

Mr. Richard B. Bays  
Associate Commissioner  
Health Care Quality and Standards  
Texas Department of Health  
1100 West 49<sup>th</sup> Street  
Austin, TX 78756-3199

December 21, 2001

Ms. Leigh Ing  
Deputy Director  
Office of Permitting, Remediation & Registration  
Texas Natural Resource Conservation Commission  
P.O. Box 13087, Mail Code 122  
Austin, TX 78711-3087

Dear Mr. Bays and Ms. Ing:

On December 10, 2001, the Management Review Board (MRB) met to consider the proposed final Integrated Materials Performance Evaluation Program (IMPEP) report on the Texas Agreement State Program. The MRB found the Texas program adequate to protect public health and safety and compatible with the Nuclear Regulatory Commission's program.

Section 5.0, page 22, of the enclosed final report presents the IMPEP team's recommendations for the State of Texas. We received your November 16, 2001 and November 19, 2001 letters which described your staff's actions taken in response to the recommendations in the draft report. We request no additional information.

Based on the results of the current IMPEP review, the next full review will be in approximately four years.

I appreciate the courtesy and cooperation extended to the IMPEP team during the review and your support of the Radiation Control Program. I look forward to our agencies continuing to work cooperatively in the future.

Sincerely,  
***/RA by Paul Lohaus Acting For/***

Carl J. Paperiello  
Deputy Executive Director  
for Materials, Research  
and State Programs

Enclosure:  
As stated

cc: Richard Ratliff, TDH  
Susan Jablonski, TNRCC  
George FitzGerald, TNRCC  
Edgar D. Bailey, CA/MRB Liaison

bcc: Chairman Meserve  
 Commissioner Dicus  
 Commissioner Diaz  
 Commissioner McGaffigan  
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DCD (SP01)  
 PDR (YES✓)

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INTEGRATED MATERIALS PERFORMANCE EVALUATION PROGRAM  
REVIEW OF TEXAS AGREEMENT STATE PROGRAM

AUGUST 27-31, 2001

**FINAL REPORT**

U.S. Nuclear Regulatory Commission

## 1.0 INTRODUCTION

This report presents the results of the review of the Texas Agreement State program. The review was conducted during the period August 27-31, 2001, by a review team consisting of technical staff members from the Nuclear Regulatory Commission (NRC) and the Agreement States of Georgia and North Carolina. Team members are identified in Appendix A. The review was conducted in accordance with the "Implementation of the Integrated Materials Performance Evaluation Program and Rescission of a Final General Statement of Policy," published in the Federal Register on October 16, 1997, and the November 5, 1999, NRC Management Directive 5.6, "Integrated Materials Performance Evaluation Program (IMPEP)." Preliminary results of the review, which covered the period of June 29, 1997 to August 31, 2001, were discussed with Texas management on August 31, 2001.

A draft of this report was issued to Texas for factual comment on October 15, 2001. Texas sent factual comments by letters dated November 16, 2001 from Mr. Richard B. Bays, Associate Commissioner, Health Care Quality and Standards, Texas Department of Health, and November 19, 2001 from Ms. Leigh Ing, Deputy Director, Office of Permitting, Remediation, and Registration, Texas Natural Resource Conservation Commission. The Management Review Board (MRB) met on December 10, 2001 to consider the proposed final report. The MRB found the Texas radiation control program was adequate to protect public health and safety and compatible with NRC's program.

The Texas Agreement State Program is administered by two State agencies, the Texas Department of Health (the Department) and the Texas Natural Resource Conservation Commission (the Commission). Organization charts for the Department and the Commission are included as Appendix B.

The Department's Bureau of Radiation Control (the Bureau) regulates approximately 1502 specific licenses authorizing agreement materials. On July 21, 1997, the Department received regulatory authority for the 11e.(2) uranium recovery program and currently regulates three conventional uranium mills and six in-situ uranium mines. In addition to the radioactive materials program, the Department administers a laboratory program for environmental sciences under the Bureau of Laboratories.

The Commission has regulatory responsibility for low-level radioactive waste (LLRW) disposal sites and the decommissioning of former burial sites. The Commission had responsibility for the uranium recovery program until its transfer to the Department in July 1997.

The review focused on the materials program as it is carried out under the Section 274b. (of the Atomic Energy Act of 1954, as amended) Agreement between the NRC and the State of Texas.

In preparation for the review, questionnaires addressing the common and non-common performance indicators were sent to the Department and the Commission on June 8, 2001. The Commission provided a response to the questionnaire on July 30, 2001 and the Department provided a response to the questionnaire on August 9, 2001. Copies of the complete questionnaire responses from both agencies can be found on NRC's Agencywide Document Access and Management System (ADAMS) using the Accession Number ML012770379.

The review team's general approach for conduct of this review consisted of: (1) examination of Texas' responses to the questionnaire; (2) review of applicable Texas statutes and regulations; (3) analysis of quantitative information from the Department and the Commission's licensing and inspection data base; (4) technical review of selected licensing and inspection actions; (5) field accompaniments of six Texas inspectors; and (6) interviews with staff and management of both agencies to answer questions or clarify issues. The team evaluated the information that it gathered against the IMPEP performance criteria for each common and applicable non-common performance indicator and made a preliminary assessment of the radiation control program's performance.

Section 2 below discusses the Department and the Commission's actions in response to recommendations made following the previous IMPEP review. Results of the current review for the IMPEP common performance indicators are presented in Section 3. Section 4 discusses results of the applicable non-common performance indicators, and Section 5 summarizes the review team's findings and recommendations. Recommendations made by the review team are comments that relate directly to program performance by the State. A response is requested from the State to all recommendations in the final report.

## 2.0 STATUS OF ITEMS IDENTIFIED IN PREVIOUS REVIEWS

During the previous IMPEP review, which concluded on June 27, 1997, eight recommendations were made and transmitted to Dr. Patti J. Patterson, Commissioner, the Department and Dan Pearson, Executive Director, the Commission on January 26, 1999. The team's review of the current status of these recommendations is as follows:

1. The review team recommends that the State adhere to the policy of annual supervisory accompaniments of all qualified inspectors. (Section 3.4)

Current Status: During this review, the review team found that annual accompaniments were still not conducted on an annual basis for all inspectors. Four of the nine regional inspectors had not been accompanied by a supervisor since 1999. This recommendation will be incorporated in the review team's recommendation found in Section 3.2.

2. The review team recommends that all radiation detection instruments used for confirmatory surveys (field measurements) be calibrated on all ranges encountered by inspectors. (Section 3.4)

Current Status: The review team determined that the Department modified their procedures to incorporate all encountered ranges for instrument calibrations. New Cesium 137 sources have been purchased and new documentation forms have been generated. This recommendation is closed.

3. The team recommends that TNRCC vigorously pursue the changes necessary to make Texas law (statutes and regulations) compatible with those of NRC in the low-level waste (LLW) area and, if necessary, raise this issue to higher levels in the State government. (Section 4.1)

Current Status: The definition of low level radioactive waste in Section 401.004 of the Health and Safety Code was amended by the Texas legislation during their 1999 legislative session to reference the definition of low level radioactive waste in 10 CFR 61.2. The amended definition eliminates the jurisdictional gap that had created a potential orphan waste category for waste containing between 10 and 100 nanocuries per gram of transuranic radionuclides. This recommendation is closed.

4. The review team recommends that the State perform an evaluation to determine the safety significance of the issues identified by the review team pertaining to registration certificate number TX-0246-D-103-S and to identify any other issues that may exist, and re-evaluate the application, as necessary, to ensure that all pertinent safety and regulatory issues are adequately addressed. (Section 4.2.1)

Current Status: The Department evaluated the issues identified in the 1997 IMPEP report and determined that none were of safety significance. During this review, the team interviewed staff and reviewed the certificate file and concluded that each issue identified during the 1997 review was appropriately addressed. This recommendation is closed.

5. The review team recommends that the State evaluate an adequate sample of additional safety evaluations to ensure that the deficiencies identified in TX-0246-D-103-S are adequately addressed in the additional cases, and to demonstrate that this was an isolated occurrence. (Section 4.2.1)

Current Status: The Department reviewed a sample of other device evaluations for the deficiencies identified in TX-0246-D-103-S and did not identify additional deficiencies. During this review, the team did not identify the recurrence of any of the previous deficiencies. This recommendation is closed.

6. The review team recommends that the State review the issue of concurrence reviews for SS&D safety evaluations and implement procedures that require an independent technical review for all future evaluations. (Section 4.2.1)

Current Status: The Department modified their procedures for performance of SS&D safety evaluations to include a concurrence review. The review sheet for SS&D evaluations now includes a checklist for both reviewers. During this review, the team determined through the review of casework and interviews with staff that an independent technical review is being performed and appropriately documented during the concurrence review. This recommendation is closed.

7. The review team recommends that TNRCC ensure that well documented technical bases exist for the performance assessment. Sensitivity analyses could be completed to ensure that key aspects of the performance assessment analysis have been reviewed. (Section 4.3.3)

Current Status: Currently, the Commission does not have a LLRW disposal application under review. For a future application, the Commission indicated that they will use the current NRC recommendations from the Performance Assessment working group documented in NUREG-1573. This recommendation is closed.

8. The review team recommends that an action plan be developed and implemented by TDH to overcome the inspection backlog in the uranium recovery program. (Section 4.4.1)

Current Status: The Department hired additional personnel, developed new inspection forms and procedures, and completed an initial round of full inspections within a six-month period following acquisition of regulatory authority from the Commission on September 1, 1997. There are currently no overdue inspections. This recommendation is closed.

During the 1997 review, ten suggestions were made for the Department and the Commission to consider. The team determined that the Department and the Commission considered the suggestions and took appropriate actions.

### 3.0 COMMON PERFORMANCE INDICATORS

IMPEP identifies five common performance indicators to be used in reviewing both NRC Regional and Agreement State programs. These indicators are: (1) Status of Materials Inspection Program; (2) Technical Quality of Inspections; (3) Technical Staffing and Training; (4) Technical Quality of Licensing Actions; and (5) Response to Incidents and Allegations.

#### 3.1 Status of Materials Inspection Program

The team focused on four factors in reviewing the Bureau's portion of this indicator: inspection frequency, overdue inspections, initial inspections of new licenses, and timely dispatch of inspection findings to licensees. The review team's evaluation is based on the Department's questionnaire responses relative to this indicator, data gathered independently from the Department's licensing and inspection data tracking system, the examination of complete licensing and inspection casework, and interviews with managers and staff.

The team's review of the Department's inspection priorities verified that the Department's inspection frequencies for various types or groups of licenses are as frequent, or more frequent, as similar license types or groups listed in the frequency schedule in NRC Inspection Manual Chapter (IMC) 2800. The Department requires more frequent inspections for the following license categories: all type A broad scope licenses are inspected on a one year frequency compared with the NRC two year frequency for type A broad scope industrial and academic licensees; type B and C broad scope licenses are also inspected on a one year frequency compared to the NRC frequencies of three and five years respectively; portable gauge measuring systems are inspected on a two-year frequency compared to the NRC frequency of five years and general license distribution type licenses are on a four-year frequency compared to NRC's five year frequency.

In their response to the questionnaire, the Department indicated that there were a total of 44 inspections of core licensees that were completed overdue during the review period or where overdue at the time of the review. This information was verified during the inspection casework reviews and the review of the monthly generated "inspections due" lists provided to the review team. The review team noted that out of 14 inspection files examined, no other inspections were overdue other than the ones identified by the Department in the questionnaire for the current IMPEP review. The 44 overdue inspections represented 1% of the 4,402 core

inspections performed by the Department during the review period. The review team also examined seven initial inspections and noted that they were all completed within the IMC 2800 guidelines.

