervisor, assumed responsibilities for the 100-B, 100-D and 100-DR Areas on May 1, in addition to his previous responsibilities for 100-F and 100-H Areas.

R. W. Hooper and C. E. Jones, Shift Supervisors, were promoted to Area Supervisors, effective May 1.

W. G. Albert and G. S. Spencer, Supervisors-in-Training, were promoted to Shift Supervisors, effective May 1.

K. T. Perkins of the Contact Engineering Group visited the Kellex Corporation in New York City on May 10 and 11 to discuss problems related to Project C-431.

F. E. Jochen visited the Y-12 facility at Oak Ridge from May 21 through May 31 to advise and assist in the startup of a new production line.

III. AREA ACTIVITIES**100 Areas - Pile Irradiation**

The total pile production for May was 3.9% below that for April and was only 92% of the amount forecast for this period. There were two major contributing factors which resulted in the failure to meet forecast production quotas; both were associated with slug ruptures. (1) An outage of 69.1 hours duration at DR Pile was required to locate and correct a leaking process tube. The leak was found to have resulted from a ruptured slug. Additional

P Division

lost production resulted from this incident since it was necessary to operate the DR Pile at approximately 78% of its usual level during the last 16 days of the month, while removing the water from the pile packing. (2) A loss of 87.5 hours of operating time occurred at H Area due to unusual circumstances encountered in removing a ruptured P-10 slug from the pile.

<u>Pile Production Summary</u>	<u>Pile B</u>	<u>Pile D</u>	<u>Pile DR</u>	<u>Pile H</u>	<u>Pile F</u>
Unscheduled Outage Time (Hours)	0	58.8	69.6	87.5	27.4
*Inlet Water Temperature (°C.)	12.7	12.3	12.2	12.4	12.4
*Outlet Water Temperature (Max. °C. 10 tubes 0.240" zone) (10 tubes 0.285" orifice zone at H Area)	59.9	67.7	78.5	72.6	72.8
Maximum Graphite Temperature (°C.)	354	372	309	400	391
Metal Discharged (tons)	10.19	10.38	23.58	15.41	20.01
Inhours Gained	72	41	**78	0	30
Inhours Poisoned	532	506	379	40	495
Inhours in Rods	134	90	70	105	117

* Month end figures.

** Loss incidental to water leak in process tube.

Pile downtime during the month of May was mainly attributable to the scheduled discharge of metal, the removal of ruptured and stuck slugs and the time required for production test and special request work. A tabular breakdown of outage time in hours is given below:

	<u>B</u>	<u>D</u>	<u>DR</u>	<u>H</u>	<u>F</u>	<u>Total</u>
Metal Discharge	14.5	12.0	30.2	37.7	31.7	126.1
H-10 Discharge	-	-	-	10.0	-	10.0
Ruptured Slug Removal (except P-10)	-	41.8	69.1	-	27.4*	138.3
Pile Maintenance	23.1	16.9	-	-	18.3	58.3
Production Test and Special Request (except P-13)	7.5	6.0	10.0	110.5**	13.6	147.6
P-13	-	-	-	-	-	0.0
Electrical Outage	-	-	-	-	0.3	0.3
Stuck Slug Removal	-	17.0	-	-	-	17.0
Safety Circuit Interruption	-	-	0.5	-	-	0.5
	45.1	93.7	109.8	158.2	91.3	498.1

* Includes 25.4 hours required to effect removal of the ruptured slug in tube 2475-F reported in April.

** Includes 87.5 hours required to effect removal of ruptured P-10 slug.

Operating Experience

Operating experience during the month was normal, except for outages required to remove ruptured slugs from D, DR, H and F Piles and the removal of a stuck slug in D Pile.

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Production tests having operational significance are reported below:

- 105-103-P (Corrosion Rates at Elevated Temperatures, Supplement D)
At F Pile, 29 tubes are operating satisfactorily at elevated temperatures under the provisions of this test. During May, five additional tubes were charged and two tubes were discharged and returned to normal.
- 105-338-P (Pile Test of Special Step Plug and Gas Seal)
During the May outage, the silicone plug in Vertical Safety Rod 20 was replaced at D Pile. This effectively sealed the previously reported gas leak.
- 105-391-P (Graphite Burnout and Transport Test)
On May 8, graphite samples were charged into tubes 2682-F and 2777-F, as outlined in the production test.
- 105-403-P (Controlled Temperature Exposure of Graphite, Supplement A)
Graphite samples which were installed in Tube 1684-B on January 23, were removed on May 16 and additional samples and associated equipment were installed as outlined in this production test. No operational difficulties have been experienced with this equipment.
- 105-435-P (Graphite Temperature Increase of the F Pile)
Operation of the F Pile under the provisions of this production test was begun on May 10. No difficulties attributable to increased graphite temperatures have, as yet, been experienced.
- 105-433-P (H Pile Graphite Sampling from Fringe Tubes)
During the scheduled outage of May 22, graphite samples were mined and cored from the channels of tubes 1191-H, 1196-H and 2766-H. The operation required approximately 23 hours of outage time. It is anticipated that analysis of the samples will yield data of value in the design of C Pile.
- 105-354-P (Operation of ANL-140 with Fuel Installed, Supplement C)
Operation of the P-13 equipment in H Pile was normal throughout the month. For the first time in many months, no interruption of pile operation due to the operation of the P-13 safety circuit occurred, indicating the success of the two second time delay mechanism installed in the safety circuit in April. There were positive indications that at least one unscheduled outage was thus avoided.

The special request program required approximately 350 manhours of time during the month. Cask handling and decontamination work continued to consume a large portion of the time charged to this work. Fourteen tubes of special request material were charged into the piles for irradiation. Twenty-eight tubes containing special request samples were discharged and 17 casks containing irradiated samples were shipped off site. In addition, 152 manhours were required for the charging, discharging and shipping of Chemical 68-56.

P Division

A total of 79.57 tons of uranium slugs was discharged during the month, of which 0.25 tons were at 56%, 0.38 tons were at 37%, 0.13 tons were at 57% and 78.94 tons were at 100% of nominal goal value concentrations.

At D Pile, there were two unscheduled outages to remove ruptured slugs. The first outage of 26.8 hours occurred May 13, and involved the removal of a ruptured uranium slug from tube 1973-D. A second outage occurred on May 21, when a uranium slug failed in tube 1174-D. After the removal of the slug, which required 15.0 hours, the outage was extended to complete work that had been planned for a scheduled shutdown on May 23. An additional delay of 17 hours occurred during this outage, to remove a stuck slug which was found when an attempt was made to discharge tube 3779-D. Details of these slug failures will be described in detail in a document to be issued at a later date.

An unscheduled outage of 69.1 hours duration occurred at DR Pile on May 13, due to a ruptured uranium slug and an incidental process water leak. A large decrease in reactivity and an unexplained rise in pile atmosphere moisture content necessitated a pile shutdown. Following an extensive testing program, the water leak was eventually located in tube 1368-DR. Subsequently, it was found that the tube contained a ruptured slug, the position of which conformed to the leak in the process tube. A document describing this incident will be issued at a later date.

During a scheduled outage at H Pile, on May 22, a ruptured P-10 target slug was found in tube 188C-H and necessitated a total outage of 87.5 hours to effect removal. The removal operation was significantly complicated by the inadvertent ejection of an enriched fuel slug into the front face fittings during the transfer operation of the upstream slugs to an adjacent tube. The resultant intense radiation level necessitated development and utilization of special procedures which partially accounted for the unusual length of time required to complete the removal of the ruptured slug. The incident is described in detail in document HW-21230.

A uranium slug failure in tube 3489-F occurred on May 3. The tube was discharged and the pile resumed operation after an outage of only two hours. The details involved in the removal of the ruptured slug will be published in a document to be issued at a later date.

During the month, evidence of a small water leak appeared at F Pile. Gas moisture analyses have been inconclusive in determining the location of the leak and no measurable reactivity losses or wet spots in the pile have become apparent.

Mechanical Experience

The general mechanical condition of the pile components and equipment continued good throughout the month. All horizontal and vertical safety rods are in satisfactory operating condition at month end, except the following:

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- a. Horizontal safety rods 6 and 9 at 100-D bind during operation. The cause of the binding will be investigated during subsequent outages.
- b. Horizontal safety rod 8 at 100-B was removed from service during the May 16 outage when investigation revealed a gas leak in the thimble. The thimble will be replaced and the rod returned to service during a subsequent outage.

Horizontal control rod A at 100-D was returned to service following the replacement of a section of the graphite track during the May 21 outage.

The unclad 2-S aluminum tubes in channels 0657-B, 0678-B, 1293-B, 1856-B and 4385-B were replaced with 72-S clad tubes on May 16 in accordance with the P Division program for replacement of all 2-S unclad tubes.

The gas thermocouple was removed from C hole at D Pile on May 22 and a multiple thermocouple assembly was installed. This equipment provides an additional source of data for the study of graphite temperatures.

During May, a routine inspection revealed that the DR Pile sixty inch process sewer line at the inlet to the 107 west distribution chamber was leaking. Temporary repairs failed to correct this condition and additional repairs are planned at a later date.

During May outages, inspections of the near downcomers in H and DR Piles revealed damaged vent pipes. An evaluation of the problem has been undertaken by the P Division engineering section and subsequent repairs are planned.

Vertical safety rod thimble 26 at F Pile was replaced on May 8. The thimble was equipped with thermocouples which had failed and a new thermocouple thimble assembly was installed in order to give graphite temperature data for that location in the pile.

Gas Processing

The gas leak in B Pile circulating gas system was located during the May 16 outage. Investigation revealed the leak to be in No. 8 horizontal safety rod thimble. The gas consumption returned to normal following the removal of the rod and sealing of the thimble.

Pile Development

As a part of the program in the development of more rapid and effective means of determining slug failures, a delayed neutron counter was installed in the 100-H water sample rooms, to receive impulses from the chambers installed at the ends of rear crossheader 21. Tests are planned to determine the effectiveness of this approach to the problem of ruptured slug detection.

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To facilitate the measurement of the water pressure in the front face crossheaders, pressure taps were installed at the center of all crossheaders on the H Pile. Facilities are provided for reading these pressures on a master gauge located in the control room. This information is of value in determining water temperature limitations, and as an indication of any plugging which might occur in crossheader screens.

To increase the usefulness of the effluent water monitoring system at H Pile, the readings of the header sample recorder were duplicated in the control room, using two instruments previously recording data available elsewhere. It is anticipated that the change will permit closer attention to this system than has been possible in the past.

Special Hazards

Removal of ruptured slugs in D, DR, H and F Piles was accomplished with no overexposure to personnel in spite of the high rates of exposure involved.

Unprecedented radiation levels were encountered at H Pile when an enriched fuel slug was ejected into the front face fittings during a ruptured slug removal operation. The development of special tools and procedures were necessary to assure that the slug could be retrieved without overexposure of personnel. A crane equipped with tongs was used to pick up the slug and deposit it in a tank of water. This operation was performed without overexposure of personnel despite a radiation level of about 275 R/hr. at the edge of the work area elevator pit.

300 AREA METAL FABRICATION

OPERATING SUMMARY

All 300 Area facilities, except the 305 test pile, were operated on a one shift, six-day week basis throughout the month. The 305 test pile was operated on a one shift, five-day week schedule.

During the month, record billet and solid yields of 88.9% and 95.5%, respectively, were achieved in the Melt Plant operation.

<u>URANIUM FABRICATION</u>	<u>April</u>	<u>May</u>	<u>To Date</u> <u>1951</u>
Billets Produced (Tons)	20	26	98
Bare Pieces Machined (Tons)	99	86	460
Briquettes Produced (Tons)	13	14	64
Oxide Burned (Weight out-Tons)	3	3	15
Acceptable Pieces Canned (Tons)	92	76	435
Melt Plant Billet Yield (%)	88.2	88.9	88.1
Melt Plant Solid Yield (%)	95.1	95.5	94.3
Machining Yield (%)	78.7	71.5	78.4
Chip Recovery Yield (%)	87.5	88.8	87.8
Canning Yield (%)	89.5	73.8	87.3
Autoclave Frequency (No./M)	0.06	0.0	0.16

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OPERATING EXPERIENCEMelt Plant

The record billet and solid yields attained during the month resulted chiefly from the increased amount of solid scrap processed. About 50% of the uranium scrap cast into billets was solid scrap, as compared to 30% during the previous months. This adjustment was made to bring the percentages more nearly in line with the solid scrap and TXB accumulated from the machining operation.

Three broken stopper rods and one cracked crucible were the only operating difficulties experienced in May. The installation of spring tension stopper rod devices on both furnaces has eliminated rod breakage caused by excessive tension during the melting cycle.

Machining

The machining yield was adversely effected by the poor quality of rods and the modified standards for the acceptance of bare slugs. A major portion of the rods machined were rolled during recent months from U type material. These rods had an abnormally poor surface quality because of seams, flaws, and cracks. In addition, some rods failed to cleanup when turned to slug dimensions because they were either elliptical or too small in diameter. The condition of the rods accounted for a decrease in machining yield of about 5%, with the balance being attributed to more stringent inspection standards.

Chip Recovery

Chip recovery operated without incident during the month.

Oxide Burning

Twelve tons of raw oxides were burned in May. This figure includes nine tons of expended graphite parts (MD-4) from the Melt Plant operation.

The enlarged graphite burner, which was installed in April, has operated at three times the capacity of the previous burner. Based on present rates of burning, it is estimated that the entire backlog of MD-4 will be processed by September 1, 1951.

Canning

An appreciable decrease in canning yield and production for the month resulted from the application of very rigid controls on slug quality in order to minimize the possibility of slug failures in the 100 Areas. Operation of the canning lines was continued on a 57 second cycle to reduce non-seating rejects and reduce the frequency of off-cycle rejects. Of the total number of slugs processed, 11.1% was rejected for

P Division

deviations from standard process, 5.5% for non-seating, 3.2% for bad welds, 3.0% for marred surface and 3.4% for other miscellaneous causes.

Although rejects for deviation from standard process were abnormally high for the month, this type of reject had been reduced to about 6% at month end. Further reduction is expected through continued emphasis on strict adherence to the relatively close tolerances of the canning cycle. Automatic timing devices were installed on the centrifuges and Al-Si dip furnaces. These devices have been instrumental in reducing off-cycle rejects at this stage of the process. The majority of the off-cycle rejects now occur at the canning baths and involve can-sleeve preheat and submerge, plus cap preheating.

Non-seating rejects have been reduced from about 10% to less than 5% through the extension of the canning cycle from 47 to 57 seconds. The longer cycle has permitted the utilization of above nominal times for can-sleeve preheat and submerge. At month end, the possibility of increasing the time to maximum process limits was being investigated.

Bad weld rejects have increased as a result of inspecting all welds under magnification prior to frost testing. This method of inspection has proven quite effective in detecting small voids or pinholes in the weld beads that cannot be observed without visual aids. The quality of welds has been improved through emphasis on handling pieces with clean gloves and welding at reduced rates of rotation.

Inspection

There were no autoclave failures during the month. The last failure occurred on April 19, 1951. This marked improvement in the failure frequency has resulted from the improved inspection of welds mentioned above, as well as the rigid controls on cap preheating. The use of optical aids in inspection has revealed many minute defects not previously detected.

None of the slugs tested for penetration during the month were penetrated within 0.010" of the outer surface of the can wall.

305

The following tests were run during May:

<u>Description</u>	<u>No. of Tests</u>
Regular Slugs	39
Billet Eggs	79
Measure the reactivity effects of dry film on uranium slugs	11
Measure the reactivity of uranium slugs with varying thickness of end caps	22
Measure the purity of high density graphite	4
Production Test 305-14-P (Reactivity Test of a "J" Slug after discharge from 105 pile	8
	<u>163</u>

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Special Fabrication Work

During the month, 951 poison pieces and 600 "B" pieces were canned. In addition, 121 manhours were spent in processing the following special materials:

Canning 114 normal uranium slugs for the Plant Assistance Group to evaluate the effects of canning bath temperatures on can wall penetration.

Canning 184 normal uranium slugs for the Plant Assistance Group to evaluate bare slug inspection standards.

Canning 100 six-inch lead dummy slugs, 100 eight-inch and 1000 four-inch aluminum dummy slugs for use in water quality experiments, (Project C-424).

Material Handling

Forty-five tons of normal canned slugs were shipped to the 100 Areas. Fifty-one tons of uranium billets were shipped to Simonds Saw and Steel Company for rolling.

A total of ninety-five tons of alpha rolled rods was received from Simonds Saw and Steel Company.

Approximately eight manhours were devoted to making two off-plant shipments of miscellaneous materials.

Special Hazards

No unusual conditions developed during the month.

Development

The installation of the automatic locking devices to assure alpha-beta transformation of the slugs when dipped in the bronze baths was completed during the early part of the month. Since installation, these devices have operated without incident.

At the request of the P Division, the Plant Assistance Group of the Pile Technology Division made a series of tests to determine the optimum speeds of rotation for welding canned slugs. Based on the preliminary results of this work, the welders have been adjusted so that the preheat and first pass are made at 4 rpm and the final pass is made at 8 rpm. These rates of rotation have been fixed in such a manner that they cannot be varied by the welding operators. This effort to standardize the process appears to have resulted in improved weld quality and uniformity.

At the request of the P Division, the H. I. Divisions made a film study to determine the radiation exposure encountered on specific

P Division

operations in the Melt Plant. The preliminary results of this study showed that the oxide burner operator receives the maximum exposure. In view of this finding, a consented effort is being made to eliminate and mechanize oxide handling. Melt Plant crucibles are being burned out in the oxide furnace so that after burnout the crucibles can be removed and the oxide burned without rehandling.

As part of a program to establish tentative standards to be used for bare slug inspection, a number of selected bare slugs were alpha-beta heat treated by immersing them in a chloride salt bath and quenching in water. It was found that undesirable cracks and folds are more evident after heat treating. Slugs of doubtful quality, which have score marks of an undetermined depth, can best be inspected after heat treatment. It was concluded on the basis of this study that the present bare slug inspection standards are adequately conservative to be used until the Plant Assistance Group has concluded its investigation and made specific recommendations.

PROCESS ACTIVITIES

Contact Engineering Group

All major scope bases for the "B" section of Project C-431 with the exception of the inclusion of "coring" in the graphite stack design have been approved at month end. The first draft of the project proposal was completed during the month.

The 105 Building design is approximately 15% complete. Detailed design of the pile and its associated equipment is approximately 30% complete.

Modification No. 5 to Directive HW-222 received during the month increases the total funds available for the project to \$15,000,000. Of the \$7,500,000 allocated to the "B" section of the project, approximately \$6,750,000 have been committed at month end.

Engineering Control Group

Efforts of the Engineering Control Group were directed toward:

- (a) Scoping, project proposal preparation and design follow-up of a number of urgent projects including "Effluent Downcomer Repairs", "Retention Basin Repairs", "Ball 3X System", "Panellit Gauge Revisions", "J Slug Storage and Shipping Facilities", "Power Calculating Instrument Revisions", and "Mechanization of Slug Canning, Finishing, and Inspection Lines".
- (b) Field follow-up of approved projects and design development work as well as engineering assistance to operating personnel.

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- (c) Analysis and control of the divisional cost program including a study of the causes of monthly variations in the 100 Area costs to provide background information for explanation of past cost variations and predictions of future 100 Area costs. Also a procedure for estimation of the costs incurred by the P Division while handling routine special requests was prepared for use by the Manufacturing Cost Group.

Project Status

Below is summarized the status of currently active P Division Projects:

C-330 (Improved Ventilation - Buildings 313-314 (Engineering and Development Only)

The design for improved ventilation in the chip recovery operation is essentially completed. It is expected the designs for the 314 Building which include the saw room, rod straightener, and environs will be completed early in June. The field construction necessary for the development work was formally accepted as satisfactorily completed May 25.

C-420 (CO₂ Bulk Storage Facilities)

The piping installation has been started at 110-D as all the pipe is now on hand. However, progress will be slow as all valves and pressure relief equipment have not been received. The low pressure storage tank for DR from 100-H Area has been set in place.

C-438
B-1886

(Ball 3X Facilities for B, D, DR, H, F Piles (Engineering and Procurement of Critical Materials)

Purchase of nickel-plated boron steel balls has been initiated as authorized by directive HW-230, Modification No. 1, dated 5-21-51. Final tests have been made of chute and flute shapes and dimensions. Designs for mock-up of the combined step plug and rod guide are being prepared for tests prior to issuance of final drawings for procurement of castings. Preliminary surveys have indicated that the best location for the emergency battery systems at B, D, F, and DR is in the process water valve pits.

M-713 (Vertical Safety Rod Design - B, D, F)

Project Engineering has completed an inspection of the rod which failed in its second free drop at 181-F on April 27, 1951. The rod fell free a distance equivalent to the nominal drop at 105-B, D, and F. Inspection revealed that the rod separated at the first crimped joint next to the top section. The tapered end of the tie rod slipped through the supporting split collar and adapter. As no visible weaknesses were apparent in the rest of the rod, it is planned to redesign the tie rod connection at the upper end and conduct another similar test with the rod strengthened at this point.

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- M-806 (Slug Canning - Transformation Timing Equipment)
This equipment is in use on all bronze furnaces of the slug canning process.
- B-821 (Design and Install Replacement Downcomers in 100-B, D, F)
Recommendations for downcomer repairs at 105-B, D, and F and for replacement at 105-F were received from the Project Engineering Divisions. A work order and reason sheet was submitted to the Project Engineering Divisions to prepare a project proposal for repairs to 100-B, D, F, DR, and H downcomers and for a replacement downcomer design at 100-F Area. DR and H Areas have been included in the project request as recent inspections have indicated the need for repairs to those downcomers.
- M-829 (105-D and DR Safety Circuit Interlock)
Four of the eight necessary relays have arrived; the remaining four are expected by June 15. Latest estimates are that the work will require two shutdowns at 105-DR and three or four shutdowns at 105-D. The May 22 shutdown of 105-D was used to investigate the method of making the cutover.
- M-831 (Repairs to Retention Basins - B, D, F, DR and H (Engineering Only)
The plan for routine inspection and repair of the joints using an inexpensive filler has been decided upon as the most desirable approach to the problem. Accordingly, the Project Engineering Divisions are preparing a project proposal along these lines.
- M-1968 (Crossheader Pressure Monitoring - B, D, F, and DR)
A work order and reason sheet for the preparation of a project proposal was submitted to the Project Engineering Divisions during the month.
- M-1969 (Earthquake Detectors - B, D, F, DR and H)
One seismometer (pendulum starting device) has been received from O. S. Peters Company and set up in the Instrument Division Shop for experimental work.
- B-1993 (Process Tube Thermocouple Replacement)
Arrangements have been made with the Instrument Division to obtain samples of thermocouple wire from the 105-B discharge area to determine the condition of the saran covering relative to location on the unit and in the duct. The thermocouple replacement problem at 105-H is also under investigation by the Instrument Division.
- B-2025 (Slug Canning Process Improvements)
B-2035 (Canned Slug Finishing and Inspection Improvements)
A work order and reason sheet have been submitted to the Project Engineering Divisions for the preparation of a de-

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sign project to accomplish the work outlined in the above two budget items. A meeting of representatives from the Technical, Project Engineering, Industrial Engineering, and P Divisions was held on May 29, 1951 to initiate action toward scoping the design project.

- M-810 (Control Mechanism)
- M-824 (Emergency Repairs to 107-DR and H Retention Basins)
- M-825 (Pneumatic Rod Feeders)
- M-826 (Crossheader Pressure Monitoring - 105-H)

The four above projects were closed during the month.

Process Control Group

Investigations relative to the prevention and control of ruptured slugs were made by this group during the month and a complete reference compilation of available data was assembled. Improved control methods for the 300 Area process were also given considerable emphasis.

Process Development Group

A study to determine the operational feasibility of using eight-inch slugs has been completed and a report issued. The report analyzes the improvements in slug metallurgy, the high incidence of end cap slug failures, and all known trends in graphite damage effects on process tube configuration and concludes that eight-inch slugs can be satisfactorily used in all piles. Their use should reduce ruptured slug incidence as a result of the improved heat transfer characteristics of the thicker end caps used on the eight-inch slugs and the smaller number of slugs which will be exposed.

E. P. Lee
Superintendent
P DIVISION

EP Lee:ges

Richland, Washington
June 2, 1951

S DIVISION

MAY, 1951

I. RESPONSIBILITY

There was no change in S Division operating responsibility during the month.

II. ACHIEVEMENT

1. Production Statistics

a. Over-all Performance - Canyon, Concentration and Isolation Buildings (5-1-51 through 5-31-51, inclusive)

	<u>B Plant</u>		<u>T Plant</u>		<u>Combined</u>	
	Acid		Acid		Acid	
	<u>Normal</u>	<u>Wash</u>	<u>Normal</u>	<u>Wash</u>	<u>Normal</u>	<u>Wash</u>
Charges started in 221	64	2	65	2	129	4
Charges completed thru 224	63	1	71	1	134	2
Special chgs. thru 224	0		0		0	
Charges completed thru 231	62	1	72	1	134	2
Special charges thru 231	-		-		1	
Avg. purity comptd. chgs	-		-		98.9	
Avg. elapsed cooling time						
metal processed (days)	45		46		45	
Yield thru process	99.5		100.1		99.8	
Material Balance thru process	100.5		101.3		100.9	

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b. Canyon and Concentration Building Performance Data for Completed Charges (5-1-51 through 5-31-51, inclusive)

	<u>B Plant</u>	<u>T Plant</u>	<u>Combined</u>
Percentage of starting product in waste:			
This month	1.9 (a)	1.7 (a)	1.8
Last month	1.8 (b)	1.8 (b)	1.8
Cumulative to Date	3.7 (c)	3.6 (c)	3.6
Percentage of starting product recovered:			
This month	98.5	100.4	99.5
Last month	98.9	102.9	100.9
Cumulative to date	97.0	96.3	96.7
Percentage of starting product accounted for:			
This month	100.4	102.1	101.3
Last month	100.7	104.7	102.7
Cumulative to date	100.7	99.9	100.3
Gamma decontamination factor (Log.)			
This month	6.57	7.14	6.69
Last month	6.70	6.76	6.71
Cumulative to date	7.19	7.32	7.25

(a), (b), and (c): Includes waste from processing recycle. The recycle wastes are estimated as: (a) 0.023%, B Plant: 0.020%, T Plant. (b) 0.027%, B Plant: 0.036%, T Plant. (c) 0.012%, B Plant; 0.064%, T Plant.

c. Isolation Building Performance Data (5-1-51 through 5-31-51, inclusive)

	<u>Prepared for Shipment</u>	<u>Recycle</u>	<u>Waste</u>	<u>Retained Material Samples</u>	<u>Balance</u>
Average for this month	93.4	6.06	0.15	0.03	99.6
Average for last month	93.5	7.40	0.002	0.04	100.9
Average to date	94.9	5.03	0.04	0.01	100.0

d. Depleted Uranium and Waste Storage Status

<u>Tank Farm</u>	<u>200 East Area</u>					<u>Reserve Capacity in Batches to Process</u>				
	<u>Gallons (10³) in Storage</u>					<u>B</u>	<u>C</u>	<u>BX</u>	<u>BY</u>	<u>Total</u>
Metal Waste	1579	3374	3117	2902	10972	0	0	18	893	911
1st Cycle	2645	3170	2645	1183	9643	0	0	151	309	460
2nd Cycle	1428	0	0	0	1428	61	No cribbing during May			
TBP Reserve					758					
Waste Evap. Reserve	530									

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Tank Farm	200 West Area Gallons (10 ³) in Storage				Reserve Capacity in Batches to Process			
	T	U	TX	Total	T	U	TX	Total
Metal Waste	1579	4737	3677	9993	0	0	677	677
1st Cycle	1770	1585	5219	8574	400	0	239	639
2nd Cycle	1629	0	0	1629	185,600	gals est. cribbed by cascade		
TBP Reserve				758				
Waste Evap. Reserve				716				

2. Production Activities

a. General

Over-all time cycles of 10.7 hours and 10.6 hours were maintained at the Canyon and Concentration Buildings, respectively, during May, including standard charges and acid washes. B Plant failed to comply with the starting schedule due mainly to necessary maintenance on a centrifuge in each of the Canyon and Concentration Buildings. At the Isolation Building, an over-all time cycle of 12.6 hours was achieved. The operation of the First Decontamination Cycle Waste Evaporator in the 200 West Area was suspended for part of the month due to the rapid corrosion of the Admiralty Metal tubes in the vapor condenser attributable to the presence of free ammonia in greater than predicted quantities. The defective condenser was replaced during the latter part of the month. Thus far, the limited number of results indicate a volume reduction of approximately eighty percent, with a beta decontamination factor of 3.7×10^3 .

b. Extraction

Significant data on extraction waste losses are tabulated below:

	B Plant		T Plant	
	May	April	May	April
Analysis before rework	1.77	1.85	1.94	2.01
Analysis after rework (throw-away)	1.60*	1.46	1.76**	1.57
Average MWD/Ton	412	412	412	412

* Includes thirty-four charges not reworked

** Includes thirty-eight charges not reworked

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c. Acid Washes - B & T Plants

An acid wash was started in each of the parallel lines in the Canyon Buildings and one of these acid washes was completed through each of the Concentration Buildings. The acid washes, which had been started just prior to month end, will be completed early in June. Data are tabulated below which indicate the percentage of product recovered from the completed acid washes in terms of a standard charge:

<u>Run</u>	<u>Extraction</u>	<u>Sect. 12 and 1st Cycle</u>	<u>2nd Cycle</u>	<u>Total 221 Bldg.</u>	<u>224 Bldg.</u>	<u>Total thru Process</u>	<u>Preflush B, E & F Cells</u>
B-11-05-AW-1	15.33	38.96	4.28	58.57	5.73	64.30	16.62
T-11-05-AW-1	6.86	30.57	17.33	54.76	1.38	56.14	27.90

d. Nutsche Filter Block Cleanouts - Isolation Building

A series of scheduled flushes were made on the first cycle nutsche filter blocks in cells 2, 3 and 4. The filter blocks installed recently in cells 3 and 4 exhibited a normal amount of product hold-up. Although the similar equipment in cell 2 did not hold up an excessive amount of product, the extended filtering time cycle indicates that the porosity of the block has become considerably restricted. This block will be replaced within the near future. At present, a procedure has not been developed for reclaiming the small amount of product estimated to remain in the blocks removed from cells 3 and 4 during April.

e. Cribbing of Second Decontamination Cycle Waste

The settled second cycle decontamination cycle waste started to overflow constantly from the 241-T-112 tank on May 8, 1951 and has continued uneventfully since that time. It is expected that Section 5 waste effluents, originating in the Canyon Buildings, will be combined with second cycle decontamination wastes at both B and T Plants, during June.

f. First Decontamination Cycle Waste Evaporator

Since start-up during the latter part of April, 189,046 gallons of first decontamination cycle waste have been processed at an average rate of 511 gallons per hour, with approximately an eighty percent volume reduction and a beta decontamination factor of 3.7×10^3 . A few minor operating inconsistencies remain to be resolved, however, a production rate in excess of the designed capacity appears readily attainable.

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To date a total of 1,379,000 gallons of supernate have been transferred from the 241-T Tank Farm to the 241-TX Tank Farm for feed stock, thus providing an equivalent amount of reserve storage space.

g. Rerouting of 291-T Stack Drainage Waste

On May 28, 1951, the T Plant stack drainage waste was rerouted to discharge into the 241-TX-113, 114 and 115 tank series, concurrent with first decontamination cycle waste.

h. Decontamination in Canyon Building - B Plant

Lower than normal decontamination factors were obtained in the B Plant Canyon and Concentration Buildings during the major portion of the month, ultimately resulting in abnormally high radiation levels on the product containers shipped from the Concentration Building. Production Test 221-B-10 was discontinued during the early part of the month and operation was resumed under former standard procedures. (70 percent volume with 4.5 grams per liter of Bismuth) in an unsuccessful effort to improve the decontamination efficiency through the Canyon Building. Several variations of standard procedures were tried within the limits of established standards and toward the latter part of the month it was indicated that the elimination of reworking the extraction effluent wastes would effect a certain degree of improvement without increasing the over-all waste losses in the Canyon and Concentration Buildings by more than 0.2%. Apparently, the extraction rework cake retains a sufficient amount of fission products which carry through the first and second decontamination cycles, and which eventually have an adverse effect on the extent of decontamination in the Concentration Building. The decontamination factors had improved in the Canyon Building at month end and the readings on the Concentration Building shipping containers had improved by approximately a factor of 2. However, further improvement is desirable.

3. Process Control

a. Dissolver Off-Gas Filter (Project C-337) and Silver Reactor (Project C-378)

The fifth silver nitrate reactor filter assembly is about 60 percent complete. It is estimated that the filter box will be completed during June, however, material procurement delays may postpone the over-all completion of the reactor until October 1, 1951.

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DECLASSIFIED**b. Section 5 Waste Disposal (Project C-415)**

It is anticipated that this Project will be physically completed during June and that by July 1st the Section 5 wastes in both plants will be combined with the second cycle wastes for settling and subsequent discharge to the underground crib.

c. Additional Waste Storage Facilities - 241 TY (Project C-418)

The preliminary construction work has been completed, and the contract for the major construction work has been awarded to the F. J. Early, Jr. Company. Excavation work is progressing satisfactorily but reinforcing steel procurement problems may delay completion of the over-all project.

4. Investigation and Development**a. Extraction Precipitation Bismuth Concentration (Production Test 221-B-10)**

During the month sixteen runs in alternating pairs at two different sets of conditions (1) 3.5 g/l Bismuth and 56% volumes and (2) 2.5 g/l Bismuth and 49-56% volumes, were processed in B Plant. These pairs were followed by control runs of standard 4.5 g/l Bismuth and 70% volumes. Results of these test runs continued to show increased waste losses in extraction, however, the total Canyon Building wastes corrected for the alpha emitters, Americium and Curium, were no greater at the lower volumes than at the standard 70% volume. The production test was temporarily discontinued, as previously mentioned, to investigate the source of the factors contributing to the lower than normal decontamination factors being experienced in the B Plant Canyon Building.

b. Elimination of Radio-Iodine from Stack Effluent (Production Test 221-B-9)

This test has been discontinued pending an investigation of the distribution of radioactive iodine in the canyon process. Also, the efficiencies of the silver reactors are being reviewed in view of the increased evolution of iodine as the result of the decreased cooling period.

c. First Decontamination Cycle Waste Evaporator - Material Balance (Building 242-T)

The original instrumentation arrangement has not provided an exact measurement of the input and output to the West Area Evaporator. Several minor modifications were made and other

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are being investigated. The major difficulty is due to the salting-out characteristics of the concentrate, during the latter part of the evaporation cycle.

d. Solids in AT and WT Solution Tanks - Isolation Building

Since adopting the process modification whereby the AT (final product) solution is concentrated to 350 g/l instead of 275 g/l, the AT and WT tanks have contained more solids than usual. This may be due to the presence of an excess of sulfates in the AT solution. A special series of AT samples are being taken and a reduction of sulfuric acid added to the P-2 tank, prior to the peroxide strike, has been inaugurated in an effort to rectify the above difficulty. Data compiled to date are insufficient to report definite findings.

e. Special Samples

A 100 ml. sample of metal solution of cut T-11-05-Bd 12 was obtained and shipped on 5-28-51 to the Berkeley Radiation Laboratory.

B. Equipment Experience

1. Operating Continuity

On May 23, 1951, an unusual incident occurred in a construction area near the 283-W water filtering facility, resulting in 25 minutes delay in operations in the 200 West Area. A crane boom was left unbraked in an elevated position, after completion of the day's work, and a high wind swung it into a primary electrical supply line, thus interrupting service. There were no serious processing difficulties encountered, and no spread of contamination occurred since the emergency ventilation facilities operated satisfactorily.

2. Inspection, Maintenance and Replacements

a. Canyon Equipment Failures - B & T Plants

Equipment failures in the Canyon Buildings are summarized below:

- (1) In B Plant the skimmer hydraulic system on the Section 16 first decontamination cycle by-product centrifuge failed. The centrifuge was replaced with a spare and attempts will be made to replace the defective parts in the failed machine.

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- (2) In B Plant the Section 13 first decontamination cycle by-product precipitator to centrifuge "A" jet assembly failed due to a steam leak in the inlet flange of the jet assembly.
- (3) In B Plant the Section 14 first decontamination cycle product centrifuge dip tubes were bent as a result of inadvertently running the machine in reverse. Five of the six dip tubes were replaced and subsequent operation of the centrifuge has been normal.
- (4) In T Plant the Section 20 second decontamination cycle precipitator to centrifuge "A" jet assembly became inoperative due to a steam leak in the inlet flange to the jet. The assembly was removed, regasketed, and replaced.
- (5) In T Plant the special Y-shaped drop leg to the Section 19 second decontamination cycle product centrifuge from the Section 20 precipitator "A" and "B" jets developed a leak at a weld. The assembly was removed, welded, regasketed, and replaced.
- (6) In T Plant the Section 13 first decontamination cycle by-product precipitator chemical addition line from the "A" position scale tank was found to be leaking at the wall connector. Reimpacting failed to eliminate the leak and the assembly was replaced with a spare.
- (7) In T Plant the effluent tank to precipitator recycle line dip leg at Section 19 was ascertained to be leaking at the wall connector. The assembly was replaced with a previously repaired unit, regasketed, and stored as a spare.
- (8) In T Plant the Section 8 extraction precipitator to centrifuge "A" jet assembly developed a steam leak at the jet inlet flange. The assembly was replaced with a spare and stored for possible subsequent under-water repair.

b. Concentration Building Mechanical Difficulties - B & T Plants

- (1) In B Plant the E-2 centrifuge motor and drive-head assembly was replaced with a spare, due to a defective thrust bearing.
- (2) In T Plant it became necessary to replace a portion of the F-2 to F-10 line after several attempts at welding were unsuccessful in correcting a leak located in a relatively inaccessible part of the trough.

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- (3) At T Plant several leaks have been discovered and corrected by welding during the month in the E-1 to E-2 line. One section is in extremely poor condition and is to be replaced during the coming period.
- (4) At T Plant corrosion caused failure of the E-1 distributor unit at a point immediately below the spray slot. A replacement has been fabricated and is awaiting heat treatment.

C. Improvements

1. Adoptions

There were no significant adoptions regarding process or equipment during the period.

2. Inventions and Discoveries

There were no inventions, discoveries or patentable items reported during the period.

III. PERSONNEL EXPERIENCE

A. Organization Changes

O. V. Smiset, Administrative Assistant, assumed the responsibility as Group Head - Planning and Scheduling, S Division, effective May 21.

L. F. Hardy, Area Supervisor, T Plant, assumed the responsibility as Group Head - Personnel Administration, S Division, effective May 21.

D. McDonald, Area Supervisor, B Plant, assumed the responsibility as Group Head - Costs and Budgets, S Division, effective May 25.

C. B. Foster, Senior Supervisor, Expansion Group, became Acting Area Supervisor, B Plant, effective May 14.

W. M. Wierman, Senior Supervisor, T Plant, became Acting Area Supervisor, T Plant, effective May 14.

The following Supervisors-in-Training were promoted to Shift Supervisors effective May 1;

W. S. Hartnett
C. E. Hirsch
N. W. Hope

W. R. Pogue
A. J. Quant

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The following Shift Supervisors were promoted to Senior Supervisors effective May 1:

C. F. Falk	R. A. Kennedy
D. R. Gustavson	A. B. Snyder
G. R. Harr	

W. E. Burlingame was promoted from Shift Supervisor to Senior Supervisor effective May 14.

The following changes from Weekly Roll to Monthly Roll; Supervisors-in-Training occurred:

M. S. Hansen	W. H. Johnson
D. W. Halstead	D. D. Deming
W. F. Unzicker	F. G. Kimble

W. R. Portch, Supervisor-in-Training transferred from Health Instrument to "S" Division May 1, 1951.

E. F. Curren, Senior Supervisor, transferred from Technical Divisions to "S" Division May 7, 1951.

B. Force Changes

1. Number of Employees on roll:

	<u>Monthly Roll</u>	<u>Weekly Roll</u>	<u>Total</u>
Beginning of month	155	497	652
End of month	<u>163</u>	<u>521</u>	<u>684</u>
Net increase (decrease)	8	24	32

2. Personnel Changes

	<u>Monthly Roll</u>	<u>Weekly Roll</u>	<u>Total</u>
Transfers from other Div.	2	+4	+6
Transfers to other Div.	0	-1	-1
Reactivated	0	0	0
New Hires	0	32	+32
Resigned	0	-5	-5
Transferred from Weekly to Monthly	+6	-6	0
Other	<u>0</u>	<u> </u>	<u>0</u>
	+8	24	32

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3. Work Schedule

Effective May 14, 1951, a six day work week schedule was adopted temporarily, by the S Division, to compensate for the prevailing shortage of non-exempt employees.

C. Safety Experience

There were no major or sub-major injuries incurred by S Division personnel during the month of May.

D. Radiation Protection

1. Locker Room Contamination - Canyon Building - T Plant

Decontamination of a patrolman, who received gross product contamination to his person, was performed in 271-T locker room. The spread of contamination was limited to the immediate decontamination area and was promptly cleaned to ≤ 500 d/m. A detailed and extensive survey of the building revealed no spread of contamination.

2. Radioactive Iodine Activity - T Plant

Contamination up to 4000 c/m and general contamination of 1000 c/m were discovered at the 200 West Area Main Badge House and vicinity during the month. General contamination of 800 c/m was also discovered at the Batch Plant east of the 200 West Area. The contaminating agent was found to be I^{131} . Subsequent investigation has shown that the amount of this radioactive material being discharged from the 291-T stack may be as high as twenty-fold times the indicated amount being discharged in the 200 East Area under ostensibly similar conditions.

A detailed investigation of this phenomenon is currently underway. Meanwhile precautions have already been initiated to halt the spread of I^{131} by discontinuing dissolver operation during periods of northwest winds. It has also been indicated that the silver reactor units of the T Plant dissolvers may be operating at efficiencies as low as 90 percent, in contrast to the 99.9 percent of the 4-5L silver reactor in the 200 East Area. Further evaluation of this indication is under way at month end, as are investigations of the effect of overheating the silver-nitrate coated Berl saddles with which the reactors are packed, and measurements of the amount of I^{131} being eliminated in the Canyon ventilation air.

3. Air Contamination - Concentration Building Pipe Gallery

The alpha activity of the Concentration Building Pipe Gallery air rose steadily for a period of seven consecutive days in May

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after which it declined again to an innocuous concentration. During a four day period the alpha count exceeded 2×10^{-11} ug/cc, the limit established requiring assault mask protection.

Continuous and extensive investigations during and after the entire period failed to disclose a source of this contamination. A small amount of alpha contamination (2,000 d/m) was found on the protective grill of some of the cell inlet air fans; however, this was considered a result rather than the source inasmuch as air flow is constant into the cells.

Although no similar conditions existed elsewhere in the building the 222-T Laboratory Building was similarly affected and the investigation is being continued.

4. Air Activity - Isolation Building

Samples of the 903 ventilation system during the month disclosed an activity of 9×10^{-11} ug Pu/cc being discharged to the atmosphere. This figure is higher than desired and may be partially attributed to the frequent N-1 cleanouts performed during the month. However, the desirability of installing an additional CWS-6 filter in the vent lines from the AR-1 and VR-1 tanks will be investigated. Sampling of the various discharge air ducts will be continued in an effort to isolate the more highly contaminated sources.

IV. EXPANSION SECTION

A. TBP Project (C-362)

1. General

a. Project Status

The project status at month-end was as follows:

- (1) Of 2896 drawings required for the TBP Project, 2560 drawings, representing 88.4 percent of the total have been approved for construction. This figure compares favorably with the scheduled 85 percent completion.
- (2) At month end 887 requisitions have been written for this project. Those requisitions remaining to be written or altered are for miscellaneous items of a minor nature and represent only a small percentage of the dollar value of materials. The order for three carbon steel vessels placed with the Willamette Iron and Steel Company was cancelled and a new order was placed for these vessels with Gunderson Company in order to expedite delivery to the project.

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- (3) The construction phase was 23 percent complete on a labor and materials basis, or 26.6 percent on a labor only basis, at month-end. This progress is behind the scheduled 37 percent completion due mainly to delays in receiving materials.

b. Part II Project Proposal C-362

The Project Proposal, Part II, for Project C-362 was completed and submitted to the Appropriations and Budget Committee at month-end. New funds, amounting to approximately \$6,000,000, are required. The major portion of this increase is due to the six-day work week, labor escalation, premium payments and bulk material handling.

2. Essential Materials

a. TBP Chemical Procurement

The Purchasing Division was authorized by the Manufacturing Divisions this month to begin purchasing dry chemicals for the TBP plant operation. Deliveries are to begin in September and continue into October.

At month-end one of the four dry chemicals, Sodium Sulfate was ordered. Sulfamic Acid will be ordered upon completion of contract discussions. Ferrous Ammonium Sulfate will be ordered later against a current plant contract. Limestone will be ordered when the freight rates are finally resolved. A supply of these materials equivalent to the needs for the first four months of operation will constitute the starting inventory.

Purchases of liquid chemicals are still under advisement and will not be made until July 1 or until more definite information on new storage tank availability is transmitted from the Design Division.

b. Dry Chemical Warehouse

The design of a new dry chemical warehouse, to supplement 271-U storage areas, was initiated in May. This warehouse will contain three thousand square feet of floor area and be of prefabricated steel frame construction. This building will be placed adjacent to the UO₃ storage building and will be serviced by the same railroad spur.

3. Design

- a. Phase I, Metal Removal, One Cascade: - Phase II, Metal Removal, Cascade Remaining

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(1) Equipment Installation and Storage

"S" Division has received a letter from the Executive Secretary of the Work Advisory Committee, stating that it is permissible for plant maintenance forces to install pumps and other equipment in the waste tanks after completion of the subcontractor's work. This will be necessary due to the fact that some of the equipment purchased by the project cannot be installed for a year or more after construction has been completed and the subcontractor released. This equipment will be stored adjacent to the 277-U Mock-up shop and will be in the custody of the S Division.

(2) Temperatures of Current Metal Waste in 241 Storage Tanks

The temperatures in the first tanks of the waste metal cascades recently filled in both the East and West Areas, namely the six tank 101 BX-BY cascade and the four tank 101-TX cascade, are much higher than the temperatures encountered in the past and are approaching the boiling point of the supernatant. This condition is caused by the larger quantities of more active sludge which has accumulated in these tanks. In an effort to lower the temperature to a point where it is safe to do construction work around the tank and in which the process equipment will not be submitted to abnormal operating conditions, a revision request has been approved by the Scope Committee to do the following:

- (a) Install coolers in the abnormally hot tanks.
- (b) Reroute the feed lines of the waste metal cascades being filled so that a cascade will consist of two or three tanks instead of the present four and six tanks. It is felt that this arrangement will eliminate the heating problem in these cascades by decreasing the amount of sludge in any given tank.

b. Phase III - Underground Transfer System

(1) 155-TX Diversion Box Catch Tank

Original plans called for the catch tank at 155-TX diversion box to be painted on the inside with Amercoat so it could withstand the acidified TBP process solutions which will be routed through this diversion box. When the tank was uncovered, however, the radiation readings were of such a degree that the plans for painting the

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tank were considered infeasible. An excess sulphuric acid tank has been procured from the 211-U area tank farm, and it will be modified and used to replace the present tank. The replaced catch tank will be stored in the 200 West Storage Garden for possible future use in non-acid service.

(2) Vents and vacuum breakers on transfer lines

A combined vent and vacuum breaker station will be added to the East-West pipe line system at the request of the "S" Division. It will be located at the high point in the system midway between the two areas, and will consist of a valve on each of the six lines which will open to a catch tank. The equipment will be designed for remote handling. Such a station is required to assure drainage of lines before making jumper changes and will permit the release of trapped air during the pumping operation.

c. Phase IV - Reactivation and Conversion of 200-U Area

(1) Diluent Storage and Handling

The precautions required in storing and handling diluent were discussed with the Safety and Fire Protection Division in May. Agreement was reached on specific needs of this operation and a letter request to the Engineering Division was made to incorporate the requirements into the design. The major items were:

- (a) Aluminum paint for the outside of the organic storage tanks.
- (b) Grounding of the railroad tank car unloading station.

(2) Johnston Pump Company Visits

Representatives of the Technical and Design Division visited the Johnston Pump Company during the month to observe and discuss Johnston's current test program for the evaluation of bearing materials for the slurry accumulator high pressure pumps. Based upon comparative performance, the tests showed cast iron to be superior to rubber and Graphitar 41 when used in conjunction with a Type 416 stainless steel shaft. Further evaluation of cast iron as a bearing material will be undertaken at Hanford along with studies to determine the galvanic corrosion effects which might occur between cast iron and Type 416 stainless steel.

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Two multi-stage, deepwell turbine pumps have been received from the Johnston Company. The effect of concentrated, neutralized RAW on Graphitar 41 bearings is currently being tested in these pumps.

(3) Revision Request No. 362-31

An additional small evaporator to operate a series with the existing designed UNH concentrator evaporator was proposed in this request and was approved by the Scope Committee this month. This resolves the changes in evaporator design, contemplated in last month's report, which resulted from indications of extreme corrosion in Hanford tests with concentrated UNH solutions and from Mallinckrodt plant experience.

No satisfactory substitute materials for the stainless steel currently used in the design are available. Because of this, it was deemed advisable to conduct the evaporation in two steps: the first step of the evaporation will be carried out in the presently designed evaporator and will be carried to 60-70 percent UNH; the second step will be carried out in a smaller evaporator, to be added, and will carry the concentration to 100 percent UNH. Hence the excessive corrosion will take place in a smaller, more readily repairable unit. Since the small evaporator costs \$4,500 as compared to \$30,000 for the large evaporator, a savings in replacement and/or repair costs should be realized. One spare unit of each size will be provided.

4. Construction.

Month-end construction data on the various phases of this project are as follows:

a. Phase I

This phase is approximately 42.5 percent complete. The blend tanks in the 244-UR vault have been installed. Minor construction work continues on the pits and pipe installation in the 241-U Area. Lighting and plumbing fixtures are in the process of being installed in the 271-UR control building. Prefabricated sections for the first of the 241-WR vessels were received and are being assembled in the White Bluffs shop.

b. Phase II

This phase is approximately 8.5 percent complete. Work is continuing on the installation of the exhaust duct from the

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244-CR Vault. Other work on the 244-CR vault is delayed until tanks are received for installation. Minor construction forces continue with the concrete pouring of pipe encasement and pits in the 241-C tank farm area. In the 241-B Area the walls are being poured for 244-BXR and the backfilling around the walls is underway. Minor construction forces are forming and pouring concrete for pits around pipe line encasements in this area.

c. Phase III

This phase is approximately 83 percent complete. To date a total of 113,000 feet of 3½ inch o.d. tubing has been received for installation. The total requirement is approximately 160,000 feet and of this amount 65,000 feet have been welded. The three line encasement is complete.

d. Phase IV

This phase is approximately 14 percent complete. Building 277-U is 83 percent complete. In the 221-U Building the installation of pipe, tanks, panels, etc. continues in the operating and service galleries while painting continued in the cells. Forms are being set and concrete poured for the floors and dikes of 203-U, 211-AU, and 276-U tank areas.

e. Phase VI

This phase is approximately 9.5 percent complete and work is continuing on the setting of forms and concrete pouring for the addition to the 283-W filter plant. The two 3,000 KVA transformers for 252-W-2 have arrived and have been placed on the substation slab. The switch structure for this substation has been erected.

B. UO₃ Project

1. Month-end Project Status

	Part A	Part B Segregation	Over-all
Scope	100%	95%	99%
Detailed Plans	100%	8%	88%
Construction	22%	0%	20%

Part II of the Project Proposal was issued May 22 requesting new funds amounting to \$400,000. This increase is chiefly due to the six day work week and an increase in the estimated equipment cost over the study report estimates for segregation.

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2. Design**a. UO₃ Shipment Procedures**

Procedures for shipping UO₃ off-site are being developed in cooperation with representatives of the Accountability Section.

3. Construction

Over-all construction is 20 percent complete at month-end. This includes Part B of this project.

C. Redox (Project C-187-D)**1. General**

- a. Part III of the Redox Project Proposal, presenting the status of the project with respect to the scope of work set forth in the original project proposal and as further modified by Part II, was approved and issued during the past month. A revised estimate for the project indicates a cost reduction of \$2,070,000 over that noted in Part II, bringing the total project cost to an estimated \$42,000,000.
- b. Further consideration of the revised grinding methods, which were approved for use in mounting the electrical connectors to the cell wall kick plates, has resulted in a return to the original grinding procedures to maintain the explosion-proof features of the connector installation. A review of the factors involved indicated that grinding under the original procedures would not be detrimental to the construction completion schedule and that the money expended on grinding labor was only a small fraction of that spent to date to maintain the explosion-proof requirements of the canyon equipment.
- c. Following additional difficulties encountered in welding the thin wall expansion bellows into the pipe jumpers in the Mock-up Building, the Separations Design Division has, with the approval of the Manufacturing Divisions, eliminated a large portion of the expansion bellows from jumpers and in the few remaining cases is considering all possible design alternates. Difficulty was experienced not only in the buckling of the thin wall tubing through expansion of trapped air, during welding but also in the damage of the bellows resulting from connector handling and torsion applied to the jumper heads during mock-up and placement.

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- d. A representative of the agitator vendor (Eastern Industries, Inc.) has recommended that the paddles of the 7½ h.p. agitator units be reduced in diameter from the originally designed 33" to 28". Under the worst process conditions (waste neutralizer agitation) the resulting motor load is expected to be approximately 115% of the manufacturer's continuous overload rating with respective process conditions determining the corresponding motor loads for the remaining 7½ h.p. units. 115% motor overloading has been checked with the motor manufacturer and is permissible according to word received. Consideration is now being given to the reduction in size of the paddles for the 5 h.p. agitator units; the size reduction anticipated is 1 to 2 inches in diameter.
- e. At the request of the Manufacturing Divisions a revision request is being processed through the Separations Scope Committee adding to the scope of Project C-187-D work the purchase of 25 FR and RC cans for Redox use. Purchase of these cans has been necessitated by the recent changes in production schedules which require that the Redox facilities supplement rather than supplant existing production facilities.
- f. Complete sets of drawings showing the proposed sand filter monitoring system and the stack air monitoring system were received from the Design Division and approved during the past month. Construction of the small shelters to house this equipment is already underway.
- g. Efforts are currently being made to obtain approval for the adoption of disposable plastic sampling trombones which have recently been developed in the operating buildings. This equipment appears to be much more satisfactory than the present stainless steel trombones, from the standpoint of decontamination, operation, and special hazards.

2. Construction

a. 202-S Building and Associated Outside Facilities

At month-end the concrete work on the 202-S Building structure was essentially complete; however, some structural work was still required on the Organic Treatment Building (276-S). Concrete work on the 291-S turbine house was completed and the installation of the fan equipment is now in progress.

Installation of piping connecting the hot pipe tunnel with the silo U frames continued during the past month, and hydrostatic testing and cleaning of the installed pipe

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tunnel piping was initiated. These cleaning and testing operations in conjunction with the cleaning operations in progress for the gallery wall piping necessitated the establishment of three shift, seven-day coverage of the activities by the Manufacturing Divisions. Following a rather slow start on the cleaning operations due to dirty steam, air, and water, cleaning is now progressing at a fairly rapid rate and is following a general pattern of 15 minute water flush, 20 minute steam blow at 100 psig., and a final 10 minute air blow. Swabbing of the lines is utilized as necessary to determine the condition of the interior of the cleaned lines.

Following a successful test of the F Cell fire fog system installation of process equipment in this cell was started. A number of tanks have been set at month-end; however, the installation of jumpers is proceeding very slowly. Previous plans to turn the building over to the operating forces by cell units are still valid; however, it appears that the F Cell turn-over originally scheduled for the second week in June will be considerably delayed.

Several different types of tests, none of which are entirely conclusive, are being used in an attempt to determine the approximate composition of the welds in the hot piping of the canyon and silo areas. All lines 2" and larger in these areas have been checked with a small permanent magnet, and chips from three questionable welds thus located have been analyzed and found acceptable. The 1/8" lines of the sampler assemblies have been tested with nitric acid and, within the limits of reliability of this test, no questionable welds were located. Probing of the 1/2" and 1" lines in the canyon with an electromagnetic instrument is now underway and questionable welds thus located, will be subjected to further acid testing. An attempt has also been made to segregate lines by their service and criticality, concentrating testing operations on those where the corrosion conditions are more stringent and the line usage most critical. A number of questionable welds in the pipe tunnel will be sleeved with Schedule 40 stainless steel piping, and it is anticipated that questionable welds in the critical lines of the silo area will be accorded the same treatment. No decision has yet been reached on the off-gas vent lines to the 291-S Building and the two laboratory waste lines running from 219-S to D Cell of the 202-S Building.

Work in the Mock-up Building on the fitting of jumpers continued satisfactorily during the month. The initial installation of reactors in the Mock-up U frames was made, and jumper setting is now in progress. Continued difficulty was

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experienced with the Agitator shaft seals, and in one instance some chipping of the boron carbide shaft guide bearing with accompanying scoring of stainless steel agitator shaft was noted. Defective seals are being returned to the vendor for reworking.

A decision was made during the past month to return pump head assemblies to the vendor for additional lapping of the bearings. During disassembly work to initiate the return shipment, it was found that the blades of several pump impellers were bent due to stainless steel chips and other foreign material being sucked into the pump as run-in operations in the Mock-up Building took place. In several cases the offending chips were still lodged in the pump housing. The damage thus done will be repaired by the pump vendors as the bearing lapping work is done, and new calibration curves will be obtained on each pump head. This experience is further indication that care taken to assure equipment cleanliness is not all that could be desired, although the situation seems to be improving somewhat.

Lining of the salt tanks in the 211-S Chemical Storage Farm continued and is nearing completion at month-end. Run-in of the 211-S pumps has revealed trouble with overheating pump glands, and somewhat excessive water leakage through the glands. This situation has not been corrected at month-end.

The status of construction at month-end is estimated as follows:

Improvements to land	28%
Temporary Construction	82%
202-S Building	85%
211-S	65%
240-S	97%
276-S	46%
277-S	99%
282-W	100%
284-W	94%
291-S	86%
2702-S	100%
2726-S Propane Storage	100%
Sanitary Waste Facilities	99%
Electrical Distribution	86%
Water Distribution	99%
Steam Distribution	97%
Railroads	63%
Over-all Facilities (A&J)	84.81% Scheduled 95.66%

b. 241-S Waste Farm and Associated Facilities (Fred J. Early Contract)

Progress in the 241-S Tank Farm and the associated facilities

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was made at an even rate during the past month, standing at 79.7% actual completion versus a 99.8% scheduled. High early strength concrete was utilized in the domes of Tanks 107, 110, 111, and 112 to permit earlier removal of the dome forms and thus accelerate job progress.

D. Training and Procedures

1. Redox - TBP Training School - 321 Building

The third training cycle started on May 14 and will be completed on June 10. Twenty-five operators and 14 supervisors are in training during this period, and to date 57 operators and 28 supervisors have completed this phase of their training.

Due to the inception of a six day work week concurrent with the start of the third training cycle, a review was made of the training program with the result that the length of the cycles has been reduced from six to four weeks. It was found possible to eliminate certain items from the course which are of very little value in preparing personnel to operate the new facilities, and adequate training of this type can be carried out in a four week cycle.

2. Procedures

a. Redox

The status of procedure formulation for the Redox Plant is tabulated below:

<u>Procedure</u>	<u>% Complete</u>
Flushing	98
Calibration (Tank & Inst.)	90
Special Hazards	100
Safety Rules	98
Emergency	80
Operability & Capacity Tests	85
Essential Material Control	90
Miscellaneous Forms and Repts.	40
Operating	50
Manual Std. Prac.	55
Accountability	40
Dispatcher Cent.	80
Job Descriptions	25
Communications	100
Lubrication	60
Equipment & Specification Manuals	50
Cold Runs	0


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b. TBP and UO₃

Rough drafts of operability tests for agitators, pumps, jets, centrifuges, coils and jackets, evaporators, samplers, spargers and recirculation jets have been prepared and submitted for comment. A list of "Tickler" assignments and a list of required operational and safety signs were completed and have been reviewed. The cell diagrams which are to be incorporated into a cell and trench inspection Manual have been completed.

Approximately ninety percent of the miscellaneous expendable operating supplies which were on order from the Stores Division have been received.



Superintendent
S DIVISION

RS Bell:mvk

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DECLASSIFIEDINSTRUMENT DIVISIONMONTHLY REPORT

MAY, 1951

I. SUMMARY

The P-10 metal line was started with satisfactory instrument performance after the initial "shake-down."

Cause of the temperature monitor thermocouple failure in the 100-H Area is thought to be determined, and a study is under way to provide corrective measures.

The first cycle waste evaporator was put in service in the 200-W Area. After minor modification, the instrumentation appears to be functioning satisfactorily.

The high speed oscilloscopic temperature mapping device has been demonstrated operationally, and plans are proceeding for fabrication of a full size unit for the new reactor.

II. STATISTICAL AND GENERAL - JOB EXPERIENCE100 AREAS (Reference: HW 21235)100-B Area

The first operational run of the P-10 metal extraction line was made on May 4, 1951. Considerable instrument trouble was encountered on the extraction furnace controller and product ionization gages. After making changes in the circuits, subsequent runs have been made with no instrument difficulties.

100-D Area

Due to increase in operating power level, it was necessary to increase the range of the BGST Temperature Recorder and the Bailey Power Level Indicator.

100-DR Area

An increase in moisture content of the pile atmosphere was indicated on the gas analysis moisture recorder, and a sample line survey was run with a dewpoint indicator. Results were disappointing and collective readings contributed little to the ultimate isolation of ruptured tube No. 1369.

A duplicate set of recorders for the water activity monitor was installed in the control room to insure closer inspection of sample room readings. Alarm system circuits were also transferred, making it possible to reset trips in the control room.

100-F Area

The gas analysis system indicated high moisture content in the pile atmosphere, and a survey was made with dewpoint instruments. In addition, a special 6-point recorder was installed, attached to dew cells at separate sampling points. The equipment performed satisfactorily, but failed to help in isolating the leak believed to be at the front of the pile. Moisture distribution is apparently uniform enough to hide the source.

100-H Area

Horizontal rod position and control room gas analyzer recorders were converted to duplicate water activity monitor recorders for the control room, in the same manner as the 105-DR installation.

The range of the BGST Temperature Recorder and Indicator was increased, due to the higher power operating level.

Shutdown Experience

100-B Area - None due to instrument failure.

100-D Area - Unit shut down manually May 13, 1951 at 9:00 PM, due to increase in process water activity and a pressure increase on tube No. 1973. Investigation revealed a ruptured slug in that tube.

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100-DR Area - Unit shut down manually on May 12, 1951 at 8:49 AM, due to a low water pressure indication on tube No. 2660. Investigation revealed a ruptured gage capillary. Gage was replaced and the unit started back to power at 8:53 AM. Unit was shut down manually again on May 13, 1951 at 9:12 PM, due to a low pressure alarm on the water pressure monitor. Start-up began at 9:36 PM, but was shut down again at 10:40 PM, due to loss of activity caused by moisture in the unit from ruptured tube No. 1368. Start-up began May 16, 1951 at 4:19 PM.

100-F Area - Unit was shut down April 30, 1951 at 5:58 PM and May 3, 1951 at 5:18 PM. In the first instance, the cause was a ruptured slug in tube No. 2475; in the second, a ruptured slug in tube No. 3489. The water activity monitor gave an alarm previous to both incidents.

100-H Area - A near scram occurred on May 17, 1951 at 12:38 AM, due to a low water pressure alarm on gage No. 2586. A leak in the gage was detected in time to avert the shutdown.

200 AREAS (Reference: HW 21236)

T&B Plant Production Instruments

Two bevel gears, the pinion gear, the shaft, and pillow blocks were replaced in the left hand periscope of the 75 ton crane in 221-B Building, as excessive wear in the original components caused binding.

Acceptance tests were completed on the first cycle waste evaporator and minor changes made during the cold runs. During subsequent production runs, it was found that contaminated material got back to the operating panels because of their location being at a lower level than the process vessels. To correct the condition, the pneumatic transmitters were relocated at a position higher than the vessels, to allow drainage in the proper direction.

Z Plant Production Instruments

All instrument material for the additional high vacuum system for hood No. 26A in the 234-5 Building has been ordered.

300 AREA (Reference: HW 21237)

Manufacturing Section

Project C-398 - Experimental Coating Hood, 234-5 Building

Shop fabrication of the Miller gage amplifier is 95 percent complete. Completion is dependent upon receipt of component materials.

Project C-412 - P-10X Extraction Facilities

Three of the 8 Beckman safety controllers have been completed and are ready for testing. The remaining 5 are approximately 40 percent complete, but cannot be finished until necessary materials are received.

Project C-424 - Water Quality Experimental Program

One of the 4 Beckman safety controllers is complete and ready for testing. The remaining units are approximately 45 percent complete, fabrication having been suspended pending receipt of material.

Development Section

Process Tube Temperature Mapping

Tests have demonstrated the feasibility of designing and fabricating a system which will provide oscilloscopic presentation of process tube temperature deviations from preselected points. A report is in preparation describing the tests and outlining the proposed design for a full scale unit.

General

The new Maintenance and Development Shop, 3717-B Building, was occupied on May 12. Final acceptance of the building will be dependent upon correction of several cited exceptions.

ENGINEERING & CONSTRUCTION GROUP - 760 BUILDING (Reference: HW 21266)

Project C-431 - 100-C Area

Preliminary specifications for the Filter Plant flow metering and control equipment were reviewed and comments issued. Instrument equipment will be procured by the Filter Plant contractor in accord with specifications.

Bids have been received for the pressure monitor. Specifications have been issued for bidding on the power calculator. It is anticipated that the order can be placed by July 1, 1951. Specifications for the temperature monitor have been issued for comment. Agreement has been reached on location of the BGST thermocouples.

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Project C-187 - Redox Process and Facilities

Instrument installation in the north and south operating galleries of the 202-S Building is nearing completion. Instrument tubing installations have been checked and electrical end connections are being calibrated. The Instrument Shop in the 222-S Building has been occupied by operational forces and acceptance testing is under way.

Project C-362 - Tri-Butyl Phosphate Process and Facilities

Engineering assistance is being supplied to the Foxboro Company in an effort to expedite the instrument equipment needed to complete the graphic panels. At this time, the delivery date of June 30 appears optimistic, and it is probable that the panels will be shipped without the rotameter recorders.

Project C-413 - RMB Line, 234-5 Building

The Mine Safety Appliance Company has returned the order for the carbon monoxide detector, being unable to meet the specifications. It has been decided to order the equipment based on the present status of the art of measuring.

III. ORGANIZATION AND PERSONNEL

There were 5 new hires and 8 terminations and transfers to other divisions, for a total force decrease of 3 during the month.

	<u>Monthly</u>	<u>Weekly</u>	<u>Total</u>
Beginning of Month	58	236	294
End of Month	<u>56</u>	<u>235</u>	<u>291</u>
Net Decrease	2	1	3

The lack of progress in personnel procurement has necessitated continuation of a 6-day work week for the majority of the division forces. Machine Shop and Electronic Fabrication Shop work backlog has increased sharply, but material procurement difficulties would allow effective utilization of present personnel only on the 6-day basis.

MAINTENANCE DIVISIONMay, 1951GENERAL:

The divisions backlog as of May 31 represents twenty-seven days of work for the present force. This is an increase of two days over last month and is caused by an increase in production equipment changes in the 200 Areas and additional maintenance work in the 100 Areas.

BACKLOG STATUS

<u>Man Days Work</u>	<u>April 30</u>	<u>May 31</u>
Project work	2486	2673
Maintenance work	3107	3618
New work	1039	1008
Routine work	595	504
Total	7227	7803
 Total crew	 289	 286
Crew days work	25	27

It was necessary to work thirty-one machinists on a six day work schedule to complete work assigned to the division by the Technical Divisions 101 Shops.

A central material procurement group was organized under the direction of a Field Material Coordinator and has been located at Hanford High School. This group will be responsible for procurement of all Maintenance and Project materials from vendors, and for making "take-off" and material requirement lists for all projects assigned to the Division.

A Project Proposal to install asbestos shakes on the exterior walls of the Maintenance Shops, 272 East and West, was submitted for approval. The installation of these shakes will considerably reduce the painting maintenance costs.

The design of the proposed Contaminated Maintenance Shop in Building 108-D is complete and a drawing has been sent to the Estimating and Standards Section for an estimate.

One Engineer has been assigned to the Contact Engineer Groups of the "P" and Power Divisions as a Maintenance Consultant for the design of Project C-431.

There were eleven Suggestions received during the month from the divisions employees. Fifteen suggestions were investigated of which two were accepted. Awards to Maintenance personnel amounted to \$185.00 for the month of May.

100 AREAS

The number of emergency Pile shutdowns continued to be high with six occurring during the month due to ruptured and stuck metal pieces. There were two shutdowns at "D", one at "DR", at "F" there were two, and one at "H" Area. Dur-

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ing the emergency shutdown at "D" on April 21, defective pieces were found in two different tubes. These shutdowns required an average of forty hours maintenance emergency down time and were handled routinely except in two instances. On May 22 at "H" Area one of the metal pieces dropped and lodged on the front face during an attempt to transfer it to an adjacent tube. Retrieving this piece safely caused the maintenance time to extend into eighty-six hours on this shutdown. The ruptured metal in the "F" area pile on May 3 was removed and the pile was returned to operating in a record time of two hours. The removal of the metal was accomplished with the charging machine because the piece had not enlarged enough to seize in the tube.

The CO₂ gas leak in the "B" pile which was reported last month was located in the #8 horizontal safety rod thimble. The thimble was sealed off and preparations are being made to replace it on a future shutdown.

The graphite track was removed from the "A" horizontal safety rod thimble in the "D" pile during April because the rod had become inoperative due to pile movement. A track with reduced cross section was fabricated and installed, using measurements obtained by Pile Technology and the rod is now operating satisfactorily.

The #1-P10 metal line in 108-B was put into operation with no unusual maintenance being required to date.

C-340 - Critical Mass Program Part III - P-11

The leveling tank, mixer tank and vault were installed and all piping and control lines have been connected between them and the reactor.

C-410 - In Pile Controlled Atmosphere Experimental Facilities

Shielding was installed over the T beams on the X-2 level. Work is in progress on the assembly of the valve rack and control panel.

200 AREAS

200-West Area

Equipment was installed in the 224-T Concentration Building to permit lubrication of the four forty inch centrifuges remotely and with no interruption in operation. This eliminates the necessity for mechanics to enter the cells under S.W.P. conditions three times per week to perform the lubrication.

A permanent platform type scaffold was installed above the 221-T separations building railroad entrance to the Canyon tunnel. Formerly maintenance to the door mechanism, which is twenty-five feet above the railroad track, was performed from ladders or temporary scaffolding. The permanent platform which cost \$150.00 is expected to eliminate the expenditure of \$250.00 per year for temporary scaffolding.

It was necessary to make several revisions to the newly installed equipment in the 242 Waste Evaporator Building. The 3/16" thick lids on the two preheat tanks ahead of the evaporator were replaced with lids 3/4" thick which are suff-

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iciently rigid to prevent leakage when tightened. The instrument lines from the three evaporator dip tubes were re-routed to prevent contaminated condensate from draining to the panel board in the operating gallery. The 500 gallon per hour condenser in the cold cell was replaced with a new unit fabricated with mild steel tubes. The copper tubes in the original unit had failed due to the presence of ammonia in the process.

Metal Recovery

One of the two Pulsafeeder pumps used in transferring process solutions in Hood #29 was replaced with a Viking gear driven pump to try to eliminate the excessive maintenance caused by the rupture of Pulsafeeder diaphragms. After two weeks operation the gear pump is performing satisfactorily.

200-East Area

Wall nozzle #53 in cell 13-R in the 221-B Separations Building was found to be leaking inside of the concrete behind the nozzle kick plate and was abandoned.

A spare heating unit column for the dissolver cell, reactor filter assembly, in the "B" Separations Building was fabricated.

C-326 - Underground Geological and Hydrological Investigation Program

The air compressor, motor generator, tripod, hose and cable reels, and control panels were installed on the truck. The work should be completed and the unit ready for trial during June.

C-337 - Dissolver Off-Gas Filtration for Building 221-T&B

The fifth filter box is approximately 50% complete.

C-378 - Iodine Removal Facilities for Dissolver Off-Gas

Fabricated scrubber tower and reactor. These will be installed in the East Shop Mock-Up Cell together with filter box being fabricated on C-337.

C-398 - Experimental Coating Hood, Building 231

Fabrication of three stainless steel hoods has been started.

C-444 - Additional Unit to Supplement Operation Hood #26 - 235 Building

The base plate, volume chamber, and miscellaneous fittings were fabricated and the roughing pump was relocated. All fabricated parts will be tested for high vacuum leakage during the month.

M-805 - Transformer and Circuit Breaker Oil Processing Facilities

This project is complete except for installing the canvas side curtains.

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M-772 - Improved Decontamination Facilities Buildings 272-T&B

Fabrication of the hood is complete except for the installation of Panelite which has just been received. The hood will be installed during June.

M-808 - Replacement Filters for 26" Vacuum System - 234-5 Building

Completed on May 17, 1951 and accepted.

300 AREA

The blow tank used to feed neutralized solutions through the filter press in slug recovery was replaced because it had been weakened through the action of dilute acid. The new tank was hydrostatically tested at 150 P.S.I. and will operate normally at 35 P.S.I.

Twenty-one Polyethelene trays to be used to line laboratory sinks were fabricated and will be installed as required.

C-330 - Increased Ventilation 313-314 Buildings

The initial acceptance inspection was made on May 24. Eight minor exceptions were noted for correction.

M-806 - Slug Canning - Transformation Timing Equipment - 313 Building

Three hoods and four agitators have been revised according to plan, one hood has yet to be revised.

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ELECTRICAL DIVISIONMAY, 1951GENERAL

The backlog of scheduled work at month end was 6,399 mandays, or 25.1 mandays per non-exempt employee. There was a slight increase in total backlog due to additional work in Telephone Section, plus loss of personnel in the line craft. The problem of line craft personnel is becoming increasingly difficult because Linemen are being attracted elsewhere with absolutely no replacements available.

The power demands for the month were:

	<u>Date</u>	<u>May KW Demand</u>	<u>Comparative April Demand</u>
Process Load	5-11-51 (11:30-12:00 N)	66,650	65,800
Village Load	5-7-51 (7:30-8:00 a.m.)	19,150	26,100

The sharp drop in Village demand is as expected with the conclusion of the heating season.

The principal co-ordinating activities with design groups were:

1. Project C-414 (Pile Technology Building) - preliminary plans and specifications were reviewed and commented on.
2. Agreements were reached with Engineering and Construction relative to telephone cable requirements within the job site for Project C-431, and also for 151-B substation expansion requirements.
3. Conferred with Power Division relative to electrical requirements of their budget items for water plant expansion, all areas.
4. In a series of discussions with Project Engineering, sufficient preliminary studies were made to permit architect engineers to start development of the Project Proposal for B-2006 "New Process Area Distribution Headquarters" within budgetary limits.

Jointly with the Atomic Energy Commission, five year forecasts of Village and Process Area monthly peak demands and energy consumption based on currently known expansion plans were developed.

General and preliminary planning of electrical service, telephone, street lighting, and fire alarm requirements were also developed jointly with the Atomic Energy Commission representatives for possible additional housing for the Village of Richland.

Mr. T. B. Correy, Electrical Engineer, visited Brooklyn, New York at the request of DuPont and the American Machine and Foundry Company as consultant relating to the welding process for slug canning operation.

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After 612 days without a major injury in the Electrical Division, a Relay Engineer received flash and second degree burns while adjusting meters in the new Chief Joseph School, Richland, resulting in one day lost time for observation. A metal blocking spring, inadvertently left in place after initial installation, slipped from his fingers and caused a line-to-line short circuit within the meter. This major injury is the fourth major injury experienced in the Electrical Division since plant start-up in January, 1944.

AREA ACTIVITIES

During an attempted start-up on May 22 at 5:00 a.m., Process Pump Motor No. 12 failed. This was the eighteenth failure of these 800 HP 2200 volt motors. In this case, the failure was from bull ring to laminations, inboard end.

In the 200-W Area, the Gamewell fire alarm system was changed from 48 volts to 72 volts, and gongs and boxes were all connected in one loop. Vitaguard unit and batteries were moved to the 2709 Building, and some gongs, no longer useful, were removed. Studies indicated more reliable service will result.

High winds caused the boom of an idle construction crane to swing into a 13.8 KV line near 283-W Building, causing an outage of this line at 12:50 a.m., May 23. Fortunately, no injury resulted and precautionary measures are being taken to prevent recurrence.

An external thermoguard unit has been installed on the 8-2 centrifuge, 221-T Building, leaving a reasonable degree of protection, but greatly reducing lost production time which had resulted from the original overly sensitive installation.

At the 284-E Power House, three new 750 MCM single conductor 5000 volt cables were pulled in to replace the originals which had grounded at the weatherhead. A bakelite bushing was fabricated to relieve pressure in the weatherhead. The change was accomplished without interruption of process facilities, and the emergency generator was operated to carry the Power House load.

The Electrical Division cooperated with the Maintenance and "P" Divisions in the 300 Area for the fabrication of a dip-pot experimental timer controlled agitator for stepped-up quality control.

A new method has been developed for installing replacement bushing of induction coils, 314 Building melt furnaces, making use of a special locally fabricated bushing. Preliminary results show considerable saving in labor and in reduction of lost production time necessary for repairs.

TRANSMISSION AND DISTRIBUTION

Two unscheduled interruptions occurred during the month. On May 6, lightning storms caused a number of disturbances on the Bonneville Power Administration system, including a surge at 4:31 p.m. which scrambled 100-F and tripped off two supply fan motors and four exhaust fans at Building 234-5. Another storm on May 11 caused a power interruption of fifteen minutes duration from 6:15 p.m. to Richland Village.

Maintenance and rehabilitation of the 66 KV service from Hanford to Allard Substation has now been completed, preparatory to providing construction services to Project C-431.

The new 13.8 KV Riverland-Midway Bonneville Power Administration line for auxiliary service to Midway from 100-B Area has been energized. Request has been made of the Atomic Energy Commission to permit transfer of the 40 year old orchards service as an underbuild to this line.

TELEPHONE SECTION

On Project C-363 (Modification of Prefab Houses), 152 complete telephone installations were removed and rearranged, as well as 46 additional service drops, protectors and ground wires.

Design data and an Informal Approval Request was prepared for a proposed 11 pair cable from the area trunk to the Benton Station (Budget Item B-1871).

A preliminary Project Proposal (B-2003) was prepared for a new and relocated 100-B Area exchange, including cable re-routing.

A reason sheet and data were supplied for the preparation of a Project Proposal (B-1847) "13 Quad Cable BY Exchange to Point I" as urgently required for Project C-431.

An Informal Request (B-1871) was completed for "BY Telephone Exchange Equipment to Serve Project C-431".

A report was submitted, summarizing the communication requirements of the Richland Civil Defense Program.

A new telephone directory was issued during the month.

