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OAK RIDGE NATIONAL LABORATORY

QUARTERLY PROGRESS REPORT

OF

SERVICES AND ADMINISTRATION

FOR PERIOD ENDING MARCH 31, 1955

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OAK RIDGE NATIONAL LABORATORY

QUARTERLY PROGRESS REPORT

OF

SERVICES AND ADMINISTRATION

for Period Ending March 31, 1955

Compiled by W. E. Thompson

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DATE ISSUED

JUL 11 1955

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OAK RIDGE NATIONAL LABORATORY
QUARTERLY PROGRESS REPORT
OF SERVICES AND ADMINISTRATION

SUMMARY

1. LABORATORY ADMINISTRATIVE AND PROGRAM SERVICES

In connection with the International Conference on Peaceful Uses of Atomic Energy to be held in Geneva, Switzerland, on August 8–20, 1955, ORNL proposed the construction of a research reactor that would be set up in Geneva and actually operated during the time of the Conference. In addition to the operating reactor, the Laboratory proposed to provide exhibits and other display materials for conference personnel. These proposals were approved by the Atomic Energy Commission, and plans were started immediately for construction of the reactor and for preparation of exhibits and display materials.

Preparations of the Laboratory's Program and Budget Proposals for FY 1957 and of its formal budget document were carried out simultaneously during the quarter. Changes that have been made in the AEC activity descriptions under all programs are being reflected in the FY 1957 budget documents, which will be submitted to the AEC during the next quarter. At the same time that the Laboratory's programs for FY 1956 and FY 1957 were being reviewed, the Service Divisions' budgets were also reviewed. As a result of this review, the Laboratory was able to include in its program budgets a more realistic estimate of overhead changes that would be experienced by the program accounts during FY 1956 and FY 1957.

In response to a request from the AEC, the Laboratory's major research tools have been listed and briefly described in a comprehensive tabulation covering all research divisions of ORNL.

A survey was made of administrative and clerical personnel in the Laboratory to aid in evaluating the need for additional personnel and to assure the greatest utilization of present personnel.

To improve and expedite the transfer of mail between plants, a new mail service involving four exchanges a day between the Carbide plants, MSI, ORINS, and the AEC has been put into effect.

To improve the accuracy of cost reporting methods, arrangements have been made to discontinue the cost of telephone tolls, line charges, and telephone equipment charges as an overhead item and to place this cost on a direct-charge basis to the division incurring the cost.

During the quarter, arrangements were completed for the procurement, at 50% of cost or less, of equipment, laboratory supplies, and cafeteria supplies from Mound Laboratory. This equipment has been placed in the Equipment Pool, where it is available for utilization by all groups in the Laboratory.

In FY 1955 a program was initiated to replace typewriters, calculators, and office machines that are worn out, over-age, or too expensive to maintain. The program was established on a three-year basis and was designed to provide new equipment in FY 1955 valued at approximately $20,000.

The enrollment of employees in the Major Medical Expense Plan was completed during this quarter, with a total of 940 employees participating.

The recreation policy of the Laboratory was revised to concentrate on intra-Laboratory activities.

The annual Laboratory supervisors' banquet was held at Deane Hill Country Club during the quarter and was attended by 325 supervisory employees.

During the quarter six grievances were filed by the Atomic Trades and Labor Council and one by the International Guards Union of America. There were no arbitration cases.

2. PERSONNEL SERVICES

Full-time dispensary service is now being provided for the 7000 Shops Area.

The Health Division staff is participating in a series of safety lectures being given to various groups in the Engineering and Mechanical Division.

The Laboratory completed the calendar year 1954

[redacted]

with the lowest accident frequency rate since the start of operations. At the end of the current quarter the Laboratory had accumulated 1,508,200 accident-free hours since the last disabling accident.

No major fire losses occurred during the calendar year 1954; 44 minor fires that occurred resulted in a total loss of $361.85.

A fenced construction area has been established south of the Graphite Reactor Building 3001 to allow the Troy Construction Company to construct the Solid State Building addition.

Twenty-one staff conferences were held during January on the subject "Communication," and two conferences on the Major Medical Expense Plan were conducted.

A personnel audit that was completed brought up to date important data on all employees.

A limited number of miscellaneous summer jobs for college undergraduates has been filled from a relatively large number of applications.

The current program of recruitment of scientific and technical personnel is progressing satisfactorily.

3. ORGANIZATIONAL AND POLICY CHANGES

Miscellaneous official bulletins and Standard Practice Procedures were issued or revised so that employees would be informed of current policies.

4. CONSTRUCTION AND MAINTENANCE PROJECTS

During the quarter the X-10 site improvement program was completed.

