

Chemical Technology Division

**Research and Development Services Section
Quarterly Progress Report for the Period
January 1 to March 31, 2000**

**L. D. Duncan, Section Head
Research and Development Services Section**

June 2000

Prepared by the
OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37831-6285
managed by
UT-BATTELLE, LLC
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-00OR22725

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1. INTRODUCTION

This report details activities of the Research and Development Services Section (RDSS) of the Chemical Technology Division (CTD) at Oak Ridge National Laboratory (ORNL) for the period January 1 to March 31, 2000. The mission of RDSS is to provide high-quality support services to R&D staff members in an efficient, cost-effective, and timely manner so that CTD's programmatic efforts can succeed.

Rather than a routine report of activities, this report highlights only those accomplishments and notable events that are key to our mission and that have significant impact on division objectives and goals. Names are included along with headings in the report, and readers are encouraged to contact these individuals for more details.

RDSS contains two major groups: the Business Management Systems Group (BMSG) and the Compliance Resource Management Group. The sections that follow describe the activities of these groups.

2. BUSINESS MANAGEMENT SYSTEMS

2.1 Budget/Finance (D. H. Ault, D. W. Isham, D. L. Moates, C. D. Parks, D. J. Weaver)

The primary objective of the CTD Finance Office is to provide financial support to the research staff members and division management. In addition to routine business, the following tasks and activities were performed by the staff during this review period:

- Budget pages were prepared and submission of annual budget documents was coordinated, including Field Work Proposals, Technical Task Plans, Work for Others estimates, and other program-specific DOE budget calls.
- Isotopes Production and Distribution Program (IPDP) financial data were prepared and presented at the annual business meeting in New York.
- The staff participated in preliminary financial data development for the IPDP Five-Year Plan.
- The staff prepared a travel report by appropriations category, section, and project for tracking and monitoring division progress in relation to the division's assigned travel targets in the Energy & Water and Interior Appropriations programs.

The CTD Finance Office also reviewed and approved the financial documents listed in Table 1.

Table 1. Financial documents reviewed and approved

Document	Quantity
Consultant's invoice	9
Controlled business expense	3
Cost adjustment and transfer	41
Field work proposal	34
Foreign travel request	7
Guest appointment authorization	19
Interagency agreement	1
Notification of planned conference	1
ORISE travel authorization	4
Request for subcontract	9
Small-cash-purchases voucher	13

2.2 Document Management Centers (L. M. Crews, M. D. Griffith)

Statistical data concerning document center activities for this reporting period are provided in Table 2.

- Ten cubic feet of record-copy documents was transferred to Laboratory Records. The boxes of documents consisted of record-copy material with an enclosed index listing of the records and scheduling documentation.
- CTD Document Management Center (DMC) staff performed an extensive literature search in support of the isotope project work performed at the Radiochemical Engineering Development Center (REDC). The search involved several internal and Web-based information systems.
- DMC staff designed, created, and distributed new manual covers to all controlled-copy holders of the following Radiochemical Technology Section (RTS) publications: Facility Authorization Basis Manual, RTS Administrative Procedures Manual, Radiochemical Development Procedures Manual, Radiochemical Development Technology Manual, and Engineering Support Work Group Manual. All references to the previous ORNL contractors were removed and replaced with references that reflect the new contractor.

2.3 The IMAGE Center (D. K. Cochran, L. B. Gorman, J. J. Jernigan, C. D. King)

Job assignments processed by the IMAGE Center during the second quarter of FY 2000 are listed in Table 3.

Table 2. Document management activity^a

	CTD/ADM	RTS/REDC
Database records entered or dated	934	1359
Controlled document transmittal issued ^b	12	68
Requests received and completed	154	210
Drawings printed by DMC staff		73
Database reports issued ^c	7	5
CTD reports distributed	8 (595 copies)	
Technical research notebooks, distributed	12	1

^aREDC = Radiochemical Engineering Development Center DMC.

^bDoes not include the number mailed for each document.

^cReports include those from the EDIS and PRIS databases of the Engineering Division.

An increase in the work load during this reporting period can be attributed to the need for posters as well as viewgraphs and word slides. Most of the posters were created or generated by the customer and then printed by the IMAGE Center. A significant number of the posters and presentation materials were prepared for the Symposium on Biotechnology for Fuels and Chemicals to be held in Gatlinburg, Tennessee, in May 2000.