The timeliness of the issuance of inspection findings was also evaluated during the inspection file review. The Department has set a goal of issuing the compliance finding within 31 days of the inspection. Field office notes are expected to be sent to the Austin office within 14 days after the inspection. Findings should be issued by the Austin office to the licensee within 17 days of receiving the notes. For the 14 inspection files examined, only two of the inspection findings sent to the licensees significantly exceeded 31 days, due to the complexity of an inspection write-up and a lack of clerical assistance during the review period.

The Department had 64 current licensees granted reciprocity, of which, 37 were core licensees based on IMC 1220. The Department generally met the IMC 1220 inspection frequencies for Priority 1 licensees but did not inspect Priority 2 licensees nor Priority 3 licensees at the frequency in IMC 1220. The Department stated that reciprocity is difficult to monitor since each licensee has their own calendar year based on the day the licensee starts work in the State. The Department maintains two separate databases for tracking reciprocity licensees, one for fees and one for inspections. The review team noted that there were inconsistencies between the two databases. This issue was discussed with Department management and staff. They indicated this matter would be resolved and corrected. Due to turnover in staff and unfilled inspector positions during the review period, Department management chose to prioritize their resources to focus on the inspection of Department licensees instead of licensees working in Texas under reciprocity. The review team concluded that this approach is acceptable.

As discussed in Section 3.4, the Commission has regulatory oversight for the burial site for one active licensee. The Commission completes annual inspections of their single active licensee. At the time of the review, the inspections were up to date, and there was no backlog. This licensee also has a Department license.

Based on the IMPEP evaluation criteria, the review team recommends that Texas' performance with respect to the indicator, Status of the Materials Inspection Program, be found satisfactory.

### 3.2 Technical Quality of Inspections

The team evaluated the inspection reports, enforcement documentation, and inspection field notes and interviewed inspectors for 14 radioactive materials inspections conducted during the review period. The casework included all of the Department's materials inspectors, and covered inspections of various types as follows: industrial radiography, medical broad scope, high dose rate after loader (HDR), mobile decommissioning service, laboratory research and development, nuclear pharmacy, specific medical, and reciprocity. Appendix C lists the inspection casework files reviewed for completeness and adequacy with case-specific comments.

Based on the casework file reviews, the review team found that routine inspections covered all aspects of the licensee's radiation protection program. The inspection reports were thorough, complete, consistent, and of high quality, with sufficient documentation to ensure that licensee's performance with respect to health and safety was acceptable. The documentation adequately supported the cited violations. Exit interviews were held with appropriate licensee personnel.



Team inspections were performed when appropriate and for training purposes.

The inspection procedures utilized by the Department were consistent with the inspection guidance outlined in NRC's IMC 2800. Inspection reports are in a format that covers all inspection areas for each inspection type.

The review team found that routine inspections adequately cover the licensee's radiation protection program, included a written summary of the scope of the licensed activities, and categorize violations into severity levels which can later be used for escalated enforcement if necessary. The review team noted that the majority of violations cited are record keeping infractions and discussed the current performance-based, risk-informed inspection philosophy with the accompanied inspectors. The review team found that the inspectors observed licensed operations and interviewed personnel whenever possible, although these observations and interviews were not well documented on the inspection forms.

Inspection accompaniments are conducted by the Regional Health Physics Reviewers out of the Austin office. During the 1997 IMPEP review, it was recommended that the Department adhere to the annual supervisory accompaniment policy. The team found during this review that annual inspection accompaniments were still not being conducted for all inspectors. Four of the nine regional inspectors had not been accompanied by a supervisor since 1999. Department management was aware of this situation and is currently making arrangements to perform those missing accompaniments. The review team recommends that the State adhere to the policy of annual supervisory accompaniments of all qualified inspectors. This is a repeat recommendation from the 1997 IMPEP review.

Five Department materials inspectors were accompanied by members of the review team during the period of July 24, 2001 to August 2, 2001. Other inspectors were accompanied during the 1997 review. Two inspectors were accompanied during the inspections of industrial radiography offices and field sites, two inspectors were accompanied during inspections of medical institutions, and one inspector was accompanied during the inspection of a manufacturing facility. The facilities inspected are identified in Appendix C.

During the accompaniments, each inspector demonstrated appropriate inspection techniques and knowledge of the regulations, and conducted performance-based inspections. The inspectors were trained, well prepared for the inspection, and thorough in their audits of the licensees' radiation safety programs. Each inspector conducted effective interviews with appropriate licensee personnel, observed licensed operations, conducted confirmatory measurements, and utilized good health physics practices. The inspections were adequate to assess radiological health and safety at the licensed facilities.

The Department has an adequate number and type of survey meters to support the current inspection program as well as for responding to incidents and emergency conditions. The Department calibrates their own survey instruments at a six-month frequency. Appropriate, calibrated survey instruments such as GM meters, scintillation detectors, ion chambers and micro-R meters were observed. They also have portable multi-channel analyzers that can be used in the field at inspection sites. Air monitoring equipment is also available. Contamination wipes are sent to the State's laboratory for analysis. This laboratory, which is administrated by the Bureau of Laboratories, was visited on July 25, 2001 by an IMPEP team member and found to have adequate staffing, facilities, and instrumentation to complement and support the efforts

of the Department with regards to radioactive material. The Bureau of Laboratories maintains a mobile laboratory van for use in emergencies and emergency exercises.

The Commission uses the same procedures and inspectors for their regulatory oversight under this performance indicator as in the LLW and uranium recovery areas. Because of their limited activity in this area, the review team found their performance acceptable based on the program in place as discussed in Sections 4.3 and 4.4.

Based on the IMPEP evaluation criteria, the review team recommends that Texas' performance with respect to the indicator, Technical Quality of Inspections, be found satisfactory.

### 3.3 Technical Staffing and Training

Issues central to the evaluation of this indicator include the Department's staffing level and staff turnover, as well as the technical qualifications and training histories of the staff. To evaluate these issues, the review team examined the Department's questionnaire responses relative to this indicator, interviewed Department management and staff, reviewed job description, training records, and considered any possible workload backlogs.

The Bureau consists of two major Divisions, Division of Licensing, Registration and Standards, and Division of Compliance and Inspection. The Bureau is staffed with the Bureau Chief, two Division Directors, eight Deputy Division Directors, technical staff and administrative support staff. Currently, the Bureau has a total of 147 employees. Among them, 110 employees work at the main office in Austin and 37 employees work at 11 regional offices. With regard to the Agreement State program, the Division of Licensing, Registration and Standards has 19 technical staff positions including 11 license reviewer positions. The Division of Compliance and Inspection has 14 technical staff positions in the main office and 14 inspector positions in the regional offices. Three new positions were created under the Bureau due to the transfer of regulatory authority for the 11e.(2) uranium recovery program from the Commission.

At the time of the review, there were three vacancies reported in the materials area including two inspectors in the Region 6 office and one license reviewer in the main office. For the two regional inspector vacancies, there have been three individuals hired for these positions in the recent past, but because of their inability to perform the duties of the positions, these individuals were terminated prior to completing their probationary period. One of the positions has been open since May 31, 2000 and the second has been open since October 31, 2000. These two positions have been posted and interviews have been conducted without finding acceptable individuals. Due to the two inspector vacancies, the team noted that the program has experienced some inspection backlogs in the Region 6 office. The Department plans to post the positions with more flexible salary steps instead of starting at the lowest step in an attempt to find acceptable candidates. For the license reviewer vacancy, the position was vacated as of August 1, 2001. The Department will post a vacancy announcement in the near future.

The Department's response to the questionnaire indicated that 16 staff members left the program and the same number of staff members were hired during the review period. The qualifications of the staff were determined from the questionnaire, training records, resumes and interviews of personnel. The team found the staff well qualified from an education and experience standpoint. All have at least Bachelor's degrees in the sciences, or equivalent

training and experience. The review team noted that a qualification journal is used for each license reviewer. The journal establishes minimum training requirements for personnel assigned to perform license reviews for materials facilities. The qualification journal is based upon the requirements specified in IMC 1246 and the Final Report of the NRC/OAS Training Working Group Recommendations for Agreement State Training Programs. The technical staff including license reviewers and inspectors is expected to receive basic training courses (or equivalent) within the first two years of starting work with the Department. Inspectors are required to demonstrate competence during accompaniments by the supervisor prior to being given permission to perform inspections independently. The review team noted that a similar inspector qualification program is also in the process of being developed for each inspector.

The Department continues to be committed to staff training as needed to allow the staff to carry out the duties and functions of the radiation control program. In addition to NRC training courses, training alternatives that are less costly were also used. The review team noted that 12 staff members are attending a 5-week Basic Health Physics course offered by the Texas A&M University in 2001.

The Texas Radiation Advisory Board is composed of 18 members appointed by the Governor. The members reflect a variety of backgrounds in the use of radiation sources and also include three representatives of the public. The purpose of the Texas Radiation Advisory Board is to review and evaluate State radiation policies and programs, make recommendations and furnish technical advice to the Department, the Commission and other State agencies, review proposed rules and guidelines relating to regulation of sources of radiation, and recommend changes. Each member is required to complete a training program including conflict-of-interest laws before the member can vote, deliberate, or be counted as a member in attendance at a meeting of the Texas Radiation Advisory Board.

The review team discussed with Department management their concerns about the effect of an aging workforce and their ability to maintain a highly qualified workforce in the years to come. The aging workforce issue was also identified during an internal audit conducted by the State. The review team noted that one of the State's highest priorities is to effectively deal with potential loss of a qualified workforce because of retirement of senior staff and managers in the near future.

The Commission uses the same staff for their regulatory responsibilities under this performance indicator as in the LLW and uranium recovery areas. Because of their limited activity in this area, the review team found their performance acceptable based on the program in place as discussed in Sections 4.3 and 4.4.

Based on the IMPEP evaluation criteria, the review team recommends that Texas' performance with respect to the indicator, Technical Staffing and Training, be found satisfactory.

### 3.4 Technical Quality of Licensing Actions

This section focuses on licensing activities in the Medical and Academic Licensing Program and the Industrial Licensing Program for the Department program and licensing activities that pertain to former burial of radioactive waste under Texas regulations compatible to 10 CFR Part 20 for the Commission's program.

The review team examined completed licensing casework and interviewed the staff for 26 specific licenses from the Department and the Commission. Licensing actions were evaluated for completeness, consistency, proper isotopes and quantities used, qualifications of authorized users, adequate facilities and equipment, and operating and emergency procedures sufficient to establish the basis for licensing actions. Licenses were evaluated for overall technical quality including accuracy, appropriateness of the license, its conditions, and tie-down conditions. Casework was evaluated for timeliness; adherence to good health physics practices; reference to appropriate regulations; documentation of safety evaluation reports, product certifications or other supporting documents; consideration of enforcement history on renewals; pre-licensing visits, peer or supervisory review as indicated; and proper signature authority. The files were checked for retention of necessary documents and supporting data.

The licensing casework was selected to provide a representative sample of licensing actions that were completed during the review period. The sampling included the following types: well logging, industrial radiography, medical (institution, private practice, and broad scope), manufacturing and distribution, gauge (fixed and portable), pool irradiator, nuclear pharmacy, broad scope research and development, and broad scope academic. Licensing actions included three new licenses, eight renewals, eleven amendments, and four terminations. A list of the licenses evaluated with case-specific comments can be found in Appendix D.

Overall, the review team found that the licensing actions were thorough, complete, consistent, and of acceptable quality with health and safety issues properly addressed. License tie-down conditions were stated clearly, backed by information contained in the file, and inspectable. The licensee's compliance history was taken into account when reviewing renewal applications and amendments. Reviewers appropriately used the State's licensing guides, license templates, standard conditions and checklists. No potentially significant health and safety issues were identified.

