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Environment, Safety, and Health

Technical Safety Appraisal of the Rocky Flats Plant

January 1989

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U.S. Department of Energy Environment, Safety, and Health

Washington, D.C. 20545

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January 1989

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TECHNICAL SAFETY APPRAISAL

ROCKY FLATS PLANT

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1/24/89

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ACRONYMS

The following acronyms are used throughout this report without definition after the first time they are used. Other acronyms are defined when they are used the first time within each section of the report.

AL	DOE Albuquerque Operations Office
ALARA	As Low As Reasonably Achievable
ANS	American Nuclear Society
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
DOE	U.S. Department of Energy
RFAO	DOE Rocky Flats Area Office
FSAR	Final Safety Analysis Report
HS&E	Health, Safety, and Environment
NFPA	National Fire Protection Association
NQA-1	Nuclear Quality Assurance-1
OSHA	Occupational Safety and Health Administration
OSR	Operational Safety Requirement
QA	Quality Assurance
QC	Quality Control
RFP	Rocky Flats Plant
RI	Rockwell International, the operating contractor for RFP
SAR	Safety Analysis Report
TSA	Technical Safety Appraisal
UOR	Unusual Occurrence Report

I. INTRODUCTION

This report provides the results of a Technical Safety Appraisal (TSA) of the Rocky Flats Plant (RFP) conducted November 14 to 18 and November 28 to December 9, 1988. This appraisal covered the effectiveness and improvements in the RFP safety program across the site, evaluating progress to date against standards of accepted practice. The appraisal included coverage of the timeliness and effectiveness of actions taken in response to the recommendations/concerns in three previous Technical Safety Appraisals (TSAs) of RFP Bldg. 707 conducted in July 1986, Bldgs. 771/774 conducted in October/November 1986, and Bldgs. 776/777 conducted in January/February 1988. Results of this appraisal are given in Section IV for each of 14 technical safety areas at RFP. These results include a discussion, conclusions and any new safety concerns for each technical safety area. Appendix A contains a description of the system for categorizing concerns, and the concerns are tabulated in Appendix B. Appendix C reports on the evaluation of the contractor's actions and the current status of each of the 230 recommendations and concerns contained in the three previous TSA reports.

The appraisal team was guided by Mr. James P. Knight, Director, DOE Office of Safety Appraisals. Mr. Blake P. Brown of the DOE Office of Safety Appraisals was the Team Leader. The team consisted of 20 experts including DOE employees, DOE contractors and outside consultants. The members of the team and their areas of principal assignment are listed in Appendix D, and the biographical sketches of the team members are in Appendix E.

RFP is a nuclear weapons parts production facility owned by DOE and managed under a prime contract by Rockwell International Corporation (RI). Management by RI began in 1975. Production and support facilities occupy 385 acres near the center of the 6,550-acre site in northern Jefferson County near Boulder, Colorado. RFP began operations in 1953 with 20 buildings, and now more than 100 buildings are used in production and support activities.

The primary mission of RFP is the production of parts for nuclear weapons. The plant has a variety of production activities that involve the fabrication of plutonium, uranium and other materials. Activities also include plutonium scrap and residue recovery. Components from obsolete nuclear weapons are processed at RFP to recover plutonium and other reusable material. Key operations include: weapon component fabrication using plutonium (Bldg. 707); plutonium residue recovery (Bldg. 771); plutonium metallurgical, manufacture, assembly and solid waste treatment (Bldgs. 776/777); liquid waste management (Bldgs. 374 and 774);

and non-plutonium component fabrication (Bldgs. 444, 460, 865 and 883). Finished parts are shipped to another DOE facility for assembly.

Bldg. 771 was not in operation during this appraisal. Continuing deficiencies in the safety program at RFP, as noted in past TSAs, culminated in a plutonium contamination incident in Bldg. 771 on September 29, 1988, as a result of inadequate control of maintenance work practices and of radiological protection requirements. A finding was made that insufficient margins of safety existed in Bldg. 771 to support continued operation with ongoing maintenance. Operations were curtailed on October 8, 1988, to accomplish an accelerated program for correction of safety deficiencies. Based upon restart requirements defined by the Office of the Deputy Assistant Secretary for Safety, Health, and Quality Assurance (EH) through an onsite review and AL/RFAO restart criteria, a RI restart plan has been developed and defined actions are being implemented to support start-up of Bldg. 771.

Operations at RFP routinely involve the handling of radioactive, hazardous, and toxic materials; and the use and operation of equipment, processes, and facilities that expose workers to industrial safety hazards (e.g., fire, electrical, etc.). Also, many plant operations involve fissionable material (material that can sustain a nuclear chain reaction) which must be handled with specialized equipment and detailed procedures.

II. PERFORMANCE EVALUATION

In response to the appraisal conducted in February 1988, Rockwell International (RI) undertook a longer range remedial action program to foster an improved safety performance at the Rocky Flats (RFP) facility. Such programs involve not only changes in management policy and direction, but also include increased formality and discipline by all elements of the organization. Similar efforts in the commercial sector have shown that effective and long-lasting changes take years to realize. In light of the wide ranging efforts undertaken by RI, an appraisal was scheduled to monitor the progress being made. At the time of the establishment of the appraisal team, it was recognized that many deficiencies would still be identified. The purpose of this appraisal was to determine whether the fundamental changes in management direction, policies, and controls were being established to give confidence that further changes to promote safety would result.

This appraisal found that over the last year the safety program is in a state of transition. Whereas prior appraisals encountered resistance to change and found continued reliance on outdated practices, recent observations show a program open to change. RI has retained the services of personnel familiar with current practices in the commercial sector and have initiated steps to reflect these lessons into the RFP facility procedures, training programs, and practices.

Within the past twelve months, RI management established a goal to make a major adjustment in the working environment that will assure safe operation, establish line ownership of safety, and assure full accountability for safety requirements and practices. Such an approach to safety management affects the work habits of managers, supervisors, and workers. It is usually referred to as a safety culture. Union-management relations, an essential component in such a change, have dramatically improved due to efforts of both parties. RI management's intent is to correct deficiencies. They are prepared and committed to make changes, and are trying to be responsive to DOE. These initiatives represent a noteworthy first step in what must be a continuing program to install a proper and sustained safety philosophy at RFP. However, complete and effective implementation will take more time to achieve and can only be obtained through a more integrated effort on the part of DOE (Area Office, Albuquerque, Program Office) and the contractor (Rockwell International).

Management Approach - Substantial corrective actions are underway, including development of an integrated safety program in the future. However, RI management is currently focused on aggressively responding to individual recommendations and concerns from previous TSAs rather than pursuing an integrated

systematic and planned approach designed to achieve and maintain safety excellence. The result is evidenced by efforts that are reactive, frequently inadequately thought out, and sometimes counterproductive. Closer coordination and monitoring by DOE is needed to provide feedback and guidance on what is expected.

A noteworthy exception that can be considered as a model is RI's corrective action in the area of emergency readiness. After the 1986 TSAs, the emergency readiness staff reviewed the TSA findings, DOE Orders, requirements, and specific plant emergency readiness needs, and developed a program plan, which when fully implemented, will assure an exemplary emergency readiness program. The program integrates RI and RFAO into a single emergency response organization with a single emergency plan. RFP participates on AL emergency readiness committees and has a good working relationship with AL.

Management Control Over the Work Force - Effective and safe operations depend on trained and qualified staff who maintain their skills. An appropriate training and recurrent requalification program can be used to certify workers to perform the jobs for which they are qualified. The current union "bumping" and job "bidding" rights frequently result in replacement of trained employees by individuals who do not have the requisite training or certification; this, in turn, creates sporadic and questionable training demands, with concomitant impact on worker and facility safety concerns relative to work force qualifications. Management has the obligation and authority to establish job qualification standards and can negotiate more stringent "bumping" and job "bidding" criteria with the union. Data on internal turnover rates, on a job category basis, should be collected and analyzed. Such an effort can provide the bases for appropriate action to improve the training and requalification program to minimize the safety impact of turnover and "bumping" rights on the continuity of the work force.

DOE (AL and RFAO) Oversight and Direction - Interviews with individual RFP workers revealed that AL and RFAO technical personnel were not frequent visitors to the various facilities. In contrast, the workers know the EH site representatives who have been conducting regular tours and have been discussing technical issues with workers. Furthermore, first hand monitoring of contractor actions to prior individual TSA findings could have encouraged site-wide performance improvements. AL and RFAO need to recognize and act upon the impact of the contractor's reactive approach to correcting deficiencies in the safety program. This warrants an increased DOE presence at the workplace. AL and RFAO need to provide more on-site visibility, technical guidance, and oversight of the day-to-day operations. Results from such oversight can provide more effective input in providing program direction, guidance, and oversight to RI that will encourage systematic analysis of the need for safety changes, and long-range planning of upgrades and improvements in

the safety program. The Cost-Plus-Award Fee (CPAF) process utilized by DOE/AL should also be evaluated to assure emphasis on achieving excellence in safety performance.

Plant Aging - Many of the safety systems are old and replacement parts are not always available. Capital needs to support necessary safety requirements have often been identified by the contractor but, in some instances, have not been addressed adequately by DOE. Increased attention by DOE is needed for planning and resource support to address safety concerns directly related to plant aging.

III. REVIEW FINDINGS

The results of the Technical Safety Appraisal of RFP in 14 safety technical areas are discussed in this section. Although not specifically addressed as a separate technical area, QA is addressed generally in Organization and Administration (OA) and specifically in the areas of Maintenance (MA), Emergency Readiness (ER), Technical Support (TS), Radiological Protection (RP), and Personnel Protection (Industrial Hygiene) (PP). The facts and conclusions in this section are an evaluation of the status and progress made against DOE requirements and standards of accepted practice for each safety technical area. The evaluation was made by the appraisal team through observing facility operations and maintenance, and the physical condition of the facility; interviewing RI management, technical, and craft personnel, interviewing RFAO staff; and reviewing policies, records, procedures and other documents. There has been progress in addressing the 230 recommendations/concerns from the three previous Technical Safety Appraisals (TSAs) of RFP conducted in July 1986 (Bldg. 707), October/November 1986 (Bldgs. 771/774) and January/February 1988 (Bldgs. 776/777). Ninety-one of the 230 recommendations/concerns remain open. Appendix C gives the specific facts and conclusions regarding the status of each of these recommendations/ concerns.

Thirty-two new concerns have been identified, the correction of which would improve the safety of RFP operations and DOE oversight. Each concern has been categorized as to its seriousness in accordance with the system described in Appendix B-1. The concerns are tabulated in Appendix B-2. The findings that serve as the basis for each concern can be found in the discussion and conclusions of the appropriate safety technical area in this section of the report. To understand the full intent of any concern, it is necessary to read its basis. Resolution of an individual concern will not necessarily correct the deficiency underlying the concern unless root causation is addressed in a systematic manner. Only by finding and addressing root causes can there be assurance that improvements are made and further recurrence can be prevented.

Six of the concerns contained in this report were judged to be of Category II seriousness (see Appendix B-1); i.e., they address hazards of sufficient significance to warrant expedited attention by the contractor and DOE. As a result, RI management instituted compensatory measures on an interim basis while a more comprehensive remedial action program is developed and implemented. The problems defined by these six concerns are: 1) the lack of formality and "surety" of operations in Bldg. 374; 2) the lack of adequate training and qualification programs for fissile material handlers; 3) the fact that radiation monitors are not utilized to full potential as part of the radiological protection program; 4) the lack of adequate measurement and documentation on extremity doses for workers who cannot wear hand

dosimeters; 5) the lack of electrical safety and/or code compliance; and 6) the lack of fire separation barriers with approved fire dampers or equivalent protection.

There had been little apparent urgency by RI management to correct the deficiencies identified in the 1986 TSAs. Consequently, 39 of the 85 concerns in the last TSA (Bldgs. 776/777, January/February 1988) address problems that were addressed by one or both of the earlier TSAs. In addition, compensatory actions on several safety deficiencies were placed in effect during the last TSA. Several months prior to this review, RI management established a goal to make a major "culture change" that would assure safe operations and establish line supervision "ownership" of safety responsibilities. In its efforts to be responsive to the many recommendations and concerns for a variety of changes, RI often has acted in a piecemeal fashion, rather than systematically analyzing the need for changes and planning in an orderly fashion.

DOE program groups (Defense Programs [DP], AL, RFAO) have been ineffective in providing program direction, guidance, and oversight to assure timely and effective correction of deficiencies and to ensure that a systematic safety program is developed and sustained by RI.

A. ORGANIZATION AND ADMINISTRATION

Discussion

1. RI Management

RI management activities, subsequent to the January/February 1988 TSA of Bldgs. 776/777, have involved the application of substantial resources, major organizational changes, new policy, and revised procedures. The goal has been to make a major "cultural change" that would assure safe operations commensurate with production goals and line "ownership" of safety responsibilities. Of the 15 recommendations and concerns (including four in the QA area) contained in the three previous TSAs, six have been closed and nine remain open (including all four QA concerns). All nine open items involve management planning and control. The following evaluation of RI management's effectiveness is discussed in the context of classical management functions.

a. Planning

Input from various DOE, outside consulting, and internal reviews has resulted in recommendations for numerous changes. In its efforts to be responsive to these pressures for change, RI often has acted in a piecemeal fashion, rather than systematically analyzing the need for fundamental change and planning in an orderly fashion, particularly in the radiological protection, maintenance, and waste management areas. A notable exception is the emergency readiness area, where RI developed a long range plan and delineated the steps required to devise a cohesive program responsive to TSA concerns.

RI management's Strategic Plan, dated September 1988, contains goals and objectives for many areas, including safety. These specific goals, however, do not indicate how, when, who, or what will be done to accomplish the goals. The Strategic Plan does not address the need for a cohesive safety program. While a strategic plan is not intended to be an operational plan, it should provide an outline of key objectives and action items so that management can assign resources, responsibility, accountability, and track accomplishment of objectives necessary to reach the stated goals.

On November 15, 1988, RFP issued a document entitled Integrated Safety Program (ISP). This document is a cohesive, long-term operational plan treating every aspect of the RFP safety program. It addresses issues that should have been included in the Strategic Plan. It is an ambitious program containing ten project areas (each headed by a project manager) that will take many years and substantial resources to accomplish. If implemented, it will be exemplary. Management has stated its commitment to implement the plan; but the enormity of the task, the resource requirements, and the numerous milestones indicate the need for careful monitoring.

In the interim, RFP has established a Self-Improvement Plan (SIP) to act as a transition between the specific corrective actions in response to TSAs (and findings from other audits and appraisals) and the long-term ISP. The SIP includes provisions for examining specific corrective actions and determining their plant-wide applicability. It includes review by the cognizant ISP project manager to assure that the SIP project will be supportive of ISP goals and that these efforts are coordinated. These activities are reported to management on a monthly basis.

b. Organization

Whether or not management can effect a "cultural change" depends heavily on increased awareness and acceptance of safety responsibilities. Increased emphasis on safety is being accomplished through organizational changes such as the establishment of a new Health, Safety, and Environment (HS&E) Directorate; establishment of a new building manager position description with focus on safety; revised and new independent safety review committees; and the inclusion of safety responsibilities and performance rating factors in all job descriptions.

Management's policy of line organization "ownership" of safety has been communicated throughout the organization. How this responsibility is to be implemented by middle management and line supervision is not clear to persons occupying the latter positions, and full implementation lies in the future.

Effective operations depend on trained and certified staff. The current union "bumping" and job "bidding" rights are creating undue training and certification demands, with concomitant impact on worker and facility safety concerns regarding the qualifications of the work force, and in effect, a loss of management control of its work force (see Training and Certification, Maintenance, and Radiological Protection [Sections III.D, III.C, and III.L] for additional discussion of this problem). Management has the unilateral authority to establish job qualification standards or it can negotiate more stringent "bumping" and job "bidding" criteria with the union. Currently, management is not fully cognizant of the impact of this and other staffing problems, since turnover statistics are available only on a directorate basis and only for terminations. Data on internal turnover rates, on a job category basis, must be collected and analyzed for management to make appropriate reviews of the impact of turnover and "bumping" rights on management control of the work force, since turnover is counterproductive to the achievement of safety program goals.

A large number of organizational changes have been made in a relatively short time and some may be ill-conceived. There are some anomalies (e.g. Technical Training and Emergency Readiness report to the Director of Security and Safeguards) and there is duplication of efforts particularly in the safety auditing

functions. An organizational effectiveness review is desirable to assure the organizational changes align appropriately with functional needs.

c. Leadership/Direction

RI corporate interest in the activities at RFP has increased over the past year. The Corporate Vice President for Safety has visited RFP frequently and a corporate level safety committee, utilizing recognized outside safety experts, has been active.

Union/management relations have improved dramatically due to the efforts of both parties. Management has recently initiated an aggressive safety awareness communication program, but operating level personnel do not believe management is serious or credible. This is not an entirely unexpected result considering the time since management began its "cultural change" (see Section IV.M, Personnel Protection, for further discussion of this matter). An effective Employee Assistance Program (EAP) exists at RFP. A potential problem has developed adversely affecting employee motivation to volunteer for this assistance, because certain personal problems (e.g., drug/alcohol abuse) must be reported to DOE. DOE policy that requires reporting of these problems is at cross-purposes with the intent of the EAP. This policy matter should be resolved, so that employee confidence in this program can be restored.

RI management has been almost entirely reactive in its response to previous findings, leading to implementation of poorly conceived changes, false starts, and rapid changes of direction. This is exacerbated by the DOE implementation of the Cost Plus Award Fee (CPAF) process, which has established goals that emphasize standard indices (e.g., accident, incident, radiological) which, while commendable, are not the type of goals that will lead to an effective and sustainable safety program. RI, in adopting these CPAF goals, has not addressed many of the underlying issues discussed in the previous TSAs and, therefore, has failed to expeditiously and systematically attack root cause problems.

d. Control

Management control systems include the usual financial, informational, and auditing systems. In general, they provide accurate, timely, objective, and comprehensive information for non-technical management decision making.

Although not fully implemented, logging, tracking, and reporting of the numerous outstanding safety findings have been centralized and should provide the means to assure effective implementation. This system should include the tracking of Unusual Occurrence Report (UOR) and Internal Investigation Report (IIR) findings, which is not the current plan. A new system to independently review and report unusual events has been established and is consistent with DOE orders.

RFP has updated various Safety Analysis Reports (SARs). Review of an independently-sponsored DOE evaluation of these SARs indicates that the technical analysis was fundamentally sound. In some areas, there are deficiencies in content, and it is not possible to trace the SAR criteria to actions that assure safe operation. Some of these deficiencies are the result of inconsistent guidance from DOE, including the decision not to prepare initial SARs for uranium facilities.

The non-war reserve quality assurance (NWQA) program will take some time to fully implement, but it has the proper direction and is receiving management support. This is not the case with training and certification programs, which have not been implemented, although recently completed pilot programs are of good quality.

Management has established a multiplicity of safety auditing activities. Building managers' activities are subject to as many as eight different safety audits. Many of these appear duplicative and have the potential to diffuse safety responsibilities. This is another area that could benefit from an organizational effectiveness review.

2. AL and RFAO Management

The administration of the RI contract by the RFAO and AL has a direct bearing on the performance of RI and its relationships with AL and RFAO. This section discusses several observations, based on a limited review, which focused on those factors that have the most impact on the relationships between the parties and the performance of RI.

All parties believe that they have good and open lines of communication which are steadily improving. This includes RFAO interactions with RI corporate management and the bargaining units at RFP. RFAO has monthly meetings with RI management to review the status of the various safety programs and outstanding action items.

AL's primary role in the safety area is to provide RI with guidance (in the form of AL Orders and their interpretation) and oversight, primarily in the form of periodic appraisals and reviews of documentation. AL's distance from the site and the existence of the RFAO understandably results in limited visibility of AL presence at RFP. There is some evidence that AL Orders are inconsistent with DOE Orders (e.g., DOE 5481.1b on SARs and DOE 4330.4 on Real Property Management). In some cases, this may be the result of slow updating of AL Orders after DOE Orders have been published. There is also evidence that interpretation of these orders and the guidance provided to RFP is inconsistent with the intent of DOE Orders (e.g., the need for SARs for uranium facilities and the issuance of fire protection exemptions). Appraisals are being performed periodically with the exception of the AL 5482.1A requirement for a safety

management appraisal once every three years. This appraisal would have been helpful in identifying many of the fundamental problems found in the RFP safety program. The appraisals performed by AL are in-depth, professional reviews of safety functional areas and contain numerous findings. However, they do not address root causation indicated by the multiplicity of their findings. The appraisals and their follow-up, therefore, are not providing RI with the kind of guidance that would lead to an effective, systematic, and sustainable safety program. Furthermore, there is little evidence that AL took aggressive or effective action to assure RI follow-up on the previous TSA appraisals.

RFAO's on-site presence and its safety staff should provide sufficient DOE visibility, immediate technical guidance, and oversight of the day-to-day safety program at RFP. This does not appear to be the case. Interviews with most RFP personnel revealed that RFAO safety personnel were not frequent visitors to the various RFP facilities, only appearing when there were problems or appraisals (unlike the visibility of the EH Site Representative who has been a regular visitor).

A recent reorganization of the safety activities within RFAO has led to the establishment of an RFAO Safety Officer and two safety branches, all with appraisal responsibilities. The two branches have divided safety responsibilities on the basis of whether the activities are on-site or off-site. This diffusion of responsibilities and need for substantial coordination has the potential to be counterproductive and inefficient.

The Facilities and Operations Branches of RFAO have responsibility for the physical plant, programs, and operations and have assigned personnel with responsibility for various buildings. Their primary concern is for operations in these facilities and collaterally for safety activities. The presence of Facilities and Operations Branch personnel, however, appears to have had little impact on safety within their assigned facilities.

Administration of the CPAF process by DOE (AL and RFAO) has had an adverse influence on the RFP safety program. The process has delivered the wrong message to RI with regard to what are important DOE safety goals. It has not been used to provide incentives to RI to develop root cause solutions to the safety deficiencies that have been identified by the various TSAs. It has been used to accomplish contractually required activities in a piecemeal fashion rather than stimulate exceptional or innovative performance and development of a well-planned program. Safety was not a rating factor until FY87.

3. Quality Assurance

There are two quality documents being addressed by operations at RFP: AL Quality Policy and Operating Instruction Manual for Product Acceptance (QC-1), and ANSI/ASME NQA-1, "Quality

Assurance Program Requirements for Nuclear Facilities." The quality practices required by QC-1 have been existent at RFP for some time. The application of NQA-1 to all other activities not covered by QC-1 is, by comparison, a new activity at RFP.

Serious management attention was not dedicated to Non-Weapons QA until after the Bldg. 776/777 TSA in January/February 1988, in which the lack of a site Non-Weapons QA program was identified. Several positive actions have been taken by RI to address this shortcoming. A Non-Weapons QA Department was created within the Quality Engineering and Control (QE&C) Directorate. A small, well qualified staff is being assembled, and staffing includes a mix of quality, NQA-1, and nuclear operations expertise. A Non-Weapons QA Manual has been written that addresses the requirements of NQA-1. The services of an outside consultant are being utilized. RFP on-site "regulatory" organizations have been identified, and the larger task of defining responsibilities is ongoing.

In the Non-Weapons QA Manual, the responsibility for quality is clearly placed on line management, with Non-Weapons QA providing implementation guidance and (ultimately) oversight. Appropriately, the Non-Weapons QA organization is not writing the other organizations' QA manuals or procedures. The review revealed no conflict of interest concerns.

There are many examples of quality deficiencies identified in this report. Nearly every concern from previous TSAs and new concerns identified in this review can be correlated to one or more elements of ANSI/ASME NQA-1. The RFP Non-Weapons QA staff has attempted to explain this to the RFP staff, with mixed results. Written requirements assigning quality responsibility to general management will be ineffective until all levels of management understand quality fundamentals. To some, quality is still the function of QE&C or Non-Weapons QA.

AL and RFAO have been slow in addressing the responsibilities assigned them in DOE 5700.6B, of September 23, 1986. AL 5700.6B (Revision I), "Non-Weapons Quality Assurance," of September 13, 1988, was formally received by RFP on November 1, 1988. This order cancels AL 5700.6B, "Quality Assurance," of April 24, 1984. RFP issued their first copy of a Non-Weapons QA Manual on January 15, 1988, and a revision on September 30, 1988. AL has recently (November 1988) written a draft Non-Weapons QA Manual. Outside of AL involvement in activities related to QC-1, there is little evidence of Non-Weapons QA overview. In the last 18 months, there has been only one QA audit of RFP non-weapons activities; it was conducted as part of the QC-1 survey program.

Following the publication of the National Academy of Sciences report on the DOE production reactors, RFP performed a study to determine what actions (and associated resources) should be undertaken at RFP. A report describing their findings was provided to RFAO for routing to AL. No substantive actions resulted from the contractor's expenditure of effort.

Several tasks are being coordinated within the program to address priority areas. These include procurement, calibration, audit, corrective action, software QA, personnel certification/qualification, training and certification records, document control, and organizational structure and responsibilities. All these have begun, and the status of each was reviewed, including the definitions and goals for each task. Among these tasks, the site-wide calibration and corrective action programs are among the least developed, with procurement, audit, and document control most clearly defined and approaching initial implementation activities. Deficiencies were identified during this review demonstrating fundamental problems in post-procurement activities. For example, ASME code vessels were kept in long term outdoor storage without adequate protection from the environment, and new glovebox assemblies having inadequate packaging, labeling and cleanliness control were found in outdoor storage. Existing RFP standards were not effectively implemented to prevent these occurrences. The identification and storage of maintenance spares are inadequate.

Conclusions

Accomplishing the necessary changes for effective safety program management has required numerous organizational, policy, and procedural revisions and has substantially increased safety resources. This effort has not been entirely successful due to ineffective management by RI of these efforts, characterized by a reactive approach towards correction of safety deficiencies. A more thoughtful and orderly planning process is necessary to attain an integrated safety program. There is evidence that this type of planning, which is necessary if RFP is to develop a systematic and sustainable safety program, is now taking place in the SIP and ISP efforts. RI management direction is forceful and clear. However, management is not mindful that implementation and understanding of "cultural change" are not being fully accomplished at the operating level. In some cases, the rate and number of changes have been counterproductive to safety and have undercut the perception of management's credibility.

AL and RFAO have been ineffective in providing guidance and overview to RI efforts at correcting these problems in a timely, systematic, and sustainable manner. Their overview of safety, as evidenced through the appraisal program, has treated symptoms rather than the underlying causes of deficiencies in the safety program. The minimal visibility and lack of vigorous follow-up on previous TSAs, coupled with the relative importance of safety to other program objectives (as reflected through the CPAF process), have delivered the wrong message to RI. The current

value of safety as a rating factor, when compared to other rating areas, does not provide sufficient economic incentive for RI to give safety the attention it requires.

The Non-Weapons QA program at RFP is in the early stages of development. The personnel responsible for this program understand that the purpose of a nuclear facilities QA program is to provide the management and administrative controls necessary to assure safe operation. However, the concept of a site-wide QA program is being met by resistance to change, misconceptions, and defensive posturing that must be overcome if the program is to be successful.

The Non-Weapons QA Group has identified weaknesses in the RFP program, relative to ANSI/ASME NQA-1. Nearly all of the new concerns identified in this report can be correlated to one or more elements of ANSI/ASME NQA-1. Two additional areas were found to be particularly deficient and are the basis of the new Concerns OA-4 and OA-5.

New Concerns

OA-1
(C3/H3)	The effective development of RFP's safety program is jeopardized by diffusion of responsibility, duplication of effort, poor planning, and anomalous organizational changes.
OA-2
(C3/H2)	Resolution of the problems resulting from union "bumping" rights is necessary, if RFP is to correct the safety consequences resulting from less qualified personnel "bidding" into jobs and regain control of its work force.
OA-3
(C2/H2)	AL and RFAO have not been effective in their oversight, provided consistent guidance, nor established goals (e.g., through the Cost Plus Award Fee process) that would lead to a timely, effective, systematic, and sustainable RFP safety program.
OA-4
(C2/H3)	Corrective action for safety deficiencies is incomplete because it often does not include either identification of root causation or how recurrences can be prevented.
OA-5
(C2/H3)	There is a lack of discipline in the interrelated areas of handling, storage and shipping; control of purchased items; and identification and control of items (see also Concerns TS-6 and TS-7).

B. OPERATIONS

Discussion

Operations at RFP are being carried out with increased attention to radiological protection, industrial safety, and operational discipline. New clothing and survey requirements in all facilities have enhanced contamination control and provided increased assurance that clean areas and buffer zones can remain contamination-free. The assignment of responsibility to building managers for overall facility safety has increased the potential to strengthen line management's role and to define clearly who is in charge. An appropriate matrix structure has been established, by management reorganization, to provide the building managers with the necessary resources to perform their job. Within Production Operations in Bldg. 707, a pilot program has been implemented which uses a facility status board to visually indicate present operational status. This status board is used to denote active lock-and-tagouts, equipment deficiencies, and the condition of vital utility equipment. In addition, a "Plan of the Day" has been initiated, which allows the building manager to coordinate daily work activities with support organizations; however, this concept has not proven to be fully effective yet. RI management has begun to expand this pilot program to all major operating facilities at RFP, but the program was in its first month of operation during this review. Follow-through on this program has the potential for increasing operational discipline by improving facility surveillance and shift-to-shift communications. Facility housekeeping has shown a visible improvement over previous TSA observations, and management is implementing the necessary formal programs to ensure maintenance of a high standard during future operations. However, long term, formal housekeeping programs have not been fully implemented yet, and full commitment from all building managers has not been demonstrated.

In addition, RI has initiated a program to develop a Nuclear Facilities Operations Manual. This Manual, when complete in June 1989, will contain administrative procedures and operational guidelines, which will be implemented site-wide. When this Manual is completed, it should aid in standardizing operations throughout RFP.

Between the time of the TSA at Bldg. 707 (July 1986) and early summer 1988, RI was slow in developing and following through on corrective action plans. Also, in some cases, RI was short-sighted in not implementing corrective actions site-wide where applicable. Two of the seven recommendations/ concerns presented in the three TSAs completed for RFP facilities in this safety technical area have been satisfied and are closed. Two of the five still open remain open specifically to establish a Self Improvement Program (SIP) to address the recommendations/concerns site-wide. A particular concern is RI's inability to implement a viable lock-and-tag procedure which is consistent with other operating nuclear facilities. Though interim procedures are in

place to protect workers, many instances of danger tags being used for information or to designate out-of-service equipment, were noted. This practice does not provide controls equivalent to those in use at most DOE facilities.

The level of formality and discipline of operations in the Waste Processing Areas of Bldg. 374 do not meet the standards established at other DOE facilities or at other RFP buildings. Evidence of deficiencies includes:

- Use of handwritten, informal and uncontrolled operator data logs. Some logs were filled out in pencil, with ditto marks used for recurring data.
- Use of unauthorized operating aids (yellow stickers) posted on operating panels.
- Observation of operators reading newspapers in the control room.
- Location of the break room immediately adjacent to the evaporator control room with board games and playing cards evident.
- Lack of control room access control. The control room is in a high traffic area.

Other observations that denoted deficient operational performance included:

- The control room operators and their supervisor were not knowledgeable of Emergency Action Limits applicable to their major process equipment.
- The control room operators and their supervisor were not knowledgeable of the cause or status of numerous indicator lights in the alarm condition on their control panels.
- Waste processing operating procedures are out-of-date and there was no evidence that they had been reviewed periodically. Some procedures for major processing equipment have not been revised in nine years. Procedures are not routinely referred to during normal or off-normal operations.
- The experience level of waste processing operators is low due to a high turnover rate resulting from the union contract seniority "bumping" policy.

Similar conditions were not observed during reviews of the other RFP facilities. Only limited operations were available for observation in most of the major production facilities during this review. Because loss of waste processing capability can shut down the entire RFP complex, attention should be directed at

the formality and "surety" (those measures taken to assure safe operation) of operations in this area to ensure that upgrades are implemented as soon as possible.

There was no documented (or, at best, poorly documented) compliance with building Limiting Conditions for Operation (LCOs). The LCOs for each facility on site represent the Operational Safety Requirements (OSRs) from the FSAR, and are implemented to prevent off-site release and exposure to the public in excess of DOE guidelines. Specific surveillances for each LCO are established in the FSAR. RI has initiated a long-range plan to revise the LCOs and OSRs for each major facility and to provide a formal, standardized program to ensure compliance with each surveillance requirement. At the present time, however, interim actions to verify day-to-day compliance are inadequate and not capable of being audited. Though no direct evidence was found that an LCO was being or had been violated, the documentation to verify compliance was lacking in most cases.

Finally, there is a lack of an official list of machinists, welders, etc., who are qualified to operate specific equipment in Bldgs. 444 and 460 (See new Concern TC-3). Operations in these buildings involve the casting, machining, welding, and inspecting of uranium, stainless steel, and other specialty metals. It involves the use of sophisticated equipment requiring specially trained and qualified operators. However, there is no qualified operator list that is based upon documented training and certification. This documentation has been implemented in Plutonium Operations and should be implemented now in Production Operations.

Conclusions

Only recently, RI has implemented many significant changes in their plutonium facilities to enhance operating performance and to ensure the safety of their employees. It is important that these improvements now be implemented site-wide so that a coordinated and logical upgrade of all operational activities can take place. Improvements in the formality of Bldg. 374 operations, documentation of LCO surveillance and compliance, periodic operating procedure review and revision, and documented training and qualification of operators in Bldgs. 444 and 460 are of particular concern. All of these concerns stress the need for attention to standardizing operations and safety measures in all facilities at RFP.

New Concerns

OP-1	The formality and discipline of operations in the waste
(C2/H2)	processing areas of Bldg. 374 do not meet DOE and
CAT II	industry practices.

- OP-2 No formal, systematic program is in place to ensure and
(C1/H2) document compliance with Limiting Conditions for
 Operation for each operations facility.
- OP-3 Facility operating procedures are not being subjected
(C2/H2) to periodic, mandatory review to assure that they are
 adequate and reflect current practices.

C. MAINTENANCE

Discussion

Some improvement has been realized in the RFP maintenance program over the last year, as reflected in systems and procedures in use, and in facility condition. However, major improvements are needed in almost all areas to make the maintenance program fully effective and consistent throughout RFP.

In the three previous TSAs, seven recommendations/concerns were issued in the technical area of maintenance. These recommendations/concerns addressed shortcomings in most of the basic elements of the maintenance program. Six of those recommendations/concerns remain open; only one was recommended for closure during this review, and that involved the condition of Bldg. 771.

The following fundamental elements of an effective maintenance program are discussed:

- Establishment of proper standards for maintenance performance,
- Assignment of qualified personnel,
- Training for workers, planners, schedulers, foremen, and managers,
- Proper procedures for conduct of the maintenance program,
- Work control methods, including permits and procedures for the work,
- Integrated planning and scheduling, including prerequisites, and
- Post-work follow-up and analysis.

In addition to the discussion that follows, the last four elements are also discussed in Appendix C, which addresses concerns/recommendations from previous TSAs. RI has made some progress in these areas through action plans developed to meet these concerns/recommendations, but in most cases, the corrective actions are not fully effective, or have been implemented so recently that their effectiveness cannot be evaluated. In any event, the actions initiated are not effective on a site-wide basis, so corrective actions were not considered complete. This section also addresses additional concerns involving the first three fundamental elements of maintenance. Other sections of this report deal with maintenance issues, as they relate to other technical safety areas such as Organization and Administration (OA) and Training and Certification (TC).

1. Establishment of Proper Standards for Maintenance Performance

The lack of an established QA program for the non-weapons portion of RFP operation affects the establishment of proper standards for the conduct of maintenance. An example is the lack of standards for cleanliness, including such issues as providing closures for systems to prevent the entry of foreign material and

for assurance of internal cleanliness of newly installed equipment or piping. Another example involves the control of thread sealant material, including teflon tape. No standard exists for the control of these materials to prevent problems with their misuse and entry into systems which can be adversely affected by their presence; e.g., blocking orifices in pneumatic or hydraulic control systems.

A bolting and torquing standard does not exist, although in Bldg. 771 a training videotape is used. Each craftsperson's review of the videotape is documented in individual training records. This training is not standardized for craftspersons on a site-wide basis, however. Other examples are the lack of standards for drive belt tightening or hoisting and rigging.

2. Assignment of Qualified Personnel

RI uses only qualified maintenance craftspersons on the journeyman level (some of whom have progressed through the apprenticeship program). One aspect of the assignment of maintenance personnel that has a significant effect on the quality of maintenance is the use of "bumping" based on seniority of crafts personnel. For example, during the review, the dayshift preventive maintenance force of approximately 20 craftspersons was undergoing a shift change from a dayshift assignment with days off in the middle of the week to a regular Monday through Friday dayshift schedule. Because of the "bumping" process, where union personnel can choose assignments by seniority, changing the shift of 20 people resulted in the movement of approximately 80 people. Because of these personnel movements, continuity of expertise or specialization of a given craftsperson to work on particular equipment in a building is difficult. Further, foremen make personnel assignments based on personal knowledge of a given individual's training. A system is not established to provide foremen the information necessary to make such decisions, in all cases. Reassignment generally requires retraining for each new area of assignment (for building-specific safety training) and for learning the specific equipment in each different building. The "bumping" process and its effect on management control and supervision is discussed in more detail in Section III.A.1 (Organization and Administration) and is the subject of a new Concern (OA-2).

3. Training for Workers, Planners, Schedulers, Foremen, and Managers

A training program is established for maintenance personnel which consists of courses in core training (nuclear safety, radiation worker, glovebox safety, etc.); safety training (building indoctrination, respirator fitting, industrial safety, etc.); and new technology training (solid state controls, laser concepts, programmable control concepts, etc.).

New training qualification standards were developed early in 1988 for electricians, electrician technicians, and mechanics, but

they have not been integrated into the crafts training program. Qualification standards for the other crafts have not been developed (See Section III.D, Training and Certification for discussion of this issue and a new Concern [TC-2]).

A review of unusual occurrence reports (UORs) for events related to maintenance over the past year showed that the need for improved training was often included in the evaluations; for example, use of improper tools, failure to follow procedures, improper work practices, and insufficient work instruction.

The training program for craftspersons does not include initial and refresher training in the conduct of maintenance such as: basics for each craft in proper work practices, selection of proper tools, procedure use and control, work scheduling, and proper standards for maintenance performance. Foreman and area maintenance manager training is basically the same as that for craftspersons with some classes added for administrative and management topics. However, no training is provided in how to conduct the specifics of the maintenance program, including such topics as use of procedures, standards, planning and scheduling, inspections, and checking quality of work. Although they receive formal, documented training in some aspects of management, they do not receive specific training in management techniques or in how to be effective in assigned supervisory positions. Some classes of this nature are provided on a volunteer basis.

4. Proper Procedures for Conduct of the Maintenance Program

With the exception of procedures to identify proper standards of maintenance as previously discussed, procedures are in place for the management of the maintenance system. The RFP Maintenance Procedure Manual is a controlled document with controlled distribution, but a method is not established to record and make it apparent to the reader that it includes the latest revisions by date. The Manual has undergone revision recently to accommodate the establishment of a new Work Control Group. The Work Control Group will provide control of the detailed planning and scheduling effort, including the designation and procurement of parts, preparation of procedures, and development of schedules. All these functions are addressed by previous TSA concerns. Although some responsibilities and functions of the Work Control Group have been established, this Group is not fully operational.

5. Work Control Methods Including Permits and Procedures for the Work

When a work order is entered into the work control system, it is reviewed for priority and content and then either turned over to a planner or an engineering group for planning and preparation of the work package. Where detailed control of a job is necessary, RI procedures require the preparation of an "A" level work package. These packages provide more detailed work instruction with hold points for inspection and acceptance. The success of

the work control process being implemented by RI depends on the proper preparation and use of these work packages. Numerous packages were reviewed in various buildings throughout the site. A considerable variation in quality and detail of the packages was noted, with the best being produced in Bldg. 771. None of the packages reviewed contained special "as low as reasonably achievable" (ALARA) provisions or indicated review had been conducted by a person trained in ALARA principles. In several buildings, due to the recent assignment and lack of training of planners, the packages were not rigorous, nor were they used for the majority of work, especially if work was designated as "flow-through" (discussed below). When the parts and work package are ready, the job is added to the backlog and/or scheduled depending on the priority assigned. Most work is being accomplished with no documentation or instructions other than the work order itself. Work schedules are now established in most buildings for each craft showing numbers of craftspersons available and the backlog jobs that are to be worked each day. However, the majority of the craft manpower is held aside on the schedules for "flow-through" work (which is work supporting breakdowns and/or emergency jobs). The percentage of "flow-through" varies considerably from building to building and by craft, but it is significant. For example, in Bldg. 881, "flow-through" was 85 percent of total craft work for the last week of November; for two weeks in November 1988, in Bldg. 771, "flow-through" was 54 percent and 43 percent; and in Bldgs. 776/777 and 707, November 1988, "flow-through" varied from 30 percent to 100 percent depending on the craft. Use of the "flow-through" concept is therefore allowing the majority of the work to go unscheduled, which makes it impossible to effect a scheduling system that controls each craftsperson and job. The problem is further compounded when work is considered "flow-through", because planning and procedural controls receive less emphasis; in the jobs analyzed during this review, the procedures were of poorer quality for "flow-through" work than for other comparable scheduled jobs. In several cases reviewed, no work package was being used at all; e.g., major work on the Harwood press in Bldg. 707 (the reason given for not needing a work package was because it was "flow-through" work).

During the review, the safe work permit procedure and forms were revised. The old safe work permit procedure required that the permit be approved at the start of the shift during which the work was to be performed. Permits were sometimes extended for up to a week, but in several buildings, a new permit was processed each day. Therefore, the foreman had to obtain the safe work permit, while the crafts personnel waited to start the work. On numerous occasions, the lack of detailed scheduling and failure to provide alternate work while obtaining the permit, caused the crafts to be non-productive while waiting for the permit. A plan and schedule had been established for implementation and training in the use of the new work permit (Radiological Work Permit). The new permit procedure allows for the permit to be obtained up to 24 hours ahead of the job. However, instead of following the plan to train personnel in the use of the new permit and waiting

until a supply of the new forms was available, the decision was made to make the new procedure and form effective immediately. This threw the maintenance system into chaos; forms had to be xeroxed and assembled with carbon paper, and the crafts and radiation monitors, and their supervision had to learn the new procedure without the benefit of formal training. All jobs requiring work permits were stopped while this occurred. This is an example of poor management discussed in Section III.A.1 (Organization and Administration).

The operation of the lockout/tagout system is discussed in Section III.B (Operations). A number of misuses of the current danger tag system were noted, some of which support the need for a system to identify deficient equipment (discussed in Concern R-155 [MA.2-1] from the January/February 1988, TSA of Bldgs. 776/777, which remains open). Also, much equipment is currently installed but not in use or being maintained, and no system is established to identify that such equipment is out of service. A new system for identifying lifted leads or installed jumpers was initiated early in 1988, but review of maintenance work throughout the site revealed no evidence of the system's use.

6. Integrated Planning and Scheduling, Including Prerequisites

A review of the methods used by building managers showed that they do not operate consistently in planning and scheduling across the site. The use of a plan-of-the-day or daily planning meeting, headed by the building manager with all the principals involved, is not practiced site-wide. The use of integrated, detailed schedules, which include all building activities, is not being consistently pursued on a site-wide basis. The majority of crafts manpower assignments bypass the scheduling system, because they are designated for "flow-through" work.

In previous TSAs, it was noted that building managers were not serving as the central figure for control of the overall building effort. Such central control is especially critical to the maintenance function, because the building manager is the only position in the building which has influence on all the principals necessary to support a job; namely, production, utilities, maintenance, radiological protection, and the HS&E representative.

Although several of the building managers are close to accomplishing overall coordination, only Bldgs. 771 and 371/374 are emphasizing the concept of daily planning meetings using an integrated schedule. Even in these cases, the daily planning meetings and the integrated schedules are not providing for the scheduling of prerequisites and for coordinating the efforts of various groups in an integrated manner.

One job in Bldg. 707 which was reviewed in detail clearly demonstrated the shortcomings of the scheduling effort by the building manager: An entry had to be made to do maintenance in a normally inerted storage vault which was a contaminated radiation

area. This job had been scheduled for several days. On the morning the work was to begin, the foreman started to obtain approvals on the work permit, but found that the area was not deinerted to the acceptable oxygen level, the extremity dosimetry was not ready, and the radiation survey had not been conducted. None of these prerequisites had been scheduled. The craftspersons waited by the job site for over an hour while the foreman tried to obtain the permit.

Another serious shortcoming affecting maintenance is the scheduling of radiation monitor coverage. The monitors are not assigned to specific jobs until the last minute and then they are often moved to other jobs or reassigned without coordinating the reassignment with the maintenance foreman. On the job discussed above, two radiation monitors were "assigned" at the beginning of the shift when the foreman was obtaining the work permit, but they never went to the jobsite. When it was determined that a survey of the vault was necessary, the radiation monitor from another job (on a large press in another module) was reassigned to run the survey in the vault. This stopped the work on the press (which never really got started) even though the vault could not be entered because the oxygen level had not been confirmed. Neither job was worked. The coordination of prerequisites was not scheduled or controlled. The Building Manager was not involved in establishing proper conditions to support the maintenance effort. Although the crafts foreman was working hard to obtain the work permit and to get the job started, he did not receive the necessary support from the autonomous groups involved.

7. Post-Work Follow-Up and Analysis

Analysis of maintenance program effectiveness is dependent on the quality of the documentation. The Maintenance Procedure Manual, Section 7.1, "Work Evaluation and Management Control," and Section 5, "Equipment Management," include the elements of necessary evaluations. An important facet of this evaluation process is the quality of the work packages (including preventive maintenance work packages), and the incorporation of the results of the work documentation into equipment history records. Review of these systems showed that the foundation is in place and that, in some cases, such as the preventive maintenance system, feedback provisions are functioning in a limited manner. However, the quality of work package documentation, especially "A" level packages, is generally not sufficient to provide proper data from which maintenance program and equipment performance analysis can be conducted.

Some useful trending and analysis of data are evident, such as the analysis of selected machine tool performance. However, the analysis of these data only commenced during the last week of November 1988. Periodic measurements and analysis of machine variation are factored into the specifications for using the machine.

Equipment history files are improving, using feedback from preventive maintenance packages.

Review of UORs, Supervisor Investigation Reports, and Internal Investigation Reports show continuing problems with use of improper work practices, choice of wrong tools, insufficient work instructions, and failure to follow procedures. Training and retraining of crafts personnel and their supervision do not include reviews of root cause analyses of these reports to preclude repetition of shortcomings.

Conclusions

Although improvement has been noted in some areas, maintenance program administration is not consistent throughout the site and within the various buildings.

Maintenance effectiveness at RFP has improved since the advent of the TSAs, especially in Bldgs. 707, 771/774, and 776/777. Maintenance shops are markedly improved in neatness and cleanliness. Other site facilities vary in general physical condition and cleanliness, with a few being in poor condition; e.g., Bldg. 443 (the steam plant). Procedures have been established in the Maintenance Procedures Manual for building and area inspections, but the effectiveness of the inspections on a site-wide basis cannot be fully assessed yet, because the system has been implemented only recently. Maintenance effectiveness is dependent on the building managers, since they are the only position in each building that can assure coordination among all the principals. Success of the maintenance program to upgrade the condition of RFP is dependent on building managers enforcing consistently high standards of facility condition and appearance, but thus far, that has not been the case. Some improvements have been initiated in the control of maintenance work, such as increased use of "A" level work packages and improved control of materials, but most maintenance work is still being conducted using the work order with no additional instructions. A new work scheduling system has been implemented recently, but the majority of work is still being handled by assigning crafts on a daily basis to "flow-through" work. Nowhere at RFP is there scheduling of each job and each craftsperson. Work package documentation and control is not as rigorous for "flow-through" work as it is for backlog work. Although several RFP building managers are nearing the ability to coordinate the total building efforts using integrated schedules and daily planning meetings with all the principal groups, none of them coordinate job prerequisites, including production, utilities, radiation monitors, and HS&E approvals.

Standards for maintenance performance are not established to support a quality maintenance program.

Training for crafts, maintenance planners and schedulers, and supervisory training for foremen and area maintenance managers does not contain the elements necessary to support a quality maintenance program (see Section III.D).

Lessons learned from RFP and industry experience are not fully factored into training and retraining of crafts personnel and maintenance department personnel.

Concerns from previous TSAs which addressed most of these issues remain open. New Concerns (OA-2 and TC-2) in the technical areas of Training and Certification (TC) and Organization and Administration (OA) and one new concern in this Section are issued to ensure all deficient elements of maintenance are addressed.

New Concerns

MA-1 Maintenance and quality standards of performance have (C2/H2) not been established to support the maintenance program.

D. TRAINING AND CERTIFICATION

Discussion

Until mid-1988, there had been little evidence of management commitment to assuring training and qualification programs comply with DOE requirements or responding to TSA recommendations/concerns in this technical area. In the past several months, pilot training programs for some fissile material handler (FMH) positions and for FMH supervisors have been initiated. These pilot programs have generally been effective and well implemented, with the exceptions of some on-the-job-training (OJT) programs, annual recertification and retraining, and FMH supervisor job-specific certifications. Deficiencies observed in these areas included: standards (e.g., procedures) are not available for evaluating OJT performance (Bldgs. 374 and 707), OJT trainers/evaluators are not trained in OJT methods, waivers of training are permitted without DOE approval (as required by DOE 5480.5, Sec. 10) for Production Operations, not all abnormal/emergency events are addressed in OJT checklists (Bldg. 707), annual retraining/reexamination are not addressing job-specific abnormal/emergency responses (Bldg. 707), and biennial requalification is not addressing operating experience/lessons learned (Bldgs. 374, 707, 776). When, based on lessons learned from these pilot programs, training and qualification programs are implemented for all FMH and supervisor positions, RFP will be in compliance with DOE 5480.5 training and qualification requirements. Based on current schedules, all RFP FMHs will be trained and qualified in accordance with these programs by the end of 1990. Because of the plant's late start in initiating these programs, significant escalations in most of these schedules cannot be achieved without jeopardizing the quality of the training and qualification programs. However, there are actions to improve qualification programs that can be taken in the near term.

Of the 18 previous recommendations/concerns in this area, 12 should remain open. A principal reason that many recommendations/concerns remain open is because the team did not consider that a training recommendation should be closed until all currently qualified personnel have completed the training. This is particularly important because most RFP schedules for new training programs do not even include a target date for training currently qualified personnel, and some schedules have considerable gaps between the completion of training materials development and the conduct of training using the new materials.

The delinquency rate in core safety training required for personnel qualification/certification has been reduced to near zero, primarily through the use of an automated training records system to provide regular training status and delinquency reports to line managers. The training records system includes equivalent information concerning job-specific qualification, but this information is not provided to line managers in the same way as core safety training information requirements and status. In

general, first line supervisors of maintenance, uranium operations, radiation monitoring, and production operations personnel demonstrated limited familiarity with the qualification status of their personnel, and there is little indication that qualification information is used to make job assignments.

While training development activities have generally been proceeding on schedule, there are some programs, particularly OJT programs, that are not being implemented in a timely manner. Examples include programs for radiation monitors and maintenance personnel. The radiation monitor training and qualification program development was completed before the end of 1987. However, classroom training of radiation monitors began only within the last two months, and the OJT portion of the program has not started yet. Qualification standards were completed in March 1988 for three maintenance positions, in response to an award fee incentive. There has been no progress made since that time in development of training programs for these positions, or other crafts. A pilot program for one of these positions (electricians) is scheduled to be completed by June 1989. No date has been identified by which all currently employed electricians will be trained in accordance with this program, or when other maintenance training will be upgraded. Additional information concerning deficiencies in maintenance training and qualification are discussed in Section III.C (Maintenance). This information supports new Concern TC-2.

Based on observation of training and discussions with cognizant personnel, slow progress in implementing OJT programs is at least partially due to the fact that conduct of OJT is the sole responsibility of line management. The August 1988 training reorganization did not address this weakness, but did result in three different Directorates (Human Resources, Safeguards and Security, and the Directorate responsible for the applicable job) having responsibility for development of any training programs at RFP. Other DOE and commercial nuclear facilities do not have such a disjointed training development organizational structure. The interface between Technical Training and Training Development and Administration is generally working well, despite this limitation.

The negative impact of less qualified personnel "bidding" into jobs because of their seniority continues to reduce the overall performance level of the plant workforce, as well as place undue demands on training and supervisory resources that could otherwise be devoted to safety improvements and operational concerns. There have been no evident improvements in this area, since it was identified in July 1986 during the first TSA for Bldg. 707, nor are there any initiatives identified to reduce these impacts. At present, plant management has little control over which personnel are assigned to operator or technician jobs. This issue is addressed as a new concern (OA-2 in Section III.A). Another management/labor issue which has not been addressed is how the existing "progression programs," which are part of the union contract, will be integrated with the new qualification-

based training programs. First line supervisor and worker uncertainties about these relationships have been identified as another reason for delays in OJT implementation.

Conclusions

While training development for several programs was underway in 1987, only within the past several months has senior RFP management made a concerted commitment to meeting DOE training and qualification/certification requirements and to responding to the intent of previous TSA recommendations/concerns. The results have been a large increase in resources devoted to training and reorganization of training functions. Pilot training and qualification programs, which have many elements of high quality programs, have been developed and implemented for some FMH positions. However, the implementation of OJT programs, annual retraining and requalification on abnormal and emergency responses, and FMH supervisor job-specific qualification have not been satisfactorily addressed. Recent organizational changes affecting training are disjointed and do not provide a structure to address these issues. Methods being used for pilot programs have not been institutionalized in RFP-wide procedures, contributing to inconsistencies in the quality, timing, and methods for training and qualification, and have resulted in missed opportunities to apply lessons learned.

New Concerns

- TC-1 The quality of pilot training and qualification
(C1/H2) programs for fissile material handlers and supervisors
CAT II for initial on-the-job certifications, and annual and
 biennial recertifications do not meet the requirements
 of DOE 5480.5, Section 10.

- TC-2 Training and qualification of maintenance personnel,
(C2/H2) including crafts foremen, area maintenance managers,
 planners, and schedulers, are not sufficient to support
 a quality maintenance program.

- TC-3 The training and qualification status of skilled
(C2/H2) machinists and welders in Bldgs. 444 and 460 is not
 available for use at work sites.

E. AUXILIARY SYSTEMS

Discussion

Uniform practices are employed plant-wide for effluent holdup and treatment. Air is continuously discharged to the atmosphere through 54 ventilation exhaust systems. This exhaust air is passed through high efficiency particulate air (HEPA) filters which meet or exceed an efficiency of 99.5 percent. Records verify that installed filters are tested for efficiency and leakage according to approved procedures. Contaminated process water from all process areas is treated in Bldg. 374 by precipitation and evaporation and reused on-site. Sanitary waste collected plant-wide is sent to the activated sludge sanitary waste treatment plant. Effluent release data have been trended to help establish goals for reducing the discharge of hazardous materials to the environment. A prior TSA recommendation (R-16, AX.1-1 for Bldg. 707) to incorporate the general dry air exhaust measurement in the reporting of effluents has been effectively implemented and is closed.