The IMAGE Center continues to process work for other divisions, including Metals and Ceramics, Energy, Computational Physics and Engineering, Computer Science and Mathematics, and Chemical and Analytical Sciences.

Table 3. Assignments processed by Graphics Services during FY 2000

	First quarter	Second quarter	Cumulative total
New drawings	99	123	222
New word slides	49	100	149
Revisions	26	40	66
Miscellaneous ^a	471	548	1019
Total	645	811	1456

^aIncludes posters, signs, name tags, doors, photographs, and photographic makeup.

2.4 Publications Services (M. K. Savage, D. P. Stevens, M. G. Stewart)

As indicated in Table 4, in addition to the typical work load of technical publications, the staff completed a large volume of material (180 abstracts) for the Symposium on Biotechnology for Fuels and Chemicals, to be held in Gatlinburg, Tennessee, in May 2000.

Table 4. Work distribution and production in Publications Services

Document type	Number of documents
ORNL/TM reports	9
ORNL/CF reports	4
Other reports	5
Journal articles	6
Meeting/proceedings papers	6
Symposium/meeting materials	1
Abstracts	186
Visuals and letters	165
Newsletters and brochures	3
Newsletter/WWW articles	16
Review articles	4
Proposals/patent applications	5
Procedures (processed)	36

2.5 Quality Systems

2.5.1 Management Assessment (T. R. Jones)

An Integrated Safety Management Assessment of the Radiochemical Development Facility was completed in March.

The self-assessment of the implementation of the CTD Chemical Hygiene Plan was conducted and reported on by the Environmental Safety and Health Protection Group.

The CTD Annual Assessment Plan for CY 2000 was finalized and issued.

The Annual Summary of the CTD Self-Assessment Program report was issued.

Development of the CTD Performance Indicators and Critical Outcomes and Performance Objectives was continued.

2.5.2 Quality Assurance (G. W. Askew, G. E. Chitwood, T. R. Jones, G. Q. Kirk)

Closure packages were assembled for DOE's review and verification of corrective actions by CTD in response to the Preliminary Notice of Violation.

A draft of the CTD procedure GEN-6, Procurement of Items and Services, was prepared and several meetings held to decide on the scope and details of the procedure for implementing Price-Anderson Amendments Act requirements.

Two targets from iridium campaign 53, two from campaign 54, and three from campaign 55 were ORNL tested and inspected. Fabrication packages were assembled, reviewed, and then approved for irradiation in the High Flux Isotope Reactor (HFIR).

One iridium target from irradiation campaign 51, one target from campaign 52, and one from campaign 53 were removed from the reactor and transferred to the CTD RTS Hot Cell Facility (Radioisotope Development Laboratory), Building 3047, for final processing and shipment to the customer.

Two hydraulic-tube rabbit capsules were submitted for review, approval, and irradiation.

Activities are under way for updating drawings and the memorandum of understanding with the Research Reactors Division for the hydraulic-tube rabbit capsules.

A Deviation Request was initiated as a result of the preshipping inspection of the REDC Cave A Glove box. The glove box was shipped and is in storage at the REDC and will be receipt inspected.

A procurement specification and drawing for the Cave A Liner Disposal Container were prepared, reviewed, and issued.

2.5.3 Other Professional/Management Activities

Roger Jones attended the ASQ Energy and Environmental Division Conference entitled Management Systems Integration: Approaching the Next Frontier, held February 14–16, 2000.

Responsibility for the CTD Self-Assessment Program was transferred to the Business Management Systems Group. Terry Donaldson will provide support on a part-time basis with self-assessment activities and coordination functions.

Smart Books were put together for describing the features and status of each of CTD's nuclear facilities and provided to the UT-Battelle Transition Team.

3. COMPLIANCE RESOURCE MANAGEMENT GROUP

(T. A. Childs, A. F. Frederick, J. J. Kirkham, R. T. Murr, S. H. Shaver)

3.1 New Training Programs

During this quarter, the CTD ESH&Q Training Group accomplished the following:

- Developed and designed eight new Local E-Squad Modules via the Web for various facilities at ORNL.
- Developed and received site approval for ORNL Radiological Worker Site-Specific Training.
- Developed and implemented a new course via an automated system for Establishing Qualification Requirements.
- Developed and implemented ORNL Land Disposal Restrictions Notification/Certification Training Program.
- Developed and implemented ORNL Sanitary/Industrial Waste Training.