Licensing actions in the Department are all tracked via the License Review Sheet. The sheets are generated by the clerical staff upon receipt of an action and the information entered into the database. All incoming licensing actions are then reviewed and assigned to a license reviewer by the Chief of the respective licensing program. Non-complex actions, primarily administrative amendments, are assigned to a licensing assistant for completion with close supervision by the Chief. The License Review Sheet follows the status of the licensing action throughout the process.

The State maintains original financial assurance instruments with Texas' Comptroller of Public Accounts and copies of supporting documents in the license files. The team concluded that the State handles financial assurance appropriately.

The team found that terminated licensing actions were adequately documented. In general, the files included the appropriate material transfer records and survey records. There were no performance issues identified with the handling of termination files by the Department. All major licenses are renewed on a seven-year frequency and all other licenses are renewed on a ten-year frequency. Previously, the Department allowed licensees to renew by letter with a term of five years for one renewal cycle. The Department intends to phase out the renewal by letter process and expects to complete the renewal in entirety of all licenses by the end of the year. The Department has developed a limited review procedure for renewals as a streamlining initiative. New licenses receive a complete technical review and are handled as a priority.

The Department requires authorized users and radiation safety officers for medical licenses to certify that they have familiarized themselves with the conditions of the license application and agreed to abide by the statements, representations, and procedures as submitted with the application prior to approving them in their requested role. The Department frequently noted that authorized users and radiation safety officers have failed to fulfill their role or discharge their duties properly. Often they have accepted positions in licensed facilities without fully understanding the responsibility, obligation and commitment that are required. The review team recommends this as a good practice because it encourages the authorized users and radiation safety officers to become familiar with the licensee's radiation safety program prior to accepting their duties.

The review team noted that the Department required an affidavit statement from a property owner in cases where licensed activities were to be conducted on leased property. The affidavit ensures that the property owner knows that the tenant will be storing and using radioactive material at the site. The review team recommends this as a good practice.

The Commission has regulatory responsibility for the burial of radioactive waste conducted under Texas regulations compatible to 10 CFR Part 20. Eighteen facilities have been evaluated for decommissioning by the Commission during the review period; four of these are licensed facilities and the other fourteen have been reviewed for decommissioning by rule. Of the four licenses, one has been terminated, two are being reviewed for termination and one is under review for renewal. This one license is currently in timely renewal, and the revised license application is being reviewed by staff. Of the remaining 14 facilities, nine have been decommissioned and five are currently under review for decommissioning. There were no performance issues identified by the review team during the review of the Commission's files for this portion of the Commission's program.

Based on the IMPEP evaluation criteria, the review team recommends that Texas' performance with respect to the indicator, Technical Quality of Licensing Actions, be found satisfactory.

### 3.5 Response to Incidents and Allegations

In evaluating the effectiveness of the Department's actions in responding to incidents, the review team examined the Department's response to the questionnaire relative to this indicator, evaluated selected incidents reported for Texas in the Nuclear Material Events Database (NMED) against those contained in the Department's files, and evaluated the casework and supporting documentation for 12 material incidents. A list of the incident casework examined with case-specific comments is included in Appendix E. The team also reviewed the Department's response to 11 allegations involving radioactive materials, including seven allegations referred to the Department by the NRC during the review period.

The review team discussed the Department's incident and allegation procedures, tracking system, file documentation, the State's Open Record Act, NMED, and notification of incidents to the NRC Operations Center with Department management and staff.

Responsibility for initial response and follow-up actions to material incidents and allegations rests with the Incident Investigation Program under the Division of Compliance and Inspection. Written procedures exist for handling incidents and allegations which are referred to as "complaints" by the Department. The Department procedures require on-site investigation for

each significant incident and a timely response to allegations. All incidents and allegations are tracked by a numerical identification system. In most cases, the numerical identification numbers for incidents were cross-referenced on the NMED report.

During the review period, the Department received notification of more than 500 radioactive material incidents. Since the Department does not differentiate between Agreement material and non-Agreement material incidents in the tracking system, the review team was unable to determine how many Agreement materials incidents occurred during the review period or how many incidents the Department should have reported to NRC per Office of State and Tribal Programs (STP) Procedure SA-300, Reporting Material Events.

The 12 incidents selected for review included the following categories: misadministration, overexposure, equipment failure, lost and stolen gauges, loss of radioactive material, damaged source and contamination event, and loss of administrative control. The review team found that the Department's response to incidents was generally complete and comprehensive. Initial responses were prompt and well-coordinated, and the level of effort was commensurate with the health and safety significance. Inspectors were dispatched for on-site investigations when appropriate and the Department took suitable enforcement action.

Department staff began using the NMED system in February 1998. Due to computer software problems, Department staff did not fully utilize the NMED system until November 1999. Prior to November 1999, the Department staff provided written notification of incidents to the NRC. Since that time, initial and follow-up event information has been forwarded to NRC's contractor.

Four Department staff members attended a training session on the use of an updated Microsoft Access 97/2000 version of the NMED software in July 2001.

The review team identified 178 incidents in NMED involving Agreement material for Texas during the review period. The review team compiled reporting statistics for 50 incidents including 32 significant events and 18 routine events as defined in STP Procedure [SA-300](#), "Reporting Material Events." The review team noted that only 26% of the significant events were reported to the NRC's Operations Center within 24 hours after notification of the incident to the Department. For the routine events, 78% of the events were reported to NMED more than five months after notification of the incident. It was also noted that routine and follow-up event information was not reported to NMED on a monthly basis as requested in STP Procedure SA-300. Agreement State event reporting to NRC is mandatory as detailed in a Staff Requirements Memorandum dated June 30, 1997. Failure to report event information, including the required frequency, can serve as a basis alone for a finding of "not compatible" per STP Procedure SA-200, Appendix B. Although the Department's response to incidents was adequate from a performance and health and safety standpoint, the Department's performance in not reporting in a timely fashion supports a "satisfactory with recommendations for improvement" finding.

The team discussed the issue of reporting incidents with Department management and staff responsible for NMED data entry. The review team recommends that the Department report all significant and routine events, as well as follow-up event information, to the NRC in accordance with STP Procedure SA-300, "Reporting Material Events."

The review team noted that under the Texas Medical Practice Act, effective September 1, 1999, the Department is prohibited from releasing any confidential medical event information to the

public. This had been interpreted by the Department's legal staff to include information such as patient prescribed dose, administered radionuclide and its activity. The Department has begun to redact the medical event information contained in the quarterly summary reports on incidents, allegations and enforcement actions available at the Department web site. Due to the enactment of this Act, at the time of the onsite review, NRC would also not receive the medical event information which was needed to complete NMED records from Texas. This issue was reviewed by NRC's Office of General Counsel prior to the MRB meeting and discussed with legal staff in the Department. The Department has modified its reporting practice to contain technical information regarding the medical event, but will keep the patient's identity confidential. The MRB agreed that this is an acceptable practice to achieve compatibility in reporting.

During the review period, the Department received 91 allegations involving Atomic Energy Act (AEA) material. Among them, 14 allegations were referred to the Department by the NRC. Due to time limitations on team members, the casework for seven of these allegations was reviewed. The casework for four additional allegations reported directly to the Department were also reviewed. The review team noted that for 10 of the allegations reviewed, the Department promptly responded with appropriate investigations, follow-up, and close out actions. Information about an allegation, including the identity of an alleged, is not protected under the State's Open Record Act once the file is closed. During the initial telephone contact, the alleged is advised that their anonymity cannot be guaranteed. The review team noted that the incident, allegation and enforcement actions are posted on the Department web site, as required by legislative mandate, when the case becomes final.

The eleventh allegation file reviewed was a highly complex case referred to the Department by the NRC. The team noted that the Department completed its investigation and reached the conclusion that substantiated portions of the alleged's concerns. Appropriate enforcement actions were taken. Other portions of the allegation were not substantiated. During a review of licensee documents contained in the allegation file, the review team identified that several personnel monitoring badge records, other than the alleged's, appeared to contain errors. The review team believes that the cause of these errors needs to be examined. The review team discussed this finding with Department management and staff. During the discussions, the Department acknowledged that the main focus of their investigation had been on the alleged's exposure records and it appeared to be an oversight that they did not identify the errors contained in the records of the alleged's co-workers. The Department stated that they will request additional clarifying information from the licensee in the near future. The Office of State and Tribal Programs requested that the Department provide the results of their evaluation of this information to NRC following completion of this review. NRC will follow its procedures and complete its review of any additional information received.

The Commission uses the same procedures and inspectors for their regulatory oversight under this performance indicator as in the LLW and uranium recovery areas. Because of their limited activity in this area, the review team found their performance acceptable based on the program in place as discussed in Sections 4.3 and 4.4.

Based on the IMPEP evaluation criteria and the State's November 16, 2001 response, the review team recommends that Texas' performance with respect to the indicator, Response to Incidents and Allegations, be found satisfactory.

#### 4.0 NON-COMMON PERFORMANCE INDICATORS

IMPEP identifies four non-common performance indicators to be used in reviewing Agreement State Programs: (1) Legislation and Program Elements Required for Compatibility; (2) Sealed Source and Device Evaluation Program; (3) Low-level Radioactive Waste Disposal Program; and (4) Uranium Recovery Program.

##### 4.1 Legislation and Program Elements Required for Compatibility

###### 4.1.1 Legislation

The legal authority for the Department is found in the Texas Radiation Control Act, Health and Safety Code, Chapter 401. The Department is designated as the State radiation protection agency with authority to regulate byproduct materials, source materials, and special nuclear materials in quantities not sufficient to form a critical mass. The Commission's legal authority for LLW activities is found in Chapters 401, 402 and 403 of the same Act.

All Texas agencies are subject to sunset review by the Texas Sunset Commission. The Department was last reviewed in 2000 and the Commission was reviewed in 2001. The next sunset review will be 12 years from the previous review, or in 2012 and 2013 for the Department and the Commission, respectively.

New legislation passed in 1999 that affected both the Department and the Commission. Specifically, a new provision was added to the Government Code, Chapter 2001.09 which requires Texas State agencies to assess whether the reasons for adopting each rule continue to exist and to review each rule to determine whether it is obsolete, whether it reflects the current legal and policy considerations and whether it reflects current procedures of the agency. Each rule is required to be reviewed four years from the last effective date of the rule and a notice of intent to review the rule must be published in the Texas Register.

In addition, legislation was passed in 2001 that effected the Bureau. This included: (1) a requirement to evaluate the financial qualification of all licensees; (2) authority to use the Radiation and Perpetual Care Fund to pay for removal, cleanup or remediation of radioactive materials; (3) the payment of administrative penalties into the Radiation and Perpetual Care Fund; and (4) a 5% surcharge on the annual fee for all materials licensee to maintain the Radiation and Perpetual Care Fund.

In November 1998, the Department and the Commission entered into a Memorandum of Understanding (MOU) to implement and coordinate responsibilities and define the respective duties of the two agencies in the regulation of sources of radiation to provide a consistent approach to avoid duplication and to delineate areas of separate jurisdiction. The MOU is incorporated into Section 289.101 of 25 Texas Administrative Code.

###### 4.1.2 Program Elements Required for Compatibility

The Department regulations for control of radiation are located in Title 25 of the Texas Administrative Code and apply to ionizing and non-ionizing radiation, whether emitted from radionuclides or devices. Texas requires a license for possession and use of radioactive materials, including naturally occurring and accelerator-produced radionuclides. The



Commission's regulations for control of radiation and disposal of LLRW are located in Title 30 of the Texas Administrative Code.