In 1985, RFP began to decommission and clean up the three ponds which hold industrial (mixed) waste. Packages of this waste consisted of approximately 500 lbs. of the pond sludge which was mixed with 600 lbs. of cement and cured. Approximately 2,000 boxes were shipped to Nevada Test Site (NTS) as solid mixed waste. In September 1986, NTS temporarily terminated the acceptance of mixed waste and packagings (tri-ply cardboard boxes, weighing 1,100 lbs.) and these materials began to accumulate at RFP. Meanwhile, in response to Colorado Department of Health (CDH) agreements, the pond cleanup was accelerated and waste packaging production was increased from approximately 100 boxes per week to approximately 250 boxes per week. Shortly thereafter some of the stored boxes (tri-wall cardboard) had collapsed due to excessive moisture in the contents. Initial review revealed improper curing of the cement. A followup review revealed that the amount of cement used in each box had been reduced from approximately 600 lbs. to approximately 200 lbs. Use of insufficient cement and improper curing meant that the boxes may have contained moisture in excess of that permitted by NTS waste acceptance criteria and by the U.S. Department of Transportation (DOT) to enable the material to be classed as a solid for transportation purposes.

At the present time, there is a backlog on-site of approximately 18,260 containers: 16,000 pondcrete, 2,000 saltcrete, and 260 sewage sludge. These containers cannot be transported as a solid because the moisture content is unknown, and it will not be accepted by NTS because of the strength of the cardboard boxes. Subject to final review, RFP plans to unpack each cardboard box, examine the contents for moisture content, and re-pack them, two each, in plywood boxes. If the contents contain too much moisture, the material will be pulverized, dried, and re-cast into a solid.

It should be noted that the DOE/NTS low-level waste acceptance criteria (DOE 5820.2A of September 26, 1988) for moisture, 0.5 percent by volume, appears to be in excess of the amount permitted in a solid as defined by DOT (49 CFR 171.8).

The pondcrete situation indicates that there was a lack of criteria, procedures and oversight of mixed waste packaging. Although a review was performed and a corrective action plan was implemented by RI, some deficiencies remain: waste operations personnel are not convinced that the moisture content of the waste form must meet DOE requirements; there is no indication that the Repackaging and Reprocessing Plan has been reviewed by ES&H; and packaging and repackaging procedures have not been prepared. Further, RFAO rejection of the RFP Unusual Occurrence Report (UOR) and the absence of plans to convene a board of investigation indicates that RFP has not identified root causation, e.g. production schedule vs. quality, nor made any attempt to assess accountability for the incident (see new Concern AX-1).

The storage of fissile material at RFP, based on review of selected storage areas in Bldgs. 371, 707, 777, 776, and 991, in general conforms to good practice standards. A tour of vaults revealed proper nuclear criticality safety postings, procedures, and housekeeping. Carts used for the transfer of fissile material had nuclear material safety limits indicated on the cart. The carts had fixed position holders to provide proper spacing of fissile material. The Bldg. 771 "East Hallway" (Room 146C) continues to represent poor storage practice (see discussion of Recommendation R-101 [AX.3-1], for Bldgs. 771/774 in Appendix C-3). One drum in Bldg. 776, Room 1 (basement) was observed to have a 1,000 g plutonium limit label and a stated content of 1003 g. The room has a special 3 kg limit for the drums.

Ventilation and exhaust systems at RFP have a number of identified deficiencies. These deficiencies include inadequate fresh air in some workplaces, improper air flows, and unreliable pressure relief devices on inert gloveboxes. Three specific concerns and recommendations in prior TSAs are being addressed, but none is complete and all remain open.

The Facilities Capability Assurance Program (FCAP) includes ventilation equipment in its overall assessment of the condition and capabilities of plant equipment. As a result, a \$20 million capital line item project is planned for FY92 for the plutonium facilities. This project includes: replacing the natural gas-driven equipment in Bldgs. 702 and 776; upgrading the breathing air and glovebox monitoring systems in Bldg. 707; replacing the Kathabar regenerators in Bldg. 707; replacing the heating and ventilation controls in Bldg. 750; replacing the supply air coils and dampers, and installing an electrical inverter and data acquisition and control system in Bldgs. 712, 713, and 776; and replacing glovebox header supply duct work in Bldg. 771. Other, more urgent work on these systems in the plutonium facilities is

being handled through annual expense and capital funding, as appropriate.

Similar ventilation and exhaust system deficiencies exist in other buildings. Some of these are being addressed in a timely manner. For example, the highest priority project planned for FY89 general plant project funding is a renovation of the heating and ventilation system in Bldg. 889. Development of a plan and schedule for timely correction of all other ventilation problems at RFP is part of an existing Self-Improvement Program; a preliminary schedule and cost for this effort is anticipated to be available early in 1989 (see new Concern AX-2).

RFP has recently developed a list of the vital facility safety equipment plant-wide. Written procedures cover testing, monitoring, and reporting requirements for these systems. A review of experience in Bldgs. 371/374, 444, 559, 779, and 881 verified that the procedures are in use and that testing and monitoring data are on record. The prior TSA recommendation for Bldgs. 771/774 to improve the performance testing and monitoring of safety systems is closed.

RI has reviewed OSRs for the nine plutonium facilities and has revised their SARs to fully describe the operational requirements for engineered safety systems. The revised SARs clearly spell out administrative controls as well as limiting conditions for operation, surveillance requirements, and remedial actions. The prior TSA recommendations for Bldg. 707 and Bldgs. 776/777 dealing with OSRs for engineered safety systems, however, should remain open pending full implementation of procedures ensuring compliance (see new Concern OP-2).

Closed cooling-water systems that have the potential for radioactive contamination are monitored quarterly in Bldgs. 371, 707, 771, and 776. These systems are currently being checked to ensure a pressure gradient from the non-contaminated side of the heat exchanger to the contaminated side. Similar procedures are being established in Bldgs. 444, 559, 779, 881, 883, and 865.

All cooling-water systems, both open cooling towers and closed recycle loops, are monitored to provide proper chemical treatment for prevention of scaling and corrosion. Tests on the closed recycle systems are performed monthly to check for proper concentration of corrosion inhibitors. Chemicals used are a Nalco product, chromate, and ethylene glycol. Open cooling tower systems are monitored daily for hardness, conductivity, pH, and alkalinity.

Conclusions

Effluent holdup and treatment is carried out effectively to minimize the impact on the environment. However, the backlog of solid waste accumulating on-site continues to present problems and specific criteria, procedures, and oversight have not been established to address these problems. The storage of fissile

materials, in general, conforms to good practice standards, although exceptions were noted in some areas. Ventilation and exhaust system deficiencies exist in many of the buildings, most of which have been identified by RI. However, a plan for timely correction of all ventilation problems at RFP has not been fully developed. Cooling water systems, vital supply systems, and engineered safety systems are generally tested and monitored in compliance with orders, regulations, and industry standards.

New Concerns

- AX-1 Criteria, procedures, and oversight of mixed waste
(C3/H3) packaging operations for pondcrete, saltcrete and sewage
 sludge are not adequate. There is no indication that a
 board of investigation is being considered, and no
 attempt has been made to identify a root cause for the
 pondcrete incident.
- AX-2 Upgrading ventilation systems on a plant-wide basis at
(C2/H2) RFP to meet current requirements has not been
 accomplished.

F. EMERGENCY READINESS

Discussion

The RFP Emergency Preparedness Program has improved substantially since the first TSA in 1986 and currently is an organized, well-planned, and effective program in meeting emergency readiness needs. The program integrates RI and RFAO into a single emergency response organization with a single emergency plan. Interfaces are exercised with each major drill and effective joint planning meetings are conducted monthly. RFP participation in AL emergency preparedness (EP) committees has resulted in good formal and informal working relationships with AL.

Organizationally, a full-time Emergency Preparedness Manager has been hired to run the day-to-day program. In each facility, the Building Emergency Representative has been assigned the responsibility of being the single point of contact for all emergency preparedness issues. Long- and short-range plans have been developed to provide direction and assign priorities to EP tasks. A QA Plan has been developed in coordination with the Non-Weapons QA Group and, once implemented, will provide for oversight and audit functions. The additional staffing required to implement this QA program has been identified and requests have been submitted to RFP management for approval.

The Rocky Flats Emergency Plan (RFEP), the Emergency Management Handbook, Emergency Operations Center (EOC) Deskbooks, and building emergency plans have been issued and are maintained in a document control system. The RFEP and building emergency plans were developed to meet DOE, state and local county requirements and standards. For emergency response levels, this has required that three separate, but similar, definitions be included in the RFEP. Recently, the EP staff has begun a program to upgrade all building emergency plans to a standard format that assures uniformity and compliance with prescribed guidelines.

A new EOC has been built, employing the latest technology and providing RFP one of the best facilities in the DOE complex. An intensive training program was developed and conducted to prepare all emergency cadre members for using this new facility. The training program includes emergency job descriptions, training requirements, standard course outlines and training materials, and databases to maintain training records.

Major exercises and building drills are routinely conducted, but they do not always provide effective learning for all emergency responders. The exercise conducted for the review team lacked a well-developed exercise scenario package. This was particularly evident at the event scene where emergency responders did not have enough information to respond properly. Data, such as the magnitude and duration of the simulated fire, ongoing radiation monitoring data for the simulated injured person and immediate area, contamination levels following decontamination steps, and contingency messages, were not available to control the event.

Simple drills, such as bomb threats and criticality evacuations not requiring much control, proceeded smoothly and provided excellent training. A corrective actions database has been established to track exercise and drill deficiencies and improvement items to completion.

Interim improvements have been made on the nuclear criticality accident alarm and public address systems to increase reliability. This has required considerable financial and staff resources, including a dedicated staff of maintenance and repair personnel. The existing systems are old and replacement parts are not always available. Requests for Facility Capability Assurance Program funding of about \$40 million have been submitted to AL to modernize the systems and assure they meet current codes and standards. This funding is in addition to that required to upgrade the fire alarm systems.

An extensive program has been undertaken to label all building emergency egress routes and to train employees in understanding these routes. Emergency equipment cabinets are now key locked with glass key boxes located in close proximity. These cabinets are inventoried monthly by radiation monitoring supervisors to assure adequate and functional emergency supplies and calibrated equipment. Bldg. 850 has been identified to serve as an alternate EOC and backup facility for the support satellites. Building modifications are in progress, equipment has been ordered, and once training is provided, this facility will be operational. EP staff needs to be involved in the final acceptance review of this facility, as well as all other major engineering projects that have EP implications.

A computerized accountability system using bar code technology has been implemented in the production facilities allowing positive accountability of building occupants. This system was demonstrated in a criticality drill, and accountability was complete within 15 minutes. Procedures for screening individuals involved in nuclear accidents were upgraded and guidelines established. These procedures were demonstrated during the same criticality drill. The review and authorization for volunteers to receive radiation doses during emergencies involving lifesaving and other critical activities are documented, and appropriate responsibilities are assigned. However, training of key individuals must still be accomplished. Shift supervisors, radiation monitoring supervisors, and off-shift radiation monitors need to be trained on procedures and theory. In addition, radiation monitors need emergency training to evaluate radiation status during emergency conditions. Their ability to provide this emergency radiation support is questionable (see Sections III.D and III.L.1 of this report).

A total of 29 recommendations and concerns were identified by the previous TSAs. Based on the progress outlined above, 23 recommendations/concerns are considered closed. Plans or procedures are in place for the remaining six items and implementation is pending.

Conclusions

The EP program is fundamentally sound and has been improved in the past few years, although all elements of the program have not been completely implemented. The interfaces and working relationships between RI, RFAO and AL are good. Actions have been taken or plans are in place to correct all previously identified deficiencies. Attention is needed in implementing the QA program, training emergency responders in the procedures and theory of allowable lifesaving radiation doses, developing more detailed scenarios to assure that major exercises are better controlled and serve as more effective learning experiences, EP staff participating in final acceptance review of engineering projects, and in completing the identified alternate EOC. Budget requests and technical presentations have been made to AL to upgrade the nuclear criticality accident alarm and communications systems to meet appropriate codes and standards. Action on this item must now come from DOE. The strides made in upgrading this program are directly related to the systematic planning and management of the EP staff.

New Concerns

None.

G. TECHNICAL SUPPORT

Discussion

1. Technical Support - General

Technical support at RFP comes primarily from departments within Support Operations and HS&E. Organizational charts clearly define the lines of communication and responsibilities. Interviews with managers within those departments indicated that they understand operations throughout the plant.

Planning and implementation of capital projects effectively incorporate safety-related concerns, both in establishing priorities for the various projects and in detailed engineering phases. For example, seven of the nine FY89 General Plant Projects (GPPs) recommended for implementation by RI have a primary impact on HS&E matters. A recent innovation in the project implementation procedure is the preparation of an "Operational Requirements Document" which requires the user to consider, among other factors, a wide variety of safety-related concerns at the initiation stage of a project. Use of this document should reduce the probability of overlooking an important design safety feature in the initial design. As the engineering proceeds, comprehensive safety reviews are required for each project; evaluation of the safety review comments received on several projects showed that they were effectively incorporated into the design. A previous recommendation, identifying the need for an independent review of facilities modification projects, is closed.

Testing and monitoring of equipment performance is accomplished at RFP through a wide variety of methods. Routine quality control measurements on product quality provide data which are being trended and analyzed to detect poor equipment performance; however, seldom, if ever, are the identified defects likely to lead to safety-related problems. A small amount of information on equipment performance is being obtained from the preventive maintenance program, but this effort needs to be continued and expanded significantly before it will be effective.

A Facilities Capability Assurance Program (FCAP) was initiated in 1986 which is attempting to categorize systematically the condition of facilities and equipment on a plant-wide basis. This program is improving the planning process for timely capital expenditures to maintain facility capabilities. Trending performed on the In-Process Plutonium Staging Vault availability is an example of the successful performance of this program. This trending process predicted the need for a large capital line item (\$18.6 million) in FY90 to avoid falling below the availability of this system which is required to meet program needs. FCAP is also being employed to predict the need for other projects, several of which involve safety-related systems. For example, other FCAP projects include: Electrical Power Rehabilitation (FY90), Central Steam Plant Upgrade (FY91),

Production Annunciation Utility Replacement (FY92), Plutonium Facilities HVAC Restoration (FY92), Plant Fire and Security Alarms Systems Replacement (FY93), Liquid Waste Treatment Facility Renovation in Bldg. 374 (FY95), and Plant-wide Drainage Renovation (FY96).

Since 1986, all plant modifications are required to be reviewed by Facilities Engineering. As-built drawings must be completed for closeout of these projects. Red-lined drawings are not permitted in operations buildings, and none were observed during tours of the plant. However, a large backlog of as-built drawings needs to be updated. This effort started about five years ago and the current five-year plan shows a priority list through FY94. Of highest priority are recovery process systems, nuclear criticality accident alarm detectors, and piping and instrument drawings (P&IDs) and schematics. Important items not on the list are mechanical fire protection systems (see Section III.N.). Of 40 active process systems in Bldg. 771, six P&IDs require updating and five others are to be updated as part of ongoing modifications. Of 20 support systems, 17 require P&ID update. Current P&IDs are essential to safe operations (see new Concern TS-1).

HS&E area engineers coordinate safety-related issues between HS&E and operations in each building. They work to assure that health, safety, and environmental problems and requirements are resolved or implemented through the use of a multi-disciplinary safety team. Discussions with operations managers and building managers verified that this coordination was useful. Sometimes their effectiveness is reduced by their need to coordinate simultaneously the safety review for a variety of activities in more than one building. In particular, safety-related maintenance work has not always received timely coordination.

Area engineers also have the responsibility to ensure compliance with DOE Orders and SARs. Evidence suggests that they have not been proactive in ensuring compliance with OSRs (see new Concern OP-2). Further, the evidence suggests that not all building managers plant-wide have proactively ensured compliance with OSRs. RI has recognized this problem and has initiated a pilot program in Bldg. 707 to work out satisfactory procedures for ensuring OSR compliance plant-wide.

Until recently, area engineers also have had the responsibility to coordinate HS&E review and approval for modification projects within Facilities Engineering. This has required too much of their time, given their other duties within operations. As of January 1989, two HS&E engineers, whose sole responsibility will be to coordinate HS&E review, surveillance and approval for engineered projects, will be assigned to Facilities Engineering. This should help to assure the timeliness and effectiveness of safety coordination for engineering projects.

RI has recently completed a comprehensive review of OSR content for SARs in the nine plutonium facilities. An implementation

plan for incorporating revised OSRs, limiting conditions for operation, safety limits, and administrative controls into procedures is scheduled for completion in January 1989, pending approval of the SARs by AL (see discussion for Recommendation R-32 [TS.4-1], for Bldg. 707 in Appendix C-2).

RFP uranium facilities are considered by AL to be "low hazard facilities." As such, they are approved to operate under a Safety Assessment rather than an SAR. RI has submitted a five-year plan and schedule to RFAO for issuance, revision, and maintenance of RFP SARs; however, Safety Assessments for uranium facilities have not been included in the schedule.

HS&E input to operating procedures is achieved through operational readiness reviews and operational safety analyses. A review of operating procedures, however, verifies that safety-related limits and cautions are generally not referenced and highlighted. Further, Procedure POA-1, May 1988, states that production operations procedures must be approved by involved safety departments. In general, HS&E is not documenting its approvals of operating procedures.

During this review, regulated effluents were verified to be well below regulatory limits and plant control limits. The environmental surveillance program is conducted by the Environmental Management Section of HS&E. An Annual Environmental Monitoring Report is submitted to EPA and the State of Colorado. Effluent monitoring programs are audited annually by the RFP QA organization. Calibrations of monitoring equipment are accomplished at least quarterly by a member of the Environmental Management Group using equipment supplied by the Standards Laboratory. RFP has developed a waste minimization program to reduce the generation of wastes and to reduce volume and/or toxicity prior to disposal.

Stack emissions of gaseous effluents which may contain radioactive isotopes or beryllium are sampled continuously. The sampling filters are changed/analyzed weekly, then averaged for the month. Thirty-six of the 54 stacks are also monitored by Selective Alpha Air Monitors (SAAMs) which will alarm if the effluent radioactivity level reaches 10 percent on the lowest scale reading (activity concentration compared to that permitted by DOE 5480.11). Interviews with RFP personnel indicate there were only two "supervisory alarms" in the past 15 years, and no "real" alarms.

Stack monitoring of releases of non-radioactive, non-beryllium effluents of hazardous materials, is not required. However, RFP maintains an ambient air monitoring station downwind (east) of the plant. The monitoring program and effluents are in compliance with the Clean Air Act.

Plant-wide process water containing radioactive or hazardous materials is sent to Bldg. 374 for treatment. Treated water is used in cooling towers and in the steam plant; none is released

off-site. Sanitary water throughout the plant, isolated from process water, is treated in the sanitary waste-water treatment plant. It is then used for on-site spray irrigation or off-site release to Walnut Creek. Since January 1987, about 42 million gallons have been released to the Great Western Reservoir, most of which has come from surface water runoff. RFP has a zero-discharge goal with respect to off-site release of water from the waste-water treatment plant; less than 10 percent was released during 1987 and 1988. Discharges have been monitored to demonstrate compliance with Colorado and EPA limits.

Small amounts of hazardous substances spilled during vendor loading of process chemicals into bulk storage tanks is creating additional solid waste. RFP has not addressed this situation for compliance with the Resource Conservation and Recovery Act, the Clean Water Act, and the Comprehensive Environmental Response, Compensation, and Liability Act (see new Concern TS-2).

2. Technical Support/Packaging and Transportation

a. Quality Assurance

The January/February 1988 TSA of Bldgs. 776/777 reported (Concern TS.7-1) that the RFP "Quality Program Plan - Material Packaging, Shipping and Transportation," which was prepared by Quality Engineering and Control (November 1982), does not include the NQA-1 requirements of DOE 5480.3 and DOE 5700.6B. A draft of the revised QA Plan has been prepared, but an implementation date has not been established (see discussion of Concern R-181 [TS.7-1] for Bldgs. 776/777 in Appendix C-4).

The AL safety appraisal, "Packaging of Hazardous Materials," (September 9-13, 1985) reported an Observation/Suggestion regarding deficiencies in the QA Plan. This was reported as a Finding/Recommendation in a subsequent AL safety appraisal (February 2-6, 1987). This has been an outstanding item for three years. The RFP response to AL appraisals regarding this issue has not been timely (see new Concern TS-3).

The "Quality Program Plan - Material Packaging, Shipping and Transportation," (November 1982) indicates (on p. MPST Q1-5) that audits and reviews are conducted by RFP Internal Auditing, and Quality Engineering and Control. Although QA audits have included war reserve (WR) parts, audits of non-WR activities have not been conducted. A responsibility of the On-Site Transportation Committee is to "audit packaging and transportation," but no audits have been conducted (see new Concern TS-4).

The AL functional safety appraisal schedule includes annual reviews of the RFP Traffic Department. Generally, these reviews have emphasized activities involving radioactive materials, but have not included the entire spectrum of hazardous materials packaging and transportation, such as in-depth reviews of hazardous materials training, on-site transportation safety, and

the bulk storage of hazardous materials. The last AL functional safety appraisal was conducted in February 1987. An AL traffic management appraisal is conducted annually, but it does not include a review of safety functions (see new Concern TS-5).

b. Training

The training program for persons whose responsibilities include packaging and transportation consists of both on-site and off-site courses. Key persons, including the four instructors who conduct the on-site training program, receive packaging and transportation training from a variety of off-site sources, including DOE-sponsored courses. A review of selected training records revealed that not all off-site training is documented; the records were not auditable.

Persons who package or transport hazardous materials must complete satisfactorily the on-site hazardous materials course. Upon successful completion of the course, they are given a "Hazardous Materials Training Certification" card which is valid for two years.

There are no documented criteria that indicate qualifications of a hazardous materials instructor, and there is no requirement that the four hazardous materials instructors receive recurrent technical training. A review of the training records for the four instructors indicated that one last received off-site training in May 1985. Frequent revisions to DOT regulations require more frequent training. The Education and Training Department provides instruction in training techniques to the four hazardous materials instructors, maintains the records of the personnel who have received the on-site hazardous materials training, and notifies personnel when they are scheduled for re-training (every two years, in this case).

There are only two versions of the final examination for the on-site course. Since students in subsequent courses, and students who fail the examination may re-test on the same examination, the final examination is subject to compromise. The preparation of final examinations from question banks is being planned; however, an implementation plan was not available. The passing grade on the final examination is 80 percent, or better. This requirement is not documented. If a student fails, there are no published criteria for re-test. The failed student may remain on the job, so long as the student's qualification card remains current (see new Concern TS-6, and Section IV.D, Training and Certification).

c. Bulk Storage Tanks

Vendors deliver hazardous materials (including sodium hydroxide, potassium hydroxide, nitric acid, fuel oil, etc.) to RFP bulk storage tanks. Included are the tanks located near Bldgs. 374, 774, and the 218 Nitric Acid Tank Farm. The chemicals are used as feed stock for the various chemical processes.

Although RI adopted ASME code standards for tanks built after 1979, some tanks pre-date the policy, and their pedigree is unknown. Generally, tanks are the responsibility of the respective building manager; at the present time, however, there is no plant-wide documented safety policy or mandatory preventive maintenance operations (PMO) program for the tanks.

RFP is in the process of preparing a "Tank Integrity PMO" program which is expected to have plant-wide implications. The program plan is incomplete; however, some work has begun. By late 1989, it is expected that each tank will have been subjected to an ultrasonic scan (to determine wall thickness, and check for structural flaws), and subjected to routine PMO review.

A 1987 ultrasonic scan of the 6,000-gal. sodium hydroxide tank located outside of Bldg. 774 indicated that the tank walls are 0.150 inches thick; a 1988 ultrasonic scan revealed a nominal wall thickness of 0.145 inches. The present secondary containment will not contain 100% of the tank contents, and it drains into an old condensate tank which leaks. The tank, used to supply sodium hydroxide for treatment of Bldg. 771 effluent, is scheduled to be replaced by mid-1989. However, since secondary containment was not included in the original design for the replacement tank, project completion may be delayed.

Additionally, the RFP Spill Prevention, Control and Countermeasures (SPCC) Plan (March 1985) does not comply fully with EPA requirements (Clean Water Act [CWA], and Comprehensive Environmental Response, Compensation and Liability Act [CERCLA]). Secondary containment of storage areas is the accepted practice of complying with the containment aspects of SPCC requirements. Secondary containment (earthen dikes) of the two large fuel oil #6 tanks and the two tanks located at the "218 Nitric Acid Tank Farm" is inadequate since these dikes will permit spilled liquids to soak into the ground. Secondary containment of other tanks consists of deteriorated gunnite which may also leak. Additionally, the loading area at each location is not diked. Other tanks have similar deficiencies.

Cryogenic liquids (oxygen, nitrogen, argon, and carbon dioxide) are supplied by vendors and stored on-site in vendor furnished tanks. There are no contractual provisions for vendor maintenance for these tanks (see new Concern TS-7).

d. Operations

RFP ships transuranic (TRU) waste to Idaho National Engineering Laboratory (INEL) for interim storage pending Waste Isolation Pilot Plant (WIPP) start-up. The TRU waste is transported via the DOE-owned ATMX railcar which operates under a DOT exemption (DOT-E 5498). The exemption expires on June 30, 1989. Although RFP is developing an exemption renewal request, there is no contingency plan for transporting the TRU waste, should the

exemption not be renewed (The use of TRUPACT II to transport TRU waste to WIPP has been delayed pending certification of TRUPACT II and start-up of WIPP).

On the evening of December 1, 1988, at approximately 1745 hours (during darkness), a commercial train stopped on a private rail spur which crosses the west access road to the site. The west access road was completely blocked; there were no lights on the train to warn oncoming motorists. The crossing is marked with usual daytime grade crossing markers; however, no lighted markers are present. An RFP inquiry to the railroad indicated that the private spur is "rarely" used at night. The company spokesperson was apologetic and promised to: 1) notify RFP, and 2) use flares or some other lights at the crossing when operating during hours of darkness. This procedure should be formalized.

Portable "dumpster" tanks (500 gal. capacity) are used to transfer nitric acid from the "218 Nitric Acid Tank Farm" to Bldgs. 444, 771, and 883, per procedure CO-1008-D (September 24, 1988). Although this procedure has been in use for several years, it has not been reviewed by the Traffic Department. The portable "dumpster" tanks have not been approved for on-site use, and they are not labeled in accordance with the requirements of the On-Site Transportation Manual.

The area behind Bldg. 331 used for storing discarded automobile batteries and drums (unlabeled, but presumably containing oil or transmission fluid) is not properly diked.

There is no requirement that the drivers of on-site delivery trucks possess a cargo list which could be used by emergency response personnel in the event of an accident (see new Concern TS-8).

Conclusions

Departments within Support Operations and HS&E provide technical support in a number of ways to contribute to safe operations at RFP. In most cases, this support has been appropriate and effective, although in a number of areas procedures should be strengthened to improve assurance of safety in operations. A number of new plans and procedures have been written, but their effective implementation has yet to be demonstrated.

The large backlog of safety-related, as-built drawings that require updating continues to be a concern. Also, a more formal trending of safety-related data from process and equipment performance could be used effectively for improvements. RFP has an effective program in place to monitor, control, and reduce hazardous materials in liquid and gaseous effluents. However, spillage of hazardous substances during vendor loading of bulk storage tanks has not been addressed.

The Quality Program Plan (November 1982) is not current and response to AL appraisals has not been timely. QA and internal

audit requirements of DOE 5480.3, DOE 5480.5, DOE 5482, and DOE 5700.6B are not being met. AL functional safety appraisals do not include all aspects of DOE 5480.3.

Because of the lack of documented requirements (instructor qualifications and re-training; re-tests for failed students), and since the final examination is subject to compromise, there is no assurance that workers are properly trained. Accordingly, not all aspects of the on-site hazardous materials training program are auditable; and it does not meet the requirements of DOE 5480.3 and DOE 5480.5.

RFP lacks a comprehensive program to assure the structural integrity and environmental compliance of their bulk storage tanks and the loading stations for the tanks. Therefore, RFP does not comply with DOE general safety requirements in DOE 5480.1, nor EPA requirements. Additionally, RFP has no assurance that vendor furnished cryogenic tanks are safe.

Deficiencies were observed in several operational activities, including contingency planning, adherence to the on-site manual provisions, and drum storage of hazardous materials. However, there is no direct evidence to indicate that off-site shipments do not comply with DOT regulations, 49 CFR 100-199.

New Concerns

- TS-1 The large backlog of safety-related, as-built drawings (C2/H2) that require updating is detrimental to the safety of operations.
- TS-2 Minor spillage of hazardous substances during vendor (C1/H2) loading of bulk storage tanks has not been addressed by RFP.
- TS-3 RFP responses to AL hazardous materials appraisals (C3/H3) have not been timely.
- TS-4 The RFP internal audit program does not meet the (C1/H3) requirements of DOE 5480.3, DOE 5480.5, DOE 5482.1A, and DOE 5700.6B.
- TS-5 AL functional safety appraisals do not include all (C2/H3) aspects of DOE 5480.3. Furthermore, AL has not required or pursued responses from RFP to the findings of these appraisals (see new Concern TS-3).
- TS-6 The hazardous materials training program does not (C1/H3) meet fully the requirements of DOE 5480.3 and DOE 5480.5.
- TS-7 The bulk storage of hazardous materials does not meet (C1/H2) current safety and environmental requirements (see also Concern TS-2).

TS-8 Several on-site transportation and storage activities
(C3/H3) do not comply fully with established practices.

H. SECURITY/SAFETY INTERFACE

Discussion

The Security Department has adopted a safety policy that reads: "It shall be the policy of the Plant Security Department that no task is so important or urgent that it cannot be done in a totally safe manner." The Department appears to be effectively implementing this policy. Adequate safety review is given to all new security facilities and to prospective changes in security requirements or procedures. Input from these reviews is effectively applied.

Procedures have been established which adequately cope with emergency situations without creating additional safety risks to employees. For example, there are no automatic door or gate closures activated by any alarms. All such actions are manually performed by an individual within view of the gate or door to assure that no one will be injured by the closure.

Three emergency exercises were conducted during this review (fire, criticality, and bomb threat). In each instance, security personnel performed their function in a satisfactory and timely manner and no threat to personnel safety was introduced. All security-oriented equipment performed as intended during each exercise.

Plans for changes in portal monitoring configurations were being made during this review. New buildings are under construction, and when completed will allow effective complete monitoring for ingress and egress from the Perimeter Security Zone (PSZ) for the first time, although thorough monitoring has been conducted for some time at Material Access Area [MAA] ingress/egress points. Detailed plans for implementing the use of the new portals are being developed which will involve sequential activation of the various monitors. Consideration is being given to requiring the use of non-metallic lunch boxes and thermos bottles to permit more effective monitoring. This practice would be beneficial in making the program thorough and effective.

Procedures and training for safe use of firearms by security personnel are effective. Firearms in vehicles are locked in holders so that they can only be used by authorized personnel. A professional physical therapist guides the required exercise program for each security employee required to pass periodic physical tests, thus helping avoid any adverse health effects from these required tests.

Shift Superintendents report to the Director of Security. Since they are the designated initial emergency directors, this is a logical arrangement. The superintendents have wide-ranging responsibilities and authority, especially on off-shifts, and they are fulfilling these responsibilities effectively. The

necessity of performing their duties in such a way as not to jeopardize safety is recognized by in the five incumbent Shift Superintendents.

Conclusions

Security activities are conducted at RFP with effective safety review and do not adversely impact the safety of employees. Internal safety practices in the Security Department give appropriate attention to safe use of firearms and security devices.

New Concerns

None.

I. EXPERIMENTAL ACTIVITIES

Discussion

Experimental activities are conducted at RFP both in facilities dedicated to such activities and with operations equipment temporarily utilized for such activities. These two types of experimental activities are discussed separately.

Experimental activities are conducted in dedicated facilities in a wide variety of locations at RFP in Bldgs. 444, 460, 559, 701, 705, 707, 771, 776, 777, 779, 865, 881, and 991. These activities are managed by development managers in four different directorates, Plutonium Operations, Production Operations, Quality Engineering and Control, and Program Management. The primary vehicle used to assure safe operation of experimental equipment is the Operational Safety Analysis (OSA) required by procedure HSE 2.03. Tours of the various experimental areas revealed OSAs were in place and up to date for each experimental unit, and these analyses were sufficiently thorough in identifying hazards and means of coping with them. In those locations where fissile materials are handled, criticality limits are posted, as required by procedure HSE 17.03.

Housekeeping in experimental areas was barely satisfactory; however, no area was in such poor condition as to represent a significant safety hazard. Low priority being given to such activities as removal of obsolete equipment and materials, and painting is contributing to the poor housekeeping situation. Several experimental activities are underway that have safety-related goals such as significant reduction in radiation exposure or significant reduction in radioactive waste volume. One example is the substitution of a cesium-plutonium chloride salt for the currently used magnesium chloride salt in the fused salt plutonium recovery process. This will eliminate the alpha-neutron reaction with magnesium which is currently causing a significant radiation exposure to employees working in this process area. This program has been receiving active support from top RFP management, maintenance, and operations organizations and is scheduled for implementation in January 1989. Another example is the development of microwave melting of waste sludges which has the capability of creating an 80 percent reduction in the large volume of these wastes currently being produced. Development managers report that good cooperation and management support is also being received for this program, as well as for other important experimental activities.

Experimental activities conducted with production equipment are diverse. Such activities are periodically conducted in Bldgs. 374, 444, 460, 707, 771, 776, 788, and 883.

These activities are conducted only after a thorough, documented review of safety aspects of the planned activities by the requester and the equipment custodian. This review is conducted and documented in accordance with Procedure HSE 2.09 and centers

on the adequacy or need for revision of the existing OSA. This review and approval process began in August 1988 and is being effectively implemented throughout RFP, thus satisfying the only prior concern identified in this technical area.

Conclusions

Experimental activities are being conducted satisfactorily both in facilities dedicated to that purpose and, where these activities are done periodically, in production facilities. Some of the experimental activities have goals intended to make significant improvements in safety performance at RFP. These activities are receiving appropriate RI management support.

New Concerns

None.

J. FACILITY SAFETY REVIEW

Discussion

Eight of the ten prior TSA recommendations in this technical area are closed.

The two recommendations/concerns that remain open pertain to the triennial appraisal of the safety review system. These efforts not scheduled for completion until second quarter, calendar year 1989, and too little substantive information is presently available to close these recommendations/concerns.

Improvements are being made in the independent safety review process at RFP. However, actions have not progressed to the point where the recommendations to expand the scope of the triennial review to fully address the items specified in DOE 5480.5 can be considered fully satisfied. Other actions concerning annual facility appraisals, formal statements of authority for the various committees, and timeliness of reviews have progressed to the point where sufficient activity has been observed directly and adequate records have been reviewed to demonstrate that the newly established independent review system is functioning. As more experience is gained, changes to the committee system can be expected as duplicated activities are discovered or functions are combined to enhance the efficiency and effectiveness of the independent safety review process.

Two committees, the Safety Oversight Panel (SOP) and the Safety Advisory Overview Group (SAOG), are comprised of experts external to RFP and serve to provide the President, RFP, with an independent executive level perspective to ensure plant operations are performed in the safest achievable manner. The SAOG was chartered in April 1988 and has met on a periodic basis, approximately monthly. The SOP Charter was approved in June 1988 at its initial meeting, and the SOP adopted a policy of meeting quarterly. Two formal meetings have been held since that time, and the next formal meeting is scheduled for January 1989.

Other committees staffed by RFP personnel have been chartered and identified in the Rocky Flats Organization Manual with individually stated policy, scope, specific responsibility, and action required. Committee appointment responsibility, reporting relationships, and accountability have also been defined; and lists of required representatives for each committee have been specified in their charters. The formal charters are dated October 24, 1988, although some of the committees have been operating with earlier versions of their charters. Staffing philosophy for the committees has been to assure a multi-disciplinary approach with representatives from appropriate RFP functional groups chosen to support the committees. All of the committees are advisory to management.

The committees and reporting relationships are as follows:

Reporting to the President, RFP:

- Safety Oversight Panel
- Safety Advisory Overview Group
- Executive Safety Committee
- Executive Safety Review Board
- Nuclear Criticality Safety Committee.

Reporting to the Director of HS&E:

- Special Materials Review Committee
- Joint Company/Union Safety Committee
- Best Management Practices/Spill Prevention
and Control Committee
- Environmental/Risk Analysis Committee
- Health Physics/Industrial Hygiene Committee.

Reporting to the Controller:

- On-Site Transportation Committee.

Reporting to the Director of Safeguards and Security:

- Accident and Fire Prevention Committee.

The committees generally meet monthly to review items brought before them and to perform facility reviews. The type of material for committee review is specified in the charters and includes facility performance and compliance to policies, procedures, and regulations, programmatic issues, and other items relating to safe operational practices. Annual reviews of the facilities are accomplished through a system of monthly reviews of individual buildings with all important facilities being covered at least annually. The net result for any facility is that the various committees will make an appraisal at least annually in their designated areas of responsibility. Thus, multiple appraisals will be performed of each important building, including reviews of organization and staffing, accidents, incidents, and other safety-related issues every year to meet the requirements of DOE 5480.5. In addition, advance reviews will be made of proposed modifications to facilities and equipment having safety significance and of proposed experiments.

UORs and Internal Investigation Reports (IIRs) are to be addressed by the Safety Review Group (SRG), a line organization group established in November 1988. The SRG investigates all unplanned events, with the responsibility for categorization of the event within one day. The SRG maintains consistency of subsequent safety investigations and the effective implementation of "lessons learned" from the investigations. In addition, the SRG is responsible for trending safety-related issues at RFP. Current staffing is five permanent members, with four members matrixed from RFP on assignments from six months to two years. Procedures are being developed for the structured handling of notifications, database management, conduct of investigations, and report preparation.

The proposed triennial review process is contained in a draft document, FY1989 Triennial Review, Nuclear Facility Safety Plan. The draft plan is intended to meet the requirements of DOE 5480.5. Responsibility for the triennial review has been assigned to the Audit and Strategic Planning Manager.

As presently proposed, safety discipline manuals will be prepared for each of six areas:

- Nuclear Safety
- Industrial Hygiene
- Industrial Safety
- Environmental
- Health Physics
- Fire Protection

These manuals will serve as references and as a means to familiarize the management review team that will perform the actual triennial review. The management team is comprised of managers without direct line responsibilities for operations at RFP. Thus, the review team will not be reviewing activities under their direct supervision or responsibility. Assuring "...that the review and appraisal system is in place and working appropriately..." is part of the primary purpose of the proposed review plan. Audit programs for each of the safety disciplines are to be prepared by the Manager of Audits and Strategic Planning, to assure a consistent review by each team member and for each safety discipline.

The proposed plan is comprehensive, addresses pertinent safety disciplines, and should address the adequacy and performance of the management systems established for independent safety review when the review has been completed and documented. The present schedule for distribution of the triennial review is April 28, 1989.

Several issues face the committee chairpersons. They are:

- Lack of administrative support to assure timely preparation and distribution of meeting minutes and facility appraisal reports.
- Lack of assurance that all important reference documents have been distributed to committee members.
- The rapid change in structure and assignments and new personnel has made it difficult to develop and implement an integrated tracking and closure system for committee activities.
- The lack of a central focal point for global corrective action applicable to all building managers.

Conclusions

The facility safety review program has improved. An integrated, structured system of safety review groups has been further

enhanced and supported by line organization functions as described in the Integrated Safety Program, Rev. A, November 15, 1988. However, because the total system is new, changes and readjustments in the program can be expected as more experience is gained. Improvements in general committee operating performance can be expected as members become more proficient at performing committee activities. This includes the areas of annual facility appraisals and of reviews of safety-related issues.

Some difficulties in maintaining the present level of personnel commitment to the independent review program may develop as time demands begin to have a serious impact over the long-term. This, plus the need to address the effectiveness of the present program, indicates that a reassessment of the facility safety review effort should be performed in approximately nine months. At that time, the availability of more records, performance experience, and a more stable organizational structure should provide an environment more closely related to normal plant operation than the present situation of rapid change and adjustment.

New Concerns

None.

K. NUCLEAR CRITICALITY SAFETY

Discussion

The objective of the Criticality Engineering Group is to provide RFP management with the necessary policies, practices, and guidance to assure the nuclear criticality safety of all fissile material operations. The program is well defined and documented in the Health, Safety and Environment (HS&E) Manual, HSE 17.01 through 17.04, which implements RFP MHS 3-001, "Nuclear Criticality Safety Policy." The formal internal review and audit process to monitor conformance of operations to the program is documented in "Procedure for Criticality Safety Engineers" (October 1988) and in the "Nuclear Criticality Safety Committee," RFOM Committee Charter No. 5.5 (October 3, 1988).

One of the two previous TSA concerns in this category is closed. The criticality engineering staffing level concern remains open. The "Nuclear Criticality Safety Committee" was cognizant of the staffing level problem in the Criticality Engineering Group in 1987. The Bldgs. 776/777 TSA conducted in January/February 1988 elevated the staffing level problem to a concern, based on noncompliance with ANSI/ANS 8.1 - 1983. RFP has identified the turnover rate in Criticality Engineering as the root cause of the collective deficiencies underlying the concern. RFP has increased the approved personnel limit (APL) from nine to twelve. Eleven of these positions are presently filled. However, four of the eleven are new hires (with less than six months of RFP experience). Only three of the remaining seven APLs are considered "certified" criticality engineers. The certification is an in-house (RFP) process. The formal certification period takes approximately two years. Processing for a security clearance requires approximately 14 months, further delaying their full integration into the staff. This waiting period is concurrent with the certification period. Assurance that RFP has identified the true root cause and taken the appropriate recurrence control measures cannot be confirmed.

Nuclear accident dosimetry continues to be employed in an appropriate manner. No credit is taken by RFP for incidental neutron absorption. Historical usage data confirms the suitability, presence, and reliability of Raschig rings for use in unfavorable geometric acidic or basic solution tanks. The Bldgs. 771/774 TSA conducted in October/November 1986 uncovered an omitted chemical acceptance test required by ANSI/ANS 8.5-1979 for Raschig rings which are to be used in a basic solution. This test requirement has been incorporated into RFP Std. No. SX-106 and Laboratory Procedure No. L-4110-F. Records indicate one skid of 11,040 pieces (Rings) from PO No. RM-36483-000-NJ (April 24, 1986) represents the beginning of chemical acceptance testing with sodium hydroxide. No ring procurement has occurred since April 15, 1987. An AL QA Management Survey, conducted June 23-25, 1987, had another finding related to Raschig rings. This finding questioned the statistical validity of the sampling plan. As a result of RFP action, the lot sampling has been

increased from 80 to 240 rings in RFP Std. No. SX-106 and a documented basis for the sampling plan exists. At present, Laboratory Procedure No. L-4110-F does not reflect the increased testing (quantity) required by RFP Std. No. SX-106. A review of Raschig ring tanks containing basic fissile solution in operation at RFP, which have rings that were not sodium hydroxide acceptance tested in Bldg. 371 and Bldg. 771, reveals the number may be in excess of 22. However, RFP has a Tank Surveillance program which monitors the physical properties of the rings on a routine frequency. This program has not indicated any excess failure of the basic solution environment rings.

Reliance is placed on geometric control, when practical. Mass limits are determined from handbook values and validated calculational methods. The computation of data for criticality safety evaluations are generally calculated with KENO IV or KENO VA. A four-sigma margin of safety is required for experimental and computational uncertainties. Nuclear criticality safety evaluations are made for normal and credible abnormal operating conditions. Criticality safety evaluations are reviewed by a second nuclear criticality safety specialist before being employed. KENO modeling is reviewed by a Critical Mass Laboratory representative who has expertise in neutronic modeling.

In general, no incorrect or missing nuclear materials safety limits were found during tours of selected operating areas and/or storage vaults in Bldgs. 371, 707, 771, 776, and 779. A comparison of the Bldg. 779 manager's Nuclear Materials Safety Manual and the posted limits revealed the posted limits had not been updated. The time elapsed from the issue date was approximately one month. Operating procedures were posted at work stations and reference the posted limits. Therefore, operating procedures generally do not require review when nuclear materials safety limits are revised. The procedures are reviewed during the criticality safety engineer's audit of individual operations areas. However, no requirement was found to assure the review is performed on a specified periodic basis. The reporting and investigation of occurrences involving criticality safety limits are delineated in HSE 3.01.

RFP has a nuclear criticality accident alarm system with fixed detectors installed in Bldgs. 371/374, 559, 707, 771, 774, 776/777, 778, 779, 886, and 991. The criteria for detector location are based on direct penetration and streaming for metal or solution neutron sources. These systems are frequently tested and periodically calibrated. The system meets the detector threshold requirements of ANSI/ANS 8.3-1979. The audio annunciation is delivered to the workplace over an outdated public address system. Thirty-eight instances have been documented during the ten year period, ending in mid-1986, when the criticality detection system was triggered but the annunciation system failed to produce an audible alarm. However, since 1986 only one event of this nature has occurred. With the exception of preannounced alarms, three situations in the past

two years have caused an aural alarm and building evacuation. Interim measures have improved the system. However, interim measures cannot mitigate the aging and obsolescence of the system. The present detector failures traced for 1,500 system tests (1986) exhibited a failure rate of 1.6 percent. A review of the latest detector test data shows the same failure rate. Improvement measures for the nuclear criticality accident alarm system have been discussed in Section III.F. A concern, which deals with the nuclear criticality accident alarm system, from the Bldg. 707 TSA remains open.

A May 23-27, 1988, appraisal by AL found a situation where fissile material in drums stored in Bldg. 991 were exposed to groundwater. This situation has been corrected.

Conclusions

The nuclear criticality safety program is well documented and is staffed with capable and dedicated personnel; however, the level of experienced staff is precariously low. Budget requests and technical presentations have been made to AL to upgrade the nuclear criticality accident alarm system to meet codes and standards. Action on the item is under the control of DOE. The requirement for chemical acceptance testing of Raschig rings for basic solution environments has been addressed in documentation; however, the consequences of the omission have not been formally investigated and documented.

New Concern

CS-1 The consequences on nuclear criticality safety due to
(C1/H2) the use of non-tested (chemical acceptance) Raschig
 rings have not been formally investigated and
 documented.

L. RADIOLOGICAL PROTECTION

Discussion

1. Organization and Administration

Substantial staffing and funding support has been provided to the radiological protection components of the HS&E organization since April 1988. A restructuring of the HS&E organization has resulted in adding over 15 new key radiological protection-related personnel assignments. Additional staffing levels for the purpose of establishing a comprehensive, site-wide radiological protection program have been approved. Other funding has been provided during this same time period to provide for needed upgrades identified in previous TSAs in the areas of instrumentation, equipment, facilities, air sampling, monitoring, and protective clothing procedures and facilities. Plant management has placed strong emphasis on radiological protection. Progress in this area has resulted in closing four previous TSA concerns dealing with management support. Two other previous TSA concerns addressed personnel monitoring and are discussed in Section III.L.5.

As a result of a massive effort in response to the over 70 radiological protection concerns/recommendations from previous TSAs, some individual aspects of the program have improved significantly. However, some responses are being independently addressed, rather than being developed as part of a comprehensive program, and are being implemented in a rapid manner, with an apparent lack of overall program coordination. Some of these responses go beyond minimum requirements, i.e., applying more stringent measures than are required by DOE or industry standards. Individual TSA responses may lack overall site-wide consistency and may, or may not, be compatible with the radiological protection components of the RFP Integrated Safety Program. A specific example of this possible inconsistency is the major funding that has been approved for purchasing air monitoring equipment, before the total cost for instituting an Integrated Radiological Protection Program has been estimated. This is an issue which should be addressed by developing a coordinated overall radiological protection package with clear goals to guide specific upgrade activities. It is recognized that there is a vigorous planning/upgrade effort which is in the initial stages of development.

From April to December 1988, many radiological protection procedures were revised and/or issued. Because the procedures have been issued for immediate implementation as they are completed, personnel at the work sites, (i.e., building managers, area safety engineers, operational health physicists, and radiation monitors) are subjected to continuous changes and, in many cases, changes which were not well coordinated or staffed. Also, these personnel have had little or no implementation training. Developing these and other radiological protection program changes, as well as responding to special appraisal

assignments, have resulted in a reduction of the functional operational health physics presence in the workplace. The operational health physicists spend much of their time away from the work areas, producing analyses and preparing reports. The combination of these changes with the concern discussed below results in a reduced capability to provide radiological protection coverage.

A significant concern exists related to the utilization and function of the radiation monitors as a group. Due to a long history and a variety of problems associated with and resulting in the reduction of the function of the radiation monitors, the expectation for and utilization of this valuable resource in radiological protection is inadequate. The radiation monitors are the safety personnel who are routinely at the worksites -- the places where the actual problems occur, and where controls must be applied in order to be effective. Radiation monitors should know the workers, see the operations day-to-day, and understand applied problems. In addition, the operational health physicists who provide technical evaluations and program direction are too few in number to be at all the worksites. The radiation monitors should be the "eyes and ears" of the radiation safety program to support safety and program/line management. In spite of this fundamental concept, the following conditions exist at RFP:

- The radiation monitors are denied access to the radiation exposure information of any worker other than themselves. In effect, this removes radiation exposure control from their cognizance and responsibility, even though they survey and post radiation levels in the workplace. Radiation monitors should be in a position to recognize specific problems and be able to work with individuals at the worksite to reduce exposures.
- Radiation monitor job openings are filled by union "bumping" -- entry requirements are so minimal as to be nondiscriminating with regard to qualifications, and rapid turnover has resulted in a less stable and less experienced staff.
- At present, neither the new training program (though this program promises to be a significant tool) nor the union "progression" program provides the documented on-the-job skills necessary for radiation monitors to perform all the duties expected in a comprehensive radiological protection program.
- Emergency response support by radiation monitors is not clearly defined and emergency training is not comprehensive. The formal procedures which guide emergency response are not sufficient to direct a comprehensive evaluation of the situation. They do not receive detailed on-the-job training

for dealing with emergency scenarios. The radiation monitor's function is not sufficiently utilized in emergencies.

- The radiation monitors are viewed as "data gatherers" in general and are not valued nor respected as equal team members who should exercise judgment within specific guidelines. Their morale is low. As an example, the recent withdrawal of radiation instrument performance checks from the monitors to the instrument technicians (though not viewed by upper management as a problem) was interpreted as a lack of confidence in the radiation monitors.

Because of this radiation monitoring functional program deficiency, a previous TSA concern dealing with improving the quality of the radiation protection program remains open and a new Concern (RP-1) is identified.

2. Internal Audits and Investigations

Internal appraisals of the RFP HS&E function, required by DOE 5482.1B, are conducted by the HS&E QA staff that reports directly to the Director, HS&E, through the Operations and Plans organization. The HS&E QA Implementation Plan, dated November 10, 1988, indicates that the HS&E QA Program addresses the following areas: QA consistent with the Non-Weapons Quality Manual and NQA-1; safety assurance audits; audit verification; audit response tracking; and building walkthroughs for inspection of safety compliance. A database is being established for the HS&E audit data. An HS&E audit schedule for FY89 was issued on October 18, 1988.

A previous TSA concern in this area has been adequately addressed and is closed.

3. Radiological Protection Procedures and Posting

Major revisions have been made in the radiological protection sections of the plant Health, Safety and Environment Manual (HSE 18.02 and HSE 18.03) and many other radiological protection-related procedures have been issued. These procedures are in the process of being implemented in the field. Field verification indicates that radiation posting information is current and appropriate to the conditions in the area.

Two previous TSA concerns related to this issue are closed.

4. External Radiation Exposure Control Program

No concerns/recommendations were listed in this area during the previous TSAs, indicating that external exposure control was adequate. However, the approximately 5,000 employees at RFP receive a cumulative annual exposure of 600-1,200 person-rem. This exposure is received by a large number of workers who work

in fields of a few mrem/h for extended periods of time. Since the total plant exposures are relatively high, the accomplishment of a decreasing trend in cumulative dose will result from small exposure savings to a large number of workers. A new Concern (RP-1) relates to this area of emphasis. Trending of low levels of exposures (not just at some "action level" at or above an administrative guide) should be emphasized in "working"/accomplishing reduction of RFP cumulative exposures. In addition, the radiation monitors should be trained and expected to help devise ways to reduce occupational exposures.

5. External Dosimetry

A major effort has been made by RFP to respond to the concerns/recommendations of the previous TSAs in this area. The four previous concerns associated with personnel dosimetry technician training and expediting upgrade and improvements in the wearing of dosimeters are closed, while seven previous concerns associated with development of the technical bases for calibrations, dose conversion factors for wrist and other extremity dosimeters, and dose evaluation remain open. Work on the remaining open concerns/recommendations is being pursued by the RFP dosimetry staff with outside support service contractors.

The Personnel Dosimetry Group is in the process of changing badge interchange racks and changing extremity badge dosimeters to a Panasonic detector. These changes should significantly upgrade the dosimetry capabilities.

Although the dosimeter service has not been accredited by the DOELAP, external dosimetry performance capabilities of test badges have been demonstrated through calibration with outside laboratories and participation in intercalibrations. A major upgrade is planned through provision of a calibration facility, which will allow RI to prepare for the DOELAP and QA programs without relying on the support of outside standards laboratories.

Housekeeping should be improved in the personnel dosimetry facilities, processing flows established on cabinets/benches designed for the specific service, access restricted to those with a specific need for entry, and the room in which the dosimeter readers are housed environmentally controlled. The current dust, temperature fluctuations, casual handling of dosimeters and casual access by plant workers adds variabilities to the system, in addition to having a negative appearance.

A deficiency remains in the extremity dosimetry program, since wrist badges are used to detect exposure to the wrists and a factor of approximately 2.5, (determined in 1982) is used to establish the hand exposure from the wrist badge data. The use of conversion factors based on a six year old study with outdated dosimetry techniques provides cause for concern. Plans to perform an extensive study to resolve these questions are in place, but the previous TSA concerns related to this issue remain open until the study and appropriate implementation are complete.

In addition, a new concern (RP-2) related to the extremity dosimetry issue has arisen in the uranium processing areas, due to the fact that machinists working on uranium parts cannot wear rings, wrist badges, etc., because of the RFP safety policy. From all appearances, the potential for significant extremity exposure is real, since uranium parts are handled with bare hands for what could be significant time periods. Under the current RFP safety policy, extremity dose must be assigned rather than measured. A supporting technical basis must be provided through time-and-motion studies and dosimetry mockups.

6. Internal Radiation Exposure Control Program and Internal Dosimetry

The internal dosimetry capability at RFP is excellent. A competent, professional staff with state-of-the-art body and organ counters provide internal dose assessments. Procedures that trigger possible internal deposition investigations are effective and conservative. Algorithms for calculating internal radiation exposures are appropriate, but will have to be expanded to include additional body organs to assure compliance with DOE 5480.11, which will become effective in 1989.

Eight recommendations of the previous TSAs addressing the internal dosimetry program are closed. Three concerns/recommendations addressing continuing needs in the area of air monitoring/sampling remain open.

7. Fixed and Portable Instrumentation

The previous TSAs resulted in twelve concerns/recommendations, primarily focused on meeting the intent of ANSI N323 guidance. RI accepted the need to upgrade this area and developed plans which go beyond the minimum requirements of the standard. Major progress has been accomplished through extensive and detailed efforts, that include the following:

- Upgraded procedures are in place.
- NBS traceable sources have been procured.
- Electrical technician training specific to this concern has been developed and initiated.
- All instruments have been serialized and placed on a computerized inventory and control system.
- Routine calibration and maintenance recall of instruments has been implemented.
- QA programs are in place.
- Acceptance criteria have been developed and are being accomplished.

- Environmental effects evaluations are being performed on a random selection basis with a support service contract.

Though implementation of all plans has not been completed (new calibration facility not complete, present facilities crowded, personnel workloads excessive), the intent of ANSI N323 is currently being met. If all of the plans are implemented, the program will be exemplary.

All of the previous concerns are closed.

8. Respiratory Program

RI has upgraded respirator training and now meets DOE requirements for annual retraining and refitting. Staffing has been increased since 1987 and larger facilities have been provided for training, fit-testing, and administration of the respirator program.

All four of the recommendations made on previous TSAs addressing the respiratory program are closed.