3.2 New Tracking System

The staff presented a tracking system of Problem Safety Summary Required Reading/Site-Specific Training to the Chemical and Energy Research Section (CERS) during their safety meeting in March. Two groups will pilot the system for 2 to 3 weeks prior to section-wide implementation.

3.3 Computer Development/Security (J. M. Cole)

The annual ORNL Workstation Self-Assessment was completed in January. Half of the division's employees were selected to complete the Web-based assessment. Results of the audit from ORNL Computing and Network Security are still forthcoming. Corrective action plans will be developed on any deficiencies found.

The division passed through the millennium and leap-year changeover without experiencing any difficulties. The division's Y2K project files have been transferred to Laboratory Records for storage.

3.4 Corrective Action/Commitment Tracking (J. M. Cole)

At the end of this reporting period, CTD was tracking 94 corrective actions/management commitments in the CTD Issues Database System (Fig. 1), as compared with 107 at the end of last quarter. This decrease is primarily due to the closure of Occupational Safety and Health Administration (OSHA) actions. The division opened 72 and closed 84 corrective actions/management commitments/OSHA actions during this report period (Fig. 2). The number of corrective actions decreased from 29 to 22. Management commitments increased from 38 to 60, due to the inclusion of Critical Outcomes tracking in the CTD Issues Database. The number of OSHA actions decreased from 40 to 12.

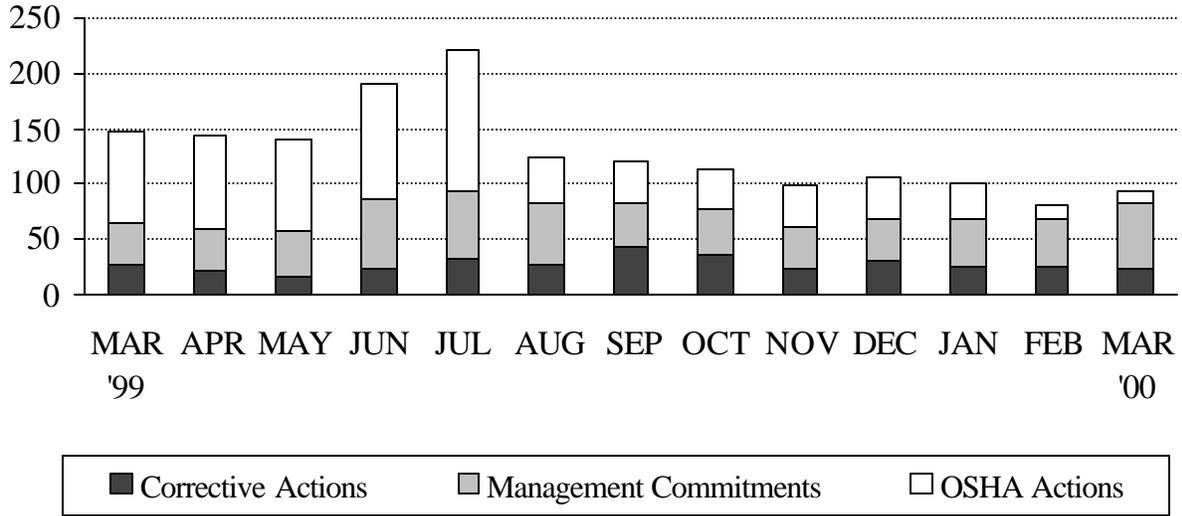


Fig. 1. Open corrective actions/management commitments for FY 2000.

