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January 6, 1999

SECY-99-005

FOR: The Commissioners

FROM: William D. Travers Executive Director for Operations

SUBJECT: SELF-ASSESSMENT OF OPERATIONAL SAFETY DATA REVIEW PROCESSES

PURPOSE:

To inform the Commission of the results of the self-assessment concerning effectiveness and efficiency improvements in agency-wide events assessment and review of operational data activities. Some improvements have been implemented and other recommendations will be considered in the planning, prioritization, and resource allocation activities of the respective offices.

BACKGROUND:

A 1993 NRC headquarters organizational review resulted in a "Report of the Review of Operational and Occupational Event Review, Evaluation, and Followup," August 1, 1994, sponsored by James L. Milhoan, which contained 16 recommendations to improve the effectiveness and efficiency of events assessment in the reactor and materials program areas.

The NRC's response to Phase II of the Administration's National Performance Review, SECY-95-154, contained a number of questions and issues regarding NRC review and assessment of operational safety data (see Appendix A of the self-assessment report). Subsequently, the Commission issued a Staff Requirements Memorandum (SRM) on January 14, 1998, regarding SECY-97-225, "Enhancing NRC Effectiveness and Efficiency." This SRM directed the staff to "consider incorporating efficiency improvements in the agency-wide events assessment and review of operational data function, and other outstanding candidate efficiency improvements discussed in SECY-95-154, in the Regulatory Excellence Plan."

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The staff responded by forming an interoffice self-assessment group representing the Office for Analysis and Evaluation of Operational Data (AEOD), the Office of Nuclear Reactor Regulation (NRR), the Office of Nuclear Material Safety and Safeguards (NMSS), and the Office of State Programs (OSP) to address this and the related issues raised in the "Strategic Assessment Phase I Final Report," described in SECY-98-065, "FY 1998 NRC Excellence Plan," April 2, 1998 (see Appendix A of the self-assessment report). Some of these issues were identified and tracked by WITS and SARSC. The self-assessment group also received coaching from the Arthur Andersen consulting firm and input from Region IV personnel during the self-assessment. This self-assessment was conducted against a backdrop of changing priorities, budgets, and proposed changes in organizational structure and assignments. The self-assessment recommendations have been modified to reflect issues that may need further consideration by appropriate program offices depending upon the extent of changes in organizational structure and assignments that will be implemented as proposed. The staff committed to report the results of the assessment along with appropriate recommendations to the Commission.

DISCUSSION:

The self-assessment group produced their final attached report, "Self-Assessment of Operational Safety Data Review Processes," on December 17, 1998, which details how current headquarters events assessment and review of operational data can be made more effective and efficient. This report has been made available to each office to consider in their normal planning and budgeting efforts.

The scope of the 1998 self-assessment included NRC headquarters review and assessment of operational safety data from the occurrence of an event or discovery of a condition, through fact gathering event followup, to the production of a product or service. This self-assessment does not include activities and resources associated with the incident response function, as was done in the August 1994 Milhoan report; a 1998 self-assessment of the incident response function is currently under development. Regional contributions to the operational safety data review process are primarily in the event reporting and followup part of their inspection role and regional resource estimates were provided in this report related to these processes. No significant recommendations were made to the regional processes because it is expected that ongoing reviews of the reactor oversight program, including assessment and inspection using risk-informed methods, will provide the principal impetus for streamlining the region's event reporting and followup part of low using the region's event reporting and followup processes.

The self-assessment group modeled operational safety data review processes described in NRC Management Directive 8.5, "Operational Safety Data Review," using only direct resources from the FY99 current estimate budget for each office (see Appendices B and C in the self-assessment report). The AEOD direct reactor program FY99 current estimate budget resources in the self-assessment report are generally consistent with the total AEOD resources shown in SECY-98-228, "Proposed Streamlining and Consolidation of AEOD Functions and Responsibilities," October 1, 1998. The differences in the resources recommended in the self-assessment report and the various proposed reorganization papers recently submitted to the Commission occurred because (1) this review recommended changing some of the function and

resource allocations among offices, (2) event assessment resources were estimated based on a bottom up analysis vs top down allocation, and (3) the use of direct instead of total FTE resources. The self-assessment group considered four factors in making its recommendations:

1. The relative contribution of each product, service, or process to meeting NRC strategic goals.

The contribution of functions in the three complementary program elements in the review and assessment of operational safety data (the assessment of plant-specific event safety significance; identification of generic vulnerabilities, feedback of generic lessons learned, and resolution of generic concerns; and assessment of plant-specific and overall industry performance) to the NRC strategic goals are different because each element has a unique purpose and time frame. The self-assessment group rated each product and service by its contribution to meeting three of the NRC's strategic goals by whether it was:

- used by licensees to improve safety at their facilities, had generic applicability and was time critical to safety
- used by the NRC to assess licensee safety performance
- used by the general public for information, and was timely and widely available
- 2. If the product, service, or process was useful to industry.

The self-assessment group contacted the Institute of Nuclear Power Operations (INPO) and the Nuclear Energy Institute to discuss the usefulness of the reactor program products, services, and processes to the nuclear power industry and similarities between some of their current or planned efforts with those of the NRC.

3. If there were means to improve the effectiveness of the product, service or, process.

Functions were recommended to be sunset, where warranted. NRC appropriation reductions, and streamlining and consolidation recommendations to the Commission made during the course of the self-assessment affected some of the recommendations in the self-assessment report.

4. If there were means to improve the efficiency of the product, service, or process.

Duplication of effort was eliminated where found. Recommendations to consolidate functions were made, commensurately with the desire to maintain a degree of independence of critical functions. Future opportunities for achieving efficiencies through increased data sharing and integration among event systems may be identified when the agency develops the strategic data model for the "Safety Concern" business area.

The self-assessment group found that operational safety data review and feedback is an essential element of the safety mission performed by the NRC, and is an agency strength. This review and feedback process provides measures of how well the industry is achieving the desired outcomes of the regulatory process. It yields insights about the effectiveness of NRC rules, regulations, and processes and identifies issues warranting additional regulatory action, on the basis of actual experience.

Reactor Operational Safety Data Review Program

The group compared the FY99 current estimate budget resources of June 29, 1998, with those in the 1994 "Report of the Review of Operational and Occupational Event Review, Evaluation, and Followup," by James L. Milhoan. The 1994 comprehensive review of the operational data review process had a broad scope including activities not directly related to events assessment that were not in the scope of the 1998 self-assessment, such as the systematic assessment of licensee performance and related plant performance meetings, allegations, and enforcement. The 1994 report estimated that 174 FTE were used in agency-wide reactor operational safety data review under its broad scope, whereas the 1998 self-assessment estimated approximately 126.5 FTE were used in 1994 for the scope of the 1998 self-assessment. The FY99 current estimate budgets resources of 94.5 FTE in Table ES-1 of the 1998 self-assessment report, reflects a reduction of 25 percent from the 126.5 FTE over the last 5 years. This reduction resulted from efficiency improvements in specific programs, changes in work scope and level of effort on specific items, as well as improvement in reactor performance.

If all of the effectiveness and efficiency recommendations in the 1998 self-assessment report are realized, it would result in saving a total of 10.5 FTE (i.e., 19 percent of the June 29, 1998, headquarters FY99 current estimate budget or 11 percent of the agency-wide events assessment FY99 current estimate budget). These recommendations preserve the following key elements of the program:

- daily screening of plant-specific operating experience. (see Sections 3.5.2 and 3.5.7)
- generic communications to feedback safety significant lessons learned (see Sections 3.2.1, 3.2.3, and 3.2.9)
- risk-based performance analyses needed as the NRC moves toward risk-informed regulation (see Sections 3.2.5 through 3.2.8, 3.4.1, and 3.4.3, through 3.4.6)
- independent perspective in critical function areas, such as the long-term assessment of operational safety data and the investigation of safety significant operational events with potential regulatory effectiveness implications, as described in SECY-98-0228.

Section 3 of the self-assessment report provides the detailed recommendations and their bases. Table 3 in the self-assessment report summarizes all of the recommendations. The most important recommendations are described below.

Potential effectiveness savings of approximately 4.9 FTE and \$300,000 are recommended by eliminating AEOD Senior Management Meeting analyses (see Section 3.2.12), systematic review of all licensee event reports (see Section 3.5.10), and related AEOD functions. However, the prudence of achieving savings by eliminating AEOD Senior Management Meeting analysis will be reexamined after more experience is gained with risk-informing the plant assessment processes, including the Senior Management Meetings in 1999 and 2000.

Efficiency savings of approximately 5.6 FTE and \$50,000 are recommended by (1) eliminating duplication of effort in generic communications preparation (see Sections 3.2.1 and 3.2.3), regional morning reports (see Section 3.2.14), review of foreign reactor events and INPO operational safety data (see Sections 3.5.1, 3.5.7, and 3.5.10), and events screening (see Section 3.5.7), and (2) raising the threshold on information notices (see Section 3.2.3). The recommendation to increase the effectiveness of the morning report system was made in part as a result of discussions with industry. However, increased use of morning reports and continued NRR review of foreign reactor events warrant using a small part of the savings recommended in other areas (see Sections 3.2.14, 3.2.18, and 3.5.1). Many of the efficiency recommendations in this self-assessment report have already been implemented and NRR has already achieved approximately 5 FTE reduction that is within the "Final FY99 budget [Rev. 0]," of October 20, 1998. These NRR FTE reductions result in fewer products.

The self-assessment group recommended that industry operating experience feedback be considered when evaluating the need for generic communications (see Section 3.2.1 and 3.2.3). This would minimize NRC and industry duplication of effort, but is not wholly consistent with the Commission's position in response to a General Accounting Office report, as reflected in a letter from Chairman Selin to Congressman Markey, dated July 19, 1991, that stated, "when the NRC staff determines that it would be appropriate for reasons of safety to issue an information notice, the staff will issue the notice without regard to whether INPO has already notified the industry about the subject of the notice." This policy will be revisited through a separate Commission paper for policy review.

Rulemaking has already commenced to revise reporting requirements in 10 CFR 50.72 and 50.73 to make them more risk-informed (see Section 3.5.5). The resulting rule will eliminate or reduce the reporting of information with little or no safety/risk significance, improve the reporting of risk-significant information, and assure information to be reported is necessary for the new risk-informed regulatory oversight program. This effort is being tracked for completion by February 25, 2000.

Materials Operational Safety Data Review Program

The 1994 Milhoan report found that nuclear materials operational safety data reviews had fewer resources and a less formal process than the reactor reviews, and recommended formalizing the process and increasing its resources. The 1998 self-assessment found that NMSS had made significant progress on these recommendations and has 14.3 FTE in its FY99 current estimated budget for this effort. However, the self-assessment group concluded that the overall materials program still needs additional resources to analyze and feedback long-term generic lessons-learned from materials operational safety data.

There is no routine, long-term analysis of materials operational safety data. If all of the nuclear materials recommendations in Tables 4 and 5, and Section 4 of the self-assessment report are implemented, it would result in an increase of 3.7 FTE (17 percent) and \$254,000 in FY99 current estimated budget resources, due primarily to the need to restore funding for generic materials event studies (see Sections 4.2.8 and 5.1). The self-assessment group concluded that these generic studies are necessary to identify and feedback trends and patterns in materials operating experience to both the NRC and Agreement State licensees, as well as areas for regulatory improvement to NMSS. Further, the generic materials event studies were recommended to be performed in an independent office that has agency-wide responsibilities, such as RES. While increased resources are needed to achieve effectiveness in the generic feedback of materials operational safety data to reduce the frequency of similar events, these resources are not budgeted and cannot be reprogrammed from current AEOD or NMSS resources under either current or future priorities. The level and balance in operating experience review between power reactors and materials lines of business were found to be appropriate under the current priorities, except for generic materials events studies, which were eliminated from the FY99 presidents budget, as confirmed in a July 29, 1998, letter to Senator Domenici. It should be also noted that the recommendation to restore generic material events studies is not consistent with the streamlining of AEOD as described in SECY-98-0228 and approved by the SRM of December 10, 1998.