9. Air Monitoring

Air sampling (static samplers) and air monitoring (Selective Alpha Air Monitors [SAAMs]) are still deficient in the production areas, in terms of placement, coverage, and detection sensitivity. However, HS&E has been working on programs to upgrade air sampling and monitoring. A support services contract to study air-flow patterns and develop conceptual designs for placement of air samplers has been completed. The contractor recommended the addition of approximately 900 sampling locations along glovebox lines in Bldgs. 771/774 and 776/777.

RI Engineering has completed the design of the air sampling systems, and funds have been appropriated, so construction/installation can begin in January 1989. Larger header lines and vacuum pumps are required on the air sampling vacuum systems to accommodate the large number of additional samplers. System completion is scheduled for September 1989.

The existing SAAMs are deficient in sensitivity and number. HS&E is aware of the technical limitations of the current SAAM systems and has conducted studies on chamber design to determine if increased sensitivity can be obtained by detector and air collection geometry changes. HS&E is also conducting market surveys to determine availability of commercial air monitors that will meet their specifications. DOE Order 5480.11 states that "air monitors should be (recommended) capable of measuring one DAC (derived air concentration) when averaged over 8 hours (i.e., 8 DAC-h)." For Pu-239, this probably represents the state-of-the-art capability. Increased sensitivity and more units closer

to the work sites are desirable. Although HS&E has recently completed evaluating location sites for additional air monitors, funds for purchase of new SAAMs have not been approved.

Three of the previous TSA recommendations addressing the need for studies to define air monitoring and sampling are closed. One previous recommendation dealing with air sampling capability additions in Bldgs. 771/777 remains open.

10. Radiological Monitoring/Contamination Control

Previous TSAs identified ten concerns in the area of Radiological Monitoring/Contamination Control. Eight concerns dealing with personnel contamination monitoring are closed and two dealing with protective clothing utilization remain open. Actions have been taken in response to specific concerns such as reviewing and modifying the protective clothing policy in the Perimeter Security Zone (PSZ), establishing self-monitoring "combos" in the radiation control areas, establishing "step-off pads," and providing careful alpha monitoring of personnel leaving a radiation control area in the PSZ. Although these actions are important, they appear to be a reaction to TSA findings, rather than an integral part of a comprehensive contamination control program. Good practice at DOE facilities consists of utilizing engineered controls, carefully following procedures, monitoring for contamination, judicious use of respirators, and use of protective clothing. Fundamentally, a comprehensive contamination control program places strong emphasis on personnel contamination monitoring at the gloveboxes or other "source" and careful monitoring of personnel as they finally exit the facility.

Protective clothing is only part of such a program. The clothing policy, as currently implemented, is not clearly visualized and used as a part of an overall contamination control program. Although inconvenient, there are possible means for changing protective clothing without necessitating major construction. The considerations addressed in the Bldg. 771 restart evaluation would substantively contribute to an improved plant-wide contamination control program.

11. ALARA Program

By use of RI administrative limits, annual radiation exposures of individuals are kept well below the limits specified in DOE 5480.11. The highest whole body exposure in 1986 was 2.73 rem, and in 1987 was 2.50 rem. The highest individual hand exposure in 1986 was 20.195 rem, and in 1987 was 13.194 rem. For 1987, the total cumulative whole-body radiation exposure for all workers was 761 person-rem of gamma and neutron radiation. As indicated in the discussion on External Radiation Exposure Control (Section III.L.4), this cumulative exposure is relatively

high, even though exposures to individuals are below administrative guides. A vigorous personnel dose minimization program is considered necessary.

RI Operations Management has been studying those operations that typically produce the highest exposures. The molten salt extraction process was identified as an operation producing high exposures. A new chemical process, which will reduce exposure rates, is currently under study.

HS&E has recently developed computer programs to do trending analyses on air sample and radiation exposure data. These trending plots and data print-outs are just becoming available to operational health physicists on demand.

In an attempt to reduce exposure, RI management has instigated an incentive program in which cash awards are given for reaching reduced radiation exposure goals.

In December 1988, an ALARA Coordinator will be assigned to reemphasize keeping radiation exposures as low as possible. Three recommendations addressing the ALARA program from previous TSAs remain open and one is closed.

12. Records

Both external and internal radiation exposure records are maintained in Bldg. 123 (a building with an automatic sprinkler system) in two flexretrieval files which do not meet the DOE fire-resistant criteria. Most of the information contained in these files exists in other locations, but if the central files were lost, retrieval of data would be difficult, costly and time consuming. HS&E has been evaluating the possibility of micro-filming the records, but no action has been taken to date.

One previous recommendation addressing recordkeeping is closed. Three remain open.

Conclusions

Substantial progress has been made in improving the radiological protection program at RFP. Approximately 72 percent (51 of 71 total) of the previous TSA concerns are closed as a result of the effort made during the past six months by RI. The increased staffing levels and revised procedures still need effective implementation in the workplace. Many of the radiological protection activities have been developed and implemented independently without assimilation into a comprehensive program. The elements of a comprehensive radiological protection upgrade plan are just now being identified as part of the overall integrated safety plan. A new Category II concern is identified to reflect the fact that the radiation monitoring function is substantially less effective than it should be and is not being used as an essential part of a radiological safety program. In

the area of radiation exposures, there is one new Category II concern dealing with extremity exposures. It identifies the need to develop the technical basis for estimating hand exposures to machinists, who handle uranium parts and are not permitted to wear extremity dosimeters.

New Concerns

RP.1 The radiation monitors, as a group, are not being
(C1/H2) trained/qualified on-the-job to utilize their full
CAT II potential as members of the radiological safety team and
 as a valued resource in all aspects of the applied
 radiological protection program.

RP.2 The extremity doses for workers, who cannot wear hand
(C1/H2) dosimeters as a result of RI safety policy, are not
CAT II adequately determined and documented.

M. PERSONNEL PROTECTION

Discussion

1. Industrial Hygiene

The industrial hygiene program at RFP is based on DOE prescribed standards, and there is no evidence that personnel exposures exceed specific DOE guidelines for non-radiological chemicals, physical agents, or biological contaminants. Improvements were noted in the overall industrial hygiene program, especially in the documentation of policies, programs, and plans. However, several areas of the industrial hygiene program still require additional effort to meet DOE requirements for occupational health protection programs.

Operations at RFP, not unlike other DOE nuclear facilities, are unique in comparison with similar industrial operations in non-nuclear facilities. The common presence of radiological materials in major operations has resulted in the extensive use of highly contained processes which desirably limit routine exposure to most potentially hazardous materials. For example, although thousands of gallons of chlorinated solvents are used annually at the plant, the vast majority are within gloveboxes which eliminate the potential for inhalation exposures during normal operations. In general, industrial facilities with similar operations involving non-radioactive materials would not be enclosed and the potential for inhalation exposures would require a significant industrial hygiene control program effort. In addition, surveillance of the effectiveness of controls would usually require extensive monitoring efforts. At RFP, the predominant non-radiological occupational exposures of significance are associated with short-term or transient events. This requires an industrial hygiene program effort that can respond with capabilities for rapid hazard identification, prompt assessment, and practical approaches to hazard controls. The industrial hygiene program has demonstrated its effectiveness in meeting programmatic requirements in these areas. However, neither the extensive presence of enclosed systems and predominantly short-term exposures, nor subjective assessment of low risk of excessive exposure warrants the virtual lack of routine monitoring programs.

The RFP industrial hygiene program is required to provide services, and/or support to several other health/environmental protection programs on the plant site, including health physics and environmental management. An example is the administration of the respiratory protection program by the Industrial Hygiene Group, although use of respiratory protective equipment at the plant is primarily in areas where airborne radioactive materials are present. The industrial hygiene program is effective in providing support services to such programs.

Fifteen recommendations/concerns were made in the industrial hygiene program area during the previous TSAs. Items

satisfactorily corrected required implementing formal programs in carcinogen control, hazard communication, and QA for respiratory protection. In addition, necessary improvements were noted in the documentation and control systems for tracking technical recommendations, equipment calibrations and maintenance, consolidation of databases for potential occupational exposure records, and procedures for workplace hazard labeling of chemical mixtures. These accomplishments resulted in the closure of eight recommendations/concerns. Seven recommendations/concerns require additional accomplishments for demonstration of adequate implementation of program improvements. The seven outstanding items exist in three areas: staffing, routine monitoring, and QA. The concerns related to staffing were noted on two of the previous TSAs; monitoring was noted on two TSAs; and QA was noted on all three previous TSAs. These concerns are as follow:

The industrial hygiene program continues to be adversely impacted by staff turnover, utilization, and availability of personnel resources. During calendar year 1988, the manager's position has been held by four individuals; the group turnover rate is approximately 40 percent; over one-third of the current staff is uncleared or works part-time; and increases in staffing have been accompanied by additional duties. Staffing issues are directly related to other major concerns noted in the industrial hygiene program.

RFP has virtually no routine monitoring program for non-radiological contaminants potentially in the workplace, except beryllium and asbestos. As noted above, most potential contaminants in the workplace are associated with short-term events such as the transfer of chemicals from supply or storage containers to process systems, welding or metal forming operations, chemical decontamination, painting or coating operations, or the application of adhesives or other solvent-based materials. The potential health risks of such exposures may be minimal in light of generally observed good work practices and subjective assessments by the RFP industrial hygiene staff; however, there is virtually no documented assessment of the effectiveness of controls used at RFP. DOE Orders require at least periodic monitoring of such potential exposures to confirm the effectiveness of controls.

Progress has been made in the development of quality control procedures for industrial hygiene-type samples. Evidence exists that industrial hygiene data, consisting primarily of beryllium and asbestos, are of sufficient quality to assure validity in interpretation of the information. However, several areas of improvement are required to achieve satisfactory demonstration of the quality assurance of industrial hygiene data to external reviewers, regulatory agencies, and nationally recognized accreditation organizations.

In Bldg. 777, process waste tanks containing mixtures of freon, carbon tetrachloride, and oils do not have hazard rating labels because they are considered waste containers. The tanks are

similarly not labeled as a waste product under EPA guidelines because the economic recovery value has not been determined at that stage in the waste stream, therefore it is not technically a waste. Such materials should still be classified as process materials and labeled consistent with other process materials.

2. Occupational Safety

The occupational safety program for RFP meets DOE requirements in program content, organization, and function. This program is administered by the Manager, Nuclear/Industrial Safety, who reports to the Director, Health, Safety and Environment (HS&E), who, in turn, reports to the President, RFP. This organizational structure provides the independence from line/operating organizations necessary to perform required safety overview functions.

Company safety policies and procedures are covered in upper level documents including the RFP Policies Manual, Safety Requirements Manual, and Plant Safety Procedures Manual. The Industrial Safety Group drafts, revises and updates these policies, procedures, and requirements; and they are issued by the President or his staff. Company policies and procedures clearly state line management's responsibility for personnel and operational safety and their authority to carry out these responsibilities. Interviews with plant supervisory personnel confirmed that acceptance of safety enforcement responsibility by line management is now an accepted part of the safety program.

The Industrial Safety staff is sufficient to carry out their functions of independent overview, program development, and technical support. However, two recent staff transfers have left the group shorthanded; a condition that may impact surveillance and design review activities, if the vacancies are not filled soon.

There has been progress toward resolution of the previous TSA concerns/recommendations in this technical area. In several program areas, the respective policies or procedures have been drafted or issued but implementation of the changes is incomplete (e.g., the lock and tag program changes). In other cases, program changes and improvements have been implemented in an aggressive way but "culture change" lags behind. An example is the extensive safety communications program implemented this year, the purposes of which are to improve employee safety attitudes and heighten safety awareness. Significant improvements in this area were noted; however, interviews with working level employees (primarily craft personnel) indicate they are not convinced that management is dedicated to safety. The challenge now is for management to demonstrate, by example, that they are committed to safety as a top priority.

The injury accident statistical performance of RFP is an indicator of the overall quality of the industrial safety program. The frequency of recordable injuries is below the

average of DOE/DOE Contractor and the frequency rate of lost-time injuries is considerably below the DOE/DOE Contractor average. The following are rates for the previous five years.

<u>Year</u>	<u>Recordable Injury Frequency Rate</u>	<u>Lost Workday Case Frequency Rate*</u>
1983	1.7	.5
1984	1.4	.3
1985	2.2	.8
1986	2.3	.8
1987	2.0	.5
1988 (thru 3 rd Qtr)	2.0	.4

<u>Five-Year Averages</u>	<u>Recordable Injury Frequency Rate</u>	<u>Lost Workday Case Frequency Rate*</u>
RFP	1.9	.6
DOE/DOE Contractor	2.2	1.1
General Industry	6.6	2.9

*Number of injuries per 200,000 employee hours.

Electrical safety-related program improvements were noted; for example, a current project to "ring-down" and label all circuits/breakers in Bldg. 444. However, several violations of the National Electric Code (NEC) were noted, although not an inordinate number for a facility of this size. These included outlet boxes without cover plates, use of extension cords for permanent installation, and blocked electrical panels. A review of unusual occurrence reports (UORs) and supervisor investigation reports (SIRs) revealed repeated incidents of human error as the cause or contributing to the cause of electrical accidents. An alarming incident occurred during this review in which an engineer came in contact with a 10,000 volt energized circuit, receiving first and second degree burns. This "near-miss" accident, an electrical fatality in 1987, and repeated NEC violations support a new concern involving the adequacy of electrical safety awareness.

There is a need for increased emphasis on traffic safety (both motor vehicle and pedestrian safety). Observation revealed the need to enforce, more rigorously, existing traffic safety requirements. Traffic safety violations noted included: an employee riding a truck running board, disregard for stop signs, general lack of seat belt use on-site, and pedestrians walking on roadways in violation of posted signs limiting pedestrian traffic to walkways. Considering the potential for personnel injury, this issue should receive more attention.

Conclusions

The overall industrial hygiene program has steadily improved since the Bldg. 707 TSA in 1986. Staffing issues continue to adversely impact the effective implementation and maintenance of

several program elements. However, the available staff consists of well-qualified personnel that are supported by both upper management and operations components. Evidence exists that the organization is respected and utilized by plant personnel. The program is generally well-structured and documented. The industrial hygiene program must, however, devote additional resources to documentation of potential occupational exposures to materials other than beryllium and asbestos.

The RFP Industrial Safety organization is well placed organizationally and staffed to perform its role of independent oversight. The policy and procedure content and hierarchy are generally appropriate to administer and implement a good program. Previous TSA concerns and recommendations related to industrial safety are now being addressed. However, in most cases the policy/procedure/requirement changes have been issued, but the implementation or transition phase in the field is not complete.

New concerns relative to hazard rating labeling of process waste tanks, electrical safety compliance, and traffic/pedestrian safety have been identified.

New Concerns

PP-1 The absence of hazard rating labeling of process
(C1/H3) waste tanks does not meet the requirements of the
 hazard communication guidelines of DOE, OSHA, or
 general industrial practice.

PP-2 There is continuing evidence indicative of a lack of
(C1/H1) electrical safety awareness and/or code compliance at
CAT II the RFP.

PP-3 Traffic safety practices need increased attention and
(C2/H2) enforcement by RFP management.

N. FIRE PROTECTION

Discussion

Twenty-one of the 32 prior concerns and recommendations are closed. Of the remaining eleven, two are scheduled to be completed in the first quarter of FY89, four are scheduled to be finished in FY89, three require resolution with RFAO and two require RFAO action. With the exception of the two concerns (Recommendations R-143 [FP.5-3] and Concern R-229 [FP.5-3] of previous TSAs of Bldgs. 771/774 and 776/777, respectively) requiring RFAO action, planned actions are appropriate.

Fire separations are in place to limit values at risk to an acceptable amount, as required by DOE 5480.7. Fire barriers and doors have been identified in all facilities and are part of a monthly inspection program to verify their integrity. Most of the building drawings have been upgraded to identify the fire barrier separations. The balance are in the process of being upgraded. Inspection disclosed several roll-up and horizontal fire doors do not have fusible links installed, as required by NFPA 80, "Standard for Fire Doors and Windows," and DOE 5480.4. This condition can be found in Bldgs. 707, 551, 779, and 991. The existing doors have links on only one side of the door opening. There should be one on each side to provide timely activation from a fire on either side. This is a new concern. Another new concern is the lack of fire dampers or equivalent features in heating and ventilating ducts which pass through fire separations in RFP buildings. Concern R-228 (FP.5-2) from a previous TSA of Bldgs. 776/777, discussed in Appendix C-4, identified this concern in those buildings. Action is in progress to correct it. As a result of the previous TSA, RI employed a consulting firm to evaluate this concern and make recommendations based on the results of its review and testing. The effects of fire loading were assessed using computer models, and full-scale fire tests of three duct samples common to RFP were evaluated. The results of these tests indicated that some duct configurations provide protection equivalent to fire dampers. These data have not been applied site-wide to determine the need for fire dampers or equivalent protection in ducts that penetrate fire separations, as required by DOE 5480.7.

The Fire Department inspects facilities to ensure fire prevention program implementation. An open recommendation (see discussion of Recommendation R-145, [FP.5-5] of the TSA for Bldgs. 771/774 in Appendix C-3) from a previous TSA identifies a deficiency in the fire extinguisher inspection program. There is a concern regarding line management's "ownership" of the responsibility for fire prevention matters. Evidence indicates that building management looks to the Fire Department to detect and correct deficiencies. There is also evidence that building managers are beginning to recognize their responsibility for fire protection equipment and programs in their facilities. The building manager training program has helped in this regard. However, there are no policies or standards defining their responsibility for the

implementation of the fire protection program, as required by DOE 5480.7. The direct impact of these findings is that a program to identify deficiencies through facility inspections suffers from a lack of direction and it is not clear who is responsible for it. This is a new concern.

Periodic loss and risk evaluations are done of RFP facilities. The evaluations have been completed for most facilities, but there is no follow-up schedule in place. The inspection, testing and maintenance of installed fire protection systems are current and system impairments are given priority by Maintenance. Fire detection/alarm systems in the production facilities are 16 to 35 years old, which makes them difficult to maintain. There are no mechanical "as-built" drawings for some of the systems. See new Concern TS-1 in Section III.G. Replacement parts, when they are available, are costly and hard to obtain. One of the remaining open concerns (see discussion of Recommendation R-229 [FP.5-3] of the TSA for Bldgs. 776/777 in Appendix C-4) addresses this issue. Resolution of this concern will require increased funding support.

The fire protection portion of design reviews for new facilities and modifications to existing facilities are complete and timely. These reviews are used to identify non-conforming building materials. The use of non-combustible or fire-retardant treated wood and plastic materials in facility or equipment construction is not documented as a requirement. The identification of fire protection design requirements, including recommended materials of construction, in an RFP manual would eliminate design errors that result from using materials not in conformance with improved risk criteria, as required by DOE 5480.7. This is a new concern. A program to reduce and control the amount of combustibles in buildings was started just prior to this review. Planning and subsequent implementation by RI seek to reduce the fire loading in production facilities.

Review of facilities disclosed that many do not meet the requirements of the NFPA 101, Life Safety Code, and DOE 5480.4. Deficiencies identified included excessive common paths of travel, open stairwells, lack of exit discharge directly to the outside from levels above and below grade, and astragals on double doors that do not allow the doors to operate independently of each other. There were no imminent hazards identified during the review; however, these discrepancies warrant corrective action.

There are several cases where the contractor does not meet DOE fire protection requirements for a variety of reasons. Exemptions have not been requested from DOE in all cases. However, two exemption requests were submitted to RFAO, one in 1985 and one in 1987, but RFAO has not responded. This item remains open (see discussion of Recommendation R-143 [FP.5-3] of the TSA for Bldgs. 771/774 in Appendix C-3).

A DOE Headquarters independent fire protection survey of RFP was done in 1979. The contractor and AL consider the deficiencies identified in the report as being completed. A review in October 1988 by DOE Headquarters indicated that available documentation supported closing 50 of the 81 major recommendations. Of the remaining 31, six require exemptions, corrective action is in progress for two, and corrective action is pending for 23. There were 51 minor recommendations that were not reviewed in this follow-up. There is one recommendation from the 1987 AL appraisal of the RFP fire protection program that has not been resolved.

There were several recommendations for improvements resulting from a consultant's review of the RFP storage and underground water supply system done in 1988. Implementation of these recommendations as planned will improve system reliability by reducing the consequences of single-point failure and comply with the "improved risk" criteria in DOE 5480.7.

Conclusions

The overall fire protection program is adequate. Review of the 1987 Annual Summary of Property Damage disclosed that there was one fire in 1987 resulting in a loss of \$14,310. Through November 1988, there has been one fire loss of \$3,804. These losses are below both the DOE and national fire loss rates for comparable high value facilities. Automatic fire extinguishing systems are provided in areas where there is a possibility of major loss or program interruption. Halon extinguishing systems are used where there is high value electronic equipment. The fire protection system, inspection, testing and maintenance program is good. There are four new concerns identified to improve the fire protection program at RFP. Building manager fire protection responsibilities have not been formally established. These responsibilities should be formalized and the managers held accountable to assure adequate fire protection is maintained in RFP facilities. The requirement to include non-combustible or fire-retardant materials in facility and equipment design needs to be communicated to engineers and designers. Ducts which pass through fire separation barriers require fire dampers or equivalent protection. Several roll-up and horizontal fire doors were observed that do not meet NFPA requirements.

New Concerns

FP-1
(C1/H2)	Roll-up and horizontal fire doors have fusible links on only one side of the door, compromising their timely operation and ability to promptly contain a fire to the non-linked side.
FP-2
(C1/H1)
CAT II	Not all heating, ventilation and process ducts that penetrate fire separation barriers have approved fire dampers or equivalent protection.

FP-3 Policies or standards for building managers defining
(C1/H3) their responsibilities for building fire protection
equipment or fire protection program requirements have
not been established.

FP-4 Policies or standards have not been established to
(C1/H2) require the use of fire-retardant materials in the
construction of facilities or equipment.

APPENDIX A

System for Categorizing Concerns

- A. Each concern contained in this report has been categorized for SERIOUSNESS by the following criteria:

CATEGORY I: Addresses a situation for which a clear and present danger exists to workers or members of the public. A concern in this category is to be immediately conveyed to the managers of the facility for action. At this point, consideration shall be given to whether a "clear and present danger" exists such that the facility shutdown authority of the Assistant Secretary (EH-1) should be exercised. If so, the Assistant Secretary or his designee is informed immediately.

CATEGORY II: Addresses a significant risk (but does not involve a situation for which a clear and present danger exists to workers or members of the public) or substantial noncompliance with DOE Orders. A concern in this category is to be conveyed to the manager of the facility no later than the appraisal closeout meeting for immediate attention. Category II concerns have a significance and urgency such that the necessary field response should not be delayed until the preparation of a final report and the routine development of an action plan. Any issues surrounding the concern or the suggested response should be addressed during the appraisal or immediately thereafter. Again, consideration should be given to whether facility shutdown is warranted under the circumstances.

CATEGORY III: Addresses significant noncompliance with DOE Orders, or suggests significant improvements in the margin of safety, but is not of sufficient urgency to require immediate attention.

- B. Each concern made has also been characterized by the POTENTIAL HAZARD CONSIDERATIONS of the issues addressed or by the significance of its COMPLIANCE CONSIDERATIONS. Some concerns have been characterized in more than one of these groups when applicable. The criteria used are:

POTENTIAL HAZARD CONSIDERATIONS

- Level 1. Has the potential for causing a severe injury or fatality, potentially fatal occupational illness, or loss of the facility.
- Level 2. Has the potential for causing minor injury, minor occupational illness, major property damage, or has the potential for resulting in or contributing to unnecessary exposure to radiation toxic substances.

Level 3. Has little potential for threatening safety, health, or property.

COMPLIANCE CONSIDERATIONS

Level 1. Does not comply with mandatory DOE requirements (DOE Orders), prescribed policies and standards, and documented accepted practice (the latter is a professional judgment based on the acceptance and applicability of national consensus standards not prescribed by DOE requirements).

Level 2. Does not comply with recommended DOE references, standards, guidance, or with good practice (as derived from industry experience, but not based on national consensus standards).

Level 3. Has little or no compliance considerations; these concerns are based on professional judgment in pursuit of excellence in design or practice (i.e., these are improvements for their own sake -- not deficiency-driven).

APPENDIX B

Categorization and Tabulation of Concerns

Using the criteria in Appendix A, all of the concerns have been categorized as Category III for seriousness, except for Concerns OP-1, TC-1, RP-1, RP-2, PP-2, and FP-2, which are designated as Category II for seriousness. OP-1 addresses operations in Bldg. 374; TC-1 addresses the training and qualification of fissile material handlers; RP-1 addresses the training and use of radiation monitors; RP-2 concerns the accurate measurement of extremity doses; PP-2 addresses electrical safety; and FP-2 addresses protection for penetrations in fire barriers. RI has developed action plans to respond to these concerns.

The concerns were also characterized by relative hazard and compliance considerations. Appendix B-1 summarizes the results of the characterization. All of the concerns are tabulated in Appendix B-2, without their supporting bases. The user is cautioned that to understand the full intent of any concern, it is necessary to read its basis in Section III.

APPENDIX B-1

Categorization of Concerns

<u>Concern Number</u>	<u>Compliance Level</u>	<u>Relative Hazard Level</u>
OA-1	3	3
OA-2	3	2
OA-3	2	2
OA-4	2	3
OA-5	2	3
*OP-1	2	2
OP-2	1	2
OP-3	2	2
MA-1	2	2
*TC-1	1	1
TC-2	2	2
TC-3	2	2
AX-1	3	3
AX-2	2	2
TS-1	2	2
TS-2	1	2
TS-3	3	3
TS-4	1	3
TS-5	2	3
TS-6	1	3

*Category II

APPENDIX B-1 (Cont'd)
Categorization of Concerns

<u>Concern Number</u>	<u>Compliance Level</u>	<u>Relative Hazard Level</u>
TS-7	1	2
TS-8	3	3
CS-1	1	2
*RP-1	1	2
*RP-2	1	2
PP-1	2	2
*PP-2	1	1
PP-3	2	2
FP-1	1	2
*FP-2	1	2
FP-3	1	3
FP-4	1	2

*Category II

APPENDIX B-2

Tabulation of Concerns

OA-1 (C3/H3)	The effective development of RFP's safety program is jeopardized by diffusion of responsibility, duplication of effort, poor planning, and anomalous organizational changes.
OA-2 (C3/H2)	Resolution of the problems resulting from union "bumping" rights is necessary, if RFP is to correct the safety consequences resulting from less qualified personnel "bidding" into jobs and regain control of its work force.
OA-3 (C2/H2)	AL and RFAO have not been effective in their oversight, provided consistent guidance, nor established goals (e.g., through the Cost Plus Award Fee process) that would lead to a timely, systematic, effective, and sustainable RFP safety program.
OA-4 (C2/H3)	Corrective action for safety deficiencies is incomplete, because it often does not include either identification of root causation or how recurrences can be prevented.
OA-5 (C2/H3)	There is a lack of discipline in the interrelated areas of handling, storage and shipping; control of purchased items; and identification and control of items (See also Concerns TS-6 and TS-7).
OP-1 (C2/H2) CAT II	The formality and discipline of operations in the waste processing areas of Bldg. 374 do not meet DOE and industry practices.
OP-2 (C1/H2)	No formal, systematic program is in place to ensure and document compliance with RFP Limiting Conditions for Operation for each operations facility.
OP-3 (C2/H2)	Facility operating procedures are not being subjected to periodic, mandatory review to assure that they are adequate and reflect current practices.
MA-1 (C2/H2)	Maintenance and quality standards have not been established to support the maintenance program.
TC-1 (C1/H2) CAT II	The quality of pilot training and qualification programs for fissile material handlers and supervisors for initial on-the-job certifications, and annual and biennial recertifications do not meet the requirements of DOE 5480.5, Section 10.

Tabulation of Concerns (continued)

TC-2 (C2/H2)	Training and qualification of maintenance personnel, including crafts foremen, area maintenance managers, planners, and schedulers are not sufficient to support a quality maintenance program.
TC-3 (C2/H2)	The training and qualification status of skilled machinists and welders in Bldgs. 444 and 460 is not available for use at work sites.
AX-1 (C3/H3)	Criteria, procedures, and oversight of mixed waste packaging operations for pondcrete, saltcrete, and sewage sludge are not adequate. There is no indication that a board of investigation is being considered and no attempt has been made to identify a root cause for the pondcrete incident.
AX-2 (C2/H2)	Upgrading ventilation systems on a plant-wide basis at RFP to meet current requirements has not been accomplished.
TS-1 (C2/H2)	The large backlog of safety-related, as-built drawings that require updating is detrimental to the safety of operations.
TS-2 (C1/H2)	Minor spillage of hazardous substances during vendor loading of bulk storage tanks has not been addressed by RFP.
TS-3 (C3/H3)	RFP responses to AL hazardous material appraisals have not been timely.
TS-4 (C1/H3)	The RFP internal audit program does not meet the requirements of DOE 5480.3, DOE 5480.5, DOE 5482.1A, and DOE 5700.6B.
TS-5 (C2/H3)	AL functional safety appraisals do not include all aspects of DOE 5480.3. Furthermore, AL has not required nor pursued responses from RFP to all the findings of these appraisals.
TS-6 (C1/H3)	The hazardous materials training program does not meet fully the requirements of DOE 5480.3 and DOE 5480.5.
TS-7 (C1/H2)	The bulk storage of hazardous materials does not meet current safety and environmental requirements.
TS-8 (C3/H3)	Several on-site transportation and storage activities do not comply fully with established practices.

Tabulation of Concerns (continued)

CS-1 (C1/H2)	The consequences on nuclear criticality safety, due to the use of non-tested (chemical acceptance) Raschig rings have not been investigated and documented.
RP-1 (C1/H2) CAT II	The radiation monitors, as a group, are not being trained/qualified on-the-job to utilize their full potential as members of the radiological safety team and as a valued resource in all aspects of the applied radiological protection program.
RP-2 (C1/H2) CAT II	The extremity doses for workers who cannot wear hand dosimeters, as a result of Rockwell safety policy, are not adequately determined and documented.
PP-1 (C2/H2)	The absence of hazard rating labeling of waste tanks in process areas does not meet the requirements of the hazard communication guidelines of DOE, OSHA, or general industrial practice.
PP-2 (C1/H1) CAT II	There is continuing evidence indicative of a lack of electrical safety awareness and/or Code compliance at RFP.
PP-3 (C2/H2)	Traffic safety practices need increased attention and enforcement by RFP management.
FP-1 (C1/H2)	Roll-up and horizontal fire doors have fusible links on only one side of the door, compromising their timely operation and ability to promptly contain a fire to the non-linked side.
FP-2 (C1/H2) CAT II	Not all heating, ventilation, and process ducts that penetrate fire separation barriers have approved fire dampers or equivalent protection.
FP-3 (C1/H3)	Policies or standards for building managers defining their responsibilities for building fire protection equipment or fire protection program requirements have not been established.
FP-4 (C1/H2)	Policies or standards have not been established to require the use of fire-retardant materials in the construction of facilities or equipment.

APPENDIX C

Status of Recommendations

The review of progress in addressing the 230 recommendations/concerns for improvement of safety (in 14 technical areas) that were identified in the July 1986 (Bldg. 707), October/November 1986 (Bldgs. 771/774), and January/February 1988 (Bldgs. 776/777) Technical Safety Appraisals are discussed in this Appendix. Pertinent facts regarding the current status of each recommendation/concern were used to evaluate progress made to date against standards of accepted practice and DOE requirements. The performance review team observed facility operations and the physical condition of reviewed facilities; interviewed RI management, technical, and craft personnel; and reviewed policies, procedures, records, and other documents.

Appendix C-1 is a status summary of the recommendations/concerns. Each recommendation/concern for the previous TSAs has been assigned a sequential number (e.g., R-1, R-2, etc.), followed by the identifier for it (e.g., OA.1-1, OA.1-2, etc.) used in the report in which it was raised (e.g., TSA for Bldg. 707). Appendices C-2, C-3, and C-4, respectively for Bldgs. 707, 771/774, and 776/777, state each recommendation/concern, discuss the progress made, identify the remaining issues in the context of current operations, and state the team's judgment as to whether the recommendation/concern should remain open or be closed. Where significant deficiencies persist or full implementation has not been achieved, the original recommendation/concern remains open; where deficiencies have been substantially corrected, the recommendation/concern is considered closed. Where possible, evaluation and discussion of recommendations/concerns that involved more than one building and were substantially similar or the same were consolidated and discussed once. Appropriate cross-references have been included to guide the reader. Of the 230 recommendations/concerns, 139 are considered closed.

Both the open items and the new concerns, which are discussed in Section III, are considered to be symptomatic of underlying causal and management factors. The contractor needs to treat the open items and new concerns as symptomatic of deeper root causes. Resolution of individual deficiencies will not necessarily correct the original concerns unless root causation is adequately addressed in a systematic manner. Only by resolving root causes, can there be assurance that improvements made so far will be sustained and that progress toward further improvement will continue.

APPENDIX C-1

Status Summary

I. Building 707

<u>Recommendation</u>	<u>Status</u>	
	<u>Open</u>	<u>Closed</u>
A. Organization and Administration		
R-1 (OA.1-1)		X
R-2 (OA.1-2)		X
R-3 (OA.2-1)	X	
R-4 (OA.4-1)	X	
R-5 (OA.6-1)	X	
B. Operations		
R-6 (OP.3-1)		X
R-7 (OP.4-1)	X	
C. Maintenance		
None		
D. Training and Certification		
R-8 (TC.1-1)	X	
R-9 (TC.1-2)	X	
R-10 (TC.1-3)	X	
R-11 (TC.3-1)	X	
R-12 (TC.3-2)	X	
R-13 (TC.3-3)	X	
R-14 (TC.4-1)	X	
R-15 (TC.5-1)		X
E. Auxiliary Systems		
R-16 (AX.1-1)		X
R-17 (AX.7-1)	X	

Building 707 (Continued)

<u>Recommendation</u>		<u>Status</u>	
		<u>Open</u>	<u>Closed</u>
F.	Emergency Readiness		
	R-18 (ER.1-1)		X
	R-19 (ER.1-2)	X	
	R-20 (ER.2-1)		X
	R-21 (ER.2-2)		X
	R-22 (ER.3-1)		X
	R-23 (ER.3-2)		X
	R-24 (ER.4-1)	X	
	R-25 (ER.4-2)		X
	R-26 (ER.4-3)		X
	R-27 (ER.4-4)		X
	R-28 (ER.4-5)		X
	R-29 (ER.4-6)		X
	R-30 (ER.4-7)	X	
	R-31 (ER.6-1)		X
G.	Technical Support		
	R-32 (TS.4-1)		X
H.	Security/Safety Interface		
	None		
I.	Experimental Activities		
	None		
J.	Facility Safety Review		
	R-33 (FR.1-1)		X
	R-34 (FR.1-2)		X
	R-35 (FR.4-1)		X
	R-36 (FR.5-1)	X	

Building 707 (Continued)

	<u>Recommendation</u>	<u>Status</u>	
		<u>Open</u>	<u>Closed</u>
K.	Criticality Safety		
	None		
L.	Radiological Protection		
	R-37 (RP.1-1)		X
	R-38 (RP.1-2)		X
	R-39 (RP.1-3)	X	
	R-40 (RP.5-1)	X	
	R-41 (RP.5-2)	X	
	R-42 (RP.5-3)		X
	R-43 (RP.5-4)		X
	R-44 (RP.5-5)	X	
	R-45 (RP.6-1)	X	
	R-46 (RP.7-1)		X
	R-47 (RP.7-2)		X
	R-48 (RP.7-3)		X
	R-49 (RP.7-4)		X
	R-50 (RP.8-1)		X
	R-51 (RP.8-2)		X
	R-52 (RP.8-3)		X
	R-53 (RP.8-4)		X
	R-54 (RP.9-1)		X
	R-55 (RP.9-2)		X
	R-56 (RP.10-1)		X
	R-57 (RP.10-2)		X
	R-58 (RP.11-1)	X	
	R-59 (RP.11-2)		X
	R-60 (RP.11-3)		X
	R-61 (RP.12-1)	X	
	R-62 (RP.13-1)	X	
	R-63 (RP.13-2)		X
M.	Personnel Protection		
	R-64 (PP.1-1)		X
	R-65 (PP.3-1)		X
	R-66 (PP.5-1)		X
	R-67 (PP.5-2)	X	
	R-68 (PP.5-3)		X

Building 707 (Continued)

<u>Recommendation</u>		<u>Status</u>	
		<u>Open</u>	<u>Closed</u>
N.	Fire Protection		
R-69	(FP.1-1)		X
R-70	(FP.3-1)		X
R-71	(FP.5-1)		X
R-72	(FP.5-2)		X
R-73	(FP.5-3)		X
R-74	(FP.5-4)		X
R-75	(FP.5-5)		X
R-76	(FP.5-6)	X	
R-77	(FP.5-7)	X	
R-78	(FP.5-8)		X
R-79	(FP.5-9)		X
R-80	(FP.5-10)		X
R-81	(FP.5-11)		X
R-82	(FP.5-12)		X
R-83	(FP.5-13)		X
R-84	(FP.5-14)		X
R-85	(FP.5-15)		X
R-86	(FP.5-16)		X
R-87	(FP.5-17)	X	
R-88	(FP.5-18)		X

II. Buildings 771/774

	<u>Recommendation</u>	<u>Status</u>	
		<u>Open</u>	<u>Closed</u>
A.	Organization and Administration		
	R-89 (OA.1-1)		X
	R-90 (OA.1-2)		X
	R-91 (OA.1-3)		X
B.	Operations		
	R-92 (OP.1-1)		X
	R-93 (OP.1-2)	X	
	R-94 (OP.4-1)	X	
C.	Maintenance		
	R-95 (MA.2-1)		X
D.	Training and Certification		
	R-96 (TC.3-1)		X
	R-97 (TC.3-2)	X	
	R-98 (TC.3-3)	X	
	R-99 (TC.3-4)		X
	R-100 (TC.3-5)		X
E.	Auxiliary Systems		
	R-101 (AX.3-1)	X	
	R-102 (AX.4-1)	X	
	R-103 (AX.5-1)		X
F.	Emergency Readiness		
	R-104 (ER.2-1)		X
	R-105 (ER.2-2)		X
	R-106 (ER.2-3)		X
	R-107 (ER.3-1)		X
	R-108 (ER.4-1)		X
	R-109 (ER.4-2)		X
	R-110 (ER.5-1)		X
	R-111 (ER.6-1)		X
	R-112 (ER.6-2)	X	
G.	Technical Support		
	None		

II. Buildings 771/774 (Continued)

	<u>Recommendation</u>	<u>Status</u>	
		<u>Open</u>	<u>Closed</u>
H.	Security/Safety Interface		
	R-113 (SS.3-1)		X
I.	Experimental Activities		
	None		
J.	Facility Safety Review		
	None		
K.	Nuclear Criticality Safety		
	R-114 (CS.2-1)		X
L.	Radiological Protection		
	R-115 (RP.1-1)		X
	R-116 (RP.1-2)		X
	R-117 (RP.5-1)		X
	R-118 (RP.5-2)	X	
	R-119 (RP.6-1)	X	
	R-120 (RP.8-1)		X
	R-121 (RP.8-2)		X
	R-122 (RP.8-3)		X
	R-123 (RP.8-4)		X
	R-124 (RP.9-1)		X
	R-125 (RP.9-2)		X
	R-126 (RP.10-1)		X
	R-127 (RP.10-2)	X	
	R-128 (RP.11-1)	X	
	R-129 (RP.11-2)		X
	R-130 (RP.11-3)		X
	R-131 (RP.11-4)		X
	R-132 (RP.11-5)		X
	R-133 (RP.13-1)	X	
M.	Personnel Protection		
	R-134 (PP.1-1)		X
	R-135 (PP.4-1)	X	
	R-136 (PP.5-1)	X	
	R-137 (PP.5-2)	X	
	R-138 (PP.7-1)		X
	R-139 (PP.7-2)		X

II. Buildings 771/774 (Continued)

	<u>Recommendation</u>	<u>Status</u>	
		<u>Open</u>	<u>Closed</u>
N.	Fire Protection		
	R-140 (FP.3-1)	X	
	R-141 (FP.5-1)		X
	R-142 (FP.5-2)		X
	R-143 (FP.5-3)	X	
	R-144 (FP.5-4)	X	
	R-145 (FP.5-5)	X	

III. Buildings 776/777

	<u>Concern</u>	<u>Status</u>	
		<u>Open</u>	<u>Closed</u>
A.	Organization and Administration		
	R-146 (OA.1-1)		X
	R-147 (OA.1-2)	X	
	R-148 (OA.2-1)	X	
	R-149 (OA.4-1)	X	
	R-150 (OA.4-2)	X	
	R-151 (OA.6-1)	X	
	R-152 (OA.6-2)	X	
B.	Operations		
	R-153 (OP.3-1)	X	
	R-154 (OP.4-1)	X	
C.	Maintenance		
	R-155 (MA.2-1)	X	
	R-156 (MA.3-1)	X	
	R-157 (MA.5-1)	X	
	R-158 (MA.5-2)	X	
	R-159 (MA.6-1)	X	
	R-160 (MA.7-1)	X	
D.	Training and Certification		
	R-161 (TC.1-1)		X
	R-162 (TC.3-1)	X	
	R-163 (TC.3-2)	X	
	R-164 (TC.3-3)	X	
	R-165 (TC.4-1)	X	
E.	Auxiliary Systems		
	R-166 (AX.1-1)		X
	R-167 (AX.2-1)	X	
	R-168 (AX.3-1)	X	
	R-169 (AX.4-1)	X	
	R-170 (AX.4-2)		X
	R-171 (AX.4-3)	X	
	R-172 (AX.7-1)	X	
	R-173 (AX.7-2)		X

III. Buildings 776/777 (Continued)

	<u>Concern</u>	<u>Status</u>	
		<u>Open</u>	<u>Closed</u>
F.	Emergency Readiness		
	R-174 (ER.1-1)		X
	R-175 (ER.3-1)		X
	R-176 (ER.3-2)	X	
	R-177 (ER.4-1)	X	
	R-178 (ER.5-1)		X
	R-179 (ER.6-1)		X
G.	Technical Support		
	R-180 (TS.1-1)		X
	R-181 (TS.7-1)	X	
	R-182 (TS.7-2)	X	
	R-183 (TS.7-3)		X
H.	Security/Safety Interface		
	None		
I.	Experimental Activities		
	R-184 (EA.3-1)		X
J.	Facilities Safety Review		
	R-185 (FR.1-1)		X
	R-186 (FR.1-2)		X
	R-187 (FR.2-1)		X
	R-188 (FR.2-2)		X
	R-189 (FR.4-1)		X
	R-190 (FR.5-1)	X	
K.	Nuclear Criticality Safety		
	R-191 (CS.1-1)	X	

III. Buildings 776/777 (Continued)

	<u>Concern</u>	<u>Status</u>	
		<u>Open</u>	<u>Closed</u>
L.	Radiological Protection		
	R-192 (RP.1-1)		X
	R-193 (RP.1-2)		X
	R-194 (RP.1-3)		X
	R-195 (RP.2-1)		X
	R-196 (RP.3-1)		X
	R-197 (RP.3-2)		X
	R-198 (RP.5-1)	X	
	R-199 (RP.5-2)		X
	R-200 (RP.5-3)	X	
	R-201 (RP.5-4)	X	
	R-202 (RP.6-1)	X	
	R-203 (RP.6-2)		X
	R-204 (RP.7-1)		X
	R-205 (RP.7-2)		X
	R-206 (RP.7-3)		X
	R-207 (RP.8-1)		X
	R-208 (RP.8-2)		X
	R-209 (RP.8-3)		X
	R-210 (RP.8-4)		X
	R-211 (RP.11-1)		X
	R-212 (RP.11-2)		X
	R-213 (RP.12-1)	X	
	R-214 (RP.12-2)	X	
	R-215 (RP.12-3)		X
	R-216 (RP.13-1)	X	
M.	Personnel Protection		
	R-217 (PP.2-1)	X	
	R-218 (PP.2-2)		X
	R-219 (PP.3-1)		X
	R-220 (PP.4-1)	X	
	R-221 (PP.5-1)		X
	R-222 (PP.5-2)	X	
	R-223 (PP.7-1)	X	
	R-224 (PP.7-2)		X

III. Buildings 776/777 (Continued)

<u>Concern</u>		<u>Status</u>	
		<u>Open</u>	<u>Closed</u>
N.	Fire Protection		
	R-225 (FP.1-1)		X
	R-226 (FP.2-1)	X	
	R-227 (FP.5-1)	X	
	R-228 (FP.5-2)		X
	R-229 (FP.5-3)	X	
	R-230 (FP.5-4)	X	

APPENDIX C-2

BUILDING 707

Evaluation of Progress

A. ORGANIZATION AND ADMINISTRATION

OA.1 FACILITY ORGANIZATION AND ADMINISTRATION

RECOMMENDATION R-1 (OA.1-1) [CATEGORY I-N]: ENHANCE THE BENEFITS OF THE COMPANY/UNION SAFETY COMMITTEE.

Evaluation

The Company/Union Safety Committee is a strong element of the RFP safety program. On the management side, the inclusion of representatives from the operating directorates has increased the visibility and the timeliness of actions. The union has made its membership more aware of the committee's successful efforts at resolving safety issues. Established procedures are being followed and first-line managers and their supervisors are involved with the resolution process. Leadership by the company and union co-chairpersons, technical support from HS&E when requested, and their direct access to top management have enhanced the committee's effectiveness. A measure of this success is that fewer safety concerns are being brought to the committee because they are being resolved directly at the workplace by employees and their immediate supervisors. Fewer union safety complaints, in the form of DOE 628s, have been filed since union/management relations have improved and the perception is that in-house methods of resolving safety issues exist and are effective.

Management considers the time spent by union members on activities of the Company/Union Safety Committee as union business and chargeable to the allocation of union time made by management in their bargaining agreement. According to union membership this has, on occasion, reduced the union participation so as not to exceed the monthly hour limitation. Resolving this situation would provide management with another opportunity to improve union/management relations and enhance the benefits of the committee.

This recommendation should be CLOSED.

RECOMMENDATION R-2 (OA.1-2) [CATEGORY II]: SEPARATE THE FUNCTIONS OF BUILDING MANAGERS AND PRODUCTION MANAGERS TO STRENGTHEN SAFETY MANAGEMENT IN BUILDING 707, AND CLARIFY THE CHAIN OF AUTHORITY.

Evaluation

The role of building managers has been clarified and strengthened. Organization Manual, Position Description 10.4, dated October 3, 1988, has been issued and outlines a new job description, which makes building managers responsible for all activities in their assigned buildings. The lines of authority are clearly detailed and interviews with several building managers revealed that they understood their central role and responsibility for safety. To effectively implement these new responsibilities, building managers for the larger facilities have been provided additional staff to handle production and support activities. Organization charts have been modified to reflect these new positions. Most building managers have been appointed except for a few positions which have been posted. A training program for building managers has been started.

This recommendation should be CLOSED.

OA.2 MANAGEMENT OBJECTIVES

RECOMMENDATION R-3 (OA.2-1) [CATEGORY III]: QUANTIFY THE KEY OBJECTIVE ON SAFETY PERFORMANCE STATED IN THE 1986 RI-RFP MANAGEMENT OBJECTIVES AND PLAN (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO CONCERN R-148 (OA.4-1) FOR BLDGS. 776/777).

Evaluation

Management action toward resolution of these concerns is still essentially the result of the DOE Cost Plus Award Fee process and reflects typical industrial safety and radiation exposure reporting requirements. While actions have been taken to reduce accidents and exposure; and analyze, monitor, and trend data, they do not address the fundamental safety issues identified in the previous TSAs. The efforts have been piecemeal and reactive; lack cohesiveness and clarity; and leave open the question of whether an effective safety program can be sustained in the long term. The establishment of clear, quantified goals and objectives, with traceable milestones that address root cause problems, is required.

This recommendation should remain OPEN.

OA.4 MANAGEMENT ASSESSMENT

RECOMMENDATION R-4 (OA.4-1) [CATEGORY II]: STANDARDIZE AND IMPROVE MANAGEMENT SYSTEM FOR REPORTING AND FOLLOWUP ON ACTIONS IDENTIFIED THROUGH INTERNAL AUDITS AND INVESTIGATIONS. ESTABLISH A COMPREHENSIVE SYSTEM FOR REPORTING AND INVESTIGATING ABNORMAL EVENTS AND FOR ASSIGNING RESPONSIBILITY. ESTABLISH A SYSTEM TO PROVIDE EFFECTIVE TRACKING ON RECOMMENDED CORRECTIVE ACTIONS. (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO CONCERN R-149 [OA.4-1] FOR BLDGS. 776/777).

Evaluation

Progress has been made toward correcting the previous deficiencies. A new policy statement, RFPM MHS 16-500, dated March 18, 1988, has been issued. This statement combines two previous policy statements (MHS 8-100 and MHS 16-500) that were somewhat contradictory. This policy assigns responsibility, addresses all the DOE reporting requirements, includes the required reporting times and cites all the appropriate references. In addition, HS&E Manual 3.01 (HSE 3.01) has been revised (as of April 25, 1988) and now properly treats interim and final reports. HSE 3.01 also clarifies the responsibility for conducting investigations and centralized reporting of incidents as part of a hierarchical reporting to management and DOE for followup tracking of corrective actions.

This corrective action is deficient in that Section 8.1 of HSE 3.01 assigns responsibility to the director of the affected organizational element to: conduct investigations, appoint a manager from the organizational element to chair investigative committees, and permit appointment of two other members from the affected organizational element (not from the specific activity) as well as an HS&E and union safety committee member. Placing these responsibilities and staffing the investigation committee primarily with membership from within the affected organizational element raises questions of independence and objectivity. In addition, Section 7 of HSE 3.01 assigns line responsibilities to the committee to "initiate" an "assign" actions. This is contrary to good practice and RFP Organization Policy #9 which states "committees act in an advisory capacity." These concerns were closed out by RFP on September 7, 1988. On November 11, 1988, The Rockwell News (the RFP employee newspaper) carried an article titled "New Safety Review Group to Investigate UORs." This new organizational element, defined in HSE 1.03, Section 4.3 (issued November 4, 1988), is charged with RFP-wide investigation, monitoring, and tracking of all UORs and Internal Investigation Reports. It removes the deficiency cited above but is in conflict with HSE 3.01.

This recommendation should remain OPEN.

OA.6 DOCUMENT CONTROL

RECOMMENDATION R-5 (OA.6-1) [CATEGORY III]: DEVELOP A SITE-WIDE SYSTEM TO CONTROL PERTINENT SAFETY-RELATED DOCUMENTS AND TO ENABLE MAINTAINING THEM CURRENT BY NEW ISSUE OR BY INDIVIDUAL PAGE REVISIONS.

Evaluation

See Evaluation for Concern R-151 (OA.6-1) for Bldgs. 776/777.

This recommendation should remain OPEN.

B. OPERATIONS

OP.3 FACILITY STATUS CONTROL

RECOMMENDATION R-6 (OP.3-1) [CATEGORY III]: ESTABLISH A SYSTEM TO IDENTIFY PRODUCTION EQUIPMENT WHOSE FAILURE WOULD RESULT IN A SERIOUS SAFETY HAZARD. PROVIDE SPECIAL PROCEDURES THAT ARE DESIGNED TO MINIMIZE FAILURE OF THIS EQUIPMENT.

Evaluation

In response to this recommendation, all production equipment items in Bldg. 707 (Modules A through K) were examined and evaluated by the Manufacturing Technical Support Group in Production Operations using references to available failure analyses for Bldg. 707 production equipment. The HS&E Safety Analysis Group has carried out appropriate analyses to determine the consequences of failure of all critical production equipment items. The techniques this group utilizes are fault-tree analysis, preliminary hazard analysis, and failure mode and effects analysis (as described in Appendix A of the Bldg. 707 SAR).

As a result of these analyses, no equipment item was identified as one whose failure would result in a "serious safety hazard." "Serious safety hazard," as used in the recommendation, has been interpreted to mean a hazard with a severity category of "critical" or "catastrophic" as defined in AL 5481.1A. Review of the analyses plus discussions with personnel responsible for conducting them confirmed their validity. The analyses are recorded in the files of the Safety Analysis Group. Some of the analyses actually appear in Appendix A of the Bldg. 707 SAR; others, because of classification, are available only in draft form in internal files of the HS&E Safety Analysis Group.

In a related effort, RI has issued the Safe Shutdown Procedures Manual for Buildings 707 and 777, September 1988. This Manual's procedures, if followed, improve assurance that equipment failure will not result from improper shutdown.

Similar treatment of production equipment in other RFP buildings may merit consideration.

This recommendation should be CLOSED.

OP-4. OPERATIONS STATIONS AND EQUIPMENT

RECOMMENDATION R-7 (OP.4-1) [CATEGORY I-N]: INSTALL GUARDS AROUND ELECTRICAL JUNCTIONS WHERE THEY ARE ACCESSIBLE TO PERSONNEL.

Evaluation

The original intent of this recommendation has been satisfied. Physical inspection revealed that protective devices have been installed around the electrical junctions specifically cited in the basis for this recommendation. Also, a survey of Bldg. 707 by the Safety Review Team revealed that other similar situations have been corrected.

As a follow-on, RFP management has initiated a maintenance program to inspect and correct deficiencies (on a continuing basis) in the safety of electrical junctions in all RFP buildings. The goal of this Self Improvement Program (SIP) is to eliminate unplanned accessibility to electrical junctions in facilities and on equipment that could cause electrical shock. Central to this site-wide SIP is an RFP Maintenance Procedure (June 11, 1988) entitled "Inspection of Buildings and Facilities," which establishes the policy for the Maintenance Department to conduct monthly and annual inspections of all buildings and facilities at RFP to identify and correct any electrical hazards (among others). The initial implementation phase of this SIP is currently in progress and is scheduled to be completed on December 23, 1988. However, the initial phase is incomplete, and the results have not yet proven to be successful.

This recommendation should remain OPEN.

C. MAINTENANCE

No recommendations were made in this safety technical area during the July 1986 TSA of Bldg. 707.

D. TRAINING AND CERTIFICATION

TC.1 ORGANIZATION AND ADMINISTRATION

RECOMMENDATION R-8 (TC.1-1) [CATEGORY III]: PROVIDE A CENTRAL ORGANIZATION WITH THE RESPONSIBILITY FOR OPERATOR TRAINING, CENTRAL PLANNING, AND MANAGEMENT.

Evaluation

In August 1988, RFP training responsibilities were reorganized to establish a Technical Training Group in the Security and Safeguards Directorate. This Group shares the responsibility for development of training with the Training Development and Administration Group and the responsible line organization, and includes subject matter experts for operations, maintenance, and health and safety areas.

While organization charts have been revised to reflect this new organization, the Training Administration Manual has not been updated to reflect the changes. At present, the effectiveness of training development is dependent on good working relationships between the Human Resources, and Security and Safeguards Directorates, because the division of responsibility between these two Directorates is not institutionalized in RFP policies and procedures.

The intent of this recommendation was to provide more accountability and better planning for training. The reorganization that added the Technical Training Group served to disperse responsibilities for training among additional organizational units, and necessitates additional interfaces. Other DOE and commercial nuclear facilities do not have such a diffused training development organizational structure.

This August 1988 reorganization has provided no change in responsibilities for the conduct of on-the-job-training (OJT). Line management continues to have the sole responsibility for the conduct of OJT. As discussed in the evaluation of Recommendation R-12 (TC.3-2 for Bldg. 707), there are plant-wide weaknesses in the implementation of OJT programs.

This recommendation should remain OPEN.

