ORNL-6657/V2/R5

Oak Ridge National Laboratory Corrective Action Plan in Response to Tiger Team Assessment

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Volume 2

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PREFACE TO REVISION 5

The *ORNL Corrective Action Plan in Response to Tiger Team Assessment* presents a complete response to the Tiger Team assessment that was conducted at Oak Ridge National Laboratory (ORNL) and at the U.S. Department of Energy (DOE) Oak Ridge Operations Office (ORO) from October 22, 1990, through November 30, 1990. The action plans have undergone both a discipline review and a cross-cutting review with respect to root cause. In addition, the action plans have been integrated with initiatives being pursued across Martin Marietta Energy Systems, Inc., in response to Tiger Team findings at other DOE facilities operated by Energy Systems. The root cause section is complete and describes how ORNL intends to address the root causes of the findings identified during the assessment.

The action plan has benefitted from a complete review by various offices at DOE Headquarters as well as review by the Tiger Team that conducted the assessment to ensure that the described actions are responsive to the observed problems.

All actions listed in this action plan are contingent upon suitable funding being provided. Action plan schedules for findings listed as "funded" are current best estimates of expected completion. The projected completion dates for actions listed as "requested" or "new" are technically feasible dates based on work scope and available or projected nonfinancial resources. Actual completion dates will depend on when work is authorized and funding is received.

This action plan has been a cooperative effort between ORNL and ORO and is the result of exceptional efforts by many individuals in both organizations to meet a very demanding schedule.

Michael A. Kuliasha
Action Plan Leader

August 23, 1991

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3.4 REACTORS SAFETY AND HEALTH FINDINGS, RESPONSES, AND PLANNED ACTIONS

3.4 REACTORS SAFETY AND HEALTH FINDINGS, RESPONSES, AND PLANNED ACTIONS

Finding discipline	Finding number prefix	Section number
Organization and Administration	ROA	3.4.1
Quality Verification	RQV	3.4.2
Operations	ROP	3.4.3
Maintenance	RMA	3.4.4
Training and Certification	RTC	3.4.5
Auxiliary Systems	RAX	3.4.6
Emergency Preparedness	REP	3.4.7
Technical Support	RTS	3.4.8
Nuclear Criticality Safety	RCS	3.4.9
Security/Safety Interface	RSS	3.4.10
Experimental Activities	REA	3.4.11
Site/Facility Safety Review	RFR	3.4.12
Radiological Protection	RRP	3.4.13
Personnel Protection	RPP	3.4.14
Fire Protection	RFP	3.4.15

3.4.1 Organization and Administration

Finding No.: ROA.1-1 Funding for Maintenance of ORR

Finding Description: **Funding has not been provided to maintain the Oak Ridge Research Reactor in a safe and environmentally favorable state pending final decommissioning of the reactor, as required by DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 59
Tiger Team Action Plan Priority 2

Response: Field Work Proposals (FWPs) were submitted in April 1989 and April 1990 for maintenance and surveillance costs associated with the Oak Ridge Research Reactor (ORR). Inadequate funds were provided in FY 1989, FY 1990, and FY 1991. ORNL overhead funds have therefore been used to provide adequate maintenance and surveillance activities. The ORR has been maintained in safe shutdown. In addition to the FWPs, correspondence requesting funding and verbal requests at Quarterly Review meetings with DOE program offices have been made.

No surveillance and maintenance funds were requested for FY 1992 because funds for the decommissioning of the reactor were requested for FY 1991 and FY 1992. However, no funds have been provided for this request either. Current estimate is that decommissioning funds will be provided by DOE in FY 1994. This will result in the need for surveillance and maintenance funds for FY 1993.

Root Causes:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Submit written request to DOE restating the need for the required surveillance and maintenance funds.	Complete
2.	Submit FY 1993 FWP requesting the required decommissioning funds.	Complete

Costs:

Type of funds: Research Programmatic
Source of funds: ER-AT

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	825	729					1554
2	—						
Status:							
Funded							
Requested	443	490					
New	382	239					$1554

References: FWP ERAT734
FWP ERAT733 (NOEW)

Finding No.: ROA.1-2 Approval of ORR Shutdown Plans

Finding Description: **The Oak Ridge Research Reactor shutdown plan has not been approved by the Manager of the Oak Ridge Operations Office as required by DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: The decision to permanently shutdown ORR was made July 20, 1987. A preliminary plan for the ORR shutdown was submitted to DOE in September 1987. A detailed Shutdown Program Plan ORNL/RRD/INT-46 was submitted in November 1988.

The Shutdown Program Plan was reviewed and updated and issued in June 1989 (ORNL/RRD/INT-62). On September 19, 1990, Dr. Alvin W. Trivelpiece, Director of ORNL, was notified by N. Anne Davies, Acting Associate Director for Fusion Energy, Office of Energy Research, that the Office of Environmental Restoration plans to take responsibility for the ORR in FY 1993 providing certain requirements are met.

Root Cause:

Inadequate oversight

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Review ORR Shutdown Program Plan to ensure it is up to date.	Complete
2.	Revise and reissue ORR Shutdown Program Plan if update is required.	5/91
3.	Request approval of the previously submitted Oak Ridge Research Reactor Shutdown Program Plan by the Manager of the Oak Ridge Operations Office.	6/91
4.	ORO approve the ORR Shutdown Program Plan.	8/91

Costs: Costs for ROA.1-2 are included in ROA.1-1.

References: Oak Ridge Research Reactor Shutdown Program Plan ORNL/RRD/INT-46
Oak Ridge Research Reactor Shutdown Program Plan ORNL/RRD/INT-62

Finding No.: ROA.1-3 Decommissioning Plan for HPRR

Finding Description: **A decommissioning plan for the Health Physics Research Reactor has not been approved by the Manager of the Oak Ridge Operations Office.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: ORNL had not previously received any written directive from ORO regarding HPRR status. However, a memo from Decker to LaGrone dated November 9, 1990, instructed ORO to place HPRR in shutdown, but "...in a manner so as to leave open the possibility of future reassembly and restart...." A more recent memo from Decker to LaGrone dated January 28, 1991, instructed "Energy Systems to proceed with shutdown of the subject reactor." Therefore, a Shutdown Plan, which will contain necessary decontamination and decommissioning actions, is scheduled to address this finding.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

Item/Description	Completion Date
1. Request funding from DOE to prepare a Shutdown Plan.	Complete
2. Submit an HPRR Shutdown Plan to DOE-ORO.	12/91
3. DOE approve HPRR Shutdown Plan.	2/92
4. Prepare HPRR for transfer to surplus facilities in FY 1995.	9/95

Costs: Costs for ROA.1-3 are included in ROA.1-4.

References: None

Finding No.: ROA.1-4 Funds for Maintenance of HPRR

Finding Description: **Funds have not been provided to ensure that the needed maintenance and surveillance of the Health Physics Research Reactor will be maintained as required by DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Field Work Proposals (FWPs) were submitted to DOE requesting $580K in FY 1990, $549K in FY 1991, and $200K in FY 1992 for maintenance and surveillance of the Health Physics Research Reactor (HPRR). In April 1990 FWPs were submitted to both Energy Research (ER) and Nuclear Energy (NE). No funds were provided in FY 1989, FY 1990, or FY 1991. ORNL overhead funds have therefore been used to provide adequate maintenance and surveillance activities. The HPRR has been maintained in safe standby. In addition to the FWPs, correspondence requesting funding and verbal requests at Quarterly Review meetings have been made. If funding is not provided by DOE, needed maintenance and surveillance will be funded from ORNL overhead.

Root Causes:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Reassess maintenance and surveillance costs now that fuel has been removed.	Complete
2.	Submit requests to DOE restating the need for the required FY 1991 and FY 1992 funds.	Complete
3.	Submit FY 1993 FWP requesting maintenance and surveillance required funds.	Complete

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KP, NE-AF

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	777	119	31	32	34	*	993
Status:							
Funded							
Requested	325						
New	452	119	31	32	34		$993

*Estimated annual ongoing cost: $35K.

References: FWP ERKP155 (NOEW)
FWP NEAF155 (NOEW)

Finding No.: ROA.1-5 Funding for the Bulk Shielding Facility

Finding Description: **Funds have not been provided to ensure that the needed surveillance and maintenance of the Bulk Shielding Facility will be provided, as required by DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 60
Tiger Team Action Plan Priority 3

Response: Field Work Proposals (FWPs) were submitted to DOE-ER requesting $430K for FY 1991 and $450K for FY 1992. No funds were provided in FY 1990 or FY 1991. ORNL overhead funds have therefore been used to provide adequate maintenance and surveillance activities. The BSR has been maintained in "operable" status as defined in DOE Order 5480.6, but in a defueled and standby mode. Correspondence and verbal requests at Quarterly Review meetings have been made requesting the funds. If funding is not provided by DOE, needed maintenance and surveillance will be funded from ORNL overhead.

Root Causes:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Submit request to DOE restating the need for required funds.	Complete
2.	Submit FY 1993 FWP requesting maintenance and surveillance funds.	Complete

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
2	548	597				*	2986
Status:							
Funded							
Requested	430	450					
New	118	147	575	660	606		$2986

*Estimated annual ongoing costs: $636K starting in FY 1996.

References: FWP ERKCR02

Finding No.: ROA.1-6 Status of the Bulk Shielding Facility

Finding Description: **The Bulk Shielding Facility is still classified as an "Operable" reactor; however, it is being maintained as though it were in an extended shutdown mode. It has not been declared in "Standby" or "Shutdown" with an approved plan to maintain the facility in its designated status, as required by DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: A decision on the future of the BSR has been purposely delayed until intentions regarding the future of HPRR were resolved, due to insufficient resources to deal with both issues simultaneously.

BSR is currently in "operable" status as defined in DOE Order 5480.6, but in a defueled and standby mode. A decision to proceed with restart or decommissioning action is expected in June 1991. When such a decision is reached, either a startup plan or a shutdown plan will be provided to DOE-ORO for approval.

Root Cause:

Insufficient resources; there are insufficient resources to implement all phases of DOE Order 5480.6.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Submit an assessment of future program needs in a preliminary schedule and cost projections for available options.	Complete
2.	DOE issue guidance on future operational status.	6/91
3.	Request funding to prepare appropriate plans.	7/91

Costs: Costs for ROA.1-6 are included in ROA.1-5.

References: None

Finding No.: ROA.1-7 Status of the CEF "W" Cell

Finding Description: **The Critical Experiments Facility "W" cell is still classified as an "Operable" reactor; however, it is not being operated and maintained in an operable status, nor has it been declared to be in "Standby" or "Shutdown" with an approved plan to maintain the facility in its designated status, as required by DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Because there were no pressing operational needs due to available backlog of verified HFIR fresh cores and resources available were dedicated to higher priority projects, actions to utilize the facility were deferred. Actions have been ongoing, however, to develop an alternate, less expensive method to provide a final fresh fuel verification without a full core criticality experiment. Current intentions are to obtain approval of the alternate method and shut down the facility.

A revision to the HFIR Technical Specifications deleting the need for CEF is being prepared for submission in February 1991. RORC approval and submission to DOE is expected in May 1991. DOE approval of the Technical Specifications change will constitute approval of the intent to shut down the CEF. A Shutdown Plan will then be developed and sent to ORO.

Root Cause:

Insufficient resources; there are insufficient resources to implement all phases of DOE Order 5480.6.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Submit HFIR Technical Specifications change to DOE-ORO.	8/91
2.	DOE approve Technical Specifications change.	10/91
3.	Request funds for preparation of Shutdown Plan from DOE.	1/92
4.	Submit a CEF Shutdown Plan to DOE-ORO.	7/92
5.	DOE approve CEF Shutdown Plan.	9/92

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	—						
4		80					80
5	—						
Status:							
Funded							
Requested							
New		80					$80

References: None

Finding No.: ROA.1-8 Line Management Responsibilities in RRD

Finding Description: **The position descriptions for the Research Reactors Division management do not explicitly assign line management responsibility for the safe operation of reactors, as required by DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: All charters for Research Reactors Division (RRD) line management, down to and including Reactor Operators, have been revised to explicitly state and assign to each individual the responsibility for safe operation of the reactors and to maintain the work place in a safe condition assuring that ES&H policies and work practices are implemented. Emphasis is placed on accident prevention as a part of the daily work plan, and each individual is encouraged to provide leadership in following safe practices.

Root Cause:

Poorly defined roles and responsibilities

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue revised charters for RRD line management to explicitly state responsibilities for safe operation of the reactor and for maintaining the work place in a safe condition, assuring that ES&H policies and work practices are implemented.	Complete

Costs: No significant costs associated with this action.

References: None

Finding No.: ROA.1-9 Management Position Descriptions for RRD

Finding Description: **Not all Research Reactors Division management personnel have formal position descriptions.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: Position descriptions and charters have been written for the Shift Supervisors, Shift Technical Operators, and Reactor Operators, thus completing the direct line management linkage from Reactor Operators to Director of Reactor Operations.

Root Cause:

Poorly defined roles and responsibilities

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue position descriptions and charters for those positions which were not previously written.	Complete

Costs: No significant cost associated with this action.

References: None

Finding No.: ROA.3-1 Program to Increase Safety

Finding Description: **There is no active program to stimulate management personnel and staff to increase the level of safety at the Research Reactors Division through goal setting and promoting esprit de corps in achieving safety goals.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: Employee/worker safety both on-the-job and off-the-job is a responsibility of everyone and is repeatedly emphasized in quarterly safety meetings. This program, lab wide, has resulted in on-the-job and off-the-job safety records which are some of the best in the nation for similar operations. Performance indicators were implemented in RRD October 1989. These are plotted and conspicuously posted in several locations monthly to call attention to the level of performance in many important areas of plant operation. Management has been proactive in promoting the performance indicators and they are routinely discussed. The indicator most directly related to safety is the Lost-Time Accident Rate. The goal is stated in the safety industry and ORNL-wide terms of the number of lost-time accidents per 200,000 person-hours worked (100 person-years). The performance indicator goal for the Lost-Time Accident Rate is $\leq$0.04. This goal is not always clear to all personnel who read the performance indicator graph. There is an Energy Systems program to provide safety incentive awards. However, it is based on Laboratory-wide performance and not broken down by facilities or work centers, thus the impact is minimal.

See Finding RQV.1-9.

Root Cause:

Inadequate communications; communications of performance indicators and safety goals are not clearly stated.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Show management's commitment to safety by emphasizing the importance of the safety program and goals at the Division Director's weekly staff meetings.	Complete

	2. Provide an appropriate award to division personnel who proactively practice good safety throughout the year.	10/91 and annually thereafter

Costs: None

References: None

Finding No.: ROA.6-1 Performance Evaluations for Safety

Finding Description: **Performance evaluations for management personnel are not always used to enhance individual performance in the area of safety.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: The Performance Planning and Review (PPR) System program, which encompasses monthly and weekly employees, includes a Primary Performance Factor of "Environment, Safety, and Health." The employees are rated on how well they actively practice and promote safe work practices in support of ES&H policies. Each individual must be evaluated on primary Performance Factors. This annual Performance Review process requires the supervisor to evaluate their staff on practices and promotion of safe work practices and to discuss any corrective actions needed.

Root Cause:

Poorly defined roles and responsibilities

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Remind all supervisors orally and by distributing a memo to them that during the annual PPR process they must evaluate and discuss with their staff how the individual actively practices and promotes safe work practices in support of Energy Systems ES&H policies. PPR documentation is kept in the employee's personnel field file for three years.	Complete

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	0.4						0.4
Status:							
Funded	0.4						
Requested							
New							$0.4

References: "Performance Planning and Review System" form, Part 2, Section A

Finding No.: ROA.7-1 HFIR Final Safety Analysis Report

Finding Description: **The High Flux Isotope Reactor does not have a Final Safety Analysis Report that meets current DOE requirements, and budget shortfalls have resulted in continued slippage of the completion date.**

Code: Category III

Compliance Protocol: DOE Order 5481.1B (9-23-86), paragraph 4, subparagraphs b. and c. require that "those ongoing DOE operations which can reasonably be expected to have the potential for major on-site or off-site impacts to people or the environment shall be identified and evaluated..." For those operations for which documentation is determined to be inadequate to identify the risk from the operation, the line organization must make necessary arrangements (funds and other resources) to provide adequate safety analyses or obtain an exemption. Safety analyses prepared under these subparagraphs are to be prepared based on current technical criteria.

DOE Order 5480.6 (9-23-86), paragraph 8, subparagraph c. requires that the requirements of DOE Order 5481.1B be met and for new safety analysis reports, the NRC's guidelines on standard format and content of safety analysis reports shall be followed.

Priority: Energy Systems Risk Weight 80
Tiger Team Action Plan Priority 2

Response: This milestone has its origin in the DOE Environment Safety and Health (DOE-EH) Design and Management reviews of the HFIR. A number of other committees have recommended similar or related items, but the fundamental source for the recommendation was the DOE-EH committees. These committees recognized that the response to this recommendation should be carried out in a normal and responsive manner following restart of the reactor. However, as the restart of the reactor progressed, the relative urgency of the recommendation changed, in early 1989, at the direction of DOE-EH. At that time, a list of Key Milestones was created linking completion of many long-term milestones to continued reactor operation.

The Key Milestone for completion of the HFIR FSAR was originally set with the expectation that the final document would be mainly descriptive, except for the new analyses to be generated for the Chapter 15 accident analysis. The original intention was to use much of the old descriptive information - updating it where necessary to include design changes. Over the last 3 years, the scope of information to be included in the FSAR has gradually increased to include all the studies that have been performed by RRD up until now. For example, we would be remiss by not including thermal analysis associated with the long-term decay heat removal problem, the seismic design basis upgrade, and design basis research associated with the PRA - including definition of design basis small break LOCA

where none existed during the original design. In addition to our internal increase in scope, there has been an external increase in scope as the ORNL Office of Operational Readiness and Safety, the Energy Systems safety organization, and the DOE-ORO safety organization have begun to formally define their expectations for standard format, content, scope, and extent of reviews for FSARs. For example, it is clear from these external developments that the HFIR FSAR will require description of a large part of the ORNL-wide utilities information, whereas this information was not planned for inclusion earlier.

In addition to scope changes, the HFIR FSAR has suffered budget cuts that have delayed progress. The budgets that were set in 1987 and frozen since that time have been effectively lowered due to more-urgent/higher-priority items consistently taking RRD staff time away from the FSAR. In addition, funds for subcontracts to support the FSAR have been unavailable since other projects depleted the RRD budget. To be specific, in 1988 the Comprehensive Safety Assessment and Upgrade Program and the "Sparkle" Program depleted the budget; in 1989, the delayed restart and response to the May 5 and 9 events depleted the budget; and in 1990, the Environmental Qualification Program and the Contamination Survey have affected the budget.

Thus, a combination of scope and budgetary problems made it necessary to seek a delay in the FSAR Key Milestone (see Reference 1). The request for the delay and additional funds was made in May 1990. The schedule that was submitted in May was based on a timely receipt of additional funding. The schedule was approved in August 1990. However, additional funds to support the FSAR needs were not available during FY 1990, and only recently was information provided that additional funds would be available during FY 1991.

See action plan in response to Finding RTS.2-2.

Root Causes:

(1) Insufficient resources; resources for the HFIR updated SAR have been inadequate due to higher-priority items consuming the RRD budget and RRD staff time. (2) Ambiguous requirements or expectations; changing compliance requirements have increased expectations for the scope and content of the SAR beyond the original basis for the budget request.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Obtain additional FY 1991 funding.	Complete
2.	Revise SAR work tasks and planning to achieve timely completion of HFIR SAR, based on resources of Item 1.	Complete

3. Submit revised SAR plan to DOE in the form of re-negotiated Key Milestone Action Plans (see Reference 1) for approval.	Complete
4. Submit funding request for FY 1992 including current FY 1992 budget plus additional $900 K requested in Reference 2.	Complete
5. Perform work as indicated in approved Action Plans of Item 3.	Completion date determined by item 3
6. Provide response to review comments and submit final HFIR SAR.	6 months beyond draft SAR completion date

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	25						25
3	10						10
4	—						
5	3500	3400					6900
6	—						
Status:							
Funded	3535						
Requested		2500					
New		900					$6935

References: Letter, J. B. Richard to J. A. Reafsnyder, May 18, 1990, "Modification of Key Milestones Concerning Completion of the Updated High Flux Isotope Reactor (HFIR) Final Safety Analysis Report"

Letter, J. B. Richard to J. A. Reafsnyder, May 4, 1990, "Summary of Additional Funding to Meet New Requirements for HFIR Operations"

Finding No.: ROA.7-2 Updating of Safety Analysis Reports for BSF and PCA

Finding Description: **The Bulk Shielding Reactor and Pool Critical Assembly Safety Analysis Reports do not meet current nuclear standards, as required by DOE 5481.1B.**

Code: Category III

Compliance Protocol: DOE Order 5481.1B (9-23-86), paragraph 4, subparagraphs b. and c. require that "those ongoing DOE operations that can reasonably be expected to have the potential for major on-site or off-site impacts to people or the environment shall be identified and evaluated..." For those operations for which documentation is determined to be inadequate to identify the risk from the operation, the line organization must make necessary arrangements (funds and other resources) to provide adequate safety analyses or obtain an exemption. Safety analyses prepared under these subparagraphs are to be prepared based on current technical criteria.

DOE Order 5480.6 (9-23-86), paragraph 8, subparagraph c. requires that for new Safety Analysis Reports, the Nuclear Regulatory Commission's guidelines on standard format and content of safety analysis reports shall be followed.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 2

Response: This concern was generally identified in 1987 by the ORNL Reactor Review and Audit Committee and documented in ORNL/CF-87/30 as requirement 4. [This finding has been tracked by the Research Reactors Division (RRD) commitment tracking system as item BTCREQ-04.] To address the need for updated safety analysis documentation, the Bulk Shielding Reactor (BSR) and Pool Critical Assembly have been included in Energy Systems Safety Analysis Report Update Program. Phase I of that program involves completing a facility hazard screening document for each facility in the program. That commitment for the BSR facility (including the Pool Critical Assembly) is tracked in the RRD tracking system as RRD91-060. The facility hazard screening document will provide an evaluation of the adequacy of existing safety analysis and a preliminary identification of the hazard level of the facility. Work on the hazard screening document for the BSR facility has not begun. Actions planned under the Energy Systems Safety Analysis Report Update Program would ultimately lead to an updated safety analysis report that satisfies the requirements of the DOE order. However, completion of an updated safety analysis report for the BSR is contingent on authorization to proceed with the restart readiness process for the facility. If it is decided to permanently decommission and decontaminate the facility, the safety analysis report will not be updated.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue Hazard Screening Document.	10/91
2.	Request FY 1992 funding.	Complete
3.	Contingent upon approval of funding, proceed with phases II and III of Energy Systems Safety Analysis Report Update Program for BSR facility.	FY 1995*
4.	Request FY 1993 funding.	Complete

*Note: Detailed schedules for Phases II and III of the Energy Systems Safety Analysis Report Update have not been finalized; however, reference 1 indicates that completion between FY 1995 and FY 1998 is anticipated. A facility-specific schedule for the BSR will be developed following authorization to proceed with the restart readiness process (expected in early FY 1992).

Costs:

Type of funds: Research Programmatic

Source of funds: NE-AF

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	30						30
2	—						
3		75	125	100	100	0	400
4	—						
Status:							
Funded	30						
Requested							
New		75	125	100	100	0	$430**

**Cost of completing updated SAR was based on information from Energy Systems SAR update program indicating that the cost of full SAR is $1.5 million. BSF/PCA estimate was developed recognizing the relative simplicity of facility and existence of a 1960s safety analysis document.

Reference: Y/CSET-1 "Safety Analysis Report Update Program Overview and Phase I Implementation," October 1990

Finding No.: ROA.7-3 Updating of Safety Analysis Report for TSF

Finding Description: **The Tower Shielding Facility Safety Analysis Report does not meet current nuclear standards, as required by DOE 5481.1B.**

Code: Category III

Compliance Protocol: DOE Order 5481.1B (9-23-86), paragraph 4, subparagraphs b. and c. require that "those ongoing DOE operations that can reasonably be expected to have the potential for major on-site or off-site impacts to people or the environment shall be identified and evaluated..." For those operations for which documentation is determined to be inadequate to identify the risk from the operation, the line organization must make necessary arrangements (funds and other resources) to provide adequate safety analyses or obtain an exemption. Safety analyses prepared under these subparagraphs are to be prepared based on current technical criteria.

DOE Order 5480.6 (9-23-86), paragraph 8, subparagraph c. requires that for new Safety Analysis Reports, the Nuclear Regulatory Commission's guidelines on standard format and content of safety analysis reports shall be followed.

Priority: Energy Systems Risk Weight 80
Tiger Team Action Plan Priority 2

Response: This concern was identified in 1987 by the ORNL Reactor Review and Audit Committee and documented in ORNL/ CF-87/211 as requirement 4 and recommendation 4. (These findings have been tracked by the Research Reactors Division (RRD) commitment tracking system as items TTCREQ-04 and TTCREC-04, respectively.) In addition, internal reviews and reviews completed by an independent consultant during the 1988-89 restart readiness process for the Tower Shielding Reactor (TSR) identified the need to update the safety analysis documents. (Refer to action items SAISAR01, SAISAR02, and SAISAR06 in the RRD commitment tracking system.) Essential analyses were updated prior to restart, but not incorporated into the safety analysis documents. It was determined that formal update of the safety analysis documents would be a post-restart action. To address the need for updated safety analysis documentation, the TSR has been included in the Energy Systems Safety Analysis Report Update Program. Phase I of that program involves completing a facility hazard screening document for each facility in the program. That commitment for the TSR facility is tracked in the RRD tracking system as RRD91-062. The facility hazard screening document will provide an evaluation of the adequacy of existing safety analysis and a preliminary identification of the hazard level of the facility. A draft hazard screening document has been completed for the TSR. Actions planned under the Energy Systems Safety Analysis Report Update Program would ultimately lead to an updated safety analysis report that satisfies the requirements of the DOE order. However, completion of an updated safety analysis report for the TSR is contingent on authorization to continue operating the reactor after completion of the current

experimental program and receipt of funds for the update. If it is decided to permanently decommission and decontaminate the facility, the safety analysis report will not be updated.

See Finding RTS.2-2.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

Item/Description	Completion Date
1. Issue Hazard Screening Document.	5/91
2. Request funding for completion of Phases II and III in FY 1993 FWP.	Complete
3. Contingent upon approval of continued operation beyond current experimental program and funding, proceed with Phases II and III of Energy Systems Safety Analysis Report Update Program for TSR facility.	FY 1996*

*Note: Detailed schedules for Phases II and III of the Energy Systems Safety Analysis Report Update have not been finalized; however, reference 1 indicates that completion between FY 1995 and FY 1998 is anticipated. A facility-specific schedule for the TSR will be developed following authorization to continue operation beyond current experimental program.

Costs:

Type of funds: Research Programmatic
Source of funds: NE-AF

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	20						20
2	—						
3	—		100	100	50	50	300
Status:							
Funded	20						
Requested							
New			100	100	50	50	$320

References: Y/CSET-1 "Safety Analysis Report Update Program Overview and Phase I Implementation," October 1990

Finding No.: ROA.7-4 Control of Documents

Finding Description: **There is no assurance that controlled documents are kept up to date or that uncontrolled copies of the document do not become working copies.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: An automated computer program has been implemented to track and monitor material transmitted to controlled document holders. Procedures are being revised to reflect how decontrolled copies in the field will be handled.

Root Causes:

Inadequate policy implementation; no formal verification system existed to ensure controlled document holders were returning signed transmittals and maintaining their documents. Poorly defined roles and responsibilities; inadequate understanding of responsibilities and accountability by controlled copy holders.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Initiate system to issue and track material transmitted to controlled copy holders.	Complete
2.	Conduct initial formal quarterly audit of approximately 10% of controlled copy holders.	Complete
3.	Identify and initiate implementation of corrective actions to resolve any audit findings.	Complete
4.	Revise existing procedures to reflect practice of quarterly audits and correction of findings.	5/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	21						21
2	5	5					10
3	1	0.5					1.5
4	0.2						0.2
Status:							
Funded	27.2						
Requested		5.5					
New							$32.7

References: ORNL/RRD/INT-12 RRAP 3.1

Finding No.: ROA.7-5 Procedures

Finding Description: **Because many procedures have deficiencies, and procedures are not always followed, management cannot ensure the highest level of safe reactor operations, as required by DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 2

Response:

- Overall improvements in procedures for operating reactors have received significant emphasis in the reactor restart programs. Continuing actions from these programs are acknowledged to remain outstanding. The procedures, however, have been accepted as adequate to support safe operations.

- Individual deficiencies with procedures have been identified on an ongoing basis and actions have been and continue to be taken to improve them. When deficiencies are noted they are addressed. This process generally involves revision followed by review by the Plant Operations Review Committee (PORC), which review is supportive of safe operation.

- The operator training and certification program is performance based and produces qualified operators who are able to operate the reactors safely with existing procedures. Such also emphasizes requirements for procedure compliance and processes for correcting any procedure deficiency noted.

  Procedures are normally written for operational consideration with implementation by qualified personnel; therefore, all acceptance criteria are not explicitly listed in most procedures.

- Several of the concerns regarding procedural deficiencies are recommended good practices and, as such, lack of deficiency correction does not infer lack of safety of operations.

  Our conservative approach in regards to personnel protection, safety, and hazards assessments has resulted in some cases where procedures were considered deficient because they were overly restrictive. These errors have been in the direction of safe operation and not ones which would result in a reduced level of safety of operation.

  In some cases the cited procedural deficiency did not reflect current or past practices, both of which were more conservative in regards to safe operation of the facility.

- Our Quality Assurance program, which is conducting surveillance of procedures and procedural compliance, is considered by many to be one of the best of DOE reactors and as such supportive of safe operations.

- There have been extensive independent reviews and appraisals associated with the reactor restart programs, including specific review of the adequacy procedures, none of which have questioned the safety of reactor operations.

- Periodic walk-throughs by management personnel at all levels are made both during operation and outages toward maintaining an acceptable level of safe operations.

- Revisions of procedures, experimental program changes, and physical modifications which could have safety implications are conducted through formalized, effective programs.

- Continuing procedure improvement initiatives are a part of our pursuit of excellence programs, and specific actions are being carried out as documented in the Integrated Resource Management System.

Root Causes:

Ambiguous requirements or expectations and insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Review Reactor Technical Safety Assessment in the Tiger Team Report and recent RORC reports for any underlying or pervasive concerns that could indicate less than required levels of safe operation.	Complete
2.	Senior management review all findings referenced in Concern 4.5.2.1.2 (Finding OA.7-5) for applicability to and impact on the issue.	Complete
3.	Complete actions identified in the action plans addressing the following findings as scheduled: QV.1-3, 2-2, 7-1; OP.2-1, 2-2, 2-3, 3-1, 3-2; EP.7-2; TS.3-1, 3-3; EA.3-1, 4-1; and RP.2-3.	
4.	Complete actions identified in the action plans addressing the following findings as scheduled after funding is provided: QV.1-4, 1-5; OP.3-3; MA.8-1; EP.6-1, 7-2; and TS.2-1.	

Costs: No significant additional costs associated with these actions not already included in referenced actions.

References: None

Finding No.: ROA.8-1 Substance Abuse Program

Finding Description: **The substance abuse program at ORNL is not well understood by all management and staff.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: The Laboratory will address this concern through the review and revision, as necessary, of fitness for duty policies and procedures and through employee training.

Root Cause:

Insufficient resources; the Laboratory has been operating for some time on limited resources. Thus, items not mandated by requirements have been given a lower priority.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Complete a 2.5-hour drug awareness training course for managers. (See Finding OA.8-1.)	Complete
2.	Develop a fitness-for-duty policy to integrate all elements of the program into a single policy.	6/91

Costs: To be accomplished with existing resources.

References: None

3.4.2 Quality Verification

Finding No.: RQV.1-1 RRD Quality Assurance Program Manual

Finding Description: **The Research Reactors Division Quality Assurance Program Manual is out of date and does not address current organization. The important responsibilities for identification on nonconforming conditions of individual employees at all levels are not identified.**

Code: Category III

Compliance Protocol: ANSI/ASME NQA-1 Basic Requirement 1 states in part: "Organizational structure, functional responsibilities, levels of authority, and lines of communication for activities affecting quality shall be documented."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: QA-RRD-15-100, Rev. 3, "Nonconformance Identification, Control and Documentation," states that RRD staff is responsible to identify nonconforming items. Also, all staff working for RRD have to take GEAT training which outlines the individual's responsibility to report nonconforming conditions per the Occurrence Reporting System (ORS).

This same condition was identified as Finding 1 on September 18, 1990, during ORNL Audit X-90-0297.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue revised Attachment "A" and other applicable portions of RRD QA Manual QA-RRD-1-100, Rev. 0.	11/91

Costs: None significant.

References: None

Finding No.: RQV.1-2 Management Assessment of RRD

Finding Description: **Management is not conducting verification and self-assessment as required by the Research Reactors Division quality assurance program and DOE 5700.6B.**

Code: Category III

Compliance Protocol: NQA-1, Basic Requirement 2 states in part: "Management of these organizations implementing the QA Program or portions thereof, shall regularly assess the adequacy of that part of the program for which they are responsible and shall assure its effective implementation." Also, QA-RRD-2-103 requires "a semiannual assessment and the ORNL QA Program as practiced within the RRD."

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: Deviation Request X-91-RR-0013 has been approved and issued to defer assessment and reporting of QA program adequacy and effectiveness. Management is conducting verification and self-assessments by the following methods: 1) Facility Inspection Program, 2) Operational Technical Specification Surveillance (STP), 3) Providing evaluators for conducting QA surveillances, 4) Providing staff from RRD to perform as auditors on internal audits, 5) Calculations/design verifications by peers, 6) management overview and scrutiny involving quality investigation determination and investigation depth/adequacy, and 7) hosting multiple outside reviews of RRD programs and their adequacy. Because of the mentioned verification processes/self-assessments, the intent of NQA-1, Basic Requirement 2 is being met.

Root Cause:

Inadequate management approach

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue and implement revised procedure QA-RRD-2-103, "Assessment and Reporting of QA Program Adequacy and Effectiveness," to reflect the new RRD Self-Assessment Process. This is an alternate action already specified on the Deviation Request cited above.	12/91

Costs: None significant.

References: Deviation Request X-91-RR-0013 and RRD Procedure QA-RRD-2-103.

Finding No.: RQV.1-3 Implementing RRD Procedures

Finding Description: **Personnel do not always follow procedures or interpret them correctly, resulting in noncompliance with Research Reactors Division requirements. This concern has been repeatedly identified on Quality Surveillance Summary reports.**

Code: Category III

Compliance Protocol: Best practices dictate that procedures be as clearly written and as unambiguous as practicable.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: The reviewer indicated that many Research Reactors Division procedures lack clarity, details, and information. Several procedures reviewed have numerous references to other procedures which make them difficult to follow.

Difficulties with the procedures have been recognized and steps have been and are being taken to improve the procedures. When deficiencies are noted they will be addressed, revised, and reviewed by the Plant Operations Review Committee (PORC). Specific actions on specific procedures have been identified and are documented in action plans for the following Findings: OP.2-3, OP.3-2, OP.3-3, OP.4-2, MA.8-1, TS.2-1, and TS.3-2.

Root Causes:

Inadequate policy implementation

Planned Actions and Schedules:

Specific actions to review, correct, and upgrade procedures have been identified in Findings OP.2-3, OP.3-2, OP.3-3, OP.4-2, MA.8-1, TS.2-1, and TS.3-2.

	Item/Description	Completion Date
1.	Reemphasize to all personnel in staff meetings and in writing the importance of always following procedures.	Complete
2.	Enter action plans into Integrated Resource Management System and track progress to ensure that the above action plans are completed as scheduled, resulting in improved procedures.	10/91

Costs: None significant.

References: None

Finding No.: RQV.1-4 Thoroughness of Procedures

Finding Description: **Procedures lack adequate detail — they do not specify what is to be done in response to specific items or failures as required by basic requirement 5 of ANSI/ASME NQA-1.**

Code: Category III

Compliance Protocol: NQA-1, "Basic Requirement" Section 5, "Instructions, Procedures, and Drawings" - "Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures, or drawings of a type appropriate to the circumstances. These documents shall include or reference appropriate quantitative or qualitative acceptance criteria for determining that prescribed activities have been satisfactorily accomplished." OR 5700.6B (11/22/89) paragraph 6 (Contractor Requirement) Item 6 - "ANSI/ASME NQA-1 is the required standard for ORO program."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Finding QV.1-4 was not addressed in the RRD self-assessment report of October 1990. However, in April of 1990, RRD completed a 2-year review of 44 manuals/procedures (memo, H. A. Glovier to Dr. Martin McBride, April 30, 1990). To ensure consistency and a quality review, these documents were reviewed using formal guidelines and criteria which were issued specifically for the review. The review format is based on knowledgeable personnel completing a review of assigned procedures; therefore, the amount of detail necessary for a procedure to be adequate can be very subjective.

Root Cause:

Ambiguous requirements or expectations; detailed acceptance criteria have not been routinely incorporated into procedures or establish as a requirement for procedures.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding for this action plan and action plan RQV.1-5. Funding for this action covered under Finding RQV 1-5.	Complete

	2. Obtain additional support for completing already identified revisions to the procedures/manuals being used by RRD.	3 months after funding has been provided
	3. Incorporate revisions into procedures/manuals and improve the details on acceptance criteria (amount of detail necessary for adequate procedures).	6 months after support is obtained
	4. Issue formal guidelines and criteria, including standard forms to document the results of the two-year and annual reviews. Issue revised procedures to reflect current review requirements.	3/92
	5. Clearly assign priorities to personnel performing procedure reviews; additional manpower will be required to incorporate improvements to procedures as they are identified by the users or reviewers.	6 months after funding has been provided

Costs: Funding covered in Finding RQV 1-5

References: ANSI/ASME NQA-1
DOE Order 5700.6B
RRAP-1.5
Memo from H.A.Glovier to Dr. Martin McBride dated April 30,1990

Finding No.: RQV.1-5 Revision of Procedures

Finding Description: **Procedures are revised without analysis and coordination to ensure conformance with other similar programs or procedures.**

Code: Category III

Compliance Protocol: NQA-1, "Basic Requirements", Section 6, "Document Control"- "The preparation, issue and change of documents that specify quality requirements or prescribe activities affecting quality shall be controlled to assure that correct documents are being employed. Such documents, including changes thereto, shall be reviewed for adequacy and approved for release by authorized personnel."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Finding QV.1-5 is a new finding and was not addressed in the RRD self-assessment report of October 1990. RRAP-1.5, "Preparation, Review, and Revision of Procedures" contains in Section 6 (Reviews and Approvals) and Section 7 (Revisions) requirement for the revision of procedures used by RRD. However, procedures are revised and issued on a continuous basis. When procedures are issued before a review of similar programs can be conducted, minor differences are expected. This is sometimes necessary to implement timely improvements. Limited resources have sometimes prevented requested revisions to supporting procedures being completed in a timely fashion.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding for this action plan.	Complete
2.	Issue revised RRAP-1.5 to document the review of other similar programs or procedures that are affected by a proposed revision.	3 months after action plan has been accepted

3.	Increase staffing to provide for timely analysis of revisions to procedure when required by the review process.	6 months after funding has been provided
4.	Audit procedure review process to ensure appropriate analysis and coordination with other programs or procedures.	6 months after staffing obtained

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3		*					
4	—						
Status:							
Funded							
Requested							
New							$*

*Estimated annual ongoing cost: $100K starting in FY 1992.

References: ANSI/ASME NQA-1
RRAP-1.5

Finding No.: RQV.1-6 Frequency of RRD QA Audits

Finding Description: **Audits performed by Research Reactors Division Quality Assurance are infrequent, requiring extended periods to evaluate total quality program effectiveness.**

Code: Category III

Compliance Protocol: QA-RRD-18-100, "Administration and Conduct of Quality Assurance Audits," Requirement Items A & B state in part: "A documented audit program shall be established to verify compliance with all aspects of the QA program and to determine its effectiveness. Audits shall be planned and scheduled at a frequency commensurate with the risk of the activity being considered for audit."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: QA-RRD-18-100, "Administration and conduct of Quality Assurance Audits," does not specify a certain frequency of audits, rather it states in part: "Audits shall be scheduled at a frequency commensurate with the risk of the activity being considered for audit." Quality program effectiveness is being looked at on a continual basis by a variety of tools. Within the past 2 years, approximately ten external audits or committee reviews have been conducted. Additionally, four internal audits and approximately 200 QA surveillances (which supplement the audit program) have been completed. Because of this, RRD management and the RRD QA Manager have determined that the established frequency of internal audits has been more than adequate. If, at some point in the future, the frequency of external audits/reviews is reduced, the number of internal audits/surveillances will be increased. In addition to the external audits (approximately five per year) for the Research Reactors Division, four internal audits are scheduled, and an 18-element NQA-1 based audit (conducted by ORNL Quality Assurance) is scheduled for each operating reactor for 1991. These audits are to be supplemented (not replaced) by approximately 60 QA surveillances. This is deemed adequate for assessing the RRD QA program.

A similar finding to this concern was previously identified in May 1990, audit E-90-0002, Finding 2.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Conduct RRD QA audits as approved and scheduled.	12/91

Costs: None significant.

References: Procedure QA-RRD-18-100, "Administration and Conduct of QA Audits" NQA-1, Supp. 18S-1, Paragraph 2

Finding No.: RQV.1-7 Method of Questioning in RRD QA Audits

Finding Description: **Research Reactor Divisions Quality Assurance audits have generic questions that are answered with no objective evidence or method of sampling, evaluation, or determination.**

Code: Category III

Compliance Protocol: Good practice not followed; QA-RRD-18-100, Section 200.1 states in part: "Checklists should include the parent requirement, the necessary verification activity, and the required objective evidence."

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: While it is generally a preferred audit technique to indicate the objective evidence or method of sampling, evaluation, or determination in the comments/remarks section of the audit checklist, the checklist is primarily a guide to ensure that nothing is overlooked, as well as a convenient place to indicate the determination of "satisfactory," "unsatisfactory," or "not applicable." NQA-1 Supp. 18S-1 does not require that the audit checklist be maintained as a quality record, instead NQA-1 Supp. 18S-1 states: "Audit records shall include audit plans, audit reports, written replies, and the record of completion of corrective action." The RRD QA procedure for audits, QA-RRD-18-100, "Administration and Conduct of Quality Assurance Audits," section 200.1 states in part: "Checklists should include the parent requirement, the necessary verification activity, and required objective evidence." Emphasis is placed on the word "should," which according to the guidelines of NQA-1 is a recommendation. Furthermore, only qualified and certified lead auditors and auditors conduct audits at RRD, which by virtue of their training and demonstrated proficiency are required to obtain and maintain their qualifications. Many RRD audit and surveillance checklists do have the remarks sections annotated where applicable as deemed appropriate by the auditors.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue memo to inform auditors performing audits at RRD of the Tiger Team concern, i.e., document the objective evidence or method of sampling or acceptability determination in the comments/remarks section of the audit checklist.	Complete
2.	Issue revised RRD-QA-18-100 to respond to Energy Systems proposed audit procedure change.	6/91

Costs: None.

References: None

Finding No.: RQV.1-8 RRD Corrective Action Program

Finding Description: **Many corrective action items are closed without the corrective action process required by DOE 5700.6B. The Research Reactors Division corrective action program does not ensure correction and prevent recurrence of identified deficiencies.**

Code: Category III

Compliance Protocol: DOE Order 5700.6B requires that the causes of significant deficiencies be identified and corrected to prevent recurrence. This finding deals with nonsignificant deficiencies; therefore, it is considered to be best management practice.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: The formality and the discipline of implementing corrective actions for reported deficiencies is acknowledged to have been inadequate in regard to the application of NQA-1, the identification of root causes, and the follow-up action needed to ensure the effectiveness of the corrective actions. Some improvements, to the extent permitted by available resources, have been implemented.

As part of RRD's evaluation of reported deficiencies, root causes will be identified, documented, and resolved in a more formal manner toward prevention of recurrences of the deficiencies. Improvements to RRD's corrective action program are addressed in this action plan.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding for this action plan.	Complete
2.	Evaluate the corrective action process and determine and document the type of analysis necessary (including formal root cause analysis) to appropriately identify corrective actions.	3/92
3.	Issue revised supporting procedures as necessary to reflect the formal requirements for analysis and appropriate correction of the cause of the problem.	3/92

4. Conduct additional training of personnel involved in corrective actions/reporting on various types of analyses (root cause, MORT, etc.).	180 days after funding is provided
5. Increase staffing level to support the analysis necessary to demonstrate compliance with applicable requirements (1 FTE).	180 days after funding is provided and qualified personnel are available

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	—						
4		30	30				60
5		85	85				170
Status:							
Funded							
Requested							
New		115	115				$230

References: RRD's Administrative Procedure Manual: RRAP-1.8 (Reviews, Audits, Trend Analysis, and Reporting); and draft RRAP-3.5.1 (Critiques for Reported Events)

Finding No.: RQV.1-9 Conflicting Goals in RRD

Finding Description: **The Research Reactors Division management's stated performance expectation is not consistent with published performance goals.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: The Performance Indicator Program, as outlined in RRAP-1.8.4, has been implemented for approximately one year. At the onset of its implementation, we planned to review the indicators and their goals for applicability and appropriateness. One of the goals already identified as needing change is the goal for "Number of Unplanned Automatic Trips While Critical." As in this case, some of our performance indicators were patterned after those used in the commercial nuclear industry, e.g., there would be great consequences for scrams at a commercial reactor, possibly on the order of millions of dollars a day. Therefore, a goal of zero would be appropriate. On the other hand, scrams for a research reactor are in a more conservative direction, and may typically result in a few days of delay in operation over a year. Using data from past experience, we are revising the near term goal for this indicator to be 1 per quarter for FY 1991. This was reflected in the October Performance Indicators.

A new task group has been assigned to investigate the cause of scrams during our safety system testing.

Root Causes:

Ambiguous requirements or expectations and poorly defined roles and responsibilities

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Complete the review of all RRD Performance Indicators for necessary improvements.	Complete
2.	Issue revised RRAP-1.8.4, updating indicators and goals, as appropriate, and include a provision to review the goals annually.	Complete

3. Issue revised Charter of Responsibility, Accountability, and Authority for the Director of Reactor Operations to reflect applicable rather than all commercial practices in continuing improvements and the pursuit of excellence. 5/91

Costs:

Type of funds: Research Programmatic

Source of funds: ER KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1-3	10						10
Status:							
Funded	10						
Requested							
New							$10

References: Research Reactors Administrative Procedure RRAP-1.8.4, "Performance Indicator Reporting and Tracking"

Finding No.: RQV.1-10 Data Base Trending System

Finding Description: **Some important quality-related information is not input into the trend and quality verification feedback system, and is not utilized to identify conditions adverse to quality or improve item/process quality as required by DOE 5700.6B.**

Code: Category III

Compliance Protocol: DOE Order 5000.3A, Section B, Item C(2) utilization states in part: "Each Facility Manager should adopt the use of trending and analysis of this information for early indications of deteriorating conditions."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: It is true that all information from a variety of sources, Deviation Requests, audit reports, surveillance reports, Occurrence Reports, etc. is not entered into the ESQIS system.

The concern for trending nonconformances has been previously identified by RRD audit I-88-028, which is still open with trending of NCRs utilizing ESQIS currently in-process.

Trending of RRD QA surveillance data has been in effect since early 1989, and is being accomplished on a quarterly basis.

X-GP-13 requires entry of all Occurrence Reports into the ESQIS. The Occurrence Reporting System (ORS) has only recently been implemented (since August 1990) with ESQIS originally established to assign numbers. The ESQIS program for accepting notification reports was instituted September 1, 1990, with ESQIS program for accepting 10-day and final reports updated on October 7, 1990. Training on data input was accomplished in September and October 1990. Some earlier Occurrence Reports have not been input to ESQIS because the computer program was not ready to accept the information and training had not been completed. Because the ORS is a relatively new program as mentioned above, procedures have not yet been developed to trend event data.

A similar finding to this concern was previously identified in Audit E-90-0002, Finding 33.

Root Causes:

Inadequate policy implementation and insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding to permit evaluations in Actions 2, 3, and 4.	Complete
2.	Evaluate various other types of reports for applicability to trending and ascertain if the identity of conditions adverse to quality or improvement to item/process can be achieved or is worth pursuing. Document this activity by report.	Two months after funding is available
3.	Develop and revise procedures to address applicable recommendations of the evaluation/report in Action 2.	Six months after funding is available.
4.	Issue revised RRAP-3.5 for inclusion of trending requirements for ORS data.	Six months after funding is available

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2			10				10
3			10				10
4			10				10
Status:							
Funded							
Requested							
New			30				$30

References: None

Finding No.: RQV.1-11 Occurrence Reporting System

Finding Description: **The new occurrence reporting system and its lack of interface with the nonconformance reporting system have allowed deficient conditions to go unreported, resulting in noncompliance with DOE 5700.6B and DOE 5000.3.**

Code: Category III

Compliance Protocol: DOE Order 5700.6B requires NQA-1 which requires Basic Requirement 15 that states in part: "Controls shall provide for identification, documentation, ... of nonconforming items, ..." DOE Order 5000.3A, purpose states in part: "To establish a system for reporting of operations information related to DOE-owned or operated facilities and processing of that information to provide for appropriate corrective action in accordance with the policy set forth ....."

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: ORNL/RRD staff have been documenting nonconformances and deficiencies on either nonconformance reports or the new occurrence report forms. Before the occurrence report came along, the now defunct Quality Event or Operations Event Report, Unusual Occurrence Report, Quality Investigation Report, was used. In the case of the Health Physics area the Radiological Awareness Report was used. If a nonconformance condition (needing technical disposition and control) was warranted from this variety of reports the issue has been escalated or referred to the nonconformance system.

RRD strongly disagrees that events or nonconforming items/activities have simply gone unreported because of some confusion on the interfacing of the new Occurrence Reporting System procedure with the nonconformance procedures in effect. Also, the existing procedure QA-RRD-15-100, "Nonconformance Identification, Control and Documentation," Section 7.2 (Evaluation of Nonconformances) requires the QAS to determine the reportability of the event under RRAP-3.5, "Event Reporting."

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding for Action Items 3 and 4.	Complete

2. Issue guidance on the type of report to initiate for (i.e., nonconformance reports versus occurrence reports and vice versa) and emphasize the importance of problem identification. Ensure that personnel understand their responsibilities and methodology to identify nonconforming conditions.	6/91
3. Evaluate issued occurrence reports to determine if nonconformance reports should have been initiated and if an NCR was needed, prepare and obtain technical disposition as necessary if the occurrence report did not address.	Two months after funding is received
4. Evaluate procedural interfaces between nonconformance and occurrence reporting for appropriateness and compliance with DOE Order 5700.6B (NQA-1) and DOE Order 5000.3A and issue revised procedures as required.	One month after funding is received

Costs:

Type of funds: Research Programmatic

Source of funds: ER

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	1						1
3,4		10					10
Status:							
Funded	1						
Requested							
New		10					$11

References: None

Finding No.: RQV.2-1 Justification of Procurement Deviations

Finding Description: **Deviations that have not been justified circumvent the intent of the Quality Assurance plan, resulting in questionable material and equipment. This does not meet the requirements of DOE 5700.6B.**

Code: Category III

Compliance Protocol: ANSI/ASME NQA-1; NQA-1 Supplement 15S-1, par. 4.4 states in part: "Disposition such as use-as-is, reject, repair, or rework of nonconforming items shall be identified and documented."

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: The examples (penciled records, erasures, etc.) pertinent to the Hafnium Sleeve job are dated several years ago for the fabrication and the RRD or the ETD (division responsible for this job) program was not quite as disciplined as it is currently due to changes made within the past several years. Reviews were done by outside committees and these types of findings had been previously identified in the "older" documentation, which has since been determined acceptable for this older work. Recognizing past deficiencies, RRD instituted a "fitness-for-use" or package audit review by the RRD QAS. Any questions on the appropriateness of documentation completion are addressed prior to the item being "certified for use." The older packages particularly have proved to be a challenge, only in rare occasions would requirements of current RRD program be "back-fit" on an old subcontractor or fabricator. That type of a back-fit would have to be for when the quality of the item is in jeopardy or suspect.

Deviations in the RRD program are not considered as nonconforming since they are reviewed/approved and have logical cause provided before the departure is permitted. Considered as a design change permission, deviation requests to remove the requirements for certified material or the deletion of a drawing note were reviewed by the appropriate technical parties. At the time, their signatures were considered adequate documented justification. These changes were not made to circumvent or to compromise quality. Many times the QAS was involved with the changes and they weren't pressured by cost or scheduling. The formal QAS review should have identified any improprieties if the quality had been in jeopardy or suspect from the deviation. Also, it must be mentioned that other means (testing/checking) was provided to assure with high confidence the material requirements were being met for deviations MFE-330J-1-10 and MFE-60J-1-3 as well as 12673-1.

The concern relating to the PU-4B pressurizer clutch was addressed in the work package prior to installation. The clutch was procured during the mid 1980's "old

program" and the concern had been recognized by the Task Leader and the work package was adjusted to correct the anomaly.

Magnetic clutch excessive shaft run-out being discovered after placement in HFIR was a management decision based on risk that the unit was acceptable for use without run-out measurements prior to placement.

Root Causes:

Ambiguous requirements or expectations, inadequate training, and inadequate management approach

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding to permit evaluation in Action 6.	Complete
2.	Review similar ETD Fabrication Packages and where penciled or erasures have been identified, make a copy and attach it to the original to "base-line" the document this review has taken into account the source or appropriateness of entries or changes made to these packages.	Complete
3.	Provide training to Task Leaders emphasizing importance of proper documentation completion.	6/91
4.	Add disposition justification to NCR 330J-1-11.	Complete
5.	Revise other NCRs at ETD and add justification where missing or inappropriate.	Complete
6.	Evaluate RRD NCR program and determine if revisions are needed to assure consistent application of justification on NCRs, if revisions are required, issue revised appropriate procedures and train affected staff.	One month after funding is available

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	5						5
4	—						
5	—						
6	1		20				21
Status:							
Funded	5						
Requested	1						
New			20				$26

References: None

Finding No.: RQV.2-2 Purchase Order and Quality Requirements

Finding Description: **Purchase order and quality requirements are not enforced, resulting in item noncompliance and failure to meet the requirements of DOE 5700.6B and basic requirement 8 of ANSI/ASME NQA-1.**

Code: Category III

Compliance Protocol: DOE Order 5700.6B, par. 9 and NQA-1 are being violated. NQA-1 Basic Requirement 8 states in part: "Controls shall be established to assure that only correct and accepted items are used or installed. Identification shall be maintained on the items or in documents traceable to the items, or in a manner which assures that identification is established and maintained."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: This concern is based on the PU-4B, Magnetic Clutch Procurement Package. The particular example cited was for a procurement dating back into the mid-1980s. No current samples were identified. Since that time, RRD has hired a Material Control Supervisor to coordinate procurements of reactor material. An internal audit (X-90-0297) performed in September 1990, by independent auditors identified a **positive** observation which cited improvements made in the "process on the procurement system, including the handling, storage, inspection, tagging, and documentation of received materials and equipment." Also, internal audit I-89-022, was performed in January 1990, which covered "procurement document control" and no findings of this nature were identified.The particular concern relative to the PU-4B magnetic clutch was corrected in the work package prior to final installation.

Root Cause:

Inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Complete internal audit on receiving inspection process; the audit includes an assessment of purchase orders and applicable quality requirements to determine if the purchase order and/or applicable quality requirements are being adhered to.	Complete

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	6						6
Status:							
Funded	6						
Requested							
New							$6

References: Internal Audit X-90-0297, "Quality Audit of HFIR"
Internal Audit X-89-022, "Procurement Document Control"

Finding No.: RQV.3-1 Adequacy of Inspections

Finding Description: **Receiving and pre-installation inspections do not consistently verify critical attributes before installation.**

Code: Category III

Compliance Protocol: NQA-1, Basic Requirement No. 7 states that "The procurement of items and services shall be controlled to assure conformance with specified requirements," and Basic Requirement No. 8 states that "Controls shall be established to assure that only correct and accepted items are used or installed."

Priority: Energy Systems Risk Weight 6
Tiger Team Action Plan Priority 3

Response: The specific item identified in the findings had been purchased in 1986. Our procurement and receiving inspection activities have been enhanced considerably since that time. A material control engineer has been hired and has implemented a tracking system for procurement activities. New procedures that address procurement and issue of materials are in draft form. A material-receiving procedure will be developed which will incorporate results of a currently ongoing RRD internal audit of receiving.

Root Causes:

Inadequate policy implementation and poorly defined roles and responsibilities

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue new procurement, material issue, and receiving procedures for RRD.	12/91
2.	Issue revised existing Maintenance Procedure, RRD-M-1.6 to add on the work package preparation checklist a line for pre-installation requirements.	5/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	25	5					30
2	2						2
Status:							
Funded	27						
Requested		5					
New							$32

References: Research Reactors Maintenance Procedure RRD-M-1.6, "Preparing and Processing a Maintenance Work Package"

Finding No.: RQV.3-2 Documentation of "Use-As-Is" Classification

Finding Description: **Items identified as nonconforming by receiving or pre-installation inspections are not dispositioned and justified for "use as is," as required by Research Reactors Division procedures and DOE 5700.6B.**

Code: Category III

Compliance Protocol: NQA-1 Supplement 15S-1, par. 4.4 states in part: "The disposition such as use-as-is ... shall be identified and documented .... Technical justification for acceptability of a nonconforming item dispositioned use-as-is shall be documented."

Priority: Energy Systems Risk Weight 0
Tiger Team Action Plan Priority 3

Response: The finding was in relation to the RRD Inspection Plan and Dimensional Certification Report for which an approved Engineering Specification (RRD-JS-24, "Specification for Dimensional Inspection") has been in place. This specification permits the Task Leader, with QA oversight and concurrence (by signature), to approve generally minor dimensional anomalies while the work is in-process without the need for a formal nonconformance report per RRD-QA-15-100. The QA oversight is the check and balance for minor dimensional anomalies being accepted by the Task Leader. The finding states that "only the signature of the engineer is required." This is not the case as pointed out above.

Also, in the case of major fabrications that are covered by a fabrication package, the package has to undergo QAS certification-for-use review (i.e. package audit/review). At this time, if there are any questions as to the nature of a minor dimensional acceptance that may appear to need a formal NCR, the matter would be resolved before the item's acceptance and certification-for-use.

The Task Leaders do not and have not just arbitrarily accepted these minor dimensional anomalies. They evaluate the effect the minor out-of-tolerance has, any tolerance build-ups, items final use, and functional fit. These considerations, because of the extremely minor nature of the dimensional anomalies encountered, are informally done (usually without documentation). DOE Order 5700.6B requires that line management be responsible for the achievement of quality. It has been determined that the acceptance of minor dimensional deficiencies by the Task Leader with QA concurrence IS NOT a compromise to quality achievement.

Because the items produced at ORNL facilities for RRD use are not mass produced (RRD only requires very limited quantities and most are highly customized) trending of these minor dimensional anomalies is not an issue that would provide any value added. P&E at one time kept track of inspection efficiency/shop supervisor efficiency and no appreciable benefits were derived other than to ascertain that over the period a 95% to 98% accuracy of

conformance was achieved for items produced. Therefore, the process was discontinued.

The idea that a trend from these data would identify machine variation, isn't correct because a multitude of machines and different locations at ORNL are used to produce the limited quantities and customized items for RRD.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding to permit evaluation in Action 2.	Complete
2.	Perform a documented review of a sample of Dimensional Certification Reports over the past year to see if more than just minor dimensional anomalies have been accepted without a formal nonconformance per QA-RRD-15-100 or without QA concurrence signature.	1 month after funding is available
3.	Prepare nonconformance reports and provide justification for use-as-is dispositions, as necessary if review in Item 2 above indicates abuse of procedure for minor dimensional anomalies.	2 months after funding is available
4.	If Item 2 indicates abuse of established procedure for accepting minor dimensional anomalies, then train appropriate personnel to the requirements.	4 months after funding is available

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2		10					10
3		1					1
4		10					10
Status:							
Funded							
Requested							
New		21					$21

References: RRD-QA-15-100, "Nonconformance Identification, Control and Documentation" Engineering Specification, RRD-JS-24, "Specification for Dimensional Inspection."

Finding No.: RQV.4-1 Documentation of Acceptance Inspections

Finding Description: **Measuring and test equipment found out of tolerance cannot be traced to previous inspection usage as required by ANSI/ASME NQA-1, Section 12S-1-3.2.**

Code: Category III

Compliance Protocol: NQA-1, Section 12S-1-3.2

Priority: Energy Systems Risk Weight 6
Tiger Team Action Plan Priority 3

Response: This finding is similar to Finding QV.4-2, Measurement and Test Equipment Traceability and QV.4-4, Determining Effects of Out-of-Tolerance Equipment.

Similar findings were identified in Audit E-90-002, Finding 6, dated May 1990, and ORNL Audit PE-89-001 in May 1989.

The approved response to both earlier audits was to continue the method currently used to "verify accuracy prior to use." This verification is documented on the Dimensional Inspection form per RRD Engineering Specification for Dimensional Inspection, JS-24. This issue will be reevaluated for acceptability.

The corrective action intended to conduct an independent evaluation of the ORNL Calibration Program and implement recommendations from the evaluation. See planned actions, schedule, and cost information for Findings QV.4-4 and QV.4-2.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Perform and document an independent reevaluation of current practices of "verifying for accuracy prior to use."	6/91

Costs: The costs associated with this finding are reported under Findings QV.4-4 and QV.4-2.

References: None

Finding No.: RQV.4-2 Measurement and Test Equipment Calibrations

Finding Description: **Measuring and test equipment calibrations are not always traceable to the National Institute of Standards and Technology, as required by ANSI/ASME NQA-1, Section 12-5-3.1.**

Code: Category III

Compliance Protocol: ANSI/ASME NQA-1, 12-S1, par. 3.1 states in part: "M&TE shall be calibrated, adjusted, and maintained at prescribed intervals or, prior to use, against equipment having known valid relationships to nationally recognized standards."