The review team examined the procedures used in the Department and the Commission's regulatory process and found that the public and other interested parties are offered an opportunity to comment on proposed regulations. The NRC is provided with drafts for comment. The package of draft regulations prepared by Bureau staff requires review and recommendation from the Texas Radiation Advisory Board and approval from the Department's associate and deputy commissioner. The Texas Board of Health gives final approval for the proposed or final regulations before publication in the Texas Register. Department staff indicated that the entire rule making process typically takes one year. The Commission's rule making process also requires review of the proposed rules by the Texas Radiation Advisory Board with final approval by their Commissioners. The adoption of rules by the Commission can take up to one year to adopt.

The team evaluated the Department and the Commission's responses to the questionnaire, reviewed the status of regulations required to be adopted by the State under the Commission's adequacy and compatibility policy and verified the adoption of regulations with data obtained from the STP Regulations Assessment Tracking System. Since the last IMPEP review, the Department adopted 22 regulations in three rule packages that became effective in March 1998, April 1999 and October 2000. The Commission has adopted four regulations since the last IMPEP review in rule making packages that became effective July 1998 and August 2001.

Current NRC policy requires that Agreement States adopt certain equivalent regulations or legally binding requirements no later than three years after they are effective. Neither agency has overdue regulations.

The Commission has adopted all regulations required for compatibility. The Department will need to address the following four regulations in upcoming rule makings or by adopting alternate legally binding requirements:

- "Radiological Criteria for License Termination of Uranium Recovery Facilities" 10 CFR Part 40 amendment (64 FR 17506) that became effective June 11, 1999.
- "Respiratory Protection and Controls to Restrict Internal Exposures," 10 CFR Part 20 amendment (64 FR 54543; 64 FR 55524) that became effective February 2, 2000.
- "Energy Compensation Sources for Well Logging and Other Regulatory Clarifications," 10 CFR Part 39 amendment (65 FR 20337) that became effective May 17, 2000.
- "New Dosimetry Technology," 10 CFR Parts 34, 36, and 39 amendments (65 FR 63749) that became effective January 8, 2001.

The review team noted that the Department's "two-person" rule for the conduct of industrial radiography operations in Title 25, Section 289.255(v)(7)(G) does not require the second qualified individual to observe the operations and be capable of providing immediate assistance to prevent unauthorized entry unless the radiographer trainee is operating the equipment. In this case, the radiographer trainer must maintain direct surveillance of the radiographer trainee when operating the equipment. NRC's requirement in 10 CFR 34.41(a) states that radiography

cannot be performed if only one qualified individual is present. The review team discussed this matter with the Department and they indicated that if a radiographer trainee is not present at the temporary job site, one of the two qualified radiographer and/or radiographer trainer does not need to observe radiographic operations.

The compatibility requirement for the “two-person” rule requires that the State’s regulation be “essentially identical” to the NRC’s due to trans-boundary implications (Category B). The Department stated that the current version of their “two-person” rule has been part of the Department’s regulations since 1986 and was adopted at that time along with specific training requirements. The review team concluded that the Department’s “two-person” rule is not compatible with the equivalent NRC regulation.

The review team submitted the Department’s “two-person” rule to OGC for their review. OGC determined that the Texas rule does not meet Compatibility Category B as defined in Management Directive 5.9 and thus the Texas rule is not compatible with NRC’s rule. In their detailed response to the draft IMPEP report, the Department stated that they disagree with NRC’s prescriptive interpretation of the requirement for a two-person crew and noted that their requirements more directly address the historical root causes of the large number of industrial radiography overexposures seen prior to adoption of their regulations in 1986 (see the Department’s response to the draft IMPEP report, Attached). The review team noted and the MRB concurred, that the Department presented sufficient information to warrant reconsideration of how this rule should be implemented. The review team recommends that NRC, in coordination with the Agreement States, re-evaluate the two-person rule to assess the effectiveness of the intended outcomes, including experience from past events, and propose a strategy and rule interpretation that best achieves the goal of safety.

Based on the IMPEP evaluation criteria, the review team recommends that Texas’ performance with respect to the indicator, Legislation and Program Elements Required for Compatibility, be found satisfactory.

#### 4.2 Sealed Source and Device (SS&D) Evaluation Program

In conducting this review, three sub-indicators were used to evaluate the Department’s performance regarding their SS&D Evaluation Program. These sub-indicators include: (1) Technical Quality of the Product Evaluation; (2) Technical Staffing and Training; and (3) Evaluation of Defects and Incidents Regarding SS&Ds.

In assessing the Department’s SS&D evaluation program, the review team examined information provided by the Department in response to the IMPEP questionnaire on this indicator. A review of selected new, amended, corrected, inactivated, converted and transferred SS&D evaluations, deficiency letters and supporting documents covering the review period was conducted. The review team noted the Department’s use of guidance documents and procedures, interviewed the staff, technical support professionals, and management involved in the SS&D evaluations, and verified the use of regulations and license conditions to enforce commitments made in the applications.

##### 4.2.1 Technical Quality of the Product Evaluation Program

The Department completed approximately 50 actions involving more than 25 different certificates during the review period. Ten case files, representing 18 actions, were selected for review. The certificates reviewed covered the period since last review and included work performed by all reviewers. The cross-section sampling included medical and industrial applications of both sealed sources and devices. The SS&D actions reviewed included new certificates, amendments, and inactivated certificates. With the retirement of a senior staff member in April 2001, the team included a number of SS&D evaluations performed by newer staff and issued since February 2001. The SS&D certificates issued by the Department, and evaluated by the review team, are listed with case-specific comments in Appendix F.

The selected SS&D registration certificates and case files were reviewed for accuracy, appropriateness for authorization, tie-down statements, inclusion of appropriate and useful "Limitations and Considerations of Use" to be utilized by license reviewers, and overall technical quality. The casework was evaluated for timeliness, adherence to good radiation safety practices, acceptable engineering practices, reference to appropriate regulations, evaluation of safety evaluation reports, manufacturing Quality Assurance/Quality Control, supporting documents, peer and supervisory review as indicated, and proper signature authority. The files were checked for retention of necessary documents and other supporting data.

Analysis of the casework and interviews with staff confirmed that the Department generally follows the recommended guidance from the NRC SS&D training workshops and two Texas regulatory guides ("Guide for Applications for Evaluation of Sealed Sources of Radioactive Material" and "Guide for Applications for Evaluation of Devices Containing Radioactive Material") that provide information comparable to NUREG-1556, Volume 3, issued in July 1998. The Department has also created template documents for use by the SS&D evaluation staff. All applicable and pertinent American National Standards Institute standards, NUREG-1556 Series, NRC or Texas Regulatory Guides, and applicable references were confirmed to be available and were used appropriately in performing the SS&D reviews. In reviewing emergent technology related products and new applications, the Department performed evaluations based on sound conservative assumptions to ensure public health and safety and also sought the input from other licensing jurisdictions that have experience with similar products. Appropriate review checklists were used to assure that all relevant materials were submitted and reviewed. The checklists are retained in the case files. Registrations clearly summarized the product evaluation and provided license reviewers with adequate information in the "Limitations and Considerations of Use" section on areas requiring additional attention to license the possession, use, and distribution of the products. The review team identified a few errors that were present in multiple files, but these were of an editorial nature and did not affect the technical quality of the evaluation itself. The team determined that product evaluations were thorough, complete, consistent, of acceptable technical quality, and adequately addressed the integrity of the products during use and in the event of likely accidents.

The review team discussed a few general issues with Department staff, including the need to use the appropriate template, and the need to utilize dual units and include a percent error on maximum activity as indicated in the Department's checklist in order to foster national consistency. The Department agreed with the need to include these issues and will incorporate them.

#### 4.2.2 Technical Staffing and Training

SS&D evaluation responsibilities are distributed among the license review staff. The evaluation staff currently consists of a lead license reviewer (0.4 FTE) and 5 secondary reviewers (0.05 FTE each). At the time of the review, one secondary reviewer position was vacant (date of vacancy was August 1, 2001). During the review period, the Department lost one senior SS&D staff member to retirement (effective April 1, 2001), and had one license reviewer complete the SS&D workshop in CY2001. Additionally, the Department has two license reviewers going through training for SS&D evaluation; they are scheduled to attend the SS&D workshop in CY2002.

New staff members develop SS&D evaluation experience by working with senior members on evaluations, sometimes signing as a second concurrence signature, then by performing concurrence reviews by themselves, and finally by performing the initial reviews on SS&D applications. Assignment of casework is determined by the SS&D supervisor, with most staff specializing in either industrial or medical.

The review team examined the training and experience documentation of the staff and management involved in the evaluation program. The review team noted a blend of senior and junior reviewers and a schedule for training new staff. The educational qualifications for the current staff were evaluated and were found adequate.

#### 4.2.3 Evaluation of Defects and Incidents Regarding SS&Ds

No safety significant or generic incidents, issues, or defects related to SS&D issues were reported concerning the devices registered by the Department during the review period. The review team also verified that there were no reported incidents through discussions with the SS&D reviewers and a review of the NMED database.

No incidents were identified that were related to any malfunctioning devices or products considered during this review.

Based on the IMPEP evaluation criteria, the review team recommends that Texas' performance with respect to the indicator, Sealed Source and Device Evaluation Program, be found satisfactory.

#### 4.3 Low-level Radioactive Waste (LLRW) Disposal Program

In conducting this review, five sub-indicators were used to evaluate the Program's performance regarding the LLRW disposal program. These sub-indicators include: (1) Status of LLRW Disposal Inspection Program; (2) Technical Quality of Inspections; (3) Technical Staffing and Training; (4) Technical Quality of Licensing Actions; and (5) Response to Incidents and Allegations. The results of the LLRW disposal program review will be discussed under each of these sub-indicators.

In 1981, the Texas Legislature created the Texas LLRW Disposal Authority (TLLRWDA) for the purpose of siting, developing, and operating an LLRW disposal facility. Since 1993, the Commission has the authority to regulate disposal of radioactive material. Within the Commission, the LLRW program is administered by the Radioactive Material Licensing Team

within the Industrial & Hazardous Waste Division. In 1992, TLLRWDA submitted a license application for review. The Commission completed its review on March 26, 1996, and a draft, proposed license was developed. On July 15, 1998, the State Office of Administrative Hearings determined that the applicant failed to establish adequacy in the areas of tectonics and socioeconomic. Subsequently, the Commission issued an Order on October 27, 1998, denying the license application because the applicant had not demonstrated that the site complied with 30 TAC 336.715 and 336.728(i). In September 1999, the functions of TLLRWDA were transferred to the Commission.

Currently, the Commission does not have a LLRW disposal application under review. Under Texas regulations, the State is responsible for siting an LLRW disposal facility, and private entities do not have the authority to propose a commercial LLRW disposal facility. These regulations were not changed during the 2001 legislative session.

#### 4.3.1 Status of LLRW Disposal Inspection

At the time of the review, the Commission was in the process of developing inspection procedures for the proposed Sierra Blanca site. These procedures would be finalized, if an application is received. Since the Commission does not have an application, this program sub-indicator was not reviewed.

#### 4.3.2 Technical Quality of Inspections

Since the Commission does not have an LLRW facility, this program sub-indicator is not applicable.

#### 4.3.3 Technical Staffing and Training

Since the last IMPEP review, the number of Commission and contractor staff supporting the LLRW program has decreased because there is no application under review. A few staff members have retired, and most staff members have transferred to other programs within the Texas government. There are currently six core technical staff members supporting the LLRW program in the areas of geology and health physics. All technical staff have bachelors degrees or above. Commission management indicated that staffing would be increased if an application was submitted. This could include utilizing staff members that had transferred to other programs. In addition, the manager indicated that additional support by contractors would be used.