Resource Summation

The self-assessment group report estimated a Reactor Program savings of 10.5 FTE and \$350,000, offset by a Nuclear Material Program increase of about 3.7 FTE and \$254,000, for a "net" savings of 6.8 FTE and \$96,000. Of this net savings, approximately 5 FTE have already been taken in the NRR current FY99 budget leaving a potential realization of approximately 1.8 FTE and \$96,000. The resource implications would apply to FY2000 as well and would be addressed by the respective offices in their upcoming budget cycle.

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COORDINATION:

The Office of the Chief Financial Officer has reviewed this Commission paper for resource implications and has no objections. The Office of the Chief Information Officer has reviewed this Commission paper for information technology impacts and compliance with the Paperwork Reduction Act and concurs in it. The Office of the General Counsel has no legal objection.

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William D. Travers Executive Director for Operations

Attachment: Self-Assessment of Operational Safety Data Review Processes

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SELF-ASSESSMENT OF OPERATIONAL SAFETY DATA REVIEW PROCESSES

December 17, 1998

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EXECUTIVE SUMMARY

Background and Scope

Review, assessment, and feedback of operational safety data is an essential element of the U.S. Nuclear Regulatory Commission's (NRC) safety mission and is an agency strength. Since these functions are shared among several organizations in the NRC, questions were raised regarding the need to improve effectiveness and efficiency. The issue was studied in 1994, in an interoffice review resulting in a "Report of the Review of Operational and Occupational Event Review, Evaluation, and Followup" by James L. Milhoan, Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations and Research, August 1, 1994 ("Milhoan Report"). That report contained recommendations to improve effectiveness and efficiency in the reactor and materials areas that were addressed and implemented where appropriate. However, the Milhoan report showed that significant staff resources were being expended on the reactor event review process and the concern remained about the need for improvement.

Related to this concern, on January 14, 1998, the Commission issued a Staff Requirements Memorandum (SRM) in response to Office of the Secretary of the Commission (SECY)-97-225. "Enhancing NRC Effectiveness and Efficiency," October 2, 1997, that requested the staff to "consider incorporating efficiency improvements in the agency-wide events assessment and review of operational data function and other outstanding efficiency improvements discussed in SECY-95-154, in the Regulatory Excellency Plan." The staff's response to the SRM in SECY-98-065, "FY98 NRC Excellence Plan," April 2, 1998, indicated that an interoffice group was formed with members from the NRC's Office for Analysis and Evaluation of Operational Data (AEOD), Office of Nuclear Reactor Regulation (NRR), Office of Nuclear Material Safety and Safeguards (NMSS), Office of State Programs (OSP), and Region IV to prepare recommendations, considering the related issues raised in the "Strategic Assessment Phase I Final Report," and the questions raised in SECY95-154, "Report on Parts Two and Three of the National Performance Review: Phase II Study Plan - NRC Functions and Efficiency Review." June 14, 1995. The interoffice group consisted of a working group and a management oversight group. The scope of this self-assessment included the headquarters review and assessment of events and operational safety data from the occurrence of an event or discovery of an abnormal condition, through event followup, to the production of a product and related services.

The self-assessment occurred during a period of many parallel activities and change in the NRC resulting from the July 17, 1998, Commission meeting with reactor stakeholders and the July 30, 1998, hearing before the Senate Subcommittee on Clean Air, Wetlands, Private Property, and Nuclear Safety. In response to the concerns raised in those meetings, noted in the Chairman's August 7, 1998 memorandum to the Executive Director for Operations, the staff generated a "Staff Response to Tasking Memorandum and Stakeholder Concerns," on August 25, 1998, that included specific issues on generic communications, event reporting rulemaking, and risk-informed performance indicators that are related to the objectives of this self-assessment. NRC appropriations reductions made during the course of the self-assessment affected some of the recommendations. The lesson learned from the Three Mile Island accident for the need for some functions to be independent from program offices was taken into consideration. The Executive Director for Operations also submitted SECY-98-228, "Proposed Streamlining and Consolidation of AEOD Functions and Responsibilities." to the Commission on

October 1, 1998. The streamlining and consolidation of AEOD functions, recommended in SECY-98-0228, also affected some of these recommendations.

Evaluations and recommendations contained in this report are made for each function in the agency-wide events assessment and review of operational data - products, services, databases, and processes. Each function was examined to determine if it was needed to meet NRC strategic goals and if improvements in effectiveness or efficiency were warranted. In addition, products and services were rated on their contribution to the NRC's strategic goals of increasing safety at licensee facilities, assessing licensees' performance (reactor program only), and informing the public. FY 99 current estimated budget resources (as of June 29, 1998) for each function are identified in the report. Potential resource savings from effectiveness and efficiency recommendations are presented as changes to this "Current FY99 budget" allocation. The focus of this self-assessment is on headquarters functions and processes. Regional contributions to the operational safety data review process are primarily in the event reporting and followup part of their inspection role. The regions were not directly included in the scope of this self-assessment and no significant recommendations were made, because it was expected that ongoing reviews of the reactor oversight progran, including assessment and inspection using risk-informed methods, will have a larger impact on the regions' event reporting and followup processes.

Power Reactor Program Summary

Sections 3.1 through 3.5 of this report summarize the resources, costs, and savings that can be achieved by implementing effectiveness or efficiency savings recommendations for products, services, databases, and assessment processes associated with the power reactor program.

Effectiveness savings of approximately 4.9 full-time equivalent (FTE) and \$300,000 are recommended in sun setting the following functions that make a relatively low contribution to the NRC's strategic goals:

- AEOD Annual Report
- AEOD Senior Management Meeting Analyses
- AEOD Commission Site Visit Analyses
- Significant Event Determinations
- AEOD Management Briefings
- AEOD input to Department of Energy Office of Emergency Management
- AEOD Human Performance Event database
- AEOD Work Assignment Management System database
- Events Assessment Panel

Efficiency savings of 5.6 FTE and \$50,000 are recommended, such as considering crediting industry actions and eliminating duplication in generic communications preparation, regional morning reports, and events screening. Efficiencies may be achieved by raising the threshold on Information Notices and Operating Reactor Events briefings. However, increased use of morning reports and continued review of foreign reactor operating experience warrant using some of these savings. Changes are recommended in the following functions:

- Bulletins/Generic Letters
- Information Notices
- Morning Reports
- Preparation of U.S. Incident Reporting System Reports
- Operating Reactor Briefings
- Foreign Incident Reporting System report review
- AEOD review of licensee operational safety data
- AEOD review of INPO operational safety data
- Event Screening
- Event Followup

The Nuclear Energy Institute is receptive to communicating with the NRC early in the generic correspondence process to avoid duplication between NRC and industry efforts for savings in NRC generic communications preparation. Industry views on the usefulness of NRC events assessment reports are summarized in Section 3.6. The NRC will continue to work with industry on the development and use of risk-based performance indicators to avoid duplication of effort.

The 1994 Milhoan report proposed recommendations to answer concerns about the significant amount of staff resources being expended on reviewing, evaluating, and following up on operational and occupational events. This self-assessment compared the changes in budgets in this area between the FY94 budget in the Milhoan report and the FY99 current estimated budget, as shown in Table ES-1. However, the differences in scope between the Milhoan report and this self-assessment for NRR and the Regions required an adjustment to the FY94 FTE in the Milhoan report for a valid comparison to the FY99 budget. An overall 25 percent agency-wide reduction in resources performing operational safety data review and assessment has occurred since 1994. This is due to efficiency improvements made over the last 5 years in specific programs, changes in work scope and level of effort on specific items, as well as improvements in reactor performance.

	FY94 Milhoan Report FTE	Estimated FY94 Current Scope FTE	FY99 Budget FTE	FY94 - FY99 Change	
				FTE	Percent
AGOD	37	37 *	24.6	- 12.35	- 33%
ARR	53	39.5 °	30	- 9.5	- 24%
Regions	84	50 °	39.9	- 10.1	- 20%
Totals	174	126.5	94.5	- 31.95	- 25%

Table ES-1 FY99 Reactor Budget Comparison with FY94 Resource Review

* The current AEOD assessment scope replicates the Milhoan scope at the program level although there are significant changes to program elements. Senior management meeting preparation, and performance indicators were included in both the Milhoan scope and the current scope.

^b The current NRR assessment scope did not replicate the Milhoan scope. Activities not addressed in the current assessment include Senior Management Meeting preparation, Systematic Assessment of Licensee Performance, incident response, and review of generic letter and bulletin responses.

* The current regional assessment scope did not replicate the Milhoan scope. Significant activities not addressed in the current assessment include Senior Management Meeting preparation, Systematic Assessment of Licensee Performance, allegations, enforcement, and Plant Performance Review meetings. Implementation of the reactor events assessment program recommendations in this report are estimated to result in an additional 10.5 FTE (i.e., 19 percent savings in the June 29, 1998 headquarters FY 99 current estimate budget, or 11 percent savings in the agency-wide events assessment FY99 current estimated budget allocated to operational safety data review), as shown in Table ES-2.

Table ES-2	Projected	Savings	Resulting m	om Reactor	Program	Recommendations	

Table FOA Designation Designation Designation

	FY99	Recommended	Recommended Changes	
	FTE	FIE -	FTE	Percent
AEOD *	24.6	19.6	- 5.0	- 20%
NRR	30	24.7	- 5.3	- 17%
Regions	39.9	39.7	- 0.2	- 1%
Totals	94.5	84.0	- 10.5	- 11%

* In addition to the identified 10.5 FTE savings, \$350,000 potential savings in contract costs are also recommended.

^b During this self-assessment, there was a proposed transfer of AEOD functions and responsibilities to other agency offices. This transfer does not affect the FY99 budget resources. The recommendations and savings for the AEOD functions listed in this report are based on the elimination of AEOD.

Materials Program Summary

Sections 4.1 through 4.4 summarize the resources, costs, and savings that could be achieved by implementing effectiveness or efficiency savings recommendations for each product, database, and assessment process associated with the materials program. Effectiveness savings are recommended in sun setting the AEOD engineering review.

Recommendations are made regarding:

- Generic Materials Events Studies
- Abnormal Occurrence Report to Congress
- AEOD Annual Report
- Nuclear Material Events Database
- Events Tracking System
- Agreement State event notification and reporting

The level and balance in operating experience review between the power reactor and materials lines of business was found to be appropriate except for generic materials events studies, which were eliminated from the FY99 budget in a July 29, 1998, letter from the Chairman to Senator Domenici. This decision will result in no generic studies except for *ad-hoc* studies NMSS may perform in conjunction with its screening activities. These studies are necessary to identify and feedback trends and patterns in materials operating experience to licensees as well as areas for regulatory improvement to NMSS. Given the differences in probability and consequences of a reactor and material accident, an appropriate balance in operating

experience review and feedback between the two lines of business warrants an agency effort in analysis and dissemination of generic materials operational lessons learned by an independent office. Thus, this report recommends restoration of generic materials events studies, which would counterbalance the potential savings realized. If all of the materials recommendations in this report are implemented, it would result in an increase of 3.7 FTE (17 percent) in FY99 current estimated budgeted resources and \$254,000, as shown in Table ES-3.

Table ES-3 Projected Changes Resulting from Materials Program Recommendations

Office	FY94	FY99		Recommended Changes	
	FTE d	FTE	FTE	FTE	Percent
AEOD	6	1.0	0.0	-1.0	-100%
NMSS	2	14.3	14.3	0.0	0%
Regions	15	5.9	5.9	0.0	0%
OSP	<1	0.9	0.9	0.0	0%
RES	NA	NA	4.7	+ 4.7	+100%
Total	24	22.1	25.8	+ 3.7	+ 17%

In addition to the identified 3.7 FTE an additional \$254,000 is needed for generic materials event studies.