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: See Finding RQV.4-4. A similar finding to this concern was previously identified in May 1990, audit E-90-0002, Finding 6.

Root Cause:

Inadequate policy implementation

Planned Actions and Schedules:

Finding RQV.4-2 is fully addressed by actions listed in Finding RQV.4-4.

Costs: The costs associated with this finding are reported under Finding RQV.4-4.

References: DOE Order 5700.6 and ANSI/ASME NQA-1

Finding No.: RQV.4-3 Use of Uncontrolled and Uncalibrated Instruments

Finding Description: **Critical measurements for acceptance and operability are made using uncontrolled and uncalibrated instruments, contrary to basic requirement 12 of ANSI/ASME NQA-1.**

Code: Category III

Compliance Protocol: ANSI/ASME NQA-1, Basic Requirement 12 states in part: "M&TE used for activities affecting quality shall be controlled and at specified periods calibrated and adjusted to maintain accuracy within necessary limits."

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: The micrometer mentioned in the findings has calibration records with it demonstrating that the instrument is within tolerance; therefore, if any measurements might have been performed with it, they would have been satisfactory. Besides the issue of whether the micrometer could be repeatably calibrated, the contention of the auditor during interviews was that the "crack" in the anvil of the micrometer could have possibly scratched the surface of the item it was measuring. This is a valid concern and therefore the micrometer was taken out of service. P&E Management Staff at RRD was asked if it was likely that the micrometer in question had been used for any "acceptance" readings on parts, items, etc. In response it was stated that with the given work performed in the RRD shop was unlikely, but not impossible, that the micrometer was used for acceptance measuring as the majority of that measuring/gaging is performed at Bldg. 2525. Therefore, the one sample of this micrometer is an isolated case that has not affected quality. Since the micrometer has been taken out-of-service, no further action is planned regarding this one micrometer.

A similar finding to this concern was previously identified in May 1990, audit E-90-0002, Finding 6.

Root Cause:

Inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Calibrate the four devices that were found out-of-calibration frequency and/or were not included in the calibration program. Evaluate any anomalies found during the calibration.	6/91
2.	Request that facility managers determine if similar conditions to this concern exist elsewhere and if so, evaluate the M&TE for inclusion into Calibration Program. If calibrations are required, evaluate "as-found" readings in accordance with procedures in the event that anomalies or unexpected results cast doubt on past readings from these devices.	12/91
3.	Ensure that when M&TE is utilized for acceptance testing, the identification of the device will be recorded within job documentation to provide "use traceability" or the device will be "verified for accuracy" and documented just prior to and after use.	9/91

Costs: No significant costs associated with actions outlined.

References: ANSI/ASME NQA-1

Finding No.: RQV.4-4 Determining Effects of Out-of-Tolerance Equipment

Finding Description: **Out-of-tolerance conditions of measuring and test equipment are not identified and evaluated to determine impact on previous measurements, as required by ANSI/ASME NQA-1, Section 12S-1-3.2.**

Code: Category III

Compliance Protocol: NQA-1, Section 12S-1-3.2 states in part: "When M&TE is found to be out of calibration, an evaluation shall be made and documented of the validity of previous inspections or test results and of the acceptability of items previously inspected or tested." 12S-1-3.1 also states in part: "M&TE shall be calibrated, adjusted, and maintained at prescribed intervals or prior to use..."

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: I&C technicians are required to perform the calibrations and report the results to the supervisor, who in turn initiates evaluation actions in the case of out-of-tolerance conditions.

It can and has been demonstrated that out-of-calibration devices are evaluated for impact on previous measurements, as by reference to samples such as: an 9/18/90, 10/22/90, and an early 1990 "out-of-tolerance notification" memo from I&C representatives to Maintenance Manager and QER-X-89-RR-0058. The P&E metrology lab's method of choice is to do a performance check on the device (M&TE) before the device is used. Thus, confidence is gained that the device is within it's "tolerance range." Also, the need for evaluating impact on past items measured with the device or the need for M&TE identification numbers to be included on Dimensional Inspection reports is eliminated. This was the method of choice as depicted in the current RRD Engineering Specification for Dimensional Inspection. This method requires less paperwork, and "tracking" and demonstrates a proactive approach to eliminating a problem device before it is used, rather than finding a problem with it some time later after the item might have been used in a nonretrievable or critical application. This was an agreed-upon response to a past audit on this same subject, which was subsequently audited several times with no concerns raised regarding how this activity is being performed.

See response to Finding QV.4-2 for outside consultants scheduled to evaluate M&TE program for appropriateness. A similar finding to this concern was previously identified in May 1990, audit E-90-0002, Finding 6. Also, ORNL audit dated May 24, 1989, audit PE-89-001 identified similar conditions and the approved corrective action to the audit observation, is the process currently in use: "Inspection equipment verified for accuracy prior to use."

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding to perform Item 3.	Complete
2.	List transfer standards on the calibration form, as agreed to by P&E Calibration Supervisor.	Complete
3.	Contract with a consultant from Martin Marietta (Denver DOD Contractor) to evaluate the ORNL Calibration Program and provide recommendations for improvements.	12/92

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
3			60				60
Status:							
Funded							
Requested							
New			60				$60

References: None

Finding No.: RQV.5-1 Justification of Deviations and Nonconformances

Finding Description: **Some deviations and nonconformances are accepted without justification that meets the requirements of ANSI/ASME NQA-1, Section 15S-1-4.4.**

Code: Category III

Compliance Protocol: DOE Order OR 5700.6B Section 6.6 requires the judicious and selective use of ANSI/ASME NQA-1 as the national consensus standard to be used for ORO programs. ANSI/ASME NQA-1 Supplement Section 15S-1 4.4 requires documented technical justification for the acceptability of nonconforming items dispositioned repair or use-as-is.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: The RRD Quality Assurance (QA) Procedure, RRD-15-100, "Nonconformance Identification, Control, and Documentation" Section 6.4 requires a completed justification for each nonconformance written. RRD QA procedure RRD-3-102, "Control of Design Related Deviations" Section 100.5 requires a completed justification for each deviation written. RRD Administrative Procedure RRAP 3.2 Section 7.9 requires written justification for all design related deviations.

RRD Job Specification RRD-JS-24, "Specification for Dimensional Inspection" Section 6 allows the Engineering Task Leader, with the concurrence of the Quality Assurance Representative, to accept out-of-tolerance dimensions of a minor nature without the issuance of a nonconformance report. The out-of-tolerance dimensions are circled on the dimension report and the acceptance indicated by a dated signature of the task leader and QA department representative. This dimensional inspection practice has been questioned by many other review committees at HFIR (such as, Audit E-90-002 and Audit PE 89-001), but consistently found to be acceptable as applied. The deviation and/or nonconformance report number is typically referenced on the Drawing Change Notice (DCN) form under the section labeled "References." The procedure for drawing control, RRAP 3.2-3, "Administration of RRD Engineering Design Drawings" does not specifically specify the reference of deviation and/or nonconformance report numbers on the DCN.

Documented training has been conducted for RRD personnel on the above problems.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue a memo to reemphasize the need to justify nonconformance and deviation rationale per existing RRD procedures.	5/91
2.	Issue revised RRD Procedure RRAP 3.2.3 to require reference to deviations and nonconformances on Drawing Change Notices.	5/91
3.	Issue revised RRD Specification RRD-JS-24 to require justification on dimensional inspection reports for use-as-is dispositions.	5/91
4.	Train RRD personnel on procedure and specification revisions.	6/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	3						3
3	—						
4	—						
Status:							
Funded	3						
Requested							
New							$3

References: RRD Administrative Policies and Procedures Manual, ORNL/RRD/INT-12
RRD Quality Assurance Procedures Manual, ORNL/RRD/INT-26
RRD Engineering Specifications Manual, ORNL/RRD/INT-37, Vol. 4

Finding No.: RQV.5-2 Trending of Nonconforming Items

Finding Description: **Items that do not meet design requirements are accepted in "use-as-is" dispositions without identification or trending as nonconforming as required by DOE 5700.6B.**

Code: Category III

Compliance Protocol: DOE Order 5700.6B; NQA-1 Supplement 15S-1, par. 4.4 states in part: "The disposition such as use-as-is .... shall be identified and documented .... Technical justification for acceptability of a nonconforming item dispositioned use-as-is shall be documented.

Priority: Energy Systems Risk Weight 51
Tiger Team Action Plan Priority 3

Response: The concern for trending nonconformances has been previously identified by RRD Audit I-88-028, which is still open with trending of NCRs utilizing ESQIS currently in-process. See Findings RQV.1-10, RQV.2-1, and RQV.3-2.

Root Causes:

Ambiguous requirements or expectations, inadequate policy implementation, and inadequate training

Planned Actions and Schedules:

Finding is fully addressed by actions listed in response to Findings RQV.1-10, RQV.2-1, and RQV.3-2.

Costs: Covered under other findings indicated above.

References: None

Finding No.: RQV.5-3 Identification and Storage of Parts and Material

Finding Description: **Parts and material are not stored as required by controlling procedures of American Welding Society (AWS)/ASME Code, and are not identified as acceptable or unusable.**

Code: Category III

Compliance Protocol: NQA-1, Basic Requirement 9, Processes affecting quality of items or services shall be controlled; and Basic Requirement 8, Controls shall be established to assure that only correct and accepted items are used or installed.

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: The material found improperly stored or improperly identified was located near one of the Plant and Equipment (P&E) fabrication shops. Fabrication of parts for RRD at other facilities, such as the P&E Machine Shop (Building 7012) are governed by the material specifications originated in RRD. P&E Division has in place appropriate procedures for control of material for special processes. The spare parts and material program in RRD is establishing the controls necessary for implementing a good program. An action plan to implement a system for providing spare parts for safety-related and critical equipment for RRD reactor facilities has been established previously.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Review the P&E procedures on the welding program with the welding supervisors and document the review.	Complete
2.	Make any revisions necessary to the P&E procedures after review is complete.	5/91
3.	Request additional funding for Material Control and Procurement Group to carry out planned actions to implement the spare parts and material program.	Complete
4.	Initiate hiring of additional support for Material Control and Procurement Group for support of HFIR and B reactors.	Funding plus 4 months

5. Perform inventory of all HFIR spare parts in storage as initial spare parts requirements.	Funding plus 10 months
6. Issue a spare parts stock list for HFIR safety-related and critical spare parts.	10/91
7. Initiate implementation of a reactor materials and spare parts inventory system to ensure that sufficient quantities of reactor spare parts are kept on hand.	Funding plus 15 months
8. Issue a spare parts stock list for B reactors safety-related and critical spare parts.	12/91
9. Incorporate B reactors into the materials and spare parts inventory system.	Funding plus 17 months

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	—						
4		*					
5	—						
6	20	10					30
7	—						
8		20					20
9	—						
Status:							
Funded	20						
Requested		30					
New							$50

*Estimated annual ongoing cost: $110K starting in FY 1992.

References: Plant and Equipment Division Procedures:
F-WELD-1.1, "Welding Program"
F-WELD-5.3, "Control of Welding Filler Metal"

Finding No.: RQV.5-4 Evaluating Unreviewed Safety Questions

Finding Description: **Some modifications are performed to portions of the plant with analyzed accident impact without evaluation of the possibility of an unreviewed safety question as required by DOE 5480.5.**

Code: Category III

Compliance Protocol: DOE Order 5480.5, Section 9h requires that each contractor provide for objective and independent review of proposed modifications to nuclear facilities and equipment having safety significance.

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: The Research Reactors Division (RRD) Facility Modification Control Procedures met this requirement for significant facility modifications, but did not adequately provide documented evidence of an objective safety review analysis for minor modifications. These deficiencies in the RRD Facility Modification Control procedures have been documented in both the October 1990 RRD Self-Assessment under the Technical Support Section and the RRD Self-Assessment Supplemental Section on Configuration Management. The RRD Administrative Procedure RRAP 3.2, Rev. 5 was revised and approved by the RRD Plant Operations Review Committee (PORC) on October 26, 1990, correcting the deficiencies noted in Finding QV.5-4. The PORC decided not to implement the RRAP 3.2, Rev. 5 changes until training on the revisions could be completed. RRAP 3.2, Rev. 5 went into effect after completion of training sessions conducted on November 6, 1990, and November 9, 1990. The RRD-DCC began the process of issuing RRAP 3.2, Rev. 5 in the RRD controlled procedures RRAP manual as of November 20, 1990.

Related TSA concerns are found in Findings TS.3-1, TS.3-3, and FR.1-2.

Root Cause:

Poorly defined roles and responsibilities

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue revised RRD Facility Modification Control procedures to require an independent and objective review and safety analysis for both major and minor design modifications.	Complete

	2. Train RRD Design, Safety Analysis, and QA personnel on these revisions in the modification control procedures.	Complete

Costs: None significant.

References: RRD Administrative Policies and Procedures Manual, ORNL/RRD/INT-12

Finding No.: RQV.6-1 Inspection Reports

Finding Description: **Inspection reports are not completed correctly and do not indicate important measuring and test equipment used, as required by ANSI/ASME NQA-1, Sections 10 and 12.**

Code: Category III

Compliance Protocol: NQA-1, Sections 10 and 12. NQA-1, Basic Requirement 10, "Inspection" and 12 "Control of M&TE." Basic requirement 10 states in part: "Inspection results shall be documented." Basic requirement 12, Supp. 12S-1 states in part: "When M&TE is found out to be out of calibration, an evaluation .... and the validity of previous .... results and of the acceptability of items previously inspected/tester shall be made."

Priority: Energy Systems Risk Weight 51
Tiger Team Action Plan Priority 3

Response: The findings relating to measuring and test equipment are addressed collectively in the response and action plans to Finding RQV.4-2. Adequacy of inspection report completion for the example involving brazing inspection reports are herein addressed; however, associated findings involving special processes are addressed in the response and action plans for Finding RQV.7-1.

Procedures were in place to ensure a program of inspection and special process control; however, incomplete inspection reports and inappropriate procedures were identified for the hafnium sleeve/capsule job that pertained to brazing:

1) An inspection report has been prepared by the technician that was cognizant of quality workmanship that went into the brazing operation.
2) Before the item was accepted, several type leak tests were performed to verify integrity of the brazing process and leak tightness.
3) On 11/09/90, ETD issued correspondence requesting the P&E division to develop brazing procedures for future. See Findings RQV.4-4, RQV.7-1, and RQV.7-2.

Root Cause:

Inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funds to prepare procedures for materials, qualifications, inspections, and processes involving brazing operations used and ORNL facilities. Actions: 2 and 3, below.	Complete
2.	Issue qualified procedures for brazing operations used at ORNL facilities that include at least the following: material appropriateness, qualifications for brazing operators and inspectors, and inspection techniques.	6 months after funding is available
3.	Train and qualify operators and inspectors for newly developed procedures involving brazing.	7 months after funding is available

Costs:

Type of funds: Research Programmatic

Source of funds: NE-AF

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2			15				15
3			15				15
Status:							
Funded							
Requested							
New			30				$30

References: Response and actions to Findings QV.4-4, QV.7-1, and QV.7-2

Finding No.: RQV.7-1 Control of Special Process Material

Finding Description: **Special process material is not controlled as required by ORNL Research Reactors Division procedures and American Welding Society (AWS)/ASME Codes.**

Code: Category III

Compliance Protocol: No specific section or requirement was cited to the above codes other than: "AWS/ASME." However, NQA-1, Basic Requirement 9, "Special Processes" states in part: "Processes affecting quality of items or services shall be controlled. Special processes that control or verify quality, such as those used in welding ... shall be performed ... using qualified procedures per specified requirements."

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: Programs and procedures are in use at ORNL/RRD/ETD to control special processes. However, specific individual deficiencies with brazing procedures, stitch weld inspection, wrong heat number, and atmospheric exposure for coated electrodes indicate more attention to detail is required.

Many of the specific deficiencies noted have already been corrected or better documented within the fabrication file.

On 11/9/90, ETD issued correspondence requesting the P&E division to develop welding procedures (five processes, three for brazing and two for welding).

Concerning the atmospheric exposure of coated electrodes, weld procedures that apply to the use of coated electrodes are being revised to specify the limits for atmospheric exposure; also, the impact on items prior to the discovery are limited because 100% visual inspection and approximately a 5% Radiographic inspection has been performed on welds utilizing coated electrodes of concern and generally these type of electrodes are used on low carbon steels in which hydrogen induced cracking is not too much of a concern. However, for alloy steels in certain applications this could be a concern.

A similar audit finding to this concern was identified in May 1990, Audit 90-0002, Finding 19.

Root Cause:

Inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	For brazing procedure development, see Finding QV.6-1.	
2.	Evaluate other (if any) in-practice ORNL welding/brazing processes and determine extent of undeveloped qualified procedures and develop qualified procedures for material such as those mentioned in the ETD 11/9/90 correspondence to P&E. If unapproved weld procedure materials have been utilized, prepare NCR and evaluate on a case-by-case basis.	6/91
3.	Revise existing program or issue revised procedures to comply with applicable codes/standards to specify exposure limits for coated electrodes.	Complete
4.	Instruct applicable people, i.e., weld operators, inspectors, supervision of the new requirements for atmospheric exposure of coated electrodes.	Complete
5.	Evaluate and document worst case scenarios for the adequacy of quality related welding performed at ORNL using coated electrodes that may have had excessive moisture content in coating.	6/91
6.	Issue memo to instruct P&E that all welding is to be performed to written and approved procedures appropriate to the circumstances and that if procedures are not in-place or do not exactly fit the circumstances; either 1) revise existing procedures to include the circumstances prior to the work, 2) develop new procedures to address the situation prior to the work, or 3) prepare and obtain approval of a deviation request to allow the situation, prior to the departure.	6/91

Costs:

Type of funds: Research Programmatic
Source of funds: NE-AF

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
2	10						10
3	10						10
4	10						10
5	5						5
6	5						5
Status:							
Funded							
Requested							
New	40						$40

References: Deviation Request TS 0012/90

Finding No.: RQV.7-2 Special Process Procedures

Finding Description: **Special process procedures are used outside allowable critical parameters allowed by ASME Code and ORNL/Research Reactors Division procedures.**

Code: Category III

Compliance Protocol: See Finding QV.7-1.

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: See response to Finding QV.7-1. A similar audit finding to this concern was identified in May 1990, Audit E-90-0002 Finding 19.

Root Cause:

See Finding QV.7-1.

Planned Actions and Schedules:

See Action Plans to Finding QV.7-1, "Control of Special Process Material."

Costs: Planned actions will be performed with existing funds.

References: None

3.4.3 Operations

Finding No.: ROP.2-1 Deficiencies in HFIR Operating Instructions

Finding Description: **High Flux Isotope Reactor operating instructions do not include all Technical Specification limits on reactor operations.**

Code: Category III

Compliance Protocol: Best management practices require that all Technical Specification limitations be reflected in operating procedures.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: The responsibility for the generation and revision of all HFIR operating procedures was recently (October 1990) assumed by the HFIR Operations Section of RRD. This should allow for more efficient handling of procedure revisions as required and assure that the overall revision of the manual is completed as scheduled.

The need to revise the HFIR Operating Procedures Manual has been recognized from early in the restart effort. Because of the large number of restart issues and concerns, RRD management made a deliberate decision to perform an overall revision on a long-term basis so that resources could be focused on restart-related issues. Revisions to specific procedures within the manual were performed to reflect changes in the system and identified deficiencies.

The inclusion of all technical specification requirements (limits) in the operating procedures will enhance our current practices which include biennial detailed training (of certified operators) and the requirement that an official, controlled copy of the technical specifications be available in the HFIR control room. Spelling out technical specification limits in each procedure will lessen the likelihood that the operating crew will be required to "break-out" the technical specification manual, and will also serve as a reminder that a particular operation will or might affect a technical specification. It is rather important that additions to the Operating Manual be accomplished in a manner which will facilitate later revisions, particularly when technical specification changes are effected.

Root Causes:

Insufficient resources and inadequate policy; lack of knowledgeable staff and a conflict between ORNL records control practices and RRD need for quick revisions has slowed adoption of this best management practice. (Lack of personnel and inadequate records management system.)

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Hire additional engineering staff to assist with procedure review/preparation.	Complete
2.	Review the Operating Manual to find obvious omissions of technical specification references.	Complete
3.	Correct the obvious omissions found in Item 2, including those specified in the 1990 ORNL TSA Review (Tiger Team Report).	Complete
4.	Complete a detailed biennial review of the operating procedures to ensure compatibility with the Technical Specifications as specified in the Research Reactors Administrative and Policies Procedures Manual (RRAP-1.5, Sect. 8).	6/91
5.	Correct the omissions, or make additions to the operating procedures as found necessary in Item 4.	9/91
6.	See Action Item ROP.3-1 regarding steps being taken to resolve the conflict between operational needs and ORNL records control practices.	

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	39						39
4	—						
5	—						
6	—						
Status:							
Funded	39						
Requested							
New							$39

References: Finding 4.5.2.3.1 (OP.3-1, HFIR Operating Manual)
Finding 4.5.2.2.1 (QV.1-4)
Finding 4.5.2.2.1 (QV.1-5)

Finding No.: ROP.2-2 Technical Specifications at HFIR

Finding Description: **High Flux Isotope Reactor Technical Specifications do not always define the criteria by which a system or component can be determined to be operable.**

Code: Category III

Compliance Protocol: DOE Order 5480.6, "Safety of Department of Energy-Owned Reactors," provides guidance for the establishment of technical specifications for DOE reactors. This requires compliance with 20 CFR 50.36 and subsequently ANSI 15.1 ANSI 15.1-1982, "Development of Technical Specifications for Research Reactors," is specified by DOE Order 5480.4 as the governing requirement for format and content of technical specifications for DOE-owned reactors.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: The HFIR Technical Specifications provide a general definition for operability, and in those instances where specific technical criteria are necessary for reactor safety, they are clearly specified; however the specific criteria for each individual piece of equipment are usually defined in the Operating Procedures or Surveillance Test Procedures. The TSA (Tiger Team) Operations reviewer determined that many of the operability criteria specified were either inadequate or open ended. Resolution of this finding will involve revision to the Operating Procedures, Surveillance Test Procedures, and eventually the Technical Specifications.

The HFIR Operations staff was assigned the responsibility for the generation and revision of all HFIR operating procedures in October 1990. Agreements have been made between HFIR Operations and the Research Reactors Division Document Control Center which will allow revisions, additions, and deletion of operating procedures to be accomplished more efficiently than in the past. Revisions to resolve this finding will be incorporated in the appropriate procedures as HFIR operations resources allow.

Revisions to the HFIR Technical Specifications are to be negotiated between the RRD Compliance Section and DOE-ORO.

Root Causes:

Insufficient resources and inadequate policy; a recommended good practice that has not been implemented due to limited knowledgeable staff available to revise operating procedures, surveillance test procedures, and technical specifications.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Identify and document HFIR Technical Specifications that require operability to be defined.	6/91
2.	Review the HFIR Technical Specifications and determine if more explicit operability criteria should be defined. Prepare a report of the review findings.	6/91
3.	Identify the enabling procedures (Operating Procedure, Surveillance Test Procedure, etc.) for each identified Technical Specification.	7/91
4.	Issue a revision of the appropriate procedures to ensure that criteria for operability is defined in each.	9/91
5.	Submit initial revision to the HFIR Technical Specifications to include more explicit operability criteria if determined appropriate in Step 2. The issuance of the draft DOE Order 5480.22, "Technical Specifications and Operational Safety Requirements," will impact this process and could extend the completion date.	12/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	1.2						1.2
2	8.4						8.4
3	2.0						2.0
4	16.8						16.8
5	25.0	8.4					33.4
Status:							
Funded	53.4						
Requested		8.4					
New							$61.8

References: DOE Order 5480.6, "Safety of Department of Energy-Owned Reactors"
DOE Order 5480.4, "Environmental, Safety, and Health Protection Standards"
ANSI-15.1-1982, "Development of Technical Specifications for Research Reactors"

Finding No.: ROP.2-3 Ambiguities in HFIR Operating Instructions

Finding Description: **Ambiguous operating instructions hinder the ability of High Flux Isotope Reactor supervisors and managers to adhere to facility policies regarding reactor operations.**

Code: Category III

Compliance Protocol: Best management practices require that procedures be unambiguous and as clearly written as practicable.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: The need to revise the HFIR Operating Procedures Manual has been recognized from early in the restart effort. Because of the large number of restart issues and concerns, RRD management made a deliberate decision to perform an overall revision on a long-term basis so that resources could be focused on restart-related issues. Revisions to specific procedures within the manual were performed to reflect changes in the system and identified deficiencies.

The responsibility for the generation and revision of all HFIR operating procedures was recently (October 1990) assumed by the HFIR Operations Section of RRD. This should allow for more efficient handling of procedure revisions as required and assure that the overall revision of the manual is completed as scheduled. The Research Reactors Administrative Policies and Procedures Manual provides for biennial review of all operating procedures, a process designed to keep procedures in agreement with technical specifications as well as the plant configuration.

Root Cause:

Insufficient resources; the shortage of knowledgeable personnel to revise and update procedures coupled with rapidly changing practices which require more specific procedures.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Hire additional engineering staff to assist with procedure review/preparation.	Complete
2.	Review outstanding requests for procedure revision to identify areas of ambiguous instructions. Document the review.	6/91

3. Issue revisions of those procedures identified in Step 2, including those identified in the 1990 ORNL TSA Review (Tiger Team Report). 6/91

4. Complete and document the biennial review of the operating procedures as specified in the Research Reactors Administrative Policies and Procedures Manual. 9/91

5. Issue revised procedures and complete necessary corrections or revisions as determined in Step 4. 12/91

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	55						55
4	—						
5	—						
Status:							
Funded	55						
Requested							
New							$55

References: None

Finding No.: ROP.2-4 HFIR Shift Check Sheets

Finding Description: **Pertinent information needed to diagnose off-normal trends in High Flux Isotope Reactor operation does not always come to the attention of the shift supervisor when reviewing shift check sheets.**

Code: Category III

Compliance Protocol: INPO Good Practice, OP-204, INPO 85-017, Rev. 1, "Guidelines for the Conduct of Operations at Nuclear Power Stations," provides guidelines for the performance of operations checks which are accepted by the nuclear industry.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: This concern was previously expressed in an October 1990 internal review. Instructions were transmitted to the Operations staff on how to flag check sheet readings which are out of specification and equipment which is out of service. Also, the check sheets are currently being revised to provide explicit tolerances for each reading.

Root Causes:

Inadequate management approach and insufficient resources; this good practice has not been implemented due to limited knowledgeable staff available to revise operating procedures.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Revise all check sheets to provide explicit tolerances.	Complete
2.	Issue revised ORNL/RRD/INT-12/V2, *Research Reactors Division Administrative Policies and Procedures Manual,* RRAP-3.12, "Conduct of Operations" to incorporate a standard methodology for flagging out-of-tolerance checks.	10/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	4						4
2	4						4
Status:							
Funded	8						
Requested							
New							$8

References: INPO Good Practice OP-204, INPO 85-017, Rev. 1, "Guidelines for the Conduct of Operations at Nuclear Power Stations"

Finding No.: ROP.2-5 HFIR Reactor Log

Finding Description: **The High Flux Isotope Reactor reactor log lacks detail and accountability for entries.**

Code: Category III

Compliance Protocol: The HFIR log should contain the detail and format currently accepted in the nuclear industry. Revisions to the reactor log format have been made within the last two years based on INPO good practices.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: The current reactor log format will be reviewed against current industry good practices and upgrade made to improve detail and accountability. Reactor shift supervisors will be counseled on the need for more detail in their logs.

Root Causes:

Inadequate management approach and insufficient resources; this good practice has not been implemented due to limited knowledgeable staff available to revise operating procedures and provide detailed guidance to shift personnel concerning log book entries.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Evaluate and document current log-taking practices against industry good-practice guidelines.	6/91
2.	Revise and issue RRD procedures ORNL/RRD/INT-12/V2, *Research Reactors Division Administrative Policies and Procedures Manual,* RRAP-3.12, "Conduct of Operations," and ORNL/TM-1168, *High Flux Isotope Reactor Operating Manual* to reflect the changes generated by the evaluation.	10/91
3.	Train HFIR Operations staff on the new log-taking practices.	12/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	2						2
2	4						4
3	12						12
Status:							
Funded	18						
Requested							
New							$18

References: INPO Good Practice, OP-204, INPO 85-017, Rev. 1, "Guidelines for the Conduct of Operations at Nuclear Power Stations"

INPO Good Practice, OP-201, INPO 84-008, "Shift Relief and Turnover"

Finding No.: ROP.2-6 HFIR Crew Communications

Finding Description: **High Flux Isotope Reactor crew communications are informally structured, thus decreasing the likelihood of reliable human performance, especially under degraded and stressful conditions.**

Code: Category III

Compliance Protocol: Shift crew communication should be clear, concise, and complete to assure for safe and reliable operation.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: Training sessions have been held with the HFIR Operating shift crews to enhance their communication and team skills. "Repeat back" communication is used by most shifts; however, not on a consistent basis. Further guidance and training is required to improve shift crew communication and organization.

Root Cause:

Insufficient resources; this good practice has not been implemented due to limited knowledgeable staff available to revise operating procedures and provide detailed guidance to shift personnel concerning crew communications.

Planned Actions and Schedules:

Item/Description	Completion Date
1. Review and document commercial nuclear industry practices for shift crew organization and communication.	6/91
2. Evaluate and document current crew communication practices against industry good practices and identify specific needs.	7/91
3. Revise and issue RRD procedures ORNL/RRD/INT-12/V2, *Research Reactors Division Administrative Policies and Procedures Manual,* RRAP-3.12, "Conduct of Operations," and ORNL/TM-1168, *The High Flux Isotope Reactor Operating Manual*) to reflect the changes generated by the evaluation.	10/91
4. Train HFIR Operations Staff on the new communication practices.	12/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	2						2
2	4						4
3	12						12
4	—						
Status:							
Funded	18						
Requested							
New							$18

References: INPO Good Practice, OP-204, INPO 85-017, Rev. 1, "Guidelines for the Conduct of Operations at Nuclear Power Stations"

Finding No.: ROP.3-1 HFIR Operating Manual

Finding Description: **The prolonged review and approval process for the High Flux Isotope Reactor Operating Manual delays the implementation of effective and accurate instructions for safe operation of the facility.**

Code: Category III

Compliance Protocol: The procedure review and approval process should assure that all operating procedures have received an appropriate level of review and are issued for use in a timely manner.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: Although the review process for HFIR procedures is a lengthy one, the instructions provided for use by operating personnel were kept up to date by use of the temporary change process (SOIs). The instructions used by individuals operating the facility were accurate and posed no problem in respect to safe operations of the facility.

Revision 6 of the HFIR Operating Manual was initiated into the review process in March 1990. This revision was finally issued for use in October 1990. Most of this delay is attributed to the review and approval process required for an ORNL/TM document. Documents issued under the ORNL/TM format are typically single-issue reports for external consumption. The HFIR Operating Manual is a "living" document which is used only by Energy Systems or DOE personnel. Action was begun before the Technical Safety Appraisal to convert the HFIR Operating Manual to an internal document. Temporary measures have already been instituted to allow quick revision until the conversion can be effected.

Root Cause:

Inadequate policy; this good practice has not been implemented due to a conflict between ORNL records control policies and RRD needs. RRD priorities and resource distribution precluded dealing with this situation in a timely manner.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	For purposes of revision, treat the HFIR Operating Manual as an RRD internal document until a full conversion of the manual to the RRD internal format can be made.	Complete

2. Convert the HFIR Operating Manual to an RRD internal document. 12/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	20	7					27
Status:							
Funded	20						
Requested		7					
New							$27

References: None

Finding No.: ROP.3-2 Use of HFIR Procedures

Finding Description: **The operator is not always directed to necessary procedures containing instructions for events which degrade from normal to off-normal and then to emergency conditions.**

Code: Category III

Compliance Protocol: Best management practices require that the operator be directed to necessary procedures as needed.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: The need to revise the HFIR Operating Procedures Manual has been recognized from early in the restart effort. Because of the large number of restart issues and concerns, RRD management made a deliberate decision to perform an overall revision on a long-term basis so that resources could be focused on restart-related issues. Revisions to specific procedures within the manual were performed to reflect changes in the system and identified deficiencies.

The responsibility for the generation and revision of all HFIR operating procedures was recently (October 1990) accepted by the HFIR Operations Section of the RRD. This should allow more efficient handling of procedure revisions as required and assure that the overall revision of the manual is completed as scheduled.

Root Causes:

Insufficient resources and ambiguous requirements or expectations; insufficient personnel to adequately review procedures for degradation instructions, plus unclear (changing) expectations.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Review and document the off-normal and emergency procedures to determine if there are other areas of immediate concern.	5/91
2.	Correct the omissions noted during the 1990 TSA Review (Tiger Team Report) and any others revealed by Step 1 above.	6/91

3. Complete and document the biennial review of the operating procedures as specified in the Research Reactors Administrative Policies and Procedures Manual. — 6/91

4. Issue revised procedures to incorporate necessary corrections or revisions as determined in Step 3. — 9/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	4.5						4.5
2	9						9
3	9						9
4	18						18
Status:							
Funded	40.5						
Requested							
New							$40.5

References: None

Finding No.: ROP.3-3 Preparation and Review of HFIR Operating Procedures

Finding Description: **The HFIR administrative process governing preparation and review of operating procedures does not ensure implementation of high-quality procedures.**

Code: Category III

Compliance Protocol: DOE Order 5480.19(7-9-90), Chapter XVI - "Operations Procedures", Section B - "Procedures are a key factor affecting operator performance. Appropriate attention should be given to writing, reviewing, and monitoring operations procedures to ensure the content is technically correct and the wording and format are clear and concise..."; Section C - "Administrative procedures and/or writers' guides should direct the development and review process for procedures."

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: This is a new concern, it was not addressed in the RRD self-assessment report of October 1990. The administrative requirements for conducting reviews of operating procedures presently exists in RRD procedures, RRAP 3.1.6 and RRAP 3.1.7.

Root Cause:

Insufficient resources, within RRD, procedures are typically written or reviewed by personnel who will use the procedure. Since procedure writers as a separate working group do not exist within RRD, the need for a formal writers' guide has not been recognized as a best management practice.

Planned Actions and Schedules:

Item/Description	Completion Date
1. Request funding to complete required actions.	Complete
2. Develop and implement the use of a writers' guide.	4 months after funding is provided
3. Provide increased management attention in the form of more frequent audits and evaluations by the compliance section. Additional personnel may be required for the increased oversight function.	3 months after funding is approved

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

Action item	Estimated costs per fiscal year ($K)						
	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2		50	30				80
3		10	110				120
Status:							
Funded							
Requested							
New		60	140				$200

References: DOE Order 5480.19
RRAP 3.1.6
RRAP 3.1.7

Finding No.: ROP.4-1 Tagging Procedures

Finding Description: **Multiple tags with similar or identical functions complicate the controls placed on equipment removed from service and can unnecessarily delay the return to service of equipment designed for safe plant operations.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: The HFIR has instituted a tagout system designed to ensure both personnel protection and system status controls. In order to ensure that all tags within the HFIR facilities are current and tracked, Division policy is that an operations tag be placed in addition to any other tag. This sometimes results in more than one type or style of tag being attached to a device in order to perform a single function. Although this can be cumbersome, it does serve to ensure that plant system status is known to the operations staff on duty while assuring personnel safety.

Actions are ongoing to consolidate the Energy Systems, ORNL, and HFIR lockout/tagout procedures and actions are planned to address the administrative tagout procedure at a corporate level. These actions will define the process to be used at all Energy Systems operated facilities including definition of the types and styles of authorized tags. The resultant procedures will adequately address the stated concern. See Finding MA.2-1.

Root Causes:

Inadequate policy implementation, inadequate management approach, and unclear requirements; each of the Energy Systems sites has been operated in an autonomous manner and the various divisions at ORNL have also operated largely independently. Because personnel are interchanged between sites at ORNL, a multiplicity of tags propagated, which contributed to this situation.

Planned Actions and Schedules:

See Finding MA.2-1.

Costs: No significant costs are associated with the action listed.

References: None

Finding No.: ROP.4-2 Records of HFIR Equipment

Finding Description: **Incomplete records of temporary alterations to High Flux Isotope Reactor equipment indicate a lack of attention to this administrative process, which would help to ensure personnel and plant safety.**

Code: Category III

Compliance Protocol: The lifted lead and jumper control system should assure that the configuration of the plant remains approved and documented.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: This concern is related to the HFIR lifted lead and jumper log which is implemented through ORNL/RRD/INT-12/V2, *Research Reactors Division Administrative Policies and Procedures Manual,* RRAP-3.11, "Safety Work Permits and Temporary Tagging Procedure." This procedure was being revised at the time that this concern was noted. This revision is intended to simplify the lifted lead and jumper process and will consolidate it into the current tagout process. An Energy Systems PIP team is also currently working on standardizing the tagging process throughout the Corporation.

Root Causes:

Insufficient resources and inadequate management approach; this good practice has not been adequately implemented due to confusing ORNL procedures and inadequate instruction of personnel.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue a revised ORNL/RRD/INT-12/V2, *Research Reactors Division Administrative Policies and Procedures Manual,* RRAP-3.11, "Safety Work Permits and Temporary Tagging Procedures," to simplify the lift-lead and jumper process and to clarify the instructions to the Operations staff.	6/91
2.	Implement the revised to RRAP-3.11 and train the Operations staff.	7/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	2						2
2	12						12
Funded	14						
Requested							
New							$14

References: INPO Good Practice, OP-204, INPO 85-017, Rev. 1, "Guidelines for the Conduct of Operations at Nuclear Power Stations"

3.4.4 Maintenance

Finding No.: RMA.1-1 Control of Maintenance Support

Finding Description: **Maintenance support for the B reactors is not under the control of the manager of the B reactors.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 0
Tiger Team Action Plan Priority 4

Response: Inclusion of the B Reactors in the RRD Maintenance Program has not formally been documented or specifically identified in Program procedures. While not formally recognized, the B Reactors Maintenance Program is supported by a Coordinator dedicated to support the B Reactors Plant Manager, while administratively reporting to the RRD Maintenance Manager.

Root Cause:

Inadequate management approach

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Prepare a report to evaluate existing organizational effectiveness and management approach to determine if changes are required.	Complete
2.	Issue revised RRD Maintenance Program RRD/INT-42/ Volume 1 as necessary to reflect any changes in roles, responsibilities, accountability, and/or management approach.	5/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	2						2
2	1						1
Status:							
Funded	3						
Requested							
New							$3

References: *RRD Maintenance Program*, RRD/INT-42/Volume 1

Finding No.: RMA.2-1 Torquing of Equipment Bolting

Finding Description: **Failure of equipment can occur due to improper torquing of equipment bolting.**

Code: Category III

Compliance Protocol: Good Engineering Practice requires proper torquing of equipment bolting for strength and stiffness.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: This finding was the result of observation of installation of a pressurizer pump magnetic clutch assembly. The observed torquing of the mounting bolts was during initial installation. Final torquing of the mounting bolts is performed after final alignment which requires installation of shims. General Engineering Specifications are provided for the High Flux Isotope Reactor, which provide minimum torquing requirements to develop maximum strength of the joint, and not the maximum stiffness, which is the purpose of the mounting bolts for the clutch assembly.

No torquing requirements were defined in drawings or recommended in the vendor manual. Torquing after the final alignment is difficult to define because of shim variations. Current practice is to torque to the maximum extent practical.

The inspection of torque wrenches in the 7910 Shop area indicated some torque wrenches did not have calibration tags on them. As a general practice, not all torque wrenches require calibration. All critical torque measurements are made with calibrated torque wrenches; however torque wrenches are also used in applications where it is desirable, but not a necessity, to obtain an indication of torque. Any requirements for calibrated torque wrenches is documented in work package instructions in accordance with NQA-1.

Maintenance Program RRD/INT-42, Volume 1, Procedure RRD-M-1.6, does not specify consideration of torque requirements as a part of the checklist for preparing work package instructions or require the identification of torque wrenches as maintenance and test equipment (M&TE) used in completing critical work package instructions. The need for general revision to Maintenance Program procedures was noted during the RRD internal biennial review of procedures in May 1990 and in the Beckman Review conducted in July 1990. Revision has not been completed due to a lack of funding and personnel and higher priority work for available personnel. Additional priority for procedure revision will be provided with the addition of a new maintenance engineer in February 1991.

See Finding RMA.4-1.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue revised Procedure RRD-M-1.6 to include torquing requirements and data requirements in the checklist for the work package preparation. Also see Finding RMA.4-1.	5/91

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	2						2
Status:							
Funded	2						
Requested							
New							$2

References: RRD/INT-42, Volume 1, Procedure RRD-M-1.6, *Preparation of Work Packages*

Finding No.: RMA.2-2 Unsafe Conditions at the B Reactor Facilities

Finding Description: **Unsafe conditions and the potential for the release of hazardous materials exist at the B reactor facilities.**

Code: Category III

Compliance Protocol: DOE Orders 5483.1A and 4330.4

Priority: Energy Systems Risk Weight 356
Tiger Team Action Plan Priority 2

Response: Critical systems such as primary cooling systems, criticality and flux alarms, and building services do receive the maintenance required to keep them in a safe condition. Lower priority was given to neatness and OSHA-related items. Maintenance work plans will be written for each B reactor and an independent review performed of each plan from a safety aspect.

See Findings RMA.3-1 and RPP.3-1.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

This Finding is fully addressed by actions listed in Findings RMA.3-1 and RPP.3-1.

Costs: See Findings RMA.3-1 and RPP.3-1.

References: Findings RPP.3-1 and RMA.3-1.

Finding No.: RMA.3-1 Maintenance of B Reactor Areas

Finding Description: **The B reactor maintenance areas are not being maintained in a clean and orderly condition in accordance with 29 CFR 1910 and DOE 4330.4, attachment 2, and present potential hazards ranging from release of contaminated materials to personal injury.**

Code: Category III

Compliance Protocol: 29 CFR 1910 and DOE Order 4330.4 attachment 2.

Priority: Energy Systems Risk Weight 403
Tiger Team Action Plan Priority 2

Response: Critical systems such as primary cooling systems, criticality and flux alarms, and building services do receive the maintenance required to keep them in a safe condition. Lower priority was given to neatness and OSHA-related items.

See Finding RPP.3-1.

Root Causes:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding from DOE.	Complete
2.	Improve housekeeping in the TSF maintenance shop as follows. • Install new lights. • Remove/repair old test equipment. • Make safety signs consistent with 29 CFR 1910.	5/91
3.	Remove lead bricks from the BSR reactor room.	Complete
4.	Remove rusting and untagged slings from the TSF storage shed.	Complete

5. Provide load capacity and date of latest preventative maintenance inspection for the TSF fork lift and hoist vehicle.	5/91
6. Clean, paint, and organize the B reactor pump houses, storage buildings, and storage areas.	8 months after funding available
7. Write upgraded maintenance work plans for the B Reactors, perform a safety review on them, and implement them.	1 month after funding available
8. Remove excess and contaminated equipment from storage areas at the TSF and ORR.	4 months after funding available

Costs:

Type of funds: Overhead
Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2 TSF	10						10
3 BSR	5						5
4 TSF	2						2
5 TSF	5						5
6 TSF				60			60
6 ORR				60			60
6 BSR				60			60
7 TSF	*			—			
7 BSR	*						
7 ORR	*						
7 HPRR	*						
8 TSF					50		50
8 ORR			25	25			50
Status:							
Funded	22						
Requested							
New			25	205	50		$302

*Estimated annual ongoing cost: $60K starting in FY 1991.

References: Finding RPP.3-1

Finding No.: RMA.3-2 Inspection of RRD Maintenance Activities

Finding Description: **Facilities and equipment inspections are not always provided for Research Reactors Division maintenance activities.**

Code: Category III

Compliance Protocol: DOE Order 5480.6, "Safety of Department of Energy-Owned Nuclear Reactors," requires in part that ANS 3.1, Section 6.3 (Training Program) be implemented for training of maintenance personnel.

29 CFR 1910.179, *Occupational Safety and Health Standards for General Industry* specifies overhead crane inspection and marking requirements.

Priority: Energy Systems Risk Weight 8
Tiger Team Action Plan Priority 3

Response: (1) DOE Order 5480.6 specifies in part that a training program be established to enhance the skills, knowledge and ability personnel to perform job assignments. (TC.5-1, TC.5-2). The ORNL Plant and Equipment (P&E) Division or the Instrumentation and Controls (I&C) Division do not have adequate training facilities or programs to meet the requirements of this order. This concern was identified in the RRD self-assessment report of October 1990. ORNL Training, P&E Division Training, and I&C Division Training have developed plans and requested funding to meet the requirements of DOE Order 5480.6, but have not received DOE approval or funding. Action plans for this finding are in action plans for TC.5-1 and TC.5-2.

(2) Within RRD, adequate facilities for storage and handling of contaminated tools and controlled laydown and staging areas are not available. This concern was previously identified in 1988, and plans are being implemented for provision of temporary facilities. Lack of adequate funding has delayed providing temporary facilities and equipment.

(3) Long-range plans include the construction of a new RRD maintenance facility, currently planned in the FY 1991 ARIMS Project.

(4) Appropriate equipment inspection and tagging is not performed in accordance with 29 CFR 1910.179 because of inadequate ORNL Quality Department and Safety Department procedures. This concern is being addressed in WS.4-3.

Root Causes:

Inadequate policy and insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Establish ORNL, P&E Division, and I&C Division training programs to meet DOE Order 5480.6. (See Action Plans for Findings TC.5-1 and TC.5-2.)	
2.	Provide temporary adequate facilities and equipment for handling contaminated tooling and controlled laydown, staging areas, and spare parts storage if funding is available. (See cost estimate below.)	6/91
3.	Provide new maintenance facility from $2.7 million funding in the FY 91 ARIMS Project.	10/92
4.	Revise ORNL Quality Procedures for equipment inspection and testing. (See Action Plan for Finding WS.4-3.)	

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	90	20					110
3	100						100
4	—						
Status:							
Funded							
Requested							
New	190	20					$210

Type of funds: Capital
Source of funds: ER-ARIMS (91-KC-4)

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
3	2700						2700
Status:							
Funded	2700						
Requested							
New							$2700

References: None

Finding No.: RMA.4-1 Oversight by Maintenance Supervisors

Finding Description: **Lack of oversight and monitoring of work in progress by maintenance supervisors could lead to incorrect maintenance activities and equipment damage.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: Oversight and control of maintenance activities is provided by Plant and Equipment (P&E) and Instrumentation and Controls (I&C) Division supervision and RRD Maintenance management personnel. Formal control of maintenance activities is provided by written instructions developed by the Maintenance Engineer and Coordinator. Oversight and monitoring of maintenance activities has been hindered by a lack of resources in the RRD Maintenance budget to provide additional personnel in the P&E, I&C, and RRD Maintenance Management group. This concern was cited in the RRD self-assessment report of October 1990. An additional Maintenance Engineer is funded in the FY 91 budget and is being hired. Workload and effectiveness of work control of P&E, I&C supervision, and the RRD maintenance management group will be evaluated by the Maintenance manager every 6 months to determine if additional resources are required.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Hire Maintenance Engineer to help provide oversight and monitoring of maintenance activities.	Complete
2.	Review and document workload and effectiveness of work control every 6 months to determine if additional resources are required.	6/91
3.	Request funding for any additional resources identified in 2 above.	6/91

Costs: Estimated annual ongoing cost: $120K starting in FY 1991.

References: None

Finding No.: RMA.5-1 Maintenance at Shut Down Reactors

Finding Description: **Unsafe conditions, release of hazardous and contaminated materials, and/or personal injury can result from the lack of maintenance at shut down reactors; this situation is not consistent with the requirements of DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 403
Tiger Team Action Plan Priority 2

Response: Critical systems such as primary cooling systems, criticality and flux alarms, and building services do receive the maintenance required to keep them in a safe condition. Lower priority was given to neatness and OSHA-related items. A maintenance work plan will be written for each shut down reactor and a review performed to assure safety and compliance with DOE 4330.4

See Finding RMA.3-1.

Root Causes:

Insufficient resources and ambiguous requirements or expectations

Planned Actions and Schedules:

See Finding RMA.3-1.

Costs: Costs are reported under Finding RMA.3-1.

References: Finding RMA.3-1

Finding No.: RMA.8-1 Deficient Procedural Information

Finding Description: **Improper corrective or preventive maintenance may be performed as a result of deficient procedural information.**

Code: Category III

Compliance Protocol: Best management practices require procedures to contain adequate information.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: Adequate qualified personnel to develop and review instructions and procedures is necessary to provide fully detailed procedures. A lack of funding and personnel resources has not permitted development of the desired level of instructions and procedures. An additional Maintenance Engineer is being hired.

See Finding RMA.4-1.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

This finding is fully addressed by actions listed in Finding RMA.4-1.

Costs: Costs covered under Finding RMA.4-1.

References: None

3.4.5 Training and Certification

Finding No.: RTC.1-1 Position Task Analyses

Finding Description: **Position task analyses are not provided for senior reactor operators and reactor operators, as required by DOE 5480.6, Section 8e(1)(d)1.**

Code: Category III

Compliance Protocol: DOE Order 5480.6, Section 8e(1)(d) states:

"Position Task Analysis. A position task analysis shall be conducted by the operating contractor as necessary for operating personnel to define the tasks performed by the person in each position, and to identify the required training, in conjunction with education and experience, necessary to provide assurance that the tasks can be effectively performed. The position task analysis should include normal and emergency duties and place emphasis on the role played by each member of an operating organization in assuring safe plant operation. The position task analysis shall support the selection of requirements of ANS 3.1 and any supplemental requirements appropriate to the position."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: A task analysis shall be performed on each task as outlined in the HFIR Training Program Accreditation Plan.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Obtain accreditation funding to complete position task analyses.	Complete
2.	Based upon task support material, it will be determined and documented which of the tasks selected for training require further analysis.	
	a. Reactor operator	9/91
	b. Senior reactor operator	2/92

3. Perform task analysis of selected tasks, including conditions; standards; references; special tools; knowledge; and skills.
   a. Reactor operator 3/92
   b. Senior reactor operator 6/92

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	0	0					
2	80						80
3	210						210
Status:							
Funded	290						
Requested							
New							$290

References: DOE Order 5480.6
ANS 3.1
TPAP (10/90 Draft)

Finding No.: RTC.1-2 Class B Reactor Training Plan

Finding Description: **The Class B reactor training plan has not been approved by OR.**

Code: Category III

Compliance Protocol: DOE Order 5480.6 specifies training requirements for Class B reactor personnel.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 4

Response: While not specifically required by the order, a Class B reactor training plan had been prepared and submitted in March 1990 to ORO for approval. The reactor training program was thoroughly reviewed prior to reactor startup in December 1989.

Root Cause:

Inadequate management approach; the review of the plan had been delayed due to emphasis on higher priority staff work.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Review the draft training plan and provide comments to the contractor (DOE/ORO).	Complete
2.	Prepare management plan, self-assessment process, and tracking system for site office activities.	Complete
3.	Obtain DOE concurrence to withdraw the Class B reactor training plan.	Complete

Costs: No significant costs are associated with the actions outlined.

References: None

Finding No.: RTC.1-3 Instructors for Maintenance Training

Finding Description: **Maintenance skill job training does not have qualified instructors.**

Code: Category III

Compliance Protocol: DOE orders and ANS 3.1 require the analysis, design, development, conduct and evaluation of performance-based training programs for maintenance personnel who are assigned to support Category "A" Reactor facilities.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Finding RTC.1-3 is addressed in Finding TC.1-3

Planned Actions and Schedules:

Actions for this finding are addressed in Finding TC.1-3.

Costs: Funding for actions are included in Finding TC.1-3.

References:

DOE Order 5480.6,	"Safety Of Department of Energy-Owned Reactors
ANSI/ANS 3.1	Draft 1980, "Selection, Qualification and Training of Personnel for Nuclear Power Plants"
DOE Order 5480.18	"Accreditation of Performance-Based Training for Category A Reactors"
DOE Order 5480.XX	Draft 3/90 "Personnel Selection, Qualification and Training Requirements"

Finding No.: RTC.2-1 Examinations for Operator and Reactor Supervisor Training

Finding Description: **Examinations are not given in a manner accepted by nuclear industry. The written examinations given soon after a lecture do not examine retained knowledge.**

Code: Category III

Compliance Protocol: DOE Order 5480.6 Section 8.e.(1)(d)3a states:

"Annual retraining and reexamination programs covering abnormal plant procedures and emergencies shall be required. Retraining and reexamination programs meeting all other requirements of ANS 3.1, Section 5 shall be scheduled on a biennial basis. Examination content shall be varied from test to test."

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: Training and examinations are developed using a systematic approach to Performance Based Training. Exams are developed using questions based on specific learning objectives. The examinations are reviewed for content and comprehensiveness by an independent instructor, the RRD Training Manager, and the HFIR Plant Manager. The current examination program for operators and supervisors is in full compliance with all applicable regulations affecting certification. Annual retraining and reexamination programs are administered. Biennial retraining and reexaminations including written, oral, operating, and scenarios are given. Written examinations are given on selected categories throughout the 2-year period, which is allowed by DOE Order 5480.6, DOE Order 5480.XX (Draft of 3/15/90), and U.S. Department of Energy Safety Guide 830.55 (Draft of 7/26/90). Based on the length of the course, 10–15 weeks may elapse between the examination and coverage of particular objectives.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

Actions have been completed.

Costs: None

References: DOE Order 5480.6
ANSI/ANS 3.1 (1980 Draft)
DOE Order 5480.XX (03/15/90 Draft)
DOE Safety Guide 830.55 (07/26/90 Draft)

Finding No.: RTC.4-1 General Employee Access Training

Finding Description: **General Employee Access Training does not meet all requirements of DOE 5480.11.**

Code: Category III

Compliance Protocol: DOE Order 5480.11, Paragraph 9.o(1) requires all occupational workers who may enter a controlled area at a DOE facility shall receive an orientation in radiation safety within one month of their initial assignment to, and prior to, potential exposure to radiation at that facility. Retraining shall be provided when there are significant changes to radiation protection policies and procedures which affect general plant employees and should be provided every two years. The level of training is to be commensurate with the employee's job assignment with the initial orientation including, but not limited to:

a. The risk of low-level occupational radiation exposure, including cancer and genetic effects;
b. The risk of prenatal radiation exposure;
c. Basic radiation protection concepts;
d. DOE and Company radiation protection policies and procedures;
e. Employer and management responsibilities for radiation safety;
f. Emergency procedures.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: The General Employee Access Training Program has been revised to include the risk of low-level occupational radiation exposure, including cancer and genetic effects; the risk of prenatal radiation exposure; employee and management responsibilities for radiation safety; and, emergency procedures.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Revise lesson plan to be more specific about risks of low-level radiation exposure.	Complete

	2. Direct instructors to discuss the risk of pre-natal radiation exposure regardless of whether females are present.	Complete
	3. Revise lesson plan to include employee and management responsibilities for radiation safety.	Complete
	4. Revise lesson plan to ensure the audience was informed that the film titled "The HFIR Safety and Security Plan", contains an error in the fire fighting procedure, which is used as a training experience.	Complete
	5. Reviewed DOE Order 5480.11 to ensure all training requirements have been incorporated.	Complete

Costs: No significant costs are associated with the actions outlined.

References: DOE Order 5480.11

Finding No.: RTC.5-1 Maintenance Personnel Training Program

Finding Description: **A training program for maintenance skills has not been provided and implemented for maintenance personnel, as required by DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Finding RTC.5-1 is fully addressed by actions listed in Finding TC.5-1.

Costs: Funding for actions are included in Finding TC.5-1.

References:

DOE Order 5480.6,	"Safety Of Department of Energy-Owned Reactors
ANSI/ANS 3.1	Draft 1980, "Selection, Qualification and Training of Personnel for Nuclear Power Plants"
DOE Order 5480.18	"Accreditation of Performance-Based Training for Category A Reactors"
DOE Order 5480.XX	Draft 3/90 "Personnel Selection, Qualification and Training Requirements"

Finding No.: RTC.5-2 Training Facilities for Maintenance Personnel

Finding Description: **Adequate classroom and training devices have not been provided for maintenance personnel.**

Code: Category III

Compliance Protocol: Current standards for conduct of performance-based training and qualification programs require that adequate facilities and equipment be provided to allow for the proper training of maintenance personnel on equipment.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Finding RTC.5-2 is fully addressed in actions listed in Finding TC.5-2.

Planned Actions and Schedules:

Actions in Finding RTC.5-2 are contained in Finding TC.5-2.

Costs: Funding for actions are included in Finding TC.5-2.

References:

DOE Order 5480.6	"Safety Of Department of Energy-Owned Reactors"
ANSI/ANS 3.1	Draft 1980, "Selection, Qualification and Training of Personnel for Nuclear Power Plants"
DOE Order 5480.18	"Accreditation of Performance-Based Training for Category A Reactors"
DOE Order 5480.XX	Draft 3/90 "Personnel Selection, Qualification and Training Requirements"

Finding No.: RTC.10-1 Training for Managers, Supervisors, and Technical Staff

Finding Description: **A skill training program for managers, supervisors, and technical staff as required by DOE 5480.6 has not been provided and implemented.**

Code: Category III

Compliance Protocol: DOE Order 5480.6, Section 8.e.(1)(a) states:
"American Nuclear Society (ANS) Standard 3.1, "Selection, Qualification and Training of Personnel for Nuclear Power Plants" (10/80 Draft), shall be the basis for qualification and training requirements for reactor personnel for Category A reactors. The requirements of ANS 3.1 are to be followed to the extent that they are appropriate for the facility or operation being considered. Paragraphs 8e(1)(a) through 8e(1)(d), contain interpretations of, or variations from, ANS 3.1 requirements."

ANS 3.1, Sections 5.3.1 and 5.3.2 outline training requirements for managers, supervisors and technical personnel as follows:

Training for Managers and Supervisors.
"Specialized training for each individual in this category shall be based upon an analysis of the individual's background, abilities and responsibilities and the effect his area of responsibility could have on overall plant safety. Training shall be provided to compensate for deficiencies identified by comparing the individual's experience and knowledge to the task analysis. The programs may include assignment of the individuals to operating reactors and/or simulators, involvement in plant design, and participation in the programs listed in Section 5.2.1.8. Construction and startup may be utilized as necessary to complete the training."

Training for Professional Technical Personnel.
"Training shall be provided to compensate for deficiencies identified by comparing the individual's experience and knowledge to the task analysis. The required training of these professional-technical personnel can be implemented by involvement in related training programs. These training programs may include assignment at operating reactors and/or simulators, and at vendors facilities. The training shall be for periods of time sufficient to develop the proficiency required for safety and competent supervision and performance."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: The need for training programs for managers, supervisors, and technical support staff was previously identified in the initial Self Evaluation Report. Programs will be developed and implemented for these positions.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Develop general training requirements using analysis of position requirement and available DOE, INPO, and industry guidance.	9/91
2.	Develop a training matrix to establish specific training requirements per each position.	4/92
3.	Update the training program matrix annually, based on feedback from supervisors, training requirements, and DOE orders.	9/92

NOTE: The Training Program Accreditation Plan (TPAP) noted that the Technical Support Staff Training Program will be implemented, evaluated and maintained using existing staff. When TPAP was written, there was a full complement of 15 training personnel plus two subcontractors. At present, the Training and Procedures Staff has one person on loan to another division and no subcontractors assigned to the staff due to budget reductions.

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1		134					134
2	—						
3	—						
Status:							
Funded							
Requested		134					
New							$134

References: DOE Order 5480.6 Section 8.e.(1)(a)
ANS 3.1 Sections 5.3.1 and 5.3.2
TPAP (10/90 Draft)
DOE Order 5480.XX

3.4.6 Auxiliary Systems

Finding No.: RAX.2-1 Resin Carryover in Resin Regenerative System

Finding Description: **The fluid from the resin regenerative system is not monitored for activity by Research Reactors Division as it leaves the ion exchanger, and there is resin carryover.**

Code: Category III

Compliance Protocol: There is no current requirement relative to monitoring the LLLW stream; however, good practice dictates the reduction of resin carryover.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: Improvements in the liquid low-level waste (LLLW) system have been in the planning stage for the last year. A new direction that RRD has decided to implement is to eliminate LLLW. This will be accomplished primarily by converting to a dry resin disposal system and no longer regenerating resins.

Root Causes:

Ambiguous requirements or expectations and insufficient resources; this good practice has not been implemented due to funding and priority considerations. A modification is currently being planned and funded to allow compliance with the proposed FFA which would preclude the need for a monitor and would eliminate resin carryover.

Planned Actions and Schedules:

Item/Description	Completion Date
1. Design new resin disposal system.	8/91
2. Install new resin disposal system.	1/92

Costs:

Type of funds: ERWM Programmatic
Source of funds: EM-ADS350

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	200						200
Status:							
Funded	200						
Requested							
New							$200

Type of funds: Capital
Source of funds: GPP-EM

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
2		1200					1200
Status:							
Funded							
Requested		1200					
New							$1200

References: Draft Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Resource Conservation and Recovery Act (RCRA)

Finding No.: RAX.3-1 Contamination of the HFIR Pool

Finding Description: **If the europium source in the HFIR pool is not removed or protected, the acid may etch out more europium to further increase contamination in pool.**

Code: Category III

Compliance Protocol: Best management practices would dictate that the source of the contaminant be moved prior to final clean-up efforts.

Priority: Energy Systems Risk Weight 1
Tiger Team Action Plan Priority 4

Response: This concern was previously addressed during the preparation of Action Plans (11/89) dealing with the clean-up of the contamination in the HFIR storage pools. The previously developed plan includes: (1) removal of the leaking control plates to a burial or storage site; and (2) clean-up of the solids in the pool by use of a pool vacuum-cleaner system and/or other appropriate methods. These steps will remove the source of europium before the addition of acid to the pool.

Root Cause:

Inadequate communications; the Tiger Team member did not recognize that scheduled activities addressed this concern.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	The source of the europium will be removed from the pool prior to reducing the pH of the water for decontamination purposes. This concern is provided for in the action plan prepared in November of 1989 (see RRD CARIS item 91-105, Remove Europium Contamination from Reactor Storage Pools).	Complete

Costs: No significant cost associated with action listed.