#### 4.3.4 Technical Quality of Licensing Actions

The Commission utilizes licensing guides including the following: (1) "Standard Review Plan for the Review of a License Application for a LLRW Disposal Facility," NUREG-1200; (2) "Environmental Standard Review Plan for the Review of a License Application for a LLRW Disposal Facility," NUREG-1300; (3) "Standard Format and Content of a License Application for a LLRW Disposal Facility," NUREG-1199; (4) "Review Process for a LLRW Disposal License Application under the LLRW Policy Amendments Act," NUREG 1274; and (5) "Standard Format and Content of Environmental Reports for Near-surface Disposal of Radioactive Waste," Regulatory Guide 4.18. The Commission was also aware of a technical report entitled "A Performance Assessment Methodology for LLRW Disposal Facilities: Recommendations of

NRC's Performance Assessment Working Group," NUREG-1573, that was published in October 2000. This document includes suggestions on performing sensitivity analyses in reviewing performance assessments. The Commission indicated that they would also use this document as appropriate in evaluating any future application.

#### 4.3.5 Response to Incidents and Allegations

There were no reported incidents, or allegations of safety concerns with regards to the LLRW program.

Based on the IMPEP evaluation criteria, the review team recommends that Texas' performance with respect to the indicator, LLRW Disposal Program, be found satisfactory.

#### 4.4 Uranium Recovery Program

In conducting this review, five sub-indicators were used to evaluate the Program's performance regarding the uranium recovery program. These sub-indicators include: (1) Status of Uranium Recovery Inspection Program; (2) Technical Quality of Inspections; (3) Technical Staffing and Training; (4) Technical Quality of Licensing Actions; and (5) Response to Incidents and Allegations. The results of the uranium recovery program review will be discussed under each of these sub-indicators.

In 1993, jurisdiction over uranium recovery activities was transferred to the Commission from the Department. In 1997, jurisdiction was transferred back to the Department from the Commission. Under the MOU (see Section 4.1.1) between the two agencies regarding in-situ uranium mining, the Department has primary responsibility for the licensing and enforcement activities for aboveground process plant facilities, including the review of the design, construction, operation, record keeping, maintenance, and decommissioning, decontamination, and surface reclamation. The Commission has primary responsibility for the permitting and enforcement activities for all wells permitted by the underground injection control program, wellhead assemblies, and groundwater monitoring requirements. Both agencies are responsible for the review, permitting, licensing, and enforcement activities for fluid holding ponds. The Department now has the responsibility for the licensing and reclamation of conventional uranium mill facilities.

At the time of the review, Texas had three conventional mill licenses (three sites currently under reclamation, but substantially finished with construction activities), six in-situ licenses (five sites currently in restoration), and one new application under review. Two in-situ licenses have been terminated in the last four years.

##### 4.4.1 Status of Uranium Recovery Inspection Program

The inspection program for both conventional and in-situ uranium facilities has set inspection priorities at one year frequency, consistent with IMC 2800 and IMC 2801. Some inspections are conducted more frequently (e.g., every six months) when escalated enforcement actions are warranted. Currently, there are no overdue inspections.

At the time of transfer of program responsibilities on September 1, 1997, an inspection backlog existed. The Department developed and implemented an action plan to overcome the

inspection backlog which included the hiring of additional personnel, developed new inspection forms and procedures, and completed an initial complete round of inspections within a six-month period.

#### 4.4.2 Technical Quality of Inspections

In reviewing this sub-indicator, the review team examined inspection files, inspection reports, and enforcement documentation. These reviews indicated that inspections adequately covered the scope, completeness, and technical accuracy to determine compliance with regulations, license conditions, and available guidance. Appropriate enforcement actions were taken both by the Department and the Commission given the scope of the violations noted. The inspections were thorough and the violations identified were addressed by the licensee. The team also determined that supervisory inspection accompaniments are performed annually, in accordance with written procedures. Appendix C lists the inspection casework files reviewed for completeness and adequacy.

A team member accompanied a Department inspector to the Cogema in-situ facility on August 21, 2001. During the accompaniment, the inspector demonstrated appropriate inspection techniques and knowledge of the regulations, and conducted a performance-based inspection. The inspector was trained, well prepared for the inspection, and thorough in the audit of the licensee's radiation safety programs. The inspector conducted effective interviews with appropriate licensee personnel, observed licensed operations, conducted confirmatory measurements, and utilized good health physics practices.

#### 4.4.3 Technical Staffing and Training

The Inspection and Compliance Team in the Commission performs inspections at in-situ facilities consistent with the scope and responsibility outlined in the MOU and consists of a team leader and a health physicist. The Uranium Inspection Project Team in the Department performs inspections at in-situ facilities and consists of a project leader and an inspector with extensive experience as a Radiation Safety Officer at a licensed uranium recovery facility. The review team examined the education, training, and experience of the inspection staff members for the Commission and the Department and found that the qualifications of the technical staff and supervisors are commensurate with the expertise identified as necessary to regulate in-situ uranium recovery activities.

Licensing activities in the Department for conventional uranium mills are conducted by the Uranium/NORM Licensing Program, consisting of a program chief and several technical reviewers trained in various technical disciplines. The review team examined the training and qualifications of the personnel assigned to review reclamation plans for conventional uranium recovery facilities and interviewed Department staff. The team believes that the performance of the Department staff will be enhanced with additional training in the areas of surface water hydrology, erosion protection design, groundwater modeling, and geotechnical engineering. The Department did not have a specific training plan that addressed the necessary training for the review of reclamation plans at conventional uranium mills. The review team discussed the desirability for development and implementation of a training plan by the Department to assure that technical staff are sufficiently trained in specific technical areas related to review of reclamation plans at conventional uranium mills.

#### 4.4.4 Technical Quality of Licensing Actions

The team examined both agencies files and documentation related to licensing of a proposed in-situ facility, license amendment files, and other licensing documentation. Based on these reviews, the team concluded that licensing actions were appropriate and that license conditions were clear and well-written. Requirements associated with these conditions were based on a need to meet regulations and to protect health and safety. Appendix D lists the licensing files reviewed for completeness and adequacy.

The team attempted to evaluate the State's review and documentation of reclamation plans at three conventional uranium mill sites in South Texas: (1) Conoco-Conquista Project; (2) Rio Grand Resources-Panna Maria Project; and (3) Exxon-Ray Point Project. There was apparently no documentation of the Commission's review of the reclamation plans in the files when they were transferred to the Department in 1997. The lack of documentation poses a major issue to the Department since: (1) Section 274(c) of the AEA requires that, before a license can be terminated at a conventional uranium mill, an Agreement State must determine that all applicable standards and regulations have been met; and (2) NRC must concur in the State's determination that the standards and requirements have been met, based on a review of the State's bases for making such a determination. The review team recommends that the Department prepare necessary supporting documentation identifying the bases for the licensing actions associated with reclamation plans for the three conventional mills.

The Department is participating in the current revision of guidance for license termination, STP Procedure SA-900, "Termination of Uranium Milling Licenses in Agreement States," by an NRC/Agreement State working group. The review team discussed these revisions and the Department plans to utilize SA-900 once the revised guidance is finalized by NRC.

#### 4.4.5 Response to Incidents and Allegations

During the review period, several minor incidents, such as on-site pipe leaks, were reported. The Department followed up on these incidents and discussed their findings in inspection reports. Several allegations were investigated, including involvement of both the Commission and the Department. Review of the files indicated that the evaluations and the actions taken by the State were timely and satisfactory.

Based on the IMPEP evaluation criteria, the review team recommends that Texas' performance with respect to the indicator, Uranium Recovery Program, be found satisfactory.

### 5.0 SUMMARY

As noted in Sections 3 and 4 above, the review team found Texas' performance to be satisfactory for all nine performance indicators. Accordingly, the review team recommended and the MRB concurred in finding the Texas Agreement State program to be adequate and compatible with NRC's program. Based on the results of the current IMPEP review, the review team recommends that the next full review should be in approximately four years.

Below are the recommendations, as mentioned earlier in the report, for evaluation and implementation, as appropriate, by the State.



## RECOMMENDATIONS FOR THE STATE:

1. The review team recommends that the Department adhere to the policy of annual supervisory accompaniments of all qualified inspectors. (Section 3.2)
2. The review team recommends that the Department report all significant and routine events as well as follow-up event information to the NRC in accordance with the STP Procedure SA-300, "Reporting Material Events." (Section 3.5)
3. The review team recommends that the Department prepare necessary supporting documentation identifying the bases for the licensing actions associated with reclamation plans for the three conventional mills. (Section 4.4.4)

## RECOMMENDATIONS FOR THE NRC:

1. The review team recommends that NRC, in coordination with the Agreement States, re-evaluate the two-person rule to assess the effectiveness of the intended outcomes, including experience from past events, and propose a strategy and rule interpretation that best achieves the goal of safety. (Section 4.1.2)

## GOOD PRACTICES

1. The Department requires authorized users and radiation safety officers for medical licenses to certify that they have familiarized themselves with the conditions of the license application and agreed to abide by the statements, representations, and procedures as submitted with the application prior to approving them in their requested role. (Section 3.4)
2. The Department requires an affidavit statement from a property owner in cases where licensed activities were to be conducted on leased property to ensure that the property owner know that the tenant will be storing and using radioactive material at the site. (Section 3.4)

## LIST OF APPENDICES AND ATTACHMENTS

Appendix A	IMPEP Review Team Members
Appendix B	Texas Organization Charts
Appendix C	Inspection Casework Reviews
Appendix D	License Casework Reviews
Appendix E	Incident Casework Reviews
Appendix F	Sealed Source & Device Casework Reviews
Attachments	Letter dated November 16, 2001 from Mr. Richard B. Bays, Associate Commissioner, Health Care Quality and Standards, Texas Department of Health (ML013250497), and letter dated November 19, 2001 from Ms. Leigh Ing, Deputy Director, Office of Permitting, Remediation, and Registration, Texas Natural Resource Conservation Commission (ML013240321)

## APPENDIX A

### IMPEP REVIEW TEAM MEMBERS

<b>Name</b>	<b>Area of Responsibility</b>
Duncan White, Region I	Team Leader Legislation and Program Elements Required for Compatibility Inspection Accompaniments
Vivian Campbell, Region IV	Technical Quality of Licensing Actions
Lee Cox, North Carolina	Status of Materials Inspection Program Technical Quality of Inspections Inspection Accompaniments
Tim Harris, NMSS	Technical Quality of Licensing Actions LLRW Disposal Program
Kevin Hsueh, STP	Technical Staffing and Training Response to Incidents and Allegations
Eric Jameson, Georgia	Sealed Source and Device Evaluation Program
Ted Johnson, NMSS	Uranium Recovery Program Inspection Accompaniment

APPENDIX B

TEXAS

DEPARTMENT OF HEALTH

AND

TEXAS NATURAL RESOURCE

CONSERVATION COMMISSION

ORGANIZATION CHARTS

(ML012770379)

As Budgeted - 7D775  
May 2001

**Bureau of Radiation  
Control  
Bureau Office**

Bureau Chief (Director II) - 001  
(Richard A. Ratliff, P.E.)  
Program Specialist VI - 002  
(Margaret S. Henderson)  
Administrative Technician III - 050  
(Doris F. McCormick)

**Bureau Automation  
Networking and  
Information Office**

Systems Analyst V - 003  
(Weizhen S. Bao)

**Automation  
Networking  
Program**

Systems Analyst IV - 006  
(Stephanic B. Herbert)  
Network Specialist III - 008  
(Cheryl Schuster)  
Systems Support Specialist III - 030  
(Juanita Molina)

**Public Information  
and  
Training Program**

Information Specialist IV - 005  
(Marilyn F. Kelso)  
Information Specialist II - 011  
(Julie L. Davis)

**Bureau  
Administrative  
Office**

Accountant VI - 004  
(Linda B. Volek)