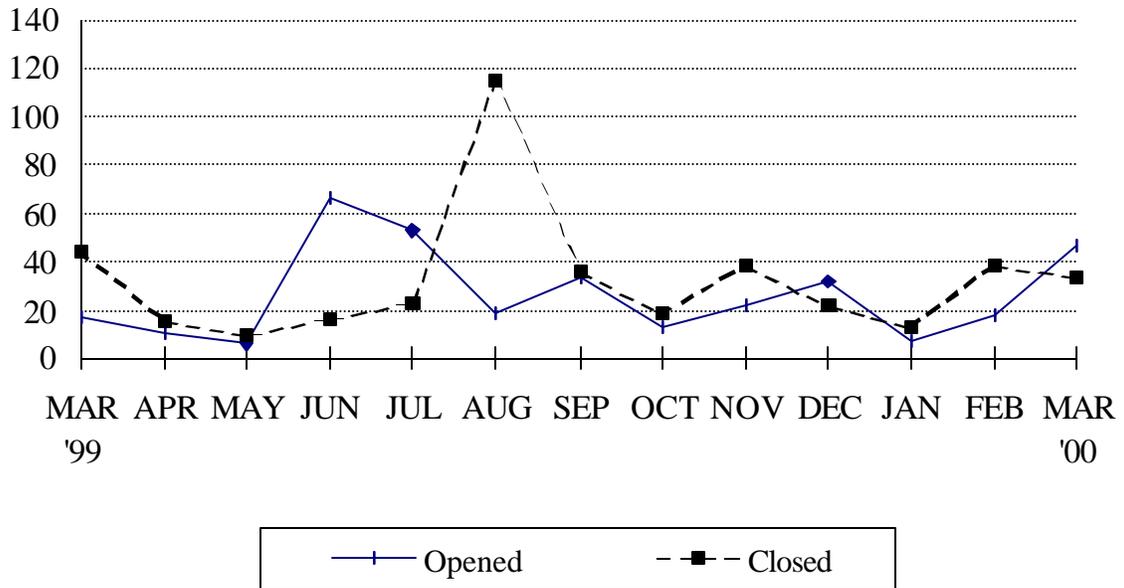


Fig. 2. Transactions for FY 2000.

3.5 Program Management/Coordination

Reviewed and revised the following training programs:

- RCRA Hazardous Waste Awareness
- Waste Certification Program—General Awareness
- No-Rad Added Training
- Nevada Test Site
- Basic Environmental Laws
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980
- Clean Water Act
- Clean Air Act
- Hazardous Waste Operations and Emergency Response (HAZWOPER) 8-h Refresher
- HAZWOPER, 24 h
- HAZWOPER, 16 h
- HAZWOPER for Supervisors
- Melton Valley Orientation
- Federal Motor Carrier
- QA Fundamentals
- Occurrence Reporting
- Principles of Accident Investigation

3.6 Self-Assessment/Compliance

- Developed Self-Assessment Action Plan for CTD Self-Assessment Program Upgrades
- Revised CTD Procedures GEN-1, GEN-2, GEN-3, GEN-4
- Performed self-assessment of CSAUP data, issues, and actions for trending
- Developed requirement units and checklist for Bldg. 3019 Self-Assessment, RTS Conduct of Operations, and Lock-out/Tag-out
- Developed CTD Tracking/Trending Process and Flowcharts
- Developed self-assessment forms, notebooks, and files
- Completed data and developed initial CTD performance indicators for 2000
- Completed Phase II evaluations and reports for CTD Integrated Safety Management System
- Reviewed laws/regulations/ORNL procedures for effect on training and compliance issues
- Identified and extracted ~2200 requirement units for the Compliance Management System Database
- Updated Self-Assessment Program on Web

3.7 Other Activities

Other activities/training accomplished during this period are as follows:

- Scheduled ~75 courses/self-exams for CERS and RDSS.
- Updated division training charts.
- Attended and received qualification from the American Red Cross to teach Standard First Aid and CPR at ORNL.
- Developed quarterly ORNL Radiological Worker Bulletin.
- Conducted the annual ORNL Shift Emergency Response Training (for 135 Shift E-Squad members).

4. ENVIRONMENTAL, SAFETY, AND HEALTH PROTECTION TEAM

4.1 Division Radiological Protection and ALARA (R. R. Shoun)

In support of the RTS, the Division Radiological Control Officer (DRCO) prepared training on “Planning Radiological Work.” This training, based upon RPP-310, was presented to personnel in a CTD facility and served to close a corrective action identified from a previous occurrence in this facility. This procedure is a primary driver for review of radiological work for As Low As Reasonably Achievable (ALARA) purposes.