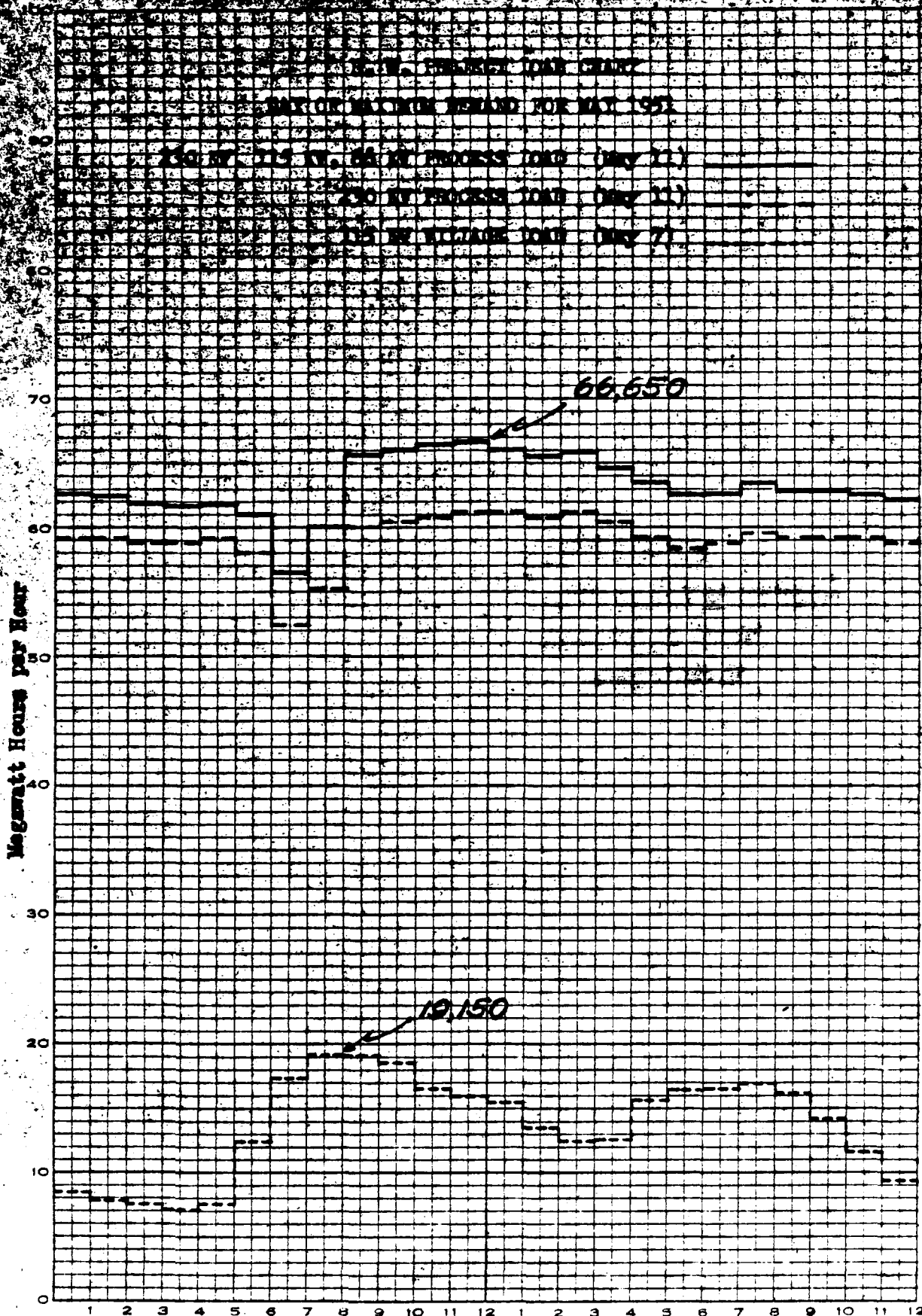
The following is a summary of current telephone service rendered by the Project Telephone System:

	<u>Lines in Service</u>	<u>Stations in Service</u>	<u>Extensions in Service</u>	<u>Vacant Lines</u>
Richland	3,846	6,089	1,033	154
Project Total	5,294	7,688	1,908	656

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ITEM	ENERGY - MW HRS.		MAX. DEMAND - KW		LOAD FACTOR - %	
	April	May	April	May	April	May
230 KV SYSTEM						
A-2 Out (100-B)	8,780	6,500	12,800	11,200	95.3	78.0
A-4 Out (100-D)	12,940	13,160	21,000	20,600	85.6	85.9
A-5 Out (100-H)	7,920	7,704	17,100	13,800	64.3	75.0
A-6 Out (100-F)	6,300	6,590	11,200	10,600	78.1	83.6
A-8 Out (200 Areas)	4,104	4,140	7,560	6,840	75.4	81.3
TOTAL OUT	40,044	38,094	69,660**	63,040**	79.8	81.2
MIDWAY IN	40,598	39,010	61,200*	61,200*	92.1	85.7
Transm. Loss	554	916				
Percent Loss	1.4	2.3				
115 KV SYSTEM						
B1-S4 Out (N.Richland)	1,891	1,867	3,629	3,456	72.4	72.6
BB1-S1 Out (Richland)	4,960	4,084	12,790**	9,540**	53.9	57.5
BB1-S2 Out "	5,124	3,944	13,590**	10,260**	52.4	51.7
BB3-S4 Out (300 Area)	768	768	1,840	1,760	58.0	58.6
TOTAL OUT	12,743	10,663	31,849**	21,560**	55.6	66.5
Benton In	4,370	800	27,000*	32,000	22.5	3.4
S. Richland In	8,420	10,030	29,700*	22,800*	33.4	59.1
TOTAL IN	12,790	10,830	56,700**	54,800**	31.3	26.6
Transm. Loss	47	167				
Percent Loss	.4	1.5				
66 KV SYSTEM						
B7-S10 Out (W.Bluffs)	435	459	1,193	1,237	50.6	49.9
Hanford Out	332	363	600	600	76.8	81.3
TOTAL OUT	767	822	1,793**	1,837**	59.4	60.2
HANFORD IN	783	815	1,600*	2,000*	68.0	54.7
Transm. Loss	16	47				
Percent Loss	2.0	4.0				
PROJECT TOTAL						
230 KV Out	40,044	38,094	69,660**	63,040**	79.8	81.2
115 KV Out	12,743	10,663	31,849**	21,560**	55.6	66.5
66 KV Out	767	822	1,793**	1,837**	59.4	60.2
TOTAL OUT	53,554	49,579	103,302**	86,437**	72.0	77.1
230 KV In	40,598	39,010	61,200*	61,200*	92.1	85.7
115 KV In	12,790	10,830	56,700**	54,800**	31.3	26.6
66 KV In	783	815	1,600**	2,000**	68.0	54.7
TOTAL IN	54,171	50,655				
Transm. Loss	617	1,076				
Percent Loss	1.1	2.1				

Average Power Factor - 230 KV System—94.1
Average Power Factor - 115 KV System—92.5
Average Power Factor - 66 KV System—81.6



DECLASSIFIED

TRANSPORTATION DIVISION (Changed to RESTRICTED)
MONTHLY REPORT
MAY 1951

Classification Code HW-21260-Del
By Authority of H. J. [unclear] Dec. Review Room

By Margaret [unclear] 2-1-52

Date 12-18-51

GENERAL

Transportation Division personnel forces were increased from 599 to 614 employees during the month by 23 new hires, 6 transfers in, 1 reactivation - personal illness, 6 transfers out and 9 terminations.

RAILROAD ACTIVITIES

Commercial cars handled during May increased 11% over April.

Process Movements during May increased 16% over April.

Cars handled in May including process movements totaled 2,433 compared to 2,078 in April; 1,984 in March; 1,793 in February and 2,625 in January.

The following recapitulation indicates the number of commercial cars handled:

<u>Carload Movements</u>	<u>-</u>	<u>Loads In</u>	<u>Empties In</u>	<u>Loads Out</u>	<u>Empties Out</u>
General Electric Company		770	23	22	771
Subcontractors and Others:					
Arnold & Jeffers		1	-	-	1
Atkins & Jones		57	-	-	56
L. E. Baldwin & Associates		19	-	-	18
Day Bros.		1	-	-	1
Dix Steel Co.		4	-	-	4
F. J. Early		13	-	-	12
Goodfellow Bros.		1	-	-	1
Montgomery Electric Company		2	-	-	2
Morrison Knudsen Co.		-	14	9	-
S. S. Mullen Co.		2	-	-	2
Royal Co.		4	-	-	4
Tom Saeger & Associates		2	-	-	2
Sound Construction Co.		5	-	-	5
Washington Electric Co.		-	-	-	1
Clarence Weston Co.		2	-	-	2
U.S. Corps of Engineers		1	-	-	1

120-ton Diesel electric locomotive 39-3729, removed from service on April 22 for excessive engine vibration, is still undergoing repairs. Extensive tests and checks have been made at the direction of the factory representative and as yet the cause has not been determined.

Transportation Division

By Authority

By

Date 12-18-51

Railroad track maintenance and rehabilitation work continued on a normal basis throughout the five sections. Surfacing and related work was in progress on the 105-B track, 200-East coal track, 183-F track, 183-F coal track, 105-F track, Salvage Yard track, Richland Yard track, between Mile Posts 35 and 36 and 44 and 46, requiring 2,840 man-hours. Replaced 240 cross ties on the 151-B track; 801 cross ties in 200-East; 346 cross ties in the Salvage Yard track; and hauled salvage ties from 200-East requiring 1,779 man-hours.

AUTOMOTIVE ACTIVITIES

The Area Bus System transported 4.47% more passengers in May than in April. The following tabulation indicates the May passenger volume by shifts and the total revenue received:

No. 1 outbound and No. 3 inbound	26,441
No. 2 outbound and No. 1 inbound	58,087
No. 3 outbound and No. 2 inbound	56,012
Total	140,540
Revenue	\$ 7,027

The following is a comparative breakdown of average daily bus trips to the Plant Areas:

Passenger busses - 100-B	11
Passenger busses - 100-D	13
Passenger busses - 10-F	10
Passenger busses - 100-H	10
Passenger busses - Hanford	4
Passenger busses - 200-West	21
Passenger busses - 200-East	12
Passenger busses - 300 Area	7
Passenger busses - Riverland	3
Passenger busses - Pistol Range	1
Passenger busses - White Bluffs	4
Passenger busses - North Richland	3
700-300 Area Shuttle Service	26
Inter-Area Passenger Service	3
Inter-Area Express Service	1
Inter-Area Mail Service	1

Transportation was furnished at the request of Community and Public Relations Division for a tour of the 700-1100 Areas by Idaho University Students on May 1.

Transportation was furnished at the request of the Union Relations Division for the election officials between the 1131 Bus Terminal and the 703 Building on May 1 and 2.

Special bus service was rendered to the Technical Divisions for a tour of various areas and buildings on May 4.

Special bus service was rendered at the request of the Purchasing and Stores Divisions for prospective tract house buyers on May 10 and 11.

Transportation Division

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Classification Cancelled

(Changed)

By Author

HW 21260

Date 12-18-51

Transportation was furnished on May 27 for a special tour of Richland and North Richland by the Marine Corps League of Washington.

The Richland Local Bus System transported 6.1% more passengers in May than in April. Volume of service rendered is indicated in the following statistics:

Total passengers including transfers	39,903
Total bus trips	3,732
Total bus miles	20,526
Total revenue	\$ 2,808.45

Off-Plant automobile trips (Company business and/or official visitors) totaled 180.

The following tabulation indicates the service rendered by the Drivers' Test Unit:

Applicants: Male	124	Number retested	0
Female	18	Number rejected	0
	<u>142</u>	Number tests given	142

Permits issued: Limited to driving with glasses	24
Unlimited	<u>118</u>
	142

Permits reissued 48

The following tabulation indicates the Plantwide usage of automotive equipment:

Code	Type	No. of Units	Total Mileage
1A	Sedans	323	553,080
1B	Busses	170	213,960
1C	Pickup Trucks	468	286,396
1D	Panel, Carryall, Sta. Wagon	112	127,747
1E	Armored Cars	12	737
1G	Jeeps	2	679
68 Series	Trucks	<u>296</u>	<u>77,824</u>
		1,383	1,260,423

The following tabulation indicates the volume of fuel distribution by the Equipment Maintenance Section:

	Gasoline	Diesel Fuel	50 Cetane	Kerosene	White Gas
Stock at start of month	38,749	11,038	16,460	1,749	284
Received during month	112,894	54,870	29,017	1,040	0
Total	151,643	65,908	45,477	2,789	284
Delivered to Areas	101,070	45,202	25,834	1,089	87
Stock at end of month	50,573	20,706	19,643	1,700	197

TRANSPORTATION DIVISION

(Changed to)

By Auth

By

Date

The following tabulation indicates the volume of inspection and maintenance service rendered to Hanford Works automotive and heavy equipment by the Equipment Maintenance Section: 26 motor overhauls; 109 Class A Inspections and Repairs; 1,288 Class B Inspections and Lubrications; 1,397 other routine maintenance repairs and service calls; 553 tire repairs and 591 wash jobs.

Summarizing of all types of HO equipment was completed during the month.

At the request of Management, the Planning and Methods Section of the Transportation Division initiated a vehicle utilization survey to extend from May 14 through July 14 for the purpose of obtaining information to prepare a comprehensive report on the utilization of all Government owned light automotive vehicles assigned to Hanford Works.

LABOR ACTIVITIES

The following tabulation indicates in gallons the volume of asphalt road material handled by the Services Section:

	<u>MC 1</u>	<u>MC 3</u>	<u>MC 4</u>	<u>MC 5</u>
Stock at start of month	0	0	0	0
Received during month	0	9,500	0	0
Dispensed during month	0	9,500	0	0
Stock at end of month	0	0	0	0

The following tabulation indicates the volume of materials handled by the Services Section and a breakdown by Plant Areas:

	<u>100 B</u>	<u>100 D</u>	<u>100 F</u>	<u>100 H</u>	<u>200 W</u>	<u>200 E</u>	<u>300</u>	<u>Total</u>
Cars coal unloaded	118	176	89	67	46	31	0	547
Cars other material	5	5	3	3	0	2	2	20
Cars loaded out	1	4	0	0	0	0	1	6

Crushed and stockpiled 132 cubic yards of 5/8" crushed rock and 96 cubic yards of 1/4" crushed rock requiring 196 man-hours. Manufactured 1,238 tons of 3/4" pre-mix material and 246 tons of 1/4" pre-mix material requiring 313 man-hours.

Maintenance of primary roads required 688 man-hours; secondary roads 77 man-hours; and patrol roads 68 man-hours.

Vegetation control spraying operations throughout the Plant required approximately 1,900 man-hours.

Handling of miscellaneous materials for the Stores Division at White Bluffs required 1,760 man-hours and excess materials 335 man-hours.

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Transportation Division

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Handling of materials for the Stores Division in the 700, 1100 and 3000 Areas required 764 man-hours.

Handling of Area deliveries required 1,420 man-hours; Stores deliveries 332 man-hours; and office furniture 1,474 man-hours.

Handling and loading of 1 carload of steel, 1 carload of rail, 1 carload of scrap, 67 truckloads of equipment and 105 truckloads of material required 2,764 man-hours.

Routine Area maintenance and labor services were rendered in all Manufacturing Areas.

Labor and transportation equipment were furnished for Projects: M-713, M-805, M-834, P-117, P-172, P-192, P-291, P-326, P-340, P-372, P-377, P-378, P-396, P-410, P-411, P-412, P-415, P-432 and P-438.

Classification Cancelled

(Changed to [redacted])

By Authority [redacted]

By [redacted]

POWER DIVISION
MAY 1951

GENERAL

The inspection of one boiler in each of eight Power areas was completed by a Travelers Insurance Company certified boiler inspector on May 3.

On May 9, a Sub-Contractor's employee was seriously injured when he fell approximately thirty feet from a ladder while working in the 100-F Area, 190 Process Pump Tank Room. The work he was performing was in connection with the C-172 Deaerator Removal Project.

An operator in 100-B Area received lime burns on his legs and arms on May 15, when lime-saturated coveralls were worn during a flume cleaning operation, and became wet. This was classified as a Sub-Major injury.

PERSONNEL

Number of employees on payroll	- May
Beginning of month	476
End of month	<u>473</u>
Net Decrease	3

The indicated net decrease is the result of the hiring of two new employees, while five employees left the Division. Those leaving the Division included the transfer of an Area Supervisor to Manufacturing General, one removal from the payroll on account of illness, and three terminations.

100 AREAS

River water turbidity followed a normal trend for the spring run-off period. Standard water quality was maintained without difficulty.

Normal operation was changed from ten operating pump sets to eleven operating pump sets in the 190 Process Pump House in 100-B Area on May 9, and in 100-F Area on May 11. This manner of operation at the above locations will result in a substantial steam saving under present operating requirements.

In the 100-F Area, the emergency generator was not available for service during the period May 7 through 9. During this period the turbine wheel and shaft were replaced.

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In the 100-B Area, the No. 1-A coal crusher was out of service for repairs from May 11 to 18. This crusher was damaged when a piece of scrap steel, which was unloaded with the coal, passed through the crusher rolls.

In the 100-H Area, the 1906 Waste Water Pump House was placed in service on May 19, and was used intermittently throughout the remainder of the month as the river water elevation fluctuated above 386.5 feet.

All sub-contractor's work in connection with the C-172 Deaerator Removal Project, including building repairs, was satisfactorily completed in 100-B, D, and F Areas during the month.

200 AREAS

In the 200 East Area, 284 Power House, the emergency generator was out of service for four hours on May 3 for the replacement of the Ruggles-Klingeman valve.

On May 6, in the 200 West Area, a power surge caused two supply fans in the 234-5 Facility, and two exhaust fans in the 291-Z Stack Fan House to relay out. The emergency turbo-fans came on satisfactorily, and the system was restored to normal in fifteen minutes.

The 200 West Area, 283 Filter Plant was shut down for two hours on May 12 to allow construction forces to install a bulkhead in the flume at the No. 3 contact and settling basins to permit the construction of additional basins and filters. There were no interruptions of service to process.

Activated silica feed, as a coagulant aid, was started at the 200 West Area, 283 Filter Plant during the month to compensate for excessive flow rates through the settling basins as a result of new construction in the filter plant. This method of treatment will continue as long as turbid water conditions require.

In the 200 West Area, on May 23, high winds blew the elevated boom of a construction crane into electric power lines. This resulted in a total power outage to all area buildings except the 221-271-T Canyon Building, and the 234-5 Facility. The last named buildings were affected by a partial outage. Emergency equipment responded satisfactorily, and all equipment was restored to normal operation in two hours.

On May 30, in the 200 West Area, a complete outage of the raw water system was in effect to permit construction forces to connect the new ten-inch water line to the 183 Filter Plant, and to make a cross connection between the new and existing ten-inch lines.

Power Division

300 AREA

Operations continued on a normal basis, without incident, throughout the month.

GENERAL PLANT AREAS

Operations continued on a normal basis, without incident, throughout the month.

POWER ENGINEERING SECTION

The high flow test through the filter plant at 100-B Area continued to show satisfactory results. Normal operating flow rates were 3450 gpm per filter-basin unit, or 15 percent above the design rate.

All water filters in the 200 East and West Areas were inspected during the month. Recommendations were made on the backwashing of filters in the 200 East Area to correct a tendency toward the formation of mud balls within the filter bed.

Preparation of construction estimates and project proposal is in progress for the expansion of the 200 West Area, 284 Power House as required for installation of one additional boiler. Funds for this project are covered in Budget Item B-2032, of Fiscal Year 1952. A tentative completion date of September, 1952 has been set for this work, in order to meet the anticipated steam demands of new facilities now under construction.

Lump sum bids for design and construction of additions to the 300 Area, 384 Power House and pumping station have been received from four engineering firms to cover all work specified in Project C-433. Evaluation of these bids indicate that the Bumstead and Woolford Company will be awarded a contract for this job.

Investigation of methods and construction costs involved in producing increased process water pressures and flows for pile operation is in progress.

A project proposal for replacement of two elevated water storage tanks in 200 East Area was approved by the Appropriations & Budget Committee on May 29, and has been forwarded to the Atomic Energy Commission.

H. F. Mensley

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POWER PLANT STATISTICS

HW-21260 *Del*

From May 1, 1951

Through May 31, 1951

		<u>100-B</u>	<u>100-D</u>	<u>A R E A S</u> <u>100-DR</u>	<u>100-F</u>	<u>100-H</u>
<u>RIVER PUMP HOUSE (Building 181)</u>						
River Elevation (msl ft.)	(max)	406.2	395.2		382.0	387.4
	(min)	394.6	385.4		371.9	375.5
	(avg)	402.3	391.8		378.4	383.6
River Temperature	avg. of.	49.6	49.5		50.0	50.0
Water to Reservoir	gpm avg. rate	39,364	54,155		35,237	45,183
Water to 183-DR			29,028			
<u>RESERVOIR (Building 182)</u>						
Flow to Filter Plant	gpm avg. rate	36,116	42,412		32,676	41,344
Flow to Cond. System	gpm avg. rate	3,248	2,758		2,561	3,839
Flow to Cond. System (DR)	gpm avg. rate		3,258			
Flow to Export System	gpm avg. rate	0	5,727		0	0
Flow to Export System	gpm nor. rate	5,727	5,727		5,727	5,727
Chlorine, Added (#1 Inlet)	Pounds	22,500	34,500		20,000	26,400
<u>FILTERED WATER (Building 183)</u>						
Flow to Power House	gpm avg. rate	239	444		219	215
Flow to Process (190)	gpm avg. rate	32,031	31,147	33,215	29,715	37,655
Flow to DR	gpm avg. rate		5,478			
Flow to Fire & Sanitary	gpm avg. rate	249	216		246	67
<u>WATER TREATMENT (Building 183)</u>						
Chlorine - Consumed	pounds	6,500	3,500	12,600	5,000	6,600
	ppm avg.	2.02	1.93	1.17	1.94	2.00
Lime - Consumed	pounds	126,000	147,400	87,400	104,730	160,310
	ppm avg.	9.4	9.3	8.1	8.6	10.4
Coag - Consumed	pounds	248,280	287,740	173,600	205,200	320,400
	ppm avg.	18.5	18.2	16.1	16.9	20.8
Raw Water pH		7.83	7.75	8.00	7.68	7.82
Finished Water pH		7.70	7.66	7.69	7.69	7.78
Alkalinity, M.O. - Raw	ppm avg.	59	58	53	57	59
	Finished	58	55	53	56	58
Residual Chl. - Finished	ppm avg.	.12	.08	.14	.11	.15
Iron - Raw	ppm avg.	.52	.66	.87	.38	.72
	North Clearwell	ppm avg.	.017	.019	.025	.017
South Clearwell	ppm avg.	.017	.021	.022	.017	.019
Hardness - Finished	ppm avg.	76	71	73	76	76
Turbidity - Raw	ppm avg.	35	32	30	27	26
	Filtered		0	0	0	0

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Power Division Statistics

From May 1, 1951

Through May 31, 1951

		A R E A S				
		<u>100-B</u>	<u>100-D</u>	<u>100-DR</u>	<u>100-F</u>	<u>100-H</u>
<u>POWER HOUSE (Building 184)</u>						
Maximum Steam Generated	lbs/hr.	146,000	296,000		136,000	129,000
Total Steam Generated	M lbs.	92,793	165,623		81,519	79,151
Steam Load - Avg. Rate	lbs/hr	124,722	222,611		109,569	106,386
225 psi Steam to Plant(est)	M lbs.	78,318	140,078		68,758	66,750
15 psi Steam to Plant(est)	M lbs.	370	370		370	370
Coal Consumed	Tons	5,666	10,216		5,410	5,249
Coal in Storage (est)	Tons	40,057	38,388		40,651	36,685
<u>TANKS (190 Building)</u>						
Flow to 190	gpm avg.rate	31,781	30,897	33,215	29,465	37,405
Dichromate-Consumed	pounds	22,250	23,500	25,500	21,000	26,300
Chemical Analysis:						
pH	pH avg.	7.58	7.63	7.69	7.62	7.65
Dichromate	ppm avg.	1.8	1.9	1.9	1.8	1.8
<u>PROCESS PUMP TROOM (Building 190)</u>						
Flow to 105	gpm avg.rate	31,606	30,722	32,260	29,290	37,230
	gpm nor.rate	33,160	34,700	36,700	32,500	42,600
Water Temperature	Avg. °F.	53.1	52.3	52.0	52.5	52.5
<u>VALVE PIT (Building 105)</u>						
Solids Consumed	pounds	3,550	2,300	4,050	1,550	3,000
Chemical analysis:						
A, B, C, & D Headers						
Standard limits						
pH	7.5 - 7.8 pH	(max)	7.70	7.70	7.70	7.65
		(min)	7.60	7.60	7.55	7.60
		(avg)	7.60	7.65	7.65	7.62
Na ₂ Cr ₂ O ₇	1.8 - 2.2 ppm	(max)	2.0	2.0	2.1	2.0
		(min)	1.8	1.8	1.8	1.8
		(avg)	1.8	1.9	1.9	1.8
Iron	ppm	(max)	.035	.025	.030	.035
		(min)	.010	.010	.010	.010
		(avg)	.020	.020	.020	.019
Chlorides	ppm	(avg)	1.9	1.8	1.5	1.7

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Power Division Statistics**DECLASSIFIED**

From May 1, 1951

Through May 31, 1951

200 AREASRESERVOIR (Building 282)

		<u>200-E</u>	<u>200-W</u>
Raw Water Pumped	gpm avg. rate	2,378	3,349

FILTER PLANT (Building 283)

Filtered Water Pumped	gpm avg. rate	342	719
Chlorine Consumed	lb.	380	300
Alum Consumed	lb.	2,700	5,300
Chlorine Residual - Sanitary Water ppm		.49	.39

POWER HOUSE (Building 284)

Maximum Steam Generated	lbs./hr.	26,400	64,200
Steam Generated - Total	M lb.	17,484	43,249
Steam Generated - Ave. Rate	lb./hr.	23,500	58,131
Coal Consumed (Est.)	Tons	1,116	2,603
Coal in Storage (Est.)	Tons	9,969	21,623

300 AREAPOWER HOUSE (Building 384)

Maximum Steam Generated	lbs./hr.	19,700
Steam Generated - Total	M lb.	11,168
Steam Generated - Avg. Rate	lb./hr.	15,011
Coal Consumed - Total (Est)	Tons	716
Coal in Storage (Est.)	Tons	1,708

SANITARY AND FIRE SYSTEM (300)

Sanitary Water from 3000 Area	gal.	28,822,709
Well Water Pumped - Total	gal.	24,909,120
Total Water Per Day	gal/day	1,733,285
Total Water	gpm avg. rate	1,204
Chlorine Residual	ppm	.47

MISCELLANEOUS AREASWHITE BLUFFS

Ice Manufactured	lbs.	927,300
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101 SHOPS

Coal Consumed	Tons	352
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[REDACTED]

PLANT INDUSTRIAL ENGINEERING SECTION

MAY 1951

I. Responsibility

No change.

II. Personnel

One engineer was loaned to Transportation Division for special study work.

III. Achievements

100 Areas

In order to determine the magnitude of operator time consumed in preparation for SWP work in the 100 Areas, a brief study was conducted. Extensive study does not appear economically justified.

200 Areas

Training of personnel in 221 and 224-T operations was completed preparatory to beginning industrial engineering study work. A study program was outlined for determining standard crew requirements for operating the 221 and 224-T buildings and collection of data begun.

Industrial engineering report of manpower and equipment requirements for operation of the 234-5 R. G. Line under the proposed July conditions is in progress. The report contains for varying production rates, proposed detailed operating schedules, man-equipment tables, manpower allocation, rate balances, including percentage rejects and their disposition, as well as forecasted additional equipment required to meet the specified production solely on the R. G. Line.

300 Areas

A preliminary review was made to determine the work which would be involved in establishing cost standards for the "P" Division, 300 Area. A typical monthly cost, control and variance report is being prepared to illustrate the application of such a report to this Area.

A test mechanical canning pot is being fabricated in the shop. This test unit includes mechanized cap and can preheating, and cap and can assembly with slug.

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**DECLASSIFIED
WITH DELETIONS**TECHNICAL DIVISIONS

MAY 1951

6/11/51

SUMMARYPile Technology Division

A new section to be known as the Pile Applications Section was formed this month. The Area Physics Group, Area Engineering Group, and the special request program were transferred to this section. The general assigned duties include 100 Areas plant assistance and those parts of research and development programs which use a pile as an experimental facility.

Exponential pile measurements of the thermal neutron diffusion length in a standard lattice loaded with lithium-aluminum alloy slugs are in disagreement with pile theory which casts considerable doubt on present methods of calculation.

The critical mass facilities are being modified and some of the equipment replaced.

Measurements of solid graphite cores removed from tube blocks indicate that the original undercutting of tube blocks in the DR and H Piles is contributing significantly to the elimination of overall pile expansion.

Heat transfer and water quality studies included evaluation of larger outlet fittings, changed header pressures, emergency process pump requirements, and corrosion of process tubes and slugs.

The design of a double diffraction spectrometer for x-ray work on radioactive materials has been completed.

Metallurgical studies of irradiated uranium slugs, aluminum tubes, and P-10 alloy slugs are being continued.

Non-destructive tests are being investigated for detecting stainless steel welds which are low in chromium and nickel.

Flow cup corrosion tests on aluminum, zirconium, stainless steels, and other materials are being investigated.

A "stepped extraction" technique was used giving a much improved recovery of product.

Extraction and separation of tritium in the metal process equipment was begun. Certain difficulties were experienced in the extraction step and the recycle system used for operating the toepler pumps. Production data and visual observations indicate that adverse temperature variations exist in the furnace pot during extraction. Several proposed remedies are being evaluated.

Separations Technology Division

Production testing of reduced Bismuth Phosphate process volumes has been suspended temporarily in an effort to improve decontamination and thus reduce the high activity of PR cans. Replacement of two of the Isolation Building filters has reduced product hold-ups to normal values. The production capacity of the casting hood in Bldg. 234-5 has been approximately doubled by the "nesting" of two crucible assemblies in the furnace. The use of a four-hour cold outgassing cycle (formerly 16 hours) prior to coating has been adopted for a three-month test period.

In Redox and TBP process development, Technical Manual preparation has continued to 81 per cent completion of the Redox Manual and 31 per cent completion of the TBP Manual. The third group of 14 "S" Division supervisors and 25 operators started a 6-week training period in the 321 Building. Large-scale Purex and pulse column studies for O.R.N.L. were essentially completed during the period. Testing of TBP production pumps was initiated to determine suitable shaft bearing materials.

In the research laboratory, it was determined that 75 per cent of the iodine carried into the oxidizer will be removed during the scavenging step. The coupling of Redox product to the 234-5 process by means of a plutonium ammonium sulfate precipitate was found promising. A rapid scouting study to determine the feasibility of electroless coating in an alkaline bath indicated failure for all conditions studied.

A study of the suitability of one and two peroxide strikes for coupling Redox product solution to 234-5 was initiated using a simulated 2BP solution prepared in the cold semi-works. A study of the oxalate purification process has demonstrated the feasibility of reducing the HI requirements by 40 per cent and the oxalic acid by 28 per cent. Samples of PuF_3 prepared from the oxalate were reduced to give metal yields of 83.5 and 92.7%. It appears that further improvement can be made.

Sampling of the silver reactor effluent gases indicates that the 4-5L unit at B Plant is functioning at 99.9+ efficiency but that the remaining units may be removing iodine to the extent of 90-99%.

Technical Services Division

On May 2, the Technical Divisions accepted Building 222-S, the Redox Analytical and Plant Assistance Laboratory, with certain exceptions. The latter included the installation of hoods and balancing of the ventilation system. A.E.C. authorization was received for the Phase II of this project, under which certain unassigned space will be made into chemical laboratories.

In the Works Laboratory Area, erection of the structural steel framing for the Mechanical Development Building was started by the Dix Steel Company on May 28. Phase II design and estimation consideration is under way with Dix as a preliminary to negotiating the required extension to their subcontract.

Lump-sum bids for construction of the Radiochemistry Building were opened on May 29, with Sound Construction and Engineering Company the apparent low bidder at \$3,744,213. This figure was slightly under the fair cost estimate.

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A Part III of Project C-394 covering the construction phase of the outside services for the Works Laboratory Area was approved by the A & B Committee and forwarded to the A.E.C. Similar action was accorded the Part II proposal for Project C-385 which covers construction of the Radiometallurgy Building.

A.E.C. authorization was received for construction of the originally unexcavated portion of the basement of the Pile Technology Building. This additional space will serve for exponential pile studies. Final prints for this building, as well as for the Library and Files Building, were received from C. T. Main, the architect-engineer.

In view of the materially higher estimates recently made for the Radiometallurgy Building and the Plot Plan & Utilities projects, the total cost of the Works Laboratory Program is now expected to exceed the \$14,563,000 budgeted. However, indications are that this cost will stay well within the 15% overrun allowable under the regulations as listed in the Construction Rider to the Appropriations Act of 1951.

The press of service work in support of the Technical development programs and new building equipment needs made it necessary to continue the following groups on a six-day work week: Equipment Design, Technical Shops, IBM Computing Laboratory, and the contact engineers engaged in New Laboratory Planning.

Agreement has been reached whereby the Manufacturing Divisions will assume responsibility for the craftsmen and craft supervision in the Bldg. 101 Shops, effective July 1. Under this arrangement, these personnel will be on the Manufacturing Divisions' rolls, but the shops will otherwise be under Technical Divisions administration on a "captive" basis.

Analytical Division

A working manual has been prepared for the analytical control of the Redox and TEP processes. This manual contains information on type, volume, frequency and radiation levels of the samples expected, constituents present and determinations required on each sample and detailed procedures for the analytical methods to be employed. A detailed review of these procedures has been initiated as a final check on their state of readiness for plant control use.

A recently developed Leeds and Northrup Direct Recording Spectrochemical Analyzer has been tested on a field trial basis at Hanford for determination of hydrogen isotope ratios. Numerous difficulties and instrument failures have been observed and corrected, and sampling and sample excitation operations modified. The instrument and analytical procedure are now under satisfactory control and will allow the determination of hydrogen to tritium ratios in P-10 product. Using 3cc. of sample per hour at 1000 micron pressure, a precision of $\pm 0.04\%$ and a bias of 0.3% are observed; the bias may be readily eliminated by minor adjustment of conditions.

Shipment of the second mass spectrometer purchased for P-10 Project service has been delayed by the General Engineering Laboratories in Schenectady but steps have been taken to expedite delivery with improvement features to be added later.

Preliminary experiments have indicated that isotopic analysis of a mixture of xenon and krypton is possible using the present mass spectrometer, in spite of the fact that the instrument was not specifically designed to handle m/e ratios greater than 60. Advantage is taken of the peaks due to Kr^{++} and Xe^{+++} .

Successful analytical methods have been developed for the determination of TBP in aqueous solutions and of uranium in aluminum-silicon bath. The former employs carbon tetrachloride extraction and subsequent infrared absorption measurement. The latter employs conversion of the metal sample to the chlorides in a dry chlorine atmosphere, chromatographic separation of uranium, and determination by alpha counting. Methods for the determination of silicon and titanium in 234-5 Building pickling and stripping solutions have been put into control laboratory use.

Work schedules were revised from a two-shift to four-shift operation in the 234-5 Building Laboratory. This necessitated the appointment of two new supervisors. A special five-day work week schedule was set up in the 231 Bldg. Laboratory to provide analytical service to the 231 Building operations which are conducted on a six-day work week, Monday through Saturday.

O. H. Greager

OEG:dg

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June 9, 1951

PILE TECHNOLOGY DIVISION

MAY, 1951

VISITORS AND BUSINESS TRIPS

<u>Visitor</u>	<u>Address</u>	<u>Date</u>	<u>Purpose</u>
A. U. Seybolt	Knolls Atomic Power Lab.	5/1-2/51	Liaison on KAPL Assistance to Hanford

Business Trips of Pile Technology Division Personnel during May were as follows:

<u>Name</u>	<u>Place Visited</u>	<u>Date</u>	<u>Purpose</u>
R. M. Fryar	Alcoa Research Lab., New Kensington, Pa.	5/1-2/51	Technical Consultation In-Pile Experimental Tests Concerning Aluminum Corrosion

<u>Name</u>	<u>Place Visited</u>	<u>Date</u>	<u>Purpose</u>
A. C. Callen J. E. Faulkner R. E. Nather T. C. Nelson L. D. Turner	Argonne Nat'l. Lab.	5/16-18/51	A..E. C. Information Meeting
F. E. Kruesi G. M. Muller	Argonne Nat'l. Lab.	5/1/51	Discussion on Reactor Design
E. P. Warekois	Mount Vernon, New York	5/1-4/51	To attend a conference at the North American Philips Co., Inc.
G. E. Duvall	Brookhaven Nat'l. Lab.	5/1-2/51	Discussion on Exponential Experiments
D. F. Snoeberger	Argonne Nat'l. Lab.	5/16-18/51	A.E.C. Information Meeting
	Knolls Atomic Power Lab.	5/21-25/51	Inspect Heater Facility for Project C-410
	General Engineering Lab.	5/21-25/51	Consultation on KAPL Gas Slug Experiment
W. R. DeHollander	Knolls Atomic Power Lab.	5/15-18/51	P-10 Consultation
H. F. Zuhr	General Engineering Lab., Knolls Atomic Power Lab.	5/24-26/51	P-10 Consultation
C. E. Lacy	Knolls Atomic Power Lab.	5/21-25/51	Discussion of KAPL's Hanford Metallurgical Assistance Program

ORGANIZATION AND PERSONNEL

	<u>April</u>	<u>May</u>
Physics	54	32
Engineering	67	50
Metallurgy	38	37
Pile Application	0	49
P-10	62	64
Administration	<u>5</u>	<u>9</u>
	226	241

One laboratory assistant terminated and a technical graduate transferred from E&C into the Physics Section. Five technical graduates, nine physicists, three laboratory assistants, one technologist, two steno-typists, one general clerk, and one accountant transferred to the new Pile Application Section.

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In the Engineering Section, one technical graduate transferred in from Analytical, a laboratory assistant was hired, and seven engineers transferred in from the E&C Division. An engineer terminated. Fifteen engineers, two technical graduates, two engineering assistants, one laboratory assistant, four technologists, and one steno-typist transferred from the Engineering Section to the new Pile Application Section.

One metallurgist terminated in the Metallurgy Section.

The new Pile Applications Section was formed by transferring fifteen engineers, two technical graduates, two engineering assistants, one laboratory assistant, four technologists, and one steno-typist from the Engineering Section; five technical graduates, nine physicists, three laboratory assistants, one technologist, two steno-typists, one general clerk, and one accountant from the Physics Section. An engineer transferred in from P Division, and a new laboratory assistant was hired.

Two laboratory assistants were hired for the P-10 Section. A technical graduate transferred in from P Division and an accountant clerk transferred in from the Accounting Division. One chemist and a field clerk terminated from P-10 Section.

Three laboratory assistants were hired for Pile Technology Division. They will be listed under the Administration Section until they receive their Q clearance and will then be permanently placed in one of the other sections. A chemist transferred from the Knolls Atomic Power Laboratory to the Administration Section to be a technical assistant to the Division Head.

PHYSICS

Lattice Design

An analysis has been made of the results of the experiments, reported last month, to determine the diffusion length of thermal neutrons in a Hanford lattice (8-3/8 in. centers) which is loaded with lithium-aluminum alloy slugs. The measured diffusion lengths are 14.5 cm when the tubes are dry and 15.4 cm when they contain water. These results are in disagreement with pile theory which indicates a diffusion length of approximately 11 cm. This disagreement casts considerable doubt on present methods of calculating thermal neutron diffusion lengths and the utilization of thermal neutrons in a lattice.

The exponential experiments with the standard Hanford lattice have been analyzed to give values for the critical buckling with and without cooling water. These values are about ten percent higher than the corresponding values obtained from actual pile loadings. To facilitate a comparison of exponential pile results with pile loadings some experiments have been carried out to determine the amount of nitrogen which would be present in the graphite in the exponential experiments and might be removed when the graphite is placed in a pile atmosphere. No nitrogen was released from graphite samples during a period from a few minutes up to six weeks after being placed in a carbon dioxide atmosphere. Experiments are in progress to determine the nitrogen release during the first few minutes.

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Some calculations have been made on the interpretation of possible lattice design experiments which might be carried out by placing a core, built of the experimental lattice, in the center of the Test Pile. This work is continuing.

Shielding

Measurements on the gamma ray attenuation in the Hanford iron-masonite shield are being undertaken. Fabrication of the necessary plugs and calibration of ionization chambers is under way.

The neutron flux is being measured in the graphite reflector to assist in the analysis of the data on attenuation in the shield. Information on neutron energies of 0.025 ev, 5 ev, and greater than 1 mev is being obtained with the use of gold and sulphur detectors. Also a theoretical study of the flow of higher energy neutrons from the reflector into the shield has been started.

Techniques for the study of radiation damage in shielding materials have been worked out and appropriate experimental equipment has been designed and partially fabricated. Samples of about half the materials to be studied have been prepared.

Xenon Cross Section Measurement

The xenon to be used in this measurement has to be separated from the iodine and krypton gases which are also liberated in the fission process. Tests indicate that the krypton separation is possible by selective absorption in charcoal. Apparatus is being prepared to test charcoal separation procedures for iodine.

The neutron spectrometer has been installed on the upper experimental level at DR Pile.

Methods are being developed for the assay of Xe^{135} by counting the beta particles released by a sample of the gas.

Critical Mass of Plutonium

The experimental program was suspended during this report period for purposes of equipment replacement and expansion of facilities. This work is about 75 percent complete.

The major effort of the technical personnel was directed towards the writing of a final report on the phase of the program dealing with assemblies with a full water tamper. This report is in rough draft form.

Instrument Development

The magnetic spectrometer has been assembled and preparation of a source for calibrating it is in progress.

PILE ENGINEERING**DECLASSIFIED**Graphite Studies

The state of graphite damage in one of the counterbored process tube channels of the DR Pile was redetermined by x-ray examination of a series of samples taken at short intervals through the critical fringe region of the pile. The greater number of observations permits a better comparison of the effects of counterboring on the damage gradients in the oversized and the regular tube channel. For both cases, sharper damage gradients were determined; these were found to occur between eight and ten feet in from the front gun barrel edge. The results indicate clearly that counterboring has effected a considerable decrease in the crystal damage in the central zone; in the fringe zone, the crystal damage is no greater than in the corresponding position in a regular channel.

Direct physical expansion measurements were made on the solid graphite cores removed from process tube blocks in the B, DR, and H Piles in the course of pile monitoring and the counterboring tests. These represent the only possible direct measurement of the physical expansion of the tube blocks in the DR and H Piles; the results indicate that fringe zone expansion of the tube blocks, with a carbon dioxide pile atmosphere, is less than was experienced in the older piles with a helium atmosphere. It has been calculated that the DR Pile graphite has expanded from 0.4 in. to 0.7 in. in the front fringe zone and the H Pile has expanded 0.7 to 1.0 in. Expansion in the old piles with a helium atmosphere is estimated at 1.1 to 1.4 in. for an exposure period comparable to that for the H Pile. These data will be checked by x-ray measurements on the same cores. The magnitude of the physical expansion of the DR and H Piles, is sufficiently great to prove that undercutting of the tube blocks is contributing significantly to the elimination of the operating difficulties caused by tube block expansion in the older piles.

An x-ray crystal damage traverse was made along the graphite trackway removed from the "A" horizontal control rod thimble at the D Pile. This is the first extensive sample of pile graphite taken from the near side into the pile center, and although the environment of the material is considerably different than the packing graphite, the crystal damage traverse shows a profile similar in nature to those obtained on the pile stringers removed from the far side.

Graphite samples removed for the second time from the bare tube channel at the F Pile indicate burnout rates at 385°C of 0.30 percent/1,000 days and 0.14 percent/1,000 days for virgin KC and C hole stringer graphite respectively. The rate for virgin material is about one-half that reported previously and may be attributed to better control of the pile gas composition during this exposure period. C hole stringer graphite is KC material with a long high temperature exposure in the pile center. In each case a lower burnout rate was obtained compared to that for the virgin material. Previously exposed graphite samples with cold test hole exposure have, in all burnout experiments to date, shown a greater burnout rate. These data indicate a difference in the chemical reactivity of graphite exposed at low and high temperatures. Graphite samples in the fringe zone of the bare process tube channel gained

weight in agreement with previous experiments. A laboratory determination has shown, however, that the film which builds up on these samples is volatile at 350°C and therefore cannot be elementary carbon.

A literature survey indicates that nitrogen gas would not be entirely satisfactory as a pile gas from a chemical viewpoint unless water vapor and oxygen could be excluded from the pile. In the presence of these gases, it is possible for nitrogen to form nitric acid, which would cause corrosion of aluminum and other metal components.

Work continued normally on thermal conductivity measurements of core samples, surface studies, physical expansion annealing, controlled temperature exposure, mechanical properties and stored energy.

Heat Transfer Studies

A study has been completed on the desirability of changing tube outlet fittings and header pressures to obtain power level increases. The use of larger cross sections in the outlet fittings, and modification of the process water pumps, may make possible increases in the operating levels of the piles. The details of this study will be published in a separate report.

Tube Boiling

An experimental program is in progress in the 189-D Heat Transfer Laboratory to determine what would occur if boiling were to start in a process tube because of a temporary loss of header pressure. These tests are similar to those previously run on the small scale equipment in the 101 Building Laboratory. However, these tests are full scale, and should establish definitely the boiling curve characteristics for process tubes. Only preliminary results have been obtained to date.

Thermocouple Slug

The thermocouple in the center of uranium slug #411-1 failed on May 7. The reason for this failure has not been determined; if it proves impossible to repair the break, the assembly will be replaced.

Water Studies

Construction of the 100-D flow laboratory is continuing. It is estimated at the present time that this construction should be completed by July 15, provided critical materials can be procured as scheduled. Since the time required for the completion of the water quality experimental facilities is quite long, the work on sodium dichromate elimination will be expedited by using existing equipment. An in-pile test will be recommended to determine the effects of sodium dichromate on aluminum corrosion and film formation rates. The recirculation equipment, originally set up by the Reactor Division for recirculation studies, will be modified to provide the necessary separate source of dichromate-free process water.

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An analytical study of the emergency process pump requirements has been completed. This review indicates that the present acceleration features of the primary pump turbines are not necessary and suggests confirmatory tests. Recommendations will be made concerning the setting on the pile header pressure scram circuit.

Further experiments on the use of Dry Film to prevent the formation of film on tubes and slugs have indicated that there is a good possibility that film buildup may be minimized by treating the slugs with this material. A production test will be initiated to study the effects of radiation on the stability and effectiveness of this coating.

Mechanical Development

Ball 3-X System

Nickel plated boron steel balls were exposed in a water saturated carbon dioxide atmosphere for three weeks to determine their corrosion resistance. It was found that only those balls with 0.0001 in. plating showed signs of minute rust spots. Those with 0.0002 in., and more, nickel plating showed no signs of rusting or other corrosion. The specifications for nickel plating have been changed from 0.0001 in., as reported last month, to 0.0002 in. to provide greater corrosion resistance as well as greater abrasion resistance. The gas seal around number 20-D vertical safety rod continued to operate satisfactorily. This seal was inspected after approximately six months operation and was found to be in very good condition. During this time, one scram occurred from full power with recovery in approximately twenty-five minutes. This is considered to be the most severe use to which the seal can be subjected, since at this time the rod should reach its maximum temperature.

In connection with the Ball Third Safety and thimble removal program, samples of carbonaceous cements are being tested to find a suitable material for filling the cracks in the graphite blocks around the rod holes. These samples are being supplied by the National Carbon Company. Tests have been performed to determine the exact time required for vertical safety rod release and fall. A lag of approximately 0.4 seconds was determined from the time of interruption of the rod circuit, until the clutches have released and the rods commence to move. This will have a bearing on the actuating controls of the Ball 3-X Safety System.

C Pile Projects

Effective May 1, 1951, the test work previously carried on by the Reactor Division on new pile developments was transferred to File Technology Division, Engineering Section. The testing of component parts and assemblies to be used on the C-Pile has continued during the month. Testing of the inverted thimble proposed for use on the C Pile has continued at the White Bluffs Test Tower. Dropping times of 1.9 seconds can be obtained with suitable orifices in the air by-pass lines. These times are somewhat shorter than those obtained in the present piles; this is attributed to the absence of a winch assembly which tends to retard the rods in the old piles. This rod has been operated with the friction drive unit since the proposed winch is not yet available for testing. Work is in progress at the test tower to reconstruct

the 3-X ball hopper and entry chute to simulate the C Pile design. This is being done to make certain that the ball flow rates previously obtained with a G Pile type graphite slot are applicable to the D Pile design.

A full-scale horizontal rod mock-up will be built in the 189-D test laboratory, which will require the removal of some additional refrigerating equipment to make room for the installation. This mock-up will be used for testing the horizontal rod and gas seal being designed for the C Pile. After completion of the C Pile test, this mock-up will be used for developing replacement rods for the present piles, and for any future horizontal rod studies. Tests on the continuous discharge machines are continuing; it has been demonstrated that the non-pressurized type machine operates satisfactorily with negligible damage to slugs and the machine itself. Work is continuing of the pressurized type charging machine; the Goodrich seal, which mates special nozzle adaptors, has been found pressure tight to 375 psi. One full charge of slugs has been passed through the process tube and into the discharge hopper successfully. Re-working of a few incorrect parts and minor adjustments to the test apparatus are still necessary.

METALLURGY

Uranium Billet Casting and Rod Fabrication

In the past, a spot-check of rod quality has been taken on 75-100 rods from each incoming shipment of uranium. Although this spot-check has revealed no obvious trends over the past several months, with respect to diameter, ellipticity, and surface condition, machining experience has shown a downward trend in slug yield. The spot-check examinations are being discontinued, for it is anticipated that more comprehensive information will be obtained from the machining by the P Division of a pilot lot of rods from each shipment within two or three weeks of its receipt at Hanford.

Uranium Canning

During the current re-evaluation of welding procedures, it has been conclusively demonstrated that weld quality is greatly improved by (a) reducing the speed of rotation during welding, and (b) moving the arc away from the bead gradually rather than abruptly, after completion of the weld.

The use of Dy-Chek, a dye-penetrant designed for the detection of small surface flaws, has been evaluated as a means of insuring freedom from perforation in jackets of slugs destined for pile loading. It is concluded that Dy-Chek may be used as an aid in detecting suspect regions on slug surfaces, but cannot be used as an agent to definitely distinguish between potential autoclave or pile failures and slugs having innocuous surface blemishes. Caps from pile failures Nos. 1477-E, 3270-E, and 3188-DR were tested with Dy-Chek to detect any previously undiscernable perforations in cap or closure. This test only served to verify previous conclusions, no new information being obtained.

DECLASSIFIEDUranium Metallurgy

Design of a preliminary double diffraction spectrometer for x-ray work on radioactive materials has been completed; the instrument will be constructed in the 101 shops. Background radiation in a simulated double diffraction set-up was checked again using a more active sample, measuring 25 R at one foot, than was used in tests reported previously. The background counting rate again was sufficiently low that the double diffraction technique appears promising.

A report (HW-20727) covering orientation studies on uranium rod was issued. Included were some data relating "in pile" slug expansion and warping to the preferred orientation of the uranium. A production test designed to provide additional information on the relationship between pile expansion and the orientation of the uranium was initiated.

Dilatometry

A portion of the slugs tested in the production dilatometer were run on the laboratory dilatometer. After a correction has been made for dial indicator errors, the data obtained will be used to correlate the results from the two machines. It will then be possible to determine whether the production dilatometer data check with the data obtained in the degree of transformation versus expansion tests run in the laboratory unit. From data obtained in these latter tests it has been found that differences in expansion for a given degree of transformation correlate better with differences in the untransformed orientation than with variations in chemical composition of the uranium.

Construction of auxiliary parts for the 234-5 dilatometer was begun.

Radiometallurgy

Five irradiated uranium slugs ruptured in the pile units during the month. After visual examination, each slug was placed in an aluminum container and shipped to the 111-B Building for more detailed examination. Three of the failures occurred near the cap end of the slug, one was a side failure, and the other slug, which had been exposed 551 MWD/ton, was almost completely disintegrated. The caps of three previously failed slugs, 1477-H, 3188-DR, and 3270H, were cleared and re-examined. No observable defect was noted on the 1477-H cap, but either patched welds or Al-Si porosity were indicated on the other two.

A six-foot section of unclad process tube from the upstream end of tube 0657-B was examined for corrosion and found to be relatively free from pits and corrosion film. Other observations of the unclad tubes indicate that they generally corrode less than the clad ones, but the few that do corrode show extreme pitting.

A hardened steel die for making metallographic mounts two in. in diameter was fabricated to permit the examination of complete transverse sections of slug components and process tubes. Electrical contact to the sample is made by mixing graphite with the bakelite and adding this mixture to the upper half of the molded sample mount.

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Modifications to the 111-B Building were begun on May 7 with all workers wearing double protective clothing and fresh air-masks. Work on this job plus the installation of the dry-storage unit and the health monitoring system should be completed by July 1, 1951.

P-10 Alloy

The melt-down characteristics of the irradiated target alloy in the extraction vessel are now under study. The forced flow of cold air about the spout and the presence of heavy metal shielding about the furnace give rise to a cold zone in the vessel.

Severe corrosion of the stainless steel thermocouple protection tubes occurred at the molten-lead-air interface in the extraction vessel. Investigation showed that a cover, either of charcoal or of borax glass - silica sand flux, would practically eliminate this corrosive action.

The use of the metal pinch-off technique for sampling gases has necessitated a study of this process to provide adequate information for interested parties. A program designed to indicate the optimum conditions of pressure, die design, material, etc., is now in progress. This pinch-off process is being studied in detail since many project applications other than gas sampling are possible.

Corrosion

Flow cup corrosion tests on zirconium and a number of aluminum alloys were started in pile process water at 20, 70, and 90°C. Samples of aluminum-silicon casting bath alloy with varying tin contents are being tested in pile water at 90°C. In addition to weight loss tests, galvanic couple tests were also started.

A number of process slugs discharged from D Pile after a four month exposure were examined. Pitting attack was suspected on the side walls of at least ten slugs, and there were several cases of suspected weld corrosion. The pieces are being moved to the 105-DR viewing pit to permit a more careful examination.

As part of the program for the UO₃ Plant-Project C-362 four materials, (1) 309 SCb sensitized (2) 309 solution heat treated (3) 304 ELC sensitized, and (4) Carpenter 20 solution heat treated, were corrosion tested in 100 percent UNH and in 97 percent UNH - three percent HNO₃ solutions. After five 48-hour

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exposure periods at boiling temperatures of 118 to 126°C, the materials all gave corrosion rates of the order of 0.0010 in./month or less. These rates were considerably lower than those reported previously for 309 SCb and 304 EIC in the sensitized condition. The difference was attributed to a lower temperature in the second series of tests, the first tests having been run at 133 to 143°C.

In connection with the same problem, samples from a type 309 SCb cast melt pot which had been rejected by radiographic inspection gave acceptable corrosion rates, 0.0008 and 0.0014 in./month, in boiling 100 percent UNH. The performance of this material in the Huey test was unsatisfactory.

Preliminary tests of several materials for sulphuric acid service in the 234-5 operation were initiated.

Special Requests

Two-hundred twenty-six recanned pieces of SR-13 material were tested and found unsuitable for use. They were stripped, recanned, identified, and retested. All were acceptable.

Three additional process tube slugs and 40 capsule slugs were processed, identified, and/or tested.

A report (Document HW-20722) describing the preparation of samples for Special Hanford Irradiations, issued under date of April 9, 1951, was completed and distributed early in May.

Miscellaneous

A number of non-destructive test methods are being investigated for detecting stainless welds which are low in chromium and nickel because of the use of mild steel filler rod or because of burnout caused by improper welding procedures employed in the Redox plant construction. The tests included are electrical inductance, being run by the Instrument Division, tribo-electric (Metal-Sorter), magnetic attraction, and the potassium-ferricyanide spot test. Results from these tests are being correlated with corrosion resistance and spectro-chemical analysis data in an effort to find the best method for field use. Corrosion data indicated that welds having a chromium content as low as found in some field welds were attacked at a rapid rate in the Huey Test.

There are no data to report on the creep of 2S at 500°C because the test which was in progress was harmed by a power failure. 2S-0 sheet appears to be particularly sensitive to temperature fluctuations in the regions of 500°C. This point will have to be considered in conjunction with the normal creep test data in the application of 2S at 500°C.

A sample from a heat of stainless steel being used for 200 Area connector blocks was examined to determine whether the material was defective. A number of longitudinal defects appeared in the surface of the pieces during machining,

and it was thought that these might necessitate rejection of the stainless for connector block use. The defects were found to be stringer inclusions; the tensile properties were normal. It was concluded that material of the same quality as the piece which was examined was entirely satisfactory for the intended use.

In service work, the thickness of nickel plating on a number of boron steel balls was measured and tensile properties of a cast stainless pot were determined.

PILE APPLICATION SECTION

Area Physics Work

There were reductions in equilibrium power level experienced at B, F, and H Piles during the month as the result of flux distortion from control rods at B and F, and as the result of anticipated unbalances from H-10 tube discharges at H Pile. Improvement should be forthcoming at B and F from configuration adjustment and from reduction in the amount of reactivity held in the rods, but conditions at H Pile will persist until the transition from H-10 to regular loading is completed. Marked improvement in the flux distribution and graphite condition at D Pile resulted in a significant increase in the operating level.

Ruptured regular metal slugs occurred at D, DR, and F Piles, and a ruptured P-10 piece in an H-10 tube at H Pile during the month. No unusual physics effects were noted except at DR, where the rupture resulted in a process tube water leak, which cooled the lower near quadrant of the pile, causing a severe flux control problem and a significant loss in pile reactivity. Experience was gained in the use of IBM temperature traverses in evaluating the flux distortion caused by such conditions, and in determining the location of the leak.

Evidence of moisture in the circulating gas was also obtained at F Pile, but to date no flux distortion or reactivity loss attributable to a water leak has been observed.

Background data are now being obtained from neutron chambers installed during the month on a discharge cross-header at H Pile, for the evaluation of delayed neutron counting techniques for the detection of ruptured uranium pieces. Preparations have been made for the injection of uranium bearing solution into a selected process tube to check the efficiency of the system, with no pile shutdown time required.

Test Pile

To date nine irradiated U^{235} Al alloy pieces have been remeasured in the test pile to determine the U^{235} burnout. After the satisfactory measurement of the first piece a supplement to the production test was issued authorizing further measurements. A detailed report will be issued after three more tests have been completed.

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Three special work requests were completed during the month. These included the irradiation of gold foils for flux monitoring purposes for the Shielding Group, measurements of the reactivity effects of Dri-Film coatings, and the measurement of the reactivity effect due to a variation in the end cap thickness of the standard test pile slugs, 1.448 in. in diameter. This last is part of the program of collecting information regarding the multiplication factor of the test pile. The detailed data from these tests are reported in Technical Activities Report - Pile Application Section - May, 1951.

Pile Reactivity Status

A summary of the reactivity status of each operating pile near the end of this report period is given in the following table:

<u>Pile</u>	<u>B</u>	<u>D</u>	<u>DR</u>	<u>F</u>	<u>H</u>	<u>Totals at end of Report Period</u>
Control Rods	13 ^h	90	70	117	105	
Xenon	619	631	648	603	682*	
Material Testing	22	29	0	25	15	91
Other SR's	13	14	20	36	0	83
Plant Assistance	25	34	0	25	5	89
Dummy Columns	0	20	11	27	20	
Hot Reactivity	1285	1227	1097	1215	827	
C _o Allowance	-290	-363	-171	-365	-158	
Cold, clean	995	864	926**	850	669*	

The reactivity changes at B, D, and F are characteristic of the increase in average product concentration of the piles now taking place.

* The saturation xenon value for H Pile has been decreased to agree with recent critical and turn around observations which have been affected by H-10 depletion and discharge. No change in reactivity total is indicated if the xenon is corrected to the same base.

** There are 80 to 90 ih of reactivity still being taken up in water from the recent leak at DR.

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Area Engineering

Pile Power Levels

A ruptured slug in tube 1368 DR swelled sufficiently to split the process tube. The position of the ruptured slug was undetected before the pile went down because the leaking water had spread over a large enough area of the pile to obscure the source of water leak. After removal of the offending pieces and tube, the pile was started up again. Power levels were raised very slowly after the startup.

Special Irradiations

Monthly statistics on the Special Request Program are tabulated below:

P-10-A pieces charged	298
P-10-A pieces discharged	217
P-10-A pieces being irradiated	1349
(Exclusive of H-10)	
Special Request samples charged	9
Special Request samples discharged	48
Samples on hand awaiting charging	899
Samples now being irradiated	356
Samples awaiting shipment	57
Samples shipped during May	38

High Pressure Water Channel (P-13 ANIM-140, P.T.-105-354-P).

The behavior of water, prototype fuel, and structural materials is being determined under conditions simulating those of the naval reactor as nearly as is possible in the Hanford piles. Operating during May was routine at 540°F and 1550 psi.

As a result of leak repair work during the month, the leak rate was reduced from a maximum of approximately 13 liters per day to 1.7 liters per day.

KAPL Fuel Element Tests (Beta Experiment, SR-79, P.T. 105-180-P)

The influence of pile irradiation on fuels and fuel assemblies in contact with liquid metal coolant is being determined. Slug #R-5 had been irradiated 320.7 days at base power through May 21. It has reached the required exposure and will be discharged at the next opportunity.

Measurement of Uranium Slug Temperatures P.T.-105-411-P

The thermocouple in the center of a uranium slug in the F Pile became erratic on May 4 and failed on May 7. Plans have been made to investigate the reason for failure and to start the construction of a replacement assembly.

Controlled Gas Atmosphere Experiment - Project C-410

The one and one-half in. diameter heater facility with two three-foot heater sections providing a temperature which may be controlled to within two percent over a range of 250° to 650°C is nearing completion at Schenectady. The final assembly of this unit is underway at the General Engineering Laboratory.

The gas system, which will be used to pass gases of known concentration over graphite samples exposed in this controlled temperature heater facility, is nearing completion in the D Area maintenance shop. It will be set up and tested in the shop before installation in a radiation danger zone on the X-1 level by the far side of the pile.

The infra-red gas analyzers were received and the shielding on the far side of the DR Pile X-1 level is about 50 percent completed.

Thermal Conductivity of U-Zr Alloys (ANLM-172, P.T.-105-432-P)

An experimental slug will be inserted in a process tube to determine the effect of irradiation on the thermal conductivity of U-Zr alloys. The slug assembly is being fabricated and leak tested at ANL and the shipping date to Hanford is now estimated at about June 1. Assembly of the cooling facility for ANL-172 in the through hole mock-up is 50 percent complete. This mock-up will also be used to mock-up the zirconium creep experiment.

Controlled Temperature Exposure of Graphite (P.T.-105-403-P, RDA-PT-10)

Graphite samples are being exposed at moderate temperatures to determine the temperature coefficient of damage. The first series of samples has been discharged. Series #2 also consisting of four slugs was charged and is operating at nominal temperatures of 163°C, 225-235°, 200-210°, 125-135°.

Irradiation of Insulators (P.T.-105-408-P, RDA-PT-11)

An experiment was charged into D Pile during the shutdown of April 18, 1951, to determine the influence of Hanford flux on the insulating properties of commercially available electrical insulators.

Creep Test of Pins (KAPL-M-105, P.T.-105-400-P)

Slug #K105-1

The slug assembly was discharged with no difficulty during the May 8 shutdown.

Slug #K105-2

The slug assembly was charged during the May 8 shutdown. Following a two week period of satisfactory operation, unreliable data have been recorded. The test slug will be pushed out of the flux zone during the June shutdown. This will establish any changes of creep rate following removal from the pile flux.

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A creep test with dead weight loading is proposed to determine the effect of irradiation on the creep rate of zirconium. The slug assembly design has not yet been completed. No new design drawings have been submitted by ANL during the past two months.

LVDT Calibration (WAPD-M-103, P.T.-105-379-P)

The slug assembly was charged during the May 16 shutdown. The electrical resistivity of the zirconium specimen increased about 0.5 percent during the first nine days of exposure.

Creep of Zirconium (Pneumatic Loading) (WAPD-M-106, P.T.-105-430-B)Slug #W-106-1

The slug assembly was discharged during the May 6 shutdown. It is believed that free creep of the specimen was prevented by frictional drage in the slug assembly. It is assumed that the binding resulted from breakage of one of the ceramic insulators inside the slug.

P-10 PROJECT -Operations - General

In addition, one special by-product shipment was made to the Brookhaven National Laboratory.

One glass line operator exceeded the maximum permissible concentration (65 $\mu\text{c/l.}$) for internal tritium contamination during the month.

Erratic operation of the monitoring system for the air to the hood room caused some difficulty during May. It was noted that welding in the 108-B Building and heating of glassware on the third floor of 108-B caused erratic Beckman operation. The Kanne chamber piping was altered to permit clean air from the fourth floor to be flushed through the chambers. This clean air reduces the lost time from hood room evacuation by shortening the time required for the monitoring Beckman to return to the re-entry level. The Instrument Group has been attempting to lower the background on the Kanne chambers by various means; a bucking voltage to the chamber is being considered.

The direction of rotation of the power roller of the can opener was reversed which greatly improved can opening operations. New tips were installed on the three furnace pot lifting tools for the Metal Line since the old tips spread and became inoperative with use.

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DECLASSIFIED
WITH DELETIONSGlass Line Operations

In addition, one batch of previously air-contaminated product and one batch of spectrometer samples were processed. During processing, four runs became air-contaminated.

Production Tests 108-B-61-A, -61-B, -62, -65-A, -65-C, -68-A, and -68-C were completed during the month.

During a five-slug production run in Line 3, a "blurr" occurred and metal from the slugs was deposited on the furnace tube wall just below the cooling coil area.

Metal Line Operations

Extraction and separation of tritium in metal process equipment was begun during May. Nine runs, consuming 195 irradiated slugs, were made satisfactorily from a process standpoint; however, certain difficulties were experienced with the equipment. Liaison with the General Engineering Laboratory indicates that design of the stripping addendum to the Metal Line has been essentially completed, and that procurement and fabrication of the equipment is under way.

Stepped extraction techniques were used for all runs to date. However, thermal gradients existing in the furnace pot required some modification of the

Tests were undertaken by the Plant Assistance Group to determine the nature of the gradients existing and to suggest methods of correction.

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Equipment difficulties centered in the extraction step and the recycle system used for operating the Toepler pumps.

Alert operation prevented excessive furnace temperatures in two runs when the temperature sensing equipment corroded and failed to function properly. This corrosion of the stainless steel of the thermocouple sheath and the interior of the furnace pot thermocouple well was observed just above the top of the molten lead within the well. The lead is used to obtain good heat transfer and temperature indication. A cover of granular carbon was found by the Metallurgy Section to reduce this corrosion.

Extensive leakage in the recycle system caused considerable difficulty. It appears that major redesign of the recycle compressor will be necessary before this problem can be relieved completely.

Development

In addition to providing standard production assistance such as data correlation, the Experimental Extraction Glass Line (#1) was used for production, and development personnel outgassed Metal Line furnace pots and shipping containers. As a result of the experience obtained, the procedures for furnace pot outgassing and shipping container evacuation are being written and slight alterations are being made to existing and designed facilities for these operations.

An analysis of 100 production runs made in the Glass Lines during the report period is shown in Table I below where the average purities and comparative ratios are summarized for each production line. Very good correlation was obtained for the average T_2/He^4 and $He^4/(2T_2 + He^3)$ ratios.

Table I

AVERAGE PURITIES AND RATIOS - (NUMBER OF RUNS)

* The numbers in parentheses indicate the number of runs used in making the averages.

In averaging the above values, only those runs that differed by less than five percent from the average $He^4/(2T_2 + He^3)$ are included in the non-variant summaries.

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Some time is being spent in planning the installation of a manifold to all glass lines for pumping air contaminated product to Line #2. This will eliminate the hazardous and time-consuming transfer of large volumes of air contaminated product in glass containers. It is felt that if a consistently high purity product is to be obtained, the air contaminated product should not pass through the parallel metal product transfer system.

Production Assistance - Metal Line: Production data from the Metal Line are being correlated using methods similar to those used for Glass Line work. Inspection of such data to date and visual observation of the melt in extracted Metal Line pots indicate that adverse temperature variations exist in the furnace pot during extraction. While the tritium yields are as high as is anticipated from Glass Line data, the sharp steps of outgas, product, and by-product evolution at specified furnace temperatures do not prevail. A cold

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run was made employing thermocouples embedded in non-irradiated slugs; initial analysis of the data obtained with these slugs located at critical points throughout a pot indicates the existence of temperature gradients. This equipment will be used to evaluate the effectiveness of several proposed remedies.

The metal, cold-weld, pinch-off technique has been applied to remove process gas samples from the metal line. Results of simultaneous samples taken in glass ampules and metal pinch-offs correlate very satisfactorily. Additional correlation is under way to fully evaluate the pinch-off from a production aspect.

Scoping of facilities to incorporate on-line-sampling from the metal line to the mass spectrometer has begun. This technique will eliminate the necessity of removing ampules containing process gases from the metal line, transporting them to the mass spectrometer, opening them at the mass spectrometer, and similarly returning the excess gas to a recovery station.

A second glass line composed of two sections is nearing completion in the Instrument Development Room. The design incorporates versatile experimental components since this line will be used for studying the take-up of tritium on pertinent materials.

Design Liaison

During the month, work has been proceeding on the detailed design of the P-10 extraction facilities being provided on Project C-412. The design work on this project, with the exception of the metallurgical facilities, is now approximately 75 percent complete. Detailed design work on the metallurgical facilities has just begun with approximately eight men currently engaged in this activity.

Construction Liaison

Due to the uncertain delivery date of the General Electric Mass Spectrometer, it has been mutually agreed by the Project Engineering, Analytical, and the Pile Technology Divisions that the Mass Spectrometer (Consolidated-Nier) will be moved from the third floor of 108-B into the second floor laboratory on June 25, 1951, rather than delaying the move until the General Electric Spectrometer can be installed there.

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Detailed schedules are being prepared for the completion of C-399 Project and the procurement, fabrication, and construction schedules will be reviewed with the intent to close out Project C-399 at an early date.

Construction activity on Project C-412, P-10-X Extraction Facilities, has begun. The Project Engineering Division has been requested to complete certain parts of the C-412 and C-399 Projects by June 30, 1951, to permit an extensive production test of the Metal Line extraction facility in July, 1951. This test is intended to demonstrate the maximum productivity which can be expected of this equipment.

INVENTIONS

All Pile Technology Division personnel engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report, except as listed below. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

<u>Inventor</u>	<u>Title</u>
H. H. Burton	Rechargeable Absorbent Column

Signed

G. E. McCullough
G. E. McCullough
Division Head

GEMcC: jr

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June 5, 1951

SEPARATIONS TECHNOLOGY DIVISION

MONTHLY REPORT

MAY, 1951

VISITORS AND BUSINESS TRIPS

G. W. Watt, Consultant from the University of Texas, visited this site from May 1-5 for research and development consultations.

T. H. Permar and V. I. Montenyohl of duPont, visited Hanford May 14-17 for discussions on 234-5 process technology.

F. S. Chambers of duPont visited here May 23-25 for discussion of Separation Plants.

P. E. Collins visited the Los Alamos Scientific Laboratory May 6-10 for 234-5 consultations.

R. B. Richards, O. F. Hill and G. Sege attended a Chemical Processing Meeting at Argonne National Laboratory May 7-10. R. B. Richards also visited Pennsylvania State College on May 10 for technical consultations. G. Sege visited KAPL May 10-11 for purex consultations.

J. T. Stringer visited Johnston Pump Company and Shell Chemical Company May 5-9 for pump consultations.

R. S. Rosenfels, W. L. Lyon and M. K. Harmon attended an Information Meeting at Argonne National Laboratory May 16-18. M. K. Harmon also visited Brookhaven National Laboratory May 14 and KAPL on May 15 for laboratory design and operation consultations.

Separations Technology Division

ORGANIZATION AND PERSONNEL

Personnel totals are as follows:

	<u>April</u>	<u>May</u>
Administration	2	2
Special Assignment	3	3
Research Section	34	35
Development Section	73	75
Process Section	<u>32</u>	<u>31</u>
	144	146

Development Section: One Tech. Grad and one Steno-Typist B were added as new hires; one Laboratorian A was reactivated. One Chemical Engineer was transferred to "S" Division. One Chemical Engineer transferred to Research Section. One Chemical Engineer transferred from Research Section.

Process Section: One Steno-Typist C was terminated.

Research Section: One Chemical Engineer transferred to the Development Section and one Chemist transferred to Tech. Services. One Chemist was added as a new hire. One chemist was reactivated. One Chem. Engr. transferred from Development Section.

200 AREAS PLANT ASSISTANCE

Canyon Buildings

Additional runs were processed at B Plant under Production Test 221-B-10, Process Volume Reduction. Recent test conditions have been as follows (volume percentages refer to September 1, 1946 standards): (a) sixteen runs, control standard (4.5 g/l Bi in extraction and decontamination cycle volumes at 70%), (b) eight runs with 3.5 g/l Bi in extraction and decontamination cycles volumes at 63%, (c) eight runs with 3.5 g/l in extraction and decontamination cycles at 56%, and (d) sixteen runs with 2.5 g/l Bi in extraction and the first decontamination cycle volume at 49% and second cycle volume at 56%. Canyon Building total losses, corrected for americium and curium, were 1.40%, 1.32%, 1.21%, and 1.40% respectively. Production testing was temporarily suspended in an effort to improve decontamination since PR Can (Concentration Building final solution) activity readings ranged as high as 400 mr/hr. at B Plant and 190 mr/hr. at T Plant. Conditions were stabilized at B Plant with existing standards, i.e., 4.5 g/l Bi in extraction and decontamination cycle volumes at 70%, T Plant remained with conditions of 2.5 g/l Bi in extraction and decontamination cycle volumes at 56%. The routine extraction waste rework was discontinued at both plants. Although an insufficient number of runs have been processed to completion to permit an average evaluation, it was indicated at month end that decontamination was somewhat improved. Canyon Building data for 10 runs at B Plant and 18 runs at T Plant, processed without the extra waste rework, indicated that the average total product loss is increased by 0.2 to 0.3% and decontamination was improved by an average arithmetic factor of approximately 1.5.

SEPARATIONS TECHNOLOGY DIVISION
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Eighty percent of a run was carried in extraction at a Bi/Pu weight ratio of 11.4 (0.6 g/l Bi) when sodium nitrite was inadvertently added instead of bismuth for the direct strike of a run at B Plant. Routine reworking reduced the loss to 2.25% (uncorrected for americium and curium).

Concentration Buildings

It is likely that the increased activity in the Concentration Building final solution is largely due to the shorter cooling period of metal currently being processed. The ~~gamma~~ count of starting material averaged 3.86×10^{13} counts per minute per batch (second shelf) for the first twenty runs processed at B Plant during February, with an average decay period of 87 days from time of discharge at time of sampling, while sixteen runs processed during May with an average cooling period of 47 days averaged 8.41×10^{13} gamma counts per batch. The average PR Can activity for the February runs was 21 mr/hr.

Permanganate flushes from the Purification Building (234) were blended with Isolation Building recycle material and processed through the Concentration Building as a master recycle run. The total waste loss for this run, 0.35%, was comparable to those of other master recycle runs composed of only Isolation Building material.

The hydrofluoric acid dip tube in the lanthanum fluoride by-product precipitator tank at B Plant was replaced with one of monel metal on April 26, 1951. This was done in an effort to lower the frequency of replacement due to corrosion failure. At present the 25-12 S-Cb stainless steel tubes require replacement approximately every 250 runs.

Isolation Building

Data from the decay and absorption in lead of the radioactivity in the Concentration Building final solution strongly indicate that the major portion of the activity is due to Ba^{140} and its daughter La^{140} . A sample of the solution has been submitted to the Chemical Research Group for fission product analysis.

Leaching of the N-1 filters, used to clarify the Concentration Building final solution, following replacement of the filter blocks in Cells 3 and 4 indicated a reasonable product hold-up over a two week period. Total recoveries from the filter aid and blocks were 34.5%, 16.4% and 16.5% for Cells 2, 3, and 4 respectively for leaches made during the period May 2 to 4, 1951 and 29.1%, 14.9% and 12.9% respectively for leaches made on May 18 and 19, 1951. Recoveries from the filter block after removal of the partially leached filter aid were less than 0.1% per leach in Cells 3 and 4 and approximately 1% per leach in Cell 2 (Filter unchanged). It is planned to return to a monthly leaching schedule and to replace the filter block in Cell 2 in the near future.

Test coupons of Grade D (65 microns mean pore size) and Grade H (5 microns mean pore size) sintered type 18-8 stainless steel filter media subjected to immersion in 60% and 25% nitric acid at room temperature for two week test

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periods were found to lose weight as determined by iron analysis of the solutions at average rates of 2.2×10^{-5} per cent per hour and 1.5×10^{-5} per cent per hour for Grade D in 60% and 25% nitric acid, respectively, and at 1.5×10^{-3} per cent per hour and 0.8×10^{-3} per cent per hour for Grade H in 60% and 25% nitric acid, respectively. These materials have been proposed as filter media to replace the existing N-1 filter blocks in the Isolation Building since a thinner plate could be used and thus reduce the hold-up of product. While the corrosion rate of the finer grade material is greater, and the maximum corrosion would occur during leaching with 60% nitric acid, use of this medium in place of the existing N-1 filter block should increase the iron content of the P-1 solution by less than 0.1 grams per liter.

A sample of Filtros E filter block (sintered silica filter used in N-1 and N-2 tanks) was corrosion tested in 60% nitric acid at 60°C. After leaching for many hours at room temperature and at 60°C. in nitric acid, the rate of weight loss for a test period of four hours was 3.4×10^{-3} per cent per hour. This test was made in connection with a proposal to filter and dissolve plutonium peroxide on these filters.

First Cycle Waste Evaporator

The first cycle waste evaporator was tested with cold feed (5000 ppm PO_4 as tri-sodium phosphate) starting April 26, 1951. Seven runs, made at evaporation rates ranging from 365 to 880 gallons per hour, resulted in condensate containing less than one ppm phosphate, with the exception of runs at 600 and 700 gallons per hour which resulted in condensate analyses of 1.9 and 1.5 ppm phosphate respectively. A duplicate run at 600 gallons per hour resulted in condensate containing less than one ppm phosphate. These results indicated decontamination factors in excess of 103. Tests at 12, 0 and -6 inches submergence indicated no detectable difference in decontamination or heat transfer coefficient. Over-all heat transfer coefficients varied during these tests from 213 to 255 Btu/hr/°F/ft² with the exception of one run at 181 Btu/hr/°F/ft². Eliminating two runs where the steam was indicated to be less than the distillate produced, steam consumption varied from 1.01 to 1.10 pounds per pound of distillate. The maximum evaporation rate obtainable on the cold runs, 880 gallons per hour, was limited by the automatic control valve.

First cycle waste evaporation of process material was started on April 29, 1951. Seven runs have been made with feed analyzing 2.5×10^4 cmm beta. Evaporation rates in the range of 500 to 750 gallons per hour resulted in average distillate analyses ranging from 6 to 32 beta cmm. Foaming was indicated during four runs, but did not reoccur after addition of approximately 100 ppm of G.E. Silicone anti-foam agent. High ammonia content in the distillate resulted in severe corrosion of the admiralty metal condenser tubes. Penetration of the tubes necessitated shut-down after the seventh run. At month end the condenser was replaced with one constructed with mild steel tubes.

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Equipment has been set up and work has been started in which information pertaining to first decontamination cycle waste will be obtained. The data desired are: boiling points, freezing points, densities, viscosities, and pH at the various boil down ratios: 2:1, 3:1, 4:1, 5:1, etc.

Purification and Fabrication Building - Plant Assistance

Production Test 234-3, Direct Hydrofluorination of Plutonium Peroxide - HW-21026, was written and approvals obtained. Fabrication of equipment for conducting the test is in progress.

Seventy and thirty-seven units of plutonium as plutonium oxalate were transferred to the supernatant system of Hood 6 when wash solutions were added to Batches X-11-4-115 and 203 while the decant line was in its lowered position. This material was recovered by a permanganate flush of equipment in Hoods 6 and 29.

A run-book for RM Line Task I equipment operation with stand-in material was prepared and placed in use.

Direct hydrofluorination of oxalate precipitates was continued during the month of May. During the month 14.7% of the runs were rehydrofluorinated when weight changes and color of the tetrafluoride indicated incomplete conversions. Sixty-three per cent of the batches so treated showed increases in conversion. This process is being continued although minor changes in handling and processing techniques may still be found to be desirable. The final report on Production Test 234-4 by which the direct hydrofluorination of oxalate precipitates was evaluated has been issued as HW- 20916.

Task II run-books are being prepared for "cold shake-down" runs on lanthanum and uranium tetrafluoride.

The average reduction yield for May was 98.1 per cent.

The average c/q summation for castings made during April was 0.58.

An attempt to melt and pour turnings machined from two castings in as pure He atmosphere as possible was unsuccessful. Approximately 408 units of turnings were placed in a Y-3 crucible and processed by standard casting procedures. Although the melt did not pour, 36- units (88% of the turnings used) melted and formed a solid button which was later melted with other buttons to form a casting. The bulk density of turnings loaded to a Y-3 crucible with slight compacting (some long turnings were produced) was 1.2 g/cc. Some additional experimental work is required before melting and casting of turnings could be adopted for routine use.

The last part of Production Test 235-1 was completed during May and beginning with charge Z-11-5-6 cold outgassing of charges was eliminated. According to present procedures, as soon as the furnace has been evacuated to 1×10^{-5} mm of Hg pressure and a satisfactory leak rate is obtained, the charge is heated and the casting made.

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Permission to make two model 110 castings (maximum sizes were specified) in one furnace experimentally by placing 2 crucible assemblies, one on top of the other, was obtained from the Physics Section providing no material was passed through the hood during the operation. Written instructions were given the "S" Division concerning these requirements. Two experimental runs were made. Cycles were approximately 2 hours longer than a normal cycle due to longer times required to obtain the required vacuum and to reach the required temperatures. Normal waste losses and products were obtained.

When necessary controls have been established for the critical mass control required for routine use of these procedures the production capacities of the furnaces in Hood 14 will be approximately doubled as the present cycle is 19 hours per casting and this will be reduced to 10.5 hours per casting (21 hours for a dual charge operation).

Tests on heating cycles for charges Z-11-5-1M and Z-11-5-16F indicate that heating times may be reduced from 3 1/2 hours to 1 hour by heating in helium at atmospheric pressure with 6000 watts heat input instead of the 2700 watts used for heating when helium is present at 200 microns pressure. In addition to shorter cycles, less electrical maintenance is expected since heater element temperatures are lower due to the better heat transfer provided by the helium present.

Production Test 235-4 (Reduction of Cold Outgassing Time Prior to Coating) was completed during May. Forty-five 4-hour outgassed and fifty-four 16-hour outgassed units were produced to obtain 30 and 31 acceptable units. (Only 29 of the 16-hour units were marked as test pieces.) A final report is being prepared.

Beginning May 24th, the four-hour cold-outgassing was instituted for all production for a three month's trial period.

Production Test 234-1, Supplement A, "Treatment of the Oxalate Supernate To Permit Product Recycling", HW-21104, was authorized. This supplement revises the process to permit the use of 50% hydrogen peroxide instead of nitric acid as the oxidizing agent for the removal of iodine and the destruction of oxalate.

REDOX AND METAL WASTE RECOVERY DEVELOPMENT

Technical Manuals

On May 25, the preparation of the Redox Technical Manual was approximately 81% complete. Chapter XVI, Other Process Equipment, was completed during the month, bringing the total number of chapters completed to date (except for reproduction) to twenty-one, out of a total of twenty-five. Reproduction of the completed chapters was continued. On May 25, the reproduction status was as follows:

No. of figures and tables photostated:	140 (about 50% of total).
No. of text pages mimeographed:	113 (about 25% of total).

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The writing of the Uranium Recovery Technical Manual was continued. On May 25, the preparation of this manual was about 31% complete.

Process Studies

A technical and economic appraisal of the proposal to process BiPO_4 Process unneutralized current metal waste (CMW) in the TBP Plant concurrently with neutralized aged metal waste (AMW) has shown this proposal to be economically unattractive because it reduces the processing capacity of the TBP Plant and extends the uranium recovery period from approximately 2.5 yr. to 3.6 yr. The resulting increase in unit operating cost per pound of recovered uranium outweighs the savings in chemicals and waste volume resulting from processing CMW. This study will be summarized in a memorandum report.

The following formal and informal reports were issued during May:

1. HW-20958, Increase in Redox Capacity (Part II - Additional PR Cage) by F. W. Woodfield, E. T. Merrill, and J. R. Cartmell, dated May 3, 1951.
2. HW-21201, Trip Report - Chicago May 7 to 9, 1951, and Schenectady May 10 and 11, 1951, by G. Sege, dated May 23, 1951.