RECOMMENDATION R-9 (TC.1-2) [CATEGORY III]: PUBLISH A TRAINING MANUAL WHICH DESCRIBES IN DETAIL THE COMPANY'S POLICY REGARDING TRAINING REQUIREMENTS, CERTIFICATION REQUIREMENTS, CURRICULUM DEVELOPMENT STANDARDS, AND INTERFACES WITH OTHER DEPARTMENTS.

Evaluation

A Training Administration Manual was issued in draft form by the Human Resources Directorate on September 1, 1987, but has yet to be released as a formal RFP document. This Manual addresses

responsibilities, organizational structure, training and certification program requirements, training material development, academic standards, and training administration. As indicated in the evaluation of Recommendation R-8 (TC.1-1), the Training Administration Manual does not address the current organizational responsibilities for training development. Also, the Manual does not address responsibilities for training program evaluation.

Variability in the development and conduct of training programs in different line organizations throughout the plant indicate that the standards included and/or referenced in the Training Administration Manual are not being followed. Discussions with personnel in line organizations with training responsibilities indicated that they view this Manual as a Human Resources, not a plant, document.

This recommendation should remain OPEN.

RECOMMENDATION R-10 (TC.1-3) [CATEGORY III]: IMPROVE RESPONSIVENESS TO FINDINGS AND RECOMMENDATIONS CONTAINED IN INTERNAL AND EXTERNAL AUDITS AND APPRAISALS.

Evaluation

The specific audits and appraisals that prompted this recommendation have been addressed by RI. However, the major intent of this recommendation was to assure the effective use of all available information to evaluate training programs. Several organizational units have identified responsibilities for training evaluation, including: the Training Council, Instructional Development and Accreditation, Organizational Development, Technical Training, HS&E, and Quality Engineering and Control. None of these units has an integrated, documented program or other effective means to address all inputs to training evaluation (audits and appraisals, supervisor feedback, student and graduate feedback, instructor evaluations, and operating experience), and to use this information to conduct regular, structured evaluations of training programs. Interfaces among these organizational units to share training evaluation information are not defined.

This recommendation should remain OPEN.

TC.3 NUCLEAR FACILITY OPERATIONS OTHER THAN REACTORS

RECOMMENDATION R-11 (TC.3-1) [CATEGORY III]: DETERMINE METHODS WHICH WOULD LEAD TO THE ELIMINATION OF "BIDDING RIGHTS" BY OPERATORS INTO VACANT POSITIONS WHICH ARE CLASSIFIED AS FISSILE MATERIALS HANDLER (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO CONCERN R-162 [TC.3-1] FOR BLDGS. 776/777).

Evaluation

RFP has reviewed fissile material handler (FMH) minimum job qualifications based on job requirements. Based on task analysis data, changes have been implemented in minimum job qualifications for chemical operators-recovery. In spite of these changes, there is still considerable turnover in key positions such as chemical operators, metal operators, and radiation monitors due to "bidding rights." These transfers often have involved the most experienced/qualified personnel in one job classification shifting into a new position for which they have no experience (e.g., metal operator to radiation monitor). Not only does this reduce the overall plant level of safety, but it also requires expending additional training and supervisory resources on personnel changing jobs rather than on other needs. Management has not yet developed any approaches to deal with this situation. It is noted that the intent of this recommendation is to overcome the negative effects of bidding rights on performance, not necessarily to do away with bidding rights.

This recommendation should remain OPEN.

RECOMMENDATION R-12 (TC.3-2) [CATEGORY I-N]: ESTABLISH AND IMPLEMENT A COMPREHENSIVE OPERATORS QUALIFICATION/CERTIFICATION TRAINING PROGRAM WHICH MEETS OR EXCEEDS THE INTENT OF DOE 5480.1A, CHAPTER V (SUPERSEDED BY DOE 5480.5).

Evaluation

While a pilot program for FMH training and qualification has been developed, none of the training and qualification programs have been implemented for any of the Bldg. 707 FMH positions. Interviews revealed that it will be two years before these programs are scheduled to be implemented for all Bldg. 707 positions.

The annual recertification of Bldg. 707 FMH emergency and abnormal tasks does not address tasks that are specific to individual positions. This does not meet the intent of DOE 5480.5, Section 10a. Plant-wide, there are difficulties and uncertainties remaining concerning on-the-job training and evaluation, including performance standards, and abnormal and emergency response actions. The development of qualification based training should be based on job analysis and subsequent identification of knowledge and skills needed for job performance.

This recommendation should remain OPEN.

RECOMMENDATION R-13 (TC.3-3) [CATEGORY I-N]: ESTABLISH AND IMPLEMENT A COMPREHENSIVE QUALIFICATION AND CERTIFICATION TRAINING PROGRAM FOR ALL FOREMEN AND SUPERVISORS OF FISSILE MATERIAL HANDLERS IN BLDG. 707 WHICH MEETS OR EXCEEDS THE

REQUIREMENTS OF DOE 5480.1A, CHAPTER V (SUPERSEDED BY DOE 5480.5) (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-98 [TC.3-3] FOR BLDGS. 771/774 AND CONCERN R-164 [TC.3-3] FOR BLDGS. 776/777).

Evaluation

While pilot programs are being developed for plant-wide FMH supervisor training and qualification, none of these pilot programs have been fully developed. Also, schedules for the implementation of these programs for all FMH supervisor positions have not been developed. There are no methods identified for conducting job-specific FMH supervisor qualification or requalification.

This recommendation should remain OPEN.

TC.4 PERSONNEL PROTECTION

RECOMMENDATION R-14 (TC.4-1) [CATEGORY I-N]: IMPLEMENT A CURRICULUM DEVELOPMENT PROGRAM (AS PART OF RECOMMENDATIONS R-12 AND R-13 [TC.3-2 AND 3-3]) WHICH INCLUDES AS PART OF THE CURRICULUM, TRAINING ON THE PERSONNEL PROTECTION ASPECTS RELATED TO THE ACTUAL JOB.

Evaluation

The development efforts for pilot programs have addressed the personnel protection aspects of these jobs. However, as described in the evaluations for Recommendations R-12 and R-13 (TC.3-2 and TC.3-3), training programs for all positions either are not scheduled yet, or are not scheduled for completion for two years.

This recommendation should remain OPEN.

TC.5 MAINTENANCE PERSONNEL

RECOMMENDATION R-15 (TC.5-1) [CATEGORY III]: DOCUMENT ON-THE-JOB TRAINING WHICH IS ACTUALLY ACCOMPLISHED IN INDIVIDUAL FOLDERS OR BY COMPUTER TO TAKE CREDIT FOR THAT TRAINING DELIVERED.

Evaluation

Qualification-based training programs for all maintenance positions are not scheduled for completion until 1993. Plans are for these training programs to include documentation of OJT through individual qualification standards. The completion of these programs will be tracked through new Concern TC-2.

This recommendation should be CLOSED.

E. AUXILIARY SYSTEMS

AX.1 EFFLUENT HOLDUP AND TREATMENT

RECOMMENDATION R-16 (AX.1-1) [CATEGORY III]: INCORPORATE THE GENERAL DRY AIR EXHAUST MEASUREMENT IN THE REPORTING OF EFFLUENTS.

Evaluation

The General Dry Air exhaust system recirculates clean, filtered, low humidity air to the modular work spaces (Zone III) of the plutonium-handling areas in Bldg. 707. About 20 percent of the recirculated air is exhausted to the atmosphere. Prior to the Bldg. 707 TSA in July 1986, air samples of the exhausted air were collected and counted for alpha activity. Results were evaluated and stored by Health Physics but were not formally reported. The measurements have since been included in the Monthly Environmental Monitoring Reports to the Colorado Department of Health since January 1987. They have also been included in the Discharge Data Reports, as required by DOE 5484.1.

Measurement results were verified for the nine effluent streams from January 1987 to September 1988. Alpha activities in pCi/m³ are generally orders of magnitude lower than Zone II effluents.

This recommendation should be CLOSED.

AX.7 ENGINEERED SAFETY SYSTEMS

RECOMMENDATION R-17 (AX.7-1) [CATEGORY I-N]: REFINE CHAPTER 7 (OPERATING CONTROLS AND LIMITS) OF THE BLDG. 707 FINAL SAFETY ANALYSIS REPORT (8/85 DRAFT) AND DOCUMENT THE CONCURRENCE OF THE MANAGER(S) RESPONSIBLE FOR IMPLEMENTING THE SPECIFICATIONS OR SURVEILLANCE REQUIREMENTS. (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO CONCERN R-172 (AX. 7-1) FOR BLDGS. 776/777).

Evaluation

RI's analysis of the prior TSA recommendations/concerns confirmed that operations personnel did not have current Operational Safety Requirements (OSRs), and were not knowledgeable in OSRs and actions required for non-compliance. The analysis also confirmed that the importance of establishing, maintaining, and adhering to Limiting Conditions for Operation (LCOs) in OSRs was not fully understood.

In 1987, a project was initiated to review the OSRs for the nine plutonium facilities and to revise Chapter 7 of the SARs to fully reflect the requirements of DOE 5480.1A, Chapter V. Addressed were design bases, equipment, modifications, implementation procedures, assurance of compliance and remedial actions for non-compliance.

Draft revisions of Chapter 7 of the SARs, "Operational Safety Requirements," have been prepared for the nine plutonium facilities and have been submitted to DOE/RFAO and AL for approval. The revised OSRs clearly spell out administrative controls as well as LCOs, surveillance requirements, and remedial actions. Further, the user-friendly organization of the information should be helpful to operations not only for day to day use, but also for training.

An implementation plan for incorporating these revised OSRs into procedures has been prepared. Final approval of the OSRs by DOE/RFAO and AL is required before the procedures can be fully implemented. The completion of RFP actions on the TSA finding related to this recommendation and Concern R-17 (AX.7-1 for Bldgs. 776/777) is planned for early 1989.

This recommendation should remain OPEN.

F. EMERGENCY READINESS

ER.1 ORGANIZATION AND ADMINISTRATION

RECOMMENDATION R-18 (ER.1-1) [CATEGORY III]: PROVIDE A FACILITY EMERGENCY PLANNING COORDINATOR FOR THE BLDG. 707 TO INTERFACE DIRECTLY WITH THE SITE EMERGENCY PLANNING COORDINATOR.

Evaluation

Facility emergency planning functions have been assigned to the Building Emergency Representative (BER) and are clearly documented in Section 1.9.4 of the Rocky Flats Emergency Plan. The role of the BER is to provide local preparation and coordination of the emergency preparedness program in each facility and to serve as a point of contact for the plant emergency preparedness staff.

The BER function was initiated in 1986 with the assignment of these responsibilities to the building managers. The job description for building managers was changed significantly during 1988 and in September 1988 a formal assignment of BER responsibilities was made. The building manager may choose to assume the BER function himself or may assign it to someone else. Interviews with BERs revealed that they are knowledgeable as to their duties and interface with the RFP emergency preparedness organization. Recent efforts to standardize building emergency plans using primarily emergency preparedness staff labor with BER input has enhanced this interface and relationship. Scheduling and conducting drills is another interface area that is working well.

This recommendation should be CLOSED.

RECOMMENDATION R-19 (ER.1-2) [CATEGORY I-N]: AUDIT THE EMERGENCY PREPAREDNESS ACTIVITIES TO ASSURE THAT ADEQUATE RESOURCES ARE AVAILABLE.

Evaluation

A review of emergency preparedness (EP) activities by management indicated the need for a QA program to staff and carry out audits, reviews and assessments. A draft Quality Assurance Program Plan was prepared by the EP staff in October 1987. This Plan was reviewed and found to be deficient in meeting the current NQA-1 requirements and was not implemented nor staffed by RFP to meet the requirements of the Plan, although a few elements were put in place (tracking corrective actions identified in exercise critiques, training of one staff member in audit techniques, and document control of plans and procedures).

A new Emergency Preparedness Quality Assurance Implementation Plan was developed in accordance with the RFP Non-Weapons Quality Assurance Program requirements and was approved on November 21,

1988. It outlines the elements that apply to EP planning and operational activities and sets target dates for their implementation. Additional staffing will be required to perform the various functions outlined in the Plan. Although the Plan is in place, most elements of the Plan have not been implemented.

This recommendation should remain OPEN.

ER.2 FACILITY EMERGENCY PLAN

RECOMMENDATION R-20 (ER.2-1) [CATEGORY I-N]: EXPEDITE THE ISSUANCE OF OPERATING PROCEDURES FOR THE EMERGENCY OPERATIONS CENTER (EOC) AND THE SITE AND BUILDING EMERGENCY PLANS.

Evaluation

Operating procedures for the EOC, the site emergency plan, and building emergency plans have been issued as controlled documents. EPP-200, the Emergency Management Handbook (formerly titled The Emergency Operating Center Handbook) was originally issued in September 1986 and the current revision is dated September 1987. In addition, emergency management deskbooks have been developed for each major EOC staff position. These deskbooks include a position description, responsibilities, authority, suggested interfaces with other EOC staff and offsite agencies, notification checklists, and telephone numbers.

The site emergency plan (Rocky Flats Emergency Plan) was originally issued in May 1987 as a controlled document. It has since been revised twice, in June and October of 1988.

Emergency plans have been written for all major RFP buildings. Recently, the emergency preparedness staff, with the assistance of building emergency directors, has begun to upgrade the building plans using a standard format to ensure that all DOE requirements are met. Upgraded plans are complete for the major production facilities and were issued on November 14, 1988. (These include the 707, 771, 774, 776 and 777 Building Emergency Plans.) Upgrading of other existing building plans is in progress.

This recommendation should be CLOSED.

RECOMMENDATION R-21 (ER.2-2) [CATEGORY I-N]: ASSURE THAT THE EMERGENCY OPERATIONS CENTER (EOC) IS OCCUPIED BY QUALIFIED PERSONNEL AT ALL TIMES, OR PROVIDE A CONTINGENCY PROCEDURE FOR THE TIMES WHEN IT IS NOT OCCUPIED.

Evaluation

The EOC is manned 24 hours per day, seven days a week, by the Shift Superintendent, who is the on-scene Emergency Director and is responsible for the overall direction of the emergency

response effort. In addition, members of the emergency preparedness staff are present during day shifts. When the Shift Superintendent responds to the scene of an emergency, he maintains the capability to activate and begin staffing of the EOC. He can remotely activate the ADAS VI Rapid Notification System which automatically dials and/or pages all EOC staff by phone or radio. He may also contact the Security Dispatch Office and request that they activate the EOC.

The Security Dispatch Office is always fully staffed, receives all emergency calls, and is located in close proximity to the EOC. Staff members are trained to activate the EOC upon request of the Shift Superintendent using the dedicated management ringdown telephone system or ADAS VI Rapid Notification System. The dispatcher remains in the EOC to maintain an event log until the EOC is staffed. All twelve dispatchers have (October 1988) been trained recently on current procedures.

This recommendation should be CLOSED.

ER.3 EMERGENCY RESPONSE TRAINING

RECOMMENDATION R-22 (ER.3-1) [CATEGORY III]: REQUIRE THAT FALSE ALARMS THAT ARE CREDITED WITH BEING AN EMERGENCY DRILL ARE SUBJECTED TO A POST-EVENT CRITIQUE SESSION, DEFICIENCY REPORT, AND CORRECTIVE ACTION FOLLOWUP.

Evaluation

The Rocky Flats Emergency Plan (Section 1.12.1) states that "response to false alarms may be credited as a drill if the activity meets the evaluation criteria for required drills." This requires a post-event critique, a formal written critique report, and computerized tracking of corrective actions. During 1987 and 1988, RFP has not credited any false alarms as emergency drills.

The emergency preparedness staff schedules emergency drills for all facilities on an annual, bi-annual or tri-annual basis, depending on the type of facility and its required drill frequency. For 1987 and 1988 all required drills were scheduled and scenarios prepared. In 1987, 30 out of 30 drills were conducted. In 1988, 32 out of 34 drills have been conducted and 1 is scheduled for December. These drills have been evaluated using documented evaluation criteria.

This recommendation should be CLOSED.

RECOMMENDATION R-23 (ER.3-2) [CATEGORY I-N]: MAINTAIN RECORDS OF EMPLOYEE PARTICIPATION IN EMERGENCY DRILLS AND EXERCISES TO ENSURE THAT EVERYONE HAS PARTICIPATED TO THE EXTENT REQUIRED.

Evaluation

A system to document employee participation in emergency drills and exercises was implemented in March 1988. At each exercise or drill a standard form is distributed to all participating employees requiring that they record their employee number and signature. This information is collected at staging areas, at critique meetings, from building managers and emergency responders, and from EOC and satellite discipline responders. These data are entered into the site training database computer where they can be analyzed as needed.

Printouts of employee participation data were reviewed. Records of participants in each of the drills conducted since March 1988 were available and complete. In addition, records of EOC cadre participation in drills, table-top exercises, etc., is maintained in a separate emergency preparedness training database. This database is used to document and verify that cadre members receive required training.

This recommendation should be CLOSED.

ER.4 EMERGENCY FACILITIES, EQUIPMENT, AND RESOURCES

RECOMMENDATION R-24 (ER.4-1) [CATEGORY I-N]: EVALUATE ALARM SYSTEMS AND THEIR ELECTRIC POWER SUPPLIES FOR COMPLIANCE WITH THE INTENT OF CURRENT STANDARDS.

Evaluation

A compliance review of alarm systems and their power supplies with current, applicable standards, has been conducted by RFP. The responsible committee, composed of personnel from the Safety Analysis, Radiation Instrumentation, Facilities Engineering, and Utilities Departments, concluded that these systems do not meet the requirements and/or intent of all standards. Budget requests and technical presentations have been made to AL for projects totalling over \$40.8 million extending through 1992, which would bring the alarm systems and their power supplies into compliance.

Interim measures have been taken to increase the reliability of the present systems. Communication Systems has dedicated four employees to full-time repair and maintenance of these systems. Criticality alarms are routinely tested and maintained. During the past two years there have been no false alarms from the criticality alarms. Previously, these monitors had a history of frequent false alarms. Increased attention has also been focused on the operability of the public address system. Unfortunately, most of the alarms are over 15 years old, the public address

system is outdated, and replacement parts are no longer available. To meet current codes and standards, these systems need upgrading/replacement and requisite funding to support these actions. Action on this recommendation must come from DOE.

This recommendation should remain OPEN.

RECOMMENDATION R-25 (ER.4-2) [CATEGORY II]: ASSURE THAT THE QUALITY ASSURANCE ORGANIZATION BECOMES INVOLVED IN EMERGENCY PREPAREDNESS ACTIVITIES.

Evaluation

An Emergency Preparedness Quality Assurance Implementation Plan was developed in accordance with NQA-1 requirements and was approved by the Manager, Non-Weapons Quality Assurance. This plan integrates QA functions into the organization. Three levels of independent audits are outlined and their respective frequencies are defined. A document control system is required and currently in place for all EP plans and procedures. Inspections of alarms, communication equipment, and emergency supplies are also dictated. The joint development and implementation of this plan assures QA involvement in emergency preparedness activities. See also Evaluation for Recommendation R-19 (ER.1-2) for Bldg. 707 for further discussion of this topic.

This recommendation should be CLOSED.

RECOMMENDATION R-26 (ER.4-3) [CATEGORY III]: ESTABLISH A WORK CONTROL PROCESS FOR WORK ORDERS ASSOCIATED WITH EMERGENCY ALARM AND COMMUNICATION SYSTEMS.

Evaluation

A communications systems policy and procedure for work orders and trouble reports was developed and implemented on November 18, 1987. This procedure provides an audit trail from work initiation to completion and provides feedback to the requestor. Repairs of an emergency nature are called in and logged in the Repair and Trouble Report Log. Technicians respond immediately (an on-call system covering off-hours and weekends is in place) and make repairs, if possible. Work of longer duration or requiring engineering design is entered into the Alarm and Telecommunications Support Work Order System. This system provides complete documentation of work progress and feedback to the user at the initiation of the work order and at its completion.

Records were reviewed and found to be in good order. Emergency requests have been completed in a timely fashion. Work orders are generally completed in 60 days except for those requiring

engineering design, which often take much longer. The current backlog of work orders is approximately 25 jobs.

This recommendation should be CLOSED.

RECOMMENDATION R-27 (ER.4-4) [CATEGORY I-N]: EVALUATE THE FAILURE MODE OF THE GLOVEBOX AND BUILDING EXHAUST DAMPERS TO DETERMINE WHETHER MEANS SHOULD BE PROVIDED FOR REMOTELY ISOLATING THESE SYSTEMS.

Evaluation

An evaluation was performed of the Bldg. 707 exhaust dampers, their failure mode, and means to isolate these systems during emergencies. In the event of an electrical or other failure, the exhaust dampers fail open and the supply dampers fail closed, allowing the building to shut down to a static air condition with the only ventilation open to the atmosphere passing through the high efficiency particulate air (HEPA) filter plenum. This is the safest shutdown condition. If closing of exhaust dampers becomes necessary, the Utilities Control Room has a separate outside entrance and separate HEPA filtered ventilation system allowing easy access and egress to control panels.

This evaluation of ventilation failure and control accessibility was extended site-wide at RFP. Records of the evaluation were reviewed and most building ventilation systems failed in a similar mode.

This recommendation should be CLOSED.

ER.4 EMERGENCY FACILITIES, EQUIPMENT, AND RESOURCES

RECOMMENDATION R-28 (ER.4-5) [CATEGORY I-N]: EVALUATE THE RESPONSE OF PERSONNEL TO THE CESSATION OF MUSIC ON THE PUBLIC ADDRESS SYSTEM.

Evaluation

A study was conducted of personnel response to the cessation of music over the public address (PA) system and a number of corrective actions were taken. First, policies (SEC 16-006, "Life Safety/Disaster Warning System") and procedures (HS&E Procedures 18.02 and 18.03) were revised to define more clearly employee and management responsibilities. Building managers were assigned responsibility for assuring that the PA system is functional. Building personnel that note the cessation of music should report it to the building manager (or the Shift Superintendent on off-hours) and he/she will test the system and evacuate personnel as necessary. Employees and management have received additional training in this subject.

Additional measures have been instituted to assure that the PA system is functional. A staff of four employees is dedicated to maintaining the PA system and scheduling preventive maintenance. The security force is required to check the system in each building on all shifts every day. A review of security checklists for Bldg. 707 for September 1988 revealed that for 19 of 29 days the systems were checked. Starting and quitting time tones are broadcast over the PA system at 7:30 am, 4:00 pm and 11:30 pm each day and building managers, as well as most employees, are attentive to and verify that the system is functional. When these tones are absent, building managers are quickly informed.

This recommendation should be CLOSED.

RECOMMENDATION R-29 (ER.4-6) [CATEGORY I-N]: EXPEDITE UPGRADING OF THE PUBLIC ADDRESS SYSTEM.

Evaluation

The upgrading of the public address system was submitted as a Facility Capability Assurance Program (FCAP) project in September 1987, and is being supported by RFAO as an FY92 FCAP Project. Until then, interim measures are being taken (see Recommendation R-24 [ER.4-1] for Bldg. 707) and upgrades are being made, as permitted by approved funding levels.

This recommendation should be CLOSED.

RECOMMENDATION R-30 (ER.4-7) [CATEGORY I-N]: ASSURE THAT THE SITE EMERGENCY PLANNING COORDINATOR AND THE AREA SAFETY REPRESENTATIVE, OR SAFETY PERSONNEL REPRESENTING THEIR INTERESTS, PARTICIPATE IN THE PRELIMINARY WALKTHROUGH AND FINAL OCCUPANCY REVIEW OF ALL ENGINEERING PROJECTS TO ASSURE THAT CHANGES THAT COULD AFFECT EMERGENCY PROCEDURES ARE BEING PROPERLY CONSIDERED.

Evaluation

The Rocky Flats Emergency Plan assigns the responsibility for participating in engineering project walkthroughs to the Building Emergency Representative (BER). The BER represents the interests of the emergency preparedness (EP) organization and is the primary building contact for EP. HS&E Procedure 2.02 assigns responsibility for the verification of safety of engineering projects to the HS&E Area Representative who coordinates an occupancy use readiness inspection or final walkthrough.

An interview with the HS&E Area Representative revealed that the current practice is to have HS&E disciplines, as well as the Fire Department and Security, participate in design reviews and the

final acceptance walkthroughs. All have signature authority to make changes. These groups have emergency response functions and often will identify potential problems. The building manager also participates but has no signature authority. The building manager may be the BER, but not necessarily, and currently there is no guarantee that the BER will participate in the preliminary walkthrough or final occupancy review of engineering projects.

This recommendation should remain OPEN.

ER.6 PERSONNEL PROTECTION

RECOMMENDATION R-31 (ER.6-1) [CATEGORY I-N] : ASSIGN A HIGHER PRIORITY TO IMPLEMENTING A BADGE READER SYSTEM THAT CAN ACCOUNT FOR ALL PERSONS DURING AN EMERGENCY.

Evaluation

A badge reader system was introduced to the plutonium facilities in July 1988 for emergency accountability of personnel. This system, the Personnel Emergency Logging System or PELS, is a computer-based system employing bar code technology. After a short testing period it was upgraded and this new system has been operating since October 1988. The system was successfully demonstrated during the Bldg. 991 criticality exercise conducted on November 29, 1988.

This recommendation should be CLOSED.

G. TECHNICAL SUPPORT

TS.4 EQUIPMENT PERFORMANCE TESTING AND MONITORING

RECOMMENDATION R-32 (TS.4-1) [CATEGORY I-N]: SPECIFY AND CONTROL BY WRITTEN PROCEDURE THE PERFORMANCE TESTING, MONITORING, AND REPORTING REQUIREMENTS FOR THE "VITAL" FACILITY SAFETY EQUIPMENT AND SYSTEMS (HVAC, FIRE PROTECTION, ELECTRICAL, AND PERSONNEL PROTECTION ALARM SYSTEMS) (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-103 [AX. 5-1] FOR BUILDINGS 771/774, AND TO CONCERN R-173 [AX. 7-2] FOR BUILDINGS 776/777).

Evaluation

RI determined in their analysis of related TSA findings that the definition of engineered safety systems or vital safety systems had not been adequately reviewed to ensure proper operation and maintenance.

Recommendation R-103 (AX 5-1) for Bldgs. 771/774 introduced some confusion in its use of the term "vital" safety equipment under the Performance Objective covering vital supply systems. RI's response was to identify all equipment and systems vital to safety which necessarily included both vital supply systems and engineered safety systems.

Equipment vital to safe operations has been identified and listed for each of the following buildings: 371/374, 444, 460, 559, 707, 771, 776/777, 778, 779, 865, 881, 883, and 991.

Among the items listed are systems for personnel protection monitoring and alarms, ventilation, fire protection, and emergency power. These engineered safety systems have been further catalogued to list the requirements for inspection/monitoring, testing, preventive maintenance, reporting, and trend analysis.

Criticality alarms and Selective Alpha Air Monitors (SAAMs) are tested monthly by the Radiation Instrument Department. Testing, monitoring, and reporting for these systems are covered by written procedures.

Ventilation systems are monitored 24 hours per day by the Utilities Department. Recorded results are kept in daily log sheets. Equipment tests and maintenance are covered by written procedures.

Electric power supplied to the buildings is monitored by the Plant Power Department on all three shifts. Tests and preventive maintenance for transformers and circuit breakers are carried out using written procedures and documented records. Emergency generators are tested each month, once with no-load and once with full-load according to written procedures.

Fire protection systems are tested and monitored by the Fire Department on a regular schedule following written procedures. Operations management and the Building Manager are notified whenever a safety system fails or does not meet Operational Safety Requirements (OSRs).

RI-RFP has responded appropriately to the specific concerns expressed in the three separate recommendations/concerns from previous TSAs. Vital facility safety equipment, including engineered safety systems listed in facility SARs, have been identified plant-wide. Written procedures cover the performance testing, monitoring, and reporting requirements for these systems. A review of experience in Bldgs. 371/374, 444, 559, 779, and 881 verified that the procedures are in use and that testing and monitoring data are on record.

This recommendation should be CLOSED.

H. SECURITY/SAFETY INTERFACE

No recommendations were made in this safety technical area during the July 1986 TSA of Bldg. 707.

I. EXPERIMENTAL ACTIVITIES

No recommendations were made in this safety technical area during the July 1986 TSA of Bldg. 707.

J. FACILITY SAFETY REVIEW

FR.1 SAFETY REVIEW COMMITTEE

RECOMMENDATION R-33 (FR.1-1) [CATEGORY II]: ESTABLISH A FORMAL STATEMENT OF AUTHORITY FOR THE NUCLEAR SAFETY COMMITTEE.

Evaluation

A formal statement of authority for the Nuclear Criticality Safety Committee is embodied within the Rocky Flats Organization Manual (RFOM), Committee Charter Number 5.5, "Nuclear Criticality Safety Committee," dated October 24, 1988. This document includes statements of policy, scope, responsibility, specific responsibility, and actions required for the committee.

The following statement of authority is indicated within the "scope" paragraph:

"The Committee has the authority to recommend corrective actions on all matters concerning nuclear criticality safety, with the urgency of the actions being commensurate with the seriousness of the concern. In situations of imminent danger, the Committee can initiate action (through Criticality Engineering or management up to and including the Rocky Flats Plant President) to halt the operation(s) until the concern is resolved."

In addition, the charter specifically states that the Committee is appointed by, reports to, and is accountable to the President, RFP. This assures that the Committee reports to a designated official at a sufficiently high level in the organization to take necessary corrective action. Composition and experience of Committee members is sufficiently broad to represent all important functions of the organization and necessary technologies for accomplishment of its independent review function.

This recommendation should be CLOSED.

RECOMMENDATION R-34 (FR.1-2) [CATEGORY III]: PROVIDE A SINGLE DOCUMENT WHICH DEFINES THE NUCLEAR FACILITY SAFETY INDEPENDENT REVIEW SYSTEM, INCLUDING THE ENTIRE SCOPE OF NUCLEAR FACILITY SAFETY.

Evaluation

Changes to the structure of the independent safety review system at RFP have been made which apply to all facilities on a plant-wide basis. A hierarchy of independent review committees has

been defined in the Rocky Flats Organization Manual, (RFOM), Committee Charter Number 5.0, "Safety Committees," dated October 24, 1988. Reporting relationships have been defined for each of the Committees as follows.

Reporting to the President:

- Executive Safety Committee (Charter Number 5.1)
- Executive Safety Review Board (Charter Number 5.10)
- Nuclear Criticality Safety Committee (Charter Number 5.5)

Reporting to the Director of HS&E:

- Special Materials Review Committee (Charter Number 5.2)
- Joint Company/Union Safety Committee (Charter Number 5.3)
- Best Management Practices/Spill Prevention and Control Committee (Charter Number 5.4)
- Environmental/Risk Analysis Committee (Charter Number 5.7)
- Health Physics/Industrial Hygiene Committee (Charter Number 5.9)

Reporting to the Controller:

- On-site Transportation Committee (Charter Number 5.8)

Reporting to the Director, Safeguards and Security:

- Accident and Fire Prevention Committee (Charter Number 5.6)

Two additional independent review committees comprised of distinguished off-site experts are used as part of the safety independent review system. The Safety Advisory Overview Group operates to a defined charter and reports to the President, RFP, regarding recommendations that are developed from regular meetings. The external Safety Oversight Panel, which is directed by RI, also has a defined Charter and provides recommendations to the President, RFP. Despite the fact that the two off-site review committee charters are not presently included in the RFOM, they are functioning as part of the facility safety independent review system.

This recommendation should be CLOSED.

FR.4 ANNUAL FACILITY SAFETY REVIEW

RECOMMENDATION R-35 (FR.4-1) [CATEGORY II]: EXPAND THE ANNUAL FACILITY APPRAISAL TO INCLUDE ALL AREAS REQUIRED BY DOE 5480.1A, CHAPTER V, PARAGRAPH 7g (SUPERSEDED BY DOE 5480.5).

Evaluation

Restructuring of the safety review process at RFP has been recently completed and should allow annual facility appraisals to meet the requirements of DOE 5480.5, which supersedes DOE 5480.1A. The process of facility review is not singular in the

RFP safety review system, but employs multiple reviews of each facility (building complex) by several committees that cover the scope of activities delineated in DOE 5480.5. As an example, the Accident and Fire Prevention Committee is scheduled to audit Bldg. 707 in June 1989; the Health Physics/Industrial Hygiene Safety Committee is scheduled to audit Bldg. 707 in July 1989; and the Environmental/Risk Analysis Committee is scheduled to audit Bldg. 707 in April 1989. All facilities considered to have significant safety requirements will be audited at least annually under this program. Other miscellaneous buildings will be addressed less frequently.

This recommendation should be CLOSED.

FR.5 TRIENNIAL APPRAISAL OF FACILITY SAFETY REVIEW SYSTEM

RECOMMENDATION R-36 (FR.5-1) [CATEGORY II]: EXPAND THE SCOPE OF THE TRIENNIAL REVIEW TO COVER ALL ASPECTS OF NUCLEAR FACILITY SAFETY AS REQUIRED BY DOE 5480.1A, CHAPTER V (SUPERSEDED DOE 5480.5).

Evaluation

The proposed scope of the Triennial Review has been expanded to cover all aspects of nuclear facility safety as required by DOE 5480.5, which supersedes DOE 5480.1A. A draft RFP document, FY 1989 Triennial Review, Nuclear Facility Safety Plan, contains a well-defined process by which the review is to be accomplished.

A manual will be prepared for the management team that will perform the review to familiarize them with each of six safety disciplines:

1. Nuclear Safety
2. Industrial Hygiene
3. Industrial Safety
4. Environmental
5. Health Physics
6. Fire Protection

The management team will consist of the:

1. Director of Security
2. Director of Quality
3. Director of Budget and Finance
4. Program Manager

This management team does not have direct line responsibilities for the operation of facilities at RFP.

A formal audit program will be prepared for each safety discipline by the Manager of Audit and Strategic Planning to assure a consistent review by each management team member. The triennial review will meet DOE requirements, if conducted as outlined in the draft program.

This recommendation should remain OPEN.

K. NUCLEAR CRITICALITY SAFETY

No recommendations were made in this safety technical area during the July 1986 TSA of Bldg. 707.

L. RADIOLOGICAL PROTECTION

RP.1 ORGANIZATION AND ADMINISTRATION

RECOMMENDATION R-37 (RP.1-1) [CATEGORY I-N]: REVIEW PLANT MANAGEMENT'S COMMITMENT, DIRECTION, AND EXERCISE OF AUTHORITY AS IT APPLIES TOWARD THE IMPROVEMENT OF QUALITY OF RADIATION PROTECTION PROGRAM (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-115 (RP.1-1) FOR BLDGS. 771/774, AND CONCERN R-194 (RP.1-3) FOR BLDGS. 776/777. IT ALSO RELATES TO RECOMMENDATION R-91 (OA.1-5) FOR BLDGS. 771/774).

Evaluation

The HS&E organization, with over 20 additional assignments of people since April 1988, began a major upgrade of the radiation safety programs, as well as other plant safety disciplines. A major effort has been expended over the past four to five months to respond to the concerns identified in the previous TSAs. Strong emphasis has been placed on safety by plant management through the issuance of safety policies, institution of a reduced radiation exposure program, establishment of monetary award initiatives, and establishment of safety responsibilities for building managers. The HS&E radiation protection program has management support in the form of funding and staffing authorization. The HS&E organizational elements principally concerned with radiation protection have received staffing levels consistent with those required to establish a comprehensive site-wide program. For example, Radiation Monitoring has a target of 200 people, Radiological Engineering a target of nine people, and Operational Health Physics has a target of 17 people. The radiation protection professional staff appear to be able to establish and conduct a comprehensive program equivalent to current industry practice. The effective conduct of such a program in the field is critically dependent on upgrading the radiation monitoring element of the program. The increased radiation protection staffing will not be in place for some time. Despite the increased management support, the current radiation protection organization is not adequately staffed to provide adequate coverage to the production facilities. Moreover, the number and rapidity of the issuance of new and revised policies, coupled with the establishment of a matrix safety organization for the production facilities, places a premium on effective communication and implementation of the program conducted in the process areas. The field groups with radiation protection responsibilities have yet to effectively implement the new and revised policies.

This recommendation should be CLOSED.

RECOMMENDATION R-38 (RP.1-2) [CATEGORY II]: COMPLY WITH PERSONNEL MONITORING REQUIREMENTS.

Evaluation

See also Evaluation for Recommendations R-48 and R-63 (RP.7-3 and RP.13-2) for Bldg. 707.

Though total effectiveness have not been demonstrated, upgrades have been attained in the following areas:

- Plant demographics procedures and performance have been upgraded (see Evaluation for Recommendation R-63 [RP.13-2] for Bldg. 707).
- Employee and supervision education, badge exchange procedures and compliance have been upgraded by Procedure HSE 18.07, "Instructional Letters and Routine Interface."
- Improved tracking/followup systems have been devised and implemented.
- Worker restriction policies have been disseminated for delinquent participants through a letter from dosimetry to first line supervision, and the policies have been implemented.
- Late dosimeter collection and bioassay samples/counts have dropped from 10 to 20 percent, to the 5 percent range.
- Though late results are still experienced, very few results are lost completely, and improvement efforts are continuing.
- Further improvements probably require leaving badges at the site and additional penalties, both of which may not be practical.

This recommendation should be CLOSED.

RECOMMENDATION R-39 (RP.1-3) [CATEGORY I-N]: IMPROVE THE QUALITY OF THE RADIATION PROTECTION PROGRAM.

Evaluation

Evaluation of Recommendation R-37 (RP.1-1) for Bldg. 707 discusses management's commitment toward improvement of the radiation protection program. Improvement of the quality of the radiation protection program requires upgrading all aspects of that program. The HS&E organization has major occupational radiation protection functions in Radiation Monitoring, Radiation Health, and HS&E Engineering; with important support from Operations and Plans and the Plant Health Physicist. Initiatives are moving forward, with strong management support in Radiation

Health, HS&E Engineering, and the support functions identified above. The first line safety group with direct day-to-day contact with building operations is the Radiation Monitoring Group. The effectiveness of the radiation monitors in carrying out their function has not been upgraded. Despite a finding by the DOE/RFAO in April 1988 that effective mechanisms to ensure timely and complete training of radiation monitors were not in place, no real change has been made to the progression program that records time spent in different areas. An on-the-job proficiency training and functional performance testing program has been developed but has not been instituted. The radiation monitors have had the responsibility taken away from them for conducting tasks like performance testing of the Ludlum portable alpha survey instrument. The radiation monitors do not have access to the radiation exposure information for the radiation workers in their area, so are less able to contribute toward effecting radiation exposure reduction. With these and other limitations in the radiation monitoring function, like poor morale, the effectiveness of the overall radiation protection program is significantly affected. This aspect of the program requires significant upgrade.

This recommendation should remain OPEN.

RP.5 EXTERNAL DOSIMETRY (ROUTINE AND ACCIDENT USE)

RECOMMENDATION R-40 (RP.5-1) [CATEGORY II]: DOCUMENT COMPREHENSIVE QUALITY CONTROL PROCEDURES TO ENSURE ACCURACY OF CALCULATED PERSONNEL DOSES.

Efforts have been initiated to respond to the intent of this recommendation in providing QA for personnel dosimeters. Quality control procedures have been generated and are in place. A contractor has been retained to provide routine calibrations on test badges as a QA practice.

Panasonic dosimeters will be used in extremity badges, thus eliminating Harshaw thermoluminescent dosimeters (TLDs) chip detectors which are more difficult to calibrate and control. However, this change has not been implemented. The calibrations and associated dose conversion algorithms have not been completed.

This recommendation should remain OPEN.

RECOMMENDATION R-41 (RP.5-2) [CATEGORY II]: DOCUMENT RESPONSE OF PERSONNEL AND WRIST DOSIMETRY TO BETA AND NEUTRON FIELD IN THE WORKPLACE.

Evaluation

The RI Personnel Dosimetry Group has initiated upgrade programs related to documentation of personnel and wrist dosimetry response. RI activities and accomplishments were verified and are reported. Full discussion of this recommendation is found under the evaluation of Recommendation R-118 (RP.5-2) for Bldgs. 771/774.

This recommendation remain OPEN.

RECOMMENDATION R-42 (RP.5-3) [CATEGORY II]: IMPROVE TECHNICIAN QUALIFICATIONS AND TRAINING TO ENSURE CREDIBLE PERFORMANCE DURING THE FABRICATION, ANNEALING, AND READOUT OF DOSIMETERS.

Evaluation

RI has developed and implemented formal technician task procedures, technician on-the-job training checklists, technician training, and dosimeter processing quality control checks.

This recommendation should be CLOSED.

RECOMMENDATION R-43 (RP.5-4) [CATEGORY I-N]: EXPEDITE THE COMPLETION OF NEW RADIOLOGICAL CALIBRATION FACILITY.

Evaluation

The new radiological calibration facility is currently scheduled by RI as a FY 88 plant project (Authorization #379690). Planning and engineering are complete. Construction start is scheduled for January 1989 with an estimated completion date of November 1989. The project is currently on schedule, although this accelerated schedule assumes DOE funding approval, yet to be received. In the interim, the calibration facilities have been consolidated as much as practicable and outside standards laboratories have been utilized where internal capabilities do not exist. Review reveals that expedited activities have been accomplished to the extent possible.

The recommendation should be CLOSED.

RECOMMENDATION R-44 (RP.5-5) [CATEGORY III]: CHARACTERIZE GAMMA DOSE RESPONSE OF FIXED NUCLEAR ACCIDENT DOSIMETERS AND DEVELOP REPLACEMENT CRITERIA.

Evaluation

Placement criteria for nuclear accident dosimeter (NAD) units have been documented and revision has been completed to the procedures for routine change out of the gamma element and general NAD maintenance. The validation of the gamma dose response would normally be done at the Oak Ridge National Laboratory (ORNL) NAD intercomparison; however, that resource is not available on a timely basis. This validation will be accomplished as an alternative through Pacific Northwest Laboratories (PNL), but has not been completed yet.

The recommendation should remain OPEN.

RP.6 INTERNAL RADIATION EXPOSURE CONTROL PROGRAM

RECOMMENDATION R-45 (RP.6-1) [CATEGORY II]: IMPROVE THE ALPHA AIR MONITORING SYSTEM IN BLDG. 707 TO ENSURE RAPID WARNING OF RADIOACTIVE AIR CONCENTRATIONS SUBSTANTIALLY IN EXCESS OF MAXIMUM PERMISSIBLE CONCENTRATIONS (MPCs).

Evaluation

See Evaluation for Recommendation R-119 (RP.6-1) for Bldgs. 771/774.

This recommendation should remain OPEN.

RP.7 INTERNAL DOSIMETRY

RECOMMENDATION R-46 (RP.7-1) [CATEGORY II]: TRANSFER THE QUALITY CONTROL/BLIND AUDIT PROGRAM FOR BIOASSAY TO THE INTERNAL DOSIMETRY GROUP.

Evaluation

Blind audits of bioassay are, in fact, conducted periodically by the Standards Laboratory, a part of the Quality Engineering and Control Department. This satisfies the intent of having an independent group do quality testing of bioassay.

This recommendation should be CLOSED.

RECOMMENDATION R-47 (RP.7-2) [CATEGORY II]: ELIMINATE THE BACKLOG IN ROUTINE IN VIVO AND IN VITRO ANALYSES.

Evaluation

Three body counters are now in operation. To reduce the backlog, the body counting personnel have been working 12 hour shifts. The in vivo backlog has now been reduced to a manageable level (less than two weeks behind) and the extended work shift will be discontinued on December 1, 1988. There will always be a small backlog of personnel awaiting whole-body counts due to vacations, illnesses, missed appointments and equipment down-time.

The in vitro backlog has been substantially reduced by placing an additional evaporative hood in operation and by working 12 hour shifts. The in vitro samples are the standard 24 hour collection and require extensive evaporation. The backlog has been reduced to a manageable level and the 12 hour shifts will be discontinued after December 1, 1988.

This recommendation should be CLOSED.

RECOMMENDATION R-48 (RP.7-3) [CATEGORY II]: SUBSTANTIALLY INCREASE THE INITIAL PARTICIPATION IN THE REQUESTED ROUTINE IN VIVO AND IN VITRO ANALYSES TO REDUCE THE NUMBER THAT HAVE TO BE RESCHEDULED.

Evaluation

Plant Policy MHS3-050 has been revised to emphasize the requirements and responsibilities of each employee to participate in the in vivo and in vitro measurement programs. Monthly feedback is provided to supervisors on employees who miss or cancel a scheduled whole-body count or do not submit a bioassay sample when scheduled.

Management is supporting an HS&E policy to restrict employees from the work area if they fail to report for a whole-body count or fail to submit a bioassay sample when rescheduled. The policy has been implemented in several cases, and employees are responding much more readily to the initial scheduling.

The recommendation should be CLOSED.

RECOMMENDATION R-49 (RP.7-4) [CATEGORY III]: IMPLEMENT A PROGRAM TO PERMIT THE COMPARISON OF IN VIVO AND IN VITRO RESULTS FOR EMPLOYEES WITH AIR CONTAMINATION LEVELS IN THEIR WORKPLACE.

Evaluation

A program is in place to permit the comparison of body counter and bioassay results with work place air contamination. However, HS&E has decided that routine analyses are not economically practicable nor a prudent use of resources, so the analyses are not performed except on an as-needed-basis.

As justification for this decision, RI cites recently promulgated DOE 5480.11 which explicitly discourages the use of the air sample data for dose assessment. This is a sound interpretation of the Order.

This recommendation should be CLOSED.

**RP.8 FIXED AND PORTABLE INSTRUMENTATION
(NORMAL AND EMERGENCY USE)**

RECOMMENDATION R-50 (RP.8-1) [CATEGORY I-N]: PROVIDE AT LEAST AN ANNUAL CALIBRATION FOR INSTRUMENTS USED FOR ESTABLISHING DOSE RATES, USING A FACILITY WHERE RADIATION SOURCES TRACEABLE TO NBS ARE OPERATED IN A FIXED GEOMETRY.

Evaluation

See Evaluation for Concern R-207 (RP.8-1) for Bldgs. 776/777.

This recommendation should be CLOSED.

RECOMMENDATION R-51 (RP.8-2) [CATEGORY I-N]: EVALUATE HEALTH PHYSICS INSTRUMENTS USED FOR PERSONNEL PROTECTION FOR APPROPRIATE PERFORMANCE REQUIREMENTS.

Evaluation

See Evaluation for Concern R-209 (RP.8-3) for Bldgs. 776/777.

This recommendation should be CLOSED.

RECOMMENDATION R-52 (RP.8-3) [CATEGORY II]: PERIODICALLY CALIBRATE ALPHA SELF-MONITORING EQUIPMENT.

Evaluation

See Evaluation for Concerns R-207 and R-208 (RP.8-1 and RP.8-2) for Bldgs. 776/777.

This recommendation should be CLOSED.

RECOMMENDATION R-53 (RP.8-4) [CATEGORY III]: AUDIT THE QUALITY AND UNIFORMITY OF THE CALIBRATION AND MAINTENANCE OF HEALTH PHYSICS INSTRUMENTATION AT THE VARIOUS INSTRUMENT LABORATORIES.

Evaluation

See Evaluation for Concern R-207 (RP.8-1) for Bldgs. 776/777.

This recommendation should be CLOSED.

RP.9 RESPIRATORY PROGRAM

RECOMMENDATION R-54 (RP.9-1) [CATEGORY II]: PROVIDE A WRITTEN STANDARD OPERATING PROCEDURES MANUAL WHICH COVERS A COMPLETE RESPIRATOR PROGRAM TO ENSURE THE SAFE ROUTINE USE, NONROUTINE USE, AND EMERGENCY USE OF RESPIRATORS (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-124 [RP.9-1] FOR BLDGS. 771/774).

Evaluation

A new written procedure (dated March 1988) is in place in the Industrial Hygiene (IH) Manual. Distribution was made to the IH, Health Physics, Medical, and Fire Departments along with copies to ES&H supervision. A revision dated October 24, 1988, modifies the procedure to allow contact lenses to be worn under full-face respirators. Other related respiratory protection procedures are found in HS&E Quality Program Plan Manual, Section 4, dated November 14, 1988, and HS&E Manual, Procedure HSE 7.03 dated November 4, 1988.

Staffing has been increased since 1987 and larger facilities have been provided for fit testing, training, and administration of the respirator program. Self-contained breathing apparatus (SCBA) training is done by the Fire Department. Approximately 8,000 full-face and 6,000 half-mask respirators are recycled per month. This includes cleaning, reassembling, and testing of each respirator including filter testing. There are approximately 4,400 employees refit and retrained each year.

This Recommendation should be CLOSED.

RECOMMENDATION R-55 (RP.9-2) [CATEGORY II]: UPGRADE RESPIRATOR PROGRAM ELEMENTS FOR TRAINING AND FIT TESTING TO MEET DOE REQUIREMENTS (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-55 [RP.9-2] FOR BLDGS. 771/774).

Evaluation

Respiratory retraining is now done annually in accordance with DOE Orders. Retraining is done by a computer-based training

program with on-line testing. Scheduling for retraining and retesting is done by the IH Group. If an employee does not report for retraining/refitting after three schedulings, he/she is restricted from wearing a respirator and entering an area requiring respiratory protection.

This recommendation should be CLOSED.

RP.10 AIR MONITORING

RECOMMENDATION R-56 (RP.10-1) [CATEGORY III]: PERFORM A SMOKE TEST AT SELECTED LOCATIONS SUCH AS J AND K MODULES TO DETERMINE DIRECTION OF AIR FLOW AT SEVERAL VERTICAL LEVELS.

Evaluation

Two air tracer experiments were conducted in Bldg. 707 in March 1987 using a 5 um particle size aerosol. This experiment was not definitive. A second experiment was carried out in August 1988. The conclusion was that between four and seven feet (breathing zone) there is a high variability in the concentration of any release from a gloveport and that there is no optimum level for placement of an air sample except at the mouth or nose of the worker.

This recommendation should be CLOSED.

RECOMMENDATION R-57 (RP.10-2) [CATEGORY I-N]: CALIBRATE THE SAAM AIR MONITORS AT LEAST ANNUALLY.

Evaluation

A full calibration procedure has been established for the Selective Alpha Air Monitors (SAAMs). Frequency is scheduled to be performed at least annually. Calibration is to be performed at the time of the initial installation or immediately following any maintenance or adjustment in the counting circuitry.

Quarterly performance tests are accomplished using a Pu-239 source traceable to the NBS.

This recommendation should be CLOSED.

RP.11 RADIOLOGICAL MONITORING/CONTAMINATION CONTROL

RECOMMENDATION R-58 (RP.11-1) [CATEGORY II]: DEVELOP AND IMPLEMENT A POLICY FOR APPLYING A CONSISTENT CONTROL OF AREA PROTECTIVE CLOTHING REQUIREMENTS FOR WORKERS, SUPERVISORS, AND VISITORS AND CONFINING PROTECTIVE CLOTHING TO THE CONTROLLED AREA INCLUDING THE CHANGE ROOMS.

Evaluation

See Evaluation for Recommendation R-128 (RP.11-1) for Bldgs. 771/774.

This recommendation should remain OPEN.

RECOMMENDATION R-59 (RP.11-2) [CATEGORY II]: REVIEW AND REVISE STEP-OFF PAD PROCEDURES TO ENSURE CONTROL OF TRACKING OF CONTAMINATION. POST PROCEDURES AT STEP-OFF PAD LOCATIONS, AND RETRAIN ALL PERSONNEL IN THE PROCEDURES.

Evaluation

See Evaluations for Recommendation R-128 (RP.11-1) for Bldgs. 771/774 and Concern R-211 (RP.11-1) for Bldgs. 776/777.

This recommendation should be CLOSED.

RECOMMENDATION R-60 (RP.11-3) [CATEGORY II]: CHANGE PROCEDURE FOR THE SELF-MONITORING PERSONAL SURVEYS AT THE TWO AIRLOCKS USING THE COMBO INSTRUMENTS TO ASSURE THAT ADEQUATE CONTAMINATION MEASUREMENTS HAVE BEEN MADE.

Evaluation

See Evaluation of Concern R-211 (RP.11-1) for Bldgs. 776/777.

This recommendation should be CLOSED.

RP.12 ALARA PROGRAM

RECOMMENDATION R-61 (RP.12-1) [CATEGORY II]: AUTOMATE THE TREND EVALUATION OF AIR SAMPLE RESULTS TO PROVIDE A MORE THOROUGH ANALYSIS OF CHANGES IN AIR CONCENTRATIONS.

Evaluation

A health physicist who is awaiting a security clearance is assigned to write programs that will do trend analyses of air sample data that exist on the HS&E computer. The goal to finish

this programming has slipped to November 30, 1988. Once the programs have been installed and tested, trend analyses can be conducted for operational health physicists on request.

Planning includes provisions for each operational health physicist to be trained to use the programs so that they can plot trends at their own convenience. Also, terminals in convenient locations for the occupational health physicists will be networked to the HS&E computer.

This recommendation should remain OPEN.

RP.13 RECORDS

RECOMMENDATION R-62 (RP.13-1) [CATEGORY I-N]: SAFEGUARD OCCUPATIONAL EXPOSURE RECORD SYSTEMS FROM CATASTROPHIC LOSS.

Evaluation

Master files on all employees are stored in two Flextrievers file cabinets in Bldg. 123. These files contain internal and external radiation exposure histories, whole body count data, bioassay data, and other pertinent information on each RI employee working at RFP, including contractor personnel. In addition, terminee files are also stored in these Flextrievers for a period of one year after which they are boxed, indexed and stored in the Federal storage vaults in Denver.

A Fire Department study of the Flextrievers reported that these files were protected for only 30 minutes from a fire originating outside the cabinets. This does not meet the requirements of DOE 5480.11 or 5700.6. Bldg. 123 has an automatic sprinkler system, however.

If destroyed, most of the information contained in these files could be reconstructed from computer databases, medical records, incident files and duplicates that are maintained at other locations, but retrieval would be difficult and costly. A new HS&E centralized database system, not yet operational, will alleviate this problem.

This recommendation should remain OPEN.

RECOMMENDATION R-63 (RP.13-2) [CATEGORY III]: IMPROVE THE DEMOGRAPHIC CAPABILITY OF THE SITE COMPUTER SERVICE.

Evaluation

The Personnel Status Change Forms to cover direct employee transfers from one job location to another have been simplified. Plant general staff and all supervision have been informed of need of timely transfer notification. The "UPFront" plant

publication was used to remind the plant staff that the Personnel Status Change Forms are to be kept current. Improved response has been demonstrated and current delays are not due to demographic inadequacies.

This recommendation should be CLOSED.

M. PERSONNEL PROTECTION

PP.1 INDUSTRIAL HYGIENE PROGRAM CONTENT

RECOMMENDATION R-64 (PP.1-1) [CATEGORY II]: DEVELOP AND IMPLEMENT A FORMAL CARCINOGEN CONTROL PROGRAM.

Evaluation

See Evaluation for Recommendation R-134 (PP.1-1) for Bldgs. 771/774.

This recommendation should be CLOSED.

PP.3 HAZARD COMMUNICATION

RECOMMENDATION R-65 (PP.3-1) [CATEGORY II]: IMPLEMENT THE FORMAL HAZARD COMMUNICATION PROGRAM TO ENSURE COMPLIANCE WITH OSHA 1910.1200.

Evaluation

RFP has implemented a formal hazard communication program that is in compliance with DOE Orders and prescribed standards, including 29 CFR 1910.1200 (the OSHA hazard communication rules). The program is documented in HS&E Manual Section 9.07, "Hazardous Material Control Program" (HSE 9.07). HSE 9.07 was originally issued in July 1986, and was significantly revised and reissued in November 1988. This plant standard outlines the work practices required for safely handling hazardous chemicals at RFP. Included in the document are requirements and guidelines for hazard evaluation, hazard ratings, labeling, material safety data sheets, and training. In addition, requirements for hazardous material acquisition; transportation; handling, use, and storage; treatment, and disposal are clearly identified. The program, as documented, meets or exceeds the specific requirements and intent of the prescribed standards.