**Records  
Maintenance  
Program**

Program Administrator III - 019  
(Chrissie L. Toungate)  
Administrative Technician III - 052  
(Brinda L. Staton)  
Micrographics Technician II - 055  
(Clydene Gage)  
Clerk IV - 063  
(Vickie L. Bunton)  
Clerk IV - 067  
(Shelley M. Kasper)  
Clerk IV - 069  
(Kathleen E. McMahan)

**Accounting and  
Administrative  
Support Program**

Accountant V - 017  
(Mary A. Halcy)  
Accountant III - 020  
(Mary June Sanders)  
Purchaser III - 021  
(Albert L. Purdy)  
Accountant III - 023  
(Tami L. Maxwell)  
Clerk IV - 059  
(John M. Sheffield)  
Staff Services Officer II - 018  
(Carolyn J. Dunlap)  
Administrative Technician III - 022  
(Susie J. Spears)  
Clerk III - 068  
(David Swain)

As Budgeted - 7D776  
May 2001

**Division of Licensing,  
Registration and Standards  
Director I - 001  
(Ruth E. McBurney, C.H.P.)**

Administrative Technician II - 188  
(Tracie G. Miller)

**Deputy Director, Registration  
Manager II - 040  
(Deborah L. Borden)**

Word Processing Operator III - 228  
Barbara E. Banks  
Word Processing Operator III - 241  
(Vacant)  
Word Processing Operator III - 262  
(Donna K. Howell)  
Word Processing Operator III - 260  
(Karen Banks)

**Medical and Academic  
Registration Program  
NRS V - 043  
(Patricia M. Parma)**

NRS III - 150  
(Sharon H. Doyle)  
NRS I - 184  
(Misty Regina Garwood)

**Mammography Certification  
Program  
NRS V - 054  
(Josephine S. Turkette)**

NRS IV - 044  
(Kimberly R. Floyd)

**Mammography Accreditation  
Program  
NRS V - 047  
(Kaye J. Goss-Terry)**

**Industrial X-Ray  
and Nonionizing  
Registration Program  
NRS V - 045  
(Latischa M. Merritt)**

NRS IV - 083  
(Shannon K. Dove-Edson)  
NRS I - 183  
(Vacant)

**Deputy Director, Licensing  
Manager II - 009  
(Peter H. Myers)**

Administrative Technician II - 187  
(Theresa A. Calloway)  
Word Processing Operator III - 227  
(Sherri L. Cogburn)  
Word Processing Operator III - 242  
(Inger L. Peyton)  
Word Processing Operator III - 243  
(Kathleen E. Martin)  
Word Processing Operator III - 245  
(Keith M. Smith)

**Medical and Academic  
Licensing Program  
NRS VI - 041  
(Danny Ray Jisha)**

NRS V - 048  
(David M. Wood)  
NRS V - 053  
(Tim R. Schley)  
NRS IV - 082  
(James S. Kcc)

**Industrial Licensing Program  
NRS VI - 011  
(David B. Fogle)**

NRS V - 046  
(William P. Stringfellow)  
NRS V - 049  
(Barbara J. Taylor)

**Special Licensing Programs  
NRS VI - 008  
(Phillip E. Shaver)**

NRS IV - 084  
(William G. Corbin)

**Uranium Licensing Program  
NRS VI - 013  
(Eugene F. Forrer)**

**Advanced Technology  
Licensing Program  
NRS VI - 010  
(Vacant)**

**Deputy Director, Standards  
and Special Programs  
Manager II - 012  
(Cynthia C. Cardwell)**

NRS V - 051  
(Sonia I. Simmons)  
NRS V - 099  
(Monica P. Gonzalez)  
Program Specialist I - 100  
(Ronda A. Sanders)  
Word Processing Operator III - 186  
(Elva Ramirez)

**Standards Development  
Program  
NRS VI - 015  
(Catherine M. Fontaine)**

**Industrial Radiographer  
Certification and Legal  
Actions Programs  
NRS V - 042  
(Janalee K. Endahl)**

**Deputy Director  
Technical Assessments  
Manager II - 014  
(Gary Lee Smith, Ph.D.)**

**Geological Assessments  
Program  
Geologist V - 017  
(Bruce Calder)**

**Civil Engineering  
Assessments Program  
Engineer V - 039  
(George A. Gonzalez, Jr.)**

**Engineering  
Assessments Program  
Engineer V - 019  
(Charles R. McLendon, III)**

NRS - Natural Resources Specialist

As Budgeted - 7D777  
May 2001

**Escalated Enforcement  
Program**

NRS VI - 011  
(R. Ricardo Munoz)  
Administrative Tech. IV - 090  
(Hazel C. McGuire)  
NRS VI - 019  
(Quincy M. Wickson)

**DIVISION OF  
COMPLIANCE AND  
INSPECTION  
Director I - 001  
(Arthur C. Tate)**

**Pantex Coop Agreement  
Special Project,  
Manager I - 005  
(Joseph A. Martillotti)**

Staff Services Officer I - 083  
(Kailey Alyssa Barnett)

**Deputy Director,  
Radioactive Material  
Inspection  
Manager II - 050  
(William A. Silva)**

Word Processing Operator III - 125  
(Vacant)  
Word Processing Operator III - 128  
Teri C. Crider

**Radioactive Material  
Inspection Program**

NRS VI - 014  
(Robert L. Green, Jr.)  
NRS VI - 015  
(Michael L. Dunn)  
NRS VI - 055  
(Kitty Emerson)

**Special Inspections NORM  
Program  
NRS VI - 054  
(Eric N. Skotak)**

**Deputy Director  
Environmental Monitoring  
& Special Programs  
Manager II - 017  
(Ruben K. Cortez)**

NRS VI - 022  
(Robin A. Cooksey)  
NRS V - 060  
(Martin B. Utley)  
NRS IV - 075  
(Terry Marshall Horan)  
NRS IV - 074  
(Carol Ann Leitzel)  
Administrative Technician III - 100  
(Sharon J. Farris)

**Deputy Director,  
Emergency Response &  
Investigation  
Manager II - 051  
(Robert E. Free)**

Word Processing Operator III - 123  
(Kimberly R. Bradshaw)

**Radiological Emergency  
Preparedness Program**

NRS VI - 021  
(John E. Rawlston)  
NRS VI - 016  
(Scott D. Flowerday)  
NRS VI - 020  
(Gary L. Froemsdorf)  
NRS VI - 013  
(Miklon P. Rutherford)  
NRS IV - 066  
(James C. Kee)  
NRS V - 067  
(Christopher Amaro)  
NRS IV - 115  
(Kristianne E. Gear)  
NRS IV - 116  
(John H. Bush)  
NRS IV - 117  
(David E. Fehrenkamp)

**Incident Investigation  
Program**

NRS VI - 018  
(Bradley W. Caskey)  
NRS VI - 052  
(Helen D. Watkins)  
NRS VI - 012  
(James H. Ogden, Jr.)

**Deputy Director, X-Ray  
& Nonionizing  
Inspection  
Manager II - 010  
(Thomas C. Cardwell)**

Administrative Technician III - 126  
(Georgia Y. Stewart)  
Word Processing Operator III - 152  
(Sharon L. DeVillar)  
Word Processing Operator III - 176  
(Rosalie M. Lefner)

**X-Ray Review Program**

NRS V - 057  
(June R. Ayers)  
NRS V - 058  
(Jacqueline P. Carter)  
NRS V - 059  
(Jack E. England)

**Mammography Review  
Program**

NRS V - 065  
(Jerry S. Cogburn)  
Word Processing Operator III - 124  
(Rick L. Watts)  
NRS V - 064  
(Vacant)

NRS - Natural Resources Specialist

As Budgeted August 2001

**Division of Compliance and Inspection**

**Radioactive Material Inspection**

**Regional Inspection Program**

- Region 1 - 2Q777  
NRS VI - 001  
(Robert O. Adcock, P.E.)
- Region 2 - 2T777  
NRS V - 010  
(Charles C LaSalle, P.E.)
- Region 3 - 2T777  
NRS VI - 002  
(Carlton R. Shirley)
- Region 4 - 2V777  
NRS V - 052  
(Patricia M. Zuclich)
- Region 5 - 2S777  
NRS VI - 010  
(Steven Fernandez)
- Region 6 - 2S777  
NRS V - 011  
(James L. Thompson, Jr.)
- Region 7 - 2P777  
NRS VI - 010  
(David J. Smith)
- Region 8 - 2U777  
NRS V - 040  
(Vacant)
- Region 9 - 2R777  
NRS V - 066  
(Lisa C. Clark)
- Region 10 - 2R777  
NRS VI - 010  
(Clarence W. Dittman)
- Region 11 - 2W777  
NRS VI - 010  
(Roger Winkelmann)
- Region 12 - 2R777  
NRS VI - 010  
(Hazel I. Casares)
- Region 13 - 2W777  
NRS VI - 010  
(Javier D. Charles)

**X-Ray and Nonionizing Inspection**

**Regional Inspection Program**

- Region 1 - 2Q777  
NRS IV - 026  
(Timothy F. Gibson)
- Region 3 - 2T777  
NRS VI - 011  
(Leanne R. Myers)
- Region 4 - 2V777  
NRS V - 012  
(Judy K. Koch)
- Region 5 - 2S777  
NRS IV - 078  
(Royce C. Harmon)
- Region 6 - 2S777  
NRS IV - 077  
(Sarah N. Maupin)
- Region 7 - 2P777  
NRS IV - 079  
(Norman Robinson)
- Region 8 - 2U777  
NRS IV - 080  
(Gary D. Sanders)
- Region 9 - 2R777  
NRS IV - 081  
(Laurie A. Cochran)
- Region 10 - 2R777  
Administrative Technician II - 0152  
(Shelley F. Lenz)
- Region 11 - 2W777  
NRS IV - 050  
(Deborah D. Wilson)
- Region 12 - 2R777  
NRS IV - 102  
(Christine K. Sanchez)
- Region 13 - 2W777  
NRS V - 012  
(Dorothy J. Douglas)
- Region 14 - 2W777  
NRS IV - 099  
(Billy C. Moton)
- Region 15 - 2W777  
NRS IV - 101  
(Beverly Ann Hanna)
- Region 16 - 2W777  
NRS IV - 103  
(Debra J. Takacs)
- Region 17 - 2W777  
NRS IV - 104  
(Kathy A. Coleman)
- Region 18 - 2W777  
Administrative Technician I - 160  
(Iammie Williams)
- Region 19 - 2W777  
NRS V - 030  
(Sabra L. Pope)
- Region 20 - 2U777  
NRS IV - 050  
(Lisa R. Brudigan)
- Region 21 - 2U777  
NRS V - 050  
(Richard Morcland)
- Region 22 - 2R777  
NRS IV - 100  
(Tina S. Munson)
- Region 23 - 2R777  
NRS IV - 001  
(Pamela J. Doty)
- Region 24 - 2R777  
NRS IV - 030  
(Samuel Mendoza)
- Region 25 - 2W777  
NRS IV - 050  
(Antonio Elizondo)