Major active projects during the quarter included the fabrication and installation of in-pile rocking bomb experiments, the construction of an addition to the metallographic cell in the Solid State Building 3025, and the dismantling of the ARE and salvaging of its equipment.

A construction contract for the Solid State Building addition was let to the Troy Construction Company, and a contract for the Metal Storage Facility was awarded to Rentenbach and Wright Construction Company.

The in-pile loop program continued with the removal and dismantling of ANP loop No. 2.

Other active projects included the Shielding Laboratory (Building 3010) addition, the ARE fuel test equipment for the MTR, the HRT construction, the Corrosion Examination Facility, the Clothing Decontamination and Monitoring Facility, the Multi-Kilocurie Loading Cell, the SF Materials Machine Shop, the SF Materials Storage Vault, the addition to the Rolling Mill, and the High-Radiation-Level Analytical Facility.

Projects in the design stages included the Multicurie Fission-Product Pilot Plant, the Automatic Fire Protection System, and the Research Reactor.

New projects proposed during the quarter are the High Level Chemistry Development Facility, the 7500 Area Field Shop, Expansion of the Metal Recovery Facility, the Lead Shop, and the ART Facility.

ORNL projects in the Y-12 Plant during the quarter included the power redistribution changes in the ANP Engineering Building 9201-3, the installation of gas-fired furnaces, and an engineering office air conditioning system in Building 9201-3. The library expansion and substores relocation in the Biology Building 9207 were completed. Design of additional animal farm facilities and the new Mammalian Radiation Recovery Laboratory for the Biology Division was started. Engineering design was started on the air conditioning system for the Criticality Facility, Building 9213. Preliminary design for the proposed Calutron expansion was completed. Construction of a Materials Chemistry Pilot Plant Facility located in Building 9207 was started during the quarter. Removal and salvage of the Orex Pilot Plant equipment was started. Construction of additional offices in the Reactor Experimental Engineering Building 9204-1 was completed, and design of additional electrical facilities for the building was started.

1. LABORATORY ADMINISTRATIVE AND PROGRAM SERVICES

GENEVA CONFERENCE REACTOR AND EXHIBITS

In connection with the International Conference on Peaceful Uses of Atomic Energy to be held at Geneva, Switzerland August 8–20, 1955, the Laboratory proposed early in the quarter to construct a research reactor that would be set up in Geneva and actually operated during the time of the Conference. In addition to the operating reactor, the Laboratory proposed to provide exhibits and other display materials for Conference personnel.

By building and operating a research type of reactor in Geneva, the United States can demonstrate one of the most important uses for some of the fissionable material and, at the same time, demonstrate the ease with which a research reactor can be designed, procured, assembled, and safely operated. Moreover, the overseas installation of the reactor by European contractors will illustrate that reactor construction can be handled by competent construction forces who have had no previous experience in this field. However, the use of European contractors will require basic excellence of design and meticulous, accurate attention to the details involved in the overseas execution of the project.

Although it would be desirable for other nations to view a complete prototype of a research reactor, there are several design features which have been selected on the basis of their contribution to a more effective display rather than to slightly greater research usefulness. These include the following:

1. support of the reactor from the bottom, rather than from the top,
2. fixed position of the reactor within the tank,
3. absence of reflector elements,
4. minimization of excess reactivity in the lattice,
5. free convection cooling only,
6. controls in a separate room,
7. small diameter tank,
8. absence of beam holes.

The power level for the reactor has been chosen as 10 kw. Experience with the ORNL Bulk Shielding Reactor has shown that this power level will give a distinct blue glow with dimmed lights. Reasonably steady operation at this power level will not result in the activation of fuel elements or components beyond convenient limits for reactor disassembly and disposal. If desirable, the reactor will be capable of operating at a power level of 100 kw. It is not planned, however, to do this except as a special demonstration and then only for several minutes at a time, since this level of operation will give inconveniently high levels for disassembly and disposal.

The purpose of the entire reactor exhibit is to display in the most effective manner a United States designed and built reactor which in many ways resembles the reactors that could be built from the 100 kg of fissionable material contributed to the International Pool by the United States.

Certain models and reactor components will be provided to illustrate the advancement of reactor development, chemical technology, and other related fields in the United States. These exhibits will very effectively supplement the talks and other materials presented by the United States delegates to the Conference.

The Laboratory's proposal to construct a reactor and provide exhibits was approved by the AEC, and plans were started immediately for the construction of the reactor and the preparation of exhibits and display materials. At the request of the AEC a special budget for these Geneva Conference activities is being set up under activity 8990.

PREPARATION OF ORNL BUDGET DOCUMENTS

In accordance with instructions received from the AEC, preparation of the Laboratory's formal budget for FY 1957 was started during this quarter. The preparation of the Laboratory's program and budget proposals (Gray Book) for FY 1957 was carried out simultaneously. Both the program and budget proposals and the formal budget are scheduled for submission to the AEC early next quarter.