Field inspection verified that employee training, work practices, availability of material safety data sheets, labeling, practices, and documentation meet the requirements of the prescribed standards.

This recommendation should be CLOSED.

PP.5 SURVEILLANCE

RECOMMENDATION R-66 (PP.5-1) [CATEGORY III]: ESTABLISH A FORMALLY STRUCTURED SYSTEM TO ASSURE THAT INDUSTRIAL HYGIENE RECOMMENDATIONS ARE IMPLEMENTED.

Evaluation

A tracking system for Industrial Hygiene recommendations has been implemented. Corrective action recommendations are documented by Industrial Hygiene personnel on "field contact sheets" or in more formal building inspection or hazard assessment reports. These documents reflect necessary descriptive and identification data, recommendations, and the need for follow-up. The contact sheet/report is designated as "open" or "closed," depending on the status of the recommendations. The Industrial Hygiene Manager reviews the contact sheets on a weekly basis and assures that appropriate actions are being taken in response to the recommendations. A cumulative list of recommendations is kept and reviewed on a monthly basis by the Industrial Hygiene Manager.

This recommendation should be CLOSED.

RECOMMENDATION R-67 (PP.5-2) [CATEGORY III]: DEVELOP A LABORATORY QUALITY CONTROL PROGRAM FOR THE ANALYSIS OF CHEMICAL CONTAMINANTS ASSOCIATED WITH THE INDUSTRIAL HYGIENE PROGRAM.

Evaluation

See Evaluation for Recommendation R-222 (PP.5-2) for Bldgs. 776/777.

This recommendation should remain OPEN.

RECOMMENDATION R-68 (PP.5-3) [CATEGORY III]: UPGRADE RECORDS OF CALIBRATION AND MAINTENANCE OF INSTRUMENTATION.

Evaluation

The records systems for inventory, maintenance, repair, and calibration of industrial hygiene equipment have improved. The records program has been expanded to include an Industrial Hygiene Group database of equipment, frequency of calibration, calibration due dates, out-of-tolerance conditions, and other significant information. This user-group specific database supplements records maintained by service suppliers such as plant physical metrology or original equipment manufacturers. Field data sheets include notation of equipment and calibration verification sources used.

The records system was challenged to test proper equipment operation, calibration, and use was documented on recent field sample collections. Retrievability of records was feasible and complete.

This recommendation should be CLOSED.

N. FIRE PROTECTION

FP.1 LIFE PROTECTION

RECOMMENDATION R-69 (FP.1-1) [CATEGORY I-N]: ELIMINATE THE USE OF HALLWAY AREAS FOR THE STORAGE OF COMBUSTIBLES OR OTHER ITEMS WHICH MAY IMPEDE EMERGENCY EXITING.

Evaluation

Review of the exit routes in several buildings disclosed that none were used for storage in a manner that would hinder the use of the emergency egress routes. RFP has a program to inspect emergency exit routes monthly. The results of the inspections are documented and any deficiencies are reported and tracked until corrected.

This recommendation should be CLOSED.

FP.3 IMPAIRMENT OF OPERATIONS

RECOMMENDATION R-70 (FP.3-1) [CATEGORY I-N]: PERFORM A "FIRE LOSS POTENTIAL ANALYSIS" FOR BLDG. 707 WHICH ADDRESSES CREDIBLE FIRES FOR THE FACILITY AND DEVELOP A PROGRAM TO REDUCE IDENTIFIED RISK TO A LEVEL ACCEPTABLE TO DOE AND DP.

Evaluation

A Property Loss and Risk Evaluation Report has been completed by the RI Fire Protection Engineer. It was reviewed and adequately assesses the fire loss risk of Bldg. 707. These evaluations are done for RFP buildings. Discussion with the RI Fire Protection Engineer disclosed that there is no follow-up schedule in place.

This recommendation should be CLOSED.

FP.5 IMPROVED RISK

RECOMMENDATION R-71 (FP.5-1) [CATEGORY I-N]: REVIEW MANAGEMENT COMMITMENT AND EXERCISE OF AUTHORITY AS THEY APPLY TOWARD THE REQUIREMENTS IN DOE 5480.1, CHAPTER VII.

Evaluation

Discussion with the Manager, Fire Department, who is the RI manager charged with implementation of the fire protection program, disclosed that RI management has reviewed RFP performance against DOE requirements, including program coverage, staffing, operation and performance. Their conclusion was that the requirements were being met. This was confirmed in part by this appraisal. A concern remains regarding the "ownership" of

responsibility for fire protection in RFP facilities. Management lacks knowledge of, and appreciation for, the role of the Fire Protection Engineer. Discussion with line management disclosed that responsibility for fire protection concerns is generally assumed to reside with Fire Department, not line management. See new Concern FP.5-3 in Section IV. N.

This recommendation should be CLOSED.

RECOMMENDATION R-72 (FP.5-2) [CATEGORY I-N]: INCREASE FIRE PROTECTION ENGINEERING INPUT TO DESIGN REVIEWS, OVERALL FIRE PROTECTION MATTERS, FACILITY AUDITS, PROJECT DEVELOPMENT AND APPROVAL, AND FIRE SYSTEM DESIGN AND TESTING. (THE EVALUATION THAT FOLLOWS APPLIES ALSO TO RECOMMENDATION R-141 (FP.5-1) FOR BLDGS. 771/774).

Evaluation

Discussion with the Fire Department staff and the Fire Protection Engineer, along with a review of records, disclosed that Recommendations R-72 and R-141 are being implemented. In accomplishing this, RI management is assigning some engineering tasks to Fire Department firefighters. Major project design reviews are accomplished. Engineered Maintenance Work Order reviews are sometimes not done in a timely manner; however, it appears that this does not represent a serious impediment to the accomplishment of the work.

This recommendation should be CLOSED.

RECOMMENDATION R-73 (FP.5-3) [CATEGORY II]: INCREASE MANAGEMENT OVERVIEW OF FIRE PROTECTION INSPECTION AND FIRE PROTECTION SYSTEM TESTING ACTIVITIES WHICH ARE CARRIED OUT BY FIRE DEPARTMENT PERSONNEL. TAKE APPROPRIATE ACTION TO CORRECT IDENTIFIED WEAKNESSES IN THE INSPECTION AND TESTING PROGRAM.

Evaluation

RI management reviewed the building fire protection inspection and system testing program. This resulted in increased Fire Department management overview of the program. A Fire Department officer's written concurrence of all inspection and test reports is now required. Following this change, RI management's conclusion was that the program and the performance resulting from that program were effective and adequate. This appraisal disclosed that inspection and testing of fire protection systems, fire extinguishers, and egress route identification and maintenance are done by the Fire Department, although there is an effort underway to include all or part of these tasks in the responsibilities of the various building managers. This shift of responsibility is being conveyed by letter, rather than by

publication in standard procedures. A review of Fire Department inspection and testing records revealed they were complete and the program was on schedule. However, there was no evidence that fire extinguishers are being inspected monthly as required by DOE 5480.4 and NFPA 10. (See Recommendation R-145 [FP.5-5] for the TSA of Bldgs. 771/774). See new Concern FP-3 in Section IV. N.

This recommendation should be CLOSED.

RECOMMENDATION R-74 (FP.5-4) [CATEGORY I-N]: PROVIDE AUTOMATED FIRE DETECTION WITHIN THE PACKAGING, SHIPPING AND RECEIVING AREA.

Evaluation

Review disclosed that the area was fully protected by a wet pipe automatic sprinkler system. The combustibles in the area are maintained at a low level, well below that which would pose a threat to the safety of the facility, and the facility is constructed of noncombustible materials. Additionally, the value of the contents of this area and programmatic impact of their loss are not of the magnitude which would require additional fire detection or suppression measures.

This recommendation should be CLOSED.

RECOMMENDATION R-75 (FP.5-5) [CATEGORY I-N]: DEVELOP A PROGRAM THAT INVOLVES ROCKWELL MANAGEMENT IN EXPEDITING IMPLEMENTATION OF RECOMMENDATIONS FROM DOE FIRE PROTECTION APPRAISALS.

Evaluation

Review of documentation and discussion with the Manager, Fire Department, and Fire Protection Engineer disclosed that both are consulted regarding the priorities of correcting fire protection deficiencies and actions resulting from DOE appraisals. The Fire Protection Engineer maintains a list of fire protection projects and concerns which is used to set priorities. This provides an appropriate level of management involvement to assure fire protection concerns are correctly prioritized.

This recommendation should be CLOSED.

RECOMMENDATION R-76 (FP.5-6) [CATEGORY I-N]: PROVIDE EARTHQUAKE BRACING PER NFPA 13 FOR THE AUTOMATIC SPRINKLER SYSTEM PIPING (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-144 [FP.5-4] FOR BLDGS. 771/774 AND CONCERN R-226 [FP.2-1] FOR BLDGS. 776/777).

Evaluation

The low probability of earthquake activity at or near RFP is identified in a study done by Agbabian Associates, 1982, Document

Number R-7912-5944. The FSARs for these buildings assume that the sprinkler systems fail during a seismically initiated fire and do not take any credit for the sprinkler system to mitigate the effects of the event. Earthquake bracing for sprinkler systems is required by NFPA Standard 13, a mandatory DOE 5480.7 requirement. RI has not obtained an exemption request from DOE for this requirement.

This recommendation should remain OPEN.

RECOMMENDATION R-77 (FP.5-7) [CATEGORY I-N]: REDUCE THE RISK OF FIRE OCCURRING IN THE PLENUM AREA BY REDUCING THE FIRE LOADING AND/OR PROVIDING ADEQUATE FIRE SEPARATION BETWEEN STORAGE AREAS AND THE PLENUM AREA. ENSURE THAT THE INTEGRITY OF THE EXISTING FIRE WALLS IS MAINTAINED.

Evaluation

Inspection disclosed that there were three wooden waste crates, each approximately 4 ft. x 4 ft. x 8 ft. in the plenum area. One contained plutonium contaminated waste. There were several spools of electrical wiring, plastic bags of combustible waste, filters in cardboard boxes, and other miscellaneous combustibles in the area. The second floor plenum area is protected by an automatic sprinkler system. The filter plenums from the first floor are protected by deluge sprinkler systems. The air intakes on the second floor do not have internal protection. Discussion with building management indicated that crates of contaminated material would routinely be stored in this area. There is a program underway to identify amounts of combustible storage allowed in each RFP facility. Monthly facility inspections will be used to verify that these amounts are not exceeded. It is essential that amounts be maintained at very low levels to assure the integrity of the ventilation system.

This recommendation should remain OPEN.

RECOMMENDATION R-78 (FP.5-8) [CATEGORY I-N]: PROVIDE FIRE RESISTIVE VAULTS FOR THE STORAGE OF FINISHED PRODUCT AND APPRECIABLE AMOUNTS OF PARTIALLY COMPLETED PRODUCT WHICH ARE STORED ON OPEN SHELVEING IN THE SHIPPING AND RECEIVING AREA AND THE DRY AIR ROOM.

Evaluation

The RI Fire Protection Engineer has analyzed both the referenced areas in terms of fire loading, fire risk, monetary value and programmatic value. In both cases, the conclusion was that the risk of a fire was low, the installed fire protection features were appropriate for the risk (and met DOE 5480.7 requirements), and that additional fire protection features were not necessary.

Review of the analysis and the facts used in that analysis support this conclusion (information in the evaluation of Recommendations R-74 [FP.5-4] and R-82 [FP.5-12] support this conclusion. Note: Two of the oil filter transformers are in the Dry Air Room).

This recommendation should be CLOSED.

RECOMMENDATION R-79 (FP.5-9) [CATEGORY II]: PROVIDE AUTOMATIC SPRINKLER PROTECTION FOR ALL ENCLOSED INTAKE FILTER UNITS (THE EVALUATION THAT FOLLOWS APPLIES ALSO TO RECOMMENDATION R-142 (FP.5-2) FOR BLDGS. 771/774).

Evaluation

Inspection of the intake filter plenums disclosed that the risk of fire compromising their ability to function properly is minimal. Facts supporting this conclusion are: (1) there is very little fire loading in the immediate area of the filter intakes on the second floor; (2) there is essentially no fire loading exposure to the fresh air intakes on the roof; (3) the entire second floor is protected by a wet pipe automatic sprinkler system; and (4) the filter medium consists of fire-retardant treated material.

This recommendation should be CLOSED.

RECOMMENDATION R-80 (FP.5-10) [CATEGORY I-N]: EITHER REMOVE THE GLOVEBOX LINE FROM THE BUTTON STORAGE VAULT OR PROVIDE TWO-HOUR FIRE SEPARATION BETWEEN THE GLOVEBOX LINE AND THE BUTTON STORAGE VAULT.

Evaluation

A fire risk/loss analysis of the "J" Module/"J" Vault relationship was done by the RI Fire Protection Engineer. The penetration into "J" Vault by the glovebox line reduces the effectiveness of that wall for fire separation purposes. However, a review of the values in both rooms combined revealed that they do not exceed the value limitations in DOE 5480.7, negating the need for a two-hour fire separation. Inspection of the area disclosed a very low fire loading, the vault material is packaged in stainless steel cans, the areas are equipped with either automatic sprinklers or heat detectors, and the glovebox atmosphere is nitrogen. The fire risk is, therefore, acceptable.

This recommendation should be CLOSED.

RECOMMENDATION R-81 (FP.5-11) [CATEGORY I-N]: PROVIDE EXTERIOR WATER SPRAY PROTECTION OF WATER COOLING TOWER (BLDG. 709) AND REPAIR ITS DELUGE SPRINKLER SYSTEM.

Evaluation

The deluge sprinkler system has been repaired. The cooling tower does not represent a fire exposure to nearby buildings and there is no fire exposure to the outside of the cooling tower. An RI risk analysis determined that the programmatic impact and replacement costs were within the limitations contained in DOE 5480.7. There is a very small risk of the cooling tower being involved in a fire that the deluge system would not suppress. The fire risk is, therefore, acceptable.

This recommendation should be CLOSED.

RECOMMENDATION R-82 (FP.5-12) [CATEGORY II]: REPLACE WET TYPE (OIL FILLED) TRANSFORMERS WITHIN BLDG. 707 WITH DRY TYPE TRANSFORMERS.

Evaluation

The transformers referred to in the recommendation are actually one transformer and six power supplies. The transformer is small and is an integral part of an X-ray machine located in Room 169. The six power supplies are part of the electron beam welders located in Modules E and F. They have been reviewed against electrical code requirements by RI Engineering and were found to be in compliance. The RI Fire Protection Engineer has assessed the fire loading and risk the transformer/power supplies represent and determined that they are within the criteria of DOE 5480.7. Fire risk data were obtained from power supply manufactures, users, and insurance carriers. This data disclosed that there is no history of power supplies causing fires. The areas in question are protected by automatic sprinklers. Therefore, the risk from the transformer and power supplies in Bldg. 707 is small and acceptable.

A plant-wide study of the remaining transformers and power supplies at RFP was in progress at the time of this review. It is scheduled to be completed in January 1989. Corrective actions are expected to begin in February 1989 (information discussed in the evaluation for Recommendation R-78 [FP.5-8] is also applicable).

This recommendation should be CLOSED.

RECOMMENDATION R-83 (FP.5-13) [CATEGORY II]: DEVELOP CRITERIA FOR AND IMPLEMENT A PROGRAM FOR THE INSTALLATION OF FIRE DOORS IN NEW AND EXISTING GLOVEBOX LINES.

Evaluation

Glovebox line construction materials are non-combustible, fire retardant and combustible. The atmosphere inside gloveboxes is nitrogen gas, which will not support combustion. The glovebox rooms are protected by automatic sprinklers. The need for fire separation in glovebox line construction is reviewed by the Fire Protection Engineer during the design review process.

This recommendation should be CLOSED.

RECOMMENDATION R-84 (FP.5-14) [CATEGORY II]: ESTABLISH A PROGRAM TO TRACK REPAIRS AND OUTAGES TO FIRE PROTECTION SYSTEMS.

Evaluation

Procedure 14.03, "Fixed Fire Protection Systems" Health, Safety, and Environment Manual, contains a requirement that a form entitled "Notification of Repairs or Modifications to Fixed Fire Systems" be used prior to any work on fire protection systems. The Fire Department maintains control of fire protection equipment with locks or chains to provide assurance equipment is operable. System impairments are monitored in the Fire Department alarm office. The status of impairments are posted within eyesight of the alarm operator.

This recommendation should be CLOSED.

RECOMMENDATION R-85 (FP.5-15) [CATEGORY II]: IMPROVE THE FIRE DEPARTMENT RESPONSE PROCEDURES TO FIRE ALARMS, ESPECIALLY AUTOMATIC ALARMS FROM THE GLOVEBOX OVERHEAT SYSTEM.

Evaluation

Section III, "Emergency Response," Procedure 302, "Fire Alarms" of Internal Operating Procedures, a Fire Department Manual, contains response procedures and staffing requirements for Fire Department personnel. Review of this procedure disclosed that it was adequate, if followed, to assure a proper response by Fire Department personnel.

This recommendation should be CLOSED.

RECOMMENDATION R-86 (FP.5-16) [CATEGORY II]: ESTABLISH A FORMAL IN-HOUSE PLAN FOR THE REQUEST AND USE OF OUTSIDE FIRE FIGHTING FORCES.

Evaluation

The RFP emergency response within the perimeter security zone (PSZ) is self-contained because of security access restrictions. Off-duty firefighters will be called in to provide additional qualified personnel in the event they are needed. Additionally, security personnel and Building Emergency Support Team (BEST) members are available to provide backup support in the form of non-risk assistance. Brush fire assistance is available from nearby fire departments. Although this assistance is not formalized by agreement, during a recent brush fire in the RFP buffer zone, assistance was offered to the RFP Fire Department. Nearby fire departments participate in training programs conducted by the RFP Fire Department. This is helping to develop rapport with these departments. The existing arrangement is adequate to assure appropriate resources are available for the variety of emergencies probable at RFP.

This recommendation should be CLOSED.

RECOMMENDATION R-87 (FP.5-17) [CATEGORY III]: MAINTAIN EQUIPMENT SUITABLE FOR BRUSH FIRES DURING THE FIRE SEASON SO AS TO REDUCE THE NEED TO COMMIT FIRST-LINE FIRE APPARATUS OUTSIDE THE FENCED AREA (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO CONCERN R-225 [FP.5-1] FOR BLDGS. 776/777).

Evaluation

An attack pumper which will satisfy this concern has been ordered on RI Purchase Document No. SA 80079RL. Final acceptance at the factory is expected the week of November 28, 1988, and delivery to RFP is scheduled for December 15, 1988.

This recommendation should remain OPEN.

RECOMMENDATION R-88 (FP.5-18) [CATEGORY II]: ENSURE THE ADEQUACY OF THE BUILDING EMERGENCY SUPPORT TEAM'S (BEST) TRAINING AND PROTECTIVE CLOTHING TO INSURE THAT IT COMPLIES WITH REQUIRED STANDARDS AND RECOGNIZED GOOD PRACTICES.

Evaluation

BESTs provide incipient stage firefighting and first aid emergency assistance in a manner that exposes them to very little or no personal risk. They assist the Fire Department by performing tasks that are outside the danger area, freeing up firefighters who deal directly with the emergency. A review of BEST training material confirmed that the training plan is

adequate to support their role in an emergency. They have no protective clothing requirements beyond those required for their assigned work building. Review of the BEST's training records disclosed that they were receiving necessary training.

This recommendation should be CLOSED.

APPENDIX C-3

BUILDINGS 771/774

Evaluation of Progress

A. ORGANIZATION AND ADMINISTRATION

OA.1 FACILITY ORGANIZATION AND ADMINISTRATION

RECOMMENDATION R-89 (OA.1-1) [CATEGORY III]: DEVELOP, IMPLEMENT, AND PROMOTE A MORE PROACTIVE, MANAGEMENT-SPONSORED SAFETY PROGRAM FOR BLDG. 771. ESTABLISH QUANTITATIVE OBJECTIVES FOR BLDG. 771 SAFETY PERFORMANCE, AND PROVIDE THE SYSTEM TO MONITOR PROGRESS IN ACHIEVING THE OBJECTIVES.

Evaluation

Numerous plant-wide steps (posters, bulletins, slogans, etc.) have been taken by management to increase employee awareness of their responsibilities for safety. The employee newspaper has run regular articles on safety activities. Policy, organizational, and procedural changes have been made that formalize safety activities at the building level. Interviews with employees indicate that management's message of increased attention to safety has gotten through. An elaborate system of self and independent safety audits of buildings has been implemented. Data on various safety-related activities are trended and conspicuously posted in buildings. In addition, modifications are being made to the plant to reduce exposures and correct safety deficiencies.

This recommendation should be CLOSED.

RECOMMENDATION R-90 (OA.1-2) [CATEGORY III]: IMPROVE THE COMMUNICATIONS SYSTEM BETWEEN THE HEALTH, SAFETY AND ENVIRONMENT (HS&E) DEPARTMENT AND THE OPERATIONS DIVISIONS IN ORDER TO COORDINATE THEIR EFFORTS ON SAFETY-RELATED PROGRAMS AND THEREBY TO FACILITATE RESOLUTION OF SAFETY PROBLEMS.

Evaluation

The organizational changes and, in particular, the new safety-related responsibilities of building managers have resulted in improved coordination with HS&E and resolution of safety problems. Most building managers have established regular building committee meetings at which the predominant topic of discussion is safety. Building managers, when interviewed, were emphatic about their "ownership" of safety and their integration of HS&E resources (particularly the HS&E Area Safety Engineer) into their safety program.

This recommendation should be CLOSED.

RECOMMENDATION R-91 (OA.1-3) [CATEGORY III]: DEFINE THE RESPONSIBILITY/AUTHORITY RELATIONSHIP FOR ORGANIZATIONAL UNITS ASSIGNED THE TASKS OF CORRECTING SAFETY DEFICIENCIES TO ENSURE THAT THE UNIT IS NOT BEING HELD RESPONSIBLE FOR SOLVING A PROBLEM IT LACKS ADEQUATE AUTHORITY TO RESOLVE. (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO CONCERN R-146 (OA.1-1) FOR BLDGS. 776/777 AND RELATES TO RECOMMENDATION R-37 (RP.1-1) FOR BLDG. 707).

Evaluation

Management, through the various policy, organizational, and procedural changes, has addressed this concern. The core of these changes deals with management's emphasis on line responsibility for safety and the development of elaborate self-audit and independent oversight safety functions. Management job descriptions now include a discussion of the incumbent's safety responsibilities. Job evaluations for employees include safety performance rating factors. The establishment of the new HS&E Department and the updating of the various safety committee charters give increased visibility to the safety program as well as better definition of their respective authorities. The establishment of the new building manager job description makes this individual critical to the safety program. It is at this management level where responsibility and authority to carry out programmatic objectives and safety come together. These managers are appointed by, and report to, the line operating organizations. Safety resources are made available to the building managers who clearly have the responsibility and authority for safe plant operation. Safety organizations no longer have the responsibility to implement line functions in correcting safety deficiencies.

This recommendation should be CLOSED.

B. OPERATIONS

OP.1 CONDUCT OF OPERATIONS

RECOMMENDATION R-92 (OP.1-1) [CATEGORY III]: LIMIT THE ROTATION OF OPERATORS TO MINIMIZE THE ASSIGNMENT OF INDIVIDUALS TO AN OPERATION IN WHICH THEY HAVE LESS THAN THE DESIRED AMOUNT OF EXPERIENCE.

Evaluation

A concerted effort has been underway to address this recommendation. The problem is complicated by the many factors that influence the rotation schedule and that constrain the freedom of movement with respect to job reassignment. These factors include radiation exposure to employees, personnel training, line experience, and negotiated labor rules.

Because no quantitative indicators were available, the Safety Review Team requested that Bldg. 771 management calculate (or estimate to the best of their ability) the mean-time between rotation to determine whether their efforts -- mostly qualitative administrative measures -- had succeeded in limiting operator rotation to yield greater mean-times between rotation. A calculational method using a sampling of core chemical operators, indicated that average annual length of assignment between rotations increased from about 38 days in 1986 to about 57 days in 1988, or an improvement of 50%. This estimating technique, which was based on the three most frequent assignments and which required normalizing between seven day operation in 1986 and five day operation in 1988, is acceptable.

This recommendation should be CLOSED.

RECOMMENDATION R-93 (OP.1-2) [CATEGORY III]: DEVELOP AND IMPLEMENT A PROCEDURE FOR SAFE CLEANING OF GLOVEBOXES AND HOODS.

Evaluation

In response to this recommendation, a procedure (CO-1119-B/1) was issued in February 1987. This procedure was prepared in part by extracting information from the checksheets for taking inventory in the individual gloveboxes and hoods. The procedure is clear and understandable. It contains important warnings to users with respect to all gloveboxes in Bldg. 771; however it is generic and needs to be supplemented by the individualized checksheets.

Although CO-1119-B/1 is readily available throughout the operations areas of Bldg. 771, it has not been properly implemented as an operational control. Interviews with a group of seven chemical operators in the building revealed that they had not been briefed on the procedure and had not used it as a reference to enhance the safety of routine glovebox cleanup operations. Several of the operators were not aware of its

existence. This procedure has not been incorporated into regular schedules for training prior to glovebox inventories and cleanout operations.

No effort has been made to inform glovebox users in RFP facilities, other than Bldg. 771, of the availability of CO-1119-B/1, even though with minor adaptation the procedure should be applicable in Bldgs. 707, 776, 777, and possibly other RFP facilities. While recognizing that this recommendation was directed toward operations in Bldg. 771, site-wide application could have merit and therefore should be considered.

This recommendation should remain OPEN.

OP.4 OPERATIONS STATIONS AND EQUIPMENT

RECOMMENDATION R-94 (OP.4-1) [CATEGORY III]: PROCEED EXPEDITIOUSLY WITH THE CURRENT PROGRAM OF UPGRADING EQUIPMENT AND VITAL SYSTEMS IN BUILDING 771.

Evaluation

There are six defined projects that must be completed to satisfy this recommendation. Three have already been completed and the other three are scheduled to be completed within the next 14 months. The completed projects (as verified by physical inspection) are:

- Installation of geometrically safe storage tanks.
- Renovation of the laboratory waste system.
- Installation of a new system for reduction to metal and button breakout.

Those projects still in progress are:

- A new molten salt extraction line (scheduled for completion in May 1989).
- A renovated ion exchange system (scheduled for completion in July 1989).
- A renovated precipitation/calcination system (scheduled for completion in January 1990).

Some delays in the schedule for completing the last three projects have resulted from the shutdown of Bldg. 771, following the operating incident in September 1988. RFP management is providing the appropriate levels of management attention and

funding to address this recommendation at this time. However, if the restart of Bldg. 771 operations is delayed significantly beyond January 1989, further slippage in the completion dates cited above will result.

This recommendation should remain OPEN.

C. MAINTENANCE

MA.2 FACILITY MATERIAL CONDITION

RECOMMENDATION R-95 (MA.2-1) [CATEGORY III]: CONTINUE A HIGH LEVEL OF MAINTENANCE SUPPORT FOR THE RENOVATION OF BLDG 771.

Evaluation

This recommendation was addressed through an action plan and progress has been made since its issuance. However, recent events affecting Building 771 have completely overshadowed the effort and superceded the initial action plan with detailed action plans having high-level management attention and the application of priority resources. These events will result in a major upgrade in not only the condition, but the design of the facility.

This recommendation should be CLOSED.

D. TRAINING AND CERTIFICATION

TC.3 NUCLEAR FACILITY OPERATIONS OTHER THAN REACTORS

RECOMMENDATION R-96 (TC.3-1) [CATEGORY III]: DEVELOP SELECTION CRITERIA FOR CHEMICAL OPERATORS BASED ON JOB REQUIREMENTS.

Evaluation

Job and task analyses performed to identify training requirements for chemical operators-recovery were used to identify minimum qualifications for this position. The principal revision to these criteria has been an industrial reading test which has been implemented on a plant-wide basis.

This recommendation should be CLOSED.

RECOMMENDATION R-97 (TC.3-2) [CATEGORY III]: ENSURE THAT BLDG. 771 CHEMICAL OPERATORS ARE QUALIFIED/CERTIFIED BEFORE THEY ARE ALLOWED TO PERFORM TASKS INDEPENDENTLY, AND THAT THEY ARE RETRAINED AND REEXAMINED AS REQUIRED BY DOE 5480.1A, CHAPTER V (SUPERSEDED BY DOE 5480.5) (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO CONCERN R-163 [TC.3-2] FOR BLDGS. 776/777).

Evaluation

As discussed in the evaluation of Recommendation R-12 (TC.3-2) for Bldg. 707, with the exception of on-the-job training (OJT), the pilot programs for fissile material handlers (FMHs) adequately address this recommendation. However, these training and qualification programs are not scheduled for implementation for all FMH positions until 1990 or later.

While the annual training and examination requirements for Bldg. 771 FMHs meet the requirements of DOE 5480.5, annual retraining in Bldgs. 707 and 776, with respect to abnormal or emergency conditions, as developed by Production Training, does not address job specific responses to abnormal or emergency conditions, and therefore does not meet the requirements of DOE 5480.5.

This recommendation should remain OPEN.

RECOMMENDATION R-98 (TC.3-3) [CATEGORY III]: UPGRADE THE CONTENT OF THE CERTIFICATION PROGRAM FOR BLDG. 771 FOREMEN AND SHIFT SUPERVISORS TO MEET THE REQUIREMENTS OF DOE 5480.1A, CHAPTER V, SECTION 8a (SUPERSEDED BY DOE 5480.5).

Evaluation

See Evaluation for Recommendation R-13 (TC.3-3) for Bldg. 707.

This recommendation should remain OPEN.

RECOMMENDATION R-99 (TC.3-4) [CATEGORY III]: PROVIDE SUFFICIENT RESOURCES TO CONDUCT THE BLDG. 771 CHEMICAL OPERATOR AND FOREMAN TRAINING AND CERTIFICATION PROGRAMS (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO CONCERN R-161 [TC.1-1] FOR BLDGS. 776/777).

Evaluation

Three chemical operations foremen have been assigned as full-time chemical operations instructors. A five week classroom training program is underway, with all Bldg. 771 chemical operators scheduled to rotate through the class. Additional OJT requirements have been added to the training program, and selected chemical operations personnel who will conduct OJT evaluations have completed a basic instructional skills development course.

During 1988, significant resources have been added to the development and conduct of training and qualification/certification programs plant-wide. Many of these programs are not fully implemented, so it is not possible to determine whether the right combination of resources has been applied. However, this issue can be addressed only by evaluating the quality and effectiveness of these training and qualification programs, which are addressed by Recommendations R-12, R-13, and R-14 (TC.3-2, TC.3-3, and TC.4-1) for Bldg. 707, and related recommendations for Bldgs. 771/774 and Bldgs. 776/777, which should remain open.

This recommendation should be CLOSED.

RECOMMENDATION R-100 (TC.3-5) [CATEGORY III]: IMPLEMENT A TRAINING AND QUALIFICATION PROGRAM FOR BLDG. 771 ANALYTICAL LABORATORY TECHNICIANS THAT MEETS THE REQUIREMENTS OF DOE 5480.1A, CHAPTER V, SECTION 8a (10) (SUPERSEDED BY DOE 5480.5).

Evaluation

Review of the training materials and training development process used for Bldg. 771 analytical laboratory technicians revealed that they were appropriate. Completed qualification-based training and qualification documentation for two randomly

selected technicians were reviewed and found to be complete. An OJT evaluation of the analytical laboratory technician performing a calorimetry procedure was observed and found to be adequate.

Similar qualification/certification programs have been completed for analytical laboratory technicians in Bldgs. 559/707/777 in the majority of duty areas, but programs for six duty areas have not been completed yet. Qualification/certification programs for Bldg. 371 analytical laboratory technicians and inspectors have not been developed yet. RFP is tracking the development of these remaining training programs through other recommendations for FMH training and qualifications which remain open. Therefore, leaving this recommendation open is unnecessary.

This recommendation should be CLOSED.

E. AUXILIARY SYSTEMS

AX.3 STORAGE AND HANDLING OF FISSILE MATERIAL

RECOMMENDATION R-101 (AX.3-1) [CATEGORY III]: PROVIDE IMPROVEMENTS FOR SHIPPING, RECEIVING, AND STORAGE OF FISSILE MATERIAL IN BLDG. 771.

Evaluation

In 1987, RFP had a project underway to replace the "East Hallway" storage vault (Room 146C) of Bldg. 771. Fissile material storage in this area did not represent an acceptable practice, although security and nuclear criticality safety concerns were adequately addressed. This project required the relocation of the plutonium metallographic polishing equipment and personnel to a new area, and the relocation was completed in May 1988. The vacated area will be converted into a storage vault containing approximately 500 shielded storage containers and an adjacent staging area. The shutdown of construction in Bldg. 771 will delay completion of this work. Approximately 60 calendar days will be required to complete the construction activity. The contractor has made progress toward completion of the storage vault and shipping/receiving area project (General Plant Project Authorization No. 375505).

When these areas become functional, the shipping/receiving and storage of fissile material in Bldg. 771 will reduce personnel exposure and add the capability for off-site shipping/receiving.

This recommendation should remain OPEN.

AX.4 VENTILATION SYSTEMS

RECOMMENDATION R-102 (AX.4-1) [CATEGORY III]: UPGRADE THE VENTILATION SYSTEM IN BUILDING 771 TO PROVIDE RELIABLE CONTROL OF AIR FLOW FROM AREAS WITH LOWER POTENTIAL FOR CONTAMINATION TOWARD AREAS WITH GREATER POTENTIAL.

Evaluation

Work to correct the ventilation systems in Bldg. 771 is underway through an approved capital project. Construction is underway, and, when completed will satisfy the concerns leading to this recommendation.

This recommendation should remain OPEN.

AX.5 VITAL SUPPLY SYSTEMS

RECOMMENDATION R-103 (AX.5-1) [CATEGORY III]: IDENTIFY "VITAL" FACILITY EQUIPMENT AND ASSURE APPROPRIATE PRIORITY IS GIVEN TO PERFORMANCE TESTING, MAINTENANCE, AND MONITORING OF THIS "VITAL" EQUIPMENT.

Evaluation

See Evaluation for Recommendation R-32 (TS.4-1) for Bldg. 707.

This recommendation should be CLOSED.

F. EMERGENCY READINESS

ER.2 FACILITY EMERGENCY PLAN

RECOMMENDATION R-104 (ER.2-1) [CATEGORY III]: DEVELOP AN EMERGENCY PLAN IN ACCORDANCE WITH DOE 5500.2 AND 5500.3 FOR BLDG. 771 (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-105 [ER.2-2] FOR BLDG. 771).

Evaluation

An emergency plan for Bldg. 771 was developed in accordance with DOE Orders and was issued in November 1987. The plan was written to augment the Rocky Flats Emergency Plan (RFEP) and includes specific implementing procedures for building management and personnel. Emergency responsibilities and organization are defined, assembly points and their alternate locations are outlined, personnel accountability is described, and the requirement for annual review and updating is included. Building evacuation criteria, protective responses, and other issues generic to all facilities are included in the RFEP.

This document was revised and updated in November 1988, and meets DOE requirements. Its format was changed to conform with the RFP Model Building Emergency Plan, providing uniformity for all such building plans. A major revision program is in progress to update all building emergency plans to conform with the Model Plan. During November 1988, all major plutonium building plan revisions (including Bldg. 771) were completed and the documents issued. The Bldg. 771 Emergency Plan is also included in the distribution control and configuration management system.

This recommendation should be CLOSED.

RECOMMENDATION R-105 (ER.2-2) [CATEGORY III]: DEVELOP THE BLDG. 771 EMERGENCY PLAN IMPLEMENTING PROCEDURES (EPIPs) IN ACCORDANCE WITH THE ROCKY FLATS EMERGENCY PLAN (RFEP) ISSUED OCTOBER 8, 1986, AND IN ACCORDANCE WITH ATTACHMENT 2, ITEM 2b, OF DOE 5500.2.

Evaluation

See Evaluation for Recommendation R-104 (ER.2-1) for Bldgs. 771/774.

This recommendation should be CLOSED.

RECOMMENDATION R-106 (ER.2-3) [CATEGORY III]: DEFINE THE EMERGENCY RESPONSE LEVELS IN THE ROCKY FLATS EMERGENCY PLAN/EMERGENCY OPERATIONS CENTER HANDBOOKS.

Evaluation

Emergency response levels are defined in Section 4.8.5 of the RFEP and are also included in the Emergency Operations Center (EOC) Handbooks. Terminology for these levels differs between the State of Colorado, the local counties, and DOE guidance. Therefore, the RFEP and EOC Handbooks contain the Colorado Radiological Emergency Response Plan definitions, the Jefferson/Boulder County Non-Radiological HAZMAT Plan definitions, and DOE Headquarters definitions as found in DOE N 5500.3 (March 23, 1988). Directions are given for their use and for providing appropriate notification and classification to the various agencies. Proper classification of emergency response levels and notifications were demonstrated in the November 15, 1988, emergency exercise conducted during this review.

This recommendation should be CLOSED.

ER.3 EMERGENCY RESPONSE TRAINING

RECOMMENDATION R-107 (ER.3-1) [CATEGORY III]: DEVELOP A DOCUMENTED TRAINING AND QUALIFICATION PROGRAM FOR SPECIALIZED RESPONSE TEAMS AND EMERGENCY RESPONSE PERSONNEL.

Evaluation

Training programs have been established for EOC personnel, for Building Emergency Support Teams (BESTs), and for Building Bomb Search Teams. These programs include training goals, required training modules, standard training outlines and course materials, and auditable records of training progress. RFP policies and procedures are documented for this emergency response training. Detailed lists of emergency personnel are found in the EOC Deskbooks and building emergency plans, not in the RFEP.

Building emergency plans have recently been updated in the production facilities and building personnel have received training on the new procedures. Building Bomb Search Teams are being formed for buildings without them and a formalized and documented training program is being followed. BEST members receive initial training and at least two hours additional training each year. Training classes are offered at a variety of times each month. A review of records indicates that minimum training requirements are being met and normally exceeded. Specific EOC training is evaluated under Concern R-175 (ER.3-1) for Bldgs. 776/777.

This recommendation should be CLOSED.

ER.4 EMERGENCY FACILITIES, EQUIPMENT, AND RESOURCES

RECOMMENDATION R-108 (ER.4-1) [CATEGORY III]: DEVELOP A METHOD TO ENSURE THAT DEDICATED EMERGENCY EQUIPMENT AND SUPPLIES ARE AVAILABLE IN EMERGENCY CABINETS FOR EMERGENCY RESPONSE.

Evaluation

Inventory lists of required emergency supplies and equipment have been developed for each emergency response cabinet. Key locks have been installed on the cabinets and a glass key box is located nearby. Keys are also provided to the radiological monitoring supervisor responsible for each cabinet. A procedure (RMPM 5.5) recently has been written and implemented (October 31, 1988) which establishes the requirement for inventory control of the emergency cabinets. Radiological monitoring supervision is responsible for ensuring that all cabinets are inventoried monthly, all inventory items are present and in calibration and good working order, and that the cabinets are restocked as needed.

The contents of three emergency response cabinets, those located in Bldgs. 750, 773 and 865, were compared against their respective inventory lists and all were found to be complete. Instrument calibrations were current and respiratory equipment was new.

This recommendation should be CLOSED.

RECOMMENDATION R-109 (ER.4-2) [CATEGORY III]: REPAIR OR REPLACE FLOOR EMERGENCY-EVACUATION MARKERS IN BLDG. 771 AND RETRAIN BUILDING OPERATORS AND OCCUPANTS ON THE PURPOSE OF THESE MARKERS.

Evaluation

Responsibility for emergency-evacuation markers has been assigned to the Fire Department. In coordination with building managers, emergency egress routes were identified and appropriate arrows and walkway markers applied to floors and walls. A four minute training video was produced and used to train all RFP employees.

This recommendation should be CLOSED.

ER.5 EMERGENCY ASSESSMENT AND NOTIFICATION

RECOMMENDATION R-110 (ER.5-1) [CATEGORY III]: ASSURE THAT EMERGENCY NOTIFICATIONS TRANSMITTED DURING TESTS OR EXERCISES ARE PREFACED AND ENDED BY CLEARLY IDENTIFYING THEM AS PART OF THE TEST OR EXERCISE.

Evaluation

The RFEP and emergency procedures outline the necessity of prefacing and ending emergency announcements and notifications with identification that signifies they are a drill or exercise message. This issue has also been emphasized in recent EOC and other emergency training.

During the exercises conducted on November 15, 29 and 30, 1988, as part of this review, all exercise announcements and notifications were clearly identified as "exercise messages."

This recommendation should be CLOSED.

ER.6 PERSONNEL PROTECTION

RECOMMENDATION R-111 (ER.6-1) [CATEGORY III]: PROVIDE CRITERIA FOR INITIAL SCREENING OF PERSONNEL INVOLVED IN NUCLEAR ACCIDENTS.

Evaluation

Criteria for initial screening of personnel involved in nuclear accidents are outlined in the Radiation Monitoring Procedure Manual (RMPM), Section 5.2, "Response to a Criticality Alarm." Radiation monitors are required to scan the entire dosimeter badge of evacuated personnel with specific survey instruments. Personnel without badges are monitored under the armpit and in the pit of the stomach. Any readings in excess of 1mR/hr are reported to supervision and the individual involved is transported to the medical facility for further analysis and possible treatment. Survey instrument readings result from the activation of the indium foils contained in the dosimeter badges. These foils have been calibrated with respect to fission spectrum neutrons through an intercomparison study, last conducted in 1983, with Oak Ridge National Laboratory.

During the November 29, 1988, criticality exercise conducted in Bldg. 991, this procedure was explicitly followed. Radiation monitors surveyed the badges of all evacuated employees and reported to supervision that none exceeded the 1mR/hr limit.

This recommendation should be CLOSED.

RECOMMENDATION R-112 (ER.6-2) [CATEGORY III]: ENSURE THAT THE APPROPRIATE REVIEW AND AUTHORIZATION ARE PROVIDED AND DOCUMENTED FOR EMERGENCY DOSES, IN ACCORDANCE WITH DOE 5480.1A, CHANGE 2 (APRIL 29, 1981).

Evaluation

A procedure defining the responsibilities and authority for emergency doses is provided in the RMPM, Section 5.2, "Response to a Criticality Alarm." The Shift Superintendent, as the on-scene Emergency Director, authorizes all emergency doses for life saving, recovery of deceased victims, and critical equipment shutdown operations. He/she receives technical assistance from Health Physics and/or Radiation Monitoring management, Criticality Engineering, and building management. During off-shift hours, he/she may have to rely solely on the advice of the Radiation Monitoring Supervisor or the radiation monitor. These individuals are not uniformly trained on the RMPM procedure, and are not aware of the emergency dose limits nor the technical basis for making such critical decisions. Training should be provided and exercises conducted to give such individuals, including the Shift Superintendent, the experience of thinking through the decision-making process.

This recommendation should remain OPEN.

G. TECHNICAL SUPPORT

No recommendations were made in this safety technical area during the October/November 1986 TSA of Bldgs. 771/774.

H. SECURITY/SAFETY INTERFACE

SS.3 EMERGENCY ACCESS

RECOMMENDATION R-113 (SS.3-1) [CATEGORY III]: ENSURE THAT LIFE SAFETY CODE NFPA 101 IS NOT VIOLATED BY ANY SECURITY PRACTICE.

Evaluation

This recommendation was responded to primarily by issuance on August 4, 1987, of standard procedure HSE 22.01, "Exits (Means of Egress)." This procedure was revised November 4, 1988, and now establishes the minimum requirements for exits as defined in NFPA Standard 101, as well as related OSHA regulations and DOE Orders.

Section 6 of HSE 22.01 provides procedures, requirements, and necessary approvals for those occasions when it becomes necessary to barricade egress exits for reasons such as construction, safety, or security. The requirements include review and approval signatures from HS&E, the Fire Department, Security, and the building manager or his/her representative and reflect special instructions such as temporary exit signs and building announcements. Shift superintendents are the focal point for maintaining records and oversight of barricaded door actions.

This recommendation should be CLOSED.

I. EXPERIMENTAL ACTIVITIES

No recommendations were made in this safety technical area during the October/November 1986 TSA of Bldgs. 771/774.

J. FACILITY SAFETY REVIEW

No recommendations were made in this safety technical area during the October/November 1986 TSA of Bldgs. 771/774.

K. NUCLEAR CRITICALITY SAFETY

CS.2 USE OF NUCLEAR CRITICALITY SAFETY CONTROL PARAMETERS

RECOMMENDATION R-114 (CS.2-1) [CATEGORY III]: MODIFY PROCEDURES TO ADDRESS THE SODIUM HYDROXIDE CHEMICAL-ACCEPTANCE TEST SPECIFICATIONS IN PARAGRAPH 4.2.2 OF THE AMERICAN NATIONAL STANDARD ANSI/ANS 8.5-1979, "USE OF BOROSILICATE GLASS RASCHIG RINGS AS A NEUTRON ABSORBER IN SOLUTIONS OF FISSILE MATERIAL."

Evaluation

In 1987, the RFP chemical acceptance test requirement for Raschig rings (RFP Standard MO/SX-106) omitted a sodium hydroxide test, as specified in ANSI/ANS-8.5-1979. This test is for assurance that the rings will maintain the required boron content and glass volume in a basic solution environment.

RFP Standard No. SX-106, (Revision) October 21, 1988, addresses the requirements of ANSI/ANS-8.5-1979 for a sodium hydroxide test. RFP Laboratory Procedure No. L-4110-F, "Raschig Ring Specification Tests," February 8, 1987, delineates the sodium hydroxide test procedure in Paragraph 6.22.2. This procedure is in compliance with the requirements of ANSI/ANS-8.5-1979, Section 4.2.2. Records indicate a skid of 77,040 pieces (rings) from P.O.# RM-36483-000-DJ, April 24, 1986, did undergo the required acceptance test. Rings (209,760) procured with P.O.# RM-36483-DJ, April 15, 1987, were acceptance tested according to the sodium hydroxide test procedure. No ring procurement has occurred since that time.

This recommendation should be CLOSED.

L. RADIOLOGICAL PROTECTION

RP.1 ORGANIZATION AND ADMINISTRATION

RECOMMENDATION R-115 (RP.1-1) [CATEGORY III]: ASSESS THE IMPACT OF STAFFING LEVEL ON QUALITY OF THE RADIATION PROTECTION PROGRAM.

Evaluation

See Evaluation for Recommendation R-37 (RP.1-1) for Bldg. 707.

This recommendation should be CLOSED.

RECOMMENDATION R-116 (RP.1-2) [CATEGORY III]: COMPLY WITH PERSONNEL MONITORING REQUIREMENTS.

Evaluation

See Evaluations for Recommendations R-47 (RP.7-2), R-48 (RP.7-3), and R-63 (RP.13-2) for Bldg. 707; and Concern R-213 (RP.12-1) for Bldgs. 776/777.

This recommendation should be CLOSED.

RP.5 EXTERNAL DOSIMETRY (ROUTINE AND ACCIDENT USE)

RECOMMENDATION R-117 (RP.5-1) [CATEGORY III]: DEVELOP A PROGRAM TO ENSURE THAT DOSIMETERS ARE WORN CORRECTLY BY BLDG. 771 PERSONNEL.

Evaluation

Procedure HSE 18.07, "External Radiation Dosimetry" dated November 14, 1988, has recently been issued to clarify proper dosimeter wearing procedures and is being enforced. Field observations revealed compliance with the procedure, indicating effective training and enforcement.

The recommendation should be CLOSED.

RECOMMENDATION R-118 (RP.5-2) [CATEGORY III]: DOCUMENT THE RESPONSE OF PERSONNEL AND WRIST DOSIMETRY FOR BETA AND NEUTRON FIELDS IN THE WORKPLACE AND COMPREHENSIVE QUALITY CONTROL PROCEDURES TO ENSURE THE ACCURACY OF CALCULATED PERSONNEL DOSES.

Evaluation

RI has negotiated contracts with consultants to provide field studies and data to establish and document the response of personnel and wrist dosimetry. QA procedures are in place.

Specific RI activities and accomplishments were listed on page 156 of Section RP.5 of the TSA for Bldgs. 776/777, dated March 1988. This listing reports progress in satisfying this recommendation and Recommendation R-41 (RP.5-2) for Bldg. 707. However, the following are elements of the planned upgrade which are scheduled and in process but which remain to be completed. These are:

- Complete documentation of all field characterization studies
- Complete and document the initial intercalibration with the Battelle Standards Laboratory
- Perform field hand-to-wrist ratio studies
- Complete Panasonic extremity dosimetry calibrations/evaluations
- Develop dose conversion algorithm for Panasonic extremity dosimeter
- Convert to Panasonic extremity dosimeter

Accomplishment of these goals and objectives will satisfy the intent of the recommendation.

This recommendation should remain OPEN.

RP.6 INTERNAL RADIATION EXPOSURE CONTROL PROGRAM

RECOMMENDATION R-119 (RP.6-1) [CATEGORY III]: IMPROVE THE ALPHA AIR MONITORING SYSTEM IN BLDG. 771 TO ENSURE RAPID WARNING OF RADIOACTIVE AIR CONCENTRATIONS SUBSTANTIALLY IN EXCESS OF MAXIMUM PERMISSIBLE CONCENTRATIONS (MPCs). SEE ALSO RECOMMENDATION R-57 (RP.10-2) FOR BLDG. 707 AND R-202 (RP 6-1) FOR BLDGS. 776/777 FOR RELATED TOPICS.

Evaluation

Effort has been made in upgrading the Selective Alpha Air Monitors (SAAMs). New calibration procedures are in effect which reduce the number of "false" alarms from radon daughter products. The detector/chamber design has been studied to determine if sensitivity can be increased.

A project manager has been designated and efforts are underway to secure funding for purchase of new SAAMs. Timeline schedules have been established for replacements and additions in Bldgs. 771/774 and 776/777. It is projected that replacement in Bldg. 771 will be complete by January 1991.

This recommendation should remain OPEN.

**RP.8 FIXED AND PORTABLE INSTRUMENTATION
(NORMAL AND EMERGENCY USE)**

RECOMMENDATION R-120 (RP.8-1) [CATEGORY III]: DEVELOP AN INSTRUMENT CALIBRATION PROGRAM THAT MEETS THE REQUIREMENTS OF DOE-PRESCRIBED STANDARD ANSI N323.

Evaluation

See Evaluation for Concern R-207 (RP.8-1) for Bldgs. 776/777.

This recommendation should be CLOSED.

RECOMMENDATION R-121 (RP.8-2) [CATEGORY III]: DEVELOP AND IMPLEMENT A PROCEDURE TO PERMIT THE DAILY SOURCE CHECKING OF PHOTON AND NEUTRON DOSE-RATE INSTRUMENTS.

Evaluation

RI has accomplished the following actions in response to this recommendation:

- Procedures have been revised
- All survey instruments are returned to an "instrument crib" each shift. Instrumentation technicians perform a detailed source check and instrument function check and log/record results prior to reissue of the instruments.

This recommendation should be CLOSED.

RECOMMENDATION R-122 (RP.8-3) [CATEGORY III]: CALIBRATE PERSONNEL ALPHA SELF-MONITORING EQUIPMENT AND AIR MONITORS.

Evaluation

See Evaluation for Concern R-208 (RP.8-2) for Bldgs. 776/777.

This recommendation should be CLOSED.

RECOMMENDATION R-123 (RP.8-4) [CATEGORY III]: EVALUATE HEALTH PHYSICS INSTRUMENTS USED FOR PERSONNEL PROTECTION FOR APPROPRIATE PERFORMANCE REQUIREMENTS.

Evaluation

See Evaluation for Concern R-209 for Bldgs. 776/777.

This recommendation should be CLOSED.

RP.9 RESPIRATORY PROGRAM

RECOMMENDATION R-124 (RP.9-1) [CATEGORY III]: PROVIDE A WRITTEN STANDARD OPERATING PROCEDURES MANUAL WHICH COVERS A COMPLETE RESPIRATOR PROGRAM TO ENSURE THE SAFE ROUTINE USE, NON-ROUTINE USE, AND EMERGENCY USE OF RESPIRATORS.

Evaluation

See Evaluation for Recommendation R-54 (RP.9-1) for Bldg. 707.

This recommendation should be CLOSED.

RECOMMENDATION R-125 (RP.9-2) [CATEGORY III]: UPGRADE RESPIRATOR PROGRAM ELEMENTS FOR TRAINING TO MEET DOE REQUIREMENTS.

Evaluation

Computer-based respirator training and testing is required by all new employees whose work assignment will require their use. To qualify, the candidate must obtain a passing grade on the test. Quantitative fit testing is provided in an aerosol chamber after which the type and size of respirator is specified for the individual's use. A pictured respirator authorization card is issued which is valid for one year.

Retraining, testing and fitting are done annually, in accordance with DOE Orders. The individual is notified by IH in advance of his/her expiration date and scheduled for retraining, testing, and fitting. If the individual does not receive the prescribed retraining, etc., and the expiration date is passed, he/she is excluded from entering an area where respiratory protection is required.

This recommendation should be CLOSED.

RP.10 AIR MONITORING

RECOMMENDATION R-126 (RP.10-1) [CATEGORY III]: PERFORM TESTS AT SELECTED LOCATIONS IN BLDG. 771 TO DETERMINE DIRECTION OF AIRFLOW AT SEVERAL VERTICAL LEVELS.

Evaluation

RI contracted to conduct air flow studies in Bldg. 771 to recommend placement of air samplers (air heads) and air monitors (SAAMs). This study has been completed. See Evaluation for Recommendation R-127 (RP.10-2) for a discussion of implementation status.

This recommendation should be CLOSED.

RECOMMENDATION R-127 (RP.10-2) [CATEGORY III]: INCREASE THE AIR SAMPLING CAPABILITIES IN BLDG. 771.

Evaluation

The study referenced in the Evaluation for Recommendation R-126 (RP.10-1) has identified the locations for additional breathing zone air samplers in Bldg. 771. Engineering has been completed on upgrading and extending the existing vacuum system for the additional coverage. Funds have been appropriated for upgrade, and construction is beginning. Total cost is estimated at \$960K.

The completion date is estimated for September 1989.

This recommendation should remain OPEN.

RP.11 RADIOLOGICAL MONITORING/CONTAMINATION CONTROL

RECOMMENDATION R-128 (RP.11-1) [CATEGORY III]: ESTABLISH A CONSISTENT POLICY FOR USE OF PROTECTIVE CLOTHING BY WORKERS, SUPERVISORS, AND VISITORS IN BLDG. 771 AND CONFINE PROTECTIVE CLOTHING TO THE RADIATION AREA, INCLUDING THE CHANGE ROOMS (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-58 [RP.11-1] FOR BLDG. 707).

Evaluation

A Clothing Control Implementation Team was established on August 1, 1988. The team prepared a Clothing Control Implementation Plan for the perimeter security zone (PSZ), with several phases of implementation: Phase 1; Phase 2a; and Phase 2b. A four day trial clothing program was conducted at Bldg. 771. On October 31, 1988, all areas of the PSZ were included in the Phase 1 implementation policy: restriction from wearing controlled area white coveralls in PSZ cafeterias. A revised PSZ Clothing Control Procedure was issued on October 10, 1988. HS&E Manual, Procedure 18.02, "Personnel Protection Requirements for Plutonium Controlled Areas," issued on November 4, 1988, incorporated the October 10, 1988 procedure. A presentation to the Executive Safety Review Board on November 10, 1988, evaluated the problems associated with implementation Phases 2a and 2b. (2a: further administrative limitation of white coveralls in break rooms, offices and meeting rooms, and 2b: construction of hot/cold zone change rooms).