^d The bases of the FY94 Milhoan report FTE are not well documented, but appear to include functions outside the current selfassessment scope. Since much of the materials program did not exist in 1994, no comparison between the FY94 and FY99 resources is made.

Operational Safety Data Review Issues

Section 5 of this report responds to the broad issues raised in the National Performance and Strategic Assessment reviews regarding the effectiveness and efficiency of agency-wide events assessment and review of operational safety data.

ABBREVIATIONS

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AEOD Analysis and Evaluation of Operational Data, Office for (NRC) ACRS Advisory Committee on Reactor Safeguards (NRC) AIT augmented inspection team AL administrative letter AO abnormal occurrence ASP accident sequence precursor BL bulletin (NRC) CCF common-cause failure CFR Code of Federal Regulations CRGR Committee To Review Generic Requirements (NRC) DOE Department of Energy DOT Department of Transportation DRP Division of Reactor Projects, NRR (NRC) DSR Division of Reactor Safety, regions (NRC) DWM Division of Waste Management, NMSS (NRC) EDO Executive Director for Operations (NRC) Materials and Chemical Engineering Branch, NRR (NRC) EMCB EN event notification ENS emergency notification system Equipment Performance and Information Exchange System EPIX EPRI Electric Power Research Institute ERA Energy Reorganization Act ET executive team ETS events tracking system FCSS Division of Fuel Cycle Safety and Safeguards, NMSS (NRC) FEMA Federal Emergency Management Agency FTE full-time equivalent FY fiscal year GAP generic assessment panel (IMNS) GL generic letter GSI generic safety issue HFIS Human Factors Information System HHFB human factors assessment branch, NRR (NRC) HOO headquarters operations officer HQ headquarters IAEA International Atomic Energy Agency Incident Investigation Team IIT IMC inspection manual chapter

IMNS	Division of Industrial and Medical Nuclear Safety, NMSS (NRC)
IMPEP	integrated materials performance evaluation program
IN	information notice
INEEL	Idaho National Engineering and Environmental Laboratory
INPO	Institute of Nuclear Power Operations
IRB	Incident Response Branch, IRD (NRC)
IRD	Incident Response Division, AEOD (NRC)
IRS	incident reporting system
LER	licensee event report
MD	management directive
MR	morning report
NEA	Nuclear Energy Agency
NEI	Nuclear Energy Institute
NMAS	nuclear material assessment staff, RCS (NRC)
NMED	nuclear material events database
NMSS	Nuclear Material Safety and Safeguards, Office of (NRC)
NPRDS	nuclear plant reliability data system (INPO)
NRC	U.S. Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation, Office of (NRC)
NUREG	NRC technical report designation
OL	Office Letter
ORNL	Oak Ridge National Laboratory
OSP	State Programs, Office of (NRC)
PECB	Events Assessment and Generic Communications Branch, NRR (NRC)
PERB	emergency preparedness and radiation protection branch, NRR (NRC)
PI	performance indicator
PN	preliminary notification
PNO	preliminary notification of occurrence
PPL	policy and procedures letter (NMSS)
PRA	probabilistic risk assessment
RI RII RIV RAB RES RC RDO RRAB RRE RSAO	Region I - King of Prussia, Pennsylvania (NRC) Region II - Atlanta, Georgia (NRC) Region III - Glen Ellyn, Illinois (NRC) Region IV - Arlington, Texas (NRC) Reactor Analysis Branch, SPD (NRC) Nuclear Regulatory Research, Office of (NRC) regional coordinator (IMNS) regional duty officer Reliability and Risk Assessment Branch, SPD (NRC) required reporting events regional state agreement officer (NRC)

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- SARCS Strategic Assessment and Rebaselining Steering Committee
- SE significant event (NRC performance indicator)
- SECY Secretary of the Commission, Office of the (NRC)
- SEE-IN Significant Event Evaluation and Information Network (INPO)
- SCSS Sequence Coding and Search System
- SMM senior management meeting
- SOER Significant Operating Experience Report (INPO)
- SPD Safety Programs Division, AEOD (NRC)
- SPSB probablistic safety assessment branch, NRR (NRC)
- SRM staff requirements memorandum
- TAC Technical Assignment Code
- TMI Three Mile Island

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- VRE voluntary reported events
- WANO World Association of Nuclear Operators
- WITS work item tracking system

SELF ASSESSMENT GROUP

Self-Assessment Period:

Working Group:

.

Management Oversight Group:

Methods Consultants:

April 1998 through November 1998

Robert Dennig, NRR Ed Goodwin, NRR Kevin Hsueh, OSP Samuel Pettijohn, AEOD Kevin Ramsey, NMSS Jack Rosenthal, AEOD Robert Spence, AEOD John Stolz, NRR John Tappert, NRR Mary Wegner, AEOD

Don Cool, NMSS Fred Combs, NMSS Paul Lohaus, OSP Jack Roe, NRR David Mathews, NRR Charles E. Rossi, AEOD

Louis Allenbach, Contractor Dexter Peach, Contractor

* Group Leader

1 INTRODUCTION

This section provides the background, purpose, and scope of this assessment.

1.1 Background

Operational safety data review and feedback is an essential element of the safety mission, performed by the U.S. Nuclear Regulatory Commission (NRC), and is an agency strength. The review and feedback process provides measures of how well the industry is achieving the desired outcomes of the regulatory process. It also yields insights about the effectiveness of NRC rules, regulations, and processes. It identifies issues warranting additional regulatory action, on the basis of actual experience. Nonetheless, because operational safety data review is resource intensive, the NRC has conducted periodic, multi-office, self-assessments of these efforts.

In particular, the efficiency of the NRC's review and assessment of operational safety data has been studied multiple times over many years. A 1993 HQ Organizational Review resulted in a "Report of the Review of Operational and Occupational Event Review, Evaluation, and Followup," sponsored by James L. Milnoan, Deputy Executive Director for Nuclear Reactor Regulation (NRR), Regional Operations and Research, which was issued on August 1, 1994 ("Milhoan report"). That report contained 16 recommendations to improve effectiveness and efficiency in the reactor program and materials program areas. These recommendations were addressed and some were implemented where appropriate.

Phase II of the National Performance Review identified six operational experience issues for study. That report was conveyed to the Commission on June 14, 1995, by SECY-95-154, "Report on Parts Two and Three of the National Performance Review: Phase II Study Plan — NRC Functions and Efficiency Review." Phase I of the Strategic Assessment identified five additional issues in 1996.

A memo dated January 14, 1998, entitled "Staff Requirements — SECY-97-225 — Enhancing NRC Effectiveness and Efficiency," directed the staff to consider incorporating efficiency improvements in agency-wide events assessment and review of operational data function.

1.2 Purpose and Scope

At the end of April 1998, SECY-98-065, "FY 1998 NRC Excellence Plan," responded to the need for increased effectiveness and efficiency in events assessment and review of operational safety data by establishing an interoffice management oversight group with a working group to answer the question posed by the staff requirements memorandum (SRM):

Can the agency-wide events assessment and review of operational data be made more efficient and effective?

This interoffice group consisted of representatives from the NRC's Office for Analysis and Evaluation of Operational Data (AEOD), NRR, the Office of Nuclear Material Safety and Safeguards (NMSS), the Office of State Programs (OSP), and Region IV. The interoffice group also considered the overlapping issues that were raised in the NRC's review of functions in response to "Phase II of the Administration's National Performance Review," and the "NRC

Strategic Assessment Phase I Final Report," to propose practical solutions for the philosophical guestions listed in Appendix A, "Operational Safety Data Review Issues."

The scope of this study includes NRC headquarters review and assessment of operational safety data from the occurrence of an event or discovery of a condition, through fact gathering event followup, to the production of a product or service. Incident response was considered outside the scope of this study as it is being separately addressed in the "Incident Response Function Self-Assessment." Enforcement activities also were considered outside of the scope of this study.

During this self-assessment, there was a proposed transfer of AEOD functions and responsibilities to other agency offices. This transfer does not affect the fiscal year (FY) 1999 budget resources. The recommendations and savings for the AEOD functions listed in this report are based on the elimination of AEOD.

2 SELF-ASSESSMENT PROCESS

This section describes the process used by the interoffice group in assessing the effectiveness and efficiency of the agency-wide operational safety data review processes. It included establishing a baseline model of the current reviews, evaluation of the contribution made by the outputs of those reviews, and industry input.

2.1 Model of Current Operational Safety Data Reviews

The first task undertaken by the interoffice group was to model the current reactor and materials operational safety data review processes described in NRC Management Directive (MD) 8.5, "Operational Safety Data Review," December 23, 1997.

To facilitate this task, each office documented their current operational safety data review processes, budgeted FY99 resources, products, and services. Overviews of the reactor and materials operational safety data review processes are shown in Figure 1, "Reactor Operational Safety Data Review," and Figure 2, "Materials Operational Safety Data Review." More detailed descriptions and figures identifying inputs, processes, products, services, databases, and their relationships are contained in Appendix B, "Current Reactor Operational Safety Data Reviews." These appendices describe the review and assessment of operational safety data as they occur chronologically through three complementary program elements:

- (1) assessment of plant-specific event safety significance
- identification of generic vulnerabilities, feedback of generic lessons learned, and resolution of generic concerns
- (3) assessment of plant-specific and overall industry performance

These elements are necessary to assess licensee safety performance and feedback operational safety data. Each has a different time frame and purpose, and makes different contributions to three NRC strategic goals. Recommendations about the processes, products, databases, and services comprising these program elements were based on their contribution to both the NRC strategic goals as well as their respective elements.

2.2 Ranking Products of Operational Safety Data Reviews

Each product, service, and process of each function was examined by each of the following considerations to determine:

 The relative contribution of each product, service, or process to meeting NRC strategic goals.

Each product and service contribution to three of the NRC's strategic goals (in order of importance): safety, assessing licensee performance, and informing the public, was rated by a four-level scale (high, medium, low, and none). The safety goal was addressed by whether a product or service was used by licensees to improve safety at their facilities, had generic applicability, and was time critical to safety. The assessment of licensee performance goal







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Fig. 2 Materials Operational Safety Data Review.

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considered whether the NRC used the product or service to assess licensee safety performance. The public information goal was considered by whether a product or service was used by the general public for information, and was timely and widely available. Each product and service was rated on each of these criteria in a four-level scale rating, where high was considered as "almost always," medium was interpreted as "generally," low was understood to be "sometimes," and none was deemed to be "rarely or not at all." The products were then ordered by their significance commensurate with their respective contributions to each of these three strategic goals.

(2) If the product, service, or process was useful to the industry.

The interoffice group contacted the Institute of Nuclear Power Operation (INPO) and the Nuclear Energy Institute (NEI) to discuss similarities between some of their current or planned efforts and those of the NRC.

(3) If there were means to improve the effectiveness of the product, service, or process.

Regulatory effectiveness denotes a regulatory framework for ensuring public health and safety that is clear, coherent, logical, consistent, reliable, and technically sound.

(4) If there were means to improve the efficiency of the product, service, or process.

Efficiency connotes a regulatory framework that is cost-effective for both the NRC and its licensees. Some of the recommendations regarding improvements in efficiency in the "Report of the Review of Operational and Occupational Event Review, Evaluation, and Followup," August 1, 1994, had been implemented as appropriate.

Recommendations from this assessment are provided in Sections 3 and 4 of this report. They reflect potential effectiveness and efficiency savings, as well as the elimination of AEOD.