References: Letter, H. R. Fair to M. H. McBride, July 9, 1990, Subject: Verification of HFIR Award Fee Milestone 90-09, "Implement Program to Reduce Radiation Exposure from Pool Heat Exchangers"

Finding No.: RAX.4-1 HFIR Spent Fuel Cask Not Approved by DOE

Finding Description: **Possibility of fission product contamination due to cladding failure resulting from long-term storage can impact ALARA (as low as reasonably achievable).**

Code: Category III

Compliance Protocol: 10 CFR 71, "Packaging and Transfer of Radioactive Material," and USNRC Reg. Guide 7.9, Safety Analysis Reports for Packaging (SARP), are required for containers used for fuel movement. The HFIR SARPs for fresh and spent fuel required revision to comply with NRC requirements which were adopted as DOE policy.

Priority: Energy Systems Risk Weight 1
Tiger Team Action Plan Priority 2

Response: The SARP (Docket No. 9861) for the new HFIR Spent Fuel Cask has been undergoing review and revision for 3 years. Responses to several rounds of questions (Q0-Q3) have been submitted to reviewers for approval prior to the certification. As of December 1, 1990, there were 34 items remaining to be resolved for DOE approval.

Root Causes:

Ambiguous requirements or expectations; changing DOE review processes that evolved over a 3-year time span, no structured closure process has been defined. Inadequate management approach: management systems were not effective in elevating problem areas and schedule slippages to upper management for timely resolution.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Document the NE organization and organization interface responsibilities for SARP review and approval on ORO reactors.	Complete
2.	Coordinate with senior managers in ORO, NE, EH, and Energy Systems to obtain resolution on outstanding issues and project realistic dates for SARP certification and cask fabrication.	Complete
3.	Analyze impact on HFIR operation schedule and document options to DOE senior management.	Complete

4. Evaluate fundings requirements to complete SARP approval and request funding. 5/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	5						5
3	5						5
4	—						
Status:							
Funded	10						
Requested							
New							$10

References: None

3.4.7 Emergency Preparedness

Finding No.: REP.2-1 HFIR Emergency Preparedness Planning

Finding Description: **The High Flux Isotope Reactor (HFIR) emergency preparedness planning does not conform to the requirements of DOE 5500.5 and draft DOE 5500.3A in that the required top-level Hazards Assessment has not been performed for emergency planning purposes, a HFIR Emergency Planning Zone has not been specified, Emergency Action Levels have not been appropriately specified, and the HFIR and ORNL plans are not coordinated.**

Code: Category III

Compliance Protocol: DOE Order 5500.5 and draft DOE Order 5500.3A. Draft DOE Order 5500.3A states that "the size of the EPZ (Emergency Planning Zone) and the extent of special planning and procedures required for a facility is determined by the hazards assessment." A hazards assessment was performed some 25 years ago, based on "many extremely conservative assumptions." In addition, potential external hazards to the control room were not included in the original assessment.

Priority: Energy Systems Risk Weight 85
Tiger Team Action Plan Priority 3

Response: A hazards analysis is currently in progress which may be used as a baseline upon which to perform a more comprehensive hazards assessment. Once the hazards assessment is complete, the EPZ may be defined.

Root Cause:

Insufficient resources; the hazards assessment has been partially completed in the process of developing the Facility Safety Analysis Report and the Probabilistic Risk Assessment. Changing priorities coupled with limited resources have delayed this action for a period of approximately three years.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request FY 1993 funds to complete Items 4, 5, and 6.	Complete
2.	Perform site hazards identification study.	4/91
3.	Complete the ORNL hazards consequence assessment.	6/92
4.	Define the HFIR Emergency Planning Zone.	10/92

5. Issue revised Emergency Action Levels (EALs). 10/92

6. Issue revisions to affected procedures. 3/93

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	—						
4			12.5				12.5
5			37.5				37.5
6			50				50
Status:							
Funded							
Requested							
New			100				$100

References: HFIR Probabilistic Risk Assessment

Finding No.: REP.3-1 Training of Designated Emergency Responders

Finding Description: **Minimum training requirements for designated emergency responders are not specified and their training is not tracked, which is contrary to the requirements of DOE 5500.5 and draft DOE 5500.3A.**

Code: Category III

Compliance Protocol: DOE Order 5300.3A (Draft of 11-22-88) Section 10.c (11) (a) states the following:

"Training programs shall be established for onsite emergency management and response personnel, including those involved in emergency communications, and shall provide for: an organization of qualified personnel, to include replacement personnel; retraining of qualified personnel to ensure retention of proficiency in all areas of responsibility; instruction in the application of emergency plans and procedures; and periodic drills and exercises."

DOE Order 5500.3A (11/22/88 Draft), Section 11, states the following:

"Auditable records shall be maintained of the training required and the training satisfactorily completed. Records shall meet the requirements of DOE Order 5500.7A."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Minimum training requirements for emergency response personnel will be established and all personnel required to attend this training will be identified. A data base will be developed to ensure information is readily retrievable. A similar activity is in progress at the ORNL level (see Finding EP.3-1).

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Identify minimum training requirements for emergency response and management personnel.	Complete
2.	Determine personnel required to attend training.	Complete
3.	Develop data base for tracking emergency response training.	5/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	0.9						0.9
2	0.3						0.3
3	1.8						1.8
Status:							
Funded	3.0						
Requested							
New							$3.0

References: DOE Order 5500.5 and DOE Order 5500.3A (11/22/88 Draft)

Finding No.: REP.5-1 HFIR Stack Radiological Effluent Monitors

Finding Description: **Because the HFIR stack radiological effluent monitors are not in compliance with DOE Order 5500.5 at 6.a.(1) and (3), these monitors could fail due to saturation during an emergency.**

Code: Category II

Compliance Protocol: DOE Order 5500.5 at 6.a(1) and (3)

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 2

Response: This is a new concern. The 7900 area stack does have stack monitoring instrumentation; however, this instrumentation is intended for normal monitoring and will saturate with almost any abnormal release to the atmosphere via this path. During the emergency response planning process, the RRD assumed for accident analysis purposes that the noble gas portion of the entire core fission product inventory is released through the stack whenever core damage occurs. This assumption is the most conservative possible, and as a result, mandates overly restrictive response actions. Such assumptions and actions based thereon have the potential to unnecessarily concern the general public.

Root Causes:

Inadequate policy and ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
Immediate		
1.	Evaluate the capabilities of the K-25 Site emergency response field survey team as an interim solution. This team could be dispatched to the site to perform ground-level monitoring. Release rates could then be calculated from this data. The evaluation indicates that the capabilities of the team are insufficient to completely fulfill this need; however, the team is available to us in a standby mode for other emergency needs.	Complete

	2. Evaluate the use of in-plant monitoring to determine core-melt fraction. a. Primary coolant sampling at primary sample sink. b. Portable radiation detection equipment to determine core-melt fraction based on local dose rates near main coolant lines.	Complete
	3. Evaluate the feasibility of external duct radiation measurements during emergency conditions to determine release activity.	Complete
	4. Request FY 1991 funding for interim activities.	Complete
	5. Obtain any equipment necessary for implementation of activities identified by Immediate Items 2 and 3 above. This action assumes any additional equipment required is readily available on site or commercially.	5/91
	6. Issue and implement interim emergency procedures as determined by Immediate Items 2, 3, and 4 above. This should address the concern until a permanent solution is achieved.	5/91
Near-Term		
	7. Present funding options and associated safety and programmatic impacts for DOE approval.	5/91
	8. Perform design study (including evaluation of commercially available systems and cost-benefit analysis) to identify suitable instrumentation for permanent stack accident monitoring system, contingent on availability of funding. This estimate assumes that commercially-available equipment will meet the requirements specified or that commercially available equipment can be easily modified to meet these requirements. In the event that new equipment must be designed and/or fabricated, the schedule and costs will be revised to reflect these activities.	5/91
	9. Request DOE approval of intended permanent stack accident monitoring system.	5/91
	10. Submit revised FY 1992 FWP to implement the results of Near-Term Items 7 and 8 above.	5/91

Long-Term

11.	Initiate procurement of specified equipment, contingent upon availability of funding.	10/91
12.	Complete installation of equipment.	6/92
13.	Complete the RRD Design Change Memorandum process to design, procure, install, and document system specified in Near-Term Item 7 above.	8/92
14.	Issue RRD procedures and train personnel as necessary to place permanent stack monitoring system in operation.	9/92

Costs:

Type of funds: Research Programmatic
Source of funds: ER KC-03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	3						3
2	12.5						12.5
3	12.5						12.5
5	15						15
6	25						25
7	0						0
8	75						75
9	6.25						6.25
10	6.25						6.25
Status:							
Funded	3						
Requested	65						
New	87.5						$155.5

Type of funds: Capital Equipment
Source of funds: ER KC-03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
8		75					75
11		12.5					12.5
12		250					250
13		150					150
14		75					75
Status:							
Funded							
Requested							
New		562.5					$562.5

References: None

Finding No.: REP.5-2 Emergency Resources

Finding Description: **Contrary to the requirements of DOE 5500.5 and draft DOE 5500.3A, emergency resources do not completely provide for emergency radiological environmental monitoring, personnel accountability, sampling of High Flux Isotope Reactor (HFIR) building air, protection of emergency ventilation systems for emergency operations centers, external sampling of HFIR building air and water, and for remote monitoring of HFIR building dose rates.**

Code: Category III

Compliance Protocol: DOE Order 5500.5 and draft DOE Order 5500.3A. No radiological emergency monitoring teams have been designated or have participated in exercises for response at the HFIR for at least two years. Remote sampling capabilities for air and process water do not exist. Automated sitewide personnel accountability for the fenced area immediately surrounding the 7900 area has not been implemented.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: This finding was noted in the October 1990 self-assessment report. Actions are ongoing to address several of the individual components of this finding to include (1) a hazards assessment to help define necessary protection to the Emergency Operation Center and (2) a memorandum of understanding has been executed with the K-25 Site to provide a trained radiological and environmental monitoring team until ORNL can establish and equip a dedicated team.

Root Causes:

Insufficient resources and ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Establish a radiological and environmental monitoring team for at the ORNL site. (See Laboratory Action Plan EP.5-1.)	Complete
2.	Complete the hazards assessment to define the protection necessary for inhabitability of the area(s) used as emergency control centers. This assessment will also be used to define the appropriate remote monitoring requirements.	6/92

3.	Modify the remote readout of the HFIR building high-range radiation detector to add a scale.	Complete
4.	Issue revised calibration procedure for the high-range radiation monitor to reflect the proper ranges of calibration sources.	8/91
5.	Evaluate the cost(s)/benefit(s) associated with an automated 7900 area personnel accountability system.	6/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	0.2						0.2
4	12.5						12.5
5	5.8						5.8
Status:							
Funded	18.5						
Requested							
New							$18.5

References: HFIR Probabilistic Risk Assessment

Finding No.: REP.6-1 Emergency Assessment and Notification Procedures

Finding Description: **Procedures for emergency assessment and notification do not meet the requirements of DOE 5500.5 and draft DOE 5500.3A.**

Code: Category III

Compliance Protocol: DOE Order 5500.5 and draft DOE Order 5500.3A. Although guidelines are available for classifying emergencies, they are in a separate document.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: The RRD classification guidelines will be revised and the corresponding Protective Action Guidelines (PAGs) developed based on the hazards assessment upon its completion. Past practice has dictated that any accident in which core damage is a potential, is treated as a total core melt scenario. Although this is a conservative approach in respect to personnel protection, the approach could cause unnecessary public reactions.

Root Causes:

Insufficient resources, inadequate policy, and ambiguous requirements or expectations; a lack of funding for performance of the hazards assessment and an overly conservative approach to accident analysis at the HFIR.

Planned Actions and Schedules:

Item/Description	Completion Date
1. Request FY 1993 funds to complete actions below.	Complete
2. Define the Emergency Planning Zone (see action plan for Finding EP.2-1).	
3. Based on preliminary SAR results, issue interim EALs.	2/92
4. Issue revised Emergency Action Level (EAL) procedures and include PAGs.	10/92
5. Issue procedures to estimate core damage based on available data.	2/93
6. Issue revised Emergency Operating Procedures.	4/93

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	—						
4			50				50
5			50				50
6	—						
Status:							
Funded							
Requested							
New			100				$100

References: HFIR Probabilistic Risk Assessment

Finding No.: REP.7-1 HFIR Emergency Preparedness Planning

Finding Description: **Personnel protection procedures do not effectively minimize personnel exposure to hazardous materials during emergencies, as required by DOE N5500.5 and draft DOE 5500.3A.**

Code: Category III

Compliance Protocol: DOE Order N5500.5 and Draft DOE Order 5500.3A

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Planning for emergencies at the HFIR has been patterned after that for commercial nuclear power plants. As a result, the major emphasis of the HFIR personnel protection policies have followed those of the commercial industry which is evacuation of all nonessential personnel as soon as possible after a significant event.

Root Causes:

Inadequate policy implementation and ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue an ORNL procedure regarding the storage and availability for use of potassium iodide (KI) during a radiological emergency.	6/91
2.	Based on preliminary SAR results, issue interim PAGs.	2/92
3.	Issue protective action guides which include the sheltering-in-place option. This is to be performed by the ORNL Central Emergency Preparedness Organization as part of Finding EP.6-1.	8/92
4.	Issue revised emergency and health physics procedures to incorporate changes necessary to ensure adequate sampling of the HFIR building air in emergency conditions. This review is dependent upon the hazards assessment scheduled to be completed in June 1992.	10/92
5.	Review the Laboratory analytical sampling procedures to	10/91

evaluate the use of silver-zeolite filters for detection of iodines in release gases.

6. Issue revisions to Laboratory analytical sampling procedures as dictated by Item 4. 8/91

7. Review the Emergency Response Plan and relocate the assembly point if necessary. This action is also dependent upon the Laboratory-wide hazards assessment scheduled to be complete by June 1992. 8/92

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	1						1
2	2						2
3	2	2					4
4	1						1
5	1						1
6	1	1					2
7	—						
Status:							
Funded	8						
Requested		3					
New							$11

References: None

3.4.8 Technical Support

Finding No.: RTS.1-1 Technical Support for RRD Tasks

Finding Description: **Technical support for key Research Reactors Division tasks is excessively impacted by changing workloads.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: This is a previous finding in the 1990 RRD self-assessment supplemental FY 1991 report. Staffing increases were identified in the RRD budget submittal as described below.

On May 4, 1990, a supplemental budget submittal (Ref. 1) requested $1.8 M above President's Budget for technical support to allow work to progress on key long-term technical items (such as the SAR) as well as on high-priority technical issues resulting from routine operation of the reactor.

In September 1990 additional justification for supplemental budget increases for technical support was submitted to DOE (Ref. 2).

In November 1990 DOE worked to identify additional funds for technical support.

In September-November 1990, RRD Reactor Technology Section actively recruited five additional replacement staff based on the current President's Budget. These additional staff will assist in leveling the workloads. See Finding ROA.7-1.

Root Cause:

Insufficient resources; inadequate level of staffing in the RRD Reactor Technology Section to respond to the large number of unexpected issues

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	DOE make available additional FY 1991 funding to provide subcontractors support.	Complete
2.	Based upon above funding, procure matrix organization services (ETD, C&TD, Energy Systems Engineering) to provide baseload technical support for long-term items (such as the SAR), allowing RRD staff to attack unpredicted short-term operational problems.	Complete
3.	Request long-term funding commitment to support two additional FTEs.	Complete
4.	When funding is received, hire two additional Reactor Technology staff members.	3 months following receipt of funding

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	*a*						
2	—	*					
3	—						
4	—						
Status:							
Funded							
Requested							
New							$

*Estimated annual ongoing cost: $330K starting in FY 1992.

[a]Costs for Action Item 1 are contained in Finding ROA.7-1 Action Item 5 costs.

References: Letter, A. W. Trivelpiece to J. A. Reafsnyder, May 4, 1990, "Summary of Additional Funding to Meet New Requirements for HFIR Operations"

Letter, A. W. Trivelpiece to J. A. Reafsnyder, September 27, 1990, "Request for Additional Funding to Meet Requirements for HFIR Operations"

Finding No.: RTS.1-2 Backup for RRD Staff

Finding Description: **Staffing actions in the technical support groups at the Research Reactors Division have not ensured sufficient backup in specific key technical positions.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 6
Tiger Team Action Plan Priority 3

Response: Research Reactors Division (RRD) has been aware that several of its key people are reaching retirement age. Active recruiting of backup key staff members has been in progress. In one case, such a backup slot has been filled. An open slot is available to hire an individual to understudy the individual currently providing HFIR fuel procurement and engineering support.

Root Causes:

Insufficient resources; inadequate funding prior to FY 1990 and scarcity of appropriately qualified individuals since that time

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request FY 1993 funding.	Complete
2.	Initiate recruitment of candidates with appropriate qualifications to back up key positions.	6/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1			*				
2	—						
Status:							
Funded							
Requested							
New							$

*Estimated annual ongoing cost: $160K starting in FY 1993.

References: None

Finding No.: RTS.2-1 Consistency of Technical Specifications and Procedures

Finding Description: **The Technical Specifications and the related surveillance test procedures are not consistent, particularly with regard to acceptance criteria, and are not in full compliance with DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6, Safety of DOE-Owned Nuclear Reactors, requires that each DOE-owned reactor shall have a Technical Specification document meeting the Code of Federal Regulations (CFR), Title 10, Part 50.36.

DOE Order 5480.4, Environmental Protection, Safety, and Health Protection Standards, requires that Technical Specifications comply with the mandatory standard ANS 15.1-1982 (Development of Technical Specifications for Research Reactors).

10 CFR 50.36(c)(3) requires that surveillance requirements ensure that the necessary quality of systems and components is maintained.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Improvements in Surveillance Test Procedures (STPs) and/or Technical Specifications are addressed in this action plan. The criteria for system operability and test acceptance shall be reviewed and explicitly defined where appropriate, and the documents will be reviewed to ensure full compliance with DOE Order 5480.6, subparagraph 8.(d)1. This DOE order requires Technical Specifications similar to those required for comparable facilities licensed by the NRC and yet provide the flexibility necessary for experimental activities.

Root Cause:

Inadequate management approach; the process of putting all requirements in procedure form with established acceptance criteria acceptable to all reviewers significantly expands the amount of detail considered necessary for adequate procedures. Procedures are normally written for operational consideration with implementation by qualified personnel; therefore, all acceptance criteria have not been explicitly listed in most procedures.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding to complete required actions.	Complete
2.	Review HFIR Technical Specifications and Surveillance Test Procedures to ensure appropriate system-operability criteria and testing-acceptance criteria are explicitly defined and consistent between the two documents.	7/91
3.	Issue revised HFIR Surveillance Test Procedures to ensure full compliance with requirements stipulated in the Technical Specifications and that acceptance criteria are appropriately defined.	4/92
4.	Submit a revision to the HFIR Technical Specifications to DOE to correct any noted inconsistency.	6/92
5.	Initiate a review of TSR Technical Specifications and STPs with the goal of issuing revised documentation contingent upon approval of continued operation beyond current experimental program and funding. See Action Plan for ROA.7-3.	6 months after DOE decision for continued TSF operation

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	30	10					40
4		10					10
5	—	—					
Status:							
Funded							
Requested							
New	30	20					$50

References: None

Finding No.: RTS.2-2 Safety Analysis Reports for the HFIR and TSF

Finding Description: **The safety analysis reports for the High Flux Isotope Reactor and Tower Shielding Facility are not in compliance with subparagraph 8.C of DOE 5480.6 with regard to format and content.**

Code: Category III

Compliance Protocol:

HFIR

DOE Order 5481.1B (9-23-86), paragraph 4, subparagraphs b. and c. require that "those ongoing DOE operations which can reasonably be expected to have the potential for major on-site or off-site impacts to people or the environment shall be identified and evaluated..." For those operations for which documentation is determined to be inadequate to identify the risk from the operation, the line organization must make necessary arrangements (funds and other resources) to provide adequate safety analyses or obtain an exemption. Safety analyses prepared under these subparagraphs are to be prepared based on current technical criteria.

DOE Order 5480.6 (9-23-86), paragraph 8, subparagraph c. requires that the requirements of DOE Order 5481.1B be met and for new safety analysis reports, the NRC's guidelines on standard format and content of safety analysis reports shall be followed.

TSF

DOE Order 5481.1B (9-23-86), paragraph 4, subparagraphs b. and c. require that "those ongoing DOE operations that can reasonably be expected to have the potential for major on-site or off-site impacts to people or the environment shall be identified and evaluated..." For those operations for which documentation is determined to be inadequate to identify the risk from the operation, the line organization must make necessary arrangements (funds and other resources) to provide adequate safety analyses or obtain an exemption. Safety analyses prepared under these subparagraphs are to be prepared based on current technical criteria.

DOE Order 5480.6 (9-23-86), paragraph 8, subparagraph c. requires that for new Safety Analysis Reports, the Nuclear Regulatory Commission's guidelines on standard format and content of safety analysis reports shall be followed.

Priority: Energy Systems Risk Weight 80
Tiger Team Action Plan Priority 2

Response: **HFIR**

A combination of scope and budgetary problems made it necessary to seek a delay in the FSAR Key Milestone as described in detail in Reference 1. The request for the delay and additional funds was made in May 1990. The schedule that was submitted in May was based on a timely receipt of additional funding. The schedule was approved in August 1990. However, additional funds to support the FSAR needs were not available during FY 1990, and only recently has an indication been made that additional funds would be available during FY 1991. We are currently in the process of responding to the information that the funds requested for FY 1991 will be made available in the near future.

See Finding ROA.7-1.

TSF

This concern was generally identified in 1987 by the ORNL Reactor Review and Audit Committee and documented in ORNL/CF-87/211 as requirement 4 and recommendation 4. (These findings have been tracked by the Research Reactors Division (RRD) commitment tracking system as items TTCREQ-04 and TTCREC-04, respectively.) In addition, internal reviews and reviews completed by an independent consultant during the 1988-89 restart readiness process for the Tower Shielding Reactor (TSR) identified the need to update the safety analysis documents. (Refer to action items SAISAR01, SAISAR02, and SAISAR06 in the RRD commitment tracking system.) Essential analyses were updated prior to restart, but not incorporated into the safety analysis documents. It was determined that formal update of the safety analysis documents would be a post-restart action. To address the need for updated safety analysis documentation, the TSR has been included in the Energy Systems Safety Analysis Report Update Program. Phase I of that program involves completing a facility hazard screening document for each facility in the program. That commitment for the TSR facility is tracked in the RRD tracking system as RRD91-062. The facility hazard screening document will provide an evaluation of the adequacy of existing safety analysis and a preliminary identification of the hazard level of the facility. A draft hazard screening document has been completed for the TSR. Actions planned under the Energy Systems Safety Analysis Report Update Program would ultimately lead to an updated safety analysis report that satisfies the requirements of the DOE order. However, completion of an updated safety analysis report for the TSR is contingent on authorization to continue operating the reactor after completion of the current experimental program and receipt of funds for the update. If it is decided to permanently decommission and decontaminate the facility, the safety analysis report will not be updated.

See Finding ROA.7-3.

Root Causes:

HFIR
(1) Insufficient resources; resources for the HFIR updated SAR have been inadequate due to higher-priority items consuming the RRD budget and RRD staff time. (2) Ambiguous requirements or expectations; changing compliance requirements have increased expectations for the scope and content of the SAR beyond the original basis for the budget request.

TSF
Insufficient resources

Planned Actions and Schedules:

HFIR

Planned actions and schedules are contained in Finding ROA.7-1.

TSF

Planned actions and schedules are contained in Finding ROA.7-3.

Costs: HFIR—Costs are contained in Finding ROA.7-1.
TSF—Costs are contained in Finding ROA.7-3.

References: **HFIR**

1. Letter, J. B. Richard to J. A. Reafsnyder, May 18, 1990, "Modification of Key Milestones Concerning Completion of the Updated High Flux Isotope Reactor (HFIR) Final Safety Analysis Report"

2. Letter, J. B. Richard to J. A. Reafsnyder, May 4, 1990, "Summary of Additional Funding to Meet New Requirements for HFIR Operations"

TSF

1. Y/CSET-1 "Safety Analysis Report Update Program Overview and Phase I Implementation," October 1990

Finding No.: RTS.3-1 "Facility Design Modifications"

Finding Description: **Procedure RRAP-3.2, Rev. 4, "Facility Design Modifications," is not in compliance with DOE 5480.6, with respect to the requirement for independent and objective review and safety analysis. In addition, no approved procedures for reviewing and documenting temporary facility changes are given.**

Code: Category III

Compliance Protocol: DOE Order 5480.6, Section 8,G,8,a requires that the contractor provide for objective and independent review of proposed modifications to plant and equipment having safety significance.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: The Research Reactors Division (RRD) Facility Modification Control Procedures met this requirement for significant facility modifications, but did not adequately provide documented evidence of an objective safety review analysis for minor modifications or address temporary modifications. These deficiencies in the RRD Facility Modification Control procedures have been documented in both the October 1990 RRD Self-Assessment under the Technical Support Section and the RRD Self-Assessment Supplemental Section on Configuration Management. The RRD Administrative Procedure RRAP 3.2, Rev. 5 was revised and approved by the RRD Plant Operations Review Committee (PORC) on October 26, 1990, correcting the deficiencies noted in Finding TS.3-1. The PORC decided not to implement the RRAP 3.2, Rev. 5 changes until training on the revisions could be completed. RRAP 3.2, Rev. 5 went into effect after completion of training sessions conducted on November 6, 1990, and November 9, 1990. The RRD-DCC began the process of issuing RRAP 3.2, Rev. 5 in the RRD controlled procedures RRAP manual as of November 20, 1990.

Related TSA concerns are found in Findings TS.3-3, QV.5-4, and FR.1-2.

Root Cause:

Inadequate management approach

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue revised RRD Facility Modification Control procedures to (1) require an independent and objective review and safety analysis for all (both major and minor) design modifications, and (2) document procedures for the approval and analysis of temporary modifications.	Complete
2.	Train RRD Design, Safety Analysis, and QA personnel on these revisions in the modification control procedures.	Complete

Costs: None significant

References: RRD Administrative Policies and Procedures Manual, ORNL/RRD/INT-12

Finding No.: RTS.3-2 "Configuration Control of Plant Design Modification"

Finding Description: **Procedure RRAP 3.2, Rev. 5, "Configuration Control of Plant Design Modification," is excessively long and complex to the extent that its usefulness is limited.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: RRAP 3.2, Rev. 4 was extensively revised on October 26, 1990, to incorporate findings recommended by (1) the ORNL Reactor Operations Review Committee (RORC) 1990 Annual Review of HFIR, and (2) the RRD Self-Assessment Report of October 1990.

Part of the overall length of RRAP 3.2 is attributable to an effort to make the procedure more user friendly. This effort at procedure useability includes (1) a two page table of contents to direct the user to the applicable section of the procedure, and (2) a four page attachment which outlines the steps required to approve a modification from original initiation to operational readiness and closure. The author of the procedure (RRD Design Group Manager/Configuration Control Manager) is the individual responsible for the effectiveness of procedure RRAP 3.2, Rev. 5.

Related TSA concerns are found in Findings TS.3-1, TS.3-3, FR.1-2, and QV.5-4.

Root Cause:

Inadequate management approach

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Review procedure RRAP 3.2, Rev. 5 six months after its issuance to determine if the procedure is being used effectively to adequately control modifications to the facilities operated by the Research Reactors Division. This review will be conducted by the RRD Configuration Control Board, the RRD Quality Assurance Group, and the DOE site office. If it is determined that RRAP 3.2 Rev. 5 is not effective, then each organization will submit revision recommendations to the RRD Plant Operations Review Committee for approval.	5/91

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	1.4						1.4
Status:							
Funded	1.4						
Requested							
New							$1.4

References: RRD Administrative Policies and Procedures Manual, ORNL/RRD/INT-12

Finding No.: RTS.3-3 Drawing Changes for the HFIR

Finding Description: **There are no procedural means to ensure that the required level of review and safety analysis has been performed on drawing changes during the post High Flux Isotope Reactor restart drawing as-built program. This is not in compliance with subparagraph 8.g.(8) of DOE 5480.6.**

Code: Category III

Compliance Protocol: DOE Order 5480.6, Section 8.g.(8),a requires that the contractor provide for objective and independent review of proposed modifications to plant and equipment having safety significance.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: The Research Reactors Division (RRD) Facility Modification Control Procedures met this requirement for significant facility modifications (Design Change Memos), but did not adequately provide documented evidence of an objective safety review analysis for minor modifications and drawing changes [Design Change Notices (DCNs)]. These deficiencies in the RRD Facility Modification Control procedures have been documented in both the October 1990 RRD Self-Assessment under the Technical Support Section and the RRD Self-Assessment Supplemental Section on Configuration Management. The RRD Administrative Procedure RRAP 3.2, Rev. 5 was revised and approved by the RRD Plant Operations Review Committee (PORC) on October 26, 1990, correcting the deficiencies noted in Finding TS.3-3. The PORC decided not to implement the RRAP 3.2, Rev. 5 changes until training on the revisions could be completed. RRAP 3.2, Rev. 5 went into affect after completion of training sessions conducted on November 6, 1990, and November 9, 1990. The RRD-DCC began the process of issuing RRAP 3.2, Rev. 5 in the RRD controlled procedures RRAP manual as of November 20, 1990.

Related TSA concerns are found in Findings TS.3-1 and QV.5-4.

Root Cause:

Inadequate management approach

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Revise the RRD Facility Modification Control procedures to (1) require an independent and objective review and safety analysis for all (both major and minor) design modifications, and (2) to require a review and approval signature by a member of the RRD Safety Analysis Group of all drawing changes (DCNs).	Complete
2.	Train RRD Design, Safety Analysis, and QA personnel on these revisions in the modification control procedures.	Complete
3.	Perform a documented safety analysis review of each drawing change (DCN) that was not part of a design change memo for all drawing changes since the May 1989 HFIR restart.	06/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	15						15
Status:							
Funded	15						
Requested							
New							$15

References: RRD Administrative Policies and Procedures Manual, ORNL/RRD/INT-12

Finding No.: RTS.4-1 Equipment Performance Tracking

Finding Description: **Equipment performance tracking is done by several groups but is not compiled, trended, and analyzed by any single organization to produce an integrated result.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: The need for equipment performance monitoring and trending as it relates to the maintenance program was previously identified in 1988 as a result of the Comprehensive Safety Appraisal and Upgrade Program (CSAUP) for the High Flux Isotope Reactor (HFIR). This was documented as Findings 7.5.3.2 through 7.5.3.4 in ORNL/RRD/INT-39, June 1988. In response to those findings, the maintenance systems were upgraded to collect more complete information related to equipment performance. However, equipment performance data and evaluation needs have not been comprehensively identified. Currently, trending and evaluation of data collected is done on a case-by-case basis by the maintenance organization, Reactor Technology Section, and operations organization.

Root Causes:

Inadequate communications and insufficient resources

Planned Actions and Schedules:

Item/Description	Completion Date
1. Identify equipment performance data needs.	1/92
2. Assign overall responsibility for equipment performance tracking to single organization.	1/92
3. Develop and implement data collection for information not currently available.	7/92
4. Develop and implement evaluation program.	1/93

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1		30					30
2	—						
3		30					30
4			15				15
Status:							
Funded							
Requested		60					
New			15				$75

References: None

Finding No.: RTS.5-1 Environmental Impact

Finding Description: **The NEPA review and approval sequence by DOE is not done in a sufficiently expeditious fashion to ensure prompt resolution of problems.**

Code: Category III

Compliance Protocol: DOE Order 5440.1C

Priority: Energy Systems Risk Weight 390
Tiger Team Action Plan Priority 2

Response: In general, receipt of categorical exclusion determinations (CXDs) needed for research reactor activities have been issued and distributed expeditiously. However, the delay of distribution of the cited CXD for Modification to the Secondary Cooling Tower at the HFIR was traced to handling of the CXD after approval by DOE. Streamlining of NEPA coordination is being addressed in response to Finding NEPA/CF-1.

Root Cause:

Inadequate communications

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Strengthen tracking of ongoing NEPA actions by including NEPA status in periodic (normally weekly) interface meetings between the DOE reactor site office and the ORNL Research Reactors Division.	Complete

Costs: None

References: None

Finding No.: RTS.7-1 Reactor Engineering Function at the HFIR and TSF

Finding Description: **The reactor engineering function at the High Flux Isotope Reactor and Tower Shielding Facility is not defined.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: New concern

Root Cause:

Poorly defined roles and responsibilities; lack of clear functional description in staff charters

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Reorganize Reactor Technology Section, and issue position charters to specifically identify a reactor engineering function and roles and responsibilities.	Complete

Costs: No significant costs are associated with the action.

References: None

3.4.9 Nuclear Criticality Safety

Finding No.: RCS.1-1 Management of Criticality Safety Program

Finding Description: **Research Reactors Division management is not providing the oversight to ensure a comprehensive criticality safety program that is in compliance with DOE 5480.5.**

Code: Category III

Compliance Protocol: DOE Order 5480.6 (9-23-86) Section 8.h., *Fissile Material Storage and Handling Facilities and Operations Located Within a Reactor Facility.* "The requirements of DOE Order 5480.5 shall be applied as appropriate to fissile material storage handling facilities and operations within a reactor facility."

DOE Order 5480.5 (9-23-86) Section 9. *Contractor Independent Review and Appraisal System.* "Each contractor to whom this Order is made applicable shall establish and maintain an internal safety review system for nuclear facilities which:

a. Functions primarily in an advisory capacity to line organization, reporting to a designated official at a level of management sufficiently high to take necessary corrective action. (Safety is a line responsibility; neither review nor subsequent approval releases line management from its responsibility for the safety of people and equipment).

b. Is clearly defined and delineated in writing (e.g., purposes, objectives, functions, authority, responsibility, composition, quorum, meeting frequency, and reporting requirements.

c. Can be audited by contractor management and by DOE. The performance of the system shall be recorded in sufficient detail to permit contractor management and DOE to evaluated its effectiveness. Actions taken on any recommendations resulting from reviews, audits, inspections, appraisals, and surveillance shall be included in these records.

d. Provides technical competence in the areas being reviewed. Each review, except that described in subparagraph 9i, below, shall be carried out by persons whose technical disciplines cover the range of technical fields encountered in performing a safety review. Safety considerations are to be treated in the breadth and depth necessary to identify potential hazards and to evaluate the risks.

e. Provides for group discussions between reviewers on all but the more routine matters.

f. Provides an independent determination of whether a proposed activity involves an unreviewed safety question, violation of a Criticality Safety Limit, Operational Safety Requirement, or any matter for which approval is required.

g. Provides an appraisal of the overall operation of each facility at least annually. The majority of the individuals performing the appraisal shall be independent of the operation being appraised. It shall include, but not be limited to, applicable areas listed in subparagraph 9h, below.

h. Provides for objective and independent review of:

(1) Proposed modifications to nuclear facilities and equipment having safety significance, and safety analyses thereof.

(2) Proposed experiments and operations having safety significance.

(3) Administrative, operating (normal and abnormal), maintenance, repair, testing, quality assurance, and emergency procedures and significant changes thereto.

(4) Organization and staffing.

(5) Standards, Nuclear Criticality Safety Limits, Operational Safety Requirements, and changes thereto.

(6) Nuclear facility safety training programs, including the initial and subsequent qualification and verification requirements and procedures for criticality safety.

(7) Unusual occurrences, including those referred to as incidents, operating anomalies, and violations of Nuclear Criticality Safety Limits or Operational Safety Requirements.

(8) The physical condition of the nuclear facilities.

(9) The accuracy and completeness of record keeping and documentation.

(10) Facility operations against its safety analysis.

(11) Facility operational compliance with the requirements of this Order.

i. Is reviewed by contractor management for adequacy of performance at least every 3 years."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Research Reactors Division (RRD) has depended upon the annual review by the ORNL Criticality Review Committee for assurance of compliance with the requirements of DOE Order 5480.5.

Root Causes:

(1) Inadequate management approach; RRD relied on the annual review by the ORNL Criticality Review Committee to provide the needed assurance of compliance with DOE Order 5480.5, and the knowledge that a creditable criticality accident at its facilities was not probable. (2) Insufficient resources; current RRD staffing levels prevented a higher priority to be given to Criticality Safety audits.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding to complete required actions.	Complete
2.	Increase staffing to allow performance of the oversight requirements of DOE Order 5480.5.	90 days after funding
3.	Revise Research Reactors Division Administrative Policies and Procedures, RRAP-2.7, Nuclear Criticality Safety Program, to reflect the requirements of oversight within DOE Order 5480.5.	60 days after staffing increase

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	*						
Status:							
Funded							
Requested							
New							$

*Estimated new annual ongoing cost: $20K beginning in FY 1991.

References: None

Finding No.: RCS.1-2 Timely Resolution of Criticality Safety Issues

Finding Description: **Criticality safety issues are not being handled on a timely basis.**

Code: Category III

Compliance Protocol: Best Management Practice dictates that all action items be addressed and corrected in a timely and cost effective manner as determined by line management.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: Items on the Critical Actions and Requirements Tracking System (CARTS) are scheduled based on the Technical Evaluation Group's (TEG) evaluation of the risk associated with the item. The purpose of the TEG is to provide a mechanism and process to systematically evaluate, using the collective expertise of the committee, the importance, risks and/or benefits of issues and commitments related to the Research Reactors Division's responsibilities with regard to the operation of the reactors and other functions. This evaluation provides a basis for prioritizing, scheduling, and ultimately resource planning for each activity.

Root Causes:

(1) Inadequate management approach; the TEG process has established a formal program for prioritizing all significant concerns or recommendations within RRD; scheduling is based on resources and priority considerations that are line management responsibilities. (2) Insufficient resources; limited resources can and do result in prolonged schedules that may be considered an untimely response by reviewers.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	The RRD Radiation Control Officer will review the present Criticality Safety CARTS items to determine if priorities should be changed.	6/91
2.	Revise the Research Reactors Division Administrative Policies and Procedures, RRAP-2.7 (Nuclear Criticality Safety Program) to require the checking on status of outstanding/incomplete Criticality Safety items on CARTS as part of the biannual (every 6 months) audit.	5/91
3.	Request additional resources if required to complete items with the priority determined in item 1.	7/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	25						25
Status:							
Funded							
Requested							
New	25						$25

References: None

Finding No.: RCS.5-1 Criticality Alarm Systems

Finding Description: **The criticality alarm systems at High Flux Isotope Reactor, Bulk Shielding Reactor, and Health Physics Research Reactor do not meet all requirements of ANSI/ANS-8.3-1986.**

Code: Category III

Compliance Protocol: ANSI/ANS-8.3-1986 ("Criticality Accident Alarm System"), Section 4 (General Principles), Item 4.1.1:

"Alarm systems shall be provided wherever it is deemed that they will result in a reduction in total risk. Consideration shall be given to hazards that may result from false alarms."

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response:

1. Due to the very low risk of accidental criticality and the personnel shielding provided by the HFIR and BSR fuel storage pools, these two facilities are not provided with criticality alarms. Radiation alarms ("monitrons") are installed, however, to warn of other radiation hazards.

2. During recent criticality safety audits, a commitment was established to document the technical justification for not providing criticality alarms in these two facilities, or alternately, to show that the existing alarms satisfy the current requirements for criticality alarms. An initial justification for exemption was prepared in July 1989, addressing only the HFIR, with subsequent concurrence from the Laboratory Criticality Safety Committee Chairman (Ref. 1). This exemption was not subsequently approved by Laboratory safety officials, however, nor did it include the BSR storage pool. A revised justification has subsequently been provided and approved, addressing both the HFIR and BSR storage pools. Without approved exemptions at the time of the Tiger Team inspection, however, the Concern was based on the assumption that criticality alarms are required for these facilities, together with the finding that the existing radiation alarms, intended for other purposes, do not meet all current standards for criticality alarms.

3. This situation was recognized in Appendix CS to the RRD self-assessment (extracted from the audit report of the Criticality Safety Committee), which states that "Documentation exist to justify no alarm system for the current [HFIR] situation." The BSR and HPRR were not addressed, however.

Root Cause:

Ambiguous requirements or expectations; (a) HFIR and BSR: Delay in documentation and Laboratory approval of exemption from criticality alarm requirements. (b) HPRR: Final upgrading of criticality alarm system delayed due to shortage of resources and uncertainty regarding future use of this facility.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Revise the technical justification for exempting both the HFIR and BSR fuel storage facilities from requirements for a criticality alarm system and obtain approval from appropriate Laboratory criticality safety officials.	Complete
2.	Ship the HPRR core to the Y-12 Plant for storage.	Complete

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	10						10
2	—						
Status:							
Funded	10						
Requested							
New							$10

References: Memo, J. T. Thomas to D. H. Cook, July 20, 1989, "Criticality Alarm at HFIR"

Memo, M. W. Kohring to H. A. Glovier, November 28, 1990, "Justification For and Approval of Not Requiring Criticality Alarm Systems in the HFIR and BSR Facilities"

Finding No.: RCS.5-2 Distribution of Nuclear Accident Dosimeters

Finding Description: **Nuclear accident dosimeters are not supplied in conformance with DOE 5480.5 and 5480.11 in areas that require criticality alarm systems.**

Code: Category III

Compliance Protocol: DOE Order 5480.5 and 5480.11

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 2

Response: ORNL does not supply Nuclear Accident Dosimeters as required by DOE Orders 5480.5 and 5480.11, Section 9.q.3. This concern was previously stated in the Radiation Protection Program Appraisal (RPPA) of the Oak Ridge Complex conducted during 1989.

Following the RPPA, a corrective action plan was approved which specified that a common NAD be developed for the Oak Ridge, Tennessee, and Paducah, Kentucky, facilities operated by Energy Systems. A NAD committee was chartered to identify potential NAD devices and to determine the most-feasible device for use at the Energy Systems sites. Following a detailed study, the currently used beta-gamma and neutron personnel dosimeters were selected for testing to determine applicability.

Results from the measurements of neutron and high gamma doses at accidental levels with the personnel dosimeters, using in-house NIST-traceable sealed gamma and neutron radiation sources, demonstrated the dosimeters' capability as a NAD. A follow-up test with a fast-burst reactor was conducted in November 1990. The data from the test are currently under evaluation. Preliminary review of the data indicates that the dosimeters are able to respond well to all the conditions tested. Testing of the dosimeters and evaluation of the results are currently being documented in a technical basis document. A program implementation plan has been developed to ensure that the requirements of the DOE Orders 5480.5 and 5480.11 are met. The NAD program is scheduled to be completed by April 1991. Continued studies are scheduled to improve the accuracy of the dosimeter readings.

See Finding RP.5-1.

Root Causes:

Inadequate policy implementation and insufficient resources

Planned Actions and Schedules:

Item/Description	Completion Date
1. Complete the technical basis document for the NAD program.	Complete
2. Determine present locations where criticality alarms are required to ensure that these areas are supplied with NADs.	Complete
3. Develop and issue procedures for processing NADs and for field retrieval by Radiation Protection personnel in the event of an accident.	Complete
4. Train Centralized External Dosimetry System personnel and field health physicists to implement the NAD procedures.	Complete
5. Issue a Radiation Safety Bulletin specifying the new NAD policy.	Complete
6. Implement the NAD program.	Complete

Costs:

Type of funds: Overhead[a]
Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	17						17
2	5						5
3	16						16
4	9						9
5	1						1
6	7						7
Status:							
Funded	55						
Requested							
New							$55

Estimated annual ongoing cost: $16K for annual retrieval and annealing of dosimeters, beginning in FY 1992.

[a]Funding is in addition to the sitewide program in Finding RP.5-1.

References: DOE Orders 5480.5 and 5480.11

Finding No.: RCS.5-3 Performance of Criticality Drills

Finding Description: **Criticality drills are not being performed in all applicable areas of the Research Reactors Division, and in some cases the drills are not initiated by the criticality alarms as required by ANSI/ANS-8.3-1986, Sec. 7.3, and DOE 5480.5 par. 11C(3)(g).**

Code: Category III

Compliance Protocol: ANSI/ANS-8.3-1986, Sec 7.3, and DOE Order 5480.5 para. 11C(3)(g) are being violated. Evacuation drills are being conducted at each facility; however, the HFIR and BSR facilities do not have criticality alarms making it impossible to initiate a drill using this alarm.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response:

1. Criticality alarms do not exist for the HFIR or BSR. Justification for not requiring these alarms is outlined in the referenced attachment.

2. The HPRR fuel is being moved from the site; therefore, no criticality alarm will be required at that site after December 1990. Since no criticality alarms will be required at any RRD site after December 1990, no requirement to initiate an evacuation with a criticality alarm will exist.

See Finding CS.5-2.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Obtain justification for <u>not</u> requiring criticality alarms systems in the HFIR and BSR facilities.	Complete
2.	Remove the remaining HPRR fuel.	Complete

Costs: Costs are included in Finding RCS.5-1.

References: Letter, M. W. Kohring to H. A. Glovier, November 28, 1990, "Justification for and Approval of Not Requiring Criticality Alarm Systems in the HFIR and BSR Facilities"

3.4.10 Security/Safety Interface

Finding No.: RSS.1-1 New Safeguards and Security Elements

Finding Description: **No system is in place to ensure that designs for new or modified safeguards and security elements of site facilities are reviewed and approved by both safety and security site organizations.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: While all new and modified ORNL facilities are reviewed for safety, no specific system exists to ensure that safeguards and security elements are reviewed. This deficiency will be corrected by the development and implementation of an Energy Systems-ORNL Engineering Procedure EP-E-16, "Safeguards and Security Planning," assigning duties and responsibilities.

Root Causes:

Inadequate policy, ambiguous requirements or expectations, and poorly defined roles and responsibilities

Planned Actions and Schedules:

Item/Description	Completion Date
1. Develop draft of procedure.	Complete
2. Implement final procedure.	10/91

Costs:

Type of funds: Overhead
Source of funds: Overhead

Action item	Estimated costs per fiscal year ($K)						
	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	20	20					40
Status:							
Funded							
Requested							
New	20	20					$40

References: None

Finding No.: RSS.3-1 Analyses to Determine Appropriate Weapons

Finding Description: **No analyses have been performed to determine what weapons can be used safely at the ORNL site, as stipulated by DOE 5480.16, Chapter II, 2.j. and OR 5480.16, Chapter II, 2.j.**

Code: Category III

Compliance Protocol: DOE Order 5480.16, Chapter II, 2.j and OR 5480.16, Chapter II, 2.j

Priority: Energy Systems Risk Weight 105
Tiger Team Action Plan Priority 2

Response: This deficiency was identified in the ORNL Self-Assessment and a mitigation and correction plan has been developed. The plan included both interim and permanent fixes.

Root Causes:

Inadequate policy implementation and ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Involve the safety department in all security patrol drills and exercises.	Complete
2.	Identify major hazards in response plans.	Complete
3.	Identify consultant group capable of performing appraisals and audits.	Complete
4.	Conduct audits and appraisals using outside consultants to provide an analysis of the safe use of weapons at ORNL.	10/92

Costs:

Type of funds: Overhead

Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	—						
4		40					40
Status:							
Funded							
Requested							
New		40					$40

References: None

Finding No.: RSS.4-1 Safety Appraisals and Audits for Firearms

Finding Description: **Martin Marietta Energy Systems, Inc., does not conduct formal firearms safety appraisals and audits of the ORNL internal security operations, as required by DOE 5480.16, Chapter III, 1.b.**

Code: Category III

Compliance Protocol: DOE Order 5480.16, Chapter III

Priority: Energy Systems Risk Weight 105
Tiger Team Action Plan Priority 3

Response: Energy Systems has an established corporate-wide Firearms Safety Committee that provides oversight and performs reviews and appraisals of appropriate activities. This oversight function will be strengthened by instituting a site-specific committee. The charter of the ORNL committee will require a system of continuing oversight and formal firearms safety appraisals and audits that shall become a permanent part of the ORNL Security Patrol annual self-assessment.

Root Causes:

Inadequate policy implementation and ambiguous requirements or expectations

Planned Actions and Schedules:

Item/Description	Completion Date
1. Establish Energy Systems Firearms Safety Committee.	Complete
2. Establish contract with appropriate consultants.	4/92
3. Establish ORNL Firearms Safety Committee.	10/91
4. Complete audit.	10/92

Costs:

Type of funds: Overhead
Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	*						
3	—						
4	—						
Status:							
Funded							
Requested							
New							$

*Estimated annual ongoing cost: $10K starting in FY 1991.

References: None

3.4.11 Experimental Activities

Finding No.: REA.1-1 Safety Overview of Bldg. 7900

Finding Description: **The HFIR Operations Section does not have a formal program for safety overview of all areas of Bldg. 7900, including experimental areas, to monitor compliance with safety requirements and overall facility safety interactions.**

Code: Category III

Compliance Protocol: Best Management Practices dictate a need for an auditable safety oversight program of all areas within the 7900 building.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: This concern was noted in the Research Reactors Division's (RRD) self-assessment report of October 1990. It was never RRD's intent or belief that the original Memoranda of Understanding with the Solid State Physics Division (SSD) and the Analytical Chemistry Division (ACD) would relieve RRD of the overall safety inspection responsibilities for the General Purpose Neutron Activation Analysis Facility (GPNAAF) or the Beam Room. Both SSD and ACD perform and document their independent Quarterly Safety Inspection of the Beam Room and GPNAAF respectively.

The RRD *Facility Inspection Program (FIP)* provides for the performance and documentation of monthly inspections of all RRD areas of responsibility including the Beam Room and GPNAAF in building 7900 by salaried employees (engineers of various disciplines, reactor supervisors, trainers, etc.). The FIP provides for quarterly inspections and documentation by the Division Director of an RRD facility or area. The FIP provides for the quarterly inspection and documentation by Section Heads of their areas. The FIP provides for weekly inspections and documentation by the Facility Managers of their facilities. The FIP provides for the monthly inspection and documentation by the Division Safety Officer/Radiation Control Officer (DSO/RCO) of all RRD facilities. The primary look of the FIP is toward housekeeping, but health and safety standards as well as radiological ALARA concerns are viewed.

RRD has in the past established a number of administrative controls which are administered though an RRD Experiment Coordinator. RRD has established pre-training requirements for visiting experimenters. This training is conducted by the host division (SSD or ACD) but RRD has input and review privilege of the training plans. Both the Beam Room and GPNAAF are under the radiological control and review of the Reactors Complex Radiation Protection Leader and the RRD Radiation Control Officer. All maintenance in the Beam Room and

GPNAAF is performed by and under the supervision of the RRD maintenance organization.

Root Causes:

(1) Poorly defined roles and responsibilities; it is difficult to share responsibilities for safety when each line organization is charged with this responsibility. One must depend on each line of division management at the laboratory to enforce the requirements of a particular administrative control. (2) Insufficient resources; the RRD staffing level is based on providing only infrequent surveillance of activities performed by other divisions in the Beam Room. Normally the Beam Room is the only experimental area where 24-hour manned experiments will take place.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue revised Research Reactors Division Administrative Polices and Procedures Manual (RRAP) to incorporate the Facility Inspection Program	Complete
2.	Increase surveillance of the experimental areas by RRD and support divisions line management as specified in the revised RRAP.	5/91
3.	Request funding to complete required actions.	Complete
4.	Increase RRD staffing level to assist in the surveillance of the experimental areas.	90 days after funding is provided

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	—						
4			*				
Status:							
Funded							
Requested							
New							$

*Estimated annual ongoing cost: $100K beginning in FY 1993.

References: None

Finding No.: REA.3-1 Updating of Research Reactors Experimenters' Guide

Finding Description: **The Research Reactors Experimenters' Guide is not being maintained current in its description of facilities and requirements.**

Code: Category III - Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: This is a new concern. Some sections of the document have become out-dated due to the design changes and new procedural requirements implemented during the extended 1986 reactor shutdown. A new document that is up-to-date will be issued as a controlled document within the RRD. This document will be distributed to established ORNL experimental groups currently using the reactors and to other prospective experimenters as the need arises.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue an RRD Administrative Policy and Procedure that establishes the requirements for a controlled RRD internal manual entitled "Research Reactors Division Experimenters' Guide." This procedure will define the format and contents of the manual, as well as establish responsibilities for review and upkeep of the manual.	09/91
2.	Develop applicable manual contents and issue draft version of "Research Reactor Division Experimenters' Guide" for comment.	02/92
3.	Issue revised Research Reactors Division Experimenters' Guide.	05/92

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	20						30
3	—	10					
Status:							
Funded	20						
Requested		10					
New							$30

References: None

Finding No.: REA.3-2 Verification of Reactor Experiment Calculations

Finding Description: **ORNL does not have a clearly defined set of requirements, and implementing system, for verification of safety-related reactor experiment calculations.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 0
Tiger Team Action Plan Priority 3

Response: This is a new concern. Review Committee (RERC/RORC) methods of operation require that all safety-related experiment calculations be independently reviewed and such reviews for operating experiments have been made. The scope of the review and a standard implementation system, however, are not defined. The RRD Reactor Technology Section has recently issued a procedure (RTP-1) to address the preparation, review, validation, and handling of safety related calculations. Applicable RRD procedures related to experiment reviews and approval (RRAP 5.3, 5.4) will be revised to define the term safety-related calculations for experiments and to require that safety-related experiment calculations be done in accordance with RTP-1. The Experimenter's Guide will also be updated to require that safety-related calculations be performed in accordance with RTP-1. Established ORNL experimental groups performing experiments at the reactor will be trained in the requirements of RTP-1.

Root Cause:

Inadequate policy

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Train ORNL experimental groups on Procedure RTP-1.	08/91
2.	Define the term safety-related calculation as it applies to reactor experiments.	08/91
3.	Draft a new section to the "Experiment Information and Safety Analysis Form for Experiments in the ORNL Research Reactors" (the Experiment Review Questionnaire) entitled "Safety-Related Calculations." This section will define the term safety-related and list all calculations that are considered safety-related.	12/91

4. Issue revised the RRD Experimenter's Guide to include the definition of safety-related calculations and to reflect the requirements of RTP-1. 12/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	8						8
4		2					2
Status:							
Funded	8						
Requested		2					
New							$10

References: None

Finding No.: REA.4-1 Control of Potential Personnel Exposure

Finding Description: **High Flux Isotope Reactor Operating Procedure 5.1, Part 5.1.4.2, and draft Procedure 5.1, Rev. 1, permit relinquishing of spectrometer angle limit lock keys to experimenters, thus diluting the control over potential personnel exposure to high Beam Room radiation levels. Neither procedure specifies steps for safely restoring the system to its normal operating configuration.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 8
Tiger Team Action Plan Priority 3

Response: This is a new concern. The cited procedures do not reflect current or past practice. The keys to the spectrometer angle limit lock are currently and have always remained in the custody of the reactor shift supervisor and are not relinquished to the experimenter. The cited procedures will be revised to reflect this practice. In addition, a new section(s) will be added to the High Flux Isotope Reactor Operating Procedure 5.1 to address the steps necessary to safely move the main beam room spectrometer shield past the angle limit lock and for restoring the shield back to its normal operating configuration. RRAP 5.1 will also be revised to include the procedure for restoring the shield to its normal operating position.

Root Cause:

Inadequate communications

Planned Actions and Schedules:

Item/Description	Completion Date
1. Issue revised HFIR operating procedure 5.1 to address possession of the spectrometer angle limit lock keys and work with the spectrometer shield.	08/91
2. Revise RRAP 5.1 in a similar manner to be consistent with HFIR Operating Procedure 5.1.	10/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	5						5
2	—						
Status:							
Funded	5						
Requested							
New							$5

References: None

3.4.12 Site/Facility Safety Review

Finding No.: RFR.1-1 Training for Unreviewed Safety Question Determinations

Finding Description: **Instructional material and formal courses are not available to train new personnel to perform Unreviewed Safety Question Determinations, as required by DOE 5480.6, Section 8.g.(6).**

Code: Category III

Compliance Protocol: DOE Order 5480.6, Section 8.g.(6) requires that Unreviewed Safety Question (USQ) Determinations be performed. It is good practice to implement a training program that supports this requirement.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: A recommended good practice has not been implemented due to limited application of results, qualified staff with low turnover reducing the need to establish a documented training module on this topic, and lack of funding.

Root Causes:

Inadequate management approach and insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding from DOE for this action plan.	Complete
2.	Incorporate existing approach for performing USQ into a formal lesson plan.	90 days after funding is provided
3.	Review and document approach at other selected facilities for training on USQ.	90 days after funding is provided
4.	Revise Item 2 per the best "lessons learned" obtained from Item 3.	90 days after funding is provided

5. Conduct training for selected RRD personnel in accordance with the formal lesson plan. Incorporate training requirement for selected new personnel and also retraining for selected RRD personnel.	180 days after funding is provided
6. Transmit lesson plan on USQ to training department at the laboratory for consideration for incorporation in their training requirements.	120 days after funding is provided

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	3						3
3	1						1
4	1						1
5	15	5					20
6	—						
Status:							
Funded							
Requested							
New	20	5					$25

References: None

Finding No.: RFR.1-2 Review Board for Nuclear Safety Assessments

Finding Description: **A review board is not currently in place to judge whether a Nuclear Safety Assessment is required for proposed new or modified reactor activities.**

Code: Category III

Compliance Protocol: Best Management Practice

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: The Research Reactors Division (RRD) Facility Modification Control Procedures met this requirement for significant facility modifications but did not adequately provide documented evidence of an objective safety review analysis for minor modifications. These deficiencies in the RRD Facility Modification Control procedures have been documented in both the October 1990 RRD Self-Assessment under the Technical Support Section and the RRD Self-Assessment Supplemental Section on Configuration Management. The RRD Administrative Procedure RRAP 3.2, Rev. 5 was revised and approved by the RRD Plant Operations Review Committee (PORC) on October 26, 1990, correcting the deficiencies noted in Finding FR.1-2. The PORC decided not to implement the RRAP 3.2, Rev. 5 changes until training on the revisions could be completed. RRAP 3.2, Rev. 5 went into effect after completion of training sessions conducted on November 6, 1990, and November 9, 1990. The RRD-DCC began the process of issuing RRAP 3.2, Rev. 5 in the RRD controlled procedures RRAP manual as of November 20, 1990.

A Nuclear Safety Assessment Review is currently required per RRAP 1.5 for all new and revised procedures. The latest revision (Rev. 3) of RRAP 1.5 has been in effect since October 25, 1989.

Other related TSA concerns include Findings TS.3-1, TS.3-3, and QV.5-4.

Root Cause:

Inadequate management approach

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue revised RRD Facility Modification Control procedures to (1) require an independent and objective review and safety analysis for both major and minor	Complete

design modifications, and (2) establish a RRD Configuration Board.

2. Train RRD Design, Safety Analysis, and QA personnel on these revisions in the modification control procedures. Complete

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	37						37
Status:							
Funded	37						
Requested							
New							$37

References: RRD Administrative Policies and Procedures Manual, ORNL/RRD/INT-12

Finding No.: RFR.4-1 New Format for Written Reports

Finding Description: **The new format for organizing the written reports of the Reactor Operations Review Committee Annual Safety Appraisals complicates validation that the reports meet the requirements of DOE 5480.6, Section 8.g.(8).**

Code: Category III

Compliance Protocol: DOE Order 5480.6, Section 8.g.(8)

Priority: Energy Systems Risk Weight 1
Tiger Team Action Plan Priority 4

Response: It is good management practice to make reports amendable to audits against standards (DOE Orders) in a convenient manner.

Root Cause:

Inadequate policy

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Provide an index between the recently completed Reactor Operations Review Committee (RORC) reviews for 1990 and DOE Order 5480.6	Complete
2.	Revise the guidelines for report preparation format for internal Laboratory appraisals to require an index between the items reviewed and the requirements of DOE Orders 5480.5, 5480.6, and 5482.1B. This will be included in the ORNL Appraisal Program Manual.	1/92
3.	Issue revised ORNL Appraisal Program Manual.	5/92

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	1						1
2		1					1
3		—					
Status:							
Funded							
Requested							
New	1	1					$2

References: DOE Orders 5480.5, 5480.6, 5482.1B

3.4.13 Radiological Protection

Finding No.: RRP.3-1 Source Control

Finding Description: **Radioactive source inventories and leak testing records are not complete for all accountable sources, as required by DOE Order 5480.11**

Code: Category III

Compliance Protocol: DOE Order 5480.11

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: ORNL's Radiation Source Control Program has added significantly to the control and accountability of radioactive sources at the Laboratory. On April 10, 1990, the "ORO Radiation Source Control Policy" was issued; it specifies the requirements that ORNL is required to comply with by January 1, 1991. Energy Systems has issued ESH-11 to specify requirements for the implementation of the policy.

Office of Environmental and Health Protection personnel are currently initiating a program to become compliant with ESH-11 and the ORO policy. ORNL Health Physics Procedure RP 2.14, "Radioactive Source Control," is currently under revision to specify requirements of the policy. The *Radiation Protection and Radiation Monitoring Standard Operating Procedures Manual,* Procedure 02-50-55, "Surveying Sealed and Unsealed Radioactive Sources," was issued on September 29, 1990, to provide the technical guidance for the leak testing of radioactive sources. In addition, self-paced training program modules are being developed for each individual responsible for radiation source control.

Research Reactors Division (RRD) needs to emphasize the need for source registration to all its members. The Division will conduct an inspection of all its operations to identify and register all sources that are not presently registered, but that meet the criteria of *Health Physics Manual Procedure,* RP-2.14, "Registry of Radioactive Material and Sealed Sources." The Radiation Protection personnel who are dedicated to RRD will provide the support needed to ensure that all identified sources are leak-tested, properly identified, properly stored, and posted.

RRD will train its personnel in the requirements of radioactive source control, as training materials become available from the Office of Environmental and Health Protection's, Technical Resources and Training Section.

Response to Finding RP 3-3 specifies the corrective actions developed to implement the ORNL Radioactive Source Control Program.