The Laboratory was notified by the AEC of revisions, to be effective July 1, 1955, to the activity descriptions in every program. Although the changes are being reflected in the FY 1957 budget documents, the Laboratory has voiced its objections to the repeated changes in activity breakdowns. Such changes cause significant complications in budgeting and cost reporting,

particularly since it becomes necessary to realign costs that were incurred under the previous activity so that they can be compared with budgets for the same program under the new activity.

REVIEW OF BUDGETS FOR SERVICE DIVISIONS

At the same time that the Laboratory's programs for FY 1956 were being reviewed and the FY 1957 budgets were being prepared, the FY 1956 and FY 1957 budgets for the Service Divisions were reviewed. As a result of this review, the Laboratory was able to include in its program budgeting a more realistic estimate of overhead charges that would be experienced by the program accounts during FY 1956 and FY 1957. This timely review of the Service Divisions' budgets represents a further refinement of program budget preparation at ORNL and, because of the improved correlation with program budgeting, also encourages better planning in the Service Divisions. This should result in more effective use of service personnel and in better cost estimates for research activities.

TABULATION OF MAJOR SCIENTIFIC RESEARCH EQUIPMENT AND FACILITIES

In response to a request from the AEC, the Laboratory's major research tools have been listed and briefly described in a comprehensive tabulation covering all research divisions of the Laboratory. The tabulation indicates not only the specific research tools that are available at ORNL but also the types of research in which these tools are most useful.

ADMINISTRATIVE AND CLERICAL PERSONNEL SURVEY

A survey of the administrative and clerical personnel in each of the Laboratory's divisions was made for the purpose of determining the average and the individual ratios of administrative and clerical personnel to total personnel so that the need for additional personnel could be evaluated and so as to assure the greatest utilization of present personnel. While it is true that the ratio of administrative and clerical personnel to total division personnel should not be expected to be the same for all divisions, it was found that comparison of the divisions was helpful in evaluating requests for additional office personnel.

CHANGE IN MAIL SYSTEM

On March 4, 1955, the three-plant mail service furnished by K-25 was discontinued. Effective March 7, 1955, to improve and expedite the servicing of mail between plants, each installation initiated its own pickup and delivery service. Mail runs are made four times each day, with Clayton Hall established as the focal point for pickup and exchange of intraplant mail; MSI, ORINS, and the AEC also have arranged, consistent with the three-plant schedule, to maintain pickup and delivery service at Clayton Hall.

Coincident with the change in the mail system, a similar system was arranged for the three-plant cashiers to exchange money bags once each day at the Hamilton National Bank.

DIRECT DISTRIBUTION OF TELEPHONE COSTS

Consistent with the policy of charging cost-with-effort where practicable, arrangements were initiated in March to discontinue the cost of telephone tolls, line charges, and telephone equipment charges as an overhead item and to place this cost on a direct-charge basis.

During April, necessary detail will be furnished to concerned divisions in order that a complete review can be made of all telephone costs associated with the divisions.

The change in method of charging telephone costs will become effective July 1, 1955.

EQUIPMENT POOL

During the quarter, arrangements were completed that resulted in the procurement of equipment, laboratory supplies, and cafeteria supplies from Mound Laboratory. The material was procured on the basis of 50% of cost or less.

Equipment valued at approximately $50,000 was acquired in this transaction on the basis of no charge. It is in excellent condition and consists of vacuum pumps, scalers, voltmeters, bridges, amplifiers, Pirani gages, etc. Upon delivery, the equipment was placed in the Equipment Pool and is available for utilization by the Laboratory.

OFFICE MACHINE REPLACEMENT PROGRAM

In February 1955 a program was effected to replace typewriters and calculators that are worn out, over-age, or too expensive to maintain. The program was established on a three-year basis

and was designed to provide for new equipment in FY-55 valued at approximately $20,000.

Final arrangements have been made to procure and place in service in FY-55 the typewriters and calculators scheduled as replacement equipment in the first stage of the over-all program.

MAJOR MEDICAL EXPENSE PLAN

The enrollment of employees in the Major Medical Expense Plan was completed during this quarter, and at the end of March, 940 employees at the Laboratory were enrolled in the plan.

RECREATION PROGRAM

The recreation policy of the Laboratory has been revised in order that all efforts can be concentrated on intra-Laboratory activities. The Laboratory will not support city league or varsity teams in any sports activity.

SUPERVISORS' BANQUET

The annual Laboratory Supervisors' Banquet was held at the Deane Hill Country Club on March 10, 1955. The dinner was attended by 325 supervisory employees.

GRIEVANCES

During this quarter, six grievances were filed in written form by the Atomic Trades and Labor Council, and one by the International Guards Union of America.