A review committee was chartered by the DRCO to review the proposed placement of a glove box into service at the REDC. The committee included the DRCO, a representative from the Office of Safety and Health Protection, and a representative from the Office of Radiation Protection (ORP). The box was approved for service.

An ALARA Review was conducted relative to the replacement of a hot cell window in Building 3047. The window had been previously removed, shipped off-site for refurbishment, and returned to ORNL for replacement. The review included the DRCO, as well as personnel from ORP, Plant and Equipment, and CTD. The window has been successfully reinstalled.

The DRCO has participated as a member of the ORP-chartered committee to address DOE concerns with the bioassay program at DOE facilities nationwide. Most proposed changes recommended by the committee [and approved by Oak Ridge Operations (ORO)] have now been implemented. One significant change involves scheduling bioassay appointments based upon radionuclides present in an individual’s work area; inclusion on the Radiological Work Permit serves to schedule the necessary sampling.

The DRCO participated in the Building 4501 hot cell training by presenting an overview of the DRCO’s responsibilities, a discussion of the importance of planning radiological work, and a summary of some lessons learned with respect to personal protective equipment. More than 60 people were trained during two sessions.

4.2 Safety

ORNL implemented a new procedure entitled “ORNL Stop Work and Restart Work Program” during the fourth quarter of CY 1999. This procedure defined a somewhat more structured approach to stopping work in situations posing imminent danger situations and subsequent resumption of work. The Division Safety Officer prepared explanatory materials on this topic and made presentations at (1) a quarterly RTS safety meeting (two sessions), (2) a session at the Isotope Enrichment Facility at Y-12, and (3) an RDSS staff meeting.

4.3 Chemical Hygiene and Hazards Communication (T. V. Dinsmore)

Significant activities during the period are summarized as follows:

- Reviewed 29 Problem Safety Summaries.
- Completed and distributed the CY 2000 update of the Chemical Hygiene Plan. It is also available online.

Hazardous Materials Inventory System (HMIS)

- Updated the list of nine custodians and their alternates and corrected the HMIS and CTD databases to reflect the changes.
- Completed the annual update of the division's chemical inventory in early January 2000.

Table 5 shows that the purchase/disposal of ~2010 g and 370 mL of material was avoided.

Table 5. CTD waste minimization/hazardous material reduction for the period January 1 to March 31, 2000

Chemical needed	Found	Minimum volume/ quantity sold	Volume/ quantity needed
Silica, fumed	✓	500 g	10 g
Fluoranthene	✓	50 g	5 g
Benzo(a)pyrene	✓	100 g	10 g
Fluorene	✓	100 g	5 g
Ferric chloride, hexahydrate	✓	250 g	15 g
Ferric chloride, anhydrous	✓	500 g	15 g
3-(Trimethoxysilyl)propyl methacrylate	✓	100 g	20 g
Potassium bromate	✓	500 g	30 g
Dipicolinic acid	✓	25 g	5 g
Hydrogen peroxide	✓	400 mL	30 mL

4.4 Environment (J. M. Norman)

Resource Conservation and Recovery Act

Waste accumulation areas located throughout the division were inspected by the CTD Environmental Protection Officer during this reporting period. It was noted that several log books did not contain information related to the removal of waste by members of the ORNL Laboratory Waste Services (LWS). State guidelines require that generator records include removal dates. Division accumulation area custodians were reminded of these requirements, and the division Generator Interface representative was notified. Generator records were then updated to reflect the dates of removal. Members of LWS are now considering possible resolutions to this problem.

All areas were found to be in compliance; no violations were noted. Currently there are 56 Satellite Waste Accumulation Areas within the division.

Toxic Substance Control Act

The division's Toxic Substance Control Act areas were inspected by members of the ORNL Office of Environmental Protection during this reporting period. All areas were found to be in compliance; no violations were noted.

Industrial Waste Disposal

All bulk industrial waste receptacles under the responsibility of the division were inspected three times during the quarter. No prohibited items were found.

Transuranic (TRU) Waste Task Team

In response to changing requirements imposed by the Bechtel Jacobs Corporation (BJC) on acceptance criteria related to TRU waste, a task team composed of representatives of ORNL TRU waste-generating divisions was formed. The team recently completed a review of the Bechtel Jacobs TRU Master Waste Profiles and forwarded recommendations to BJC representatives. The suggested changes represent a continuing effort to lessen the impact of the new requirements on the generating divisions. Results of this effort will be reported when they become available.