Root Causes:

Inadequate policy implementation, inadequate oversight, inadequate training, and poorly defined roles and responsibilities.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Based on the requirements of *Health Physics Manual Procedure,* RP-2.14, "Radioactive Source Control", conduct a review of compliance for RRD facilities and operations and identify the deficiencies needing correction. Complete source inventory and review of leak-testing records.	6/91
2.	Complete corrective actions to correct identified deficiencies.	9/91

Costs: Funding listed is in addition to the sitewide program in Finding RP.3-3.

Type of funds: Overhead
Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	7						7
2	12						12
Status:							
Funded	19						
Requested							
New							$19

References: None

Finding No.: RRP.3-2 Radioactive Source Inventories

Finding Description: **There is no active program at the reactor sites to reduce the inventory of unneeded sources.**

Code: Category III

Compliance Protocol: Best Management Practice. Maintaining an inventory of sources required for operation should require appropriate disposal of unneeded sources.

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 4

Response: DOE Order 5480.11 makes no reference to source inventories or leak testing of those sources or records of the same. The DOE ORO Radioactive Source Control Policy, with which ORNL is required to be in compliance by January 1, 1991, references DOE Order 5480.11 but only in regards to posting and labeling of radioactive material. The DOE ORO Radioactive Source Control Policy, Table 1, lists those radionuclides and activity levels at which registry and inventory is required.

The Cs-137 sources found at HFIR were exempt from inventory controls because they were below the activity levels required by Table 1 of the DOE ORO Radioactive Source Control Policy.

This concern is related to Finding RP.3-1 because it deals with the radioactive source control program.

Root Cause:

Ambiguous requirements or expectations - The newly written DOE ORO Radioactive Source Control Policy, which is currently under review by DOE, has not been fully implemented, and no program exists to ensure a reduction in unneeded sources.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Leak check the two large Co-60 sources located in building 3095 or place a hold tag on the sources requiring testing before use. (The two sources were properly labeled on the date of discovery.) Evaluate sources for appropriate disposal and document results.	Complete

2. Fully implement the DOE ORO Radioactive Source Control Policy.

   a. Ensure sources are properly listed on inventory. 6/91

   b. Maintain source listing according to actual need. Properly dispose of unnecessary sources. 9/91

3. Institute an inventory reduction program for sources which are no longer needed. Unnecessary sources will be stored or disposed of in accordance with Laboratory requirements. 9/91

4. Issue revised ORNL Health Physics Manual procedure RP-2.14 to agree with the DOE-ORO Radioactive Source Control Policy. 7/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	0.2						0.2
2	1.0						1.0
3	3.0						3.0
4	0.5						0.5
Status:							
Funded	4.7						
Requested							
New							$4.7

References: None

Finding No.: RRP.4-1 Posting of Radiological Conditions

Finding Description: **Current postings do not always adequately inform the worker of the radiological conditions in a posted area, as required by DOE 5480.11.**

Code: Category III

Compliance Protocol: DOE Order 5480.11

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Additional radiological survey maps have been posted at the entrances to and in the radiological areas at HFIR. There is no Very High Radiation Area roped off at HFIR as indicated in the TSA findings. There is a High Radiation Area roped off at HFIR in the first floor water wing. Additional survey maps of the area have been posted in the immediate area of the boundary.

Root Cause:

Ambiguous requirements or expectations for information required for posted areas

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue revised RRD Health Physics Procedure RRD-HP-3, "General Guidance to Radiation Protection Personnel at the HFIR Facility" to be more specific in the location and the degree of posting and to include all RRD facilities.	7/91
2.	Request funding for Item 3.	5/91
3.	Purchase digital alarming dosimeters.	7/91

Costs:

Type of Funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
3	20	5					25
Status:							
Funded							
Requested							
New	20	5					$25

References: None

Finding No.: RRP.4-2 Radiological Controls in the Experiment Area

Finding Description: **The radiological controls in the experiment area of the beam room at the High Flux Isotope Reactor do not preclude inadvertent exposure of personnel to the neutron beam.**

Code: Category III

Compliance Protocol: DOE Order 5480.11 (12-21-88), Section 9.k.(2)(a) *Posting for External Radiation.* "The access to any area where an individual can at anytime during normal operations receive a dose equivalent greater than 5 mrem (50 microsieverts) in 1 hour at 30 centimeters from the radiation source or any surface through which radiation penetrates shall be posted ..."

Priority: Energy Systems Risk Weight 6
Tiger Team Action Plan Priority 2

Response: Pretraining of personnel, administrative controls, and experienced supervision are used in conjunction with indicating lights to preclude inadvertent exposure of personnel to the neutron beam. Level of possible exposure and restricted access do not justify engineering controls.

Root Cause:

Inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Improve the signs at the neutron beams to indicate the presence of "Open Beam when the Red Light is Lit — Very High Radiation Area in the Beam."	5/91
2.	Measure and document exposure rates in the neutron beams.	7/91
3.	Based on results of Item 2 above, determine design and any engineering required.	10/91
4.	Experimenters review design to ensure that controls do not preclude any science.	11/91
5.	Install controls.	10/92

Costs: None significant.

References: None

Finding No.: RRP.8-1 Instruments

Finding Description: **No program or procedures are in place to ensure that portable and fixed emergency instruments meet the requirements of ANSI N320, N323, and N42.17C.**

Code: Category III

Compliance Protocol: None

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: This finding addresses the same issue as Finding RP.8-4. See response to Finding RP.8-4.

Root Causes:

Inadequate policy implementation and inadequate resources

Planned Actions and Schedules:

This concern is fully addressed by actions listed in response to Finding RP.8-4.

Costs: Cost is reported in Finding RP.8-4.

References: DOE Order 5480.11
DOE/EH 0135
ANSI N320
PNL-SA-13346/CONF-840774

Finding No.: RRP.10-1 Control of Low-Level Contamination

Finding Description: **Current contamination and radiation monitoring capabilities and policies are not adequate to prevent the spread of low-level radioactive contamination outside of controlled areas.**

Code: Category III

Compliance Protocol: DOE Order 5480.11 (12-21-88) Section 9.g.(4)(c) "*Personnel and Personal Property Contamination Monitoring* shall be provided, as appropriate, and used immediately prior to or after exits from radiological areas established to control surface or airborne radioactive contamination. If monitoring is performed after the exit, appropriate controls shall be implemented to prevent the loss of control of contamination."

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: This is a previously identified noncompliance. Background radiation in many areas prevents the monitoring for contamination immediately prior to or after the exit from a contamination area. Shielding booths and additional personnel contamination friskers have been requested. Very high source of contamination exists in the reactor pool and associated systems. Action to remove the source from the reactor pool and decontaminate the associated systems has been requested.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Obtain four shielded frisking booths and install at contamination area exits.	6/92
2.	Obtain four additional personnel contamination friskers to be used in conjunction with the shielded frisking booths.	6/92
3.	Remove Europium source from the reactor pool and decontaminate the associated systems, as previously planned.	10/91

4. Improve the training of radiation workers who work with contamination.	Complete
5. Improve availability and quality of protective clothing and self-monitoring radiation dosimeters.	8/91
6. Inform personnel of the standing practice that personnel who knowingly violate the basic safety precaution will be subject to positive discipline.	8/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
2	—						
3	—						
4	—						
5	20	5					25
Status:							
Funded	20						
Requested		5					
New							$25

Type of funds: Capital
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1		60	5				65
Status:							
Funded							
Requested							
New		60	5				$65

References: None

Finding No.: RRP.10-2 Waste Minimization

Finding Description: **Waste minimization, through surveillance and proper segregation of contaminated material, is not effectively performed.**

Code: Category III

Compliance Protocol: Best Management Practice

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: Recent emphasis on control of contamination with a concurrent tightening of limits and an improvement in detection instruments and techniques has resulted in the necessity to change the methods of handling protective garments, and other potentially contaminated items. As these practices become stabilized and new protective clothing is procured, then emphasis on the minimization of waste will be returned to its former higher level. This concern or finding has been recognized previously.

Also see Finding WM/BMPF-2.

Root Causes:

Inadequate management approach and ambiguous requirements or expectations; recent policy changes relative to contamination control resulted in a lag in practices leading to waste minimization.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Review practices and procedures to find areas requiring improvement aimed at waste minimization and document review.	6/91
2.	Train and certify appropriate division members, including all ROs and SROs, as low-level waste generators.	6/91
3.	Initiate practices for contamination control and waste segregation as appropriate, based on the training scheduled above.	6/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	7						7
2	9						9
3	9						9
Status:							
Funded	25						
Requested							
New							$25

References: None

Finding No.: RRP.11-1 Addressing ALARA Issues

Finding Description: **As low as reasonable achievable (ALARA) issues are not always being reviewed and addressed when Radiation Work Permits and Posted Regulations are issued.**

Code: Category III

Compliance Protocol: DOE Order 5480.11 (12-21-88) Section 8.b. *As Low as Reasonably Achievable (ALARA).* "An approach to radiation protection to control or manage exposures (both individual and collective to the workforce and general public) as low as social, technical, economic, practical, and public considerations permit. As used in this Order, ALARA is not a dose limit but a process, which has the objective of dose levels as far below applicable limits of the Order as reasonably achievable."

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: Radiation Work Permits and Posted Regulations are part of the ALARA process. Due to the concern for ALARA within the Research Reactors Division facilities and in particular the High Flux Isotope Reactor (HFIR), radiation work permits (RWP) and/or Posted Regulations (PR) are written for many jobs which might not normally be required by ORNL Health Physics procedures. This is done in an effort to document as much as possible the dose received at our facilities. The result is that many RWPs and PRs are written and our percentage of documented dose is increased which is in keeping with ALARA. The present review process for ALARA issues is considered adequate since it contains the following elements:

(a) The RWP and/or Posted Regulation is written by the Radiation Protection Technician.

(b) The RWP and PR are reviewed by the Reactors Complex Radiation Protection Leader.

(c) The RWPs and PRs and their collective dose are documented in the Monthly Radiation Protection Reports.

(d) The RWPs and PRs all have had low exposures associated with them. In fact the exposures documented in the majority of our RWPs would not have required that an RWP be issued for the activity.

See Finding RP.11-1.

Root Cause:

Ambiguous requirements or expectations; there was no demonstrated need for the review of the RWPs and/or PRs by personnel outside of the present review process, such as the ORNL Reactors ALARA engineer.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	RRD Radiation Control Officer (RCO) review monthly those post work (completed) RWPs with a collective dose of 10 mrem or more. RRD RCO make those or any other post work RWPs available to the ORNL Reactors ALARA engineer for review and comment as he/she may desire.	Complete
2.	Submit ALARA plans for unusual, non-routine, potentially high exposure jobs to the ORNL Reactors ALARA engineer for review.	Complete
3.	Revise Research Reactors Division Administrative Policies and Procedures Manual, procedure RRAP-2.2, Radiation Protection to establish the requirement of Action 1 and 2.	6/91

Costs: None significant

References: None

3.4.14 Personnel Protection

Finding No.: RPP.1-1 Review of RRD

Finding Description: **Documented periodic internal appraisals, audits, or assessments of Research Reactors Division activities and facilities by professional industrial hygiene and industrial safety personnel have not been performed, as required in DOE 5480.10.**

Code: Category III

Compliance Protocol: DOE Order 5480.10

Priority: Energy Systems Risk Weight 0
Tiger Team Action Plan Priority 2

Response: During the first quarter of CY 1991, individual Industrial Hygiene Section professionals will be assigned to provide oversight for particular divisions. Once these assignments have been made, periodic assessments of industrial hygiene concerns at Research Reactors Division facilities will be scheduled, the assessments will be conducted, and the results will be documented.

In addition, the ORNL Safety Manual will be revised to reflect current DOE, OSHA, and industry requirements (see PP.2-1, Item 5).

Root Causes:

Inadequate oversight, poorly defined roles and responsibilities, and inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Assign Industrial Hygiene Section staff members to provide oversight for particular divisions (see Finding RPP.4-1).	Complete
2.	Develop schedule for periodic assessments of RRD facilities and operations by Industrial Hygiene and Industrial Safety. Assessments will be based on established roles and responsibilities covering all RRD facilities.	6/91
3.	Begin periodic assessments, including appropriate documentation.	6/91

Costs:

Type of funds: Overhead
Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	4						4
2	2						2
3	11	*					11
Status:							
Funded	17						
Requested							
New							$17

*Estimated annual ongoing cost: $30K beginning FY 1992.

References: DOE Order 5480.10

Finding No.: RPP.2-1 ORNL Safety Manual

Finding Description: **The ORNL Safety Manual has not been maintained as a controlled document and does not reflect current DOE, OSHA, or industry consensus requirements.**

Code: Category III

Compliance Protocol: ANSI/ASME NQA-1, Quality Assurance Program Requirements for Nuclear Facilities

Energy Systems ESS.6.1, Document Control

ORNL X-ESH-6, ORNL ES&H Procedures Control System

ORNL QA-L-6-100, Document control

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 2

Response: This action plan is designed to correct this deficiency. The ORNL Safety Manual will be maintained as a controlled document. All present procedures will be reviewed and revised, as needed, to reflect current DOE, OSHA, and industry consensus requirements. New procedures will be created, as appropriate, to ensure that industrial safety requirements are documented and are made available to ORNL line management.

See Action Plan PP.2-1.

Root Causes:

Inadequate policy, inadequate policy implementation, and insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Send current table of contents and controlled document to manual holders to sign verifying that they presently possess the manual assigned to them and that the manuals are up-to-date.	3/91

Costs: See Action Plan PP.2-1

References: DOE Orders 5480.4 and 5483.1A

Finding No.: RPP.2-2 Safety Personnel Involvement with Safety Work Permits

Finding Description: **Involvement of professional industrial safety personnel in the issue of safe work permits is not required by ORNL procedures and documentation.**

Code: Category III

Compliance Protocol: Best Management Practice

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: There is no requirement under the present administrative controls system for an industrial safety professional to review or approve safety work permits (SWPs). Not having an independent review of SWPs increases the probability of an accident or mishap as a result of not having a trained professional review the work being proposed. The decision to have an independent review of the SWP by industrial hygiene personnel is made by the maintenance coordinator or facility manager.

Due to the number of industrial safety and industrial hygiene personnel on the Laboratory staff and the sheer volume of SWPs which are generated on a daily basis, it may not be prudent to have a member of the two staffs review every SWP. However, a systematic process is warranted to ensure that certain types of work proposals are reviewed by trained professionals.

Root Cause:

Inadequate policy

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Evaluate the existing SWP procedure with respect to required reviews by industrial hygiene and industrial safety personnel. Revise the procedure to include a process by which line management can objectively determine which SWPs require independent reviews by safety professionals.	6/91

Costs:

Type of funds: Overhead
Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	5						5
Status:							
Funded	5						
Requested							
New							$5

References: None

Finding No.: RPP.2-3 Updating of RRD Manuals

Finding Description: **ORNL policy and procedures do not ensure that the Research Reactors Division is using the most recent edition of safety and health program manuals, as required by NQA-1.**

Code: Category III

Compliance Protocol: Best Management Practice

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 3

Response: The current Laboratory system does provide a procedure (SPP-X-AD-1) for divisions, such as RRD, to provide input during the document review cycle before final document approval. The procedure calls for all Standard Practice Procedures to be distributed for review to the divisions before they are approved for implementation to ensure, at a Laboratory level, that procedures that are generated receive a consistent technical or administrative review and do not represent a conflict unresolvable with other division requirements. This procedure has not always been consistently followed.

ORNL does have a Measurements Assurance group who maintains a database and regulates controlled copies of procedures to ensure that the most recent edition is utilized.

Integrated administrative systems and controls for providing comprehensive guidance is the subject of the action plan in response to Finding MF-2, while the flowdown of ES&H policies and requirements is the topic of the action plan for Finding OA.1-1. The other issues raised in this finding are resolved by the actions included in those findings.

Root Cause:

Poorly defined roles and responsibilities; the procedure review process cycle by originators of laboratory manuals is not always adequate.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Submit an RRD letter to the originators of the ORNL Health Physics Manual, Safety Manual, and Procedures for Industrial Hygiene Programs Manual indicating the need to receive a draft of generated procedures for concurrence before they are formally approved and issued for use within ORNL.	Complete
2.	RRD request that ORNL management remind document originators to comply with the review process in SPP X-AD-1 (Administration of ORNL Procedures) for functional, discipline or multiple-division operating procedures.	Complete
3.	Conduct QA audit.	11/91

Costs: None significant

References: ORNL Standard Practice Procedures Manual SPP-X-AD-1

Finding No.: RPP.2-4 ORNL Hoisting and Rigging Equipment

Finding Description: **The hoisting and rigging equipment at ORNL does not conform to current OSHA requirements as documented in 29 CFR 1910 or to the DOE Hoisting and Rigging Manual.**

Code: Category III

Compliance Protocol: 29 CFR 1910 and the DOE Hoisting and Rigging Manual

Priority: Energy Systems Risk Weight 405
Tiger Team Action Plan Priority 2

Response: ORNL Safety Manual Section IS-7.1 requires: the frequent, periodic inspection and load testing per OSHA and DOE H&R Manual; the Engineering division to be responsible for design evaluation/review and procurement and installation of equipment; the P&E division to be responsible for modification and maintenance that complies with the engineering standards; and the periodic inspection and load tests to be performed by the QE&I personnel. The detailed requirements of OSHA and the DOE H&R Manual are to be found in the QE&I Procedures, SSI 220 through SSI 229. These procedures control the actions of the QE&I personnel. Individual operating divisions such as P&E and RRD will have to address the responsibility for frequent inspection and special lifts to meet the intent of IS 7.1.

Root Cause:

Inadequate policy implementation; incomplete flowdown policy standards fail to ensure appropriate control for hazardous operations.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue revised QE&I Procedures to include all the requirements of OSHA and the applicable sections of DOE H&R Manual.	5/91
2.	Issue revised IS 7.1 to require all the requirements of 29 CFR 1910.179 and the applicable parts of the DOE H&R Manual.	11/91
3.	Conduct formal presentations to relevant divisions on the updates to the Safety Manual and the QE&I Inspection Procedures.	12/91

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC 03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	2						2
2	2						2
3	4	*					4
Status:							
Funded	8						
Requested							
New							$8

*Estimated annual ongoing costs: $4K beginning in FY 1992.

References: ORNL Safety Manual

Finding No.: RPP.3-1 Industrial Safety at TSF

Finding Description: **ORNL has not effectively controlled industrial safety hazards at the Tower Shielding Facility (TSF). Conditions observed were not in compliance with 29 CFR 1910.**

Code: Category II

Compliance Protocol: DOE Order 5483.1A (6-22-83) Section 1 (Purpose) "To establish requirements and procedures to assure that occupational safety and health standards prescribed pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, and the DOE Organization Act of 1977, provide occupational safety and health protection for DOE contractor employees in Government-owned contractor-operated (GOCO) facilities which is consistent with the protection afforded private industry employees by the occupational safety and health standards promulgated under the Occupational Safety and Health Act of 1970 (OSHA), Public Law 91-596."

Priority: Energy Systems Risk Weight 356
Tiger Team Action Plan Priority 2

Response: While this is not a new concern, it was not previously considered to represent a significant concern due to the restricted access to the facility, the training of assigned personnel and the good safety record achieved at the facility. ORNL will implement a program to upgrade control of industrial safety hazards at the Tower Shielding Facility. This program will consist of remedial actions for currently identified hazards and enhanced control to preclude future safety hazards from occurring.

Also see Finding RMA.3-1.

Root Causes:

Inadequate management approach and insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
Immediate		
1.	Remove tripping hazards or provide temporary caution signs against hazard.	Complete
2.	Correct the improper stacking of paraffin shielding blocks.	Complete
3.	Remove the improperly engineered fixed ladder.	Complete
4.	Correct poor housekeeping in the storage shed on the pad and remove all uninspected choker cables.	Complete
5.	Implement a second maintenance day per week to remedy immediate concerns as a temporary measure.	Complete
Near Term		
6.	Contain exposed asbestos material.	Complete
7.	Inspect chokers, hoists and cranes.	Complete
8.	Correct the National Electric Code violations.	Complete
9.	Improve housekeeping on the outside pad and storage areas as follows: • Identify tripping hazards on the pad with yellow and black paint. • Separate material in the Butler Building by marked aisles. Move tanks of hazardous material away from the control aisle to prevent puncture by the forklift.	Complete
10.	Install permanent caution barriers to prevent tripping on the tower lifting cable. (Interim abatement measure is in #1 above.)	5/91
11.	Plan, arrange for, schedule, and commence continuing routine industrial safety oversight inspections. (Interim abatement measure for #13 below.)	5/91

12.	Transmit revised budgets to DOE for the increased FY-92 and subsequent costs of completing long term items and controlling industrial safety hazards at the TSF on a continuing basis. Include experiment disposal costs.	Complete
13.	Issue RRD Safety Plan to include requirement for ES&H industrial safety personnel to conduct and document periodic walkthroughs of site facilities.	10/91
Long Term		
14.	Remove all exposed asbestos-containing materials.	9/93

Costs:

Type of funds: Research Programmatic
Source of funds: NE AF20

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	0.5						0.5
2	0.5						0.5
3	1.0						1.0
4	—						
5	—						
6	1						1
7	2						2
8	26						26
9	10						10
10	5						5
11	—						
12	—						
13	—						
14			50				50
Funded	46						
Requested							
New			50				$96

References: Also see Action Plan for Finding RMA.3-1 Maintenance of B Reactor Areas

Finding No.: RPP.3-2 Carcinogens in RRD Facilities

Finding Description: **Carcinogens present in Research Reactors Division facilities are not being managed in accordance with DOE 5480.10.**

Code: Category III

Compliance Protocol: DOE Order 5480.10

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 2

Response: Findings leading to this concern were addressed in the ORNL self-assessment report of October 1990. ORNL issued Industrial Hygiene Procedure (IHP)-13, "ORNL Chemical Carcinogen Control Program" on October 8, 1990. This procedure went through an RRD PORC Review meeting on November 2 and 5, 1990, and was endorsed for use with the following recommendation: "Due to the numerous requirements for supervisors, Health Physicists, Division Safety Officer and others, its recommended that Industrial Hygiene develop an index of requirements against job assignments to assist personnel in the performance of their responsibilities. This index would assist the training department in determining training requirements and it would assist new personnel in identifying their responsibilities in a concise document." See Finding IH.5-2.

Root Cause:

Insufficient resources; limited resources has resulted in incomplete implementation of DOE Order 5480.10.

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Complete a current inventory of all chemical carcinogens used or stored at RRD facilities. (A chemical inventory was requested in a memo dated October 23, 1990 to the RRD Director, this action to be completed by January 4, 1991.)	Complete
2.	Provide Industrial Hygiene Section with copies of inventory, and request that they can identify and document existing and potential occupational carcinogen hazards.	2/91
3.	Request funding for this action plan to manage RRD carcinogens.	4/91

4. Properly label identified carcinogens. 2/91
5. Post identified regulated areas. 2/91
6. Develop and complete job-specific carcinogen training for appropriate personnel. 8/91
7. Perform periodic audits for compliance with carcinogen control program. 10/91
8. Issue emergency procedures for accidental releases or spills of chemical carcinogens. 12/91

Costs:

Type of funds: Research Programmatic

Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	—						
4	—						
5	—						
6	—						
7	—						
8		20	20				40
Status:							
Funded							
Requested							
New		20	20				$40

References: IHP-13, "ORNL Chemical Carcinogen Control Program"

Finding No.: RPP.3-3 ORNL Electrical Program

Finding Description: **ORNL has not formulated a program to prevent the recurrence of OSHA electrical safety and National Electrical Code compliance deficiencies.**

Code: Category III

Compliance Protocol: DOE Order 5483.1A requires compliance with Subpart J of 29 CFR 1910 and the National Electrical Code.

Priority: Energy Systems Risk Weight 55
Tiger Team Action Plan Priority 3

Response: Correction of existing electrical OSHA deficiencies is being addressed in Findings WS.4-4, WS.4-5, and WS.4-6. This action plan addresses prevention of additional electrical OSHA noncompliances through improved craft and supervisory training and more effective inspection of electrical work.

Root Causes:

Inadequate training and inadequate management commitment

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Provide craft and supervisor initial training on necessity for full compliance to electrical OSHA requirements and need for excellences in job performance. (See Finding MA.2-2, Action 7.)	Complete
2.	Expand current electrical OSHA inspection program from two jobs per month to 20 percent of new electrical installation jobs each month. Noted deficiencies will be scheduled for correction or documented for acceptable usage.	Complete
3.	Train two engineers in electrical OSHA inspection.	6/91
4.	Provide basic electrical OSHA training to all electrical crafts and supervisory personnel. (see Finding WS.4-4, Action 7.)	
5.	Revise "Oak Ridge National Laboratory, Conformance Plan for Occupational Safety and Health Administration Subpart S" to document prevention program.	9/91

6. Initiate annual refresher training for electrical crafts and supervisors emphasizing code changes and problems detected by inspections. 6/92

Costs:

Type of funds: Overhead

Source of funds: Division Administration

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	—						
3	3						3
4	—						
5	—						
6		*					
Status:							
Funded	3						
Requested							
New							$3

*Estimated annual ongoing cost: $8K, beginning FY 1992.

References: Subpart J, 29 CFR 1910, National Electrical Code

Finding No.: RPP.4-1 RRD Monitoring Program

Finding Description: **A periodic monitoring program for chemical, physical, and biological stresses at Research Reactors Division activities has not been developed or implemented, as required by DOE 5480.10.**

Code: Category III

Compliance Protocol: DOE Order 5480.10

Priority: Energy Systems Risk Weight 53
Tiger Team Action Plan Priority 2

Response: This finding was based on several related findings, which said:

- A database of surveillance measurements on physical, chemical, and biological monitoring at Research Reactors Division (RRD) facilities was not available.
- Safety and industrial hygiene professional staff were not making and documenting periodic walkthroughs or assessments at RRD facilities before 1990.
- Available personnel sampling data did not provide sufficient information to meet ANSI requirements for monitoring of respirator usage.

Measurements of physical, chemical, and biological monitoring are currently available in either database or hard-copy form. Air sampling data are available on the OHIS system or the MUMPS database. High-noise sources/areas are also entered into a database. Biological monitoring data are contained in a hard-copy file. The "building" files associated with RRD facilities contain other physical data.

Industrial Hygiene staff have been conducting walkthrough surveys and assessments as part of the Comprehensive Facility Survey. More detailed assessments will be conducted by the industrial hygiene staff member who is assigned to the RRD (see corrective action item 1 below). Specific actions related to routine and special monitoring are described in the action plan for IH.4-1. Other corrective actions planned to address these findings are listed below.

Root Causes:

Inadequate oversight and inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Assign Industrial Hygiene Section staff members to provide oversight for particular divisions. (Same action item as contained in Finding RPP.1-1 Action Plan)	4/91
2.	Establish a field surveillance schedule to ensure that a monitoring program is appropriately implemented for divisions.	10/91

Costs:

Type of funds: Overhead
Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	4						4
2	47	*					47
Status:							
Funded	51						
Requested							
New							$51

*Estimated annual ongoing cost: $52K starting in FY 1992.

References: DOE Order 5480.10

Finding No.: RPP.5-1 HAZCOM Program at RRD

Finding Description: **ORNL has not implemented a hazards communication program that fulfills all requirements of 29 CFR 1910.1200 or 29 CFR 1910.1450.**

Code: Category III

Compliance Protocol: 29 CFR 1910.1200 and 1910.1450

Priority: Energy Systems Risk Weight 353
Tiger Team Action Plan Priority 2

Response: This finding was based on several related findings.

- While an inventory of chemicals was present in most Research Reactors Division (RRD) facilities visited, these inventories were incomplete in each case.

- Some laboratory areas within RRD facilities were observed to contain listed carcinogens or suspect carcinogens. These areas were not posted in accordance with requirements in DOE Order 5480.10.

- Material Safety Data Sheets were not available for many of the chemicals present at the time of the appraisal.

- Policy for obtaining Material Safety Data Sheets was inconsistent. In some cases, the sheets were present in notebooks located in the work area. In other cases, they were available on a central computer data base or through the central Laboratory ES&H Division Office.

- Training of personnel concerning workplace hazards was incomplete. Some employees indicated that they had not had any formal hazards communication training or job-specific training; other training (supervisor training) had not been developed.

On September 12, 1990, the Industrial Hygiene Section issued procedure IHP-01, "ORNL Hazard Communication Program," which was designed to address the requirements of OSHA's HAZCOM regulation. Many of these findings will be corrected once additional staff members are hired for administration of the HAZCOM program. See also the responses to Finding Nos. 4.5.1.15.2 (PP.5-1) and 4.5.1.17.2 (IH.6-1).

Root Causes:

Insufficient resources and inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Assign two additional staff members to conduct HAZCOM surveillance [see response to Finding 4.5.1.17.2 (IH.6-1)].	3/91
2.	Compile a complete chemical inventory for all ORNL divisions [see response to Finding 4.5.1.17.2 (IH.6-1)].	3/91
3.	Issue SOPs for HAZCOM surveillance of areas throughout the Laboratory [see response to Finding 4.5.1.17.2 (IH.6-1)].	5/91
4.	Begin HAZCOM surveillance throughout ORNL [see response to Finding 4.5.1.17.2 (IH.6-1)].	6/91
5.	Issue an informational bulletin emphasizing the importance of MSDSs and how to access them [see response to Finding 4.5.1.17.2 (IH.6-1)].	3/91

Costs: See the cost summary for Finding IH.6-1.

References: 29 CFR 1910.1200
29 CFR 1910.1450
DOE Order 5480.10

3.4.15 Fire Protection

Finding No.: RFP.1-1 Organization and Administration of Fire Protection Program

Finding Description: **The Fire Protection organization and administration necessary for the effective implementation and control of the fire protection program are not in place, as required by DOE 5480.7.**

Code: Category III

Compliance Protocol: DOE Order 5480.7

Priority: Energy Systems Risk Weight 5
Tiger Team Action Plan Priority 2

Response: This item was earlier identified on a DOE-ORO Multi-Disciplinary Appraisal in April 1990. A search for an acceptable data tracking system was initiated immediately involving contacts with all energy systems facilities and review of multiple mainframe and pc-based systems. The final selection was a recently modified, pc-based system called "Evaluation Database System" (EDS).

The EDS program has been installed on the Fire Protection computer hard disk, however, the final selection and setup of program format is not complete.

Completion of this program will involve selection and programming of the database management format, selection and programming of multiple report formats, selection and programming of specified records to be sorted and generated as printed reports and the initial installation/follow-up of all report data to be tracked on the data base. In addition, personnel assigned to input and maintain records will need to be trained on use of the system.

The EDS program for tracking data shall be completed as planned, providing an appropriate system for tracking fire protection activities, fire protection deficiencies, the completion of recommendations or findings, fire protection engineering surveys, and fire protection system inspections.

Root Causes:

Inadequate policy implementation and insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Design a data base management system for EDS.	9/91
2.	Complete programming of EDS data base management system.	1/92
3.	Train designated personnel for system operation.	2/92
4.	Implement EDS data base system.	6/92

Costs:

Type of funds: Overhead
Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2		3					3
3		3					3
4	—						
Status:							
Funded							
Requested							
New		6					$6

References: Evaluation Database System Documentation (EDS), FD-EDS-90, 5/31/90

Finding No.: RFP.4-1 Sprinkler System in Bldg. 7902

Finding Description: **The Research Reactors Division is operating a wooden cooling water tower (Bldg. 7902) that is protected with a sprinkler system whose design is not in accordance with NFPA 13, DOE 5480.7, and 5480.4.**

Code: Category III

Compliance Protocol: NFPA 13, DOE Order 5480.7, and DOE Order 5480.4

Priority: Energy Systems Risk Weight 53
Tiger Team Action Plan Priority 2

Response: A comprehensive fire analysis of HFIR was performed on May 26, 1989, by Professional Loss Control, Inc., to evaluate the HFIR facility for compliance with DOE Orders 6430.1A and 5480.7. At this time, the deficiency of the dry pipe sprinkler protection system at the cooling tower was identified. A major fire protection upgrade was planned and budgeted, which included the cooling tower upgrade, but due to escalating cost the cooling tower upgrade was delayed.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request additional funds.	Complete
2.	Contingent upon receipt of funding, design new piping system.	11/92
3.	Contingent upon receipt of funding, install new piping system.	7/93

Costs:

Type of funds: Capital—ARIMS
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2			200				200
3			600				600
Status:							
Funded							
Requested							
New			800				$800

References: NFPA 13, DOE Order 5480.7, and DOE Order 5480.4.

Finding No.: RFP.4-2 Smoke Detection Systems at the HFIR

Finding Description: **The High Flux Isotope Reactor has no smoke detection systems in the control rooms and certain critical areas, contrary to NFPA 72-E, "Automatic Smoke Detectors."**

Code: Category III

Compliance Protocol: NFPA 72-E

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 3

Response: A comprehensive fire analysis of HFIR was performed on May 26, 1989, by Professional Loss Control, Inc., to evaluate the HFIR facility for compliance with the DOE Orders 6430.1A and 5480.7. At this time, the fire detection system was found to be out of compliance with NFPA 72-E. Since this time a major fire protection upgrade has been planned, developed, and scheduled with primary funding to be supplied through the Accelerator Reactor Improvements and Modification (ARIMS) program. This upgrade involves a number of modifications to the piping system and the alarm system including a new smoke detection system.

Upon detecting conditions indicative of fire—smoke, heat, sprinkler, waterflow, or actuation of manual alarm devices—the new fire alarm control equipment will (1) automatically notify building occupants and HFIR operations personnel that a fire emergency exists; (2) automatically notify ORNL emergency response personnel of the emergency; (3) identify the cause of location of the alarm condition through annunciators; and (4) automatically perform appropriate fire and smoke control functions to protect evacuating personnel and essential equipment.

The existing preaction system will be converted to a wet-pipe system and additional sprinklers and piping will be provided in areas that currently do not meet present fire codes. See Finding RFP.4-3.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Redesign the HFIR fire alarm system, including smoke detection in the control room and critical areas.	11/91
2.	Bid, award, and install alarm system.	3/93

Costs:

Type of funds: Capital—ARIMS
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	250	100					350
2		250	100				350
Status:							
Funded	250						
Requested		350	100				
New							$700

References: NFPA 72-E

Finding No.: RFP.4-3 Use of Preaction-Type Sprinklers

Finding Description: **ORNL uses slower, preaction-type sprinklers instead of the faster, wet-type automatic sprinklers, contrary to NFPA 13.**

Code: Category III

Compliance Protocol: NFPA 13

Priority: Energy Systems Risk Weight 53
Tiger Team Action Plan Priority 2

Response: A comprehensive fire analysis of HFIR was performed on May 26, 1989, by Professional Loss Control, Inc., to evaluate the HFIR facility for compliance with the DOE Orders 6430.1A and 5480.7. At this time, the fire detection system was found to be out of compliance with NFPA 72-E. Since this time a major fire protection upgrade has been planned, developed, and scheduled with primary funding to be supplied through the Accelerator Reactor Improvements and Modification (ARIMS) program. This upgrade involves a number of modifications to the piping system and the alarm system.

The existing preaction system will be converted to a wet-pipe system and additional sprinklers and piping will be provided in areas that currently do not meet present fire codes. See Finding RFP.4-2 for related TSA concerns.

Root Cause:

Insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Design HFIR fire protection piping upgrade.	12/91
2.	Install and perform acceptance test of new piping system.	2/93

Costs:

Type of funds: Capital—ARIMS
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	175	50					225
2		140	135				275
Status:							
Funded	175						
Requested		190	135				
New							$500

References: NFPA 72-E

Finding No.: RFP.7-1 Diking and Fire-Resistant Enclosures at the HFIR

Finding Description: **The HFIR oil storage reservoir and hydraulic power unit for elevator operations, and transformer area (Bldg. 7901) have no approved diking and fire-resistant enclosure, as required by NFPA 30.**

Code: Category III, Compliance

Compliance Protocol: The HFIR oil storage reservoir and hydraulic power unit for the 7900 elevator and the transformers near Building 7901 are not in compliance with NFPA 30.

Priority: Energy Systems Risk Weight 51
Tiger Team Action Plan Priority 2

Response: These deficiencies in the fire protection of the HFIR transformer area (Bldg. 7901) and the HFIR elevator oil reservoir and hydraulic power unit were documented in the *Fire Hazards Analysis of High Flux Isotope Reactor (HFIR)* dated May 26, 1989, by Professional Loss Control, Inc. (PLC). Section 4.6 of the *Fire Hazard Analysis* did not require automatic sprinkler protection for the transformer area. The transformers are separated from Building 7901 by a blank 12" concrete block wall which is considered to be adequate by PLC. Direct thermal radiation due to fire causing damage from one transformer to another is prevented by blank fire walls between transformers. Per PLC's analysis, the adjacent beam tube bridge structure is adequately protected from fire damage until such time as the ORNL Fire Department can respond with hose streams. Without confinement for any oil which may be discharged from transformers, other unprotected steel columns may be exposed to potential fire damage.

A report titled *DOE Oak Ridge Operations ESH & QA Appraisal Oak Ridge National Laboratory* and dated April 1990 identified the need to replace the oil-filled transformers located at the HFIR with dry type transformers or separate the transformers from air intakes and provide improved diking and drainage. In addition, the report stated that the transformers should be provided with automatic sprinkler protection. This finding was also documented by the ORNL Fire Protection Engineering group on August 30, 1990, in a report entitled *Expected Completion Dates For ORNL Fire Protection Self-Assessment Items.*

The requirement for providing diking for the Building 7901 transformers was also documented in the October 1990 Research Reactors Division (RRD) Self-Assessment Report.

The need for installation of diking for oil-filled transformers or replacement of the oil-filled transformers with dry type transformers has been recognized by ORNL. Line item projects for fiscal years 1994 and 1995 are being prepared for submission.

As part of the planned action, an evaluation of transformer diking versus replacement of the transformers with dry type transformers will be performed.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding.	Complete
2.	Complete design, review, and approval of Building 7901 transformer diking and sprinkler addition or transformer replacement. Review to include ORNL FP and EM&C.	9/91
3.	Completely install and perform acceptance test for Building 7901 transformer diking or dry-type transformer installation.	4/92
4.	Complete design, review, and approval of Building 7900 elevator oil storage/hydraulic unit diking and containment. Review to include ORNL Fire Protection Engineering and ORNL Environmental Compliance and Monitoring.	9/91
5.	Completely install and perform acceptance test for Building 7900 elevator oil reservoir and hydraulic power unit diking and containment design.	1/92

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	15						15
3	—	80					80
4	15						15
5		50					50
Status:							
Funded							
Requested	30	10					
New		120					$160

References: Research Reactors Division (RRD) Self-Assessment Report, October 1990

Fire Hazard Analysis (FHA) of High Flux Isotope Reactor, dated May 26, 1989

DOE Oak Ridge Operations ESH & QA Appraisal ORNL, April 1990

Finding No.: RFP.7-2 Potential Fire Hazards at the HFIR

Finding Description: **At the High Flux Isotope Reactor, a number of areas do not comply with NFPA 101, "Life Safety Code Standard."**

Code: Category III

Compliance Protocol: NFPA 101

Priority: Energy Systems Risk Weight 50
Tiger Team Action Plan Priority 2

Response: The following fire protection deficiencies were documented in the *Fire Hazards Analysis of the High Flux Isotope Reactor (HFIR)*, dated May 26, 1989, by Professional Loss Control, Inc. (PLC).

- A 45-kVA transformer and electrical conduits are located in a stairwell designated as an exit.
- A door frame located at 102(B) is not a labeled door frame according to NFPA 101, "Life Safety Code Standard."
- The HFIR heating, ventilating, and air conditioning system equipment room is not totally separated from the remainder of the facility.

The issue of the unlabeled door frame, located at room 102(B) was also documented in a report titled *Research Reactors Division Self-Assessment Report*, dated October 1990. This report stated the following about this finding by the 1989 FHA:

> "The justification and relevance of replacing the unlabeled door frame to Room No. 102 and adding fire dampers in rooms 102, 102A, 102B, and 105B is not clearly defined."

The self-assessment further states that:

> "An engineering evaluation should be prepared by the ORNL Fire Protection Engineering Staff to assess the need for replacement of the door frame in room No. 102, and the addition of fire dampers in rooms 102, 102A, 102B, and 105B is actually needed. An engineering justification or reliance on "equivalent" protection instead of the specified hardware changes will be adequate, if it can be shown the existing structure satisfies the degree of protection required."

The following was also documented in the RRD Self-Assessment Report and by ORNL Fire Protection Engineering.

- Conduits and piping penetrate through existing fire walls.

The following was documented in a report titled *DOE Oak Ridge Operations ESH & QA Appraisal Oak Ridge National Laboratory*, dated April 1990.

- The HFIR air conditioning ducts are not equipped with smoke detectors or fire dampers.

Root Causes:

Ambiguous requirements or expectations and insufficient resources

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Request funding.	Complete
2.	Complete the design for the removal of the 45 KVA transformer and associated conduits in stairwell in order to conform with NFPA 101.	2/92
3.	Prepare an engineering evaluation to assess the need for replacement of the door frame in room No. 102, and the addition of fire dampers in rooms 102, 102A, 102B, and 105B is actually needed. An engineering justification or reliance on "equivalent" protection instead of the specified hardware changes will be adequate if it can be shown the existing structure satisfies the degree of protection required.	4/92
4.	Complete the design to provide total separation of the HFIR HVAC equipment room from the remainder of the facility.	6/92
	a. Non-labeled (not fire-rated) doors are provided at the opening to the HVAC Equipment Room.	
	b. Ducts penetrating the walls to the HVAC Equipment Room are not provided with rated fire dampers.	
	c. Pipe openings through the walls of the HVAC Equipment Room are not sealed.	

5.	Complete the design of the fire penetration seals needed to properly seal conduit and piping penetrations through existing fire walls.	7/91
6.	Complete the design for smoke detectors or fire dampers in HFIR air conditioning ducts.	4/93
7.	Complete installation of the 45-kVA transformer and associated conduit relocation.	12/92
8.	Complete installation of the corrective action/design for Action 3.	11/92
9.	Complete installation of the design for separation of the HFIR HVAC equipment room from the remainder of the facility.	4/93
10.	Complete installation of the proper sealing of conduit and piping penetrations through existing fire walls.	12/91
11.	Complete installation of the design to install smoke detectors or fire dampers in HFIR air conditioning ducts.	12/93

Costs:

Type of funds: Research Programmatic
Source of funds: ER-KC03

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	—						
2	3	2					5
3	1	3					4
4	1	5					6
5	4						4
6		2	2				4
7	2	7					9
8		10	9				19
9		15	12				27
10	6	4					10
11		15	8	5			28
Status:							
Funded	17						
Requested		19	10				
New		44	21	5			$116

References: Fire Hazards Analysis of the High Flux Isotope Reactor (HFIR), dated May 26, 1989

Research Reactors Division Self-Assessment Report, dated October 1990

DOE Oak Ridge Operations ESH & QA Appraisal ORNL, dated April 1990

3.5 MANAGEMENT FINDINGS, RESPONSES, AND PLANNED ACTIONS

3.5 MANAGEMENT FINDINGS, RESPONSES, AND PLANNED ACTIONS

Finding No.: MF-1 ES&H Goals and Objectives

Finding Description: **The organizational goal of ES&H compliance has not been supplemented with subordinate goals at all levels of the organization which are understood and, therefore, "owned."**

Code: Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 99
Tiger Team Action Plan Priority 3

Response: The responsibility for establishing ES&H specific standards and requirements begins with the Central ES&H organization to provide both compliance and consistency across all Energy Systems. The actions listed will be executed in the context of Energy Systems guidance on policy, procedure, and specific requirements.

Improvements will be made in the way ORNL translates the overall Laboratory goals and objectives for ES&H to specific actions that are expected of all staff members. This action plan and the interrelated action plans noted address those improvements.

A hierarchy of goals will be defined that identifies specific, attainable, and measurable objectives appropriate for each level in the organization. The Performance Planning and Review System, the Position Charter policy, and regular staff meetings will be modified and used to formally establish these goals with appropriate interactive review and approval. These formal mechanisms will provide opportunities for improved self-assessment, monitoring, and control of attainment of ES&H goals. Existing and improved communication systems at the Laboratory (e.g., training courses, safety meetings, newsletters) will be used to foster two-way communication and provide positive reinforcement for attainment of mutually developed goals.

Root Cause:

Inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue consistent, ORNL-wide ES&H goals that stress specific, positive, attainable, and measurable objectives and are applicable in hierarchical fashion for the specific position of each laboratory staff member.	6/91
2.	Issue policies and procedures for implementation of position charters, organization charters, and committee charters, which include guidelines for the incorporation of ES&H accountability and authority (see Finding MF-4).	
3.	Communicate established goals to bargaining unit employees so as to ensure full understanding of ES&H goals that are applicable to their work places and functions. Involve the union's health and safety representatives in communications efforts and fully utilize the company/union contracts' safety and health provisions.	6/91
4.	Reorient the monthly ORNL Health and Safety Council, Joint Labor/Management Safety Committee, and regular divisional safety meetings into broader ES&H meetings in order to communicate the Laboratory's broader goals.	6/91
5.	Issue an SPP to implement a consistent practice for self-assessment monitoring, line management control, and independent ES&H oversight of planning and attainment of specific ES&H goals by all staff.	9/91

Costs: Costs for actions listed are included in Findings OA.1-4, OA.3-1, MF-3, MF-2, MF-4, MF-5, and MF-6.

References: Environmental Safety and Health Program Action Plan for Martin Marietta Energy Systems, Y/MS-0001, January 1991

Finding No.: MF-2 ES&H Management Systems

Finding Description: **Neither MMES nor ORNL have developed integrated ES&H administrative systems and controls that provide comprehensive guidance, or controls that ensure consistent application.**

Code: Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 102
Tiger Team Action Plan Priority 3

Response: ORNL intends to strengthen its management approach by using a framework modeled after the Institute of Nuclear Power Operations (INPO) Guidelines for Conduct of Operations and as required in DOE Order 5480.19. Conduct of Operations is a management system designed to develop authority, responsibility, and accountability at all levels of an organization. Key elements of the Conduct of Operations philosophy are that individuals take "ownership" for their activities and that management be routinely visible in the workplace to observe and assist where feasible.

In addition, Energy Systems and ORNL recognize the need for a management plan which provides guidance and direction for implementing a cohesive ES&H program. Energy Systems will develop a strategic plan encompassing program goals and objectives; the role to be played by Energy Systems; independent oversight, roles, responsibilities, and authorities; program elements; and reporting. The strategic plan will be a living document updated annually. ORNL will develop an implementing or operational plan to implement the strategic plan. Energy Systems will formalize administration, systems, and controls for the review of ES&H activities and requirements, and their conversion into Energy Systems documents. Policies are being developed in a draft ESH-25, Energy Systems Environmental Safety and Health Policy Statement Procedure. This Policy Procedure will supplement other policy and procedure activities that are currently being formalized within Energy Systems.

See Findings MF-1 and OA.1-1.

Root Causes:

Inadequate policy and inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Initiate Conduct of Operations training for all Laboratory personnel to be completed by 7/91.	Complete
2.	Complete Energy Systems Comprehensive Environmental Review.	Complete
3.	Enter ESH-25, Energy Systems Environmental Safety and Health Policy Statement Procedure into the Energy Systems review/approval process.	3/91
4.	Issue Draft of Energy Systems ES&H Strategic Plan.	Complete
5.	Issue Draft of ORNL ES&H Implementation Plan.	6/91
6.	Issue Energy Systems ES&H Strategic Plan.	9/91
7.	Approve and issue ESH-25, Energy Systems Environmental Safety and Health Policy Statement Procedure.	9/91
8.	Issue ORNL ES&H Implementation Plan.	12/91

Costs:

Type of funds: Overhead
Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
2–4	150	*					150
5	70						70
6	—						
7	—						
8	—						
Status:							
Funded	220						
Requested							
New							$220

*Estimated annual ongoing cost: $100K starting in FY 1992.

Type of funds: Overhead
Source of funds: Division Administration

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	1500						1500
Status:							
Funded	1500						
Requested							
New							$1500

References: Environmental Safety and Health Program Action Plan for Martin Marietta Energy Systems, Y/MS-0001, January 1991

Finding No.: MF-3 Quality Assurance

Finding Description: **ORNL has not fully implemented a comprehensive quality assurance program to ensure the accomplishment of ES&H goals and objectives.**

Code: Compliance

Compliance Protocol: DOE Order 5700.6B AND ANSI/ASME NQA-1

Priority: Energy Systems Risk Weight 126
Tiger Team Action Plan Priority 3

Response: The Energy Systems Quality Director establishes QA policy, ensures flowdown for NQA-1 and other DOE requirements, and performs oversight audits of ES&H programs at ORNL. Energy Systems Policy Procedures, GP-5, "Quality Assurance Program," and GP-7, "Quality," establish line management responsibility for quality achievement and for documentation and implementation of QA programs. The policy and standards at the Energy Systems level are systematically being upgraded to provide better and more specific guidance across Energy Systems.

QA assistance and guidance is provided to the operating divisions by the ORNL Quality Department staff of QA Specialists, or by the QA Coordinators who are appointed and trained to provide QA support in their divisions.

The QA program at ORNL has made considerable progress in the past several years due, in large part, to the High Flux Isotope Reactor experience, which forced acceleration of the implementation of NQA-1.

Some traditional QA roles had become fragmented at ORNL over the past years. On December 1, 1990, ORNL management acted to consolidate several QA roles in the Quality Department. A Quality Assurance Audit Program Manager was named with responsibility for planning and conducting independent technical audits and assisting line management in the areas of surveillances, corrective action reporting, and tracking, occurrence reporting, lessons-learned, and root cause analysis activities. Placement of all these activities in one area will provide ORNL Management with a single system for ensuring that all corrective actions are tracked and trended, and that their closure is verified.

In addition, other activities are planned to strengthen the ORNL QA Program and enhance its ability to aid Management in the accomplishment of ES&H goals and objectives. Job offers have been extended to fill existing vacancies created by movement of QA personnel to the line organization. Funding is being requested for two auditors to assure that an aggressive audit and surveillance schedule is implemented in 1991. Three additional QA Specialists will be hired to replace the part-time QA Coordinators currently being utilized in the research and development areas. The QA Specialists will also work with their division

management to identify requirements and create lists of procedures needed for ES&H support and other important activities. These lists will include personnel responsible for procedure development and prioritized completion dates for each procedure.

The actions described above will enable the line organization to establish a comprehensive QA program which will ensure the accomplishment of their ES&H goals and objectives.

Both configuration management and document control issues are addressed by the performance of Finding MF-3, Action 6. The action requires an assessment of the adequacy of quality affecting procedures. Where deficiencies exist, a procedure development schedule will be prepared.

Adequate independence of staff activities is ensured by the multiple levels of oversight. For example, reviews are conducted at the division, site, and corporate levels by a variety of functional disciples, i.e., quality, safety, environmental, and technical.

Pursuit of Actions 2 and 4 is a high priority and will be initiated upon distribution of available funds. One full-time auditor has already been hired.

Root Cause:

Inadequate policy implementation

Planned Actions and Schedules:

Item/Description	Completion Date
1. Establish Quality Audit Program Manager position with responsibility for audits, surveillance, corrective actions, occurrence reporting, and lessons-learned.	Complete
2. Hire two auditors (see Finding QV.1-4, Item 3).	
3. Issue Laboratory directive requiring division managers to (a) establish a procedure development schedule and update it quarterly and (b) perform assessments of the implementation and effectiveness of their QA programs.	Complete
4. Hire three QA Specialists to replace the QA Coordinators in the R&D divisions (see Finding QV.1-1).	9/91
5. Complete implementation of the CY 91 Audit/Surveillance schedule.	12/91

6. Division managers issue procedures development schedules and QA program assessments. 7/91

7. Analyze QA staffing needs (see QV1-1, Action Item 2).

8. Request funds for QA staffing needs (see QV1-1, Action Item 3).

Costs: All costs have been identified on Findings FR.6-1, QV.1-4, and QV.1-1.

References: DOE Order 5700.6B and ANSI/ASME NQA-1

Finding No.: MF-4 Human Resources

Finding Description: **ORNL management has not communicated personal ES&H responsibility and accountability throughout all levels of the organization by incorporating ES&H elements and criteria into job descriptions and employee performance evaluation systems, and by ensuring that appropriate training is provided to perform the ES&H responsibilities.**

Code: Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 99
Tiger Team Action Plan Priority 3

Response: ORNL will address this management finding through a combination of developing and implementing appropriate new policies and procedures. ES&H goals, responsibilities, and accountabilities will be addressed in the following documents: (1) the Roles and Responsibilities Charters (R&R), and (2) the Performance Planning and Review System (PPR). Establishing the goals and accountabilities in the R&R Charters and the PPRs should ensure that every employee is aware of his/her ES&H responsibilities. Energy Systems does not utilize individual job descriptions for all positions, but the combination of the new R&R and PPR thoroughly addresses this. We will also provide new or improved employee training based on the Laboratory-wide Training Needs Overview assessment now in progress. This assessment is based on DOE regulations and directives. Management will identify tasks and related training.

Root Causes:

Inadequate communications, ambiguous requirements or expectations, and inadequate management commitment

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Issue policies and procedures for implementation of position charters, organization charters, and committee charters, which will include guidelines for the inclusion of appropriate ES&H accountabilities and authorities. (See Finding OA.1-5 and MF-1)	6/91
2.	Instruct implementing managers and supervisors in the development of charters which will address requirements and expectations.	7/91

3. Develop and approve charters for all applicable staff members.	9/91
4. Verify these charters are in place by division audits.	10/91
5. As an interim step, ORNL management will issue a directive to all persons who conduct employee performance evaluations to include a section in their 1991 planning on ES&H.	Complete
6. Include implementation of ES&H performance and goals in the performance evaluation and conduct training for managers and supervisors.	8/91
7. Update training for Division Environmental Protection Officers to incorporate periodic retraining in new or revised ES&H requirements, standards, and implementation guidelines.	9/91
8. Conduct training needs assessment (see Finding TC.1-1 Action Items 3–6).	

Costs:

Type of funds: Overhead

Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1–4	44	*					44
5, 6	22	*					22
7	22	*					22
Status:							
Funded							
Requested							
New	88						$88

*Estimated annual ongoing cost: Items 1–4, $14K; Items 5 and 6, $9K; Item 7, $13K.

References: None

Finding No.: MF-5 Independent Oversight Systems

Finding Description: **Independent ES&H oversight at ORNL is not consistent with DOE requirements or current industry practices, nor is management sufficiently involved in or informed of the status of key ES&H activities.**

Code: Compliance

Compliance Protocol: DOE Orders 5480.5, 5480.6, 5482.1B and 5-1 Memorandum, "Guidance on Environment, Safety, and Health (ES&H) Self-Assessment," dated July 31, 1990

Priority: Energy Systems Risk Weight 135
Tiger Team Action Plan Priority 2

Response: DOE Orders 5480.5 and 5480.6 require the contractor to establish an independent safety review and appraisal system for nuclear and reactor facilities.
DOE Order 5482.1B requires a multidiscipline functional appraisal system for the contractor's environmental, safety, and health (ES&H) programs. All three orders specify the requirements for performing periodic facility and program appraisals which include, as a minimum, functional area reviews spelled out in the orders.

Energy Systems recognized the need for enhanced independent and line oversight of all ES&H Quality functions in early 1988 and established a new policy and approval in late 1988 (GP-13). Starting in 1989, the Quality Director of Energy Systems has led an integrated multidiscipline audit team (much like the Tiger Team) composed of consultant and independent Energy Systems technical experts to each site each year. Likewise, the Martin Marietta Corporation has commissioned the Vice President of Quality to lead MMC teams to perform broad integrated technical audits of the sites on a biannual basis. These Martin Marietta Corporation—Energy Systems—level technical audits are responsive to the above compliance protocol. However, they only "calibrate" the status of compliance and a stronger internal audit and surveillance program is needed at ORNL to provide more frequent reinforcement of requirements and feedback to management on the current status. This need was recognized in 1989 as applicable across all five sites within Energy Systems, and a coordinated effort was launched. The detailed Energy Systems action plan can be found in Y/QD-6 Rev. 1, (action plan for Evaluations) pp. 24–26. This action plan considers audits and surveillances, reporting of problems, the corrective action system, tracking and trending of problems, and a lessons-learned system.

ORNL is in the process of strengthening the internal oversight process per the Finding MF-5 response. See also the action plan for Finding SA-1 for the self-assessment program upgrade including the independent appraisal function and enhanced management involvement.

ORNL instituted a program built around individual review teams called director's review committees (DRCs) in the late 1950s. Presently, there are eleven such committees which are chartered to focus their reviews on a specific operational group of facilities or activities. These independent committees also review safety documentation. The Laboratory has recognized and has identified ways to improve the internal appraisal system by (1) reorganizing reviews based on appropriate ESH functional areas, (2) drawing on necessary ESH, QA, and technical experts as necessary (including DRC members) and ensuring that these appraisers are independent of the reviewed facilities, (3) requiring more direct involvement of senior Laboratory managers in the activities of the internal appraisal programs, and (4) improving the formality of these evaluations with respect to reporting of review results, tracking and trending of corrective actions, and training of appraisers. The secretary of energy's memorandum, "Guidance on Environmental, Safety, and Health (ES&H) Self-Assessment," dated July 31, 1990, details the expectations of the Self-Assessment program which includes the independent oversight systems. The upgraded ORNL independent appraisal program will be implemented beginning in January 1992 and will be fully functional by the end of CY 1992.

Root Causes:

Inadequate management commitment, lack of clear policy, inadequate implementation of existing procedures, poorly defined roles and responsibilities, and lack of training for appraisers

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Evaluate existing Laboratory review functions against DOE Orders, ANSI Standards, and other directives to determine shortcomings and develop an approach to implement an effective multidisciplined internal appraisal system. Present proposal to Laboratory management.	Complete
2.	Categorize and prioritize all Laboratory facilities and determine types and frequency of appraisals required.	7/91
3.	Prepare draft Laboratory Standard Plant Procedure (SPP) which clearly defines procedures for independent internal appraisals, roles and responsibilities of appraisers and appraisees, comprehensive scope for appraisal coverage, appraisal protocols, and requirements for independence of appraisers.	7/91
4.	Develop and issue internal appraisal schedule for CY 1992.	9/91

5. Issue SPP to reflect improvements to Laboratory Internal Appraisal program. 11/91

6. Develop and initiate training program for those designated personnel who will participate in the Laboratory Internal Appraisal program. 12/91

7. Conduct triennial appraisal of improved Internal Appraisal program. 11/92

Costs:

Type of funds: Overhead

Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	20						20
2	3						3
3	20						20
4	—						
5	*	3					3
6		20					20
7			31				31
Status:							
Funded	43						
Requested							
New		23	31				$97

*Estimated annual ongoing cost: $15–25K for appraiser training beginning in FY 1992.

References: DOE Orders 5480.5, 5480.6, and 5482.1B

S-1 Memorandum, "Guidance on Environmental, Safety and Health (ES&H) Self-Assessment," dated July 31, 1990

Environmental Safety and Health Program Action Plan for Martin Marietta Energy Systems, Y/MS-0001, January 1991

Finding No.: MF-6 ORNL Tracking ES&H Issues to Closure

Finding Description: **ORNL does not have comprehensive, integrated systems that provide management with timely and accurate information to make well-informed decisions on ES&H issues arising from reviews such as audits, assessments, and appraisals as well as occurrence reporting.**

Code: Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 105
Tiger Team Action Plan Priority 2

Response: ORNL has not had a comprehensive integrated system that promotes the analysis, tracking, trending, and lessons learned sharing across all sites. This was recognized in 1989 and an Energy Systems-wide team initiated development of the Energy Systems Action Management System (ESAMS). The first major element incorporating the DOE Order 5000.3A reports is due in April 1991. The system will incorporate internal and external audit findings and lessons learned by the end of 1991.

The prioritization process has not yet been developed or proceduralized by Energy Systems or ORNL. The process has been piloted on concerns from the DOE Headquarters Quality Verification Inspection, Martin Marietta Corporate Audit, and DOE Headquarters Tiger Team as well as all corrective actions at RRD. It will be refined, proceduralized, and implemented across ORNL.

An organizational announcement was issued on December 1, 1990, creating the position of Quality Audit Program Manager. This position consolidates the ORNL auditing and surveillance program, the occurrence reporting system, (including lessons-learned), and the corrective action program in one office. Once all data associated with the individual programs is combined in the Energy Systems Action Management System (ESAMs), ORNL will have an integrated system.

The ESAMS system will be available for managers at all levels to query the system for a variety of reports.

With respect to establishing a system for tracking progress and closure of corrective actions, periodic reports to the ES&H Coordination Committee and issuance of monthly performance indicators are planned.

The closure process for corrective actions is described in current Laboratory QA procedures.

Root Cause:

Inadequate management approach and inadequate roles and responsibilities

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Develop a risk-based prioritization process for consistent application across Energy Systems, issue it for use.	Complete
2.	Charter an Energy Systems Board to develop and oversee the risk prioritization process.	Complete
3.	Issue instructions for the use of the Risk Matrix and risk prioritization process.	9/91
4.	Provide training modules for use for training users of the risk prioritization process.	9/91
5.	Consolidate responsibility for corrective action tracking, occurrence reporting, and audits and surveillances (see Finding QV.1-6).	Complete
6.	Initiate merger of all ORNL action tracking systems into a common database (ESAMS).	12/91
7.	Issue an SPP establishing the corrective action tracking system for ORNL.	9/91
8.	Incorporate the requirements of the Energy Systems prioritization process in an SPP that establishes the ORNL prioritization process.	9/91
9.	Use the data and features of ESAMS to analyze for lessons learned and for problem causes and issue a quarterly report to management summarizing the critical few ES&H issues at ORNL.	1/92
10.	Establish system for tracking progress and closure of corrective actions resulting from Tiger Team and other sources.	Complete

Costs: Activities are to be accomplished with existing staffing. Some additional expense funding is required for modification of existing database programs, new hardware, and ongoing database support.

Type of funds: Overhead

Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
3	15						15
4	15						15
6	30	*					30
7	40	*					40
8	25	*					25
9	187	334	175				696
Status:							
Funded							
Requested							
New	312	334	175				$821

*Estimated annual ongoing cost: $70K starting in FY 1992.