Redox Solvent-Extraction Studies

The Demonstration Unit columns were operated primarily for training "S" Division personnel for Redox Plant operation. H.T.U. values calculated for the 2D Column runs carried out last month indicated an optimum H.T.U. value of 1 ft. at Redox HW #4 Flowsheet conditions in the 3-inch glass column extraction section (packed with 1/2-in. by 1/2-in. stainless-steel Raschig rings) at 1000 gal./hr. (sq.ft.), sum of both phases. These 2D H.T.U. values are in good agreement with comparable IA extraction section H.T.U. values in 3-inch and 5-inch i.d. columns and confirm the equivalence of IA and 2D Column extraction section performance.

A series of "cold" 2A-2B Column Redox runs was carried out in the Demonstration Unit packed columns (with plutonium absent) to prepare samples of simulated 2BP solution to be used by the Chemical Research and Process Sections in conducting studies of coupling Redox to the 234-5 Bldg. operations. Data for the above 2A-2B runs, and for the associated "cold" first cycle run are reported in HW-20971 by F. M. Empson, May 3, 1951.

TBP Solvent-Extraction Studies

During the month, 52 solvent-extraction studies were carried out in 5-in., 8-in., and 16-in. diameter pulse columns under O.R.N.L. #1 Purex Flowsheet conditions for the IA, IB, IC, 2D, and 2E Columns. In addition to evaluating mass-transfer performance, these studies included determination of the flooding capacities of the IA scrub section, IA extraction section, IB extraction section, IB scrub section, and 2D scrub section. Seven additional

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pulse-column runs designed primarily to process feeds or to provide "S" Division operating training were also completed and a single IO-type run employing 5 wt.% Na_2CO_3 as IOX was carried out in an 8.42-in. i.d. packed column.

The above pulse-column studies were carried out with the dual objectives of training "S" Division personnel in the operation of the TBP Process pulse columns, and of rounding out Purex plant pulse-column specifications, as requested by Oak Ridge National Laboratories. The latter objective is now nearly completed, and highlights of new information developed during the month are summarized below.

Purex IA extraction section studies have been extended (from previous runs in a 5-in. diam. column) to test the performance of an 8-in. diam. pulse column (3/16-in. holes, 23% free area, 2-in. plate spacing, 8.5-ft. "packed" height). The resulting H.T.U.'s of 0.7 to 1 ft. and uranium waste losses of 0.0004 to 0.02% (at an amplitude of 1-in. and a pulse frequency of 85 cycles/min.) indicate no scale-up factor from previous 5-in. column studies for the IA extraction section.

Purex IC and 2E Column studies have been continued in 8-in. and 16-in. diam. columns using Dri-filmed stainless-steel perforated plates (3/16-in. holes, 23% free area, 2-in. plate spacing, 8.5 ft. and 10.3-ft. "packed" heights, respectively, for the 8-in. and 16-in. columns). Operating with the aqueous phase dispersed, these studies show essentially no difference in H.T.U.'s for the 8-in. column whether performing at IC or 2E Column conditions (the latter using 2DU as feed from 2D Column operation which was conducted with ferrous ammonium sulfate and sulfamic acid present. Optimum H.T.U.'s for the IC Column indicated a scale-up from 1.2 ft. in the 8-in. column to 1.6 ft. in the 16-in. column.

The performance of a 5-in. diam. 2D extraction section (1/8-in. holes, 23% free area, 2-in. plate spacing, 12-ft. "packed" height" with ferrous ammonium sulfate and sulfamic acid present has been essentially in agreement with previous Purex IA extraction section studies in the same column. At an amplitude of 1-in. and a pulse frequency of 65 to 70 cycles/min.) H.T.U.'s were between 1 ft. and 1.3 ft. (0.001 to 0.005% waste loss) over a range of operating rates from 700 to 1700 gal./(hr.)(sq.ft.), sum of both phases.

Some Purex column studies during the month resulted in flooding at rates which were less than half of previously determined flooding capacities. This behavior is believed due to the accumulation in the recycled feed solutions of as-yet-unidentified emulsifying impurities. Steps are being taken to purge the suspected solutions.

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321 Building Construction and Maintenance

In order to conserve chemicals and space in the 321 Building underground storage tanks, equipment for recycling the Redox IAW as IAS was installed in the Demonstration Unit and placed in service. A centrifuge bowl, removed from a spare centrifuge, has been revised by the addition of a baffle with an inside diameter 1 in. smaller than the I.D. of the 26-in. centrifuge bowl overflow lip. This change simulates similar revisions made at S.P.R.U. This bowl will be installed in the existing centrifuge and will be tested for effectiveness in MnO_2 removal during head-end treatment. Installation of the Fenske stacked extractor and hydraulic drive unit was completed during the period. It may be placed in service when required by tying in feed and effluent piping from the unit to existing Demonstration Unit feed and effluent pumping facilities.

321 Building Operations

During the entire period training runs were carried out in the Demonstration Unit equipment. Some adjustment of the feed stream specifications was required by the recycling of the IAW as IAS, but no loss of efficiency has resulted so far as the training program is concerned. Changing the packing in the 3-in. IA Column has resulted in a more rapid demonstration of "flooding" in the column for training purposes, with a decreased amount of high UNH waste.

Combined Purax flowsheet and training runs have continued in the Scale-Up equipment. Some mechanical difficulties were experienced with the 8-in. column pulse generator and the organic transfer pump. The pulse generator required (a) replacement of the frequency-controlling Speed Ranger in the speed control drive mechanism when a bearing failed, (b) disassembly to repair a leak in the piston rod when a weld failed, and (c) addition of a lock washer to hold the piston in place. The organic transfer pump required an overhaul and adjustment. In spite of these mechanical difficulties, little time was lost in the training program because of the versatility of the equipment.

321 Building Operations Training

The second cycle of "S" Division trainees (28 operators and 17 monthly roll trainees) completed their training on May 13, 1951. During the last week of the program, the Scale-Up Unit was turned over to the trainees for operation according to scheduled run plans. This not only allowed them complete operation of the equipment, but gave them valuable training in meeting specified run conditions.

On May 14, 1951, the third cycle of the training program started with 25 operators and 14 monthly roll trainees reporting to the 321 Building. Members of this group will complete their training on June 10, 1951. The training is now being carried out on a 6 day week basis at the request of the "S" Division to accelerate the program.

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Redox Plant Assistance

The Plant Assistance Group now consists of four men reporting in the field. Aqueous make-up procedures prepared by the "S" Division have been reviewed by the group and commented upon. Work is approximately 75% completed for the initial Redox "cold" run plan procedure.

Columns IA, IB, 2D and IO are now positioned on Mock-Up U-frames. As estimated 2 weeks will be required to fit jumpers to IA after which time the column will be packed in mock-up (pending delivery of rings). The stripping columns on ICU, 2EU, and the Pu concentrators have been packed (Pu Columns are installed on concentrators in the North Sample Gallery).

Equipment now installed in F Cell includes 2DF, 3DF, IAF and ISF Tanks and the ICU and 2EU Concentrator pots (no columns). Jumper installation has started on ISF Tank. The "S" Division is steaming and flushing F Cell lines in concrete concurrently with equipment installation. F-Cell vessel water calibrations are expected to start by 7/30/51.

Hot Semiworks

Construction of the Hot Semiworks is 5-1/2 per cent complete as estimated by the field engineer. The base pad for the Hot Process Building was poured on May 10, 1951. Forms are being erected for the second pour, which will bring the cell walls up to 20 ft. above the pad (five feet below grade), and which is scheduled to be made the second week in June. The Office Building and Change House have been framed in and underground lines are being laid. The foundation for the Solvent Building was poured on May 23, and the walls of the Gas Building were poured on May 24.

Work on the Hot Semiworks Manual is now 69% complete.

Equipment Development

Submerged Pump No. 2, a submerged regenerative turbine pump, has been employed to evaluate bearing materials for the Hot Semiworks centrifuge feed pump. Under conditions simulating the oxidizer in the Redox Process (7 g/l of MnO_2 scavenger present), the pump underwent a total of 48 days' operation at 3450 rev./min. with a process solution lubricated boron carbide bearing and a Stellite No. 6 shaft journal. Maximum bearing wear over the test period was within the limits of accuracy of measurement, i.e., 0.3 mil. Based upon these results, a regenerative turbine pump utilizing boron carbide as a process lubricated bearing will be designed and built at Hanford for use in the Hot Semiworks.

Peerless 4"-IA-No. 1, a four-stage deepwell turbine pump has been employed to evaluate bearing materials under conditions simulating those which will exist in the slurry accumulator, TBP process. The pump, equipped with six process lubricated boron carbide bearings and a Type 347 stainless steel shaft, operated smoothly and uneventfully for 29 days at 1750 rev./min. in a simulated incubated underground metal waste (fission products and plutonium absent).

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The maximum measurable change in dimension of any bearing was 0.3 mils which is within the accuracy of measurement. No other changes were noted over the operating period. Testing was discontinued.

Peerless 4"-LA No. 2, a four stage deepwell turbine pump identical except for bearing materials to the Peerless 4"-LA-No. 1 pump described above has been employed to extend the evaluation of bearing materials for the slurry accumulator pumps, TEP process, which was initially carried out at the Johnston Pump Co. factory and reported by memorandum J. T. Stringer to File, Report of Visit to Johnston Pump Company, dated May 15, 1951. In the 4"-LA No. 2 pump, the top seal bearing, top bowl bearing, and foot bearing are fabricated of 30,000 lb. tensile strength grey cast iron and three intermediate bowl bearings are Hycar rubber with a hexagonal bore. The shaft is cold rolled SAE-1020 steel. After 2 days operation at 1750 rev./min., discharge rate of approx. 50 gal./min. (unrestricted flow) in a simulated incubated underground metal waste (F.P. and Pu free) the pump was disassembled. No wear was detected on either the bearing or journals. Corrosion, both chemical and galvanic, was not observed. Testing will be continued with examination repeated at 5 and 15 days.

TEP Production Plant Pumps Two Johnston Pump Co. four stage, 4-in. diam. deepwell turbine pumps (Nos. 221-U-P-8-2 and 221-U-P-9-2) have been received for evaluation of bearing wear when operating in concentrated neutralized RAW solutions. Each pump is equipped with 8 Graphitar 41 bearings and a nominal 3/4-in. diam. Type 304 stainless steel shaft. The pumps will be operated concurrently using an interlocking time switch to insure equal operating periods on both pumps.

Galvanic Corrosion of Dissimilar Bearing Materials

The proposed use of cast iron bearings and Type 416 stainless steel shafts for slurry accumulator service introduces the possibility of galvanic corrosion taking place between the bushing and the journal. In order to investigate this effect, both static and dynamic immersion tests have been set up to simulate the operation of both Type 416 and SAE-1020 shafts and cast iron bearings.

Pump and Agitator Acceptance Tests - Redox

Ten Redox "hot service" submerged pumps have been put through the mock-up shop and accepted. Seven pumps remain to be accepted. Two of the 17 pumps have been returned to the vendor to replace broken bearings.

Seventeen agitators have been put through the mock-up shop and accepted. Five agitators remain to be accepted. Two agitators have been returned to the vendor because of seal failure and one has been returned with a bent shaft. During mock-up of agitators, the 7-1/2 h.p. units were found to be overloaded 11 to 26% when agitating water in vessels containing coils. The overload would approach 110% in vessels where the specific gravity of the solution is 1.7. The overload condition will be corrected by reducing the

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diameter of the 33 in. paddle blades to 28 in. One agitator, A-108, will be modified and tested before other agitators are reduced in diameter.

Materials Testing

Epon RN-34, an air-dry protective coating manufactured by Shell Chemical Company was applied in two coats on metal coupons and exposed for 25 days to dry heat of 95°C. and 160°C. No qualitative physical change of the coating was noted after exposure at 95°C. except for color darkening. At 160°C. the coating softened initially, but regained its original hardness after 24 hours' exposure. In the Redox Plant, the D Cell floor has been coated with 2 coats of Epon RN-34 as replacement for the originally specified stainless steel. A third coat will be applied. Inspection of the coating indicates a good seal between the concrete floor and the coating.

Effect of Radiation on Hycar Rubber Bearings

A sample of Hycar rubber bearing has been exposed to radiation on the order of 2×10^6 r./hr. in the 200N storage basin, under total water immersion. The Shore hardness has remained unchanged from an original reading of 69 to 70.

Process Chemistry

All work orders issued to the 101 Shops for special equipment have been completed with the exception of the "swivel jaw tongs". A new miniature mixer-settler is complete except for the agitator drive motor which is on emergency back order. This unit should be completed in June. Fabrication of a batch counter-current extractor has begun.

222-S Building

One man from Process Chemistry is spending 90 to 95% of his time in this area, following the installation of laboratory and office equipment in 222-S, and also following the progress of work and equipment installation in 202-S. All office equipment originally ordered by the Chemical Development Section for 222-S, has been delivered. The hood installation and ventilation balancing is still in progress, and is not expected to be finished before the end of next month.

SEPARATIONS PROCESS RESEARCH

Pulse Column Operation At Elevated Temperatures

The previous month's report described the beneficial effects of increased temperature of operation on pulse column operation in the Purex "C" column. Uranium losses at the higher temperatures were lower due to more favorable equilibrium conditions and to lower stage heights, and column operation was improved by increased throughput and decreased entrainment.

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Experiments with the Metal Recovery Extraction Column (RA) under the HW #4 flowsheet conditions have also demonstrated lower losses and lower stage heights at higher temperatures. The experiments were made with a 1" diameter x 17" pulse column with 0.039" diameter holes in fluorothene-stainless steel compound plates and an aqueous continuous phase. With an RAFS of 90 g/l UNH, an organic:aqueous flow ratio of 1.66, and a throughput of 1000 gal/sq ft/hr, the average RAW loss was 16 g/l UNH (HETS = 16") and 9 g/l UNH (HETS = 12") at 25°C. and 65°C., respectively. Thus, the beneficial effect of increased temperature upon viscosity, diffusion and other variables relative to the rate of transfer of uranium more than offset the detrimental effect due to a drop in distribution coefficient (E_D) for uranium.

Purex Decontamination Studies

Batch countercurrent extraction and scrub studies, simulating two extraction and three scrub stages, were made to compare the decontamination obtained with head-end treated and non-head-end treated feeds. These studies were made at full Hanford activity level with approximately 90-day-cooled dissolver solution prepared from 400 MWD per ton uranium. Eight organic throughputs were made.

Overall gamma decontamination factors of 1.4×10^4 and 5.4×10^4 and overall beta decontamination factors of 5×10^4 and 1.7×10^5 were obtained with the non-treated feed and the treated feed, respectively. An emulsion was formed when the treated feed, in which the permanganate had been "killed" with chromic ion, was contacted with the organic (30% TEP-Shell Spray Base). Formation of a blue or green color in the IAW indicated reduction of the dichromate accompanied, presumably, by oxidation of the organic. This may have contributed to the failure to obtain higher decontamination factors for the treated feed relative to the non-treated feed expected on the basis of previous batch extraction and scrub studies.

Ruthenium, niobium and zirconium accounted for 79, 13 and 8 per cent, respectively, of the gamma activity in the product obtained using the non-treated feed. Specific fission product analyses are not yet available for the treated feed run.

Behavior of Iodine In The Redox Process

Less than one per cent of the iodine present was evolved during the volatilization step of the head-end treatment during six hours of sparging with air, nitrogen or ozone, and using potassium permanganate as the oxidant.

Following head-end treatment, about 75 per cent of the iodine added to a simulated dissolver solution remained on the manganese dioxide formed in that treatment. Washing the dioxide with dilute nitric acid removed very little of the iodine. The degree to which iodine was carried on the dioxide was not influenced by the nature of the spargant used (air, nitrogen or ozone) or by the reagent used to reduce the residual permanganate (manganous or chromic ion). Carrying of the iodine was increased by increasing the amount of manganese dioxide formed and by the presence of mercuric nitrate.

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Of that iodine which remained in solution following head-end treatment (permanganate reduced by either manganous or chromic ion) only one to two per cent was extracted into the organic when the solution was converted to Redox IAFS composition and contacted with Redox IAX. Three scrubs with Redox IAS removed about one-fifth of the extracted iodine from the organic, distribution into the first scrub being greater than into the latter two.

Redox Studies - Digestion of Manganese Dioxide Slurries

Investigations into the settling rates of MnO_2 slurries in 2 M $UO_2(NO_3)_2$ under 1G were made to determine the optimum digestion time for the formation of dense manganese dioxide having good centrifugation characteristics. All slurries were made by killing off 0.08 M $KMnO_4$ solutions with chromic ion at 95°C. Varying digestion times following kill-off have been tried, with periodic sampling during the digestion.

It has been established that the six hour digestion preceding kill-off (representing oxidation in head-end treatment) causes a marked increase in particle size. It seems apparent, however, from microscope slide studies that the crystal size of the MnO_2 does not increase; rather the crystals collect in plate-like groups which adhere to each other in loose layers of perhaps 1000 times the original crystal size.

Partially complete investigations indicate that in the head-end process (ozonization, kill-off and digestion), as the MnO_2 is digested, the particle size actually decreases and settles more slowly, but that the terminal slurry volume (after 48 hours settling time) decreases with digestion time.

Concentration of Redox IIRP Solutions

A sample of IIRP solution, resulting from a cold (no plutonium) Redox packed-column run, has been obtained from the Chemical Development Section for coupling and concentration studies. This solution contained 43.8 g HNO_3 /l, 0.0005 g Fe/l, 0.24 g Cr/l, 0.023 g Al/l, 0.60 g U/l, and was spiked with plutonium to make the solution 1.27 g Pu/l. This IIRP solution was evaporated 450-fold in the presence of stainless steel wire (to approximate the surface to volume ratio which will be encountered in the Redox plant). The final plutonium, uranium, aluminum and nitric acid concentrations were 560 g/l, 267 g/l, 10.4 g/l and 690 g/l, respectively. Analyses for corrosion products were somewhat inconclusive but indicated that corrosion was not excessive. The solution was very viscous, and dilution of the concentrate with water produced a solution containing only a trace of solid matter which resembled silica. It is concluded that the evaporation of Redox IIRP solution up to 400-500 g Pu/l should not be troublesome in plant operations and dilution to 50 g Pu/l, after filtering, should result in a suitable product solution for metal reduction processing.

Redox Coupling Studies - Plutonium Ammonium Sulfate

Experiments are being carried out to determine the feasibility of precipitating plutonium (III) ammonium sulfate from concentrated Redox feed (40-60 g Pu/l) for metal reduction purposes. It is known that this compound can be precipitated from pure plutonium(III) nitrate - hydroxylamine sulfate

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solutions with low losses (ca. 1-2%) and that this material is converted to PuF_4 by treatment with gaseous HF at elevated temperatures. Although the PuF_4 produced in this manner appears to be normal, reduction of this material to the metal has not as yet been attempted. The separation of plutonium from aluminum, uranium and corrosion products of stainless steel by this precipitate is unknown. The precipitation of this compound from the bismuth phosphate AT solution has resulted in unsatisfactorily high solubilities due to an unidentified impurity in the AT solution.

Recovery of Plutonium From Slag and Crucible

A. Recycle to Redox

An eight stage extractor consisting of four extraction stages and four scrub stages was used to carry out batch countercurrent runs to determine the effect of recycling slag and crucible solution to the Redox IIA column. Phases were contacted for five minutes and allowed to disengage for five minutes prior to phase transfer, and clean phase separation was observed throughout.

In one control run and two runs consisting of a 1% and 10% (by volume) dilution of the original IIAF solution with slag and crucible solution (0.09 g Pu/l, 2.4 M HNO_3 , 0.15 M $\text{Ca}(\text{NO}_3)_2$, ca. 2.1 M $\text{Mg}(\text{NO}_3)_2$ and 0.2 M $\text{Al}(\text{NO}_3)_3$), plutonium losses were 0.02%, 0.03% and 0.03%, respectively. It is concluded that the recycle of slag and crucible solution up to at least 10% by volume is quite feasible (from a chemical point of view) since only very low plutonium losses were observed in all runs. An additional batch countercurrent run is now underway where the entire IIAF is slag and crucible solution (100% by volume recycle).

B. Recycle to the LaF_3 Product Precipitation Step - 224 Building

The recycle of slag and crucible solution to the lanthanum fluoride product precipitation in the 224 Building has been tested on the 10% and 100% recycle level, i.e., 30 and 300 grams plutonium, respectively, from slag and crucible, per plant run. Low plutonium losses, ca. 0.5%, were found in the supernatant solutions providing the slag and crucible dissolution is carried out in the absence of aluminum nitrate. Excess hydrofluoric acid was added to complex calcium, magnesium, aluminum and silica. Since silica dissolves in hydrofluoric acid solutions, the removal of silica (and the subsequent plutonium separation) is avoided in this recycle procedure. Approximately 2% Ca, 1% Si and 1% Mg was carried by the LaF_3 precipitate at the 10% Pu recycle level. Although approximately 9% Ca and 3% Mg were carried at the 100% recycle level, these values could probably be reduced by using a lower hydrofluoric acid concentration. The presence of calcium and magnesium in the lanthanum fluoride product precipitate is not expected to interfere with the plutonium peroxide precipitation in the 231 Building. The recycle of slag and crucible solution by this procedure is an attractive process.

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C. Recycle to the Second Bismuth Phosphate Product Precipitation Step - Canyon Building

Recycle to the second cycle bismuth phosphate product precipitation was tested on a 100% plutonium level (300 grams plutonium from slag and crucible per plant run). The slag and crucible solution was diluted 6.6-fold before the run, and the final phosphoric acid concentration was 0.6 M above that required for the first visible formation of bismuth phosphate.

The plutonium loss in the bismuth phosphate supernatant solution was ca. 4%. Even in a control run containing plutonium tracer but no slag and crucible solution the loss was ca. 2%. Thus, the loss from slag and crucible solution may be satisfactory and more work is being undertaken to improve these losses. In a cold run from slag and crucible solution only ca. 0.3% Ca, 1% Mg and 2% Al carried on the bismuth phosphate precipitate.

The precipitate from the slag and crucible solution was composed of large coarse particles, as compared with small crystals in the cold run. Therefore, the precipitate from the slag and crucible run dissolved more slowly than that from the cold run.

Replacement of 231 Facilities By A Solvent Extraction Process

A laboratory investigation is underway to determine the feasibility of replacing the current 231 operations by a solvent extraction process. The volume ratios of the two phases during extraction and re-extraction are to be adjusted to produce an aqueous effluent having a plutonium concentration of ca. 50 g Pu/l to eliminate the evaporation step.

Plutonium losses of ca. 0.04 per cent were obtained during four successive batch extractions of F-10-P solution containing ca. 1.5 M HNO_3 and ca. 1.3 M $\text{Al}(\text{NO}_3)_3$ with 15 or 20% TBP in AMSCO when an organic to aqueous phase ratio of one to ten was employed. A plutonium loss of less than 0.01% was obtained during four successive equal volume batch extractions with 15% TBP in AMSCO (aqueous phase 1.6 M HNO_3 and 1.23 M $\text{Al}(\text{NO}_3)_3$). Although stripping of the plutonium from the organic phase has not as yet been investigated, previous data indicate that this operation should proceed without difficulty at these TBP concentrations.

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234-5 PROCESS DEVELOPMENT

Redox Coupling

Analyses of the peroxide cake and button from a single cycle five gram run using a synthetic Redox 2BP solution adjusted to 40 grams of plutonium per liter and spiked to 1.0 M aluminum (more than 10 times the expected amount) showed greater than 25,000 ppm in the cake and 40,000 ppm of aluminum in the button. The volume of wash used for cake washing on the filter (150 ml in three parts) is indicated to be insufficient, and has therefore, been increased in subsequent runs.

Using simulated 2BP solution from the 321 Building Demonstration Unit, three runs were made on the five gram scale to evaluate alternate projected flow-sheets for coupling with peroxide. A single precipitation from a 10 gram of Pu per liter solution gave a waste loss of 1.57%, and a reduction yield of 88.1% when processed through dry chemistry. A single cycle process employing a starting solution adjusted to 40 grams per liter resulted in a wet chemistry waste loss of 1.73 per cent and a reduction yield of 91.8 per cent. A two cycle process beginning with the 10 gram per liter material gave an overall wet chemistry waste loss of 3.30 per cent and a reduction yield of 96.8 per cent. Final evaluation of these processes must await analytical data, particularly aluminum and uranium concentrations in the metal.

The solution obtained from the Demonstration Unit and reported to be representative of Flowsheet Redox 2BP (except for the absence of plutonium and fission products) has the following composition:

HNO ₃	43.8 g/l
Fe	0.0005 g/l
Al	0.023 g/l
Cr	0.24 g/l
U	0.6 g/l*

*Concentration approximately 100-fold higher than expected on the basis of IBP assay - attributed to recontamination from process equipment.

The plutonium expected to be associated with this solution will be at a concentration of 1.25 g/l.

After sparging for 12 hours to remove dissolved hexone, the sample (13.72 liters) was boiled down to 1/8 of the original volume in a 25-lb stainless steel vessel, and then spiked with AT solution. A sample taken from this solution had the composition given below:

Pu	10.4 g/l
H+	5.03 g/l
Fe	0.029 g/l
Sp. Gr.	1.177

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DECLASSIFIEDOxalate Process

Studies of the oxalate process were directed toward reduction of oxalic acid, plutonium, and iodine compounds in the process waste solutions. Using simulated AT solution it was demonstrated on 1/100 plant scale that the hydriodic acid could be reduced 40%, the oxalic acid for the strike could be reduced 28%, and the oxalic acid in the washes could be eliminated completely without any increase in the process plutonium losses. By using SO_2 as a reducing agent, it was possible to eliminate the hydriodic acid completely without increasing the plutonium losses, but the precipitate so obtained was not $\text{Pu}_2(\text{C}_2\text{O}_4)_3$, and while it hydrofluorinated readily, the fluoride reduction has not been demonstrated.

Oxalate Process studies with plant AT solution were limited to four runs which indicated that complete elimination of oxalic acid from the washes increased plutonium losses for the process by 80%, but that elimination of the oxalic acid in the first wash would not increase the plutonium losses.

Plutonium Trifluoride Reduction

Two samples of PuF_3 prepared from $\text{Pu}_2(\text{C}_2\text{O}_4)_3$ were reduced to give metal yields of 83.5 and 92.7%, and it seems probable that improvements can be made in this reduction process.

A sample of PuF_3 prepared from very pure $\text{Pu}_2(\text{C}_2\text{O}_4)_3$ was reduced using one third of a mole of iodine per mole of plutonium, and enough calcium to react with all of the PuF_3 and I_2 plus a 33% excess. The yield of 92.7% as compared to 85.7% for an identical reduction made in April is probably due to the difference in purity of the fluorides. A sample of the impure fluoride used for the April reduction was reduced using 0.5 mol of iodine per mole of plutonium, and enough calcium to react with all of the PuF_3 and I_2 plus a 25% excess. The yield was 83.5 per cent.

Reduction Process Using Sulfur Booster

Three additional runs were made on the plant scale in which UF_4 was reduced with calcium using sulfur instead of iodine as the booster. Yields of 99.8% were obtained in two runs which used 0.23 moles S per mole U and 25% excess Ca (equivalent reaction heat to 0.2 moles I_2 per mole U). A yield of 99.9% resulted when the amount of sulfur was increased to a 0.34 to 1 ratio (equivalent reaction heat to 0.3 mole I_2 ratio as used in PuF_4 reduction). The sulfur content of the button has averaged 166 ppm with the lower booster ratio, and was 317 ppm in the button produced with the higher ratio.

Skull Recovery

Laboratory tests indicate that boiling sulfuric acid in concentrations of 1 to 4 normal is an excellent solvent for casting skulls from current production (those which have not oxidized during prolonged storage). Sulfuric acid dissolution followed by Isolation Building processing of the skull solution may, therefore, be a feasible substitute for the HNO_3 -HF process previously considered.

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Studies were made to determine whether the green "oxide" formed by boiling skull material in 0.5 M HNO_3 would dissolve during prolonged boiling in this reagent, and also to determine how much hydrogen evolution occurred during oxidation and dissolution in 0.5 M HNO_3 . Hydrogen evolution was too small to indicate hydrogen evolution from the nitric acid in a dissolution reaction, and the green oxide did not dissolve appreciably after the first hour of refluxing in a 72 hour refluxing test.

Oxalate Supernate Treatment

Based upon laboratory studies using samples of supernatant solution from Purification, the optimum conditions for destruction of oxalic acid and removal of iodine are to add a quantity of 50 per cent hydrogen peroxide based upon 120% of the stoichiometric requirement, and then to boil the solution down to 15% of its original volume. Document HW-21082 has been issued summarizing the laboratory work and recommending this process for production testing.

Development of a similar process for the treatment of those wet chemistry wastes already concentrated and accumulated in storage has been started. In two runs with a synthetic SW-3 solution using 20 and 100% excess hydrogen peroxide and manganous ion catalyst 72% and 92.5% respectively of the oxalic acid was destroyed after heating for an hour. When similar procedures were followed using actual concentrated waste samples, a maximum oxalic acid destruction of only 70% resulted. A cream colored residue remaining after this treatment, possibly $\text{Pu}(\text{C}_2\text{O}_4)_2$, was found to be soluble in hot concentrated nitric acid.

234-5 Quality Control

Visual observation and autoradiographic inspection indicate that the quality of the coatings improved during this period, but is not equal to the best produced in the past.

The new geometry (Bertha) received from Los Alamos for making the specification neutron count has been modified to comply with Hanford standards.

The integrated alpha counts reported by Los Alamos are now in excellent agreement with Hanford counts. Over 75 per cent of all acceptable pieces

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during this period had an integrated count of less than 100 c/m. The average difference between Hanford and Los Alamos counts is now 10 c/m instead of 122 c/m previously observed.

STACK GAS DISPOSAL

Silver Reactor Performance

The performance of the dissolver cell silver reactors has been checked by monitoring the individual off-gas lines with caustic scrubbers. The results reveal that the unit in the 4-5L cell at B Plant is operating with an efficiency of 99.9% but that the quantity of I^{131} passing through the other three reactors is greater by a factor of 50 to 100. A thorough investigation of the operating histories of the units and a supplementary experimental program have been initiated in an attempt to determine the reason for the variation in performance.

Activity Distribution Throughout the Dissolver Cell Silver Reactors

Measurements of the radioactivity distribution throughout the silver reactors have indicated that the zone of maximum activity in the 4-5L unit at B Plant is in a band approximately 10 inches wide and centered 36 inches from the screen supporting the silver nitrate coated packing. The zone of maximum activity in the other three reactors was within 6 inches of the supporting screen.

The location of the maximum activity at a higher position in the 4-5L B Plant reactor may be the result of overheating. The assembly has been overheated upon three occasions and it is quite possible that the high temperatures would have caused the silver nitrate film to become fluid and run off the bottom section of packing. The location of the activity maxima at the bottom of the packing in the other three reactors and the indications of their lower efficiencies are anomalous. An explanation is not readily available.

The monitoring of the B Plant ventilation air by simultaneous operation of caustic scrubbers at the downstream sand filter position and the 50 foot level of the stack has shown that the quantity of radio-iodine discharged from the stack per 24 hours increased during the latter part of the month. Values of 49 and 81 curies/day were recorded as compared with a normal range of 1 to 10 curies/day (one result of 28 curies/day) for the preceding three weeks. The higher values were to some extent due to the increased quantities of radioiodine processed in the dissolvers.

The placing of the Fiberglas media in the filters to be incorporated into the condenser hatchway of the underground metal storage tanks, Project C-362, has been initiated. The pressure drop across each of the packed units will be checked. This will be done to detect possible channeling and to determine the uniformity of packing density.

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INVENTIONS

All persons engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

R. B. Richards

R. B. Richards

Separations Technology Division

6/1/51

ANALYTICAL DIVISION

MAY 1951

VISITORS & BUSINESS TRIPS

E. W. Bailey, N. H. MacKay and F. E. Clark, of the Carbide and Carbon Chemicals Co., Y-12 Plant, Oak Ridge, Tennessee; C. D. W. Thornton and E. Hall, of the A.E.C. Division of Production, Washington, D. C., O.R.E.; and V. V. Hendrix, of the SF Accountability Branch, Oak Ridge Operations Office, Oak Ridge, Tennessee, spent May 28-29 discussing inter-site discrepancies and analytical methods and procedures relating to J Slug accountability.

Business trips of Analytical Division personnel were as follows:

J. A. Parodi spent May 3 at Leeds & Northrup Co., Philadelphia, consulting on P-10 analyses and equipment; May 4 at Baird Associates, Inc., Cambridge, Massachusetts, discussing technical aspects of integrating and scanning emission spectrometers; and May 7 and 8 at Knolls Atomic Power Laboratory, Schenectady, consulting on P-10 analyses and equipment.

J. K. Figenshau spent May 15-18 at the Argonne National Laboratory, Chicago, attending the Information Meeting on Hot Laboratories and Equipment.

A. H. Bushey spent May 28 at the Reed College, Portland, Oregon, discussing work that Reed College may do on a sub-contract basis.

F. W. Albaugh spent May 28 at the Reed College, Portland, Oregon, discussing work that Reed College may do on a sub-contract basis.

ORGANIZATION AND PERSONNEL

Personnel totals in the subdivisions are summarized as follows:

	<u>April 30</u>	<u>May 31</u>
Analytical Service Section	258	267
Analytical Research Section	35	36
Administrative	<u>3</u>	<u>3</u>
Division Totals	296	306

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Analytical Division

ANALYTICAL SERVICE**DECLASSIFIED**Work Volume Statistics

The following tabulation shows the source and volume statistics for samples on which analyses were completed:

	<u>April</u>		<u>May</u>	
	<u>Samples</u>	<u>Determinations</u>	<u>Samples</u>	<u>Determinations</u>
Process Control - 200	5,504	11,878	4,977	11,058
Process Control - 300	538	971	596	1,036
Water Control - 100, 700	955	3,555	791	3,357
Research & Dev. Programs	2,748	4,910	3,149	4,513
P-10 Control	225	2,025	441	4,410
Process Reagents	2,388	2,850	2,126	2,397
Essential Materials	216	811	2,782	3,337
Special Samples	604	6,324	782	7,111
Totals	13,250	33,324	15,644	37,219

The increase in Essential Material analyses was due primarily to a large number of quickly performed pipet calibrations. The large increase in P-10 samples reflected the general increase in the tempo of this Project during the month of May.

100 Areas Water Control

The Naval Reactor (P-13) Project sampling schedule was altered considerably because of changing conditions, test completions, etc. The routine spectrographic analyses of the system water were eliminated when they were found not to give a true measure of corrosion products, due to partial deposition of the latter in the system as a sludge. The frequency of determination of the gas constituents in the system water was increased from thrice weekly to daily, detailed consideration of past gas analyses indicating the need for closer monitoring. Other calculations indicated that more information regarding gas concentrations in the liquid phase surge tank was necessary; therefore, plans were made to sample this tank thrice weekly. Flow cells to facilitate daily pH and conductivity readings of the system water were installed. The conductivity readings will provide a basis for comparison between present conditions and conditions when an ion exchanger unit is added to the system, as scheduled for the near future. In the past, four liter samples of system water for complete chemical analysis were periodically submitted during the course of a run. This will be continued and, in addition, a large sample taken immediately prior to draining the system for an equipment shut-down. The work load for the laboratory was not affected significantly by these changes.

Three sanitary water samples from Richland and North Richland were submitted by the Public Works Division for complete analysis, as requested of them by the

U. S. Department of Interior - Geological Survey. The requested analyses were covered by standard procedures with the exception of potassium for which a chloroplatinate procedure found in Snell's "Colorimetric Analyses" was adapted.

200 Areas Control

As the result of a formal suggestion, the Permanganate Titration Method (MSL-1a) replaced the slower ceric titration method for determining lanthanum in recycle material (E-4-RC). It is estimated that a saving of 30 man-hours/month of analytical time, based on a 120 run production schedule, will be realized as a result of this change with no sacrifice in accuracy.

The processing of high MWD material after short cooling periods has resulted in unusually active samples and prompted the following changes affecting control laboratory operation:

- (1) To reduce radiation levels the 1.0 ml capacity pipet has been replaced with an 0.5 ml capacity pipet on the trombone-type sampler.
- (2) The extraction waste solution (7(8)-3-WS) will not be reworked for a series of 25 runs each in the B and T Plants. The effect on decontamination factors and plutonium losses will be observed.
- (3) Gamma determinations will be resumed on samples of the cake solution from the second decontamination cycle (19-4-P).

Analytical service for the start up of the First Cycle Waste Evaporator (Bldg. 242-T) has been as follows. During preliminary cold runs the decontamination factor was followed by means of colorimetric phosphate analyses of the condensate, which indicated a factor of greater than 10^3 . Hot operation with samples from the feed tank (FT), cyclone catch tank (CCT) and condensate catch tank (CT) was monitored by analyses performed at the 222-T Building Laboratory. Beta Decontamination Factors of 10^4 were measured for an operating rate of 650 gallons/hour. Prior to shut-down of the unit on May 7 due to attack of the Admiralty Metal condenser tubes by ammonia fumes, analyses of CT samples showing 41 to 92 ppm copper were performed to follow the rate of the reaction. Analytical requirements to date have been at the rate of 200 man-hours/month for the routine determinations; however, it is anticipated that this work load will decrease markedly as soon as routine operation of the unit is established.

The use of coincidence corrections for AST and ASVP type counters based on Document HW-20485 was placed in effect in all 200 Area Laboratories on May 7. A slight increase in accuracy of plutonium assays by radiochemical means will result where counting rates are in excess of 20,000 c/m.

Cooling pads were installed on the locker room inlet air baffles at the 222-B and -T Buildings. The locker rooms, heretofore uncooled, should be more comfortable during the summer months hereafter.

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Training of personnel of the 222-B Laboratory in the Falling Drop Method for specific gravity measurement has been essentially completed by the Methods Control Group. It is anticipated that routine gravity determinations can be started on June 1.

Recent studies in the 222-B Laboratory on the Direct Evaporation Method (CA-6b) for plutonium assay indicated that one drop of concentrated nitric acid should be added to each stainless steel disc except on those samples containing uranium. This nitric acid addition apparently prevents the formation of a ferric phosphate complex which had resulted in green or greenish-yellow colored discs and low assays.

Effective May 14, the "S" Division adopted a six-day week work schedule. In order to continue analytical service on a five-day week work schedule, Monday through Saturday coverage, the 231 Building Laboratory adopted a special shift schedule on the same date. Concurrently, the 234-5 Building Laboratory converted from a two shift to four shift operation in order to provide analytical service for the 234-5 Process on an around the clock basis. The staff in this laboratory is being increased slightly in anticipation of increased production rates at mid-year.

Investigation of a spectrophotometer method for the determination of silicon in the concentrated oxalate supernates samples was continued. It was found that previous difficulties were due to equipment failure. Recovery on spiked samples has been improved to approximately 80%.

Additional analytical requirements for the 234-5 Building Process are the determination of silicon and titanium in the B-1-S (Button pickling, 60% HNO_3), B-2-S (Bomb pickling, 60% H_2SO_4), CO-S (Button stripping, 70% HNO_3), and CSS (30% caustic scrubber solution) samples. Investigations are under way to adapt currently used laboratory procedures to these samples.

One 32-place magnetic stirrer was received in the 234-5 Building Laboratory to be used in conjunction with the special quartz extraction flasks in the cupferron extraction step of the spectrochemical procedure. Use of the stirrer will be initiated as soon as calibration of the quartzware is completed. This equipment should improve the precision of analyses through reduced sample contamination.

300 Area Control and Special Services

The 300 Area Control Laboratory recently received a uranium metal standard from Mallinckrodt Chemical Works for nitrogen determination. The sample was submitted in accordance with recommendations made at the Sample Exchange Meeting held at St Louis in February. Hanford results have been higher than those obtained at other sites and it was believed that the point of sampling of the billet wafer was causing the discrepancy; consequently, a uniformly prepared sample was sent to all interested sites to check this premise.

Analytical Division

Several nitric acid washings from a Nutsche box were submitted from the 231 Building in an investigation of the relationship between plutonium hold-up and phosphate content. The direct phosphate colorimetric method, after removal of the nitric acid with formic acid, gave good precision but results were questionable because of the probability of silicates being present. Wet ashing with perchloric and sulfuric acid and removal of the silica by filtration gave values considerably higher than given by the direct method. The extraction-molybdenum blue method was also used and gave results in agreement with the wet ashing method. The plutonium phosphate ratio obtained suggested that the compound being held up in the Nutsche box was plutonium phosphate.

Numerous plutonium solutions from development studies on the removal of plutonium from 234-5 Building crucibles and slags have been submitted to the Chemical Research Service Laboratory for calcium and magnesium analysis. The versenate titration method was used but it was found necessary to complex the aluminum with tartrate ion to prevent its interference with the method.

In the determination of TBP in aqueous streams, the hydrolysis of TBP by H_2SO_4 prior to colorimetric measurement appears to be more accurate than the old method of hydrolysis with fuming HNO_3 . The TBP is extracted into carbon tetrachloride, the carbon tetrachloride evaporated and the residue heated in the presence of H_2SO_4 until fuming occurs. In the past a three-minute digestion with H_2SO_4 at $200^\circ C$ has been tried but results were occasionally high. With the elimination of the three-minute digestion period results are low by ca. 10% but are quite consistent.

Recent analytical results obtained on the P-10A gas extraction line were invalidated when it was discovered that the input valve in the first Toepler pump was stuck; how long it had been stuck could not be determined. Two unsuccessful attempts to clean the plug were made and later that day the mercury reservoir on the Toepler pump broke. The furnace unit was then transferred to the new small line and work is continuing there.

Several nickel plated boron steel balls, used in a pile safety device, were submitted by Pile Technology Division for determination of cobalt in the nickel plate. The nickel plate was found to contain 0.13% Co, approximately three times the specification amount (0.04%).

As a result of possible faulty welds in the construction of the Redox Plant, numerous acid leach samples of stainless steel piping containing possible mild steel in the welded areas were submitted to the laboratory for analysis of iron pick-up. The colorimetric method was employed and results were found to be in the range of 5-15 ppm. In addition, numerous welds which were found to be magnetic were sampled by means of drilling through a part of the welded area and the drillings submitted to the laboratory for analysis. The method employed consisted of exposing the metal drillings to 3M HNO_3 for three hours and analyzing for iron in the nitric acid solutions. Results on standard weld samples indicated that both of these procedures were incapable of identifying bad welds.

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Chemical Development Service Laboratory

The Chemical Methods Group of the Analytical Research Section prepared thirty test samples of synthetic Redox IAF solution and submitted ten samples to each of the three shifts in the Chemical Development Service Laboratory for UNH, HNO_3 , and Specific Gravity determinations. The concentrations assigned by the Chemical Methods Group were 995.0 g/l UNH, and -12.6 g/l HNO_3 .

Method DW-1a, "Density by Pycnometer", was used for the specific gravity determination; Method UX-1a, "Uranium by X-Ray Photometer", was used for the uranium determination; Method HV-3c, "Nitric Acid by Oxalate Complexing", was used for the nitric acid determination. The results of the test program are tabulated below:

	<u>Sp. Gr.</u>	<u>UNH</u>	<u>HNO_3</u>
Mean Value (30 det'ns)	1.6429	984.8 g/l	-13.33 g/l
Precision ($\pm\%$)	0.05	1.27	13.6
No. Out of Control	0	0	1

The precision and accuracy figures for this latest test program agree quite well with those obtained in a series of similar studies made in September-December, 1949 and are within the required limits.

A synthetic IAF test sample will be submitted to the Chemical Development Service Laboratory in June for UNH determinations. Future IAF test sample studies will be made in the 222-S Building utilizing equipment designed for handling small volumes of active solutions.

Other operations in this laboratory continued on a routine basis.

P-10 Control

Effective April 30 and continuing through June, P-10 Control Laboratory personnel went on a six-day week in support of operational activities also on a six-day week. In order to meet production schedules, only Product and By-Product samples were submitted for analysis during the month. It was mutually agreed with the P-10 Operations Group and the Health Instrument Division that all excess sample could be discarded rather than recovered after analysis during this period.

The first opener (crusher type) tried for the new metal ampule sample containers did not prove satisfactory. However, a hollow needle type opener designed by the Analytical Research Section has been entirely adequate.

The series of samples run on the Mass Spectrometer to determine rates of exchange of tritium with Apiezon N and Apiezon W for the Analytical Research Section has been completed. Analysis of the data shows a direct correlation between the area of grease exposed and the rate of tritium exchange. There was no apparent relation between the tritium exchange and weight of grease present. A gradual

increase in air contamination of the bulb containing Apiezon W was observed. This was not the case with Apiezon N, indicating the latter to be the more stable of the two greases under study.

Methods Control Group

The standard plutonium solutions prepared by dissolution of a high purity (99.7%) plutonium metal were used to evaluate the radiochemical and volumetric assays of plutonium in the 231 Building Laboratory. The standard samples were placed in small vials containing ca. 5 ml of the 8.253 g/l plutonium solution. Separate vials were delivered to each shift each week. The results obtained are tabulated below:

		<u>Radiochemical Assay</u>	<u>Volumetric Assay</u>
% Average Recovery		(98.0%)	99.5%
<u>Error Source</u>	<u>Number of Observations</u>	<u>% Precision (99% Confidence Level)</u>	
Analysts	10	(0.60)	± 1.08
Disc Preparation	40	± 1.36	
Counting		± 0.26	
Titration	20		± 0.70
Total		± 1.51	± 1.29

Estimated Precision CA/RA due to analytical variations ± 1.98

Due to difficulties experienced in the standardization of the solution, the recovery obtained by radio assay is of questionable validity and is shown in parenthesis.

Determinations of the plutonium content of Plant AT solutions during April showed for a given MFD level a CA/RA ratio having a precision of ± 5.23%, and averaging 0.48% lower than the value given in Document HW-20581. This review and the above analysis of standard solutions will be continued to establish the effect of analytical precision and accuracy on isotopic correction factors and to elucidate the cause of current Los Alamos-Hanford product shipment discrepancies.

New or Revised Methods

The cause of the variation of recoveries in the spectrophotometric determination of Silica in the SN samples from the Metal Fabrication Process was found to be due to mechanical malfunctioning of one of the extraction bulbs. After this difficulty was eliminated an average recovery of 80% was obtained. The method is applicable to samples containing 0.3 to 2.0 ug of Silica, having a precision of ± 0.15 ug in this range.

The volumetric determination of fluoride involving preliminary separation by the distillation of fluosilicic acid and subsequent titration with thorium nitrate

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using zirconium alizarin sulfonate indicator was introduced in the 234-5 Building Laboratory for analysis of fluoride content of the nitric acid leaches of the 231 Building Nutsches. The spectrophotometric method for the determination of trace amounts of sulfur, developed by the Analytical Research Section, was also placed in service.

Preparations for Analytical Service to the Redox and TBP Processes

A rough draft manual for use within the Analytical Division was prepared and contained the following information for each sample anticipated from the Redox and TBP Processes: name of sample, sample container, sample volume received, frequency of sampling, beta and gamma activity, constituents and their concentrations, analyses required, analytical method to be used, and the volume of original sample required for each individual determination. This manual will also contain the detailed procedures for the analytical methods required.

A number of improvements have been made in methods involving titrations. By utilizing Fluorolube as a substitute for mercury in the Gilmont type displacement buret, the utility of this type buret has been extended to include titrants such as ceric sulfate, nitric acid, and permanganate. Tests with ceric sulfate indicate this reagent does not change detectably within a week, while permanganate (0.1N) changed less than 1% in a week. This modification makes it possible to use displacement burets for all titration methods. To avoid the inconvenience of refilling the buret from the tip, a stopcock and reservoir has been added to all 1.0 ml burets. A titration apparatus was designed in which two 1 ml displacement burets with stopcocks are mounted on a panel with the buret tips extended to fit into a small titration vessel placed on a magnetic stirrer. This general design will be utilized for all semi-micro and macro titration methods with minor modifications as required for heating, cooling or inert atmosphere. The analytical methods for aluminum, ferrous iron, sulfamic acid, nitric acid (on both semi-micro and macro scales by either fluoride complexing or direct titration) and uranium by chromous titration have been rewritten to utilize this type equipment. The aluminum method was modified to utilize the same glove box used for acid determinations by fluoride complexing. The micro acid procedures for both oxalate and fluoride complexing were rewritten to utilize the remote controlled microtitrator. The microtitrator was received and has been checked by titrating inactive solutions. All methods for acid determinations using fluoride complexing were modified to reduce co-precipitation of acid or base by a preliminary approximate neutralization, and to take advantage of the extra precision possible when aluminum is present without appreciable quantities of uranium. An approximate preliminary titration method was written for the determination of the amount of acid or base to be added for the approximate neutralization.

In order to reduce the transfers of heavy sampling equipment and the number of highly active process samples transferred, it is planned to aliquot from a single initial dilution for as many different determinations as possible, to use the same sample for several methods when it is not changed by the first analysis (such as use of X-Ray photometer or Shonka ionization chamber), and to utilize

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the remotely operated displacement buret (now used for determination of specific gravity by the falling drop technique) to deliver the samples for both the nitric acid determination and the initial dilution.

The arrangement of junior caves in the laboratories was modified so that the cave will fit snugly into a series comprising (1) a bench for instruments; (2) a hood and a gloved box for microdeterminations of acid by either fluoride or oxalate complexing; (3) a hood and gloved box for displacement sampling and specific gravity determination by falling drop; (4) a junior cave for opening and closing gross sample containers; (5) a hood and gloved box for visual sampling, dilutions, and direct evaporation; and (6) a hood and gloved box for semi-micro determinations of acid and aluminum. One sample container is placed in the front left corner of the junior cave, and another in the front right corner, then both are raised and opened. From the two adjacent hoods, samplers are extended through the side door openings of the junior cave to remove the required aliquots. This minimizes the number of operations which must be performed in the junior cave, and still keeps the greatest activity, the gross sample, behind excellent shielding. Sampling will be simplified by utilizing the displacement sampler required for specific gravity to also deliver (without refilling) the other samples and dilutions required for those samples which are highly radioactive. The above arrangement of hoods saves time and reduces contamination problems by avoiding a great many transfers of various containers into and out of glove boxes.

Recovery of Plutonium 234-5 Building Laboratory Wastes

The all glass processing equipment has been mounted in the laboratory hood. During shakedown runs on inactive solutions it was found the Glasco mantle used to heat the reaction vessel did not have sufficient capacity. It was necessary to install a mantle on top of the reaction vessel, necessitating replacement of the cooling condenser side arms. As soon as this modification is completed, work on the lowest level wastes will be initiated to further test of the operation of the equipment.

Special Hazards Control

In order to facilitate the survey of rubber gloves before removal, a spare BGO instrument with a "hot dog" grill has been installed in room 7 at the 222-B Laboratory. Operating results to date appear to be satisfactory and if no trouble is encountered a similar installation will be made in the 222-T Laboratory.

Air samples with above tolerance levels of plutonium have been obtained in rooms 6 and 7 and in the hallway of the 222-T Building Laboratory. Since the highest level samples were obtained in room 6, the room was not used except as an assault mask area from May 4 to May 28. A check of the air flow in the hoods in room 6 has shown it to be considerably less than in February 1950. This is being corrected. Cooperative work with the H. I. Division in an effort to locate the source of the contamination is continuing.

Due to delays in procurement of material, the June 1st completion date for

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Project M-772, Installation of Decontamination Canopy, Buildings 222-T and -B will not be met. It appears that work on the project will be completed before July 1, however.

ANALYTICAL RESEARCH

General

In preparation for startup of the Redox and Metal Recovery Processes, a complete review of the established analytical control procedures has been initiated as a final check on the state of readiness of all methods.

Development work has continued toward the establishment of Uranium Oxide Process control procedures and product specification analyses; since many of the latter will be carried out by procedures presently used at Oak Ridge, personnel at that site have been urged to supply analytical information as agreed upon previously.

Discussions have been held with faculty members of Reed College to explore the feasibility of assigning a long range analytical research problem on a sub-contract basis. The problem being considered for this purpose is the development of a general analytical scheme for separating in a minimum time and number of steps a heterogeneous and unknown mixture of radioisotopes, such as those found in pile irradiated material and/or fission product contaminated substances.

The time of one chemist in the Section has for the next six months been wholly assigned to the Water Group of the Pile Engineering Section to aid in the design and conduct of in-pile experiments for study of the cause of slug and tube corrosion and the build-up of film deposit.

Radiochemical Methods (RDA #TC-1)

The result obtained on the analysis of a second dissolver solution for U-237 content supports a previously reported analysis showing that the beta activity from this isotope per gram of pile-irradiated uranium is about six times that due to U-238 daughter activities existing under steadystate conditions. The implication of this observation is that the measured beta activity of Redox-produced uranium oxide will not be a true measure of the fission product contamination, even after correction for uranium daughter activities. To avoid this interference, effort is currently being spent to devise a method that will adequately separate fission products from the combined uranium isotopes.

A sample of pure uranium oxide and samples of four other oxides containing, respectively, weak and strong beta emitters and weak and strong gamma emitters, has been prepared; portions will be shipped to KAPL and Oak Ridge to check the correlation of radiocounting procedures at the three sites.

In support of a study and possible process application of an extraction process for recovery of plutonium from 234 Bldg. skull and crucible wastes, development of the necessary analytical procedures has been undertaken.

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Spectrochemical Methods (RDA #TC-2)

A device for withdrawal of P-10 samples from metal sample containers for mass spectrometric analysis has been tested and found to work satisfactorily. In using the device, a metal capsule is placed within a container, the container is evacuated, and the capsule is punctured with a self-sealing, hollow needle that permits withdrawal of the sample into the spectrometer sample manifold. Tests on the first group of capsules showed contamination in many cases which was traced to an inadequate pinch-off tool used in preparing the capsule. Capsule samples prepared after repair of the pinch-off tool were air free and were recovered in an uncontaminated condition.

Continuing work on methods of in-line sampling of P-10 gases for mass spectrometric analysis has supported previous conclusions regarding reaction time and the absence of holdup of gases in the sampling line. It was noted that the 50 foot test sampling section on the mass spectrometer head increased slightly the reaction time of samples admitted through the leak used for control samples. As a consequence, the time schedule of the control analyses was increased to avoid possible errors from this cause.

Factors for the calculation of impurity concentrations from mass spectrometric data have been rechecked and found to be correct. In this study it was verified that the contribution of the H_3^+ ion to the He3 peak is negligible.

The General Engineering Laboratory has advised that the shipping date of a second mass spectrometer purchased for P-10 service has been delayed. The instrument has been completely assembled, but it is observed that the peak heights are not linear with the pressure of the gas in the sample manifold. Since the instrument meets the initial purchase specifications and gives a highly accurate response, and since it is possible to calibrate the instrument to avoid error from this cause, it was agreed that the instrument be shipped immediately and that Hanford later take advantage of new developments and source heads that may be devised to eliminate the nonlinear response.

Several mass spectrometric analyses have been made as a service to the Pile Physics Section. The first was in support of the Exponential Pile Program and was designed to determine the rate of liberation into a carbon dioxide atmosphere of gases held within a block of graphite. A small piece of graphite was placed within a container and flushed for several minutes with pure carbon dioxide, after which the tube was sealed and allowed to stand for six weeks during which period samples of the atmosphere were analyzed intermittently. Since no impurity was found in the gas, it was concluded that the rate of diffusion was either very slow or that the interstices of the graphite had been completely flushed initially; several other experiments have been designed to learn if the latter situation occurred. Incidental observations in the course of this experiment established the cracking pattern for carbon dioxide in the ionizing beam of the instrument. The second service experiment was designed to determine if a mixture of xenon and krypton could be analyzed. Examination of the patterns obtained with each of the

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pure gases led to the conclusion that an isotopic analysis was possible even though the instrument was not specifically designed to handle m/e ratios of greater than 60. The complete isotopic analysis of the mixture was possible by measuring the peaks due to Kr^{++} and Xe^{+++} .

A Leeds and Northrup Direct Recording Spectrochemical Analyzer was acquired for a field trial in November, 1950 after receiving preliminary testing at KAPL. This instrument is under development by the manufacturer for application to analytical problems encountered in metal production plants. It is peculiarly suited to the problem of determining the isotope ratio of a mixture of hydrogen and deuterium or of hydrogen and tritium which are excited by high frequency discharge in an electrodeless tube and determined by measurement of the $H\alpha$ line intensities. The objective in the development of this method has been to apply the discharge directly to a production line side stream, thus eliminating discrete sampling.

Culmination of this program has been delayed for two reasons. The instrument was installed in a room in the 108-B Building which has been frequently shut down because of construction activities. Furthermore, the instrument has been operated to collect information for the manufacturer, according to the terms of the field trial. As was to be expected with such an arrangement, several instrument failures occurred. The principal difficulties were as follows:

1. The microswitch for cyclic deactivation of the recorder pen drive motor failed and was replaced.
2. The drive gear mechanism in the automatic scanning device wore excessively because of faulty meshing, and was replaced.
3. A few capacitors and resistors of insufficient rating failed because of overloading. An example was the capacitor in the slave stepping mechanism position indicator. These elements were replaced with ones of adequate power rating.
4. The grating mount began to rub on a light baffle, with the result that the grating failed to return to the proper position defined by the cam system. This baffle is currently being modified to correct this condition.

Despite these difficulties, a sufficient number of samples of mixtures of hydrogen with deuterium and with tritium have been tested to show that the method is capable of high precision. Thus, with deuterium, at a flow rate of 3 cc./hr., at 1,000 u pressure, results on a standard made to contain 95.36% deuterium were 0.5% high, with a precision of $\pm 0.23\%$, at the 99% limits. By an improved method of operation, in which the chart peak corresponding to hydrogen is amplified to a height comparable to that of the heavier isotope, the precision is improved to $\pm 0.04\%$. In this case, the bias was 0.3%, but this bias can be virtually eliminated by choice of the appropriate pressure since the intensity ratio is a function of this parameter. A sufficient number of tritium samples have been treated to assure the conclusion that comparable results are attainable with no difficulties. A terminal report on the subject is in preparation.

Another instrument, designed specifically for this task, has been constructed by the Bausch and Lomb Optical Company, in cooperation with KAPL, and is currently being shipped to Hanford. This instrument is designed to allow rapid scanning of two hydrogen isotope lines and periodic scanning of an impurity line at a widely different wave length. It will be applied to this problem and will allow further testing of the Leeds and Northrup instrument on problems such as the determination of tin and silicon in aluminum-silicon alloy, minor elements in aluminum, and typing of stainless steels, problems more nearly of the type for which this spectrometer was designed.

Development has been successfully completed on a method for determining TBP in aqueous solutions. It involves separation of the organic component by carbon tetrachloride extraction and measurement of infrared absorption by the extracted solution. The method is sensitive to 0.02 g/l, and has a precision equivalent to this same concentration. It has been employed in support of Chemical Research Section studies to determine the solubility of TBP in various concentrations of aqueous nitric acid solutions. It was observed that photo decomposition of TBP tends to occur in aqueous solutions if uranium is present. This observation will be investigated further in order to determine if such solutions, as obtained from Purex Process studies, must be retained in dark bottles prior to analysis. An infrared analytical procedure for determination of aromatic impurities in TBP Process solvents exhibits a sensitivity of 0.01% and a precision of the order of $\pm 0.05\%$. Since the current specification limit for aromatic components is set at 1% and since the present A.S.T.M. procedure for this determination is precise to about $\pm 1\%$, the new method offers appreciable benefit in addition to its rapidity. Recent A.S.T.M. literature indicates that a similar method is being considered by this organization.

Work has been resumed on the porous cup spectrographic excitation procedure that involves feeding the sample, as a solution, through a porous electrode into the excitation region. It was observed that very stable excitation is obtained. A consequence of this condition is that automatic scanning emission spectrometers may be employed to monitor the emission lines, thus permitting very rapid analyses.

Electrochemical Methods (RDA #TC-3)

In continuing studies, automatic coulometric titration procedures have exhibited exceptionally good precision with extremely small samples. The method, however, has been subject to biases resulting from a variety of causes. Previous modifications of the calomel reference electrode, the temperature control unit, and the preparation of reagents have improved the situation somewhat, but not completely. Intensive work has been carried out during the past month in an effort to eliminate the existing biases in order to employ the method on several solutions that are being analyzed at both Oak Ridge and Hanford for calibration of the test pile measurements of the U-235 content of uranium-aluminum "J" slugs. Two additional sources of error were found during the J slug work. The first apparently resulted from the presence of impurities in a newly used supply of lead employed for the reduction of uranium; the second resulted from the transfer of grease from a

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stopcock into the lead reductor column. Elimination of these errors reduced the blank several fold but did not eliminate it. Preliminary results for standard solutions indicate close agreement with the preliminary Oak Ridge results. A new unit has been incorporated in the coulometer to shut off a titration completely when the time interval of the end point drift becomes adequately large. A work order has been issued for construction of an additional automatic coulometer that will be placed in control laboratory use for trial purposes.

Conventional Chemical Methods (RDA #TC-4)

Investigation has been completed on an accurate method for the determination of uranium in aluminum-silicon dip bath. The techniques investigated and employed are oxidation of the sample by dry chlorine and separation of uranium chromatographically on a paper pulp column. A precision of $\pm 5\%$ is obtained on a 100 mg sample containing 0.3% uranium.

A work order has been placed with the Maintenance Division for the conversion of room 59 in the 3706 Building to a gas laboratory. Several investigations are awaiting completion of this new laboratory. These include particularly the establishment of a procedure for determination of the specific surface area of uranium oxide by gas absorption and the preparation of standard carbon dioxide-carbon monoxide samples for calibration of infrared absorption spectrometers to be used by the Pile Engineering Section in connection with in-pile graphite reaction studies.

The standard sample program has been maintained, and three new standards have been submitted to the laboratories of the Analytical Service Section. Results of completed standards are reported in the monthly report of that Section.

INVENTIONS

All Analytical Division personnel engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during May 1951 except as listed below. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

INVENTOR(S)

J. E. Meinhard and
M. Lewis

TITLE

Treatment of Pile Surfaces in
Contact with Process Water.

Signed: *F. W. Albaugh*

F. W. Albaugh, Division Head

FWA:lrc

TECHNICAL SERVICES DIVISION

MAY 1951

VISITORS & BUSINESS TRIPS

There was one off-site visitor during the month. E. W. Bailey from the Y-12 operations of Carbide & Carbon at Oak Ridge conferred with personnel of the Mathematics Section on May 28 and 29, concerning matters pertaining to SF Accountability.

Business trips of Technical Services Division personnel were as follows:

F. B. Quinlan spent May 8 at the Kaiser Aluminum Company, Spokane, inspecting aluminum duct work in service there.

G. J. Rogers and E. Hollister visited the Oak Ridge National Laboratory on May 14-15 inspecting "hot" laboratories and related equipment.

F. B. Quinlan spent May 14-15 at the Leland S. Rosener Co., San Francisco, consulting on the design of the Radiometallurgy Bldg.

G. J. Rogers, E. Hollister, J. F. Gifford and F. B. Quinlan attended a project-wide information meeting on the design of "hot" laboratories and related equipment which was held at the Argonne National Laboratory on May 16-18.

R. F. Cell spent May 21-24 in Cleveland, Ohio, attending the convention of the American Society for Quality Control.

ORGANIZATION AND PERSONNEL

Effective May 1, J. S. Stoakes was appointed Laboratory Services Supervisor for Bldg. 222-S, the new Redox Analytical and Plant Assistance Laboratory in the 200-W Area. W. M. Compton was transferred from the Analytical Division on May 18 to become Laboratory Services Supervisor for Bldg. 3706, vice J. S. Stoakes.

Personnel totals in the several subdivisions are summarized as follows:

	<u>April 30</u>	<u>May 31</u>
Engineering Section	78	78
Technical Information Section	74	79
Mathematics Section	21	22
Administrative	<u>3</u>	<u>3</u>
Division Totals	176	182

Technical Services Division

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ENGINEERING SERVICES

Mechanical Shops (Bldgs. 101 and 3706)

Work volume statistics for the Mechanical Shops are as follows:

	Customer Division or Program	April		May	
		No. of Jobs	Man- Hours	No. of Jobs	Man- Hours
<u>Work Done on Jobs Com- pleted</u>	P-10	22	869	28	514
	Pile Tech. (Incl. P-12) (a)	63	610	81	1,091
	Separations Tech.	17	164	30	272
	Analytical	34	326	36	448
	Technical Services	19	495	14	588
	Other Divisions	0	0	4	76
	Sub-Total	155	2,464	193	2,989
<u>Work Done on Jobs Not Completed</u>	P-10	6	362	7	356
	Pile Tech. (Incl. P-12)	12	83	12	194
	Separations Tech.	14	161	8	51
	Analytical	2	25	5	12
	Technical Services	4	454	4	36
	Other Divisions	2	56	1	8
	Sub-Total	40	1,141	37	657
Total Work Done			3,605		3,646

Work Backlog:

				Man-Hours To Complete	
<u>Jobs Started</u>	P-10	6	875	7	1,215
	Pile Tech. (Incl. P-12)	12	3,852	12	4,154
	Separations Tech.	14	125	8	15
	Analytical	2	18	5	77
	Technical Services	4	294	4	67
	Other Divisions	2(b)	68	1	60
	Sub-Total	40	5,232	37	5,588
<u>Jobs Not Yet Started</u>	P-10	5	96	2	18
	Pile Tech. (Incl. P-12)	10	213	6	89
	Separations Tech.	8	145	4	65
	Analytical	8	266	2	59
	Technical Services	6	605	5	661
	Other Divisions	0	0	0	0
	Sub-Total	37	1,325	19	892
Total Backlog			6,557(c)		6,480(d)

- (a) P-12 Designates the Exponential Pile Project.
- (b) Includes one order that is unestimated because work is of routine nature.
- (c) Does not include 1,235 man-hours transferred to Instrument nor 1,103 man-hours transferred to Maintenance during April.
- (d) Does not include 486 man-hours transferred to Instrument nor 1,107 man-hours transferred to Maintenance during May.

The Bldg. 101 Shops continued on a planned six-day work week in support of the various technical programs requiring this service. In addition, Instrument and Maintenance Divisions machining craftsmen worked the same overtime schedule, on jobs cross-ordered from Technical.

Several items of special equipment for the P-10 program were completed during the month. These included a spare set of mercury pots, an all-welded stainless steel furnace incorporating a special built-in stainless steel screen, a stainless steel stripper line, and a pinch-off tool for sealing gas within a glass tube. In addition, work was started on four metal transfer assemblies.

Fabrication work was completed on a high pressure air receiving tank for the Pile Engineering Section. This tank, which will operate at 500 p.s.i., was fabricated from 24" steel pipe and incorporates a gage glass. It is designed for use in connection with the pile charging machine.

Fabrication was completed on six graphite sample containers for the "in-pile" controlled atmosphere experiments of Pile Technology. Heliarc welding was employed, using carefully controlled conditions to maintain the temperature of the graphite below 350°C; considerable special machining was necessary. These containers will be tested on the helium mass spectrograph leak detector.

Work continued on the second air hoist for the multicurie cell, and in support of the Analytical Research and Chemical Research Sections for the 222-S Bldg.

Work on the "W" hole mock-up is nearing completion for Pile Technology. The step plugs have now been installed, and other accessory items for use in conjunction with this mock-up are ready for assembly.

A swivel-tilt wrist action tong was developed in the shops for the Equipment Design Group. Although this pair of tongs is not considered to be the final design, it will aid in the future development of tongs with similar action.

Shop work is continuing on the fabrication of rubber gauntlets. This process was developed by the Technical Shops and to date 50 gauntlets with bellows attached have been completed. A saving of approximately \$46 per gauntlet is being realized when fabrication costs are compared with outside procurement costs.

Work continued on the modified Master-Slave manipulator. Fabrication of a counter-current batch extractor for the Chemical Development Section was

started. Designs and mock-ups are being developed in the Bldg. 3706 Shop, and the actual fabrication is progressing in the Bldg. 101 Shops.

Design and fabrication of a multiple spark-proof stirrer for the Chemical Research Section to be used in a gloved box was completed. In this unit, four small air motors are encased in an enclosed unit mounting on top of a 400 ml. beaker which contains four centrifuge cones for holding the solutions.

A Do-All saw was received and installed in the Bldg. 3706 shop. A considerable amount of work has already been completed on this machine.

Glass Shop

Work volume statistics for the Glass Shop (exclusive of P-10 service) are as follows:

	<u>April</u>	<u>May</u>
<u>Jobs Completed</u>		
New	53	36
Repairs	15	0
Revisions	<u>9</u>	<u>10</u>
Total	77	46
<u>Job Backlog</u>	9	20

All personnel assigned to the Bldg. 3706 Shop were withdrawn from regular work for one week and devoted full time to the fabrication of 250 collection cylinders for the P-10 program. This unexpected departure from regular routine had a delaying effect on the regular work, and consequently a backlog of about 10 days of such work developed. No significant amount of repair work was requested during the month.

All glass workers (except the one which continued on assignment to H. I. at 108-F) worked a planned six-day schedule throughout the month in support of the P-10 program. Field assistance is continuing at Bldg. 108-B. Three glass blowers are assigned there on shift work, and three are lending assistance in development work on glass line installations on days. No cases of exposure above working limits were reported during the month.

The hoods, piping and bench are now installed in Room 41-A, Bldg. 3706, which is adjacent to the Glass Shop and will be used exclusively for working quartz. Only small quartz jobs can be completed immediately, however, pending procurement of a suitable lathe. Purchase of a large lathe for the Glass Shop is planned, and the present small lathe will be moved to this new shop to be used for quartz work.

Equipment Design

Work volume statistics for the Equipment Design Group, expressed in man-hours, are summarized as follows:

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	<u>Drafting</u>		<u>Drafting</u>	
	<u>Engineering</u>	<u>& Misc.</u>	<u>Engineering</u>	<u>& Misc.</u>
<u>Pile Technology</u>				
P-10	—	—	10	67
Physics Section	4	78	4	17
Engineering Section	121	471	36½	156
Metallurgy Section	128	173	128	225
<u>Separations Technology</u>				
Chemical Development Section	40	66	36	50
Chemical Research Section	118	48	77½	212
<u>Analytical Division</u>				
Analytical Service Section	630	361	473	601
Analytical Research Section	—	—	20	—
<u>Technical Services Division</u>				
Mathematics Section	—	20	—	—
<u>Laboratory Equipment Development (RDA #TC-5)</u>				
	353	326	233	213
Totals	1,394	1,543	1,018	1,541

High work load factors in connection with the completion of designs for the multicurie cells and other special equipment for Bldg. 222-S as well as for Pile Engineering programs, resulted in continuation of the planned six-day work schedule for a number of the engineers and all designers and draftsmen in this Group.

The following work was done for the various sections, as indicated:

Pile Engineering

Drawings made included a piping header, a junction box mock-up, a transfer chamber dolly, pressure tube removal scoping, and numerous graphs.

P-10

A vacuum valve was designed.

Pile Physics

A gold foil punch was drafted.

Metallurgy

Shop assistance was given on the "slice and dice box." Slug removal equipment was designed. A cold welding vise was drawn, and additional drawings were made of the sugar loaf cask. One draftsman was on direct assignment in Bldg. 3706 during May.

DECLASSIFIEDChemical Research

Drawings were made of crucibles, manometer mounts, funnel racks, laboratory-scale Redox process tanks and pulsers, graphs, hoods and benches for the Radiochemistry Bldg., etc. A column gloved box was in process of design. Information was being prepared for purchase of special apparatus for the Radiochemistry Bldg.

Chemical Development

Shop assistance was given in the assembly of the miniature mixer settler. Preliminary drawings were made of the counter-current batch extractor, and fabrication was started in the shops.

Analytical Service

Numerous small designs were made, such as a lucite adapter for magnetic stirrers, a magnetic stirrer revision, an inter-hood airlock and a gloved box operation booklet. A gloved box was completed for use in Bldg. 222-B. Preparations for operation of Bldg. 222-S included outfitting of a large number of gloved boxes, drafting of numerous tongs, syringes, etc., and design of an organic waste stripper.

Analytical Research

A uranium assay panel design was revised, and an instrument mount was designed.

Laboratory Equipment Development (RDA #TC-5)

Very little work was done under this authorization this month due to the pressure of other work, and also to the time spent at the Information Meeting at A.N.L. The slave-type manipulator is nearing completion in the Technical Shops, and development of the bellows-type sealed stirrer is nearing completion.

New Laboratory Planning

The three contact engineers engaged in this work continued on a planned six-day work week, as required to expedite the final design stages of the Works Laboratory Area program.

Redox Analytical and Plant Assistance Laboratory, Proj. C-187-E

On May 2 the Technical Divisions accepted this new laboratory (Bldg. 222-S) with certain exceptions. These included installation of hoods and door locks, as well as the ventilation balancing and the exhaust fans adjustment. The exhaust fan shafts are being increased in diameter, and the sleeve bearings have been replaced with roller bearings. Eighty-five of the hoods have been received and are being installed. All of the as-built drawings have been received from the Architect-Engineer and reviewed by responsible General Electric personnel.

A.E.C. Directive No. HW-124, Modification No. 4, dated May 23, was received authorizing the Phase II work in this new building which is described in project proposal C-187-E-R-4 (document HW-20814). While this utilization of originally idle space in Bldg. 222-S meets a Separations Technology Division need, the project will be administered by the Technical Services Division as a part of C-187-E.

Mechanical Development Bldg., Proj. C-406

Erection of the structural steel framing for the Mechanical Development Bldg. was started by the Dix Steel Co. on May 28. A preliminary Dix estimate for the Phase II construction of this building is considerably more than the project proposal provision for this work. However, there appear to be several differences in the bases used for estimating. These are being resolved so that negotiations can continue with Dix on the extension of their lump sum subcontract to include this Phase II work.

Radiochemistry Bldg., Proj. C-381

Lump-sum construction bids for the Radiochemistry Bldg. were opened on May 29. The Sound Construction and Engineering Co. (now building the H. I. Control & Development Laboratory) was apparent low bidder with a submittal of \$3,744,213. Only two other contractors submitted bids (L. H. Hoffman and A. R. Nieman); both were within \$130,000 of the Sound bid. The fair cost estimate prepared by the E & C Divisions was \$3,788,898.

Plot Plan & Utilities, Proj. C-394

A Part III project proposal covering the construction phase of the Plot Plan & Utilities project (C-394) was approved by the A & B Committee and forwarded to the A.E.C. The \$1,758,500 indicated total cost of this project, when coupled with the separate but related projects covering electric power supply, steam plant expansion and sewage disposal facilities, indicates an overall total cost for Works Laboratory utilities and outside services which is about \$750,000 more than originally expected. However, the total scope of this work is essentially unchanged, and the bulk of the estimated cost increase is attributed to the very preliminary information on which the original was based, and the consequent under-estimation in several respects.

Final prints and specifications for the Badge House required at the south gate of the Works Laboratory Area were received from E & C for approval, and the comments of all interested Divisions have been returned to E & C.

Facilities for the disposal of very hot wastes (dry and liquid) originally scoped under this project are now planned for installation in the Radiochemistry Bldg. where most of this material will originate. Minimum-cost equipment for concreting these wastes into metal drums now is proposed.

Radiometallurgy Bldg., Proj. C-385

The Part II proposal for project C-385, covering construction of the

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Radiometallurgy Bldg., was approved by the A & B Committee and forwarded to the A.E.C. The final drawings for this facility were received from the Leland S. Rosener Co. on May 31.

Pile Technology Bldg., Proj. C-414

A.E.C. directive No. HW-212, Modification 2, was received authorizing construction of the originally unexcavated portion of the basement of the Pile Technology Bldg. This additional space is required by the Pile Technology Division as a permanent facility for exponential pile experiments (P-12) which will be conducted in temporary quarters until this building is available. Final prints of the Pile Technology Bldg. were received from Chas. T. Main on May 11, and have been reviewed and comments referred to the architect-engineer through the E & C Divisions.

A status report on the special G. E.-purchased equipment for this building shows 100% placement of orders as of May 15, including a supply of portable air samplers for H. I. use. Three of the items ordered earlier have already been received.

Library and Files Bldg., Proj. C-421

The final prints and specifications for the Library and Files Bldg. have been received, reviewed and comments returned to E & C. The contract with Chas. T. Main, the architect-engineer, is completed and the bid assemblies will be prepared by E & C as soon as possible. In view of the uncertainty regarding total program costs (see below), bid invitation for this facility may be delayed until more complete information is available on the actual construction bid cost of other higher priority buildings in the Works Laboratory program.

Laboratory Supply Bldg.

A project proposal was prepared covering the conversion of Bldg. 3702, 300 Area, for use as the Laboratory Supply Bldg. in the Works Laboratory Area. This work, which is estimated to cost \$29,000, cannot be started until the present occupants of Bldg. 3702 are relocated into other facilities (late 1952).

Cost of Total Works Laboratory Program

In view of the materially higher estimates recently made for the Radiometallurgy Bldg. and the Plot Plan & Utilities projects, the total cost of the Works Laboratory Program is now expected to exceed the \$14,563,000 budgeted. However, indications are that this cost will stay well within the 15% overrun allowable under the regulations as listed in the Construction Rider to the Appropriations Act of 1951.

Laboratory Services

Building 3706

Normal Building 3706 services continued routinely. Material control,

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stockroom and work order activity is summarized as follows:

	<u>April</u>	<u>May</u>
<u>Purchase Requisitions</u>		
Total number processed	63	59
Number requiring special expediting	14	13
Number requiring emergency handling	2	3
<u>Stores Stock Requests Processed</u>	0	0
<u>Store Orders</u>		
Total number processed	887	1,123
Number requiring emergency pick-ups and deliveries	9	13
<u>Work Orders Processed</u>	59	63

A work order was issued for the remodeling of offices 94 and 94-A for the Analytical Division. This work was nearing completion at month end.

A survey of locker utilization in Bldg. 3707-C was completed. It was determined that a number of the lockers are not being used, and that considerable space can therefore be made available for other assignment by removal of the unused lockers. Plans for converting this idle, locker-room space to offices and other uses were submitted to the Maintenance Division for a cost estimate.

Building 222-S

Technical service responsibility in the new Radox Analytical and Plant Assistance Laboratory (Bldg. 222-S, 200-West Area) was assigned to the Laboratory Services Group effective May 2, 1951, at which time the building was accepted by the Technical Divisions with incomplete phases excepted. E & C Divisions progress on the completion of these "exceptions" by construction forces will be followed closely.

Work has been completed on a work order issued this month by the Technical Divisions to the Minor Construction Division for replacement (with needle valves) of 115 one-quarter inch "plug-cock" valves on the fume hood water servicelines which were installed according to specifications, but which in testing were recognized to be unsatisfactory. It was initially intended that the same type valves on the junior cave units would also be changed, but this work was cancelled because of (1) an insufficient number of suitable replacement units, (2) the convenient access to these valves as compared to those of the hood units, and (3) the questionable need for water service to the junior caves.

Partial requirements of office furniture ordered by the various operating groups have been received for use by the occupying personnel. Installation of six telephones was completed at month end and will provide minimum service until complete listings can be determined to permit the most satisfactory assignment of the limited number of lines to the building. Laboratory instruments that have been in storage are being transferred to the building to permit installation by Instrument Division personnel.

MATHEMATICAL SERVICES

Statistical Services

300 Area

The statistical investigation to develop a means of detecting weighing bias of shipper-receiver weight difference of uranium rods, and to determine the maximum allowable weight difference for an individual rod and for a shipment, was completed with the report of conclusions and recommendations to the Accountability Section in Document HW-20985.

At the request of the 300 Area Plant Assistance Group, a study was made of Process Control Reports covering the period January 1 to April 24, 1951, to determine the deviations of can preheat, can submerge, cap preheat, and bath temperature from process specifications. Further study was undertaken to determine the relationship between deviations from process specifications and the percentage of rejected slugs.

A study made at the request of the 300 Area Plant Assistance Group failed to show a significant relationship between the 305 Test Pile reactivity of canned uranium slugs (from shipment B-1221) and the density, carbon, nitrogen, and hydrogen analyses of the corresponding billet eggs.

A table was prepared for field use to indicate when a significant change in frequency of canned uranium slug failures in autoclave testing has taken place (for better or worse) from the failure frequency observed during the period from September 1949 through April 1951.

A statistical investigation, made at the request of the P Division, indicates that the recent increase in solid scrap during machining of uranium rods to slugs in Building 313 is due to more stringent inspection of machined slugs.

Statistical controls were reported on P Division operational results from Machining, Pickling, Canning and Autoclaving, Test Pile, and Melt Plant.

100 Areas

Additional studies are being made on routinely obtained Panellit pressure readings for the H-10 loading to determine whether further refinements are possible in this technique for the detection of slugs swelling in the process of rupture.

Determination of a pile multiplication constant for the case where a masonite shield surrounds the pile was obtained from a transcendental fourth order determinant for the Theoretical Physics Group. Additional computations on the problem of pile shielding are in progress.

Extensive computations were performed for the Theoretical Physics Group relative to the proposed Test Pile revision.

DECLASSIFIED200 Areas

The Chemical Development Section requested a statistical study of Building 321 weekly material balances. Data are being gathered for analysis.

The study of variations in ratios of chemical to radioassay of AT solutions during May continued to show the previously reported significant correlation of this ratio between B and T plant runs. The following progress was made toward determining the cause of these covariations:

- (1) The ratio of expected chemical assay (predicted statistically from specific gravity) to actual radioassay showed, for B Plant runs, essentially the same pattern of variation as the actual chemical to radioassay ratios. This absolves the chemical assay as a major cause of this variation.
- (2) The same effect did not show for T Plant runs. A subsequent analysis of covariance between actual chemical assay and specific gravity, indicates the expected chemical assay (predicted from specific gravity) was not as reliable a substitute for actual chemical assay in T Plant runs.

Thus, for B Plant runs at least, the actual chemical assay was shown to have no appreciable effect on the variations in the chemical to radioassay ratio. Since variations in the ratio correlate between B and T Plant runs, and do not correlate with total counts per ton, this implies that errors in radioassay have been responsible for a large share of observed discrepancies in the chemical to radioassay ratio. Further statistical studies are continuing on this problem.

The study was completed for the Analytical Division to determine the efficacy of correcting the cupferron method spectrographic results by the use of cobalt as an internal standard.

Due to a shortage of data, the program to initiate statistical control of P-10 mass spectrometer analyses was retarded. Data are being accumulated as rapidly as possible for the initial report of precisions.

A monthly report of reruns in 200 Area Control Laboratories was issued. Rangelimits for AT radioassays counted on ASP instruments were completed and forwarded to the Isolation Building Control Laboratory.

The regular semi-monthly reports of certain Kr-85 computations for the A.E.C. were completed and forwarded.