ARBITRATION

There were no arbitration cases.

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2. PERSONNEL SERVICES

EMPLOYEE HEALTH SERVICE

At the Third Health Education Seminar on February 23, Dr. J. E. Sullivan, oral surgeon, spoke on "Your Teeth and Your Health."

With the addition of an industrial nurse to the staff of the Health Division, it has become possible to provide full-time service at the dispensary in Building 7009.

The Health Division staff is participating in a series of safety lectures being given to the various groups in the Engineering and Mechanical Division.

SAFETY RECORD AT ORNL

The Laboratory completed the calendar year of 1954 with the lowest accident-frequency rate since the start of operations in 1943. During 1954 there were four disabling accidents, resulting in a frequency rate of 0.79 and a severity rate of 0.03.

At the close of the report period, the Laboratory had accumulated 1,508,200 accident-free hours since the last disabling accident of December 14, 1954.

FIRE EXPERIENCE AT ORNL

No major fire losses occurred during the calendar year of 1954. Forty-four fires occurred, resulting in a total loss of $361.85 or a fire loss ratio of 0.06 cent per $100 of valuation.

Fourteen fires have occurred during the current report period, resulting in a total loss of $26.50 or a fire loss ratio of 0.018 cent per $100 of valuation.

PHYSICAL SECURITY

A fenced island has been established east of Building 3022 to allow the Troy Construction Company to build the Solid State Building addition. The "P" approved construction workers are escorted to the construction site but do not need to be under constant surveillance while they are working within the enclosure.

It is intended to establish a fenced corridor from Post 8 during the construction period for the Oak Ridge Reactor. This will result in considerable saving of Guard Department escorting time.

PERSONNEL SUMMARY

A personnel summary for the quarter is given below.

	Week Ending January 2	Week Ending April 3
Permanent Employees, total	3258	3273
Hourly	993	976
Weekly	901	928
Monthly	1364	1369
Breakdown by Division		
Aircraft Reactor Engineering	123	132
Analytical Chemistry	208	208
Biology	114	116
Chemical Technology	188	184
Chemistry	111	112
Director's	31	31
Educational	11	11
Electronuclear Research	57	58
Engineering and Mechanical	803	795
General Office	125	122
Health	20	21
Health Physics	130	126
Industrial Relations	139	144
Information and Reports	87	89
Instrumentation and Controls	178	176
Laboratory Protection	147	144
Libraries	32	33
Materials Chemistry	96	96
Mathematics Panel	24	24
Metallurgy	118	126
Operations	97	97
Physics	107	109
Reactor Experimental Engineering	170	176
Research Director's	20	22
Stable Isotopes Research and Production	62	60
Solid State	60	61
Total	3258	3273

Changes in Personnel During Quarter

Hires	54
Transfers in	20
Transfers out	0
Terminations	59

ORNL STAFF CONFERENCE PROGRAM

Twenty-one conferences were held in January on the subject, "Communications." A total of 291 staff members attended in small-group meetings, which were conducted throughout by Training Department personnel.

Two conferences on the Major Medical Expense Plan were conducted during January. These conferences were a continuation of those initiated during December and provided additional information to those undecided about participation in the plan. Seventy-five employees attended.

PERSONNEL AUDIT

A personnel audit has been completed which will reflect a number of changes on the ORNL Man Power Status Report. This audit has brought important data up to date on all employees. Arrangements have been made to reaudit at convenient intervals.

SUMMER EMPLOYMENT

A limited number of miscellaneous summer jobs for undergraduates has been filled by usual selection methods from a relatively large number of applications this year.

RECRUITMENT OF SCIENTIFIC AND TECHNICAL PERSONNEL

The current program of recruitment of scientific and technical personnel is progressing at a more uniform rate this year. The present rate of interviews is approximately four a day.

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3. ORGANIZATION AND POLICY CHANGES

OPERATING POLICIES AND PROCEDURES

Laboratory policy adjustments released during the quarter are summarized below.

Official Bulletins

DD-No. 68	Procurement of Electromagnetically Enriched Isotopes
DD-No. 69	Security Regulations
DD-No. 70	Requests for MTR Irradiation Experiments
AR-No. 290	Dissemination of Unclassified Information
AR-No. 291	Foreign Travel
AR-No. 292	Security Regulations
AR-No. 293	Unauthorized Disclosure of Classified Defense Information
AR-No. 294	Long Distance Telephone Calls
AR-No. 295	Administrative Responsibilities Relative to ORNL Employees Located in the Y-12 Area
AI-No. 286	Increase in Social Security Tax
AI-No. 289	Tests at Graphite Reactor Stack
AI-No. 290	Exemption of Sickness and Accident Disability Payments from Federal Income Tax

Standard Practice Procedures (Revisions)