2.3 Industry Views

Members of the interoffice group and INPO exchanged views on the usefulness of the NRC and INPO operational events assessment products during a telephone call on July 31, 1998. The findings and conclusions from this call appear in Section 3.6 of this report. The NEI was receptive to communicating with the NRC early in the generic correspondence process as a means of avoiding duplication of effort between the NRC and industry to realize potential savings in the preparation of NRC generic communications.

3 REACTOR PROGRAM RECOMMENDATIONS

This section provides the recommendations regarding each NRC product, service, database, and review process used in the agency-wide assessment of reactor operational safety data.

3.1 Introduction

Appendix B describes each operational safety data review or assessment process for the reactor program, including inputs, processes, products, services, and databases, with their purpose, lead office, Full Time Equivalent (FTE) and financial resources budgeted. The information flow described in Figure 1 is modeled in more detail through a series of figures in Appendix B.

In this section, **recommendations are made in bold print** for each product associated with a particular NRC operational safety data review described in Appendix B. These are practical recommendations for improving the effectiveness and efficiency of the NRC's operational safety data products, services, databases, and assessment processes at this time. This section combines findings, alternatives, conclusions, and effectiveness and efficiency recommendations on a specific item into a single source of information for clarity. The detailed information in this section is summarized in the tables in this section.

The Milhoan report proposed recommendations to answer concerns about the significant amount of staff resources being expended on reviewing, evaluating, and following up on operational and occupational events. The interoffice group compared the changes in budgets in this area from the FY94 budget in the Milhoan report to the current FY99 budget, as shown in Table 1, "FY99 Reactor Budget Comparison with FY94 Resources." However, the differences in scope between the Milhoan report and this self-assessment for NRR and the Regions required an adjustment to the FY94 FTE in the Milhoan report for a valid comparison to the FY99 budget. An overall 25 percent agency-wide reduction in resources performing operational safety data review and assessment has occurred since 1994. This is due to efficiency improvements made over the last 5 years in specific programs, changes in work scope and level of effort on specific items, as well as improvements in reactor performance.

A lesson learned from the Three Mile Island (TMI) accident was the need for an independent group to ensure that significant safety issues are identified from operational safety data. Where applicable, the need for a function to continue to be performed independent of a program office has been identified in the recommendations.

	FY94 Milhoan Report FTE 37 53 84	Estimated FY94	FY99	FY94 - FY99 Change			
	FTE FTE	FTE	FTE	FTE	Percent		
AEOD	37	37 *	24.6	- 12.4	- 33%		
NRR	53	39.5 °	30	- 9.5	- 24%		
Regions	84	50 °	39.9	- 10.1	- 20%		
Totals	174	126.5	94.5	- 32.0	- 25%		

Table 1 FY99 Reactor Budget Comparison with FY94 Resource Review

* The current AEOD assessment scope replicates the Milhoan scope at the program level although there are significant charges to program elements. Senior management meeting preparation, and performance indicators were included in both the Milhoan scope and the current scope.

^b The current NRR assessment scope did not replicate the Milhoon scope. Activities not addressed in the current assessment include Senior Management Meeting preparation, incident response, Systematic Assessment of Licenson Performance, and review of generic letters and bulletin responses.

⁵ The current regional assessment scope did not replicate the Milhoan scope. Significant activities not addressed in the current assessment include Senior Management Meeting preparation, Systematic Assessment of Licensee Performance, allegations, enforcement, and Piant Performance Review meetings.

Implementation of the reactor events assessment program recommendations in this report are estimated to result in an additional 9 percent savings in the FY99 current estimated budget allocated to operational safety data review and assessment, as shown in Table 2, "Projected Savings Resulting from Reactor Program Recommendations."

1	FY99 Budget FTE 24.6 30 39.9 94.5	Recommended	Recommended Changes				
	FTE	FIE -	FTE	Percent			
AEOD °	24.6	19.6	- 5.0	- 20%			
NRR	30	24.7	- 5.3	- 17%			
Regions	39.9	39.7	- 0.2	- 1%			
Totals	94.5	84.0	- 10.5	- 11%			

Table 2 Projected Savings Resulting from Reactor Program Recommendations

* In addition to the identified 10.5 FTE savings, \$350,000 potential savings in contract costs are also recommended

^b During this self-assessment, there was a proposed transfer of AEOD functions and responsibilities to other agency offices. This transfer does not affect the FY99 budget resources. The recommendations and savings for the AEOD functions listed in this report are based on the elimination of AEOD.

Table 3, "Reactor Operational Safety Data Review," summarizes FY99 budgeted resources and costs, contribution to the NRC's strategic goals, products or processes supported, recommendations, and potential savings for each product, service, database, and operational safety data review or assessment process.

					Reactor I	Products		_					
Description	(FY 99 Current	Budge Estima	et ite*	(NRC	Contribution	to Goals ^b	Recommendations	Potential Resource Change				
	AEOD FTE	NRR FTE	RGN FTE	Contract \$K	Reactor Safety*	Assess Performance*	Inform the Public		AEOD FTE	NRR FTE	RGN FTE	Contract \$K	
Bulletins/Generic Letters		9.7			High	Low	High	Credit Industry Action		-3.0	Ì		
Reactive Inspection Reports			10		Medium	High	Medium	Leave as is					
Information Notices		6.2			Medium	None	High	Work with Industry Raise NRC Threshold		-1.0 -0.5			
Emergency Notification System Reports	Note *				Medium	Medium	Medium	Leave as is					
Reliability and Risk Study Reports	4.4			\$ 450	Medium	Medium	Medium	Work with Industry '					
Risk-based Performance Indicators	2.25			\$ 100	Note *	Note *	Note ^e	Work with Industry 1					
Accident Sequence Precursor Reports	3.5			\$ 450	Medium	Medium	Medium	Work with Industry '					
Performance Indicator Reports	0.5			\$ 300	Medium	Medium	Medium	Work with Industry *					
Generic Nuclear Reactor Event Studies	3.0			\$ 250	Medium	None	Medium	Leave as is					
AEOD Annual Reports	Note *				Low	Medium	High	Sunset					
Plant Status Reports	Note *				Low	Medium	Medium	Leave as is					
Senior Management Meeting Analyses	2.0			\$ 300	Low	Medium	None	Sunset	-2.0			- \$300	
Commissioner Site Visit Analyses	0.1				Low	Medium	None	Sunset	-0.1				
Morning Report /Preliminary Notification		0.1	2.4		Low	Low	Medium	Expand Scope Raise Threshold		+0.1	-0.2		
Abnormal Occurrence Reports	Note '	0.1			Low	Low	Note ¹	Leave as is					
Highlights		<0.1			Low	Low	Low	Leave as is					
Administrative Letters		0.5			Low	None	Medium	Leave as is					
U.S. IRS Reports	0.25				None	None	None	Increase Efficiency *	-0.25	+0.1			
Product Totals:	16.0	16.6	3.4	\$1,850					-2.35	-4.3	-0.2	- \$300	

Table 3 - Reactor Operational Safety Data Review

Table 3 (Cont.)

					Reactor	Services							
Description		FY 99 Current	Budge Estima	t te	Contribution to NRC Strategic Goals			Recommendations	Potential Resource Change				
	AEOD FTE	NRR FTE	RGN FTE	Contract \$K	Reactor Safety	Assess Performence	Inform the Public		AEOD FTE	NRR FTE	RGN FTE	Contract \$K	
HOO Notifications to Regions, NRR and Federal agencies	Note *				Low	High	None	Leave as is					
Significant Event Determinations		0.1			Low	Medium	Medium	Sunset		-0.1	1		
Operating Reactors Briefings		0.2			Low	Medium	Low	Raise Threshold		-0.1			
NRC-Management Briefings		0.1			Low	Medium	None	Leave as is					
AEOD Management Briefings	Note				Low	Medium	None	Sunset	Note!				
ACRS Briefings		0.1	0.1		Low	Low	Medium	Leave as is					
Generic Safety Issue Identification		<0.1			Low	None	Medium	Leave as is					
Input to DOE/OEM	Note!				Low	None	None	Sunset	Note'				
Services Total:		0.5	0.1							-0.2			

*

Table 3 (Cont.)

					Reactor Databases							
Description		FY 99 Current	Budge Estima	et te	Products or Processes Supported	Recommendations	Potential Resource Change					
	AEOD FTE	NRR FTE	RGN	Contract \$K			AEOD	NRR	RGN	Contract		
Access to INPO Equipment Performance Information Exchange Database	<0.1			\$ 70	Risk-based Analysis "	Leave as is	FIE	FIE	FTE	SK		
Event Tracking System		0.5		\$ 75	Event Followup Generic Followup	Leave as is						
Human Factor Information System Database		0.2		\$ i20	Sr. Management Meeting	Leave as is						
Reliability and Risk Databases (Accident Sequence Precursor) (Common-Cause Failures) (Initiating Events) (Loss of Offsite Power) (International Common-Cause Data Exchange)	2.0			\$ 350	Risk-based Analysis "	Leave as is						
Sequence Coding and Search System Database	1.0			\$ 600	Accident Sequence Precursors Performance Indicators Generic Reactor Event Studies	Leave as is						
Human Performance Event	0.0			\$ 0	Generic Reactor Event Studies Reporting Improvements	Sunset in AEOD FY99 Budget						
Work Assignment Management System Database	Note *				RAB Operational Safety Data Review Tracking	Sunset	Note *					
Database Totals:	3.0	0.7		\$1,215								

Table 3 (Cont.)

				React	or Assessment Processes						
Description		FY 99 Current	Budge Estimat	t le	Products or Processes Supported	Recommendations	Potential Resource Change				
	AEOD FTE	NRR FTE	RGN FTE	Contract \$K			AEOD FTE	NRR FTE	RGN FTE	Contract \$K	
Foreign Event Review and Dissemination	0.25	0.1			Generic Reactor Event Studies Generic Communications ⁿ	Increase Effort * Transfer to PECB	-0.25	+0.3			
HOO Safety Assessments of Events or Condition Notifications	Note *				ENS and Plant Status Reports Notifications to Regions, NRR and Federal agencies	Leave as is					
Generic Follow up		4.0			Generic Communications Briefings [®] Morning Reports	Leave as is					
Region/NRR Call		1.0	3.3		Briefings Event and Generic Follow Up	Leave as is					
Rulemaking (10 CFR 50.72 & 50.73)	1.0				10 CFR 50.72 & 50.73	Leave as is					
Regulatory Effectiveness	2.0			\$ 200	Regulatory Improvement Issues	Leave as is					
Event Screening	0.2 Note ¹	4.1	12.0		Briefings Event and Generic Follow Up	Increase Efficiencies	-0.2	-0.6			
Event Follow up		2.5	21.1	\$ 50	Briefings Morning Reports Abnormal Occurrence Report Significant Event Determination Reactive Inspections	Increase Efficiencies				-\$ 50	
Events Assessment Panel	0.1	0.5			Generic Communications Significant Event Determinations	Sunset	-0.1	-0.5			
RAB Operational Safety Data Review	2.1				Generic Reactor Event Studies Generic Communications	Sunset Transfer INPO to PECB	-2.1				
Process Totals:	5.65	12.2	36.4	\$ 250			-2.65	-0.8		- \$ 50	
Overall Totals	24.65	30.0	39.9	\$3,315			-5.0	-5.3	-0.2	-\$350	

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Notes for Table 3:

- Budget estimate as of June 29, 1998.
- Determined by expert judgement.
- Activities which directly lead to licensees taking actions that increase the level of nuclear safety at their facilities.
- d. NRC's ability to assess both individual and industry-wide performance.
- Headquarters Operations Officer FTE is included in AEOD's Incident Response selfassessment.
- No resource savings envisioned at this time.
- g. Since risk-base performance indicators are currently under development, they could not be rated on past performance.
- Not budgeted per sé, as it involves primarily overhead FTE, rather than direct FTE included in this table.
- i. See Abnormal Occurrence Reports in Table 5 "Materials Operational Safety Data Review," in this report.
- j. Informing the public is considered high for Congress, but low for the general public.
- k. To receive significant lessons learned in foreign IRS reports, the NRC must reciprocate by sending reports on U.S. reactor events into the IAEA - AIRS system.
- FTE is accounted for as part of the AEOD effort in the "Events Screening" process.
- m. Includes Reliability and Risk Study Reports, Accident Sequence Precursor Reports, and Risk-based Performance Indicators.
- n. Includes Bulletins/Generic Letters, Information Notices, and Administrative Letters.
- Includes Operating Reactors, ACRS, and NRC Management Briefings.