References: Findings QV.1-6 and FR.6-1

Finding No.: MF-7 ORNL ES&H Interfaces with Onsite External Groups

Finding Description: MMES and ORNL have not established uniform ES&H policies and procedures across the Oak Ridge Reservation, nor clearly defined and fully documented the ES&H roles and responsibilities for critical organizational interfaces with host sites, onsite contractors, subcontractors, guests, visitors, and users.

Code: Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 539
Tiger Team Action Plan Priority 3

Response: ORNL agrees with deficiencies cited in Finding MF-7. ORNL began addressing the problem of training for visitors, users, and subcontractors in July 1990 and began the preparation of a video and procedures, and began clarifying responsibilities. Training for construction subcontractors has been ongoing and is conducted by the Office of Environmental and Health Protection.

The interface with other external groups onsite needs upgrading.

Root Causes:

Inadequate policy, inadequate policy implementation, inadequate training, and poorly defined roles and responsibilities

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Initiate training for onsite construction subcontractors.	Complete
2.	ORNL–Y-12 Memorandum of Understanding (MOU) (see Finding OA.1-5).	
3.	Determine need for, and establish if appropriate, an MOU delineating Environmental, Safety, and Health Staff responsibilities of ORNL and K-25 for ORNL organizations at K-25.	10/91
4.	Guest/visitor training video (see Finding TC.1-1).	
5.	Energy Systems—M.K. Ferguson interface (see Finding OA.1-3).	

Costs: Cost is for updating of training materials and for administering the training. Item 1 is an ongoing chargeback item to contractor.

References: None

Finding No.: MF-8 ES&H Review of Work for Others

Finding Description: **The ES&H aspects of Work for Others proposals are not receiving sufficient review by ORNL and DOE prior to proposal submission to the funding agency.**

Code: Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 33
Tiger Team Action Plan Priority 3

Response: ORO will ensure that ES&H concerns are reviewed before acceptance of work.

Root Cause:

Inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Modify Proposal Information Form to address ES&H issues.	Complete
2.	Add a staff member from the assistant manager for environment, safety, and quality organization as a permanent member on the ORWFO committee.	Complete
3.	Energy Systems will initiate a review of proposal information forms to ensure that ES&H concerns are considered adequately.	7/91

Costs: Review will be accomplished within existing resources.

References: None

Finding No.: MF-9 Contractual Matters

Finding Description: **The prime contract between DOE and MMES does not fully embody terms and conditions which reflect DOE priorities for ES&H performance, and which legally bind the contractor to full implementation of DOE's ES&H initiatives.**

Code: Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 40
Tiger Team Action Plan Priority 2

Response: While the contract does not explicitly state that the contractor must follow DOE orders, the Statement of Work (Article 2 of the contract), as originally formed in April 1984 and more recently amended in Modification M039, states that

> "...The Contractor undertakes and promises to manage, operate and maintain said plants and facilities, and to perform said work and services, upon the terms and conditions herein provided and in accordance with such directions and instructions not inconsistent with this contract which DOE may deem necessary or give to the Contractor from time to time..."

This provision of the Statement of Work has been interpreted by ORO with the authority to give Energy Systems the direction to follow any applicable order or initiative regarding ES&H or any other matter.

The new contract for the five-year extension include a DOE orders clause under which the language of the contract is more explicit regarding contractor compliance with DOE orders that are applicable to it. Other ES&H related clauses were added and the Safety and Health clause was modified to include environmental concerns.

The Agreement in Principle (AIP) has been forwarded to HQ for review and authority to proceed. The Federal Facilities Agreement (FFA) is being negotiated.

Root Cause:

Ambiguous requirements or expectations

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Incorporate Price-Anderson Amendments Act of 1988, Oversight Responsibility clause, and the Agreement regarding RCRA Permits into the contract.	Complete
2.	Incorporate other ES&H coverage into the contract with five-year extension.	Complete
3.	Execute the AIP.	5/91
4.	Execute the FFA.	9/91

Costs: No significant additional costs are associated with the actions outlined.

References: Y-12 Tiger Team Action Plan for Finding 6.5.6

Finding No.: MF-10 DOE Directive System

Finding Description: **DOE's communication of ES&H directives (Orders, Secretary of Energy Notices, and Memoranda of Understanding) does not provide guidance or specific instructions to the contractor or provides differing instructions depending on the program sponsor.**

Code: Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 119
Tiger Team Action Plan Priority 3

Responses: A number of major ES&H compliance guidance documents have been prepared by ORO to help assure consistent compliance with DOE Orders and regulatory requirements. These documents cover topics such as spill reporting, contamination control, SAR preparation, and asbestos removal requirements.

Some problems remain in communicating DOE's expectations to the contractor in a timely manner. These problems include inconsistencies in directives and other guidance received from HQ. Lack of a formal system for contracting officers' representatives to communicate requirements and for contractors to document implementation issues, lack of a central collection and control system for all types of ES&H compliance guidance, and insufficient specificity in guidance. Additionally, there is a need for improvement in transmitting draft documents to contractors for comments in a timely manner, to the extent possible given deadlines established by HQ. These issues have been identified in other Tiger Team and task force reviews, and ORO has already drafted an action plan for their resolution.

Root Causes:

Lack of consistent guidance from HQ and lack of sufficient resources to perform adequate development and coordination of local guidance and to develop control systems.

Planned Actions and Schedules:

All findings have already been addressed in an ORO action plan requested by the Secretary of Energy by memo dated August 31, 1990, and submitted to Headquarters for approval on January 11, 1991.

	Item/Description	Completion Date
1.	Inventory and establish a central control file in ORO of all the compliance guidance issued to date by all ORO organizations in the ES&H and QA areas.	Complete
2.	Establish an ORO procedure on issuance and control of changes to compliance guidance in order to ensure issuance in a timely and consistent manner to all contractors at all sites.	Complete
3.	Assess need for improvement in ORO's procedure for distribution of directives, DOE orders and supplements to ORO and contractors.	Complete
4.	Establish Compliance Guidance Coordination Team.	Complete
5.	Develop a structured Energy Systems process for accountability of requirements.	Complete
6.	Complete implementation of Item 2.	6/91

Costs: Costs to automate Action Item #1 include $250,000 requested for FY 1991 to procure a computerized document storage and retrieval system, which would provide the following information on-line: (1) all permits for all ORO plants; (2) all DOE and ORO Orders; (3) all HQ and ORO guidance memoranda; (4) all applicable ES&H Federal and State regulations. Additional money for equipment and/or enhanced support services are planned for FY 1993.

Approximately two additional FTE are needed for FY 1991, and three more for FY 1992, to improve the quality of ES&H guidance to all ORO contractors. These needs were identified and validated in the MAPS survey of manpower needs of ORO in May 1990. ORO has received additional staffing allocations for FY 1991, and initial recruitment has begun.

References: Memorandum, LaGrone to EH-1, January 11, 1991

RPPA Management Issue on Policy/Standards and Procedures/Instructions

Finding No.: MF-11 ORO Oversight Systems

Finding Description: **The inability of OR to perform its full oversight role has resulted in slower than desired implementation of ORNL's ES&H program.**

Code: Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 58
Tiger Team Action Plan Priority 3

Response: ORO previously acknowledged the need to improve ES&H oversight ORO-wide in a September 28, 1990, memorandum to EH-1 which provided draft action plans. Those plans called for preparation of site specific self-assessment program plans and procedures to address deficiencies in a comprehensive manner. They also described previous actions taken to improve the program, including the diversion of resources from other ORO activities and the request for additional resources from Headquarters. XSO has ES&H surveillance procedures in place, but lacks adequate staff to fully implement these procedures. The AMESQ organization is reorienting its mission to be more responsive to oversight needs of line organization. An XSO self-assessment plan will be prepared and implemented. Since the 1990 HQ manpower assessment, the XSO has requested six additional FTE and eight additional FTE in FY 1992 and FY 1993, respectively. Revised allocations have been received for FY 1991 and recruiting is underway. Extensive training programs have been developed and additional XSO procedures are being written and implemented.

The AMERWM has also previously acknowledged the need to provide additional oversight at ORNL. AMERWM currently provides one man-year of onsite presence. The FY 1991 staffing plan to headquarters requests one additional FTE for ORNL onsite staffing. In the interim AMERWM is reallocating existing staff to provide additional onsite support. AMERWM is also negotiating a technical support contract that will provide oversight assistance to DOE.

Root Causes:

Ambiguous requirements or expectations and insufficient resources

Planned Actions and Schedules:

Item/Description	Completion Date
1. Issue AMESQ specific self-assessment program plan.	Complete
2. Implement reorientation for S&HD organization.	Complete

3.	Implement 1.5 FTE level oversight of ORNL reactor facilities by AMESQ.	Complete
4.	XSO will provide self-assessment plan to ER-1 for review and approval.	6/91
5.	XSO fill FY 1991 revised level of allocated positions.	9/91
6.	XSO request FY 1993 position allocation.	Complete
7.	XSO complete basic surveillance training.	10/91
8.	AMERWM Self-Assessment plan complete.	Complete
9.	Implement 2.5 FTE level of oversight of ORNL AMERWM activities.	10/91

Costs: No significant costs are associated with the actions listed.

References: None

Finding No.: MF-12 Contract Award Fee Process

Finding Description: The contract award fee process, as implemented at ORNL by ORO, has not provided the appropriate incentives to MMES to accomplish the enhanced ES&H performance required by DOE.

Code: Best Management Practice

Compliance Protocol: None

Priority: Energy Systems Risk Weight 20
Tiger Team Action Plan Priority 3

Response: ORO considers the mid-range (numerical score of 80) to be the level of performance expected of a fully performing CPAF contractor. ORNL consistently performed above this level in the ES&H area from Second Half FY 1985 through First Half FY 1989. Currently, 65 percent of the available award fee for ORNL is allocated to ES&H related activities. ORO considers this to be a significant incentive to the contractor to enhance performance in the ES&H area. Notwithstanding problems to be resolved (as noted in the MF-12 Finding quotes of previous award fee determination letters), the overall ORNL rating is being achieved during a time of strict environmental compliance.

ORO considers all criteria in the Award Fee Determination Plan (AFDP) to be important. Weighing individual criteria would result in some criteria carrying an insignificant weight which could act as a disincentive to the contractor. Additional measurable ES&H criteria have been incorporated into the AFDP. The ability to measure progress is the responsibility of the DOE line management for ORNL. ORO staff organizations also have criteria with which they assess ORNL performance. All of the expectations and goals required of ORNL are addressed to ORNL during the monthly Performance Evaluation Committees (PEC) meetings mandated by the AFDP. Past meetings did not adequately consider all expectations and goals. ORNL will submit to DOE additional measurable criteria in August.

Headquarters (HQ) has been involved in the process to create and review performance criteria during preparation of the AFDP. With regard to HQs involvement in the award fee determination process, ORO has invited HQ personnel to attend all PEC and Award Fee Board meetings. There is close coordination between the Award Fee Coordinator at ORO and all Program Offices at HQ. Those Program Offices have provided input to the PEC and have identified PEC coordinators for ORNL. Draft Management Agreements, which include HQ participation in the PEC process, have been prepared and transmitted.

ORO feels the award fee process is properly structured and executed with a proper mix of line management personnel, oversight personnel, and senior management involved in the process. Recognizing improvement is always possible, ORO feels the contractor is responsive and making good progress in all areas. Furthermore, we feel this progress is a result of the overall CPAF "environment and attitude" ORO has structured and projected. ORO feels this attitude does create incentive for ORNL.

Root Cause:

Ambiguous requirements or expectations and inadequate communications

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Identify and prepare additional measurable performance criteria.	Complete
2.	Clarify ORO ES&H expectations and incorporate new measurable criteria into Second Half FY 1991 AFDP.	Complete
3.	Add HQs input to the Second Half FY 1991 award fee determination plan.	Complete
4.	Implement management agreements with HQ concerning active participation in the award fee process.	9/91
5.	Establish Departmental ES&H goals, expectations, and measurement criteria, with ORNLs input for each 6-month evaluation period beginning with first half FY 1992.	9/91

Costs: No significant costs are associated with the actions listed.

References: None

3.6 SELF-ASSESSMENT FINDINGS, RESPONSES, AND PLANNED ACTIONS

3.6 SELF-ASSESSMENT FINDINGS, RESPONSES, AND PLANNED ACTIONS

Finding No.: SA-1 The ORNL Self-Assessment Process

Finding Description: **The ORNL self-assessment process is not institutionalized and lacks many elements of an effective self-assessment program.**

Code: Best Management Practice

Compliance Protocol: DOE Memorandum from the Secretary of Energy, Guidance on Environment, Safety, and Health Self-Assessment, July 31, 1990.

Priority: Energy Systems Risk Weight 138
Tiger Team Action Plan Priority 3

Response: ORNL has previously recognized the need for a more structured self-assessment program. Although many of the key elements of a sound self-assessment program exist, several components required by the Secretary of Energy's guidance are lacking or require strengthening. Examples of existing, ongoing assessment activities are the following: (1) Laboratory Director Review Committee reviews, (2) QA audits and surveillances, (3) operational readiness reviews, (4) safety inspections, (5) the award fee process, (6) division advisory committee technical reviews, (7) the Performance Improvement Process results, (8) the Occurrence Reporting System, and (9) corrective action tracking and trending. The ORNL assessment activities are supplemented by Energy Systems ES&H and QA audits and appraisals and in-depth INPO-type evaluations. Even though many of the critical program elements are in place, no program plan or focal point exists to ensure that these elements result in a program that is responsive to all regulatory, DOE, and contractor requirements and at the same time is effective in assessing our operations.

Prior to the Secretary of Energy's guidance, efforts were begun in 1988 to carefully evaluate the status of the radiation protection program, resulting in a Radiation Protection Program Plan. The plan utilized the Technical Safety Appraisal performance objectives and criteria as a key for this self-assessment activity. Numerous improvements have been made since that time. ORNL performed an overall self-assessment and divisional self-assessments in the summer of 1990. This assessment effort was based on a thorough review of all self-assessments performed at other DOE facilities. The addition of individual division assessments was an ORNL innovation we believe added to the process. All of these assessments provide a basis on which to build a comprehensive ongoing ES&H self-assessment program. This program will become an integral part of the overall ORNL ES&H strategic planning.

This action plan describes the means for further developing and implementing a comprehensive, institutionalized, and mature program. Such a program will be developed and will incorporate the eleven elements, and performance objectives and criteria provided by the Secretary's guidance. In addition, it will be based on appropriate DOE orders, ANSI standards, Total Quality Management principles, and the Malcolm Baldrige Quality Award Criteria.

Our approach will be one of benchmarking. This will involve evaluation and implementation of the best assessment methods available, e. g., methods used by the ORNL Metals and Ceramics Division, the ORNL Steam Plant, the organizations that have participated in the Y-12 Plant Pathfinder Program, and other nuclear and high-technology organizations.

The following action plan describes the steps needed to formally document the self-assessment process, develop and conduct training, conduct divisional and plant-level assessments, analyze performance, assess the program, and report to upper management. This action plan will enable ORNL to meet the challenge as reported by the ORNL Tiger Team: "The continuing challenge to Martin Marietta and ORNL management is to *sustain this process of self-assessment, while using it, not as a means into itself, but as the means to direct aggressive management action* toward correction of the concerns, findings, and root causes identified during the self-assessment process."

Root Causes:

Inadequate policy and inadequate policy implementation

Planned Actions and Schedules:

	Item/Description	Completion Date
1.	Evaluate self-assessment program successes and failures at ORNL facilities, other Martin Marietta facilities, other comparable DOE facilities, and other outside organizations. Define a comprehensive program scope and focus based on the evaluation and develop a draft program charter.	6/91
2.	Develop draft self-assessment program plan, incorporating Tiger Team performance objectives from Secretary of Energy's guidance of July 31, 1990.	6/91
3.	Issue draft SPP(s) based on program plan, including specified authorities, responsibilities, planning requirements, and requirements for developing performance indicators.	7/91

4.	Develop and initiate implementation of tracking, trending, root cause analysis, and lessons learned programs. These actions are described in Findings MF-6, QV. 1-3, QV. 1-4, QV. 1-6, and FR. 6-1.	
5.	Submit program plan to DOE for approval.	10/91
6.	Initiate implementation of interim self-assessment program based on program plan.	10/91
7.	Issue final SPP(s) contingent upon DOE approval of program plan.	1/92
8.	Initiate quarterly status reports to upper management on divisional and overall plant performance.	1/92
9.	Develop and initiate training program on how to perform self-assessments.	12/91
10.	Identify and initiate training of line personnel in root cause analysis. (Note: this is in addition to the ~100 QA and line staff members already trained in root cause.)	12/91
11.	Conduct independent triennial appraisal of new program. See Finding MF-5.	

Costs:

Type of funds: Overhead
Source of funds: Overhead

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
1	35						35
2	14						14
3	15						15
4	—						
5		—					
6		*					
7		—					
8		—					
9		—					
11		—					
Status:							
Funded	57						
Requested							
New	7						$64

*Estimated annual ongoing cost: $488K starting in FY 1992.

Type of funds: Overhead

Source of funds: Division Administration

	Estimated costs per fiscal year ($K)						
Action item	1991	1992	1993	1994	1995	Beyond	Total
6		*					
10		9	*				
Status:							
Funded							
Requested							
New		9					$9

*Estimated annual ongoing costs: $666K for Item 6 beginning in FY 1992 and $5K for Item 10 beginning in FY 1993.

References: Secretary of Energy Guidance on Environment, Safety, and Health (ES&H) Self-Assessment; July 31, 1990

4. SUMMARY OF PLANNED ACTIONS, SCHEDULES, AND COSTS

4. SUMMARY OF PLANNED ACTIONS, SCHEDULES, AND COSTS

4.1 KEY FINDINGS AND ACTIONS

The Tiger Team identified 12 Category II findings and highlighted a number of key findings in management and environmental areas. These key issues were also amplified in the Secretary of Energy's memorandum transmitted with the draft Tiger Team report to various DOE offices. ORNL was directed to pay special attention to management issues, self-assessment, contamination spread, waste minimization, quality verification, and safety programs. Key actions completed, under way, or planned to respond to these issues are summarized in this section.

The action plan outlines an aggressive series of actions, many of which have been already completed, to mitigate the present risks associated with each finding as well as long-term actions designed to address the root cause of the problem. Of the 12 Category II concerns identified by the Tiger Team, actions to resolve 2 have already been completed, 5 more will be completed before the end of FY 1991, 3 will be completed in FY 1992, 1 in FY 1993, and 1 in FY 1994. In those cases that require extensive action over an extended period, such as correcting serious electrical deficiencies in ORNL's 306 buildings, actions are being prioritized to address the most serious problems first.

The Tiger Team noted in Finding SA-1 that ORNL has not institutionalized its self-assessment process and that the current process lacks many of the elements of an effective self-assessment program. The action plan prepared to respond to that finding outlines a plan to fully implement a continuous self-assessment process combined with periodic independent external review that meets all the criteria for an effective self-assessment program.

Virtually all contamination spread from ORNL occurs through runoff from waste sites or permitted releases within the White Oak Creek drainage basin. To control the latter, the Process Waste Treatment Plant was modified in 1986 to reduce low-level liquid waste volume by 80%. A zeolite ion exchange project is scheduled for FY 1992 to remove cesium-137 from process wastewater discharges. Removal of sediments that are impacting the hydraulic performance of flow-monitoring structures is a key concern in the assurance of quality of surface water flow data, which are essential to monitoring liquid radioactive releases. Additional funding is being requested to complete time-critical removal of contaminated sediment transport to address this issue.

Another possible path is to deep aquifers along pathways created by abandoned, unplugged wells. Corrective actions focus is mainly on ensuring that plugging and abandonment is carried out in instances where potential exists for contaminant spread along boreholes and poorly constructed or poorly maintained wells. A groundwater program coordinator has been appointed to provide a central focus for all groundwater activities at ORNL. Funds are being requested to accelerate previously planned projects to maintain, characterize, and remediate potential paths for groundwater contamination. These actions, together with the other actions outlined in the action plan, provide an aggressive start to addressing this long-term problem.

With regard to waste minimization, nonhazardous scintillation cocktails are being used wherever possible. ORNL has instituted an aluminum-recycle program, and efforts are under way to develop a comprehensive waste-minimization program.

Management is fully committed to an effective and comprehensive quality verification program. Energy Systems has instituted a total quality management program, led by senior management. A Quality Assurance Audit Program Manager was named effective December 1, 1990. A central tracking system, called the Energy Systems Action Management System, is currently under development to provide tracking of actions resulting from all audits at Energy Systems sites. An Integrated Resource Management System is also being developed to assist in prioritizing actions and managing resources.

The action plan describes numerous actions proposed to improve safety programs in industrial hygiene, fire protection, radiation protection, and hazards communication. The Tiger Team cited insufficient resources in a number of findings related to safety programs, and discussions are continuing with DOE Headquarters to identify options for funding these activities to bring them into compliance. In the meantime, efforts are continuing to make the best use of available resources.

Martin Marietta Corporation is also playing an active role in improving ES&H performance at Energy Systems facilities. The Energy Systems board of directors, chaired by Tom Young, the President of Martin Marietta Corporation, meets bimonthly and provides top management review of Energy Systems operations with special attention to performance deficiencies in ES&H. Technical and management assistance is provided to Energy Systems by other parts of Martin Marietta Corporation through an interdivisional operating directive. Recent ES&H-related assistance provided by Martin Marietta Corporation to Energy Systems includes planning assistance for the Y-12 technical audit; calibration standards and measuring; analysis, development, and implementation of plant performance objectives; and environmental task force assistance. In addition, ORNL is using the knowledge base and experience of Martin Marietta Corporation and other Energy Systems sites in developing its self-assessment process. Technical audits are performed by Martin Marietta Corporation for all Martin Marietta businesses. A pre-Tiger Team audit was conducted at ORNL during 1990. During 1991, eleven audits are scheduled, including three at Energy Systems installations. Finally, the Corporate Environmental Management group has established a local office in Oak Ridge, Tennessee, with two full-time staff members. The activities of this group include reviewing ongoing environmental programs relative to compliance with applicable federal, state, and local regulations.

ORNL's response to its acknowledged management deficiencies is to firmly establish ES&H as an integral part of the mission of the Laboratory and to apply the same rigor to meeting ES&H laws and requirements as is applied to scientific laws and requirements. Energy Systems and ORNL management have developed the following approach to establishing and maintaining excellence in ES&H. This approach envisions seven key elements:

- Strategic plan for ES&H: a strategic plan for ES&H is under development to provide vision and coherence to ES&H activities. It will integrate with the strategic plan being developed Energy Systems-wide.

- Goals and structure: institutional goals will be established and roles and responsibilities will be clearly defined and utilized in performance planning and review.

- Conduct of Operations: uniformity of management approach and formality of operations will be strengthened by the implementation of Conduct of Operations throughout ORNL.

- Surveillance: effective and independent oversight of ES&H performance will be established, and adequate technical assistance will be provided. The oversight and technical assistance roles will be managed to avoid conflicts of interest.

- Measurement: performance goals will be established, and tracking and trending systems will be implemented.

- Self-assessment: a continuous self-assessment process combined with periodic independent external review that meets all the criteria for an effective self-assessment program will be implemented.

- Total quality management: a philosophy of continuous improvement and dedication to excellence will serve as the umbrella under which elements are defined and implemented.

4.2 TOTAL ES&H ACTIVITIES

Actions to respond to the Tiger Team Assessment represent only part of ORNL's ES&H activities. ES&H improvements started long before the Tiger Team arrived, and substantial resources have already been spent or committed to correct known problems. By definition, Tiger Team findings cover deficiencies only in the activities that were assessed. Underway activities that the Tiger Team found sufficient are not the subject of findings but must be continued until the problem is fully resolved. Also, most Tiger Team findings are narrowly drawn. For example, the majority of ORNL's facilities were constructed during a time when asbestos was a common material of construction. ORNL has committed substantial resources to its asbestos control program, and consequently there are no findings of a general nature that capture the cost of this long-recognized, expensive activity. Rather, two findings relate to specific aspects of the asbestos program, one on controlling the use of new asbestos-containing materials (Finding WS.3-1) and one on designation of the asbestos disposal area (Finding A/BMPF-4). Consequently, Tiger Team costs must be considered in the context of ORNL's total ES&H requirements.

ORNL is the oldest and largest of DOE's multiprogram R&D laboratories, with an estimated replacement cost in the range $7–10 billion. About 63% of ORNL's facilities were constructed before 1960. DOE capital expenditures to upgrade and replace facilities have been a small fraction of normal industrial practice. The buildings, utilities, and equipment have now aged to the point where substantial increases in maintenance costs and decreases in reliability are being experienced for systems and facilities supporting R&D efforts, and many facilities have not been upgraded to current health and safety standards. The low capital-expenditure rate has been

highlighted to DOE as a major institutional issue for many years. The Tiger Team concurred, citing insufficient resources in two of its nine root causes. Combined with the unique environmental-contamination problems at ORNL related to its original participation in the Manhattan Project, ORNL has accumulated a substantial ES&H legacy.

Table 4.1 shows a summary of the estimated cost to bring ORNL into compliance with current ES&H laws, regulations, orders, and standards. Entries in the table listed as "to be determined" have not had work scope and cost estimates completed, but most are known to represent substantial additional costs. The planning effort to support this action plan has made a substantial contribution toward developing a comprehensive strategic plan for all ES&H activities at ORNL.

The total estimated cost of ES&H requirements at ORNL to meet DOE's goal of full compliance with all ES&H laws and regulations is on the order of $1.5 billion. It is highly unlikely that this large amount of money will be available over any near-term planning horizon. Consequently, prioritization is absolutely necessary to ensure that the most important problems are addressed first. Implementation will require careful allocation of available funding to achieve the best results with limited resources and to weigh Tiger Team actions against other ES&H needs.

4.3 TIGER TEAM RESOURCE REQUIREMENTS

Table 4.2 shows a summary of the estimated costs for all actions required to fully address the findings of the ORNL Tiger Team assessment. The table shows a fiscal year (FY) breakdown of costs by type of cost and by funding source. The table also summarizes what portion of the funding listed is funded, requested, or new by year and funds category.

All actions listed in this action plan are contingent upon suitable funding being provided. The schedules for actions listed as funded are current best estimates of expected completion. The projected completion dates for actions listed as requested or new are technically feasible dates based on work scope and available or projected resources. Actual completion dates will depend on when work is authorized and funding received.

A number of key conclusions can be drawn from Table 4.2. As stated above, the current estimate for bringing ORNL into compliance with current ES&H laws, regulations, orders, and standards is on the order of $1.5 billion. Actions related to the Tiger Team assessment total approximately $739 million. The majority of action plan cost, $457 million, is in three findings related to environmental restoration and waste management:

- SW/BMPF-4, Unrepaired Leaks from Wastewater Sewer Systems ($229 million);
- GW/BMPF-5, Inadequate Characterization of Hydrogeologic Regime ($168 million); and
- GW/BMPF-1, Inadequate Well and Borehole Abandonment ($60 million).

Table 4.1. Approximate Total ES&H Cost Summary (in millions of dollars)

	FY91	FY92	FY93	FY94	FY95	Beyond	Total
Total ES&H Cost	>111.3	>167.7	>270.4	>210.2	>307.5	>487.5	>1554.6
Tiger Team-Related Costs							
One-Time Costs	61.6	88.0	160.3	105.7	119.1	138.2	672.9
Annual Ongoing Costs	0.7	8.0	12.4	14.1	14.3	>16.3	>65.8
Subtotal	62.3	96.0	172.7	119.8	133.4	>154.5	>738.7
ES&H-Related Portion of Other Costs							
Overhead	35.7	37.3	39.0	40.7	42.6	TBD	>195.3
Operating Legacy Cost	TBD	TBD	TBD	TBD	TBD	TBD	TBD
GPP	2.5	4.8	15.0	TBD	TBD	TBD	>22.3
MGPF	0.0	1.1	16.4	18.2	40.0	333.0	408.7
Line Items	0.0	TBD	TBD	TBD	TBD	TBD	TBD
Waste Management	10.8	28.5	27.3	31.5	91.5	TBD	>189.6
Subtotal	>49.0	>71.7	>97.7	>90.4	>174.1	>333.0	>815.9

Table 4.2. ORNL Corrective Action Plan Cost Summary (in millions of dollars)

Description	FY91	FY92	FY93	FY94	FY95	Beyond	Total	Funded	Requested	New
Overhead										
Overhead	7.5	4.1	0.6	0.4	0.1	0.1	12.8	5.8	1.0	6.0
Division	1.7	1.1	0.1	0.0	0.0	0.0	2.9	1.3	1.0	0.6
Subtotal	9.2	5.2	0.7	0.4	0.1	0.1	15.7	7.1	2.0	6.6
Program										
EM	28.8	47.1	52.2	46.3	46.8	89.7	310.9	24.8	283.9	2.2
ER	10.2	14.3	13.2	6.3	0.7	0.0	44.7	6.2	21.1	17.4
NE	1.0	0.1	0.3	0.2	0.2	0.0	1.8	1.0	0.0	0.8
Subtotal	40.0	61.5	65.7	52.8	47.7	89.7	357.4	32.0	305.0	20.4
Capital										
EM	0.5	9.6	4.4	4.0	4.0	4.0	26.5	0.5	26.0	0.0
ER	0.0	1.0	1.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
GPP	0.7	3.7	5.8	1.0	1.0	0.0	12.2	0.7	5.5	6.0
GPE	0.1	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.1	0.2
Subtotal	1.3	14.3	11.4	5.0	5.0	4.0	41.0	1.2	31.6	8.2
Line item										
EM	7.1	4.6	15.9	26.5	39.1	35.0	128.2	7.1	121.1	0.0
ER	3.1	0.5	61.7	3.0	6.0	2.4	76.7	3.1	31.9	41.7
MGPF	0.9	1.9	4.9	18.0	21.2	7.0	53.9	0.9	51.0	2.0
Subtotal	11.1	7.0	82.5	47.5	66.3	44.4	258.8	11.1	204.0	43.7
Subtotal one-time costs	61.6	88.0	160.3	105.7	119.1	138.2	672.9	51.4	542.6	78.9
Funded	51.4	0.0	0.0	0.0	0.0	0.0	51.4			
Requested	5.5	73.1	105.1	104.4	116.4	138.1	542.6			
New	4.7	14.9	55.2	1.3	2.7	0.1	78.9			
Annual ongoing costs	0.7	8.0	12.4	14.1	14.3	>16.3	>65.8			
Tiger Team subtotal	62.3	96.0	172.7	119.8	133.4	>154.5	>738.7			
Other ES&H costs	>49.0	>71.7	>97.7	>90.4	>174.1	>333.0	>815.9			
Total ES&H costs	>111.3	>167.7	>270.4	>210.2	>307.5	>487.5	>1554.6			

All three findings had been identified previously and are included in the current Environmental Restoration and Waste Management 5-year plan. Next to the Office of Environmental Restoration and Waste Management, the Office of Energy Research, as the major funding sponsor of R&D at ORNL, experiences the greatest programmatic cost associated with new ES&H requirements.

Of the total estimated cost of $739 million, only $78.9 million is new costs that had not been previously identified and submitted to DOE for funding. As actions are completed, ongoing costs necessary to support the improvements in the future grow to around $16 million per year.

Of the total estimated cost of $62.3 million in FY 1991 needed to be fully responsive to the Tiger Team assessment, consisting of both one-time and ongoing costs, almost $51 million is already funded. These activities include Tiger Team–related activities that were already under way prior to the Tiger Team assessment as well as new tasks resulting from the Tiger Team assessment that have been funded in lieu of lower priority tasks and represent a substantial commitment of overhead and programmatic funds to ES&H activities. Of the $11 million shortfall for FY 1991, roughly $5 million is needed to initiate high-priority activities to move toward compliance with ES&H laws, regulations, orders, and standards.

A detailed summary of the estimated cost for each finding is included in Appendix B. Appendix C contains a summary of actions, schedules, and costs for each finding, while Appendix D lists existing and new projects that fall within the scope of DOE's *Environmental Restoration and Waste Management Five-Year Plan.*

APPENDIX A

ORNL RISK PRIORITIZATION SYSTEM

APPENDIX A: ORNL RISK PRIORITIZATION SYSTEM

A.1 BACKGROUND

In the past, ORNL has reacted to internal and external assessments by developing individual actions plans that address the findings, observations, and concerns (requirements) of the auditors. The internal organization that coordinated the assessment would typically send the requirements from the assessment to the personnel or divisions responsible for addressing them. These people would write a corrective action or actions with a proposed schedule for completion. A record of these measures would be put into a local data base created to track that assessment.

In recent years, however, the number of different sources of requirements and required actions has increased so much that individual assessments and their required actions cannot be evaluated without reference to other reports. Energy Systems and ORNL are developing a process that will enable personnel to consolidate and coordinate their responses to assessments. This process will utilize risk-based prioritization and a central tracking organization to correct deficiencies in operations more efficiently and effectively.

Several problems have resulted from the present system.

- Numerous data bases around the Laboratory track similar information but are not coordinated. The Quality Audit Program, which maintains the most comprehensive data base, must manually consolidate the status of findings and actions from each data base to report the overall status.

- Often, the requirement identified had already been identified in earlier assessments. Having uncoordinated responses to assessments forced personnel to spend much of their time completing the necessary paperwork several times for the same action. The individual had to recognize duplication in developing the corrective action and coordinate the schedules and cost estimates.

- With no estimate of how important each requirement was, the person responsible would attempt to develop schedules for completion that were not based on the risks. Resources would often be diverted from old corrective actions to newer ones, with consequent slippages in completion dates. These slippages left large numbers of open and overdue action items.

The Research Reactor Division (RRD) was the first to recognize the problems and the first to develop a system to resolve them. They created a technical evaluation group that prioritized all actions using a single prioritization matrix and the Integrated Resource Management Systems (IRMS), which consolidated all requirements into a single tracking and scheduling system. As new requirements arose, schedules were adjusted based on priority and required resources. The system provided a single, DOE-approved method for managing corrective actions and other demands on RRD resources.

This system was so successful that other organizations within ORNL and Energy Systems applied it to their operations. For example, the Chemical Technology Division (CTD) used a similar process in developing an upgrade program for their division. Unfortunately, budget changes in 1990 drastically altered their Isotopes Program's structure and mission, requiring a review of work done to date and a redirection of efforts. The RRD system has also been used in the Uranium Enrichment Performance Improvement Program (UEPIP). This system has been expanded greatly to incorporate Tiger Team results from Paducah and Portsmouth as well as overall budget planning.

A.2 METHODOLOGY

The Energy Systems Risk Matrix is shown in Table A.1. It was developed through consolidation of earlier matrices already in use in Energy Systems (RRD, CTD, Y-12, and UEPIP). Each weight in the matrix represents the weight given to the consequence category times the representative probability of its occurrence. The weights were assigned based on analysis by Tenera, a consulting firm instrumental in the development of the previous systems, and by an Energy Systems five-plant risk matrix board.

If the consequences of a given finding are in more than one category, then the total weight of the finding is the sum of the applicable weights. As a finding increases in seriousness, its weight increases in magnitude. A finding with weight of 450, for example, is much more serious than one with a weight of 5. The highest weights in the matrix are in the Public Health and Safety section, with Immediate Loss of Life/Impairment assigned 10,000 points. The lowest consequence category is Loss of Investment <$1 million, which is assigned a value of 1. The values used are based on research from commercial industry and insurance statistics, consolidating separate factors for the relative cost, extent, and unwillingness to accept risks.

The categories are divided into five main sections, representing different aspects of any deficiencies. Within each grouping are varying levels of seriousness. Human health is covered in two sections, with the public ranked higher than site personnel because of the involuntary nature of the public's risk. Environmental Protection is divided into excessive or moderate to low-level impacts on the ecological system. The fourth section includes regulatory impacts, deficiencies in good management practices and impacts that could cause public outcry. Business performance issues are rated based on cost factors or impacts on mission performance. Table A.1 presents some additional detail on each of the consequences.

The averted risk values given in the matrix for probabilities A, B, C, and D reflect the multiple for the weight. Table A.2 gives a qualitative description of the probability factors. Probability A (1.0) represents an existing fact or expected failure within the next couple of years. Probability B (0.1) represents either failure over the life of the activity (up to 20 years) or that the system has errors that could lead to failure. Probability C (0.01) represents a possible but not expected occurrence or reliability in the range of typical mechanical systems. Probability D (0.0001) represents a very unlikely event during the plant lifetime or a system with a reliability in the range of typical large-scale systems.

Table A.1. Martin Marietta Energy Systems, Inc., Risk Matrix

	Consequence	Probability per year A 1	B 0.1	C 0.01	D 1.E-04
	PUBLIC HEALTH AND SAFETY				
1.	Loss of life/impairment	10,000	1,000	100	1
2.	Excessive exposure and/or injury	500	50	5	0.05
3.	Moderate to low-level exposure	50	5	0.5	0.005
	ENVIRONMENTAL PROTECTION				
4.	Excessive damage to the ecological system	300	30	3	0.03
5.	Moderate to minor damage to ecological system	40	4	0.4	0.004
	SITE PERSONNEL SAFETY				
6.	Loss of life/immediate impairment	5000	500	50	0.5
7.	Significant injury requiring hospitalization with significant lost time or exposure > occupational limits	250	25	2.5	0.025
8.	Exposure near limits (20–100%) or loss time injury requiring medical treatment	25	2.5	0.25	0.003
9.	Minor injury requiring first aid or exposure <20% of limits	5	0.5	0.05	5E-04
	REGULATORY COMPLIANCE AND EXTERNAL CONFIDENCE				
10.	Noncompliance with law	350	35	3.5	0.035
11.	Noncompliance with DOE orders or issues which have been or could be identified as high-level audit findings	50	5	0.5	0.005
12.	Issues that have caused or could cause major public protest or outcry (other than 10, 11)	30	3	0.3	0.003
13.	Significant deviation from good practice or Energy Systems directives	5	0.5	0.05	5E-04

Table A.1. Martin Marietta Energy Systems, Inc., Risk Matrix

	Consequence	Probability per year			
		A 1	B 0.1	C 0.01	D 1.E-04
	BUSINESS PERFORMANCE OR ECONOMIC CONCERNS				
14.	Serious negative impact on site mission accomplishment [>180 days of Vital Program Interruption (VPI)]	250	25	2.5	0.025
15.	Loss of investment (>$25M/annual cost>$5M/opportunity lost>$25M)	50	5	0.5	0.005
16.	Moderate negative impact on mission (VPI 30–180 days)	25	2.5	0.25	0.003
17.	Loss of investment ($5–25M/annual cost $1-5M/opportunity lost $5–25M)	15	1.5	0.15	0.002
18.	Loss of investment ($1–5M/annual cost<$1M/opportunity lost $1–5M)	3	0.3	0.03	3E-04
19.	Loss of investment (<$1 M)	1	0.1	0.01	1E-04

Table A.2. Consequence List for Energy Systems Modifications

Number		Averted Consequence
I.	Public Health and Safety:	Radiological, hazardous material releases, or other occurrences that could result in: 1. Loss of life/disablement in the surrounding population 2. Excessive exposure or serious injury to the population 3. Moderate to low-level, measurable exposure or minor injury to the population
II.	Environmental Protection:	Radiological, hazardous material releases, or other occurrences that could result in: 4. Excessive damage to the ecological system (cleanup costs exceed $1 million) 5. Moderate to minor damage to the ecological system (reportable releases with cleanup costs from $10,000 to $1 million)
III.	Site Personnel Safety:	Occupational radiation or hazardous material exposure to workers or accident that could result in: 6. Loss of life or immediate disablement including loss of limb or organ or immediate dehabilitating radiation or hazardous material exposure effects 7. Serious overexposures or serious lost time injury requiring extensive hospital recuperation 8. Exposure that is near to above limits (20%–200%), contaminated wound or injury that requires emergency room treatment 9. Exposures from 1–20 percent of yearly limits, significant removable skin contamination, or minor injury that requires first aid
IV.	Regulatory Compliance and External Confidence:	Configurations, incidents, or lack of management controls that could result in: 10. Noncompliance with a state, federal, or local law or regulation 11. Noncompliance with DOE order or issues that have been identified as high-level audit findings by external regulators 12. Issues that have caused or could cause major public protest or outcry

Table A.2. Consequence List for Energy Systems Modifications

Number		Averted Consequence
		13. Significant deviation from good practice or Energy Systems directive or moderate to low-level audit findings or external concerns
V.	Business Performance or Economic Concerns:	Situations or incidents that could cause:
		14. Significant negative impact on site mission accomplishment [vital program interruption (VPI) over 180 days]
		15. Major loss of investment, increased production cost, or lost opportunity to reduce production cost (>$25 million)*
		16. Moderate negative impact on mission (30–180 days VPI)
		17. Moderate loss of investment, increased production cost, or lost opportunity to reduce production cost (from >$5 to $25 million)*
		18. Loss of investment, increased product cost, or loss opportunity to reduce production cost (from $1 to $5 million)*
		19. Low loss of investment, increased product cost, or lost opportunity to reduce production cost (below $1 million)*

*The value used for increased production cost or lost opportunity to reduce production cost should be integrated over the number of years of applicability.

A.3 PILOT PROGRAM

A pilot program was initiated in June 1990 to develop a resource management system at ORNL. Three external audits were chosen to be prioritized using a draft version of the Energy Systems Risk Matrix. For each audit, a risk prioritization committee (RPC) was formed from ORNL personnel familiar with issues identified in the audit. They used professional judgement and input from experts in specific areas of ORNL to estimate the consequences and probabilities. After the first prioritization committee finished its work, committees were formed subsequently with a core of personnel from the old committee and additional personnel from the different divisions identified within the audits. The subsequent formation of committees provided a method both to keep consistency among the audits and to train more people in the use of the system.

For the Pilot Program, one of the existing PC-based data bases at ORNL was modified to include prioritization fields. The data base chosen, the Evaluation Data Base Systems (EDS), is the most comprehensive at ORNL, containing the results of 450 previous audits and surveillances. It was designed to be used by ORNL's Quality Department for its quality auditing function and includes external and internal audits, appraisals, and surveillances.

A.4 MANAGEMENT'S PRIORITIZATION OF TOP ISSUES

Before the Tiger Team's arrival, ORNL management developed a list of major concerns facing the Laboratory. These concerns were identified in the ORNL self-assessment and were individually prioritized by the Tiger Team Steering Committee, both as an education tool for themselves and to further understand the relative risk of their major concerns.

As a further check on the validity of the process, the top external findings identified from the pilot program were compared with the management-defined major issues. All findings over 150 points were contained in the management concerns. The major distinction was that the external concerns were generally more specific to a certain location or program, while the management concerns were more global.

A.5 TIGER TEAM PRIORITIZATION ACTIVITIES

Once the draft of the Tiger Team findings and concerns was made available, a risk prioritization committee was established to rank them. The site-wide TSA findings were reviewed over a 2-day period following the TSA closeout, while the environmental and management concerns were prioritized during the final week. The RRD technical evaluation group prioritized the reactor TSA findings with the Energy Systems matrix, as they now do with all of their requirements. Figures A.1 through A.5 show the relative breakdown of points for each subteam's findings and the total set of findings.

The corrective actions for the Tiger Team findings are being evaluated. As a first step, it is assumed that the actions fully alleviate the concerns of the finding, and extra weight is not given to actions resolving multiple findings. The weight may then be divided by the estimated cost of the action to determine a benefit/cost ratio. This value can be used to determine relative rankings.

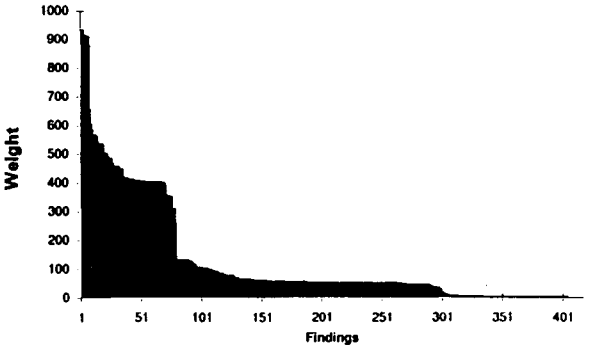

Fig. A.1. Total ORNL Tiger Team findings.

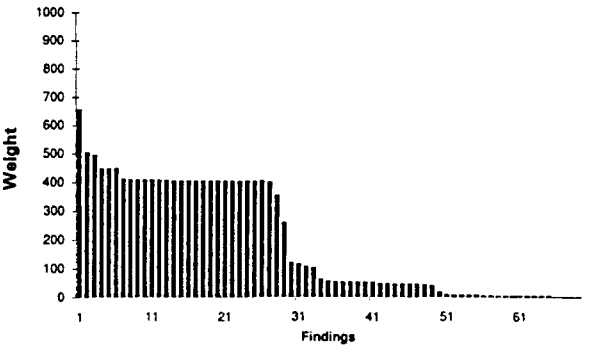

Fig. A.2. Environmental Tiger Team findings.

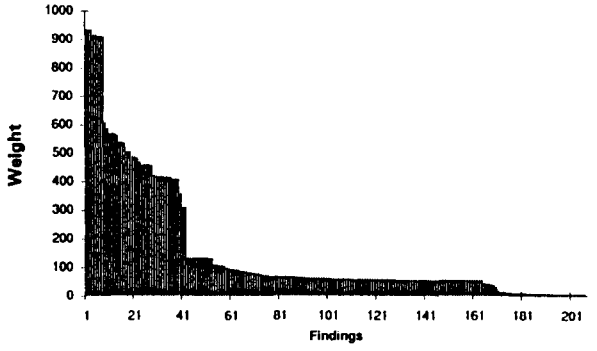

Fig. A.3. Sitewide TSA Tiger Team findings.

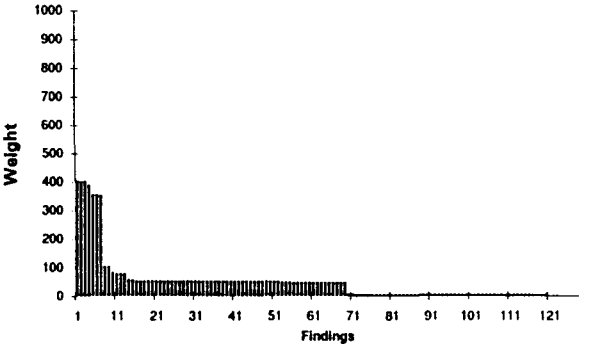

Fig. A.4. Reactor TSA Tiger Team findings.

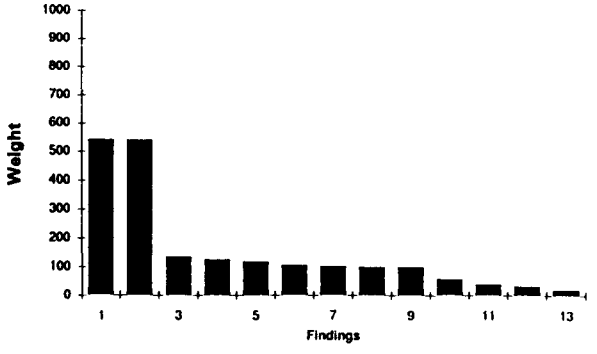

Fig. A.5. Management Tiger Team findings.

Currently, cost estimates have not been sufficiently reviewed to ensure that all estimates are consistent. Any ranking done would not be a reliable indicator.

This rank cannot be the sole determinant of scheduling priorities. Tiger Team priorities (Level 1, 2, 3, or 4) have been assigned to each finding. Levels 1 and 2 must receive increased attention, despite a high cost, especially if they were determined to be Category II findings during the Tiger Team visit. Also, other Energy Systems organizations using this process have found that benefit/cost ratios are a good measure for capital projects, but that the risk weight by itself is often a better determinant for actions funded by expense funds. Analysis of actions must utilize all three methods for management to make the best decisions on overall priorities.

APPENDIX B

SUMMARY OF CORRECTIVE ACTION PLAN COSTS

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: A/BMPF-1			PRIORITY: 3		RISK WEIGHT: 45			INADEQUATE STACK EMISSION MONITORING AND TEST PROCEDURES FOR NESHAP COMPLIANCE		
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: A/BMPF-2			PRIORITY: 4		RISK WEIGHT: 1			LACK OF VERIFYING DOCUMENTATION TO DEMONSTRATE COMPLIANCE WITH AIR PERMIT CONDITIONS		
ALL	110	0	20	21	22	23	24	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	110	0	20	21	22	23	24			
FINDING NUMBER: A/BMPF-3			PRIORITY: 4		RISK WEIGHT: 1			LACK OF CONSISTENT INSTALLATION OF STACK SAMPLING, MONITORING, AND ALARM SYSTEMS FOR RADIOACTIVE RELEASES		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: A/BMPF-4			PRIORITY: 4		RISK WEIGHT: 1			DEFICIENT ASBESTOS WASTE DISPOSAL MANAGEMENT		
1	1	1	0	0	0	0	0	OVERHEAD	Y-12 OVERHEAD	FUNDED
TOTALS:	1	1	0	0	0	0	0			
FINDING NUMBER: A/CF-1			PRIORITY: 2		RISK WEIGHT: 448			EXCURSIONS ABOVE AIR PERMIT LIMITS		
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: A/CF-2			PRIORITY: 3		RISK WEIGHT: 5			HIGH EFFICIENCY PARTICULATE AIR (HEPA) TESTING PROGRAM DEFICIENCIES		
1	2	2	0	0	0	0	0	PROGRAM	ER-KC	FUNDED
1,2	10	0	2	2	2	2	2	PROGRAM	ER-KC	ONGOING
2	2	2	0	0	0	0	0	PROGRAM	ER-KC	FUNDED
TOTALS:	14	4	2	2	2	2	2			
FINDING NUMBER: A/CF-3			PRIORITY: 2		RISK WEIGHT: 400			ABSENCE OF STATE AIR PERMITS FOR RADIONUCLIDE SOURCES		
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: A/CF-4			PRIORITY: 2		RISK WEIGHT: 55			AMBIENT AIR MONITORING DEFICIENCIES		
1	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	40	0	40	0	0	0	0	OVERHEAD	OVERHEAD	NEW

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	65	25	40	0	0	0	0			
FINDING NUMBER: A/CF-5		PRIORITY: 2		RISK WEIGHT:	55	EFFLUENT STACK SAMPLING AND MONITORING DEFICIENCIES				
3	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	3000	0	0	3000	0	0	0	CAPITAL	GPP-ER	NEW
4	200	0	200	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
6	627	0	0	0	200	209	218	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	3842	15	200	3000	200	209	218			
FINDING NUMBER: A/CF-6		PRIORITY: 3		RISK WEIGHT:	5	LACK OF CONTROL ROOM OPERATOR TRAINING IN STACK RELEASE EMERGENCY PROCEDURES				
2	2	2	0	0	0	0	0	PROGRAM	ER-KC	FUNDED
TOTALS:	2	2	0	0	0	0	0			
FINDING NUMBER: AX.1-1		PRIORITY: 2		RISK WEIGHT:	570	REMEDIAL PROGRAM FOR AUXILIARY SYSTEMS				
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: AX.1-2		PRIORITY: 2		RISK WEIGHT:	55	CONFIGURATION CONTROL SYSTEM FOR AUXILIARY SYSTEMS				
3	20	20	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
3	465	0	85	89	93	97	101	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	485	20	85	89	93	97	101			
FINDING NUMBER: AX.2-1		PRIORITY: 2		RISK WEIGHT:	56	NO IMPLEMENTATION OF THE WASTE MINIMIZATION POLICY				
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: AX.3-1		PRIORITY: 3		RISK WEIGHT:	6	ENERGY SYSTEMS POLICY PROCEDURE ON WASTE MANAGEMENT				
1-2	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	15	15	0	0	0	0	0			
FINDING NUMBER: AX.4-1		PRIORITY: 2		RISK WEIGHT:	56	FISSILE MATERIAL STORAGE HANDLING ACTIVITIES				
1	3	3	0	0	0	0	0	PROGRAM	EM-ADS387	REQUESTED
2	5	5	0	0	0	0	0	PROGRAM	EM-ADS387	REQUESTED
3	68	68	0	0	0	0	0	PROGRAM	EM-ADS387	REQUESTED
4	4	4	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
4	4	4	0	0	0	0	0	PROGRAM	DP-GE	NEW
5	25	0	25	0	0	0	0	PROGRAM	ER-	NEW
TOTALS:	109	84	25	0	0	0	0			
FINDING NUMBER: AX.4-2		PRIORITY: 2		RISK WEIGHT:	55	BUILDING 3027 STORAGE VAULT OPERATIONS				
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: AX.5-1		PRIORITY: 2		RISK WEIGHT:	63	GASEOUS EFFLUENT DISCHARGES				
3	50	50	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	30	30	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	90	90	0	0	0	0	0			
FINDING NUMBER: AX.6-1		PRIORITY: 3		RISK WEIGHT:	5	BACKUP POWER DIESEL GENERATORS				
1	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	3	3	0	0	0	0	0			
FINDING NUMBER: CS.1-1		PRIORITY: 2		RISK WEIGHT:	60	NUCLEAR CRITICALITY SAFETY TRAINING PROGRAM				
1	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
1	23	0	0	7	0	8	8	OVERHEAD	OVERHEAD	ONGOING
2	40	0	40	0	0	0	0	OVERHEAD	OVERHEAD	NEW
3	25	0	0	25	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	103	15	40	32	0	8	8			
FINDING NUMBER: CS.1-2		PRIORITY: 2		RISK WEIGHT:	55	OVERSIGHT AND SUPPORT FUNCTIONS				
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: CS.1-3		PRIORITY: 2		RISK WEIGHT:	55	ORNL CRITICALITY SAFETY PROGRAM				
3	10	10	0	0	0	0	0	OVERHEAD	DIVISION	NEW
4	50	50	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	465	0	85	89	93	97	101	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	525	60	85	89	93	97	101			
FINDING NUMBER: CS.1-4		PRIORITY: 2		RISK WEIGHT:	55	NUCLEAR CRITICALITY SAFETY PROGRAM DOCUMENTATION				
4	10	0	10	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5	10	0	10	0	0	0	0	OVERHEAD	OVERHEAD	NEW

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	20	0	20	0	0	0	0			
FINDING NUMBER: CS.3-1			PRIORITY: 2		RISK WEIGHT:	55		SAFETY ANALYSIS DOCUMENTATION REQUIREMENTS		
4	558	0	276	282	0	0	0	OVERHEAD	OVERHEAD	NEW
5	15	0	0	15	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	573	0	276	297	0	0	0			
FINDING NUMBER: CS.4-1			PRIORITY: 2		RISK WEIGHT:	55		REVIEW OF NUCLEAR CRITICALITY SAFETY ANALYSES		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: CS.4-2			PRIORITY: 2		RISK WEIGHT:	55		DISSEMINATION OF NUCLEAR CRITICALITY SAFETY GUIDANCE		
4	8	0	8	0	0	0	0	OVERHEAD	OVERHEAD	NEW
4	22	0	0	5	5	6	6	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	30	0	8	5	5	6	6			
FINDING NUMBER: CS.4-3			PRIORITY: 2		RISK WEIGHT:	55		NUCLEAR CRITICALITY SAFETY REMEDIAL ACTION PLAN		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: CS.5-1			PRIORITY: 2		RISK WEIGHT:	55		EMERGENCY RESPONSE PLAN		
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: CS.5-2			PRIORITY: 2		RISK WEIGHT:	55		CRITICALITY ALARM SYSTEM EVACUATION DRILLS		
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: CS.5-3			PRIORITY: 2		RISK WEIGHT:	58		CRITICALITY ALARM SYSTEMS		
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	2	2	0	0	0	0	0			
FINDING NUMBER: EA.2-1			PRIORITY: 2		RISK WEIGHT:	69		ORNL POLICY REGARDING INDEPENDENT SAFETY REVIEWS		
1	8	8	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	2	0	2	0	0	0	0	OVERHEAD	OVERHEAD	NEW