General

For the Health Instrument Divisions: (1) A study of the activity of water in pile effluent water retention basins was undertaken for the purpose of relating activity to water treatment and characteristics; (2) a study was made of the effect of P^{32} in plant nutriment on plant weight; (3) an investigation is being made of the relationship between the physical characteristics of a series of compounds and the number of

conjugate double bonds and side methyl groups; and (4) a recapitulation is being prepared of the survey of blood chemistry data on sheep.

Computing Services

At the request of the Pile Technology Division, a large scale calculating program was undertaken in support of a study of the transient behavior of a pile during start-up. Tube temperature rise data recorded at frequent intervals on cards by the IBM field punch at the DR pile were corrected to 240 zone, squared, and the sums of temperatures and squares over the pile obtained. Frequency distributions of temperature rise were prepared. The effective number of central tubes were calculated for use in evaluating flattening effectiveness. Temperature maps were printed for several of the temperature runs. A new temperature map printing procedure using red numerals to accentuate unusual conditions was instigated.

Support for project P-12 included the computing of: (1) 500 valuations of the probability integral; (2) twenty-one modified least square fits to the exponential series; (3) thirty-six fits to the cosine series; and (4) diffusion lengths for 30 cases.

Programming has been completed for the thermal utilization equation for the theoretical physicists. This is a complex equation involving modified Bessel functions with imaginary arguments.

Study of Pannellit pressure readings on the H-10 loading was continued routinely. A special study was made of 300 pile process tubes utilizing 8 sets of Panellit data. A study of H-10 discharge schedules was made at the request of the Pile Technology Division in the IBM Computing Laboratory; this had involved a total of 750,000 individual calculations.

The graphite temperature calculation programming for D, DR, and F piles has been revised to meet new requirements of the pile engineers. Procedures and programming for similar calculations for B and H piles have been added.

Preliminary programming for the processing of meteorological data has been prepared, and key punching was completed on the data of January through April 1951.

Routine calculations have been made on uranium metal quality, aquatic biology, and sheep thyroid data.

TECHNICAL INFORMATION SERVICES

Plant Library

Library work volume and book statistics were as follows:

	<u>April</u>	<u>May</u>
Number of books on order received	761	306
Number of books fully cataloged	400	297
Number of bound periodicals processed but not fully cataloged	141	265

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	<u>April</u>	<u>May</u>
Pamphlets added to the pamphlet file	1,928	289
Miscellaneous material received, processed and routed (Including maps, photostats, patents, etc.)	99	57
Books and periodicals circulated	3,901	3,933
Unclassified reports processed	226	173
Unclassified reports circulated	288	288
Reference services rendered	1,500	2,018

	<u>Main Library</u>	<u>W-10 Branch</u>	<u>108-F Branch</u>	<u>Total</u>
Number of books	7,388	3,124	349	10,861
Number of bound periodicals	4,532	0	593	5,125

Activities in the Library proceeded routinely, although the statistics continued to reflect an increase in direct customer services. The number of books and periodicals circulated reached another all-time high. The number of technical reference questions asked, which include a wide variety from all Hanford Divisions, was likewise the highest noted to date. A sampling of the questions is given below:

- The effect of impurities upon the properties of iron-constantan alloy.
- The effect of 5% to 20% H_2SO_4 upon No. 316 stainless steel.
- Special methods for breaking up reinforced concrete.
- A description of Hunt's process for the curing of concrete.
- Designs for low-cost, one floor apartments or motel-type structures for year-round occupancy.
- Thermal conductivity of gas mixtures.
- Toxicity of nickel carbonyl.
- Thermodynamic properties of N_2 and its gaseous compounds.
- Specifications for a satisfactory pile coolant.
- The reaction kinetics of Zr and CO_2 .
- Alloys resistant to attack by mercury.
- Cold welding of Al tubing by pressure.
- Phase diagrams for the U-Fe, U-Li, and U-Cr systems.
- The decomposition temperature and vapor pressure of Al-Li- H_2 .
- Costs of spraying (metalizing) metals.
- Some recent articles on bacteriological warfare.
- Process of welding with nascent hydrogen.

A bibliography entitled "Management of Industrial Research" was completed and distributed to supervision. The response to it has been excellent, as it was to the bibliography "Industrial Management and Problems of Supervision" which was distributed last month. Other bibliographies on subjects of Hanford interest are planned.

The check list of "controlled circulation" magazines was distributed to all exempt personnel, as requested by the A.E.C. Technical Information Service in Washington, and the completed returns were forwarded. The response clearly indicated that many technically trained people at Hanford are

anxious to receive personal subscriptions to the periodicals listed, and that unexploited opportunity exists for substantially increasing the already high circulation of technical periodicals from the Plant Library. A check list of periodicals presently received and routed by the Library is being prepared, and supervision will be circularized as to their needs. In this connection, it is worth noting that the number of technical periodicals subscribed to by the Library continues to grow and presently exceeds 600 titles of which approximately 25 have been added since January 1, 1951.

Two periodical runs were received during the month which will add appreciably to the Library's periodical reference files. One was a run of the Journal of the Chemical Society, London, for the years 1900 to 1930, preceding our previous holdings of this valuable periodical. The other was an almost complete run of the Journal of the Society of Glass Technology. A need for some basic reference material in glass technology has been evident for some time, and this Journal is one of the two basic reference periodicals in this field.

Purchase of a small hand operated saddle type stapler has greatly simplified the preparation of pamphlets for circulation.

A revision of H. W. Instructions Letter No. 31 was issued. This sets up procedures which should resolve a number of specific problems previously obstructing the smooth handling and control of reference material by the Plant Library. It provides for assigned copies of reference books and periodicals where special divisional needs justify this. Such books will be purchased through the Plant Library on the cost code of the requesting Division. A provision is also made for all terminees to clear through the Library and make restitution for any borrowed books which have not been returned.

Classified Files

Work volume statistics for the Classified Files were as follows:

	<u>April</u>	<u>May</u>
Documents routed	18,066	15,066
Documents issued	6,501	6,564
Reference services rendered	4,375	4,325
Registered packages prepared for offsite	340	370
Inter-area mail sent via transmittal	31,029	34,523
Holdings of Classified documents whose files were inventoried:		
(a) Because of normal perpetual inventory procedure	4	12
(b) Because of transfer of work assignment	19	7
(c) Because of termination	8	3
Inventory reductions:		
Copies of documents destroyed	1,172	2,196
Copies of documents downgraded	0	0
Copies of documents declassified	60	30

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Classified documents located which were
unaccounted for in previous inventory

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Work on the inventory of classified documents in the Central Files is proceeding satisfactorily, although somewhat handicapped by staff shortages due to illness. The inventory of offsite and Hanford originated Research and Development Reports, which was given a high priority, was completed on May 11. This included the Schenectady Office of the Nucleonics Department, which inventoried its Research and Development Reports at Hanford's request and reported none missing. The required report to the United States Atomic Energy Commission was in preparation at month end. The balance of the classified document inventory is going forward as scheduled, and is approximately 60% complete in the 300 Area Classified Files, 50% complete in the 700 Area Classified Files, and 99% complete in the E & C Classified Files.

Tentative working procedures and forms were developed for consideration by the Hanford Works (G. E.) Non-Technical Document Review Board. After discussion at the meeting of the Board on May 29, minor changes were agreed upon and by month end the procedures were in usable form. In this connection, a clerical position as "Records Analyst" was developed and evaluated by the Wage Rates Division. This assignment will include responsibility for reduction of classified document inventory through selection of documents suitable for processing by the local Review Board, selection of surplus copies of classified documents for destruction, and retirement of classified and unclassified material to the Records Service Center.

In connection with the problem of reduction of classified document inventory, a new service is being supplied by the A.E.C. through its classified abstract journal "Abstracts of Classified Reports." This journal is now listing two categories of reports which have been declassified within the Commission's activities. One category lists those reports which may be immediately declassified by the holding site on the authorization appearing in the ACR. The other category lists those which have been declassified, but for which specific written authorization for declassification must be obtained from the originating installation. The necessary procedures, form letters, etc., to exploit this service have been developed and put into use.

The retirement to the Records Service Center of the S Division run books mentioned in the March report was begun on May 7, and is proceeding on schedule. This assignment will occupy two clericals for approximately 6 weeks, and will involve the retirement of approximately 200 standard storage cartons of classified material from Buildings 271-T, 271-B, 231 and 234-5. An accumulation since August 1946 is represented.

A special assignment which is necessitating overtime work concerns the consolidation of the 300 and 700 Area "pink copy" files, and the division of this reference material into classified and unclassified categories. The consolidation will considerably expedite the many services for which the pink file is used, and separation of the material will simplify the problem

of records retirement since this operation is necessary before this can be carried out.

A request was received from the A.E.C. Hanford Operations Office that additional copies of the Hanford Technical Manual be made available for off-site distribution to meet a backlog of requests. There are in addition a considerable number of on-site requests for further copies. Accordingly, it was agreed that about 75 copies should be prepared and issued (as Series C), and at month end the job of reproducing these additional copies of the Manual was underway.

A microcard reader and some sample microcards were received from the Technical Information Service of the A.E.C. at Oak Ridge as a part of a Commission-wide study to determine the value of microcards as replacements for obsolete technical reports, etc., with resultant savings in files space. Technical personnel will be asked to use the reader for a few months and record their opinions on this technique. A similar study on the use of microfilm for this same purpose is also planned.

A new classified journal entitled "Reactor Science and Technology" was received from the Technical Information Service at Oak Ridge. This publication, which replaces and expands the former "Journal of Metallurgy and Ceramics" was well received. Hanford's original quota of 18 copies proved quite insufficient for local needs, and present plans are to raise this to 50 copies per issue.

The work on the Hanford Works Series file first reported in the Monthly Report for February is proceeding satisfactorily. The series index for the Technical Divisions is complete, and that for the Health Instrument Divisions substantially so. The re-filing of the Health Instrument Divisions reports from the subject to the numerical file is proceeding as the index advances and will be completed shortly. This program has been of unexpected aid in the reduction of document inventory, since the drawing together of all subject-filed copies of a document (which may have been filed in a number of slots to provide cross-references unavailable without an index) has disclosed surplus copies which can be destroyed.

A standard procedure was developed for the handling of Hanford originated classified documents submitted through the Graduate School of Nuclear Engineering to various Pacific Northwest Universities for advanced degrees. The procedure will require that such documents will first be issued as Hanford Works Formal Research and Development Reports in accordance with present requirements. The internal distribution list will include copies for submission to the designated University for thesis evaluation and return to the Hanford Classified Files. If and when the report is declassified, it will then be the author's responsibility to prepare the necessary library copies for the University in accordance with their specific thesis requirements.

Arrangements are being completed with the A.E.C. Technical Information Service at Oak Ridge to transmit to them for permanent storage the masters for all Hanford originated Research and Development reports. This will reduce document accountability (for the classified masters) and save files space. It will also put the responsibility for future re-issuances of these documents

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with the T.I.S. and assist them in carrying out this responsibility. The T.I.S. has also requested that these masters be accompanied by the original drawings and negatives, but compliance with this suggestion is awaiting further consideration of what this would involve.

Central Reporting Service

Work volume statistics for this Unit were as follows:

	<u>April</u>	<u>May</u>
Ditto masters run	612	657
Mimeograph stencils run	648	477
Ditto copies prepared	26,856	24,425
Mimeograph copies prepared	55,264	88,110
Formal Research and Development Reports issued	11	12
Formal Reports in Process	-	11
Reports abstracted	93	0
Volume of unclassified mail handled by the 300 Area Mail Room	37,085	39,803

Abstracting and indexing of current technical material is proceeding routinely. The abstracting unit is currently at work on five separate bibliographies as follows: "Slug Failures in the Hanford Production Reactors," "Corrosion of Aluminum," "Water Requirements for the Cooling System of the Hanford Reactors," "Summary of 105-Production Tests" and "Zirconium and Its Alloys." As completed, these bibliographies will be issued as formal Research and Development Reports or internal memoranda.

A meeting was held with local A.E.C. and P Division representatives regarding the revision of HW-18223, "Hanford Codes and Jargon." The most practical approach to the code problem appeared to be to re-issue the subject document in two parts, the first concerned with currently active security codes, and the second with codes and jargon of historical significance. A re-write of the document on these lines was underway at the month end.

INVENTIONS

All Technical Services Division personnel engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during May 1951. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

Signed

F. W. Hauff
F. W. Hauff, Division Head

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MEDICAL DIVISIONS

MAY 1951

General

Personnel Changes

The roll decreased from 288 to 285.

Visits

Dr. Norwood attended the A.E.C. conference of Bio-Medical Directors in Chicago, May 28 and 29.

Miss Albright, nursing supervisor, attended the annual meeting of the Association of Western Hospitals held in Los Angeles, April 30 - May 3.

Our sanitarian attended a conference in Pullman, Washington on "Sanitary Operation of Swimming Pools."

Two members of the Appeal Board for the Washington State Department of Labor-Industrial Insurance, were visitors.

Two hearing consultants from the State Department of Health visited the public health section. The chief of division of public health engineering for the state and the chairman of the Streams Pollution Committee visited concerning some minor sanitation problems which were solved.

An assistant professor, "University of Washington" School of Public Health Nursing and the head of the Health Education section, State Department of Health made a visit in regard to prevention of dental caries by fluoridation of public water supplies.

Industrial

Employee physical examinations decreased from 2797 to 2517 due to a decline in sub-contractor examinations.

Dispensary treatments increased by 539 to 10,582. Six major and 13 sub-major injuries were treated as compared with 2 major and 10 sub-majors for April.

One major and 3 sub-major injuries were sustained by C. E. employees.

"Mosquito control" was the monthly health topic.

Sickness absenteeism (weekly employees) for May decreased by .28% to 1.60% while that for monthly employees for April decreased .71% to 1.60%.

A comprehensive study of numerous new cases of radium poisoning in the Chicago area adds much to our knowledge of this subject. Since allowable plutonium exposure is based to a considerable degree on a comparison of relative toxicities of plutonium and radium, this new data is of assistance in evaluating the plutonium hazard. The toxicity status of plutonium appears to be little changed by the radium study.

Kadlec Hospital

The average daily census changed slightly from 93.7 to 92.2 (81.1 adults, 11.1 newborn). The census was 86.3 a year ago.

The occupancy rate for mixed services (all services except obstetrics) was 84.8%. Nursing house per patient day were 3.64 for the mixed services and 5.27 for obstetrics.

By a bare majority of 3, the 71 employees of Kadlec hospital represented by Building Service Employees International Union, Local #201 A.F.L., authorized the union to negotiate for a "Union Shop".

A comprehensive survey of 13 N.W. hospitals, of comparable size to Kadlec indicated an average of 2.084 employees per adult patient day as compared to 1.881 for Kadlec. Costs per patient day at Kadlec were higher by 3.7% due to higher rates of pay and continuity of service expense.

Revenue of the average Pacific Northwest hospital was found to be \$1.54 more per adult patient day than that of Kadlec and this difference has been greatly increased by rate increases of about 25% subsequent to January 1, 1951 which was the end of the period covered by the present study.

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MEDICAL DIVISIONS

MAY 1951

General (Continued)

Public Health

Communicable diseases reported were 735 as compared to 288 for April. The increase was largely due to regular measles, which appeared to be on the wane at the end of the month. No serious complications were reported.

Home nursing visits increased by 60% due to this epidemic.

A warning by the Medical Service Corps Officer of Camp Hanford that certain restaurants of North Richland would be declared "out of bounds" if sanitary conditions were not corrected has resulted in marked improvement.

Costs (April)

Medical Divisions operating costs, before assessments to other divisions, were as follows:

	<u>March</u>	<u>April</u>	<u>April Budget</u>
Industrial Medicine (Oper. Div.)	\$ 38,243	\$ 39,246	\$ 40,500
Public Health	12,303	10,974	12,207
Kadlec Hospital (net)	19,466	22,355	26,833
Hospital assessments to other divisions and workmen's compensation	2,367	4,855	3,167
Subtotal - Operations - Medical Divisions	72,379	77,430	82,707
Construction Medical (Industrial & Public Health)	6,610	9,923	13,364
Total Operations and Construction	\$ 78,989	\$ 87,353	\$ 96,071

The net costs of operating the Medical Divisions, before assessments to other divisions was \$87,353, an increase of \$8,364 and \$8,718 below the budget figure.

Gross costs decreased by \$4,578 largely due to the shorter month. However revenue decreased by \$12,942, of which \$8,953 was due to seasonal decline in sickness and \$3,989 was due to reduced service to Waale-Complin Co. for employment examinations.

MEDICAL DIVISIONS

MAY 1951

Industrial Medical Division

General

Physical examinations decreased from 2797 in April to 2517. This was due chiefly to fewer sub-contractor examinations. General Electric employees sustained 1 major injury and 3 sub-major injuries. Sub-contractor employees sustained 5 major injuries and 10 sub-major injuries.

Complete construction industrial medical service continued to operate on a 6 day basis.

A total of 10,582 treatments were rendered during the month to both operating and construction employees in 14 First Aid stations. This was an increase over the previous month of 539 due to construction cases. Plans were made to provide an additional First Aid station in the 200-E areas. It will be staffed on a part time basis until such time as full time service is warranted.

The chemical hazards committee met on May 16th. Redox and TBP plant chemicals were discussed in regard to their toxic properties. New solvents and weed killer problems were also discussed and plans made for further study of these materials.

The Health Activities committee met on May 17th. The health topic on "Mosquitoes" was presented. Material on this subject was prepared for distribution to all employees. Division representatives were appointed during the month for service on this committee for a one year period.

Absenteeism (weekly employees) due to all causes decreased by .16% to 2.51%, while absenteeism due to sickness decreased by .28% to 1.60%. Absenteeism (monthly employees) due to all causes decreased by .66% to 2.08%, while absenteeism due to sickness decreased by .71% to 1.60%.

The net cost of operations increased \$1008 as compared with the previous month, Increase chiefly due to an increase in assessed costs from other divisions including grounds and building maintenance costs and assessments from H. I. Development Division.

Industrial Medical Costs:

	Increase or (Decrease) over Previous Month	April	March	April Budget
Administration	\$ (299)	\$ 8,007	\$ 8,246	\$ 8,937
Household & Property	32	1,595	1,563	1,300
Professional Services	(266)	25,085	25,351	26,250
Total Direct Expense	(473)	34,687	35,160	36,487
Accrual for Public Liability Claims	0	150	150	0
Transferred from Other Divisions	1,245	5,313	4,068	5,070
Less: Revenue	(231)	904	1,135	1,057
Workmen's Compensation	(5)	677	682	700
Net Cost of Operations	\$ 1,008	\$38,569	\$37,561	\$39,800

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MEDICAL DIVISIONS

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Industrial Medical Division (Continued)

	April	May	Year to Date
<u>Physical Examinations</u>			
<u>Operations</u>			
Pre-employment	283	308	1352
Rehire	47	54	287
Annual	321	330	1789
Interval	262	311	1370
Visitor	0	0	2
A. E. C.	8	54	113
Re-examination and rechecks	181	128	751
Termination	174	137	750
Sub-total	1276	1322	6414
<u>Sub-contractors</u>			
Pre-employment	368	206	1647
Rehire	324	232	1626
Recheck	102	94	464
Termination & Transfer	727	663	3063
Sub-total	1521	1195	6800
Total Physical Examinations	2797	2517	13214
<u>Laboratory Examinations</u>			
<u>Clinical Laboratory</u>			
Government	38	210	457
Pre-employment, termination, transfer	6575	5072	31137
Annual	1678	1702	9278
Recheck (Area)	1349	1631	7127
First Aid	9	24	82
Clinic	2132	924	12099
Hospital	4211	4290	22622
Public Health	45	23	143
Total	16037	13876	82945
<u>X-Ray</u>			
Government	8	36	72
Pre-employment, termination, transfer	1037	796	5063
Annual	330	336	1767
First Aid	216	193	903
Clinic	311	297	1350
Hospital	272	368	1446
Public Health	2	2	36
Total	2176	2028	10637
<u>Electrocardiographs</u>			
Industrial	18	15	126
Clinic	7	4	23
Hospital	35	35	164
Total	60	54	313
<u>Allergy</u>			
Skin Tests	3	1	15

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MEDICAL DIVISIONS

MAY 1951

Industrial Medical Division (Continued)

	<u>April</u>	<u>May</u>	<u>Year to Date</u>
<u>First Aid Treatments</u>			
<u>Operations</u>			
New Occupational Cases	377	349	1562
Occupational Case Retreatments	1196	1278	5138
Non-occupational Treatments	2732	2634	14339
Sub-total	4305	4261	21039
<u>Construction</u>			
New Occupational Cases	1068	1197	4333
Occupational Case Retreatments	3552	3945	15076
Non-occupational Treatments	1028	1063	5149
Sub-total	5648	6205	24558
<u>Facility Operators</u>	30	56	174
Total First Aid Treatments	9983	10522	45771
<u>Major Injuries</u>			
General Electric	1	1	3
Sub-contractors	1	5	20
Total	2	6	23
<u>Sub-major Injuries</u>			
General Electric	2	3	10
Sub-contractors	8	10	48
Total	10	13	58
<u>Absenteeism Investigation</u>			
Total No. calls requested	6	9	62
Total No. calls made	6	9	62
No. absent due to illness in family.....	0	0	0
No. not at home when call was made	1	0	12

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LANFORD WORKS
ABSENTEEISM REPORT

May 1951

ABSENTEEISM ALL CAUSES BY DIVISION

WEEKLY

	WEEKLY	MONTHLY
Manufacturing	2.29	1.87
Plant Security & Services	2.29	1.52
Employee & Community Relations	2.51	1.80
Technical, Engineering & Construction	2.58	1.94
Health Instrument	2.79	1.94
General Accounting	2.87	2.12
Purchasing & Stores	2.99	2.16
Medical	3.26	2.50
Municipal, Real Estate & General Service	3.32	2.82
		3.64

	ALL CAUSES				SICKNESS ONLY				AVERAGE DAYS LOST BY EACH EMPLOYEE			
	Male	Female	Total	% (Dec)	Male	Female	Total	% (Dec)	Male	Female	Total	
WEEKLY ROLL 4-30 to 6-4-51	2710	1226	3936	2.51% (.16%)	1759	758	2517	1.60% (.28%)	.38	.45	.40	
MONTHLY ROLL April 1951	780	37	817	2.08% (.66%)	595	32	627	1.60% (.71%)	.31	.57	.32	

Comparison of present year to date total absenteeism figure with the 1950 figure shows an increase of .65% (Weekly)
Combined total weekly and monthly 2.90%.

MEDICAL DIVISIONS

MAY 1951

Hospital Division

General

The average daily adult hospital census decreased from 83.0 to 81.1, as compared to 76.6 a year ago. This represents an occupancy percentage of 78.7% broken down as follows: Mixed Service (Medical, Surgical, Pediatrics) - 84.8%; Obstetrical Service - 53.5%. The minimum and maximum daily census during the month ranged as follows:

	<u>Minimum</u>	<u>Maximum</u>
Mixed Service	61	84
Obstetrical Service	6	18
Total Adult.	63	94

The average daily newborn census increased from 10.7 to 11.1, as compared to 9.7 a year ago.

Nursing hours per patient per day:

Medical, Surgical, Pediatrics	3.64
Obstetrical	5.27

The ratio of hospital employees to patients (excluding newborn) for the month of April was 1.88. When newborn are included, the ratio is 1.67.

The net expense of the Richland community medical program for April 1951 was \$22,355, as compared to \$19,466 for March. Summary is as follows:

Kadlec Hospital net expense \$22,355

This is an increase of approximately \$2900 over March.

Total expenses decreased about \$3600 due to shorter working month and less salary and continuity of service costs. However, revenues, workmen's compensation costs and assessments to other divisions were also reduced approximately \$6500 and resulted in the overall increase of about \$2900 in expenses.

The construction and remodeling program at Kadlec Hospital is making good progress. The exterior portion of the new wings are almost completed. Interior remodeling in the existing portion of the hospital has also begun. Work is currently in progress on enlarging the linen room, remodeling the nurses' and nurse aides' lounge, improving ventilation in the dietary department and installing new showers in the doctors' dressing room.

In order to solve our problem of excessive heat, particularly in patients' rooms when radiators are turned off, all riser pipes leading to the radiators in the patient areas were insulated. The valves and traps on all radiators were also checked and necessary repairs or replacements were made.

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MEDICAL DIVISIONS

MAY 1951

Hospital Division (Continued)

<u>Kadlec Hospital</u>	<u>April</u>	<u>May</u>	<u>Year to date</u>
Average Daily Adult Census	83.0	81.1	87.8
Medical	27.7	27.3	27.3
Surgical	32.2	29.3	32.3
Pediatric	11.9	13.8	16.4
Obstetrical	11.2	10.7	11.8
Average Daily Newborn Census	10.7	11.1	11.8
Maximum Daily Census:			
Mixed Services	87	84	
Obstetrical Service	16	18	
Total Adult Census	98	94	
Minimum Daily Census:			
Mixed Services	57	61	
Obstetrical Service	8	6	
Total Adult Census	65	63	
Admissions: Adults	499	521	2696
Discharges: Adults	508	513	2685
Newborn	67	63	345
Patient Days: Adult	2490	2515	13268
Newborn	322	343	1782
Total	2812	2858	15050
Average Length of Stay: Adults	4.9	4.9	4.9
Newborn	4.8	5.4	5.2
Occupancy Percentage: Adults	81.3	78.7	85.2
Newborn	76.4	79.3	84.2
(Occupancy Percentage based on 103 adult beds and 14 bassinets.)			
Avg. Nursing Hours per Patient Day:			
Medical, Surgical, Pediatrics	3.25	3.64	
Obstetrics	4.40	5.27	
Avg. No. Employees per Patient (excluding newborn)	1.88		
Operations: Major	75	81	420
Minor	84	89	441
E.E.N.T.	82	67	392
Dental	5	6	20
Births: Live	61	73	344
Still	0	0	1
Deaths	4	3	22
Hospital Net Death Rate17%	.17%	.26%
Net Autopsy Rate	25.0	33.3	31.8
Discharged against advice	0	0	4
One-day Cases	115	108	525
Admission Sources:			
Richland	75.4	73.7	75.2
North Richland	11.8	11.5	11.6
Other	12.8	14.8	13.2

MEDICAL DIVISIONS

MAY 1951

<u>Kadlec Hospital (Continued)</u>	<u>April</u>	<u>May</u>	<u>Year to date</u>
<u>Admissions by Employment:</u>			
General Electric	70.8	69.3	72.8
Government	2.2	3.5	2.6
Facility	3.6	5.2	4.6
Sub-contractors	19.4	17.7	14.5
Schools8	1.5	1.6
Military	1.2	.5	2.3
Others	2.0	2.3	1.6
Hospital Outpatients Treated	406	427	2255
<u>Physical Therapy Treatments</u>			
Clinic.....	145	99	799
Hospital	54	99	407
Industrial: Plant	179	112	731
Personal	31	19	106
Total	409	329	2043
<u>Pharmacy</u>			
No. of Prescriptions Filled	3170	3108	16158
No. of Store Orders Filled	731	710	3670
<u>Patient Meals</u>			
Regulars	4000	4132	20633
Specials	1224	1256	6385
Lights	1	51	92
Softs	1212	1424	7822
Tonsils & Adenoids	175	141	882
Liquids	233	166	1032
Surgical Liquids	72	75	412
Total	6917	7245	37258
<u>Cafeteria Meals</u>			
Noon	1374	1682	7075
Night	203	240	1114
Total	1577	1922	8189

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MEDICAL DIVISIONS

. MAY 1951

Public Health Division

General

The outstanding occurrence has been the sharp increase in the number of communicable diseases reported. This is due primarily to the epidemic of Red measles which we have experienced. However, no known serious complications have come to our attention. It appeared at the end of the month that the epidemic was subsiding.

Home nursing visits increased approximately 60% due to the epidemic of Red measles. Morbidity calls remained at about the same level. Other than this there is a distinct shift of services towards communicable disease control due to the increase of measles cases in the community.

Visits were made to the section by Messrs. Waring J. Fitch and Parker Dyers, Hearing Consultants from the State Department of Health. Mr. Emil Jensen, Chief, Division of Public Health Engineering, State Department of Health and Mr. Frank Eldridge, Chairman of the Stream Pollution Committee, visited concerning some minor sanitation problems which were solved. Miss Catherine Vavre, Assistant Professor, University of Washington School of Public Health Nursing and Mr. Jack Mathews, Head, Health Education Section, State Department of Health, visited in regards to prevention of dental caries by fluoridating public water supplies.

An inspection was made of restaurants in North Richland by the sanitarian and Medical Service Corps Officer of Camp Hanford. A great deal of improvement was desired insofar as sanitation was concerned. A warning from the Medical Service Corps Officer to the effect that the establishments would be placed off-limits if insanitary conditions were not corrected, resulted in a vast improvement.

One food handling establishment in Richland was degraded because of continued improper dishwashing and sterilization.

Considerable time was spent relative to dog bites, vermin and rodent control. Information and advice regarding control measures was requested by residents.

From a bacteriological standpoint the sewage plant continues to be an efficient operation. All samples analyzed indicated an acceptable effluent insofar as pollution is concerned.

A conference was attended in Pullman, Washington on "sanitary operation of swimming pools" by the sanitarian and a representative from the Richland Public Schools.

Aircraft spraying for mosquito control was commenced the latter part of this month to supplement that done by the ground crews. Several areas were treated with a 5% DDT larvicide prior to the rise of river waters and the results were very encouraging in that no larvae were found following intensive checks by dipping.

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MEDICAL DIVISIONS

MAY 1951

Public Health Division (Continued)

General (Continued)

The largest number of requests for social service counseling came from families and individuals needing help in solving problems of family relationships and personal social adjustments. In two of these situations the family problem was directly affecting an employee's efficiency on his job.

During the month one of the counselors, along with public health nurses from the area, met with Miss Kay Laughrige of the Children's Orthopedic Hospital in Seattle to discuss the functions of the hospital and work out plans for the proper referral of Richland children who need the specialized care available at the hospital.

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MEDICAL DIVISIONS

MAY 1951

Public Health Division (Continued)

<u>Education</u>	<u>April</u>	<u>May</u>	<u>Year to date</u>
Pamphlets distributed	10000	10000	50591
News Releases	0	0	0
Staff Meetings	1	4	9
Classes	0	1	6
Attendance	0	20	87
Lectures & Talks	6	1	34
Attendance	295	12	865
Films Shown	1	1	19

Radio Broadcasts	0	0	0
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Immunizations

Diphtheria	5	7	100
Diphtheria Booster	1	4	84
Tetanus	130	9	586
Tetanus Booster	1	0	221
Pertussis	5	0	16
Pertussis Booster	1	0	59
Rocky Mountain Spotted Fever	0	6	6
Rocky Mountain Spotted Fever Booster	0	2	2

MEDICAL DIVISIONS

MAY 1951

Public Health Division (Continued)

<u>Communicable Diseases</u>	<u>April</u>	<u>May</u>	<u>Year to date</u>
Amoebic Dysentery	1	0	1
Chickenpox	26	9	366
Erysipelas	0	0	7
German Measles	16	9	54
Histoplasmosis	1	0	1
Impetigo	0	1	3
Influenza (Upper Respiratory Infection)	0	1	3092
Measles	219	675	912
Meningitis	1	0	2
Mumps	1	3	6
Salmonellosis	0	0	2
Pinkeye	5	5	13
Rheumatic Fever	0	2	2
Ringworm	4	4	14
Roseola	0	0	13
Scabies	0	0	2
Scarlet Fever	6	7	46
Syphilis	3	17	20
Tuberculosis	3	1	7
Whooping Cough	2	1	4
Total	288	735	4567
Total No. Nursing Field Visits	949	1351	4625
Total No. Nursing Office Visits	149	159	715

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DECLASSIFIEDHEALTH INSTRUMENT DIVISIONSMAY 1951Summary

There was an unusual density of special hazards incidents, with seven informal and six formal Class I investigations. However, there was no case which involved actual overexposure of personnel.

Extensive contamination of a Richland residence occurred for the first time, and received much attention in the local and national press.

Surveys by the Operational Division showed no significant deviation from expected findings, except in the matter of tritium concentrations in the atmosphere.

Concentration of radioiodine in the atmosphere exceeded appropriate limits for extended operation. The cause was detected, and steps taken to reduce it. In other respects, there was no significant change from previous results in the control programs of the Biology and Development Divisions.

Research and development activities showed satisfactory progress.

Health Instrument Divisions

HEALTH INSTRUMENT DIVISIONS

MAY 1951

Organization

The composition and distribution of the force as of 5/31/51. was as follows:

	<u>100-B</u>	<u>100-D</u>	<u>100-F</u>	<u>100-H</u>	<u>200-E</u>	<u>200-W</u>	<u>300</u>	<u>700</u>	<u>P.G.</u>	<u>Total</u>
Supervisors	1	1	8	2	3	12	12	6	-	45
Engineers *	5	4	32	5	7	21	15	4	-	93
Clerical	-	-	3	1	1	3	3	5	-	16
Others	16	17	55	13	43	76	58	13	-	291
Total	22	22	98	21	54	112	88	28	-	445

* includes chemists, biologists, etc.

Number of Employees on Payroll

May 1951

Beginning of month

442

End of month

445

Net increase

3

Added to the roll were 2 technical graduates, 5 inspectors, 3 laboratory assistants, a field clerk, 2 personnel meters clerks, and a general clerk.

Removed from the roll were 2 engineers, a technical graduate, an inspector, a technologist, a photo assistant, 3 badge workers, and 2 personnel meters clerks.

General

There were seven informal investigations of minor special hazards incidents, and six Class I special hazards incidents, two of which were not yet formally investigated. The most spectacular of these incidents involved contamination of a Richland house, and occurred as a chance combination of two rare events:

- (1) the inadvertent placement of a contaminated piece in burning ground waste instead of in contaminated waste;
- (2) the unauthorized removal of the piece from the burning grounds to a Richland residence.

Actually, those physical conditions which led to improper disposal through the

Health Instrument Divisions

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undesirable proximity of two disposal bins of different function had been noted by radiation engineers two weeks before this incident, and a written recommendation for change had been submitted.

The probability of either (1) or (2) occurring again is very low, and the probability of both happening together is vanishingly small.

Obviously, without frequent tests of all personnel and all buildings to the point of absurdity, it is impossible to be absolutely sure that no other similar incident has occurred during the 7 years of operation of the Hanford Works.* It is highly probable that this was the only such occurrence, and that lessons learned in this case will make the future frequency even lower.

Criticism by a standard outside critical source, and more importantly by some internal groups, was received on the delayed reporting of the incident. When the contamination was first detected, it required astute detective work by those concerned to deduce what had occurred. Moreover, the bioassay work on the subject employee required about 5 days. Without the facts on these two phases, it appeared inappropriate, and still does in retrospect, to issue a general announcement.

Disturbing results were obtained for atmospheric concentrations of tritium oxides in the 100-B and 100-D Areas. On the assumption that all this contaminant was

* This does not include those cases in which personnel directly working with radioactive materials presumably carry home insignificant traces of contamination, nor those in which insignificant traces could be picked up by anyone from contaminated vegetation. These matters have been surreptitiously tested since the beginning of operations, and shown to be well controlled.

In the early days, many of the bowling balls in the local alleys were secretly smeared by health instrument personnel during play. This served to test not only the health risk (if any) of transfer of finger contamination, but also to define the probability of detection of the function of the Works by enemy agents, before it was realized that such agents had infinitely more direct channels. No contamination was found in such programs.

It will be recalled, however, that the removal of wild flowers from the reservation was at one time prohibited, due to the then existing levels of I^{131} contamination.

Health Instrument Divisions

emitted from the 300-foot stack in the 100-B Area, the observed concentrations were irreconcilable with Sutton's equations by a factor of ~ 2000 . They further indicated a dilution factor between 100-D Area air and stack air of only about 10, which is grossly contrary to all previous experience. It is suspected that there is some major error in these results, but each series is internally consistent, and the cause of the discrepancy is not yet apparent.

Other problems with tritium have arisen from the use of the tritiated water measurement apparatus on various waters. The presence of tritium in the P-13 experiment water was previously recorded. The observed activity density is about $0.03 \mu\text{c/cc}$ per day operation. From customary physical constants $\sim 4 \times 10^{-4} \mu\text{c/cc}$ of this should come from the natural deuterium content, and $\sim 5 \times 10^{-5} \mu\text{c/cc}$ from the lithium content. That the observed activity density was some 70 times higher than the calculated value was suspected to be due to an error in the published D (n,gamma) T cross-section. This was not satisfactorily confirmed by analysis of an irradiated heavy water sample provided by the Chalk River installation. Converted to the same exposure conditions as the P-13 water, this gave an activity density of 18 to 20 $\mu\text{c/cc}$ per day against a calculated 2.6 $\mu\text{c/cc}$ per day.

More confusing still were the reports of tritiated water up to $500 \mu\text{c/cc}$ in the condensate from the drier of the pile gas atmosphere. Such an activity density currently appears to be many orders of magnitude greater than would be calculated from irradiation of expected components of pile atmosphere.

The following trips were reported:

T.W. Galbraith	-	Bacteriology meetings, Chicago.
G.R. Hilst	-	AGU and AMS meetings, Washington, DC.
M.H. Joffe and G.N. Smith	-	Federation meetings, Cleveland, Ohio.
H.A. Kornberg	-	Bio-Medical directors' meetings, AML.
W.A. McAdams	-	Am. Water Works Assoc., Vancouver, B.C.

A joint meeting was held between the AEC, H.I. Divisions, Columbia River Advisory Group, and the US Public Health Service to discuss the proposed U.S.P.H.S. Columbia River Studies. A general agreement on scope was reached, although the plans appeared to be somewhat less than logically satisfying, and also to bear limited relationship to the originally stated intent of the Service. Nevertheless, some real benefit will accrue in two areas of activity:

- (1) Biology Division personnel will be exposed to the thinking of well-qualified specialists not represented on the division force;
- (2) Public Health personnel will be exposed to experienced operations in radiobiology and health physics. The need for this, doubtless a motivating force in the program, has been expressed by Dr. A. Wolman in the Am.J. Pub. Health 40, 1502, 1950.

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Health Instrument Divisions


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During the period covered by this report, all persons in the Health Instrument Divisions engaged in work which might reasonably be expected to result in inventions, or discoveries, advised that to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work except as listed below. Such persons further advised that for the period therein covered by this report, notebook records if any kept in the course of their work have been examined for possible inventions or discoveries.

InventorTitle

none

none

Health Instrument Divisions

OPERATIONAL DIVISION

100 Areas

General Statistics

	<u>April</u>					<u>May</u>					1951 to
	<u>B</u>	<u>D</u>	<u>F</u>	<u>H</u>	<u>Total</u>	<u>B</u>	<u>D</u>	<u>F</u>	<u>H</u>	<u>Total</u>	<u>Date</u>
Special Work Permits	558	1031	774	670	3033	697	976	662	593	2928	15857
Routine & Spec. Surveys	615	834	635	585	2669	697	783	615	553	2648	11978
Retention Basin	87	248	34	172	591	119	349	134	385	987	2896
Air Monitoring Samples	120	143	236	82	581	169	119	164	98	550	2770

Retention Basin Effluent

The activity of the water leaving the retention basin was as follows:

	<u>100-B</u>	<u>100-D</u>	<u>100-DR</u>	<u>100-F</u>	<u>100-H</u>
Power Level (MW)	382	423	515	400	510
Average beta dosage-rate (mrep/hr)	2.1	2.3	2.5	2.0	2.1
Average gamma dosage-rate (mr/hr)	4.5	4.8	6.7	5.1	4.4
Average total dosage-rate (mrep/hr)	6.6	7.1	9.2	7.1	6.5
Average integrated dose in 24 hrs. (mrep)	158	170	221	170	156
Maximum integrated dose in 24 hrs. (mrep)	180	214	288	221	204
Maximum integrated dose in 24 hrs. (mrep)	187	214	288	226	209
(1951)					

100-B Area

Pile and Associated Buildings

A sample of condensate from the pile atmosphere showed 160 μ c of tritium oxide per cc.

P-10 Operations - 108 Building

A line operator gave urine samples showing a maximum of 96 μ c tritium oxide/liter. Apparently the deposition resulted when air contaminated product was released to the atmosphere. The incident will be investigated formally.

These operations gave rise to atmospheric concentrations at ground level ranging between 2×10^{-7} and 5×10^{-6} μ c/cc both at 100-B Area and 100-D Area monitoring stations. Such concentrations cannot be readily correlated with the expected releases of the active material.

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Health Instrument Divisions**DECLASSIFIED**Metallurgical Laboratory - 111 Building

No unusual conditions or incidents were reported.

100-D Area105-D Pile and Associated Buildings

Two ruptured pieces and one warped piece were removed from process tubes without incident.

A sample of condensate from the pile atmosphere showed 380 μ c of tritium oxide per cc.

105-DR Pile and Associated Buildings

Large volumes of condensate collected from the pile atmosphere indicated a leaking process tube. Investigation showed that tube #1386 contained a ruptured piece and was the leaking tube. Both the piece and tube were removed without incident, but low level contamination spread to the change room, monitor room, and corridor occurred.

Hand and clothing contamination of five people was traced to contaminated underwater light cords at the viewing pit. One of the persons involved was at home in Richland when the contamination spread was discovered. A check of his house revealed that the clothing he had worn to work was the only contaminated item. The incident was investigated formally.

A sample of condensate from the pile atmosphere showed 500 μ c of tritium oxide per cc.

100-F AreaPile and Associated Buildings

During preparation to remove a ruptured piece steam was observed emitting from the rear of the tube. The water pressure on the tube was quickly increased and the rear dummy train and one process piece was discharged onto the elevator. Personnel on the elevator were in the act of leaving when this occurred, and no overexposure was indicated. The incident was investigated formally. This ruptured piece and another one later were removed without incident, but high levels of contamination in the discharge area made normal discharge operations difficult.

A sample of condensate from the pile atmosphere showed 230 μ c of tritium oxide per cc.

Biology Facilities

Dilution and handling of I^{131} involved a maximum exposure rate of 600 mr/hr.

Health Instrument DivisionsP-11 Operations

Forty of 58 air samples taken were above 10^{-11} $\mu\text{g Pu/cc}$. The maximum sample of 1.4×10^{-10} $\mu\text{g Pu/cc}$ was taken from the main roof vent.

100-H AreaPile and Associated Buildings

During manipulation of upstream pieces from a tube containing a ruptured piece, a "J" slug became suspended between two process tube nozzles on the front face of the pile. The dosage-rate at one foot was estimated at 15,000 r/hr. Exposure rates up to 22 r/hr were encountered during the removal of the piece with remote equipment, but no overexposure was reported.

Canning of ruptured pieces under water resulted in contamination of storage basin equipment used to levels as high as 10 rep/hr. When the process tubing was removed from one ruptured piece, the piece disintegrated completely. No significant amount of contamination was released to the retention basin as a result of this incident.

Following a purge of the process tubes, the effluent water from the retention basin showed a dosage-rate of 18 mr/hr. Four-fold dilution at the 1908 building was accomplished.

In this unit, condensate from pile atmosphere contained only 4.6 μc tritium per cc.

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Health Instrument Divisions

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200 Areas - T and B Plants

General Statistics

	April					May					1951
		234-					234-				to
	T	231	235	B	Total	T	231	235	B	Total	Date
Special Work Permits	583	31	290	285	1189	525	30	258	271	1104	5669
Routine & Special Surveys	561	472	379	551	1963	580	523	313	420	1836	9608
Air Monitoring Samples	696	332	1241	769	3038	691	435	1103	572	2801	15139
Thyroid Checks	61	-	-	22	83	165	-	-	28	193	554

T and B Plants

Air Sample Results

In the T-Plant, 348 of 691 air samples showed results above 10^{-12} $\mu\text{g Pu/cc}$, with a maximum of 6.8×10^{-9} $\mu\text{g Pu/cc}$ taken at the B cell roof vent of the concentration building. One hundred twenty-five samples were above 10^{-10} $\mu\text{c f.p./cc}$, with a maximum of 4×10^{-5} $\mu\text{c f.p./cc}$ in the canyon during crane work at 8-R.

In the B-Plant, 169 of 572 samples were above 10^{-12} $\mu\text{g Pu/cc}$, with a maximum of 8.2×10^{-9} taken at the A cell roof vent of the concentration building. Eighty-nine samples were above 10^{-10} $\mu\text{c f.p./cc}$, with a maximum of 1.2×10^{-3} in the canyon during crane work on the 16-2 centrifuge.

Canyon Buildings

Extensive decontamination efforts in both the T and B plants were effective. The 16-2 centrifuge in the B-Plant was removed from the cell and placed on the deck at 1-R. Dosage-rates as high as 3 roentgens/hour at 30 feet were observed but personnel exposure was well controlled.

Concentration Buildings

In the T-Plant, assault masks were required in the pipe gallery for 13 days, when routine air samples up to 1.5×10^{-10} $\mu\text{g Pu/cc}$ were obtained.

Cell roof vents indicated the following average discharge rates:
 $\mu\text{g Pu/24 hours}$

Cell Vent	224-T	224-B
A	--	90
B	295	65
C	225	---
D	222	50

Health Instrument Divisions

Waste Areas

In the T-Plant, three employees were contaminated at the 242-T waste evaporator while attempting to sample the concentrate line while it was discharging. The incident was investigated informally.

Construction Areas

No unusual situation was encountered.

Plant Laundry

Twenty-five of 72 spot and continuous air filter samples showed positive results with a maximum of 10^{-11} $\mu\text{g Pu/cc}$ while processing 200 Area clothing.

General

All routine thyroid checks were below the warning level. However, non-routine checks of 16 persons indicated more than $0.07 \mu\text{c}$ of I^{131} deposited in the thyroid, the maximum being $0.4 \mu\text{c}$ I^{131} . All the persons involved were working in the vicinity of the 200-West gatehouse when unfavorable dissolving conditions caused low level contamination of the building, ground, and air, in the vicinity. Air concentrations up to $1.3 \times 10^{-7} \mu\text{c}$ I^{131}/cc were reported by Site Survey in the vicinity of the 200-West area.

A patrolman, not expected to have access to plutonium contamination was found to be contaminated. His house was also found to be extensively contaminated. The source of contamination was a socket wrench part in his house. The incident was caused by the improper disposal to the burning grounds of the packaged wrench intended for controlled burial, followed by unauthorized removal of the part to the employee's home. The decontamination parties in Richland attracted enough attention to promote wild rumors about the extent of the incident. More or less factual accounts of the affair appeared in local and national newspapers.

Definite evidence of plutonium deposition in the subject employee occurred. By the most recent estimate, the deposited amount was only about 2% of that which is considered to be the permissible limit. A more accurate appraisal can only be made after measurement of the excretion rate for some time. The deposited amount is clearly below a level that would cause concern.

Isolation Building

Two hundred and six of 354 air samples taken were above $10^{-12} \mu\text{g Pu/cc}$, with a maximum of $4.7 \times 10^{-10} \mu\text{g Pu/cc}$ in room 6-C during slurping. Seventy-two unregulated items and 13 floor locations were found contaminated. The maximum levels of gamma radiation encountered were 250 mr/hr on PR containers, 40 mr/hr at process hoods, and 9 mr/hr on SC cans.

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DECLASSIFIEDPurification BuildingsAir Sample Results

Three hundred and two of 1103 air samples taken were above 10^{-12} $\mu\text{g Pu/cc}$, with a maximum of 5.6×10^{-5} $\mu\text{g Pu/cc}$ while changing filter hood tank and supernate holding tank in hood 5. Supplied-air masks were worn during this hazardous task.

Operating Sections

Widespread contamination occurred when a trainee failed to survey himself adequately after taking a process sample. The incident was investigated informally. A process operator ruptured his hood and surgical gloves and contaminated bandages over a wound on his thumb. No contamination was detected under the bandage. This incident was also investigated informally.

200 Area Control Laboratories

	<u>T</u>	<u>B</u>	<u>231</u>	<u>234-235</u>
Items contaminated - not regulated	147	103	258	160
Skin contamination - alpha	1	3	10	2
Skin contamination - beta	4	1	--	--
Contaminated floor locations	12	36	22	56

In the T-Plant, the air contamination levels in room 6 continued to be abnormally high, with a maximum of 1.2×10^{-10} $\mu\text{g Pu/cc}$ reported.

In the Isolation building, four suits of SWP clothing contaminated with Pu up to 7×10^5 d/m were found in the women's locker room.

Particulate contamination in particles per 1,000 cubic meters was as follows:

<u>Location</u>	<u>April</u>	<u>May</u>
222-T Outside	140	110
Hallway	92	86
Room 7	687	340
222-B Outside	100	160
Hallway	71	36
Room 7	1090	>1000 *

* Particle density on one filter was too high for reliable counting.

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300 Area

General Statistics

	<u>April</u>	<u>May</u>	<u>1951 to Date</u>
Special Work Permits	139	123	596
Routine & Special Surveys	353	304	1493
Air Samples	204	241	1104

Metal Fabrication Plant

Thirty-four of 68 air samples taken were above 5×10^{-5} $\mu\text{g U/cc}$, with a maximum of $0.15 \mu\text{g U/cc}$ in the main room of the 314 building while unloading trays.

A melt plant operator received an apparent "overexposure" of 315 mrep as recorded by his film badge for a 6-day period. Investigation is in progress. This was not an overexposure within the intent of the national recommendations.

Test Pile Building

Irradiated "J" pieces received from the 100-H Area and showing dosage-rates up to 2400 r/hr at 1 foot were loaded into the test pile for reactivity studies. Manipulation of the pieces into and out of the pile was executed without incident, due to excellent preparation for the task.

Technical Building

Gross plutonium contamination was found on routine surveys in room 19. Air contamination as high as 1.3×10^{-10} $\mu\text{g Pu/cc}$ was reported. Contamination outside the hoods was as high as $0.3 \mu\text{g Pu/prote area}$. Decontamination was effective.

Thirty-nine items, not regulated with respect to handling, were found contaminated on routine surveys of laboratories. Seventy-eight regulated items were found contaminated above acceptable limits.

Hand Score Summary

There were 44,149 alpha and 42,568 beta scores reported. About 0.12% of the alpha and about 0.05% of the beta scores were high. No attempted reduction was indicated on 12 high alpha scores from the 2723 building. Where decontamination was attempted, it was successful in all cases reported.

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DECLASSIFIEDPERSONNEL MEMBERSPencils

	100-B	100-D	100-F	100-H	E&N 200	200-W Const.* 200-W	300	Total	1951 To Date
Pencils Read:	18,497	17,178	14,597	10,073	27,252	12,104*	31,177	168,746	802,029
Single Readings (100 to 280 mr)	18	20	22	23	42	8*	66	249	1,054
Paired Readings (100 to 280 mr)	2	1	1	14	0	0	1	19	25
Single Readings (Over 280 mr)	18	34	31	19	55	12*	52	296	1,186
Paired Readings (Over 280 mr)	1	0	0	0	0	1*	2	4	24
Lost Readings	0	1	1	0	0	2	0	4	30

Of the 23 significant pencils readings reported, 14 were confirmed by badge results.

Investigation of lost readings indicated no possibility of an overexposure.

Badges

	100-B	100-D	P-11 101-P 100-F	100-H	200-E	R.R.T. 200-N	200-W	300	Total	1951 To Date
Badges Processed:	4,000	3,957	2,741	3,048	2,288	515	4,264	6,521	27,334	126,851
Number Readings (100 to 300 mrep)	21	69	30	87	49	0	133	112	551	1,971
Number Readings (300 to 500 mrep)	0	2	6	19	5	0	8	5	45	154
Number Readings (500 to 1000 mrep)	0	2	1*	4*	0	0	1*	2	30	54
Number Readings (Over 1000 mrep)	0	0	0	2**	0	0	0	0	2	9
Lost Readings	1	1	1	2	1	0	2	2	10	43

*Gamma over 300

Although recorded as over 1000 mrep these readings, upon investigation, were shown to be due to blackening by soft gamma radiation below permissible limits.

Lost readings were accounted for as follows:

Badger lost in Area	3
Not packaged	1
Light struck	2
Contaminated badges	3
Stuck film	1
Total	10

14 Investigation of the above lost readings indicated no possibility of an over-exposure.

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Badge Resume, Construction Areas

	<u>200-W Const.</u>	<u>200-E Const.</u>	<u>Total</u>	<u>1951 To Date</u>
Badges Processed:	4,261	2,984	7,245	32,421
Number Readings (100 to 300 mrep)	0	10	10	118
Number Readings (300 to 500 mrep)	0	0	0	24
Number Readings (500 to 1000 mrep)	0	0	0	11
Number Readings (Over 1000 mrep)	0	0	0	1
Lost Readings	4	3	7	12
Total badges processed 1951, Operation		126,851		
Construction		32,421		
Total		159,272		

In addition to the badge program, a total of 1,493 items of a non-routine nature was processed during the month.

Slow Neutron Pencil Summary

	<u>100-B</u>	<u>100-D</u>	<u>100-DR</u>	<u>100-F</u>	<u>100-H</u>	<u>Total</u>	<u>1951 to Date</u>
Number of pairs issued	30	55	70	54	188	397	2,713
Number of significant readings	0	6	18	1	11	36	148
Number of significant readings (above 50 mrem)	0	0	0	0	0	0	1

Neutron Film

<u>Badges Processed</u>	<u>100-B</u>	<u>100-D</u>	<u>100-F</u>	<u>100-H</u>	<u>200-W</u>	<u>Total</u>	<u>1951 To Date</u>
Personnel	23	120	52	119	56	370	1,661
Special	0	0	2	0	25	27	124

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DECLASSIFIEDCONTROL AND DEVELOPMENT DIVISIONCONTROL GROUPSSite Survey

Levels of radioactive contamination in drinking water and test wells did not differ significantly from previous measurements. The activity density of beta emitters exceeded 5×10^{-8} $\mu\text{c/cc}$ at only two locations; sanitary water at the 100-F Area and at Pasco averaged 6×10^{-8} $\mu\text{c/cc}$ and 7×10^{-8} $\mu\text{c/cc}$, respectively. Samples of filtering media from the Pasco Filter Plant indicated the bulk of the activity to be retained in the filters; gross beta emitters averaged 1.0×10^{-3} $\mu\text{c/gram}$ in the solid material from the backwash, and 1.0×10^{-7} $\mu\text{c/cc}$ in the liquid portion.

Decreases approaching factors of 2 were observed when measuring the activity density of gross beta emitters at representative locations in the Columbia River. This decrease was attributed to an increase in flow-rate of the river; maximum flow was 3,135,000 gallons/second during May, as compared with a maximum flow of 1,523,000 gallons/second during April. The average of maximum activity density measurements in the Columbia River was 2.1×10^{-6} $\mu\text{c/cc}$ at Hanford; individual measurements at this same location approached 4.3×10^{-6} $\mu\text{c/cc}$ during the early part of the month.

Dosage-rates as measured by detachable chambers showed increases which approached significance at locations within the 10 mile radius of the 200 Areas. Radiation levels which averaged, respectively, 3.5 mrep/day and 2.5 mrep/day, at the Meteorology Tower and the military encampment near the 200-East Area represented maximum measurements. No significant trend was observed when reviewing particle concentrations in the atmosphere.

Monitoring at the base of the 200-West Area stack indicated that about 120 curies of I^{131} were emitted daily; the maximum measurement was 400 curies in one day. These values represented significant increases over the previous month when the average daily emission was 13 curies with a maximum of 40 curies per day. Approximately 40 curies per day were emitted via the sand filter during May. This value also represents a significant increase over the previous period when only 5 curies/day passed through the sand filter.

Maximum concentrations of I^{131} in the atmosphere were observed at the 200-West Area gatehouse where fixed scrubbers indicated an average activity density of 7.5×10^{-10} $\mu\text{c/cc}$ during the month. The maximum individual fixed scrubber measurement was 3.3×10^{-9} $\mu\text{c/cc}$. Throughout the environs, the concentration of I^{131} in the atmosphere increased by a factor of 30 in extreme cases, and more commonly by a factor of 4 to 15 when compared with April data. Seventeen out of twenty-six portable scrubber samples which were obtained when the effluent was observed at ground level indicated concentrations above permanently

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permissible limits. Maximum measurements were on the order of 1.0 to 1.3×10^{-1} $\mu\text{c}/\text{cc}$ in the vicinity of the 200-West Area gatehouse. Some of the above-limit samples were obtained inside the gatehouse. These readings were generally higher than could be condoned on a continuing basis. Auxiliary measurements clearly indicated that the efficiency of the silver reactor in the 200-West Area was much inferior to the estimated value. The matter was referred to the appropriate groups of the Manufacturing Divisions and Technical Divisions, which confirmed these findings, and undertook corrective measures. As an interim procedure, dissolving was subsequently conducted only under conditions of more favorable atmospheric dilution. However, this would have no major effect on the appreciable emission reported through the sand filters. It is doubtful whether the present cooling time can be legitimately maintained unless the proposed techniques for reducing this channel of emission are rapidly developed.

Filterable beta emitters in the atmosphere increased by a factor of 3 to 5 at nearly all locations. Maximum activity was observed at the 200-West Area gatehouse where the average activity density throughout the month was 2×10^{-10} $\mu\text{c}/\text{cc}$.

I^{131} on vegetation increased by factors ranging from 2 to 30 throughout the environs during May. Maximum increases and measurements were noted inside the 200-West Area where an individual sample showed 6.2×10^{-2} $\mu\text{c}/\text{gram}$. The average activity density inside the 200-West Area was 1.2×10^{-2} $\mu\text{c}/\text{gram}$, and individual samples obtained outside the 200-West Area gate and around the Batch Plant also were on this order of magnitude. At the project perimeter, the average activity density was on the order of 10^{-5} $\mu\text{c}/\text{gram}$, with maximum measurements in the Tri-City Area showing 2 to 3×10^{-4} $\mu\text{c}/\text{gram}$. Off-area sampling indicated detectable quantities of I^{131} as far as Bonneville Dam and Pullman, Washington. The maximum activity densities on vegetation in the Tri-City Area exceeded the currently quoted limit by a factor of 20 to 30. Although the early results of the experimental animal farm studies suggest that the limit is unrealistically low, it is questionable whether the present emissions should be tolerated outside the reservation until the biological findings have been extended and reviewed by the AEC Division of Biology and Medicine. This confirms the need for prompt action on the iodine problem required also by the internal situation.

Measurements for the activity density of non-volatile emitters on vegetation reflected small increases at many locations. However, the significance of these was minimized when compared to the magnitude of increase noted in the measurement for I^{131} . Several samples analyzed for the activity density from alpha emitters indicated negligible activity from this source.

The activity density of beta emitters in the effluent water in the 107 basins showed small increases in all reactor areas. However, the average values were within the normal variation expected. Several individual measurements were nearly twice as high as previous maximum values; the maximum activity was noted at the 100-H Area in a sample which contained 2.3×10^{-3} $\mu\text{c}/\text{cc}$. No significant trend or change was observed when reviewing the over-all waste monitoring program in the 200 and 300 Areas. Plutonium measurements indicated an

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average of 52 dis/min/liter in the 300 Area waste line, including a maximum measurement of 239 dis/min/liter.

Bioassay

Four hundred and eighty-four routine urine samples were analyzed for plutonium, with thirty-six blank and thirty-five spiked samples as controls. Plutonium measured in these samples averaged 0.04 dis/min, with the control samples showing an average recovery of 93%. One urine sample indicated 0.54 dis/min; a re-sample is in process. A resample of a previously reported high sample indicated < 0.33 dis/min.

Twenty special samples were analyzed for plutonium with one case indicating a probable body deposition of 0.01 μ g. Nose smears and sputum for the same case gave positive results.

Five hundred and five samples were analyzed for fission product isotopes; 74 samples were processed as controls. None of these samples exceeded the reporting level of 10 counts/minute.

One hundred and ninety-seven samples were analyzed for uranium by the fluorophotometer procedure. Samples were taken from individuals after possible exposure to 4 days on the job, and then sampled after 2 days of no exposure. A summary of the results of analyses of these samples appears below;

Job Description	<u>END 4TH DAY OF EXPOSURE</u>		<u>END 2ND DAY, NO EXPOSURE</u>		TOTAL NUMBER SAMPLES
	<u>μg/liter</u>		<u>μg/liter</u>		
	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>	
Canning	23	5	38	5	49
Machining	14	5	11	3	30
Melt Plant	43	14	22	17	11
Material Handling	6	4	13	6	9
Inspection	4	3	14	7	6
Car unloading	182	28	47	5	62
305 Building	1	1	3	2	5
Clerical	3	2	3	3	6
Random	2	1	--	--	19

Evidently, the car unloading operation requires some modification.

A total of 989 urine samples was analyzed for tritium oxide; 151 samples were run as controls, and 133 were processed as re-runs to confirm previous values. One hundred and twenty-two air samples were also processed. Urine samples

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read as follows:

<u>TRITIUM OXIDE IN URINE</u>						
<u>μc/liter</u>						
Concentration Group	< 5	5-10	10-20	20-35	35-65	> 65
Number of samples	905	43	17	13	5	5*

* Consecutive samples on the same individual.

Analytical-Control Laboratory

Beta counter operation continued to be erratic during the month. Lost time was 4.0 operating hours/day/set, mainly due to shifting voltage plateaus and variable geometries.

A summary of samples analyzed and measurements made in the counting room follows:

Laboratory

<u>Type Sample</u>	<u>May 1951</u>	<u>1951 To Date</u>
Vegetation	1555	7106
Water	1894	9357
Solids	227	1333
Fluorophotometer	397	3105
Special Survey Analyses	40	152
Air Sample Analyses	274	925
Total	4387	21978

Counting Room

Beta measurements (recounts included)	5133	23186
Alpha measurements (recounts included)	3745	17750
Control points (beta and alpha)	2610	11078
Decay curve points	1950	11220
Absorption curve points	100	1250
Total	13538	64484

The presence of Ba¹⁴⁰ in 107 waste effluent water in amounts less than 0.01% of the total beta activity leaving the basin was confirmed by decay curve study.

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DECLASSIFIEDCalibrations

<u>Radium Calibrations:</u>	<u>Number of Routine Calibrations</u>		
	<u>April</u>	<u>May</u>	<u>1951 To Date</u>
Fixed Instruments			
Gamma	265	229	1,327
Portable Instruments			
Alpha	300	335	1,537
Beta	611	651	3,132
Gamma (radium)	1,255	1,280	5,997
X-ray	5	2	14
Neutron	3	3	12
Total	2,174	2,271	10,692
Personnel Meters			
Beta	773	889	4,071
Gamma (radium)	6,475	8,263	36,746
X-ray	816	6,083	17,898
Neutron	28	42	160
Total	8,092	15,277	58,875
Grand Total.....	10,531	17,777	70,894

Synoptic Meteorology

<u>Forecasts</u>	<u>Number made</u>	<u>May 1951</u>
		<u>Percent Reliability</u>
Production	91	84.8
24-hour	61	78.4
Special	24	75.0

The month was unusually windy. Average speed at the 50-foot level was 10.5 mph, or 1.8 mph greater than normal. The peak gust of 45 mph occurred on the 4th. There was a brief period of blowing dust on this date.

Daily high and low temperatures averaged 61.1°F, or 1.1°F below normal. The highest was 94° on the 22nd; the lowest was 37° on the 5th.

All measurable precipitation during the month occurred on the evening of the 10th, and the morning of the 11th. The total in this storm (0.43 inch) was just 0.01 inch short of the monthly normal. Thunderstorms occurred on the 6th, 10th, and the 23rd.

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DEVELOPMENT GROUPS

Experimental Meteorology

Trajectory analysis was continued.

Secondary parameters employed in Sutton's works have been recomputed and these have been used in calculations to find the maximum ground concentrations for various values of stability, wind velocity, and stack height.

Industrial Hygiene

The laboratory apparatus for testing the efficiencies of filters was completely assembled.

A study was made of the limitations on the operation of the Canyon building crane cabs with no ventilation air supply. The limiting factors are the carbon dioxide content and the humidity.

Geology

The ground water contamination levels in the 200 Areas changed appreciably. Confirmed significant beta activity in recently completed well 361-T-16 indicates a movement of ground water, during the past year, of approximately 300-feet in a SE direction directly away from the T-Plant swamp.

The spread and buildup of alpha activity in the water table beneath the 300 Area is following the pattern established during the rise of the Columbia River during 1950. Contamination has moved about 1,000 feet westward during the past month. Temperature studies also indicate a reversal of the normal flow of the ground water. The water level in well 303-13 remained about 40-feet above the normal water table.

Soil Science

X-ray diffraction patterns of the clay fraction from soils obtained from the 219-S-2 well near the Redox crib site indicate that the montmorillonite to kaolinite ratio is about 3 or 4 to 1. This preponderance of montmorillonite with its relatively high cation exchange capacity should be particularly valuable in removing activity from waste solutions.

Four soil columns are being used in an experiment with plutonium solutions with pH levels of 1, 4, 10, and 13. The effluent is being checked for pH and alpha activity at the completion of each run. To date, approximately 400 μ g of Pu have been introduced into each column in a total volume of 2500 ml. Breakthrough has occurred in the most acid column (pH 1), and somewhat variable results have been obtained for the pH 10 column. Effluents from columns with pH 4 and pH 13 have all had less than 1 dis/min/ml. This implies a "decontamination factor" of better than 20,000.

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Methods Development

Tests of the electrodeposition-nuclear film technique for the plutonium analyses of urine continued in the bioassay laboratory. Preliminary results on samples spiked with 0.064 d/m, and 0.16 d/m, gave over-all yields of about 100% within the error of the various variables involved. A sudden increase in the value of the blank sample to about 0.04 d/m was traced to a change in the brand of lanthanum used in the TTA analysis. A preliminary estimate of the sensitivity of this method under present conditions, and assuming that a Poisson Distribution is applicable, is about 0.06 d/m. The design of the new electrodeposition unit was completed. Further experimental work is now in progress in an attempt to decrease the size of the plated disc as a step in increasing the sensitivity.

Several fillings of the alcohol-argon GM tubes for the calibration of tritium oxide samples have been made after shielding the GM tubes to reduce back-grounds. The results are more variable than is desired and appear to be low by a factor of about 2, as compared to the calculated values obtained by the biology division on burning the samples. Further work is planned to investigate this discrepancy. A second hydrogen counter was constructed to assist the control laboratory in their routine analyses.

Some work was started on a constant monitor for the I^{131} from the T-Plant stack. In order to obtain data on variations involved, an ion chamber with a coil of tygon tubing through which a scrubber solution will flow has been calibrated. This unit is to be used with the present scrubber and a vibrating reed electrometer to measure the peak evolution periods.

A second series of traverses in the Columbia River was started to evaluate the change in flow patterns with high water. The data obtained on the first survey is now being analyzed and plotted for a preliminary report.

Testing of the present group analysis procedure as applied to radiochemistry has continued. Results to date all indicate adequate separation of the primary groups with poor separation of the subgroups with present techniques.

Physics

Calibration of moderated BF_3 counters is complicated by the presence of large numbers of scattered neutrons. Some measurements are now being made in the large south room of the calibrations building to minimize such errors. A model of a "long counter" consisting of a BF_3 counter in a "Hanson Moderator" is being built to provide a counter with known characteristics. The "long counters" have been used previously at Oak Ridge and Los Alamos.

A Hurst "dose counter" for fast neutrons was put into operation and found to be in good operating condition. Following a technique observed, in the French Atomic Energy installation, a fast neutron detector was made using a mixture of ZnS in a hydrogenous plastic which was placed over the window of a 1 P 21 photo multiplier. The sensitivity of this first unit 0.3 c/m per neutron/cm² sec. was equivalent to that of a rather poor recoil proton proportional counter.

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The Swiss physicist, M. Verde, has given a theoretical calculation of the T (γ , n) D cross-section. Using the principle of detailed balance, the cross-section for the D (n, γ) T process can be calculated. Since the calculations indicated an increasing cross-section with increasing energy which might be of importance to the P-10 and P-13 problems, it was thought desirable to determine numerical values. The cross-section did increase considerably with energy but not to a large enough value to be of interest.

Calculations on the effect of the fading of the latent image in nuclear emulsions for neutrons observed in the 234-5 process indicate that there will be a 25% loss of observable tracks in films developed a week after exposure.

The cadmium poison slug which was obtained to provide a source of Cd^{115} radiation was checked by decay and absorption measurements, and it is obviously not a Cd^{115} source. The observed half-life is too long (100 to 500 days), and the observed energy is too high (0.9 Mev.).

Calibrations of various radiation measuring instruments for 17 Kev X-rays was made for checking the radiation levels of the low energy components observed in the 234-5 process. Preliminary results indicated: (1) that pencil readings must be increased by a factor of about 2 depending somewhat on clip location; (2) film badge readings must be increased by a factor of 5; (3) Juno readings must be increased by about 5/3 for the medium window and 3 or 4 for the heavy window; (4) CP readings must be increased by 15 to 20% for the beta window, and 5/3 for the beta shield.

Instrument Development

The new beta air monitoring instrument is now in use by Site Survey. Design of a more straightforward relay system was completed and mechanical design of the detecting elements progressed satisfactorily.

The needle counter mentioned last month has not yet given any encouraging results. Losses in efficiency because of wall absorption, small crystal volume and long light path are prohibitive at this stage of development. When the thin wall aluminum tubing arrives, the study will be reopened.

Mixtures of freon and methane were tried as an atmospheric pressure medium for counting tritium. As little as 30% freon (F-12) in methane removed nearly all traces of plateau and first counted at 4300 volts, with a 0.001 inch wire and an amplifier with 1 mv. sensitivity. Pure methane in the same system gave about 1000 volts of counting rate plateau starting at 2600 volts. A mixture containing enough freon to render methane non-inflammable is, therefore, not a very good counting gas.

Some work has been done to determine the usefulness of "starved" (plate and

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screen potentials about 10% of normal) pentode amplifiers to H.I. instrumentation. Such an amplifier was used in an experimental poppy for scintillation counting where it gave excellent laboratory results. As finally set up, the system gave 24% geometry with a 2 c/m background and could be adjusted to give 0.3 c/m background, but with a drop to 16% geometry. Some progress was also made toward developing a system less sensitive to light leaks.

A "starved" amplifier was also studied for use as a sensitive D.C. amplifier. In such service, the stability of this amplifier was of particular value.

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BIOLOGY DIVISION

Analyses Group

1. Radioactivity in Carcasses

Aliquots from 5 adult cadaver ashes were analyzed for radium by the chemical separation method. Results were comparable with analyses determined last month.

2. Alpha and Beta Analyses of Organic Material

A method for the analysis of large organic samples for radiiodine using muffling in the presence of Na_2CO_3 and NaHSO_3 followed by dissolving in HCl and precipitation as PdI_2 was completed.

3. Radioelements in Organisms in Pile Effluent

Fish grown in effluent water were analyzed for beta emitters. Results showed Na^{24} and P^{32} as primary beta emitters, small amounts of Cu , and traces of rare earths, As , Fe and Zn .

4. Physical Processes Affecting Methods for Isotope Use

Inactive

5. Waste Disposal Methods for Biological Specimens

Inactive

6. Physical Chemical Methods for Dosimetry due to Deposited Isotopes

Nineteen samples were analyzed for Pu in conjunction with the Physiology Group bone deposition study.

Services

Analytical services to other biology groups included calibration of 5 ORNL shipments of I^{131} , preparation of 7 spike solutions for animal and plant feeding, analysis of approximately 2200 samples, and the taking of approximately 4300 alpha and beta counts, including decay and absorption studies.

Aquatic Biology Group

1. Effect of Pile Effluent Water on Aquatic Organisms

The chinook salmon monitoring studies were continued without unusual incident. Previously observed trends of growth and mortality continued during the month with marked effects evident at the 10% strength levels and slight effects observable at the 5% strength levels in all types of process water (area effluent, cooled area effluent, pile influent and pile effluent).

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2. Biological Chains

Spawning of the rainbow trout held in the 5% pile effluent was completed during the month. Since only 11 females (about 10%) matured and spawned, additional data on the potency of the males were obtained by utilizing the eggs from 8 large control females (3 years of age). The radioactive algae fed to one group of these fish originally was obtained from the 107-F retention basin but for the past several months this source has not been of value due to algae control operations. Substitute algae held in laboratory ponds has not been as satisfactory since accumulated activity amounts to only a fraction of that of the algae which originally flourished in the retention basin. As a result, the activity density of the fish held in 5% effluent and fed the active algae diet has exceeded that of the fish held in the 5% effluent and fed a normal diet by only about 20% to 30% whereas differences in the order of 500% were observed last year at this time.

3. Radiobiological - Ecological Survey of the Columbia River

The crest of the spring freshet appeared to have been reached at the end of the month. Shore sampling was at a minimum during the high water period. Small fish, including young chinook salmon, were still readily available, and some algae samples were obtained from floats. Further improvements have been made in the plankton collecting equipment used on the boat.

The activity density of the plankton showed a further drop to 2.4×10^{-3} $\mu\text{c/gm}$ and was inversely related to flow. The abundance of planktonic organisms increased slightly over April. Activity density of algae remained at the same level while in small fish the average value for May of 3×10^{-4} $\mu\text{c/gm}$ was three times that observed during April; one small shiner showed an activity of 2.6×10^{-3} $\mu\text{c/gm}$. For large fish, a maximum of 3×10^{-4} $\mu\text{c/gm}$ was found in the liver of a sucker; this was associated with 4×10^{-5} $\mu\text{c/gm}$ in the flesh.

4. Control of Algae in 107 Retention Basins

No progress.

Biochemistry Group

1. Relative Biological Effects via Biochemical Systems

The addition of water containing tritium as THO to the suboptimal culture medium caused the following increase in the time required for achieving half maximum growth of L. Casei.

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<u>Millicuries THO added per milliliter medium</u>	<u>Hours required to reach half maximum growth</u>
0	15.4
10	17.0
25	18.0
50	20.2
75	25.0

At the end of 48 hours, however, all cultures had attained the same degree of turbidity.

Two hundred millicuries of S^{35} are available to determine the effectiveness of this isotope in inhibiting the growth of L. Casei as compared with tritium. Tracer experiments indicated that 80% of the S^{35} may be recovered from a culture medium by adsorption on an ion exchange resin (amberlite IRA 400) and elution with 3 N HCl.

2. Absorption of Pu from the G.I. Tract

By administering 3 feedings per day, all experimental rats have already received over 100 doses of plutonium. One rat which had received 25 d/m of Pu^{238} per day for about 3 months was found dead in its cage and an autopsy disclosed pulmonary engorgement. Soft tissue and carcass analyses for plutonium in this animal indicated a rather high coefficient of gastro intestinal absorption (0.60 per cent of total dose fed), but no definite conclusions should be drawn at present since the animal was clearly abnormal. All other rats appeared to be in good health.

3. P-10 Biological Hazards Investigations

One hundred and thirty-six days after the intraperitoneal injection of tritium oxide in mice, the biological half-time of the bound tritium remaining in the tissues was between 50 and 60 days.

In the case of rats, the biological half-life of tritium in body water 150 days after the intraperitoneal injection of this isotope was of the order of 25 days. Bound tritium half-life values ranged between 50 to 90 days at this time.

A new method was developed for exposing the skin of animals to a more uniformly saturated atmosphere of tritium oxide. Dry air at 30° C was passed at a constant rate through a sintered-glass rod immersed in tritium oxide, thence over the skin of the animal and finally through a dry-ice trap where the oxide was held for re-use. Preliminary data showed a one-third increase in the amount of tritium oxide vapor percutaneously absorbed when this new method was used as compared to the static system previously described.

During the past month some difficulty has been experienced in obtaining reproducible tritium analyses in blood and body water.

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An alkaline decontamination solution was tested and found to produce localized allergic-type skin reactions in two out of six individuals.

4. Possible Therapeutic Agents for Radiation Damage

No progress

5. Percutaneous Absorption of Radioelements

No progress

Services

A total of 480 biochemical and 970 hematological determinations was performed by the Clinical Services Laboratory.

Botany Group

1. Agricultural Field Station

No report

2. Translocation of Radioelements in Plants

The absorption, in a four-day period, of Cs by roots and the translocation of this element to the leaves of red kidney bean plants was found to be directly proportional to the concentration of Cs in the nutrient solution, in the range of 1 to 100 p.p.m. of Cs. Leaf concentrations of Cs were 2 - 3 times (fresh wt. basis) those of the nutrient solution.

3. P-10 Botanical Investigation

Red kidney bean plants were grown for 24 hours in light and in nutrient solution containing tritium oxide and adjusted to pH 4.0, 6.0 or 8.0. Incomplete results suggested that hydrogen ion concentration had no effect upon the rate at which tritium oxide enters into plant water or organic matter.

Escherichia coli and Proteus vulgaris fixed approximately 0.05 per cent of the tritium oxide of the nutrient medium in their cells after a twenty-four hour period of growth. About four times this concentration was found, per equal weight, in the organic solids of the media.

Studies on the effects of pH on the utilization of tritium oxide by Azotobacter vinelandii have shown that this organism fixes a maximum quantity of tritium at pH 6.5; minima were reached at pH 5.5 and 8.0

Studies on the effects of pH on the incorporation of tritium, from tritium oxide, into the soluble solids of nutrient medium showed that maximum quantities were fixed at pH 5.5 and 8.0; minimum fixation occurred at pH 7.0. On an equal weight basis, resting Azotobacter vinelandii suspensions fixed approximately one-fifteenth as much tritium at pH 6.5 as the soluble solids of the medium fixed at pH 7.0

4. Effects of Radiation on Plant Life

Red kidney bean plants were grown for seven days in nutrient solution containing 100 μ c P³², a range of P of 5×10^{-6} to 5×10^{-3} moles per liter.

Health Instrument Divisions

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Light intensity and quality were controlled. No significant effect of P^{32} on growth was noted, but there was an indication that the uptake of phosphorus by the plants exposed to 100 μ c P^{32} was greater than that of controls.

Physiology Group

1. Biological Effects of Active Particles

After the initial acclimatization period, the strain A mice are breeding satisfactorily.

2. Bone Metabolism of Radioelements

Chemical analyses were completed on the plutonium fed animal and a second animal with hyperplastic bone marrow received a 0.116 μ g/kg dose of Pu^{239} .

3. Techniques in Autoradiography

Literature studies only.

4. Inhalation of Tritium

Six animals were used with approximately two curies of tritium gas in the attempt to standardize procedures. Analysis of the results was unsatisfactory from the point of view of consistency and percentage recovery.

Services

Approximately 250 slides of different tissue were made for examination by the pathologist.

Zoology Group

1. Biological Monitoring

Waterfowl

The monthly census figure for wild waterfowl on the Columbia River within the plant boundaries was approximately 700, a decrease of 16% from last month. Canada geese accounted for about 80% of the total. A complete count of that species is difficult to obtain due to their secretive habits while escorting their broods of young. Plans have been made to cooperate with the State Game Department in banding geese during the second week of June.

Development of the pond at 212-R Area progressed satisfactorily. Aquatic plants, frogs, fish and snails were planted in the water and food plants for the ducks were planted along the ditch. Mallard ducklings will be introduced in the near future. It is hoped that the pond and its biological constituents will maintain a state of biotic equilibrium that will insure native food organisms for the ducks.

Health Instrument Divisions

Upland Wildlife

Thyroid activities of upland species from several stations are tabulated below:

<u>Locality</u>	<u>Specimen</u>	<u>Thyroid Activity Densities</u>
300 Area	Cottontail (1)	0.013 $\mu\text{c/g}$
Hanford	Jackrabbit (1)	0.016 $\mu\text{c/g}$
200 East	Jackrabbit (6)	0.416 $\mu\text{c/g}$
	Raven (2)	0.199 $\mu\text{c/g}$
100-F	Mouse (1)	0.005 $\mu\text{c/g}$

All thyroid values exceed the chronic MPC of radioiodine in man. All other tissues were found to contain negligible quantities of radioisotopes.

2. Toxicology of I^{131} in Stock Animals

Lambing operations were completed during this period. One ewe of the 240 μc group gave birth to a dead lamb, one lamb in the 5 μc group died and one was sacrificed. Fifteen of the sixteen off-project/control ewes were reported involved in multiple births. Of the 34 lambs dropped, 31 lambs survive.

The most recent IBM data available relative to external thyroid counts revealed no change in efficiency of uptake or any alteration in thyroid functioning in any of the experimental groups receiving 5 μc or less/day.

Of the nine ram lambs previously placed (Feb. 12, 1951) on a feeding regimen containing 480 μc of I^{131} /ram/day, six have now been sacrificed. The thyroids of three lambs sacrificed when the thyroid evidenced loss of ability to concentrate I^{131} still appeared to have functional tissue present. One ram lamb in this group that was removed from the I^{131} regimen at the time of the thyroid break was given a tracer feeding 2 months after I^{131} feeding ceased. This animal exhibited less than 4% thyroidal uptake which characterizes a clinically athyrotic animal.

Hematological and blood chemical results are now undergoing analysis by the Statistics Group. Preliminary observations reveal significant changes by some parameters for animals in groups receiving 240 μc or more of I^{131} daily.

A depression in the leucocyte count was noted. Relative to blood chemistry results in the original ewes, there appears to be significant changes only in NPN and creatinine. The ewe lambs in addition revealed differences in calcium, phosphorus, glucose, alkaline phosphatase and perhaps cholesterol.

GENERAL ACCOUNTING DIVISION
MONTHLY REPORT

May 1951

Reviews of cost accounting methods, procedures and reporting, with a view toward improvement, were conducted throughout the month. Recommendations and proposals developed by the Cost Accounting Committee in their weekly meetings were thoroughly studied and are being incorporated in the contemplated revision of Cost Accounting methods. Consideration was given to cost accounts, development of revised cost reporting, and distribution of costs to the end product. Considerable time was devoted to the recasting of prior months' costs in order that the affect of considered revisions in procedures could be determined.

With the preparation and submission to AEC of additional schedules relative to balance sheet accounts and a breakdown by quarters of FY 1952 budget estimates, all work was completed this month concerning the Budget For FY 1953 and Revision of the Budget For FY 1952.

All accounting work in connection with Technical Divisions Budgets, Operating Costs and Research and Development Costs which had been handled by General Accounting personnel through April 30 was transferred to Technical, Engineering and Construction Accounting Division on May 1, 1951. On May 21, 1951, five employees who had been handling this work were transferred to the Technical, Engineering and Construction Accounting Division.