D-1-8	Absence for Non-Occupational Disability
D-1-11	Absence for Warranted Personal Reasons
D-2-5	The Sale of Contaminated Materials
D-3-1	Employment
D-3-3	Termination of Employment
D-4-3	Savings Plan for Employees
D-5-4	Military Service Plan – Part I of II
D-6-1	Moving and Travel Expense – Inbound
D-6-3	Travel on Company Business
D-7-2	Hours of Work
24-B	Official Letters of Reference and Recommendation

4. CONSTRUCTION AND MAINTENANCE PROJECTS

PROJECTS COMPLETED

Site Improvements

During the past quarter a considerable amount of landscaping was completed in the western section of the X-10 area. The greater portion of this work was concentrated along Central Avenue. Trees and shrubs were planted in areas which had previously been topsoiled and seeded, which includes the area formerly occupied by the old mechanical shops. At the site of the old clock alley at the west gate, the concrete pad was removed and an extension to the existing walkway was installed. This area was topsoiled, seeded, and planted with trees and shrubs. The paving and rock surfaces surrounding the buildings on the north side of Central Avenue (Buildings No. 2018, 2012, 2013, and 2069) were removed, and the space was backfilled with suitable topsoil, seeded, and mulched, and shrubs were planted.

ACTIVE PROJECTS

Rocking Bomb Experiments

Considerable effort has been expended during the quarter on the development and fabrication of the components for the rocking bomb experiments proposed for ORNL and the MTR.

At ORNL, the majority of the work required for the installation of equipment in hole HB-5 of the LITR was completed the last week in March. By the end of the quarter the fabrication and installation of a miniature bomb dismantling cell, which is located in the High Level Radiochemical Laboratory, Building 4501, were approximately 85% complete. The cell structure is mild steel framing with a stainless steel lining, stainless steel pipe sleeves, and lead shielding.

The designs for the MTR rocking bomb experiments were about 90% complete at the end of the period. As soon as portions of the design of various equipment items were completed and approved, the drawings were sent to the shops so that the fabrication work would be in progress before the total design was completed. The rocking bomb equipment is similar to that being installed in the LITR but has been modified for adaptation to the MTR. It is expected that all the work for these experiments will be completed by the end of next quarter.

Metallographic Cell

The steel plate for the fabrication of the Metallographic Cell was not delivered until January 20; this delay resulted in extending the time for the final completion. Because of operating commitments in the Solid State Building 3025, the start of the final installation has been advanced to about April 22. It is anticipated that the project will be completed by the end of next quarter.

ARE, Building 7503

Dismantling work on the ARE reactor and components was started the first part of this quarter. By the end of the period all the equipment in the main equipment pit and the reactor pit had been removed. It is planned to salvage and reclaim as much equipment and materials as possible for utilization in the proposed ART and other experimental installations. In February a temporary building was removed from the X-10 salvage yard to the east side of the ARE Building to provide for the storage of some of the reclaimed components.

Solid State Building

The plans and specifications for the construction of the Solid State Building were completed by the H. K. Ferguson Company and issued to the Atomic Energy Commission to solicit bids. The bids for the installation of the facility were opened on March 15. The Troy Construction Company of Knoxville was the low bidder. The Atomic Energy Commission awarded lump-sum prime contract No. AT-(40-1)-1949 to this company, and a notice to proceed was issued. It is expected that the contractor will start work the first week in the next quarter.

All the Laboratory's preparatory work on this facility, including the installation of a temporary exclusion fence and the relocation of exits from the east end of the Engineering and Mechanical Division Offices, Building 3022, was completed. Further Laboratory participation in the project, consisting mainly in providing miscellaneous work to assist the contractor, will be performed as required.

Metal Storage Facility

The bids for the installation of a Metal Storage Facility were opened on March 22, and Rentenbach and Wright Construction Company had submitted a low bid of $11,240. This bid was accepted and a notice to proceed was issued. On the basis of the estimated time allocated for the installation of this structure, the work is expected to be completed before the end of next quarter.

In-Pile Loops

The operation of the ANP fuel loop No. 2 was discontinued on January 7 after it had operated for approximately 400 hours. It was decided to remove the loop from the reactor and move it to the Solid State Building 3025, where it was dismantled for examination.

The experiments with the other in-pile loops are continuing as scheduled.

Shielding Laboratory, Building 3010

At the end of this quarter the contract work for the addition to Building 3010 was approximately 75% complete. This work is being performed by the Charles Hobson Company under subcontract No. 594 and is scheduled for completion by the middle of April.

The Laboratory forces installed a 10-ton air conditioner in the lower instrument room. The 5-ton unit which was removed from this room will be installed in the addition to the building.