3.2 Products

This section addresses the findings, conclusions, and recommendations for each product resulting from review and assessment of operational safety data.

3.2.1 Bulletins and Generic Letters

The use and criteria for generic communications (including Generic Letters (GLs) and bulletins (BLs) are covered in NRC Inspection Manual Chapter (IMC) 0720, "Nuclear Regulatory Commission Generic Communications Regarding Nuclear Reactor Issues." GLs may request that licensees (1) perform analyses or submit descriptions of proposed corrective actions, if any, regarding matters of safety, safeguards, or environmental significance, or (2) submit technical information to enable the NRC to perform its function. Requests for analyses or technical information may be on a voluntary basis or required in accordance with Section 182a. Atomic Energy Act of 1954, as amended, and Title 10 of the Code of Federal Regulations (CFR) 50.54(f), "Conditions of licenses." GLs are also used to convey staff technical or policy positions that were not previously communicated or are not broadly understood. BLs are a type of generic communication that transmits information to, requests specified action by, and requires a written response in accordance with Section 182a, Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f) from addressees regarding matters of safety, safeguards, or environmental significance. BLs generally do not request continuing actions. These products make a high contribution to the NRC's strategic goals of reactor safety and informing the public and they contribute to assessing overall industry safety. However, they are not intended to assess individual licensee performance.

INPO and various owners' and users' groups also develop initiatives to address specific technical issues. One option available to the NRC is to consider the existing industry information or initiatives when preparing BL or GL. One disadvantage to this option is that many industry documents are proprietary, and the basis for the NRC's course of action would not be transparent to the public nor widely disseminated to the staff. Use of alternative approaches will require revisiting the agency's policy regarding NRC issuance of safety information to inform the public.

Efficiency improvements may be achieved by reviewing potential BLs and GLs early in their formulation process, focusing on the regulatory basis and risk significance of the relative issue(s), and considering the balance of the safety benefit with the burden on both industry and staff. The NRR executive team (ET) now reviews potential BLs and GLs, before committing extensive resources, to assess the need for the generic communication. The ET is also encouraging a graded approach in the response requested to BLs and GLs, with the prescriptiveness and level of followup inspection commensurate with the safety significance of the issue. Independent of these improvements, the number of BLs and GLs has been declining over the years. Increased regulatory discipline should enhance this trend and result in fewer generic communications, while ensuring the most safety significant issues are still addressed.

As of June 29, 1998, NRR budgeted approximately 9.7 FTE for FY99, to develop and issue approximately 11 BLs and GLs. Based on the trends cited above, approximately three fewer BLs and GLs may be issued for FY99 with a corresponding 3 FTE savings.

Recommendation: BLs and GLs are important regulatory tools and should be continued. However, for potential BLs and GLs, increased regulatory discipline should be exercised and alternative approaches, including industry-sponsored initiatives, should be considered before the issuance of each one. Using current labor rates, issuing three less BLs or GLs annually would generate a savings of approximately 3 FTE.

3.2.2 Reactive Ir. pection Reports

Reactive inspections for operational events include special inspections. Augmented Inspection Team (AIT) inspections, and Incident Investigation Team (IIT) inspections. The inspection reports for these reactive inspections are governed, in general, by IMC 0610, "Inspection Reports." Additional guidance for AITs and IITs is provided in MD 8.3, "NRC Incident Investigation Program." The overall objectives of reactive inspection reports are (1) to clearly communicate significant inspection results to licensees. NRC staff, and the public; (2) provide a basis for enforcement; (3) assess licensee performance in a short-term context; and (4) present information in a manner that will be useful to NRC management in developing longer-term broad assessments of licensee performance. As such, reactive inspection reports document the significant effort that goes into reactive inspection event followup. On an annual basis, the regions budgeted approximately 1 FTE in documenting reactive inspections.

Recommendation: Leave as is.

3.2.3 Information Notices

Information Notices (INs) are generic communications that are used to bring significant safety, security, or environmental information to the attention of licensees. Licensees are expected to review the information for applicability to their facilities, and consider actions (as appropriate) to avoid similar problems. However, an IN is not used to convey or imply new requirements, transmit new interpretations of regulations, or require or request specific actions. INs are generally less complicated efforts than BLs and GLs. They are typically accomplished within a few months.

INs serve an important role in communicating operational experience to licensees. All licensees have an operational experience review program that assesses the NRC's INs as well as other sources of information. While no response is required to an IN, licensees do take actions to avoid similar problems, when appropriate. INs are also public documents that are made visible by wide distribution and posting on the internet. Therefore, these products make a moderate to high contribution to both the NRC's strategic goals of reactor safety and informing the public. They are of little use in assessing overall industry and individual plant performance.

INPO, vendors, and owners' and users' groups also disseminate operational experience information. Industry documents, along with NRC notices, are considered by the NRC enforcement policy as missed opportunities to identify a problem. The NRC may decide not to develop an IN if the relevant information has already been disseminated by other means. A disadvantage of this is that the alternative means may not be available to the staff or the public. This could be somewhat offset by the increased use of morning reports (MRs), which are available to the public on the NRC's Web page to promulgate information if the decision is made not to issue an IN. MRs can be developed within a few hours with minimal effort.

A 1991 General Accounting Office report raised concerns regarding the NRC's decision not to issue INs if INPO has previously disseminated similar information in their operational experience reports. The General Accounting Office's concern was that the INPO reports were not publicly available. In response to this report, NRC Chairman Selin informed Congressman Markey, in a letter dated July 19, 1991, that, "when the NRC staff determines that it would be appropriate for reasons of safety to issue an Information Notice (IN), the staff will issue the notice without regard to whether INPO has already notified the industry about the subject of the notice." This 1991 policy should be revised in light of agency resource constraints and in lieu of an IN, increased use of MRs be made to convey the substantive information in the INPO operating experience reports to the public.

The number of INs may also by reduced by raising the threshold. Historically, the NRC has issued INs that may have provided interesting information, but was of limited safety significance or utility. By more aggressively questioning the safety benefit of proposed INs, the NRC could eliminate five INs annually, resulting in a savings of 0.5 FTE.

INs are important regulatory tools and should be continued. However, in the future the NRC should determine whether the information has already been disseminated by an alternative means, including vendors' and industry groups. Issuing 10 fewer INs annually would generate a savings of approximately 1 FTE (using current labor rates). For FY99, NRR has budgeted 6.2 FTE to produce 65 INs.

Recommendation: INs should be continued. However, the threshold should be raised. Credit for industry documents should be considered. The NRC's policy on public access should also be revised.

3.2.4 Emergency Notification System Reports

As part of their duties, HQ Operations Officers (HOOs) immediately document the notifications that reactor licensees make in accordance with 10 CFR 50.72, "immediate notification requirements for operating nuclear power reactors," technical specifications, or licenses. Emergency Notification System (ENS) Reports are available to all NRC employees via the Internet. They are input for the Event Screening call each weekday morning to coordinate near-term NRC response and followup. The ENS reports are also used in various analyses. There is no substitute available for ENS reports. No FTE savings could be realized by their discontinuance, since an NRC representative must be available to receive licensee notifications and initiate the NRC's incident response 24 hours per day. ENS reports are considered to make a high contribution to the NRC's strategic goals of reactor safety and performance assessment. As such, ENS reports help coordinate near-term NRC actions and should be continued as is.

Recommendation: Leave as is.
3.2.5 Reliability and Risk Study Reports

Risk-important system reliability studies objectively analyze nuclear power plant operational event data from licensee event reports (LERs), special reports, and INPO Nuclear Power Reactor Data System (NPRDS) records to identify significant reliability trends and patterns, and to compare them with published probabilistic risk assessment (PRA) and individual plant evaluation (IPE) reliability data to develop engineering insights. The NRC must have an independent capability to study and assess industry performance, especially as the agency moves toward risk-informed regulation. These studies are considered to make a medium contribution to all three of the NRC's strategic goals. AEOD has budgeted 4.4 FTE and \$450,000 in FY99 for these studies.

Recommendation: Continue to work with industry to avoid duplication of effort.

3.2.6 Risk-Based Performance Indicators

The AEOD Reliability and Risk Assessment Branch (RRAB) plan, currently under internal NRC review, scheduled an implementation date of January 2001 for the new risk-based performance indicators (PIs). RRAB has met with the NEI to understand and possibly adopt some of the PIs that the NEI is developing for industry to monitor safety performance with risk-informed measures. However, the NRC has to have an assessment capability to independently assess industry PRA work and performance, especially as the agency moves toward risk-informed regulation. The Commission and senior NRC management are involved in this development activity. Since risk-based PIs are under development, their contribution to the three NRC strategic goals could not be rated. For FY99, AEOD has budgeted 2.25 FTE and \$100,000 for the development of risk-based PIs. Additional funding necessary for this effort will be authorized separately and is considered outside the scope of this self-assessment.

Recommendation: Continue to work with industry to develop risk-based PIs and avoid duplication of effort.

3.2.7 Accident Sequence Precursor Reports

The Accident Sequence Precursor (ASP) Program uses PRA techniques to estimate the conditional core damage probabilities for risk-significant nuclear power plant events or conditions. Operational safety data are screened, identified, and evaluated by Oak Ridge National Laboratory (ORNL). ORNL then calculates the estimated conditional core damage probability for 50 to 60 events or conditions. The program systematically evaluates operating events to document and rank those with the highest potential for inadequate core cooling and subsequent core damage. It also categorizes the precursor events for plant-specific and generic implications, provides a measure to trend nuclear plant core damage risk, and provides a partial check on PRA-predicted dominant core damage scenarios. These reports are considered to make a medium contribution to all three of the NRC's strategic goals. For FY99, AEOD budgeted 3.5 FTE and \$450,000 to provide funding for ORNL.

Recommendation: Continue to work with industry to avoid duplication of effort.

3.2.8 Performance Indicator Reports

PI reports, present plant operational and event performance data trends, based on data extracted from LERs, 10 CFR 50.72 reports, monthly operating reports, and INPO radiation exposure data. These PI reports are published annually in NUREG-1187 and used as input into senior management meetings (SMMs) and Commissioner site visit analyses. The current PIs will be replaced by risk-based PIs. INPO and the World Association of Nuclear Operators (WANO) have similar PIs. After a trial application of candidate risk-based PIs, the last PI report is scheduled to be published in January 2000. These reports are considered to make a medium contribution to all three of the NRC's strategic goals. AEOD budgeted 0.5 FTE and \$300,000 for these indicators for FY99.

Recommendation: Continue to work with industry to avoid duplication of effort.

3.2.9 Generic Nuclear Reactor Events Studies

AEOD generic nuclear reactor event studies are in-depth analyses of significant safety issues to feed back lessons learned from licensee events or conditions to licensees, cognizant NRC branches, and the public, so that actions may be taken to avoid similar problems. These differ from INs in that they compare a number of related events. There are no existing industry alternatives that can currently replace these widely distributed, public, in-depth studies. Where warranted, generic communications are issued on the basis of these studies. Recent examples include pressure-locking valves, solenoid valve problems, electrical grid issues, and cold weather problems and protective measures.