DOE Audit of the BJC Waste Certification Program

Members of the division participated in a DOE-ORO audit of the BJC Waste Certification Program. Preliminary results of this audit indicate problems related to the movement and tracking of waste at ORNL. Resolution and corrective actions are forthcoming.

5. OTHER SECTION FUNCTIONS

5.1 Human Resources (S. L. McQuade)

Employment

During the first quarter of FY 2000, there was one voluntary quit, one employee transfer to the Energy Division, and one conversion from temporary to regular status.

The declared job vacancy in SAP will be filled effective April 1, 2000. At this time the hiring section will be transferred out of CTD and into another division.

Two declared vacancies exist in SAP—one for a summer technical intern student and the other for a summer clerical intern student.

There are a total of 32 foreign nationals in CTD. Of this number, 5 are CTD monthly employees, 20 are consultants or leased personnel, and 7 are ORISE program participants.

Table 6 summarizes the staffing level for FY 2000.

Table 6. CTD staffing activity for FY 2000

	First quarter	Second quarter
Employees		
Hourly	0	0
Weekly	72	72
Monthly	163	163
Part-time/temporary/students	<u>14</u>	<u>12</u>
Total employees	249	247
Guests		
Consultants/leased personnel	99	105
ORISE ^a program participants	<u>13</u>	<u>13</u>
Total guests	112	118
Total employees/guests	361	365

^aOak Ridge Institute for Science and Education.

5.2 Strategic Planning (J. R. Trabalka)

Section staff members, working with M. E. Reeves, revised an assessment of trends and research opportunities in biological carbon sequestration research on behalf of the LSET Directorate and briefed D. E. Reichle and M. P. Farrell on preliminary findings. Based on the feedback received, the assessment will be expanded to cover a broader area of carbon management. Once the new material has been incorporated, additional input on LSET competencies and facilities will be obtained; feedback on the overall content will also be obtained from divisions in the directorate.

Section staff members also facilitated the initial strategic planning activities for the CTD Non-Nuclear Programs Committee. The committee consists of several senior managers and staff members who coordinate division activities that do not involve radioisotopes or nuclear technologies. The committee members have completed a situation analysis, categorized potential research opportunities, drafted a mission (vision) statement for nonnuclear activities, and begun the strategic business modeling phase. In this phase, major R&D areas or programs that CTD will need to accomplish its nonnuclear missions are identified, along with the strategic thrusts and culture needed to support them, and critical success indicators are established. The results of the strategic business modeling phase are used as input for the performance audit and gap analysis phases, all of which are expected to be completed during the third quarter of FY 2000.

Work Smart Standards

A section staff member cochaired the ORNL Work Smart Standards Team for DOE Order 435.1, *Radioactive Waste Management*. The new order, which replaces Order 5820.2A (of the same name), is much more comprehensive and voluminous than its predecessor. The RDSS representative (1) assisted in the selection of team members, (2) chaired and facilitated team meetings, (3) obtained documents and background information for evaluation of key requirements, (4) scheduled presentations to the team by ORNL subject-matter experts, (5) led a subteam that assessed the relevance of high-level waste requirements to ORNL, and (6) drafted the team report (which was submitted to the ORNL Standards Team for review on December 1). The report was approved by the ORNL Standards and Confirmation Teams and was submitted for DOE-ORO approval.

Depleted Uranium Hexafluoride Program

Conversion and use or management of the 700,000 metric tons of depleted uranium (DU) stored at DOE's gaseous diffusion plants represent significant challenges. During this reporting period, section staff members served on an ORNL-Argonne National Laboratory team that developed a white paper on options and issues associated with disposal of potential DU conversion products for the DOE Office of Nuclear Energy, Science, and Technology.

DISTRIBUTION

1. L. D. Duncan
2. T. R. Jones
3. S. L. McQuade
4. R. T. Murr
5. M. K. Savage
6. J. E. Williams
7. CTD ADM DMC
8. Laboratory Records-RC

Electronic distribution to the following: J. M. Begovich, A. G. Croff, R. T. Jubin, L. E. McNeese, B. D. Patton, and members of the Research and Development Services Section of the Chemical Technology Division.