The installation of a permanent filter system, by ORNL, for filtering the pool water was also completed. This system consists of a 200-gpm pump, a filter with a bypass arrangement, and two spray nozzles which are located on each side of the reactor suspension frame. The pool water may be circulated through the filter and returned to the pool either through an 8-inch-diameter inlet line or through the nozzles.

ARE Fuel Test Equipment – MTR

The Laboratory's participation in the preliminary work to the installation of the ARE test equipment during the period has consisted in the design and fabrication of the track assembly for the in-pile loading mechanism and the control panels. The dolly and track assembly was completed and sent to the Y-12 shops, where this unit will be integrated with the work being performed there. The work on the control panels will be completed early in the next quarter.

Homogeneous Reactor Test

A modification (No. 2) to the V. L. Nicholson Company subcontract No. 590 authorized the installation of a reinforced concrete water tank with approximate dimensions of 19 ft × 19 ft 9 in. × 5 ft 6 in. The walls of this tank will be the foundation supports for a cooling tower. The J. F. Pritchard Co. was awarded Carbide subcontract No. 588 for the design, fabrication, and/or procurement and installation of an 800-gpm redwood cooling tower. The tower will have a cooling capacity of from 135 to 90° F at a wet bulb reading of 80° F. Work on the concrete tank was completed the last week in March, and it is expected that the entire installation will be completed by the end of next quarter.

The installation of the large steel tank by the Chicago Bridge & Iron Co. was completed; however, the V. L. Nicholson Company has extended their contract with that company to include the installation of the steel tanks proposed for the Chemical Technology cells B and C. The foundations for these cells were completed about the middle of the quarter, and the east, west, and south walls for cell A were completed by the end of the quarter.

A review of the contractor's work indicated that it would be desirable and also more practical to delay the start of the construction of the building extension until the major portion of the work on the cells had been completed. A supplement to the construction request (CR-218) was submitted to the Atomic Energy Commission in March requesting that the completion date be extended to June 30. This was subsequently granted, and the construction schedules were revised to reflect the change.

Corrosion Examination Facility

Work on the Corrosion Examination Facility at the end of the quarter was approximately 97% complete. The completion date has been further extended to allow for sufficient time for the delivery and installation of purchased manipulators. It is presently anticipated that the project will be completed by the end of April.

Clothing Decontamination and Monitoring Facility

During the period, very good progress was made on the installation of the Clothing Decontamination and Monitoring Facility. This work, which is being performed by the Charles Hobson Company under Carbide subcontract No. 591, was approximately 67% complete by the end of the quarter. ORNL delivered two driers and one steam-water heater to the contractor for installation. The present schedule indicates that the contract work will be completed by the middle of next quarter; the remaining work – the Laboratory's portion – consists principally in relocating the existing equipment and will be completed by the end of May.

Upon completion of this facility, it is planned that the present laundry buildings will be sold on a competitive bid basis. Approval by the Atomic Energy Commission for the disposal of these buildings has been received.

Multi-Kilocurie Loading Cell

The contract work for the installation of the Multi-Kilocurie Loading Cell was essentially completed at the end of March. Final inspection for the acceptance of the contract portion of the project is expected to be performed the first of next quarter. The portion of the work being done by ORNL is now scheduled for completion by the end of April.

Source and Fissionable Materials Machine Shop, Source and Fissionable Materials Storage Vault, and Addition to Rolling Mill

The installation of the Source and Fissionable Materials Machine Shop and the addition to the Rolling Mill were completed about the middle of March. Additional work on the Source and Fissionable Materials Storage Vault makes it necessary to extend the completion schedule into the next quarter; however, the additional work will be completed about the first week in April.

All the machine shop equipment was removed from the Central Machine Shop – Special Materials Section, Building 3006, and reinstalled in the new shop. Work was started on the installation of a dust collection system, which is a requisite for this shop. It is planned to utilize the existing exhaust blower and to install new ducts to the machines. All work required for the relocation of the shop facilities is expected to be completed early in the next quarter.

High-Radiation-Level Analytical Facility

At the end of the quarter the contract work on the High-Radiation-Level Analytical Facility was behind the established schedule by approximately three weeks. Inclement weather and difficulty in obtaining materials have contributed to this delay. A recent modification to the directive for this facility has established the final completion date as June 30. The over-all project was about 62% complete by the last week in March.

PROJECTS IN DESIGN STAGES

Multicurie Fission Product Pilot Plant

A Carbide subcontract was awarded to John McPherson and Sons for Title II, A-E services, and their work is now in progress; during the period, ORNL's portion of the design was also in progress. The construction portion of this project is to be performed by Atomic Energy Commission prime contractors and is expected to be completed in June 1956. The contracts will be let in two parts; the first part includes the building structure, cells, and tank farm, the second part the process equipment.