The documenting of General Accounting procedures currently in effect was begun this month. Procedures for Accounts Payable, Accounts Receivable (Including Kadlec Hospital), Travel Expenses, and Cash Controls were nearing completion at the end of the month.

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General Accounting Division

Internal Auditors continued work in connection with Stores inventories. Letters were written to Stores supervision relative to procedures covering inventory adjustments and instructions were issued covering the handling of adjustments resulting from incorrect unit pricing and the recording of returnable container deposits.

Report was issued by the Medical Divisions Accountant reflecting comparisons of Kadlec Hospital operating costs, number of personnel, and various operating procedures and policies with those of thirteen other Pacific Northwest hospitals which were visited during a recent survey.

The Plant Accounting supervisor visited the Oak Ridge, Tennessee plant and observed methods in use at that location for the accounting for plant and equipment. Details of his observations are covered in a separate report.

Approximately 520 man hours were expended in connection with the Spring Payroll Review for exempt employees.

In connection with a study and analysis of payroll practices and procedures, an opportunity was given a National Cash Register Company representative to study the present system to determine whether full use was being made of the equipment now in use and to determine if it would be advantageous to use additional NCR equipment for the purpose of calculating gross payroll and labor cost distribution. The NCR representative's report, received in May, and information obtained through visits to NCR Payroll installations is being reviewed and will be taken into consideration in arriving at a decision with respect to further mechanization of payroll operations.

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General Accounting Division

Advances from AEC increased from \$4 500 000 as of April 30, 1951 to \$5 000 000 as of May 31, 1951. Advances are accounted for as follows:

	<u>May</u>	<u>April</u>
Cash in Bank - Contract Accounts	\$4 003 389	\$3 871 689
Cash in Bank - Salary Accounts	50 000	50 000
Cash in Transit	496 611	153 311
Advances to Subcontractors	300 000	300 000
Travel Advance Funds	150 000	125 000
Total	\$5 000 000	\$4 500 000

Hanford Works cash disbursements and cash receipts, excluding advances from Atomic Energy Commission for the month of May 1951 as compared with April 1951 may be summarized as follows:

	<u>May</u>	<u>April</u>
<u>Disbursements</u>		
Material and Freight - GE	\$ 2 941 959	\$ 2 544 983
Payrolls - GE (Net)	2 182 126	2 057 080
Payments to Subcontractors	4 993 065	4 436 526
Payroll Tax	409 565	737 409
General & Administrative Expenses	200 000	200 000
U. S. Savings Bonds	139 392	162 146
Special Payments for 1950	114 779	-0-
Others	280 260	307 323
Total	\$11 261 146	\$10 445 467

<u>Receipts</u>		
Rents	\$ 132 880	\$ 125 428
Refunds From Vendors	1 766	843
Hospital	63 972	68 809
Telephone	16 294	14 324
Miscellaneous Accounts Receivable	13 514	11 975
Bus Fares	9 807	9 461
Scrap Sales	7 109	4 946
Sales to AEC Cost-type Contractors	6 054	41 435
Other	13 139	14 935
Total	\$ 264 535	\$ 292 156

Net Disbursements	<u>\$10 996 611</u>	<u>\$10 153 311</u>
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General Accounting Division

DECLASSIFIEDSTATISTICSEmployees and Payroll

	<u>Total</u>	<u>Monthly Payroll</u>	<u>Weekly Payroll</u>
Employees on Payroll at beginning of month	8 171	1 968	6 203
Additions and transfers in	299	15	284
Removals and transfers out	(142)	(27)	(115)
Transfers from Weekly to Monthly Payroll	--	27	(27)
Transfers from Monthly to Weekly Payroll	--	(1)	1
Employees on Payroll at end of month	<u>8 328</u>	<u>1 982</u>	<u>6 346</u>

Number of Employees

	<u>May</u>	<u>April</u>
Bargaining group - HAMTC	3 182	3 112
Bargaining group - Building Services	70	70
Other weekly	3 094	3 021
Two platoon firemen	57	57
Executive, administrative and operating	1 338	1 321
Professional	550	552
Other monthly	37	38
Total	<u>8 328</u>	<u>8 171</u>

Number of Employees

Manufacturing	3 303	3 264
Technical, Engineering & Construction	1 784	1 729
Municipal	238	226
Real Estate and General Services	432	432
Health Instrument	445	441
Employee and Community Relations	110	110
Plant Security and Services	1 069	1 051
Purchasing and Stores	399	383
Medical	284	282
General Accounting	204	195
General Administrative	60	58
Total	<u>8 328</u>	<u>8 171</u>

Overtime Payments

Weekly Paid Employees	\$ 148 930	\$ 101 707
Monthly Paid Employees	93 915 (1)	38 692 (2)
Total	<u>\$ 242 845</u>	<u>\$ 140 399</u>

Number of Changes in Salary Rates and Job Classifications

979	1 555
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Gross Amount of Payroll

Manufacturing	\$ 1 281 995	\$ 1 229 130
Technical, Engineering & Construction	738 552	661 121
Municipal, Real Estate and General Services	226 947	224 080
Other	848 256	818 439
Total	<u>\$ 3 095 750 (3)</u>	<u>\$ 2 932 770 (4)</u>

- (1) Payments cover period from April 16 through May 31 for all divisions except Plant Security and Services Division where payments to Patrolmen cover period April 16 to April 30, 1951 and Engineering and Construction Divisions where payments cover period April 1 through May 31, 1951.
- (2) Payments cover period from March 16 to April 15 except that in the case of Engineering and Construction Divisions, payments cover period March 1 to March 31, 1951.
- (3) Includes payments for the four (4) week period ended May 20, 1951 in the case of weekly paid employees.
- (4) Includes payments for the four (4) week period ended April 22, 1951 in the case of weekly paid employees.

General Accounting Division

Annual Going Rate of Payroll

	May	April
Base	\$ 34 631 154	\$ 34 129 425
Overtime	3 232 794	1 927 094
Isolation Pay	1 107 412	1 060 502
Shift Differential	457 168	422 612
Other	67 050	51 547
Total	<u>\$ 39 495 578</u>	<u>\$ 37 591 180</u>

Average Hourly Base Rates

Bargaining group - HAMTC	1.927	1.939
Bargaining group - Building Services	1.493	1.492
Other weekly	1.605	1.609
Two platoon firemen (monthly rate ÷ 173.9 hours)	1.878	1.877
Executive, administrative and operating	2.795	2.793
Professional	2.673	2.680
Other monthly	2.187	2.188
Total	<u>1.993</u>	<u>2.002</u>

Average Earnings Rate Per Hour (1)

	May			April		
	Weekly	Monthly	Total	Weekly	Monthly	Total
Manufacturing	\$2.108	\$2.808	\$2.223	\$2.106	\$2.808	\$2.225
Technical, Engineering & Construction	1.700	2.788	2.092	1.697	2.785	2.118
Municipal, Real Estate & General Services	1.847	2.365	2.002	1.861	2.368	2.019
Other	1.695	2.678	1.868	1.703	2.683	1.878
Total	<u>\$1.883</u>	<u>\$2.723</u>	<u>\$2.069</u>	<u>\$1.886</u>	<u>\$2.723</u>	<u>\$2.078</u>

% Absenteeism

	May	April
Weekly - Men	2.52	2.81
Weekly - Women	3.21	3.67
Total Weekly	2.70	3.03
Monthly	1.43	2.08
Grand Total	<u>2.30</u>	<u>2.80</u>

Employee Benefit Plans

Pension Plan

Number participating at beginning of month	6 457	6 494
New participants and transfers in	61	65
Removals and transfers out	(84)	(102)
Number participating at end of month	<u>6 434</u>	<u>6 457</u>
% of eligible employees participating	95.1%	95.4%

(1) Includes Shift Differential and Isolation Pay. Excludes overtime premiums, commissions, suggestion awards, etc.

General Accounting Division

Employee Benefit Plans (continued)Pension Plan (continued)**DECLASSIFIED**Employees Retired

Number

May
6Total to Date
168 -a)

Aggregate Annual Pensions Including

Supplemental Payments

\$ 811

\$39 108 -b)

Amount contributed by employees retired

\$2 102

\$27 934

(a- Includes 6 employees who died after reaching optional retirement age but before actual retirement. Lump sum settlements of death benefits were paid to beneficiaries in these cases.

(b- Amount before commutation of pensions in those cases of employees who received lump sum settlement.

Insurance Plan (1)Personal Coverage

Number participating at beginning of month

May
7 943April
7 759

New participants and transfers in

290

268

Cancellations

(1)

(13)

Removals and transfers out

(91)

(71)

Number participating at end of month

8 1417 943

% of eligible employees participating

96.7%

96.1%

Dependent Coverage

Number participating at beginning of month

5 046

5 026

Additions and transfers in

121

96

Cancellations

(6)

(6)

Removals and transfers out

(55)

(70)

Number participating at end of month

5 1065 046Claims - Disability Benefits (2)

Number of claims paid by insurance company:

Employee Benefits

Weekly Sickness and Accident

129

238

Daily Hospital Expense Benefits

131

263

Special Hospital Services

150

286

Surgical Operations Benefits

103

179

Dependent Benefits

Daily Hospital Expense Benefits

224

359

Special Hospital Services

274

404

Surgical Operations Benefits

194

243

Amount of claims paid by insurance company:

Employee Benefits

\$28 268

\$47 524

Dependent Benefits

24 964

40 617

Total

\$53 232\$88 141Claims - Death Benefits (3)

Number

May
2Total to Date
63

Amount

\$20 500

\$334 812

- (1) The new Insurance Plan was made effective on December 1, 1950.
- (2) Statistics cover only claims paid and not all claims incurred during the month.
- (3) Total to date includes all claims under the old and new Insurance Plans and two deaths resulting from accidents.

General Accounting Division

Employee Benefit Plans (continued)

Group Life Insurance

The Group Life Insurance Plan was discontinued November 30, 1950. As of May 31, 1951, 17 employees who are absent with continuous service are still participating in the Group Life Insurance Plan. They were not actively at work on December 1, 1950, and therefore were not eligible to participate in the new Insurance Plan. However, they will become eligible upon their return to work.

Group Disability Insurance

The Group Disability Insurance Plan was discontinued November 30, 1949 for all employees actively at work. However, one employee who has been absent from work since September 15, 1949, is still insured under the Group Disability Insurance Plan.

Group Health Insurance

The Group Health Insurance Plan was made effective December 1, 1949 and was discontinued on November 30, 1950. As of May 31, 1951, 6 employees who are absent with continuous service are still participating in the Group Health Insurance Plan. They were not actively at work on December 1, 1950, and therefore were not eligible to participate in the new Insurance Plan. However, they will become eligible upon their return to work. During May, 79 checks in payment of benefits of \$4,815 on 53 Group Health Insurance claims were received from Metropolitan Life Insurance Company.

Vacation Plan

Number of employees granted permission to defer
one week of their 1951 vacation to 1952

	May			Total to Date			
	Weekly	Monthly	Total	Weekly	Monthly	Total	
Manufacturing	1	4	5	104	42	146	-a)
Technical, Engineering & Construction	2	4	6	14	24	38	
Municipal, Real Estate & General Services	2	1	3	15	3	18	
Health Instrument	-0-	-0-	-0-	1	-0-	1	
Employee and Community Relations	-0-	-0-	-0-	1	-0-	1	
Plant Security & Services	-0-	-0-	-0-	44	16	60	
Purchasing and Stores	2	-0-	2	7	-0-	7	-b)
Medical	1	-0-	1	3	-0-	3	
General Accounting	-0-	-0-	-0-	4	-0-	4	
General Administrative	-0-	2	2	-0-	2	2	
Total	<u>8</u>	<u>11</u>	<u>19</u>	<u>193</u>	<u>87</u>	<u>280</u>	

- (a - Total to date reduced by 1 cancellation
(b - Total to date reduced by 2 cancellations

General Accounting Division

DECLASSIFIEDEmployee Benefit Plans (continued)U. S. Savings Bonds

	<u>Mfg.</u>	<u>Engineering & Construction</u>	<u>Municipal, Real Estate & General Services</u>	<u>Other</u>	<u>Total</u>
Number participating at beginning of month	1 496	664	266	982	3 408
New authorizations	36	21	2	52	111
Voluntary cancellations	(21)	(6)	(2)	(13)	(42)
Removals and transfers out	(12)	(10)	(5)	(7)	(34)
Transfers in	6	12	2	2	22
Number participating at end of month	<u>1 505</u>	<u>681</u>	<u>263</u>	<u>1 016</u>	<u>3 465</u>

Percentage of Participation

G. E. Employees Savings and Stock Bonus Plan	39.7%	34.3%	34.8%	33.7%	36.3%
G. E. Savings Plan	11.9%	6.8%	9.1%	9.9%	10.0%
Both Plans	45.6%	38.2%	39.3%	39.5%	41.6%

Bonds Issued

Maturity Value	\$ 76 950	\$ 31 775	\$ 12 775	\$ 46 850	\$ 168 350
Number	1 441	582	236	888	3 147
Refunds issued	33	18	4	28	83
Revisions in authorizations	22	7	3	19	51
Annual going rate of deductions					
G.E. Employees Savings and Stock Bonus Plan	\$598 010	\$275 017	\$100 872	\$363 114	\$1 337 013
G.E. Savings Plan	213 794	61 769	31 943	109 524	417 030
Total	<u>\$811 804</u>	<u>\$336 786</u>	<u>\$132 815</u>	<u>\$472 638</u>	<u>\$1 754 043</u>

Annuity Certificates (For duPont Service)

Number issued	<u>May</u> 1	<u>Total to Date</u> 76
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Suggestion Awards

Number of awards	16	991
Total amount of awards	\$535	\$16 330

Employee Sales Plan

Certificates issued
Certificates voided

<u>May</u>		
<u>Major Appliances</u>	<u>Traffic Appliances</u>	<u>Total</u>
36	299	335
-0-	8	8

Salary Checks Deposited

Richland Branch - Seattle First National Bank
North Richland Area Office - Seattle First National Bank
Richland Branch - National Bank of Commerce
Out of state banks (Schenectady staff)
Total

<u>May</u>		<u>April</u>	
<u>Weekly</u>	<u>Monthly</u>	<u>Weekly</u>	<u>Monthly</u>
668	828	684	847
11	7	12	6
264	201	250	190
--	3	--	3
<u>943*</u>	<u>1 039</u>	<u>946**</u>	<u>1 046</u>

*Week ended 5-20-51

**Week ended 4-15-51

Special Absence Allowance Requests

Number submitted to Pension Board

<u>May</u> 11	<u>April</u> 4
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Absenteeism (Weekly Paid Employees)

January 1 to May 20

<u>1951</u> 3.21%	<u>1950</u> 2.53%
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General Accounting Division

PERSONNEL AND ORGANIZATION

	<u>May</u>	<u>April</u>
Number of Employees		
On Payroll at beginning of month	195	189
Removals and transfers out	(10)	(8)
Additions and transfers in	19	14
Number at end of month	<u>204</u>	<u>195</u>
Net increase (or decrease) during month	9	6
% of terminations and transfers out	5.1%	4.2%
% of absenteeism	3.67%	3.39%

Changes by division in number of Accounting Division employees during May 1951 were as follows:

Name

General: No Change

Accounts Payable: Increase of two employees

Three new hires

One transfer from Real Estate & General Services

One transfer to Rotational Training Program

One termination

Shirley H. Byland
Dorothy M. Clark
Rose F. Woodall
Jacqueline K. Liddle
V. B. Schwinberg
Jacqueline K. Liddle

Cost: Decrease of one employee

Two new hires

Three transfers to Construction Accounting

D. L. Crosier
Alma D. Porter
S. D. Medhus
J. W. Nelson
W. T. Rynick

General Accounts: No Change

One new hire

One termination

Amber B. Meckle
Amber B. Meckle

Plant Accounting: No Change

Weekly Payroll: Increase of six employees

Eight new hires

One return from illness absence

Three terminations

Mary L. Bowman
O. J. Bruseth
Juanita J. Hobson
Mary G. Messervy
Lovejoy O. Morey
Hazel W. Pollard
Dorothy C. Smith
Barbara J. Spence
Mary E. Brand
Helen H. Applegate
Catherine H. Larcom
Clementine H. Mortensen

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General Accounting Division

PERSONNEL AND ORGANIZATION (continued)

	<u>Name</u>
<u>Monthly Payroll:</u> Increase of two employees	
Two new hires	Donna C. Ashby Leta L. Fowler
One transfer from Special Assignment	J. M. Graves
One termination	J. E. McKeen
<u>Special Assignment:</u> Decrease of three employees	
One transfer to Monthly Payroll	J. M. Graves
Two transfers to Rotational Training Program	W. L. Brown George Hessney
<u>Budgets:</u> Decrease of one employee	
One transfer to Construction Accounting	J. G. Fisk
<u>Internal Audit:</u> No Change	
<u>Rotational Training Program:</u> Increase of four employees	
One new hire	T. E. Johnston
One transfer from Accounts Payable	W. B. Schwinberg
Two transfers from Special Assignment	W. L. Brown George Hessney

<u>Injuries</u>	<u>May</u>	<u>April</u>
Major	-0-	-0-
Sub-major	-0-	-0-
Minor	3	1

Number of Accounting Division employees as of May 31, 1951 were as follows:

	<u>Number of Employees</u>		
	<u>Non-Exempt</u>	<u>Exempt</u>	<u>Total</u>
General	4	6	10
Accounts Payable	17	1	18
Cost	13	1	14
General Accounts	18	1	19
Plant Accounting	27	2	29
Weekly Payroll	67	6	73
Monthly Payroll	20	1	21
Special Assignment	-0-	2	2
Budgets	4	1	5
Internal Audit	3	6	9
Rotational Training Program	4	-0-	4
Total	<u>177</u>	<u>27</u>	<u>204</u>

General Accounting Division

PERSONNEL AND ORGANIZATION (continued)

Non-exempt employees may be summarized as follows:

<u>Classification</u>	<u>Number as of</u>	
	<u>5-31-51</u>	<u>4-30-51</u>
Accounting A	2	2
Accounting B	3	3
Accounting C	8	7
Accounting D	11	10
Business Graduate	11	14
Clerical Working Leader	8	9
Cost Clerk A	2	1
Cost Clerk B	1	1
Cost Clerk C	2	2
Cost Clerk D	4	3
Field Clerk B	3	-0-
Field Clerk C	1	2
General Clerk A	16	18
General Clerk B	44	39
General Clerk C	19	19
General Clerk D	11	8
General Clerk E	2	3
Office Machine Operator A	9	8
Office Machine Operator B	5	5
Office Machine Operator C	-0-	1
Secretary B	1	1
Steno-Typist A	3	3
Steno-Typist B	7	6
Steno-Typist C	2	3
Steno-Typist D	2	1
Total	<u>177</u>	<u>169</u>

Open employment requests as of May 31, 1951 were as follows:

Accounting B	3
Accounting C	1
Business Graduates	13
General Clerk B	8
General Clerk C	1
General Clerk D	1
Steno-Typist C	4
Total	<u>31</u>

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General Accounting Division

	<u>May</u>	<u>April</u>
<u>Accounts Payable*</u>		
Balance at Beginning of Month	\$ 153 857	\$ 92 850
Vouchers Entered	1 376 716	1 633 725
Cash Disbursements	1 382 480	DR 1 572 976
Cash Receipts	50	258
Balance at end of month	<u>\$ 148 143</u>	<u>\$ 153 857</u>
Number of Vouchers Entered	1 947	2 358
Number of Checks Issued	1 310	1 306
Number of Freight Bills Paid	350	321
Amount of Freight Bills Paid	\$ 6 675	\$ 4 567
Number of Purchase Orders Received	631	840
Value of Purchase Orders Received	\$ 235 769	\$ 372 782
<u>Cash Disbursements</u>		
Municipal, Real Estate & General Services	\$ 236 438	\$ 242 132
Engineering & Construction	6 446 501	5 804 269
General	3 703 998	3 792 202
Manufacturing	874 209	606 864
Total	<u>\$11 261 146</u>	<u>\$10 445 467</u>
Material and Freight	\$ 2 941 959	\$ 2 544 983
Lump Sum and Unit Price Subcontracts	641 183	602 886
CPTF Subcontracts		
Labor	3 514 678	2 950 846
Others	837 204	882 794
Payrolls (Net)	2 182 126	2 057 080
Payroll Taxes	409 565	737 409
U. S. Savings Bonds	139 392	162 146
General & Administrative Expenses	200 000	200 000
Special Payments for 1950	114 779	-0-
All Other	280 260	307 323
Total	<u>\$11 261 146</u>	<u>\$10 445 467</u>
<u>Cash Receipts</u>		
Municipal, Real Estate & General Services	\$ 116 516	\$ 109 897
Engineering & Construction	42 252	40 942
General	11 238 393	8 557 077
Manufacturing	20 685	12 876
	<u>\$11 417 846</u>	<u>\$ 8 720 792</u>

*General Divisions Only

General Accounting Division

	<u>May</u>	<u>April</u>
<u>Detail of Cash Receipts</u>		
Advances from AEC	\$11 153 311	\$ 8 428 636
Rents	132 880	125 428
Hospital	63 972	68 809
Telephone	16 294	14 324
Scrap Sales	7 109	4 946
Bus Fares	9 807	9 461
Miscellaneous Accounts Receivable	13 514	11 975
Sales to AEC Cost-type Contractors	6 054	41 435
Refunds from Vendors	1 766	843
Employee Sales	754	1 093
Educational Program	172	124
All Other	12 213	13 718
 Total	<u>\$11 417 846</u>	<u>\$ 8 720 798</u>

<u>Number of Checks Written</u>		
Municipal, Real Estate & General Services	259	264
Design & Construction	946	910
General	1 310	1 306
Manufacturing	753	755
 Total	<u>3 268</u>	<u>3 235</u>

<u>Bank Balances At End of Month</u>		
Chemical Bank & Trust Company - New York		
Contract Account	\$ 890 004	\$ 1 113 860
Seattle First National Bank - Richland		
Contract Account	2 547 788	2 205 263
U. S. Savings Bond Account	203 039	215 748
Salary Account No. 1	20 000	20 000
Salary Account No. 2	30 000	30 000
Travel Advance Account	59 828	44 107
Seattle First National Bank - Seattle		
Escrow Account	31 685	31 685
National Bank of Commerce - Richland		
Contract Account - Manufacturing	501 797	494 698
Contract Account - Municipal, Real Estate & General Services	63 800	57 868
 Total	<u>\$ 4 347 941</u>	<u>\$ 4 213 229</u>

<u>Travel Advances and Expense Accounts</u>		
Cash Advance balance at end of month*	\$ 30 487	\$ 32 453
Cash Advance balance outstanding over one month*	10 055	12 219
Traveling and Living Expenses:		
Paid Employees	40 864	34 017
Billed to Government	37 253	29 986
Balance in Variation account at end of month	29 267 DR	25 656 DR

*General Divisions Only

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General Accounting Division

	<u>May</u>	<u>April</u>
<u>Hospital Accounting</u>		
<u>Accounts Receivable</u>		
Balance at Beginning of Month	\$ 131 592	\$ 145 780
Invoices Issued	60 162	60 412
Refunds	820	558
Cash Receipts	63 972 CR	68 809 CR
Payroll Deductions	5 195 CR	6 321 CR
Bad Debts Written Off	2 234 CR	-0-
Adjustments	19 CR	. 28 CR
	<u> </u>	<u> </u>
Balance at End of Month	<u>\$ 121 154</u>	<u>\$ 131 592</u>
 <u>Scrap Sales</u>		
Number of Sales	365	15
Revenue (excluding Sales Tax):		
Scrap Sales	\$ 348 745	\$ 7 109
Tract House Sales		
Revenue to AEC	32 503	3 365
Revenue to GE	14 262	848
	<u> </u>	<u> </u>
Total	<u>\$ 395 510</u>	<u>\$ 11 322</u>

General Accounting Division

ACCOUNTS PAYABLE

Due primarily to the transfer of work in connection with Technical Divisions' accounts payable to the Technical, Engineering and Construction Accounting Division, there was a 17% decrease in number of invoices booked in May.

The number of invoices paid in May was 2 042 amounting to \$1 382 480 compared with 2 277 in April amounting to \$1 572 976 - a decrease in number paid of 10%.

There was a slight increase in number of checks issued in May compared with April. Details are as follows:

	<u>May</u>	<u>April</u>
Chemical Bank & Trust Company	419	398
Seattle-First National Bank	<u>891</u>	<u>908</u>
Total	<u>1 310</u>	<u>1 306</u>

On May 31 there were 1 328 vouchers on hand requiring additional supporting data before they could be considered complete and ready for final audit by AEC. This is a slight decrease from April. Details are as follows:

	<u>May</u>	<u>April</u>
Number on hand - Paid	367	413
Number on hand - Unpaid	<u>961</u>	<u>965</u>
Total	<u>1 328</u>	<u>1 378</u>

Increased activity in Purchasing and Employment Divisions in the last six months has resulted in nearly double the number of Western Union telegrams this section has had to audit and code to proper Cost Accounts. Amount paid in May to Western Union was \$10 375.

Number of freight bills paid in May increased over April. In May there were 350 amounting to \$6 675 compared with 321 in April amounting to \$4 567.

Overtime work on Saturdays continued throughout the month of May. This overtime has been necessary due to an increase in volume of work during the past eight months of over 20%. Also there is a backlog of completed purchase order files which require a final audit before they can be forwarded to permanent storage.

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General Accounting Division

BUDGET ACCOUNTING

During the month of May all work to be performed by this Section in connection with submission of the Budget for FY 1953 and Revision of the Budget for FY 1952 was completed. In addition to schedules submitted in April, estimates were prepared on Cash Working Capital, Inventories, Special Materials and Reactor Materials. Narrative justification and statistical information relative to Office Furniture and Equipment was also completed and submitted.

In connection with the revised budget for FY 1952, AEC requested a quarterly breakdown of the following budget schedules: Research and Development, P-10, Operating Costs of Kadlec Hospital, Property In Service - Equipment, Net Cash Working Capital and Inventories. These schedules were prepared and submitted for General, Medical and Technical Divisions.

In the latter part of the month file records on Technical Divisions budgets were transferred to the Accountant, Technical, Engineering and Construction Divisions. Two Budget Accounting employees were transferred to Technical, Engineering and Construction Accounting in line with this shift of responsibility.

At the close of the month work was progressing on entering budget amounts for the month of May on Cost working papers.

COST

General Divisions Operating Reports for the month of April were issued on May 15, 1951 and detailed reports of Research and Development Costs for Health Instrument Divisions programs were issued on May 21, 1951.

Operating costs of Technical Divisions for the month of April were accumulated by this Section and the Operating and Research and Development Reports for the month of April were prepared and issued for the Accountant - Technical, Engineering and Construction Divisions.

Cost analyses letters were prepared and issued to each General Division Manager showing a summary of April costs and a comparison with March costs. Significant changes from the preceeding month were explained in detail.

Considerable work was done in connection with recasting costs for the nine months ended March 31, 1951 based on a proposed revision of cost accounting to be made effective in July. Recast amounts were established for General and Administrative, Protection of Plant and Personnel and Process Control Costs. In addition, costs of Health Instrument and Technical Research and Development Programs were recast to reflect the changes in cost occurring as a result of the proposed revision. Work is currently underway to establish special liquidations chargeable to other than plant operations, service or administrative divisions; to determine changes in the cost coding system which will be required; and to determine basis for allocation of General and Administrative Expenses and Protection of Plant and Personnel Expenses to production areas.

General Accounting Division

COST (CONT'D)

A new account code was established for use of the General Accounting Division in order that salary expense of personnel assigned to the Rotational Training Program could be reported separately.

GENERAL ACCOUNTS

Advances from A.E.C. increased from \$4 500 000 to \$5 000 000 as of May 31, 1951. A comparison with advances as of April 30 follows:

	<u>May</u>	<u>April</u>
Cash in Bank - Contract Accounts	\$4 003 389	\$3 871 689
Cash in Transit	496 611	153 311
Cash in Bank - Salary Accounts	50 000	50 000
Travel Advance Funds	150 000	125 000
Advances to Subcontractors	<u>300 000</u>	<u>300 000</u>
Total	<u>\$5 000 000</u>	<u>\$4 500 000</u>

Due to increased travel activity it was necessary to increase Travel Advance Funds to \$150 000. During the month 194 travel reports were processed in comparison with 113 in April. Actual travel expense incurred amounted to \$29 902 as compared with reimbursement from AEC in the amount of \$27 613. The difference of \$2 289 was charged to the Travel and Living Expense Variation Account.

Total charges this month to the Travel and Living Expense Variation Account from all divisions amounted to \$3 611. Of this total \$563 was for entertainment expenses and the balance of \$3 048 represents the difference between the amount spent by employees and the amount reimbursed by the Atomic Energy Commission. Fiscal Year to Date, this account has been charged with \$29 267.

The General Ledger balance of accounts receivable (Excluding Kodlec Hospital) as of May 31 may be compared with those of April 30 as follows:

	<u>May</u>	<u>April</u>
A.E.C. Cost-Type Contractors	\$ 121 207	\$ 76 464
Miscellaneous	2 205	2 162
Sale of Safety Shoes to Employees	<u>703</u>	<u>450</u>
Total	<u>\$ 124 115</u>	<u>\$ 79 076</u>

This increase is due mainly to the billing of eight invoices to A.E.C. Cost-Type Constructors in the amount of \$45 991. The balance of Accounts Receivable - Miscellaneous is composed mostly of freight claims and billings to other General Electric Departments. Sales of safety shoes increased this month, only \$45 of the May 31 balance represents sales made prior to May.

General Accounting Division

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GENERAL ACCOUNTS (CONT'D)

General Ledger Trial Balances were received from all divisions by May 14, 1951. Hanford Works Financial Statements and Consolidated Financial Statements were issued on May 21 and May 24 respectively.

During May, charges in the amount of \$237 634 were received for General Engineering Laboratory Assistance to Hanford, \$5 KAPL Assistance to Hanford, and \$261 Research Laboratory Assistance.

The preparation of detailed procedures covering all phases of work in connection with Cash Controls and Travel Expense was started early this month.

Considerable time was devoted in assisting the Office Equipment Section to revise their system of accounting for the inventory of Furniture and Fixtures.

Responsibility for the control of shipping documents issued by AEC was delegated to this Section in May. Controls were established to insure preparation of billings when necessary or the transfer of costs for all materials or equipment shipped from the project.

Work is continuing in the writing of detail descriptions of all General Ledger Accounts.

INTERNAL AUDIT SECTION

A report was completed and issued in May, covering an analysis of Technical, Engineering and Construction Divisions' construction costs for Manufacturing Divisions' Project C-399-5 for the construction of office building 1703-B, located in the 100-B Area.

The first monthly report of write-off adjustments of inventory accounts as the result of physical inventories was forwarded to Atomic Energy Commission during the month, covering adjustments journalized in April. As a result of this report, supplementary studies were undertaken and letters were issued to Purchasing and Stores Divisions on the following subjects:

1. "Request for Adjustment of Inventory Account as a Result of Physical Inventory." Included in this letter were instructions concerning (a) form to be used in requesting adjustment of an inventory account, (b) proper approval of adjustments by supervision of Purchasing and Stores Divisions, and (c) review by Internal Audit Section of the request for adjustment and supporting working papers prior to journalization of the adjustment.

General Accounting Division

INTERNAL AUDIT SECTION (CONT'D)

2. "Approval of Interim Write-Off Adjustment of Stores Division Inventory Accounts." During the interim period between physical inventories of Stores Division items, differences are frequently noted between quantities in stock and quantities indicated on stock record cards as being on hand. It has been the practice, in most instances, for supervisors of the various inventory control sections to approve the write-off adjustment of inventories for which they maintain memo records. In order to provide more effective internal control over interim write-off adjustments, this letter provided that requests for journalization of these adjustments should have the approval of Stores Division supervision higher than that of the inventory control sections.

The working papers of three physical inventories completed by Inventory and Audit Section of Purchasing and Stores Divisions were reviewed. In addition to verifying the accuracy and completeness of the working papers, the significance of the adjustments of physical and clerical differences, required as a result of the physical inventories, was discussed informally with supervision of Purchasing and Stores Divisions.

The study begun in April of "Adjustment of Discrepancies Arising From Incorrect Unit Prices of Stores Division Inventory Items" was completed and a letter was issued to Stores Division in May, outlining instructions governing these adjustments.

At the request of Operations Stores, a letter of instructions was issued governing the recording of returnable containers requiring deposits of \$2.50 or less each, which are purchased. The value of these containers will be charged to Stores Division overhead costs by Accounts Payable Section, General Accounting Division; if a large shipment is received, the value of those containers will be charged to using divisions by Stores Division.

A review was completed of the H. W. Instructions Letter proposed by Traffic Division on "Procedure For Receiving Tank and Bulk Car Shipments." A new draft of the Instructions Letter was submitted to Traffic Division, incorporating changes and additions relative to financial controls deemed necessary to conform with the overall internal control system for Hanford Works.

Studies which were begun, but not completed, during the month, included:

1. "Study of Inventory Account 10.15, Furniture and Fixtures." Records and controls of this inventory account will be reviewed for effectiveness. Assistance will be given Office Equipment Section, Plant Security and Services Divisions, in installing additional inventory controls that may be required.

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General Accounting Division

INTERNAL AUDIT SECTION (CONT'D)

2. "Fractional Horse Power Electric Motors - Spare Parts Inventory."
At the request of Accountant, Municipal, Real Estate and General Services Divisions, a study is being made of procedures followed by Stores Division in making fractional horse power electric motors available to servicing divisions for use as replacements.

Additional work undertaken on several audits is being completed and reports will be issued in June of most of the audits in process at the end of the month of May.

General Accounting Division

MEDICAL ACCOUNTING

The balance in Accounts Receivable decreased \$10 438 during the month; from \$131 592 in April to \$121 154 in May, due primarily to increased cash receipts and payroll deductions. Bad debts written off during the month amounted to \$2 234.

Out-patient invoices numbered 2 221 and amounted to \$10 616 as compared to 2 075 invoices amounting to \$12 055 in April.

In-patient revenue increased \$1 189 in May as compared to April due primarily to the additional day in the month of May. The average adult patient-day census decreased 1.9 from 83 in April to 81.1 in May.

A total of 34 claims in the amount of \$1 261 were submitted during the month to Fort Lewis for services rendered Military Personnel. Reimbursement on 64 claims in the amount of \$2 468 on prior months billings was received during the month. The Army has been very cooperative in this connection and have also assisted in the collection of charges incurred for services rendered dependents of Military Personnel at Camp Hanford.

Blue Cross claims paid during the month numbered 25 and amounted to \$2 100.

Listed below is a summary of activity to date on accounts submitted to Yakima Adjustment Service for collection:

	<u>Number</u>	<u>Amount</u>
Accounts Submitted	169	\$29 467
Accounts Returned as Uncollectible	39	8 253
Collections by Yakima Adjustment Service	53*	2 728
Accounts Recalled	9	1 531
Accounts at Yakima Adjustment Service as of 5-31-51	93	16 955

*Includes 28 accounts paid in full and 25 accounts partially collected.

During the month a study was made of Industrial Medical costs for the four months ended April 1951, and comparisons made with a similar study for the four months ended October 31, 1950. A comparison of these studies is summarized below:

<u>Type of Service</u>	<u>Four Months Ended April 30, 1951</u>	<u>Four Months Ended October 31, 1951</u>
Pre-employment, Annual and Post-employment	\$16.00/examination	\$22.00/examination
Intervals	14.00/examination	13.75/examination
Hazard Control - 700-1100 Areas	.07/employee	
Hazard Control - Outer Areas	.21/employee	
Health Education & Group Insurance	.17/employee	.18/employee
First Aid cost per month	2.69/employee	2.81/employee

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General Accounting Division

MEDICAL ACCOUNTING (CONT'D)

The decrease in unit cost is primarily due to increased volume of work with no corresponding increase in cost. There have been considerably more annual, pre-employment, and post-employment physical examinations during the last four month period as compared to the earlier period. Assessments for May and June will be on the basis of the new unit rates as summarized above.

A report was completed this month comparing Kadlec Hospital costs, revenue, personnel and salaries with 13 Pacific Northwest Hospitals which were contacted during a survey made in February and March of this year. This report will be issued during the first of June.

PLANT ACCOUNTING

As a result of studies in connection with the allocation of depreciation expense to end activities, Plant Accounts are being reviewed to determine necessary adjustments in order to expedite this work. Certain accounts which include facilities which could not readily be associated with any one particular machine or process are being analyzed, and adjustments are being made to these accounts.

Depreciation rates, as established by the plant appraisal of June 30, 1949, are being reviewed and changes are being made where the need is indicated. Depreciation rates applicable to new facilities which will be placed in service during F. Y. 1952 are also being studied and composite rates for the new property accounts which will be established because of the addition of these facilities will be established at the time the assets are booked.

Field inventories of selected plant and equipment accounts continued during May. A complete inventory of medical equipment in production areas was completed. The account Police Equipment was reviewed and segregation made between Community and Plant equipment.

Consideration is being given to the elimination of the account Pipe Lines - Outdoor with a balance of approximately \$25 000 000 and transferring applicable amounts to various system accounts such as Sewer, Water, Steam, etc.

During the month, the Plant Accounting supervisor visited Oak Ridge, Tennessee and reviewed with both contractor and AEC personnel the IBM methods of accounting for fixed assets in effect at that location.

General Accounting Division

PAYROLLS

During the month of May there were 142 removals from payroll, including 2 leaves of absence and 3 transfers to other units of the Company. There were 299 additions to the payroll including 26 employees re-engaged with continuous service, and 1 transfer from another unit of the Company. The result is a net increase of 157 employees on the payroll.

To assist Nucleonics Department personnel in locating H. W. Instructions Letters relative to Employee Benefit Plans, all instructions letters pertaining to this subject are being combined into H. W. Instructions Letter No. 3. Accordingly, work was begun on revising and combining Instructions Letters No. 44 and No. 59 relative to the Pension Plan.

In connection with our study and analysis of our payroll practices and procedures and our study of IBM equipment for payroll purposes, an opportunity was given to the National Cash Register Company representative to study our present system to determine whether we were making full use of the equipment we now use and to determine if it would be to our advantage to use additional NCR equipment for the purpose of calculating gross payroll. The NCR representative decided to make a study which he completed in approximately three days. His report was submitted to us during May and he suggested that we send a representative to the Seattle area to observe various NCR installations in operation. A representative of payrolls visited several installations in Seattle and Tacoma with the NCR representative and the information obtained on these visits together with information contained in the above report will be used to determine the advisability of continuing the use of NCR equipment and possibly supplementing our present equipment.

During the month of May, a review was made of the file of employees authorized to receive weekly salary checks. This review indicated that the ratio of individuals authorized to the number of employees paid was high. Schedules were prepared for each division listing the individuals authorized and Divisions were asked to review the schedules and advise if any names should be removed from the list.

During the month of May, a tabulation of shift schedules to be used in accordance with H. W. Instructions Letter No. 87 was brought up to date.

On May 28, 1951, weekly paid employees in the Public Health Building began registering "in" and "out" on a time clock which had been installed after a study revealed the need of a clock.

Approximately 520 man hours were expended in connection with a Spring Payroll Review for exempt employees.

As a result of changes in overtime payment practices for monthly paid employees, a new overtime record card was designed and put into use for the purpose of facilitating the work in Monthly Payroll in connection with payments for planned overtime work. Approximately 140 man hours were expended in posting to these cards the planned overtime schedules and overtime hours worked during the months of April and May.

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The distribution of Monthly Payroll labor cost for May was tabulated on IBM equipment in order to make labor costs available on June 4 for inclusion in operating reports. The change in the reporting period for attendance of exempt employees makes it necessary to complete monthly cost distribution in approximately two days.

Military Duty Allowances were paid during May to ten employees who entered the Armed Forces. The gross payment amounted to \$3,555.84 of which \$2,405.74 was paid to 7 weekly paid employees and \$1,150.10 was paid to 3 monthly paid employees. A total of \$17,863.92 has been paid to 52 weekly paid employees and 5 monthly paid employees for Military Duty Allowance as of May 31, 1951.

There were 156 employees, as of May 31, 1951, in the Armed Forces of the United States as follows:

	<u>Called to Duty</u>	<u>Volunteered For Duty</u>	<u>Total</u>
Reserve Officers	9	3	12
Enlisted Reserve	34	6	40
National Guard	6	-0-	6
Selective Service	37	-0-	37
Voluntary Enlistments	<u>-0-</u>	<u>61</u>	<u>61</u>
Total	<u>86</u>	<u>70</u>	<u>156</u>

At the request of Community & Public Relations Division an addressograph file was established consisting of names and addresses of Nucleonics Department employees who have entered the Armed Forces of the United States. This file will be used to mail these employees a copy of the Hanford Works News.

New authorization cards for check-off of union dues were received for 24 employee members of 7 unions affiliated with Hanford Atomic Metal Trades Council and 3 employee members of the Building Service Employees International Union, Local 201. In addition to the above one authorization card for an employee member affiliated with the Hanford Atomic Metal Trades Council was submitted which authorized deduction of union dues in the amount of \$3.00 per month instead of \$2.00.

Check-off of union dues is in effect for 883 employee members of 12 unions affiliated with the Hanford Atomic Metal Trades Council, and 22 employee members of the Building Service Employees International Union, Local 201.

There were 30 time cards received late in weekly payroll during the month of May as follows:

<u>Week Ended</u>	<u>Number</u>
4-29-51	2
5- 6-51	2
5-13-51	5
5-20-51	8
5-27-51	<u>13</u>
Total	<u>30</u>

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Division representatives have been reminded that late time cards cause considerable extra work and make it difficult to complete the payroll in the limited time available.

Approximately 135 man hours were expended on a special payroll analysis.

Work was begun on revisions of several sections of proposed "Appendix C" in order to complete a final draft at an early date.

In addition to regular payroll addressograph work, approximately 162,000 items were addressographed for other divisions. This is the largest number of items addressographed for other divisions since September 1, 1946 and this work constitutes the major portion of the work of the addressograph section of Weekly Payroll.

During the month of May, 974 U. S. Savings Bonds having a maturity value of \$48,725 were withdrawn from the G. E. Employees Savings and Stock Bonus Plan by 97 employees. U. S. Savings Bonds and Custody Receipts having a maturity value of \$200,550 covering purchases by employees through payroll deductions in April were delivered to employees on June 1, 1951. There were 733 U. S. Savings Bonds and 2,743 Custody Receipts delivered.

Replacements were requested for 30 Custody Receipts which were reported lost by 2 Nucleonics Department employees during the month.

Checks representing income for the years 1949 and 1950 on General Electric common stock credited to their accounts were delivered to 31 participants in the G. E. Employees Savings and Stock Bonus Plan who, during the year 1951, withdrew U. S. Savings Bonds purchased in 1948 or 1949.

Authorizations for deductions from payroll for the purchase of safety shoes were received from 176 weekly paid employees in May.

Rent and telephone charges were deducted from salaries of weekly paid employees in May as follows:

House Rents	3 094
Dormitory Rents	699
Trailer Rents	103
Barracks Rents	103
Telephone Accounts	<u>2 163</u>
Total	<u>6 162</u>

At the request of Division Managers or their representatives, approximately 400 salary checks were held in Payroll Division. These checks were delivered by payroll representatives to individual employees who were scheduled off on Thursday and Friday and who called at the Payroll Division for their checks.

During May, 66 salary checks and 131 Withholding Statements were mailed direct to employees who had been removed from the payroll.

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There were three garnishment cases pending at April 30, 1951. Three garnishments were served on the Company during May. Five of these cases were dismissed during May by Court Order, two with payment to the Court, and three without payment to the Court. As of May 31, 1951 one garnishment case was pending.

There were 4 lost salary checks not reissued as of April 30, 1951. Five salary checks were reported lost during the month of May. Four of these checks were subsequently located by the employees and one check was reissued. There were 4 lost salary checks not reissued at May 31, 1951.

At May 31, 1951, there were approximately 1,000 employees having preferential rates as a result of the salary rate revision made effective July 19, 1948. During May, preferential rates were eliminated in 49 cases where employees were transferred or reclassified.

During the month of May, continuity of service was restored by the Pension Board to three Nucleonics Department weekly paid employees who were re-engaged after an absence due to lack of work in excess of one year.

A total of 560 employees were scheduled to begin their 1951 vacation in May. Division Managers or their authorized representatives approved deferment of one week of the 1951 vacation to 1952 for 8 weekly paid employees and 11 monthly paid employees. As of May 31, 1951, 193 weekly paid employees and 87 monthly paid employees had deferred one week of their 1951 vacation to 1952.

Under the G. E. Pension Plan, 80 weekly paid employees became eligible for participation in May. Enrollment cards were received from 52 of these employees and 26 elected not to participate in the Plan. Two of the newly eligible employees have not returned either an enrollment card or a "waiver card". Thirty-four employees who were participating in the Plan have discontinued making contributions as of May 31, 1951.

During May, 608 claims for disability benefits, surgical benefits and hospital benefits under the Insurance Plan were processed and forwarded to Metropolitan Life Insurance Company. In May, 962 checks totaling \$58,047 for 753 claims were received from the Insurance Company and forwarded to employees or to hospitals and surgeons in accordance with authorizations of the employees.

Bank reconciliations completed:

Weekly Salary through #245, week ended May 6, 1951
Weekly Salary Vacation #245, week ended May 6, 1951
Bond Account - April
Monthly Payroll #56, April 1951

PLANT SECURITY AND SERVICES DIVISIONS

MONTHLY REPORT - MAY 1951

SUMMARY

There was one major injury during the month making a total of three for the year to date and a frequency rate of 0.45.

There were seven fires in the industrial areas with a loss of \$6.00.

Plant laundry volume increased approximately 20% during the month. It is anticipated that an additional shift will be added during July in order to handle expected additional volume.

A 4:00 P.M. to 12:00 shift was added in Printing and Duplicating in order to handle increased volume of orders and reduce backlog.

Procedures analysis and Forms Control activities resulted in savings of \$12,523 of which \$12,000 will be on an annually recurring basis.

The recently established Non-Technical Document Review Board held its first meeting on May 2, 1951.

PLANT SECURITY AND SERVICES DIVISIONS
MONTHLY REPORT - MAY 1951

ORGANIZATION AND PERSONNEL

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Number of employees on payroll:

	<u>Beginning of Month</u>	<u>End of Month</u>	<u>Increase</u>	<u>Decrease</u>
Staff	3	3		
Patrol and Security	640	641	1 (a)	
Safety & Fire Protection	148	147		1 (b)
General Service (Building & Laundry Service, Office Service, Records Control and Procedures Analysis)	256	278	22 (c)	
	—	—	—	—
TOTALS	1,047	1,069	23	1

NET INCREASE: 22

(a) - Patrol and Security

- 10 - New Hires
- 1 - Transferred from Health Instrument Division
- 1 - Returned from Leave of Absence
- 3 - Removed from Roll due to Leave of Absence
- 4 - Transferred to other Divisions
- 4 - Terminations

(b) - Safety & Fire Protection

- 1 - New Hire
- 1 - Returned from Leave of Absence
- 1 - Transferred to Purchasing & Stores
- 1 - Removed from Roll due to Leave of Absence
- 1 - Termination

(c) - Building and Laundry Service

- 6 - New Hires
- 1 - Returned from Leave of Absence
- 1 - Transferred to Municipal Division

Office Service

- 18 - New Hires
- 2 - Transferred from other Divisions
- 2 - Transferred to other Divisions
- 2 - Terminations

Plant Security and Services Divisions

SAFETY AND FIRE PROTECTION

Injury Statistics

Days since last Major Injury 10
Accumulated exposure hours since last Major Injury 456,248
Major Injury Frequency Rate (1/1/44 through 5/31/51) 0.80

	April	May	Year to Date	Comparative Period, 1950
Major Injuries	1	1	3	2
Sub-Major Injuries	2	3	10	12
Minor Injuries	341	325	1,491	1,564
Exposure Hours	1,373,996	1,414,369	6,715,402	6,188,207
Major Injury F/R	0.73	0.71	0.45	0.32
Major Injury S/R	0.11	0.001	0.07	0.002
Penalty Days	150	0	450	0
Actual Days Lost	20	2	22	15
Minor Injury F/R	2.48	2.30	2.22	2.53

Major Injury No. 75

On May 21, at 9:10 A.M., an employee of the Electrical Distribution Section of the Electrical Division, was burned on both hand, forehead, and both eyes, and sustained an abrasion of the cornea of the left eye, when he attempted to remove a spring bronze wire (used for blocking the movement of a meter in shipment) from a meter installed on a switch board at the Chief Joseph Junior High School. In removing this blocking device, injured had released the upper end of the spring and in attempting to loosen the lower end, he allowed the spring to slip from his fingers causing it to fall into the electrical terminal. The contact this spring established caused a short circuit between a load side terminal and the metal case of the meter. Employee's injuries were caused by the intense heat of the flashover and some particles of metal thrown off by the arc.

Sub-Major Injury No. 201

On May 14, an employee of the 100-B Area Power Division was assigned the task of flume cleaning, to be performed on May 15. Preparations were made which included obtaining protective clothing. Injured employee did not wear clean coveralls, but wore coveralls which had been worn the previous day for lime handling. During the cleaning operation, his clothing became wet and later in the day, his legs and arms became irritated from lime burns. He was cognizant of the fact that the coveralls had been used for lime handling, but did not consider this a pertinent factor in wearing them.

Sub-Major Injury No. 202

At approximately 10:58 A.M., May 16, a Maintenance Division employee in the 200-W Area sustained burns when a red-hot iron washer from a 3/8" U-bolt lodged inside his boot. Injured was standing on a ladder while removing a pipe bracket from a support pole and line 12' above the ground. Because U-bolt was corroded, he decided to use a cutting torch. After being handed the torch, he cut one leg of the U-bolt from the top of the bracket. He then turned the bracket over on the pipe and cut the second leg below the nut. After shutting off the torch and lowering it to the ground, he attempted to separate the

Plant Security and Services Divisions

Safety and Fire Protection Division (Contin)

DEFINITION

U-bolt and bracket so that neither piece would fall. As the U-bolt and bracket came apart, a sudden flipping motion to the bracket resulted and a red-hot washer lying on the bracket was thrown against the injured's chest and fell into the open collar of his coveralls. It then dropped inside his clothing into his left boot. He sustained second degree burn to center of chest, $1\frac{1}{2}$ " and 2" third degree burns on outer side of left foot below external ankle bone, a nickel-sized third degree burn on instep, and a pea-sized second degree burn on top of foot.

Sub-Major Injury No. 203

At 10:00 A.M., May 21, a chemist of the Analytical Division, 300 Area, received a severe laceration on the palm of his left hand. He was handling a wet 800 ML. beaker while wearing rubber gloves and the beaker slipped from his grasp, breaking on the bench top. Injured inadvertently attempted to regain his grasp on the slipping beaker and forced his hand onto jagged pieces of glass resulting from the breakage.

Safety Activities

Several meetings were conducted with personnel of Technical, Health Instrument and Manufacturing Divisions for the purpose of approving a standard type full face respiratory mask. Problems involved radiation factors, wearing of prescription safety glasses, and air supply. Recommendations are being prepared for final consideration.

Safety coverage still being provided to construction operating units of the E & C Divisions. No decision has been concluded concerning final operations of their Accident Prevention Program.

Construction operations by outside contractors have added a considerable number of hazards to GE personnel. However, fair corrective progress is reported.

An increased number of personnel over the entire plant has resulted in greater participation in new employee safety orientation.

A representative of the Safety Division attended the A.E.C. Fourth Annual Conference in Washington, D. C.

Salvage of used safety glasses appears good. Work is being conducted by the Stores Division under the direction of the Safety Division.

The 100-H Area was awarded the One-Year Safety Award Pins.

Fire Protection Activities

Fire protection surveys were completed on Buildings 115-B, 1703-B, 2701-W, and 3708.

All vaporizing liquid fire extinguishers in buildings north of the Richland Barricade have been removed. Where additional coverage is needed after the removal, the four-pound dry chemical type is being used.

Plant Security and Services Divisions

Fire Protection Activities (Contin)

The new dry chemical extinguisher is being demonstrated throughout the plant so all employees will be able to use it effectively if the need arises.

New patrolmen are being given training in the use of first aid fire fighting equipment, fire alarm systems and fire procedures.

The Vita-Guard panel in the 200-W Area was moved from the Power House to the Fire Station.

The first large grass fire of the season occurred on May 28. The fire started from an Army burning pit. Three-hundred acres were burned over before the fire was brought under control. The P-11 project was in the line of travel of the fire but it was prevented from entering the fenced-in area.

A total of 279 drills were held during the month.

Prints of the Pile Technology Building were reviewed and recommendations submitted.

Preliminary prints of the Mechanical Development Building were reviewed and recommendations submitted.

Industrial Fires

<u>Division</u>	<u>Area</u>	<u>No. of Fires</u>	<u>Cause</u>	<u>Loss</u>
Maintenance	100-H	1	Cutting torch being used by welder ignited cotton glove that was left under material being cut.	None
Maintenance	W.Bluffs	1	Workman added tar to tar pot which became too hot and flashed.	None
Maintenance	100-D	1	Heat from stainless steel tube ignited solvent being used to test tube for leaks.	None
Medical	100-B	1	Electrical current from wiring on inductotherm machine created current across zipper on oil silk pillow cover and cotton pillow slip.	None
Transportation	Outer	1	Grass fire probably caused by a carelessly discarded cigarette or other burning smoking material.	None

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Plant Security and Services Divisions

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Industrial Fires (Contin)

<u>Division</u>	<u>Area</u>	<u>No. of Fires</u>	<u>Cause</u>	<u>Loss</u>
Electrical Distribution	200-E	1	Sun rays focusing through a five-gallon clear glass bottle ignited square of corrugated cardboard and charred wooden box.	None
Security & Services	100-H	1	Siren cable from battery across front of radiator wore through insulation of cable, causing short circuit and igniting cable insulation.	\$6.00
TOTAL INDUSTRIAL FIRES		7	TOTAL LOSS	\$6.00

GENERAL SERVICE

Building and Laundry Service

Plant Laundry (200-W)

	<u>April</u>	<u>May</u>
Coveralls - Pieces	38,252	47,956
Towels - Pieces	7,910	8,586
Miscellaneous - Pieces	94,538	113,265
Total Pieces	140,700	169,807
Total Dry Weight - Pounds	203,058	248,941

Richland Laundry (700)

Flatwork - Pounds	57,619	65,569
Rough Dry - Pounds	18,628	20,077
Finished - Pounds	2,488	2,999
Estimated Pieces	102,943	116,125
Total Dry Weight - Pounds	78,735	88,645

Monitoring Section (200-V Laundry)

Poppy Check - Pieces	104,166	125,830
Scaler Check - Pieces	135,941	160,068
Total Pieces	240,107	285,898

Plant Security and Services Divisions

Office Service

Central Mail

	<u>April</u>	<u>May</u>
Pieces of internal mail handled	608,670	757,589
Pieces of postal mail handled	79,080	87,456
Pieces of registered mail handled	1,185	1,411
Pieces of insured mail handled	325	408
Pieces of special delivery mail handled	295	255
	<hr/>	<hr/>
Total Mail Handled	689,555	847,319
Total amount of postage used	\$2,114.06	\$2,642.89
Total teletypes handled	9,380	8,821

Office Equipment

Several shipments of office equipment has been received on schedule and all outstanding orders will be filled by July 1, 1951. New equipment for projects has been set aside and will be available.

	<u>April</u>	<u>May</u>
Office Machines repaired in shop	277	315
Office Machines service calls	459	914
	<hr/>	<hr/>
Total Machines Serviced	736	1,229

Central Printing

A 4:00 to 12:00 shift was started in Central Printing in order to relieve the backlog of work.

	<u>April</u>	<u>May</u>
Multilith orders received	352	378
Multilith orders completed	364	355
Multilith orders on hand	119	142

Stenographic Service

	<u>April</u>	<u>May</u>
	<u>Hours</u>	
Dictation and Transcription	:00	12:30
Machine Transcription	31:00	28:45
Letters	47:25	48:55
Manuals and Procedures	335:50	7:45
Duplicating - Stencils, Ditto	291:00	862:15
Special	384:35	636:40
Meeting Time	31:00	23:00

Plant Security and Services Divisions

Stenographic Service (Contin)

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	<u>April</u>	<u>May</u>
	<u>Hours</u>	
Training	39:20	104:20
Absentee Time	:00	40:00
Holiday and Vacation	:00	:00
Unassigned Time	56:00	56:00
Total	1,216:10	1,820:10
Employees loaned to other divisions	919:00	1,129:00

Duplicating Service

This unit is now operating on two shifts in order to keep up with requirements.

	<u>April</u>	<u>May</u>
Stencil and fluid duplicating orders received	1,106	981
Stencil and fluid duplicating orders completed	1,101	1,030
Stencil and fluid duplicating orders on hand	67	17
Number of copies	625,248	615,174
Number of stencils	5,431	4,019
Collated orders	33	34
Collated copies	143,855	132,340

Records Control

Quantity of records received, processed and stored:

Accountability Section	7	Standard Storage Cartons
Electrical Division	14	" " "
Engineering and Construction	144	" " "
Employee and Community Relations	2	" " "
General Accounting Division	99	" " "
Health Instrument	17	" " "
Instrument Division	5	" " "
Maintenance Division	4	" " "
Manufacturing Accounting	73	" " "
Municipal, Real Estate & General Services	22	" " "
Plant Security and Services	15	" " "
Power Division	35	" " "
Purchasing Division	1	" " "
"S" Division	11	" " "
Stores Division	2	" " "
Subcontractors - Kellex Cooperation	6	" " "
Technical Division	74	" " "
Transportation Division	3	" " "

TOTAL

535 Standard Storage Cartons

Plant Security and Services Divisions

Records Control (Contin)

Persons provided records service:	505
Records cartons issued:	650
Records destroyed:	35 linear feet of duplicate non-record material.
Records reboxed:	5 Standard Cartons
Filing Service provided:	284 pieces filed in with records already in storage.

Percentage of the Records Service Center vault occupied by records is 59.8% excluding Civilian Defense Area, and 37% including Civil Defense Area.

The final report of the survey of yellow file coverage was completed and sent to the Records Committee.

Arrangements were completed to set up storage in the vault for TOP SECRET material.

The survey of vital records to be microfilmed for off-site storage was completed and the report made to the Records Committee.

The procedure for the control of filing equipment was issued and is now in operation. Two hundred, five-drawer metal locked filing cabinets were ordered and will be received approximately June 15.

Requests for filing cabinets received:	69
Requests for filing cabinets filled:	38
Requests for filing cabinets turned down:	4
Filing cabinets made available for reassignment through better utilization of filing equipment:	6

A standardized filing system was established in one Maintenance office, one "S" Division office, and two Purchasing and Stores Divisions offices.

The Records Control Supervisor attended the Records Management Conference in New York May 21 through May 25, and delivered a paper on General Electric Company's Hanford Records Management Program.

Procedures Analysis

	<u>April</u>	<u>May</u>
Printing orders received:	424	454
Printing orders cancelled	29	26
New Numbers assigned	110	108
Forms designed	29	33

A forms survey has been completed for Security Patrol. This survey has resulted in the elimination of quite a few forms and has standardized all of their forms for general use in each area. Savings which have resulted will be compiled in a formal report to the Security Division. Report will be completed within the next two weeks.

Plant Security and Services Divisions

Procedures Analysis (Contin)

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The establishment of new forms to be used by MJ-1 and MJ-4 is progressing according to schedule. These forms are being coordinated with forms used by both 200-East and 200-West Areas in order to standardize as much as possible all forms that are being used by the "S" Division. This study will result in a clerical operating manual.

A purchase order has been placed for an Auto-Typist (referred to in April report) to be used in our Employment Section. The installation of this equipment will result in an estimated annual savings of \$9,000. Installation is expected within the next four to six weeks.

Results of a study made of duplicating methods has been submitted in report form. Approval has been obtained to request permission from the Commission to purchase nine offset duplicating machines and seven sets of Xerograph equipment. This equipment is to be installed in convenient locations to serve all areas. Centralized control is to be exercised over this equipment and the operators. Resulting savings will be established through experience.

Savings created during the month were:

Forms Control	\$3,523.00
Procedures	9,000.00

TOTAL	\$12,523.00
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Of this amount, \$12,000 will be on a recurring basis.

PATROL AND SECURITY

There were 257 GE employees given orientation talks which dealt with plant safety and security rules, also a brief resume of plans and policies of the General Electric Company for its employees.

There were 191 security meetings held during the month and attended by 2,468 employees.

The following security education items were issued during the month:

Five articles appeared in the WORKS NEWS concerning the subject of security.

Eleven thousand "A-B-C" security bulletins were distributed to the residences of General Electric personnel during the month. There were two bulletins, one entitled "Play Ball With Security" and the other "Aunt Minnie".

In cooperation with the Atomic Energy Commission Security Division, the film entitled "The Fight for Heavy Water" was shown at the Village Theater on May 8. This film was borrowed from the British Embassy and loaned to Hanford Works for one day only. Approximately 2,500 employees attended.

Plant Security and Services Divisions

Patrol and Security (Contin)

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A representative of the Security Division showed the following security films during the month:

- "Sabotage" at 117 meetings with 1,374 employees in attendance.
- "On Guard" at 2 meetings with 50 employees in attendance.
- "Fitting U Into Security" at two meetings with 60 employees attending.

Security Bulletin No. 60 entitled "Insecurity" was issued on May 17.

Five thousand copies of a bulletin entitled "Sabotage: 1951" were distributed at the movie shown at the Village Theater on May 8 and at special security meetings during the month. This bulletin was supplied to the General Electric Company by the Atomic Energy Commission Security Division.

There were 171 employees who received a "Q" orientation talk from a representative of the Security Division during the month.

The following emergency plans were placed into effect during the month throughout the plant areas:

Number of practice evacuations held:	3
Number of practice blackouts:	15
Number of practice mobilizations:	27

Section XIX, Page 7, of H.W. Instructions Letter No. 135 entitled "Procedures for Processing Classified Matter" was revised and issued May 1. This revision provided for the outlining of the responsibility for the accountability of reproductions and blueprints classified "Office Use Only" issued by the Blueprint Reproduction Section.

For the period of May 8 through 11, a representative of the Security Division, accompanied by a member of the Atomic Energy Commission Security Division, made a survey and inspection of the Puget Sound Navy Shipyard, Bremerton, Washington, in connection with its proposal to fabricate the "B" blocks for the 100-C Area. All phases of security (including both administrative and physical) were covered with their personnel. Approximately six hundred employees will require a "Q" clearance for the performance of the work on the contractual agreement.

Beginning May 8, a document depository service was established at the Emergency Office, 700 Area, for use by outer area operations personnel.

Extra Security Patrols were established May 10 in the MJ-1 Area occasioned by the 202-S welding incidents. Three Security Patrolmen were placed on special assignment in the 234-5 Building for Task V Top Secret testing. These men will also inspect MJ-1 construction site from 8:00 PM until 12:00 PM daily.

One of the instructors of the Patrol Training School commenced taking photographs of scenes incidental to the producing of the current Security activities film entitled "Espionage". This work was started May 16.

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Plant Security and Services Divisions

Patrol and Security (Contin)

A new post was established May 23 in the 700 Area at the south side for construction work on the 703 Building. This post will be a vehicle gate and the only persons admitted will be those with a regular pass for the 700 Area. Occupants of vehicles and vehicles will be admitted. No pedestrian traffic will be admitted via this gate.

On May 28, a memorandum was issued whereby Security Patrol will check Barracks No. 178 in the 3000 Area at least once each shift on the No. 1 and No. 3 shifts on regular working days and on all shifts Sundays and holidays. The Minor Construction Division and the Atkinson and Jones Service Group have moved their offices to this building from the 101 Building, 3000 Area.

The United States Army unit stationed at Hanford Works conducted anti-aircraft practice firing in the plant area with Security Patrol establishing the standard road blocks on several plant roads to prevent traffic from interfering with the firing on the following dates:

100-B	7:25 A.M.	May 6
	5:30 P.M.	May 16, 17, 18 and 22
100-D	5:30 P.M.	May 16, 17, 18 and 22
100-F	5:20 P.M.	May 16, 17, 18 and 22
100-H	8:30 A.M.	May 6
	7:48 P.M.	May 16
	5:15 P.M.	May 17, 18 and 22

There were 19 incidents investigated regarding unattended documents, "Restricted Data", improper storage of classified material, etc.

A total of fifteen new Security Patrolman were given their basic training, including M-8 and machine gun instruction at the Patrol Training School during the month.

A total of 705 pat searches were made during the month. Escorts handled totalled 450.

The Patrol Division made 26 ambulance runs for the Medical Division during the month.

The General Electric Company Non-Technical Document Review Board, established by Nucleonics Department Organization Announcement A-69, dated March 28, 1951, held its initial meeting on May 2. At this meeting and subsequent meetings held on May 16 and 29, the Board discussed and prepared specific procedures for its operation. The chief function of the Board will be to review classified documents, either on its own initiative or upon the request of General Electric Company or du Pont Company personnel in connection with the operation of Hanford Works.

The Board will also be authorized to change or cancel the classifications of "administrative documents" which do not contain "Restricted Data". This Board

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Plant Security and Services Divisions

Patrol and Security (Contin)

will take cognizance of all classification markings appearing on a document under review. No action will be taken when the Board doubts the wisdom of any proposed action.

Approximately 100 documents were reviewed during the meetings in May. Action was taken to declassify or reclassify about forty percent of them, and the balance was either forwarded to the Coordinating Organization Director for further processing or returned to Files as being non-classifiable at the present time.

There were 3,745 badge transactions completed during May including "A", "B", "C" and temporary type badges.

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HANFORD WORKS
General Electric Company
Richland, Washington

REPORT OF VISITORS FOR PERIOD ENDING MAY 31, 1951

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data</u> <u>Class.</u> <u>Unclass.</u> <u>Areas</u>
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GENERAL ACCOUNTING DIVISION

I. Visits to other Installations

B. Schauss to: Oak Ridge National Lab. Oak Ridge, Tennessee	Observe I.B.M. system of plant accounting	F. R. Eanou	5-16-51	5-22-51	X
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B. Schauss to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Observe I.B.M. system of plant accounting	D. C. Bogart, Jr.	5-22-51	5-25-51	X
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ACCOUNTABILITY DIVISION

I. Visits to other Installations

C. G. Shortess, Jr. to: Los Alamos Scientific Lab. Los Alamos, New Mexico	Exchange of TS infor- tion concerning SE accountability	A. G. R. Champion	5-22-51	5-25-51	X
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MEDICAL DIVISION

I. Visitors to this Works

S. T. Cantril Tumor Institute Swedish Hospital Seattle, Washington	Medical consultation	W. J. Norwood P. A. Fuqua	5-28-51	5-29-51	X
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Name - Organization Purpose of Visit Person Contacted

Arrival Departure Restricted Data Class. Unclass Areas

II. Visits to other Installations

W. D. Norwood, M. D. Attend AEC Bio-Medical A. M. Bruss
to: Argonne National Lab. Program Directors Meeting
Chicago, Illinois

5-27-51 5-31-51 X

COMMUNITY DIVISIONS

I. Visits to other Installations

C. R. Bergdahl Technical discussions E. F. Fox
to: Sandia Operations concerning results of
Los Alamos-Santa Fe, New Mexico tests at Eniwetok

5-7-51 5-8-51 X

C. R. Bergdahl Business and community F. Diluzio
to: Los Alamos Scientific Lab. problems E. Brooks
Los Alamos, New Mexico Mr. Kersey

5-9-51 5-9-51 X

L. F. Huck Confer with their F. C. Diluzio
to: Los Alamos Scientific Lab. community management
Los Alamos, New Mexico group on community problems

5-7-51 5-9-51 X

ENGINEERING AND CONSTRUCTION DIVISIONS

I. Visitors to this Works

K. L. Boring Inspection, consul- W. P. Ingalls
General Engineering Laboratory tation and test of
Schenectady, New York 432 Project Equipment

3-26-51 5-4-51 X

A. A. Batza Inspection, consul- W. P. Ingalls
General Engineering Laboratory tation and test of
Schenectady, New York 432 Project Equipment

3-8-51 Still here X

M. A. Edwards Discussion of GEL's J.S. Parker
General Engineering Laboratory assistance to Hanford
Schenectady, New York

5-17-51 5-18-51 X

200-W Const.
234-5 Const.
200-W 231, 234,
235
200-W Const.
234-5 Const.
200-W 231, 234,
235
202-S Canyon
200-W Const.
277-S

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>Unclass.</u>	<u>Areas</u>
E. E. Johnson General Engineering Laboratory Schonectady, New York	Discussion of GEL's assistance to Hanford	J. S. Parker	5-17-51	5-18-51	X		202-S Canyon 200-W Const. 277-S
D. J. Santoler General Engineering Laboratory Schonectady, New York	Instrumentation on Project O-412	W. R. Felts	5-7-51	5-10-51	X		100-B 108 3000
M. W. Vittum General Engineering Laboratory Schonectady, New York	Installation consul- tation on 432 Project	W. P. Ingalls	5-14-51	5-26-51	X		200-W (Op) 234, 235 234-5 Const.
R. J. Walsh General Engineering Laboratory Schonectady, New York	Installation consul- tation on 432 Project	W. P. Ingalls	5-14-51	5-26-51	X		200-W (Op) 234-5 Con. 234-5 Const.
S. L. Allison Pugot Sound Navy Shipyard Bremerton, Washington	Consultation on "B" block fabrication	V. D. Nixon C. W. Harrison L. Pihlfeldt	5-2-51	5-5-51	X		700 White Bluffs
T. Peterson Pugot Sound Navy Shipyard Bremerton, Washington	Consultation on "B" block fabrication	V. D. Nixon C. W. Harrison L. Pihlfeldt	5-2-51	5-5-51		X	700 White Bluffs
W. E. Ainsworth Pugot Sound Navy Shipyard Bremerton, Washington	Consultation on "B" block fabrication	V. D. Nixon C. W. Harrison L. Pihlfeldt	5-2-51	5-5-51		X	700 White Bluffs
S. Dunning Amercoat Paint Company Seattle, Washington	Inspection of equipment	F. H. Shadel	5-24-51 5-2-51	5-24-51 5-3-51	X		221-U 200-W Const. 241-U 234-5 Const.
E. G. McKay Charles T. Main, Incorporated Boston, Massachusetts	Inspection for contract work	V. D. Nixon	5-23-51	5-24-51	X		100-D XXX 100-B XXX

DECLASSIFIED

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data	
					Class.	Unclass.
L. D. Singleton H. A. Hadley, Associates Burlington, Vermont	Installation of balance- ing equipment in 234-5 Construction Area	W. P. Ingalls	5-18-51	6-22-51	X	200-W XXX 234-5 Const.
C. P. Carr Eastern Industries Seattle, Washington	Engineering consulta- tion on agitators which are furnished by his firm	H. M. Parker	5-9-51 5-15-51 5-31-51	5-11-51 5-16-51 5-31-51	X X X	277-S 277-S 277-S, 202-S Canyon
R. L. Towers Eastern Industries Seattle, Washington	Engineering consulta- tion on agitators which are furnished by his firm	H. W. Huntley	5-15-51 5-25-51	5-15-51 5-25-51	X X	277-S 277-S
A. W. Flynn Kollex Corporation New York, New York	Consultation on contract	J. H. Wolcott	5-7-51	5-15-51	X	700
J. Thomas Kollex Corporation New York, New York	Consultation on contract	J. R. Wolcott	5-8-51	5-11-51	X	700
S. M. Stoller Kollex Corporation New York, New York	Consultation on contract	J. R. Wolcott	5-21-51	5-28-51	X	700
K. A. McCroight Sound Construction & Eng. Seattle, Washington	Inspect site, Power Plant and Pumping Station	B. D. Puckott	5-16-51	5-16-51		X 300
G. A. Smith Sound Construction & Eng. Seattle, Washington	Inspect site, Power Plant and Pumping Station	B. D. Puckott	5-16-51	5-16-51		X 300
II. Visits to other Installations						
G. S. Cochran to: General Engineering Lab. Sphenoctady, New York	Consultation on 432 Project	D. H. Marquis	5-8-51	5-25-51	X	

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Arms

Restricted Data
Class Unclass.

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Purpose of Visit Person Contacted

Name - Organization

Arrival

Departure

Class

Unclass.