The protective clothing policy should be carefully evaluated as an integral part of the overall contamination control program. In the PSZ, each person leaving a controlled area is now surveyed by a radiation monitoring technician and controlled area white coveralls are not allowed to be worn in the cafeterias. Despite

these improvements, the protective clothing program for the plutonium areas will not be adequate until the final phase of the program is in place, with clear separation of the radiation control area clothing from the clothing worn in "cold" areas.

This recommendation should remain OPEN.

RECOMMENDATION R-129 (RP.11-2) [CATEGORY III]: CHANGE AND ENFORCE PROCEDURES FOR SELF-MONITORING BY PERSONNEL USING THE COMBO INSTRUMENTS TO ENSURE THAT ADEQUATE CONTAMINATION MEASUREMENTS HAVE BEEN MADE.

Evaluation

See Evaluation for Concern R-211 (RP.11-1) for Bldgs. 776/777.

This recommendation should be CLOSED.

RECOMMENDATION R-130 (RP.11-3) [CATEGORY III]: LOCATE SENSITIVE SURVEY INSTRUMENTS (HAND AND SHOE COUNTER, SURVEY BOOTH COMBO) AT EXITS FROM BUILDING TO PERMIT PERSONNEL TO MAKE THE FINAL SURVEY.

Evaluation

See Evaluation for Concern R-211 (RP.11-1) for Bldgs. 776/777.

This recommendation should be CLOSED.

RECOMMENDATION R-131 (RP.11-4) [CATEGORY III]: IMPROVE THE SURVEY OF WASHED CLOTHING AT THE LAUNDRY.

Evaluation

See Evaluation for Concern R-212 (RP.11-2) for Bldgs. 776/777.

This recommendation should be CLOSED.

RECOMMENDATION R-132 (RP.11-5) [CATEGORY II]: DEVELOP AN ADEQUATE LAUNDRY PROCEDURE FOR SHOE COVERS TO ENSURE THAT SHOE COVERS ARE CLEAN AND SERVICEABLE FOR REUSE.

Evaluation

See Evaluation for Concern R-212 (RP.11-2) for Bldgs. 776/777.

This recommendation should be CLOSED.

RP.13 RECORDS

RECOMMENDATION R-133 (RP.13-1) [CATEGORY III]: IMPROVE THE OCCUPATIONAL EXPOSURE RECORD PROGRAM TO ENSURE THAT THERE ARE NO GAPS OR APPARENT GAPS IN THE LEGAL RECORDS. SEE ALSO RECOMMENDATION R-37 (RP.1-1) FOR BLDG. 707.

Evaluation

A centralized computer database on individual radiation exposure has not been fully implemented yet. The new HS&E centralized database system was coming on line during this review. It will permit easy review of exposure history for missing data. A hard copy file, however, is maintained in Bldg. 123 in two flexretrieval cabinets, but little effort is expended to identify gaps in exposure data.

RFP is expending resources to upgrade their entire exposure record-keeping system which will bring them in compliance with ANSI 13.6 and DOE Orders, but actions were not completed at the time of this review. See also evaluation for Recommendation R-62 (RP.13-1) for Bldg. 707.

This recommendation should remain OPEN.

M. PERSONNEL PROTECTION

PP.1 INDUSTRIAL HYGIENE PROGRAM CONTENT

RECOMMENDATION R-134 (PP.1-1) [CATEGORY III]: DEVELOP AND IMPLEMENT A FORMAL CARCINOGEN CONTROL PROGRAM (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-64 [PP.1-1] FOR BLDG. 707).

Evaluation

A formal carcinogen control program has been developed and implemented following the applicable requirements of DOE 5480.10, Paragraph 9C. The criteria set forth by the American Conference of Governmental Industrial Hygienists (ACGIH) have been utilized to identify those contaminants subject to control under the program. The program is being implemented on a "most-first" basis. Consequently, the carcinogens to receive priority treatment are asbestos, beryllium, and carbon tetrachloride.

The program includes the controlled purchase of carcinogens, with review and concurrence by hazardous material control (HMC). Other program elements include identification of all carcinogens on the plant-site; utilizing substitute products when feasible; review of control technologies; employee notification and training; and medical monitoring. Additionally, operating procedures have been written, regulated areas established, warning signs posted, and procedures for emergency action are readily available. The program is being implemented by the responsible supervision under the direction of the Industrial Hygiene Group.

The major policy guidance document for this program was finalized in May 1988, for issuance in a proposed HS&E Requirements Manual. That Manual was cancelled and the policy document is to be issued in the HS&E Manual by December 15, 1988. This delay does not appear to have significantly impacted implementation of this program.

This recommendation should be CLOSED.

PP.4 STAFFING

RECOMMENDATION R-135 (PP.4-1) [CATEGORY III]: ASSESS THE IMPACT OF STAFFING LEVEL ON THE QUALITY OF THE INDUSTRIAL HYGIENE PROGRAM.

Evaluation

See Evaluation for Concern R-220 (PP.4-1) for Bldgs. 776/777.

This recommendation should remain OPEN.

PP.5 SURVEILLANCE

RECOMMENDATION R-136 (PP.5-1) [CATEGORY III]: EXPAND THE ROUTINE SURVEILLANCE PROGRAM TO INCLUDE ALL HIGH-HAZARD PHYSICAL, CHEMICAL, AND BIOLOGICAL EXPOSURES.

Evaluation

See Evaluation for Recommendation R-217 (PP.2-1) for Bldgs. 776/777.

This recommendation should remain OPEN.

RECOMMENDATION R-137 (PP.5-2) [CATEGORY III]: DEVELOP A LABORATORY QUALITY CONTROL PROGRAM FOR THE ANALYSIS OF CHEMICAL CONTAMINANTS ASSOCIATED WITH THE INDUSTRIAL HYGIENE PROGRAM.

Evaluation

See Evaluation for Recommendation R-222 (PP.5-2) for Bldgs. 776/777.

This recommendation should remain OPEN.

PP.7 OCCUPATIONAL SAFETY

RECOMMENDATION R-138 (PP.7-1) [CATEGORY III]: INTEGRATE OPERATIONAL SAFETY ANALYSES (OSAs) WITH WORK PROCEDURES.

Evaluation

A review of selected operations procedures for Bldgs. 771 and 774 supports the plant's position that all applicable Operational Safety Analyses (OSAs) have been incorporated into operations procedures for Bldgs. 771 and 774. The procedure revisions have included both a reference to the appropriate OSA and the essential hazards highlighted therein.

In addition, Procedure HSE 2.03 has been revised to require one of the following:

- Posting of OSAs in the affected work area;
- Discussing OSAs at documented safety meetings at least annually or whenever changes occur (whichever occurs first);
- Attaching OSAs to applicable operating procedures;
- Having involved employees read and sign the OSA cover sheet; or
- Integrating the essential content of the OSA into the operating procedure.

The last alternative is the better approach in most cases and is the one taken in Bldgs. 771 and 774. RFP is continuing a site-wide effort to improve the quality and safety of operations by

tying OSAs with applicable operations procedures. This effort should be continued.

This recommendation should be CLOSED.

RECOMMENDATION R-139 (PP.7-2) [CATEGORY III]: REVISE HS&E MANUAL CHAPTER 15.01, "LOCKOUT AND TAGGING," TO ENSURE THAT THE POLICY FOR THE USE OF LOCKS AND TAGS IS ADEQUATE AND A SYSTEM IS DEVELOPED FOR POSITIVE ADMINISTRATIVE CONTROL AND TRACKING.

Evaluation

The bases for this recommendation were: 1) the old procedure implied that the lock was the primary control and tags were used for information or warning only, and 2) there was no formalized system for tracking and controlling locks and tags in Bldg. 771. The current revision of Procedure HSE 2.08, "Locking and Tagging," addresses both these concerns in a satisfactory manner. However, see Concern R-153 (OP.3-1) for Bldgs. 776/777 for further discussion of this issue.

The current procedure was revised to resolve the bases for the recommendation, and actual practice in Bldg. 771 is generally consistent with the procedure. However, the current status of the locking and tagging program, including the latest draft revisions to the HSE procedure are being tracked under OPEN Concern R-153 (OP.3-1) for Bldgs. 776/777.

This recommendation should be CLOSED.

N. FIRE PROTECTION

FP.3 IMPAIRMENT OF OPERATIONS

RECOMMENDATION R-140 (FP.3-1) [CATEGORY III]: EVALUATE THE DESIRABILITY OF EXPEDITING REPLACEMENT OF THE TWO TRANSFORMERS CONTAINING PCB OILS IN BLDG. 771.

Evaluation

The transformers and the associated switchgear have been delivered to RFP. Inspection of the area disclosed that one unit has been replaced. The second unit is scheduled for replacement during FY89.

This recommendation should remain OPEN.

FP.5 IMPROVED RISK

RECOMMENDATION R-141 (FP.5-1) [CATEGORY III]: INCREASE FIRE PROTECTION ENGINEERING INPUT TO DESIGN REVIEWS, OVERALL FIRE PROTECTION MATTERS, FACILITY AUDITS, PROJECT DEVELOPMENT AND APPROVAL, AND FIRE-SYSTEM DESIGN AND TESTING.

Evaluation

See Evaluation for Recommendation R-72 (FP.5-2) for Bldg. 707.

This recommendation should be CLOSED.

RECOMMENDATION R-142 (FP.5-2) [CATEGORY III]: PROVIDE WET-PIPE AUTOMATIC SPRINKLER PROTECTION OF ALL INTAKE FILTER PLENUMS.

Evaluation

See Evaluation for Recommendation R-79 (FP.5-9) for Bldg. 707.

This recommendation should be CLOSED.

RECOMMENDATION R-143 (FP.5-3) [CATEGORY III]: DEVELOP AND INSTITUTE EITHER A FIRE-HOSE TESTING OR FIRE-HOSE REPLACEMENT PROGRAM WHICH COMPLIES WITH OR MEETS THE INTENT OF NFPA 1962.

Evaluation

Discussion with RFP Fire Department officers disclosed that the Fire Department pressure tests each section of fire hose at 250 pounds per square inch (psi) for five minutes prior to installing it on building hose reels. This test exceeds the requirement of 150 psi in NFPA 1962. This discussion further disclosed that building hose reel hose is then tested every three years at the

building service water pressure which is typically 75 psi. However, there is no internal test procedure for these two tests.

Two exemption requests have been submitted to DOE concerning this matter. On February 7, 1985, a letter from E. R. Young, Director, Plant Security, to James R. Nicks, Area Manager, DOE, RFAO, Subject: Request for Exemption to NFPA 14, 7-2.4, Subject: Testing of Building Standpipe Systems, was sent. On April 23, 1987, a letter from E. R. Young to Albert E. Whiteman, Area Manager, DOE, RFAO, Subject: Request for Exemption to National Fire Protection (NFPA) 1962, "Service Test of Hose Reel Hose," was sent. There has been no response from DOE to these requests.

This recommendation should remain OPEN.

RECOMMENDATION R-144 (FP.5-4) [CATEGORY III]: PROVIDE EARTHQUAKE BRACING FOR THE AUTOMATIC SPRINKLER SYSTEM TO COMPLY WITH THE REQUIREMENTS OF NFPA 13.

Evaluation

See Evaluation for Recommendation R-76 (FP.5-6) for Bldg. 707.

This recommendation should remain OPEN.

RECOMMENDATION R-145 (FP.5-5) [CATEGORY III]: STRENGTHEN THE SYSTEM FOR THE INSPECTION OF PORTABLE FIRE EXTINGUISHERS IN THE BIWEEKLY OR MONTHLY BUILDING SAFETY INSPECTION PROGRAM.

Evaluation

A checklist for building managers to use when inspecting fire extinguishers has been prepared. It does not specify the frequency at which they are to be inspected or whether there is an implementing procedure which specifies the frequency. There was no evidence that portable fire extinguishers in all facilities are being checked monthly as required by NFPA Standard 10. See new Concern FP-3 in Section IV. N.

This recommendation should remain OPEN.

APPENDIX C-4

BUILDINGS 776/777

Evaluation of Progress

A. ORGANIZATION AND ADMINISTRATION

OA.1 FACILITY ORGANIZATION AND ADMINISTRATION

CONCERN R-146 (OA.1-1) [CATEGORY III]: MANY PERSONS CHARGED WITH OVERSIGHT RESPONSIBILITIES ALSO HAVE PROGRAMMATIC RESPONSIBILITIES FOR THE ACTIONS THEY OVERSEE; AND PERSONS WITH PROGRAMMATIC RESPONSIBILITY FOR SAFETY DO NOT ALWAYS HAVE THE AUTHORITY AND RESOURCES TO CARRY OUT THESE RESPONSIBILITIES.

Evaluation

See Evaluation for RECOMMENDATION R-91 (OA.1-1) Bldgs. 771/774.

This concern should be CLOSED.

CONCERN R-147 (OA.1-2) [CATEGORY III]: THERE IS NO MANAGEMENT SYSTEM WHICH ASSURES THE CONTINUOUSLY EFFECTIVE PERFORMANCE OF ALL SAFETY-RELATED ACTIVITIES.

Evaluation

A more visible and dedicated safety program in the newly established HS&E Department has been established. This organization, and in particular, the Operations and Plans Group has been given responsibility for developing a comprehensive safety audit, evaluation, and tracking system. Charters for the various elements of HS&E have been written. Although these seem somewhat duplicative and confusing, they are adequate to accomplish this goal. Audit schedules have been established and are in the process of being implemented. These audits include operating facilities, programs, and the HS&E functional safety disciplines. At present, safety findings (approximately 5000), from a variety of sources (TSAs, DOE, HS&E audits, self-audits, etc.), are being assembled manually in files of the Safety Assurance Group. This centralized control and oversight provides appropriate reporting on the status of corrective actions to management. It is anticipated that this system will be automated in the near future. Auditors are being qualified in accordance with standard ANSI/ASME N45.2.23, "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants."

While the actions taken appear appropriate, the activities of the HS&E Operations and Plans Group are new and their resources limited. Therefore, it is difficult to determine if they will be successful in meeting the broad objectives established. It

appears that the HS&E auditing activity has only five of the 13 people it needs and many of the other monitoring and tracking areas are similarly short-handed. However, management has indicated a willingness to provide resources as they are required.

This concern should remain OPEN.

OA.2 MANAGEMENT OBJECTIVES

CONCERN R-148 (OA.2-1) [CATEGORY III]: THERE ARE NO VISIBLY PROMOTED MEASURABLE ANNUAL SAFETY-RELATED OBJECTIVES AND MANAGERIAL FOLLOW-UP THAT GO BEYOND THOSE CONTAINED IN THE ASSIGNED COST-PLUS-AWARD FEE GOALS AND OBJECTIVES.

Evaluation

See Evaluation for Recommendation R-3 (OA.2-1) for Bldg. 707.

This concern should remain OPEN.

OA.4 MANAGEMENT ASSESSMENT

CONCERN R-149 (OA.4-1) [CATEGORY III]: THE RI INCIDENT AND UNUSUAL OCCURRENCE EVALUATION AND REPORTING POLICIES AND PROCEDURES ARE NOT IN FULL COMPLIANCE WITH DOE 5000.3 "UNUSUAL OCCURRENCES REPORTING SYSTEM," AND DOE 5484.1 "ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION INFORMATION REPORTING REQUIREMENTS."

Evaluation

See Evaluation for Recommendation R-4 (OA.4-1) for Bldg. 707.

This concern should remain OPEN.

CONCERN R-150 (OA.4-2) [CATEGORY III]: A PLANT-WIDE NON-WAR RESERVE QUALITY ASSURANCE PROGRAM BRINGING TOGETHER ALL ORGANIZATIONAL ELEMENTS OF RI ACTIVITIES OF THE NON-WAR RESERVE PROGRAM AREAS DOES NOT CURRENTLY EXIST.

Evaluation

- The Non-Weapons Quality Manual that existed during the January-February 1988 Bldg. 776/777 TSA has been revised and reissued. On-site distribution to date consists of approximately 130 controlled copies to management.
- The Director, Quality Engineering and Control (QE&C) has appointed a Non-Weapons QA Program Manager, a Non-Weapons QA Program Administrator, and, to date, two program development engineers. These personnel have appropriate qualifications.

- A Non-Weapons QA Program Management Plan has been written (approved by the Director, QE&C). This document is to be updated quarterly to reflect implementation status and changes in plans.
- The Directorates responsible for developing QA Plans (QAPs) have not yet been provided with a guidance document. This is being developed.
- RFP has not yet published a QA Training Plan or the related descriptions and schedules.
- Ten plant-level regulatory groups have been identified. Group charters are being written to define each group's role.
- Plant-level control systems have been identified and organizational responsibilities for their development assigned.

RFP has taken the first steps toward implementing a plant-wide ANSI/ASME NQA-1 based Non-Weapons QA Program. RFP tracking of progress on this item has been transferred from the TSA tracking system to the Site Self Improvement Program. This quality program is far from implemented, and most of the Non-Weapons QA activities are in preliminary status.

This concern should remain OPEN.

OA.6 DOCUMENT CONTROL

CONCERN R-151 (OA.6-1) [CATEGORY III]: RI LACKS A COMPLETE AND EFFECTIVE SITE-WIDE DOCUMENT CONTROL SYSTEM.

Evaluation

- This concern is similar to Recommendation R-5 (OA.6-1) for Bldg. 707.
- A long-term solution to the site-wide document control program is being developed as part of the Non-Weapons QA Program.
- The plant-level document control system is being developed by Contracts Administration via the Plant Publications Administration Manual (PPAM), last revised on October 31, 1988.
- Work instructions and other documents internal to individual directorates are to be controlled in accordance with the Non-Weapons Quality Manual, through a document control section within each directorate's QA Program.

- The Contracts Administration Group's effort includes a system to control the flow down of requirements, guidance for lower level document control systems, and the strategies for upgrading the plant-level document hierarchy.
- Both the Master Requirements Index and the PPAM were revised to provide a plant-wide document control system which was in compliance with the intent of DOE 5700.6B and NQA-1. The revised specifications contained in the PPAM will take approximately two years to fully implement and a program plan for achieving plant-wide compliance is being drafted.
- Document hierarchies are now required for all publications, as specified in the PPAM. All new and/or revised publications in Level 1 (Policies), Level 2 (Requirement Manuals), and Level 3 (Standard Operating Procedures) are required to be in compliance starting December 1, 1988. As soon as a publication inventory of all categories of Level 4 (Working Instructions) is completed, a Level 4 schedule for future compliance will be defined.
- A Contracts Administration Group was created comprised of three functions: correspondence control, requirements control, and publications control. Organizational representatives have been assigned and monthly team meetings are being held to clarify roles and responsibilities.
- The revised PPAM specifies that all levels of the plant document control system, including working level instructions, should be subjected to periodic reviews. Any exemptions to the periodic reviews must be approved by Contracts Administration.

This concern should remain OPEN.

CONCERN R-152 (OA.6-2) [CATEGORY III]: THE VITAL RECORDS STORAGE VAULT SYSTEM IS NOT IN FULL COMPLIANCE WITH THE DOE ORDERS, NFFA-232 AND NQA-1.

Evaluation

The specific findings that supported the concern are being addressed.

- For the classified records currently in the RFP records management system, primary records are stored separately in Bldg. 777, Vault 402A, on microfilm in an environmentally temperature- and humidity-controlled facility.
- Working copy records are stored in vaults such as those in Bldg. 881, Vault 214B. Radiographic film records are stored in Bldg. 881, Vault 246, and in Bldg. 777, Vault 402A.
- The fire loading in Bldg. 777, Room 402, has been removed.

- The only existing instance where primary and working copies of records are located in a common location is when records are being duplicated or initially filmed.
- Approximately 300 to 400 cubic feet of existing records in Bldg. 881, Vault 214B, remain to be duplicated. This backlog is being reduced as resources permit.

The definition of quality records and arrangements for their retention have not yet been addressed beyond establishment of the requirements for these items in the Non-Weapons Quality Manual.

This concern should remain OPEN.

B. OPERATIONS

OP.3 FACILITY STATUS CONTROLS

CONCERN R-153 (OP.3-1) [CATEGORY III]: THE LOCKOUT AND TAGGING PROGRAM REQUIREMENTS DO NOT COMPLY WITH ANSI Z244.1-1982, AMERICAN NATIONAL STANDARD FOR PERSONNEL PROTECTION - LOCKOUT/TAGOUT OF ENERGY SOURCES - MINIMUM SAFETY REQUIREMENTS (ESPECIALLY THE APPENDIX REGARDING "PROCEDURE INVOLVING MORE THAN ONE PERSON").

Evaluation

A substantial effort has been expended in responding to this concern. (See also Recommendation R-139 [PP.7-2] for Bldgs. 771/774.) The official RFP Lockout/Tagout (L/T) Procedure (HSE 2.08) was revised and approved on May 2, 1988, and then replaced by a second revision on September 15, 1988. RFP management did not consider either of these procedures to be completely responsive to Concern OP.3-1, or adequate with respect to ease of understanding and clarity. As a consequence, a special committee (The Support Operations Lockout/Tagout Task Force) was chartered to:

- Revise HSE 2.08 further to satisfy residual deficiencies identified by RFP staff.
- Develop all details of a training course (training rosters, video tape, schedules, etc.) on implementing the new L/T procedure.
- Develop a schedule for completion of the project.

This committee is currently functioning. A new draft procedure was prepared, issued (October 20, 1988) for staff review, and revised once to incorporate reviewers' comments. The latest revision (November 16, 1988) is now circulating for comment. The most recent (October 28, 1988) action plan forecasts implementation of the new L/T procedure by February 24, 1989.

This concern should remain OPEN.

OP.4 OPERATIONS STATIONS AND EQUIPMENT

CONCERN R-154 (OP.4-1) [CATEGORY III]: THE "...GENERAL AND SPECIFIC BUILDING PRACTICES PERTAINING TO PERSONNEL SAFETY AND HOUSEKEEPING PRACTICES..." (PER BUILDING MANAGEMENT, RFPM ONM 7-304, ITEM 1) ARE NOT BEING FOLLOWED.

Evaluation

Improvement in overall housekeeping has been achieved since February 1988. Implementation of the organizational system of building managers and the appointment of building support

managers have been instrumental in effecting the improvement of housekeeping in all buildings.

A Self Improvement Program (SIP) is currently being formulated to implement and maintain a formal site-wide housekeeping program and is scheduled to be activated around mid-December 1988. The proposed plan for improvement calls for:

- Assigning specific areas to teams or selected individuals,
- Performing routine tours through building areas,
- Utilizing checksheets to verify conditions in each area,
- Posting signs to promote good housekeeping practices, and
- Periodically evaluating the effectiveness of the program.

The formality of the proposed SIP has the potential for creating the requisite employee attitude to maintain an effective housekeeping program permanently.

This concern should remain OPEN.

C. MAINTENANCE

MA.2 FACILITY MATERIAL CONDITION

CONCERN R-155 (MA.2-1) [CATEGORY III]: THERE IS NO SYSTEM TO INDICATE THAT DEFICIENCIES HAVE BEEN IDENTIFIED AND ENTERED INTO THE WORK CONTROL SYSTEM.

Evaluation

RFP did not respond on a priority basis to this concern. After reviewing several other facilities, RI made a decision not to initiate a system to identify deficiencies. In the case of equipment which needs to be tagged out for safety reasons, such tagout was to be incorporated into the new Lockout/Tagout (Danger Tag) system, where a safety deficiency would be tagged using a Danger Tag, but that did not treat the issue underlying this concern.

The underlying issue of this concern is to provide a method to identify deficient equipment such as a pump or furnace that has failed, to avoid having several different persons noting the problem and initiating multiple work requests. Danger tagging equipment which may cause injury if operated is a separate issue within the scope of the Danger Tag system.

Because it was apparent that RFP personnel did not fully understand the need for a system to identify deficiencies, the merits of this deficiency identification system were emphasized with key RI maintenance personnel. The use of such a system was discussed for such specific equipment as a pump or furnace, as discussed above, and also for a deficient "run or stop" indicating lamp holder which failed to indicate the operating status of an item of equipment (to clearly indicate that the equipment is not functioning as designed).

This concern should remain OPEN.

MA.3 CONDUCT OF MAINTENANCE

CONCERN R-156 (MA.3-1) [CATEGORY III]: THERE IS NO PROCESS THAT ENSURES THE QUALITY OF MAINTENANCE WORK, CLEANLINESS, CLEANUP, TESTING, AND RESTORATION OF NORMAL FACILITY CONFIGURATION. SEE ALSO CONCERN R-153 (OP.3-1) FOR BLDGS. 776/777.

Evaluation

Several aspects of this concern are addressed by the use of "A" level packages for control of the work. The "A" level package includes detailed work instructions, with better control of the work through the use of hold points and completion documentation. Conceptually, the method is valid, but review of the actual work documentation for numerous jobs in progress or to be performed revealed the following:

- In many cases, the "A" level packages were not detailed and did not provide the desired job control.
- "A" level packages for flow-through work are of a lower quality than for a regularly scheduled backlog job.
- In some flow-through or emergency work, "A" level packages are not used. In most cases, no detailed instruction is provided beyond the work order authorizing the repair.

Several aspects of this concern have been successfully addressed; namely, the cleanup of work sites and maintenance shops. In most cases, significant improvement in job cleanliness was observed. Shop and work areas in particular have improved. Also, a calibration system has been implemented for torque wrenches. An inspection system has been implemented for hoisting and rigging equipment. On the other hand, when a preventive maintenance item is being worked, for example, a relief valve recalibration, there is no established standard for control of system cleanliness or thread sealants. Further effort is required to address the following elements of this concern:

- The implementation of proper work standards,
- Proper maintenance training,
- Quality control,
- Job separation, job performance and documentation, and
- Post-maintenance testing and close-out.

These elements are being treated in some cases, but the lack of fundamentals such as proper standards, training, and work control make it impossible to ensure quality work.

This concern should remain OPEN.

MA.5 MAINTENANCE FACILITIES, EQUIPMENT, AND MATERIAL

CONCERN R-157 (MA.5-1) [CATEGORY III]: THERE IS NO SYSTEM FOR INDEPENDENT RECEIPT INSPECTION COMMENSURATE WITH THE QUALITY OR SAFETY LEVEL OF EQUIPMENT AND MATERIAL ORDERS (SEE ALSO CONCERN R-156 [MA.3-1] FOR BLDGS. 776/777).

Evaluation

A formalized, comprehensive QA program covering all non-weapons materials is not in place at RFP. Three separate procurement control systems exist at RFP, providing partial QA coverage for procured non-weapons items:

- The WR procurement control system pertains to some safety-related non-weapons items (e.g., surgeons gloves, glovebox gloves, high efficiency particulate air [HEPA] filters).
- Construction Management and Inspection performs some receipt inspection in support of the facilities QA program.
- The Plutonium Recovery Project (PRP) Group has established a QA program to cover equipment related to that project.

Near-term actions include establishment of a plan for review and control of spare parts inventory, and all procurement QA activities are to be consolidated into one group within Quality Engineering and Control (QE&C), beginning in December 1988.

This concern should remain OPEN.

CONCERN R-158 (MA.5-2) [CATEGORY III]: THERE IS NO SYSTEM TO IDENTIFY MATERIAL OR EQUIPMENT WHICH DOES NOT CONFORM WITH STANDARDS TO PREVENT ITS UNCONTROLLED USE IN THE PLANT.

Evaluation

Two existing procedures (CMIC-21 and FAC 24) define a non-conformance reporting system applied only to materials, equipment and maintenance jobs received or inspected by Construction Management and Inspection. The Procurement Quality Engineering Group has a work instruction that describes a non-conformance disposition procedure for items received through the WR procurement control system.

Interim corrective action to date includes a job-site inspection of valves, pipes, and fittings for proper vendor certification before installation. However, this is not a receipt inspection. Long-term, permanent solutions are planned as part of the implementation of an integrated control system for purchased items and services, and controls for non-conforming items. These are being accomplished as part of the Non-Weapons QA (NWQA) Program.

This concern should remain OPEN.

MA.6 WORK CONTROL SYSTEM

CONCERN R-159 (MA.6-1) [CATEGORY III]: THERE IS NO DETAILED WORK SCHEDULING SYSTEM WHICH PROVIDES, ON A TIME-LINE BASIS, EACH JOB TO BE WORKED WITH ASSIGNED CRAFTS AND OTHER SUPPORT GROUPS.

Evaluation

Although an effort has been made to improve the scheduling system in Bldgs. 776/777, including the assignment of a scheduler, the scheduling effort is not functioning effectively. Assigned

scheduling personnel are not yet involved in the detailed scheduling of crafts at all levels in the process.

Maintenance scheduling in Bldgs. 776/777 does not make use of a detailed, integrated schedule which treats not only the crafts, but support and production groups. No overall, detailed schedule is established which includes prerequisites for a job such as preparation of systems by production or utilities, radiation and contamination surveys, and other support such as obtaining final Industrial Hygiene and ES&H approvals. The Building Manager does not hold a "plan-of-the-day" meeting with all the principal players to coordinate the overall building effort, including integrated maintenance. The daily maintenance planning meeting is still conducted at the time when the foremen should be making final preparations for getting crafts personnel to work.

A significant impact on maintenance scheduling is the coordination of radiological monitoring support, which controls most work. Monitors are assigned to a job but then, in many cases, are reassigned elsewhere, leaving the crafts personnel to find other work. The indiscriminate rescheduling and undependable nature of radiological monitor support is seriously impacting the maintenance effort. The scheduling system in use has an insufficient framework to support and control all the factors necessary to prepare for and commence a job properly.

With the present scheduling system, very few of the crafts personnel start work in a timely manner. A minimum 20 to 30 minute delay was observed on a routine basis. Further, there is a precedent established for the maintenance foremen to start final job preparation at about the time the job should be starting. The time required to obtain a safe work permit (radiological work permit) has been a large part of the delay, primarily because of the interpretation of the procedure governing the use of the permit, which has now been changed to allow preparation of the permit up to 24 hours before the job starts.

Workers and management in Bldgs. 776/777 are not aligned to provide effective support to maintenance. The Building Manager is not controlling the overall operation. For the most part, the Building Manager is not the central figure who drives all the issues through the principal players to one, common, integrated end. Several of the groups such as Radiological Monitoring and ES&H (Building Safety Representative) are not supporting the integrated schedule. In the cases observed, these entities were routinely holding up the start of, or stopping, maintenance jobs without recognition of the need for a team effort to support the needs of building management.

A major issue remains with the handling of "flow-through" or emergency work. This work is a necessary part of the support for the maintenance effort, but it represents from 30 to 100 percent of the crafts effort each day, depending on the craft. Therefore, the scheduled jobs represent the balance, which varies

from zero to 70 percent. With this much work bypassing the scheduling system, the effectiveness of maintenance scheduling is seriously impeded. No effort is made to schedule all jobs for all craftpersons.

This concern should remain OPEN.

MA.7 PROCEDURES AND DOCUMENTATION

CONCERN R-160 (MA.7-1) [CATEGORY III]: THE SYSTEMS TO ASSURE PROPER PREPARATION OF PARTS AND MATERIALS AND TO ASSURE APPROPRIATELY DETAILED WORK INSTRUCTIONS FOR EACH MAINTENANCE TASK ARE INADEQUATE.

Evaluation

The action plan established for this concern by RI was completed. It included:

- Rewriting procedures for preparing more detailed work instructions for each maintenance task,
- Providing a system to ensure that the maintenance manuals are up to date,
- Creating a system for controlling wire disconnects and interlocks,
- Reviewing maintenance library needs, and
- Improving the prekitting system to control material and material movement and to collect and distribute the proper materials at the proper time for maintenance authorization jobs.

The action plan, although completed, did not achieve the desired results. The preparation of parts and materials shows improvement, particularly due to increased involvement of Facilities Engineering and the RFP Procurement Department when material is ordered. The quality of work instruction has improved but not to a sufficient level to support quality work. The use of more "A" level planning packages is positive, but the quality of the packages is still lacking; e.g., numerous package reviews revealed shortcomings including lack of hold points, lack of scheduling or controlling prerequisites, and lack of detail in the instructions. In one case, the "A" level planning package did not refer to the preventive maintenance procedure, nor did it include as much detail as the preventive maintenance procedure. No use of the newly established system for controlling wire disconnects and interlocks was observed.

This concern should remain OPEN.

D. TRAINING AND CERTIFICATION

TC.1 ORGANIZATION AND ADMINISTRATION

CONCERN R-161 (TC.1-1) [CATEGORY III]: AN APPROPRIATE RESOURCE MIX TO MORE QUICKLY IMPLEMENT AND EFFECTIVELY MAINTAIN THE NEW QUALIFICATION STANDARD TRAINING PROGRAMS, AND AT THE SAME TIME BE ABLE TO MAINTAIN EXISTING PROGRAMS IS NEEDED.

Evaluation

See Evaluation for Recommendation R-99 (TC.3-4) for Bldgs. 771/774.

This concern should be CLOSED.

TC.3 NUCLEAR FACILITY OPERATIONS OTHER THAN REACTORS

CONCERN R-162 (TC.3-1) [CATEGORY III]: ALTERNATIVE STRATEGIES ARE NEEDED THAT WOULD LESSEN THE CURRENT IMPACT OF LESS QUALIFIED PERSONNEL "BIDDING" INTO FISSILE MATERIAL HANDLER CLASSIFICATIONS.

Evaluation

See Evaluation for Recommendation R-11 (TC.3-1) for Bldg. 707.

This concern should remain OPEN.

CONCERN R-163 (TC.3-2) [CATEGORY III]: DOE ANNUAL TRAINING AND EXAMINATION REQUIREMENTS FOR EMERGENCY AND ABNORMAL CONDITIONS ARE NOT INCORPORATED INTO FISSILE MATERIAL HANDLER TRAINING PROGRAMS AND OTHER PROGRESSION/ CERTIFICATION PROGRAMS AS REQUIRED.

Evaluation

See Evaluation for Recommendation R-97 (TC.3-2) for Bldgs. 771/774.

This concern should remain OPEN.

CONCERN R-164 (TC.3-3) [CATEGORY III]: THE CERTIFICATION PROGRAM FOR FOREMEN AND SUPERVISORS DOES NOT MEET THE REQUIREMENTS OF DOE 5480.5.

Evaluation

See Evaluation for Recommendation R-13 (TC.3-3) for Bldg. 707.

This concern should remain OPEN.

TC.4 PERSONNEL PROTECTION

CONCERN R-165 (TC.4-1) [CATEGORY III]: TRAINING DELIVERY DATES FOR THE NEW RADIATION WORKER TRAINING PROGRAM ARE TOO LAX.

Evaluation

The radiation worker training program has improved. There are separate programs for radiation workers and radiation worker supervisors. Both programs have added additional material addressing dose relationships, the biological hazards associated with gamma/neutron exposures, and internal hazards associated with poor contamination control practices, as well as information concerning the protection provided by building design, gloveboxes, hoods, clothing, respirators, supplied breathing air, and other protective equipment/features.

All RI Perimeter Security Zone (PSZ) workers and supervisors (1,600 people) have completed the classroom portion of this training program. RI non-PSZ workers and construction workers (J. A. Jones) who work inside the PSZ are scheduled to complete the classroom training program by June 1989. The on-the-job training portion of the new radiation worker training program is scheduled to begin in December 1988.

This concern should remain OPEN.

E. AUXILIARY SYSTEMS

AX.1 EFFLUENT HOLDUP AND TREATMENT

CONCERN R-166 (AX.1-1) [CATEGORY III]: READILY USABLE INSTRUCTIONS TO OPERATORS ON HOW TO SAFELY COMBINE CHEMICALS USED IN BLDGS. 776/777 ARE NOT AVAILABLE.

Evaluation

A building committee consisting of supervisory representatives for each major operating area of Bldgs. 776/777 reviewed the corrective action required to address this concern. It was determined that Operational Safety Analyses (OSAs) would be changed, where necessary, to assure personnel are appropriately warned of chemical mixture control requirements. This resulted in addenda to six OSAs. Identified procedures in Bldg. 777 require mixing three compounds compatible and miscible in all proportions, and addenda were not added to the OSAs for such operations. Chemical laboratory operations were not included in this review, as they are subject to special considerations in the development of laboratory procedures and technician training.

RFP has identified the need to implement a plant-wide review to address this concern in all areas where chemicals are handled. Facility inspections did not reveal other areas where OSAs or related standard operating procedures were inadequate; however, implementation of a systematic plant-wide review is appropriate and reflective of responsible management action.

This concern should be CLOSED.

AX.2 SOLID WASTES

CONCERN R-167 (AX.2-1) [CATEGORY III]: THE 1992-1993 TIME FRAME TO REACH "CURRENT" STATUS FOR THE "ACTIONS TO REDUCE DRUM BACKLOG" PLAN FOR REMOVAL OF THE BACKLOG OF SCRAP STORED IN BLDGS. 776/777 IS EXCESSIVE.

Evaluation

The backlog of stored drums of residue has been the subject of several "drum backlog campaigns." Building and incinerator "down time," as well as the lack of tested recovery processes, have impeded reduction of the backlog, which is estimated to be approximately 5,000 drums.

The Safety Review Team conducted a multi-disciplinary review of the drums, the storage areas, and the safety aspects of the storage and operation. This review encompassed applicable safety technical areas.

Aside from the housekeeping aesthetics associated with the large backlog of stored residue, evidence indicates that this operation is conducted safely.

However, RFP must continue to meet all existing safety requirements. These include, but are not necessarily limited to: fire prevention and protection; strict drum life criteria and related inspections; radiation protection of personnel, and application of ALARA and criticality safety; and industrial and occupational safety.

This operation and its scheduling is a matter of production priorities, and, as long as safe practices are followed, does not constitute a safety concern requiring immediate attention. This item should be reviewed again after the "drum storage criteria" are implemented. Implementation of "drum storage criteria," (see AX.3-1 for Bldgs. 776/777) is scheduled for March 1989.

This concern should remain OPEN.

AX.3 STORAGE AND HANDLING OF FISSILE MATERIAL

RECOMMENDATION R-168 (AX.3-1) [CATEGORY III]: CRITERIA AND PROCEDURES FOR DETERMINING WHEN, WHERE, AND FOR HOW LONG DRUMS MAY BE STORED NEED TO BE ESTABLISHED.

Evaluation

As of October 31, 1988, there were a total of 4,128 residue drums and 615 mixed and low level waste drums stored in Bldgs. 371 and 776/777.

Storage space is at a premium, and some mixed and low level waste drums are stored on the second floor of Bldg. 776, Rooms 201 and 238.

The "Action Plan for Bringing RFP Drum Storage in Compliance with DOE Orders 5480.3 and 5480.5," provides a review for compliance with DOE 5480.3 and 5480.5. In comparing RFP procedures with DOE 5480.5, Paragraph 13b, "Operating Requirements for Storage," two areas of possible noncompliance were noted. The lack of specific inspection and drum criteria do not meet the requirements of Sections of 13b(17), "Criteria and Inspection of Containers" and 13b(18), "Provisions for Heat Removal" of DOE 5480.3.

The action plan indicates an implementation date of March 1989.

· This concern should remain OPEN.

AX.4 VENTILATION SYSTEMS

CONCERN R-169 (AX.4-1) [CATEGORY III]: THERE IS INSUFFICIENT VENTILATION IN EACH ROOM TO ASSURE THAT ALL AREAS HAVE A SAFE ATMOSPHERE. AIR SAMPLING DOES NOT COMPLY WITH ANSI STANDARDS N13.1-1969 AND N13.10-1974.

Evaluation

A ventilation study has been conducted by RFP for Bldgs. 776/777 to determine basic ventilation system capacities and flow patterns for the various areas. As a result of the study, a number of deficiencies and related corrective actions have been identified. RI is planning to correct these deficiencies according to a project plan during calendar year 1989.

This concern should remain OPEN.

CONCERN R-170 (AX.4-2) [CATEGORY III]: THE STORAGE OF HAZARDOUS CHEMICALS ON THE SECOND FLOOR OF BLDGS. 776/777 NEEDS SAFETY REVIEW.

Evaluation

This concern focused on a carbon tetrachloride (CCl_4) tank located on the second floor of Bldgs. 776/777 in close proximity to building air distribution systems. A project has been initiated that will convert the CCl_4 system from a gravity feed to a pressurized (low pressure) system with flow control from a new outside storage location direct to the process areas. This will eliminate the need for the second floor gravity feed storage tank. The new storage location will be isolated from recirculating building systems, thus preventing building distribution of accidental material releases. The revised system will also result in a reduction of exposed pipe lengths, further reducing the potential for accidental material releases. This project is scheduled for completion by January 1989.

Interim measures were taken to contain the potential spill area of the CCl_4 to a minimally acceptable limit. Reportably, calculations of vaporization rates and permissible airborne concentration levels confirmed the interim measures provided acceptable temporary safety control. A review of the calculations was not completed in the course of this review.

RFP has reportably evaluated chemical and hazardous waste storage and satellite collection points of plant buildings for similar potential concerns. Facility inspection did not reveal other locations where accidental release of process chemicals or waste materials could readily enter the building air distribution systems. A plant-wide review is appropriate and reflective of responsible management action.

This concern should be CLOSED.

CONCERN R-171 (AX.4-3) [CATEGORY III]: THERE ARE NO POSITIVE NON-MECHANICAL PRESSURE RELIEF DEVICES ON INERT RECIRCULATING ATMOSPHERE GLOVEBOXES THAT CAN BE ISOLATED FROM THE CONVEYOR BY A DOOR.

Evaluation

A survey of RFP needs for non-mechanical pressure relief protection has been completed. A design has been finalized for a properly-sized relief system (Bubbler).

The first of the new non-mechanical over-pressure devices is being installed on a glovebox in Module C of Bldg. 707. This device is to be evaluated to establish the standard for the plant.

After an operational evaluation of the device, a plan will be formulated to provide such relief protection where it is needed site-wide.

This concern should remain OPEN.

AX.7 ENGINEERED SAFETY SYSTEMS

CONCERN R-172 (AX.7-1) [CATEGORY III]: OPERATING CONDITIONS IN BLDGS. 776/777 ARE NOT IN COMPLIANCE WITH THE REQUIREMENTS OF CHAPTER SEVEN OF THE FINAL SAFETY ANALYSIS REPORT FOR BUILDINGS 776/777.

Evaluation

See Evaluation for Recommendation R-17 (AX.7-1) for Bldg. 707

This concern should remain OPEN.

CONCERN R-173 (AX.7-2) [CATEGORY III]: ALL ENGINEERED SAFETY SYSTEMS THAT PROVIDE PROTECTION TO THE FACILITY ARE NOT IDENTIFIED.

Evaluation

See Evaluation for Recommendation R-32 (TS.4-1) for Bldg. 707.

This concern should be CLOSED.

F. EMERGENCY READINESS

ER.1 ORGANIZATION AND ADMINISTRATION

CONCERN R-174 (ER.1-1) [CATEGORY III]: EMERGENCY MANAGEMENT HAS NO METHOD TO TRACK AND VERIFY COMPLETION OF IDENTIFIED EMERGENCY RESPONSE DEFICIENCIES AND IMPROVEMENT ITEMS.

Evaluation

A computerized system for tracking emergency exercise deficiencies and improvement items was implemented in March 1988. The unresolved findings from all 1987 exercises were initially entered. All deficiencies and corrective actions for 1988 also have been entered. Each record includes a description of the deficiency or problem as identified in the exercise critique, the individual assigned responsibility for corrective action, a proposed resolution or action, the date the problem was resolved, and the name of the individual resolving it. A designated member of the emergency preparedness staff then verifies that the corrective action has been completed, closes out the item, and enters this information in the database. A hard copy permanent record is made of closed-out items before they are deleted from the system.

Records of exercise deficiencies entered in the computerized tracking system were examined. Comparisons with written critique reports were made and it was verified that deficiencies identified in exercises were being entered into the tracking system. All items considered closed had been verified by the emergency preparedness staff. Currently, there are 63 items in the data-base, 23 of which have been resolved but not formally closed. Responsibility for data input and corrective action validation has been assigned to an individual who has received appropriate training.

This concern should be CLOSED.

ER.3 EMERGENCY RESPONSE TRAINING

CONCERN R-175 (ER.3-1) [CATEGORY III]: INITIAL TRAINING OF NEW EMERGENCY CADRE MEMBERS AND ANNUAL TRAINING OF ALL CADRE MEMBERS ARE NOT UNIFORMLY PROVIDED, NOR ARE THEY DOCUMENTED.

Evaluation

The emergency preparedness staff has accomplished a number of objectives to improve their training program. First, an Emergency Preparedness Education and Training Outline and Plan was produced to define the training elements and resources necessary to perform initial training and keep the emergency cadre proficient in their respective duties. Emergency job descriptions with specific training requirements were developed for all Emergency Operations Center (EOC) personnel. An

emergency preparedness training database was developed to monitor and document training on an individual basis. Long-term plans to extend this program to all emergency responders (i.e., building managers, emergency satellite staff, etc.) have been documented and training has begun.

With the completion of a new EOC, the emergency preparedness staff has taken advantage of new training opportunities. A training coordinator from the central training staff was obtained and provided a comprehensive program with high quality training materials and course outlines. EOC cadre personnel were required to complete specific training before the new EOC was considered operational. The training records reviewed indicated that 85 to 90 percent of all cadre personnel attended this training. Continuing training is planned and on-going sessions are being held. Two such sessions were reviewed, and the training was found to be acceptable.

This concern should be CLOSED.

CONCERN R-176 (ER.3-2) [CATEGORY III]: EMERGENCY EXERCISES AND DRILLS THAT ARE CHALLENGING AND EFFECTIVE LEARNING TOOLS ARE NOT BEING CONDUCTED.

Evaluation

Exercises and drills are routinely conducted at RFP. During 1988, seven major exercises and approximately 33 building emergency drills were held. Exercise scenarios are developed by the Emergency Planning Coordinator and a team of "trusted agents" and then reviewed and approved by the Emergency Planning Review Committee.

An emergency exercise was conducted and observed on November 15, 1988. The event involved a simulated fire and contaminated injured person in Bldg. 776. Many facets of the exercise went well including on-scene command, lack of pre-staging, and the interface between safety and security. Deficiencies were noted in various areas. The Fire Department had trouble finding the simulated fire and determining its size and duration. Radiation contamination control was poor at the scene for those involved with the injured person, compounded by a lack of health physics data. Decontamination and treatment at the medical facility were excellent, but medical personnel didn't know when to stop because a controller was not present. EOC decision making was not evident due to the simple nature of the event and the lack of hard data. Many of these deficiencies were repetitive from previous exercises performed for other TSA teams. Most of these deficiencies are attributable to the lack of a well-developed and detailed exercise package and a lack of technical experts to control the exercise.

This concern should remain OPEN.

ER.4 EMERGENCY FACILITIES, EQUIPMENT, AND RESOURCES

CONCERN R-177 (ER.4-1) [CATEGORY III]: ADEQUATE BACKUP FACILITIES FOR THE EMERGENCY OPERATIONS CENTER AND ALL SUPPORT SATELLITES HAVE NOT BEEN IDENTIFIED.

Evaluation

A facility at the east end of the site has been chosen as an alternate location for the EOC and support satellites. This facility, Bldg. 850, will house all emergency response groups, once modifications are made and new equipment is installed. An implementation plan has been developed by the Emergency Preparedness Manager with a date of April 15, 1989, set for completion and full operability. This date allows sufficient time for systems testing and training of emergency cadre personnel. A review of documented progress reports revealed that the planned schedule is being met.

This concern should remain OPEN.

ER.5 EMERGENCY ASSESSMENT AND NOTIFICATION

CONCERN R-178 (ER.5-1) [CATEGORY III]: CONTRACTOR EMERGENCY CLASSIFICATION CATEGORIES ARE INCONSISTENT WITH DOE GUIDELINES, AND THIS MAY RESULT IN CONFUSION WHEN COMMUNICATING WITH DOE.

Evaluation

See Evaluation for Recommendation R-106 (ER.2-3) for Bldgs. 771/774.

This concern should be CLOSED.

ER.6 PERSONNEL PROTECTION

CONCERN R-179 (ER.6-1) [CATEGORY II]: THE PERSONNEL ACCOUNTABILITY SYSTEM DOES NOT PROVIDE POSITIVE CONTROL OF CASUAL BUILDING OCCUPANTS.

Evaluation

In February 1988, a manual accountability system was implemented, requiring each person who is not a building resident to sign a register upon entry and exit. Building managers were given the responsibility and authority to verify compliance. In an emergency, this register is used by the Emergency Director in establishing accountability.

A computer-based register system employing bar code technology was introduced in July 1988. After testing, it was judged to be inadequate and the manual system was restored. The computer-based system, known as the Personnel Emergency Logging System or

PELS, was upgraded and re-introduced to high hazard facilities in October 1988. PELS has since been extended to all production facilities and is used for emergency accountability.

A criticality exercise conducted on November 29, 1988, at Bldg. 991 demonstrated that accountability of all personnel, visitors and building residents, can be accomplished in a timely and accurate fashion. Manual systems accounted for all but one employee within six minutes. The PELS system accounted for that one employee (he had not reported to the building that day) and verified accountability for all casual building occupants.

This concern should be CLOSED.

G. TECHNICAL SUPPORT

TS.1 FACILITY MODIFICATIONS

CONCERN R-180 (TS.1-1) [CATEGORY III]: THERE IS NO SYSTEM FOR INDEPENDENT AUDIT OF FACILITIES MODIFICATION PROJECTS THAT SPAN THE RANGE FROM PROJECT INITIATION TO FINAL PROJECT CLOSE-OUT.

Evaluation

Facilities Engineering and Construction bears the primary responsibilities for control of facility modification projects. These responsibilities are described in the following policies:

- RFPM PLB 6-102, "Additions or Modifications to Rocky Flats Plant," April 15, 1983;
- RFPM PLB 6-101, "Work Orders, Preventive Maintenance Orders and Construction Change Orders," September 1, 1987;
- RFPM ENS 3-011, "Configuration Control," August 15, 1983; and
- RFPM ENS 3-100, "Documentation and Drawings - Procured and On-site Developed Equipment and Systems," October 7, 1988. The Facilities Engineering and Project Management Manual, (i.e., Procedures DES-3, "Design Review," FAC-29, "Systems Operational Testing and Acceptance Procedure," and FAC-20, "Facilities and Configuration Management") also provide direction regarding control of activities related to facilities modification.

Support Operations QA has the responsibility for the support operations self-appraisal program, described in a procedure entitled "Support Operations Self-Appraisal Program." One individual is assigned as a full-time appraiser. This system provides for independent review of facilities modification projects from project initiation to close-out.

This concern should be CLOSED.

TS.7 PACKAGING AND TRANSPORTATION OF HAZARDOUS MATERIALS

CONCERN R-181 (TS.7-1) [CATEGORY III]: THE (PLANT-WIDE) SYSTEMS AND PROCEDURES FOR DRUM HANDLING, MARKING, STORAGE AND LOADING/UNLOADING, AND FOR INDEPENDENT AUDITS AND QUALITY ASSURANCE, DO NOT COMPLY WITH DOE 5480.3, DOE 5480.5, AND ANSI STANDARD NQA-1-1986 [SEE ALSO CONCERNS R-147 (OA.1-2), R-150 (OA.4-2), R-189 (FR.4-1), R-196 (RP.3-1), R-167 (AX.2-1), AND R-168 (AX.3-1)].

Evaluation

Progress is being made toward upgrading systems and procedures to meet current requirements. The plant-wide system and procedures for drum handling, marking, and (truck) loading/unloading are contained in the On-site Transportation of Radioactive and Other Hazardous Materials Manual (December 1985). This Manual is deficient because, in some instances, it lacks sufficient detail to be useful to an operator and does not have plant-wide applicability. A revision of the Manual has been prepared; review of the draft indicates that prior TSA concerns are being addressed. The revision is scheduled to be implemented on January 15, 1989.

The Quality Program Plan - Material Packaging, Shipping, and Transportation (November 1982), last revised in July 1983, provides for plant-wide evaluation and periodic verification of compliance. It does not meet the requirements of DOE 5480.3 and 5700.6B; a revision is planned and scheduled for completion in March 1989.

OSHA provides some criteria for drum storage safety; however, there is no plant-wide policy, procedure, criteria, or other guidance regarding drum storage safety. Some individual buildings, however, have developed drum storage procedures, e.g., "NDA and MC Drum Handling and Drum Storage Area Operations," CO-6077, dated October 15, 1988, effective October 24, 1988 (see discussion for Concern R-168 [AX.3-1] for Bldgs. 776/777).

Specifications for new packaging procurement are prepared by Package Engineering (in Program Management) for War Reserve (WR) materials, by Waste Operations for waste materials, and by other user organizations for their materials. RFP management has not addressed the lack of central control of package design activities with regard to compliance with DOE/DOT requirements.

This concern should remain OPEN.

CONCERN R-182 (TS.7-2) [CATEGORY III] : THE SAFETY IMPLICATIONS OF HYDROGEN GAS GENERATION IN ALL DRUMS AND DRUM STORAGE AREAS HAVE NOT BEEN REVIEWED IN ORDER TO DETERMINE THE MAGNITUDE OF THE PROBLEM, AND DETERMINE WHETHER CHANGES IN THE CURRENT PROCEDURES ARE REQUIRED (SEE ALSO EVALUATION FOR CONCERN R-168 [AX.3-1] FOR BLDGS. 776/777).

Evaluation

RFP has prepared a probabilistic risk assessment (PRA), dated June 8, 1988, which addresses risks from hydrogen generation in drums. The PRA concludes that there are no undue risks to workers or the public, and that risks from these scenarios are negligible compared with other operations and hazards.

Although RFP considers the risk to be negligible, several recommendations were proposed in the analysis. One recommendation resulting from the analysis has been implemented. It concerns strict compliance with respirator usage during the opening of the drums or during the conduct of any activity that might lead to a release of material from a pressurized drum ("NDA and MC Drum Handling and Drum Storage Area Operations," CO-6077, dated October 15, 1988, effective October 24, 1988). Another recommendation to vent the drums by using breathable gaskets or vent (bung) filters (WO-4034), will not be fully implemented until January 1989 because of an inadequate supply of filters.

A subsequent assessment, "Hydrogen Generation/Concentration in Selected Storage Areas in Building 776," (November 15, 1988) indicated that the hydrogen concentration in storage areas will remain below the lower flammability limit.

This concern should remain OPEN.

CONCERN R-183 (TS.7-3) [Category III]: THERE IS NO SAFETY ANALYSIS OF THE PRESENT SYSTEM FOR DRUM MOVEMENT INTO AND OUT OF THE BASEMENT OF ROOM 127 IN BLDG. 776.

Evaluation

RFP has prepared a PRA, "Safety Analysis of Drum Movement In and Out of Room 127 (Basement) - Building 776" (May 2, 1988). The PRA concludes that this operation causes no undue risk to workers or the public.

Several recommendations were proposed and the following have been implemented:

- The drum hoist has been modified to include a platform on which the drum will be placed, thereby providing redundant support for the drum.
- All drums have been placed on metal pallets to reduce the possibility of exposure to water seepage.
- An inspection of 100 percent of the drums revealed some with corrosion; these were checked for structural activity, scraped, and painted.
- A work order (to seal known water seepage into the room) has been initiated.

This concern should be CLOSED.

H. SECURITY/SAFETY INTERFACE

No concerns were indicated in this safety technical area during the January/February 1988 TSA of Bldgs. 776/777.

I. EXPERIMENTAL ACTIVITIES

EA.3 EXPERIMENT CATEGORIES

CONCERN R-184 (EA.3-1) [CATEGORY III]: THE PROTOCOL FOR REVIEW, APPROVAL, AND AUTHORIZATION OF EXPERIMENTAL TESTS PERFORMED IN PROCESSING FACILITIES DOES NOT, IN ALL CASES, REQUIRE DOCUMENTED, FORMAL APPROVAL AND AUTHORIZATION.