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	25	23	2	0	0	0	0			
FINDING NUMBER: EA.3-1		PRIORITY: 2		RISK WEIGHT:	69		GUIDANCE ON INTERNAL SAFETY REVIEWS			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: EA.3-2		PRIORITY: 2		RISK WEIGHT:	55		DOCUMENTATION OF SAFETY REVIEWS OF EXPERIMENTAL PLANS			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: EA.4-1		PRIORITY: 3		RISK WEIGHT:	6		RANDOM SAFETY SURVEILLANCES			
2	35	0	35	0	0	0	0	OVERHEAD	OVERHEAD	NEW
2	158	0	0	37	39	40	42	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	193	0	35	37	39	40	42			
FINDING NUMBER: EP.1-1		PRIORITY: 2		RISK WEIGHT:	109		ACCIDENT CONSEQUENCE ASSESSMENT			
ALL	75	15	5	55	0	0	0	PROGRAM	ER-AT EP	REQUESTED
ALL	157	0	0	0	50	52	55	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	232	15	5	55	50	52	55			
FINDING NUMBER: EP.1-2		PRIORITY: 3		RISK WEIGHT:	11		EMERGENCY PREPAREDNESS RECOMMENDATIONS			
1	28	0	5	5	6	6	6	OVERHEAD	OVERHEAD	ONGOING
2	25	25	0	0	0	0	0	PROGRAM	ER-AT EP	NEW
TOTALS:	53	25	5	5	6	6	6			
FINDING NUMBER: EP.1-3		PRIORITY: 2		RISK WEIGHT:	69		FACILITY HAZARDS INFORMATION			
1	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	20	20	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	3	3	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	10	0	10	0	0	0	0	PROGRAM	ER-AT EP	REQUESTED
5	42	0	0	10	10	11	11	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	82	30	10	10	10	11	11			
FINDING NUMBER: EP.1-4		PRIORITY: 2		RISK WEIGHT:	66		ANALYSIS OF EMERGENCY PREPAREDNESS			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: EP.2-1		PRIORITY: 2	RISK WEIGHT:	56	CLASSIFICATION OF EMERGENCY EVENTS					
ALL	10	10	0	0	0	0	0	PROGRAM	ER-AT EP	REQUESTED
TOTALS:	10	10	0	0	0	0	0			
FINDING NUMBER: EP.2-2		PRIORITY: 2	RISK WEIGHT:	106	ADEQUACY OF ORNL EMERGENCY PLANS					
1	18	18	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	20	0	20	0	0	0	0	PROGRAM	ER-AT EP	REQUESTED
TOTALS:	40	20	20	0	0	0	0			
FINDING NUMBER: EP.3-1		PRIORITY: 3	RISK WEIGHT:	7	TRAINING FOR EMERGENCY SITUATIONS					
1-4	314	0	0	0	100	105	109	OVERHEAD	OVERHEAD	ONGOING
1-4	10	10	0	0	0	0	0	PROGRAM	ER-AT EP	REQUESTED
5-6	50	0	50	0	0	0	0	PROGRAM	ER-AT EP	NEW
7	50	0	50	0	0	0	0	PROGRAM	ER-AT EP	NEW
8	100	0	0	100	0	0	0	PROGRAM	ER-AT EP	NEW
TOTALS:	524	10	100	100	100	105	109			
FINDING NUMBER: EP.3-2		PRIORITY: 3	RISK WEIGHT:	7	SPILL RESPONSE TRAINING					
1	274	0	50	52	55	57	60	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	274	0	50	52	55	57	60			
FINDING NUMBER: EP.4-1		PRIORITY: 3	RISK WEIGHT:	7	EMERGENCY PREPAREDNESS EXERCISES					
ALL	471	0	0	0	150	157	164	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	471	0	0	0	150	157	164			
FINDING NUMBER: EP.4-2		PRIORITY: 3	RISK WEIGHT:	6	DRILL PLANNING					
1-3	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
1-3	54	0	10	10	11	11	12	OVERHEAD	OVERHEAD	ONGOING
4	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	69	15	10	10	11	11	12			
FINDING NUMBER: EP.5-1		PRIORITY: 2	RISK WEIGHT:	68	EMERGENCY MONITORING OF RELEASES					
2	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	50	50	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	547	0	100	105	109	114	119	OVERHEAD	OVERHEAD	ONGOING
5	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	637	90	100	105	109	114	119			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: EP.5-2		PRIORITY: 2		RISK WEIGHT:	56	REGIONAL RADIOLOGICAL EVENT				
1-5,7	471	0	0	0	150	157	164	OVERHEAD	OVERHEAD	ONGOING
2	5	0	5	0	0	0	0	PROGRAM	ER-AT EP	REQUESTED
3	5	0	5	0	0	0	0	PROGRAM	ER-AT EP	REQUESTED
4	10	0	10	0	0	0	0	PROGRAM	ER-AT EP	NEW
5	100	0	100	0	0	0	0	PROGRAM	ER-AT EP	NEW
6	200	0	0	200	0	0	0	CAPITAL	GPE-ER	NEW
7	100	0	0	100	0	0	0	PROGRAM	ER-AT EP	NEW
TOTALS:	891	0	120	300	150	157	164			
FINDING NUMBER: EP.6-1		PRIORITY: 2		RISK WEIGHT:	56	PROTECTIVE ACTION GUIDES/EMERGENCY ACTION LEVELS				
ALL	25	25	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
ALL	274	0	50	52	55	57	60	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	299	25	50	52	55	57	60			
FINDING NUMBER: EP.7-1		PRIORITY: 2		RISK WEIGHT:	130	PERSONNEL ACCOUNTABILITY SYSTEMS				
1	50	50	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
1-4	137	0	25	26	27	29	30	OVERHEAD	OVERHEAD	ONGOING
2	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	5	0	5	0	0	0	0	PROGRAM	ER-AT EP	NEW
4	15	0	15	0	0	0	0	PROGRAM	ER-AT EP	NEW
TOTALS:	217	60	45	26	27	29	30			
FINDING NUMBER: EP.7-2		PRIORITY: 2		RISK WEIGHT:	133	EMERGENCY NOTIFICATION SYSTEMS				
1	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	410	410	0	0	0	0	0	CAPITAL	GPP-ER	FUNDED
3	8	8	0	0	0	0	0	PROGRAM	ER-AT EP	REQUESTED
ALL	274	0	50	52	55	57	60	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	694	420	50	52	55	57	60			
FINDING NUMBER: FP.1-1		PRIORITY: 2		RISK WEIGHT:	133	RESOURCES OF FIRE PROTECTION ENGINEERING SECTION				
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	596	0	60	125	131	137	143	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	598	2	60	125	131	137	143			
FINDING NUMBER: FP.1-2		PRIORITY: 2		RISK WEIGHT:	133	FIRE DEPARTMENT RESOURCES AND WORK LOAD				
ALL	274	0	50	52	55	57	60	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	274	0	50	52	55	57	60			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: FP.1-3			PRIORITY: 2		RISK WEIGHT: 55			FIRE PROTECTION OF ORNL FACILITIES AT THE Y-12 PLANT		
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: FP.1-4			PRIORITY: 2		RISK WEIGHT: 55			FIRE PROTECTION POLICIES REGARDING IMPROVED RISK		
1	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	7	7	0	0	0	0	0			
FINDING NUMBER: FP.1-5			PRIORITY: 2		RISK WEIGHT: 105			FACILITY REOCCUPANCY POLICY		
2	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	7	7	0	0	0	0	0			
FINDING NUMBER: FP.1-6			PRIORITY: 3		RISK WEIGHT: 9			MANAGEMENT'S ROLE IN FIRE PROTECTION		
2	7	0	7	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
3	329	0	60	63	66	68	72	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	336	0	67	63	66	68	72			
FINDING NUMBER: FP.2-1			PRIORITY: 2		RISK WEIGHT: 458			EGRESS FROM BUILDING 4500N, MACHINERY SPACE		
ALL	120	120	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	120	120	0	0	0	0	0			
FINDING NUMBER: FP.2-2			PRIORITY: 2		RISK WEIGHT: 458			EGRESS FROM BUILDING 4500N, OFFICE SPACE		
1-6	607	607	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	607	607	0	0	0	0	0			
FINDING NUMBER: FP.2-3			PRIORITY: 2		RISK WEIGHT: 133			LIFE SAFETY CODE SURVEYS		
1	240	240	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	240	240	0	0	0	0	0			
FINDING NUMBER: FP.2-4			PRIORITY: 3		RISK WEIGHT: 56			ACTION PLANS REGARDING LIFE SAFETY CODE SURVEYS		
1	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	5	5	0	0	0	0	0			
FINDING NUMBER: FP.3-1			PRIORITY: 2		RISK WEIGHT: 59			ORNL TESTING OF FIRE EQUIPMENT		
2	93	93	0	0	0	0	0	PROGRAM	ER-KC	FUNDED
2	22	22	0	0	0	0	0	PROGRAM	DP-GE	REQUESTE
5	350	0	140	210	0	0	0	PROGRAM	ER-KC	REQUESTED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
5	150	0	60	90	0	0	0	PROGRAM	DP-GE	REQUESTED
7	45	45	0	0	0	0	0	PROGRAM	ER-KC	FUNDED
TOTALS:	660	160	200	300	0	0	0			
FINDING NUMBER: FP.3-2 PRIORITY: 2 RISK WEIGHT: 80 ADEQUATE DOCUMENTATION OF FIRE STUDY										
4	105	105	0	0	0	0	0	PROGRAM	ER-KC	REQUESTED
4	45	45	0	0	0	0	0	PROGRAM	DP-GE	REQUESTED
TOTALS:	150	150	0	0	0	0	0			
FINDING NUMBER: FP.3-3 PRIORITY: 2 RISK WEIGHT: 58 DESIGN BASIS FIRE REVIEW PROGRAM										
1	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	7	7	0	0	0	0	0			
FINDING NUMBER: FP.4-1 PRIORITY: 2 RISK WEIGHT: 55 ADEQUACY OF FIRE PROTECTION										
1	500	0	100	400	0	0	0	PROGRAM	ER-KC	NEW
TOTALS:	500	0	100	400	0	0	0			
FINDING NUMBER: FP.5-1 PRIORITY: 2 RISK WEIGHT: 60 FIRE PROTECTION SYSTEMS IN BUILDING 4500N										
1	850	850	0	0	0	0	0	LINE ITEM	MGPF	FUNDED
1	1960	0	1660	300	0	0	0	LINE ITEM	MGPF	REQUESTED
2	10	10	0	0	0	0	0	LINE ITEM	MGPF	NEW
5	1990	0	190	0	0	1800	0	LINE ITEM	MGPF	NEW
TOTALS:	4810	860	1850	300	0	1800	0			
FINDING NUMBER: FP.6-1 PRIORITY: 2 RISK WEIGHT: 63 PHYSICAL FITNESS PROGRAM FOR FIRE FIGHTERS										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: FP.6-2 PRIORITY: 3 RISK WEIGHT: 83 FIRE DEPARTMENT STAFFING LEVEL										
4	1367	0	250	261	273	285	298	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	1367	0	250	261	273	285	298			
FINDING NUMBER: FP.6-3 PRIORITY: 3 RISK WEIGHT: 5 PRE-FIRE PLANS FOR ORNL FACILITIES										
1	225	225	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
2	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	226	226	0	0	0	0	0			
FINDING NUMBER: FP.7-1 PRIORITY: 2 RISK WEIGHT: 58 FIRE PROTECTION OF MAIN COMPUTER CENTERS										
ALL	9	9	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
ALL	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	10	10	0	0	0	0	0			
FINDING NUMBER: FP.7-2			PRIORITY: 2		RISK WEIGHT: 133			FIRE HAZARD ANALYSIS AND FACILITY PROTECTION SURVEY		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: FP.7-3			PRIORITY: 2		RISK WEIGHT: 58			FIRE PROTECTION OVERSIGHT		
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: FP.7-4			PRIORITY: 2		RISK WEIGHT: 58			REVIEW OF DOCUMENTS AFFECTING FIRE PROTECTION		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: FP.7-5			PRIORITY: 2		RISK WEIGHT: 58			WATER SUPPLY SYSTEM		
1	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	30	0	30	0	0	0	0	OVERHEAD	OVERHEAD	NEW
4	22000	0	0	0	5000	10000	7000	LINE ITEM	MGPF	REQUESTED
TOTALS:	22037	7	30	0	5000	10000	7000			
FINDING NUMBER: FR.1-1			PRIORITY: 3		RISK WEIGHT: 6			ORGANIZATION AND IMPLEMENTATION OF SAFETY REVIEW SYSTEM		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: FR.2-1			PRIORITY: 2		RISK WEIGHT: 60			REVIEW OF SAFETY QUESTIONS AND TOPICS		
2	15	0	15	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	15	0	15	0	0	0	0			
FINDING NUMBER: FR.3-1			PRIORITY: 2		RISK WEIGHT: 63			SHORTCOMINGS OF THE SAFETY REVIEW SYSTEM		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: FR.4-1			PRIORITY: 2		RISK WEIGHT: 98			MANAGEMENT RESPONSE TO SAFETY COMMITTEE RECOMMENDATIONS		
2	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	15	15	0	0	0	0	0			
FINDING NUMBER: FR.4-2		PRIORITY: 4		RISK WEIGHT:		1	ANNUAL FACILITY APPRAISALS			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: FR.5-1		PRIORITY: 3		RISK WEIGHT:		5	TRIENNIAL APPRAISAL			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: FR.6-1		PRIORITY: 2		RISK WEIGHT:		55	INDUSTRY LESSONS LEARNED			
1	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	21	21	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
2	465	0	85	89	93	97	101	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	501	36	85	89	93	97	101			
FINDING NUMBER: GW/BMPF-1		PRIORITY: 2		RISK WEIGHT:		50	INADEQUATE WELL AND BOREHOLE ABANDONMENT			
10	14860	0	0	2860	3000	3000	6000	PROGRAM	EM-ADS329	REQUESTED
10	250	250	0	0	0	0	0	PROGRAM	EM-ADS329	NEW
11	1302	0	102	1200	0	0	0	PROGRAM	EM-ADS333	REQUESTED
12	20977	0	0	0	0	1800	19177	PROGRAM	EM-ADS333	REQUESTED
13	250	250	0	0	0	0	0	PROGRAM	EM-ADS333	NEW
13	14856	0	2182	1830	3788	4656	2400	PROGRAM	EM-ADS333	REQUESTED
2	15	15	0	0	0	0	0	PROGRAM	EM-ADS332	FUNDED
3	10	10	0	0	0	0	0	PROGRAM	EM-ADS0322AB	FUNDED
4	110	0	110	0	0	0	0	PROGRAM	EM-ADS033	NEW
5	190	0	190	0	0	0	0	PROGRAM	EM-ADS329	REQUESTED
6	50	50	0	0	0	0	0	PROGRAM	EM-ADS332	FUNDED
6	90	0	90	0	0	0	0	PROGRAM	EM-ADS329	REQUESTED
7	220	0	120	100	0	0	0	PROGRAM	EM-ADS329	REQUESTED
7	50	50	0	0	0	0	0	PROGRAM	EM-ADS332	FUNDED
8	402	402	0	0	0	0	0	PROGRAM	EM-ADS332	FUNDED
8	6390	0	6390	0	0	0	0	PROGRAM	EM-ADS332	REQUESTED
9	90	0	50	40	0	0	0	PROGRAM	EM-ADS329	REQUESTED
TOTALS:	60112	1027	9234	6030	6788	9456	27577			
FINDING NUMBER: GW/BMPF-2		PRIORITY: 1		RISK WEIGHT:		50	INADEQUATE MONITORING WELL AND BOREHOLE INVENTORY, SECURITY, AND MAINTENANCE			
2	40	40	0	0	0	0	0	OVERHEAD	ENERGY SYSTEMS	REQUESTED
3	50	50	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5	150	0	150	0	0	0	0	PROGRAM	EM-ADS311AA	REQUESTED
5	1497	0	0	350	366	382	399	PROGRAM	EM-ADS311AA	ONGOING

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	1737	90	150	350	366	382	399			
FINDING NUMBER: GW/BMPF-3 PRIORITY: 2 RISK WEIGHT: 50 CROSS-CONTAMINATION BETWEEN AQUIFERS AND STRATA										
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: GW/BMPF-4 PRIORITY: 2 RISK WEIGHT: 50 NO CUSTODIAN FOR UNUSED WELLS										
3	672	100	105	109	114	119	125	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	672	100	105	109	114	119	125			
FINDING NUMBER: GW/BMPF-5 PRIORITY: 2 RISK WEIGHT: 117 INADEQUATE CHARACTERIZATION OF THE HYDROGEOLOGIC REGIME										
2	75	75	0	0	0	0	0	OVERHEAD	ENERGY SYSTEMS	FUNDED
2	75	75	0	0	0	0	0	PROGRAM	EM-ADS413	FUNDED
3	75	75	0	0	0	0	0	OVERHEAD	ENERGY SYSTEMS	FUNDED
3	75	75	0	0	0	0	0	PROGRAM	EM-ADS413	FUNDED
4	100	0	100	0	0	0	0	OVERHEAD	ENERGY SYSTEMS	REQUESTED
4	100	0	100	0	0	0	0	PROGRAM	EM-ADS413	REQUESTED
5	125	0	125	0	0	0	0	OVERHEAD	ENERGY SYSTEMS	REQUESTED
5	125	0	125	0	0	0	0	PROGRAM	EM-ADS413	REQUESTED
6	17796	17796	0	0	0	0	0	PROGRAM	EM-ADS363,324,325	FUNDED
6	149511	0	26670	27650	26367	26733	42091	PROGRAM	EM-ADS363,324,325	REQUESTED
TOTALS:	168057	18096	27120	27650	26367	26733	42091			
FINDING NUMBER: GW/CF-1 PRIORITY: 2 RISK WEIGHT: 507 INADEQUATE HYDROGEOLOGIC CHARACTERIZATION AT SWSA 6										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: GW/CF-2 PRIORITY: 2 RISK WEIGHT: 405 INADEQUATE IMPLEMENTATION OF WELL PURGING PROCEDURES AT SWSA-6										
4	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	5	0	1	1	1	1	1	OVERHEAD	OVERHEAD	ONGOING
5	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	10	0	2	2	2	2	2	OVERHEAD	OVERHEAD	ONGOING
6	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	10	0	2	2	2	2	2	OVERHEAD	OVERHEAD	ONGOING
7	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
7	28	0	5	5	6	6	6	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	63	10	10	10	11	11	11			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: IH.2-1		PRIORITY: 2	RISK WEIGHT:	68	DOCUMENTATION OF PROCEDURES BY INDUSTRIAL HYGIENE					
2	43	43	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	181	181	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	126	126	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
4	1269	0	852	417	0	0	0	PROGRAM	ER-AT IH	NEW
4	285	0	0	0	91	95	99	OVERHEAD	OVERHEAD	ONGOING
5	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
7	11	11	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
8	3	3	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	1933	379	852	417	91	95	99			
FINDING NUMBER: IH.2-2		PRIORITY: 4	RISK WEIGHT:	90	IMPLEMENTATION OF INDUSTRIAL HYGIENE REVIEWS					
1	2	0	2	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
2	11	11	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
4	99	0	18	19	20	21	21	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	117	16	20	19	20	21	21			
FINDING NUMBER: IH.3-1		PRIORITY: 2	RISK WEIGHT:	458	PERSONNEL PROTECTIVE EQUIPMENT					
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
8	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	16	16	0	0	0	0	0			
FINDING NUMBER: IH.4-1		PRIORITY: 2	RISK WEIGHT:	60	SURVEILLANCE OF INDUSTRIAL HYGIENE MONITORING					
2	435	0	435	0	0	0	0	PROGRAM	ER-AT IH	NEW
TOTALS:	435	0	435	0	0	0	0			
FINDING NUMBER: IH.5-1		PRIORITY: 2	RISK WEIGHT:	455	HEARING CONSERVATION PROGRAM					
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
3	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
4	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5	12	0	12	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5	56	0	0	13	14	14	15	OVERHEAD	OVERHEAD	ONGOING
6	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
6	5	0	1	1	1	1	1	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	90	17	13	14	15	15	16			
FINDING NUMBER: IH.5-2		PRIORITY: 2	RISK WEIGHT:	418	CHEMICAL CARCINOGEN PROGRAM					
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
4	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
7	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
8	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	47	47	0	0	0	0	0			
FINDING NUMBER: IH.5-3 PRIORITY: 1 RISK WEIGHT: 913 CONFINED SPACE ENTRY										
10	43	43	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
10,14	580	0	106	111	116	121	126	OVERHEAD	OVERHEAD	ONGOING
14	78	78	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	176	176	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	884	304	106	111	116	121	126			
FINDING NUMBER: IH.5-4 PRIORITY: 2 RISK WEIGHT: 415 RESPIRATORY PROTECTION PROGRAM										
1	44	0	44	0	0	0	0	OVERHEAD	DIVISION	NEW
1,2,4	419	0	8	96	100	105	110	OVERHEAD	DIVISION	ONGOING
2	7	7	0	0	0	0	0	OVERHEAD	DIVISION	FUNDED
4	7	7	0	0	0	0	0	OVERHEAD	DIVISION	FUNDED
5	7	7	0	0	0	0	0	OVERHEAD	DIVISION	FUNDED
6	28	28	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	169	0	31	32	34	35	37	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	681	49	83	128	134	140	147			
FINDING NUMBER: IH.5-5 PRIORITY: 2 RISK WEIGHT: 408 SANITATION AND POTABLE WATER PROGRAM										
1	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
1	120	0	22	23	24	25	26	OVERHEAD	OVERHEAD	ONGOING
3	2	0	2	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
TOTALS:	129	7	24	23	24	25	26			
FINDING NUMBER: IH.5-6 PRIORITY: 2 RISK WEIGHT: 80 ERGONOMICS PROGRAM										
1	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
2	295	44	46	48	50	52	55	OVERHEAD	OVERHEAD	ONGOING
3	15	0	15	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	325	59	61	48	50	52	55			
FINDING NUMBER: IH.6-1 PRIORITY: 2 RISK WEIGHT: 422 HANDLING, STORAGE, AND LABELING OF CHEMICALS										
1	85	85	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
1	963	0	176	184	192	201	210	OVERHEAD	OVERHEAD	ONGOING
2	55	55	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	66	0	66	0	0	0	0	OVERHEAD	OVERHEAD	NEW

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
4	1129	0	0	264	276	288	301	OVERHEAD	OVERHEAD	ONGOING
5	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	14	14	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	2314	156	242	448	468	489	511			
FINDING NUMBER: IWS/BMPF-1 PRIORITY: 3 RISK WEIGHT: 10 INFORMALITY OF OPERATIONS IN THE ENVIRONMENTAL RESTORATION PROGRAM (ERP)										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: IWS/BMPF-2 PRIORITY: 3 RISK WEIGHT: 7 PROCEEDING WITHOUT APPROVED PLANS										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: IWS/BMPF-3 PRIORITY: 3 RISK WEIGHT: 42 LACK OF ADEQUATE PLANNING FOR FEDERAL FACILITY AGREEMENT ACTIVITIES										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: IWS/BMPF-4 PRIORITY: 3 RISK WEIGHT: 50 INCOMPLETE EVOLUTION OF CONTINUOUS RELEASES										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: IWS/CF-1 PRIORITY: 2 RISK WEIGHT: 410 INADEQUATE INVENTORY AND IDENTIFICATION OF INACTIVE WASTE SITES										
1-2	25	25	0	0	0	0	0	PROGRAM	EM-ADS322	FUNDED
TOTALS:	25	25	0	0	0	0	0			
FINDING NUMBER: IWS/CF-2 PRIORITY: 2 RISK WEIGHT: 495 LACK OF FORMAL NATURAL RESOURCES DAMAGE ASSESSMENT NOTIFICATION										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: IWS/CF-3 PRIORITY: 2 RISK WEIGHT: 405 INCOMPLETE DISTRIBUTION OF EPCRA REPORTS										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: MA.1-1 PRIORITY: 3 RISK WEIGHT: 41 ORNL LACKS POLICY/PROCEDURE IN REMOVING EQUIPMENT FROM SERVICE										

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
5	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	1	1	0	0	0	0	0			
FINDING NUMBER: MA.2-1 PRIORITY: 1 RISK WEIGHT: 917 ORNL LACKS EFFECTIVE LOCKOUT/TAGOUT SYSTEM										
1	12	12	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	190	190	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	443	66	69	72	75	79	82	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	645	268	69	72	75	79	82			
FINDING NUMBER: MA.2-2 PRIORITY: 2 RISK WEIGHT: 86 PLANT MAINTENANCE PERSONNEL										
1-4	655	655	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	100	100	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	25	25	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	82	0	15	16	16	17	18	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	862	780	15	16	16	17	18			
FINDING NUMBER: MA.5-1 PRIORITY: 2 RISK WEIGHT: 567 GENERAL FACILITY AND POST-WORK INSPECTIONS WER' NOT BE USED										
4	25	5	20	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5	2462	0	450	470	491	514	537	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	2487	5	470	470	491	514	537			
FINDING NUMBER: MA.5-2 PRIORITY: 2 RISK WEIGHT: 58 FUNDAMENTAL ASSESSMENTS OF FACILITIES										
1	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	30	0	30	0	0	0	0	OVERHEAD	OVERHEAD	NEW
ALL	1094	0	200	209	218	228	239	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	1129	5	230	209	218	228	239			
FINDING NUMBER: MA.6-1 PRIORITY: 2 RISK WEIGHT: 570 P&E DIVISION PREVENTIVE MAINTENANCE										
3	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	5	0	5	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
6	1367	0	250	261	273	285	298	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	1382	10	255	261	273	285	298			
FINDING NUMBER: MA.8-1 PRIORITY: 3 RISK WEIGHT: 42 MAINTENANCE PROCEDURES										
1	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	3	3	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	547	0	100	105	109	114	119	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	551	4	100	105	109	114	119			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: MF-1			PRIORITY: 3		RISK WEIGHT:	99	ES&H GOALS AND OBJECTIVES			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: MF-10			PRIORITY: 3		RISK WEIGHT:	119	DOE DIRECTIVE SYSTEM			
ALL	250	250	0	0	0	0	0	PROGRAM	ER-AT	REQUESTED
TOTALS:	250	250	0	0	0	0	0			
FINDING NUMBER: MF-11			PRIORITY: 3		RISK WEIGHT:	58	ORO OVERSIGHT SYSTEMS			
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: MF-12			PRIORITY: 3		RISK WEIGHT:	20	CONTRACT AWARD FEE PROCESS			
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: MF-2			PRIORITY: 3		RISK WEIGHT:	102	ES&H MANAGEMENT SYSTEMS			
1	1000	0	1000	0	0	0	0	OVERHEAD	DIVISION	REQUESTED
1	500	500	0	0	0	0	0	OVERHEAD	DIVISION	FUNDED
2-4	150	150	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2-4	547	0	100	105	109	114	119	OVERHEAD	OVERHEAD	ONGOING
5	70	70	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	2267	720	1100	105	109	114	119			
FINDING NUMBER: MF-3			PRIORITY: 3		RISK WEIGHT:	126	QUALITY ASSURANCE			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: MF-4			PRIORITY: 3		RISK WEIGHT:	99	HUMAN RESOURCES			
1-4	44	44	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
1-4	77	0	14	15	15	16	17	OVERHEAD	OVERHEAD	ONGOING
5-6	22	22	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5-6	49	0	9	9	10	10	11	OVERHEAD	OVERHEAD	ONGOING
7	22	22	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
7	72	0	13	14	14	15	16	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	286	88	36	38	39	41	44			
FINDING NUMBER: MF-5			PRIORITY: 2		RISK WEIGHT:	135	INDEPENDENT OVERSIGHT SYSTEMS			
1	20	20	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	3	3	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
3	20	20	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	3	0	3	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5	110	0	20	21	22	23	24	OVERHEAD	OVERHEAD	ONGOING
6	20	0	20	0	0	0	0	OVERHEAD	OVERHEAD	NEW
7	31	0	0	31	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	207	43	43	52	22	23	24			
FINDING NUMBER: MF-6			PRIORITY: 2		RISK WEIGHT: 105			ORNL TRACKING ES&H ISSUES TO CLOSURE		
3	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
4	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
6	45	45	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
7	40	40	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
8	25	25	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
9	696	187	334	175	0	0	0	OVERHEAD	OVERHEAD	NEW
ALL	382	0	70	73	76	80	83	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	1218	327	404	248	76	80	83			
FINDING NUMBER: MF-7			PRIORITY: 3		RISK WEIGHT: 539			ORNL ES&H INTERFACES WITH ONSITE EXTERNAL GROUPS		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: MF-8			PRIORITY: 3		RISK WEIGHT: 33			ES&H REVIEW OF WORK FOR OTHERS		
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: MF-9			PRIORITY: 2		RISK WEIGHT: 40			CONTRACTUAL MATTERS		
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: MS.1-1			PRIORITY: 2		RISK WEIGHT: 55			VOLUNTARY HEALTH EXAMINATION PROGRAM		
1	672	100	105	109	114	119	125	OVERHEAD	OVERHEAD	ONGOING
2	15	0	15	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	687	100	120	109	114	119	125			
FINDING NUMBER: MS.2-1			PRIORITY: 3		RISK WEIGHT: 8			MEDICAL DIVISION ADMINISTRATIVE ASSISTANCE		
2	246	0	45	47	49	51	54	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	246	0	45	47	49	51	54			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: MS.3-1		PRIORITY: 2		RISK WEIGHT: 408			BACKUP PULMONARY FUNCTION TESTING PERSONNEL			
2	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	5	5	0	0	0	0	0			
FINDING NUMBER: MS.3-2		PRIORITY: 3		RISK WEIGHT: 55			MEDICAL DIVISION SPACE ALLOCATION			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: MS.3-3		PRIORITY: 2		RISK WEIGHT: 62			DECONTAMINATION FACILITIES			
1	280	280	0	0	0	0	0	CAPITAL	GPP-ER	FUNDED
2	920	0	920	0	0	0	0	CAPITAL	GPP-ER	REQUESTED
TOTALS:	1200	280	920	0	0	0	0			
FINDING NUMBER: NEPA/BMPF1		PRIORITY: 3		RISK WEIGHT: 10			LACK OF ENVIRONMENTAL IMPACT ASSESSMENT FOR ORNL CONTINUING OPERATIONS			
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: NEPA/CF-1		PRIORITY: 2		RISK WEIGHT: 658			INEFFICIENT DOE NEPA IMPLEMENTATION PROCEDURES			
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: NEPA/CF-2		PRIORITY: 2		RISK WEIGHT: 405			PROJECT IMPLEMENTATION WITHOUT COMPLETED NEPA PROCESS			
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: OA.1-1		PRIORITY: 2		RISK WEIGHT: 69			FLOWDOWN OF POLICIES			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: OA.1-2		PRIORITY: 2		RISK WEIGHT: 58			DOE ORDERS			
5	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	75	75	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
ALL	44	0	8	8	9	9	10	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	120	76	8	8	9	9	10			
FINDING NUMBER: OA.1-3		PRIORITY: 2		RISK WEIGHT: 539			ROLES AND RESPONSIBILITIES FOR ES&H			
NONE	0	0	0	0	0	0	0			NONE

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST		FUND SOURCE	STATUS
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: OA.1-4			PRIORITY: 2		RISK WEIGHT: 488			ES&H REQUIREMENTS ACCEPTANCE BY DIVISIONS			
2	275	275	0	0	0	0	0	OVERHEAD	DIVISION		NEW
TOTALS:	275	275	0	0	0	0	0				
FINDING NUMBER: OA.1-5			PRIORITY: 2		RISK WEIGHT: 539			ROLES, RESPONSIBILITIES INVOLVING ES&H NOT CLEARLY DEFINED			
X-REF'	0	0	0	0	0	0	0	X	X		X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: OA.1-6			PRIORITY: 2		RISK WEIGHT: 65			NO UNIFORM SAFETY REQUIREMENTS AT X10 AND Y12			
X-REF'	0	0	0	0	0	0	0	X	X		X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: OA.3-1			PRIORITY: 2		RISK WEIGHT: 64			ORNL HAS NOT ESTABLISHED COMPREHENSIVE ES&H GOALS FOR FACILITIES			
2	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD		NEW
2	82	0	15	16	16	17	18	OVERHEAD	OVERHEAD		ONGOING
TOTALS:	97	15	15	16	16	17	18				
FINDING NUMBER: OA.6-1			PRIORITY: 3		RISK WEIGHT: 58			REQUIREMENTS FOR JOB DESCRIPTIONS			
X-REF'	0	0	0	0	0	0	0	X	X		X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: OA.6-2			PRIORITY: 3		RISK WEIGHT: 58			PPR SYSTEM			
X-REF'	0	0	0	0	0	0	0	X	X		X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: OA.7-1			PRIORITY: 3		RISK WEIGHT: 5			CENTRALIZED SYSTEM FOR CONTROL OF SAFETY DOCUMENTS			
1	4	4	0	0	0	0	0	OVERHEAD	OVERHEAD		FUNDED
2	4	0	4	0	0	0	0	OVERHEAD	OVERHEAD		REQUESTED
TOTALS:	8	4	4	0	0	0	0				
FINDING NUMBER: OA.7-2			PRIORITY: 2		RISK WEIGHT: 130			STORAGE FACILITIES AT ORNL FOR RECORDS			
1	18	18	0	0	0	0	0	OVERHEAD	OVERHEAD		REQUESTED
2	7	0	7	0	0	0	0	OVERHEAD	OVERHEAD		NEW

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	25	18	7	0	0	0	0			
FINDING NUMBER: OA.8-1			PRIORITY: 2		RISK WEIGHT:		87	SITE WIDE TRAINING FOR DRUG/ALCOHOL USE/BEHAVIOR		
1	14	14	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
1	26	0	6	6	7	0	7	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	40	14	6	6	7	0	7			
FINDING NUMBER: OP.3-1			PRIORITY: 2		RISK WEIGHT:		55	ORNL LACKS STANDARDIZED POLICY FOR OPERATING PROCEDURES		
1	11	11	0	0	0	0	0	OVERHEAD	ENERGY SYSTEMS	NEW
2	20	0	20	0	0	0	0	OVERHEAD	ENERGY SYSTEMS	NEW
2	22	0	0	5	5	6	6	OVERHEAD	ENERGY SYSTEMS	ONGOING
3	12	0	12	0	0	0	0	OVERHEAD	ENERGY SYSTEMS	NEW
4	7	0	7	0	0	0	0	OVERHEAD	ENERGY SYSTEMS	NEW
TOTALS:	72	11	39	5	5	6	6			
FINDING NUMBER: OP.4-1			PRIORITY: 3		RISK WEIGHT:		56	FACILITY STATUS DISPLAYS		
2	756	756	0	0	0	0	0	OVERHEAD	DIVISION	FUNDED
TOTALS:	756	756	0	0	0	0	0			
FINDING NUMBER: OP.4-2			PRIORITY: 1		RISK WEIGHT:		917	LOCKOUT/TAGOUT SYSTEMS AT ORNL		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: OP.7-1			PRIORITY: 2		RISK WEIGHT:		67	SHIFT WORKERS AT ORNL		
3	5	5	0	0	0	0	0	OVERHEAD	DIVISION	FUNDED
3	629	0	115	120	126	131	137	OVERHEAD	DIVISION	ONGOING
TOTALS:	634	5	115	120	126	131	137			
FINDING NUMBER: OP.8-1			PRIORITY: 3		RISK WEIGHT:		5	GENERALLY ACCEPTED TERMINOLOGY		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: OP.8-2			PRIORITY: 2		RISK WEIGHT:		56	ALARM PANELS		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: OP.8-3			PRIORITY: 2		RISK WEIGHT:		56	LACK OF UNIFORMITY IN CONVEYING INFORMATION TO PERSONNEL		

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
1	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	15	0	15	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5	67	0	0	67	0	0	0	OVERHEAD	DIVISION	NEW
TOTALS:	92	10	15	67	0	0	0			
FINDING NUMBER: PP.1-1 PRIORITY: 2 RISK WEIGHT: 505 RESOURCES FOR WORKPLACE MAINTENANCE										
1	6	6	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
10	8	0	8	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
12	40	40	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
13	12400	0	0	1000	3000	6000	2400	LINE ITEM	ER-AT	REQUESTED
3	4	4	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
9	2297	0	425	444	464	479	485	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	14773	68	433	1444	3464	6479	2885			
FINDING NUMBER: PP.2-1 PRIORITY: 2 RISK WEIGHT: 505 ORNL HEALTH AND SAFETY PROGRAM										
4-5	1258	0	0	140	461	153	504	OVERHEAD	OVERHEAD	ONGOING
5	280	0	280	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	1538	0	280	140	461	153	504			
FINDING NUMBER: PP.2-2 PRIORITY: 2 RISK WEIGHT: 415 WORKPLACE EXPSOURE MONITORING AND MEDICAL RECORDS										
1	61	0	61	0	0	0	0	PROGRAM	ER-AT IH	REQUESTED
2	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	46	46	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	124	63	61	0	0	0	0			
FINDING NUMBER: PP.3-1 PRIORITY: 2 RISK WEIGHT: 68 HEALTH AND SAFETY CONCERNS										
1	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	15	15	0	0	0	0	0			
FINDING NUMBER: PP.3-2 PRIORITY: 2 RISK WEIGHT: 68 ORNL CONSTRUCTION OVERSIGHT PROGRAM										
2	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	7	7	0	0	0	0	0			
FINDING NUMBER: PP.5-1 PRIORITY: 2 RISK WEIGHT: 418 HAZARD COMMUNICATION PROGRAM DEFICIENCIES										
1	3	3	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
2	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	10	10	0	0	0	0	0			
FINDING NUMBER: PP.5-2			PRIORITY: 3		RISK WEIGHT:	13		HEALTH AND SAFETY PROGRAM DEFICIENCIES		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: PP.5-3			PRIORITY: 2		RISK WEIGHT:	133		EXPLOSIVES SAFETY PROGRAM		
4	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	10	0	10	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5	12	0	0	3	3	3	3	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	29	7	10	3	3	3	3			
FINDING NUMBER: PP.5-4			PRIORITY: 3		RISK WEIGHT:	5		IMPLEMENTATION OF INDUSTRIAL SAFETY PROGRAM		
3	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	15	15	0	0	0	0	0			
FINDING NUMBER: PT.1-1			PRIORITY: 2		RISK WEIGHT:	534		FINANCE MATERIALS DIVISION STAFF		
ALL	1024	133	163	170	178	186	194	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	1024	133	163	170	178	186	194			
FINDING NUMBER: PT.1-2			PRIORITY: 2		RISK WEIGHT:	93		PACKAGING AND TRANSPORTATION PROCEDURES		
1	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
2	75	75	0	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
ALL	262	0	48	50	52	55	57	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	352	90	48	50	52	55	57			
FINDING NUMBER: PT.1-3			PRIORITY: 2		RISK WEIGHT:	93		PACKAGING AND TRANSPORTATION PROCEDURAL DOCUMENTS		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: PT.1-4			PRIORITY: 2		RISK WEIGHT:	133		ORNL ONSITE TRANSPORTATION MANUAL		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: PT.1-5			PRIORITY: 3		RISK WEIGHT:	5		CROSSOVER PACKAGING AND TRANSPORTATION RESPONSIBILITIES		
NONE	0	0	0	0	0	0	0			NONE

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST		FUND SOURCE	STATUS
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: PT.1-6			PRIORITY: 3		RISK WEIGHT:	45		TRANSPORTATION PROGRAM			
X-REF'	0	0	0	0	0	0	0	X	X		X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: PT.12-1			PRIORITY: 2		RISK WEIGHT:	414		HANDLING AND STORAGE OF HAZARDOUS MATERIALS			
1	100	100	0	0	0	0	0	OVERHEAD	OVERHEAD		FUNDED
2	150	0	150	0	0	0	0	OVERHEAD	OVERHEAD		NEW
3	125	0	125	0	0	0	0	OVERHEAD	OVERHEAD		NEW
4	58	0	58	0	0	0	0	OVERHEAD	OVERHEAD		REQUESTED
5	94	0	94	0	0	0	0	OVERHEAD	OVERHEAD		NEW
6	50	0	50	0	0	0	0	OVERHEAD	OVERHEAD		NEW
7	150	75	75	0	0	0	0	OVERHEAD	OVERHEAD		NEW
8	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD		NEW
TOTALS:	732	180	552	0	0	0	0				
FINDING NUMBER: PT.12-2			PRIORITY: 3		RISK WEIGHT:	8		PLANNING OF RADIOACTIVE MATERIALS PACKAGING NEEDS			
X-REF'	0	0	0	0	0	0	0	X	X		X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: PT.12-3			PRIORITY: 3		RISK WEIGHT:	5		ABSENCE OF ONSITE TRANSFER PLAN			
X-REF'	0	0	0	0	0	0	0	X	X		X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: PT.12-4			PRIORITY: 3		RISK WEIGHT:	5		CONFLICTING CONTAMINATION LIMITS			
NONE	0	0	0	0	0	0	0				NONE
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: PT.2-1			PRIORITY: 2		RISK WEIGHT:	133		HAZARDOUS MATERIALS TRANSPORTATION INFORMATION			
X-REF'	0	0	0	0	0	0	0	X	X		X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: PT.3-1			PRIORITY: 3		RISK WEIGHT:	5		DIVISIONAL QA PACKAGING AND TRANSPORTATION PROCEDURES			
1	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD		FUNDED
2	5	0	5	0	0	0	0	OVERHEAD	OVERHEAD		NEW
2	28	0	5	5	6	6	6	OVERHEAD	OVERHEAD		ONGOING

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	43	10	10	5	6	6	6			
FINDING NUMBER: PT.3-2			PRIORITY: 2		RISK WEIGHT:	30		TRANSPORTATION PROGRAM AUDITS		
1	9	9	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	9	9	0	0	0	0	0			
FINDING NUMBER: PT.6-1			PRIORITY: 2		RISK WEIGHT:	487		ONSITE TRANSPORT OF WASTE		
1	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
1	642	0	150	157	164	0	171	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	657	15	150	157	164	0	171			
FINDING NUMBER: PT.6-2			PRIORITY: 3		RISK WEIGHT:	5		LOW-LEVEL WASTE BOTTLE TESTING		
1	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	10	10	0	0	0	0	0			
FINDING NUMBER: PT.6-3			PRIORITY: 3		RISK WEIGHT:	40		INCONSISTENCY OF REGULATORY TERMINOLOGY		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: PT.8-1			PRIORITY: 2		RISK WEIGHT:	58		SAFETY STANDARDS FOR VEHICLE IDENTIFICATION		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: PT.8-2			PRIORITY: 2		RISK WEIGHT:	87		UNNECESSARY TRANSPORT OF HAZARDOUS MATERIALS		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: PT.8-3			PRIORITY: 2		RISK WEIGHT:	133		ONSITE TRANSFERS OF HAZARDOUS MATERIALS		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: PT.9-1			PRIORITY: 3		RISK WEIGHT:	5		CENTRAL FILE FOR OFFSITE SHIPPING DOCUMENTS		
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: PT.9-2			PRIORITY: 1		RISK WEIGHT:	607		TRAFFIC HAZARDS ON BETHEL VALLEY ROAD		
1-2	20	20	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	350	0	350	0	0	0	0	OVERHEAD	OVERHEAD	NEW

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	375	25	350	0	0	0	0			
FINDING NUMBER: QA/BMPF-1 PRIORITY: 3 RISK WEIGHT: 9 QA/QC DEFICIENCIES IN THE MMES/ORNL ENVIRONMENTAL SAMPLING PROGRAMS										
7	235	0	235	0	0	0	0	PROGRAM	ER-AT EC	NEW
7	1006	0	0	235	246	257	268	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	1241	0	235	235	246	257	268			
FINDING NUMBER: QA/CF-1 PRIORITY: 2 RISK WEIGHT: 55 STANDARD OPERATING PROCEDURES DEFICIENCIES FOR SOME MMES/ORNL PROJECTS										
2	2	2	0	0	0	0	0	PROGRAM	ER-KC	FUNDED
2-3	22	0	4	4	4	5	5	PROGRAM	ER-KC	ONGOING
3	2	2	0	0	0	0	0	PROGRAM	ER-KC	FUNDED
TOTALS:	26	4	4	4	4	5	5			
FINDING NUMBER: QA/CF-2 PRIORITY: 3 RISK WEIGHT: 5 DEFICIENCIES WITH THE MMES ENVIRONMENTAL SURVEILLANCE PROCEDURES QUALITY CONTROL PROGRAM MANUAL										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: QV.1-1 PRIORITY: 2 RISK WEIGHT: 60 RESOURCES TO APPLY QA FUNCTIONS										
4	85	85	0	0	0	0	0	PROGRAM	ER-KC	NEW
4	1396	0	255	267	279	291	304	PROGRAM	ER-KC	ONGOING
TOTALS:	1481	85	255	267	279	291	304			
FINDING NUMBER: QV.1-2 PRIORITY: 2 RISK WEIGHT: 63 LINE ORGANIZATIONS ARE NOT IMPLEMENTING THE QA PROGRAM										
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: QV.1-3 PRIORITY: 2 RISK WEIGHT: 55 QA DEPARTMENT AUDIT PROGRAM										
3	57	57	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
3	931	0	170	178	186	194	203	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	988	57	170	178	186	194	203			
FINDING NUMBER: QV.1-4 PRIORITY: 2 RISK WEIGHT: 55 INTERNAL AUDITS/SURVEILLANCES ARE INFREQUENTLY PERFORMED										
X-REF'	0	0	0	0	0	0	0	X	X	X

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: QV.1-5			PRIORITY: 2		RISK WEIGHT:		56	QA PLANS AND MANUALS DO NOT REFLECT SPECIFIC DOE REQUIREMENTS		
1	60	60	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
1	20	0	20	0	0	0	0	OVERHEAD	OVERHEAD	NEW
2	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	95	75	20	0	0	0	0			
FINDING NUMBER: QV.1-6			PRIORITY: 2		RISK WEIGHT:		94	CORRECTIVE ACTIONS ARE UNTIMELY AND INEFFECTIVE		
3	12	0	12	0	0	0	0	OVERHEAD	DIVISION	NEW
TOTALS:	12	0	12	0	0	0	0			
FINDING NUMBER: QV.2-1			PRIORITY: 2		RISK WEIGHT:		82	PROCUREMENT CONTROLS		
1	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
6	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
7	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
8	2	0	2	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	9	7	2	0	0	0	0			
FINDING NUMBER: QV.3-1			PRIORITY: 2		RISK WEIGHT:		59	PROVISIONS FOR RECEIVING/INSTALLATION		
2	7	0	7	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	7	0	7	0	0	0	0			
FINDING NUMBER: QV.4-1			PRIORITY: 2		RISK WEIGHT:		5	CALIBRATION FACILITIES		
1	12	12	0	0	0	0	0	CAPITAL	GPE-ER	NEW
2	5	5	0	0	0	0	0	OVERHEAD	DIVISION	NEW
TOTALS:	17	17	0	0	0	0	0			
FINDING NUMBER: QV.4-2			PRIORITY: 2		RISK WEIGHT:		56	CALIBRATIONS PROGRAM		
3	3	3	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	3	0	3	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	6	3	3	0	0	0	0			
FINDING NUMBER: QV.5-1			PRIORITY: 2		RISK WEIGHT:		61	SAFETY-RELATED HARDWARE AND MATERIALS		
1	12	0	12	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
1	30	30	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	30	0	30	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
3	188	0	188	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
4	75	0	75	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	335	30	305	0	0	0	0			
FINDING NUMBER: QV.6-1		PRIORITY: 2		RISK WEIGHT:	62	QUALITY RELATED INSPECTIONS				
1	4	4	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	2	0	2	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	13	11	2	0	0	0	0			
FINDING NUMBER: QV.7-1		PRIORITY: 2		RISK WEIGHT:	58	SPECIAL PROCESS TRAINING				
1	50	50	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
1	437	0	80	84	87	91	95	OVERHEAD	OVERHEAD	ONGOING
2	6	6	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	493	56	80	84	87	91	95			
FINDING NUMBER: RAD/CF-1		PRIORITY: 2		RISK WEIGHT:	55	INADEQUATE RADIOLOGICAL DOSE ASSESSMENT				
1	6	6	0	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
2	12	12	0	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
3	12	12	0	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
ALL	82	0	15	16	16	17	18	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	112	30	15	16	16	17	18			
FINDING NUMBER: RAD/CF-2		PRIORITY: 2		RISK WEIGHT:	65	INADEQUATE RADIOLOGICAL POSTINGS				
1	16	16	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	8	8	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	225	0	0	225	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	249	24	0	225	0	0	0			
FINDING NUMBER: RAD/CF-3		PRIORITY: 2		RISK WEIGHT:	58	UNMONITORED DECONTAMINATION LAUNDRY DISCHARGES				
1	15	0	15	0	0	0	0	PROGRAM	ER-AT RP	NEW
1	22	0	0	5	5	6	6	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	37	0	15	5	5	6	6			
FINDING NUMBER: RAD/CF-4		PRIORITY: 2		RISK WEIGHT:	55	INADEQUATE CALIBRATION OF RADIOLOGICAL MONITORS				
5	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	28	0	5	5	6	6	6	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	38	10	5	5	6	6	6			
FINDING NUMBER: RAX.2-1		PRIORITY: 4		RISK WEIGHT:	5	RESIN CARRYOVER IN RESIN REGENERATIVE SYSTEM				
1	200	200	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
2	1200	0	1200	0	0	0	0	CAPITAL	EM-GPP	REQUESTED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	1400	200	1200	0	0	0	0			
FINDING NUMBER: RAX.3-1		PRIORITY: 4		RISK WEIGHT:	1		CONTAMINATION OF THE HFIR POOL			
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RAX.4-1		PRIORITY: 2		RISK WEIGHT:	1		HFIR SPENT FUEL CASK NOT APPROVED BY DOE			
2	5	5	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	5	5	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	10	10	0	0	0	0	0			
FINDING NUMBER: RCS.1-1		PRIORITY: 3		RISK WEIGHT:	55		MANAGEMENT OF CRITICALITY SAFETY PROGRAM			
3	135	20	21	22	23	24	25	PROGRAM	ER-KC03	ONGOING
TOTALS:	135	20	21	22	23	24	25			
FINDING NUMBER: RCS.1-2		PRIORITY: 3		RISK WEIGHT:	5		TIMELY RESOLUTION OF CRITICALITY SAFETY ISSUES			
3	25	25	0	0	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	25	25	0	0	0	0	0			
FINDING NUMBER: RCS.5-1		PRIORITY: 3		RISK WEIGHT:	55		CRITICALITY ALARM SYSTEMS			
1	10	10	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	10	10	0	0	0	0	0			
FINDING NUMBER: RCS.5-2		PRIORITY: 2		RISK WEIGHT:	55		DISTRIBUTION OF NUCLEAR ACCIDENT DOSIMETERS			
1	17	17	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	16	16	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	88	0	16	17	18	18	19	OVERHEAD	OVERHEAD	ONGOING
4	9	9	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	143	55	16	17	18	18	19			
FINDING NUMBER: RCS.5-3		PRIORITY: 3		RISK WEIGHT:	55		PERFORMANCE OF CRITICALITY DRILLS			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: REA.1-1		PRIORITY: 3		RISK WEIGHT:	5		SAFETY OVERVIEW OF BLDG. 7900			
4	428	0	0	100	105	109	114	PROGRAM	ER-KC03	ONGOING

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	428	0	0	100	105	109	114			
FINDING NUMBER: REA.3-1		PRIORITY: 4		RISK WEIGHT:	5	UPDATING OF RESEARCH REACTORS EXPERIMENTER'S GUIDE				
2	20	20	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	10	0	10	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
TOTALS:	30	20	10	0	0	0	0			
FINDING NUMBER: REA.3-2		FRIORITY: 3		RISK WEIGHT:	0	VERIFICATION OF REACTOR EXPERIMENT CALCULATIONS				
3	8	8	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
4	2	0	2	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
TOTALS:	10	8	2	0	0	0	0			
FINDING NUMBER: REA.4-1		PRIORITY: 3		RISK WEIGHT:	8	CONTROL OF POTENTIAL PERSONNEL EXPOSURE				
1	5	5	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	5	5	0	0	0	0	0			
FINDING NUMBER: REP.2-1		PRIORITY: 3		RISK WEIGHT:	85	HFIR EMERGENCY PREPAREDNESS PLANNING				
4	13	0	0	13	0	0	0	PROGRAM	ER-KC03	NEW
5	38	0	0	38	0	0	0	PROGRAM	ER-KC03	NEW
6	50	0	0	50	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	101	0	0	101	0	0	0			
FINDING NUMBER: REP.3-1		PRIORITY: 3		RISK WEIGHT:	55	TRAINING OF DESIGNATED EMERGENCY RESPONDERS				
1	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	3	3	0	0	0	0	0			
FINDING NUMBER: REP.5-1		PRIORITY: 2		RISK WEIGHT:	50	HFIR STACK RADIOLOGICAL EFFLUENT MONITORS				
1	3	3	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
10	6	6	0	0	0	0	0	PROGRAM	ER-KC03	NEW
11	13	0	13	0	0	0	0	CAPITAL	ER-KC03	NEW
12	250	0	250	0	0	0	0	CAPITAL	ER-KC03	NEW
13	150	0	150	0	0	0	0	CAPITAL	ER-KC03	NEW
14	75	0	75	0	0	0	0	CAPITAL	ER-KC03	NEW
2	13	13	0	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
3	13	13	0	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
5	15	15	0	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
6	25	25	0	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
8	75	75	0	0	0	0	0	PROGRAM	ER-KC03	NEW
8	75	0	75	0	0	0	0	CAPITAL	ER-KC03	NEW
9	6	6	0	0	0	0	0	PROGRAM	ER-KC03	NEW

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	719	156	563	0	0	0	0			
FINDING NUMBER: REP.5-2		PRIORITY: 3		RISK WEIGHT:	55	EMERGENCY RESOURCES				
4	13	13	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
5	6	6	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	19	19	0	0	0	0	0			
FINDING NUMBER: REP.6-1		PRIORITY: 3		RISK WEIGHT:	55	EMERGENCY ASSESSMENT AND NOTIFICATION PROCEDURES				
4	50	0	0	50	0	0	0	PROGRAM	ER-KC03	NEW
5	50	0	0	50	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	100	0	0	100	0	0	0			
FINDING NUMBER: REP.7-1		PRIORITY: 3		RISK WEIGHT:	55	HFIR EMERGENCY PREPAREDNESS PLANNING				
1	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	2	0	2	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
4	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
5	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
6	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
6	1	0	1	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
TOTALS:	11	8	3	0	0	0	0			
FINDING NUMBER: RFP.1-1		PRIORITY: 2		RISK WEIGHT:	5	ORGANIZATION AND ADMINISTRATION OF FIRE PROTECTION PROGRAM				
2	3	0	3	0	0	0	0	OVERHEAD	OVERHEAD	NEW
3	3	0	3	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	6	0	6	0	0	0	0			
FINDING NUMBER: RFP.4-1		PRIORITY: 2		RISK WEIGHT:	53	SPRINKLER SYSTEM IN BLDG 7902				
2	200	0	0	200	0	0	0	LINE ITEM	ER-KC ARIMS	NEW
3	600	0	0	600	0	0	0	LINE ITEM	ER-KC ARIMS	NEW
TOTALS:	800	0	0	800	0	0	0			
FINDING NUMBER: RFP.4-2		PRIORITY: 3		RISK WEIGHT:	50	SMOKE DETECTION SYSTEMS AT THE HFIR				
1	250	250	0	0	0	0	0	LINE ITEM	ER-KC ARIMS	FUNDED
1	100	0	100	0	0	0	0	LINE ITEM	ER-KC ARIMS	REQUESTED
2	350	0	250	100	0	0	0	LINE ITEM	ER-KC ARIMS	REQUESTED
TOTALS:	700	250	350	100	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: RFP.4-3		PRIORITY: 2		RISK WEIGHT:		53	USE OF PREACTION-TYPE SPRINKLERS			
1	175	175	0	0	0	0	0	LINE ITEM	ER-KC ARIMS	FUNDED
1	50	0	50	0	0	0	0	LINE ITEM	ER-KC ARIMS	REQUESTED
2	275	0	140	135	0	0	0	LINE ITEM	ER-KC ARIMS	REQUESTED
TOTALS:	500	175	190	135	0	0	0			
FINDING NUMBER: RFP.7-1		PRIORITY: 2		RISK WEIGHT:		51	DIKING AND FIRE-RESISTANT ENCLOSURES AT THE HFIR			
2	15	15	0	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
3	80	0	80	0	0	0	0	PROGRAM	ER-KC03	NEW
4	15	15	0	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
5	10	0	10	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
5	40	0	40	0	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	160	30	130	0	0	0	0			
FINDING NUMBER: RFP.7-2		PRIORITY: 2		RISK WEIGHT:		50	POTENTIAL FIRE HAZARDS AT THE HFIR			
10	6	6	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
10	4	0	4	0	0	0	0	PROGRAM	ER-KC03	NEW
11	20	0	15	0	5	0	0	PROGRAM	ER-KC03	NEW
11	8	0	0	8	0	0	0	PROGRAM	ER-KC03	REQUESTED
2	3	3	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	2	0	2	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
3	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	3	0	3	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
4	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
4	5	0	5	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
5	4	4	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
6	4	0	2	2	0	0	0	PROGRAM	ER-KC03	REQUESTED
7	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
7	7	0	7	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
8	19	0	10	9	0	0	0	PROGRAM	ER-KC03	NEW
9	27	0	15	12	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	116	17	63	31	5	0	0			
FINDING NUMBER: RFR.1-1		PRIORITY: 3		RISK WEIGHT:		5	TRAINING FOR UNREVIEWED SAFETY QUESTION DETERMINATIONS			
2	3	3	0	0	0	0	0	PROGRAM	ER-KC03	NEW
3	1	1	0	0	0	0	0	PROGRAM	ER-KC03	NEW
4	1	1	0	0	0	0	0	PROGRAM	ER-KC03	NEW
5	20	15	5	0	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	25	20	5	0	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: RFR.1-2	PRIORITY: 4	RISK WEIGHT:	5	REVIEW BOARD FOR NUCLEAR SAFETY ASSESSMENTS						
2	37	37	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	37	37	0	0	0	0	0			
FINDING NUMBER: RFR.4-1	PRIORITY: 4	RISK WEIGHT:	1	NEW FORMAT FOR WRITTEN REPORTS						
1	1	1	0	0	0	0	0	PROGRAM	ER-KC	NEW
2	1	0	1	0	0	0	0	PROGRAM	ER-KC	NEW
TOTALS:	2	1	1	0	0	0	0			
FINDING NUMBER: RMA.1-1	PRIORITY: 4	RISK WEIGHT:	0	CONTROL OF MAINTENANCE SUPPORT						
1	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	3	3	0	0	0	0	0			
FINDING NUMBER: RMA.2-1	PRIORITY: 4	RISK WEIGHT:	5	TORQUING OF EQUIPMENT BOLTING						
1	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	2	2	0	0	0	0	0			
FINDING NUMBER: RMA.2-2	PRIORITY: 2	RISK WEIGHT:	356	UNSAFE CONDITIONS AT THE B REACTOR FACILITIES						
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RMA.3-1	PRIORITY: 2	RISK WEIGHT:	403	MAINTENANCE OF B REACTOR AREAS						
2	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	180	0	0	0	180	0	0	OVERHEAD	OVERHEAD	NEW
7	405	60	63	66	69	72	75	OVERHEAD	OVERHEAD	ONGOING
8	100	0	0	25	25	50	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	707	82	63	91	274	122	75			
FINDING NUMBER: RMA.3-2	PRIORITY: 3	RISK WEIGHT:	8	INSPECTION OF RRD MAINTENANCE ACTIVITIES						
2	110	90	20	0	0	0	0	PROGRAM	ER-KC03	NEW
3	100	100	0	0	0	0	0	PROGRAM	ER-KC03	NEW
3	2700	2700	0	0	0	0	0	LINE ITEM	ER-KC ARIMS	FUNDED
TOTALS:	2910	2890	20	0	0	0	0			
FINDING NUMBER: RMA.4-1	PRIORITY: 3	RISK WEIGHT:	5	OVERSIGHT OF MAINTENANCE SUPERVISORS						
1	806	120	125	131	137	143	150	PROGRAM	ER-KC03	ONGOING

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST		FUND SOURCE	STATUS
TOTALS:	806	120	125	131	137	143	150				
FINDING NUMBER: RMA.5-1		PRIORITY: 2		RISK WEIGHT: 403			MAINTENANCE AT SHUT-DOWN REACTORS				
X-REF'	0	0	0	0	0	0	0	X		X	X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: RMA.8-1		PRIORITY: 3		RISK WEIGHT: 5			DEFICIENT PROCEDURAL INFORMATION				
X-REF'	0	0	0	0	0	0	0	X		X	X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: ROA.1-1		PRIORITY: 2		RISK WEIGHT: 59			FUNDING FOR MAINTENANCE OF ORR				
1	933	443	490	0	0	0	0	PROGRAM		ER-AT	REQUESTED
1	621	382	239	0	0	0	0	PROGRAM		ER-AT	NEW
TOTALS:	1554	825	729	0	0	0	0				
FINDING NUMBER: ROA.1-2		PRIORITY: 3		RISK WEIGHT: 55			APPROVAL OF ORR SHUTDOWN PLANS				
X-REF'	0	0	0	0	0	0	0	X		X	X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: ROA.1-3		PRIORITY: 3		RISK WEIGHT: 5			DECOMMISSIONING PLAN FOR HPRR				
X-REF'	0	0	0	0	0	0	0	X		X	X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: ROA.1-4		PRIORITY: 3		RISK WEIGHT: 55			FUNDS FOR MAINTENANCE OF HPRR				
3	325	325	0	0	0	0	0	PROGRAM		ER-KP	REQUESTED
3	668	452	119	31	32	34	0	PROGRAM		ER-KP	NEW
3	35	0	0	0	0	0	35	PROGRAM		ER-KP	ONGOING
TOTALS:	1028	777	119	31	32	34	35				
FINDING NUMBER: ROA.1-5		PRIORITY: 3		RISK WEIGHT: 60			FUNDING FOR THE BULK SHIELDING FACILITY				
2	880	430	450	0	0	0	0	PROGRAM		ER-KC03	REQUESTED
2	2106	118	147	575	660	606	0	PROGRAM		ER-KC03	NEW
2	636	0	0	0	0	0	636	PROGRAM		ER-KC03	ONGOING
TOTALS:	3622	548	597	575	660	606	636				
FINDING NUMBER: ROA.1-6		PRIORITY: 3		RISK WEIGHT: 55			STATUS OF THE BULK SHIELDING FACILITY				
X-REF'	0	0	0	0	0	0	0	X		X	X
TOTALS:	0	0	0	0	0	0	0				

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: ROA.1-7 PRIORITY: 3 RISK WEIGHT: 55 STATUS OF THE CEF "W" CELL										
4	80	0	80	0	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	80	0	80	0	0	0	0			
FINDING NUMBER: ROA.1-8 PRIORITY: 3 RISK WEIGHT: 55 LINE MANAGEMENT RESPONSIBILITIES IN RRD										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: ROA.1-9 PRIORITY: 4 RISK WEIGHT: 5 MANAGEMENT POSITION DESCRIPTIONS FOR RRD										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: ROA.3-1 PRIORITY: 4 RISK WEIGHT: 5 PROGRAM TO INCREASE SAFETY										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: ROA.6-1 PRIORITY: 3 RISK WEIGHT: 5 PERFORMANCE EVALUATIONS FOR SAFETY										
1	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	1	1	0	0	0	0	0			
FINDING NUMBER: ROA.7-1 PRIORITY: 2 RISK WEIGHT: 80 HFIR FINAL SAFETY ANALYSIS REPORT										
2	25	25	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	10	10	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
5	3500	3500	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
5	2500	0	2500	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
5	900	0	900	0	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	6935	3535	3400	0	0	0	0			
FINDING NUMBER: ROA.7-2 PRIORITY: 2 RISK WEIGHT: 55 UPDATING OF SAFETY ANALYSIS REPORTS FOR BSF AND PCA										
1	30	30	0	0	0	0	0	PROGRAM	NE-AF	FUNDED
3	400	0	75	125	100	100	0	PROGRAM	NE-AF	NEW
TOTALS:	430	30	75	125	100	100	0			
FINDING NUMBER: ROA.7-3 PRIORITY: 2 RISK WEIGHT: 80 UPDATING OF SAFETY ANALYSIS REPORT FOR TSF										
1	20	20	0	0	0	0	0	PROGRAM	NE-AF	FUNDED
3	300	0	0	100	100	50	50	PROGRAM	NE-AF	NEW
TOTALS:	320	20	0	100	100	50	50			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: ROA.7-4		PRIORITY: 3		RISK WEIGHT:		5	CONTROL OF DOCUMENTS			
1	21	21	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	5	5	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	5	0	5	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
3	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	1	0	1	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
TOTALS:	33	27	6	0	0	0	0			
FINDING NUMBER: ROA.7-5		PRIORITY: 2		RISK WEIGHT:		55	PROCEDURES			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: ROA.8-1		PRIORITY: 4		RISK WEIGHT:		5	SUBSTANCE ABUSE PROGRAM			
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: ROP.2-1		PRIORITY: 3		RISK WEIGHT:		5	DEFICIENCIES IN HFIR OPERATING INSTRUCTIONS			
3	39	39	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	39	39	0	0	0	0	0			
FINDING NUMBER: ROP.2-2		PRIORITY: 3		RISK WEIGHT:		5	TECHNICAL SPECIFICATIONS AT HFIR			
1	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	8	8	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
4	17	17	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
5	25	25	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
5	8	0	8	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
TOTALS:	61	53	8	0	0	0	0			
FINDING NUMBER: ROP.2-3		PRIORITY: 3		RISK WEIGHT:		5	AMBIGUITIES HFIR OPERATING INSTRUCTIONS			
3	55	55	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	55	55	0	0	0	0	0			
FINDING NUMBER: ROP.2-4		PRIORITY: 3		RISK WEIGHT:		5	HFIR SHIFT CHECK SHEETS			
1	4	4	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	4	4	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	8	8	0	0	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: ROP.2-5		PRIORITY: 4		RISK WEIGHT:		5	HFIR REACTOR LOG			
1	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	4	4	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	12	12	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	18	18	0	0	0	0	0			
FINDING NUMBER: ROP.2-6		PRIORITY: 3		RISK WEIGHT:		5	HFIR CREW COMMUNICATIONS			
1	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	4	4	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	12	12	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	18	18	0	0	0	0	0			
FINDING NUMBER: ROP.3-1		PRIORITY: 3		RISK WEIGHT:		5	HFIR OPERATING MANUAL			
2	20	20	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	7	0	7	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
TOTALS:	27	20	7	0	0	0	0			
FINDING NUMBER: ROP.3-2		PRIORITY: 3		RISK WEIGHT:		5	USE OF HFIR PROCEDURES			
1	5	5	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	9	9	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	9	9	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
4	18	18	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	41	41	0	0	0	0	0			
FINDING NUMBER: ROP.3-3		PRIORITY: 4		RISK WEIGHT:		5	PREPARATION AND REVIEW OF HFIR OPERATING PROCEDURES			
2	80	0	50	30	0	0	0	PROGRAM	ER-KC03	NEW
3	120	0	10	110	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	200	0	60	140	0	0	0			
FINDING NUMBER: ROP.4-1		PRIORITY: 3		RISK WEIGHT:		5	TAGGING PROCEDURES			
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: ROP.4-2		PRIORITY: 3		RISK WEIGHT:		5	RECORDS OF HFIR EQUIPMENT			
1	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	12	12	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	14	14	0	0	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: RP.1-1		PRIORITY: 2		RISK WEIGHT:	68	ACCOMPLISHING ES&H COMPLIANCE				
1	23	23	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
2	2	2	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
3	10	10	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
4	10	10	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
5	11	11	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
6	6	6	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
7	4	4	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	66	66	0	0	0	0	0			
FINDING NUMBER: RP.1-2		PRIORITY: 2		RISK WEIGHT:	95	ES&H COMPLIANCE STAFF				
1	8	8	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
3	4984	0	500	1048	1095	1145	1196	OVERHEAD	DIVISION	ONGOING
4	51	51	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
5	20	20	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	5063	79	500	1048	1095	1145	1196			
FINDING NUMBER: RP.1-3		PRIORITY: 2		RISK WEIGHT:	73	MANAGEMENT OVERSIGHT				
2	107	107	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	876	0	160	167	175	183	191	OVERHEAD	OVERHEAD	ONGOING
3	36	36	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	1019	143	160	167	175	183	191			
FINDING NUMBER: RP.10-1		PRIORITY: 2		RISK WEIGHT:	77	POSITIVE CONTROL OF CONTAMINATION				
3	30	0	30	0	0	0	0	PROGRAM	ER-AT RP	REQUESTED
TOTALS:	30	0	30	0	0	0	0			
FINDING NUMBER: RP.10-2		PRIORITY: 2		RISK WEIGHT:	73	CONSISTENCY OF RADIATION PROTECTION POLICIES				
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RP.10-3		PRIORITY: 2		RISK WEIGHT:	58	CONTROL OF LAUNDRY WASTEWATER				
3	54	0	10	10	11	11	12	OVERHEAD	OVERHEAD	ONGOING
3	7	7	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
5	250	0	250	0	0	0	0	CAPITAL	GPP-ER	REQUESTED
TOTALS:	311	7	260	10	11	11	12			
FINDING NUMBER: RP.10-4		PRIORITY: 3		RISK WEIGHT:	13	REQUIREMENTS FOR LAUNDRY CONTAMINATION CONTROL				
1	15	15	0	0	0	0	0	PROGRAM	ER-AT RP	REQUESTED
2	8	8	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	40	0	40	0	0	0	0	CAPITAL	GPE-ER	REQUESTED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
4	16000	0	0	2600	8000	5400	0	LINE ITEM	MGPF	REQUESTED
TOTALS:	16063	23	40	2600	8000	5400	0			
FINDING NUMBER: RP.11-1		PRIORITY: 2		RISK WEIGHT:	63	MANAGEMENT SUPPORT FOR ALARA				
1	2227	0	0	510	533	557	627	OVERHEAD	OVERHEAD	ONGOING
2	2	2	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
3	1	1	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
4	15	0	15	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	2245	3	15	510	533	557	627			
FINDING NUMBER: RP.12-1		PRIORITY: 2		RISK WEIGHT:	65	OCCUPATIONAL EXPOSURE RECORDS PROGRAM				
1	47	0	47	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	47	0	47	0	0	0	0			
FINDING NUMBER: RP.12-2		PRIORITY: 2		RISK WEIGHT:	60	REPORTING OF DOSIMETRY DATA				
1	15	15	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
2	27	0	5	5	5	6	6	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	42	15	5	5	5	6	6			
FINDING NUMBER: RP.12-3		PRIORITY: 2		RISK WEIGHT:	108	CONTROL OF OCCUPATIONAL EXPOSURE RECORDS				
1	225	0	225	0	0	0	0	PROGRAM	ER-AT RP	NEW
2	30	0	30	0	0	0	0	PROGRAM	ER-AT RP	NEW
4	127	0	127	0	0	0	0	PROGRAM	ER-AT RP	NEW
4	123	0	0	23	24	51	25	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	505	0	382	23	24	51	25			
FINDING NUMBER: RP.3-1		PRIORITY: 2		RISK WEIGHT:	73	ORNL POSTING AND CONTAMINATION PROGRAM				
1	5	5	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
2	23	23	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	28	28	0	0	0	0	0			
FINDING NUMBER: RP.3-2		PRIORITY: 3		RISK WEIGHT:	8	CONTAMINATION CONTROL PROGRAM				
1	21	0	21	0	0	0	0	OVERHEAD	DIVISION	NEW
1	1019	0	0	238	249	260	272	OVERHEAD	DIVISION	ONGOING
2	32	32	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	1072	32	21	238	249	260	272			
FINDING NUMBER: RP.3-3		PRIORITY: 3		RISK WEIGHT:	16	SOURCE CONTROL PROGRAM				
3	17	17	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
4	21	21	0	0	0	0	0	PROGRAM	ER-AT RP	NEW