**Emergency Response and Investigation**

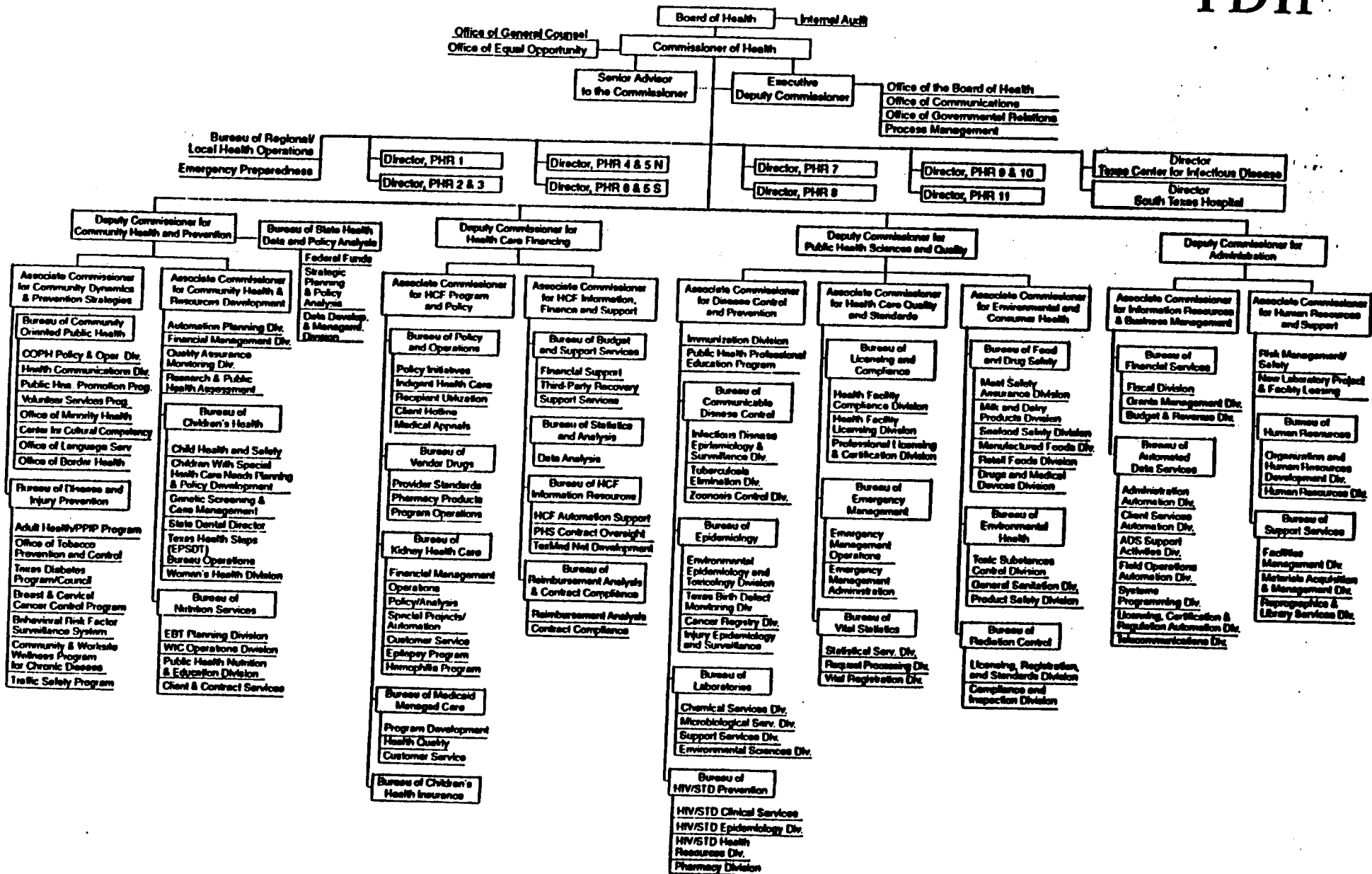
**Incident Investigation Program**

**Radiological Emergency Preparedness Program**

**Environmental Monitoring and Special Programs**



**Texas Department of Health  
Organizational Chart  
February 1999  
D-12**

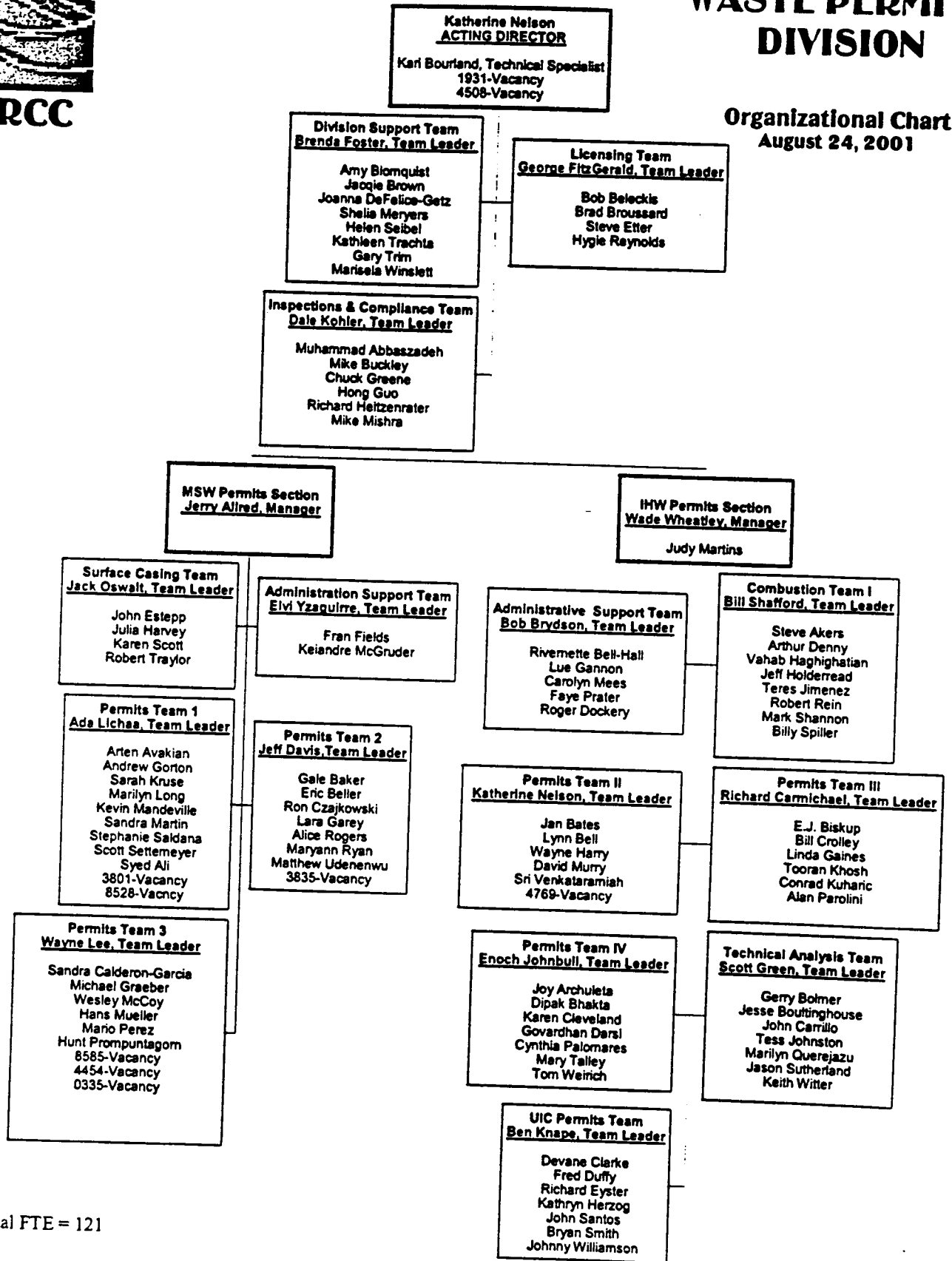




**TNRCC**

# WASTE PERMITS DIVISION

**Organizational Chart  
August 24, 2001**



Total FTE = 121



## Texas Department of Health

Eduardo J. Sanchez, M.D., M.P.H.  
Commissioner of Health

1100 West 49th Street  
Austin, Texas 78756-3189  
1-888-963-7111

Radiation Control  
(512) 834-6688

Gary R. Bego  
Chief Operating Officer

Charles E. Bell, M.D.  
Executive Deputy Commissioner

November 16, 2001

Paul H. Lohaus, Director  
Office of State and Tribal Programs  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Lohaus:

Enclosed are the Texas Department of Health, Bureau of Radiation Control responses to the recommendations listed in the draft report of the results of the Texas Integrated Materials Performance Evaluation Program (IMPEP).

We appreciate the IMPEP process and the opportunity to respond to the review team's recommendations. We look forward to participating in the meeting of the Management Review Board on December 10, 2001. If you have any questions, please contact Richard Ratliff at (512)834-6688 or [Richard.Ratliff@tdh.state.tx.us](mailto:Richard.Ratliff@tdh.state.tx.us).

Sincerely,

Richard Bays, Associate Commissioner  
Consumer Health Protection

Enclosures

**Texas Department of Health  
IMPEP Recommendations and Responses**

**1. Recommendation**

The review team recommends that the Department adhere to the policy of annual supervisory accompaniments of all qualified inspectors. (Section 3.2)

**1. Response**

The Deputy Director, Radioactive Materials Compliance and Inspection, is presently using a database program for tracking inspector training, both completed and needed, and annual accompaniments. The Regional Health Physics Coordinators are now required to submit a quarterly report to the Deputy Director on the status of the annual inspector inspections.

**2. Recommendation**

The review team recommends that the Department report all significant and routine events as well as follow-up event information to the NRC in accordance with the STP Procedure SA-300, "Reporting Material Events." (Section 3.5)

**2. Response**

The following changes to improve timely reporting of significant and routine events, as well as follow-up event information to the Nuclear Regulatory Commission (NRC) have taken place recently in the Incident Investigation Program (IIP):

A. The Department has put in place a detailed procedure that specifically addresses the in-house handling of reports that are to be sent to the NRC. The new procedure (attached) will assure that all members of IIP are fully aware of which reports should be sent to NRC and within what time frames. The new procedure involves the daily implementation of the SA-300 procedure.

B. All IIP technical staff have a copy of the most current SA-300 and have read and reviewed its contents.

C. All IIP staff, three investigators, and an administrative assistant attended a training session on the Nuclear Material Events Database (NMED) in August, 2001.

D. An updated and more user friendly version of NMED was installed on IIP staff computers during the last part of August, 2001.

In response to the issue of medical event information, representatives of the Department's Office of General Counsel and NRC's Office of General Counsel have discussed the issue. They concluded that patient identification information should be

redacted from event reports to NRC, but that technical information should be included. For future medical events, the Department will include technical information necessary to provide NRC a comprehensive review of medical events.

We will continue to redact medical event information prior to placing it on the Department web site. These and other events requiring reports to NRC will be marked "Preliminary, not for public disclosure" as suggested in SA-300, "Reporting Material Events."

It should be noted that events under investigation are not considered open record under Texas statutes. We request NRC's cooperation in preserving the confidentiality of preliminary event information.

### **3. Recommendation**

The review team recommends that the Department modify their "two-man" rule for industrial radiography to make it compatible with the equivalent NRC regulation. (Section 4.1.2)

### **3. Response**

While the Department agrees with a requirement for a two-person radiography crew at temporary job sites, we disagree with NRC's prescriptive interpretation of the requirement for a two-person crew. We contend that our industrial radiography requirements more directly address the historical root causes of the large number of industrial radiographer overexposures, which resulted in numerous injuries, that we were seeing before implementing our requirements in 1986. Our rules are prescriptive when addressing the root causes identified as reasons for the large number of overexposures in Texas. Specifically, our requirements are prescriptive concerning training (such as direct supervision by an authorized trainer when a trainer is using sources of radiation), equipment standards, and accountability of the individual for following safety procedures (such as escalated enforcement against an individual's industrial radiographer certification).

We consider our rules more performance-based in other areas such as the requirement for a two-person crew at temporary job sites.