Automatic Fire Protection

The plans and specifications for providing automatic fire protection, which consists in the installation of sprinklers in Buildings 1000, 2005, 2008, 2018, 2068, 2069, 3000, 3022, 3024, and 3550, were practically complete at the end of the quarter. It is expected that a subcontract for the installation of the system will be awarded during the next quarter.

Research Reactor (ORR)

During the period, a supplement was submitted to the Atomic Energy Commission requesting authorization to enlarge the cooling system so that the power level of the reactor could be raised from 5 to 20 Mw and to make the necessary design revisions to comply with Reactor Safeguards Committee requirements of providing a gastight building. It was also requested that alternate bids be received for contract construction periods of 310 and 400 days, respectively, with the shorter period to be used if the bids were within the available funds. Design drawings and specifications for the gastight building and the 20-Mw cooling system have been essentially completed by ORNL

and John McPherson and Sons, and they will be reproduced for distribution to prospective construction contractors by April 15. Buildings 3006 and 3007 were removed, and practically all preliminary site preparations have been completed.

PROJECTS PROPOSED

Preliminary Proposals

During the quarter, ORNL submitted to the Atomic Energy Commission five proposals and requests for directives as follows:

No. 219, "High Level Chemistry Development Facility"
No. 220, "Field Shop, Building No. 7506"
No. 221, "Expansion of Metal Recovery Facility"
No. 222, "Lead Shop, Building No. 7005"
No. 223, "ART Facility, Building No. 7503"

High Level Chemistry Development Facility

The High Level Chemistry Development Facility as proposed will occupy a space approximately 50 × 45 ft in the basement of the High Level Radiochemical Laboratory, Building 4501. The work for the facility will consist in erecting a concrete block enclosure and four cells, which are to be constructed of poured concrete, solid concrete blocks, and high-density concrete blocks. Directive No. CL-170, dated March 7, authorized Titles I and II engineering services, which are to be accomplished by ORNL. The completion date established by the directive is May 31.

Field Shop, Building 7506

The work for the Field Shop will consist in erecting a prefabricated, steel-framed metal structure, which is to be located in Area 7500. Directive No. CL-165, dated February 24, authorized the erection of the facility as outlined in the proposal. The plans and specifications were issued to the Carbide Purchasing Department the last week in March. Current schedules anticipate the completion of the installation by the end of next quarter. The building structure proposed for this facility was obtained from surplus at Paducah, Kentucky, and has been delivered to the job site.

Expansion of Metal Recovery Facility

The proposal for expansion of the Metal Recovery Facility covered the following: UNH Denitration Facility, High-Radiation-Level Processing Cell, and High-Radiation-Level Scrup expansion.

The UNH Denitration Facility as presently visualized will consist of a steel-frame structure mounted on a reinforced concrete foundation, and the installation of a moving bed denitrator. It is planned that the facility be located adjacent to the Large Column Set, Building 3592. Because this phase of the project will be of a specialized nature requiring close coordination with Laboratory technical personnel in the initial design and in the development processes, it was proposed that all the work be performed by Laboratory forces. Directive No. CL-171, dated March 23, authorized the Laboratory to proceed with certain design work and established a completion date of June 30.

The High-Radiation-Level Processing Cell will consist in the installation of an extension to the Metal Recovery Building 3505, approximately 52 × 56 ft, with insulated metal siding and roofing, reinforced concrete floors and foundations, and concrete equipment pits. The Laboratory will furnish the design and provide for the procurement and installation of specialized equipment. It is anticipated that the building extension, cell, and equipment pits will be installed by a Carbide subcontractor. Directive No. CL-172, dated March 29, authorized the Laboratory to proceed with Titles I and II engineering services and established a completion date of June 30.

The High-Radiation-Level Scrup expansion will consist in the installation of capital equipment in the High-Radiation-Level Processing Cell. The exact requirements for this phase of the project have not been determined at this time because the development of the equipment is largely dependent upon criteria which will be collected from the Hope Engineering Test Program. The design, fabrication, and installation of this equipment will be started when sufficient criteria have been collected to determine the optimum economical design of such equipment.

Lead Shop, Building 7005

The Lead Shop project will consist in altering and modifying the existing Building 7005. The renovation required to make this building usable will involve substituting a concrete floor in the area that now has earthen floor, installing toilet and change facilities and roof ventilations, and replacing double swing doors with roll-up doors. Directive No. CL-173, dated March 29, authorized

the entire project as proposed and established a completion date of October 30. Oak Ridge National Laboratory will furnish Titles I, II, and III engineering services and miscellaneous contractor assistance. The structural alterations and the installation of equipment will be performed by a Carbide subcontractor.