J. M. Fox
to: Mallinckrodt Chem. Wks.
St. Louis, Missouri

Corrosion of evaporator W. H. Kollar
equipment and fabrication
of evaporator equipment on
Projects C-361 and C-362

5-1-51

5-3-51

X

J. M. Frame
to: Mallinckrodt Chem. Wks.
St. Louis, Missouri

Corrosion of evaporator W. H. Kollar
equipment and fabrication
of evaporator equipment on
Projects C-361 and C-362

5-1-51

5-3-51

X

A. Gavin
to: Holmes and Narver
Los Angeles, California

Determine capabilities and Mr. Holmes
field work of Holmes and Narver
in design field

5-11-51

5-11-51

X

L. O. Hasselblad
to: General Engineering Lab.
Schenectady, New York

Check shipping procure- F. E. Crover
ment and schedules

5-18-51

5-19-51

X

R. C. Hollingshead
to: Kellogg Corporation
New York, New York

Consultation on material G. White, Jr.
in New York offices

5-25-51

5-26-51

X

D. A. Hoover
to: General Engineering Lab.
Schenectady, New York

Consultation on 432 D. H. Marquis
Project

5-8-51

5-11-51

X

W. P. Ingalls
to: General Engineering Lab.
Schenectady, New York

Consultation regarding D. H. Marquis
design and procurement
Projects C-198 and C-143

5-21-51

5-28-51

X

T. W. Joffe
to: General Engineering Lab.
Schenectady, New York

Consultation regarding J. E. Brown
electrical design of
Project C-413

5-21-51

5-31-51

X

J. A. Larkin
to: General Engineering Lab.
Schenectady, New York

Check shipping procure- F. E. Crover
ment and schedules

5-18-51

5-19-51

X

DECLASSIFIED

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Persons Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class</u>	<u>Unclass</u>	<u>Areas</u>
J. A. Larkin to: Kollex Corporation New York, New York	Check shipping procurement and schedules	G. White, Jr.	5-21-51	5-21-51	X		
G. B. McDonald to: Kollex Corporation New York, New York	Consultation on materials	G. White, Jr.	5-28-51	5-29-51	X		
J. S. McMahon to: Kollex Corporation New York, New York	Review status of design projects under contract	G. White, Jr.	5-24-51	5-26-51	X		
J. S. McMahon to: General Engineering Lab. Schenectady, New York	Consultation on equipment for RM line	D. A. Marquis	5-22-51	5-23-51	X		
J. S. McMahon to: Knolls Atomic Power Lab. Schenectady, New York	Consultation in instrumentation	W. H. Milton	5-22-51	5-23-51	X		
R. C. Mann to: Foxboro Company Foxboro, Massachusetts	Expedite materials on Purchase Order HMC-10549, Project C-362	J. Dobson S. U. Kirk	5-24-51	6-1-51		X	
R. C. Mann to: Kollex Corporation New York, New York	Expedite materials for Purchase Order HMC 10549	J. S. Atwood	5-28-51	6-2-51	X		
J. S. Parker to: Kollex Corporation New York, New York	Consultation on contract	G. White, Jr.	5-7-51	5-11-51	X		
J. S. Parker to: Knolls Atomic Power Lab. Schenectady, New York	Consultation on assistance to Hanford	W. H. Milton B. R. Prontico	5-20-51	6-1-51	X		

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Name - Organization

J. S. Parker
to: General Engineering Lab.
Schonectady, New York

J. R. Wolcott
to: Kellogg Corporation
New York, New York

C. W. Harrison
to: Puget Sound Navy Shipyard
New York, New York

J. B. Medlin
to: Peters Welders
Dobbs Ferry, New York

J. B. Medlin
to: E.W. Bliss Company
Canton, Ohio

J. B. Medlin
to: Baldwin-Hamilton Corp.
Philadelphia, Pennsylvania

J. B. Medlin
to: Whiting Corporation
Chicago, Illinois

J. B. Medlin
to: Chicago Metal Hose
Chicago, Illinois

J. B. Medlin
to: Ronaflex Tubing Company
Philadelphia, Pennsylvania

Purpose of Visit

Consultation on assistance
to Hanford

Consultation on Project G. White, Jr.
C-341

Consultation on "B"
block fabrication

Contact vendor on
pigtaills, rubber,
gun barrels and winches

Contact vendor on
pigtaills, rubber,
gun barrels and winches

Contact vendor on
pigtaills, rubber,
gun barrels and winches

Contact vendor on
pigtaills, rubber,
gun barrels and winches

Contact vendor on
pigtaills, rubber,
gun barrels and winches

Contact vendor on
pigtaills, rubber,
gun barrels and winches

Persons Contacted

F. K. Crever

S. L. Allison

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Arrival

5-7-51
5-20-51

5-10-51

5-14-51

5-20-5

5-20-51

5-20-51

5-20-51

5-20-51

5-20-51

Departure

5-11-51
6-1-51

5-12-51

5-18-51

Still gone

Still gone

Still gone

Still gone

Still gone

Still gone

Restricted Data
Class. Unclass

X
X

X

X

X

X

X

X

X

X

Arms

DECLASSIFIED

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Persons Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>Unclass</u>	<u>Arms</u>
J. B. Modlin to: Titoflox Corp Nowark, New Jersey	Contact vendor on pigtaills, rubber, gun barrels and winches	- -	5-20-51	Still gone		X	
J. B. Modlin to: Atlantic Metal Hose New York, New York	Contact vendor on pigtaills, rubber, gun barrels and winches	- -	5-20-51	Still gone		X	
J. B. Modlin to: Seamlox Company Long Island, New York	Contact vendor on pigtaills, rubber, gun barrels and winches	- -	5-20-51	Still gone		X	
J. B. Modlin to: General Electric Company Schenectady, New York	Contact vendor on pigtaills, rubber, gun barrels and winches	- -	5-20-51	Still gone		X	
J. G. Cartiere to: Morrison-Knudson Boise, Idaho	West Coast Comparative Salary Survey, Exempt Employees	Mr. Jainor	5-28-51	6-6-51		X	
D. Bates to: General Electric Company Schenectady, New York	Inspect drafting schools	A. H. Rau	5-7-51	5-11-51		X	
D. Bates to: General Electric Company Pittsfield, Massachusetts	Inspect drafting schools	F.F. Boisvort	5-7-51	5-11-51		X	
P. M. Murphy to: Willamette Iron & Steel Portland, Oregon	Engineering consultation Project C-362	Mr. Moore	5-28-51	5-29-51		X	
R. C. Hollingshead to: Proportioncoors, Inc. Providence, Rhode Island	Witness final assembly and testing of protoype pluse generator	Mr. Pickering	5-21-51	5-25-51		X	

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>Unclass</u>	<u>Areas</u>
R. C. Hollingshead to: Stearns-Rogers Denver, Colorado	Witness final assembly and testing of prototype pluse generator	- -	5-21-51	5-25-51	X		
G. E. Halm to: Southwest Welding Co. Alhambra, California	Engineering consul- tation	Mr. Cutler	5-28-51	6-1-51	X		
R. C. Hollingshead to: Johnston Pump Company Los Angeles, California	Observe performance test of pumps for Project C-362	Mr. Brown	5-7-51	5-11-51	X		
H. M. Parker to: Peerless Pump Los Angeles, California	Consultation on design difficulties on pumps	P. Monroe	5-9-51	5-17-51	X		
T. Williams to: Stearns-Rogers Denver, Colorado	Design consultation on vendor equipment	M. S. Rosengran	5-16-51	5-18-51	X		
D. J. Quigley to: Charles T. Main, Inc. Boston, Massachusetts	Liaison for sub-con- tract G-363	L. L. Ketchen	5-14-51	5-18-51	X		
J. L. Boyd to: Leland S. Rosener, San Francisco, California	Liaison for sub-con- tract G-304	L. S. Rosener, Jr.	5-14-51	5-16-51	X		
W. W. McIntosh to: Electric Steel Foundry Portland, Oregon	Conference	R. Richmond	5-16-51	5-17-51	X		
T. Williams to: Crano Company Chicago, Illinois	Design consultation with vendor	P. M. Weiss	5-7-51	5-11-51	X		

DECLASSIFIED

Name - Organization

Purpose of Visit

Person Contacted

Arrival

Departure

Restricted Data
Class. Unclass.
Areas

J. M. Fox, Jr.
to: Kaiser Aluminum Company
Spokane, Washington

Material procurement

5-8-51

5-8-51

X

J. M. Fox, Jr.
to: Electric Steel Foundry
Portland, Oregon

Procurement of materials - -
on Project C-361

5-16-51

5-17-51

X

L. H. Hewett
to: University of Washington
Seattle, Washington

Attend State civil
defense meetings

5-8-51

5-11-51

X

H. E. Hylbak
to: 4th Nat'l Material Handling
Chicago, Illinois Exposition material handling equipment

Obtain data and in-
formation in regard to

4-30-51

5-4-51

X

J. M. Fox, Jr.
to: Vulcan Copper Supply
Cincinnati, Ohio

Evaporation equipment Mr. Romell
on Project C-362

5-4-51

5-4-51

X

H. W. Huntley
to: Willamette Iron & Steel
Portland, Oregon

Design of filters
for Project C-187-D

5-3-51

5-4-51

X

ELECTRICAL DIVISION

I. Visits to other Installations

T. B. Correy
to: American Machine & Foundry
New York, New York

Consultation concern-
ing welding equipment
for slug canning process

5-21-51

5-25-51

X

HEALTH INSTRUMENT DIVISIONS

I. Visitors to this Works

L. L. German
General Electric Company
Schenectady, New York

Discuss Safeguards
Report

H. M. Parker

5-14-51

5-16-51

X

DECLASSIFIED

1197135

Name - Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data	
					Class.	Unclass. Areas
R. R. Harris Columbia River Advisory Committee Portland, Oregon	Conference	H. A. Kornberg	5-21-51	5-22-51		X
C. M. Everts Columbia River Advisory Committee Portland, Oregon	Conference	H. A. Kornberg	5-21-51	5-22-51		X
E. C. Jensen Columbia River Advisory Committee Portland, Oregon	Conference	H. A. Kornberg	5-21-51	5-22-51		X
C. C. Ruchhoft Columbia River Advisory Committee Portland, Oregon	Conference	H. A. Kornberg	5-21-51	5-22-51		X
E. F. Eldridge Columbia River Advisory Committee Portland, Oregon	Conference	H. A. Kornberg	5-21-51	5-22-51		X
N. E. Tolbert Division of Biology & Medicine U. S. Atomic Energy Commission Washington, D. C.	Medical - Health Instrument consultation	H. M. Parker J. W. Healy	5-9-51	5-9-51		X
M. E. Ensminger Washington State College Pullman, Washington	Consultation	K. Herde	5-1-51	5-1-51		X 100-F 108
II. Visits to other Installations						
H. M. Parker to: Argonne National Lab. Chicago, Illinois	AEC Bio-Medical Program Directors Meeting; discussions on radiation protection	A. M. Brues	5-28-51	5-30-51		X
H. A. Kornberg to: Argonne National Lab. Chicago, Illinois	AEC Bio-Medical Program Directors Meeting	A. M. Brues	5-27-51	5-29-51		X

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>Unclass.</u>	<u>Areas</u>
G. R. Hilst to: Washington, D. C.	Attend meetings of AGU and AMS	- -	4-29-51	5-5-51		X	
M. H. Joffe to: Cleveland, Ohio	Attend Federation meetings	- -	4-27-51	5-6-51		X	
G. N. Smith to: Cleveland, Ohio	Attend Federation meetings	- -	4-27-51	5-6-51		X	
T. W. Galbraith to: Chicago, Illinois	Attend Bacteriology meetings	- -	5-25-51	6-3-51		X	
W. A. McAdams to: Vancouver, B. C.	Attend American Water Works Association, Pacific NW Branch and present paper	- -	5-16-51	5-19-51		X	

INSTRUMENT DIVISION

I. Visits to other Installations

J. M. Holum
to: Argonne National Lab.
Chicago, Illinois

Attend AEC Information meeting and present paper

H. L. Hull

5-15-51 5-18-51

X

MANAGEMENT

I. Visits to other Installations

W. P. McCue
to: Sandia Corporation
Santa Fe, New Mexico

Discuss salary positions and obtain comparative salary data

R. H. Landes

5-2-51 5-4-51

X

W. P. McCue
to: Los Alamos Scientific Lab.
Los Alamos, New Mexico

Discuss salary positions and obtain comparative salary data

J. Macy

5-2-51 5-4-51

X

DECLASSIFIED

- 13 -

Name - Organization Purpose of Visit Person Contacted Arrival Departure Restricted Data Class. Unclass Areas

W. P. McCue
to: U. S. Atomic Energy Commission
New York, New York

Dr. Hill

5-18-51

5-22-51

X

W. P. McCue
to: Brookhaven National Lab.
Upton, L.I., New York

R. Patterson

5-18-51

5-22-51

X

MANUFACTURING MANAGEMENT

I. Visits to other Installations

J. E. Malder, Jr.
to: Oak Ridge National Lab.
Oak Ridge, Tennessee

S. R. Sapirio

5-3-51

5-4-51

X

POWER DIVISION

I. Visitors to this Works

A. H. Y. Hedner
Travelers Insurance Company
Seattle, Washington

F. P. Britson

5-2-51

5-3-51

X 102-B 184
200-E 284 100-D 184
200-W 284 100-F 184
300 384 100-H 184
700 1184 101

II. Visits to other Installations

W. R. Conley
to: Vancouver, B. C.

Attend American Water
Works Convention

5-16-51

5-20-51

X

H. F. Masley
to: Vancouver, B. C.

Attend American Water
Works Convention

5-16-51

5-20-51

X

F. P. Britson
to: Stauffer Chemical Company
San Francisco, California

Inspection installation
of equipment for new
facilities

5-22-51

5-25-51

X

DECLASSIFIED

1197138

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>Unclassified Areas</u>
J. A. Todd to: Stauffer Chemical Company San Francisco, California	Inspection installation of equipment for new facilities	- -	5-22-51	5-25-51		X
F. P. Britson to: American Cyanamid Company Azusa, California	Inspect installation of equipment for new facilities	- -	5-22-51	5-25-51		X
J. A. Todd to: American Cyanamid Company Azusa, California	Inspect installations of equipment for new facilities	- -	5-22-51	5-25-51		X

"P" DIVISION

I. Visits to other Installations

F. E. Jochen to: Oak Ridge National Lab. Oak Ridge, Tennessee	Assist in start-up of St. G. Arnold new facility for possible application in Hanford process	5-20-51	5-25-51	X
K. T. Perkins to: Kellogg Corporation New York, New York	Technical and engineering G. White, Jr. consultation in conjunction with Project C-341-B	5-9-51	5-12-51	X

"S" DIVISION

I. Visits to other Installations

G. A. Halsoth to: Los Alamos Scientific Lab. Operation Los Alamos, New Mexico	Consultation - 234-5 I. B. Venable	5-7-51	5-10-51	X
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II. Visitors to this Works

J. M. McBrady Railway Express Agency Seattle, Washington	Inspection of damaged O. F. Beaulieu equipment	5-7-51	5-7-51	X	200-W (op) XXX
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DECLASSIFIED

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class. Use/Class</u>	<u>Areas</u>
TRANSPORTATION DIVISION						
I. Visitors to this Works						
N. L. Martin Western Equipment Company Spokane, Washington	Inspection of equipment	A.P. Mitchell	5-25-51	5-25-51	X	White Bluffs
J. P. Sullivan Alco Locomotive Portland, Oregon	Inspection of RR equipment - locomotive	H. B. Beers L. R. Richards L. Powell	5-15-51	6-1-51	X	Riverland Yards
PLANT SECURITY AND SERVICES DIVISIONS						
I. Visits to other Installations						
R. E. Jaynes to: Puget Sound Navy Shipyard Bremerton, Washington	Review facilities from Security standpoint for fabrication of "B" blocks off-site	S. L. Allison W. L. Horner	5-8-51	5-10-51	X	
PURCHASING AND STORES DIVISIONS						
I. Visitors to this Works						
N. Schmitt Inland Motor Freight Kernowick, Washington	Deliver material on order HW 80097-M	H. H. Hart	5-7-51	5-7-51	X	100-B 105
J. Tallent United Truck Lines Kennewick, Washington	Deliver material on order AEC 56913	H. H. Hart	5-7-51	5-7-51	X	200-W 234-5
J. L. Verschuoren Liquid Carbonic Corporation Seattle, Washington	Deliver material on order HW 81738-M	H. H. Hart	5-8-51	5-8-51	X	100-H 105
G. Hixon Inland Motor Freight Kennewick, Washington	Deliver material on order HW 71555	H. H. Hart	5-9-51	5-9-51	X	100-D 105

Name -Organization	Purpose of Visit	Person Contacted	Arrival	Departure	Restricted Data	
					Class.	Unclass Areas
G. Benson Inland Motor Freight Konnewick, Washington	Deliver material on order HWC 12497	H. H. Hart	5-9-51	5-9-51	X	300 321
J. L. Verschuoren Liquid Carbonic Corporation Seattle, Washington	Deliver material on order HW 81738-M	H. H. Hart	5-10-51	5-10-51	X	100-H 105
G. Hixon Inland Motor Freight Konnewick, Washington	Deliver material on order HW 80097-M	H. H. Hart	5-14-51	5-14-51	X	100-D 105 100-F 105
G. Hixon Inland Motor Freight Konnewick, Washington	Deliver material on order HW 75251-M	H. H. Hart	5-15-51	5-15-51	X	300 303-J
M. Brill Lee & Estes Pasco, Washington	Deliver material on order HW 80086	H. H. Hart	5-16-51	5-16-51	X	100-D 189
L. A. Wilson Lee & Estes Pasco, Washington	Deliver material on order HW 80088	H. H. Hart	5-16-51	5-16-51	X	100-D 189
D. A. Westermeyer Consolidated Freightways Konnewick, Washington	Deliver material on orders HW 80082-M and 80083-M	H. H. Hart	5-16-51	5-16-51	X	200-E 275
A. Weigand Consolidated Freightways Konnewick, Washington	Deliver material on orders HW 80082 and 80083-M	H. H. Hart	5-16-51	5-16-51	X	200-E 275
M. Brill Lee & Estes Pasco, Washington	Deliver material on order HW 80088-M	H. H. Hart	5-17-51	5-17-51	X	100-D 189
N. Schmitt Inland Motor Freight Konnewick, Washington	Deliver material on order HW 81732-M	H. H. Hart	5-23-51	5-23-51	X	100-F 105

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Name - Organization

Purpose of Visit

Person Conducted

Arrival

Departure

Restricted Data
Class Unclass Areas

G. Hixon
Inland Motor Freight
Kennewick, Washington

Deliver material on
order CRC 213

H. H. Hart

5-23-51

5-23-51

X 200-W

N. Schmitt
Inland Motor Freight
Kennewick, Washington

Deliver material on
order HW 81732-M

H. H. Hart

5-23-51

5-23-51

X 100-D 105

N. Schmitt
Inland Motor Freight
Kennewick, Washington

Deliver material on
order HW 81732-M

H. H. Hart

5-23-51

5-23-51

X 100-B 105

A. Freuhling
United Truck Lines
Kennewick, Washington

Deliver material on
order AEC 56947

H. H. Hart

5-28-51

5-28-51

X 200-W 234-5

R. Thorne
United Truck Lines
Kennewick, Washington

Deliver material on
order AEC 56947

H. H. Hart

5-28-51

5-28-51

X 200-W 234-5

G. Hixon
Inland Motor Freight
Kennewick, Washington

Deliver material on
order HW 81732-M

H. H. Hart

5-31-51

5-31-51

X 100-D 105

F. Haines
Whiting Corporation
Harvey, Illinois

Supervise installation
of Whiting Crane

G. J. Hayward

5-24-51

5-24-51

X 202-S

II. Visits to other Installations

G. Q. Mathews
to: Washington, D. C.

Attend CME & NPA meetings - -

5-7-51

5-11-51

X

R. T. Cooke
to: Willamette Iron & Steel
Portland, Oregon

Inspection of equipment - -

5-27-51

5-29-51

X

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>Unclass. Areas</u>
G. Wright to: Peters Welding & Machinists Dobbs Ferry, New York	Purchasing	V. Peters	5-21-51	5-23-51		X
G. Wright to: E. W. Bliss Company Canton, Ohio	Purchasing	R. Y. Moss	5-24-51	5-24-51		X
G. Wright to: Whiting Corporation Harvey, Illinois	Purchasing	E. C. Rice	5-25-51	5-25-51		X
J. C. Hamilton to: Willamette Iron & Steel Portland, Oregon	Improve delivery of vessels on critical program	Mr. Thaver	5-27-51	5-29-51		X
R. R. Wall to: E. W. Bliss Company Canton, Ohio	Assist in procurement of gun barrels	- -	5-20-51	5-25-51		X
C. P. Fleming to: Tube Turns Louisville, Kentucky	Expedite material	A. O. Erny F. S. Briggs	5-19-51	5-21-51		X
TECHNICAL DIVISIONS						
I. Visitors to this Works						
M. A. Edwards General Engineering Laboratory Schenectady, New York	GEL's assistance to Hanford	A. B. Greninger	5-17-51	5-18-51	X	100-II 105 200-W 234,235
F. E. Johnson General Engineering Laboratory Schenectady, New York	GEL's assistance to Hanford	A. B. Greninger	5-17-51	5-18-51	X	100-II 105 200-W 234,235
A. U. Seybolt Knolls Atomic Power Laboratory Schenectady, New York	Metallurgy and P-10 consultations	D. W. Pearce R. Ward W. M. Hart	4-30-51	5-4-51	X	100-B 108 200-W 234 3706-300

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>Unclass Areas</u>
R. A. Hanson International Business Machines Richland, Washington	Service I.B.M. equipment	P. M. Thompson	5-1-51	5-31-51	X	101
C. G. Kruse International Business Machines Konnewick, Washington	Service I.B.M. equipment	P. M. Thompson	5-1-51	5-31-51	X	101
E. W. Bailey Carbide & Carbon Chem. Corp. Oak Ridge, Tennessee	SF Accountability conference	C. A. Bonnett L. G. Watore	5-28-51	5-29-51	X	300 3706, 3703
E. W. Bailey Carbide & Carbon Chem. Corp. Oak Ridge, Tennessee	Discuss discrepancies in analytical methods and procedures for J metal analyses	E. M. Kinderman H. R. Schmidt A. H. Bushoy F. W. Albaugh	5-28-51	5-29-51	X	300 3706
H. H. McKay Carbide & Carbon Chem. Corp. Oak Ridge, Tennessee	Discuss discrepancies in analytical methods and procedures for J metal analyses	E. M. Kinderman H. R. Schmidt A. H. Bushoy F. W. Albaugh	5-28-51	5-29-51	X	300 3706
F. E. Clark Carbide & Carbon Chem. Corp. Oak Ridge, Tennessee	Discuss discrepancies in analytical methods and procedures for J metal analyses	E. M. Kinderman H. R. Schmidt A. H. Bushoy F. W. Albaugh	5-28-51	5-29-51	X	300 3706
C. D. W. Thornton U. S. Atomic Energy Commission Washington, D. C.	Discuss discrepancies in analytical methods and procedures for J metal analyses	E. M. Kinderman H. R. Schmidt A. H. Bushoy F. W. Albaugh	5-28-51	5-29-51	X	300 3706
E. Hall U. S. Atomic Energy Commission Washington, D. C.	Discuss discrepancies in analytical methods and procedures for J metal analyses	E. M. Kinderman H. R. Schmidt A. H. Bushoy F. W. Albaugh	5-28-51	5-29-51	X	300 3706
V. V. Lindrix U. S. Atomic Energy Commission Oak Ridge, Tennessee	Discuss discrepancies in analytical methods and procedures J metal analyses	E. M. Kinderman H. R. Schmidt F. W. Albaugh	5-28-51	5-29-51	X	300 3706

<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class, Unclass.</u>	<u>Area</u>
G. W. Watt University of Texas Austin, Texas	Research and development consultation	R. H. Beaton R. B. Richards	5-1-51	5-5-51	X	300 3706, 321 200-W 231, 234, 234, 221-T 221-U Const. 224-U 200-E 221-B 100-B 105, 108 234-5 Const 277-S 202-S Silo, canyon
T. H. Permar E. I. du Pont de Nemours & Company Wilmington, Delaware	234-5 process technical discussion	J. B. Work P. E. Collins	5-14-51	5-17-51	X	300 XX 200-W 234, 235 Redox Const. 234-5 Const. 300 XX 200-W 234, 235 Redox Const. 234-5 Const. 300 303, 305 100-B 108 221-U, 224-U 202-S Canyon 277-S 200-W 221-T 231 234, 235 200 W Const 221-T, 231, 234, 235
V. I. Montenyohl E. I. du Pont de Nemours & Company Wilmington, Delaware	234-5 process technical discussion	J. B. Work	5-14-51	5-17-51	X	
F. S. Chambers E. I. du Pont de Nemours & Company Wilmington, Delaware	Discussion of separation plants	R. B. Richards	5-23-51	5-25-51	X	
II. Visits to other Installations						
R. H. Beaton to: Argonne National Lab. Chicago, Illinois	Attend Chemical Process Information Meeting	D. F. Peppard	5-7-51	5-9-51	X	

Name - Organization

Purpose of Visit

Person Contacted

Areas

Restricted Data
Class. Unclass

Departure

Arrival

R. H. Beaton
to: General Engineering Lab.
Schenectady, New York

432 Project consultation D. H. Marquis

5-11-51

X

R. H. Beaton
to: Knolls Atomic Power Lab.
Schenectady, New York

Consultations on Research K. H. Kingdon
Programs

5-11-51

X

A. C. Callen
to: Argonne National Lab.
Chicago, Illinois

Attend AEC Information H. L. Hull
meeting

5-18-51

X

P. E. Collins
to: Los Alamos Scientific Lab.
Los Alamos, New Mexico

234-5 consultation

R. D. Baker

5-10-51

X

W. R. DeHollander
to: Knolls Atomic Power Lab.
Schenectady, New York

P-10 consultation

D. H. Ahmann

5-18-51

X

J. K. Figschauer
to: Argonne National Lab.
Chicago, Illinois

Attend meeting on hot H. L. Hull
laboratories and
equipment

5-18-51

X

J. F. Gifford
to: Argonne National Lab.
Chicago, Illinois

Attend meeting on hot H. L. Hull
laboratories and
equipment, also present paper

5-18-51

X

M. K. Harmon
to: Knolls Atomic Power Lab.
Schenectady, New York

Observation of and consul- B. V. Coplan
tation on remote control
lab design and operation

5-14-51

X

M. K. Harmon
to: Brookhaven Nat'l Lab.
Upton, L.I., New York

Observation of an consul- L.G. Stang, Jr.
tation on remote control
lab design and operation

5-14-51

X

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data Class.</u>	<u>Unclass</u>	<u>Area</u>
M. K. Harmon to: Argonne Nat'l Laboratory Chicago, Illinois	Information meeting on Laboratory equipment	H. L. Hull	5-16-51	5-18-51	X		
O. F. Hull to: Argonne National Lab. Chicago, Illinois	Chemical process meet- ing sponsored by W. M. Manning	S. Lawroski	5-7-51	5-10-51	X		
E. Hollister to: Oak Ridge National Lab. Oak Ridge, Tennessee	Inspection of laboratory and equipment design	A. F. Rupp	5-14-51	5-15-51	X		
E. Hollister to: Argonne National Lab. Chicago, Illinois	Attend meeting on hot laboratories and equipment and present paper	H. L. Hull	5-16-51	5-18-51	X		
S. S. Jones to: Knolls Atomic Power Lab. Schonectady, New York	Inspect heat facilities for two controlled gas at- mosphere experiment	E. L. Brundage C. D. Carroll	5-16-51	5-25-51	X		
C. E. Lacy to: Knolls Atomic Power Lab. Schonectady, New York	Discussion of KAPL's- Hanford Metallurgical Assist- ance Program	J. P. Howe A. U. Saybolt	5-21-51	5-25-51	X		
W. L. Lyon to: Argonne National Lab. Chicago, Illinois	Information meeting on hot laboratories and equipment	H. L. Hull	5-16-51	5-18-51	X		
R. E. Nather to: Argonne National Lab. Chicago, Illinois	Attend AEC information on hot laboratories and equipment	H. L. Hull	5-16-51	5-18-51	X		
T. C. Nelson to: Argonne National Lab. Chicago, Illinois	Attend meeting on hot laboratories and equipment	H. L. Hull	5-16-51	5-18-51	X		
J. A. Parodi to: Knolls Atomic Power Lab. Schonectady, New York	Consultation on P-10 analyses and equipment	J. W. Myor	5-7-51	5-11-51	X		

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<u>Name - Organization</u>	<u>Purpose of Visit</u>	<u>Person Contacted</u>	<u>Arrival</u>	<u>Departure</u>	<u>Restricted Data CLOSE COVERED</u>	<u>Areas</u>
F. B. Quinlan to: Argonne National Lab. Chicago, Illinois	Attend meeting on hot laboratories and equipment	H. L. Hull	5-16-51	5-18-51	X	
R. B. Richards to: Argonne National Lab. Chicago, Illinois	Chemical Process Meeting sponsored by W. M. Manning	S. Lawroski	5-7-51	5-9-51	X	
G. J. Rogers to: Oak Ridge National Lab. Oak Ridge, Tennessee	Inspection of labora- tory and equipment design	A. F. Rupp	5-14-51	5-15-51	X	
G. J. Rogers to: Argonne National Lab. Chicago, Illinois	Attend meeting on hot laboratories and equipment	H. L. Hull	5-16-51	5-18-51	X	
R. S. Rosenfels to: Argonne National Lab. Chicago, Illinois	Attend meeting on hot laboratories and equipment	H. L. Hull	5-16-51	5-18-51	X	
G. Sogo to: Argonne National Lab. Chicago, Illinois	Chemical Process Meeting sponsored by W. M. Manning	S. Lawroski	5-7-51	5-10-51	X	
G. Sogo to: Knolls Atomic Power Lab. Schenectady, New York	Perox consultations	L. B. Bragg E. Zobroski	5-10-51	5-11-51	X	
D. F. Snooberger to: Argonne National Lab. Chicago, Illinois	Attend meeting on hot laboratories and equipment	H. L. Hull	5-16-51	5-18-51	X	
D. F. Snooberger to: Knolls Atomic Power Lab. Schenectady, New York	Inspect heater facility for Project C-410	E. L. Brundige	5-21-51	6-1-51	X	
D. F. Snooberger to: General Engineering Lab. Schenectady, New York	Inspect heater facility for Project C-410	C. E. Weber C. D. Carroll	5-21-51	6-1-51	X	

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Name - Organization

Purpose of Visit

Person Contacted

Arrons

Restricted Data
Class. Unclass

Arrival Departure

J. F. Sullivan
to: General Engineering Lab.
Schenectady, New York

P-10 consultation

D. H. Marquis

5-24-51 5-26-51 X

J. F. Sullivan
to: Knolls Atomic Power Lab.
Schenectady, New York

P-10 consultation

C. Munnal
J. Marsden

5-24-51 5-26-51 X

L. D. Turner
to: Argonne National Lab,
Chicago, Illinois

Attend meeting on
hot laboratories
and equipment

H. L. Hall

5-16-51 5-18-51 X

L. D. Turner
to: Westinghouse Atomic Power
Pittsburgh, Pennsylvania

Metallurgical consul- W. E. Johnson
Lab. tation on radio-metallurgy
examinations

5-21-51 5-22-51 X

G. W. Watt
to: Argonne National Lab.
Chicago, Illinois

Attend Chemical Process D. F. Poppard
Information meeting

5-7-51 5-9-51 X

H. F. Zuhre
to: General Engineering Lab.
Schenectady, New York

P-10 consultation

D. H. Marquis

5-24-51 5-26-51 X

H. F. Zuhre
to: Knolls Atomic Power Lab
Schenectady, New York

P-10 consultation

C. Munnal
J. Marsden

5-24-51 5-26-51 X

J. E. Faulkner
to: Argonne National Lab.
Chicago, Illinois

Attend meeting on
hot laboratories
and equipment

H. L. Hall

5-16-51 5-18-51 X

R. M. Fryar
to: Alcoa Research Lab.
New Kensington, Pennsylvania

Consultation on in- J. H. Hamilton
pilo experimental tests R. B. Brown
concerning aluminum corrosion

5-1-51 5-2-51 X

F. E. Kruosi
to: Argonne National Lab.
Chicago, Illinois

Discussion on reactor J. M. West
design

5-1-51 5-1-51 X

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Name - Organization Purpose of Visit Person Contacted Arrival Departure Restricted Data Class. Unclass Areas

G. M. Muller
to: Argonne National Lab.
Chicago, Illinois

Discussion on reactor
design

5-1-51 5-1-51 X

G. E. Duvall
to: Brookhaven National Lab.
Upton, L.I., New York

Discussion on experimen-
tial experiments

5-1-51 5-2-51 X

J. A. Parodi
to: Leeds & Northrup Co.
Philadelphia, Pennsylvania

Consultation on P-10
analyses and equipment

5-3-51 5-3-51 X

J. A. Parodi
to: Baird Associates, Inc.
Cambridge, Massachusetts

Discuss technical aspects S. H. Walters
of integrating and scanning
emission spectrometers

5-4-51 5-4-51 X

A. H. Bushey
to: Reed College
Portland, Oregon

Discuss work College may do
on sub-contract basis

5-28-51 5-28-51 X

F. W. Albaugh
to: Reed College
Portland, Oregon

Discuss work College may do
on sub-contract basis.

5-28-51 5-28-51 X

J. T. Stringer
to: Johnston Pump Company
Los Angeles, California

Pump consultation

5-5-51 5-9-51 X

J. T. Stringer
to: Shell Chemical Company
Los Angeles, California

Pump consultation

5-9-51 5-9-51 X

R. F. Cell
to: Cleveland, Ohio

Attend American
Society for Quality control

5-21-51 5-24-51 X

F. B. Quinlan
to: Kaiser Aluminum Company
Spokane, Washington

Inspect aluminum duct work F. J. Bowen

5-8-51 5-8-51 X

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Name - Organization Purpose of Visit Person Contacted Arrival Departure Restricted Data Class. - Unclass Areas

ENGINEERING AND CONSTRUCTION DIVISIONS (cont'd)

W. H. Clymer Determine capabilities and Mr. Holmes 5-11-51 5-11-51 X
to: Holmes and Narver field work of Holmes and Narver
Los Angeles, California in design field

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OFFICIALS

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PURCHASING AND STORES DIVISIONS

SUMMARY

MAY 1951

Personnel of the Purchasing and Stores Divisions showed a net increase of fifteen as indicated by the tabulation below:

	<u>Total Personnel</u> <u>as of 4-30-51</u>	<u>Total Personnel</u> <u>as of 5-31-51</u>	<u>Net Change</u>
Exempt	89	86	-3
Non-Exempt	298	306	+8
Total	387	392	+5

The number of purchase requisitions processed during the month increased by 100. However, actual dollar value of orders placed increased from \$2,937,566.06 in April to \$3,467,367.66 in May or \$529,801.60.

Of the total value of orders placed during the month, \$2,755,339.38 was for construction materials.

Commitments to date applied against Project C-431 amount to \$6,435,934.46. Uninterrupted purchasing of equipment for this project for the next four to six weeks will be possible due to appropriation of additional funds.

The Project Engineering Division requested that the Special Procurement Procedure be used for critical items required for Project C-412. Concurrence with the request was obtained from the Atomic Energy Commission. However, the procedure was not invoked as two-thirds of the requisitions on the critical list had been placed and the remaining one-third had been submitted for bids. These were subsequently placed using normal methods. Close follow-up and priority assistance, when necessary, is maintained to meet construction schedules. Development of the Controlled Materials Plan has progressed steadily during the past month.

The work load in the Inspection and Expediting Sections continues to increase due primarily to the approaching completion of MJ-1, and also to vendors reaching the stage of completion on orders for MJ-4.

Status reports on all major projects are being issued.

Liaison and advisory assistance will be given in the shipment and installation of production tooling to be used by the Puget Sound Naval Shipyard for fabrication of shielding for Project C-431-B.

Contracts were awarded covering yearly requirements for chemicals, as follows: Rock Salt - Leslie Salt Co.; Potassium Hydroxide - Niagara Alkali Co.; Sodium Bismuthate - General Chemical Division, Allied Chemical & Dye Corp.

PURCHASING AND STORES DIVISIONS
SUMMARY

Requests for quotations for new contracts were sent out on Soda Ash and Sulfamic Acid.

Firm completion schedules of Redox and TBP storage facilities were received. Contracts and orders are being placed for early delivery of essential materials for these projects.

Shipments of 778,400 pounds of stainless steel were made from the Pittsburgh warehouse.

Out of 2,536 purchase requisitions processed through screening, 1,400 items were furnished from plant sources. Thirty-three items of stainless steel not immediately available on the open market were furnished to fabricators from plant sources.

Maintenance materials and supplies disbursed from operations inventories amounted to \$281,086.39.

Receipts of shipments reached a new high with 6,612 receiving reports issued.

Material and equipment valued at \$228,062.20 were withdrawn from excess inventories for project use.

Three formal excess lists, totaling \$38,358.06 were submitted to the Commission for disposition. Excess materials and equipment valued at \$268,979.12 were shipped from the project as directed by the Commission.

Preliminary plans of the proposed Stores Warehouse have been received from the Commission for review and comment.

Twenty-two representatives of government and private business were escorted through warehouses and scrap yards for the purpose of negotiating the sale of scrap and transfer of excess property.

Effective May 1, 1951, demurrage charges on all freight cars will include Saturdays. In response to this ruling by the Interstate Commerce Commission, H.W. Instructions Letter No. 152, Revised, was issued.

As a result of rate reductions obtained from carriers, a total savings of freight charges for the month amounting to \$35,187.01 was effected.

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PURCHASING AND STORES DIVISIONS
STAFF SECTION
MAY 1951

General

Physical inventory, test audit and reconciliation of Captions 903-19, 903-27 and 906 were completed, and a spot inventory of lumber in the 10.10 account was taken.

During the month 600 sheets of field inventory items were priced and extended.

A breakdown of personnel in the Stores Section indicating number and classification of employees working each caption and servicing the Engineering and Construction Divisions was submitted to the Cost Section to be used in liquidating Stores' costs.

Responsibility for the Priorities and Allocation Section was transferred from the Purchasing Division to the Staff Section.

Development of the Controlled Materials Plan has progressed steadily during the month. CMP Regulations 1, 2, 3, and 4 have been released.

Retaining our position in steel mill melt schedules has required a great deal of effort due primarily to end use information required by producers.

Numerous requests for directive action regarding priorities analyzed and handled. Orders requiring such action were referred to the Atomic Energy Commission.

DO-43 rating authority was extended to:

Johnston Pump Company	\$ 9,885.00
Vulcan Copper & Supply Company	8,770.00

PERSONNEL

	As of 4-30-51			As of 5-31-51			Net Change		
	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
Admin. Costs & Budgets	2	0	2	2	1	3	0	1	1
Audit & Inventory	2	12	14	2	11	13	0	-1	-1
Priorities				1	9	10	1	9	10
	4	12	16	5	21	26	1	9	10

SAFETY AND SECURITY

Safety and Security Meetings scheduled	1
Number of employees attending	12

STATISTICS

Dollar value of orders to date to which Priority rating was applied:

	<u>1st Quarter 1951</u>	<u>2nd Quarter 1951</u>	<u>3rd Quarter 1951</u>	<u>4th Quarter 1951</u>
DO-40	\$1,844,910.25	\$1,855,947.44	\$536,578.34	\$179,503.17
DO-41*	8,775,919.69	8,038,841.41		

* Includes Contract Section T, E & C Divisions

PURCHASING AND STORES DIVISIONS
PURCHASING DIVISION
MAY 1951

The number of purchase requisitions processed by the Division increased slightly during the month of May. 3180 purchase requisitions were received and assigned as compared with 3076 in April. Orders and alterations placed totaled 2450 as compared with 2439 the previous month. Requisitions on hand at the end of the month totaled 1014 compared to 972 on April 30.

The dollar value of orders and alterations placed during May amounted to \$3,467,367.66 of which \$2,755,339.38 was for construction materials. Of the 832 construction purchase orders placed during the month, 5 were for Project C-361, 80 for C-362, 36 for C-187-D and E, and 61 for C-431. The balance of the construction purchase orders placed were for construction MS-Stores and miscellaneous TE&C Projects.

Additional funds were appropriated for Project C-431 which will permit uninterrupted purchasing of equipment for another four to six weeks. Commitments to date applied against this project total \$6,435,934.46. The discrepancy between the increase in commitments to date for Project C-431, amounting to approximately \$3,300,000, and the total dollar value of orders and alterations placed during May is caused by the fact that orders were placed for major items of equipment under the Special Procurement Procedure, and the actual purchase orders were not written prior to May 31.

The Project Engineering Division requested that we use the Special Procurement Procedure for all critical items required for the P-10 program which is Project C-412. Concurrence with this request was received from the Atomic Energy Commission. However, Purchasing did not have to resort to this special procedure as two-thirds of the requisitions on the critical list had already been placed by the time the list was received. Invitations to Bid had been mailed on the remaining one-third and orders were subsequently placed using normal methods. Close follow-up of each of the orders is being maintained by the Expediting Division. Requests for directives or other priority assistance will be made promptly on all orders if required to meet construction schedule.

The work load in the Expediting and Inspection Section continues to increase. This is due, primarily, to the nearness of completion of MJ-1 and the consequent importance of assuring that deliveries are made on all remaining material and equipment for this project. The amount of time spent on MJ-4 orders is also increasing, as the vendors are reaching the stage of completion requiring more frequent inspection.

The Order Status Group of the Expediting Section is presently issuing Status Reports on all major projects. Additional reports are being made for Project C-431 covering requisitions on hand unplaced by estimated value and total commitments to date, in terms of the dollar value of order actually placed.

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PURCHASING AND STORES DIVISIONS PURCHASING DIVISION

The Inspection Section will be utilized for liaison and advisory assistance in the shipment and installation of production tooling owned by Hanford Works which is to be used by the Puget Sound Naval Shipyard in the fabrication of Shielding for Project C-431-B. This will require some reassignment of inspection personnel to insure adequate coverage.

Shipments of stainless steel from our Pittsburgh warehouse total 778,400 lbs. It is hoped that within the next week shipments from the warehouse can be suspended in order that a physical inventory can be taken.

With a view toward completing the warehouse order, a review has been made of all orders consigned to the warehouse. Corrected shipping instructions were issued to consign the material which is promised for shipment during July and August, or later, directly to fabricators, or to Hanford, to prevent shipments to the warehouse after the order has been completed.

Contracts were awarded covering our yearly requirements for chemicals, as follows: Rock Salt - Leslie Salt Co.; Potassium Hydroxide - Niagara Alkali Co.; Sodium Bismuthate - General Chemical Division, Allied Chemical & Dye Corporation.

Request for quotation for new contracts have been sent out on Soda Ash and Sulfamic Acid.

Firm schedules on completion of Redox and TBP storage facilities was received from the Contact Engineer and contracts and orders are being placed for early delivery on Essential Materials for these two projects. Production has started at the new Aluminum Nitrate Plant built by Allied Chemical & Dye Corporation at Hedges, Washington and material will be delivered to the Redox Plant as soon as the storage tanks are available to us.

A recommendation was made to the Atomic Energy Commission for their approval of our awarding the contract for publishing the Richland Telephone Directories to the Telephone Directory Service Company of Everett, Washington.

673 Purchase Orders issued by Atkinson & Jones were screened, audited and certified for reimbursement.

PERSONNEL

	As of 4-30-51			As of 5-31-51			Net Change		
	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total	Ex.	Non-Ex.	Total
Administrative	2	1	3	2	1	3			
Purchasing	16	24	40	16	26	42		/2	/2
Expediting	15	12	27	14	14	28	-1	/2	/1
Inspection	32	6*	38*	30	6*	36*	-2		-2
Clerical		30	30		28	28		-2	-2
Priorities	1	6	7	**	**	**	**	**	**
TOTALS	66	79*	145*	62	75*	137*	-3	/2	-1

* The above figures do not include 8 rotational trainees assigned to Inspection.

** Priorities Section was transferred to W. L. Sapper's section.

PURCHASING AND STORES DIVISIONS
PURCHASING DIVISION

SAFETY AND SECURITY

Safety and Security Meetings Schedule	1
Number of employees attending	98
Minor Injuries	1

STATISTICS

	G	D	TOTAL
Requisitions on hand 5-1-51 (includes 93 assigned to Gov't.)	576	396	972
Requisitions assigned during May	2111	1069	3180
Requisitions placed during May	2054	1057	3111
Requisitions on hand 5-31-51 (includes 129 assigned to Gov't.)	612	402	1014

	NUMBER	VALUE
H. W. Orders Placed	1321	\$781,150.46
H. W. Alterations Placed	156	69,122.18 CR.
Total	1477	\$712,028.28

H.W.C. Orders Placed	832	\$2,679,507.97
H.W.C. Alterations Placed	141	75,831.41
Total	973	\$2,755,339.38

A.E.C. Orders Placed	200	\$223,459.34
D.C. Orders Placed	84	60,747.45

Gov't Transfers	OR	ORC	Total
	1	0	1

Return Orders Issued	Number
	172

OPEN ORDERS

HW Orders	1449
HWC Orders	1455
Government	134

Number of New Orders requiring inspection during month	73
Number of Orders requiring inspection completed during month	38
Number of Orders outstanding requiring inspection at months end	528
Number of HW Orders expedited (routine)	900
Number of HW Orders expedited (Special Requests)	629
Number of HWC Orders expedited	1450

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PURCHASING AND STORES DIVISIONS STORES DIVISION MAY, 1951

GENERAL

2536 purchase requisitions were processed through screening and 1400 items were furnished from plant sources. 33 items of stainless steel not immediately available on the open market were furnished to fabricators from plant inventories.

Maintenance material and supplies disbursed from active inventories were valued at \$281,086.39. The receipts of incoming shipments reached a new high for the month reflecting a total of 6,612 receiving reports issued.

Material and equipment valued at \$179,141.49 involving 20 captions in the 10.20 Account (Construction Held Materials) was disbursed to construction forces during the month. In addition to the foregoing, materials valued at \$6,483.92 were withdrawn for use by Operations' forces and materials valued at \$223,075.34 were declared excess.

Materials and equipment valued at \$42,437.09 were withdrawn from the 10.10 Account (Excess) and returned for use on the Project. Of this amount, construction forces' withdrawals were valued at \$38,455.33.

During the month, three formal excess lists totaling \$38,358.06 were submitted to the Commission for disposition. Excess materials and equipment valued at \$268,979.12 were shipped from the Project as directed by the Commission. Scrap sale revenue for the month amounted to \$12,262.19.

Work is progressing on the Procedure to Prevent the Accumulation of Excess Materials. Material lists showing materials in the control of the Operating Divisions that are in excess of their thirty-day needs are still coming in.

Plans for a major surplus materials sales program are being worked out jointly with the Stores Division and the Commission.

Preliminary plans for the proposed new Stores Warehouse have been submitted to us from the Commission for our review and comment.

22 representatives of government and private businesses were escorted through our warehouses and scrap yards for the purpose of negotiating the sale of scrap and transfer of excess property.

PURCHASING AND STORES DIVISIONS
STORES DIVISION

PERSONNEL

	<u>As of 4-30-51</u>			<u>As of 5-31-51</u>			<u>Net Change</u>		
	<u>Ex.</u>	<u>Non-Ex.</u>	<u>Total</u>	<u>Ex.</u>	<u>Non-Ex.</u>	<u>Total</u>	<u>Ex.</u>	<u>Non-Ex.</u>	<u>Total</u>
Administrative	4		4	5		5	1		1
Construction Mat'l Sect.	2	30	32	2	29	31		-1	-1
Operations Mat'l Sect.	4	114	118	4	119	123	1	5	6
Surplus, Salvage & Scrap Materials Section	4	45	49	4	44	48	1	-1	0
TOTALS	14	189	203	15	192	207	1	3	4

SAFETY AND SECURITY

Safety and Security Meetings Scheduled	10
Number of Employees Attending	184
Minor Injuries	9

STATISTICS

Construction Materials Section

Items in Stores Stock	45,110
Items Added to Stock	942
Items Completely Liquidated from Stock	495
Store Orders Posted (Items)	4,668
Number of Requisitions Screened - A.J.	494
Number of Items Screened - G.E.	3,597
Number of Items Furnished from Stock	554
Value of Disbursements	\$185,625.41*
Inventory Valuation at Month End - Materials	6,657,325.77
Value of Materials Shipped	2,044.49
Value of Materials Received	49,282.90
Value of Materials Declared Excess	223,075.34

*Includes \$179,141.79 disbursed to Construction & CPFF Subcontractors

Operations Materials Section

Number of Items Added to Stores Stock	742
Number of Items Deleted from Stores Stock	10
Items in Stores Stock at Month End	47,888
Store Orders Posted	19,749
Number of Requisitions Screened This Month - G.E.	2,042
Number of Items Furnished from Plant Sources This Month	846
Inventory Valuation at Month End (903-All Captions, 906 & 912)	\$1,451,967.81
Inventory Valuation at Month End (Spare Parts)	1,380,131.81
Inventory Valuation at Month End (Special Materials)	3,141,865.32
Inventory Valuation at Month End (Spare Equipment Held in Storage)	260,745.28
Total Value Inventory Accounts	6,234,710.22
Value of Disbursements, not including Cash Sale Items	281,086.39*

*Includes \$50,175.97 disbursed to Construction and CPFF Subcontractors

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PURCHASING AND STORES DIVISIONS STORES DIVISION

STATISTICS (Continued)

Value of Cash Sales	\$ 750.40
Value of Sales, Payroll Deduction	1,833.33
Value of Materials Declared Excess	3,680.81
Value of Materials Returned to Stores Stock for Credit	10,741.36
<u>Surplus, Salvage & Scrap Materials Section</u>	
Balance of Account 10.10 as of 4-30-51	\$5,123,816.35

Receipts 4-30-51 to 5-31-51

Automotive Equipment	\$14,522.48	
Office Furniture	251.00	
Material and Supplies	38,724.57	
Miscellaneous Equipment	20,004.36	
Machine Tools and Equipment	2,902.65	
Household Furniture & Equipment	48.00	76,453.06
Adjustments - Classes & Current Market Prices		84,474.23
		<u>5,284,743.64</u>

Disbursements 4-30-51 to 5-31-51

On Project:

Lumber	22.53
Automotive Equipment	11,567.93
Machine Tools & Equipment	955.63
Office Furniture	699.67
Material and Supplies	15,396.15
Miscellaneous Equipment	<u>13,795.18</u>

\$42,437.09*
20,409.65

Stores Material Transfers

Off Project

Lumber	62.57
Automotive Equipment	57,783.36
Office Furniture	8,509.94
Material and Supplies	192,502.99
Miscellaneous Equipment	6,413.17
Machine Tools and Equipment	<u>3,707.09</u>

268,979.12

331,825.86

Balance of Account 10.10 as of 5-31-51

\$4,952,917.78

*Includes \$38,455.33 disbursed to Construction & CPFF Subcontractors

Total Receipts to Date

\$35,270,114.83

Total Disbursements to Date

30,317,197.05

PURCHASING AND STORES DIVISIONS
STORES DIVISION

STATISTICS (Continued)

Scrap and Salvage Disbursed

Scrap Sales Completed	9
Scrap Sales in Process	2

Scrap Sales Revenue for Month of May	\$12,262.19
Total Scrap Sales Revenue to Date	54,756.99

WAREHOUSING, RECEIVING, DISBURSING & SHIPPING SECTIONS

Construction Materials Section

Store Orders Filled	3,190
Number of Items Received	6
Items Filled for Shipping	34
Items Excessed	5

Operations Materials Section

Receiving Reports Issued	6,612
Emergency Store Orders Filled	3
Shipments Processed (Containers & Materials)	352
Shipments Received	5,494
Store Orders Registered	27,681

Surplus, Salvage & Scrap Materials Section

Store Orders Filled	662
Truckloads of Material Shipped	38
Carloads of Material Shipped	19

MINOR CONSTRUCTION STORES

Account 10.16 as of May 31, 1951

Account No.	Balance 4-30-51	Purchases	Disbursements	Balance 5-31-51
10.16-101 Cement	30.27	-0-	80.87	Cr. 50.60
10.16-102 Sand, Blasting Sand				
Gravel	78.00	-0-	-0-	78.00
10.16-103 Plaster, etc.	16.98	-0-	11.32	5.66
10.16-104 Lumber	13,695.90	1,206.85	6,654.02	8,248.73
10.16-105 Reinforced Steel	6,200.02	135.72	526.79	5,808.95
10.16-106 Misc.	21,501.54	3,183.95	3,797.06	20,888.43
10.16-107 Plumbing	65,012.77	3,374.73	3,678.24	64,709.26
10.16-108 Electrical	69,588.12	6,744.83	4,857.16	71,475.79
10.16-109 Vitrified Clay Pipe	96.76	-0-	2.16	94.60
10.16-110 Paint, Glass	3,876.04	449.70	894.27	3,431.47
10.16-111 Welding Rod	2,108.11	1,530.73	1,545.32	2,093.52
10.16-112 Structural Steel	33,504.53	22,528.13	2,638.64	53,394.02
10.16-113 Concrete & Masonry Supplies	Cr. 434.26	16.00	344.75	Cr. 763.01

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PURCHASING AND STORES DIVISIONS STORES DIVISION

STATISTICS (Continued)

<u>Account No.</u>	<u>Balance</u> <u>4-30-51</u>	<u>Purchases</u>	<u>Disbursements</u>	<u>Balance</u> <u>5-31-51</u>
10.16-114 Thermal Insulation	-0-	45.99	-0-	45.99
10.16-115 Roofing Supplies	484.36	173.95	272.49	385.82
10.16-116 Transformers	1,282.55	114.00	186.60	1,209.95
10.16-118 Automotive	38,782.36	4,093.48	9,025.23	33,850.61
10.16-133 Small Tool Repair				
Parts	1,144.56	210.18	673.59	681.15
10.16-134 Clothing	<u>1,135.22</u>	<u>2,096.23</u>	<u>2,580.21</u>	<u>651.24</u>
TOTAL	\$258,103.83	\$45,904.47	\$37,768.72	\$266,239.58

PURCHASING AND STORES DIVISIONS
TRAFFIC DIVISION
MAY, 1951

GENERAL

The work load of the Traffic Division continued to increase over the previous month.

The Interstate Commerce Commission revised Service Order No. 856 to include Saturdays in computing demurrage on all freight cars effective May 1, 1951. H. W. Instruction Letter No. 152, Revised, was issued outlining this change.

The Interstate Commerce Commission has authorized the Pullman Company to increase all sleeping and parlor car fares 15 percent. The increased rates will become effective June 1, 1951.

The Traffic Manager attended the Pacific South Coast Freight Bureau docket meeting in San Francisco to support our proposals for reduced carload freight rates on undried Crude Salt, Sodium Sulphate, rough and machined Iron or Steel Castings and Limestone.

The delivery of the two tanks for project 361 and 362 was made on May 28. Due to the large dimensions of these tanks, the only possible way to get them to the project was via barge from Portland, Oregon to Patterson, Oregon, then via truck to the project. Special permits were required from the State and County Highway Commissions and line crews of the telephone and power companies were needed to remove and raise wires to provide for the necessary clearance.

As a result of rate reductions obtained from the carriers, there was a total savings in freight charges for the month of May amounting to \$35,187.01. This makes a total savings from September 1, 1946 to date of \$1,550,342.49.

PERSONNEL

	<u>Total Personnel</u> <u>as of 4-30-51</u>	<u>Total Personnel</u> <u>as of 5-31-51</u>	<u>Net Change</u>
Exempt	2	2	0
Non-Exempt	8	8	0
	<u>10</u>	<u>10</u>	<u>0</u>

SAFETY AND SECURITY

Safety and Security Meetings Scheduled	1
Meetings Held	1
Minor Injuries	0

STATISTICS

Savings Report

1. Rate reductions obtained from the Carriers:

12. 1197163

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PURCHASING AND STORES DIVISIONS TRAFFIC DIVISION MAY, 1951

STATISTICS (CONTINUED)

Savings Report (Continued)

1. Rate reductions obtained from the Carriers: (Continued)

<u>Commodity</u>	<u>Origin</u>	<u>Savings for May</u>	<u>Savings 9-1-46 thru April 1951</u>	<u>Total Savings 9-1-46 to date</u>
Coal	Kemmerer, Wyo.	\$ 3,427.20		
Coal	Roundup, Mont.	23,920.00		
Lime	Evans, Wash.	727.43		
Phosphoric Acid	South Gate, Cal.	2,320.61		
Caustic Soda	Willbridge, Ore.	1,325.92		
Caustic Soda	Tacoma, Wash.	1,065.22		
Soda Ash	Trona, Cal.	909.00		
Iron and Steel	Los Angeles, Cal.	272.64		
Railway Express	Various	1,122.51		
Truck	Various	81.78		
Hydrocarbon Gas	Various	14.70		
		<u>\$35,167.01</u>	<u>\$1,515,155.48</u>	<u>\$1,550,342.49</u>
2. Freight Bill Audit		2,538.34	64,242.87	66,781.21
3. Loss and Damage and Over-Charge Claims		1,306.29	105,879.43	107,185.72
4. Ticket Refund Claims		1,157.70	14,107.49	15,265.19
5. Household Goods Claims		350.51	14,700.59	15,051.10
		<u>\$40,539.85</u>	<u>\$ 1,714,085.86</u>	<u>\$1,754,625.71</u>

Work Volume Report

Reservations Made	Rail	167
	Air	220
	Hotel	182

Expense Accounts Checked	173
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Household Goods & Automobiles	Movements Arranged Inbound	5
	Movements Arranged Outbound	2
	Insurance Riders Issued	3
	Insurance Bills Approved	4
	Furniture Repair Orders	1
	Requests for Claim Billing	3
	Claims Filed	5
	Claims Collected - Number	10
	Claims Collected - Amount	\$ 350.51

Ticket Refund Claims	Filed	13
	Collected - Number	37
	Collected - Amount	\$1,157.70

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PURCHASING AND STORES DIVISIONS
TRAFFIC DIVISION
MAY, 1951

STATISTICS (CONTINUED)

Freight Claims	Filed	9
	Collected - Number	6
	Collected - Amount	\$1,306.29
	Over and Shorts Processed	27
	Damage Reports Processed	13
Freight Bill Audit Savings		\$2,538.34
Freight Shipments Traced		129
Quotations	Freight Rates	208
	Routes	218
Bills Approved	Air Express	46
	Boat	5
	Carloading	302
	Express	177
	Rail	756
	Truck	395
Return Orders Processed		70
Carload Shipments	Inbound - GE - AEC	773
	Others	114
	Outbound - GE - AEC	21
	Others	13

Report of Carloads Received

	<u>MILW</u>	<u>N.P.</u>	<u>U.P.</u>	<u>TOTAL</u>
General Electric Company				
Ammonium Silico Fluoride		1	1	2
Asphalt	3	1		4
Liquid Chlorine	2	2		4
Coal	421		223	644
Ferric Sulphate	4	3	2	9
Lime	4	3	4	11
Nitric Acid		12	5	17
Caustic Potash	1			1
Phosphoric Acid		3	2	5
Pipe, Concrete	1			1
Pipe, Steel	3	1	1	5
Plasterboard			1	1
Salt	2	1	2	5
Sodium Nitrate	1	1		2
Caustic Soda (Portland)		1	9	10
Caustic Soda (Tacoma)	5	3		8
Soda Ash	1	3	2	6
Steel Plates		1	1	2
Steel	2	2		4

PURCHASING AND STORES DIVISIONS
TRAFFIC DIVISION
MAY, 1951

STATISTICS (CONTINUED)

Report of Carloads Received (Continued)

	<u>MILW</u>	<u>N.P.</u>	<u>U.P.</u>	<u>TOTAL</u>
General Electric Company (Continued)				
Sulphuric Acid	1			1
Tanks			1	1
Tubing	1			1
Towers		1		1
Merchandise	4	5	1	10
Express	5			5
TOTAL	161	14	255	760
A.E.C.				
Aluminum Sheets		1		1
Chemicals	2			2
Desks		2	1	3
Lumber	1		2	3
Poles	1			1
Steel Roofing		1		1
Ties	1			1
Transformers		1		1
TOTAL	5	5	3	13
Atkinson & Jones Construction Company				
Asphalt	1	1		2
Cement		26		26
Gravel		1		1
Nails			1	1
Pipe		3	7	10
Plasterboard	1			1
Steel Bars			4	4
Steel	3		1	4
Tile	2		1	3
Merchandise	3	1		4
TOTAL	10	32	14	56
Puget Sound Sheet Metal Works				
Contractor's Equipment		1		1
TOTAL		1		1
Chicago Bridge & Iron Company				
Steel	1			1
TOTAL	1			1
Baldwin & Dunham, Inc.				
Lumber		6		6
Wallboard			5	5
Merchandise			1	1
TOTAL		6	6	12

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PURCHASING AND STORES DIVISIONS
TRAFFIC DIVISION
MAY, 1951

STATISTICS (CONTINUED)

Report of Carloads Received (Continued)

	<u>MILW</u>	<u>N.P.</u>	<u>U.P.</u>	<u>TOTAL</u>
F. J. Early, Inc.				
Cement	9			9
Crane		1		1
Steel			$\frac{3}{3}$	$\frac{3}{3}$
TOTAL	9	1	$\frac{3}{3}$	$\frac{13}{3}$
Sound Construction & Engineering Co.				
Building Material		1		1
Window Glass		$\frac{1}{2}$		$\frac{1}{2}$
TOTAL		$\frac{1}{2}$		$\frac{1}{2}$
Day Brothers, Inc.				
Lath			$\frac{1}{1}$	$\frac{1}{1}$
TOTAL			$\frac{1}{1}$	$\frac{1}{1}$
Montgomery Electric Company				
Lighting Fixtures			$\frac{1}{1}$	$\frac{1}{1}$
TOTAL			$\frac{1}{1}$	$\frac{1}{1}$
Arnold & Jeffers				
Cement Pipe		$\frac{1}{1}$		$\frac{1}{1}$
TOTAL		$\frac{1}{1}$		$\frac{1}{1}$
Goodfellows, Inc.				
Highway Guards			$\frac{1}{1}$	$\frac{1}{1}$
TOTAL			$\frac{1}{1}$	$\frac{1}{1}$
Dix Steel Company				
Steel		$\frac{4}{4}$		$\frac{4}{4}$
TOTAL		$\frac{4}{4}$		$\frac{4}{4}$
Royal Company, Inc.				
Asphalt Siding		3		3
Siding			$\frac{1}{1}$	$\frac{1}{4}$
TOTAL		3	$\frac{1}{1}$	$\frac{4}{4}$
Axtell Roof Service				
Asbestos Siding		$\frac{1}{1}$		$\frac{1}{1}$
TOTAL		$\frac{1}{1}$		$\frac{1}{1}$
Fox Metal Products, Corp.				
Coolers			$\frac{1}{1}$	$\frac{1}{1}$
TOTAL			$\frac{1}{1}$	$\frac{1}{1}$
Chief Joseph School				
Lockers & Shelves			$\frac{2}{2}$	$\frac{2}{2}$
TOTAL			$\frac{2}{2}$	$\frac{2}{2}$

PURCHASING AND STORES DIVISIONS
TRAFFIC DIVISION
MAY, 1951

STATISTICS (CONTINUED)

Report of Carloads Received (Continued)

	<u>MILW</u>	<u>N.P.</u>	<u>U.P.</u>	<u>TOTAL</u>
Seattle Insulation Company				
Mineral Wool			$\frac{1}{1}$	$\frac{1}{1}$
TOTAL				
Gilbert Brothers, Inc.				
Copper Wire		$\frac{1}{1}$		$\frac{1}{1}$
TOTAL				
Tom Saeger & Associates				
Cork Sheets	$\frac{2}{2}$			$\frac{2}{2}$
TOTAL				
Selden's, Inc.				
Flooring			$\frac{1}{1}$	$\frac{1}{1}$
TOTAL				
E. F. Hauserman				
Partitions			$\frac{1}{1}$	$\frac{1}{1}$
TOTAL				
Thorgaard Plumbing Company				
Plaster Cement			$\frac{1}{1}$	$\frac{1}{1}$
TOTAL				
West Coast Heating & Plumbing Company				
Chimney Flues		1		1
Furnaces			$\frac{2}{2}$	$\frac{2}{3}$
TOTAL		$\frac{1}{1}$		
Weston Plumbing Company				
Bath Tubs		$\frac{2}{2}$		$\frac{2}{2}$
TOTAL				
Corps of Engineers				
Fence Posts		$\frac{1}{1}$		$\frac{1}{1}$
TOTAL				
TOTAL - SUBCONTRACTORS.	22	56	36	114
TOTAL ENTIRE PROJECT	488	105	294	887

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EMPLOYEE AND COMMUNITY RELATIONS DIVISIONS

SUMMARY -- MAY, 1951

The number of applicants interviewed increased from 1,221 in April to 1,274 in May. Of these applicants, 448 were individuals who applied for employment with the General Electric Company for the first time. In addition, 246 new applications were submitted through the mail. Open, nonexempt, nontechnical requisitions decreased from 599 at the beginning of the month to 562 at month end. Total plant roll increased from 8,198 to 8,336. Turnover rate decreased from 2.51% in April to 1.71% in May. During May, 69 new requests for transfers to other type of work were received in the Employment Office, and 31 transfers were effected. A representative of the Employment Group spoke to 15 graduating seniors of the Pasco High School commercial class on May 22. To aid in the selection of new patrolmen, a learning ability test is being administered for purpose of validation to 50 new patrolmen. By month end, 41 new patrolmen had been tested. Through five aptitude tests and records of achievement in high school, thirteen people, of which two are women, have been selected and have accepted offers to enter the drafting training school, which is scheduled to commence June 11, 1951. At the direction of the Atomic Energy Commission, a Manpower Inventory, to provide the Commission with information on the composition and utilization of manpower engaged in the Atomic Energy program, was commenced the latter part of May. In order to complete the necessary information, Manpower Inventory Questionnaires have been forwarded to each employee for his completion and return. After completion of the initial inventory, the Personnel Records Group will be responsible for keeping the inventory on a current basis by quarterly reports to the Commission.

Two employee deaths occurred during May, and three employees retired. Two-hundred and fifty-seven visits were made to employees confined to Kadlec Hospital and 44 salary checks were delivered to employees confined at the hospital or at home. At month end, participation in the Pension Plan was 95.1%, in the Insurance Plan 96.7% and in the Employee and Stock Bonus Plan 36.3%. As of the end of May, there were 778 employees registered under the Selective Service Act, and 667 military reservists on the rolls. Since August 1, 1950, 136 employees have terminated to enter military service.

Employee and Community Relations Divisions
Summary

A total of 37 members of supervisory-management, enrolled from 10 major divisions, attended the Supervisors' 40-Hour Training Program during the week of May 14-18. PMS Groups 13 and 15 completed conferences during the month of May. PMS Groups 14 and 16 will complete PMS conferences early in June. A special dinner will be established for Groups 13 and 15, to be held early in June, while a dinner for Groups 14 and 16 will be held the latter part of June. Additional PMS groups will be started in August or September. A total of 144 HOESO conferences have been conducted for nonexempt employees, beginning in April. An estimated 3,776 employees attended, or approximately 51% of the entire nonexempt roll. Comments received regarding this program were very favorable. A total of 1,481 of the 1,500 Supervisor's Handbooks prepared for Hanford Works have been issued to date. Two revisions, "Rating of Employees - Nonexempt" and "Accidents to Vehicles" were issued to Handbook holders in May. On May 25, four members of the Training staff attended the first Northwest Training Conference held in Seattle, which was conducted by members of the Washington State Training Directors Society. Some 30 organizations of the Northwest were represented with a total of 57 members present. A Hanford Works SAGE was issued on May 16, to all supervisors. During May, Orientation was given to two re-engaged, one transferred, and 251 new employees; a total of 254. In accordance with the responsibilities charged to J. A. Wood, as Chairman of a subcommittee to the Education Committee, a study was made, and a complete six-week 1951 Introductory Program for new Technical Employees was submitted to the Education Committee on May 14. This program is designed to give proper introduction to the General Electric Company for some 200 new Technical Graduates reporting for work in June, 1951. All members of the Training Staff will be involved in dissemination of information for this program beginning June 18, 1951.

Three elections were conducted by the NLRB on May 1, 2 and 3: The Building Service Employees International Union voted in favor of negotiating a union security clause with the Company; Richland and North Richland Village Firemen voted in favor of representation by the H.MTC, with negotiations scheduled to begin on June 4; employees of the H.MTC voted against negotiating a union shop clause with the Company. Shortly after the election, the H.MTC filed a protest with the NLRB, asking that the union shop election be nullified and a substitute election scheduled as soon as possible. The Chemical Workers International Union, Local 369, petitioned the NLRB, seeking representation of all Chief Operators in the "S", "P" and "TS" Divisions. On May 25, a preliminary meeting was held with representatives of the Guards Union to discuss contract negotiation plans.

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Employee and Community Relations
Summary

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Electrician Linemen refused to work any overtime for less than double time; therefore, only Maintenance Linemen are scheduled to work six days. Isolation pay issue returned to Davis Panel from local negotiations. Asbestos Workers rate of \$2.925 agreed to in December approved by Wage Stabilization Board. Subsequently agreed rate of \$2.90 placed into effect by Jenkins Company (Atkinson-Jones subcontractor). Plasterers' demand of \$3 (rate now \$2.50) agreed to contingent upon Wage Stabilization Board approval and verification of prevailing rate by area wage survey. Operating Engineers granted new rate of \$2.80 (now \$2.45) for operating crane in Building 221-U, and new classification "Air Compressor (two or more within 100 ft. radius)" at same rate (\$2.10) as "Air Compressor (1,000 CF stationary)". Teamsters granted a rate of \$2 for "Transit Mix Truck over five yards." Premium rate of \$2.57 negotiated with Painters for "Swinging Scaffold and Boatswain Chair (15 cents over Brush Painter). Operating Engineer arbitration hearing conducted on May 28 and 29; briefs to be submitted by Employer and Union.

A revised reimbursement request was submitted to the Atomic Energy Commission for Designers and Draftsmen, incorporating changes in rates resulting from the recent nine cents per hour offer to all nonexempt employees. Our application for reimbursement of the nine-cent increase will be submitted to the Wage

Stabilization Board after the general increase has been approved for other company employees. A reimbursement request was submitted to the AEC concerning the nine-cent increase for nonexempt personnel excluding the Community Firemen. Instrument Division supervision, representatives of the HAMTC and the Wage Rate Division participated in a review of all work performed by Instrument Division field employees during the period January 1, 1951, to April 1, 1951. A review of the various platoon schedules was started in anticipation of union demands as a result of the Community Firemen representation election. An over-all review of nonexempt, non-unit job classifications in the Municipal, Real Estate and General Services Divisions was begun.

**Employee and Community Relations Divisions
Summary**

A letter to tenants who want to move to a different house was written for the Housing Division, at that group's request, which explained the new procedure for making such moves.

Thirteen speeches were delivered during the month, one of which was a HOBSO presentation. A slide film was prepared for one of the speeches. Three papers by Hanford Works people were cleared for publication. Eleven G-E films, "Pattern for Survival," and a safety film were booked for showing during the month. A film of the 1950 World Series was secured from the Seattle POST-INTELLIGENCER for the Municipal Parks and Recreation Division.

Public Functions cooperated with Treasury Department representatives in coordinating the Defense Bond Parade and ceremonies in the park. This group also performed the following services in connection with this activity: one minute spot announcements and three interviews were recorded and released to local radio stations. Arrangements were made to broadcast the ceremonies over KWIE, and tape recordings and delayed broadcast of the ceremonies were presented over KALE and KPMW. All tape recordings by local radio stations were secured from the local stations and copied for the State Director, U. S. Treasury Department.

The H.W. Photo House produced 7,129 prints during the month.

Art work, lettering, and layout were performed for: Records Center folder; Records Center clerical forms mounted for photographic reproduction; Records Center booklet; monthly health bulletin; safety booklet; attendance award poster; "You and G.E. at Hanford Works"; editorial cartoons; sketches of G.E. Monogram.

Special Programs performed the following work: five Union Relations News columns for H.W. NEWS, employee news letter, personnel recruitment display advertisements, June Health Bulletin, news stories concerning Medical Divisions, revision of "You and G.E. at Hanford Works," "This Way....Please" revision, a letter to supervisors; and the security booklet and safety booklet were sent to the printer for final production.

Hanford Works NEWS carried the following during the month: publicity for "Defenders of Freedom Day" celebration; information on drafting course for draftsmen; sports activities of Hanford Works people; information on new houses in Richland.

A complete change in the format of the Works NEWS was the most drastic step made during the month. The change was made following an editor's conference in Boston which the Editor attended.

High school journalism students prepared two pages of one issue of the Works NEWS during their one-day visit to the Community and Public Relations Divisions during the month.

The women's activities feature writer spent three weeks in May substituting as editor of the Works NEWS while the editor was on a combined business and vacation trip. Two women's pages prepared by this writer were published in the Works NEWS during the month.

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EMPLOYEE AND COMMUNITY RELATIONS DIVISIONS

MAY, 1951

ORGANIZATION AND PERSONNEL

Employment and Employee Services

Effective May 14, 1951, a General Clerk "C" was removed on an Illness Leave.

Effective May 22, 1951, a Steno-Typist "C" was engaged and assigned to the Procurement Group.

Effective May 25, 1951, a Messenger was engaged and assigned to the Investigation and Files Group to replace a Messenger who is being upgraded to a General Clerk "D".

Training and Program Development

No Organization changes.

Union Relations

No Organization changes.

Community and Public Relations

Effective May 14, one General Clerk "E" was added to the Special Programs group.

Number of Employees on Roll	<u>May, 1951</u>
Beginning of month	108
End of month	<u>110</u>
Net Increase	2

Employee and Community Relations Divisions

ACTIVITIES

Employment and Employee Services

Employment:

	<u>April, 1951</u>	<u>May, 1951</u>
Applicants interviewed	1,221	1,274

448 of the above applicants interviewed during May were individuals who applied for employment with the Company for the first time. In addition, 246 new applications were received through the mail.

	<u>April, 1951</u>	<u>May, 1951</u>
Open requisitions		
Exempt	4	1
Nonexempt	599	562

Of the 599 open, nonexempt, nontechnical requisitions at the beginning of the month, 444 were covered by interim commitments. Of the 562 open, nonexempt, nontechnical requisitions at month end, 372 were covered by interim commitments. During May, 187 new requisitions were received requesting the employment of 316 nonexempt employees.

	<u>April, 1951</u>	<u>May, 1951</u>
Employees added to the rolls	322	279
Employees removed from the rolls	204	141
Net Gain or Loss	+118	+138

Of the 141 employees removed from the rolls, none were removed due to lack of work.

Turnover:

	<u>April, 1951</u>	<u>May, 1951</u>
	<u>Male</u> <u>Female</u>	<u>Male</u> <u>Female</u>
Excluding employees laid off for lack of work	2.13% 4.02%	1.44% 2.71%

Over-all Turnover:

	<u>April, 1951</u>	<u>May, 1951</u>
Excluding employees laid off for lack of work	2.51%	1.71%

During May, 40 employees terminated voluntarily to accept other employment, 11 terminated to enter school, and 10 terminated to leave this vicinity.

At the end of May there were 22 employees in lack of work status, divided into the following categories:

	<u>April, 1951</u>	<u>May, 1951</u>
Nonbargaining unit employees	12	12
Bargaining unit employees	27	10

Employee and Community Relations Divisions

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Transfer Data

Accumulative total of requests for transfer received since 1-1-51	299
No. of requests for transfer received during May	69
No. interviewed in May, including promotional transfers	54
Trans. effected in May, including promotional transfers	31
Trans. effected to date since 1-1-51, including promotional transfers	200
Transfer requests active at month end	64
Trans. effected in May, for employees given lay off notices	0
Trans. effected since 1-1-51, for employees given lay off notices	0
No. of stenos. trans. out of steno. pool in May	2

During May, 14 people whose continuity of service was broken while in an inactive status were so informed by letter.

On May 22, 1951, Shirley Kreimeier, Assistant Employment Supervisor-Women, addressed the 15 graduating seniors from the commercial class at the Pasco High School.

A learning ability test is being administered for purpose of validation to fifty new patrolmen for use as a selection aid in recruiting additional patrolmen as required by the Plant Security and Services Divisions. By month end, a total of 41 new patrolmen had been tested.

Thirteen people have been selected and have accepted offers to enter the drafting training school, which is scheduled to commence June 11, 1951. Selections from a carefully screened group, most of which were graduating seniors from Yakima and Richland High Schools, were based on a series of 5 aptitude tests and records of achievement in high school, particularly in mathematics and mechanical drawing. The initial group of thirteen includes two women.

Again in May, employees were asked to recommend possible candidates for employment to the Procurement Group through articles placed in the Works News. As a result 13 replies were received, recommending 13 people.

As a result of the advertisements placed during the latter part of April in newspapers in Spokane, Washington; Boise, Twin Falls, Lewiston and Pocatello, Idaho; and Great Falls, Montana; for stenographers, I.B.M. operators, comptometer operators, designers and draftsmen, journeymen electricians, trackmen, journeymen telephone repairmen, plumber-steamfitter helpers, instrument mechanics, production operators and laborers, a total of 129 replies were received.

At the direction of the Atomic Energy Commission, a Manpower Inventory was commenced the latter part of May. In order to complete this inventory, it will be necessary for each employee to complete a Manpower Inventory Questionnaire. The stated purpose of the inventory is to provide the Commission with information on the composition and utilization of manpower engaged in the Atomic Energy program. The information reflected on the individual questionnaires will be transposed to I.B.M. cards and a complete, up-to-date set of cards reflecting the requested information for each employee on the roll as of June 30, 1951, submitted to the Commission. In addition, the inventory will be

Employee and Community Relations Divisions

maintained on a current basis, with new I.B.M. cards submitted to the Commission quarterly for employees hired and for employees who during a particular quarter have had changes in positions, name, marital status, dependents, military status, replacement category, or educational achievement. Responsibility for completion of the initial inventory, as well as the maintenance of the inventory on a current basis, has been delegated to the Personnel Records Group.

Employment Statistics:

	<u>4-30-1951</u>	<u>5-31-1951</u>
Number of employees on rolls		
Exempt		
Male	1,912	1,933
Female	<u>54</u>	<u>55</u>
	1,966	1,988
Nonexempt		
Male	4,578	4,641
Female	<u>1,654</u>	<u>1,707</u>
	<u>6,232</u>	<u>6,348</u>
TOTAL	8,198	8,336

ADDITIONS TO THE ROLLS

	<u>Exempt</u>	<u>Nonexempt</u>	<u>Total</u>
New Hires	12	238	250
Re-engaged	1	0	1
Reactivations	5	22	27
Transfers (from other plants)	<u>1</u>	<u>0</u>	<u>1</u>
Actual additions	19	260	279
Payroll exchanges	<u>30^a</u>	<u>2^b</u>	<u>32</u>
GROSS ADDITIONS	49	262	311

TERMINATIONS FROM THE ROLLS

Actual Terminations	18	85	103
Removals from the rolls (deactivations)	4	31	35
Payroll exchanges	<u>2^c</u>	<u>30^d</u>	<u>32</u>
GROSS TERMINATIONS	34	146	170

- a Transferred from Weekly Payroll
- b Transferred from Monthly Payroll
- c Transferred to Weekly Payroll
- d Transferred to Monthly Payroll

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GENERAL

	<u>4-1951</u>	<u>5-1951</u>
Applicants interviewed	1,221	1,274
Photographs taken	421	322
Fingerprint impressions (taken in duplicate)	487	472

ABSENTEEISM STATISTICS
(Weekly Salary Roll)^a

Male	2.80 %	2.65 %
Female	3.86	3.49
Total plant average	3.02	2.62

INVESTIGATION STATISTICS

Cases received during the month	575	501
Cases closed	357	330
Cases found satisfactory for employment	623	471
Cases found unsatisfactory for employment	24	12
Cases closed before investigations completed	6	17
Special investigations conducted	18	20

a Statistics furnished by Weekly Payroll Division

Employee Services:

The following visits were made with employees during the past month by a representative of the Employee Services Group:

Employees visited at Kadlec Hospital	257
Salary checks delivered to employees in Kadlec Hospital	36
Salary checks delivered to employees confined at home	8

As of the end of May, participation in Company Benefit Plans was as follows:

Pension Plan	95.1%
Life and Health Insurance	96.7
Employee and Stock Bonus Plan	36.3

In the past month, 10 letters were written to members of deceased employee's families concerning payment of moneys due them from the Company, as well as answering other pertinent questions for them.

Two employee deaths occurred during May, namely:

, Technical Analytical Division; and
, Engineering and Construction Divisions.

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Three employees retired during the month, namely:

Anna B. Creek, Medical Division;
Albert W. Strege, Plant Security and Services Divisions, (Optional);
Francis A. Torkelson, Design Division, (Optional).

During May, 45 letters were written to retired employees giving them information of a general nature in which they would be interested. In addition, four pensioners now residing in the immediate area were visited by a representative of the Employee Services Group, to discuss with them items in which they and the Company both are interested.

Military Reserve and Selective Service:

The statistics with respect to employees registered under the Selective Service Act are as follows:

Employees registered under the Act	778
Employees registered who are veterans	476
Employees registered who are nonveterans	302
Employees classified as 1-A	118
Deferments requested to date	108
Deferments granted	68
Deferments denied and appealed at state levels	6
Deferments denied and appealed at national levels	5
Deferments requested, employees later reclassified	20
Deferments pending	9

Statistics with respect to employees who are members of the military reserve are as follows:

Number of reservists on the roll	667
Number who returned to active duty to date	62
Number who returned to active duty in May	2
Deferments requested to date	60
Deferments granted	57
Deferments pending	3

Military terminations since 8-1-1950 are as follows:

Reservists recalled	62
Selective Service	72
Female employees inlisted	2

TOTAL 136

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TRAINING AND PROGRAM DEVELOPMENT

The Supervisors' 40-Hour Training Program was held during the week of May 14 - 18, 1951. A total of 37 members of supervisory-management were enrolled by ten major divisions. An informal luncheon was held at noon on Friday of the program week, at which time members of the group, together with six members of Senior Management of Hanford Works, met and discussed informal luncheon topics. A survey questionnaire completed by participating members of the group indicated that this program had met its specific objectives and was of definite assistance to the participating members, as supervisors. A survey of this specific group also indicated that approximately 50% had not yet been informed of the Salary Determination Plans. This information was referred to the Manager of our Divisions for discussion with the Salary Administrator.

PMS Groups 13 and 15 met and completed their conferences during the month of May. These two groups consist of a total of 28 supervisors who are regularly scheduled to work on shifts. Since these two groups have completed their PMS conferences, a special dinner is being arranged which will be held in June. PMS Groups 14 and 16, having an enrollment of 28 members of supervisors who are regularly scheduled to work shifts, completed Meetings 13 and 14 in May. These two groups will complete the final three conferences of PMS early in June, and a special dinner will be arranged for them the latter part of June. With the completion of these groups in PMS, we will have a total of approximately 300 supervisors at Hanford Works to have completed the management skill of persuasion included in the PMS training. Additional PMS groups will be started for straight day members of supervisory-management, probably in August and September, when a sufficient number have completed vacations to enable quotas to be met for enrollment.

The special schedule arranged to cover a total of 144 meetings for non-exempt employees to attend HOBSO conferences over a six-weeks period was completed in May. Copies of the schedule were mailed to members of supervision by Division Heads and Superintendents, so that they could schedule their non-exempt personnel to attend any one of the 144 especially arranged meetings. The scheduled meetings began on April 23, and were held daily throughout all areas of the Hanford Works. During the period of the schedule, a total of 144 meetings were held with a total attendance estimated at 3,776 employees. This is approximately 51% of the entire non-exempt roll at Hanford Works. This program was disseminated in a uniform manner by members of the Training Staff in a meeting taking approximately 90 minutes. It was a combination presentation of the three-session version and appreciation version, allowing approximately 30 minutes for conference discussion by the group. In addition to the special schedule, additional meetings are being held for those groups where supervision could not enroll their personnel to attend during the scheduled period. Most of these meetings include special presentations for firemen at White Bluffs Fire House, and for Patrolmen at the Hanford Pistol Range. Many comments and remarks have been received both by participating employees and supervisors of participating employees, and all are extremely favorable regarding this informative and thought-provoking program. This particular program has drawn considerable comment from non-exempt personnel, particularly along the line that this was the best program they have participated in.

Employee and Community Relations Divisions

TRAINING AND PROGRAM DEVELOPMENT

During the month of May, 27 Supervisor's Handbooks were turned in, brought up-to-date, and re-issued. An additional ten Handbooks were also issued, making a total of 1,481 Supervisor's Handbooks issued to date. Revisions of 5.31, "Rating of Employees - Nonexempt" and 11.2, "Accidents to Vehicles" were issued to all Handbook holders during May. Revision of 8.2, "Group Insurance Plan" is at the Printer's and will be issued in June. In addition, other single-page revisions are being prepared for issuance as they may be printed.

During the month of May, class meetings 13 - 16 in Effective Presentation were conducted and final examination was given on May 29. W. W. Chamberlain, who has been the instructor of Effective Presentation at the School of Nuclear Engineering, has found this program to be well accepted by those participating. A brief of this program will be used in conjunction with the 1951 Introductory Program for the New Technical Employees.

On May 25, four members of the Training Staff attended the first Northwest Training Conference held in Seattle. This meeting was conducted by members of the Washington State Training Directors Society, and was held at the University of Washington Adult Education Center. The major theme of this program was participation, thereby dividing participating members into seminar groups to discuss problems of common interest to all training personnel and current methods for assisting in training techniques. Some 30 organizations were represented, with a total of 57 members present. Such training conferences assist greatly in the development of better training methods throughout industry.

During May, one copy of the Hanford Works SAGE was prepared and distributed to all supervisors. This was issued on May 16, and included pertinent information regarding economics and information regarding beating inflation.

During the month of May, Orientation was given to two re-engaged, one transferred, and 251 new employees; a total of 254. Re-engaged and transferred employees indicated 100% participation in the G-E Insurance Plan, and 94.4% of the new employees elected to participate in the Plan. In addition to "You and G.E. at Hanford Works", a new Hanford Works Safety Booklet will be distributed to all new employees when completed. These books are at present being revised and printed.

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TRAINING AND PROGRAM DEVELOPMENT

Thirteen copies of the book, "Men and Volts" were sold during the month of May. The cash for this sale was turned over to the G-E Cashier, and the receipt is maintained in the Training Division files.

In accordance with the responsibilities charged to J. A. Wood, as Chairman of a subcommittee to the Education Committee, a study was made and a complete six-weeks 1951 Introductory Program for New Technical Employees was submitted to the Education Committee on May 14. This program is designed to give proper introduction to the General Electric Company for some 200 new Technical Graduates reporting for work in June, 1951, at Hanford Works. This program will consist of one week of General Orientation, two weeks of classes, one week of humanics for engineer or scientist, and two additional weeks of classes. The classes will be instructed by members of management from several of the divisions throughout the Hanford Works. Classes will be conducted in Mathematics, Physics, Chemistry, Metallurgy, Business and Engineering Economics, Bio-Physics, Effective Presentation, Business Law, Labor Law, and Policy Seminar. During the introductory week, which includes General Orientation, all Division Managers will be called upon to explain the major responsibilities of their divisions. Additional information regarding progress of General Electric and organization information will be included. Considerable time has been spent in the development of material to be used in the six-weeks Introductory Program for New Technical Employees, and all members of the Training Staff will be involved in dissemination of information and conducting of classes during the entire six-weeks period which will begin June 18, 1951.

Employee and Community Relations Divisions

Union Relations and Wage Rates

Union Relations - Operations Personnel:

Three separate elections were conducted by the National Labor Relations Board on May 1, 2 and 3. The first election was to determine whether the Building Service Employees International Union would be authorized to negotiate a union security clause with the Company. There were 20 votes against and 39 in favor of the proposition. Certification of the results of this election was received from the NLRB on May 14, and the Union advised the Company on May 16 of its desire to commence negotiations. No date has been set for the initial meeting.

The second election involved Richland and North Richland Firemen whom the HAMTC sought to represent. The results were 50 for and 4 against such representation. Certification of these results was sent by the NLRB to the Company on May 16. Negotiations for a Firemen contract were slated to begin on June 4.

The third election involved the HAMTC who had petitioned for an election on the union shop question. They were unsuccessful in obtaining the required majority of "yes" votes. Out of 3117 eligible employees, 1382 voted for the union shop, while 980 voted against the issue and 707 failed to vote. There were 48 void ballots.

Within a few days after this UA election was conducted, the HAMTC filed a protest with the NLRB, asking that the election be nullified and a substitute election be scheduled as soon as possible. The Company received no information from the NLRB by month-end to indicate its reaction to the protest.

The Chemical Workers International Union, Local 369, petitioned the NLRB, seeking to represent all Chief Operators in the "S", "P" and "TS" Divisions. However, there was some indication that the Chemical Workers may withdraw the petition and that the HAMTC will file for such employees.

On May 25, a preliminary meeting was held with representatives of the International Guards Union to discuss contract negotiation plans. The Union presented to the Company a draft of a proposed contract. The Company promised to review this draft and offered to prepare its own conception of a contract. This work was being accomplished at month-end.

The HAMTC, BSEIU, and Hanford Guards Local 21 endorsed the Company's application to the Wage Stabilization Board wherein approval was asked to grant a nine-cent an hour wage increase. However, Community Firemen have not been asked to endorse the application, as yet, pending the outcome of current negotiations.

Grievance Statistics:

Sixteen grievances were received during the month, bringing the total received this year to 55.

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Grievances were sent in this month from the following divisions:

Mfg. Electrical	1
Mfg. Maintenance	3
Mfg. Power	2
Mfg. "S" Division	1
Mfg. Transportation	7
Fire (Industrial)	1
200 West Laundry	<u>1</u>
Total	16

Employee grievance reports were received regarding the following subjects:

Jurisdiction	9
Overtime	2
Wage Rates	<u>5</u>
Total	16

The status of grievances received in 1951 as compared to those received during the same period in 1950 is as follows:

	<u>1951</u>	<u>1950</u>
Received in May	16	18
Received through May	55	93
Settled satisfactorily, Step I thru May	20	18
Pending at Step II thru May	29*	56
Settled Step II thru May	10	19
At arbitration	<u>1</u>	<u>--</u>

*Included grievances pending at Step II since 1950

Seven per cent of the total grievances received this year have been submitted by employees outside the bargaining unit.

Two meetings were held during the month for the purpose of processing grievances at the Step II level.

Union Relations - Subcontractor Personnel:

Electrician Linemen have refused to work any overtime for time and one-half. A meeting was held with representatives of AEC, AJ, NNE and this office, wherein it was determined that Maintenance Linemen are essential when any construction work is in progress. It was therefore decided that construction Linemen will remain on a 40-hour week and AJ will request authorization to work only Maintenance Linemen on the sixth day at double time.

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The isolation pay issue has been returned to the Davis Panel. The Union, AJ and Northcutt (Guy F. Atkinson Company, Portland) each forwarded their reports to the Panel during May. This office had an opportunity to suggest several changes to Atkinson-Jones' and Northcutt's letters which were embodied in the final submittal. The Unions' letter contained, among other things, a renewal of their demand for a \$1 increase in isolation pay, and for the first time indicated a willingness to agree to this amount until December 31, 1952.

The Asbestos Worker increase from \$2.55 to \$2.90 was approved by General Electric and AEC on March 22, 1951, subject to Wage Stabilization Board approval. Atkinson-Jones failed to request a decision from the Wage Stabilization Board until May 5, 1951. The Wage and Hour Division approved \$2.925 (agreed to in December) and Jenkins (Atkinson-Jones subcontractor) then put the subsequently agreed-to \$2.90 into effect.

At negotiations on May 1, the Plasterers demanded an increase from \$2.50 to \$3. The \$3 rate appears to be prevailing in Eastern Washington and was agreed to contingent upon (1) Wage Stabilization Board approval, and (2) verification that the rate is prevailing by a wage survey.