The number of studies affecting reactor safety and their timeliness has been decreasing for years, because of decreasing resources. AEOD studies are considered to make a medium contribution to the NRC's strategic goals of reactor safety and informing the public because information dissemination alone does not necessarily cause change. AEOD has budgeted 3 FTE and \$250,000 for national laboratory contracts on these studies.

Recommendation: Operating experience studies should be continued but be prepared in a more efficient, timely manner.

3.2.10 AEOD Annual Reports

The AEOD Annual Report, NUREG-1272, Vol _____ No.1, "Annual Report 199_, Power Reactors" presents an overview of the operating experience of the nuclear power industry from the NRC's perspective for each FY. Each summarizes a year's operating experience feedback, reliability and risk activities, generic nuclear reactor event studies, operating experience data, incident responses, incident investigation program, independent safety assessments, and international exchange of information. Since the information is publicly available through the NRC's Web page and reports are issued publicly throughout the year, the Annual Report is considered to make a low contribution toward increased safety at licensed facilities, a medium contribution toward assessing performance, and a high contribution toward informing the public. Overhead FTE are used to prepare the Annual Report.

Recommendation: Sunset the AEOD Annual Report.

3.2.11 Plant Status Reports

As part of their duties, HOOs document plant status calls made to each nuclear power plant at 4:00 a.m. each day to verify operation of the ENS phone lines. The plant status report is used as input into Region/NRR calls, Reactor Analysis Branch (RAB) screening, and the Event Screening to determine the need for followup action. During these calls, licensees sometimes identify a change in plant condition or a problem that had not otherwise been reported. The contribution of the plant status reports to the NRC's strategic goals of reactor safety and performance assessment is considered medium. No FTE savings can be realized by discontinuing the plant status calls, because they are a check of the telephone lines and an HOO must be available to initiate NRC incident response 24 hours per day.

Recommendation: Leave as is.

3.2.12 Senior Management Meeting Analyses

The RAB staff prepares analyses of operating experience for each plant under discussion in the SMM on the basis of reviews of LERs and inspection reports. Since Section 3.5.10 of this report recommends sun setting systematic AEOD review of LERs, the necessary basis for these analyses will not be available. SMMs have been decreased to once per year. PIs will still be provided, and risk-based PIs will be developed. Regional staff who are very familiar with a plant's operating experience can answer questions arising during a SMM. The contribution made by these analyses to the NRC's strategic goal of reactor safety is considered low. The contribution made to the goal of performance assessment is considered medium. There is no contribution to informing the public, since this information is categorized as predecisional and is not released. SMM analysis has been budgeted at 2.0 FTE and \$300,000 for FY99.

Recommendation: Only PIs should be provided, without analysis, for the SMM.

3.2.13 Commissioner Site Visit Analyses

Commissioner site visit notebooks are prepared by the regions when a Commissioner visits a nuclear power plant. RAB input to these briefing materials summarizes the more important events within the last year. Since the RAB LER review and categorization process minimized the required effort and the PIs provided additional support, with the RAB LER review sunset, the effort to prepare these reports would substantially increase. Each region is aware of the events and could brief the visiting Commissioner. The contribution of these analyses to reactor safety is considered low and the contribution to assessing performance is considered medium. There is no contribution to informing the public, as this information is considered predecisional and is not released to the public. Commissioner site visit operating experience analyses consume about 0.1 FTE.

Recommendation: RAB Commissioner site visit operating experience analyses for region briefing notebooks should be sunset.

3.2.14 Morning Reports/Preliminary Notifications

The MR is both an input and a product of the operational safety data review process. MRs enable the regional offices and the HQ staff to exchange information in a systematic way each day. The MR process is governed by NRC IMC 0230, "Morning Report," and various region instructions. MRs are used by the regions to augment information provided by licensee's ENS reports and to provide information on other items of interest. These reports are used as an input in the Event Screening process each workday. HQ uses MRs to announce the development and issuance of generic communications and occasionally issues MRs to provide operational experience that has not been widely disseminated.

Preliminary Notifications (PNs) are governed by Manual Chapter 1120, "Preliminary Notifications," January 7, 1994, and are used to promptly provide to the Commissioners and other NRC and Agreement State management new and current information on matters that are of significant safety or safeguards concern or have the potential for high public interest. Approximately 400 PNs are issued annually by the Regions and approximately 400 MRs are generated annually, with most of these also originating in the Regions. Approximately 2.5 FTE (0.1 FTE in NRR and 2.4 FTE in the Regions) are budgeted for this effort.

MRs and PNs receive wide dissemination in the Regions and in HQ, and they are also posted on the NRC's Web page on the Internet. MRs and PNs are essentially informational in nature. As such, they provide a low contribution to the reactor safety and performance assessment goals and a moderate contribution to the goal of informing the public. MRs are an inexpensive means of communication among the staff and with the public.

It is recommended that the effectiveness of the MR system be improved by expanding the scope and increasing the role of HQ in generating additional MRs. MRs can be generated by HQ when they have information of interest to the Regions and the public that may not rise to the threshold of an IN. A recent MR was issued by NRR which discussed a fuel channel bowing problem identified at Limerick and a related monitoring plan developed by the Boiling-Water Reactors Owners' Group. Another MR was issued by NRR which summarized a vendor advisory discussing shelf life limitations of Woodward Governor EGA controls. This increased scope is estimated to require an increased expenditure of approximately 0.1 FTE for NRR. This increase in effort can be offset by raising the threshold for region generated MRs. Many MRs are of an administrative nature, such as reporting licensee management changes. By raising the threshold for reporting, it is estimated the Regions could reduce their effort by 10 percent or approximately 0.2 FTE.

Recommendation: Increase the effectiveness of the MR system by expanding the scope and genarating additional MRs regarding potential generic technical issues as well as plant-specific event information. Raise the event threshold toward high safety significance. Raise the threshold for administrative type MRs.

3.2.15 Abnormal Occurrence Reports

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Section 208 of the *Energy Reorganization Act (ERA)* of 1974 defines an abnormal occurrence (AO) as an unscheduled incident or event that the NRC determines to be significant from the standpoint of public health and safety. The NRC reports all AOs to Congress each year in accordance with the *Federal Reports Elimination and Sunset Act* of 1995. The AOs are the primary source of information about whether or not the Agency's performance goals are being met.

Recent reactor events have not risen to the significance where an AO report had to be submitted. For the reactor program, the regulatory response and performance assessment is essentially independent of the AO determination and report generation, so the report has a relatively low contribution to the NRC's strategic goals of reactor safety and performance assessment. The AO Report is a public report to Congress, and makes a high contribution to the Congress, but a lower contribution to the public information goal. The information on these events is available through more timely sources, such as MRs, PNs, and inspection reports. Increased direct correspondence and interaction are a more effective means of providing that event information. However, the Commission has decided on several occasions that the AO report should not only continue, but the number of "other" events in Appendix C should be increased. NRR and the Regions budgeted approximately 0.1 FTE on this effort.

Recommendation: Leave as is.

3.2.16 Highlights

Highlights are a means for the staff to provide summary information to management. Highlights are written by project managers and other staff to provide both event related and nonevent related information. The Weekly Information Report is sponsored by the Office of the Executive Director for Operations (EDO) and includes weekly highlights from individual HQ and regional offices. The Weekly Information Report is made available on the NRC Web Page. The incremental effort devoted to highlights for operational safety data review is small.

Recommendation: Leave as is.

3.2.17 Administrative Letters

Administrative Letters (ALs) are used to inform licensees of administrative procedure changes related to implementing the regulations or NRC staff positions, and other purposes of a strictly administrative nature, as described in NRC IMC 0720, "Nuclear Regulatory Commission Generic Communications." For FY99, NRR has budgeted approximately 0.5 FTE to issue approximately five ALs.

ALs do not deal with safety issues, so they have a low contribution to reactor safety. They also have no direct role in assessing licensee performance; however, ALs do make a medium contribution to informing the public. No changes are proposed.

Recommendation: Leave as is.

3.2.18 United States Incident Reporting System Reports

International Atomic Energy Agency (IAEA) Rules for Membership in the Incident Reporting System (IRS) state that,

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It is assumed that a Member State that intends to participate in the IRS has

- Established a national Incident Reporting System and operational feedback process along with the IAEA recommendations and good international practices;
- Given an appropriate organization, usually the regulatory body, the responsibility for sending information on incidents to the IRS and for distribution of information from the IRS within the country.

About 55 INs are coded, abstracts prepared, and submitted to the IAEA as IRS reports each year. RRAB has budgeted about \$33,000 per year for the Idaho National Engineering and Environmental Laboratory (INEEL) to code these reports. For FY99, this effort is scheduled to be done within RRAB, through an expenditure of 0.25 FTE. This function must continue if the NRC wants to continue benefitting from foreign IAEA-IRS information. However, efficiency savings may be realized if the authors of the INs perform this coding.

Recommendation: Increased efficiency and a savings of 0.15 FTE may be achieved by having the authors of IN prepare the abstracts and the IRS coding. Transfer function to the Events Assessment and Generic Communications Branch (PECB.)

3.3 Services

This section addresses the findings, conclusions, and recommendations for each service resulting from review and assessment comprational safety data.

3.3.1 Headquarters Operations Office: Nothicetions

The HOO informs NRR, regions, and *P*ederal agencies of events or conditions for timely response, as appropriate. To renuch tree to receive notifications from other licensees, the HOO turns over important even the followup 24 hours per day to the regions and NRR. The HOO's contact with the region is a Regional Duty Officer (RDO). Communication between the Operations Center, Regions, NRR, and Pederal agencies must be continued, as this is considered to make a high contribution towards assessing how licensees cope with real-time events. These notifications, by themselves, make a low contribution toward licensee action to increase reactor safety.

Recommendation: Leave as is.

3.3.2 Significant Event Determinations

Significant Events (SEs) are those events that the NRC staff identifies for the PI program as meeting one or more criteria indicating that the event has safety or regulatory significance. This decision is made by the Events Assessment Panel, which is an interoffice, interdisciplinary panel that meets weekly to assess the significance of events and the need for generic communications. The additional effort required to make the SE determination is estimated to be approximately 0.1 FTE.

However, the SE determination makes a relatively low contribution to the strategic goal of reactor safety because neither licensees nor the NRC take actions that increase the level of nuclear safety at the facilities on the basis of that determination. The SEs are publicly documented and trended as PIs so they make a moderate contribution to performance assessment and public information goals. AEOD is currently developing new risk-based PIs. The small number of SEs limit the utility of this determination as a PI. The SE program should be reviewed in the context of the new risk-based PI program and sunset, if possible, for a savings of 0.1 FTE.

Recommendation: Significant Event determination should be sunset, if possible, in light of the new risk-based PI program.

3.3.3 Operating Reactors Briefings

PECB conducts Operating Reactors Briefings to inform NRR management and the Regions of current events of interest. Currently, PECB budgeted approximately 0.2 FTE on this activity each year.

Event response and decisions on generic communications are generally made independent of the Operating Reactors Briefing process, so it has a relatively low contribution to the NRC's strategic goal of reactor safety. However, the briefings do afford an opportunity for various managers to meet and discuss topics of interest, and this interaction has merit. The briefings summarize events, including licensee performance, so they make a moderate, albeit redundant, contribution to the performance assessment goal. While the briefing slides are made public, the actual contribution to informing the public is limited. The value of the interaction of the managers and informing of the Regions justifies a modest expenditure of resources and it is recommended that the periodic Operating Reactors Briefings be retained. However, a higher threshold for briefing issues and events should be instituted. This would result in a savings of approximately 0.1 FTE.

Recommendation: Raise the threshold for briefing issues and events.