Evaluation

This concern has been addressed by RI management through the issuance of a new standard procedure HSE 2.09, "Use of Production Equipment for Development Tests or Experiments," June 20, 1988. This procedure was originally applicable only to plutonium production equipment, but after its successful implementation in plutonium facilities, it was extended to all RFP production facilities as prescribed in a letter, dated November 28, 1988. This procedure specifies the safety review and approval requirements for utilizing production equipment for development tests and requires completion of a standard form documenting the approvals.

The new procedure requires that the existing Operational Safety Analysis (OSA) be reviewed by both the requestor and the custodian, and either that they agree the experiment meets all requirements of the existing OSA, or that appropriate revisions be made prior to approval. Appropriately, the expiration date of approved release forms cannot be later than the required review date of the OSA, thus coordinating with annual review requirements for OSAs.

Several HSE 2.09 approval forms were reviewed for each of the plutonium production areas and for some of the other production areas, and the responsible requestors and custodians were interviewed. The review revealed the procedure had been effectively implemented and the required, properly completed documentation was on file. The persons interviewed stated that they believed this new procedure was beneficial and not cumbersome.

This concern should be CLOSED.

J. FACILITY SAFETY REVIEW

FR.1 SAFETY REVIEW COMMITTEE

CONCERN R-185 (FR.1-1) [CATEGORY III]: NEW SAFETY COMMITTEES HAVE NOT BEEN FORMALLY ESTABLISHED AND EXISTING COMMITTEE CHARTERS ARE OUT OF DATE.

Evaluation

A comprehensive system of safety review committees has been established. The committees have explicit charters and defined responsibilities. The charters for the committees staffed by RFP personnel have been documented in the Rocky Flats Organization Manual with individually stated policy, scope, responsibility, specific responsibility, and action required. Committee appointment responsibility, reporting relationships, and accountability have also been defined; and lists of required representatives for each committee have been specified in their charters.

The committees and reporting relationships are as follows

Reporting to the President, RFP:

- Safety Oversight Panel
- Safety Advisory Overview Group
- Executive Safety Committee
- Executive Safety Review Board
- Nuclear Criticality Safety Committee.

Reporting to the Director of HS&E:

- Special Materials Review Committee
- Joint Company/Union Safety Committee
- Best Management Practices/Spill Prevention and Control Committee
- Environmental/Risk Analysis Committee
- Health Physics/Industrial Hygiene Committee.

Reporting to the Controller:

- On-Site Transportation Committee.

Reporting to the Director of Safeguards and Security:

- Accident and Fire Prevention Committee.

The formal charters are dated October 24, 1988, although some of the committees have been operating with the most recent versions of the charters since early 1988.

Some changes in the committee responsibilities can be expected as more experience is gained. As an example, plans to formally discontinue the Special Materials Review Committee were announced in a letter, CSSM.15, dated November 11, 1988. An HS&E Manual chapter detailing this authorization is planned to be completed by December 22, 1988.

Other changes over time are expected as improvements to the committees' structures are made.

This concern should be CLOSED.

CONCERN R-186 (FR.1-2) [CATEGORY III]: STATED ROCKWELL INTERNATIONAL POLICY THAT SAFETY COMMITTEES ARE TO BE ADVISORY TO MANAGEMENT IS NOT BEING COMPLIED WITH.

Evaluation

The recently completed restructuring of the safety committees resulted in a comprehensive review system having well-defined charters and reporting requirements. All of the committees are advisory to RFP management. Specific reporting assignments for each committee have been included in the charters. Minutes of committee meetings have specifically been reviewed and interviews conducted with committee chairpersons to verify that committee functions have been advisory to management.

This concern should be CLOSED.

FR.2 SAFETY REVIEW TOPICS

CONCERN R-187 (FR.2-1) [CATEGORY III]: THERE IS A LACK OF TIMELY SAFETY COMMITTEE REVIEW OF ACCIDENTS, INCIDENTS, AND UNUSUAL OCCURRENCE REPORTS TO ASSURE ROOT CAUSE ANALYSIS, CORRECTIVE ACTIONS, AND IMPLEMENTATION OF LESSONS LEARNED.

Evaluation

A significant restructuring of the safety review process at RFP has recently been completed and implemented. Significant attention to establishing a comprehensive system of committees for independent safety review resulted in the formation of a total of 12 committees and review boards. Two committees are comprised of distinguished outside experts. The other ten committees and boards are staffed with RFP personnel. It must be recognized that the usual committee operation requires more time than specific line functions require for performance of functional assignments.

To address the issue of timeliness in the review of accidents, incidents, and unusual occurrence reports, a line organization function, the Safety Review Group (SRG), was established on September 19, 1988. The SRG investigates all unplanned events with the responsibility for categorization of the event within one day and assuring consistency of subsequent safety investigations and the effective implementation of "lessons learned" from the investigations. In addition, the SRG is responsible for trending of safety-related issues at RFP. Current staffing is five permanent members, and four members matrixed from RFP on assignments from six months to

two years. Procedures are being developed for the structured handling of notifications, data base management, conduct of investigations, and report preparation.

This concern should be CLOSED.

CONCERN R-188 (FR.2-2) [CATEGORY III]: THERE IS NO INDEPENDENT SAFETY COMMITTEE REVIEWS OF EXPERIMENTS AND MAJOR MODIFICATIONS OF SAFETY SIGNIFICANCE PRIOR TO THEIR IMPLEMENTATION.

Evaluation

The independent safety review committees at RFP have been chartered to encompass the requirements of DOE 5480.5. While a significant part of the committees' functions are ex post facto reviews of activities, events, and changes, certain committee charters include prior reviews of modifications and experiments significant to safety.

The following committee charters indicate responsibilities for review of "...proposed modifications to facilities and equipment...proposed experiments or operations..." in their respective areas of functional responsibility:

- Nuclear Criticality Safety Committee
- Accident and Fire Prevention Committee
- Health Physics/Industrial Hygiene Committee.

In addition, the Environmental/Risk Analysis Committee reviews "...whether a proposed activity involves an Unreviewed Safety Question"; the On-Site Transportation Committee reviews and approves all new shipping containers, modifications and new design prior to use; and the Executive Safety Review Board reviews proposed changes to plant safety policies.

These prior reviews meet the requirements of DOE 5480.5.

This concern should be CLOSED.

FR.4 ANNUAL FACILITY SAFETY REVIEW

CONCERN R-189 (FR.4-1) [CATEGORY III]: ANNUAL AUDITS OF FACILITIES WHICH COVER ALL AREAS REQUIRED BY DOE 5480.5 ARE NOT PERFORMED.

Evaluation

Restructuring of the safety review process at RFP has been recently completed and should allow annual facility appraisals to meet the requirements of DOE 5480.5. The process of facility review is not singular under the RFP safety review system, but employs multiple reviews of each facility (building complex) by several committees that cover the scope of activity delineated in

DOE 5480.5. As an example, the Accident and Fire Prevention Committee is scheduled to audit Bldgs. 776/777 in November 1989; the Health Physics/Industrial Hygiene Safety Committee is scheduled to audit Bldgs. 776/777 in April 1989; and the Environmental/Risk Analysis Committee is scheduled to audit Bldgs. 776/777 in June 1989. Facilities considered to have significant safety requirements will be audited at least annually under this program. Other miscellaneous buildings will be addressed less frequently.

This concern should be CLOSED.

FR.5 TRIENNIAL APPRAISAL OF FACILITY SAFETY REVIEW SYSTEM

CONCERN R-190 (FR.5-1) [CATEGORY III]: THE SCOPE OF THE TRIENNIAL REVIEW DOES NOT INCLUDE ALL SAFETY DISCIPLINES, NOR DOES IT DETERMINE THE ADEQUACY AND PERFORMANCE OF THE MANAGEMENT SYSTEMS ESTABLISHED FOR INDEPENDENT SAFETY REVIEW.

Evaluation

The proposed triennial review process is contained in a draft document, FY1989 Triennial Review, Nuclear Facility Safety Plan. The draft plan is an attempt to meet the requirements of DOE 5480.5. Responsibility for the triennial review has been assigned to the Audit and Strategic Planning Manager.

As presently proposed, safety discipline manuals will be prepared for each of six areas:

- Nuclear Safety
- Industrial Hygiene
- Industrial Safety
- Environmental
- Health Physics
- Fire Protection

These manuals will serve as references and as a means to familiarize the management review team that will perform the actual triennial review. The management team is comprised of managers without direct line responsibilities for operations at RFP. Thus, the review team will not be reviewing activities under their direct supervision or responsibility.

Assuring "...that the review and appraisal system is in place and working appropriately..." is part of the primary purpose of the proposed review plan. Audit programs for each of the safety disciplines are to be prepared by the Manager of Audits and Strategic Planning, to assure a consistent review by each team member and for each safety discipline.

The proposed plan is comprehensive, addresses pertinent safety disciplines, and should address the adequacy and performance of the management systems established for independent safety review

when the review has been completed and documented. The present schedule for distribution of the triennial review is April 28, 1988.

This concern should remain OPEN.

K. NUCLEAR CRITICALITY SAFETY

CS.1 ORGANIZATION AND ADMINISTRATION

CONCERN R-191 (CS.1-1) [CATEGORY III]: THE STAFFING REQUIREMENTS FOR A NUCLEAR CRITICALITY SAFETY ORGANIZATION AS SPECIFIED IN ANSI/ANS 8.1-1983 ARE NOT BEING MET. THE ROOT CAUSE(S) OF THE DEFICIENCIES NEEDS TO BE DETERMINED WITH THE HELP OF QUALIFIED EXPERTS INDEPENDENT OF THE HS&E ORGANIZATION.

Evaluation

ANSI/ANS 8.1-1983 charges management with the responsibility of providing personnel with expertise in the interpretation of nuclear criticality safety data and knowledge of operations as it impacts nuclear criticality safety. If this resource (quantity and quality of personnel) is compromised, the Nuclear Criticality Safety Program is placed in jeopardy.

The root cause for the deficiencies underlying this concern has been traced to the turnover rate of criticality engineers. This rate for the past five years is slightly higher than the RFP average. Compensation, job conditions and job stress have been identified as causes for the turnover. Assurance that the true root causation has been found and that appropriate countermeasures have been initiated cannot be confirmed at this time.

RFP has taken action to mitigate this concern. The approved personnel level (APL) increase from nine to twelve (one of the three new APLs is not controlled by HS&E) will allow workload reduction. New job descriptions are being written to provide an avenue for development recognition and compensation. External recruiting has been intensified. Using external new hires is exacerbated by the long (approximately 14-month period) required for processing security clearances. The new hire's effectiveness and availability is degraded during this waiting period. In addition, the training period required to reach the "certified level" is approximately two years (this includes the waiting period). At this time, 11 of the 12 APLs are filled. However, four of the APLs have only a combined RFP presence of six staff-months.

This recommendation should remain OPEN.

L. RADIOLOGICAL PROTECTION

RP.1 ORGANIZATION AND ADMINISTRATION

CONCERN R-192 (RP.1-1) [CATEGORY II]: REALISTIC, UNDERSTANDABLE, AND ENFORCEABLE OPERATING REQUIREMENTS AND RULES RELATED TO RADIOLOGICAL PROTECTION ARE LACKING. (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO CONCERN R-193 [RP.1-2] FOR BLDGS. 776/777 AND IS RELATED TO RECOMMENDATION R-37 [RP.1-1] FOR BLDG. 707.)

Evaluation

Organizational changes, policies and procedures to improve radiation protection are discussed in the evaluation of Recommendation R-37 (RP.1-1) for Bldg. 707. As part of this effort, many radiation protection-related procedures have been promulgated, as well as major revisions of the radiation protection portions of the RFP Health, Safety and Environment Manual,

HSE 8.02 and 18.03. The procedures reviewed are generally clear and understandable. A number of new procedures have been quickly revised following their issuance and initial field application. Although these revisions should result in more realistic procedures, the effectiveness of these procedures in contributing to improving the radiological safety programs in the process areas will have to be evaluated after some period of implementation.

This concern should be CLOSED.

CONCERN R-193 (RP.1-2) [CATEGORY II]: THE PRESENT MANAGEMENT SYSTEM DOES NOT REQUIRE CLEAR ASSIGNMENT OF RESPONSIBILITIES OR PROVIDE CONTINUOUS AND EFFECTIVE ENFORCEMENT OF RADIATION PROTECTION REQUIREMENTS.

Evaluation

See Evaluation for Concern R-192 (RP.1-1) for Bldgs. 776/777 and Concern R-37 (RP.1-1) for Bldg. 707.

This concern should be CLOSED.

CONCERN R-194 (RP.1-3) [CATEGORY III]: ADEQUATE RESOURCES TO CONDUCT AN EFFECTIVE RADIATION PROTECTION PROGRAM HAVE NOT BEEN PROVIDED, AND IN SOME CASES, HAVE NOT BEEN IDENTIFIED.

Evaluation

See Evaluation for Recommendation R-37 (RP.1-1) for Bldg. 707.

This concern should be CLOSED.

RP.2 INTERNAL AUDITS AND INVESTIGATIONS

CONCERN R-195 (RP.2-1) [CATEGORY III]: THE REQUIREMENT OF DOE 5482.1B, SECTION 10, TO ASSIGN INDIVIDUALS TO THE AUDIT TEAM WHO ARE INDEPENDENT OF BLDGS. 776/777 OPERATIONS, IS NOT BEING COMPLIED WITH.

Evaluation

An HS&E QA organization has been established to conduct independent audits of HS&E program areas. The first audit conducted by the HS&E QA group on the personal contamination incidents response system was issued on November 11, 1988. A multi-disciplinary audit, initiated in Bldg. 371, utilized an operational health physicist from another building area to enhance the independence of the review. A schedule for auditing various HS&E functions in FY89 was issued on October 18, 1988.

This concern should be CLOSED.

RP.3 RADIOLOGICAL PROTECTION PROCEDURES AND POSTING

CONCERN R-196 (RP.3-1) [CATEGORY III]: POSTING OF RADIATION TYPE AND LEVELS AT THE ENTRANCE TO ALL RADIATION ZONES AND ON WASTE CONTAINERS AND GLOVEBOXES IS INADEQUATE.

Evaluation

Radiation Monitoring Procedures Manual, Procedure 1.1, "Gamma/Neutron Surveys and Posting Requirements," was revised on November 7, 1988. This procedure requires weekly surveys of the gamma/neutron radiation levels and the posting and/or updating of the relevant radiation levels on radiation signs for radiation control areas, gloveboxes, and facilities.

Field verification indicated that radiation posting information is current and is appropriate to the conditions in the area.

This concern should be CLOSED.

CONCERN R-197 (RP.3-2) [CATEGORY III]: THERE ARE NO PROCEDURES TO ENSURE THAT: SMEAR COUNTERS ARE PROPERLY CALIBRATED, CALIBRATION DATA ARE RECORDED AND MAINTAINED; AND DEFECTIVE COUNTERS ARE REMOVED FROM SERVICE AND REPAIRED.

Evaluation

The Radiation Monitoring Procedures Manual contains Procedure 6.3

(RMPM 6.3), "Alpha Smear Counter," which was issued on October 20, 1988. This current procedure describes the method to be followed by the radiation monitors for calibrating the alpha

scintillation smear counters. As of November 28, 1988, a draft procedure, which describes the method to be followed by the radiation monitors for conducting a performance check of the alpha smear counters, has been prepared to replace RMPM 6.3. The Radiation Instrumentation Group has prepared a Calibration Protocol for Rocky Flats Five Channel PMT (SIC) Smear Counter, dated November 10, 1988, which is to be used by the radiation instrumentation technicians for conducting calibrations of the alpha smear counters.

This concern should be CLOSED.

**RP.5 EXTERNAL DOSIMETRY
(ROUTINE AND ACCIDENT USE)**

CONCERN R-198 (RP.5-1) [CATEGORY III]: THERE IS A NEED TO VERIFY WRIST BADGE-TO-FINGER DOSE EQUIVALENT CONVERSION FACTORS FOR THE VARIOUS JOBS AND DOCUMENT THE RESPONSE OF PERSONNEL DOSIMETERS AND WRIST DOSIMETERS TO PHOTON AND NEUTRON DOSE IN THE WORKPLACE.

Evaluation

See Evaluation for Recommendation R-117 (RP.5-2) for Bldgs. 771/774.

This concern should remain OPEN.

CONCERN R-199 (RP.5-2) [CATEGORY III]: DOSIMETERS ARE NOT BEING WORN CORRECTLY TO ENSURE PROPER MEASUREMENTS.

Evaluation

See Evaluation for Recommendation R-117 (RP.5-1) for Bldgs. 771/774.

This concern should be CLOSED.

CONCERN R-200 (RP.5-3) [CATEGORY III]: THE PROGRAM TO MEASURE AND DOCUMENT THE RADIATION ENERGY LEVELS IN THE WORKPLACE IS INCOMPLETE.

Evaluation

In the interest of timely response, RI has issued a contract to conduct field studies to measure and document the photon and neutron radiation energies in the work areas. The field work was completed in September 1988, and RI is awaiting formal transmittal of the results. The results will be used to validate the applicability of dosimetry calibration for field use.

This concern should remain OPEN.

CONCERN R-201 (RP.5-4) [CATEGORY III]: EMERGENCY DOSIMETERS ARE NOT LOCATED STRATEGICALLY THROUGHOUT THE FACILITY AND ARE NOT CALIBRATED.

Evaluation

The "Emergency Dosimeters" which were the subject of this concern are Direct Reading Dosimeters (DRD) which were purchased by building managers without HS&E knowledge, advice, or approval. Purchase of these DRDs did not represent a consistent effort on a plant-wide basis. The DRDs have been withdrawn. Operational Health Physics will evaluate the dosimeters to determine usefulness and advisability of use at RFP. If used, they will be controlled and distributed by Operational Health Physics. Calibrations will be performed by Radiation Instrumentation. Though the underlying intent (proper application/utilization) of the concern has been solved on an interim basis by DRD withdrawal, the fundamental issue has not been resolved.

This concern should remain OPEN.

RP.6 INTERNAL RADIATION EXPOSURE CONTROL PROGRAM

CONCERN R-202 (RP.6-1) [CATEGORY II]: THE ALPHA AIR-SAMPLING/AIR-MONITORING CAPABILITIES IN BLDGS. 776/777 ARE INADEQUATE.

Evaluation

See Evaluation for Recommendations R-56 (RP.10-1) for Bldg. 707 and R-119 (RP.6-1) for Bldgs. 771/774.

Replacement of Selective Alpha Air Monitors (SAAMS) in Bldg. 776 is scheduled after Bldg. 771 installation is completed and experience is gained in their capability.

This concern should remain OPEN.

CONCERN R-203 (RP.6-2) [CATEGORY III]: THE PROGRAM TO ENSURE THAT CONTAMINATION IN THE WORKPLACE IS PROMPTLY REMOVED IS INEFFECTIVE.

Evaluation

HS&E Manual, Chapters 18.02 and 18.03, have been modified to require that decontamination of a radioactive material release must begin immediately and be completed as rapidly as possible and during the shift on which it occurred. Building Managers have the responsibility to enforce the new procedures. A contamination control coordinator has been appointed for Bldg. 771 as a pilot program for contamination control implementation effectiveness. The program has proven to be very effective and steps have been taken to expand the effort to

Bldgs. 707 and 776. The Radiation Monitoring Procedures Manual contains Procedure 5.3, "Response to a Contamination Release," which was issued on October 10, 1979, and Procedure 3.1, "Routine Contamination Surveys," issued on November 2, 1988. The radiation monitoring staff have the responsibility under these procedures to measure and define the extent of a contamination release, as well as to conduct routine surveys of building areas for surface contamination. In those cases where decontamination work is extensive, the building manager determines the priority of continued cleanup versus other priority work.

Field verification indicated that areas are generally clean.

This concern should be CLOSED.

RP.7 INTERNAL DOSIMETRY

CONCERN R-204 (RP.7-1) [CATEGORY III]: A METHOD TO TRACK ROUTING AND SPECIAL BIOASSAY REQUESTS IS NEEDED.

Evaluation

As of July 1988, a computer database program is in operation for logging in routine bioassay samples (urine only) as they arrive at the analytical laboratory. Data entry is made by the laboratory technicians. This database resides on the HS&E Vax computer. The samples are then tracked through the various analytical procedures in a hand-written logbook, also maintained by the laboratory technicians. When the analyses are complete, the results are entered in the Vax computer database.

At the end of each day, urinalysis data that are complete are transferred to a laboratory database module for official storage, retrieval and reporting.

Special bioassays samples (urine, fecal, nasal swipes, and other) are tracked by the Internal Dosimetry Group on an IBM-PC using dBaseIII Plus as the database management system. After all analyses are completed, a report is issued with a permanent hard copy going to the individual's exposure file. The urine sample results are transferred to the Health Physics Database (HPDB) module for permanent retention. Fecal and the other sample data are currently stored on floppy disks. When the HPDB module is expanded to accept these data, they will be transferred from floppy disk storage.

This concern should be CLOSED.

CONCERN R-205 (RP.7-2) [CATEGORY III]: THERE IS NO INDEPENDENT AUDIT PROGRAM FOR INTERNAL DOSIMETRY.

Evaluation

An audit of the RFP HS&E Laboratory, General Laboratory, and Chemical Standards Laboratory was conducted in September 1986. The audit included an evaluation of internal dosimetry.

A second audit of Internal Dosimetry was conducted in July 1988.

Also, in July 1988, a QA Group was organized in the HS&E Operations and Plans Branch. One of the functions of this Group is to conduct internal audits of HS&E operations. The next audit of internal dosimetry, which will be conducted by the QA Group, is scheduled for December 1988.

This concern should be CLOSED.

CONCERN R-206 (RP.7-3) [CATEGORY III]: THE PROGRAM TO COMPARE IN VIVO AND IN VITRO RESULTS FOR EMPLOYEES WITH AIR CONTAMINATION IN THEIR WORKPLACE IS INCOMPLETE.

Evaluation

See Evaluation for Recommendation R-49 (RP.7-3) for Bldg. 707.

This concern should be CLOSED.

RP.8 FIXED AND PORTABLE INSTRUMENTATION (NORMAL AND EMERGENCY USE)

CONCERN R-207 (RP.8-1) [CATEGORY II]: THE PORTABLE INSTRUMENT CALIBRATION PROGRAM DOES NOT MEET THE REQUIREMENTS OF DOE-PREScribed STANDARD ANSI N323 (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-50 [RP.8-1] FOR BLDG. 707, RECOMMENDATION R-53 [RP.8-4] FOR BLDG. 707 AND RECOMMENDATION R-120 [RP.8-1] FOR BLDGS. 771/774).

Evaluation

The RI response to this concern has been extensive and detailed. Even though construction of new calibration facilities is not complete, current facilities are crowded, and personnel work loads are excessive, the intent of ANSI 323 is being met. When the calibration facilities are complete, authorized personnel levels achieved and experience in the new procedure implementation is mature, the program at RI will be exemplary.

Below is a partial summary of actions and programs currently in place.

- Procedures meeting ANSI 323 have been developed and implemented.

- Sources traceable to NBS have been purchased.
- Initial electronics technician training has been completed.
- All instruments have been serialized and placed on a computer database for inventory and control.
- A Calibration recall system is in place.
- Interim calibration devices have been constructed.
- Supervisory and general HS&E QA audit programs are in place.
- Outside consultants have been utilized to verify current procedures/policies.
- The Instrument Technician Group is being utilized to assure formality in meeting the calibration/maintenance requirements of ANSI 323.
- Acceptance testing for radiation and instrument response is in place.
- Environmental effects tests/verifications are performed through a service contract for representative unit tests.

Though the planned upgrade has not been implemented in detail, the interim procedures and techniques are adequate.

This concern should be CLOSED.

CONCERN R-208 (RP.8-2) [CATEGORY II]: COMBOS, ALPHAMETS, AND SAAMS ARE NOT CALIBRATED AS NEEDED TO ASSURE CONTINUED EFFECTIVE OPERATION (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-52 [RP.8-3] FOR BLDG. 707 AND TO RECOMMENDATION R-122 [RP.8-3] FOR BLDGS. 771/774. IT IS ALSO RELATED TO CONCERN R-207 [RP.8-1] FOR BLDG. 776/777).

Evaluation

Responses to this concern have been as follows:

- Interim procedures have been prepared for calibrating alpha instruments (SAAMS, alphamets, combos and survey instruments).
- Sources traceable to NBS have been purchased and are in use.
- Electronics technicians have been trained.
- Instrument inventory, control, calibration, and maintenance schedules are computerized and strictly administered through the electronics technicians.

Though the RI planned upgrade is not complete due to incomplete

construction of anticipated improved facilities and incomplete staffing levels, the current program meets existing requirements.

This concern should be CLOSED.

CONCERN R-209 (RP.8-3) [CATEGORY III]: THE HEALTH PHYSICS INSTRUMENTS USED FOR PERSONNEL PROTECTION DO NOT ALL CONFORM TO APPROPRIATE PERFORMANCE REQUIREMENTS OF APPLICABLE STANDARDS. THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-51 [RP.8-2] BLDG. 707 AND RECOMMENDATION R-123 [RP.8-4] FOR BLDGS. 771/774.

Evaluation

The deficiencies identified in this concern relate to acceptance tests detailed in ANSI N 323. RI procedures and practices have been upgraded and an acceptable program for electronics and radiation parameter evaluation exists. Representative instruments are sent to Pacific Northwest Laboratories (PNL) for environmental tests. This meets the intent of the required standards.

This concern should be CLOSED.

CONCERN R-210 (RP.8-4) [CATEGORY III]: THERE IS NO EFFECTIVE QUALITY CONTROL PROGRAM FOR RADIATION PROTECTION INSTRUMENTATION.

Evaluation

See Evaluation for Concerns R-208 and R-209 (RP.8-2 and RP.8-3) for Bldgs. 776/777.

This concern should be CLOSED.

RP.11 RADIOLOGICAL MONITORING/CONTAMINATION CONTROL

CONCERN R-211 (RP.11-1) [CATEGORY III]: EFFECTIVE PROCEDURES FOR SELF-MONITORING BY PERSONNEL USING THE COMBO INSTRUMENTS AND SURVEY INSTRUMENTS (ALPHAMETS) HAVE NOT BEEN DEVELOPED AND PERSONNEL HAVE NOT RECEIVED TRAINING IN THEIR USE.

Evaluation

The plutonium process area contamination control program, including the anti-contamination protective clothing policy, has been dramatically changed since the previous TSA. Performance check sources, located at each of the Alphamet and Combo monitors, are required to be used prior to monitoring. Combos are located within controlled areas for self-monitoring, when an individual passes from one part of a controlled area to another. Step-off pads have been established at the entry and exit points to and from controlled areas. Radiation monitoring personnel are permanently stationed at exits from controlled areas to conduct a

detailed alpha survey of all personnel leaving the controlled areas. As part of the orientation training

for visitors and radiation workers, a video presentation is utilized showing the proper method for self-monitoring with the alphamet and with the combo instruments.

This concern should be CLOSED.

CONCERN R-212 (RP.11-2) [CATEGORY III]: THE SURVEY AND INSPECTION OF WASHED CLOTHING AT THE LAUNDRY IS INADEQUATE.

Evaluation

Separate "cold" and "hot" laundries have been established. "Hot" and "cold" receptacles for clothing and shoe covers are located at the exits from the perimeter security zone (PSZ) controlled areas, at which radiation monitors survey each person for contamination.

All clothing coming from the "hot" laundry is surveyed for contamination and transferred to the "cold" laundry for further washing after it passes the survey. Clothing from the "cold" laundry is surveyed on a statistical sampling basis according to the Radiation Monitoring Procedures Manual, Procedure 3.6, "Laundry Monitoring Statistical Sampling," issued on October 19, 1988. Respirators and cartridges from the "cold" laundry are also surveyed for contamination.

This concern should be CLOSED.

RP.12 ALARA PROGRAM

CONCERN R-213 (RP.12-1) [CATEGORY III]: DOCUMENTATION OF THE HEALTH PHYSICS ALARA PROGRAM FOR BLDGS. 776/777 IS NON-EXISTENT AND THE RESPONSIBILITIES OF THE ALARA COORDINATOR AND OTHER STAFF ARE NOT SPECIFIED.

Evaluation

The HS&E Engineering Branch organized a Radiological Engineering Group in October 1988. One of the missions of this Group is to assist RFP in achieving ALARA program goals.

The Group Manager is in the process of recruiting/hiring to meet the approved personnel level (APL) of seven to staff the Group. One of these positions is an ALARA Coordinator who will transfer to the Group on December 19, 1988. The job description for the ALARA Coordinator has been defined.

A corrective action plan is in place. Following are the projected milestones of the action plan:

- Strengthen the existing Radiation Control Team's programs. This Team previously was functioning and holding monthly meetings with building managers and staff where ALARA was discussed. These meetings have not been held in recent months.
- Revise HS&E ALARA procedures to better define responsibilities (scheduled completion date is December 1988).
- Prepare implementing ALARA procedures (February 1989).
- Include ALARA plans and goals in internal audit programs (April 1989).

This concern should remain OPEN.

CONCERN R-214 (RP.12-2) [CATEGORY III]: THE AUTOMATED DATA ENTRY AND TREND ANALYSES PROGRAM FOR AIR SAMPLES AND PERSONNEL EXPOSURE IS NOT OPERATIONAL.

Evaluation

See Evaluation for Recommendation R-61 (RP.12-1) for Bldg. 707.

The health physicist who is awaiting his security clearance is writing programs to do trend analysis for personnel radiation exposures.

This concern should remain OPEN.

CONCERN R-215 (RP.12-3) [CATEGORY III]: CONTAMINATION/RADIATION SURVEY RESULTS ARE NOT PROVIDED TO THE SUPERVISOR/FOREMAN RESPONSIBLE FOR EACH AREA FOR THEIR REVIEW AND POSTING.

Evaluation

With top management's emphasis on safety as a building manager's responsibility, an increased interest has been shown in contamination and radiation surveys. In Bldg. 771, where a Contamination Control Coordinator resides, a close working relationship has developed with the Operational Health Physicist (OHP) and HS&E Engineering Coordinator. In other buildings, the building manager or his assistant communicates directly with the OHP or HS&E Engineering Coordinator on survey conditions. There has been improvement in the relationship between the radiation monitors and the OHP.

Procedures have been established and implemented where survey results are posted and maintained up-to-date by the radiation monitors.

This concern should be CLOSED.

RP.13 RECORDS

CONCERN R-216 (RP.13-1) [CATEGORY III]: THE OCCUPATIONAL EXPOSURE RECORD PROGRAM DOES NOT MEET THE REQUIREMENTS FOR MAINTAINING COMPLETE RECORDS.

Evaluation

See Evaluation for Recommendation R-133 (RP.13-1) for Bldgs. 771/774.

This concern should remain OPEN.

M. PERSONNEL PROTECTION

PP.2 CHEMICAL CONTAMINATION

CONCERN R-217 (PP.2-1) [CATEGORY III]: THERE IS NO ROUTINE MONITORING PROGRAM TO CONFIRM THE EFFECTIVENESS OF CONTROL MEASURES FOR CHEMICALS UTILIZED IN THE WORKPLACE (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-136 [PP.5-1] FOR BLDGS. 771/774).

Evaluation

DOE 5480.10, Section 9.b.4, requires periodic monitoring for chemicals to assure maintenance of conditions. RFP utilizes significant quantities of chemicals (solvents, epoxies/resins, laboratory reagents, metals, paints/coatings, lubricants, acids, caustics, etc.) in its operating facilities. However, current monitoring data are limited, other than for beryllium and asbestos.

A sampling plan (routine monitoring program) has been developed but not implemented for materials other than beryllium and asbestos. This general sampling plan was issued as Procedure IH-0002-01, dated November 11, 1988. Beryllium and asbestos monitoring programs were in place at the time of the TSA during which this concern was noted.

Adequate implementation of the routine monitoring program has been adversely impacted by limited personnel resources (see comments regarding Concern R-20 [PP.4-1] for Bldgs. 776/777).

This concern should remain OPEN.

CONCERN R-218 (PP.2-2) [CATEGORY III]: A QUALITY ASSURANCE PROGRAM IS NEEDED TO MINIMIZE AND ROUTINELY IDENTIFY AND CORRECT DEFICIENCIES IN THE RESPIRATORY PROTECTION PROGRAM.

Evaluation

A Quality Program Plan has been developed, issued, and implemented for the respiratory protection program. The document was formally issued November 1988; however, it is evident that significant progress had been achieved on program elements prior to issuance of the Quality Program Plan.

The Quality Program Plan clearly describes the program structure, responsibilities, communication requirements and flow, approval authorities, specifications, training requirements, and other essential program elements. The program plan specifically requires annual audits by Health Physics, the Program Administrator, and an independent group from Industrial Hygiene.

Inspection revealed that the use, storage, and care of respiratory protective equipment was proper, and designated

equipment supply points were adequately stocked. Significant improvements were also noted in decontamination and sanitization practices in the laundry. Packaging and labeling were also significantly improved.

This concern should be CLOSED.

PP.3 HAZARD COMMUNICATION

CONCERN R-219 (PP.3-1) [CATEGORY III]: VESSELS/TANKS/CONTAINERS CONTAINING CHEMICAL MIXTURES ARE NOT LABELED WITH APPROPRIATE HAZARD RATINGS.

Evaluation

HS&E Procedure 9.07, "Hazardous Material Control Program," has been revised to accommodate hazard rating and labeling of chemical mixtures. The revised procedure was issued November 1988. Discussions with Industrial Hygiene and Hazardous Materials (HMC) personnel confirmed a single rating would be applied to chemical mixtures where appropriate.

Facility inspections verified correction of inappropriate labeling noted previously during the January/February 1988 TSA. However, a related new concern was noted regarding labeling of waste tanks/containers (note new concern PP. 1-1 in Section IV).

This concern should be CLOSED.

PP.4 STAFFING

CONCERN R-220 (PP.4-1) [CATEGORY III]: THE CURRENT UTILIZATION AND AVAILABILITY OF STAFF RESOURCES MAY BE ADVERSELY AFFECTING THE QUALITY OF THE INDUSTRIAL HYGIENE PROGRAM (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-135 [PP.4-1] FOR BLDGS. 771/774).

Evaluation

The industrial hygiene program continues to be adversely impacted by the current turnover, utilization, and availability of personnel resources.

- During calendar year 1988, the manager's position has been held by four separate individuals, with five changes of assignment.
- The group turnover rate for calendar year 1988 is approximately 40 percent.
- The group is working on scheduled extended work hours.
- Over 40 percent of current staff is part-time or uncleared.

- The authorized personnel levels have increased from 13 to 16 since January 1988; however, current staffing is less than the authorized level of January 1988, although it is currently at its highest level for the year.
- Staff increases have frequently been accompanied by additional duties previously assigned to other organizational units.
- Deficiencies in industrial hygiene workplace surveillance, review, and program implementation were apparent during facility tours.

The industrial hygiene staff includes qualified, experienced personnel, highly dedicated to fulfilling their responsibilities in protection programs. Significant improvements in staff acquisition are evident and retention stability should correspondingly mature. However, program deficiencies remain that are a direct result of inadequate personnel resources.

Staff utilization has been prioritized to assure availability of resources for new or potential hazard assessments and critical path programs. Task specific contracts have been issued to a qualified consulting/technical services firm to implement selected priority assessment programs. Consideration of alternative personnel resource availability has not been made for implementation of programs (i.e., utilization of line operating personnel in the collection of routine monitoring samples).

This concern should remain OPEN.

PP.5 SURVEILLANCE

CONCERN R-221 (PP.5-1) [CATEGORY III]: THERE IS NO COMMON DATABASE FOR RECORDS OF THE COLLECTION, ANALYSIS, AND REPORTING OF OCCUPATIONAL EXPOSURE INFORMATION.

Evaluation

Industrial hygiene (non-radiological occupational exposure) data is being entered into the Occupational Health Information System (OHIS) database. The OHIS System includes related databases for clinical data. The usage of a common computerized database for occupational exposure and occupational health (medical) records will permit improved analysis and assessment of data for industrial hygienists and medical personnel. The enhanced retrievability of data will also assist in meeting increasing regulatory, programmatic, and litigation information requirements. Plans exist for entry of historical data as well.

This concern should be CLOSED.

CONCERN R-222 (PP.5-2) [CATEGORY III]: UNIFORM QUALITY CONTROL PROCEDURES FOR ALL INDUSTRIAL HYGIENE TYPE SAMPLES DO NOT EXIST (THE EVALUATION THAT FOLLOWS ALSO APPLIES TO RECOMMENDATION R-67 [PP.5-2] FOR BLDG. 707 AND RECOMMENDATION R-137 [PP.5-2] FOR BLDGS. 771/774).

Evaluation

Significant progress has been made in the development of quality control procedures for industrial hygiene-type samples. Evidence exists that the Industrial Hygiene Laboratory is currently operating at a sufficiently high level of quality to assure confidence in analytical data provided.

- A new quality program plan has been developed for the HS&E Analytical Laboratory and was issued November 1988. The Quality Program Plan contains the direction and criteria for the activities which support the Department charter.
- Laboratory operations are based on appropriate concepts of the use of trained personnel, reliable and well-maintained equipment, consistent use of standard operating procedures, proper calibrations and standards, and adherence to principles of good laboratory practice.
- The HS&E Laboratory participates in several interlaboratory testing programs including the National Institute for Occupational Safety and Health (NIOSH) sponsored Proficiency Analytical Testing (PAT) Program. A beryllium round robin intercomparison filter analysis has also been established with other DOE contractor laboratories.

Several areas of improvement are required, however, to achieve satisfactory demonstration of QA for industrial hygiene analytical data to external reviewers, regulatory agencies, and nationally recognized accreditation organizations.

- The HS&E Laboratory intends to apply for American Industrial Hygiene Association (AIHA) laboratory accreditation by January 1989. A consultant's review identified six specific areas of improvement essential for achievement of accreditation and 11 items of recommended improvements. Some, but not complete, progress has been made on necessary corrective actions.
- Samples submitted to off-site industrial hygiene laboratories are not supplemented with quality control samples, duplicates, or split to secondary laboratories for verification of laboratory performance.

This concern should remain OPEN.

PP.7 OCCUPATIONAL SAFETY

CONCERN R-223 (PP.7-1) [CATEGORY III]: THE HOISTING/RIGGING PROGRAM IS INEFFECTIVE IN THAT IT DOES NOT INCLUDE AS A MINIMUM, REGULAR INSPECTION, PREVENTIVE MAINTENANCE, TRAINING IN, AND CERTIFICATION OF EQUIPMENT AND ACCESSORIES.

Evaluation

The hoisting/rigging program deficiencies which gave rise to this concern can be classified into two categories:

- Training and certification of hoist equipment operators; and
- Inspection and maintenance of hoisting/rigging equipment.

The issue of operator training has been addressed with the implementation of a new "Hoist Operations" class and a more formalized on-the-job training (OJT) program. To qualify as an "operator," the employee must successfully complete both the classroom and OJT training. Both portions are documented and include written and practical examinations. At this time, RI is reportably 95 percent complete with the operator training/certification phase of the program.

The concern for inspection and maintenance of hoisting and rigging equipment remains. The scheduling of monthly and annual inspections for existing equipment is in a computer-based system, but not all inspections, to date, are current. Also, plant policies are being modified to help assure that all new equipment brought on-site is certified by Central Preventive Maintenance and is properly included in the inspection scheduling system.

There is a lack of equipment-specific procedures for inspection of hoisting equipment. The existing inspection procedure, "Hoists and Cranes," (203-000-001) is a generic checklist which provides no direction specific to the item of equipment being inspected. While such a generic checklist may be acceptable for routine or elementary equipment (e.g., chain-falls, monorails), more complex, unique, or critical equipment (e.g., bridge cranes) should have a specific inspection procedure which includes the recommendations of the crane manufacturer.

This concern should remain OPEN.

CONCERN R-224 (PP.7-2) [CATEGORY III]: AN AGGRESSIVE SAFETY AWARENESS AND PROMOTION PROGRAM TO ACHIEVE A POSITIVE SAFETY ATTITUDE IN FACILITY PERSONNEL DOES NOT EXIST.

Evaluation

An aggressive and comprehensive safety awareness and promotion program exists at RFP. Following the reporting of this concern in March 1988, RFP management responded by implementing several

new safety award, communication, and awareness programs, some of which are:

- "Safety-Assurance Award" - Provides a \$350 cash award for making a significant contribution to plant/worker safety.
- "Employee Suggestion Program" - Employees making a safety-related suggestion may be considered for a cash award of up to \$1500.
- "Sentry Safety Program" - Provides a cash award to employees if certain total site employee radiation dose limits are not exceeded and no lost workday injury accidents are experienced in a given quarter. This award would provide an annual individual total of \$140 if all goals are met.
- "Employee Recognition Award" - A \$75 cash award is given for demonstrating sustained superior individual performance and dedication to one's job. Safety was recently added as one of the optional criteria for this award.
- Safety Slogan Contest - The winner of this plant-wide contest received an expense-paid trip for two to Cape Canaveral to witness a shuttle launch. The contest was an effective awareness tool and produced a slogan, "Plant Safety - Watch It Grow," now used extensively around the site.
- Safety posters and calendars produced on-site, using local scenes and employees, include a safety message that is timely, relevant and captures the attention.
- Safety publications (e.g., "Safety Alert" notices, letters to all employees from the President, RFP, "Up-Front" notices to supervisors, table tent cards and Rockwell news safety articles) are frequently issued (many weekly) and deal with a variety of timely safety topics.

Although there are many programs and publications directed at employee safety information, attitude and awareness, the total effort appears to be well organized. An FY 1989 Safety Communications Plan has been drafted which will help assure a coordinated effort in this regard.

One of the findings that gave rise to this Concern was the lack of confidence that working level personnel (primarily craft personnel) have in management's commitment to safety. Interviews conducted during this review consistently indicated that the lack of confidence remains. It is recommended that this concern be monitored until the effectiveness of the safety award, communication, and awareness programs can be demonstrated. The desired results are directed specifically at employee confidence

in management's commitment to safety. This Concern is being closed because the specific verbiage of the stated Concern has been achieved, if not all the desired results.

This concern should be CLOSED.

N. FIRE PROTECTION

FP.1 LIFE PROTECTION

CONCERN R-225 (FP.1-1) [CATEGORY II]: THERE IS NO MANAGEMENT SYSTEM TO ASSURE THAT EGRESS ROUTES IN BLDGS. 776/777 ARE IDENTIFIED ADEQUATELY, THAT THEY ENSURE RAPID PERSONNEL EGRESS, AND ARE MAINTAINED CURRENT.

Evaluation

Inspection of Bldgs. 776/777 and other RFP buildings disclosed that egress routes were adequately identified and maintained. They are inspected during the monthly inspection by the Building Safety Committee, as well as during routine facility inspections by Fire Department personnel. There is a training film for RFP personnel to acquaint them with the egress marking and identification system.

This concern should be CLOSED.

FP.2 PUBLIC PROTECTION

CONCERN R-226 (FP.2-1) [CATEGORY III]: THERE IS NO ANALYSIS OF THE NEED FOR EARTHQUAKE BRACING OF THE AUTOMATIC SPRINKLER SYSTEM IN BLDGS. 776/777.

Evaluation

See Evaluation for Recommendation R-76 (FP.5-6) for Bldg. 707.

This concern should remain OPEN.

FP.5 IMPROVED RISK

CONCERN R-227 (FP.5-1) [CATEGORY III]: THE EMERGENCY NEED FOR THE REPLACEMENT OF THE MINI-PUMPER/RESCUE VEHICLE IS NOT BEING EMPHASIZED IN THE PROCUREMENT PROCESS.

Evaluation

See Evaluation for Recommendation R-87 (FP.5-17) for Bldg. 707.

This concern should remain OPEN.

CONCERN R-228 (FP.5-2) [CATEGORY II]: THERE IS NO PROGRAM WHICH ASSIGNS RESPONSIBILITIES, REQUIRES PERIODIC REVIEW OF THE INTEGRITY OF THE FIRE SEPARATIONS, AND ASSURES PROMPT CORRECTION OF DEFICIENCIES.

Evaluation

A survey of RFP, which identified all needed fire separations, was completed. Deficiencies in the separations were identified and nearly all have been corrected. The separations were identified with wall and door markings. Fire doors are identified by building location and door classification in a data base file at the Fire Department. Fire barrier walls and doors are inspected by the Fire Department using their Internal Operations Procedure 109, Issue No. 2, dated November 8, 1988. A letter containing guidelines for fire door modifications was sent by the Fire Protection Engineer to all supervision on April 20, 1988. A technical review was made by the Fire Protection Engineer of the heating and ventilation ducts that penetrate the fire separations. A fire protection consultant was hired to perform a computerized fire model of four areas in Bldgs. 776/777 to determine if the areas were capable of sustaining a fire that would violate the fire barrier separations. A full scale fire test of three different sizes of duct work common to RFP was completed. The test was a standard ASTM E-199 two hour test. All three duct samples maintained their integrity throughout the two hour test. The FSAR for Bldgs. 776/777 has not been completely updated regarding fire separations. It is scheduled to be revised during the next triennial update which is not scheduled. See new concern FP-2 in Section IV.

This concern should be CLOSED.

CONCERN R-229 (FP.5-3) [CATEGORY III]: A WAIT OF FIVE YEARS TO REPLACE THE FIRE DETECTOR/ALARM SYSTEMS IN BLDGS. 776/777 IS EXCESSIVELY LONG.

Evaluation

The need to replace the fire detection systems at RFP has been identified since 1985. This need has not received a priority high enough to obtain funding. Partial solutions were identified to address the most critical needs and accelerated, additional funding was requested. The first request was not supported by RFAO. Additional funds for FYs 89 and 90 were requested by RI from RFAO on November 7, 1988. This request had not been responded to at the time of this review. RI is pursuing early funding to correct the plant-wide concern. A project to upgrade the glovebox overheat detectors in Bldg. 771 has been started. A maintenance and resource plan has been developed to keep the systems operational until replacement equipment can be installed.

This concern should remain OPEN.

CONCERN R-230 (FP.5-4) [CATEGORY III]: THERE IS NO MANAGEMENT CONTROL SYSTEM THAT PROHIBITS THE UNNECESSARY USE OR STORAGE OF COMBUSTIBLE MATERIALS IN BLDGS. 776/777.

Evaluation

The control of combustibles in plant construction has been strengthened by added emphasis on the design review process. There is a site program in preparation to designate storage areas in buildings and to limit the amount of material allowed in each area. The Fire Department will then use this information as audit guidance during its periodic inspections of RFP facilities.

This concern should remain OPEN.

APPENDIX D

Team Composition Technical Safety Appraisal Rocky Flats Plant

EH Senior Manager	James P. Knight, Director Office of Safety Appraisals Department of Energy
Team Leader	Blake P. Brown Office of Safety Appraisals Department of Energy
Appraisal Coordinator	Mary E. Meadows Office of Safety Appraisals Department of Energy Rita A. Bieri Los Alamos National Laboratory Patricia Davidson Oak Ridge Associated Universities
Advisor to the Team	Dale A. Moul Battelle Memorial Institute, Columbus Division
Liaison with the Team	Major Jon H. Todd, USA Office of Military Application Department of Energy Larry D. Warren, representing Office of Military Application Department of Energy Dana H. Beaulieu Department of Energy Albuquerque Operations Office Niles D. McGuire Department of Energy Rocky Flats Area Office
Organization and Administration	David B. Schweller DBS Associates, Inc.

Operations	Leon H. Meyer The LHM Corporation
	J. Chris Midgett Westinghouse Idaho Nuclear Co., Inc.
Maintenance	Frederick N. Carlson Private Consultant
Training and Certification	Thomas J. Mazour Private Consultant
Auxiliary Systems	Frederick N. Carlson Private Expert
	John M. Cece RISC, Inc.
	Glenn A. Whan University of New Mexico
Emergency Readiness	Robert T. Hadley Lawrence Livermore National Laboratory
Technical Support	Glen A. Whan University of New Mexico
Transportation	John M. Cece RISC, Inc.
Security/Safety Interface and Experimental Activities	James A. Buckham Private Consultant
Facility Safety Review	Roger W. Griebe Organizational Analysis Corp.
Nuclear Criticality Safety	Harry M. Forehand, Jr. Los Alamos National Laboratory
Radiation Protection	Bryce L. Rich EG&G Idaho, Inc.
	William C. King SCIENTECH, Inc.
	Enrico F. Conti SCIENTECH, Inc.

Personnel Protection

**Robert D. Gilmore
Environmental Health
Sciences, Inc.**

**John R. Bell
Westinghouse Hanford Co.**

Fire Protection

**William E. Taylor
Westinghouse Hanford Co.**

**Howard M. Bucci
Westinghouse Hanford Co.**

Quality Assurance

**Rex N. Lutz
ARINC Research Corporation**

APPENDIX E

Biographical Sketches of Team Members Technical Safety Appraisal Rocky Flats Plant

NAME: Blake P. Brown (Team Leader)

ASSOCIATION: DOE/Headquarters - Office of Safety Appraisals

EXPERIENCE: 31 years

- Team Leader of nine previous Technical Safety Appraisals and follow-up reviews
- Department of Energy
 - Team Leader, Technical Safety Appraisals
 - Program Manager, Nuclear Criticality Safety
 - Nuclear Safety Engineer
- Atomic Power Development Associates, Detroit, Michigan, Systems Engineer
- Phillips Petroleum Company, Idaho National Engineering Laboratory - Chemical Research Engineer

EDUCATION: B.S., Chemical Engineering, University of Idaho

NAME: John R. Bell (Personnel Protection/Occupational Safety)

ASSOCIATION: Manager, Industrial Safety and Fire Protection, Westinghouse Hanford Company, Richland, WA

EXPERIENCE: 19 years

- Westinghouse Hanford Company
 - Manager of staff providing industrial safety, industrial hygiene, fire protection, and emergency planning services
 - Senior Engineer working on nuclear facility/reactor fire protection
- U.S. Navy and General Services Administration - Safety and Fire Protection Engineer reviewing the design, construction, and operation of Government and Naval shore facilities
- U.S. Atomic Energy Commission - Fire Protection Engineer at Headquarters and Richland Operations Office

EDUCATION: B.S., Fire Protection Engineering, University of Maryland

OTHER: Registered Professional Engineer, Fire Protection, State of California

NAME: Howard M. Bucci (Fire Protection)

ASSOCIATION: Fire Protection Engineer, Westinghouse Hanford Company, Richland, WA

EXPERIENCE: 7 years

- Westinghouse Hanford Company, Fire Protection Engineer
 - Fire Protection Engineering Surveys of Process Facilities
 - Project Interface and Design Reviews
 - Fire Protection Program Development
 - Facility Life Safety Evaluations
 - Fire Investigations
 - Technical Support to other Disciplines
- Rockwell International, Hanford Operations - same as above

EDUCATION: A.A.S., Fire Protection Engineering, Delaware Technical College
B.S., General Studies, Eastern Oregon State College

OTHER: Member, National Fire Protection Association, Life Safety Code Subcommittee on Industrial, Storage, and Special Structures Member, ASTM E-5 Committee on Fire Standards

NAME: James A. Buckham (Security/Safety Interface,
Experimental Activities)

ASSOCIATION: Private Consultant

EXPERIENCE: 36 years

- Idaho National Engineering Laboratory -
Research and Development, Operations, and
Management at the Idaho Chemical
Processing Plant
- Allied-General Nuclear Services -
Executive VP and President with overall
responsibilities for the Barnwell Nuclear
Fuels Plant
- Oversight Team Leader to assure safe,
effective restart of Sequoyah Facility

EDUCATION: B.S., Chemical Engineering, University of
Washington
M.S., Chemical Engineering, University of
Washington
Ph.D., Chemical Engineering, University of
Washington

OTHER: Member, Sigma Xi, Tau Beta Pi
Member, American Institute of Chemical
Engineers
Member, American Nuclear Society
Member, American Chemical Society
Instructor, University of Washington
Adjunct Professor, University of Idaho

NAME: Frederick N. Carlson (Maintenance, Auxiliary Systems)

ASSOCIATION: Private Consultant

EXPERIENCE: 27 years

- Consultant to the Department of Energy including:
 - Participant in 13 earlier DOE Technical Safety Appraisals
 - Review of N Reactor Safety Enhancement QA
 - Preparation of Emergency Preparedness Orders
- Consultant to the NRC including:
 - Emergency preparedness appraisals and exercises
 - Detailed Control Room Design Reviews
 - Review of Safety Parameter Display Systems
 - Review of Standard Technical Specifications
 - NRC resident inspector assistance
 - Prepared Chernobyl accident scenarios
- Consultant to troubled reactor plants for operational reviews
- Consultant to FEMA for Nuclear Plant Exercises
- Westinghouse Bettis Atomic Power Laboratory
 - Manager, two reactor plants
 - Manager, Administrative Services
 - Staff Consultant, Laboratory Performance Evaluation
 - Manager, Engineering
 - Manager, Operations
 - Manager, Training
 - Shift Supervisor
- Aerojet Nuclear Company - Loss-of-Fluid Test Plant operations experience
- Phillips Petroleum Company - Reactor Operator and Fuel Handler
- Hercules Powder Company - Materials Development Engineer and Test Engineer

Frederick N. Carlson (continued)

EDUCATION: Ph.D., Mechanical Engineering, Pacific Western
 University
 B.S. and M.S., Mechanical Engineering,
 University of Idaho

NAME: John M. Cece (Transportation, Technical Support, Auxiliary Systems)

ASSOCIATION: Vice President - Risk and Industrial Safety Consultants, Inc.