Operating Engineer negotiations were held on May 7. The Union demanded a new rate for (1) a Wagner Towermobile, and (2) the overhead crane in Building 221-U. It was agreed to withhold further negotiations on the Towermobile until information is obtained on rated capacity, etc. No agreement on crane operator rate. Further negotiations on May 15, 1951, resulted in agreement on a rate of \$2.80 per hour (35-cent increase) for the overhead crane. The Union presented a demand for a new classification "Air Compressor (two or more within a 100 ft. radius)." The Contractors' Negotiating Committee agreed to the new classification at the same rate (\$2.10) as the presently existing "Air Compressor (1,000 CF stationary)."

On May 8, agreement was reached with the Teamster Union on a rate of \$2 for "Transit Mix Trucks over five yards" effective May 28, 1951. The previous classification of "Transit Mix Trucks over three yards" was changed to "Transit Mix Truck over three yards and including five yards" with the rate of \$1.95 remaining unchanged.

A rate of \$2.57 for "Swinging Scaffold and Boatswain Chair" (15 cents over Brush Painter) was negotiated with the Painters. A provision for this classification is contained in the present Schedule "A", but authorization has not heretofore been sought. Painting of a stack in MJ-1 involves use of swinging scaffolds.

The Operating Engineer eleven man dispute arbitration hearing (referred to in last month's report) was held on May 28 and 29. Written briefs are to be submitted to the Chairman, at which time a decision will be rendered.

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Requests for Reimbursement Authorizations handled during the month:

1. Electrician (Wireman) - Overtime, meal time
2. Carpenters - Wages
3. Teamsters - Transit Mix Truck over five yards
4. Electrician (Linemen) - Overtime
5. Asbestos Workers - Wages
6. Electrician (Linemen) - Classification changes

Reimbursement Authorizations received during the month:

1. Carpenters - Wages
2. Teamsters - Transit Mix Truck over five yards
3. Asbestos Workers - Wages

Wage Rates:

A revised reimbursement request was submitted to the Atomic Energy Commission for Designers and Draftsman. This request included changes in Draftsman rates resulting from the recent nine cents per hour offer to all nonexempt employees. The AEC answered this request for reimbursement and stated that the revised rate on Designers and Draftsman would be reimbursable if and when the Wage Stabilization Board approved our original rate relief application.

Because the company-wide application for approval of the nine cents per hour general increase, which was to include all nonexempt Hanford Works employees, did not cover the Community Firemen, a special petition was written and forwarded to Mr. W. P. Parsons of the General Electric Company in New York. We were later informed our application for the Firemen would be submitted to the Wage Stabilization Board after the general increase had been approved for other company employees. A reimbursement request was submitted to the AEC concerning the nine-cent increase for nonexempt personnel. Action was withheld on the reimbursement for the Community Firemen and exempt employees until additional information is issued from New York.

At a meeting with union representatives, a settlement was negotiated on a complaint concerning the length of the training period for Electrical Trainees.

A reimbursement request was submitted to the AEC on a job classification for Drafting Trainee. This job was established in connection with a new Drafting Training Program instituted by the Engineering and Construction Division.

The Wage Rate Section participated in a rate survey conducted by the Argonne Laboratory, Chicago.

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A reimbursement request was submitted to the AEC for a new job classification of Electronic Calculator Operator.

The first draft of Appendix "C" of the proposed contract between the General Electric Company and the Atomic Energy Commission was reviewed and corrected.

Instrument Division supervision, representatives of the HAMTC and the Wage Rate Division participated in a review of all work performed by Instrument Division field employees during the period January 1, 1951 to April 1, 1951. A general understanding was reached concerning the work that would come under the Instrument Specialist classification. The Instrument Division postponed discussion on the number of Instrument Specialists to be assigned because of anticipated changes.

On May 8, 1951, a meeting was held with all Instrument Division supervisors and foremen in the 200 Area to advise them about our discussion with the Union regarding Instrument Specialists' work. During this meeting the assignment of work by classification was discussed with the foremen. On May 18, 1951, a similar meeting was held with 100 Area Instrument Division supervisors and foremen.

Discussions with the Operating Engineers of the Community Division were conducted as a result of a grievance concerning the elimination of one operator's job by combining and adding duties with another operator's functions. A job review was made and discussions were held with the HAMTC representatives and Community Division supervisors. The Union indicated this case may be taken to arbitration.

As a result of the recent Community Firemen's representation election, a review of the various platoon schedules was started in anticipation of union demands.

An over-all review of nonexempt, non-unit job classifications in the Municipal, Real Estate and General Services Divisions was begun.

Insurance, Workmen's Compensation and Suggestion System:

Suggestion System:

	<u>April, 1951</u>	<u>May, 1951</u>	<u>Total since 7-15-47</u>
Suggestions Received	140	168	6723
Investigation Reports Completed	121	180	
Awards granted by Suggestion Committee	35	60	
Cash Awards	\$ 495	\$ 1,315	
Estimated Savings	4,037.42	11,432.32	

An employee in the Maintenance Division received the highest award for the month for his suggestion concerning the use of stainless steel manifold for

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the Hi-Vac System in the hoods in the 234-5 Building. Considerable savings in labor was realized through adoption of this suggestion.

The largest single award ever made to a woman employee at Hanford Works was made during the month of May to an employee of the Technical Services Division. She proposed a method of eliminating copy work in maintaining three duplicate books of records of the 300 Area daily and weekly production. Labor savings was realized from this suggestion.

Another large award was given to an employee in the Instrument Division for his suggestion concerning the maintenance of the Alpha counting equipment, resulting in savings in labor.

Workmen's Compensation:

Two cases under litigation were closed during the month.

Life Insurance:

Code information which is known only to Home Office Life Underwriters Association has been furnished 44 insurance companies and investigation agencies during the month of May, 1951. This is in accordance with an arrangement with the Underwriters whereby employees on this project might be insured on the same basis as those working elsewhere.

Insurance Statistics:

	<u>April, 1951</u>	<u>May, 1951</u>	<u>Total Since Sept., 1946</u>
Claims Reported to the Department of Labor and Industries	118	166	4499
Claims reported to Travelers Insurance Co.	7	11*	508

* Of the above claims reported during May to the Travelers Insurance Company one was bodily injury and ten were property damage claims.

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Community and Public Relations

PUBLIC INFORMATION - News Bureau

Meetings - The News Bureau supervisor attended three Flood Control meetings during the month of May.

Coverage

A total of 40 releases were distributed during the month. Of these, 30 were sent to the "local list" which includes: Columbia Basin NEWS, Tri-City HERALD, Lind LEADER, Yakima Morning HERALD, Walla Walla UNION-BULLETIN, Hanford Works NEWS, Spokane CHRONICLE and radio stations KPKW, KWIE, KALE, KREW and KIT. The rest were sent to approximately 75 daily newspapers and wire services throughout the Northwest. Following is a sampling of news subjects during the month.

Feature stories - Three long feature stories were written during May. A story describing the drafting school and another describing the role of women at Hanford Works were given wide newspaper distribution and the latter was illustrated with selected photos. The third story was written especially for the trade journal "Occupational Hazards." It dealt chiefly with hazards guarded against by Health Instrument Divisions.

Unusual Problem - The patrolman, who inadvertently came into contact with some radioactive material was a special problem to the News Bureau as well as to Health Instrument Divisions. The News Bureau prepared a statement and arranged a press conference at which Health Instrument Divisions Manager explained the situation to newsmen. The story received nation-wide attention and, in general, comment was favorable to the Company.

Bond Ceremony - News Bureau writers assisted representatives of the Treasury Department in preparing publicity for Richland's "T" flag ceremony.

Construction - The News Bureau produced 8 stories on bid invitations, bid openings covering construction projects ranging in size from the resurfacing of 8 tennis courts to the construction of \$3.7 million laboratory building.

Special Requests

A total of 14 requests were answered during the month of May for the Columbia Basin NEWS, Tri-City HERALD and Spokane CHRONICLE.

Space Report - See last pages of report.

PUBLIC INFORMATION - Community Relations

G.E. cooperated with the local high school and Kiwanis Club in sponsoring "Career Day" for graduating seniors. Approximately 50 students visited 25 G-E people employed in fields the youngsters are interested in entering. The Community Relations Supervisor arranged the interviews, helped school officials plan the event, and, as a member of Kiwanis, served as "Career Day" Committee Chairman.

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A radio script concerning the atom bomb and defenses against it was written for transcription and broadcast over local radio stations, based on the U.S. Government publication, "Survival Under Atomic Attack." The radio program is one of many activities currently being performed by the Community and Public Relations Division, in its role of public information outlet for the Richland Civil Defense Authority.

Copy for the first issue of a Community Relations NEWSLETTER was written. It is planned to mail the NEWSLETTER to community leaders monthly, in an effort to further acquaint them with the policies and practices of General Electric. The first issue is expected to be mailed July 1.

A letter to tenants who want to move to a different house was written for the Housing Division, at that group's request. A new procedure has been adopted relative to such moves, and the purpose of the letter was to acquaint concerned tenants with the procedure.

An interview to discuss a recently completed study of Richland's water system was arranged with the Public Works Superintendent for a Tri-City HERALD reporter. After a thorough discussion of the study, during which the superintendent showed that its results were not yet ready for publication, the superintendent asked the reporter to delay the story. The reporter complied. This incident is significant, press relations-wise, since it demonstrates, forcefully, that cooperation with the press--"laying the cards on the table," so to speak--usually nets cooperation in return.

Copies of the G-E annual report was mailed to local ministers, educators, and businessmen. A letter accompanied each copy of the report mailed.

Five letters of inquiry about Richland and Hanford Works were received. Four were from high school students; one from a college student. The information requested was furnished.

PUBLIC INFORMATION - Public Functions

Papers and Speakers

F. H. Ames, Jr. spoke to AIEE in Seattle on the subject, "The Man With Twelve Fingers."

S. B. Badgett explained with the use of color slides, "Records Management at Richland," to the AEC Records Management Conference in New York City.

R. J. Broun's article, "The Quantitative Electrodeposition of Plutonium," was processed for publication in ANALYTICAL CHEMISTRY.

C. W. DeLong's paper, "The Percutaneous Absorption of Water Vapor," was cleared for publication in SCIENCE magazine.

A. E. Engler's report, "Summary of Transportation Division" presentation at March 1951 meeting, was processed for publication.

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J. K. Figenshau gave his talk, "A Demonstration and Presentation of Remote Control Tools Used In Atomic Energy," to two groups at the Richland Public Library Open House.

C. K. Gamertsfelder addressed the American-British-Canadian Conference, Harwell-Berks, England, on the subject, "Problems in Design and Application of Radiation Detection Instruments."

K. E. Herde delivered his lecture on "Toxicology of Radiiodine in Suffolk Sheep" to the Animal Husbandry Faculty, Washington State College, Pullman, Washington.

J. M. Holman spoke to the Optical Conference Group, Argonne National Laboratories, Chicago, Illinois, on the subject, "Optical Instruments for Remotely Controlled Operations."

W. A. McAdams addressed the American Waterworks Association, Vancouver, B.C. on the subject, "Radioactive Contaminants and the Public Water Supply," and also the Reserve Officers, Pullman, Washington on the subject, "Radiological Problems in Atomic Disasters."

E. J. O'Black spoke to the AIEE in Richland, Washington, on "Basic Applications of Service and Maintenance Practices in Modern Industrial Plants."

G. R. Prout appeared before the Electrical Club in San Francisco and spoke on the subject, "The Hanford Project and Atomic Energy."

G. L. Swezea spoke to the AIEE in Richland, Washington on the subject, "Electrical Metering in the Village of Richland."

B. J. Willingham talked before the AIEE in Richland, Washington on "Communication Requirements for Civilian Defense."

T. A. Purton presented HOBSO to the Northwest Personnel 5-Day Institute in Seattle.

Films

A total of 11 G-E films were booked for screening by local schools and a plant group.

"Pattern For Survival," a civil defense film, was booked for showing by five plant groups and one civic group; and one safety film was booked for showing by a plant group.

Radio

One minute spot announcements to promote the Defense Bond Parade and Ceremonies were written, recorded and released for broadcast to all local stations. The local radio stations saturated the air with the three recorded spots provided them and it is felt that the large attendance at the parade and park ceremonies is largely attributable to the stations' enthusiastic cooperation.

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Representatives of all three radio stations were assembled with their recording equipment in the KWIE studios in the evening preceding the Defense Bond Show and Parade for the recording of an interview between Bob Lewis and the visiting motion picture star, the Air Force General, and prominent local personalities.

Arrangements were made with KWIE, Kennewick, Washington, for the "live" broadcast and with KALE, Richland, Washington, and KPKW, Pasco, Washington, for the tape recording and delayed broadcast of the Defense Bond Parade and Park Ceremonies. The fact that the entire parade and ceremonies were carried by all three stations contributed to the "bigness" of the event.

PHOTO HOUSE

Vacations scheduled for this month reduced the production of the Photo House to 7,129 prints of which 5,729 were for use in producing personnel identification and Area badges.

Approximately 25 color slides were produced for the Records Center sound-slide presentation, including a photograph of the building exterior, taken from the top of a ladder elevated from a hook and ladder truck. Interior shots were taken of all phases of activity and the forms used in the Center's clerical procedures photographed. The slides were used in presenting the talk concerning Hanford Works' unique Records Management Program at the conference in New York City.

The processes involved in the decontamination of the house occupied by the "radioactive patrolman" were photographed for release to local newspapers and TIME magazine.

Coverage was given Safety Award recipients in order to fulfill the Works NEWS photographic requirements in their execution of tabloid spread on the Safety Award System.

Extensive photographic requirements incident to the publication of the Manufacturing Divisions' Yearbook were fulfilled.

Photographs were made of women's activities at Hanford Works for the use of the News Bureau in the preparation of their special release, "Women at Hanford."

Publicity shots of the Records Center building were taken at the request of the Atomic Energy Commission.

Art Work

Commercial art services during the month included preparation of the last half of the final art work for the Records Center folder, a black and white drawing, combined with Artype lettering, for the front cover of the Monthly Health Bulletin, one inside illustration for the same publication, preparation of photographs, art work, and the dummy for the new safety booklet, color roughs of an attendance award poster, revision of art work for the new printing of "You and G.E. at Hanford Works," including an improvement of the front cover design and of nine illustrations, new photo lay-out involving the elimination of some photographs and the addition of others, and four editorial cartoons for the Works NEWS.

Employee and Community Relations Divisions

EMPLOYEE INFORMATION - Special Programs

Five Union Relations News Columns were written for the Works NEWS covering the grievance procedure, basic labor terms; and answering charges made by the HAMTC in an open letter to a congressman.

An Employee News Letter summing up the results of the NLRB-conducted union shop and union representations elections early in the month was written, and production and distribution arranged by Special Programs.

Recruitment Display Advertisements were placed in two national public health magazines for a public health nurse supervisor; and in six eastern newspapers for Instrument Mechanics and Design Draftsmen.

Attendance Award Plan pins and award certificates were received, wallet cards for distribution with the pins were ordered, and promotion schedule drawn up.

Hanford Works' Records Management Program was aided by Special Programs through: (1) production of a two-color brochure, "How Records Management Pays Off For You," to be sent to all supervisors, (2) printing of a paper--containing photos of actual filing procedures and reproductions of record forms--given at a meeting in New York City of AEC and contractors records people. These two items were prepared and distributed at the meeting as part of a "package promotion" developed by this division.

June Health Bulletin, entitled, "Mosquito Control," written, produced and distributed to all H.W. people.

Medical Divisions News Stories produced for release by the News Bureau concerned National Hospital Day, Rocky Mountain Spotted Fever, and vacations--the health topic for May.

"You and General Electric at Hanford Works" revision completed. The booklet is due for publication in the middle of June.

"This Way...Please" revision is underway. One complete section of stenographic handbook was re-written, one added, and numerous changes made throughout the balance of the booklet.

U.S. Treasury's Bond Drive in Richland was aided through a letter to supervisors plus production of arm bands worn in the "Defenders of Freedom" parade.

Two booklets for distribution to H.W. people were sent to the printer, proof checked and returned and will be off the press early in June. The "Security Handbook" will be distributed to new employees, and "Safety Is Part of Your Job" will be sent to all H.W. men and women.

EMPLOYEE INFORMATION - Works NEWS

Activities of the Works NEWS during May included:

Columbia High School journalism students prepared two pages of one issue of the paper. All stories and pictures were written and taken by the

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Employee and Community Relations Divisions

students and page layouts were made following a complete briefing of the Works NEWS style at the time they visited the office.

Requests have been received to have the layout appear in the ADVENTURES AHEAD magazine.

Bond Promotion for the "Defenders of Freedom Day" celebration in Richland was carried prominently in the Works NEWS for two weeks preceding the event. Readers were advised of all events to be held at that time. Pictures, stories and an editorial cartoon were used to publicize the event, while informative material on bonds was also included. Publicity included a follow-up story.

Drafting Course to train draftsmen at Hanford Works was announced with complete information on the qualifications an applicant must have to take the course.

Sports Activities of Hanford Works people has been reemphasized, with considerable attention being given publicity on game schedules for softball in all leagues. Opening of season was publicized by a feature story.

Rental rates for new homes under construction in Richland were announced in a lead story. All information relative to submitting applications for the new homes was included.

A complete change in the format of the Works NEWS was the most drastic step made during the month. The change was introduced following an editor's conference in Boston which the editor attended. It is a new, suggested style to be used. It is being introduced at this time as an experiment, and is designed after the tabloid newspaper.

Its greatest advantage is presenting news with the greatest possible impact with an idea to creating readership interest. Wherever and whenever possible pictures are used to the best advantage to tell a story. This gives more opportunity to carry pictures bigger and on more varied subjects.

Headlines are used to stimulate immediate interest in such a way as to arouse the reader's interest and curiosity. Emphasis has been given to using bold type heads. Actual impression is to give a more streamlined appearance, and more pep.

EMPLOYEE INFORMATION - Women's Activities

Three weeks in May were spent substituting as editor of the Works NEWS while the editor was on a combined business and vacation trip. During this time considerable time and effort went into assisting the SANDSTORM class at Columbia High School in publishing two pages of the Works NEWS.

Two women's pages appeared during the month in the Works NEWS. On May 4 a G.E. Consumers Institute article appeared on tinting clothes in the G.E. automatic washer, and a feature on "Rhubarb Betty" from the National Dairy Council. On May 24, the entire Women's Page was taken up with a General News Bureau syndicated feature on how to prepare low cost meats.

Ten stories were written publicizing events for the Parks and Recreation Division during May.

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NEWSPAPER SPACE REPORT

April, 1951

As compiled from Nucleonics Department News Bureau Clipping Files

SUBJECT	NEWSPAPER	DATE	COLUMN INCHES	PHOTOS
New Records Control Center	Yakima HERALD	Apr. 11	14	1
Radiochemistry Bids	Columbia Basin NEWS	Apr. 11	46	3
	Portland Daily JOURNAL OF COMMERCE	" 12	1	
	Walla Walla UNION-BULLETIN	" 2	2	
Bids on Richland Tank Farm	Spokane CHRONICLE	Apr. 7	3	
	SPOKESMAN-REVIEW	Apr. 8	2	
Painting of Prefabs	Tri-City HERALD	Apr. 11	2	
	Spokesman Review	Apr. 13	1 1/2	
	Walla Walla Union-Bulletin	Apr. 13	3 1/2	
	Portland Jr. of Commerce	Apr. 13-28	10	
	Seattle Jr. of Commerce	Apr. 13	2	
Aquatic-Biology Laboratory	Portland Jr. of Commerce	Apr. 20	4	
	Walla Walla Union-Bulletin	Apr. 17	1	
	Columbia Basin News	Apr. 21	2 1/2	
	Spokane Chronicle	Apr. 21	2	
	Yakima Republic	Apr. 21	2	
	Tri-City Herald	Apr. 23	2	
	Seattle Jr. of Commerce	Apr. 23	2	
Miscellaneous Bids	Walla Walla Union-Bulletin)	Apr. 28	5	
	Portland Jr. of Commerce)			
Plant Hiring	Walla Walla Union-Bulletin	Apr. 6	2	
	Tri-City Herald	Apr. 6	2	
	Columbia Basin News	Apr. 6	2 1/2	
	Tri-City Herald	Apr. 27	4	
Pre-employment feature	Columbia's Basin News	Apr. 20	22	1
Safety Releases	Walla Walla Union-Bulletin	Apr. 8	4 1/2	
	Columbia Basin News	Apr. 28	3 1/2	
	Walla Walla Union-Bulletin	Apr. 29	6 1/2	

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SUBJECT	NEWSPAPER	DATE	COLUMN		PHOTOS
			INCHES		
H.W. Sheep Farm	Walla Walla Union-Bulletin Spokane Chronicle Columbia Basin News	Apr. 26 Apr. 26 Apr. 27	12 16½ 21		5
Organization Changes	Walla Walla Union Bulletin) Columbia Basin News) Tri-City Herald) San Francisco News) San Francisco Pacific Factory) Spokane Chronicle)	Apr. 3-24	34½		
Technical Library Feature	Walla Walla Union-Bulletin Tri-City Herald	Apr. 15 Apr. 15	17½ 13		
Electric Meter Bids	Tri-City Herald Portland Jr. of Commerce Seattle Jr. of Commerce	Apr. 1 Apr. 3 Apr. 3	3 4 4		
Power Outages	Columbia Basin News) Walla Walla Union Bulletin)	Apr. 5-30	6½		
Fire Prevention	Columbia Basin News	Apr. 7	3½		
Room Shortage	Tri-City Herald	Apr. 1	5		
Parking Space Facilities	Walla Walla Union-Bulletin	Apr. 3	2½		
Library Open House	Columbia Basin News " " Spokesman-Review Columbia Basin News Walla Walla Union Bulletin Spokane Chronicle	Apr. 7 Apr. 20 Apr. 22 Apr. 28 Apr. 30 Apr. 20	3 4 8½ 4 5 4		1

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SUBJECT	NEWSPAPER	DATE	COLUMN	
			INCHES	PHOTOS
Civil Defense	Tri-City Herald	Apr. 2	2	4
	Walla Walla Union-Bulletin	Apr. 5	4	1
	Tri-City Herald	Apr. 13	2	1
	Tri-City Herald	Apr. 18	2	
	Walla Walla Union Bulletin	Apr. 19	2½	
	Spokane Chronicle	Apr. 19	4	
W. E. Johnson's Speech in Seattle	Seattle Times			
	Seattle Post-Intelligencer	Apr. 11	19	2
	Spokesman-Review		36½	19
			column in.	

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Employee and Community Relations Divisions

Hanford Works Photo House**DECLASSIFIED**

	2" x 2"	2" x 4"	5" x 7"	8" x 10"	11" x 14"	Color Slide 35 mm	16 mm B & W	Portrait	Hand Prints	Negatives	Transparency	Movies	Rolls
<u>Engineering & Construction</u>													
<u>Separations Technology</u>							17						
Technical				40									
Project Engineering				12						555			
Employee & Community Rel.													
Employment	4972	757								313			
Community Relations			14	23						12			
News Bureau			101	152						46		100 ft.	
Special Programs				8									
Works News			56	5				7		58			
Public Functions			32	278		66				60			
<u>Health Instrument</u>													
Instrument					25								
H.I.					56								
<u>Manufacturing Divisions</u>													
Manufacturing Tech.				35						19			
Transportation				70						40			
Pile Technology				93						25			
<u>Medical Divisions</u>									42				
<u>Municipal Real Estate &</u>													
General Services													
Recreation			6										
Commercial Facilities			160										
Safety			40							11			
Maintenance			8										
Electrical				12		2				19			
<u>Plant Security and Services</u>													
Contraband Rolls													8 rls
Police			66										
<u>Staff Organization</u>													
Rotational Training								3			12		
<u>Miscellaneous</u>													
A.E.C.				78									
Civil Defense			10			31							
G.E. Apparatus Div.				10									
TOTAL	4972	757	333	976	91	99	17	10	42	608	12	100ft.	8 rls

Total Prints

MarchAprilMay

Total Prints

7,298

8,206

7,129

Total Negatives

694

860

608

Total Assignments

103

128

102

MUNICIPAL, REAL ESTATE AND GENERAL
SERVICES DIVISIONS
SUMMARY-MAY, 1951

ORGANIZATION AND PERSONNEL

Number of employees on roll:	<u>Beg. of Month</u>	<u>End of Month</u>
Administration	12	14
Accounting	33	31
Engineering & Contracts	34	33
<u>Municipal Divisions</u> (Total 238)		
Public Works	100	104
Parks & Recreation	33	35
Police (Richland)	42	42
Fire (Richland)	54	54
Public Safety	3	3
<u>Real Estate Divisions</u> (Total 232)		
Housing & Real Estate Maintenance	213	219
Commercial & Other Property	13	13
<u>General Services Divisions</u> (Total 120)		
Steam & General Maintenance	73	66
Patrol (North Richland)	21	22
Fire (North Richland)	32	32
	<u>663</u>	<u>668</u>

There was an increase of five employees in the Divisions during the month of May, 1951.

GENERAL

The Richland Public Library held "Open House" on April 29, 1951, inaugurating the opening of the library.

Collection of residential garbage and trash was placed on a twice-weekly basis effective May 1, and will continue on this schedule through September 30.

During May Richland was advised that they had won first place in the traffic law enforcement contest for cities from 10,000 to 25,000 population, as sponsored by the International Association of Chiefs of Police..

Total housing applications pending - 502.

HARoot/jak
6/13/51

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MUNICIPAL, REAL ESTATE AND GENERAL SERVICES ACCOUNTING DIVISION MONTHLY REPORT FOR MAY, 1951

ORGANIZATION

Employees-Beginning of Month	33	Exempt	5	Male	9
Transfers In		Non-Exempt	26	Female	22
Transfers Out	1		<u>31</u>		<u>31</u>
New Hires	1				
Terminations	2				
Total-End of Month	<u>31</u>				

RENTS

<u>House Leases Processed</u>	<u>May</u>	<u>April</u>
Total active leases beginning of month	5655	5689
New leases	183	111
Cancellations	171	145
Total active leases end of month	<u>5667</u>	<u>5655</u>
Modifications	20	7

Dormitory

Total occupancy beginning of month	1060	1045
New assignments	124	137
Removals	101	122
Total occupancy end of month	<u>1083</u>	<u>1060</u>

Rental Revenue was as follows:

	<u>May</u>	<u>April</u>
Equipment	\$ 16.95	\$ 18.33cr*
House:		
Basic rent	197,306.95	196,771.91
Electricity	47,854.03	47,682.87
Water	7,928.90	7,901.16
Facility:		
Basic rent	49,094.87	46,619.32
Electricity	3,433.92	3,433.92
Water	490.00	490.00
Dormitory	15,133.36	14,623.10
Utilities-Electrical	<u>1,576.90</u>	<u>1,439.95</u>
	<u>\$322,835.88</u>	<u>\$318,943.90</u>

* Retroactive cancellation of lease-Recreational Hall

Municipal, Real Estate and General
Services Accounting Division (Con't)

TELEPHONE

	<u>May</u>	<u>April</u>
Number of work orders processed	288	406
Number of working telephones	5153	5053
Revenue including services	\$ 19,225.33	\$ 18,447.32

MISCELLANEOUS

	<u>May</u>	<u>April</u>
Invoices prepared during month	243	261
Revenue derived from invoices	\$ 2,537.13	\$ 3,390.47

GENERAL

Seventy-two collection letters were written resulting in the collection of fifty-one delinquent accounts.

Yakima Adjustment Service:

Previously submitted 61 accounts	\$865.99
Submitted in May	30.76
Collected by Yakima Adjustment Service	82.24
Collected by General Electric Company	93.73
Returned - Written Off	13.61
Recalled - No Charge	<u>1.00</u>

Balance Agency Accounts	<u>\$703.17</u>
-------------------------	-----------------

ACCOUNTS PAYABLE

Statistics

	<u>May</u>	<u>April</u>
Accounts Payable Vouchers	336	387
Freight Bills Processed	29	22
Purchase Orders Received	60	86
Net Amount of Purchase Orders	\$ 22,515.44	\$ 21,278.66
Receiving Reports Received	131	175
Net Amount Disbursed	\$236,438.21	\$242,132.14
Number of Checks Issued	246	288

A summary of Active Subcontracts is shown below:

<u>Subcontractor</u>	<u>Subcontract Number</u>	<u>Amount Awarded</u>	<u>Paid This Month</u>	<u>Total Paid</u>	<u>Amount Retained</u>
Newland Cafeteria	-----	\$ 192.68	\$ 12.48	\$ 192.68	\$ -0-
Richland Maintenance Co.	-----	182,752.40	7,423.70	182,752.40	-0-
Associated Engineers	G-305	139,578.94	15,062.11	151,079.87	7,951.57
Grant, Algot C.	G-318	26,956.59	615.00	23,715.54	-0-
Packard Pipe & Pump Co.	G-326	12,336.00	-0-	5,976.22	664.03
C & E. Construction Co.	G-328	173,575.45	-0-	165,644.44	8,678.77
F. O. Repine Co.	G-329	29,263.00	5,009.45	8,959.95	995.55

Municipal, Real Estate and General
Services Accounting Division (Con't)

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Subcontracts (Con't)

<u>Subcontractor</u>	<u>Subcontract Number</u>	<u>Amount Awarded</u>	<u>Paid This Month</u>	<u>Total Paid</u>	<u>Amount Retained</u>
Erwen, Edmund P.	G-334	\$ 16,000.00	\$ -0-	\$ -0-	\$ -0-
Baldwin-Dunham Co.	G-343	1,366,950.00	146,241.62	669,655.14	41,638.50
Roof Service, Inc.	G-350	61,319.00	6,121.37	9,969.86	1,107.76
Commercial Paint.& Dec.Co.	G-353	19,600.00	8,102.50	13,345.00	980.00
Witzig Electric	G-358	6,751.00	-0-	-0-	-0-
Patton & Hill	G-360	8,100.00	-0-	3,061.80	340.20
Motorola, Inc.	G-364	8,242.00	-0-	-0-	-0-
Collins & Babcock	G-365	3,147.50	1,727.98	1,727.98	192.00
Weston Plumbing Co.	G-372	49,907.65	-0-	-0-	-0-
R. A. Neuman & Son	G-373	76,453.16	-0-	-0-	-0-
F. O. Repine Co.	G-375	42,700.00	6,421.65	6,421.65	713.52
		<u>\$2,223,825.37</u>	<u>\$196,737.86</u>	<u>\$1,242,502.53</u>	<u>\$63,261.90</u>

COST

Reports

The April Operating Report was issued May 17, 1951. The Comptrollers Appropriations Report and Supplemental Report was issued May 15, 1951. The Utilities Report was issued May 23, 1951.

Operations Budget

The Quarterly breakdown of FY 1952 Operations Budget was completed. A comparison of FY 1951 Budget as originally submitted to Congress, with current estimate was prepared.

SERVICE ORDERS

Service Order Charges

<u>QUANTITY (A)</u>		<u>LABOR COSTS</u>		<u>MATERIAL COSTS</u>		<u>TOTAL COSTS</u>	
<u>Code</u>	<u>Apr. May</u>	<u>Apr. May</u>		<u>Apr. May</u>		<u>Apr. May</u>	
1	1,196 971	\$2,127.23 \$1,839.25		\$2,274.08 \$1,512.72		\$ 4,401.31 \$ 3,351.97	
2	1,826 1,603	2,399.85 1,970.50		3,205.36 2,353.25		5,605.21 4,323.75	
3	159 76	307.65 184.80		303.50 179.90		611.15 364.70	
4	37 94	147.00 284.55		71.49 165.04		218.49 449.59	
5	212 260	392.00 466.55		519.43 571.16		911.43 1,037.71	
6	277 243	896.70 633.85		337.88 216.43		1,234.58 850.28	
9	10 0	37.10 0		28.95 0		66.05 0	
	<u>3,717 3,247</u>	<u>\$6,307.53 \$5,379.50</u>		<u>\$6,740.69 \$4,993.50</u>		<u>\$13,048.22 \$10,378.00</u>	
Difference(B)	470	-928.03		-1,742.19		- 2,670.22	
Average Cost(C)		1.70 1.66		1.81 -1.54		3.51 -3.20	

Municipal, Real Estate and General
Services Accounting Division (Con't)

SERVICE ORDERS (Con't)

- (A) Quantity covers the number of Service Charges made since some Service Orders include several changes.
(B) Over (/) or Under (-) Previous Month.
(C) Service Order decrease is seasonal - Glazing work has increased due to change from General Services Division Maintenance to Real Estate Division Service Order Crew.
Sheetmetal is also seasonal work; therefore, eliminating sheetmetal work this month.

1 Plumbing	3 Heating & Vent.	5 Lock & Key	
2 Electrical	4 Glazing	6 Carpentry	9 Sheetmetal

WORK ORDERS

Active Routine	286	287	254	- 33
Active Normal	2,610	2,360	2,306	- 54
	<u>2,896</u>	<u>2,647</u>	<u>2,560</u>	<u>- 87</u>
W.O. Received	1,289	1,349	1,310	
W.O. Completed	<u>1,655</u>	<u>1,598</u>	<u>1,397</u>	
	<u>- 366</u>	<u>- 249</u>	<u>- 87</u>	

Decrease in active routine work orders due to consolidation of Waste Removal Work Orders to Commercial Facilities.

GENERAL LEDGER

	<u>No.</u>	<u>Debit</u>	<u>Credit</u>
Second Class Invoices Received	117	\$699,405.48	\$252,743.44
Second Class Invoices Issued	100	147,383.82	41,216.26

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ENGINEERING AND CONTRACTS DIVISION
MONTHLY REPORT
MAY 1951

ORGANIZATION AND PERSONNEL

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Number of employees on payroll	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Total</u>
April 30, 1951	20	14	34
May 31, 1951	20	13	33

ENGINEERING SECTION

As of May 31, 1951, a total of 41 Engineering Service Requests are still active; either awaiting information, being held up for more urgent work, or progressing according to schedule.

Fourteen private construction projects are in progress on which building permits have been issued.

C-232 Irrigation Extensions and Lawn Seeding--Carmichael Junior High School:
Part II Final inspection report submitted 5-11 with no exceptions. Project
 physical completion notice prepared 5-22.

C-282-R Dust & Pollen Control--Grass Seeding, Columbia Playfield: Stand of grass
 spotty due to excessive alkali conditions. Spots will be re-seeded in an
 attempt to establish stand of grass. Final inspection approximately
 6-15. Four and a half acres of emergency grass seeding, Richland Swim-
 ming Pool, added to the scope of work on this project. Work on this ad-
 dition to be physically completed 7-20. Modification revising scope of
 work forwarded to AEC.

C-351 Irrigation of Public Grounds

- (a) Frankfort Playground: Sprinkler heads lowered. Area ready for
final inspection.
- (b) Riverside Park: Final inspection held 5-11 with no exceptions.
- (c) Marcus Whitman Grade School: Sprinkler heads being lowered. Work
to be physically completed by 6-8-51.

C-356 Recreational Facilities--Equipment for Schools and Public Parks:

- (a) Restroom--Memorial Park: Construction 100% complete.
- (b) Recreation Equipment--Prefabricated: Installation 100% complete.
- (c) Recreation Equipment--Field Construction: Construction 80% com-
plete. Handball courts out for bid.
- (d) Columbia Playfield Lighting: Construction 95% complete. Stakes
have been set for light poles near tennis courts.

C-357 Sewage Lift Station: Construction held up pending receipt of 8" x 10"
valves.

- C-372 Exterior Painting of Houses: Work progressing; 51% complete.
- C-382 Well 1100-D, Duke Well Field: Modification to Packard Pipe & Pump Company. Subcontract approved 5-25 and notice to proceed issued the same day. Work is to be completed by 6-30.
- C-387 Interior Painting of 16 Dorms: 99% complete; clean up in progress.
- C-400 Re-roofing, Siding, Painting--700 Area Buildings: Subcontract work 25% complete; project forces work 100% complete.
- C-407 Bathtub, Tile & Linoleum Installation: Work started 5-2; 15% complete. Requested modification of directive on extension of completion date.
- C-408 Additional Erosion Control and Shelterbelt Planting: Contract awarded for additional erosion control and shelterbelt planting. Work will begin approximately 7-1-51.
- C-425 1951 Park Development Program: Plans are complete on Richland Library and Columbia Playfield. Chief Joseph Playground 90% complete. Plans and specifications will be ready not later than 6-8-51.
- C-426 Additions and Alterations to Existing Streets and Additional Sidewalk, Curb and Gutter Construction--Richland FY 1951: All design completed. Bid opening to be in June.
- C-430 Improvement of Lighting--703 Building: Design plans and specifications 20% complete.
- C-440 Alteration 712-A Building: Bids opened 4-27-51. Bids too high. Re-advertising of bids awaiting approval by AEC.
- C-448 Rehabilitation of 1341 Prefabs: 65% complete; work progressing. Letter to C. W. Weeks outlining expenditures to date for foundation posts, together with available funds for Minor Construction Division work.
- C-449 Water Service to 1341 Prefabs: 90% complete; work progressing. Letter to W. E. Bridges regarding transfer of charges from Project S-362 and Project C-363 to Project C-449 for expenditures to date on water service alterations.
- S-255-B Grass Seeding--Frankfort Playground and Marcus Whitman School: Final inspection of this work will be made within the next few days.
- S-255-D Parking Lot--Columbia Playfield: Construction completed 5-15 and final contract quantities for payment forwarded to Contract Section 5-21. Project completion notice has been issued.
- S-263 Sand Trap for 24" Water Main: Project completion notice issued.
- S-307 8" Water Line--Guthrie to Williams: Staked water line loop north of men's dormitories. Contractor given notice to proceed.
- S-350 Improvement of Lighting in 705 Building: awaiting lighting fixture parts.
- S-366 Exterior Painting of Kadlec Hospital, Municipal Building, and Medical-Dental Building: 99% complete; clean-up work in progress.

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- S-394 Relocation of Hutment 1125-1: Contractor was reimbursed for work he had done on this contract and released from further responsibility. A contract was let for the salvaging of the hutment.
- S-405-B Additional Erosion Control--Street Trees: No work done on this project during the month of May. Request for a modification of directive extending the time on this project to 6-1-52 was approved 5-15-51.
- S-415 Hospital Soft Water System: Staked soft water line to hospital. Contractor given notice to proceed.
- S-469 Site Preparation--703 Building: Scope of work being studied by AEC.
- S-479 Fire Protection Chief Joseph School: Plans 75% complete.
- S-485 Exterior Painting 243 Houses: Work started 5-8-51; 26% complete.
- L-017 Tract House NN-1040: Negotiating contract.
- L-262 Water and Sewer Facilities--Assembly of God Church: Plans and specifications forwarded to Contract Section.
- L-550 Double Surface Treatment--Three Parking Lots: Construction completed 5-11-51. All reports and cost estimates submitted. Project completion notice issued.
- K-430 Exterior Painting of Protestant Church and Catholic Church: 99% complete. Clean up in progress.
- K-535 Surface Treatment--Goethals Drive, Gillespie to Knight: Construction completed 5-16-51. Final contract quantities for payment forwarded to Contract Section 5-21. Project completion notice issued.

CONTRACT SECTION

- C-356 Fence and Backstop--Columbia Playfield: Contract awarded 5-8 to Cyclone Fence Division of American Steel and Wire.
- C-356-R Columbia Playfield Lighting System: Started field construction work 5-16 and work was 98% completed 5-31.
- C-448 Rehabilitation of Prefabs: Field construction work under subcontract approximately 99% complete for the 633 units. Baldwin-Dunham Modification No. 1 covering 380 units approximately 65% complete, and Modification No. 2 covering 328 units approximately 9.5% complete.
- S-244 Fencing--Wright to Van Giesen: American Steel and Wire, Cyclone Fence Division, was successful bidders and award was made 5-8. Approval signatures being obtained on contract documents.
- S-299 Radio Communication System: Subcontract documents returned by Motorola, Inc. All necessary approval signatures obtained and notice to proceed issued 5-25-51.

- S-321 Steam Pits to Dorms: This work expected to be under contract during month of June.
- S-379 Interior Painting of Approximately 676 Prefabs: Subcontractor started field construction work 5-2 and approximately 250 houses were completed during the month.
- S-450 Fencing--Riverside Park: Plans and specifications received during May and attempted to include with subcontract work being accomplished on Wright, Van Giesen, Barth Playlot and Columbia Playfield.
- S-477 Service Access Panels--U and V Houses: Attempt is being made to expedite this work through contract negotiations.
- L-330 Heating Equipment T Houses: Work expected to be under contract during month of June.
- L-353 Resurfacing Tennis Courts: Bids opened 5-31 and award made the same day. Subcontract documents have been forwarded to the successful bidder, Raecolith Flooring Co., Seattle, for approval signature.
- L-404 Fencing Barth Playlot: Award made to Cyclone Fence Division, American Steel and Wire. Contract being signed.
- L-483 Fire Damage--1313 Potter: This work was incorporated into the subcontract for rehabilitation of prefabs. Work expected to be completed by 6-30-51.

Sixteen active subcontracts were in process during the month and payments to subcontractors totaled approximately \$190,000.

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MUNICIPAL DIVISIONS

SUMMARY

MAY, 1951

ORGANIZATION AND PERSONNEL:

	<u>BEGINNING OF MONTH</u>		<u>END OF MONTH</u>	
	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Exempt</u>	<u>Non-Exempt</u>
Fire	53	1	53	1
Parks & Recreation	13	20	13	22
Police	16	26	16	26
Public Works	16	84	16	88
Public Safety	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>
	100	132	100	138

The Municipal Divisions were alerted for emergency work in the event the swelling rivers reached a flood stage. However no action except periodical dike inspections was required.

Mr. L. Joe Miller, Staff Assistant to the Municipal Manager assumed his new duties on May 23, 1951.

MUNICIPAL DIVISIONS

Public Works Division

May, 1951

ORGANIZATION AND PERSONNEL:

	<u>Exempt</u>	<u>Non-Exempt</u>
Employees - Beginning of Month	16	84
Transfers In	-	8
Transfers Out	-	5
New Hires	-	3
Terminations	-	2
	<hr/>	<hr/>
Total - End of Month	16	88

SANITATION:

Collection of residential garbage and trash was placed on a twice-weekly basis effective May 1, and will continue on this schedule through September 30.

Total weight of all waste material collected and disposed of during May was 1,157 tons as compared to 996 tons in April.

EROSION CONTROL:

This section was assigned the responsibility for inspection and maintenance of Levees 2-A, 2-B, and 2-C, effective May 23, 1951.

Routine maintenance of plantings and weed control operations were carried on according to schedule.

ROADS AND STREETS:

A double course of asphalt and rock was applied by a sub-contractor to three parking lots, (located east of the Desert Inn, east of the Village Theatre, and north of the Softball Park), and to Coethals Drive, between Knight and Gillespie Streets.

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Municipal - Public Works

ROADS AND STREETS - CONTINUED:

A pedestrian-actuated traffic signal was installed at the cross-walk on George Washington Way at the Community House, and is now in operation.

Preliminary invitations to bid on the 1951 Street Improvement Program have been released, and it is anticipated that the formal bid opening will occur on June 19, 1951.

A total of 106 traffic control signs and 6 street signs were repaired and set during May.

Routine maintenance of streets, sidewalks, and storm and surface drainage systems, and street sweeping was continued according to schedules.

DOMESTIC WATER:

Normal operation was carried on, and the average daily water consumption during May was 13.04 million gallons. This was an increase of 2.54 million gallons over the average daily consumption in April.

Well 3000-E was returned to service on May 24, 1951, after replacement of the motor rotor and repairs to switch gear.

Well No. 18, which has been out of service for some time awaiting repair parts, has been repaired and is now producing water.

"Notice to Proceed" on completion of Well 1100-D has been forwarded to the sub-contractor, and it is anticipated that this well will be equipped and ready for service in July.

Domestic Water System

	<u>Well Production</u> <u>Million Gallons</u>	<u>Avg. Daily</u> <u>Production</u>	<u>Total Consumption</u> <u>Million Gallons</u>	<u>Avg. Daily</u> <u>Consumption</u>
Richland	157.9664	5.0957	315.4721	10.1765
North Richland	149.7910	4.8320	59.8534	1.9304
Columbia Field	95.8301	3.0913		
300 Area			<u>28.8416</u>	<u>0.9304</u>
Totals	403.5875	13.0190	404.1671	13.0377

Municipal - Public Works

SEWERAGE SYSTEM:

Normal operation and maintenance of the treatment plants, lift station, and collection system was continued through the month of May.

The south trunk sewer is being flushed on a weekly schedule to eliminate a septic condition caused by a low section of main where it passes under Lee Boulevard.

	<u>Sewerage</u>		
	Total Sewage Flow <u>Million Gallons</u>	Average Daily Flow <u>Million G. P. D.</u>	Average Rate Flow <u>Gals. per Min.</u>
Plant No. 1	32.520	1.049	728
Plant No. 2	<u>67.046</u>	<u>2.163</u>	<u>1.502</u>
Totals	99.566	3.212	2,230

IRRIGATION SYSTEM:

Routine operation of the pressure irrigation systems was carried on during May. As anticipated, a considerable amount of repair work was required to maintain the system in operative condition. The major part of this maintenance involved replacement of deteriorated lines and damaged risers.

An intensive program on gopher control along the gravity flow canals is in progress so that damage to the canal banks will be held to a minimum.

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MONTHLY REPORT PARKS AND RECREATION DIVISION May, 1951

ORGANIZATION AND PERSONNEL:

	<u>Exempt</u>	<u>Non-Exempt</u>
EMPLOYEES - BEGINNING OF MONTH	13	20
New Hires	0	3
Terminations	0	2
Transfers - IN	0	1
" - OUT	0	0
Total - End of Month	<u>13</u>	<u>22</u>

SCHOOLS

The following is a tabulation of full-time paid School District #400 personnel as of May 31, 1951:

Administration	6
Principals and Supervisors	15
Clerical	25
Teachers	243
Health Audiometer	1
Building Custodians	45
Cooks	38
Nursery School & Extended Day Care	11
Bus Drivers	2
Farm Manager	1
	<u>387</u>

CLUBS AND ORGANIZATIONS

As of May 31, 1951, organizations' personnel, exclusive of those included in the Real Estate-Commercial Facilities Division report, include:

Youth Council - Chest	1
Boy Scouts	1
Camp Fire Girls	2
Girl Scouts	22
Hi-Spot Club	2
Justice of the Peace	1
Y.W.C.A.	2
	<u>11</u>

On May 1, 2 and 3 the National Labor Relations Board held a union election for employees of the General Electric Company. The Parks and Recreation Division made arrangements for the loan of voting booths to be used in the election.

On Saturday, May 12, 1951, the U. S. Treasury Department presented a Savings Bond Flag to the Community of Richland in ceremonies at Riverside Park. Arrangements were made by the Parks and Recreation Division to have the bandstand at the Riverside Park enlarged for the ceremonies.

Parks and Recreation Division

On Sunday, May 13, 1951, the Richland Softball Association began its 1951 season with a special program at the Memorial Softball Field. Arrangements for the use and operation of an amplification system was made by the Parks and Recreation Division. Two members of the Division took active part in the ceremonies.

The Richland Little League and Intermediate League held their annual dedication program at the Memorial Softball Field on May 20, 1951. An amplification system was made available to them by the Parks and Recreation Division for use during the program.

On Thursday, May 24, 1951, D. H. Berst of the Parks and Recreation Division attended the swimming pool conference at Pullman, Washington.

On Sunday, May 27, 1951, a guided tour of Richland and North Richland was made by the Parks and Recreation Division for visiting delegates attending the Washington State Marine Corp League Convention.

The number and types of organizations presently served by the Parks and Recreation Division include:

Business and Professional Clubs	20
Churches and Church Organizations	27
Civic Organizations	5
Fraternal Organizations	24
Music, Art & Theatre Groups	8
Recreation and Hobby Groups	44
Schools and Parent Teachers Assoc.	13
Social Clubs and Organizations	11
Veteran & Military Organizations	12
Welfare	6
Youth - Boy Scouts	20
Camp Fire Girls	36
Girl Scouts	49
Miscellaneous	10
Miscellaneous	9
	<hr/> 294

RECREATION

One woman employee was transferred from another Division to the Recreation Division on May 28, 1951. She will be on duty at the Community House as a girls and womens recreation leader.

Mr. R. E. Anderson of the Recreation Division attended a one day conference at Walla Walla, Washington on May 18, 1951, on "The Role of Recreation and Physical Medicine Rehabilitation Programs as an Aid to Therapy."

Parks and Recreation Division

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Attendance figures for the Month of May, 1951 were as follows:

<u>Community House</u>	<u>No. of Sessions</u>	<u>Boys</u>	<u>Girls</u>	<u>Total</u>	<u>Sub-Total</u>
Games Room	27	2,121	341	2,462	
Open Craft	2	13	14	27	
Leathercraft	2	6	9	15	
Photography	3	44	9	53	
		2,184	373	2,557	2,557
Servicemen's Center	4	454 (men)	75 (women)		529
Booked Groups	42				1,577
<u>Carmichael Playground</u>					
Tennis Clinic	3	34	33		67
<u>Riverside Park</u>					
Marble Tournament	3	138		<u>Spectators</u> 46	184
Booked Activities	33				3,384
<u>Burlin Camp</u>					
Booked Groups	18				251
<u>"Triple O" Softball</u>					
Teams	12				132
GRAND RECREATION TOTAL					8,681

The Parks and Recreation Division sponsored a Tennis Clinic on May 5, 12 and 19 under the leadership of Roland Bloomstrand and Mrs. Richard Hammond. The Clinic was held at the Carmichael Playground tennis courts with 67 persons participating.

On May 19 and 26 the City and District Marble Tournament was held at Riverside Park. The Tournament was co-sponsored by the Veterans of Foreign Wars and the Parks and Recreation Division. Total registration for the tournament was 127.

Again this year the Parks and Recreation Division is directing the sponsorship of the local Triple "O" Softball League. The League is to consist of twelve teams.

Parks and Recreation Division

PARK DEVELOPMENT

Proposed Work:

	<u>Percentage Complete</u>
1. Site Development	
a. Marcus Whitman Playground (Project S-255-B)	100%
2. Irrigation Installation	
a. Riverside Park (Project C-351)	100%
b. Columbia Playfield (Project C-351)	95%
c. Carmichael Playground (Project C-376)	100%
d. Frankfort Playground (Project 255-B)	90%
e. Columbia Playfield (Project S-255)	98%
3. Grass Seeding	
a. Carmichael Playground (Project 332)	100%
b. Frankfort Playground (Project 255-B)	90%
c. Columbia Playfield (Project S-255)	90%
4. Parking Lot	
a. Columbia Playfield (Project 255-D)	100%
5. Playground Equipment	
a. Equipment Installed (Project 356-R)	56%
6. Layout Plans - Total 31 - 10 Complete	
a. Riverside Park	15%

PUBLIC LIBRARY

The Public Library has just completed its first full month of operation to the public.

Total circulation for the month was 15,306. Total registration - 2,406. Books added to the collection, 250. Records processed for circulation, 164. A break down of the circulation for May follows:

<u>Books</u>			<u>Magazines</u>	<u>Records</u>	<u>Inter-library Loan</u>	<u>Pamphlets</u>
Adult	Juvenile	Total				
7,253	7,307	14,560	254	353	135	4

This was accomplished even with limitations as to the number of books which might be borrowed and definite limitations as to the supply for the books requested - individual titles as well as subject fields.

Twenty-five school classes visited the Library. Eight story hours for school age children were held and one pre-school story hour. A total attendance of 308 children.

Thirty classes have been visited to date regarding the summer reading program.

Parks and Recreation Division

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Two special exhibits were shown this month. One the work of the high school art classes, the second an exhibit of painting from Seattle School of Art, brought in by the A.A.U.W. Two special meetings were held in North Hall.

Special exhibits were placed in the show window for the Richland Symphony Orchestra and the Rose Show. Bulletin space was given for the Town Hall series and the Community Concert series as well as the Tri-City Flower Show and other community activities.

The Library Board held its regular monthly meeting the 2nd of May at which time they adopted their By-Laws.

MAJOR ACTIVITIES DURING THE MONTH

May 1,2,3	National Labor Relations Board Election	1100 Area
12	Savings Bond Award	Riverside Park
13	Richland Softball Association Jamboree	Memorial Softball Field
19	Cub and Scout Circus	Bomber Bowl
20	Little League Baseball Dedication	Memorial Softball Field
26 & 27	Washington State Marine Corps League Conven.	Desert Inn

MUNICIPAL DIVISIONS

RICHLAND FIRE DIVISION

May 1951

<u>Organization and Personnel</u>	<u>Exempt</u>	<u>Non-Exempt</u>
Employees - Beginning of Month.	53	1
Transfers In.	0	0
Transfers Out.	0	0
New Hires.	0	0
Terminations.. . . .	0	0
Total End of Month	53	1

Fire Protection

Response to Fire Alarms	13
Fire Loss (Estimated):	
Hanford Works	\$2.00
Personal	0.00
Investigation of Minor Fires and Incidents	12
Safety Meetings	6
Security Meetings	2
Inside Schools and Drills	46
Outside Drills	57
Fire Alarms Boxes Tested	184

Twenty-one firemen attended HOBSO sessions during the month.

On May 4th, a firemen was detailed to standby during cutting torch work under Kadlec Hospital.

Sixty-four lengths of fire hose were pressure tested during the month.

Nine members of a Brownie group visited No. 1 Fire Station on May 11th. Eight Cub Scouts and two den mothers visited No. 2 Fire Station on May 16th.

One Boy Scout was examined for Fireman ship merit badge on May 13th.

All yard fire hose boxes in Richland were inspected during the month. Hose was changed in four boxes and an additional box temporarily installed south of the 703 Building.

Fire apparatus responded nine times in May to the AEC Airport for standby during aircraft landings and take-offs.

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MUNICIPAL FIRE DIVISION, May 1951

Fire Prevention

Fire Inspections:

700 Area Buildings	- 55
1100 Area Buildings	- 49
Real Estate Buildings	- 48
Municipal Buildings	- 4
Hospital (Exits and New Construction)	- 8
Schools	- 8
Minor buildings and sheds	- 31
Weed areas etc.	- 29

1. ~~Exits~~

Inspection Reports Submitted:

700 Area Buildings	- 3
Schools	- 5
AEC Buildings	- 1
Real Estate Buildings	- 36

Fire Extinguishers:

Inspected	- 303
Refilled	- 27
Installed	- 4
Repaired	- 4
Recharged (CO2)	- 19

Standpipe Fire Hose:

Inspected	- 50
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Seven wooden fire hose boxes in the 700 and 1100 Areas were replaced with new metal boxes and connections conforming to Hanford Works Standards.

All empty carbon dioxide fire extinguishers in stock were recharged during the month. Charging equipment was remodeled with safety features recommended by the Plant Safety Division.

Assistant Fire Marshal attended Richland Safety Committee meeting as a member.

Problem of using carbon tetrachloride fluid from fire extinguishers, evidently for cleaning purposes, was referred to supervision of the buildings involved.

Assistance was given the Richland Safety Council during Clean-Up Week sponsored by the Council, April 29th to May 5th.

Daily inspections of Kadlec Hospital exits were made during the peak construction period.

Fire Marshal and Plant Fire Division supervisor made a joint inspection of the 1131 bulk oil storage. Recommendations were made for altering motor and tank supports for improved fire safety.

Following application of oil base weed killer around commercial facilities and dormitories, flammability tests were made and supervision advised of the fire hazard.

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MUNICIPAL FIRE DIVISION, May 1951

Inspection of AEC boat dock and gasoline storage house revealed hazards which were referred to the AEC Safety office.

After completion of rewiring contract in five schools, Fire Marshal and Assistant, accompanied by school officials, an inspection was made of firewalls and under floor areas. Holes through firewalls and loose, combustible insulation under floors, constituting hazards, were referred to school and AEC Safety offices with recommendations for correction.

First test of fire doors in Chief Joseph Junior High School on May 22nd revealed all doors inoperative. A second test was made May 29th when all doors but one operated satisfactorily.

Recommendations were made to AEC Safety for changes in air duct dampers and concreting breached firewalls in Chief Joseph Junior High School to conform to code.

Request was made that all dormitory disconnect switches be properly labeled to comply with National Electrical Code. Diagrams of electrical controls in these buildings were furnished to fire stations for class study and reference.

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MUNICIPAL DIVISIONS
RICHLAND POLICE DEPARTMENT

MAY 1951

ORGANIZATION AND PERSONNEL

	<u>Exempt</u>	<u>Non-Exempt</u>
Employees - Beginning of Month	16	26
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	0	0
Total - End of Month	<u>16</u>	<u>26</u>

GENERAL

On May 1, 1951, Capt. W. A. Ziegler visited the Centralia, Washington, Police Department to inspect the auxillary police organization in that city.

Several members of the Richland Police Department attended a meeting on May 16 of the Yakima River Peace Officers Association held in Yakima, Washington.

New speed check speedometers were installed on all patrol cars. This device enables the police officer to stop the check speedometer at the highest speed registered when pacing a speeding motorist.

On May 22, 1951, the Kennewick Sheriff's Office was assisted by the Crime Prevention and Investigation Section in lifting finger prints at the scene of a burglary near Kennewick.

During the month, a total of 258 letters were received, compared to 223 last month. These consisted of 258 inquiries on arrests and 8 requests for assistance.

During the month, 36 prisoners were processed through the Richland Jail. Twenty of these were from North Richland.

During the month, 22 gun registrations were recorded.

During the month, 184 bicycle registrations were recorded.

During the month, 159 traffic violation reports were received. These consisted mainly of speeding, illegal parking and negligent driving. A total of 101 other reports were received. These consisted mainly of petit larceny and public intoxication cases.

TRAFFIC

On May 14, 1951, word was received from the International Association of Chiefs of Police that Richland had won first place in their contest for outstanding traffic law enforcement for cities from 10,000 to 25,000 population.

On May 24, a new procedure was adopted for expediting traffic over the Bailey Bridge to the Richland "Y" intersection. Incoming traffic is halted and two

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Richland Police Department - Continued

outgoing lanes of traffic are permitted over the road for short periods during the peak traffic hours. This procedure has improved the traffic situation a great deal.

The Traffic Section recorded 18 reportable accidents in Richland for the month of May, 1951. This amount shows an increase of three over the preceding month and an increase of eight over the same month last year. No traffic fatalities occurred within the city limits, and only two minor injuries for the month of which one of the minor injuries was a pedestrian jaywalking in front of a motor vehicle. For the preceding month there were two minor injuries and two major injuries. For the same month last year there were three minor injuries and one major injury.

Causes of the 18 above accidents were as follows:

Reckless Driving	1
Neligent Driving	2
Failure to YROW	7
Improper Backing	3
Stop Sign Violation	1
Jaywalking	1
Following Too Closely	3

Property damage caused by traffic accidents decreased from \$250 per accident last month to \$114 per accident this month.

Meetings were conducted with the School Boy Patrol at all six grade schools by Ptm. D. F. Metz. This was the final meeting with the Patrol for the year 1951. Plans were made for the end of the year School Boy Patrol picnic which will be held June 4. Twelve new badges and belts were issued to the various schools. Daily checks were also made of the School Boy Patrol in and around the various schools.

Fifty-eight no parking signs were installed on the following streets and included: Judson, Johnston, Torbett, Haines, Haupt, Sibert, Thomas, section of Symons and Stevens Drive. These signs restricted parking between the hours of 6 A. M. and 8 P. M. due to the narrowness of the streets.

Twenty-six new play ground signs were installed at the various play ground areas throughout the community. Thirty-nine other new traffic signs were installed. Twenty-five signs were repaired and replaced within the community.

A section of the curbing on a curve on Haines Avenue and also the curve on Davison Street were painted yellow to prohibit parking on the curves. A section of curbing on George Washington Way just north of Knight Street was also painted yellow to prohibit parking back to the corner.

Traffic counts were taken at the following locations: Lee Boulevard just west of Goethals Drive; Goethals Drive just north of Lee Boulevard; Thayer Drive just north of the By-Pass Highway; Yakima Bridge on George Washington Way both in and outbound traffic; Benham Street just west of George Washington Way; Swift Boulevard just east of the By-Pass Highway both in and outbound traffic.

The installation of the new pedestrian control traffic signals at the cross

Richland Police Department - Continued

walk across George Washington Way in front of the Recreation Hall was completed. It is expected to be in operation June 2.

The center line on Benham was blacked out so as to permit a wider lane for west bound traffic where parking is permitted along the north side of the street.

TRAINING

From May 14 to 27 Lt. L. M. Linkous and Sgt. J. A. Schmitz attended a training school sponsored by the F. B. I. at Fort Lewis, Washington.

Classroom subjects covered during the month were: Scientific Aids, Taking of Plaster Casts, Practical Demonstration.

Training at the small arms range for the period in field instruction was as follows:

Pistol	2 hours
Machine Gun	1 1/2 hours

Qualifications on the F. B. I. course were as follows:

<u>Score</u>	<u>No. Men</u>	<u>Per Cent</u>
Expert	1	16%
Marksman	1	16%
Unqualified	4	68%

Qualifications on the Machine Gun course were as follows:

<u>Score</u>	<u>No. Men</u>	<u>Per Cent</u>
Expert	6	75%
Sharpshooter	1	12 1/2%
Marksman	1	12 1/2%

Qualifications on the Army-L Course were as follows:

<u>Score</u>	<u>No. Men</u>	<u>Per Cent</u>
Expert	6	38%
Sharpshooter	2	12%
Marksman	6	38%
Unqualified	2	12%

A total of 22 men reported for police training.

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Richland Police Department - Continued

ACTIVITIES AND SERVICES

	<u>March</u>	<u>April</u>	<u>May</u>
Doors & windows found open	92	37	51
Children lost or found	19	23	22
Ambulance runs assisted	31	18	21
Ambulance driver provided	4	2	6
Dogs, cats reported lost or found	22	19	37
Dog, cat, loose stock complaints	25	26	30
Persons injured by dogs	20	14	11
Bank escorts & details	12	4	10
Fires investigated	19	19	20
Miscellaneous escorts	16	11	11
Complaints investigated	44	50	55
Deaths reported	0	0	1
Articles lost or found	30	32	41
Records inquiries	312	250	237
Law enforcement agencies assisted	16	17	11
Private individuals assisted	10	4	17
Plant divisions assisted	20	29	31
Emergency messages delivered	<u>31</u>	<u>43</u>	<u>52</u>
Totals	723	598	664

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POLICE DIVISION - TRAFFIC CONTROL STATISTICS
May, 1951

MOTOR VEHICLE ACCIDENTS:

Richland	Total Number		Fatalities		Major Injuries		Minor Injuries	
	April	May	April	May	April	May	April	May
	15	18	0	0	2	0	2	2

ACCIDENT CAUSES:

Richland	Negligent Driving		Failure to Yield Right of Way		Reckless & Drunken Driving		Other Causes	
	April	May	April	May	April	May	April	May
	3	2	6	7	0	1	6	8

PLANT WARNING TRAFFIC TICKETS ISSUED:

Richland	Speeding		"Stop" Sign		Parking		Imp. License		Def. Equipment		Other Violations		Totals	
	April	May	April	May	April	May	April	May	April	May	April	May	April	May
	0	0	0	0	0	0	0	0	1	0	0	0	1	0

TRAFFIC CHARGES AND COURT CITATION TRAFFIC TICKETS ISSUED:

Richland	Speeding		"Stop" Sign		Drunken Dr.		Reckless Dr.		Right of Way V.		Neg. Dr.		Parking V.		Other V.		Totals	
	April	May	April	May	April	May	April	May	April	May	April	May	April	May	April	May	April	May
	43	28	13	16	3	3	2	6	3	7	13	20	85	27	30	37	192	144

TRAFFIC VOLUME: Average 24-hour Traffic Volume Count for week ending on May 23, 1951, on George Washington Way, north of Yakima River Bridge - 10,622 Motor Vehicles.

NOTE: Traffic Control Statistics show ORIGINAL CHARGES ONLY.

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RICHLAND POLICE DEPARTMENT
RICHLAND JUSTICE COURT CASES
MAY 1951

VIOLATION	NO OF CASES		NO OF CONV.		NO OF FORF.		CASES CONT.		CASES DISM.		WARR ISS.		SENT JAIL		SENT SUSP		LIC REV		CASES ORIG. PREV. MON.		CASES INCL. OTHER VIOL.		BAIL FORF		FINES		FINES SUSP.	
	27	12	8	4	2	1	3	2	1	3	2	13	1	5.00	60.00	45.00	15.00	182.50	75.00	10.00	10.00	28.00	5.00	52.50	307.50	187.50	140.00	25.00
Dr. Lic.	4	3	1																									
Def. Equip.	3	3	4																									
Drkn. Driving	7	2	1																									
F.T.Y.R.O.W.	2	1	8																									
F.T. Dim Lights	1	1	1																									
Follow too Closely	27	1	16																									
Ill. Parking	1	1	1																									
Ill. Passing	1	1	1																									
Ill. use of one way street	5	4	4																									
License Platen	25	16	4																									
Negligent Dr.	6	5	15																									
Reckless Dr.	33	15	10																									
Speeding	19	5	4																									
Stop Sign																												
Grand Larceny																												
Petit Larceny	3	3	2																									
Public Intoxication	11	9	2																									
TOTALS:	175	90	61	13	2	9	8	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17

NOTE: One Grand Larceny amended to Petit Larceny
One Drunken Driving case amended to Negligent Driving
Two Reckless Driving cases amended to Negligent Driving

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MONTHLY REPORT
RICHLAND POLICE DEPARTMENT
MAY, 1951

OFFENSES	KNOWN	UNFOUNDED	CLEARED ARREST	CLEARED OTHER*
PART I				
1. Murder	0	0	0	0
2. Rape	1	0	1	0
3. Robbery	0	0	0	0
4. Aggravated Asslt.	0	0	0	0
5. Burglary--Break & Ent.	1	0	0	0
6. Larceny --Over \$50.00	7	1	1	0
Larceny --Under \$50.00	19	1	8	4
Bike Theft	29	0	0	29
7. Auto Theft	0	0	0	0
TOTAL PART I CASES	57	2	10	33
PART II				
8. Other Assaults	1	0	0	1
9. Forgery & Counterfeit	1	0	1	0
10. Embezzlement & Fraud	0	0	0	0
11. Stolen Prop:Buy:Rec:Poss:	0	0	0	0
12. Weapons:Carry:Poss:	0	0	0	0
13. Prostitution	0	0	0	0
14. Sex Offense	2	0	0	2
15. Off.Ag.Fam. & Child	4	0	1	3
16. Narcotics--Drug Laws	0	0	0	0
17. Liquor Laws	0	0	0	0
18. Drunkenness	11	0	11	0
19. Disorderly Conduct	1	0	1	0
20. Vagrancy	0	0	0	0
21. Gambling	0	0	0	0
22. Driving While Intox.	3	0	3	0
23. Violation Rd. & Dr. Laws:				
Speeding	31	0	31	0
Stop Sign	20	0	20	0
Reckless Driving	7	0	7	0
Right of Way	8	0	8	0
Negligent Driving	25	0	25	0
Defective Equip.	3	0	3	0
24. Parking	25	0	25	0
25. All Other Traffic	38	0	38	0
26. All Other Offenses:				
Public Nuisance	2	0	0	2
Dest.of Pers. Prop.	5	0	1	2
Dest.of Govt. Prop.	3	0	0	1
Malicious Mischief	4	0	3	0
Vandalism	8	1	1	2
Dog Nuisance	1	0	1	0
Car Prowl	5	0	0	0
Prowlers	12	0	1	11
Illeg. Use of Firearms	1	0	0	1
Investigation	5	0	1	3
27. Suspicion	6	0	0	6
TOTAL PART II CASES	232	11	190	34

(Continued on Page Two)

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PAGE TWO MONTHLY REPORT

RICHLAND POLICE DEPARTMENT, MAY, 1951

OFFENSES	KNOWN	UNFOUNDED	CLEARED ARREST	CLEARED OTHER*
PART III				
28. Missing Persons	11	0	0	11
Lost Persons	11	0	0	11
Lost Animals	7	0	0	7
Lost Property	10	0	0	10
29. Found Persons	8	0	0	8
Found Animals	4	0	0	4
Found Property	23	0	0	23
TOTAL PART III CASES	74	0	0	74

PART IV				
30. Fatal Mot.Veh.Traf.Acc.	0			
31. Pers.Inj.Mot.Veh.Traf.Acc.	2			
32. Prop.Dam.Mot.Veh.Acc.	16			
33. Other Traffic Acc.	0			
34. Public Accidents				
35. Home Accidents				
36. Occupational Accidents				
37. Firearms Accidents	0			
38. Dog Bites	11	0	0	11
39. Suicides	0	0	0	0
40. Suicide Attempts	2	1	0	1
41. Sudden Death & Bodies Fd.	1	0	0	1
42. Sick Cared For	3	0	0	3
43. Mental Cases	1	0	0	1
TOTAL PART IV CASES	36	1	0	17

COMPOSITE TOTALS

PARTS I,II,III,IV CASES 399 4 200 158

*Cases listed under "Cleared Other" are those cleared by various means other than arrest, such as: orders from prosecutor, juvenile probation officer or other situations in which a mutual agreement is obtained. They are definitely "cleared" cases and differ from the arrest column in that there were no arrests.

Property Reported Stolen During Month \$1,843.45 (Bikes \$735.00)
Property Recovered During Month 516.70 (Bikes \$735.00)

SEE PAGE THREE FOR JUVENILES INVOLVED

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Page three		RICHLAND POLICE DEPARTMENT		MONTHLY REPORT, MAY, 1951		JUVENILES INVOLVED																
OFFENSES	NO.	JUVENILES	SEX	AGE																		
				2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	TOTAL		
Petit Larceny	4	4	M										1	3					4			
		2	F												2				2			
Vandalism	3	10	M							1		3	4	2					10			
			F																			
Malicious Mischief	2	6	M									2	2	2					6			
			F																			
Investigation	1	2	M														2		2			
			F																			
TOTALS	10	24								1		5	6	3	5	2	2		24			

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Page four

RICHLAND POLICE DEPARTMENT

May, 1951

Number of offenses known to police per 25,000 inhabitants in cities of 25,000 persons:

Wash. Oregon & Calif. Six Months (Jan-June 1950)	One Month Average	Richland (Jan-June 1950)	Richland April 1951	May 1951
Murder .49	.08	0	0	0
Robbery 14.3	2.3	0	0	0
Agg. Assault 10.3	1.7	4	0	0
Burglary 90.6	15.1	12	1	1
Larceny 269.6	44.9	223	25	26
Auto Theft 37.3	6.2	4	1	0
Bike Theft		85	19	29

Number of offenses known to police per 25,000 inhabitants regardless of whether offenses occurred in cities or rural districts:

State of Washington Six Months (Jan-June 1950)	One Month Average	Richland (Jan-June 1950)	Richland April 1951	May 1951
Murder .53	.08	0	0	0
Robbery 10.9	1.8	0	0	0
Agg. Assault 2.7	.4	4	0	0
Burglary 80.3	13.3	12	1	1
Larceny 236.1	39.3	223	25	26
Auto Theft 30.9	5.1	4	1	0
Bike Theft		85	19	29

The portion of offenses committed by persons under the age of 25 years is shown:

National Average (Percentage of Cases) (Jan-June 1950)	Wash. Oregon, Calif. (Actual Cases) (Jan-June 1950)	Richland (Jan-June 1950)	Richland April 1951	Richland May 1951
Robbery 55.4	7.9	0	0	0
Burglary 63.0	57.0	2	1	0
Larceny 46.7	125.9	57	3	7
Auto Theft 68.7	25.6	0	0	0

Note: Statistics of juvenile offenses throughout the United States were taken from the Uniform Crime Report published by the Federal Bureau of Investigation, which states: "It should be remembered that the number of arrests recorded is doubtless incomplete in the lower group because of the practice of some jurisdictions not to fingerprint youthful offenders."

MUNICIPAL DIVISIONS
PUBLIC SAFETY DIVISION

May 1951

Organization and Personnel:	Exempt	Non-exempt
EMPLOYEES - BEGINNING OF MONTH	2	1
Transfers In	0	0
Transfers Out	0	0
New Hires	0	0
Terminations	<u>0</u>	<u>0</u>
Total - End of month	2	1

*One exempt employee charging full time to Civil Defense

Statistical and General:

The national safety theme for the month of May, "Vehicle Maintenance" was publicized with various newspaper articles, radio spot announcements, etc. Three very interesting radio interviews entitled "Professional or Amateur", "Key To A Safe Car" and "Battleground" were tape recorded and broadcast by members of the Kiwanis Club who sponsored the radio programs for the Richland Safety Council this month. Safety features published in the local newspapers totaled 265 column inches and covered traffic safety, child safety and clean-up week.

Arrangements are being made for a thirteen week radio program to be narrated by Allan Grant, a prominent high school student, on the "Safety Story" series of famous people.

Notices were sent to 50 clubs and organizations listing available films in the Public Safety office. A total of approximately 2600 school children and adults viewed these safety films. The following safety films were in this office during the month of May:

Heedless Hurry	The Case of Tommy Tucker	When You Know
Safety Ahoy	Hell Wouldn't Have Him	A Closed Book
Lifelines	Uncle Jim Tells 'Em	On Two Wheels

Preparations are being made for the Safety Award Banquet which will be held June 14 in the Columbia High Cafeteria. The Governor is to be the principle speaker at this award presentation. Invitations and programs are being readied for distribution. Following is a listing of the safety awards to be presented at this time for 1950:

First place in Traffic Law Enforcement, sponsored by International Association of Chiefs of Police;

Highest score in the Traffic Safety Contest, sponsored by National Safety Council;

First place in the Oak Ridge-Los Alamos-Richland competition in the above contest;

Fourth place in the nation and first in the state in the Inter-Chamber Fire Waste Contest conducted by the National Fire Waste Council and sponsored by the United States Chamber of Commerce;

First place tie for cities of our size in the Governor's Traffic Safety Contest for the State of Washington;

Fifth place in the nation and first in the state in the Fire Prevention Contest, sponsored by the National Fire Protection Association; and

Second place tie in the Pedestrian Safety Contest sponsored by the American Automobile Association (unconfirmed to date).

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REAL ESTATE DIVISIONS

SUMMARY

MAY

ORGANIZATION AND PERSONNEL:

	<u>BEGINNING OF MONTH</u>		<u>END OF MONTH</u>	
	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Exempt</u>	<u>Non-Exempt</u>
Commercial & Other Property Divisions	7	6	7	6
Housing & Real Estate Maintenance Division	<u>22</u>	<u>192</u>	<u>21</u>	<u>198</u>
	29	198	28	204

Net Increase of employees for the month of May 5

GENERAL

Economy Drug Company, Inc. commenced operation as a sublessee in "The Mart" under the management of Jack Dowd.

MUNICIPAL, REAL ESTATE AND GENERAL SERVICES DIVISIONS

HOUSING AND REAL ESTATE MAINTENANCE DIVISION

May, 1951

ORGANIZATION AND PERSONNEL

Number of employees on payroll		May
Beginning of month	22 exempt employees	
	<u>192</u> non-exempt employees	
	214	214
End of month	22 exempt employees	
	<u>197</u> non-exempt employees	
	219	219

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RICHLAND HOUSING

Housing Utilization as of Month End

Houses Occupied by Family Groups	<u>Conven</u> <u>tional</u>	<u>Block</u>	<u>T</u>	<u>Pre</u> <u>Cut</u>	<u>Ranch</u>	<u>Pre</u> <u>Feb</u>	<u>Apt</u>	<u>Tract</u>	<u>Total</u>
G.E. Employees	2208	259	8	383	822	1145	58	38	4921
Commercial Facilities	91	9	2	27	74	65	6	5	279
Community Activities	9	---	-	1	7	3	--	1	21
Medical Facilities	5	14	-	2	--	1	--	--	22
Post Office	7	---	-	1	3	10	--	4	25
A.E.C. and Other Government	95	27	-	15	40	20	1	4	202
School District	44	1	-	5	11	49	1	--	111
Kellex Corporation	9	5	-	6	8	5	1	--	34
Atkinson-Jones	9	13	-	4	11	4	2	--	43
Newberry-Neon	3	1	-	1	---	---	1	--	6
Vernita Orchards								4	4
J. G. Turnbull					1	1			2
Fred J. Early					1				1
V. Jenkins					1				1
Hanley Company				1	1		2		4
Urban-Smythe and Warren		1	-		1		1		3
Total Houses Occupied	2480	330	10	446	981	1303	73	56	5679
Houses Assigned-Leases written	5	1	.	1	4	13			24
Houses Assigned-Leases not written	11	2		2	9	9	1		34
Houses available for assignment	4			1	6	17			28
Total Houses	2500	333	10	450	1000	1342	74	56	5765

	<u>Begin</u> <u>Month</u>	<u>Moved</u> <u>In</u>	<u>Moved</u> <u>Out</u>	<u>Month</u> <u>End</u>	<u>Difference</u>	
Convention Type	2479	43	42	2480	Plus	1
Block Type	330	5	5	330		
"T" Type	10	--	--	10		
Precut Type	441	13	8	446	Plus	5
Ranch Type	981	25	25	981		
Prefab Type	1294	51	42	1303	Plus	9
Apartments	71	6	4	73	Plus	2
Tract	56	--	--	56		
Total	5662	143	126	5679	Plus	17

DORMITORY STATISTICS

Dormitories:

	<u>Occupants</u>	<u>Vacancies</u>	<u>Total Beds</u>
Men Occupied 15	*616	---	616
Men Unoccupied			
Women Occupied 12	**481	---	481*
Women Unoccupied 1			

Women's Dormitories Occupied by:

G. E. Office	2
Education	1
Apartment	1
	<u>32</u>

*This includes 50 beds in W-17. This dormitory was opened for Men employees on March 12, 1951.

**This includes space of 2 beds in W-9 used for supply rooms and dormitory offices.

There are 127 men waiting for rooms in Richland.

GENERAL

Houses Allocated to new tenants	103
Exchanged Houses	22
Moves (Within the Village)	23
Turnovers	4
Total Leases Signed	143
Terminations	41
Total Cancellations	126
Applications Pending	502

ALLOCATION SECTION STATISTICS

Voluntary Terminations	41
R. O. F.	--
Discharge	1
Transfers	4
Retirement-Divorce-Misc.	11
Houses Assigned "As Is"	45
Move Off Project	28
Houses sent to Renovation	65

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TENANT RELATIONS WORK ORDER AND PROGRESS REPORT - MONTH OF MAY, 1951

Processing of Service Orders, Work Orders and Service Charges

	Orders Incomplete As of April 30, 1951	Orders Issued April 30 to May 31	Total Orders Incomplete as of May 31, 1951
Service Orders	152	2,577	291
Work Orders	3334	786	2,824
Service Charges	17	254	23

Principal Work Order Load

	Incomplete as of April 30, 1951	Incomplete as of May 31, 1951
Laundry tub replacement	146	124
Bathroom Renovation(tub-lino-tile)	335	330 (206 Sub-Contract)
Tileboard Only (Bathroom)	13	5
Kitchen Cabinet Linoleum	325	276
Kitchen Floor Linoleum	112	57

WORK ORDERS COMPLETED DURING THE MONTH OF MAY

52 Houses were completed on interior paint program
 15 Kitchens enameled on the most part A & J houses.
 48 Bathrooms enameled.
 104 Miscellaneous Paint jobs
 142 Linoleum put on kitchen drainboards
 139. Chrome fixtures put in in bathrooms.
 28 Lawns repaired and reseeded
 12 Loads of top soil hauled
 4 Loads of tumble weeds were picked up and disposed of
 29 Blacktop sidewalks were replaced
 80 Prefab shower stalls and valves were installed
 88 Bathtubs were installed

Alteration Permits Issued during the Month of May totaled 119 compared to 129 in April.

Electrical Wiring	2	Back door	17
Fence	25	Fireplace	5
Removal broom closet	2	Basement Excavation	2
Auto Washer	12	Tool Shed	3
Air conditioner	27	Remove Broom Closet	1
Vent Fan	1	Patio	6

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TENANT RELATIONS (continued)

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Trellis	1	Change range and refrigerator	1
Driveway	2	Dishwasher	1
Roof over front porch	1	Closet wall	1
Water softener	1	Cooling Pads	2
Additional Silcock	1	Relocate coal bin	1
Antenna	1	Awings	1
Clothes dryer	1	Letter slot	1

1577 Inspections were made during the month of May compared to 1358 made during April.

Bathtubs	51	Porch and Steps	22
Cupboard	12	Screen doors	62
Drainage	16	Shades	2
Floor boards	13	Shower stalls	56
Grass Seed	16	Sidewalks	53
Hose and Sprinkler	50	Sinks	5
Housing Siding	2	Tileboard	47
Jack and Shim	2	Toilet Seats	12
Leaking Basements	30	Top Soil	19
Linoleum	145	New Tenants	74
Lot Lines	16	Cancellations	118
Paint	355	Walls	13
Miscellaneous	251	Windows	24
		Renovations	111

HOUSING AND REAL ESTATE MAINTENANCE.