Multiple times since 1986 and during the promulgation of NRC's current industrial radiography rules, the Department has informed NRC of the purpose behind our current industrial radiography rules. We consider the reduction in industrial radiographer overexposures in Texas to be attributable to the comprehensive "package" of requirements we implemented in 1986. This "package" included upgraded training requirements, elimination of the assistant radiographer, certification, requirements for equipment standards, two radiographic personnel at temporary job sites, etc. We have never stated that the improvement in the number of overexposures reported was due solely to any one of those requirements. The revision to our rules in 1986 was developed over a period of five years with careful consideration given to radiography safety problems and with

extensive input from industry. During this time, the Department reviewed overexposure data and determined that the majority of industrial radiographer overexposures could be attributed to inadequate safety training, failure to follow established safety procedures, or equipment malfunction. As a result of this data, rules were promulgated that address these problems with the intent of improving the safety record of the industrial radiography industry.

While it is encouraging to see that NRC has adopted requirements similar to ours in terms of industrial radiographer certification and equipment standards, it is disheartening to see that the NRC industrial radiography rules adopted in 1997 and contained in 10 CFR 34 neglect to address one of the primary factors identified as a root cause for a large number of industrial radiographer overexposures. The current NRC requirements allow a radiographer assistant to use sources of radiation without attending a safety course that addresses the basic radiation topics outlined in both NRC and Texas rules, i.e., fundamentals of radiation safety, hazards of exposure to radiation, methods of controlling radiation dose, etc. It is possible for an individual to work for years as a radiographer assistant and never receive radiation safety training. The NRC rules merely require that the assistant pass a written exam on the rules, license, and licensee's operating and emergency procedures and pass a practical exam on the use of the radiographic equipment. Failing to require safety training prior to using sources of radiation is failing to address one of the root causes of industrial radiography incidents. It is important to remember that not all radiography is conducted by the larger radiography companies who have the resources to establish and oversee adequate and often exemplary training programs. Texas rules require anyone acting as a trainee complete a 40-hour safety course addressing the radiation safety fundamentals specified in rule, in addition to passing a written exam on the rules, license conditions, and operating and emergency procedures and passing a practical exam on the use of the radiographic equipment. NRC rules only require the safety training (unspecified hours) in order to act as a radiographer. NRC rules do require that a radiographer assistant work under the personal supervision of a radiographer, but place no additional requirements on the radiographer supervising the assistant. TX rules require that a trainer (the only individual allowed to supervise a trainee) have one year of documented experience as a certified radiographer, be named on the license, be free of any agency order prohibiting him or her from acting as a trainer, provide personal supervision to a trainee, and prevent any unauthorized use of a source of radiation by a trainee. These requirements provide for an additional measure of responsibility and accountability for the trainer that is lacking in the NRC requirements. Considering this failure to address one of the root causes of industrial radiographer overexposures, it is disappointing to see the NRC focus on compatibility of a prescriptive interpretation of a rule that we believe should be more performance-based.

Texas has had a requirement for a two-person crew since 1986. Our rule differs in that NRC requires the radiographer operating the radiographic equipment to be accompanied by at least one other qualified radiographer or an assistant whenever radiography is performed at a location other than a permanent radiographic installation. The NRC rule requires the additional qualified individual to observe the operations and be capable of

providing immediate assistance to prevent unauthorized entry. This rule has been interpreted in NUREG-1556, Vol 2 to mean, "Both individuals must maintain constant surveillance of the operations and be capable of providing immediate assistance to prevent unauthorized entry to the restricted area." This interpretation means that even if a two-person crew consists of two certified radiographers, both must be out with the camera or, if one of the members is in the darkroom, radiography cannot be performed. The impact of this interpretation on the industry is that companies must employ an additional third person to develop film in the darkroom while two individuals are exposing film or must use additional time at a job site to expose film and then develop it. Either situation results in added cost to the industry.

Texas requires as a minimum, two radiographic personnel for each exposure device in use during any radiography conducted at a location other than at a permanent radiographic installation. If one individual is a trainee, the other must be a trainer. This means that if a two-person crew consists of two radiographers, one may be in the darkroom while the other is exposing film. If the two-person crew consists of a trainee and a trainer, both individuals must be with the radiography equipment when it is in use because of our definition of personal supervision and requirement for the trainee to be under the personal supervision of the trainer when manipulating controls or operating radiographic exposure devices and associated equipment. We contend that in the situation in which a crew consists of two radiographers, the second individual is available to provide immediate assistance, whether in the darkroom or not. Further, we contend that our rule provides a greater degree of safety because it requires at least two individuals for each camera in use at a temporary job site and if the crew consists of a trainee/trainer, the trainee has had basic radiation safety training, something the assistant is not required to have under NRC rules.

To support our contention, we reviewed industrial radiography incident files to determine whether investigation of any industrial radiographer overexposure showed the cause to be attributable to having one certified radiographer in the darkroom and one exposing film. We consider our findings representative of the industrial radiography industry nationwide. Texas has 104 licensed temporary job sites and 42 licensed fixed sites. Data obtained from the Office of State and Tribal Programs shows that NRC has 105 licensed temporary job sites and 16 licensed fixed sites in the 18 non-agreements states and territories. Forty overexposure incidents files, from 1997 to date, were reviewed. No overexposure was attributable to a lapse in safety because one certified radiographer was in the darkroom while the other was exposing film. A performance-based approach tends to emphasize results over process and method. As applied to licensee assessment, a performance-based approach focuses on a licensee's actual performance results. We have no evidence of negative performance that would support the additional cost of enforcing the two-person rule in the same manner NRC does.

To assess the additional cost of enforcing the two-person crew as NRC does, we contacted several of our licensees who have both Texas and NRC licenses. The cost of an additional person would be \$200 per day or better (including travel and per diem). The cost of additional time would be \$10-12 per hour (not including overtime pay). The licensees we

contacted indicated that an even greater impact of enforcing the two-person crew as NRC does will be the lack of availability of industrial radiographic personnel to do the work. The licensees indicate that not only are there not enough certified radiographers to do the amount of work the companies currently have (one licensee indicated that an average work week is 65 hours), there is a shortage of people interested in obtaining the training and becoming certified. This is the same personnel shortage issue that both state and the federal governments are facing in light of the imminent wave of staff retirements.

Considering all of the above, the Department can find no justification for imposing additional costs and negative impact on an industry that has not demonstrated performance that would warrant such cost and impact. Our industrial radiography rules are a comprehensive set of requirements implemented to directly and prescriptively address the identified root causes of the large number of overexposures that were occurring in Texas before implementing our requirements in 1986. The department made several revisions to our industrial radiography rules that were effective in April, 1999. We sent the proposed revisions to NRC for review on October 23, 1998 and received no comments concerning our two-person crew rule. We consider the requirement for a two-person crew an important safety requirement, but believe it is more appropriately implemented and enforced as a performance-based requirement. We recommend NRC re-evaluate its interpretation and enforcement of this particular requirement.

#### **4. Recommendation**

The review team recommends that a training plan be developed and implemented by the Department to assure that all technical staff are sufficiently trained in specific technical areas related to review of reclamation plans at conventional uranium mills. (Section 4.4.3)

#### **4. Response**

Through many NRC inspection cycles, the Department has maintained a highly competent technical review staff without notice of the need for a training plan. Staff chosen to fill new or vacant positions have always been carefully screened on the basis of pertinent academic training and/or work experience and a specific training plan was not needed. Consequently, extensive on-the-job training has been minimized and usually reduced to specific training courses or workshops on various software packages or related topics in the general areas of engineering, geology, and environmental health physics. For instance, technical staff have been trained in groundwater modeling (GMS w/EMS-I), transportation of radioactive material (RADTRAN), financial security (NRC Financial Assurance Workshop), surface hydrology (HEC-HMS), and other areas as needed and as available. In comparison to the areas listed by NRC in Section 4.3 of the IMPEP report, technical staff have already had specific training in two out of four areas and basic training (undergraduate degree in civil engineering) in the other two.

In order to respond to the NRC's training recommendation, the Department will identify and pursue training specific to reclamation of conventional uranium mills. We request that NRC



assist the Department by identifying courses pertinent to the review of the reclamation of conventional uranium mills. For instance, what training courses do NRC staff performing the same regulatory functions attend? We will establish a plan for each technical review area so that training of present and future staff will be adequate to address present and future closures of conventional uranium facilities in Texas.

## **5. Recommendation**

The review team recommends that the Department prepare necessary supporting documentation identifying the bases for the licensing actions associated with reclamation plans for the three conventional mills. (Section 4.4.4)

## **5. Response**

The development of supporting documentation to identify the basis for licensing actions for the closeout of conventional mills in Texas is abundantly evident in the record up to the transfer of the uranium program to the Texas Natural Resource Conservation Commission (TNRCC) in 1993. NRC review of the TNRCC uranium program up to and including a review of the program in 1997, just prior to transfer back to the Department, found the program to be satisfactory. After transfer of the uranium program to the Department, Bureau staff soon discovered the absence of any further review work concerning the reclamation issues for the closeout of conventional uranium mills during the TNRCC years. Bureau staff began (as work load permitted) to address the perceived review gap. The Department staff are reviewing license files, identifying the perceived gaps, and using NUREG-1620 and SA-900 (now in draft form) as check lists for the reviews to come. Staff feel that with sufficient time, the more pressing issues of the uranium program and the issues of conventional uranium mill closeout will be addressed satisfactorily.



## **IIP EVENT NOTIFICATION TO THE NRC**

### **IMMEDIATE AND 24 HOUR NOTIFICATION**

NRC will be notified on the same business day that incidents are received by the Incident Investigation Program (IIP) and logged into the logbook. After the incident is logged into the logbook, an Event Report Cover Sheet and an Event Reporting Form found at the subdirectory `Comp\Erp\Summary\NOTIFYNRC\ImmediateReport` will be filled out with all the available pertinent information. Pursuant to Texas laws regarding the release of patient information, certain medical information will not be included. The information may be unsubstantiated and will be labeled "Preliminary, Not for Public Disclosure." The forms will then be faxed to the NRC Operations Center. The individual responsible for making the notification will follow the current Program assignments. During leave absences or travel of assigned team members, in-office investigators will assure that immediate and 24 hour notifications are logged and faxed to NRC before the close of each business day. Investigators receiving notifications during nonbusiness hours will notify the NRC Operations Center of immediate and 24 hour reports by telephone.

### **ROUTINE NOTIFICATION**

After the IIP receives an event notification, the incident is logged into the log book. Prior to copying and routing, NRC will be notified of the event by filling out a Routine Event Information Form found at the subdirectory `Comp\Erp\Summary\NOTIFYNRC\RoutineReport`. As requested by NRC, the Routine Notification Report Form will be filled out with all the pertinent information available and e-mailed to INEEL. The individual responsible for making the notification will follow the current Program assignments. Typically, routine events will be e-mailed on the same business day as the incident is logged. During leave absences or travel of assigned team members, the routine events will be e-mailed within 10 business days after log-in.

### **FOLLOW-UP NOTIFICATION**

As follow-up information or additional information is received by the IIP, prior to copying, a Follow-up Event Information Form found at the subdirectory `Comp\Erp\Summary\NOTIFYNRC\FollowUpReport`, will be filled out with all the additional information. As requested by NRC, the Follow-up Event Information Form will be e-mailed to INEEL. The individual responsible for making the notification will follow the current Program assignments. The Team Leader for the IIP will be responsible for assuring the follow-up reports are forwarded to NRC.

### **CLOSE-OUT NOTIFICATION**

When the incident investigation is completed and the incident is closed, a Completed Event Information Form found at the subdirectory `Comp\Erp\Summary\NOTIFYNRC\CompletedReport`, will be filled out with all concluding information. As requested by NRC, the Close-out Information Report Form will be e-mailed to INEEL. The individual responsible for making the notification will follow the current Program assignments.