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
4	38	0	7	7	8	8	8	OVERHEAD	DIVISION	ONGOING
TOTALS:	76	38	7	7	8	8	8			
FINDING NUMBER: RP.3-4 PRIORITY: 3 RISK WEIGHT: 6 X-RAY GENERATING MACHINE POLICY AND REQUIREMENTS										
5	6	0	2	0	0	2	2	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	6	0	2	0	0	2	2			
FINDING NUMBER: RP.3-5 PRIORITY: 3 RISK WEIGHT: 6 ACCELERATOR POLICY REQUIREMENTS AND OVERSIGHT										
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RP.3-6 PRIORITY: 2 RISK WEIGHT: 63 MATERIAL CLEARANCE										
1	2	2	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
10	2	2	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
11	1200	0	1200	0	0	0	0	CAPITAL	GPP-ER	NEW
12	115	115	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
12	958	0	175	183	191	200	209	OVERHEAD	OVERHEAD	ONGOING
13	15	15	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
14	40	0	40	0	0	0	0	PROGRAM	ER-AT RP	NEW
2	15	15	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
3	17	17	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
5	5	5	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
6	1	1	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
8	5	5	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
9	75	75	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	2450	252	1415	183	191	200	209			
FINDING NUMBER: RP.3-7 PRIORITY: 2 RISK WEIGHT: 65 DOCUMENTATION OF RADIATION HAZARDS										
3	15	15	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	15	15	0	0	0	0	0			
FINDING NUMBER: RP.5-1 PRIORITY: 2 RISK WEIGHT: 55 PERSONNEL NUCLEAR ACCIDENT DOSIMETERS										
1	57	57	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	31	31	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	14	14	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	103	103	0	0	0	0	0			
FINDING NUMBER: RP.5-2 PRIORITY: 3 RISK WEIGHT: 10 DIRECT-READING DOSIMETERS										
1	6	6	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
2	11	11	0	0	0	0	0	PROGRAM	ER-AT RP	REQUESTED
TOTALS:	17	17	0	0	0	0	0			
FINDING NUMBER: RP.6-1 PRIORITY: 2 RISK WEIGHT: 63 AIR SAMPLES										
1	23	0	23	0	0	0	0	OVERHEAD	OVERHEAD	NEW
2	8	0	8	0	0	0	0	OVERHEAD	OVERHEAD	NEW
3	75	75	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	15	0	15	0	0	0	0	OVERHEAD	OVERHEAD	NEW
6	18700	0	0	18700	0	0	0	LINE ITEM	ER-AT	REQUESTED
TOTALS:	18821	75	46	18700	0	0	0			
FINDING NUMBER: RP.6-2 PRIORITY: 3 RISK WEIGHT: 5 TIMELINESS OF AIR SAMPLING PROGRAM										
1	23	0	23	0	0	0	0	PROGRAM	ER-AT RP	NEW
2	33	0	25	8	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	56	0	48	8	0	0	0			
FINDING NUMBER: RP.6-3 PRIORITY: 3 RISK WEIGHT: 8 SURVEYING PERSONNEL FOR CONTAMINATION										
1	57	57	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
2	30	30	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
3	70	0	70	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	157	87	70	0	0	0	0			
FINDING NUMBER: RP.7-1 PRIORITY: 2 RISK WEIGHT: 58 INTERNAL RADIATION DOSIMETRY PROGRAM										
1	80	0	80	0	0	0	0	PROGRAM	ER-AT RP	NEW
3	285	0	285	0	0	0	0	PROGRAM	ER-AT RP	NEW
5	112	0	112	0	0	0	0	PROGRAM	ER-AT RP	NEW
5	345	20	325	0	0	0	0	CAPITAL	ER-KC ARIMS	NEW
6	70	0	70	0	0	0	0	PROGRAM	ER-AT RP	NEW
7	41000	0	0	41000	0	0	0	LINE ITEM	ER-AT	NEW
TOTALS:	41892	20	872	41000	0	0	0			
FINDING NUMBER: RP.7-2 PRIORITY: 2 RISK WEIGHT: 58 IN VIVO CALIBRATIONS										
2	12	0	12	0	0	0	0	PROGRAM	ER-AT RP	NEW
3	15	0	15	0	0	0	0	PROGRAM	ER-AT RP	NEW
5	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	34	7	27	0	0	0	0			
FINDING NUMBER: RP.8-1 PRIORITY: 2 RISK WEIGHT: 61 RADIATION PROTECTION INSTRUMENT PROGRAM										
1	15	15	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
2	15	0	15	0	0	0	0	PROGRAM	ER-AT RP	REQUESTED
3	675	0	675	0	0	0	0	PROGRAM	ER-AT RP	REQUESTED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	705	15	690	0	0	0	0			
FINDING NUMBER: RP.8-2		PRIORITY: 2		RISK WEIGHT:	56	APPROVAL OF RADIATION PROTECTION INSTRUMENTS				
1	2	2	0	0	0	0	0	PROGRAM	ER-AT RP	REQUESTED
2	6	6	0	0	0	0	0	PROGRAM	ER-AT RP	REQUESTED
3	33	33	0	0	0	0	0	PROGRAM	ER-AT RP	REQUESTED
4	20	20	0	0	0	0	0	PROGRAM	ER-AT RP	REQUESTED
5	225	0	225	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	286	61	225	0	0	0	0			
FINDING NUMBER: RP.8-3		PRIORITY: 2		RISK WEIGHT:	56	TESTING OF SAFETY RELATED INSTRUMENTS				
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RP.8-4		PRIORITY: 2		RISK WEIGHT:	58	HIGH RANGE RADIATION PROTECTION INSTRUMENTATION				
3	400	0	400	0	0	0	0	PROGRAM	ER-AT RP	REQUESTED
4	118	0	118	0	0	0	0	PROGRAM	ER-AT RP	REQUESTE
TOTALS:	518	0	518	0	0	0	0			
FINDING NUMBER: RP.8-5		PRIORITY: 4		RISK WEIGHT:	5	RADIATION PROTECTION INSTRUMENTATION PROGRAM				
1	30	30	0	0	0	0	0	PROGRAM	ER-AT RP	NEW
TOTALS:	30	30	0	0	0	0	0			
FINDING NUMBER: RPP.1-1		PRIORITY: 2		RISK WEIGHT:	0	REVIEW OF RRD				
1	4	4	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	11	11	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	164	0	30	31	33	34	36	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	181	17	30	31	33	34	36			
FINDING NUMBER: RPP.2-1		PRIORITY: 2		RISK WEIGHT:	55	ORNL SAFETY MANUAL				
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RPP.2-2		PRIORITY: 3		RISK WEIGHT:	5	SAFETY PERSONNEL INVOLVEMENT WITH SAFETY WORK PERMITS				
1	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	5	5	0	0	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: RPP.2-3	PRIORITY: 3	RISK WEIGHT:	5	UPDATING OF RRD MANUALS						
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RPP.2-4	PRIORITY: 2	RISK WEIGHT:	405	ORNL HOISTING AND RIGGING EQUIPMENT						
1	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	4	4	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
ALL	22	0	4	4	4	5	5	PROGRAM	ER-KC03	ONGOING
TOTALS:	30	8	4	4	4	5	5			
FINDING NUMBER: RPP.3-1	PRIORITY: 2	RISK WEIGHT:	356	INDUSTRIAL SAFETY AT TSF						
1	1	1	0	0	0	0	0	PROGRAM	NE-AF20	FUNDED
10	5	5	0	0	0	0	0	PROGRAM	NE-AF20	FUNDED
14	50	0	0	50	0	0	0	PROGRAM	NE-AF20	NEW
2	1	1	0	0	0	0	0	PROGRAM	NE-AF20	FUNDED
3	1	1	0	0	0	0	0	PROGRAM	NE-AF20	FUNDED
6	1	1	0	0	0	0	0	PROGRAM	NE-AF20	FUNDED
7	2	2	0	0	0	0	0	PROGRAM	NE-AF20	FUNDED
8	26	26	0	0	0	0	0	PROGRAM	NE-AF20	FUNDED
9	10	10	0	0	0	0	0	PROGRAM	NE-AF20	FUNDED
TOTALS:	97	47	0	50	0	0	0			
FINDING NUMBER: RPP.3-2	PRIORITY: 2	RISK WEIGHT:	50	CARCINOGENS IN RRD FACILITIES						
8	40	0	20	20	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	40	0	20	20	0	0	0			
FINDING NUMBER: RPP.3-3	PRIORITY: 3	RISK WEIGHT:	55	ORNL ELECTRICAL PROGRAM						
3	3	3	0	0	0	0	0	OVERHEAD	DIVISION	FUNDED
5	44	0	8	8	9	9	10	OVERHEAD	DIVISION	ONGOING
TOTALS:	47	3	8	8	9	9	10			
FINDING NUMBER: RPP.4-1	PRIORITY: 2	RISK WEIGHT:	53	RRD MONITORING PROGRAM						
1	4	4	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	47	47	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	284	0	52	54	57	59	62	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	335	51	52	54	57	59	62			
FINDING NUMBER: RPP.5-1	PRIORITY: 2	RISK WEIGHT:	353	HAZCOM PROGRAM AT RRD						
X-REF'	0	0	0	0	0	0	0	X	X	X

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RQV.1-1 PRIORITY: 3 RISK WEIGHT: 55 RRD QUALITY ASSURANCE PROGRAM MANUAL										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RQV.1-10 PRIORITY: 3 RISK WEIGHT: 55 DATA BASE TRENDING SYSTEM										
2	10	0	0	10	0	0	0	PROGRAM	ER-KC03	NEW
3	10	0	0	10	0	0	0	PROGRAM	ER-KC03	NEW
4	10	0	0	10	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	30	0	0	30	0	0	0			
FINDING NUMBER: RQV.1-11 PRIORITY: 3 RISK WEIGHT: 5 OCCURRENCE REPORTING SYSTEM										
2	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	5	0	5	0	0	0	0	PROGRAM	ER-KC03	NEW
4	5	0	5	0	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	11	1	10	0	0	0	0			
FINDING NUMBER: RQV.1-2 PRIORITY: 3 RISK WEIGHT: 50 MANAGEMENT ASSESSMENT OF RRD										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RQV.1-3 PRIORITY: 3 RISK WEIGHT: 5 IMPLEMENTING RRD PROCEDURES										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RQV.1-4 PRIORITY: 3 RISK WEIGHT: 55 THOROUGHNESS OF PROCEDURES										
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RQV.1-5 PRIORITY: 3 RISK WEIGHT: 55 REVISION OF PROCEDURES										
3	547	0	100	105	109	114	119	PROGRAM	ER-KC03	ONGOING
TOTALS:	547	0	100	105	109	114	119			
FINDING NUMBER: RQV.1-6 PRIORITY: 3 RISK WEIGHT: 55 FREQUENCY OF RRD QA AUDITS										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: RQV.1-7		PRIORITY: 4		RISK WEIGHT:		5	METHOD OF QUESTIONING RRD QA AUDITS			
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RQV.1-8		PRIORITY: 3		RISK WEIGHT:		55	RRD CORRECTIVE ACTION PROGRAM			
4	60	0	30	30	0	0	0	PROGRAM	ER-KC03	NEW
5	170	0	85	85	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	230	0	115	115	0	0	0			
FINDING NUMBER: RQV.1-9		PRIORITY: 4		RISK WEIGHT:		5	CONFLICTING GOALS IN RRD			
1-3	10	10	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	10	10	0	0	0	0	0			
FINDING NUMBER: RQV.2-1		PRIORITY: 3		RISK WEIGHT:		5	JUSTIFICATION OF PRODCUREMENT DEVIATIONS			
3	5	5	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
6	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
6	20	0	0	20	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	26	6	0	20	0	0	0			
FINDING NUMBER: RQV.2-2		PRIORITY: 3		RISK WEIGHT:		55	PURCHASE ORDER AND QUALITY REQUIREMENTS			
1	6	6	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	6	6	0	0	0	0	0			
FINDING NUMBER: RQV.3-1		PRIORITY: 3		RISK WEIGHT:		6	ADEQUACY OF INSPECTIONS			
1	25	25	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
1	5	0	5	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
2	2	2	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	32	27	5	0	0	0	0			
FINDING NUMBER: RQV.3-2		PRIORITY: 3		RISK WEIGHT:		0	DOCUMENTATION OF "USE-AS-IS" CLASSIFICATION			
2	10	0	10	0	0	0	0	PROGRAM	ER-KC03	NEW
3	1	0	1	0	0	0	0	PROGRAM	ER-KC03	NEW
4	10	0	10	0	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	21	0	21	0	0	0	0			
FINDING NUMBER: RQV.4-1		PRIORITY: 3		RISK WEIGHT:		6	DOCUMENTATION OF ACCEPTANCE INSPECTIONS			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST		FUND SOURCE	STATUS
FINDING NUMBER: RQV.4-2		PRIORITY: 3		RISK WEIGHT:	50	MEASUREMENT AND TEST EQUIPMENT CALIBRATIONS					
X-REF'	0	0	0	0	0	0	0	X		X	X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: RQV.4-3		PRIORITY: 3		RISK WEIGHT:	50	USE OF UNCONTROLLED AND UNCALIBRATED INSTRUMENTS					
NONE	0	0	0	0	0	0	0				NONE
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: RQV.4-4		PRIORITY: 3		RISK WEIGHT:	50	DETERMINING EFFECTS OF OUT-OF-TOLERANCE EQUIPMENT					
3	60	0	0	60	0	0	0	PROGRAM		ER-KC03	NEW
TOTALS:	60	0	0	60	0	0	0				
FINDING NUMBER: RQV.5-1		PRIORITY: 4		RISK WEIGHT:	5	JUSTIFICATION OF DEVIATIONS AND NONCONFORMANCES					
2	3	3	0	0	0	0	0	PROGRAM		ER-KC03	FUNDED
TOTALS:	3	3	0	0	0	0	0				
FINDING NUMBER: RQV.5-2		PRIORITY: 3		RISK WEIGHT:	51	TRENDING OF NONCONFORMING ITEMS					
X-REF'	0	0	0	0	0	0	0	X		X	X
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: RQV.5-3		PRIORITY: 3		RISK WEIGHT:	50	IDENTIFICATION AND STORAGE OF PARTS AND MATERIAL					
4	602	0	110	115	120	126	131	PROGRAM		ER-KC03	ONGOING
6	20	20	0	0	0	0	0	PROGRAM		ER-KC03	FUNDED
6	10	0	10	0	0	0	0	PROGRAM		ER-KC03	REQUESTED
8	20	0	20	0	0	0	0	PROGRAM		ER-KC03	REQUESTED
TOTALS:	652	20	140	115	120	126	131				
FINDING NUMBER: RQV.5-4		PRIORITY: 3		RISK WEIGHT:	50	EVALUATING UNREVIEWED SAFETY QUESTIONS					
NONE	0	0	0	0	0	0	0				NONE
TOTALS:	0	0	0	0	0	0	0				
FINDING NUMBER: RQV.6-1		PRIORITY: 3		RISK WEIGHT:	51	INSPECTION REPORTS					
2	15	0	0	15	0	0	0	PROGRAM		NE-AF	NEW
3	15	0	0	15	0	0	0	PROGRAM		NE-AF	NEW
TOTALS:	30	0	0	30	0	0	0				

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: RQV.7-1	PRIORITY: 3	RISK WEIGHT:	50	CONTROL OF SPECIAL PROCESS MATERIAL						
2	10	10	0	0	0	0	0	PROGRAM	NE-AF	NEW
3	10	10	0	0	0	0	0	PROGRAM	NE-AF	NEW
4	10	10	0	0	0	0	0	PROGRAM	NE-AF	NEW
5	5	5	0	0	0	0	0	PROGRAM	NE-AF	NEW
6	5	5	0	0	0	0	0	PROGRAM	NE-AF	NEW
TOTALS:	40	40	0	0	0	0	0			
FINDING NUMBER: RQV.7-2	PRIORITY: 3	RISK WEIGHT:	50	SPECIAL PROCESS PROCEDURES						
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RRP.10-1	PRIORITY: 3	RISK WEIGHT:	5	CONTROL OF LOW-LEVEL CONTAMINATION						
1	65	0	60	5	0	0	0	CAPITAL	ER-KC03	NEW
5	20	20	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
5	5	0	5	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
TOTALS:	90	20	65	5	0	0	0			
FINDING NUMBER: RRP.10-2	PRIORITY: 3	RISK WEIGHT:	5	WASTE MINIMIZATION						
1	7	7	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
2	9	9	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	9	9	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	25	25	0	0	0	0	0			
FINDING NUMBER: RRP.11-1	PRIORITY: 3	RISK WEIGHT:	5	ADDRESSING ALARA ISSUES						
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RRP.3-1	PRIORITY: 3	RISK WEIGHT:	50	SOURCE CONTROL						
1	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	12	12	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	19	19	0	0	0	0	0			
FINDING NUMBER: RRP.3-2	PRIORITY: 4	RISK WEIGHT:	5	RADIOACTIVE SOURCE INVENTORIES						
2	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	3	3	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
4	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	5	5	0	0	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE	FUND SOURCE	STATUS
FINDING NUMBER: RRP.4-1		PRIORITY: 3		RISK WEIGHT:	55	POSTINGS OF RADIOLOGICAL CONDITIONS				
3	25	20	5	0	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	25	20	5	0	0	0	0			
FINDING NUMBER: RRP.4-2		PRIORITY: 2		RISK WEIGHT:	6	RADIOLOGICAL CONTROLS IN THE EXPERIMENT AREA				
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RRP.8-1		PRIORITY: 3		RISK WEIGHT:	50	INSTRUMENTS				
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RSS.1-1		PRIORITY: 3		RISK WEIGHT:	55	NEW SAFEGUARDS AND SECURITY ELEMENTS				
2	40	20	20	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	40	20	20	0	0	0	0			
FINDING NUMBER: RSS.3-1		PRIORITY: 2		RISK WEIGHT:	105	ANALYSES TO DETERMINE APPROPRIATE WEAPONS				
4	40	0	40	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	40	0	40	0	0	0	0			
FINDING NUMBER: RSS.4-1		PRIORITY: 3		RISK WEIGHT:	105	SAFETY APPRAISALS AND AUDITS FOR FIREARMS				
2	67	10	10	11	11	12	13	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	67	10	10	11	11	12	13			
FINDING NUMBER: RTC.1-1		PRIORITY: 3		RISK WEIGHT:	55	POSITION TASK ANALYSES				
2	80	80	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
3	210	210	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	290	290	0	0	0	0	0			
FINDING NUMBER: RTC.1-2		PRIORITY: 4		RISK WEIGHT:	55	CLASS B REACTOR TRAINING PLAN				
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RTC.1-3		PRIORITY: 3		RISK WEIGHT:	55	INSTRUCTORS FOR MAINTENANCE TRAINING				
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: RTC.10-1 PRIORITY: 3 RISK WEIGHT: 55 TRAINING FOR MANAGERS, SUPERVISORS, AND TECHNICAL STAFF										
1	134	0	134	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
TOTALS:	134	0	134	0	0	0	0			
FINDING NUMBER: RTC.2-1 PRIORITY: 4 RISK WEIGHT: 5 EXAMINATIONS FOR OPERATOR AND REACTOR SUPERVISOR TRAINING										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RTC.4-1 PRIORITY: 3 RISK WEIGHT: 55 GENERAL EMPLOYEE ACCESS TRAINING										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RTC.5-1 PRIORITY: 3 RISK WEIGHT: 55 MAINTENANCE PERSONNEL TRAINING PROGRAM										
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RTC.5-2 PRIORITY: 3 RISK WEIGHT: 55 TRAINING FACILITIES FOR MAINTENANCE PERSONNEL										
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RTS.1-1 PRIORITY: 3 RISK WEIGHT: 5 TECHNICAL SUPPORT FOR RRD TASKS										
2	1806	0	330	345	360	377	394	PROGRAM	ER-KC03	ONGOING
TOTALS:	1806	0	330	345	360	377	394			
FINDING NUMBER: RTS.1-2 PRIORITY: 3 RISK WEIGHT: 6 BACKUP FOR RRD STAFF										
1	685	0	0	160	167	175	183	PROGRAM	ER-KC03	ONGOING
TOTALS:	685	0	0	160	167	175	183			
FINDING NUMBER: RTS.2-1 PRIORITY: 3 RISK WEIGHT: 55 CONSISTENCY OF TECHNICAL SPECIFICATIONS AND PROCEDURES										
3	40	30	10	0	0	0	0	PROGRAM	ER-KC03	NEW
4	10	0	10	0	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	50	30	20	0	0	0	0			
FINDING NUMBER: RTS.2-2 PRIORITY: 2 RISK WEIGHT: 80 SAFETY ANALYSIS REPORTS FOR HFIR AND TSF										
X-REF'	0	0	0	0	0	0	0	X	X	X

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RTS.3-1 PRIORITY: 3 RISK WEIGHT: 55 FACILITY DESIGN MODIFICATIONS										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RTS.3-2 PRIORITY: 4 RISK WEIGHT: 5 CONFIGURATION CONTROL OF PLANT DESIGN MODIFICATION										
1	1	1	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	1	1	0	0	0	0	0			
FINDING NUMBER: RTS.3-3 PRIORITY: 3 RISK WEIGHT: 55 DRAWING CHANGES FOR THE HFIR										
3	15	15	0	0	0	0	0	PROGRAM	ER-KC03	FUNDED
TOTALS:	15	15	0	0	0	0	0			
FINDING NUMBER: RTS.4-1 PRIORITY: 4 RISK WEIGHT: 5 EQUIPMENT PERFORMANCE TRACKING										
1	30	0	30	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
3	30	0	30	0	0	0	0	PROGRAM	ER-KC03	REQUESTED
4	15	0	0	15	0	0	0	PROGRAM	ER-KC03	NEW
TOTALS:	75	0	60	15	0	0	0			
FINDING NUMBER: RTS.5-1 PRIORITY: 2 RISK WEIGHT: 390 ENVIRONMENTAL IMPACT										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: RTS.7-1 PRIORITY: 4 RISK WEIGHT: 5 REACTOR ENGINEERING FUNCTION AT HFIR AND TSF										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: SA-1 PRIORITY: 3 RISK WEIGHT: 138 THE ORNL SELF ASSESSMENT PROCESS										
1	35	35	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
10	9	0	9	0	0	0	0	OVERHEAD	DIVISION	NEW
10	21	0	0	5	5	5	6	OVERHEAD	DIVISION	ONGOING
2	14	14	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	8	8	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
6	2670	0	488	510	533	557	582	OVERHEAD	OVERHEAD	ONGOING
6	3643	0	666	696	727	760	794	OVERHEAD	DIVISION	ONGOING
TOTALS:	6407	64	1163	1211	1265	1322	1382			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: SS.1-1 PRIORITY: 2 RISK WEIGHT: 112 ANALYSIS OF PROTECTIVE FORCE EQUIPMENT										
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: SSB/BMPF-1 PRIORITY: 2 RISK WEIGHT: 108 INADEQUATE RADIOACTIVE CONTAMINATION CONTROL										
1	24	24	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	30	0	30	0	0	0	0	OVERHEAD	OVERHEAD	NEW
4	1500	0	1500	0	0	0	0	PROGRAM	EM-	NEW
TOTALS:	1554	24	1530	0	0	0	0			
FINDING NUMBER: SSB/BMPF-2 PRIORITY: 3 RISK WEIGHT: 5 DELAYED BENTHIC DATA ANALYSES AND REPORTING										
1	50	50	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	150	0	150	0	0	0	0	PROGRAM	ER-AT EC	REQUESTED
4	75	0	0	75	0	0	0	PROGRAM	ER-AT EC	REQUESTED
TOTALS:	275	50	150	75	0	0	0			
FINDING NUMBER: SW/BMPF-1 PRIORITY: 3 RISK WEIGHT: 121 INADEQUATE ORNL CROSS-CONNECTIONS STUDY										
1	24	0	24	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
2	3900	0	0	3900	0	0	0	PROGRAM	ER-AT EC	NEW
TOTALS:	3924	0	24	3900	0	0	0			
FINDING NUMBER: SW/BMPF-2 PRIORITY: 1 RISK WEIGHT: 103 LIQUID RADIONUCLIDE RELEASES FROM ORNL FACILITIES										
1	110	110	0	0	0	0	0	PROGRAM	EM-ADS350,366	FUNDED
2	110	0	45	35	30	0	0	PROGRAM	EM-ADS350,366	REQUESTED
2	1000	0	1000	0	0	0	0	CAPITAL	EM-ADS366	REQUESTED
3	75	0	75	0	0	0	0	OVERHEAD	OVERHEAD	NEW
4	75	0	75	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	1370	110	1195	35	30	0	0			
FINDING NUMBER: SW/BMPF-3 PRIORITY: 3 RISK WEIGHT: 6 LACK OF BACKFLOW PREVENTION DEVICES										
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: SW/BMPF-4 PRIORITY: 1 RISK WEIGHT: 49 UNREPAIRED LEAKS FROM WATERWATER SEWER SYSTEMS										
1	5026	5026	0	0	0	0	0	PROGRAM	EM-ADS302,304,378	FUNDED
1	60032	0	6840	16722	11490	8540	16440	PROGRAM	EM-ADS302,304,378	REQUESTED
1	7081	7081	0	0	0	0	0	LINE ITEM	EM-ADS302,304,378	FUNDED
1	121147	0	4647	15900	26500	39100	35000	LINE ITEM	EM-ADS302,304,378	REQUESTED
1	20	20	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
1	80	0	40	40	0	0	0	PROGRAM	EM-ADS350	REQUESTED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
1	500	500	0	0	0	0	0	CAPITAL	EM-ADS350 GPP	FUNDED
1	500	0	100	200	100	100	0	PROGRAM	ER-AT	REQUESTED
2	10	10	0	0	0	0	0	PROGRAM	EM-ADS302,304,378	FUNDED
2	50	0	10	10	10	10	10	PROGRAM	EM-ADS302,304,378	REQUESTED
2	410	0	200	100	80	30	0	PROGRAM	EM-ADS350	REQUESTED
2	1400	0	0	1400	0	0	0	CAPITAL	EM-ADS350 GPP	REQUESTED
3	30	0	0	0	0	30	0	PROGRAM	EM-ADS350	REQUESTED
ALL	21650	0	6650	3000	4000	4000	4000	CAPITAL	EM-ADS349,350,378	REQUESTED
ALL	11000	0	0	2000	5000	4000	0	LINE ITEM	MGPF	REQUESTED
TOTALS:	228936	12637	18487	39372	47180	55810	55450			

FINDING NUMBER: SW/BMPF-5 PRIORITY: 4 RISK WEIGHT: 1 LACK OF CERTIFICATION OF TREATMENT PLANT OPERATORS AND BACKFLOW PREVENTER REPAIRERS

3	6	0	3	3	0	0	0	OVERHEAD	OVERHEAD	NEW
3	3	3	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	4	4	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	21	0	4	4	4	4	5	OVERHEAD	OVERHEAD	NEW
5	330	0	60	63	66	69	72	OVERHEAD	OVERHEAD	NEW
TOTALS:	364	7	67	70	70	73	77			

FINDING NUMBER: SW/CF-1 PRIORITY: 2 RISK WEIGHT: 448 DISCHARGES NOT INCLUDED ON THE ORNL NPDES PERMIT OR PERMIT RENEWAL

ALL	12	12	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
ALL	90	0	0	0	90	0	0	OVERHEAD	OVERHEAD	NEW
ALL	90	90	0	0	0	0	0	OVERHEAD	DIVISION	NEW
TOTALS:	192	102	0	0	90	0	0			

FINDING NUMBER: SW/CF-2 PRIORITY: 3 RISK WEIGHT: 20 INCONSISTENT LABELING OF ORNL SINKS AND DRAINS

1-2	12	12	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	53	53	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
3	44	0	8	8	9	9	10	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	109	65	8	8	9	9	10			

FINDING NUMBER: SW/CF-3 PRIORITY: 2 RISK WEIGHT: 405 INACCURATE STREAM FLOW MEASUREMENT DEVICES

1	40	40	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	314	0	0	0	100	105	109	OVERHEAD	OVERHEAD	ONGOING
4	50	0	50	0	0	0	0	CAPITAL	ER-KC	NEW
5	950	0	0	950	0	0	0	CAPITAL	ER-KC	NEW
TOTALS:	1356	42	50	950	100	105	109			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: SW/CF-4		PRIORITY: 2		RISK WEIGHT: 448			NPDES PERMIT EXCEPTIONS			
1	4	4	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	48	48	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	700	0	700	0	0	0	0	CAPITAL	EM-ADS399	REQUESTED
TOTALS:	752	52	700	0	0	0	0			
FINDING NUMBER: SW/CF-5		PRIORITY: 2		RISK WEIGHT: 354			LACK OF NPDES BEST MANAGEMENT PRACTICES PROGRAM PLAN			
ALL	25	25	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	25	25	0	0	0	0	0			
FINDING NUMBER: SW/CF-6		PRIORITY: 2		RISK WEIGHT: 410			DEFICIENCIES OF SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN			
ALL	50	50	0	0	0	0	0	OVERHEAD	DIVISION	FUNDED
TOTALS:	50	50	0	0	0	0	0			
FINDING NUMBER: TC.1-1		PRIORITY: 2		RISK WEIGHT: 358			TRAINING PROGRAMS AT ORNL			
1	14	0	14	0	0	0	0	PROGRAM	ER-AT TC	NEW
10	116	116	0	0	0	0	0	PROGRAM	ER-AT TC	NEW
11	25	0	25	0	0	0	0	PROGRAM	ER-AT TC	NEW
2	29	0	29	0	0	0	0	PROGRAM	ER-AT TC	NEW
2	17	0	0	4	4	4	5	OVERHEAD	OVERHEAD	ONGOING
3,4	44	0	8	8	9	9	10	OVERHEAD	OVERHEAD	ONGOING
3,4	180	80	100	0	0	0	0	PROGRAM	ER-AT TC	NEW
5	42	0	0	10	10	11	11	OVERHEAD	OVERHEAD	ONGOING
7	28	0	5	5	6	6	6	OVERHEAD	OVERHEAD	ONGOING
7,10	34	0	0	8	8	9	9	OVERHEAD	OVERHEAD	ONGOING
8	44	0	8	8	9	9	10	OVERHEAD	OVERHEAD	ONGOING
9	262	0	48	50	52	55	57	OVERHEAD	OVERHEAD	ONGOING
9	5	5	0	0	0	0	0	PROGRAM	ER-AT TC	NEW
TOTALS:	840	201	237	93	98	103	108			
FINDING NUMBER: TC.1-2		PRIORITY: 3		RISK WEIGHT: 37			EXAMINATIONS			
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: TC.1-3		PRIORITY: 3		RISK WEIGHT: 562			TRAINING STAFFS			
2	2112	0	1035	1077	0	0	0	PROGRAM	ER-AT TC	NEW
2	4787	0	0	1119	1169	1222	1277	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	6899	0	1035	2196	1169	1222	1277			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: TC.10-1		PRIORITY: 2		RISK WEIGHT:	87	TRAINING FOR SUPERVISORS				
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: TC.5-1		PRIORITY: 2		RISK WEIGHT:	588	MAINTENANCE TRAINING PROGRAM				
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: TC.7-1		PRIORITY: 3		RISK WEIGHT:	58	TRAINING FACILITIES				
2	295	0	295	0	0	0	0	CAPITAL	GPP-ER	REQUESTED
4	25	0	25	0	0	0	0	CAPITAL	GPP-ER	REQUESTED
5	4000	0	0	2000	1000	1000	0	CAPITAL	GPP-ER	REQUESTED
TOTALS:	4320	0	320	2000	1000	1000	0			
FINDING NUMBER: TC.7-2		PRIORITY: 3		RISK WEIGHT:	58	TRAINING RECORDS STORAGE				
1	22	0	22	0	0	0	0	OVERHEAD	OVERHEAD	NEW
3	78	0	78	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	100	0	100	0	0	0	0			
FINDING NUMBER: TCM/BMPF-1		PRIORITY: 3		RISK WEIGHT:	5	PESTICIDE PROGRAM DEFICIENCIES				
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: TCM/CF-1		PRIORITY: 2		RISK WEIGHT:	405	PCB WASTES STORED LONGER THAN ONE YEAR				
1	2	2	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
3	5	5	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
5	8	8	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
TOTALS:	15	15	0	0	0	0	0			
FINDING NUMBER: TCM/CF-2		PRIORITY: 2		RISK WEIGHT:	410	DEFICIENCIES WITH THE TSCA ASSUMPTION REQUIREMENTS FOR LIQUID FILLED ELECTRICAL EQUIPMENT				
3	22	22	0	0	0	0	0	OVERHEAD	DIVISION	NEW
5	54	0	10	10	11	11	12	OVERHEAD	DIVISION	ONGOING
TOTALS:	76	22	10	10	11	11	12			
FINDING NUMBER: TCM/CF-3		PRIORITY: 2		RISK WEIGHT:	405	INADEQUATE LABELLING OF EQUIPMENT CONTAINING PCB CAPACITORS				
NONE	0	0	0	0	0	0	0			NONE

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: TCM/CF-4 PRIORITY: 2 RISK WEIGHT: 405 DEFICIENCIES WITH TSCA TEMPORARY STORAGE FACILITY REQUIREMENTS										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: TCM/CF-5 PRIORITY: 3 RISK WEIGHT: 10 LACK OF HAZARD IDENTIFICATION LABELS FOR SOME CHEMICAL STORAGE TANKS										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: TCM/CF-6 PRIORITY: 3 RISK WEIGHT: 9 LACK OF SECONDARY CONTAINMENT FOR SOME ABOVEGROUND STORAGE TANKS/CONTAINERS										
1	1000	0	1000	0	0	0	0	CAPITAL	GPP-ER	NEW
2	750	0	0	750	0	0	0	CAPITAL	GPP-ER	NEW
3	80	0	80	0	0	0	0	OVERHEAD	OVERHEAD	NEW
4	21	0	21	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5	5	0	5	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	1856	0	1106	750	0	0	0			
FINDING NUMBER: TCM/CF-7 PRIORITY: 3 RISK WEIGHT: 5 DEFICIENCY WITH TSCA STORAGE FOR DISPOSAL MONITORING POLICY AND STORAGE FOR DISPOSAL POLICY										
3	470	70	73	76	80	84	87	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	470	70	73	76	80	84	87			
FINDING NUMBER: TS.2-1 PRIORITY: 2 RISK WEIGHT: 311 SAFETY ANALYSIS REPORT UPDATE PROGRAM										
1	4	4	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	6	6	0	0	0	0	0			
FINDING NUMBER: TS.3-1 PRIORITY: 3 RISK WEIGHT: 8 PROCEDURES FOR LOW-COST FACILITY MODIFICATIONS										
1	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
TOTALS:	15	15	0	0	0	0	0			
FINDING NUMBER: TS.3-2 PRIORITY: 2 RISK WEIGHT: 311 RESOURCE ALLOCATION FOR DRAWINGS UPDATES										
2	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	1609	1609	0	0	0	0	0	PROGRAM	ER-	FUNDED
3	871	871	0	0	0	0	0	PROGRAM	NE-	FUNDED
3	2780	2780	0	0	0	0	0	PROGRAM	EM-	REQUESTED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
3	586	586	0	0	0	0	0	PROGRAM	EM-	REQUESTED
TOTALS:	5861	5861	0	0	0	0	0			
FINDING NUMBER: TS.4-1 PRIORITY: 2 RISK WEIGHT: 55 PUBLICATION OF UNUSUAL OCCURRENCE REPORTS										
X-REF'	0	0	0	0	0	0	0	X	X	X
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: WM/BMPF-1 PRIORITY: 3 RISK WEIGHT: 5 INADEQUATE ASSESSMENTS OF OFFSITE VENDORS RECYCLING LEAD-ACID BATTERIES AND CIRCUITBOARDS										
ALL	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	10	10	0	0	0	0	0			
FINDING NUMBER: WM/BMPF-2 PRIORITY: 1 RISK WEIGHT: 56 INADEQUATE WASTE MINIMIZATION PROGRAM										
1	5	5	0	0	0	0	0	PROGRAM	EM-ADS356	NEW
2	5	5	0	0	0	0	0	PROGRAM	EM-ADS356	NEW
3	10	10	0	0	0	0	0	PROGRAM	EM-ADS350	NEW
3	54	0	10	10	11	11	12	PROGRAM	EM-ADS350	ONGOING
4	10	10	0	0	0	0	0	PROGRAM	EM-ADS349	NEW
4	902	0	165	172	180	188	197	PROGRAM	EM-ADS349	ONGOING
5	902	0	165	172	180	188	197	PROGRAM	EM-ADS356	ONGOING
6	5	0	5	0	0	0	0	OVERHEAD	OVERHEAD	NEW
8	28	0	5	5	6	6	6	PROGRAM	EM-ADS356	ONGOING
TOTALS:	1921	30	350	359	377	393	412			
FINDING NUMBER: WM/CF-1 PRIORITY: 1 RISK WEIGHT: 413 INADEQUATE OPERATION OF MIXED WASTE STORAGE FACILITY										
10	30	30	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
2	5	5	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
5	35	35	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
6	2	2	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
7	120	120	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
8	10	10	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
TOTALS:	202	202	0	0	0	0	0			
FINDING NUMBER: WM/CF-10 PRIORITY: 3 RISK WEIGHT: 5 INADEQUATE LEAK DETECTION OF PETROLEUM UNDERGROUND STORAGE TANKS										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: WM/CF-11 PRIORITY: 2 RISK WEIGHT: 408 INADEQUATE HAZARDOUS WASTE DETERMINATION OF SANITARY SEWAGE TREATMENT PLANT SLUDGE										

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
1	12	12	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
1	28	0	5	5	6	6	6	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	40	12	5	5	6	6	6			
FINDING NUMBER: WM/CF-12 PRIORITY: 2 RISK WEIGHT: 405 INADEQUATE DAILY INSPECTIONS OF RCRA FACILITIES ON WEEKENDS										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: WM/CF-13 PRIORITY: 2 RISK WEIGHT: 408 INADEQUATE CHARACTERIZATION OF MIXED WASTE IN STORAGE										
ALL	8000	0	1000	1000	1000	1500	3500	PROGRAM	EM-ADS352	REQUESTED
TOTALS:	8000	0	1000	1000	1000	1500	3500			
FINDING NUMBER: WM/CF-2 PRIORITY: 2 RISK WEIGHT: 406 IMPROPER OPERATION OF SATELLITE ACCUMULATION AREAS AT ORNL FACILITIES AT Y-12										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: WM/CF-3 PRIORITY: 2 RISK WEIGHT: 406 INADEQUATE HAZARDOUS WASTE ACCUMULATION AND MINIMIZATION AT ORNL BIOLOGY DIVISION AT THE Y-12 PLANT										
NONE	0	0	0	0	0	0	0			NONE
TOTALS:	0	0	0	0	0	0	0			
FINDING NUMBER: WM/CF-4 PRIORITY: 1 RISK WEIGHT: 409 LACK OF INTEGRITY ASSESSMENT OF 7860A HAZARDOUS WASTE STORAGE TANK										
1	20	20	0	0	0	0	0	PROGRAM	EM-ADS311AA,331	FUNDED
2	107	0	0	25	26	27	29	PROGRAM	EM-ADS311AA,331	ONGOING
TOTALS:	127	20	0	25	26	27	29			
FINDING NUMBER: WM/CF-5 PRIORITY: 2 RISK WEIGHT: 410 INADEQUATE TRAINING FOR ONSITE HAZARDOUS WASTE TRANSPORTERS										
1-3	9	9	0	0	0	0	0	PROGRAM	EM-ADS347,348	NEW
4	5	5	0	0	0	0	0	PROGRAM	EM-ADS347,348	NEW
5	9	9	0	0	0	0	0	PROGRAM	EM-ADS347,348	NEW
ALL	67	10	10	11	11	12	13	PROGRAM	EM-ADS347,348	ONGOING
TOTALS:	90	33	10	11	11	12	13			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: WM/CF-6 PRIORITY: 1 RISK WEIGHT: 406 STORAGE OF LAND DISPOSAL RESTRICTED MIXED WASTE										
10	200	0	0	0	0	0	200	PROGRAM	EM-ADS349	ONGOING
10	1150	0	150	300	300	400	0	PROGRAM	EM-ADS349	REQUESTED
4	5	5	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
5	10	10	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
6	10	10	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
7	240	240	0	0	0	0	0	PROGRAM	EM-ADS349	FUNDED
7	275	275	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
8	1200	0	500	350	200	100	50	PROGRAM	EM-ADS350	REQUESTED
8	500	0	500	0	0	0	0	PROGRAM	EM-ADS349	REQUESTED
TOTALS:	3590	540	1150	650	500	500	250			
FINDING NUMBER: WM/CF-7 PRIORITY: 1 RISK WEIGHT: 405 INADEQUATE STORAGE OF RADIOACTIVELY CONTAMINATED HAZARDOUS WASTE LEAD										
4	100	100	0	0	0	0	0	PROGRAM	EM-ADS349	FUNDED
5	821	0	150	157	164	171	179	PROGRAM	EM-ADS349	ONGOING
TOTALS:	921	100	150	157	164	171	179			
FINDING NUMBER: WM/CF-8 PRIORITY: 3 RISK WEIGHT: 5 INADEQUATE TRAINING DOCUMENTATION AND PROCEDURES FOR 7507 HAZARDOUS WASTE STORAGE FACILITY										
1	2	2	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
2	2	2	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
3	3	3	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
TOTALS:	7	7	0	0	0	0	0			
FINDING NUMBER: WM/CF-9 PRIORITY: 1 RISK WEIGHT: 405 INADEQUATE TRAINING RECORDS AND INSPECTION RECORDS AT THE 3001 STORAGE CANAL										
1	1	1	0	0	0	0	0	PROGRAM	EM-ADS311AA	FUNDED
2	1	1	0	0	0	0	0	PROGRAM	EM-ADS311AA	FUNDED
3	1	1	0	0	0	0	0	PROGRAM	EM-ADS311AA	FUNDED
3	107	0	0	25	26	27	29	PROGRAM	EM-ADS311AA	ONGOING
4	25	25	0	0	0	0	0	PROGRAM	EM-ADS311AA	FUNDED
TOTALS:	135	28	0	25	26	27	29			
FINDING NUMBER: WS.3-1 PRIORITY: 2 RISK WEIGHT: 468 CONTROL OF ASBESTOS										
1	77	77	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	8	8	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	175	0	175	0	0	0	0	OVERHEAD	OVERHEAD	NEW
6	21	0	21	0	0	0	0	OVERHEAD	OVERHEAD	NEW
6	90	0	0	21	22	23	24	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	371	85	196	21	22	23	24			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: WS.4-1		PRIORITY: 1		RISK WEIGHT: 910			MACHINE GUARDING			
1	15	15	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	150	150	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	10	0	10	0	0	0	0	OVERHEAD	OVERHEAD	NEW
5	1315	0	405	425	485	0	0	PROGRAM	ER-AT OSHA	REQUESTED
TOTALS:	1490	165	415	425	485	0	0			
FINDING NUMBER: WS.4-2		PRIORITY: 2		RISK WEIGHT: 458			NONCOMPLIANCES OF BUILDING EGRESS			
3	10	10	0	0	0	0	0	OVERHEAD	DIVISION	FUNDED
5	300	0	300	0	0	0	0	OVERHEAD	OVERHEAD	NEW
6	6485	0	625	2830	3030	0	0	PROGRAM	ER-AT OSHA	REQUESTED
TOTALS:	6795	10	925	2830	3030	0	0			
FINDING NUMBER: WS.4-3		PRIORITY: 2		RISK WEIGHT: 483			MACHINERY INSPECTION AND PREVENTATIVE MAINTENANCE			
1	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	2	2	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	2	0	2	0	0	0	0	OVERHEAD	OVERHEAD	REQUESTED
3	17	0	0	4	4	4	5	OVERHEAD	OVERHEAD	ONGOING
TOTALS:	25	6	2	4	4	4	5			
FINDING NUMBER: WS.4-4		PRIORITY: 1		RISK WEIGHT: 935			ORNL ELECTRICAL COMPLIANCE			
10	262	262	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
11	5330	0	1350	1945	2035	0	0	PROGRAM	ER-AT OSHA	REQUESTED
2	80	80	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	60	60	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
5	10	10	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
7	30	30	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	5772	442	1350	1945	2035	0	0			
FINDING NUMBER: WS.4-5		PRIORITY: 1		RISK WEIGHT: 935			EQUIPMENT AND OPERATIONS AREA			
1	6	6	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
2	1	1	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
3	4	4	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
4	5	5	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
6	14	14	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
7	7	7	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
8	42	42	0	0	0	0	0	OVERHEAD	OVERHEAD	NEW
8	272	0	50	52	54	57	59	OVERHEAD	DIVISION	ONGOING
TOTALS:	351	79	50	52	54	57	59			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: WS.4-6		PRIORITY: 2		RISK WEIGHT: 409				ORNL FIRE PROTECTION		
1	25	25	0	0	0	0	0	OVERHEAD	OVERHEAD	FUNDED
TOTALS:	25	25	0	0	0	0	0			
ACTION PLAN TOTALS:										
	738751	62294	96044	172759	119782	133374	154498			

APPENDIX C

SUMMARY OF ACTIONS, SCHEDULES, AND COSTS

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
A/BMPF-1	INADEQUATE STACK EMISSION MONITORING AND TEST PROCEDURES FOR NESHAP COMPLIANCE	40 CFR 61.93(B)	3	45	3/91	5/91	0
A/BMPF-2	LACK OF VERIFYING DOCUMENTATION TO DEMONSTRATE COMPLIANCE WITH AIR PERMIT CONDITIONS	NONE	4	1	3/91	12/91	110
A/BMPF-3	LACK OF CONSISTENT INSTALLATION OF STACK SAMPLING, MONITORING, AND ALARM SYSTEMS FOR RADIOACTIVE RELEASES	NONE	4	1	4/91	6/92	0
A/BMPF-4	DEFICIENT ASBESTOS WASTE DISPOSAL MANAGEMENT	NONE	4	1	11/90	DONE	1
A/CF-1	EXCURSIONS ABOVE AIR PERMIT LIMITS	TDHE RULE 1200-3-9	2	448	11/90	7/91	0
A/CF-2	HIGH EFFICIENCY PARTICULATE AIR (HEPA) TESTING PROGRAM DEFICIENCIES	ACP 14	3	5	2/91	10/91	14
A/CF-3	ABSENCE OF STATE AIR PERMITS FOR RADIONUCLIDE SOURCES	TDHE RULE 1200-9-0-.04(4)	2	400	11/90	DONE	0
A/CF-4	AMBIENT AIR MONITORING DEFICIENCIES	DOE 10 CFR 834	2	55	2/91	2/92	65
A/CF-5	EFFLUENT STACK SAMPLING AND MONITORING DEFICIENCIES	DOE 10 CFR 834	2	55	3/91	12/94	3842
A/CF-6	LACK OF CONTROL ROOM OPERATOR TRAINING IN STACK RELEASE EMERGENCY PROCEDURES	SECT. 9, EOP	3	5	11/90	DONE	2
AX.1-1	REMEDIAL PROGRAM FOR AUXILIARY SYSTEMS	DRAFT DOE 4330.XXX	2	570	XREF	XREF	0
AX.1-2	CONFIGURATION CONTROL SYSTEM FOR AUXILIARY SYSTEMS	DOE 5480.5, 5480.6, AND 5480.19	2	55	4/91	12/91	485
AX.2-1	NO IMPLEMENTATION OF THE WASTE MINIMIZATION POLICY	TDHE 1200-1-11-.03, RCRA 3002, AND DOE 5400.3	2	56	XREF	XREF	0
AX.3-1	ENERGY SYSTEMS POLICY PROCEDURE ON WASTE MANAGEMENT		3	6	6/91	10/91	15
AX.4-1	FISSILE MATERIAL STORAGE HANDLING ACTIVITIES	DOE 5480.5	2	56	3/91	3/92	109
AX.4-2	BUILDING 3027 STORAGE VAULT OPERATIONS	DOE 5633.3	2	55	3/91	DONE	0
AX.5-1	GASEOUS EFFLUENT DISCHARGES	DOE 6430.1A	2	63	11/90	9/91	90
AX.6-1	BACKUP POWER DIESEL GENERATORS		3	5	6/91	9/91	3
CS.1-1	NUCLEAR CRITICALITY SAFETY TRAINING PROGRAM	DOE 5480.5, PARS. 8C AND 10	2	60	8/91	10/92	103
CS.1-2	OVERSIGHT AND SUPPORT FUNCTIONS	DOE 5480.5, PAR. 7E	2	55	11/90	DONE	0
CS.1-3	ORNL CRITICALITY SAFETY PROGRAM	DOE 5480.5, PAR. 11C	2	55	11/90	11/91	525
CS.1-4	NUCLEAR CRITICALITY SAFETY PROGRAM DOCUMENTATION	DOE 5480.5, PARS. 8A, 3E, 8J, AND 11C	2	55	6/91	11/91	20
CS.3-1	SAFETY ANALYSIS DOCUMENTATION REQUIREMENTS	ANSI/ANS-8.1-1983	2	55	6/91	12/92	573

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
		SECT 4.1.4 AND DOE 5480.5, PAR 8A					
CS.4-1	REVIEW OF NUCLEAR CRITICALITY SAFETY ANALYSES	DOE 5480.5, PAR 8A	2	55	XREF	192	0
CS.4-2	DISSEMINATION OF NUCLEAR CRITICALITY SAFETY GUIDANCE	ANSI/ANS-8.1-1983 SECT 4.1.3 AND DOE 5480.5, PAR. 13B(4)	2	55	3/91	11/92	30
CS.4-3	NUCLEAR CRITICALITY SAFETY REMEDIAL ACTION PLAN	ANSI/ANS-8.1-1983, PAR. 4.1.5 AND DOE 5480.5, PAR. 8G	2	55	11/90	11/91	0
CS.5-1	EMERGENCY RESPONSE PLAN		2	55	DONE	DONE	0
CS.5-2	CRITICALITY ALARM SYSTEM EVACUATION DRILLS	ANSI/ANS-8.3-1986 AND DOE 5480.5	2	55	11/90	DONE	0
CS.5-3	CRITICALITY ALARM SYSTEMS	ANSI/ANS-8.3-1986 SECTS. 4.3, 4.4.5, 5.4, 6.5 AND DOE 5480.5 PARS. 11C(3)(G) AND 11C(3)(H)	2	58	11/90	6/91	2
EA.2-1	ORNL POLICY REGARDING INDEPENDENT SAFETY REVIEWS		2	69	11/90	10/91	25
EA.3-1	GUIDANCE ON INTERNAL SAFETY REVIEWS	DOE 5480.1B, 5480.5, 5480.10, AND 5483.1A	2	69	XREF	XREF	0
EA.3-2	DOCUMENTATION OF SAFETY REVIEWS OF EXPERIMENTAL PLANS	DOE 5480.1B, 5480.10, 5480.11, AND 5483.1A	2	55	XREF	XREF	0
EA.4-1	RANDOM SAFETY SURVEILLANCES	DOE 5480.1B, 5480.10, 5480.11, AND 5483.1A	3	6	7/91	10/91	193
EP.1-1	ACCIDENT CONSEQUENCE ASSESSMENT	DOE 5500.1A	2	109	11/90	9/92	232
EP.1-2	EMERGENCY PREPAREDNESS RECOMMENDATIONS	DOE 5500.3A	3	11	11/90	DONE	53
EP.1-3	FACILITY HAZARDS INFORMATION	DOE 5500.3A	2	69	6/91	12/91	82
EP.1-4	ANALYSIS OF EMERGENCY PREPAREDNESS	DOE 5500.3A	2	66	6/91	9/93	0
EP.2-1	CLASSIFICATION OF EMERGENCY EVENTS	DOE 5500.2A, N5500.5, AND THE STATE OF TN EMERGENCY PLAN	2	56	11/90	9/91	10

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
EP.2-2	ADEQUACY OF ORNL EMERGENCY PLANS	DOE 5500.1A	2	106	11/90	12/91	40
EP.3-1	TRAINING FOR EMERGENCY SITUATIONS	DOE 5500.3A	3	7	6/91	12/92	524
EP.3-2	SPILL RESPONSE TRAINING	DOE 5500.3A	3	7	11/90	12/91	274
EP.4-1	EMERGENCY PREPAREDNESS EXERCISES	DOE 5500.3A	3	7	11/90	DONE	471
EP.4-2	DRILL PLANNING	DOE 5500.3A	3	6	11/90	6/91	69
EP.5-1	EMERGENCY MONITORING OF RELEASES	DOE 5500.3A	2	68	11/90	DONE	637
EP.5-2	REGIONAL RADIOLOGICAL EVENT	DOE 5500.1A	2	56	9/91	3/93	891
EP.6-1	PROTECTIVE ACTION GUIDES/EMERGENCY ACTION LEVELS	DOE 5500.3A	2	56	11/90	6/92	299
EP.7-1	PERSONNEL ACCOUNTABILITY SYSTEMS	DOE 5500.3A	2	130	9/91	2/92	217
EP.7-2	EMERGENCY NOTIFICATION SYSTEMS	DOE 5500.3A	2	133	11/90	7/92	694
FP.1-1	RESOURCES OF FIRE PROTECTION ENGINEERING SECTION	DOE 5480.4, 5480.7, AND 6430.1A	2	133	6/91	12/92	598
FP.1-2	FIRE DEPARTMENT RESOURCES AND WORK LOAD	DOE 5480.4	2	133	XREF	XREF	274
FP.1-3	FIRE PROTECTION OF ORNL FACILITIES AT THE Y-12 PLANT	DOE 5480.7	2	55	11/90	DONE	0
FP.1-4	FIRE PROTECTION POLICIES REGARDING IMPROVED RISK	DOE 5480.7	2	55	7/91	1/92	7
FP.1-5	FACILITY REOCCUPANCY POLICY	DOE 5480.7	2	105	7/91	12/91	7
FP.1-6	MANAGEMENT'S ROLE IN FIRE PROTECTION	DOE 5480.7	3	9	6/91	3/92	336
FP.2-1	EGRESS FROM BUILDING 4500N, MACHINERY SPACE	NFPA 101 LIFE SAFETY CODE	2	458	12/90	DONE	120
FP.2-2	EGRESS FROM BUILDING 4500N, OFFICE SPACE	NFPA 101 LIFE SAFETY CODE	2	458	11/90	DONE	607
FP.2-3	LIFE SAFETY CODE SURVEYS	DOE 5480.7	2	133	8/91	6/92	240
FP.2-4	ACTION PLANS REGARDING LIFE SAFETY CODE SURVEYS	DOE 5480.4	3	56	11/90	6/91	5
FP.3-1	ORNL TESTING OF FIRE EQUIPMENT	DOE 5480.4	2	59	11/90	9/93	660
FP.3-2	ADEQUATE DOCUMENTATION OF FIRE STUDY	DOE 5480.7	2	80	11/90	3/92	150
FP.3-3	DESIGN BASIS FIRE REVIEW PROGRAM	DOE 5480.7	2	58	2/91	12/92	7
FP.4-1	ADEQUACY OF FIRE PROTECTION	DOE 5480.7	2	55	7/91	1/92	500
FP.5-1	FIRE PROTECTION SYSTEMS IN BUILDING 4500N	DOE 5480.7	2	60	7/91	9/96	4810
FP.6-1	PHYSICAL FITNESS PROGRAM FOR FIRE FIGHTERS	NFPA 1500	2	63	DONE	DONE	0
FP.6-2	FIRE DEPARTMENT STAFFING LEVEL	NFPA 1500, DOE 5480.4	3	83	6/91	12/92	1367
FP.6-3	PRE-FIRE PLANS FOR ORNL FACILITIES	DOE 5480.7	3	5	6/91	11/91	226
FP.7-1	FIRE PROTECTION OF MAIN COMPUTER CENTERS	DOE/EP-0108	2	58	2/91	8/91	10
FP.7-2	FIRE HAZARD ANALYSIS AND FACILITY PROTECTION SURVEY	DOE 5480.7 10(B)(2)	2	133	XREF	XREF	0
FP.7-3	FIRE PROTECTION OVERSIGHT	DOE 5480.7	2	58	11/90	6/92	0

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
FP.7-4	REVIEW OF DOCUMENTS AFFECTING FIRE PROTECTION	DOE 5480.7	2	58	9/91	9/91	0
FP.7-5	WATER SUPPLY SYSTEM	DOE 5480.7 AND 6430.1A	2	58	6/91	6/96	22037
FR.1-1	ORGANIZATION AND IMPLEMENTATION OF SAFETY REVIEW SYSTEM	DOE 5480.5, 5480.6, AND 5482.1B	3	6	XREF	XREF	0
FR.2-1	REVIEW OF SAFETY QUESTIONS AND TOPICS	DOE 5480.5 AND 5482.1B	2	60	11/90	12/91	15
FR.3-1	SHORTCOMINGS OF THE SAFETY REVIEW SYSTEM		2	63	XREF	XREF	0
FR.4-1	MANAGEMENT RESPONSE TO SAFETY COMMITTEE RECOMMENDATIONS	DOE 5480.5 AND 5482.1B	2	98	11/90	5/91	15
FR.4-2	ANNUAL FACILITY APPRAISALS		4	1	XREF	XREF	0
FR.5-1	TRIENNIAL APPRAISAL	DOE 5480.5, 5480.6, AND 5482.1B	3	5	XREF	8/91	0
FR.6-1	INDUSTRY LESSONS LEARNED		2	55	11/90	7/91	501
GW/BMPF-1	INADEQUATE WELL AND BOREHOLE ABANDONMENT	NONE	2	50	11/90	9/97	60112
GW/BMPF-2	INADEQUATE MONITORING WELL AND BOREHOLE INVENTORY, SECURITY, AND MAINTENANCE	NONE	1	50	11/90	01/92	1737
GW/BMPF-3	CROSS-CONTAMINATION BETWEEN AQUIFERS AND STRATA	NONE	2	50	XREF	XREF	0
GW/BMPF-4	NO CUSTODIAN FOR UNUSED WELLS	NONE	2	50	11/90	7/92	672
GW/BMPF-5	INADEQUATE CHARACTERIZATION OF THE HYDROGEOLOGIC REGIME	DOE 5400.4, CERCLA, AND NCP[40 CFR 300.430(D)]	2	117	11/90	6/92	168057
GW/CF-1	INADEQUATE HYDROGEOLOGIC CHARACTERIZATION AT SWSA 6	DOE 5400.4, CERCLA, AND 40 CFR 300.430	2	507	8/91	9/91	0
GW/CF-2	INADEQUATE IMPLEMENTATION OF WELL PURGING PROCEDURES AT SWSA-6	MMES-ESP-302-2, TN 1200-1-11.05, AND 40 CFR 265(F)	2	405	11/90	8/91	63
IH.2-1	DOCUMENTATION OF PROCEDURES BY INDUSTRIAL HYGIENE	DOE 5480.10	2	68	6/91	3/93	1933
IH.2-2	IMPLEMENTATION OF INDUSTRIAL HYGIENE REVIEWS		4	90	4/91	6/92	117
IH.3-1	PERSONNEL PROTECTIVE EQUIPMENT	DOE 5480.10 AND 29 CFR 1910.95, .133, .134, AND .252	2	458	3/91	7/92	16
IH.4-1	SURVEILLANCE OF INDUSTRIAL HYGIENE MONITORING	DOE 5480.10	2	60	6/91	9/92	435
IH.5-1	HEARING CONSERVATION PROGRAM	DOE 5480.10 AND 29 CFR 1910.95	2	455	11/90	12/91	90