3.3.4 NRC Management Briefings

Every business day, the EDO receives a short briefing from the EDO staff on the previous days operational events so that the EDO is cognizant of important events. PECB attends these meetings and subsequently briefs the NRR ET on the day's operational experience. These briefings are generally very short and also serve as staff meetings for the EDO and NRR

management, respectively, to discuss other issues of interest. Effort budgeted for the briefings is approximately 0.1 FTE. The NRR management briefings make a moderate contribution to the performance assessment strategic goal, with a lesser contribution to the reactor safety goal and no contribution to the public information goal. The current structure of the morning briefings serves a useful role and should be left as is.

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Using the HOO to brief the EDO on events was considered, but with the 12-hour shift rotation, the HOO who received an event notification (EN) is not likely to be on shift at the briefing time, and the on-shift HOO does not have the time to follow up on the event.

Recommendation: Leave as is.

3.3.5 AEOD Management Briefings

The AEOD Office Director is briefed each workday morning after the Event Screening call. The AEOD resources budgeted for this service were included in the 0.2 FTE budgeted for the Event Screening. Section 3.5.7 of this report recommends sun setting AEOD participation in this call. Without researching the events and participating in this daily call, the AEOD staff would not be able to accurately brief the AEOD Office Director. The contribution this briefing makes toward increasing reactor safety is considered low and the contribution toward assessing performance is considered medium. Since this information is predecisional and is not released, this briefing makes no direct contribution toward informing the public.

Recommendation: Sunset the AEOD Management Briefings.

3.3.6 Advisory Committee on Reactor Safeguards Briefings

The Advisory Committee on Reactor Safeguards (ACRS) is a statutory committee described in the *Atomic Energy Act* of 1954, as amended. The ACRS advises the Commission with regard to licensing and operation of facilities and related safety issues. At the request of the ACRS, PECB periodically coordinates event briefings for the ACRS that the Committee believes will be useful in conducting their work. The briefings are of an informative nature and may support ongoing ACRS work. Approximately 0.2 FTE is spent in this effort.

Because these briefings are primarily informational for the ACRS, the briefings provide a relatively low contribution to the reactor safety and performance assessment goals and a moderate contribution to the goal of informing the public.

Recommendation: Leave as is.

3.3.7 Generic Safety Issue Identification

MD 8.5, "Operational Safety Data Review," directs the program offices to use appropriate mechanisms in considering generic issues resulting from the review of operational safety data. A generic issue is a concern that is applicable to all, several, or a class of nuclear facilities. Generic issues do not include issues of a compliance nature. All generic issues are to be sent to Office of Nuclear Regulatory Research (RES) for assessment using the process and

information in NUREG-0933, "A Prioritization of Generic Safety Issues." As a practical matter, very few new generic issues are identified, and only a few resources are budgeted in this effort.

Recommendation: Leave as is.

3.3.8 Input to Department of Energy

When AEOD's participation in the Event Screening is sunset, as recommended in Section 3.5.7, there will be no events assessment process to screen events and no budgeted FTE for input to the Department of Energy's (DOE) Office of Emergency Management. This call does not contribute to either assessing performance or informing the public. It is also considered to make a low contribution toward reactor safety. The AEOD FTE budgeted for this service was included in the 0.2 FTE budgeted for the Event Screening.

Recommendation: Sunset input to DOE/OEM.

3.4 Databases

This section addresses the findings, conclusions, and recommendations for each database used in operational safety data review and assessment process.

3.4.1 INPO Equipment Performance and Information Exchange Database

The Equipment Performance and Information Exchange System (EPIX) is a new database being developed by INPO to replace the NPRDS. EPIX will provide failure and reliability information, and data that will be used in the new NRC Reliability and Availability Data System (RADS) to estimate reliability parameters. These parameters will be used in developing risk-based PIs and in other risk-informed and PRA applications. Less that 0.1 FTE and \$70,000 is budgeted for use of this INPO database.

Recommendation: Leave as is.

3.4.2 Events Tracking System

The Events Tracking System (ETS) is a word-searchable database that contains documentation of events and generic followup activities. The database contains information about all assigned events and issues that include an event description, followup assessment, and closeout text. ETS also provides pointers to original data sources through Folios and ZyIndex such as 10 CFR 50.72 reports, 10 CFR 21 reports, MRs, PNs, and inspection reports. Approximately 800 new assignments are added to ETS each year (400 assignments each from NRR and NMSS). The database is used as a tool to search for previous similar operational experience, as well as an archive to record regulatory assessments for why action was or was not taken. This latter attribute was added with the development of NRR Office Letter (OL) 503, "Procedure for Integrated Identification, Evaluation, Prioritization, Management, and Resolution of Generic Issues," December 27, 1995. This OL was developed in response to NRR's acknowledged weaknesses in the consistent handling and documentation of potentially generic issues. A

historical record and tracking system for followup activities should be maintained. Currently ETS fulfills this function and, until another system is developed, ETS should be left as is. Approximately 0.5 FTE and \$75,000 of information technology support is budgeted for ETS by NRR each year. ETS is an older program and requires an upgrade to become Year 2000 compliant. This upgrade has been developed and testing began in September 1998. The introduction of the Agency-wide Documents Access and Management System (ADAMS) may present an opportunity to replace ETS, but that decision will await further development and testing.

Recommendation: Leave as is. Revisit ETS when ADAMS becomes operational.

3.4.3 Human Factor Information System Database

The Human Factors Information System (HFIS) is a database developed by NRR to allow identification of (and consideration of the need for corrective actions at) licensed power plants whose personnel performance in any one of several areas is below specified standards compared to the average of all plants. The database has encoded information from each LER that involves human performance issues. The encoded information provides a greater level of detail than is available with the Sequence Coding and Search System (SCSS). HFIS, in addition to its LER module, also includes a module that contains human performance information from NRC inspection reports. The reading, coding, and data entry of the human performance information is accomplished by an NRR contractor at a cost of \$120,000.

Recommendation : Leave as is.

3.4.4 Reliability and Risk Databases

A number of databases are necessary for risk and reliability analysis, including ASP, commoncause failures, initiating events, international common-cause data exchange, and loss of offsite power events. AEOD has budgeted 2 FTE and \$350,000 to maintain these databases during FY99.

Recommendation: Leave as is.

3.4.5 Sequence Coding and Search System

SCSS provides desktop computer password-protected access via the Internet for all NRC employees to 45,000 LERs from 1981 onward, in both coded and full text formats. The database is used to provide input to the PI program, the ASP program, and system and component reliability studies. AEOD budgeted 1 FTE and \$600,000 to maintain the SCSS during FY99.

Recommendation: Transfer the responsibility and resources for SCSS to an independent office, along with the AEOD PRA and generic reactor events studies staff that it supports.

3.4.6 Human Performance Event Database

The Human Performance Event Database has already been sunset by agreement between AEOD and NRR to saved resources. The Human Factors Information System Database in NRR will be continued.

Recommendation: Sunset.

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3.4.7 Work Assignment Management System Database

The Work Assignment Management System was used to track the RAB review of 100 percent of the LERs submitted to the NRC. This database will no longer be needed when the systematic review of LERs is sunset as recommended in Section 3.5.10. Overhead FTE was expended to input data and monitor progress, so no direct FTE savings will be realized.

Recommendation: Sunset.

3.5 Assessment Processes

This section addresses the findings, conclusions, and recommendations for each reactor operational safety data review and assessment process.

3.5.1 Foreign Event Review and Dissemination

The United States has about a quarter of the world's 400 nuclear power reactors. It is vital to examine foreign operating experience to identify their safety significance and applicability to U.S. nuclear power plants. Rare events at foreign facilities have proven to be important to U.S. NRC decision making in key issues, including primary system cracking, emergency core cooling system recirculation sump blockage, and boiling-water reactor power oscillations.

AEOD had the primary responsibility for referring foreign operating experience to cognizant NRR branches so significant foreign lessons learned could be incorporated into U.S. plants. ACRS, RAB, NRR (Office of the Director, Materials and Chemical Engineering Branch, and PECB), RES, and each region are on distribution for foreign proprietary IAEA IRS reports from the NRC Library. The RAB staff tracks and reviews each IRS report in detail and provides copies of applicable IRS reports to PECB and selected technical branches for followup. While MD 8.5 lists AEOD as the principal technical contact for foreign operational safety data and events, PECB also performs this function in parallel, resulting in duplication of 0.1 FTE of screening effort on IAEA IRS reports between RAB and PECB. With the AEOD changes, the function should be transferred to PECB.

Recommendation: Involvement with foreign reactor operating experience should be continued; funding for review of foreign reactor operating experience should be restored to a level of 0.4 FTE and transferred to PECB. Elimination of the duplication results in a savings of 0.1 FTE, when combined with U.S. IRS report preparation in

Section 3.2.18.

3.5.2 Headquarters Operations Officer Safety Assessments

HOOs receive event and condition notifications, and allegations from licensees, Federal agencies, and the public; make immediate plant-specific safety assessments; and initiate appropriate, timely NRC response 24 hours/day. The HOO serves as the licensees' NRC point-of-contact for all ENs and allegations when NRC offices are closed. HOO incident response activities are being covered in an ongoing Incident Response self-assessment and are considered outside the scope of this review. The HOO function is critical for the NRC's Operations Center to receive operational safety data and initiate the appropriate NRC response; this function can not be delegated to industry. The contribution of this function to the NRC's strategic goals of reactor safety and performance assessment is considered high. The FTE budgeted for this effort is included in AEOD's Incident Response self-assessment.

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Recommendation: Leave as is.

3.5.3 Generic Followup

One purpose of the followup phase of the event assessment process is to determine the need for additional generic action as a result of an event. Section 3.5.8 of this report addresses a second purpose of event followup to obtain sufficient information to make a reasoned assessment as to the events significance. For NRR, followup includes gathering sufficient additional information to identify the generic implications of the event. The followup can be of a plant-specific nature, a generic nature, or a combination of the two. The followup information is developed by the PECB engineer with the assistance of cognizant staff and other resources. This additional information comes from databases, discussions with licensees, resident inspectors, manufacturers, owners' groups, and other sources. In addition, staff may need to consult design and licensing documents. The determination of generic implications can be time-consuming, given the variations in plant design and operation. However, the staff makes an initial regulatory assessment to provide justification for why further regulatory action is not required while the generic issue is resolved. At the conclusion of the followup, the PECB engineer summarizes the event and makes a presentation to the NRR/AEOD/RES Events Assessment Panel, which meets on a weekly basis. Approximately 4 FTE are budgeted by NRR on generic followup.

The followup process supports all of the products discussed earlier (such as generic communications, morning reports, briefings, AO reports, significant event determinations, and reactive inspection reports).

Recommendation: Leave as is.

3.5.4 Region/NRR Call

The region/NRR calls are conducted each workday for each of the four regions. During the calls, the participants discuss all of the recent ENs with additional amplifying information, as well as any information of interest regarding plant operations that had not formally been

reported. These calls serve as an important and effective means of communication among Regional management and between the Regions and NRR. The calls are typically chaired by the Regional Division of Reactor Projects (DRP) Division Director, and include Regional DRP and Division of Reactor Safety (DSR) management, NRR Project Directors, PECB, and EDO staff members. NRR budgeted 1.0 FTE and the Regions budgeted 3.3 FTE on this activity in FY99.

The Region/NRR calls are a good source of operational experience information, and they support the event and generic followup process as well as the various briefings that PECB provides.

Recommendation: Leave as is.

3.5.5 Rulemaking

Rulemaking has been approved to modify the event reporting requirements in 10 CFR 50.72 and 50.73 by February 25, 2000 to better align them with the NRC's current reporting needs, to reduce the reporting burden, and to clarify the reporting requirements where needed. The amendments would clarify the requirements for reporting design issues, limit design issue reporting that does not exceed a specified level of significance, and extend the required reporting times consistent with NRC needs. Public comment has also been requested to identify other reactor reporting requirements that could be simplified or made less burdensome and more risk-informed. AEOD budgeted 1.0 FTE for this effort in FY99.