ART Facility, Building 7503

Directive No. CL-169 was issued by the Atomic Energy Commission on March 10 authorizing the Laboratory to proceed with the development of design criteria, preliminary site investigations, and Titles I and II engineering services for the ART Facility. The proposal involves constructing a 64-ft extension to the south end of Building No. 7503, constructing a building to house auxiliary equipment, and installing specialized equipment.

The design authorized by the directive was started about the middle of March. Because of the urgency of this program, special emphasis is being placed on completing the design work by the end of next quarter.

ORNL PROJECTS IN THE Y-12 PLANT

Major engineering, design, and construction work performed for ORNL in Y-12 during the third quarter of FY 1955 is summarized by divisions.

Aircraft Reactor Engineering Division

An intensified aircraft reactor program, with its many test loops circulating coolant and fuel mixtures at high temperatures, has more than doubled the electrical power requirements for Building 9201-3. Design was completed and construction has been started for installation of a general electrical bus duct system and three 500-kva transformers. All connecting work will be completed by the time the first transformer and control cubicle arrive on June 1, 1955.

Design is 80% complete for a natural gas supply line and foundation supports for six gas-fired furnaces having a combined output of 10 Mw. These furnaces will supply heat loads to heat exchanger test loops inside the experimental area. Rust Engineering Company will provide the foundation supports and natural gas supply.

Because of the anticipated addition to heat loads and because of the almost intolerable working conditions experienced last summer from the heat exchanger test loops, an air conditioning system was authorized and the contract let to the Templin Equipment Company. The job was scheduled to be completed by March 14, 1955; however, it is presently only 70% complete. Late deliveries on the water tower and the Kennard package unit resulted from a strike in the main plants of the McQuay Company, supplier of the unit coils. The estimated completion date is now May 30, 1955.

Biology Division

Engineering design and field construction were completed on March 30, 1955, for the Chronic Radiation Exposure Facilities located in Building 9743-2. The construction was performed by the Rust Engineering Company, and radiation facilities were installed by Carbide.

The renovation and expansion of the Biology section of the ORNL Library in Building 9207 were completed during the last part of March. A new and enlarged Biology stock room was also completed on this contract; both jobs were performed by Rentenbach and Wright Construction Company of Kingsport, Tennessee.

Design was completed for additional Animal Farm facilities to be located on the fourth floor and adjacent to existing animal storage areas. Construction is scheduled to be completed by April 15, 1955, by Rust Construction Company.

Design was started for two new Mammalian Radiation Recovery Laboratories, which will be located on the fourth floor near the Animal Farms. The construction is scheduled to be completed by June 3, 1955, by the Rust Construction Company.

A public address system to cover the entire divisional area is being designed and will be installed by May 15, 1955.

Applied Nuclear Physics Division (Criticality Facility)

Engineering design was started for atmospheric control of the Materials Testing Laboratory and of the instrument control and conference rooms in Building 9213.

Electronuclear Research Division

Procurement of coils and magnet was started for the beam analyzing system of the 63-inch cyclotron.

Design was completed and work started for moving the Staff Shop from Building 9735 to 9201-2.

Isotope Research and Production Division

Preliminary design for the proposed Calutron expansion was completed on March 18, 1955.

Design was completed and renovation started on the 8-inch mass spectrometer located in Room 18, Building 9735. A new receiver electronic system and a vacuum system operating at 10^{-8} mm Hg are required.

Design was started for a new two-stage 12-inch mass spectrometer which will have the high vacuum requirement that the 8-inch mass spectrometer has.

Design was completed for a dust-tight Micro-Chemistry Laboratory to be located adjacent to the 12-inch mass spectrometer.

Materials Chemistry Division

Future planning calls for consolidation of all materials chemistry work in the B-T section of Building 9207. In line with this planning the design was completed and construction started for a pilot plant facility to be used by the Engineering section; the facility will be located in the southeast four bays on the third through the sixth floor of Building 9207. This construction is being performed by the Rust Engineering Company and will be completed by May 15, 1955.

Design is 75% completed for an Experimental Raw Materials Testing Pilot Plant and a milling and grinding facility, both to be located in the above-mentioned area. Rust Engineering Company will do the construction work.

Authorization has been received and design has been started for removal and salvage of the Orex Pilot Plant located in Building 9202. All equipment not re-used by the Materials Chemistry Division will be delivered to X-10 for disposal.

Reactor Experimental Engineering Division

Construction was completed, during the last part of March, on additional engineering office space consisting of 36 new offices and a large drafting area, all located on the second floor and on the south side of Building 9204-1. The work was performed by the V. L. Nicholson Company of Knoxville, Tennessee.

Design is in progress for additional electrical facilities for Building 9204-1 as follows: a new 15-kw motor-generator set supplying d-c power for research, a new a-c power supply for the heat transfer experiments on the first floor, and two variable-frequency motor-generator sets.