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
IH.5-2	CHEMICAL CARCINOGEN PROGRAM	DOE 5480.10 AND 29 CFR 1910 SUBPART Z	2	418	11/90	10/91	47
IH.5-3	CONFINED SPACE ENTRY	29 CFR 1910.146 SECT. (C)(8); ANSI Z117.1, SECTS. 12.2.1, SECT. 13.1; AND OSHA 29 CFR 1910.146 SECT. (G)	1	913	11/90	12/91	884
IH.5-4	RESPIRATORY PROTECTION PROGRAM	DOE 5480.10, ANSI Z88.2, AND 29 CFR 1910.134	2	415	4/91	6/92	681
IH.5-5	SANITATION AND POTABLE WATER PROGRAM	DOE 5480.4; DOE 5480.10; ANSI Z4.1-1988; PUBLIC LAW, CH. 14, PART I; AND TN FSE LAW	2	408	7/91	5/92	129
IH.5-6	ERGONOMICS PROGRAM	DOE 5480.10	2	80	4/91	12/91	325
IH.6-1	HANDLING, STORAGE, AND LABELING OF CHEMICALS	DOE 5480.10, DOE 5480.4, 29 CFR 1900.1200, 29 CFR 1910.145, AND 29 CFR 1910 SUBPART Z	2	422	5/91	06/92	2314
IWS/BMPF-1	INFORMALITY OF OPERATIONS IN THE ENVIRONMENTAL RESTORATION PROGRAM (ERP)	NONE	3	10	2/91	11/91	0
IWS/BMPF-2	PROCEEDING WITHOUT APPROVED PLANS	NONE	3	7	11/90	DONE	0
IWS/BMPF-3	LACK OF ADEQUATE PLANNING FOR FEDERAL FACILITY AGREEMENT ACTIVITIES	NCP 300.615	3	42	DONE	DONE	0
IWS/BMPF-4	INCOMPLETE EVOLUTION OF CONTINUOUS RELEASES	CERCLA 103(F)(2)	3	50	11/90	DONE	0
IWS/CF-1	INADEQUATE INVENTORY AND IDENTIFICATION OF INACTIVE WASTE SITES	40 CFR 300.410 AND 40 CFR 300.420	2	410	3/91	9/91	25
IWS/CF-2	LACK OF FORMAL NATURAL RESOURCES DAMAGE ASSESSMENT NOTIFICATION	DOE 5400.4, CERCLA 104(B), AND EXECUTIVE ORDER 12580	2	495	11/90	9/91	0
IWS/CF-3	INCOMPLETE DISTRIBUTION OF EPCRA REPORTS	40 CFR 370	2	405	11/90	9/91	0

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
MA.1-1	ORNL LACKS POLICY/PROCEDURE IN REMOVING EQUIPMENT FROM SERVICE		3	41	11/90	10/91	1
MA.2-1	ORNL LACKS EFFECTIVE LOCKOUT/TAGOUT SYSTEM	DOE 5480.19	1	917	3/91	8/91	645
MA.2-2	PLANT MAINTENANCE PERSONNEL		2	86	11/90	9/91	862
MA.5-1	GENERAL FACILITY AND POST-WORK INSPECTIONS WERE NOT BE USED		2	567	11/90	9/91	2487
MA.5-2	FUNDAMENTAL ASSESSMENTS OF FACILITIES	DOE 4330.2C	2	58	9/91	1/92	1129
MA.6-1	P&E DIVISION PREVENTIVE MAINTENANCE		2	570	3/91	12/91	1382
MA.8-1	MAINTENANCE PROCEDURES		3	42	4/91	2/92	551
MF-1	ES&H GOALS AND OBJECTIVES	NONE	3	99	6/91	9/91	0
MF-10	DOE DIRECTIVE SYSTEM	NONE	3	119	11/90	6/91	250
MF-11	ORO OVERSIGHT SYSTEMS	NONE	3	58	1/91	10/91	0
MF-12	CONTRACT AWARD FEE PROCESS	NONE	3	20	1/91	9/91	0
MF-2	ES&H MANAGEMENT SYSTEMS	NONE	3	102	11/90	12/91	2267
MF-3	QUALITY ASSURANCE	DOE 5700.6B AND ANSI/ASME NQA-1	3	126	11/90	12/91	0
MF-4	HUMAN RESOURCES	NONE	3	99	11/90	10/91	286
MF-5	INDEPENDENT OVERSIGHT SYSTEMS	DOE 5480.5, 5480.6, 5482.1B AND 5-1	2	135	5/91	11/92	207
MF-6	ORNL TRACKING ES&H ISSUES TO CLOSURE	NONE	2	105	11/90	1/92	1218
MF-7	ORNL ES&H INTERFACES WITH ONSITE EXTERNAL GROUPS	NONE	3	539	11/90	10/91	0
MF-8	ES&H REVIEW OF WORK FOR OTHERS	NONE	3	33	11/90	7/91	0
MF-9	CONTRACTUAL MATTERS	NONE	2	40	1/91	9/91	0
MS.1-1	VOLUNTARY HEALTH EXAMINATION PROGRAM	DOE 5480.8	2	55	11/90	12/91	687
MS.2-1	MEDICAL DIVISION ADMINISTRATIVE ASSISTANCE		3	8	11/90	3/92	246
MS.3-1	BACKUP PULMONARY FUNCTION TESTING PERSONNEL	DOE 5480.8 AND OSHA STANDARDS	2	408	11/90	8/91	5
MS.3-2	MEDICAL DIVISION SPACE ALLOCATION		3	55	3/91	7/91	0
MS.3-3	DECONTAMINATION FACILITIES	DOE 5480.4	2	62	7/91	12/92	1200
NEPA/BMPF1	LACK OF ENVIRONMENTAL IMPACT ASSESSMENT FOR ORNL CONTINUING OPERATIONS	SEN 15	3	10	11/90	12/91	0
NEPA/CF-1	INEFFICIENT DOE NEPA IMPLEMENTATION PROCEDURES	SEN 15	2	658	1/91	8/91	0
NEPA/CF-2	PROJECT IMPLEMENTATION WITHOUT COMPLETED NEPA PROCESS	SEN 15	2	405	11/90	8/910	0
OA.1-1	FLOWDOWN OF POLICIES		2	69	1/91	12/91	0
OA.1-2	DOE ORDERS		2	58	1/91	4/92	120

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
OA.1-3	ROLES AND RESPONSIBILITIES FOR ES&H		2	539	12/90	DONE	0
OA.1-4	ES&H REQUIREMENTS ACCEPTANCE BY DIVISIONS		2	488	5/91	10/91	275
OA.1-5	ROLES, RESPONSIBILITIES INVOLVING ES&H NOT CLEARLY DEFINED		2	539	XREF	10/91	0
OA.1-6	NO UNIFORM SAFETY REQUIREMENTS AT X10 AND Y12		2	65	XREF	XREF	0
OA.3-1	ORNL HAS NOT ESTABLISHED COMPREHENSIVE ES&H GOALS FOR FACILITIES		2	64	5/91	5/91	97
OA.6-1	REQUIREMENTS FOR JOB DESCRIPTIONS		3	58	XREF	XREF	0
OA.6-2	PPR SYSTEM		3	58	XREF	XREF	0
OA.7-1	CENTRALIZED SYSTEM FOR CONTROL OF SAFETY DOCUMENTS		3	5	6/91	2/92	8
OA.7-2	STORAGE FACILITIES AT ORNL FOR RECORDS	DOE 5700.68, ANSI/ASME NQA-1, AND NFPA 232	2	130	11/91	1/92	25
OA.8-1	SITE WIDE TRAINING FOR DRUG/ALCOHOL USE/BEHAVIOR		2	87	11/90	5/91	40
OP.3-1	ORNL LACKS STANDARDIZED POLICY FOR OPERATING PROCEDURES	DOE 5480.19	2	55	6/91	2/92	72
OP.4-1	FACILITY STATUS DISPLAYS	DOE 5480.19	3	56	11/90	10/91	756
OP.4-2	LOCKOUT/TAGOUT SYSTEMS AT ORNL	DOE 5480.19	1	917	XREF	XREF	0
OP.7-1	SHIFT WORKERS AT ORNL	DOE 5480.19	2	67	XREF	8/91	634
OP.8-1	GENERALLY ACCEPTED TERMINOLOGY	DOE 5480.19	3	5	XREF	XREF	0
OP.8-2	ALARM PANELS	DOE 5480.19	2	56	6/91	1/92	0
OP.8-3	LACK OF UNIFORMITY IN CONVEYING INFORMATION TO PERSONNEL	DOE 5480.19 AND 29 CFR 1910.145	2	56	3/91	4/93	92
PP.1-1	RESOURCES FOR WORKPLACE MAINTENANCE	29 CFR 1910 AND 1926, AND DOE 5480 AND 5483	2	505	5/91	9/92	14773
PP.2-1	ORNL HEALTH AND SAFETY PROGRAM		2	505	3/91	9/92	1538
PP.2-2	WORKPLACE EXPSOURE MONITORING AND MEDICAL RECORDS	29 CFR 1910 SUBPART C	2	415	6/91	6/92	124
PP.3-1	HEALTH AND SAFETY CONCERNS		2	68	11/90	9/91	15
PP.3-2	ORNL CONSTRUCTION OVERSIGHT PROGRAM	DOE 5480.9	2	68	3/91	9/92	7
PP.5-1	HAZARD COMMUNICATION PROGRAM DEFICIENCIES	29 CFR 1910.1200	2	418	6/91	6/91	10
PP.5-2	HEALTH AND SAFETY PROGRAM DEFICIENCIES		3	13	3/92	9/92	0
PP.5-3	EXPLOSIVES SAFETY PROGRAM	DOE 5480.4 AND 5480.3	2	133	11/90	11/91	29
PP.5-4	IMPLEMENTATION OF INDUSTRIAL SAFETY PROGRAM		3	5	3/91	9/91	15

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
PT.1-1	FINANCE MATERIALS DIVISION STAFF		2	534	11/90	8/91	1024
PT.1-2	PACKAGING AND TRANSPORTATION PROCEDURES	DOE 5480.3A AND 5480.3	2	93	3/91	12/91	352
PT.1-3	PACKAGING AND TRANSPORTATION PROCEDURAL DOCUMENTS	DOE 5480.3 AND 5480.3A	2	93	XREF	XREF	0
PT.1-4	ORNL ONSITE TRANSPORTATION MANUAL	DOE 5480.3 AND 5480.3A	2	133	11/90	6/91	0
PT.1-5	CROSSOVER PACKAGING AND TRANSPORTATION RESPONSIBILITIES		3	5	11/90	DONE	0
PT.1-6	TRANSPORTATION PROGRAM	HAZARDOUS MATERIALS TRANSPORTATION SAFETY ACT OF 1990	3	45	3/91	DONE	0
PT.12-1	HANDLING AND STORAGE OF HAZARDOUS MATERIALS	29 CFR 1910	2	414	5/91	9/92	732
PT.12-2	PLANNING OF RADIOACTIVE MATERIALS PACKAGING NEEDS	DOE 5480.3 AND 5480.3A	3	8	3/91	8/91	0
PT.12-3	ABSENCE OF ONSITE TRANSFER PLAN	DOE 5480.3 AND 5480.3A	3	5	XREF	XREF	0
PT.12-4	CONFLICTING CONTAMINATION LIMITS	DOE 5480.3	3	5	11/90	DONE	0
PT.2-1	HAZARDOUS MATERIALS TRANSPORTATION INFORMATION	40 CFR 100-177	2	133	4/91	6/92	0
PT.3-1	DIVISIONAL QA PACKAGING AND TRANSPORTATION PROCEDURES		3	5	2/91	12/91	43
PT.3-2	TRANSPORTATION PROGRAM AUDITS		2	30	XREF	XREF	9
PT.6-1	ONSITE TRANSPORT OF WASTE		2	487	11/90	XREF	657
PT.6-2	LOW-LEVEL WASTE BOTTLE TESTING	DOE 5480.3 AND 5480.3A	3	5	11/90	DONE	10
PT.6-3	INCONSISTENCY OF REGULATORY TERMINOLOGY		3	40	11/90	8/91	0
PT.8-1	SAFETY STANDARDS FOR VEHICLE IDENTIFICATION	DOE 5480.3 AND 5480.3A	2	58	XREF	XREF	0
PT.8-2	UNNECESSARY TRANSPORT OF HAZARDOUS MATERIALS	DOE 5480.3 AND 5480.3A	2	87	XREF	XREF	0
PT.8-3	ONSITE TRANSFERS OF HAZARDOUS MATERIALS	DOE N5480.3 AND 5480.3A	2	133	XREF	XREF	0
PT.9-1	CENTRAL FILE FOR OFFSITE SHIPPING DOCUMENTS		3	5	XREF	12/91	0
PT.9-2	TRAFFIC HAZARDS ON BETHEL VALLEY ROAD		1	607	3/91	12/92	375
QA/BMPF-1	QA/QC DEFICIENCIES IN THE MMES/ORNL ENVIRONMENTAL SAMPLING PROGRAMS	NONE	3	9	11/90	11/91	1241
QA/CF-1	STANDARD OPERATING PROCEDURES DEFICIENCIES FOR SOME	DOE ORDER 5700.6B	2	55	1/91	12/91	26

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	MMES/ORNL PROJECTS						
QA/CF-2	DEFICIENCIES WITH THE MMES ENVIRONMENTAL SURVEILLANCE PROCEDURES QUALITY CONTROL PROGRAM MANUAL		3	5	2/91	7/91	0
QV.1-1	RESOURCES TO APPLY QA FUNCTIONS	DOE 5700.6B AND ANSI/ASME NQA-1	2	60	6/91	9/91	1481
QV.1-2	LINE ORGANIZATIONS ARE NOT IMPLEMENTING THE QA PROGRAM	DOE 5700.6B AND ANSI/ASME NQA-1	2	63	7/91	9/91	0
QV.1-3	QA DEPARTMENT AUDIT PROGRAM	DOE 5700.6B	2	55	11/90	12/91	988
QV.1-4	INTERNAL AUDITS/SURVEILLANCES ARE INFREQUENTLY PERFORMED	DOE 5700.6B AND ANSI/ASME NQA-1	2	55	11/90	12/91	0
QV.1-5	QA PLANS AND MANUALS DO NOT REFLECT SPECIFIC DOE REQUIREMENTS	DOE 5700.6B AND ANSI/ASME NQA-1	2	56	6/91	12/91	95
QV.1-6	CORRECTIVE ACTIONS ARE UNTIMELY AND INEFFECTIVE	DOE 5700.6B	2	94	7/91	12/91	12
QV.2-1	PROCUREMENT CONTROLS	DOE 5700.6B AND ANSI/ASME NQA-1	2	82	3/91	9/92	9
QV.3-1	PROVISIONS FOR RECEIVING/INSTALLATION	ANSI/ASME NQA-1	2	59	5/91	12/91	7
QV.4-1	CALIBRATION FACILITIES		2	5	7/91	9/91	17
QV.4-2	CALIBRATIONS PROGRAM	DOE 5700.6B AND ANSI/ASME NQA-1	2	56	11/90	1/92	6
QV.5-1	SAFETY-RELATED HARDWARE AND MATERIALS	DOE 5700.6B AND ANSI/ASME NQA-1	2	61	12/91	9/93	335
QV.6-1	QUALITY RELATED INSPECTIONS	DOE 5700.6B AND ANSI/ASME NQA-1	2	62	6/91	3/92	13
QV.7-1	SPECIAL PROCESS TRAINING	ANSI/ASME NQA-1	2	58	6/91	11/91	493
RAD/CF-1	INADEQUATE RADIOLOGICAL DOSE ASSESSMENT	DOE 5400.5, 5700.6B, AND ANSI/ANS 10.3	2	55	3/91	8/91	112
RAD/CF-2	INADEQUATE RADIOLOGICAL POSTINGS	DOE 5480.11, ORNL HPRP 2.3, REV. 1	2	65	3/91	8/91	249
RAD/CF-3	UNMONITORED DECONTAMINATION LAUNDRY DISCHARGES	10 CFR 834 AND DOE 5400.5	2	58	11/90	10/91	37
RAD/CF-4	INADEQUATE CALIBRATION OF RADIOLOGICAL MONITORS	10 CFR 834 AND DOE 5400.5	2	55	2/91	12/93	38
RAX.2-1	RESIN CARRYOVER IN RESIN REGENERATIVE SYSTEM		4	5	8/91	1/92	1400
RAX.3-1	CONTAMINATION OF THE HFIR POOL		4	1	11/90	DONE	0
RAX.4-1	HFIR SPENT FUEL CASK NOT APPROVED BY DOE	10 CFR 71	2	1	1/91	5/91	10

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RCS.1-1	MANAGEMENT OF CRITICALITY SAFETY PROGRAM	DOE 5480.6 AND 5480.5	3	55	4/91	3/92	135
RCS.1-2	TIMELY RESOLUTION OF CRITICALITY SAFETY ISSUES		3	5	5/91	7/91	25
RCS.5-1	CRITICALITY ALARM SYSTEMS	ANSI/ANS-8.3-1986	3	55	11/90	DONE	10
RCS.5-2	DISTRIBUTION OF NUCLEAR ACCIDENT DOSIMETERS	DOE 5480.5 AND 5480.11	2	55	DONE	DONE	143
RCS.5-3	PERFORMANCE OF CRITICALITY DRILLS	ANSI/ANS-8.3-1986, SECT. 7.3 AND DOE 5480.5, PARA. 11C(3)(G)	3	55	11/90	DONE	0
REA.1-1	SAFETY OVERVIEW OF BLDG. 7900		3	5	3/91	5/91	428
REA.3-1	UPDATING OF RESEARCH REACTORS EXPERIMENTER'S GUIDE		4	5	3/91	5/92	30
REA.3-2	VERIFICATION OF REACTOR EXPERIMENT CALCULATIONS		3	0	2/91	12/91	10
REA.4-1	CONTROL OF POTENTIAL PERSONNEL EXPOSURE		3	8	2/91	10/91	5
REP.2-1	HFIR EMERGENCY PREPAREDNESS PLANNING	DOE 5500.5 AND DRAFT DOE 5500.3A	3	85	4/91	3/93	101
REP.3-1	TRAINING OF DESIGNATED EMERGENCY RESPONDERS	DOE 5500.3A	3	55	11/90	5/91	3
REP.5-1	HFIR STACK RADIOLOGICAL EFFLUENT MONITORS	DOE 5500.5, 6A(1) AND (3)	2	50	11/90	9/92	719
REP.5-2	EMERGENCY RESOURCES	DOE 5500.5 AND DRAFT DOE 5500.3A	3	55	11/90	6/92	19
REP.6-1	EMERGENCY ASSESSMENT AND NOTIFICATION PROCEDURES	DOE 5500.5 AND DRAFT DOE 5500.3A	3	55	4/91	4/93	100
REP.7-1	HFIR EMERGENCY PREPAREDNESS PLANNING	DOE N5500.5 AND DRAFT DOE 5500.3A	3	55	6/91	10/92	11
RFP.1-1	ORGANIZATION AND ADMINISTRATION OF FIRE PROTECTION PROGRAM	DOE 5480.7	2	5	9/91	6/92	6
RFP.4-1	SPRINKLER SYSTEM IN BLDG 7902	NFPA 13, DOE 5480.7, AND 5480.4	2	53	3/91	7/93	800
RFP.4-2	SMOKE DETECTION SYSTEMS AT THE HFIR	NFPA 72-E	3	50	11/91	3/93	700
RFP.4-3	USE OF PREACTION-TYPE SPRINKLERS	NFPA 13	2	53	12/91	2/93	500
RFP.7-1	DIKING AND FIRE-RESISTANT ENCLOSURES AT THE HFIR	NFPA 30	2	51	4/91	4/92	160
RFP.7-2	POTENTIAL FIRE HAZARDS AT THE HFIR	NFPA 101	2	50	4/91	4/93	116
RFR.1-1	TRAINING FOR UNREVIEWED SAFETY QUESTION DETERMINATIONS	DOE 5480.6, SECT. 8(G)(6)	3	5	10/91	4/92	25

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RFR.1-2	REVIEW BOARD FOR NUCLEAR SAFETY ASSESSMENTS		4	5	11/90	DONE	37
RFR.4-1	NEW FORMAT FOR WRITTEN REPORTS	DOE 5480.6, SECT. 8G(8)	4	1	2/91	5/92	2
RMA.1-1	CONTROL OF MAINTENANCE SUPPORT		4	0	2/91	5/91	3
RMA.2-1	TORQUING OF EQUIPMENT BOLTING		4	5	11/90	5/91	2
RMA.2-2	UNSAFE CONDITIONS AT THE B REACTOR FACILITIES	DOE 5483.1A AND 4330.4	2	356	XREF	XREF	0
RMA.3-1	MAINTENANCE OF B REACTOR AREAS	29 CFR 1910 AND DOE 4330.4	2	403	11/90	6/92	707
RMA.3-2	INSPECTION OF RRD MAINTENANCE ACTIVITIES	DOE 5480.6 AND 29 CFR 1910.179	3	8	6/91	10/92	2910
RMA.4-1	OVERSIGHT OF MAINTENANCE SUPERVISORS		3	5	11/90	6/91	806
RMA.5-1	MAINTENANCE AT SHUT-DOWN REACTORS	DOE 5480.6	2	403	XREF	XREF	0
RMA.8-1	DEFICIENT PROCEDURAL INFORMATION		3	5	XREF	XREF	0
ROA.1-1	FUNDING FOR MAINTENANCE OF ORR	DOE 5480.6	2	59	11/90	DONE	1554
ROA.1-2	APPROVAL OF ORR SHUTDOWN PLANS	DOE 5480.6	3	55	3/91	8/91	0
ROA.1-3	DECOMMISSIONING PLAN FOR HPRR	DOE 5480.6	3	5	2/91	9/95	0
ROA.1-4	FUNDS FOR MAINTENANCE OF HPRR	DOE 5480.6	3	55	11/90	DONE	1028
ROA.1-5	FUNDING FOR THE BULK SHIELDING FACILITY	DOE 5480.6	3	60	11/90	DONE	3622
ROA.1-6	STATUS OF THE BULK SHIELDING FACILITY	DOE 5480.6	3	55	3/91	7/91	0
ROA.1-7	STATUS OF THE CEF "W" CELL	DOE 5480.6	3	55	8/91	9/92	80
ROA.1-8	LINE MANAGEMENT RESPONSIBILITIES IN RRD	DOE 5480.6	3	55	11/90	DONE	0
ROA.1-9	MANAGEMENT POSITION DESCRIPTIONS FOR RRD		4	5	11/90	DONE	0
ROA.3-1	PROGRAM TO INCREASE SAFETY		4	5	11/90	10/91	0
ROA.6-1	PERFORMANCE EVALUATIONS FOR SAFETY		3	5	11/90	DONE	1
ROA.7-1	HFIR FINAL SAFETY ANALYSIS REPORT	DOE 5481.1B AND DOE 5480.6	2	80	11/90	9/91	6935
ROA.7-2	UPDATING OF SAFETY ANALYSIS REPORTS FOR BSF AND PCA	DOE 5481.1B AND 5480.6	2	55	3/91	10/95	430
ROA.7-3	UPDATING OF SAFETY ANALYSIS REPORT FOR TSF	DOE 5481.1B AND 5480.6	2	80	3/91	10/96	320
ROA.7-4	CONTROL OF DOCUMENTS		3	5	11/90	5/91	33
ROA.7-5	PROCEDURES	DOE 5480.6	2	55	11/90	XREF	0
ROA.8-1	SUBSTANCE ABUSE PROGRAM		4	5	2/91	6/91	0
ROP.2-1	DEFICIENCIES IN HFIR OPERATING INSTRUCTIONS		3	5	11/90	9/91	39

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
ROP.2-2	TECHNICAL SPECIFICATIONS AT HFIR	DOE 5480.6	3	5	6/91	12/91	61
ROP.2-3	AMBIGUITIES HFIR OPERATING INSTRUCTIONS		3	5	11/90	12/91	55
ROP.2-4	HFIR SHIFT CHECK SHEETS	INPO 85-017, REV. 1	3	5	2/91	10/91	8
ROP.2-5	HFIR REACTOR LOG		4	5	6/91	12/91	18
ROP.2-6	HFIR CREW COMMUNICATIONS		3	5	6/91	12/91	18
ROP.3-1	HFIR OPERATING MANUAL		3	5	11/90	12/91	27
ROP.3-2	USE OF HFIR PROCEDURES		3	5	5/91	9/91	41
ROP.3-3	PREPARATION AND REVIEW OF HFIR OPERATING PROCEDURES	DOE 5480.19	4	5	4/91	2/92	200
ROP.4-1	TAGGING PROCEDURES		3	5	XREF	XREF	0
ROP.4-2	RECORDS OF HFIR EQUIPMENT		3	5	6/91	7/91	14
RP.1-1	ACCOMPLISHING ES&H COMPLIANCE	DOE 5480.11	2	68	5/91	9/91	66
RP.1-2	ES&H COMPLIANCE STAFF		2	95	8/91	9/92	5063
RP.1-3	MANAGEMENT OVERSIGHT	DOE 5480.11	2	73	11/90	9/91	1019
RP.10-1	POSITIVE CONTROL OF CONTAMINATION	DOE 5480.11	2	77	XREF	1/92	30
RP.10-2	CONSISTENCY OF RADIATION PROTECTION POLICIES		2	73	XREF	1/92	0
RP.10-3	CONTROL OF LAUNDRY WASTEWATER	DOE 5400.5	2	58	3/91	3/92	311
RP.10-4	REQUIREMENTS FOR LAUNDRY CONTAMINATION CONTROL		3	13	9/91	9/95	16063
RP.11-1	MANAGEMENT SUPPORT FOR ALARA	DOE 5480.11 AND THE DOE ALARA MANUAL	2	63	5/91	10/92	2245
RP.12-1	OCCUPATIONAL EXPOSURE RECORDS PROGRAM	DOE 5480.11 AND ANSI N13.6	2	65	12/91	12/92	47
RP.12-2	REPORTING OF DOSIMETRY DATA	DOE 5480.11 AND 5484.1	2	60	11/90	11/91	42
RP.12-3	CONTROL OF OCCUPATIONAL EXPOSURE RECORDS	DOE 5480.11 AND 5484.1, ANSI N13.6, AND ANSI/ASME NQA-1	2	108	6/91	11/92	505
RP.3-1	ORNL POSTING AND CONTAMINATION PROGRAM	DOE 5480.11	2	73	3/91	10/91	28
RP.3-2	CONTAMINATION CONTROL PROGRAM		3	8	6/91	4/92	1072
RP.3-3	SOURCE CONTROL PROGRAM		3	16	3/91	10/91	76
RP.3-4	X-RAY GENERATING MACHINE POLICY AND REQUIREMENTS	ORNL HP MANUAL PROCEDURE 2.8	3	6	11/90	10/93	6
RP.3-5	ACCELERATOR POLICY REQUIREMENTS AND OVERSIGHT	DOE 5482.1B	3	6	XREF	XREF	0
RP.3-6	MATERIAL CLEARANCE	DOE 5480.11 AND 5400.5	2	63	3/91	9/92	2450
RP.3-7	DOCUMENTATION OF RADIATION HAZARDS	DOE 5480.11	2	65	XREF	8/91	15

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
RP.5-1	PERSONNEL NUCLEAR ACCIDENT DOSIMETERS	DOE 5480.11	2	55	11/90	DONE	103
RP.5-2	DIRECT-READING DOSIMETERS		3	10	3/91	9/91	17
RP.6-1	AIR SAMPLES	DOE 5480.11	2	63	9/91	3/93	18821
RP.6-2	TIMELINESS OF AIR SAMPLING PROGRAM	DOE INTERNAL DOSIMETRY PERFORMANCE STANDARD	3	5	10/91	12/92	56
RP.6-3	SURVEYING PERSONNEL FOR CONTAMINATION		3	8	10/91	12/91	157
RP.7-1	INTERNAL RADIATION DOSIMETRY PROGRAM	DOE 5480.11 AND DOE INTERNAL DOSIMETRY PERFORMANCES STANDARD	2	58	12/91	3/93	41892
RP.7-2	IN VIVO CALIBRATIONS	DOE INTERNAL DOSIMETRY PERFORMANCES STANDARD	2	58	9/91	7/92	34
RP.8-1	RADIATION PROTECTION INSTRUMENT PROGRAM	ANSI N232 REQUIREMENTS	2	61	10/91	3/92	705
RP.8-2	APPROVAL OF RADIATION PROTECTION INSTRUMENTS		2	56	8/91	8/92	286
RP.8-3	TESTING OF SAFETY RELATED INSTRUMENTS	DOE PRESCRIBED STANDARDS	2	56	XREF	XREF	0
RP.8-4	HIGH RANGE RADIATION PROTECTION INSTRUMENTATION	ANSI N320, N323, AND N42.17C	2	58	XREF	6/92	518
RP.8-5	RADIATION PROTECTION INSTRUMENTATION PROGRAM		4	5	11/91	1/92	30
RPP.1-1	REVIEW OF RRD	DOE 5480.10	2	0	4/91	6/91	181
RPP.2-1	ORNL SAFETY MANUAL	ANSI/ASME NQA-1, ESS.6.1, ORNL X-3SH-6, AND ORNL QA-L-6-100	2	55	XREF	5/91	0
RPP.2-2	SAFETY PERSONNEL INVOLVEMENT WITH SAFETY WORK PERMITS		3	5	11/90	6/91	5
RPP.2-3	UPDATING OF RRD MANUALS		3	5	11/90	11/91	0
RPP.2-4	ORNL HOISTING AND RIGGING EQUIPMENT	29 CFR 1910 AND DOE HOISTING AND RIGGING MANUAL	2	405	5/91	12/91	30
RPP.3-1	INDUSTRIAL SAFETY AT TSF	DOE 5483.1A, SECT. 1	2	356	11/90	9/93	97
RPP.3-2	CARCINOGENS IN RRD FACILITIES	DOE 5480.10	2	50	11/90	12/91	40

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
RPP.3-3	ORNL ELECTRICAL PROGRAM	DOE 5483.1A	3	55	4/91	6/92	47
RPP.4-1	RRD MONITORING PROGRAM	DOE 5480.10	2	53	2/91	4/91	335
RPP.5-1	HAZCOM PROGRAM AT RRD	29 CFR 1910.1200 AND 1910.1450	2	353	3/91	6/91	0
RQV.1-1	RRD QUALITY ASSURANCE PROGRAM MANUAL	ANSI/ASME NQA-1	3	55	11/90	11/91	0
RQV.1-10	DATA BASE TRENDING SYSTEM	DOE 5300.3A, SECT. B, ITEM C(2)	3	55	12/92	4/92	30
RQV.1-11	OCCURRENCE REPORTING SYSTEM	DOE 5700.6B	3	5	6/91	12/92	11
RQV.1-2	MANAGEMENT ASSESSMENT OF RRD	NQA-1	3	50	11/90	12/91	0
RQV.1-3	IMPLEMENTING RRD PROCEDURES		3	5	12/90	10/91	0
RQV.1-4	THOROUGHNESS OF PROCEDURES	NQA-1	3	55	4/91	3/92	0
RQV.1-5	REVISION OF PROCEDURES	NQA-1	3	55	3/91	9/91	547
RQV.1-6	FREQUENCY OF RRD QA AUDITS	QA-RRD-18-100	3	55	11/90	12/91	0
RQV.1-7	METHOD OF QUESTIONING RRD QA AUDITS	QA-RRD-18-100, SECT. 200.1	4	5	11/90	6/91	0
RQV.1-8	RRD CORRECTIVE ACTION PROGRAM	DOE 5700.6B	3	55	1/91	3/92	230
RQV.1-9	CONFLICTING GOALS IN RRD	RRAP-1.8.4	4	5	2/91	5/91	10
RQV.2-1	JUSTIFICATION OF PRODCUREMENT DEVIATIONS	ANSI/ASME NQA-1, NQA-1 SUPPLEMENT 15S-1, PAR. 4-4	3	5	11/90	6/91	26
RQV.2-2	PURCHASE ORDER AND QUALITY REQUIREMENTS	DOE 54700.6B, PAR. 9 AND NQA-1	3	55	11/90	11/90	6
RQV.3-1	ADEQUACY OF INSPECTIONS	NQA-1	3	6	5/91	12/91	32
RQV.3-2	DOCUMENTATION OF "USE-AS-IS" CLASSIFICATION	NQA-1 SUPPLEMENT 15S-1, PAR. 4.4	3	0	4/91	2/92	21
RQV.4-1	DOCUMENTATION OF ACCEPTANCE INSPECTIONS	NQA-1, SECT. 12S-1-3.2	3	6	11/90	6/91	0
RQV.4-2	MEASUREMENT AND TEST EQUIPMENT CALIBRATIONS	ANSI/ASME NQA-1, 12-S1, PAR. 3.1	3	50	XREF	XREF	0
RQV.4-3	USE OF UNCONTROLLED AND UNCALIBRATED INSTRUMENTS		3	50	6/91	12/91	0
RQV.4-4	DETERMINING EFFECTS OF OUT-OF-TOLERANCE EQUIPMENT	NQA-1, SECT. 12S-1-3.2	3	50	3/91	12/92	60
RQV.5-1	JUSTIFICATION OF DEVIATIONS AND NONCONFORMANCES	DOE 5700.6B, SECT. 6.6	4	5	5/91	6/91	3
RQV.5-2	TRENDING OF NONCONFORMING ITEMS	DOE 5700.6B, NQA-1	3	51	XREF	XREF	0

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
		SUPPLEMENT 15S-1, PAR. 4.4					
RQV.5-3	IDENTIFICATION AND STORAGE OF PARTS AND MATERIAL	NQA-1	3	50	11/90	1/93	652
RQV.5-4	EVALUATING UNREVIEWED SAFETY QUESTIONS	DOE 5480.5, SECT. 9H	3	50	11/90	DONE	0
RQV.6-1	INSPECTION REPORTS	NQA-1	3	51	4/91	5/92	30
RQV.7-1	CONTROL OF SPECIAL PROCESS MATERIAL	NQA-1	3	50	3/91	6/91	40
RQV.7-2	SPECIAL PROCESS PROCEDURES		3	50	XREF	XREF	0
RRP.10-1	CONTROL OF LOW-LEVEL CONTAMINATION	DOE 5480.11	3	5	11/90	6/92	90
RRP.10-2	WASTE MINIMIZATION		3	5	2/91	6/91	25
RRP.11-1	ADDRESSING ALARA ISSUES	DOE 5480.11, SECT. 8B	3	5	2/91	6/91	0
RRP.3-1	SOURCE CONTROL	DOE 5480.11	3	50	6/91	9/91	19
RRP.3-2	RADIOACTIVE SOURCE INVENTORIES		4	5	11/90	9/91	5
RRP.4-1	POSTINGS OF RADIOLOGICAL CONDITIONS	DOE 5480.11	3	55	4/91	7/91	25
RRP.4-2	RADIOLOGICAL CONTROLS IN THE EXPERIMENT AREA	DOE 5480.11, SECT. 9K(2)(A)	2	6	11/90	10/92	0
RRP.8-1	INSTRUMENTS		3	50	XREF	XREF	0
RSS.1-1	NEW SAFEGUARDS AND SECURITY ELEMENTS		3	55	11/90	10/91	40
RSS.3-1	ANALYSES TO DETERMINE APPROPRIATE WEAPONS	DOE 5480.16, CHAPT. II, 2J AND OR 5480.16, CHAPT. II, 2J	2	105	11/90	10/92	40
RSS.4-1	SAFETY APPRAISALS AND AUDITS FOR FIREARMS	DOE 5480.16, CHAPT. III	3	105	11/90	10/92	67
RTC.1-1	POSITION TASK ANALYSES	DOE 5480.6, SECT. 8E(1)(D)	3	55	11/90	6/92	290
RTC.1-2	CLASS B REACTOR TRAINING PLAN	DOE 5480.6	4	55	11/90	DONE	0
RTC.1-3	INSTRUCTORS FOR MAINTENANCE TRAINING	ANS 3.1	3	55	XREF	XREF	0
RTC.10-1	TRAINING FOR MANAGERS, SUPERVISORS, AND TECHNICAL STAFF	DOE 5480.6, SECT. 8E(1)(A)	3	55	9/91	9/92	134
RTC.2-1	EXAMINATIONS FOR OPERATOR AND REACTOR SUPERVISOR TRAINING	DOE 5480.6, SECT. 8E(1)(D)3A	4	5	DONE	DONE	0
RTC.4-1	GENERAL EMPLOYEE ACCESS TRAINING	DOE 5480.11	3	55	11/90	DONE	0
RTC.5-1	MAINTENANCE PERSONNEL TRAINING PROGRAM	DOE 5480.6	3	55	XREF	XREF	0
RTC.5-2	TRAINING FACILITIES FOR MAINTENANCE PERSONNEL		3	55	XREF	XREF	0

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
RTS.1-1	TECHNICAL SUPPORT FOR RRD TASKS		3	5	11/90	1/92	1806
RTS.1-2	BACKUP FOR RRD STAFF		3	6	4/91	6/91	685
RTS.2-1	CONSISTENCY OF TECHNICAL SPECIFICATIONS AND PROCEDURES	DOE 5480.6, 5480.4, AND 10 CFR 50.36(C)(3)	3	55	4/91	6/92	50
RTS.2-2	SAFETY ANALYSIS REPORTS FOR HFIR AND TSF	DOE 5481.1B AND 5480.6	2	80	XREF	XREF	0
RTS.3-1	FACILITY DESIGN MODIFICATIONS	DOE 5480.6, SECT. 8G(8)(A)	3	55	11/90	DONE	0
RTS.3-2	CONFIGURATION CONTROL OF PLANT DESIGN MODIFICATION	RRAP 3.1, REV. 4	4	5	11/90	5/91	1
RTS.3-3	DRAWING CHANGES FOR THE HFIR	DOE 5480.6, SECT. 8G(8)(A)	3	55	11/90	6/91	15
RTS.4-1	EQUIPMENT PERFORMANCE TRACKING		4	5	1/92	1/93	75
RTS.5-1	ENVIRONMENTAL IMPACT	DOE 5440.1C	2	390	11/90	6/91	0
RTS.7-1	REACTOR ENGINEERING FUNCTION AT HFIR AND TSF		4	5	11/90	DONE	0
SA-1	THE ORNL SELF ASSESSMENT PROCESS	NONE	3	138	6/91	1/92	6407
SS.1-1	ANALYSIS OF PROTECTIVE FORCE EQUIPMENT	DOE 5480.16	2	112	XREF	XREF	0
SSB/BMPF-1	DELAYED BENTHIC DATA ANALYSES AND REPORTING	NONE	3	5	3/91	2/93	275
SSB/CF-1	INADEQUATE RADIOACTIVE CONTAMINATION CONTROL	NONE	2	108	6/91	12/91	1554
SW/BMPF-1	INADEQUATE ORNL CROSS-CONNECTIONS STUDY	NONE	3	121	4/92	9/93	3924
SW/BMPF-2	LIQUID RADIONUCLIDE RELEASES FROM ORNL FACILITIES	NONE	1	103	8/91	5/94	1370
SW/BMPF-3	LACK OF BACKFLOW PREVENTION DEVICES	NONE	3	6	9/91	9/91	0
SW/BMPF-4	UNREPAIRED LEAKS FROM WATERWATER SEWER SYSTEMS	NONE	1	49	11/90	9/95	228936
SW/BMPF-5	LACK OF CERTIFICATION OF TREATMENT PLANT OPERATORS AND BACKFLOW PREVENTER REPAIRERS	NONE	4	1	6/94	12/98	364
SW/CF-1	DISCHARGES NOT INCLUDED ON THE ORNL NPDES PERMIT OR PERMIT RENEWAL	TCA 69-3-108(B)(6)	2	448	6/91	9/94	192
SW/CF-2	INCONSISTENT LABELING OF ORNL SINKS AND DRAINS	ORNL EPA 18.0(6.2.3)	3	20	6/91	12/91	109
SW/CF-3	INACCURATE STREAM FLOW MEASUREMENT DEVICES	ORNL NPDES PERMIT	2	405	6/91	9/93	1356
SW/CF-4	NPDES PERMIT EXCEPTIONS	ORNL NPDES PERMIT NO. TN0002941	2	448	6/91	4/93	752
SW/CF-5	LACK OF NPDES BEST MANAGEMENT PRACTICES PROGRAM PLAN	40 CFR 125.104 AND TN NPDES PERMIT	2	354	3/91	6/91	25
SW/CF-6	DEFICIENCIES OF SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN	40 CFR 112.3	2	410	6/91	9/91	50

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
TC.1-1	TRAINING PROGRAMS AT ORNL		2	358	11/90	3/92	840
TC.1-2	EXAMINATIONS		3	37	XREF	XREF	0
TC.1-3	TRAINING STAFFS		3	562	4/91	1/92	6899
TC.10-1	TRAINING FOR SUPERVISORS		2	87	12/91	2/92	0
TC.5-1	MAINTENANCE TRAINING PROGRAM	DOE 5480.6 AND DOE 5480.5, 10B(2)	2	588	7/91	6/93	0
TC.7-1	TRAINING FACILITIES		3	58	5/91	10/93	4320
TC.7-2	TRAINING RECORDS STORAGE	ASME NQA-1-1989 AND DOE 1324.2A	3	58	11/91	1/93	100
TCM/BMPF-1	PESTICIDE PROGRAM DEFICIENCIES	NONE	3	5	11/90	9/91	0
TCM/CF-1	PCB WASTES STORED LONGER THAN ONE YEAR	40 CFR PART 761.65(A)	2	405	1/91	DONE	15
TCM/CF-2	DEFICIENCIES WITH THE TSCA ASSUMPTION REQUIREMENTS FOR LIQUID FILLED ELECTRICAL EQUIPMENT	40 CFR 761	2	410	11/90	9/91	76
TCM/CF-3	INADEQUATE LABELLING OF EQUIPMENT CONTAINING PCB CAPACITORS	40 CFR 761.50(A)(4)	2	405	11/90	DONE	0
TCM/CF-4	DEFICIENCIES WITH TSCA TEMPORARY STORAGE FACILITY REQUIREMENTS	40 CFR 761.65(C)(1), 40 CFR 761.65(3), AND 40 CFR 761.50(A)(10)	2	405	11/90	DONE	0
TCM/CF-5	LACK OF HAZARD IDENTIFICATION LABELS FOR SOME CHEMICAL STORAGE TANKS	MMES-ORNL EPM-15.0	3	10	11/90	DONE	0
TCM/CF-6	LACK OF SECONDARY CONTAINMENT FOR SOME ABOVEGROUND STORAGE TANKS/CONTAINERS		3	9	12/91	12/92	1856
TCM/CF-7	DEFICIENCY WITH TSCA STORAGE FOR DISPOSAL MONITORING POLICY AND STORAGE FOR DISPOSAL POLICY	40 CFR PART 761.65(A)	3	5	2/91	6/91	470
TS.2-1	SAFETY ANALYSIS REPORT UPDATE PROGRAM		2	311	2/91	DONE	6
TS.3-1	PROCEDURES FOR LOW-COST FACILITY MODIFICATIONS	DOE 5481.1B AND 5480.5	3	8	6/91	XREF	15
TS.3-2	RESOURCE ALLOCATION FOR DRAWINGS UPDATES		2	311	XREF	10/91	5861
TS.4-1	PUBLICATION OF UNUSUAL OCCURRENCE REPORTS		2	55	XREF	XREF	0
WM/BMPF-1	INADEQUATE ASSESSMENTS OF OFFSITE VENDORS RECYCLING LEAD-ACID BATTERIES AND CIRCUITBOARDS	NONE	3	5	1/91	3/91	10
WM/BMPF-2	INADEQUATE WASTE MINIMIZATION PROGRAM	TDHE 1200-1-11-.03, RCRA 3002, AND DOE	1	56	11/90	6/92	1921

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		5400.3					
WM/CF-1	INADEQUATE OPERATION OF MIXED WASTE STORAGE FACILITY	TDHE 1200-1-11-.05	1	413	11/90	9/91	202
WM/CF-10	INADEQUATE LEAK DETECTION OF PETROLEUM UNDERGROUND STORAGE TANKS	MMES-ORNL SOP EMC-012-01 AND 40 CFR 280	3	5	3/91	9/91	0
WM/CF-11	INADEQUATE HAZARDOUS WASTE DETERMINATION OF SANITARY SEWAGE TREATMENT PLANT SLUDGE	TDHE 1200-1-11-.03	2	408	11/90	3/91	40
WM/CF-12	INADEQUATE DAILY INSPECTIONS OF RCRA FACILITIES ON WEEKENDS	TDHE 1200-1-11-.05(10)(F)	2	405	11/90	DONE	0
WM/CF-13	INADEQUATE CHARACTERIZATION OF MIXED WASTE IN STORAGE	TDHE 1200-1-11-.03 AND .05	2	408	6/92	09/97	8000
WM/CF-2	IMPROPER OPERATION OF SATELLITE ACCUMULATION AREAS AT ORNL FACILITIES AT Y-12	TDHE 1200-1-11.03	2	406	11/90	DONE	0
WM/CF-3	INADEQUATE HAZARDOUS WASTE ACCUMULATION AND MINIMIZATION AT ORNL BIOLOGY DIVISION AT THE Y-12 PLANT	TDHE 1200-1-11-.03 AND TDHE 1200-1-11-.05	2	406	11/90	DONE	0
WM/CF-4	LACK OF INTEGRITY ASSESSMENT OF 7860A HAZARDOUS WASTE STORAGE TANK	TDHE 1200-1-11-.05	1	409	3/91	DONE	127
WM/CF-5	INADEQUATE TRAINING FOR ONSITE HAZARDOUS WASTE TRANSPORTERS	TDHE 1200-1-11-.05(2)	2	410	4/91	10/91	90
WM/CF-6	STORAGE OF LAND DISPOSAL RESTRICTED MIXED WASTE	40 CFR 268.5	1	406	11/90	9/92	3590
WM/CF-7	INADEQUATE STORAGE OF RADIOACTIVELY CONTAMINATED HAZARDOUS WASTE LEAD	TDHE 1200-1-11-.01 THROUGH .09 AND 40 CFR PART 268	1	405	3/91	8/91	921
WM/CF-8	INADEQUATE TRAINING DOCUMENTATION AND PROCEDURES FOR 7507 HAZARDOUS WASTE STORAGE FACILITY	TDHE 1200-1-11-.05	3	5	11/90	6/91	7
WM/CF-9	INADEQUATE TRAINING RECORDS AND INSPECTION RECORDS AT THE 3001 STORAGE CANAL	TDHE 1200-1-11-.05 AND 40 CFR 265.195(C)	1	405	1/91	6/91	135
WS.3-1	CONTROL OF ASBESTOS	29 CFR 1910.1001 AND 29 CFR 1910.1200	2	468	5/91	7/92	371
WS.4-1	MACHINE GUARDING	29 CFR 1910 SUBPART O	1	910	4/91	9/94	1490
WS.4-2	NONCOMPLIANCES OF BUILDING EGRESS	29 CFR 1910 SUBPART E	2	458	3/91	9/94	6795

FINDING NUMBER	FINDING DESCRIPTION	COMPLIANCE PROTOCOL	DOE PRIORITY	RISK WEIGHT	BEGIN DATE	END DATE	TOTAL COST
WS.4-3	MACHINERY INSPECTION AND PREVENTATIVE MAINTENANCE	29 CFR 1910 SUBPARTS F AND N	2	483	5/91	12/91	25
WS.4-4	ORNL ELECTRICAL COMPLIANCE	DOE-PRESCRIBED OCCUPATIONAL SAFETY STANDARDS	1	935	11/90	9/94	5772
WS.4-5	EQUIPMENT AND OPERATIONS AREA	29 CFR 1910.253	1	935	11/90	7/91	351
WS.4-6	ORNL FIRE PROTECTION	29 CFR 1910 SUBPART L	2	409	7/91	8/91	25

APPENDIX D

SUMMARY OF ACTIONS FOR ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT FIVE-YEAR PLAN

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: AX.4-1		PRIORITY: 2		RISK WEIGHT:	56	FISSILE MATERIAL STORAGE HANDLING ACTIVITIES				
1	3	3	0	0	0	0	0	PROGRAM	EM-ADS387	REQUESTED
2	5	5	0	0	0	0	0	PROGRAM	EM-ADS387	REQUESTED
3	68	68	0	0	0	0	0	PROGRAM	EM-ADS387	REQUESTED
TOTALS:	76	76	0	0	0	0	0			
FINDING NUMBER: GW/BMPF-1		PRIORITY: 2		RISK WEIGHT:	50	INADEQUATE WELL AND BOREHOLE ABANDONMENT				
10	14860	0	0	2860	3000	3000	6000	PROGRAM	EM-ADS329	REQUESTED
10	250	250	0	0	0	0	0	PROGRAM	EM-ADS329	NEW
11	1302	0	102	1200	0	0	0	PROGRAM	EM-ADS333	REQUESTED
12	20977	0	0	0	0	1800	19177	PROGRAM	EM-ADS333	REQUESTED
13	250	250	0	0	0	0	0	PROGRAM	EM-ADS333	NEW
13	14856	0	2182	1830	3788	4656	2400	PROGRAM	EM-ADS333	REQUESTED
2	15	15	0	0	0	0	0	PROGRAM	EM-ADS332	FUNDED
3	10	10	0	0	0	0	0	PROGRAM	EM-ADS0322AB	FUNDED
4	110	0	110	0	0	0	0	PROGRAM	EM-ADS033	NEW
5	190	0	190	0	0	0	0	PROGRAM	EM-ADS329	REQUESTED
6	50	50	0	0	0	0	0	PROGRAM	EM-ADS332	FUNDED
6	90	0	90	0	0	0	0	PROGRAM	EM-ADS329	REQUESTED
7	220	0	120	100	0	0	0	PROGRAM	EM-ADS329	REQUESTED
7	50	50	0	0	0	0	0	PROGRAM	EM-ADS332	FUNDED
8	402	402	0	0	0	0	0	PROGRAM	EM-ADS332	FUNDED
8	6390	0	6390	0	0	0	0	PROGRAM	EM-ADS332	REQUESTED
9	90	0	50	40	0	0	0	PROGRAM	EM-ADS329	REQUESTED
TOTALS:	60112	1027	9234	6030	6788	9456	27577			
FINDING NUMBER: GW/BMPF-2		PRIORITY: 1		RISK WEIGHT:	50	INADEQUATE MONITORING WELL AND BOREHOLE INVENTORY, SECURITY, AND MAINTENANCE				
5	150	0	150	0	0	0	0	PROGRAM	EM-ADS311AA	REQUESTED
5	1497	0	0	350	366	382	399	PROGRAM	EM-ADS311AA	ONGOING
TOTALS:	1647	0	150	350	366	382	399			
FINDING NUMBER: GW/BMPF-5		PRIORITY: 2		RISK WEIGHT:	117	INADEQUATE CHARACTERIZATION OF THE HYDROGEOLOGIC REGIME				
2	75	75	0	0	0	0	0	PROGRAM	EM-ADS413	FUNDED
3	75	75	0	0	0	0	0	PROGRAM	EM-ADS413	FUNDED
4	100	0	100	0	0	0	0	PROGRAM	EM-ADS413	REQUESTED
5	125	0	125	0	0	0	0	PROGRAM	EM-ADS413	REQUESTED
6	17796	17796	0	0	0	0	0	PROGRAM	EM-ADS363,324,325	FUNDED
6	149511	0	26670	27650	26367	26733	42091	PROGRAM	EM-ADS363,324,325	REQUESTED
TOTALS:	167682	17946	26895	27650	26367	26733	42091			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: IWS/CF-1 PRIORITY: 2 RISK WEIGHT: 410 INADEQUATE INVENTORY AND IDENTIFICATION OF INACTIVE WASTE SITES										
1-2	25	25	0	0	0	0	0	PROGRAM	EM-ADS322	FUNDED
TOTALS:	25	25	0	0	0	0	0			
FINDING NUMBER: RAX.2-1 PRIORITY: 4 RISK WEIGHT: 5 RESIN CARRYOVER IN RESIN REGENERATIVE SYSTEM										
1	200	200	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
2	1200	0	1200	0	0	0	0	CAPITAL	EM-GPP	REQUESTED
TOTALS:	1400	200	1200	0	0	0	0			
FINDING NUMBER: SSB/BMPF-1 PRIORITY: 2 RISK WEIGHT: 108 INADEQUATE RADIOACTIVE CONTAMINATION CONTROL										
4	1500	0	1500	0	0	0	0	PROGRAM	EM-	NEW
TOTALS:	1500	0	1500	0	0	0	0			
FINDING NUMBER: SW/BMPF-2 PRIORITY: 1 RISK WEIGHT: 103 LIQUID RADIONUCLIDE RELEASES FROM ORNL FACILITIES										
1	110	110	0	0	0	0	0	PROGRAM	EM-ADS350,366	FUNDED
2	110	0	45	35	30	0	0	PROGRAM	EM-ADS350,366	REQUESTED
2	1000	0	1000	0	0	0	0	CAPITAL	EM-ADS366	REQUESTED
TOTALS:	1220	110	1045	35	30	0	0			
FINDING NUMBER: SW/BMPF-4 PRIORITY: 1 RISK WEIGHT: 49 UNREPAIRED LEAKS FROM WATERWATER SEWER SYSTEMS										
1	5026	5026	0	0	0	0	0	PROGRAM	EM-ADS302,304,378	FUNDED
1	60032	0	6840	16722	11490	8540	16440	PROGRAM	EM-ADS302,304,378	REQUESTED
1	7081	7081	0	0	0	0	0	LINE ITEM	EM-ADS302,304,378	FUNDED
1	121147	0	4647	15900	26500	39100	35000	LINE ITEM	EM-ADS302,304,378	REQUESTED
1	20	20	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
1	80	0	40	40	0	0	0	PROGRAM	EM-ADS350	REQUESTED
1	500	500	0	0	0	0	0	CAPITAL	EM-ADS350 GPP	FUNDED
2	10	10	0	0	0	0	0	PROGRAM	EM-ADS302,304,378	FUNDED
2	50	0	10	10	10	10	10	PROGRAM	EM-ADS302,304,378	REQUESTED
2	410	0	200	100	80	30	0	PROGRAM	EM-ADS350	REQUESTED
2	1400	0	0	1400	0	0	0	CAPITAL	EM-ADS350 GPP	REQUESTED
3	30	0	0	0	0	30	0	PROGRAM	EM-ADS350	REQUESTED
ALL	21650	0	6650	3000	4000	4000	4000	CAPITAL	EM-ADS349,350,378	REQUESTED
TOTALS:	217436	12637	18387	37172	42080	51710	55450			
FINDING NUMBER: SW/CF-4 PRIORITY: 2 RISK WEIGHT: 448 NPDES PERMIT EXCEPTIONS										
4	700	0	700	0	0	0	0	CAPITAL	EM-ADS399	REQUESTED
TOTALS:	700	0	700	0	0	0	0			

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
FINDING NUMBER: TCM/CF-1		PRIORITY: 2		RISK WEIGHT: 405			PCB WASTES STORED LONGER THAN ONE YEAR			
1	2	2	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
3	5	5	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
5	8	8	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
TOTALS:	15	15	0	0	0	0	0			
FINDING NUMBER: TS.3-2		PRIORITY: 2		RISK WEIGHT: 311			RESOURCE ALLOCATION FOR DRAWINGS UPDATES			
3	2780	2780	0	0	0	0	0	PROGRAM	EM-	REQUESTED
3	586	586	0	0	0	0	0	PROGRAM	EM-	REQUESTED
TOTALS:	3366	3366	0	0	0	0	0			
FINDING NUMBER: WM/BMPF-2		PRIORITY: 1		RISK WEIGHT: 56			INADEQUATE WASTE MINIMIZATION PROGRAM			
1	5	5	0	0	0	0	0	PROGRAM	EM-ADS356	NEW
2	5	5	0	0	0	0	0	PROGRAM	EM-ADS356	NEW
3	10	10	0	0	0	0	0	PROGRAM	EM-ADS350	NEW
3	54	0	10	10	11	11	12	PROGRAM	EM-ADS350	ONGOING
4	10	10	0	0	0	0	0	PROGRAM	EM-ADS349	NEW
4	902	0	165	172	180	188	197	PROGRAM	EM-ADS349	ONGOING
5	902	0	165	172	180	188	197	PROGRAM	EM-ADS356	ONGOING
8	28	0	5	5	6	6	6	PROGRAM	EM-ADS356	ONGOING
TOTALS:	1916	30	345	359	377	393	412			
FINDING NUMBER: WM/CF-1		PRIORITY: 1		RISK WEIGHT: 413			INADEQUATE OPERATION OF MIXED WASTE STORAGE FACILITY			
10	30	30	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
2	5	5	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
5	35	35	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
6	2	2	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
7	120	120	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
8	10	10	0	0	0	0	0	PROGRAM	EM-ADS348	FUNDED
TOTALS:	202	202	0	0	0	0	0			
FINDING NUMBER: WM/CF-13		PRIORITY: 2		RISK WEIGHT: 408			INADEQUATE CHARACTERIZATION OF MIXED WASTE IN STORAGE			
ALL	8000	0	1000	1000	1000	1500	3500	PROGRAM	EM-ADS352	REQUESTED
TOTALS:	8000	0	1000	1000	1000	1500	3500			
FINDING NUMBER: WM/CF-4		PRIORITY: 1		RISK WEIGHT: 409			LACK OF INTEGRITY ASSESSMENT OF 7860A HAZARDOUS WASTE STORAGE TANK			
1	20	20	0	0	0	0	0	PROGRAM	EM-ADS311AA,331	FUNDED
2	107	0	0	25	26	27	29	PROGRAM	EM-ADS311AA,331	ONGOING

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	127	20	0	25	26	27	29			
FINDING NUMBER: WM/CF-5 PRIORITY: 2 RISK WEIGHT: 410 INADEQUATE TRAINING FOR ONSITE HAZARDOUS WASTE TRANSPORTERS										
1-3	9	9	0	0	0	0	0	PROGRAM	EM-ADS347,348	NEW
4	5	5	0	0	0	0	0	PROGRAM	EM-ADS347,348	NEW
5	9	9	0	0	0	0	0	PROGRAM	EM-ADS347,348	NEW
ALL	67	10	10	11	11	12	13	PROGRAM	EM-ADS347,348	ONGOING
TOTALS:	90	33	10	11	11	12	13			
FINDING NUMBER: WM/CF-6 PRIORITY: 1 RISK WEIGHT: 406 STORAGE OF LAND DISPOSAL RESTRICTED MIXED WASTE										
10	200	0	0	0	0	0	200	PROGRAM	EM-ADS349	ONGOING
10	1150	0	150	300	300	400	0	PROGRAM	EM-ADS349	REQUESTED
4	5	5	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
5	10	10	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
6	10	10	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
7	240	240	0	0	0	0	0	PROGRAM	EM-ADS349	FUNDED
7	275	275	0	0	0	0	0	PROGRAM	EM-ADS350	FUNDED
8	1200	0	500	350	200	100	50	PROGRAM	EM-ADS350	REQUESTED
8	500	0	500	0	0	0	0	PROGRAM	EM-ADS349	REQUESTED
TOTALS:	3590	540	1150	650	500	500	250			
FINDING NUMBER: WM/CF-7 PRIORITY: 1 RISK WEIGHT: 405 INADEQUATE STORAGE OF RADIOACTIVELY CONTAMINATED HAZARDOUS WASTE LEAD										
4	100	100	0	0	0	0	0	PROGRAM	EM-ADS349	FUNDED
5	821	0	150	157	164	171	179	PROGRAM	EM-ADS349	ONGOING
TOTALS:	921	100	150	157	164	171	179			
FINDING NUMBER: WM/CF-8 PRIORITY: 3 RISK WEIGHT: 5 INADEQUATE TRAINING DOCUMENTATION AND PROCEDURES FOR 7507 HAZARDOUS WASTE STORAGE FACILITY										
1	2	2	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
2	2	2	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
3	3	3	0	0	0	0	0	PROGRAM	EM-ADS344	FUNDED
TOTALS:	7	7	0	0	0	0	0			
FINDING NUMBER: WM/CF-9 PRIORITY: 1 RISK WEIGHT: 405 INADEQUATE TRAINING RECORDS AND INSPECTION RECORDS AT THE 3001 STORAGE CANAL										
1	1	1	0	0	0	0	0	PROGRAM	EM-ADS311AA	FUNDED
2	1	1	0	0	0	0	0	PROGRAM	EM-ADS311AA	FUNDED
3	1	1	0	0	0	0	0	PROGRAM	EM-ADS311AA	FUNDED
3	107	0	0	25	26	27	29	PROGRAM	EM-ADS311AA	ONGOING
4	25	25	0	0	0	0	0	PROGRAM	EM-ADS311AA	FUNDED

ACTION	TOTAL COST	FY91 COST	FY92 COST	FY93 COST	FY94 COST	FY95 COST	BEYOND FY95	TYPE COST	FUND SOURCE	STATUS
TOTALS:	135	28	0	25	26	27	29			
ACTION PLAN TOTALS:										
	470167	36362	61766	73464	77735	90911	129929			