MAY, 1951

I. ORGANIZATION AND PERSONNEL

	<u>Exempt</u>	<u>Non-exempt</u>	<u>Total</u>
A.. Beginning of month	13	156	169
B.. End of month	13	161	174

II. MAINTENANCE STATISTICS (BACKLOG)

<u>JOB CLASSIFICATION</u>	<u>CRAFTSMAN CREW</u>		<u>MAN HOUR BACKLOG</u>	<u>CREW DAYS</u>
Carpenter Shop and Field Installation	Carpen. Jrn. 12 Painter, Jrn 2 Lt. Tr. Dr. 1 Upholsterer 1		1416	11
Subtotal	16			
Heavy Field Carpentry	Carpen. Jrn. 17 Carpen. Trs. 2 Lt. Tr. Dr. 1		6859	43
Subtotal	20			
Linoleum and Tile Field Carpenters	Carpen. Jrn. 19 Painter, Jrn. 1		8748	55
Subtotal	20			
Sheetmetal	Sh. Mt. Jrn. 4		1320	44
Millwright	Millwrights 4		64	2
Plumbing & Steam	Plumber Jrn. 5 Pl. S.F. Jrn 4 Pl. Helper 2		3032	34
Subtotal	11			
Cycle and Misc. Painting	Pntrs. Jrn. 24 Pntrs. Trs. 2 Carpen. Jrn. 2 Lt. Tr. Dr. 1		2860	12
Subtotal	29			
Service Section	Ser. Men 7 Lt. Tr. Dr. 3		1013	13
Subtotal	10			
Renovation	Pntrs. Jrn. 16 Carpen. Jrn. 2 Janitress 3 Lt. Tr. Dr. 1		2774	16
Subtotal	22			

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Service Order

Electr. Jrn.	5		
Plumber Jrn.	3		
Carpen. Jrn.	2	348	3
Locksmith Jrn.	1		
Glazier Jrn.	1		
Subtotal	13		

Grounds Maintenance	Lt. Tr. Dr.	2		
	Ser. men	5	18	1
		7		

TOTAL	156	28,452
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III. MAINTENANCE TRANSPORTATION FACILITIES

A. HEAVY MAINTENANCE

<u>TRUCK TYPE</u>	<u>NUMBER IN POSSESSION</u>	<u>CRAFT</u>
1½ ton Flatbed	11	Carpenters
Cushman Scooter	1	Carpenters
½ ton Pickups	6	Carpenters
¾ ton Power Wagon	1	Carpenters
¾ ton Dump Trucks	3	Labor
½ ton Pickup	1	Labor
1½ ton with Momorail	1	Millwrights
Panel	1	Sheetmetal
¾ Walkin	1	Millwrights
½ ton Pickup	2	Millwrights
Panels	3	Painters
1½ ton Flatbed	1	Painters
½ ton Pickup	5	Plumbers
¾ ton Pickup	4	Plumbers
Subtotal	41	

B. SERVICE ORDERS

½ ton Pickup	3	Plumbers
½ ton Pickup	4	Electricians
½ ton Pickup	1	Glazier
½ ton Pickup	1	Locksmith
½ ton Pickup	2	Carpenters
Subtotal	11	

C. RENOVATIONS

Bus	1	Painters (Idle)
Chev. Carryall	1	Painters, Janitresses
½ ton Pickup	2	Carpenters
Subtotal	4	

D. GROUNDS MAINTENANCE

½ ton Pickup (subtotal)	1	Servicemen
-------------------------	---	------------

E. GENERAL

Sedans	(Subtotal)	2	Supervision
	TOTAL	59	

IV. PROGRESS REPORT.

A. MECHANICAL

1. Sheetmetal

During the month a total of 80 shower stalls were fabricated and installed in prefabs. Also, during the month a number of small jobs were done on conventional type houses; gutters, signs and repairing air ducts and smokepipes.

2. Millwrights

Two men are assigned to routine inspection and lubrication of furnaces in houses; one man on service orders, part time, and the other man on work orders, part time. The other two men do miscellaneous jobs such as routine lubrication and service to coolers, setting up playground equipment and other miscellaneous small jobs.

B. PLUMBING SECTION

Plumbing consisted of installation of 88 bathtubs, 16 water heaters, 80 prefab shower faucet assemblies and one laundry tray. Work was completed in connection with 142 linoleum jobs; removing and replacing faucets. Plumbing installed 139 sets of chrome fittings ahead of contractor making bathtub installation; assembled 150 sprinklers. Inspection is made once each week for steam leaks and checking temperature of water in Dorms, Commercial facilities and Efficiency apartments. Steam was turned off in all Commercial facilities, dorms, and Efficiency apartments.

C. RENOVATION SECTION

Renovation consisted of 65 houses completed this month. Of these 28 were prefab type and 37 were permanent type houses. Forty-seven of these were complete paint jobs, 12 odd combinations and 6 cleaned only. In addition all necessary repairs were made, such as, linoleum jobs, tile jobs, carpentry, plumbing, electrical and sheetmetal work.

D. SERVICE ORDERS SECTION

A total of 2134 Service orders were completed during the month of May; 93% of these being for housing, 3.7% for Dorms, 1.5% for Commercial facilities and remainder for various other divisions. The following is status report of service orders:

On hand at beginning of month:	152
Received during month:	2577
Completed during month:	2134
On hand at end of month:	291

E. SERVICE GROUP: STANFIELD:

Routine work for the month consisted of 70 trash pickups from renovated houses,

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pumped waste from 6 service stations twice monthly, pumped grease traps at the Mart, Thrifty Drug, Bus Depot, Recreation Hall, Desert Inn and Village Pharmacy weekly. The group also did miscellaneous clean-up around cemetery, 722 Hangar Building, etc.

Non-routine work orders consisted of repairs or replacements of 29 Blacktop walks, 36 lawns repairs, (sod raised or re-seeded), 8 excavations for water service, sewers and backfill, delivered 12 loads of topsoil, excavated two feet of dirt from basement to eliminate cat odor, excavated catch basin at the Mart, filled around houses with topsoil--10 houses and five excavations for concrete walks.

F. GROUNDS MAINTENANCE GROUP

The Grounds Maintenance Group, organized to take care of the watering, mowing and trimming in the Dormitory, Apartments, Commercial and inner-block areas, is about 90% complete. At present we are not getting full coverage in the five working days. A requisition is now in for two additional servicemen. Schedule for routine work is as follows:

Monday:	Monday & Wednesday, Dorms.
Tuesday:	From Gillespie, South to Abbott.
Wednesday:	North end from Columbia, West to Thayer.
Thursday:	Commercial Area.
Friday:	From Thayer, West through Ranch House district.

By using weed killer around parking lots throughout area and next to Dorms and Commercial buildings; we have eliminated trim work to a certain degree. Because of the sizeable number of houses in renovation, one man is kept busy taking sprinklers and hose to and from these addresses. Other duties consist of picking up and replacing broken sprinklers and hose throughout the inner-block areas.

The task of preparing, seeding and watering lawns in the new homes area (1506-1508-1510 Butternut) is progressing. Grass is now up and is watered twice daily.

G. PAINT SECTION

The interior paint program is making progress in South end of town. (300 block) These forces completed 52 units, again six units over last month. Fifteen kitchens were repaired and enameled in A. & J. houses. Forty-eight bathrooms were enameled partially or entirely. One hundred-four miscellaneous paint jobs throughout the city were completed.

G. CARPENTRY SECTION

167 floor linoleum jobs and 55 table top, linoleum jobs were completed. 24 A. & J. houses were jacked up and shimmed for leveling purposes. 336 houses (including all types) had sinks and tile board chempointed. 91 bathrooms had tile board installed. Floor tile was installed in Shoe Salon. Two men were furnished throughout month to assist in the bathtub installation.

The carpenter repair, prior to interior painting by contractor, in the prefab section (approximately 680 units) has completed 400 units.

The order to lag cabinets to wall (prefabs) calls for 338 units. Of these 250 are complete.

The rehabilitation program calls for project forces to make repairs to window and door screens. Of this order, 625 units are completed.

Our forces are doing the carpenter repair work on the 243 conventional houses and are approximately 85% complete.

Other miscellaneous work includes the replacement of 16 new screen doors and the repair of 22 others. Repairs are: Repair of 70 porches, floor repair in 11 units, leveling of 15 prefabs, concrete slabs in the rear of 8 units raised, repair of windows in M. S. Warehouse, door sills replaced in 4 units, 20 roof repairs, sash balances replaced in 8 units, 7 units had cupboard doors repaired, 5 units had broken shakes replaced and the remodeling of office space in M. S. Warehouse.

Shop work consists of the filing of saws and sharpening of tools for 700 and 1100 area craftsmen, inventory and repair of ladders, the repair, upholstering and refinishing of 8 K.V. chairs, 13 K.C. chairs, 19 K.X. chairs, 6 office chairs, sewing 12 aprons, 12 tool rolls, cutting and binding of rags; service from shop to all field carpenters, such as new window frames and sash, screen doors, molding, doors and frames, porch step material and etc. Routine spray shop work completed such as furniture (office and Dorm), painting of window screens, screen doors, molding, porch material, door and window frames and etc.

V. GENERAL

A. REHABILITATION PROGRAM---PREFABS:

The prefab foundation repairs is still in progress as weekly report form from H. W. Persons, Engineer, indicates. The 380 group is now complete and a start is made on the 328 group, which, when completed will finish this program consisting of 1341 prefabs. Present status; approximately 85% complete.

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MISCELLANEOUS STORES WAREHOUSE INVENTORY SUMMARY MONTH ENDING May 25, 1951

	<u>EXPENDABLE ITEMS</u>	<u>FURNITURE (GEN LEDGER)</u>	<u>FURNITURE (KARDEX CONT.)</u>	<u>PLANT ITEMS</u>	<u>TOTAL</u>
BEGINNING BALANCE	\$42,456.68	\$25,311.13	(\$25,311.13)	\$43,225.40	\$110,943.27
RECEIPTS:					
ON PURCHASE ORDERS	6,267.28				6,267.28
ON STORE ORDERS	654.90				654.90
FROM EXCESS					
FROM HOUSING	81.05		72.25	4,093.45	4,246.75
FROM DORMITORIES			725.86		725.86
FROM OTHER (MISC.)	8.54				8.54
TOTAL RECEIPTS	\$7,011.77		(\$ 798.11)	\$4,093.45	\$ 11,903.33
TOTAL AVAILABLE	\$49,468.45	\$25,311.13	(\$26,109.24)	\$47,318.85	\$ 99,039.94
DISBURSEMENTS:					
CASH SALES (BACKCHARGES)	19.29				19.29
TO EXCESS					
TO SALVAGE		35.91	35.91		35.91
TO HOUSING	1,239.05			1,114.85	2,353.90
TO DORMITORIES	400.45		409.35		809.80
TO DORMITORIES -	67.20				67.20
LINENS					
DORM - SHADES &	6.16				6.16
REFLECTORS					
TO WAREHOUSE SUPPLIES	130.39				130.39
TO OTHER (MISC)	229.93				229.93
TOTAL DISBURSEMENTS	\$2092.47	\$ 35.91	\$ (445.26)	\$1,114.85	\$ 3,688.49
ENDING BALANCE (1)	\$47,375.98	\$25,275.22	\$ (25,663.98)	\$46,204.00	\$95,351.45
(2) (4)	(1)	(2)	(3)	(4)	
NET CHANGE	\$ 2,092.47	\$ 35.91	\$ 445.26	\$ 1,114.85	\$ 15,591.82
ENDING BALANCE GENERAL LEDGER (BALANCE - COL. 1 PLUS COL 2)					<u>\$72,651.20</u>

COLUMN 3 FOR LOCATION CONTROL ONLY - COLUMN 4 MEMO ACCOUNT ONLY

<u>EXCHANGED:</u>	<u>PIECES</u>	<u>COMMENT:</u>
DORM. FURNITURE	44	
RANGES	10	
REFRIGERATOR	5	
PREFAB HEATERS	19	
SENT TO MAINTENANCE	124	
FROM MAINTENANCE	48	
		<u>\$2,424.94 on loan to Housing</u>
		<u>from column (2) and (3).</u>

DORMITORY REPORT FOR MAY 25, 1951.

<u>120</u>	MINOR REPAIRS TO FUSES, PLUMBING, ETC.
<u>21</u>	WORK ORDERS STEAM, GLASS, EQUIPMENT, ETC.
<u>200</u>	PIECES OF FURNITURE REPAIRED.
<u>25</u>	HOUSEKEEPING CONTACTS.
<u>450</u>	LIGHT GLOBES REPLACED.
<u>66</u>	ROOMS VACATED.

LINENS LAUNDERED

<u>8178</u>	SHEETS
<u>4238</u>	PILLOW CASES
<u>293</u>	BED SPREADS
<u>33</u>	BED PADS
<u>152</u>	SHOWER CURTAINS
<u>116</u>	PAIRS DRAPES

REMARKS

12.

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COMMERCIAL AND OTHER PROPERTY DIVISION

MAY, 1951

DIVISIONAL PERSONNEL:

Number of Employees on Payroll:	<u>May</u>
Beginning of month	13
End of month	13
Net difference	0

COMMERCIAL AND NONCOMMERCIAL PERSONNEL:

Number of Employees on Payrolls:

	<u>Commercial</u>	<u>Noncommercial</u>	<u>Total</u>
April	1,144	87	1,231
May	1,166	94	1,260
Net increase			29

SUMMARY OF ROUTINE ITEMS PROCESSED:

Work Orders	18	4	22
Back Charges	2	0	2
Service Orders	19	0	19

CONTRACTS AND NEGOTIATIONS:

A. Commercial:

1. Supplemental Agreement:

Campbell's Food Market #2 - to include the receipts from house-to-house selling within the definition of "gross receipts" in the basic lease.

2. Contract of Conditional Sale:

Covering the sale of Government-owned fixtures and equipment to Harvey Stoller, an Individual, d/b/a Richland Laundry and Dry Cleaners.

COMMERCIAL AND OTHER PROPERTY DIVISION

MAY, 1951

3. Letters of Authorization:

- (a) Medical practitioners now occupying the new wing of the Medical Arts Building were authorized, jointly and severally, to partition off floor space in the new wing for use as accounting offices.
- (b) The Mart was authorized to sublet space to Economy Drug Company, Inc. for continued operation of the drugstore.
- (c) The Mart was authorized to sublet space to Sears, Roebuck and Company for the establishment of a catalog order service.

SUMMARY OF OCCUPANCY AND EXPANSION STATUS:

A. Commercial:	<u>April</u>	<u>May</u>
1. Number of Government-owned buildings	37	37
(a) Number of businesses operated by prime lessees	41	41
(b) Number of businesses operated by sublessees	14	14
(c) Total businesses operating in Government-owned buildings	55	55
2. Number of privately-owned buildings	40	40
(a) Number of businesses operated by prime lessees	37	37
(b) Number of businesses operated by sublessees	31	31
(c) Total businesses operating in privately-owned buildings	68	68
3. Total number of businesses in operation	123	123
4. Doctors and dentists in private practice, leasing space in Government-owned buildings	21	21
5. Privately-owned buildings under construction	1	1
B. Noncommercial:		
1. Government-owned buildings		
(a) Churches	4	4
(b) Clubs and organizations	10	10
(c) Government agencies	3	3
Total	17	17

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COMMERCIAL AND OTHER PROPERTY DIVISION

MAY, 1951

	<u>April</u>	<u>May</u>
2. Privately-owned buildings		
(a) Completed and in use	5	6
(b) Under construction	6	5
(c) Sites tentatively allocated or leases in process of negotiation	8	8
Total	19	19
3. Pasture Land Assignments	39	35

GENERAL:

A. Commercial:

Economy Drug Company, Inc. opened for business in The Mart under the management of Jack Dowd.

B. Noncommercial:

Northwest United Protestant Church completed the first unit of its campus-style construction program, a social hall, and held its first services in the new building.

COMMERCIAL PROSPECTS:

A number of applicants, the majority of whom were not interested in constructing privately-owned buildings, expressed an interest during the month in establishing and operating businesses in Richland. Inquiries were received concerning the following types of commercial enterprises:

Food Store	Service Station
Funeral Home	Tire Recapping Shop
Self-service Automotive	
Service Station	

NONCOMMERCIAL PROSPECTS:

Inquiries were received during the month concerning the establishment of the following types of nonprofit undertakings;

Alcoholics Anonymous
Union meeting hall and office

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GENERAL SERVICES DIVISIONS MONTHLY REPORT MAY, 1951

STEAM AND GENERAL MAINTENANCE DIVISION:

Steam Operations

Operations were normal at 784 Boiler Plant, with decreasing steam output as weather became warmer. Two boilers were in service at the beginning of the month, but on May 17 it was possible to reduce to one boiler.

Every effort is being made to turn off heating steam on the buildings served by Central Heating Plant as weather permits, in order to conserve steam. Portions of the steam mains which can be shut off are also being taken out of service for the summer.

Heating operations at 1131 Bus Terminal Boiler Plant were closed down for the summer on May 18. The remaining two Miscellaneous Operators on duty there were transferred to Municipal Public Works Division on May 21. No replacements were required.

Steam generated - 13,760.6 M. lbs.: steam leaving plant - 11,696.5 M. lbs.; steam delivered - 10,067.1 M. lbs.; coal consumed - 1,058.5 net tons; water softened - 1,691,100 gallons.

General Maintenance

The treated timber basework at 760 Building is now completed. This will protect building sills from further deterioration and help prevent moisture forming under the building. Treated baseboard installation for 761 and 762 Buildings was completed last month.

All the metal shelving has now been removed from the 721-B Records Storage Hutment, and the space is being readied for Stores' Acid Storage, which is to be moved from Building 722-C.

Safety hand rails and chains have been installed directly behind louvered doors to the attic openings to the desert coolers. These will aid workmen in ascending and descending from the attic openings, with a minimum danger of falling.

Miscellaneous routine work consisted of installation of Hauserman partitions, window and floor repair, fence repair, etc.

All piping and wiring has been freed from the boiler house near Efficiency Apartments to permit removal of the building. Boilers are to be excessed.

Radiator valves and traps on the hospital heating system were repaired and some of the remaining Victory models were replaced. Radiator steam risers were insulated with a metal-clad covering, which will much better withstand floor service operations.

The annual boiler inspection and overhaul is in progress at 784 Boiler House; 38 boiler tubes required replacement in the No. 2 boiler.

Electrical group completed 93 Work Orders, including rebuilding 28 kitchen ranges.

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NORTH RICHLAND FIRE DIVISION:

Six minor fires were investigated during the month.

Four Safety and Security meetings were held.

Five inside and 34 outside drills were conducted.

Seventy-four fire alarm boxes were tested and 2 fire extinguishers were refilled.

Stand-by protection for controlled burning was provided during the month.

General repairs were made on trucks, and rear mount pump was packed on the tanker.

Nozzles on house lines were installed in 400 barracks.

Eight sections of 2½" iron coupling hose were expressed to Station No. 1 in Richland.

Tested 250 feet of 2½" hose.

A group of Cub Scouts visited the Fire Station.

Defective master box in the hospital was replaced.

Auxiliary box on north wall of hospital kitchen was removed: box in room 150 was replaced from outside wall to inside fire wall.

Response to Alarms

<u>Alarm Number</u>	<u>Location</u>	<u>Cause</u>	<u>How Received</u>
45	Hospital at 5th & "M"	Accidental Alarm	Box
46	Bremerton House at 222 "C"	Oil Stove Explosion	Phone
47	Automobile - Parking Lot 6th & "W"	Short in Wiring	Phone
48	Barracks at 4th & Stevens Drive	Accidental Alarm	Box
49	Hospital at 5th & "M"	Accidental Alarm	Box
50	Hospital at 5th & "M"	Accidental Alarm	Box
51	Barracks 216-A, Rm. 19	Smokers' Carelessness	Phone
52	John Ball School, 6th & "C"	False Alarm	Box
53	Barracks 116-D	Accidental Alarm	Box
54	Between 7th & 8th on "Q"	False Alarm	Box
55	Sacajawea Gun Club Grass Fire	Smokers' Carelessness	Phone
56	Grass Fire West of Gay Road	Smokers' Carelessness	Phone
57	Barracks 160 at 1st & "Q"	Accidental Alarm	Box
58	Barracks at 4th & "W", Grass Fire	Smokers' Carelessness	Box

Alarm No. 47 resulted in \$50.00 personal loss

Alarm No. 51 resulted in \$18.41 personal loss

Total \$68.41

Investigations

<u>Date</u>	<u>Location and Cause</u>	<u>Personal Loss</u>
5-4-51	Barracks 238-B, Rm. 8, Smokers' Carelessness	\$17.00
5-4-51	Barracks 246-B, Rm. 19, Smokers' Carelessness	17.00
5-4-51	Barracks 219-C, Overheated Equipment in Furnace Room	

NORTH RICHLAND FIRE DIVISION Cont'd.

<u>Date</u>	<u>Location and Cause</u>	<u>Personal Loss</u>
5-9-51	Barracks 214-B, Rm. 24, Smokers' Carelessness	\$ 3.61
5-27-51	Geo. Wash. Way south of 1st, Electric Power Line	
5-28-51	Barracks 246-B, Rm. 2, Smokers' Carelessness	17.05
	Total	\$ 54.66
		68.41
	Grand Total	\$123.07

NORTH RICHLAND PATROL DIVISION:

Twenty-eight inquiries were received from Navy, Army, Civil Service Commission and du Pont regarding formerly employed personnel.

Seventeen traffic violation reports were received - 6 for running stop signs, 7 for speeding, 1 for negligent driving, 1 for illegal parking, 1 for illegal use of license plates and 1 for operating vehicle without a license.

A total of 136 traffic warning tickets were issued. These violations consisted mainly of illegal parking.

There were 6 automobile accidents in the North Richland Area during May.

All facilities, warehouses, buildings and John Ball School were checked daily on No. 1 and 3 shifts and on all shifts on Sundays and Memorial Day.

Thirty-two hours were spent on special escort service during May.

All fire, safety and traffic hazards observed by Patrol were reported to proper authorities.

An officer was assigned to Judge E. W. Brown's court in Richland each Thursday, to appear in court against persons cited to court by North Richland Patrol.

Seventeen persons were incarcerated in the Richland jail - 10 for public intoxication, 3 for drunken driving, 1 for petit larceny, 1 for auto theft, 1 for failure to stop and identify and 1 for third degree assault.

Population of North Richland increased by 164 during the month.

A police school on "In Service Training" was held in Pasco each Thursday night. Nine of our Patrol employees attended.

A Staff Meeting was held on May 16.

Five wide and high loads were escorted.

Patrol assisted ambulance drivers on six different occasions during the month.

Five firearms belonging to North Richland residents were registered with Arsenal Officer in Richland.

All traffic control points were covered during hours of heaviest traffic.

DECLASSIFIEDNORTH RICHLAND PATROL DIVISION Cont'd.

Five soldiers who were causing disturbances were picked up and turned over to M. P. Detachment for disposition.

North Richland population is as follows: Bremerton Houses - 651: Trailer Camp - 3,291: Men's Barracks - 1,452: Women's Barracks - 49: total population, excluding U. S. Army and Army Engineer Sub-contractor personnel - 5,443. Total occupied lots in Trailer Camp - 1,171: total Bremerton Houses occupied - 191.

Unusual Incident Reports

Public Intoxication	9 Stolen Automobile	1
Negligent Driving	3 Clothing Found in Garbage Can	1
Drunken Driving	2 Auto Theft (Juveniles)	1
Driving Under Influence	1 Intoxicated Parties Taken Home	1
Public Intoxication & Disorderly Conduct	1 Auto Accident (2 Private Cars)	2
Third Degree Assault	1 Stolen Bicycle (Juvenile Psycho)	1
Fire	1 Failure to Stop and Identify	1
Petit Larceny	1 Dog Bite	1
	Accident (Auto & Pedestrian)	1

Special Services Performed

Emergency Messages Delivered	51
Emergency Long Distance Telephone Calls	105
Western Union Telegrams	7
Pacific Telegraph Telegrams	5
Fires (Sig. 12)	4
False Fire Alarms	11
Unusual Conditions Reported to Maintenance	8
Escorts to First Aid	7
Bicycles Found	5
Bicycles Returned to Owner	7
Bicycles Reported Missing or Stolen	3
Children Lost	2
Children Returned to Parents	2
Children Returned to Parents When Found Wandering	3
Dogs Reported Lost	3
Dogs Recovered and Returned to Owners	2
Dogs Impounded	2
Complaints on Dogs in Trailer Camp	2
Child Struck by Automobile	1
Stolen Automobiles	2
Recovered Automobiles	1
Billfolds Turned in to Patrol	2
Billfolds Returned to Owners	2
Disturbances Investigated	5
Suspicious Persons Investigated	6
Pick Up for Grant County Authorities	1
Patrolmen to Assist Bedroll Department	2

Complaints

Petit Larceny - 2: Grand Larceny - 2: Miscellaneous - 5: Cases Cleared - 2.

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NORTH RICHLAND PATROL
COURT CASES

May, 1951

<u>VIOLATION</u>	<u>NO. OF CASES</u>	<u>NO. OF CONV.</u>	<u>NO. OF FORP.</u>	<u>CASES CONT'D.</u>	<u>CASES PEND.</u>	<u>WARR. ISSU.</u>	<u>SENT. JAIL</u>	<u>SENT. SUSP.</u>	<u>LIC. REVK.</u>	<u>TOTAL FINES</u>	<u>TOTAL SUSP.</u>	<u>TOTAL BAIL FORF.</u>
Speeding	8	5	2	1	1					\$ 60.00		\$ 25.00
Ran Stop Sign	6	3	3							17.50	\$ 7.50	17.50
Negligent Driving	5	2	2		1					67.50		45.00
Failure to Stop and Identify	1	Case Dismissed										
Failure to Yield Right of Way	1	Case Dismissed										
Drunken Driving	3	2		1	1				1	80.00		
Illegal Use of License Plates	1	1								7.50		
Passing in No- Passing Zone	1		1									10.00
No Operators License	1			1								
Petit Larceny	1	1									27.50	
Public Intoxication	8	4	4							50.00		50.00
Driving Motor Vehicle Without Permission of Owner	1	1					1					
	97	19	12	3	3		1		1	\$282.50	\$35.00	\$147.50

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GENERAL SERVICES DIVISIONS

Page 6

ORGANIZATION AND PERSONNEL:

<u>Number of Employees on Roll:</u>	<u>Beginning of Month</u>			<u>End of Month</u>		
	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Total</u>	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Total</u>
North Richland Patrol Division	5	16	21	5	17	22
North Richland Fire Division	32		32	32		32
Maintenance & Operation Division	9	64	73	8	58	66
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	46	80	126	45	75	120

Net Decrease - 6 employees

Personnel Changes During Month:

North Richland Patrol Division

New Hire

1

Maintenance & Operation Division

Transfers to Municipal Divisions

2

Transfers to Real Estate Divisions

5

Terminations

1

1

New Hires

2

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ENGINEERING AND CONSTRUCTION DIVISIONS

I. SUMMARY

A. DIVISIONAL ORGANIZATION

Staff and Line Divisions' personnel changes occurring this month are: Arthur Gavin appointed Manager, Contract Division. G. B. McDonald appointed Administrative Assistant, vice Earl A. Smith transferred, Reactor Division. C. A. Lynels appointed Division Engineer in charge of Industrial Engineering, Project Engineering Division. Other significant personnel changes are contained in Part III of this report.

B. FUNCTIONS

The Engineering and Construction Divisions are currently working on 123 Projects; 64 of these projects have authorized funds in excess of \$20,000 and have to do with increasing production, reclaiming of waste materials, and the beneficiation of manufacturing processes and their attendant facilities. The 59 other projects have been authorized funds that range up to \$20,000. These latter projects have to do with miscellaneous work items, engineering requests, and similar authorizations.

C. ACHIEVEMENT

Four projects, having a total estimated cost of \$4,861,000 were completed this month. They were, (1) C-187-E, Redox Analytical and Plant Assistance Laboratory, and Associated Waste Disposal Facilities. (2) C-290, Spectrometer Fabrication. (3) C-339, Rolling Mill (Design and Engineering Report only). (4) C-366, Auxiliary Hood Enclosure for Part 1, 234 Building.

A comprehensive study has been completed of Plant Manpower Forecasts in order to provide a firm basis for requesting additional housing.

Improved and more economical methods of reproduction of documents and their accountability by individuals using them are continuing with gratifying results.

Control of tools purchased by the subcontractor is being improved. During the month 16 contracts were approved and signed; 13 will involve the expenditure of \$1,331,299.86, one a decrease of \$3,241.05 and two do not involve any money.

A slight increase in actual completion percentages as compared with estimated completion percentages is noted this month.

D. MATERIAL PROCUREMENT AND FABRICATION

Some improvement in material procurement and fabrication is noted this month. Promised delivery dates of "B" Block and Gun Barrel Steel have been revised and are, at present, on a satisfactory basis.

The Controlled Materials Plan becomes effective July 1, 1951. Our participa-

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HW-21260

tion in this plan includes the compliance with governmental requirements for statistical information, forecasts, schedules, and other pertinent information. Such participation is necessary to obtain critical government controlled construction materials with which to successfully complete our construction projects. Meetings have been held both locally and in Washington, D. C. to acquaint our personnel with the proper procedures.

E. CRAFT LABOR

Craft Labor figures show that there are more open requisitions for Fitters than for any other craft. Likewise, this craft carries the highest "quit rate". However, the overall picture here compares favorably with the national "quit rate" as reported in Business Week.

F. SAFETY

The use of one of the many safety devices provided at Hanford Works, demonstrated its great value. A severe facial burn which resulted in a lost time injury for the individual would have, without the use of "flash goggles" resulted in permanent total blindness.

Poor housekeeping, failure of supervision to give workmen proper instruction, failure to follow instructions given, lack of personal safety consciousness and mechanical failure were the principal sources of injuries this month.

To-date, the major frequency rate of 4.23 and the severity rate of 1.77 remains a very low figure as compared to national rates for construction workers.

MONTHLY REPORT OF INVENTIONS OR DISCOVERIES

All persons in Engineering and Construction Divisions engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report except as listed below. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

<u>INVENTOR</u>	<u>SUBJECT</u>	<u>REPORT OF INVENTION (Date)</u>
F. H. Ames, Jr. (Project C-198)	Plug Type Gauge Utilizing Replaceable Glass Cylinders as Gauge	May 31, 1951
T. H. Edwards (M-12254-MD)	Electro-magnetic Control for a positive displacement all metal mercury pump	May 10, 1951
H. R. Hughes (M-754-MD)	Air Raid Shelters <u>No Others</u>	May 11, 1951

PERIOD COVERED BY THIS REPORT: May 1 through May 31, 1951

Ralph E. Davison 6/15/51
RALPH E. DAVISON (Date)

MANAGER, E&C DIVISIONS

II. STATISTICAL AND GENERAL

A. STATISTICAL

C-187-D Redox Production Plant

Separations Division - Construction completion as of May 31 - 84.8%. The estimated total project costs were reduced by \$2,000,000 to \$42,000,000 as per Project Proposal, Part III issued May 15. All 13 operating extraction towers have been received - three exhaust fans for 291-S have been shipped. The installation of process equipment in F Cell was started May 15. The completion of F Cell to permit inauguration of operational type work is scheduled for the middle of June. Other cells will be completed as rapidly as possible. Electrical wiring and instrument work is progressing satisfactorily and on schedule.

Principal Electrical Engineer - Assistance was rendered on the design of an instrument to measure the magnetic qualities of welds in stainless steel pipe lines. The problem of how to relieve overloaded motors which drive the agitators in the process vessels was investigated.

Principal Metallurgical Engineer - Progress is being made in the development of instruments and methods for the detection of "Non-Stainless" welds in "Stainless" equipment.

C-187-E - Redox Analytical and Plant Assistance Laboratory & Associated Waste Disposal Facilities

Separations Division - Project complete, with exceptions, and turned over to Using Division May 1. Exceptions are rapidly being cleared up. Hoods and filter canopies are being installed as fast as received. All should be shipped before June 15. July 1 is a target date for clearing up all exceptions.

Principal Mechanical Engineer - Investigated failure of bearings and installation difficulties on exhaust fans. Change to be made to larger shaft and anti-friction bearings.

C-198 - 234-5 Facility

Separations Division - Completion percentages as of May 31; overall design 97.0%, construction (Richland) 92.1%, (Schenectady) 97.0%. It is intended

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C-198 - 234-5 Facility - continued

to close out this project June 30. August 10 is the scheduled completion date of the RMA.

C-199 - Expansion of 300 Area Sanitary Sewage Disposal System

Power and Mechanical Division - Because other work was given higher priority, design progress remained stationary at 10% of completion during the month.

C-204-A,B - Public Health Unit & Addition to Hospital and Medical Arts Bldg.

Power and Mechanical Division - Construction completion of hospital 38%.

Overall project completion 68%. Although 9% behind schedule, progress is better this month.

C-257 H-1 Control and Development Laboratory

Power and Mechanical Division - Progress of construction by the subcontractor, Sound Construction & Engineering Company, indicates that the overall project is approximately 26% scheduled and 13% actual. Miscellaneous concrete work and pier footings have been completed. Structural steel which was received during the month, has been erected and is currently being bolted into place.

C-276 - Overall Telephone Project

Principal Electrical Engineer - Draft of History reviewed and commented on.

C-295 - Enlarging 251 Substation and Additional 13.8 KV Feeders to 200-E and W Areas

Power and Mechanical Division - All design work for this project has been completed. The subcontractor has completed approximately 35% of the total contract and is making satisfactory progress.

C-337 & C-378 Dissolver Off Gas Filters for Buildings 221 T&B

Project Engineering Division - Fabrication of the additional filters was started but is progressing slowly because of higher priority work.

C-341 Additions to Richland Village Electrical Distribution System

Project Engineering Division - The Electrical Subcontractor has completed 25% of his work. Work to be performed by plant forces is complete except for the final tie-ins to subcontractor work.

C-349 - Hot Semisworks - Part I & II

Project Engineering Division - Construction is proceeding under the sub-contract with concrete work well along on most of the buildings. Construction completion as of May 31, 18%.

C-353 - Richland Water Study

Power and Mechanical Division - Further work relative to initiation of the second phase of this project is awaiting the action and recommendations of the Municipal Division.

C-362 - Waste Metal Recovery Facilities (TBP) continued
for first cascade are nearly completed. In 115 tank, 241 TX, amercoating is in progress. In 241-C all pits are poured except the pump pits, and 60% of the pipe trench is poured. In 241-BY all pits on tanks 105 and 106 are complete. In 241-B core drilling has started on tanks, and retainer rings have been set for pump pits.

C-364 - Aquatic Biology Laboratory
Power & Mechanical Division - Revised design plans and specifications based on a somewhat reduced scope of work have been completed by the General Engineering Section. It is expected that bids for the construction of the project may be readvertised early in June.

C-369 - Evaporation Facilities for Waste Solutions 200-W Area
Project Engineering Division - A replacement condenser with carbon steel tubes has been installed and the project is being closed out.

Minor Construction Division - Work has been completed and accepted.

C-371 - Meteorological Field Stations
Minor Construction Division - Fabrication work has been completed and field installation will start during the first week in June.

C-380 - Electricity Metering Village of Richland
Project Engineering Division - All meters have been purchased for delivery in June, July and August. The contract for installation work has been awarded and work will begin in the near future.

C-381 - Radiochemistry Building for Hanford Works Laboratory Area
Power and Mechanical Division - Bids for construction of this building were opened on May 29. The low bid of \$3,744,213 was submitted by Sound Construction & Engineering Company. An award will be made early in June. Requisitions for custom-designed equipment to be installed by the subcontractor will be issued during June.

Principal Mechanical Engineer - Advised on material specifications for water storage heaters in building.

C-385 - Radiometallurgy Building
Power and Mechanical Division - All design work has been completed. It is expected that construction bids will be invited early in July. Requisitions for custom-designed equipment will be completed by June 15, 1951.

C-394 - Plot Plan and Utilities for Hanford Works Laboratory Area
Power and Mechanical Division - All design work has been completed. It is planned to invite bids for the construction of this project on a unit price basis. Because of the complexity of the job and the necessity for additional survey work prior to issuing bids, it seems probable that the bid invitation will not be issued until about July 15th.

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C-361 - UO₃ Plant (Metal Sweetening and Conversion Facilities)
Separations Division - Project completion as of May 31:

	<u>Part A</u>	<u>Part B</u>	<u>Overall</u>
Scope	100%	95%	99%
Detailed Plans	100%	8%	88%
Construction	22%	0%	20%

The Project Proposal, Part II, was issued May 7, returned for rearrangement, and reissued May 22. The CPFF Construction contract negotiation for Part B has been completed.

Principal Electrical Engineer - Acceptance tests were reviewed.

Principal Metallurgical Engineer - Reviewed and commented upon specifications for pumps, coils, heat exchangers and tanks. Inspected the fifth and sixth development pots at fabricator's plant.

Principal Mechanical Engineer - Reviewed specifications for new stainless steel evaporator. Advised on steam supply to BX-BY Tank Farm.

C-362 - Waste Metal Recovery Facilities (TBP)
Separations Division - Project completion as of May 31:

<u>Phase</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>TOTAL</u>
% Scope	100	100	100	100	100	100	100
% Design	100	89	100	99	100	95	96.2
% Construction	42.4	8.5	82.8	13.6	100	9.5	23.0

The Project Proposal, Part II was completed and submitted to the Manufacturing Division during the month. The additional funds required amount to approximately \$6,000,000. The major portion of this increase is due to the six-day week, labor escalation, premium payments, and bulk material handling.

Concrete poured to-date - 24,704 cubic yards of an estimated 36,160 cubic yards.

Principal Electrical Engineer - Ways and means to cool pump motors operating in high ambient temperatures within certain waste tanks.

Principal Metallurgical Engineer - Preliminary design comments on small evaporator. Thermal treatments of component parts for fractionating towers.

Minor Construction Division - Work is progressing at 241-U and 241-TX, Phase I, and at 241-C, BY and B, Phase II. 241-U piping is in the encasements, and welding and auxiliary tests are being made. Horizontal and vertical connectors are being installed in #152 diversion box, and all precast cover slabs

C-394 - Plot Plan and Utilities for Hanford Works Laboratory Area - continued
Principal Electrical Engineer - Suggestions were made for the redistribution of pump motor loads on the normal and emergency buses.

C-399 - P-10 C&D
Project Engineering Division - All design activity on this installation has ceased except for routine field follow-up.

Minor Construction Division - Work is progressing on ventilation and exhaust systems.

C-404 - Primary Electrical Power Lines for Hanford Works Laboratory Area
Project Engineering Division - Design work is completed. Aerial cable delivery is scheduled for June 1.

Part II of the project proposal to cover overrun in funds is being prepared.

C-406 - Mechanical Development Building for Hanford Works Laboratory Area
Power and Mechanical Division - The structural steel arrived on the job site on May 23. Erection by Dix Steel Building Company is approximately 15% complete.

Negotiations have been in progress with Dix Steel for the design and construction of the interior of the Building (Phase II). G.E. comments and recommended revisions on Dix Steel design were returned to the company on May 31. It is expected that it may be possible to give Dix Steel notice to proceed on the Phase II work about June 18.

Principal Electrical Engineer - Preliminary plans reviewed, and suggestions made for the reduction of capacity in the electrical system with attendant reduction in the cost of the building.

C-411 - P-10-J Slug Storage and Shipping Facilities
Project Engineering Division - All designs have been issued. Fabrication of the off-site shipping casks is now in progress with all critical material on hand. Design planning of heat transfer tests for the off-site shipping casks is progressing.

C-412 P-10-X Extraction Facilities
Project Engineering Division - Exclusive of the metallurgical facility approximately 50% of the designs required for this installation have been released to the field. Completion of the remainder is proceeding rapidly.

Design and material ordering is now in progress covering the metallurgical facility. Numerous changes are being made to the ventilation system to provide a balanced air supply. P-10-A equipment has been dismantled to provide space for other facilities.

C-413 - Expansion of 234-5 Facilities
Separations Division - Completion as of May 31; overall design; Richland 38.5,

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C-413 - Expansion of 234-5 Facilities - continued

Schenectady 52.7%; Construction; Richland 5.0%, Schenectady 49.3%. Directive modification #2 authorizes \$6,325,000 for the project. At meetings held in Richland and Schenectady procedures for material shipment and receiving were evolved. All major pieces of equipment for the mezzanine are on order.

Tabulation of "X" gas data has been compiled. Tests of the filter boat vacuum assembly were run. Satisfactory operation is indicated. Modifications for the RMA are being incorporated as information received.

C-414 - Pile Technology Building

Power and Mechanical Division - Final plans and specifications were received on May 7th and are under review by GE Company engineers. They will be re-tirmed to the architect-engineer, Chas. T. Main, Inc., on June 6th, and bids for construction will be invited about July 1st.

Principal Engineer Electrical - Preliminary construction drawings and specifications were reviewed.

C-416 - Minor Construction Division Fabrication Shops

Minor Construction Division - Work is progressing on equipment installation for fabricating shops. Other work stopped since funds have been exhausted.

C-418 - Additional Waste Storage Facilities for 200-W Area 241 TY

Separations Division - As of May 31 design was 94% complete. Excavation work started May 14 on a two nine-hour shift basis. A construction schedule will be submitted for approval early in June. Completion of the excavation is anticipated by June 25. Modification #2 to the directive increases authorized funds to \$2,117,000 for this project.

The radiographic inspection specifications have been approved. Bid assemblies will be ready for submission to subcontractors by approximately June 15. The Construction Subcontractor has advised that the procurement of reinforcing steel is very critical and may affect the completion date adversely.

C-419 - Induction Heating - Building 3732

Project Engineering Division - The equipment for this job has been purchased from the Ohio Crankshaft Company with delivery in about thirty weeks.

C-420, CO₂ Bulk Storage Facilities

Minor Construction Division - Work is progressing on fabrication and erection of piping.

C-421, Library & Files Building

Power and Mechanical Division - All design work has been completed. By request of GE Management, bid invitations will not be issued until major

C-421, Library & Files Building - continued

buildings in the Hanford Laboratory Area are under contract in order to determine whether funds are available for this construction.

C-422 - Skull Recovery - Building 234-5

Project Engineering Division - Materials are now being procured and the equipment is being fabricated by an off-plant vendor.

C-423 - Evaporation Facilities - 200 East Area

Project Engineering Division - The project proposal has been approved by the Atomic Energy Commission. Drawings are being revised and specifications will be complete by June 1, 1951.

C-424 - Water Quality Experimental Program

Minor Construction Division - The filter and storage tanks have been installed and piping is approximately 85% complete. The fabrication of heat exchanger has started.

C-431 - New Reactor 100-C Plant

Completion as of May 31; overall Engineering Design 38%, construction not started. Modification #5 to directive authorizes \$15,000,000 for this project. This amount has been equally assigned to the Reactor and Power and Mechanical Divisions.

It is anticipated the negotiations with the construction subcontractor will be concluded and that the construction subcontract modification will be approved, early in June.

Power and Mechanical Division - Part A, Water Works completion as of May 31; Engineering Design 28%. Procurement of material is going forward. Promised delivery dates of engineering items are better than expected. The architect engineer, Chas. T. Main Company, plans to establish an office in Richland June 16.

Reactor Division - Part B, Reactor completion as of May 31; Engineering Design 28%. Procurement of materials is going forward. Promised delivery dates of engineered items have improved this month. At the present time, no major delay is foreseen in construction due to delayed material shipments. For details of technical information, see Document HDC-2228.

Minor Construction Division - The 69 KV line is completed from operations tie-in to substation.

Principal Electrical, Mechanical and Metallurgical Engineers - Reviews of and recommendations made relative to the functional design of certain electrical and mechanical components and metallurgical requirements.

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C-432 - Air Raid Warning System - Richland - North Richland

Project Engineering Division - Project has been approved and all design work is complete. Sirens are being given run-in tests at the Benton Switching Station where noise will not disturb the public. Bids have been invited for construction of the towers.

C-433 - 384 Steam Plant Addition

Power and Mechanical Division - Bids for the design and construction of this project were opened on May 21st, the low bidder being Bumstead & Woolford Company of Seattle with a bid of \$563,380. An award will be made during the first week in June.

Principal Mechanical Engineer - Reviewed with the Principal Electrical Engineer the problem of supplying emergency power for water pumping in Building 382.

C-434 - Bio Assay Laboratory

Project Engineering Division - The proposed site for the location of this new laboratory, 100 feet east of the Public Health Building in line with Dorm M-1 on the north side of Swift Boulevard, has been approved by the various divisions concerned. Complete designs and specifications for lump sum sub-contract are in the final stages.

C-438 - Ball Type Third Safety System

Project Engineering Division - Model studies have been made to determine the pattern which must be used to permit the greatest number of balls to enter the well in the least possible time and, at the same time, provide the maximum shielding effect at the top of the pile while balls are still in the hoppers.

Approval has been received from the Atomic Energy Commission to proceed with the purchase of 190,000 lbs of nickel plated, boron steel alloy balls. Other critical items are being procured as rapidly as the design data is available.

C-440 - Building Additions, 712-A Hutment

Minor Construction Division - Completion of the work assignment is being delayed until the plumbing subcontract is finished.

C-441 - Solvents Building

Project Engineering Division - This project has been approved by the A&B Committee and is awaiting action by the Atomic Energy Commission.

C-442 - X-Ray Machine - Building 3745-A

Project Engineering Division - The purchase order for the Electrostatic Particle Accelerator (Van deGraaff) has been placed. Design work by Project Engineering Division will not be required until vendor's shop drawings of the machine have been received. Delivery date for this unit is approximately five months after receipt of order.

C-444 - Coating Unit for Hood 26, Building 235
Project Engineering Division - Field work is progressing on this project.

C-445 - B-Y Telephone Exchange Additions and Changes
Project Engineering Division - Project proposal is awaiting approval by the Atomic Energy Commission. Some changes may be requested by the Commission.

C-446 - Additional Effluent Disposal Facilities for Building 234-5
Project Engineering Division - The project proposal has been approved by the Atomic Energy Commission and a Work Release is being prepared.

C-447 - Portable Meteorological Mast

C-452 - Meteorology Tower Elevator
Project Engineering Division - These two projects which have been approved by the A & B Committee are still awaiting authorization by the Atomic Energy Commission.

C-451 - Extension of 300 Area Underground Electrical Power Distribution System
Project Engineering Division - The project proposal was submitted to the Atomic Energy Commission for approval on April 25, 1951. Design is about 75% completed. Indications are that approval will be held until after July 1, 1951.

AEC - 103 - 703 Building Addition
Minor Construction Division - Site preparation work has been completed and the balance of the work assigned to the Minor Construction Division will be performed when subcontractor has finished the building addition.

ER A-1149 - 107 B,D,F,H & DR Basin Repairs
Project Engineering Division - An economic comparison between the flexible membrane type expansion joint and an annual maintenance program has been completed. Assuming ten-year life for the expansion joint and less critical and costly materials for the maintenance program, greater savings can be realized by the latter. It has been decided to prepare the basins for the annual maintenance by establishing a firm soil bearing capacity and replacing the joint material with 200 degree asphalt and the construction joints with a mopped-on asphalt and felt membrane. A project proposal is being prepared to accomplish this work.

ER A-1161 - Pile Building Downcomer Study
Project Engineering Division - The results of the 105 Pile Building Downcomer Study have been accepted by the "P" Division and a project proposal is being prepared. It covers bracing and venting at the 105 B, D and F Pile Buildings as well as design of a replacement downcomer for the 105-F Pile Building. Major repairs to the cascade type downcomer in the 105-DR and H Buildings will also be included in the proposal.

ER A-1163 - Panellit Gauges

Project Engineering Division - A rough draft of the project proposal has been submitted to the "P" Division for their approval. Present proposal calls for installation in all pile buildings of Panellit gauges with sufficient range to accommodate the increase of water pressure to 400 lbs. per sq. in. and the insertion of magnesium dummies. The work in question will be accomplished during the normal scheduled pile outages.

ER A-1166 - Crossheader Pressure Monitors

Project Engineering Division - Design for a crossheader pressure monitoring system for the 105 B,D,F,H and DR Pile Buildings is under preparation. Individual gauges to indicate the pressure in each front face crossheader will be mounted in the control rooms and integrated into the existing alarm system.

ER - 2503 - Duct Level Floor for Building 234-5

Project Engineering Division - The design for this project is complete and drawings have been sent to the estimating group for a project estimate.

ER - 2577 - Additional Casting Unit for Hood 13, Building 234-5

Project Engineering Division - Design for this project is complete and an estimate is being prepared.

ER - 2588 - Installation of Steam Boiler for 200-W Area

Project Engineering Division - Preliminary drawings have been prepared for the boiler setting and building plans. Drawings are being prepared in sufficient detail for estimating purposes.

ER A-3094 - Mechanization of the 313 Building

Project Engineering Division - A project proposal will be prepared to provide funds for necessary engineering and development activities to mechanize the canning and finishing lines in the 313 Building. Each operation in these areas will be investigated economically and mechanically, with the sole objective of improving the quality of production. The mechanization must have design features for required dependability, as well as sufficient flexibility to permit future process changes with the least capital expenditures. All mechanization will be based on the present process with the exception that a salt bath will be included to permit a lead dip.

ER A-460 - Telephone Line-Benton Switching Station

Project Engineering Division - Informal request is being prepared. The design is approximately 85% complete.

ER E-457 - Telephone Cable, White Bluffs to Minor Construction Division Shop Areas

Project Engineering Division - Informal request to the Atomic Energy Commission. Design 100% complete.

ER E-459 - Electrical Service - New 703 Building Wing
Project Engineering Division - Informal request in preparation. Design is approximately 50% complete.

ER A-647 - Pile Technology Office Building - 100-D Area
Project Engineering Division - A project proposal has been presented for construction of an office building of approximately 5700 sq. ft. in 100-D Area to accommodate personnel of the Mechanical Development Group, Heat Transfer Group, Water Studies Group, and Materials Testing Group. Designs and specifications are being expedited.

B. GENERAL

Engineering and Construction Services Division - Engineering Services Division
DRAFTING SECTION

<u>Drafting Production</u>	
New drawings	209
Miscellaneous	8
Drawing Revisions	70
Drawings efficiency index, man-days/drawing	5.8

Estimating and Unit Cost Section

<u>Estimating</u>	
Estimates scheduled	58
Estimates completed	34
Estimates cancelled	0
Estimates to be completed	24
Total estimated value	\$30,000,000.00

Unit Costs

Studies continued on C.P.F.F., Lump Sum and Minor Construction Work.

REPRODUCTION SECTION

<u>Production Group Activity</u>	
Originals Handled	18,635
Prints Produced	244,900
Square Feet of Paper	584,541*
Average Square Feet Per Employee	32,475

*The equivalent of 13.4 acres.

Control Group Activity

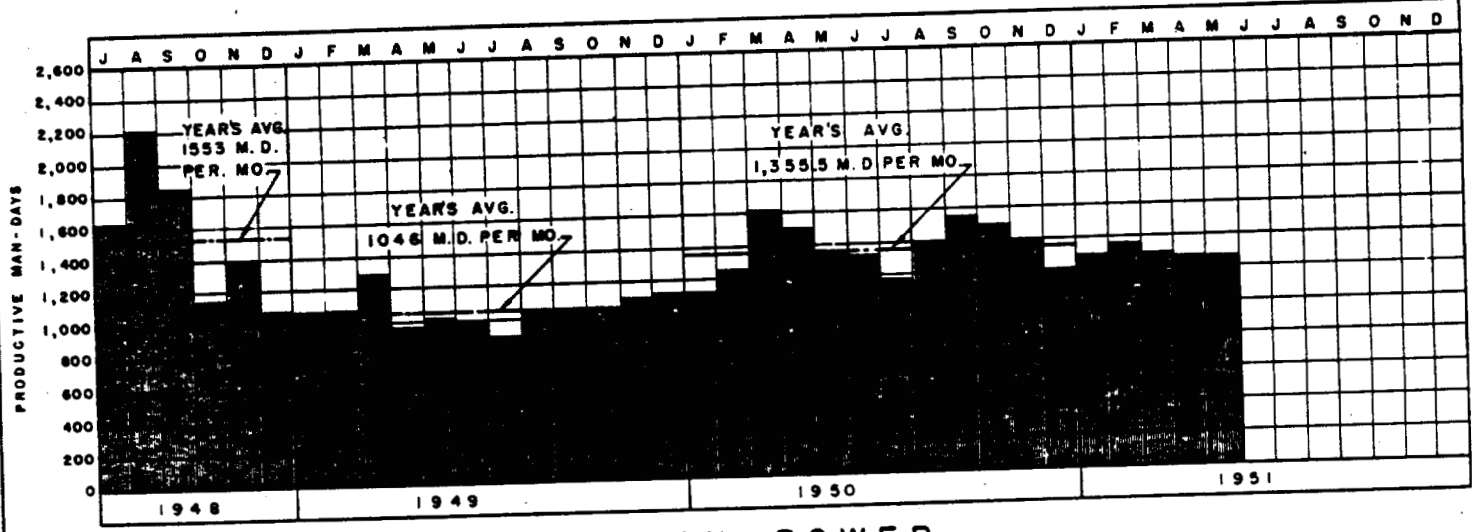
Number of Orders Processed	2,664
Number of Prints Carded	56,308
Number of Tracings Handled	15,026
Number of Prints Returned	57,275

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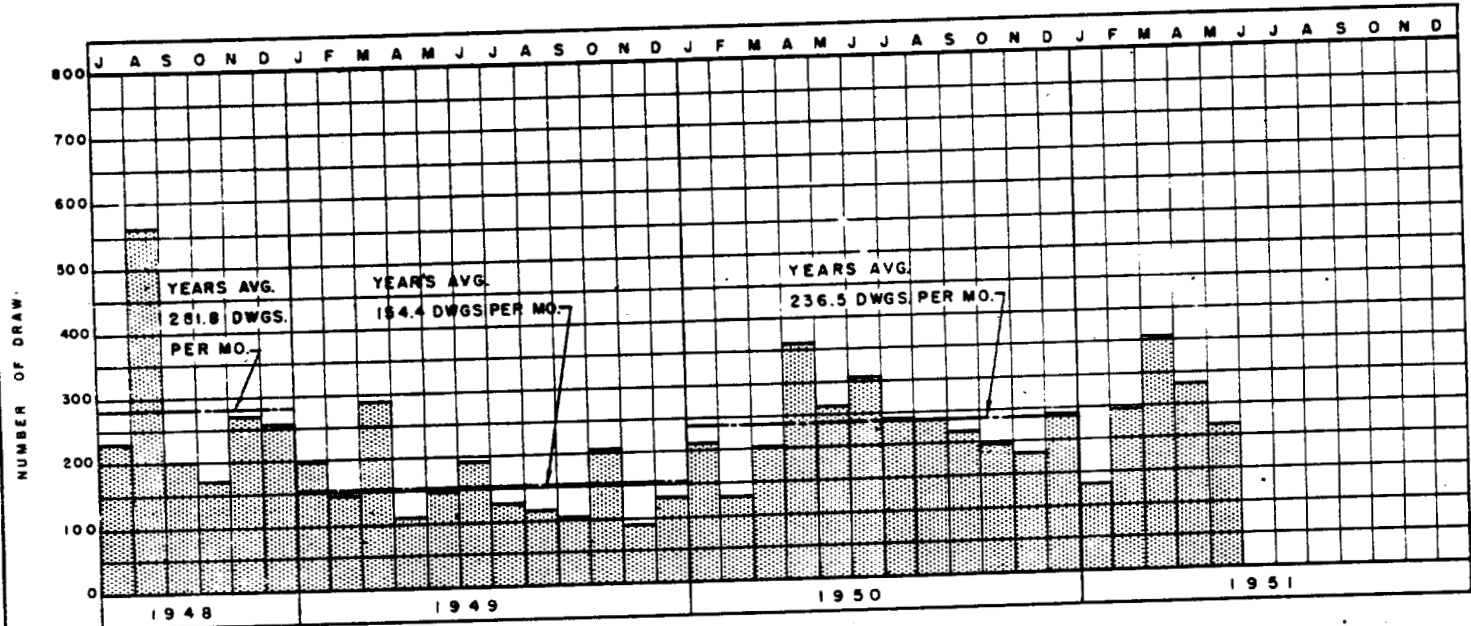
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ENGINEERING & CONSTRUCTION SERVICES DIVISION

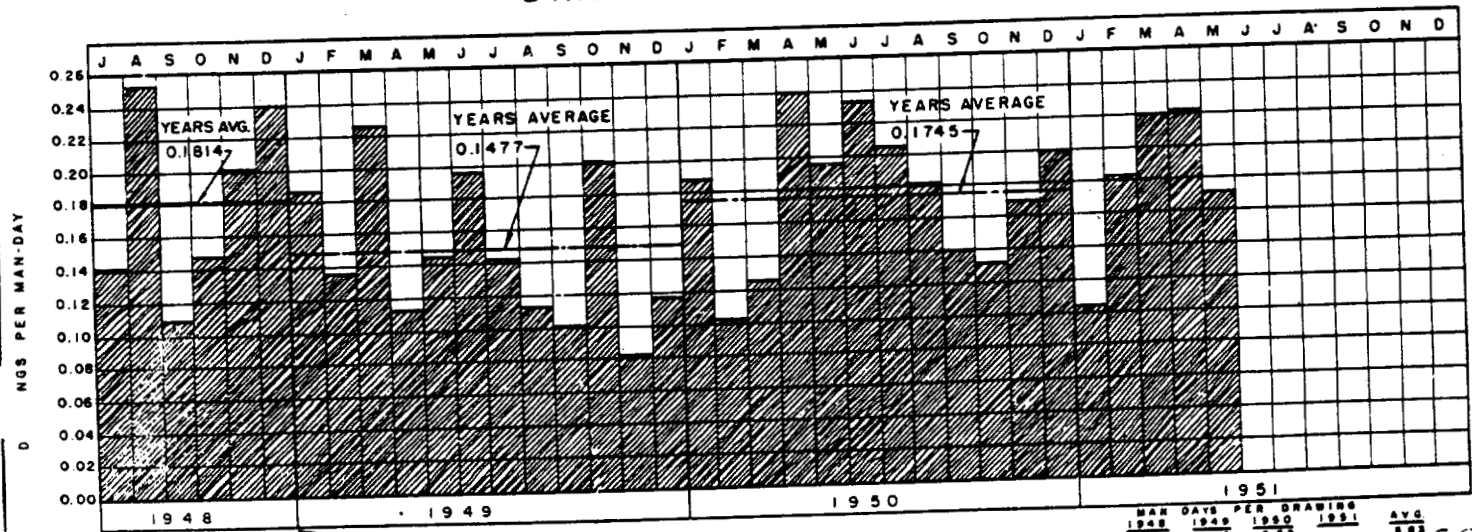
Drafting Section



MAN POWER



DRAWINGS PRODUCED

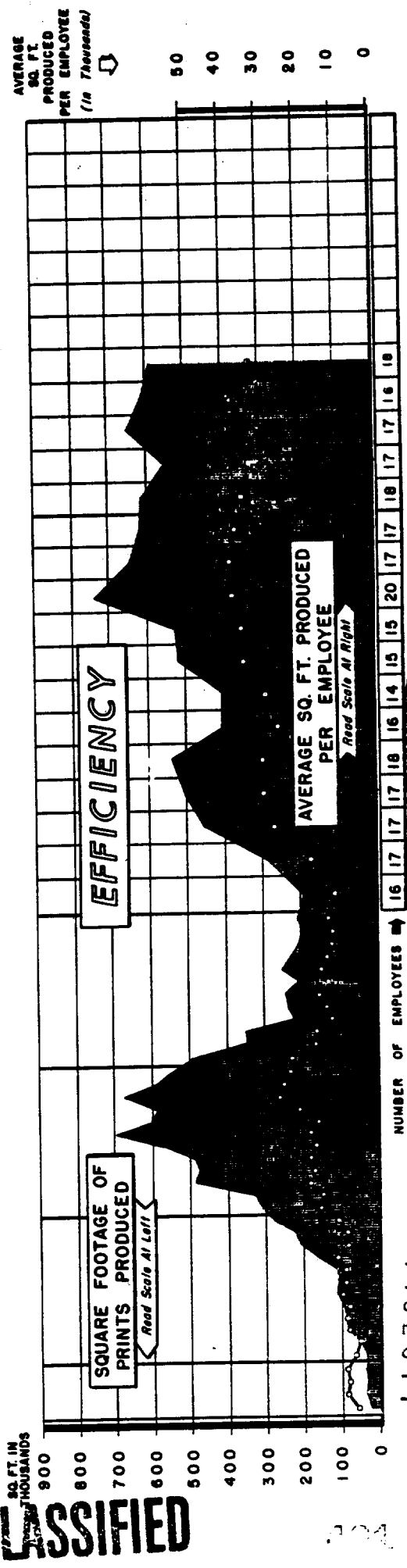
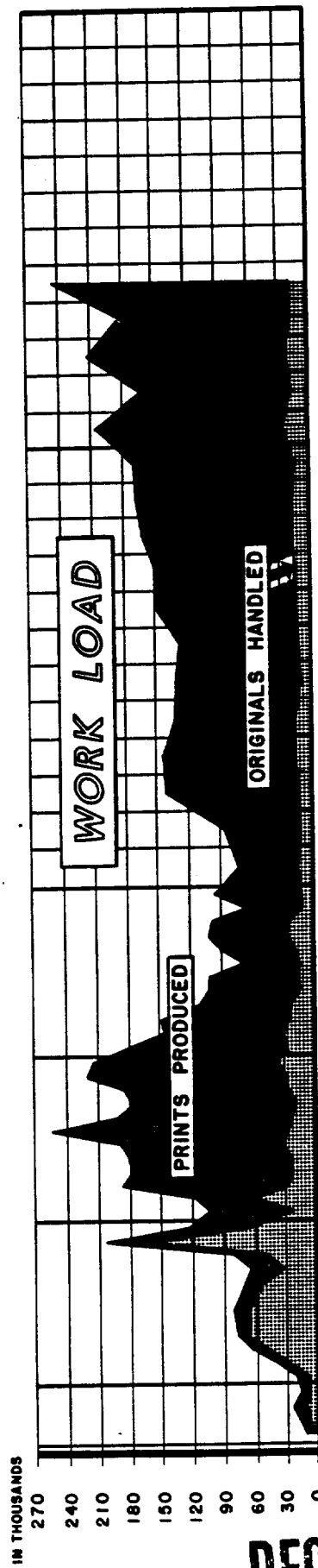
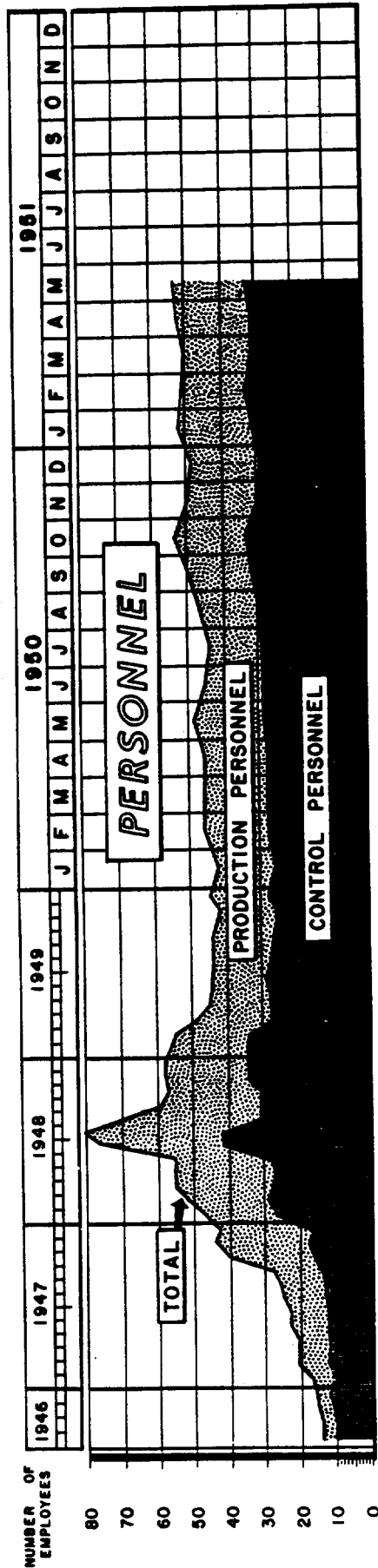


EFFICIENCY

	MAN	DAYS	PER	DRAWING	AVG.
	1948	1949	1950	1951	
BATES	4.48	6.48	8.33		5.83
DEUSNER	5.04	7.74	4.99		5.73
NICHOLS	5.46	6.91	6.11		6.22
WILLIAMSON	6.33	9.99	9.70		8.68

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REPRODUCTION SECTION STATISTICS



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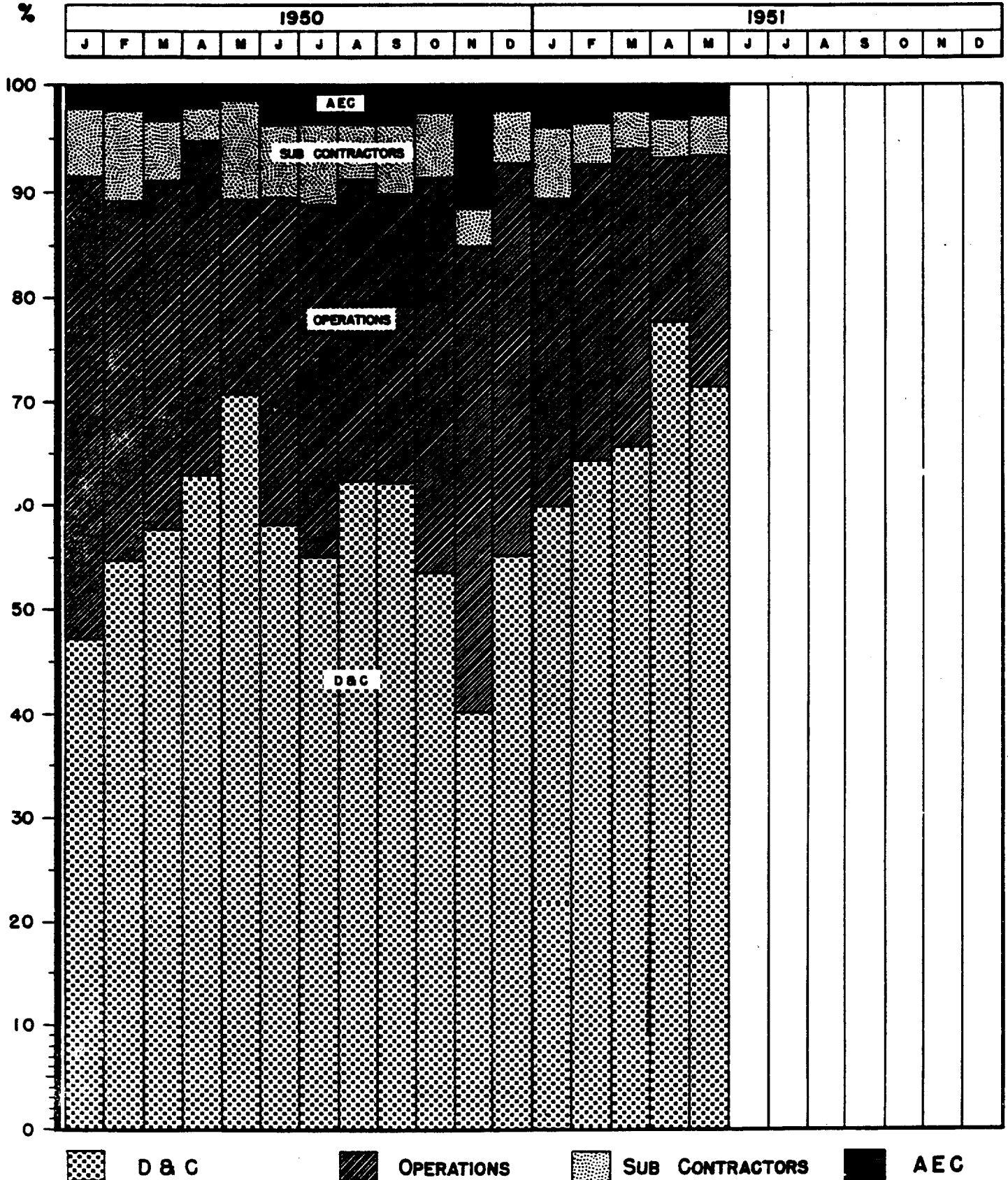
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ENGINEERING & CONSTRUCTION SERVICES DIVISION

REPRODUCTION SECTION

DISTRIBUTION OF WORK LOAD



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Control Group Activity - continued

There has been a 25% reduction in the number of misplaced or lost prints. This is the result of the Audit and Inventory Unit activities.

Personnel, Records and History Section

Security Clearances Processed

Requests for Area Badges, Cancellations, Access
Authorizations and Material and Package Passes 493

E & C Payroll Additions, Terminations, and Transfers

Additions 48
Terminations 19
Transfers within E&C Divisions 7
Transfers out of E&C Divisions 6

Secret and Confidential Documents Processed

Documents Issued, Routed or Destroyed 2653

Procedures Issued

E&C Instructions Issued 14

Status of Histories

Histories Issued 14
Ready for Issue 20
Others in Process 87

Office Services

Number of Teletypes Sent 389
Number of Teletypes Received 562
Number of Copies of Ditto Reproduced 72,706
Number of Copies of Stencils Reproduced 55,249
Number of Pieces of Incoming Mail 303,612
Number of Pieces of Registered and Insured Mail (Outgoing) 92
Amount of Postage Used \$515.13
Number of Store Orders Written (Stationery) 215
Number of Special Messenger Deliveries 197

Reports Issued

Ten - covering Weekly and Monthly Forces, Visitors, Destroyed and Classified Documents.

PROJECT COST AND PROGRESS ANALYSIS SECTION

Forecasts, charts, analysis and reports were developed and issued to show status of E&C Projects Progress.

CRITICAL MATERIALS CONTROL SECTION

Major activities during May of this newly-formed section were:

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CRITICAL MATERIALS CONTROL SECTION - continued

1. Submitting the estimated requirements of E & C Divisions for Controlled Materials for the four quarters beginning July 1.
2. Holding a meeting on May 29 with twenty-two representatives of Hanford Works subcontractors to acquaint them with the Controlled Materials Plan; how it will affect their work at Hanford Works, and how it will operate among A.E.C., G.E., the subcontractors, and the subcontractor's suppliers of material and equipment. The meeting was brought about through the joint efforts of the Contract Division, the Priorities and Allocations Section of the Purchasing Division, and the Critical Materials Control Section.

The Drafting School for instruction of student draftsmen will start June 11. A brochure has been compiled and issued which outlines in detail the scope and administration of the training program, (Vestibule Course). Twelve selected students are presently enrolled; ten male and two female.

Construction Services Division

North Richland Camp

Population

Trailers	3,279		
Barracks	1,516		
Houses	646	Net Increase	136

General

The North Richland Community Supervisor gave a luncheon talk to forty University of Idaho Civil Engineering students.

The Science classes from Columbia High School were conducted on an inspection tour of the Steam Plant May 10.

Utility costs were assembled and reported to Management for billing the Army and School District 400. The Army billing included charges for temporary electrical services to the Army contractors. The steam charges to School District 400 were billed on a meter basis. A satisfactory basis for settlement of the outstanding steam billing against School District 400 has been reached.

Management was furnished with a comparative study of North Richland Maintenance, using Atkinson and Jones' forces and General Electric personnel.

Steam Generating Plant

Steam generated, M lbs.	29,302.00
Oil consumed, gallons	6,263
Coal consumed, tons	1,970.07
Boiler efficiency, average %	74.85

*Steam cost, per M lbs. - \$1.046

*Computation of unit cost of steam is based on estimated cost of coal and

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Steam Generating Plant - continued
Indirect costs applicable to Steam Plant.

Water consumption for the month was 55,157,300 gallons or an average daily consumption of 1,838,576 gallons.

Commercial Facilities

There were fifteen commercial facilities operating in North Richland during May.

Community Activities

The 1951 summer program was officially opened on Monday, May 21, when eight "Three-O" Softball teams played their initial games.

The Teenagers have been meeting regularly and attended a picnic May 25 at Sacajawea Park. Approximately sixty Teenagers were in attendance. Maintenance work has been completed in the athletic and park areas in preparation for the summer playground program, which will open on June 11. The majority of equipment to run this program has been supplied. Two playground directors will be hired for the summer to conduct these programs.

Office Services

Reproduction and communication continue to increase.

Security

Statistical Information

During the month, 395 meetings were held at which Security topics were discussed. These meetings were attended by 11,450 employees.

The following Security Bulletins were issued:

No. 152 - Security Maintenance

No. 153 - Careless Contributions

Estimated Security requirements for the month of June are as follows:

"Q" - 250 "FP" - 450 "PA" - 100 Total - 800

Total lost badges during May 24

Total number of Subcontractor and Vendor employees as of May 28, 1951- 6,865

Total Hires 830

Total Terminations 824

Total Clearances requested this month 644

Major Construction Equipment

Total Construction equipment units assigned to AJ as of 5/29 1,529

Major Construction Equipment - continued

Total Shop equipment units assigned to AJ as of 5/29	681
Equipment assigned to E&C Division as of 5/29	115
Equipment assigned to E&C Minor Construction Division as of 5/29	391
Shop equipment units assigned to E&C Minor Construction Division as of 5/29	104

The above items are those units over which the Equipment Control Section has custody and are not to be confused with equipment being presently supplied some divisions by the Operations Transportation Division, such as Project Engineers, Minor Construction, etc.

Safety

Construction Injuries

		<u>Contractors</u>
Major Injuries		8*
Sub-Major Injuries		10
Minor Injuries		758
	<u>May</u>	<u>To-date</u>
Frequency rate	6.2	4.23
Severity rate	2.86	1.77

*Includes one in Minor Construction Division

Twelve inspections were made by the Senior Safety Committee. Five Safety meetings for lump sum subcontractors were conducted by Safety Section. Normal spot checking was carried on. Investigation of Major, Sub-major and Minor injuries were conducted. The regular program of fire inspection and prevention in the Construction Camp was carried on.

An unusual incident occurred when two Atkinson-Jones carpenters, enroute to the 3000 Area to complete their termination processing, suffered injuries when a tire blew out on their private pickup, causing it to go out of control and overturn. One of these men suffered a fractured nasal bone, the other a fractured radius of the left arm, and was hospitalized for treatment.

Small Tools

E&C Instructions Letter CCM 03.6.10.1 has been revised to allow better control of tools purchased by the subcontractor.

The excessing or salvaging of tools no longer needed or usable is progressing. As construction areas are being completed, the tools are moved to a centralized warehouse in White Bluffs for sorting and repairing.

MINOR CONSTRUCTION DIVISION

This Division is currently working on 15 projects and 51 active work assignments. New work received during May - 17 work assignments. Work completed in May - 1 project and 12 work assignments.

The Fabricating Shops began operation under shop order procedure May 7.

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Minor Construction Division - continued
During the month 82 orders were completed.

Houskeeping inspection on all jobs, shops and offices under this Division's control started May 9.

The Minor Construction Division 3000 Area office moved to its new location in Building 178.

<u>Safety</u>	<u>May</u>	<u>To-date</u>
Minor injuries	79	279
Lost time injuries	1	2
Accidents (Automotive)	1	4
Injury frequency	7.16	2.97

<u>Personnel</u>	<u>Beginning of Month</u>	<u>End of Month</u>	<u>Net Change</u>
<u>Subcontractor</u>			
Non Manual	49	51	+ 2
Manual	690	729	+ 39

ORGANIZATION AND PERSONNEL

Effective May 16, D. T. Bridgforth is assigned to the Administrative Section as Staff Assistant, vice P. D. Rieland, resigned. Effective May 1, H. W. Johnson is appointed Construction Engineer, Separations Division, responsible for projects C-198 and C-413, vice E. F. Smith who has been assigned to the Design Section. Effective May 1, C. S. Bucholz is appointed Assistant Area Engineer, Project Engineering Division, in charge of Electrical Design, vice, H. R. Hughes, transferred to Purchasing Division.

Certain other intra-divisional transfers of personnel was effected this month.

	<u>Beginning of Month</u>	<u>End of Month</u>	<u>Net Change</u>
<u>Employees on Payroll</u>	902	830*	- 72
<u>Employees on Loan from</u>			
Purchasing and Stores Division	2	2	
Separations Technology	1	0	
Instrument Division	10	10	
Technical Division	1	1	
Schenectady	4	4	
	18	17	
Total Engineering and Constructions Divisions	920	847	

*Does not include 72 personnel in Technical, Engineering and Construction Accounting Division, formerly reported in this column.

June 1, 1951

REPORT OF PROGRESS
HANFORD DISTRICT CIVIL DEFENSE
RICHLAND AND NORTH RICHLAND UNITS

Organization

Organizations are functioning well. Recruitment of volunteers continues to be slow. Health and Welfare volunteers are approximately 10% of those desired. It is felt that when the "tools" are available to start active training, morale and interest will increase quickly.

Warning System

The invitation to bid for design and construction of three air raid siren towers was transmitted to the Contract Division with the opening date set for May 16th. The low bidder was the Northwest Bridge and Tank Company with a bid of \$11,406. Engineering evaluation was completed May 23rd. Recommendation for Award is under preparation for transmittal to the Atomic Energy Commission. Presently, the delivery date for relays for the remote control system is 120 days. However, the sirens may be operated by manual controls as soon as installed.

Control Center

On May 15th representatives of the Richland and North Richland Civil Defense Units met with the Coordinator to select a site for the permanent Control Center. Mr. O. R. Simpson, and other representatives of the Atomic Energy Commission attended. Mr. W. K. MacCready, of Plant Operations, was unable to attend. The site selected is located between Snyder and Spengler Roads, east of Stevens Drive, near the site of a former Tract house. This recommendation was forwarded to Mr. D. F. Shaw for approval. No formal design work has yet been done on this building. A meeting will be held soon to determine the facilities and space required for the joint use of Richland, North Richland and Plant Operations.

Air Raid Shelters

Two scheme drawings, Nos. 4 and 5, have been completed and conform with the criteria supplied by Mr. Fleury, Disaster Planning Coordinator of Washington, D. C. These drawings have been forwarded to Mr. Fleury for approval. The magnitude cost estimates have not yet been completed. Mr. E. S. Baker, Nucleonics Department, Schenectady, has shown great interest in our designs and has been supplied with current data on cost and design.

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North Richland

An invitation has been circularized to "all hands" to take advantage of the Red Cross training in First Aid against atomic attack. It is hoped that this activity will benefit by increased interest and recruitment. Considerable interest has been indicated by residents to form a Radiological Monitoring group. Training of this group is expected to start in the near future.

A prearranged evacuation drill was held at John Ball School. Movies were taken by the Publicity Department and will be incorporated into a civil defense film.

Mutual Aid

Mr. O. R. Simpson and the Assistant Coordinator visited a meeting of Benton County Civil Defense officials. Mutual problems were discussed. Particular benefit was derived from the study of the Washington State Law on Civil Defense. Pertinent sections of the law were analyzed by Mr. Lonoy, an Attorney of Kennewick.

Richland

Volunteer Worker Program: A project is underway to publish an information booklet. Civil Defense jobs will be described. Each household will be furnished this booklet with a request for volunteers.

Funds: A letter has been prepared requesting immediate use of funds of the 1952 Fiscal Year Budget.

Publicity: The film "Pattern for Survival" has been shown and was well received by three different groups.

Temporary Control Center: All work is complete save for splicing the telephone cable.

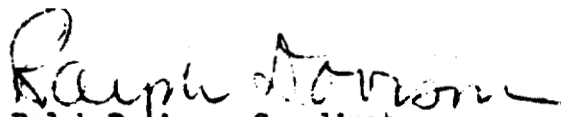
A visit was made by Mr. C. R. Bergdahl and Mr. W. W. Lowe, of the A.E.C. to the Sandia Corporation and Los Alamos installations to secure information relative to blast resistant structures. Channels for further information were developed.

Technical Defense: The Technical Defense Group has completed work in the development of radiation dosage curves. The curves are now available, printed on charts for use.

Health and Welfare: Classes in First Aid are now being conducted with the cooperation of the Red Cross. Medical supplies previously ordered are now being received.

Engineering: All equipment for reserve use has been either provided or earmarked pending the authorization of funds.

Utilities: The Electrical Division is developing electrical utility drawings in six sections, covering the Richland Area. The communications group has completed a chart showing the complete network of communications.


Ralph Davison, Coordinator
Hanford District Civil Defense

Prepared by
L.H. Howett
Ass't. to Coordinator

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PROJECT RICHLAND PERSONNEL

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MAY 1951

4-30-51

5-31-51

GOVERNMENT EMPLOYEES

Civilian Personnel-Atomic Energy Comm.	343	335
Civilian Personnel-G. A. O.	7	7
Total	350	342

RICHLAND VILLAGE PERSONNEL

Comm. Facilities (Inc. No. Richland)	1144	1166
Govn. Agency, Churches, Clubs, etc	87	94
Schools	380	387
Organizations	11	11
Total	1622	1658

CONSTRUCTION SUB CONTRACTORS

Atkinson & Jones	4044	4010
Newberry Neon	430	362
Urban, Smyth, Warren Co.	392	410
Hanley & Co.	619	445
Kelllex Corp.	315	321
No. Elect. Mfg. Co.	2	2
J. Gordon Turnbull	4	4
Erwin Const. Co.	26	7
J. P. Head	7	9
Royal Co. Inc.	17	113
Fred J. Early, Jr.	138	139
Steel Const. Co. & Gilmore Fab. Inc.	31	30
V. S. Jenkins	23	36
Empire Electric Co.	3	3
Morrison & Knudsen Co. Inc.	47	0
Associated Engrs. Inc.	11	16
Johnson Service	3	2
Monterey Co. Plumbing Co.	14	18
Thorgaard Plumbing & Heating Co.	2	2
L. E. Baldwin & Frank Dunham Co.	79	76
Hauserman	4	0
X-Ray Products	2	2
Judd Co. Inc.	3	3
Chicago Bridge & Iron	8	10
A. J. Patton & Cecil C. Hill	9	3
Malarkey & Moore	17	14
Dix Steel Bldg. Co.	0	8
Montgomery Electric Co.	12	22
Commercial Painting & Dec. Co.	21	15
Sound Const. & Engr. Co.	18	16
Montgomery Elevator	4	2
J. G. Shotwell	8	8
Custodis Const. Co.	8	0
Lewis & Queen	9	6
J. C. Whitacre Decorating Co.	16	13
West Coast Heating & Plumbing Co.	3	1
Electric Smith Inc.	2	2
Roof Service Inc.	9	11
L. G. Hoffman	30	39
Stier, Shelton & Schick	2	0
Leland S. Rosener	35	13
Charles T. Main	128	196

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HW-21760-DEL

Minneapolis Honeywell Regulator Co.	2	3	
Chem. Proof. Const. Co.	4	11	
F. O. Repine	19	42	
E. J. Bartell	2	0	0
Andersen Dec. Studio	6	0	
The Bay Co.	7	20	
J. A. Brunzell (Formerly Moscow Elect.)	5	7	
Sowle Steel Co.	2	2	
Acme Elect Co. Inc.	2	2	
Paul Berg	1	1	
Fox Metal Products	2	0	
Taylor Bros.	8	0	
K. C. Deck Const. Co.	3	0	
R. M. Robson Const. Co.	14	0	
Collins & Babcock	4	7	
Olympic Pipe Fabricators Co.	0	1	
Bethlehem Pacific Coast Steel Co.	0	11	
Day Brothers	0	4	
L. W. Vail	0	2	
Witzig Electric	0	5	
Cyclone Fence	0	1	
Peter Kiewitt Sons Co.	0	36	
Weston Plumbing Co.	0	11	
R. A. Newman & Sons Co.	0	67	
Total	6636	6622	
General Electric Total	8198	8336	
GRAND TOTAL	16,806	16,958	

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