EXPERIENCE: 26 years

- Technical Safety Appraisal Experience: FMPC, Plutonium Finishing Plant, PUREX, the Hot Fuel Examination Facility, H-B Canyon, Y-12.
- Member, peer review of Rocky Flats Safety Analysis Report (SAR)
- Safety Consultant, Hazardous Materials Packaging and Transportation: participated in safety reviews of 36" pipeline (Texas) for Travis County, Texas, and chemical manufacturing plant (Connecticut)
- U.S. Department of Energy, Headquarters - Manager, Hazardous Materials Packaging and Transportation, Office of Operational Safety
- U.S. Department of Transportation (Coast Guard)

EDUCATION: B.S., Engineering, U.S. Coast Guard Academy
Ph.D., Physical Chemistry, University of Rhode Island

NAME: Enrico F. Conti (Radiological Protection)

ASSOCIATION: SCIENTECH, Inc., Rockville, MD

EXPERIENCE: 30 years

- USNRC Office of Nuclear Reactor Regulation, Standards Development and Research - developed regulatory standards for radiation protection and waste management
- USAEC Chicago Operations Office
 - Conducted Design and Operational Safety Reviews
 - Project Manager-liquid hydrogen bubble chambers
- Armour Research Foundation - Radiation Safety Officer

EDUCATION: B.S., Engineering Physics, University of Maine
M.S., Radiation Biology, University of Rochester

OTHER: Certified by American Board of Health Physics

NAME: Harry M. Forehand, Jr. (Nuclear Criticality Safety)

ASSOCIATION: Los Alamos National Laboratory

EXPERIENCE: 25 years

- Los Alamos National Laboratory - Staff Member: computational physics, analysis, and experimental criticality safety
- Argonne National Laboratory - Associate Engineer: EBR-II Analysis
- Semiconductor - Insulated Gate Field Effect Transistor (IGFET) development
- Aerospace
 - Atmospheric platforms
 - Exoatmospheric platforms

EDUCATION: B.S., Physics, Clemson University
M.S., Nuclear Engineering, University of Arizona
Ph.D., Nuclear Engineering, University of Arizona

NAME: Robert D. Gilmore (Personnel
Protection/Industrial Hygiene)

ASSOCIATION: Environmental Health Sciences, Inc. (EHS)

EXPERIENCE: 15 years

- President, EHS
- Hanford Environmental Health Foundation
 - Director of Operations and Planning, providing comprehensive occupational and environmental health services including programs in occupational medicine, nursing, psychology, research, and environmental sciences
 - Department Manager for industrial hygiene services, environmental monitoring, and analytic chemistry
- Union Carbide Corporation
 - Corporate Staff; Headquarters staff providing technical direction and program guidance to operating components
 - Manager of Industrial Hygiene Department; Oak Ridge Gaseous Diffusion Plant
- U.S. Atomic Energy Commission - Safety and Industrial Hygiene Engineer; Richland Operations Office

EDUCATION: B.S., Environmental Health, Chemistry;
University of Washington
M.S., Industrial Hygiene, University of Washington

OTHER: Certified in Comprehensive Practice of Industrial Hygiene by the American Board of Industrial Hygiene

NAME: Roger W. Griebe (Facility Safety Review)

ASSOCIATION: Organizational Analysis Corporation

EXPERIENCE: 24 years

- Organizational Analysis Corporation - Senior Partner
- Aisling, Incorporated - President
- Energy, Incorporated - Senior Vice President & Technical Director
- Idaho National Engineering Laboratory - Project Engineer
- Purdue University School of Mechanical Engineering Research & Teaching Assistant

EDUCATION: B.S. and M.S., Mechanical Engineering, Purdue University
Ph.D., Purdue University
Senior Executive Program, Stanford University

OTHER: Registered Professional Engineer, Mechanical Engineering, State of Idaho
Adjunct Professor, University of Idaho

Listed in:

- Who's Who in the World
- Who's Who in the West
- International Who's Who of Contemporary Achievement

Member of:

- American Society of Mechanical Engineers
- American Nuclear Society
- Sigma Xi

NAME: Robert T. Hadley (Emergency Readiness)

ASSOCIATION: Lawrence Livermore National Laboratory (LLNL)

EXPERIENCE: 14 years

- Industrial Hygiene, LLNL
- Industrial Hygiene and Emergency Preparedness, Hanford Environmental Health Foundation
- Health Physics and Emergency Preparedness, Battelle Pacific Northwest Laboratories
- Biophysics research and Epidemiology, University of Utah
- Neurobiology research, Veterans Administration Hospital

EDUCATION: B.S., Life Sciences, Massachusetts Institute of Technology
M.S., Medical Biophysics and Computing, University of Utah

OTHER: Certified in the Comprehensive Practice of Industrial Hygiene by the American Board of Industrial Hygiene

NAME: William C. King (Radiological Protection)

ASSOCIATION: SCIENTECH, Inc.

EXPERIENCE: 35 years

■ Lawrence Livermore National Laboratory

- Supervisor in Safety Services Division - Developed methods to record hazards control data and hazards control training
- Staff Assistant in the Radiation and Environmental Safety Division: (1) Provided radiation safety expertise in the planning of Nuclear Weapons Accident exercises; (2) served on Audit and Incident Investigations Committees; (3) developed a classification system for radioactive waste for the NRC; (4) evaluated underground water contamination problems; (5) evaluated and assigned internal radiation dose to U, Po, Am, and Cm isotopes for over 80 persons; and (6) provided backup health physics coverage for the laser fusion, laser isotope separation program and the tritium facilities
- Manager of the Health and Safety Group: (1) Safety Advisor to the Nuclear Weapons Test Group Director; and (2) developed a method for monitoring the release of radioactive material from Nuclear Weapons Tests
- Manager of the Physics and Earth Sciences Group - Supervisor for the Super Kukla and Fran prompt burst reactors
- Reactor Physicist for Project Pluto and High Temperature Critical Facilities

■ Phillips Petroleum Company - Health Physics Supervisor at the Engineering Test Reactor

■ American Cyanamid Company - Assistant Health Physics Supervisor at the Idaho Chemical Processing Plant

William C. King (continued)

EDUCATION: M.S., Physics, Vanderbilt University, 1953
 B.A., Physics, Linfield College, 1950
 A.A., Eastern Oregon College, 1948

OTHER: Certified by the American Board of Health
 Physics in 1960
 Maintained certification current - Valid
 through December 31, 1989

NAME: Rex N. Lutz (Quality Assurance)

ASSOCIATION: ARINC Research Corporation, Annapolis, MD

EXPERIENCE: 14 years

- Nuclear Quality Assurance Consultant, ARINC Research Corporation
- Research and Faculty Assistant, Pennsylvania State University
- Nuclear QA Auditor, U.S. DOE Savannah River Operations
- Nuclear Engineer, Baltimore Gas and Electric Company
- U.S. Navy, Submarine Service

EDUCATION: B.S., Nuclear Engineering, Pennsylvania State University
M.S., Nuclear Engineering, Pennsylvania State University

OTHER: American Society for Quality Control -
Certified Quality Engineer
Member, ASQC Quality Audit Technical Committee

NAME: Thomas J. Mazour (Training and Certification)

ASSOCIATION: Private Consultant

EXPERIENCE: 18 years

- Private Consultant
 - Participated in 13 DOE Technical Safety Appraisals at Category A reactors, Category B reactors, plutonium processing, tritium processing, uranium processing, and weapons assembly facilities
 - Developing and presenting training program for DOE site-surveillance personnel
 - Supporting development of a Training Accreditation Program for DOE nuclear facilities
- Analysis & Technology, Inc.
 - Supported the NRC Division of Human Factors Safety in evaluating utility training programs and developing training review criteria and regulations
 - Designed and developed training programs for commercial utilities and DOE Category A reactors
 - Supported INPO development of a performance-based training accreditation program for reactor operator, chemistry technician and health physics technician positions
- Burns & Roe, Inc.
 - Design Engineer for PWR and breeder reactor auxiliary systems
 - Licensing Engineer for Clinch River Breeder Reactor
- U.S. Navy - Nuclear trained officer - supervised nuclear reactor operations and served as nuclear weapons officer

EDUCATION: B.S., Mathematics, U.S. Naval Academy
M.B.A., University of New Haven (UNH)
M.S., Industrial Engineering, UNH
Sc.D (candidate) Management Systems, UNH

OTHER: Registered Professional Engineer
(Nuclear/Mechanical)

Thomas J. Mazour (continued)

Adjunct faculty member, University of Rhode
Island and UNH, industrial engineering and
operations research courses

NAME: Leon H. Meyer (Operations)

ASSOCIATION: The LHM Corporation

EXPERIENCE: 35 years

- The LHM Corporation - Technical assistance
- Savannah River Plant, DuPont - Program Manager, with responsibility for Safeguards and Security, Long Range Planning, Budget Coordination, Quality Assurance, Environmental Control, Energy Conservation, and Away-From-Reactor Spent Fuel Storage
- Atomic Energy Division, DuPont - Program Manager, Technical Division, with responsibility for the Defense Waste Processing Facility and the LWR Fuel Reprocessing Design Project
- Savannah River Laboratory, DuPont
 - Assistant Director
 - Director, Separations Chemistry & Engineering Section
 - Research Manager, Separations Chemistry Division
 - Research in areas of chemical separations; plutonium, uranium, and thorium processing; and tritium technology

EDUCATION: B.Ch.E., Georgia Institute of Technology
M.S., Chemistry, Georgia Institute of Technology
Ph.D., Physical Chemistry, University of Illinois

NAME: J. Chris Midgett (Operations)

ASSOCIATION: WINCO/INEL - Assistant Production Manager,
Idaho Chemical Processing Plant

EXPERIENCE: 17 years

- Westinghouse Idaho Nuclear Co.
 - Assistant Operations Manager
 - Shift Operations Manager
 - Assistant Production Manager
 - Deputy and Principal Assistant to Vice President and Manager, Production, oversee all fuel handling, fuel processing, and waste processing operations
- Westinghouse Hanford Co. - Fast Flux Test Facility
 - Test Engineer for initial criticality and startup operations Training Manager
 - Shift Operations Manager
- U.S. Navy (Nuclear Trained Officer) - Supervised nuclear reactor operations and served as Weapons Officer

EDUCATION: B.S., Physics, U.S. Naval Academy
M.S., Nuclear Physics, U.S. Naval Postgraduate School, Monterey, CA

NAME: Bryce L. Rich (Radiological Protection)

ASSOCIATION: Scientific Specialist - Health Physics, EG&G Idaho, Inc.

EXPERIENCE: 35 years

- Served on Technical Safety Appraisals for FFTF, N-Reactor, Livermore Pu Building 332, Hanford Plutonium Finishing Plant, and PUREX Plant
- Applied Safety Program Management
 - Enriched Fuel Reprocessing
 - High Flux Test Reactors
 - Nuclear Weapons Test
 - Accelerators
 - Pu Metallurgy and Transuranic Processing
 - Technical Safety Support
- Health Physics Research and Development Project Management
- Special Problems and Program Consultation
 - Uranium Mining and Milling
 - Uranium Fabrication
 - Commercial Nuclear Power
 - NRC Site Analysis
 - TMI Program Investigations

EDUCATION: B.S., Physics/Mathematics, Idaho State University
AEC Health Physics Fellowship, Vanderbilt University/Oak Ridge

OTHER:

- Health Physics Society
 - President 1983-1984
 - HP Standards Committee Chair 1981-1984
 - HP Fellow - 1986
 - American Delegation to Berlin IRPA Chair - 1984, Sydney, 1988
- American Board of Health Physics
 - Certified - 1961
 - Member and Chairman Panel 1965-1973
 - Member and Chairman of Board 1973-1978
- American Academy of Health Physics
 - President ProTem 1986

Bryce L. Rich (continued)

- National Committee Radiation Protection
 - Subcommittee 50
 - Subcommittee 71
 - Subcommittee 46
- Organization for Economic Cooperative Development (OECD) Expert Group on Power Plant Exposure
- International Atomic Energy Agency
 - Lecturer - Mexico City
 - Working Groups - Vienna

NAME: David Schweller (Organization and Administration)

ASSOCIATION: DBS Associates, Inc. - Private Consultant

EXPERIENCE: 34 years

- President, DBS Associates, Inc., private consultant in organization, management, safety, and security
- 10 years - Manager and Contracting Officer, US DOE, Brookhaven Area Office, Upton, NY
- 14 years - Director, Safety Division, US DOE, Brookhaven Area Office, Upton, NY
- 1 year - Reactor Safety Specialist, US AEC, Washington, DC
- 2 years - Chief, Experimental Physics, Martin Nuclear Division, Middle River, MD
- 5 years - Reactor Physicist, Combustion Engineering Nuclear Division, Windsor, CT

EDUCATION: B.S., Engineering Physics, N.Y.U. College of Engineering

OTHER: Numerous Government Awards for Performance

Listed in:

- Who's Who in Atoms
- Who's Who in Engineering
- Who's Who in the East
- The U.S. Senior Executive Directory

NAME: William E. Taylor (Fire Protection)

ASSOCIATION: Westinghouse Hanford Company

EXPERIENCE: 32 years

■ Westinghouse Hanford Company

- Manager, Fire Protection, managing fire protection program and integration of four DOE contractors' safety and fire protection engineering programs into a comprehensive program
- Senior Engineer, Industrial Safety and Fire Protection
- Manager, Fast Flux Test Facility Health and Safety. Provided nuclear, radiological, fire protection, and industrial safety programs during construction, start-up, and operation

■ Washington Public Power Supply System

- Manager, Health and Safety Programs. Directed fire protection, health physics, industrial safety, medical, industrial hygiene, and emergency preparedness programs for five nuclear power reactors under construction, and one thermal, and one hydroelectric generating facility, respectively
- Manager, Industrial Safety and Fire Protection. Developed and managed company-wide industrial safety, industrial hygiene, and fire protection engineering programs

■ Battelle Northwest Laboratories - Senior Specialist, Industrial Safety. Provided industrial safety, industrial hygiene, and fire protection guidance to management and staff

EDUCATION: Certificate of Completion, College of Advanced Traffic, Chicago, IL

OTHER: Member, National Fire Protection Association
Member, Society of Fire Protection Engineers

NAME: Glenn A. Whan (Technical Support, Auxiliary Systems)

ASSOCIATION: Emeritus Professor, Chemical and Nuclear Engineering, University of New Mexico

EXPERIENCE: 31 years

- Participated in DOE Technical Safety Appraisals from 1986 to 1988 for: Oak Ridge Y-12 Plant, Portsmouth and Paducah Gaseous Diffusion Plants, Idaho Chemical Processing Plant, Hanford Plutonium Finishing Plant, and PUREX Plant
- Professor and Department Chairman, Chemical and Nuclear Engineering Department, University of New Mexico, 1957-85
 - Nuclear reactor licensing and operation
 - Gamma irradiation cell design, licensing and operation
 - Nuclear criticality safety analysis
 - Radiation measurement and safety
- International Atomic Energy Agency Technical Expert, Reactor Experimentation, 1966-67
- Los Alamos National Laboratory
 - High Temperature Gas-Cooled Reactor Safety Analysis, 1974-75
 - Nondestructive Assay Measurements for SNM, International Safeguards, 1983 to present
- Other Nuclear Safety Reviews
 - Member and Former Chairman, DOE Independent Review Committee for Transuranic Waste, 1980-84
 - Member, NRC Nuclear Criticality Safety Appraisal Team, Nuclear Fuel Services Corporation, Erwin, Tenn., 1986
 - Member, DOE Readiness Review Team, Rockwell Hanford Operations, PUREX and PFP, Richland, Wash., 1986-88
 - Nuclear criticality safety analysis, Oak Ridge K-25 Gaseous Diffusion Plant Decommissioning Project, 1987-88

Glenn A. Whan (continued)

EDUCATION: B.S., Chemical Engineering, Indiana Institute
 of Technology
 M.S., Chemical Engineering, Montana State
 University
 Ph.D., Chemical Engineering, Carnegie-Mellon
 University

OTHER: Fellow of American Nuclear Society
 Professional Engineer, Nuclear Engineering,
 State of New Mexico

APPENDIX F

INTERIM RESPONSE TO THE

TECHNICAL SAFETY APPRAISAL

OF THE ROCKY FLATS PLANT

Memorandum

Albuquerque Operations Office

DATE: DEC 23 1988

TO: SPD

SUBJECT: Technical Accuracy Comments and Interim Action Plan for the Safety Performance Review of the Rocky Flats Plant (December 1988)

TO: E. C. Baynard, III, Assistant Secretary, Environment, Safety and Health, EH-1, HQ

Attached is a copy of technical accuracy comments by the Albuquerque Operations Office (AL) Attachment 1, Rocky Flats Area Office, (RFAO) Attachment 2, and Rockwell International (RI) Attachment 3, and the Interim Action Plan for the Category II concerns, Attachment 4, resulting from the safety performance review conducted at the Rocky Flats Plant in November and December 1988. AL has reviewed both the technical accuracy comments and the Interim Action Plan and concurs. The AL Safety Programs Division and the Environment and Health Division will continue to follow up on the action plan. We will keep your staff informed of other RI actions related to the concerns identified in the TSA.

After your review of the accuracy comments provided by AL, RFAO and RI, I encourage you to reevaluate the concerns expressed throughout the draft report. Additionally, I look forward to meeting with you and your staff in the near future to discuss your concerns and mutually agree to a course of action that will eliminate those concerns.

Bruce G. Twining
Manager

4 Attachments

cc w/Attachments:

T. E. Wade, Assistant Secretary
for Defense Programs, DP-1, HQ
BG P. F. Kavanaugh, USA, DP-20, HQ
J. P. Knight, EH-33, HQ
CAPT L. R. Newby, USN, DP-22, HQ

United States Government

Department of Energy

memorandum

Albuquerque Operations Office

Rocky Flats Area Office

DATE: DEC 22 1988

REPLY TO:
ATTN OF: OAM: AEW

SUBJECT: Factual Accuracy Comments for Draft Report of the Rocky Flats Safety Performance Review

TO: Bruce G. Twining, Manager, AL

The Safety Performance Review (SPR) (pg IV-9) concludes that RFAO has been ineffective in providing guidance and overview to Rockwell for safety improvements. While I believe we can always do better in this critical area, I believe the SPR inadequately characterizes the current level of guidance and direction and the safety improvements brought about by prior and ongoing activities of the RFAO. The SPR correctly states that its conclusions were based on "a limited review."

Again, I believe the RFAO can do better and it will do better in this critical area. However, I believe the SPR has not adequately addressed the prior and ongoing activities discussed below sufficiently to make the judgements described in the SPR draft report.

1. It was recognized in the spring of 1986 that more emphasis was needed by the RFAO in safety and facility operations. Reorganizations, personnel reassignments, and work responsibility changes (construction project management was assigned from RFAO to Rockwell) were made to make professional staff available for building/area oversight and surveillance. Several engineers from the newly reorganized Facility Management Branch and the Operations Branch were assigned to major production buildings and (if applicable) colocated with the RFAO QA Specialists in these buildings. The Branch, Position Title, Grade, Degree (and year), and Major Field of Study for these individuals and their supervisors are listed in Attachment 1.

These engineers were responsible for overseeing building operations, and for resolving operational and safety concerns with the Building Managers. In addition, these engineers are frequently involved in programmatic activities (e.g., the Safety Improvement Program discussed below). I am currently reviewing to determine whether adequate resources are available to perform this important function.

One of the objectives of this increased surveillance and oversight has been to improve overall facility operations. I believe significant success has been achieved in this area as evidenced by the SPR review of operations. Concern was raised in the SPR about operation in Building 374, a waste water processing building. However, "similar conditions were not observed during reviews of the other RFP Facilities." I give RFAO credit for improvements in this critical area.

2. Subsequent to the November 1987, NAS report on the defense production reactors, RFAO, as part of an overall AL effort, made an intensive review of needed improvements in safety oversight, developed an action plan, and assigned a senior manager as Safety Improvement Program (SIP) Manager. Attachment 2 details some of the more significant improvements made as a result of the RFAO SIP. An important element of the SIP was the development and implementation of an improved incident reporting and follow-up system. An interim RFAO directive to Rockwell was issued in this area on May 4, 1988. In response to this directive (and information from Duke Power), Rockwell established the Safety Review Group that was given high marks by the SPR team. The final RFAO Order was issued December 15, 1988, and is included as Attachment 3.

The SPR draft report criticizes RFAO for not responding to the Rockwell report which was also developed as part of the overall AL NAS response effort. My staff and I reviewed the Rockwell report in detail in January, 1988 and found it to be inadequate. Events following the February, 1988 TSA made further review unproductive.

3. The SPR draft report states that "administration of the CPAF process by DOE (AL and RFAO) has been an adverse influence on the RFP Safety Program." I disagree. The purpose of CPAF is to rate the overall performance of the contractor and pay fee accordingly. It is a strong tool, but only one among many that management uses to direct and guide the contractor. Environment, safety and health (ES&H) was given its own CPAF category in October 1986. It was given a weight of 15% of the contract, as much as most other categories, and more than some. In April 1987 the weight was increased to 20%, which is more than most categories. This weight of fee has equated to several million dollars per year for the Rockwell contract since the inception of the separate category. I believe this weighting is consistent with other operating contractors of departmental nuclear facilities. In addition, ES&H can be (and has been) addressed concurrently in the General Management CPAF category. The weighting of this category is currently 25%.

Because Rockwell had not yet developed a plant safety self-improvement program, the RFAO developed a goal and objective setting process with quarterly performance evaluations in the CPAF reports to motivate safety improvements. Improvement objectives

relating to most areas covered in the SPR (operations, quality, radiation protection, training, etc) have been established for the past two years in most performance areas covered by the CPAF process. Selected paragraphs from the January 1988 quarterly CPAF performance assessment by RFAO are in Attachment 4.

As shown in Attachment 4, many improvement objectives were clearly not being accomplished in a manner satisfactory to RFAO. Subsequent to the January 1988 CPAF evaluation, significant improvement occurred. The February 1988 Technical Safety Appraisal was a major force for that improvement. Most of those areas received high marks from the SPR in its most recent review.

Many areas have exhibited a significant improvement as a direct result of RFAO CPAF objectives. These improvements have been in the areas of training, procedure control and upgrade, emergency preparedness, integrated scheduling and control, maintenance work packages, NQA-1 implementation, PCB and asbestos management and elimination, and implementation of operational safety requirements.

The draft SPR report implies that RFAO used only indices and performance indicators in the CPAF goal setting process. This is not correct, though indices and indicators have been used as a measure of performance. RFAO attention to these measures have motivated Rockwell to look at the management systems and controls that influence the indicators, and have motivated improvements. These improvements include:

- . The injury and illness Performance Index has improved by 48%. This is remarkable, consistent performance by any standard, and Rockwell has been rewarded for excellence in this area.
- . External radiation exposures have been reduced by 37% (plantwide man-rem basis). This is again excellent performance in an area that is often particularly difficult to improve. We are not yet finished in this area.
- . Wounds occurring in radiation controlled areas and requiring a wound count have been reduced by 25%.

The report contradicts itself on a factual basis. Page IV-59 and 60 gives credit for improvement in injury and illness frequencies. Rockwell is reported to have a Lost Workday Case Frequency Rate for 1988 that is half the frequency of 1986 (two years earlier), and nearly half of the DOE average. Rockwell is credited with a reduction in the Recordable Injury Frequency Rate, and a five-year average which is lower than the DOE average. One of the CPAF indices (PI, noted above) specifically targeted injury/illness rates, with emphasis on the most serious occurrences.

For the most recent CPAF fiscal year, RFAO has sought to incentivize the development of detailed operating plans through the development of a more consistent planning process. These operating plans would focus on improvement. At the same time, RFAO identified several key areas that require immediate special emphasis. This guidance letter from the RFAO is included as Attachment 5.

4. Subsequent to the February 1988, Technical Safety Appraisal, Rockwell initiated intensive programs to improve plant safety performance. RFAO provided extensive guidance and direction to Rockwell during this period. Three products of the Rockwell improvement effort were a Safety Program Document, Safety Requirements Manual, and a Self-Improvement Plan. RFAO guidance and direction regarding these important documents are contained in Attachment 6.
5. A strong effort has been made to increase the level of health, safety, and environmental staffing in RFAO. The following Table shows the increases that have been made.

	<u>RFAO</u>	<u>Support Contractor</u>
9/30/86	3	0
9/30/87	6	0
9/30/88	12	4
12/19/88	13	3

Not included in the above numbers are a health physicist and a nuclear engineer which have been recently selected, and a safety analyst that is soon to be selected. There is (obviously) little RFP experience in much of the present staff, but a significant base has been established from which strong RFAO safety and environmental oversight can be built.

Clearly, much improvement has occurred in the assurance of safe operations at the Rocky Flats Plant in the past year, and much work remains. The RFAO is an integral part of making that improvement occur, and can improve in its execution of that responsibility. I believe, however, that RFAO has made significant improvements, and that the Reviewer's assessment of RFAO Performance in the SPR draft report is an inadequate representation of RFAO accomplishments and initiatives.

 Albert E. Whiteman
 Area Manager

6 Attachments

Branch	Position Title	Grade	Degree	Year	Major Field of Study	Assigned Buildings
Operations	Supervisory General Engineer	14	BS	1964	Mechanical Engineering	115
Operations	General Physical Scientist	13	BS MS	1963 1969	Nuclear Chemistry Nuclear Chemistry	371/771
Operations	General Engineer	13	BS	1958	Mechanical Engineering	460
Operations	General Engineer	13	BS MS	1978 1982	Mining Engineering Engineering Management	707
Operations	General Engineer	12	BS MBA	1984 1986	Chemical Engineering Production Management	771
Fac. Mgmt.	Supervisory General Engineer	14	BS MS	1950 1953	Physics Physics	115
Fac. Mgmt.	General Engineer	13	BS BS	1952 1960	Mechanical Engineering Business	707/776/777
Fac. Mgmt.	General Engineer	13	BS	1957	Civil Engineering	115
Fac. Mgmt.	General Engineer	13	BS	1970	Electrical Engineering	371/771

Rocky Flats Plant
Aerospace Operations
Rockwell International Corporation
P.O. Box 464
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(303) 966-7000

Rockwell
International

Contractor to U.S. Department of Energy

88-RF-3973

DEC 21 1988

Albert E. Whiteman
Area Manager
DOE, RFAO

ROCKY FLATS SAFETY PERFORMANCE REVIEW RESPONSE TO CATEGORY II CONCERNS

The purpose of this letter is to provide DOE with Rockwell's initial response to the Category II concerns identified during the November 1988 Safety Performance Review (SPR) of the Rocky Flats Plant. The six concerns have been reviewed and within the time available we have identified compensatory and long term corrective actions. Future detailed analyses may disclose a root cause that embodies one or more of these findings. A statement is presented below summarizing the content of the six attached action plans.

OPERATIONS IN BUILDING 374 WASTE PROCESSING AREAS

OP-1 concerns the formality and discipline of Building 374 Waste Processing areas. The conditions of concern stem from several sources including: lack of a design group to routinely review and revise operating procedures; large amount of time associated with implementation of the new Qualifications-Based Training programs; and the design of Building 374 control room. The immediate compensatory measures include personnel indoctrinations, procedural changes and shift turnover meetings. The long term solution is the RFP Nuclear Facility Operations Manual development and implementation. Attachment 1 identifies the specific actions required to correct this concern.

IMPLEMENTATION OF ON THE JOB TRAINING

Finding TC-1 primarily concerned the quality of on-the-job training (OJT). Instead of responding to this individual finding, we have reviewed our entire training program and developed the attached action plan for enhancing the Training program as a whole.

Compensatory Actions, addresses the concerns identified in Category II finding of OJT implementation, extension of the training records reporting system to job-specific certifications, and definition of role and scope of the various Rocky Flats training entities. Long Term Action Plan establishes a set of tasks leading to the Training

Program Accreditation Plan. These actions include a definition of training system standards and criteria, evaluation of the Rockwell system against established standards, and recommendations for required changes to the system. Attachment 2 identifies the specific actions required to correct this concern.

UTILIZATION OF RADIATION MONITORS

Concern RP-1 is related to the under-utilization of Radiation Monitoring personnel. In mid-1988, Rockwell management recognized the need to expand the Radiation Monitor training program and established an enhanced training program. This training, scheduled for April 1990 completion, will enhance their utility in the Radiation Protection Program but will not prepare them to be para-professional health physicists. Radiation monitors at Rocky Flats have long been looked upon as data gatherers rather than as health physicist technologists. Therefore, minimum requirements to be hired or bid into this position did not include a technical background by virtue of either experience or education.

As an immediate compensatory action, a health physicist has been added to the staff of the Radiation Monitoring group. As other cleared health physicists are available, health physicists will be assigned to each of the production buildings. As part of the long term solution, team consisting of the Plant Health Physicist, the Manager, Radiation Monitoring, a union representative, representatives from Industrial Relations, Technical Training, Operational Health Physics and HS&E Operations and Plans is being formed to investigate and recommend a final solution to this concern. Attachment 3 identifies the specific actions required to correct this concern.

EXTREMITY DOSE TO WORKERS WHO CANNOT WEAR EXTREMITY DOSIMETERS

Recommendation RP-2 concerns the determination and documentation of extremity dose to workers, who as a result of Rockwell safety policy, cannot wear hand or wrist dosimeters. Compensatory actions include identification of personnel, assessment of doses encountered in similar operations, and determination of upper bound extremity dose. The extremity dose will be determined using documentation from other facilities and from time studies and measurements using phantoms of mock processing operations. The long term solution is an integral part of the Integrated Radiological Protection Plan (IRPP). The IRPP is an HS&E initiative to develop a state-of-the-art Radiological Protection Program including extremity dosimetry, requirements development, existing program review, upgrade planning and implementation. Attachment 4 describes these activities has been reviewed and is consistent with the goals and objectives of the IRPP.

AWARENESS OF ELECTRICAL SAFETY

Concern PP-2 is related to the perceived lack of awareness of electrical safety among Rockwell personnel. The Support Operations electrical safety program has been active for almost two years but did not include participation by personnel outside of Support Operations. Compensatory actions include training, safety bulletins and mandatory video tape presentations relating to electrical safety, to be used to reemphasize to all Rocky Flats employees the need to continue improving electrical safety. A task team including representatives from Industrial Safety, Support Operations and Production Operations will establish a plant wide electrical safety program as a long term solution. Attachment 5 identifies the specific actions required to correct this concern.

DAMPERS IN VENTILATION DUCTS PASSING THROUGH FIRE BARRIERS

The Action Plan for FP-2 expands site-wide activities that have been put in place as a result of a Building 776 Technical Safety Appraisal (TSA) finding.

The requirement for dampers in HVAC systems as they penetrate fire walls or barriers, stems from the assumption that duct work will fail due to a fire. As installing dampers in the HVAC systems at RFP would defeat the system to control glovebox and room atmosphere and remove smoke in the event of a fire, two approaches have been taken.

The compensatory actions include controlling fuel loading in buildings, especially in relation to overhead ducts. The remaining actions are to provide specific storage locations which will be subjected to for routine fire inspection; additional policy description for the Building Managers; and further reduction of combustible materials.

The long term approach, is to establish fire models verified by tests of the ventilation ducts at RFP. This was used to evaluate Building 776 and will be used to evaluate other buildings when a fuel source and ventilation system proximity has been identified. Our current inspections have not identified a specific area of high fuel loading adjacent to ventilation ducts. Therefore, the first phase of this plan will be to perform a detailed survey to document and assure areas of high fuel loading do not exist and evaluate, with the model any areas that are questionable. Attachment 6 identifies the specific actions required to correct this concern.

A. E. Whiteman
Page 4
Dec 21 1983

88-RF-3973

SUMMARY

All the attached action plans are consistent with Rockwell's commitment to expeditiously respond to safety concerns. These action plans have been reviewed for consistency with the long term goals and objectives of the Integrated Safety Program. Task team plans and associated implementations will similarly be reviewed prior to inclusion in the Plant Safety Self Improvement Program.

Dominick J. Sanchini
President
Rocky Flats Plant
Aerospace Operations

Orig. and 1 cc - A. E. Whiteman
Encs.(6)

ATTACHMENT 1

SPR CONCERN OP.1

CONCERN: The formality and discipline of operations in the waste processing areas of Building 374 do not meet DOE and industry practices.

CAUSE ANALYSIS: Root causes associated with this concern stem from the unavailability of a designated group to review and revise operating procedures for Waste Operations on an annual basis. Development of the new Qualification Standard Based Training for Building 374 Operations has met established time lines. However, implementation of the program for certification of supervisors and operating personnel requires allotted time for detailed classroom and on-the-job training. Facility design of the Building 374 control room contributes to the informality of control room operations, lack of limited access, and unavailability of local instrumentation to monitor parameters.

COMPENSATORY ACTIONS:

1. Action Limits

Action limits were identified for all critical processes. It was assured that emergency shutdown procedures exist for when action limits are exceeded. All personnel were indoctrinated regarding action limits.

Responsible Organization: Waste Operations
Completion: Complete

2. Alarms

The operational status of all alarms was assured. An alarm status sheet was prepared. This sheet will be utilized at Shift turnover meetings. All personnel were indoctrinated regarding proper response to alarm signals.

Responsible Organization: Waste Operations
Completion: Complete

3. Certified Operations

Management has assured that only certified operators are used for critical processes.

Responsible Organization: Waste Operations
Completion: Complete

4. Informed Employees

The Director of Plutonium Operations has held "all hands" meetings for all shifts to inform employees and answer questions.

Responsible Organization: Plutonium Operations
Completion: Complete

LONG TERM/SOLUTION ACTION PLAN:

1. Revise Operating Procedures

The 45 operating procedures for Building 374 have been identified and a plan is in place to revise and incorporate pertinent operational and Safety Information.

Responsible Organization: Waste Operations
Completion: 11/30/89

2. Implement Training Program

Implementation of the new Qualification-Based Training Program will begin in January 1989.

Responsible Organization: Waste Operations
Completion: TBD

3. Perform Annual Alarm and Emergency Training

The annual alarm and Emergency Training for major operations is currently being conducted.

Responsible Organization: Waste Operations
Completion: 1/15/89

4. Limit Access to Control Room

Modifications to limit access to the control room are in progress.

Responsible Organization: Waste Operations
Completion: 2/28/89

5. Complete Instrumentation to Monitor Pressure

Additional instrumentation to monitor pressure in the evaporator system is being completed and installed.

Responsible Organization: Waste Operations
Completion: 3/15/89

DISCUSSION/RECURRENCE CONTROL

Development and implementation of revised procedures and qualification-based training will enhance Building 374 Operations. Such enhancements, along with control room modifications and process monitoring improvements, will achieve the desired level of formality and discipline of operations.

RESPONSIBLE MANAGER:

F. P. McMenus

ACTION CENTER NUMBER:

237

ATTACHMENT 2

SPR CONCERN TC.1

CONCERN: The quality of pilot training and qualification programs for fissile material handlers and supervisors for initial on-the-job certifications, and annual and biennial recertifications do not meet the requirements of DOE 5480.5, Section 10.

CAUSE ANALYSIS: The plant has lacked an integrated training system, with clear roles, responsibilities and standards, particularly with regard to OJT training implementation. Job specific performance-based training has not been a required prerequisite to Fissile Material Handler operations.

COMPENSATORY ACTIONS:

1. Non-Weapon Quality Assurance (NWQA) Team in place to audit on-the-job (OJT) training.
Responsible Organization: Non-Weapons Quality
Completion: Complete
2. Complete classroom training for Building 771 Fissile Material Handlers (FMH).
Responsible Organization: Technical Training
Completion: 1/3/89
3. Begin OJT for Building 374 Waste Operators as procedures are updated to be delivered monthly, by duty area.
Responsible Organization: Plutonium Operations
Completion: 1/30/89
4. Complete OJT training for 771 FMH.
Responsible Organization: Plutonium Operations
Completion: 6 weeks following restart
5. Identify resources to implement remainder of FMH training plan.
Responsible Organization: Technical Training
Completion: 2/28/89
6. Implement a delinquency computer reporting system to include job specific training and recertification (modeled on core training).
Responsible Organization: Training Administration and Assessment
Completion: 3/30/89

7. Complete Building 771 FMH supervisor technical training.
Responsible Organization: Technical Training
Completion: 4/30/89
8. Complete Building 771 FMH supervisor technical training.
Responsible Organization: Technical Training
Completion: 12/31/89
9. Using Building 771 model, continue implementation of classroom and OJT for FMH as scheduled in training plan.
Responsible Organization: Technical Training
Completion: Per Training Plan

LONG TERM ACTION PLAN:

1. Plant policy of training qualification.
Responsible Organization: Training Development/Technical Training
Completion: Complete
2. Select program manager for training accreditation.
Responsible Organization: Technical Training
Completion: Complete
3. Assemble plant-wide training task team.
Responsible Organization: Technical Training
Completion: Complete
4. Issue revision to organization and responsibility section of plant Training Administration Manual.
Responsible Organization: Training Development
Completion: 1/13/89
5. Define training system standards and criteria for Rocky Flats.
Responsible Organization: Training Development
Completion: 3/31/89
6. Complete revised plant Training Administration Manual and issue as a controlled document.
Responsible Organization: Technical Training
Completion: 3/31/89

7. Evaluate existing Rocky Flats training system against standards and criteria.

Responsible Organization: Technical Training
Completion: 7/31/89

8. Recommend changes to existing training system with associated resource requirements. (Accreditation self-evaluation under DOE 5480.XX).

Responsible Organization: Technical Training
Completion: 9/30/89

9. Training Program Accreditation Plan.

Responsible Organization: Technical Training
Completion: TBD

DISCUSSION/RECURRENCE CONTROL

This plan was developed to provide a high quality, lasting solution to the RFP training and qualification programs while responding rapidly to identify deficiencies in on-the-job training and certifications. The plan permits a period to review, evaluate, and develop an overall training plan using the same approach successfully demonstrated for emergency preparedness.

These actions will ensure that job-specific performance-based training will have a sustained high priority with sufficient committed resources and plant visibility to achieve compliance with DOE Order 5480.5 and other standards and criteria.

DOE accreditation of training at Rocky Flats will ensure long-term recurrence control of the problems identified in the cause analysis. Accreditation will additionally result in continuous strategic planning including optimum resource allocation.

RESPONSIBLE MANAGER:

G. W. Meyers / B. D. Wozniak

ACTION CENTER NO.:

240

ATTACHMENT 3

SPR CONCERN RP.1

CONCERN: The radiation monitors, as a group, are not being trained/qualified on-the-job to utilize their full potential as members of the radiological safety team and as valued resource in all aspects of the applied radiological protection program.

CAUSE ANALYSIS: The function of radiation monitoring at Rocky Flats has been to monitor activities and areas rather than to participate as a health physics technologist in the Radiation Protection Program. Because of this, the minimum requirements to bid into or be hired into this classification did not include a technical background, either educational or experience.

COMPENSATORY ACTION

1. Train Radiation Monitors

In mid 1988, Rockwell International management recognized the existing training of radiation monitors as a weakness and established an enhanced training program. This training will satisfy the requirements of DOE Order 5080.11 and enhance the ability of the radiation monitors to be more fully utilized in the radiation protection program. To immediately enhance the technical expertise of the organization, a Health Physicist has been added to the staff of the Radiation Monitoring Group. This Health Physicist will be directly involved in the operation of Radiological Monitoring and will provide the guidance and technical direction required to begin a more complete utilization of the Radiation Monitors in the Radiation Protection Program.

Responsible Organization: Radiological Monitoring.
Completion: Training in April of 1990.

2. Better Utilize Radiation Monitors

2A. Enhance Work Permit System to Involve Radiation Monitors

HS&E/Radiation Work Permit system has been enhanced to provide a more comprehensive review and approval of radiation protection requirements. As a result of this enhanced system, Operational Health Physics, HS&E Area Engineering, Radiation Monitoring Management and the radiation monitors all are more involved in the day-to-day aspects of radiological protection.

Responsible Organization: HS&E Area Management.
Completion: Completed.

2B. Involve Radiation Monitors in ALARA Program

An ALARA coordinator has been appointed to work within the Radiological Engineering organization. As part of this program, the ALARA coordinator will develop a system for the review of worker exposure levels and initiate a program in which radiation monitoring is instrumental in reducing personnel exposure.

Responsible Organization: Radiological Engineering.
Completion: 3/1/89

2C. Assign Health Physicists to Production Buildings

Operational Health Physics has assigned a Health Physicist to Building 771 as part of the restart activities, to increase the technical expertise associated with on the floor activities of this facility. When fully staffed with cleared personnel; health physicists will be assigned to reside in the production facilities.

Responsible Organization: Operational Health Physics.
Completion: Ongoing.

LONG TERM ACTION: A team consisting of the Manager, Radiation Monitoring, the Plant Health Physicists, a Union representative, Operational Health Physics, Industrial Relations, Training, and HS&E Operations and Plans will be established to evaluate the technical expertise of radiation monitoring personnel. The Team will make on-site surveys of radiation monitoring programs used at other DOE facilities, as well as, gather information on how radiation monitors are utilized at nuclear power plants. The team will use the information gathered from these other facilities to evaluate our current use of radiation monitors. As a result of these evaluations, upgrades will be made to the entry technical and educational qualifications for radiation monitors. The schedule to evaluate other programs and to incorporate the required changes to the Rocky Flats Plant program follows.

Phase I ORGANIZE

1. Form Project Team to investigate and recommend a final solution to this concern. The team, lead by Radiological Monitoring, will consist of the Plant Health Physicist, a representative from Operational Health Physics, a Union representative, the Program Administrator for the Integrated Safety Program, Industrial Relations and Training.

Responsible Organization: Radiological Monitoring.
Completion: 1/6/89.

2. The Project Team will develop objectives, plans, and schedules.

Responsible Organization: Radiological Monitoring.
Completion: 1/15/89.

Phase II FACT FINDING

3. The team will review the system and methods used for radiological monitoring at Iowa Power Nuclear Power Plant and Wolf Creek Nuclear Power Plant.

Responsible Organization: Radiological Monitoring.
Completion: 2/28/89.

4. The team will gather information from other DOE Facilities on their radiological monitoring methods and systems by making on site surveys of the Idaho and Hanford facilities.

Responsible Organization: Radiological Monitoring.
Completion: 3/15/89.

Phase III DEVELOP SYSTEM

Based on fact finding and comparison of the Rocky Flats program, key elements of the radiation monitoring program will be evaluated to determine the need for changes to the Rocky Flats program. Assuming needed changes will be identified, the following steps will take place to develop and then implement a new radiological monitoring program.

5. From information gained during fact finding, the team will develop job description(s) for the radiological monitoring function.

Responsible Organization: Industrial Relations.
Completion: TBD

6. The team will develop entry qualifications based on Institute of Nuclear Power Operations (INPO) recommendations and information gained during fact finding.

Responsible Organization: Radiological Monitoring.
Completion: TBD

7. The team will develop training and certification requirements based on INPO recommendations and information gained during fact finding.

Responsible Organization: Technical Training.
Completion: TBD

8. The team will develop recertification and annual training requirements based on INPO recommendations and information gained during fact finding.

Responsible Organization: Technical Training.
Completion: TBD

9. The team will develop and negotiate with the Union any changes of Labor Grade(s) based on the job description, qualifications, certification and recertification requirements will be determined.

Responsible Organization: Industrial Relations.
Completion: TBD

Phase IV EVALUATE CURRENT RAD MONITORS FOR QUALIFICATION

10. The current Radiation Monitors personnel will be evaluated against the new standards of the proposed radiation monitoring program.

Responsible Organization: Technical Training.
Completion: TBD

11. A training program will be developed to qualify radiation monitoring personnel for the new requirements.

Responsible Organization: Technical Training.
Completion: TBD

Phase V IMPLEMENTATION

12. Plans and schedules will be developed by the team to implement the radiological monitoring program defined by steps 5 through 9.

Responsible Organization: HS&E Operations & Plans
Completion: TBD

13. The current radiation monitoring personnel will be trained and certified to the new requirements.

Responsible Organization: Technical Training.
Completion: TBD

14. The new Radiological Monitoring program will be implemented in a phased approach building by building until the program is fully implemented.

Responsible Organization: Radiological Monitoring.
Completion: TBD

RESPONSIBLE MANAGER:

R. G. DelPizzo

ACTION CENTER NO.:

253

ATTACHMENT 4

SPR CONCERN RP.2

CONCERN: The extremity doses for workers, who cannot wear hand dosimeters as a result of Rockwell safety policy, are not adequately determined and documented.

CAUSE ANALYSIS: Rockwell Health Physics management personnel had recognized that inaccuracies potentially existed is the consignment of extremity dose Uranium handlers based on skin exposure. An element of the Operational Health Physics work plan was to review beta dosimetry requirements in Uranium facilities. As part of this analysis, extremity exposure measurement techniques were to be addressed. However, manpower resource limitations in Operational Health Physics resulted in this specific activity receiving less attention than other more urgent health physics work.

COMPENSATORY ACTIONS:

1. Identification of Personnel/Organizations which require extremity dosimetry and dose assignment.

The personnel identified will be divided into three groups, plutonium process personnel, uranium process personnel, and other (e.g. Contractors and NDT personnel). Action Item 2 applies to both uranium and plutonium operations personnel. All other action items apply to Uranium personnel only.

Responsible Organization: Operational Health Physics
Completion: 2/28/89

2. Perform Concurrent Literature Search

A concurrent literature search will be performed to assess the operational experiences and typical extremity doses encountered by similar operations at other DOE and non-DOE sites. This data will assist in confirming dose assignments made to Rocky Flats personnel. It will also provide information with regard to badging techniques which may be useful when upgraded extremity dosimetry is implemented.

Responsible Organization: Operational Health Physics
Completion: 2/28/89

3. Perform Uranium Handling Time Studies

For the personnel/organizations identified in Item 1, handling time studies will be performed. These studies in conjunction with known dose rates for uranium slabs (~233 mrem/hr) will be used to assess the potential extremity dose incurred by Uranium process personnel. These

studies will provide an initial assessment of the typical extremity dose received by uranium process personnel.

Responsible Organization: Operational Health Physics
Assistance: Industrial Engineering
Completion: 3/15/89

4. Perform Measurements Using Phantoms of Mock Processing Operations

These measurements will assess the doses for known periods of time to extremities (forearms and hands) from uranium calibration standards (slab source) and actual process materials from the uranium process areas. These measurements will be performed using industry standard wrist and finger phantoms.

Responsible Organization: Dosimetry
Completion: 3/30/89

5. Perform Statistical Analysis of Upper-Bound Dose Limits for Personnel Who Cannot Wear Extremity Badges

This analysis will use existing data for uranium process personnel who were assigned extremity dosimeters to estimate the possible upper bound dose based on the existing Rocky Flats extremity dosimetry system. This data will be useful in assessing the degree of accuracy existing in previous extremity dose assignments.

Responsible Organization: Operational Health Physics
Assistance: Statistical Quality Control & Applications
Completion: 4/15/89

6. Assign Extremity Doses

Historical assignment of extremity doses due to beta/gamma emitters will be assessed, utilizing the most restrictive and technically proven results obtained from activities described in items 3, 4, and 5. This assignment will be via documentation of the results of items 3, 4, and 5 into the dosimetry historical files. Individual dose of record will not be updated. For plutonium process areas, the previously assessed extremity doses are considered to be adequate due to the nature of the radiation (x-rays and gamma photons) being measured.

Assignment of extremity doses due to beta/gamma emitters for current and near future periods will be made using the most restrictive and technically proven results obtained from activities described in items III, IV, and V. These assignments will be documented to the dosimetry record each individual/organization (identified in item I). For plutonium process areas the current method of extremity dose assignment, will be used.

Future assignments of extremity doses will be performed using a new dosimetry system. Assignment of extremity dose for both uranium and plutonium process areas will be based on results obtained from studies performed in SIP activities.

Responsible Organization: Dosimetry

Completion: 4/30/89

LONG TERM ACTION:

None required.

RECURRENCE CONTROL:

Concurrent development and implementation of criteria, requirements, and procedures to enhance the Radiological Protection Program will be ongoing through the RFP Integrated Radiological Protection Program project.

RESPONSIBLE MANAGER:

J. M. Langsted

ACTION CENTER NO.

254

ATTACHMENT 5

SPR CONCERN PP.2

CONCERN: There is continuing evidence indicative of a lack of electrical safety awareness and/or code compliance at the RFP.

CAUSE ANALYSIS: Maintenance has aggressively addressed the electrical safety issues; however, several code violations (such as extension cords) have been identified due to lack of time for the new program to take effect and lack of awareness in other departments plant-wide.

PRIOR ACTIONS:

The Maintenance Department has had an electrical safety awareness program in place for almost two years. The activities listed below are part of the existing program and have been completed.

1. Install Caution Labels

Caution labels have been installed at each motor control compartment near the interlock override, stating that HS&E Procedure 15.03 must be followed before defeating the interlock.

2. Train/Reindoctrinate Maintenance Personnel and Supervisors on Procedures

Maintenance craft personnel and supervision have been trained and reindoctrinated to assure that they are aware of, and understand, procedures intended to ensure personal safety while performing their work. This was accomplished by revising Maintenance Procedure 1.2, "Maintenance Employee Indoctrination and Reindoctrination," and developing and implementing a retraining program which all electricians have completed. In addition, a self-assessment was conducted to ensure that all requirements have been met.

3. Review Training of Requirements for Electricians

In addition to the training of electricians on procedures intended to ensure their personal safety, a review of other training requirements for electricians was conducted, by individual, to identify any deficiencies. This included training on the National Electrical Code, Safety Qualifications Standards, Care & Use of Safety Equipment, and training on specific pieces of equipment. Where deficiencies were identified, corrective actions were taken. This includes specific craft indoctrination in each major building, approximately four hours.

4. Establish Schedule for Review/Update of Maintenance Procedures Manual

A regular schedule has been established for periodic review and update of the Maintenance Procedure Manual, including sections that pertain to electrical safety. Requirements for the involvement of the HS&E organization in this review were also established to ensure coordination with HS&E procedures.

5. Revise Maintenance Procedure 3.1

Maintenance Procedure 3.1, "Maintenance Work Order System," has been revised to include written guidance to identify emergency situations for which it is permissible to initiate a job without a Work Order.

6. Label all High Voltage Systems Greater than 600 Volts

All high voltage systems greater than 600 volts have been labeled with appropriate markings, including ratings, which offer adequate warning information for potential hazards involved. Consistent electrical system markings are used throughout the plant.

7. Install Emergency Exit Hardware

Emergency exit hardware has been installed on all motor control center room exit doors.

8. Provide Additional Communication Devices

Additional communication devices have been provided to allow communication with Utilities Control Room personnel and Maintenance supervision in case of emergencies. These devices include safety type telephones in some motor control centers and two-way radios.

9. Replace 2400 Volt Fuses

A Preventive Maintenance program was initiated to replace 2400 volt fuses of the silver element design with safer devices as recommended by manufacturers. In addition, all spare 2400 volt silver element fuses were sent to PU&D.

10. Establish/Present Training Program for Maintenance Planners

A training program regarding safety practices and methods was established and presented to all Maintenance Planners to provide for incorporation of safety requirements into all Maintenance Work Packages.

11. Complete Course on National Electrical Code and Electrical Safety

All electrical craftspersons and supervision completed a course on the National Electrical Code and an Electrical Safety course specifically tailored to Rocky Flats operations through an area community college.

12. Provide Non-contact Electrical Testers

Non-contact electrical testers have been purchased and provided to all area electrical shops for use in identifying concealed electrical sources locations without employing demolition methods. All electrical craftsperson and supervision have been trained in the proper use of the new testers.

13. Provide High Voltage Electrical Safety Equipment

High voltage electrical safety equipment was purchased and provided to all area electrical shops, and personnel trained in its use. This equipment included such items as insulated gloves and aprons, and protective rubber shielding.

14. Power Linemen Complete Course on High Voltage Safety

All plant power linemen have completed a certified course on high voltage safety at Mesa College in Grand Junction, Colorado.

15. Revise Lockout/Tagout Procedure

The HS&E Lockout/Tagout procedure has been revised on an interim basis to impose more stringent requirements for control of work on electrical equipment. Final procedure will be implemented in January of 1989.

16. Revise Work Permit

The HS&E work permit has been revised, and now includes a detailed section on electrical safety.

17. Identify Deficiencies in Electrical Safety Programs

A committee consisting of personnel from several plant organizations has been formed and is in the continuous process of reviewing historical statistical data to identify deficiencies in electrical safety programs and make recommendations for improvement.

18. Distribute Electrical Safety Pocketbooks

Electrical Safety Pocketbooks have been procured and distributed to all electrical craft people.

19. Require Electrical Outages to be Planned and Reviewed

A Maintenance Department procedure has been established which requires all electrical outages to be planned and reviewed by HS&E, Facilities Engineering, and other involved plant organizations prior to work.

20. Initiate Electrical Identification Program

An electrical identification program has been initiated and is in progress which, when completed, will result in the complete and accurate marking of all electrical panels and equipment and as-built drawings.

COMPENSATORY ACTIONS:

The following new compensatory actions have been identified:

1. Issue Safety Bulletins

Safety Bulletins stressing electrical safety will be issued to all supervision.

Responsible Organization: Industrial Safety

Completion: 12/31/88

2. Develop RFP-Specific Electrical Safety Video Tape

A RFP-specific video tape will be developed on electrical safety for mandatory viewing by all RFP personnel.

Responsible Organization: Industrial Safety

Completion: 2/28/89

LONG-TERM/SOLUTION ACTION PLAN:

In addition, the following actions will be taken:

1. Implement Core Training Program

Formulate and implement a basic electrical safety core training program for all employees.

Responsible Organization: Technical Training

Completion: TBD

2. Establish Job Specific Electrical Safety Training

Establish job specific electrical safety training programs for plant organizations other than Maintenance that deal with electrical equipment and are exposed to electrical hazards on a routine basis.

Responsible Organization: Technical Training
Completion: TBD

3. Revise HS&E Manual

Revised the HS&E Manual to permit only qualified and properly trained personnel to work at any activity that could expose personnel to an electrical hazard.

Responsible Organization: Industrial Safety
Completion: TBD

4. Established Plant-Wide Electrical Safety Task Team

Establish a plant-wide electrical safety program that incorporates programs of Support Operations. This team will be chaired by a representative from the Industrial Safety group. It will adhere to the following schedule:

• Set-up task team	12/31/88
• Assess consultant report	1/15/89
• Perform team assessment of concerns plant-wide	3/15/89
• Make recommendations	4/1/89
• Implement recommendations	TBD

DISCUSSION/RECURRENCE CONTROL:

The majority of the electrical work involves the maintenance crafts, and a program has been established and is on-going to determine personnel qualifications, procedures, training (seminars on code updates, high voltage safety, safety equipment, basic electricity, so forth), and "as built" documentation of facility electrical circuits, including field identification. However, a plant-wide electrical safety awareness program needs to be reemphasized, which incorporates and supplements the Support Operations program.

A task team consisting of representatives from Industrial Safety, Support Operations, and Production Operations will be set-up to review awareness, procedures, and training and to make recommendations. Policies will be revised to reflect changes.

RESPONSIBLE MANAGER:

J. D. McCarthy

ACTION CENTER NO.

256

ATTACHMENT 6

SPR CONCERN FP.2

CONCERN: Not all heating, ventilation and process ducts that penetrate fire separation barriers have approved fire dampers or equivalent fire protection.

CAUSE ANALYSIS: Rocky Flats does not provide fire dampers in HVAC duct work due to the importance of maintaining ventilation systems to control glovebox and room atmosphere and remove smoke in the event of a fire.

PRIOR ACTIONS:

Activities listed below are part of the existing program and have been completed:

1. Contracted outside expert consulting firm to perform computerized fire modeling study.
2. Contracted outside expert consulting firm to perform full scale fire test on duct work in accordance with ASTM E-119 2 hour fire test.
3. Develop site-wide building equipment and supplies storage areas identification and inspection program
4. Upgrade site-wide all fire doors/fire barrier walls.

COMPENSATORY ACTIONS:

The following compensatory actions have been identified:

1. Include established storage areas in Fire Departments Building Inspection Program.

Responsible Organization: Fire Department
Completion: 2/28/89

2. Develop Building Managers policy statement to control combustible material introduction into buildings.

Responsible Organization: Executive Safety Review Board
Completion: 2/28/89

3. Fire Protection Engineer develop policy statement on combustible material usage for new construction and facility upgrades and place in SF-100 (Standard for Fire Protection at Rocky Flats).

Responsible Organization: Fire Department
Completion: 3/30/89

LONG TERM ACTION:

1. Survey plant facilities to determine if conditions exist to justify the expense of contracting an outside consulting expert to perform additional fire modeling study of duct work.

Responsible Organization: Fire Department
Completion:

- Pu Facilities 4/30/89
- U Facilities 5/30/89

2. Field work determination (contract work or provided by Rockwell International).

Responsible Organization: Fire Department
Completion 6/15/89

DISCUSSION/RECURRENCE CONTROL:

The requirement for dampers in HVAC systems as they penetrate fire walls or barrier, stems from the assumption that duct work will fail due to a fire. As installing dampers in the HVAC systems at RFP would defeat the need to use this system to control glovebox and room atmosphere and remove smoke in the vent of a fire, two approaches have been taken.

The first is to control fuel loading in buildings especially in relation to overhead ducts. Many actions have been completed with the remaining to provide specific storage locations which will be used as the basis for inspection; additional policy description for the Building Managers; and further reduction of combustible materials.

The second approach was to establish fire models verified by tests of the ventilation ducts at RFP. This was used to evaluate Building 776 and will be used to evaluate other buildings when a fuel source and ventilation system relationship has been identified. Our current inspections have not identified a specific area of high fuel loading adjacent to ventilation ducts. Therefore, the first phase of this plan will be to perform a detailed survey to document and assure some areas of high fuel loading do not exist and evaluate with the model any areas that are questionable.

RESPONSIBLE MANAGER:

K. F. Miller

ACTION CENTER NUMBER:

260