Recommendation: Retain function as is, but transfer to NRR.

3.5.6 Regulatory Effectiveness

AEOD's regulatory effectiveness assessment is a systematic process to identify and improve rules, standards, and regulatory guidance which have not met the objectives of clarity, coherence, logical basis, consistency, reliability, technical soundness, or effectiveness. The process also identifies unnecessary regulatory requirements and opportunities for streamlining. Candidate issues are derived from lessons learned from operating experience, stakeholders input, and staff initiatives. Existing operating and licensing experience databases, PRAs and results of research programs, engineering analyses, and tests are used to classify these issues. The ASP Program, allegations database, and enforcement actions database are used to screen the most risk-significant issues. SCSS and EPIX data are used to verify that the issues are generic and valid. AEOD had budgeted 2.0 FTE and \$200,000 for analyzing these issues in FY99.

Recommendation: Leave as is.

3.5.7 Event Screening

The primary duties and responsibilities for the review of operational safety data are documented in MD 8.5 and supplemented for NRR by NRR OL 503, "Procedure for Integrated Identification, Evaluation, Prioritization, Management, and Resolution of Generic Issues," December 27, 1995.

The daily ENs, MRs, plant status reports, and PNs are screened by the entire PECB/NRR staff and discussed at an 8:50 a.m. conference call that also includes selected NRR technical branches and RAB. The 8:50 a.m. call is a forum for multidisciplinary discussion of the event information. The screening process supports the subsequent follow up activities and the various briefings that PECB conducts.

In addition to the events which are reviewed at the 8:50 a.m. call each workday, the PECB staff also reviews many other documents such as LERs, inspection reports, foreign events, enforcement notifications, DOE reports, and others listed in NRR OL 503. INPO documents will continue to be screened by PECB after AEOD engineering review is sunset. Some of these reviews, such as LER and foreign event reviews, are duplicated in other offices. The purpose of this screening is to identify potential generic issues. It is estimated from the FY99 budget that NRR will use approximately 4.1 FTE on the screening process. In addition, the Regions will use approximately 12 FTE on the daily development and screening of event-related information. Event Screening makes a medium contribution to the NRC's reactor safety and performance assessment goals.

It is recommended that efficiencies should be incorporated into the current process to eliminate duplication by consolidating the prompt and intermediate screening of events. The short-term, nonemergency event assessment would become an NRR function, and RAB would no longer review the ENs or participate in the 8:50 a.m. Event Screening calls each workday. Ending RAB's role will result in a savings of approximately 0.2 FTE by RAB staff preparing for and participating in the Event Screening call. In the past, the RAB staff provided a questioning attitude and independent views, which ensured that important events were followed up that otherwise would not have been. Followup would be conducted by NRR.

Dedicated LER screening by RAB and NRR would also be eliminated. The screening of LERs has yielded relatively few safety-significant issues that were not identified by other means. LERs would continue to be reviewed by project managers and the Regions. LER information would continue to be available through the SCSS database, and LER information pertaining to human performance would continue to be input into the HFIS. PECB and other NRR technical branches will continue to use LERs in the course of their followup, but will not perform any routine screening. PECB would continue screening of INPO and foreign reports. PECB can eliminate screening of LERs and inspection reports to save 0.6 FTE.

Recommendation: AEOD participation in the Event Screening should be sunset, for a savings of 0.2 FTE. PECB should eliminate screening of LERS and inspection reports for a savings of 0.6 FTE.

3.5.8 Event Followup

One purpose of the followup phase is to obtain sufficient information to make a reasoned assessment as to an event's significance. From a Regional standpoint, the followup provides a factual basis to develop an assessment of licensee performance and determine the need for enforcement action.

NRR followup includes gathering of sufficient additional information to define the plant-specific

significance of an event. The followup can be of a plant-specific nature, a generic nature, or a combination of the two. The followup information is developed by the PECB engineer with the assistance of cognizant staff and other resources. This additional information comes from databases, discussions with licensees, resident inspectors, manufacturers, owners' groups, and other sources. In addition, staff may need to consult design and licensing documents.

PECB also has a contract with Pacific Northwest National Laboratory to perform probabilistic risk assessments of operating events; this work is occasionally duplicated on a different time scale by the AEOD ASP program. At the conclusion of the followup, the PECB engineer summarizes the event and makes a presentation to the NRR/AEOD/RES Events Assessment Panel, which meets on a weekly basis. Regional followup of operational events can occur through routine inspection activities or through specially chartered inspections such as special inspections, AITs, or IITs. The findings and assessments are documented in inspection reports, and on the basis of these findings, enforcement action may be taken. Approximately 23.6 FTE (21.1 Regions; 2.5 NRR) are budgeted for this area. Approximately \$50,000 is for contractor support for event risk assessments.

It is proposed that the staff assume the contractor function for the development of short-term risk assessments. The followup process supports all of the products discussed earlier (such as generic communications, morning reports, briefings, AO reports, significant event determinations, and reactive inspection reports).

Recommendation: Sunset NRR event risk assessment contract.

3.5.9 Events Assessment Panel

The Events Assessment Panel is an interdisciplinary, interoffice group with members from NRR, AEOD, and RES that meets weekly. The charter for the panel is documented in Attachment 1 to NRR OL 503. The primary tasks of the panel are to determine the plant-specific significance of events for the AEOD PI program (i.e., Significant Event) in accordance with established criteria; and also to determine the need for any further generic action, such as a generic communication or other generic activity; and to establish an appropriate schedule and priority. The results of the followup and the panel's decisions are documented and archived in the ETS. Approximately 0.6 FTE are budgeted on panel activities.

The panel supports the generic communications and significant event determination products. Specifically, the panel serves a role in the NRC's generic communications program to provide consistent judgement in determining the need for generic communications. As noted earlier, the need for the significant event PI should be revisited in the context of the risk-based PI initiative. If the significant event PI is sunset, the remaining function of determining the need for generic communications could be relegated to the PECB branch chief and the panel could also be sunset. The branch chief's decision making would still benefit from the advice and collegial review of the staff. Elimination of the panel would result in savings of approximately 0.6 FTE.

Recommendation: Sunset the Events Assessment Panel and use alternatives to ensure consistency in generic communications.

3.5.10 RAB Operational Safety Data Review

RAB has 2.1 FTE budgeted in FY99 on the systematic review and categorization of all LERs and INPO reports by their safety significance and need for followup. WAMS is used to assign and track LER review. INPO reports are reviewed to determine whether a safety issue has been overlooked that warrants NRC followup, or an IN to inform licensees and the public of safety significant operating experience. The RAB staff also reviews inspection reports and other information on assigned plants in a less formal manner. LERs that describe an AO, deficiencies reportable under 10 CFR Part 21, or generic problems that appear to warrant generic communication to licensees are referred to PECB for followup. The reviews primary purpose is to make independent plant evaluations to support the SMM. Although ideas for AEOD technical studies are identified by this review, self-initiated studies are seldom performed because of resource limitations.

PECB budgeted approximately 0.7 FTE in duplicating the screening of LERs (0.3 FTE), INPO reports, and inspection reports. Independent review efforts will be sunset to gain efficiency. Instead of a 100 percent screening, only the most important LERs will be reviewed by PECB, on the basis of the results of the Events Screening, as part of their normal followup. NRC Resident Inspectors and NRR project managers will continue to review 100 percent of the LERs. PECB will screen the INPO documents. The Regions will refer potentially significant generic issues to the appropriate lead office for action. Some generic problems may not be identified by this diverse group, who's primary mission is plant-specific.

Recommendation: Sunset centralized screening of LERs, INPO documents, and inspection reports by AEOD to save 2.1 FTE. Sunset WAMS to realize savings in overhead costs. Ensure that Project Managers and Resident Inspectors receive additional training in the identification of generic problems.

3.6 Industry Views

During a telephone call on July 31, 1998, INPO representatives expressed their view of GLS and INs as useful supplements to the INPO Significant Event Evaluation and Information Network (SEE-IN) reports. INPO believes that NRC documents may add to the event or issue knowledge, and enters them into their event database. When appropriate, these NRC products may be referenced in trending documents such as Significant Operating Experience Reports (SOERs). INPO may not prepare a report duplicating an NRC report.

Regarding the consideration of the NRC taking credit for industry information issued by INPO, as part of NRC's evaluation of issuing GLS and INs, INPO had no negative comment.

INPO indicated that the industry finds NRC MRs, ENS reports, plant status reports, and PNs very useful and timely in providing feedback to its Nuclear Network communication link with NRC licensees. They also track Significant Events identified by the NRC.

INPO finds the NRC's risk assessment reports of only slight interest. INPO finds that the usefulness of the NRC's ASP program is limited to checking or comparison with INPO work. ASP results are publicly reported as they are completed, and a combined report is issued about 1- to 1½-years after the events, which limits its value to INPO.

INPO is presently expending no effort on developing risk-based PIs. INPO will continue with its present PI system which uses WANO indicators.

The NRC receives copies of INPO products, but the distribution of INPO products is limited as a result of their proprietary nature. In recent years, the NRC has received an average of about 20 Significant Event no%fications, 12 Significant Event Reports, and 1 to 2 SOERs each year from INPO. INPO documents do a thorough job of laying out prior experience and references, and are well written and edited. INPO experience reports focus more exclusively on operating events/issues than NRC documents, which often provide feedback on some aspect of the implementation of regulations. INPO documents also provide extensive advice on how to deal with issues, whereas NRC documents are limited to describing corrective actions taken by particular licensees (INs), or suggesting courses of action for more significant matters (GLs, BLs).

A meeting was also held with NEI on August 27, 1998, regarding NEI's views on NRC generic communications. NEI's principal concerns included: a clearer understanding of the logic paths used in processing and issuing GLs and BLs; the need for citing 10 CFR 50.54(f) in requesting information in GLs; consideration of safety-benefits when imposing 10 CFR 50.109 compliance backfits; and consideration of a graded approach to safety significance with appropriate priorities when issuing GLs. NEI was receptive to an NRC staff proposal to provide opportunities for early industry engagement with the NRC on problems under consideration for generic correspondence. In those cases where the NRC could take credit for industry initiatives that would avoid duplication, potential savings could be realized as noted previously in this report.

Conclusion: Industry views are consistent with the assessments and recommendations of this report. The NRC should continue working with industry to better define their roles in developing and using risk-informed regulations to avoid duplication of effort.

4 MATERIALS PROGRAM RECOMMENDATIONS

The following sections provide recommendations for improving the effectiveness and efficiency of the materials operational safety data review program. Table 4, "Projected Changes Resulting from Materials Program Recommendations," summarizes the resource increase that would be necessary to institute a generic materials event study program. Sections 4.1 through 4.4 address the materials products, databases, and assessment processes outlined in Table 5, "Materials Operational Safety Data Review." This table provides the costs and contribution to strategic goals for each product and service.

At the end of each section, recommendations are provided in bold print.

4.1 Introduction

Questions regarding the effectiveness and efficiency of the materials operational safety data review program were studied in 1994 in an interoffice review that resulted in the Milhoan report. That report contained recommendations to improve effectiveness and efficiency in the materials areas. These recommendations were addressed and implemented where appropriate. The Milhoan report concluded that (1) materials event review was less formal than reactor event review, (2) there was a lack of uniformity in the review of Agreement State events, and (3) the effectiveness of the materials program was limited by the lack of available resources. In a 1995 memorandum responding to the report, NMSS stated that it endorsed the goal of improving its event review program, but it did not have the resources to establish a dedicated events assessment group without adversely impacting other priority work.

In December 1995, the staff briefed the Commission on mechanisms for addressing generic safety issues. NMSS informed the Commission that it did not have a formal generic issues program nor a dedicated group like the Events Assessment Branch in NRR. As a result of direction received at this briefing, NMSS allocated resources to establish a formal NMSS generic issues program including a Regional coordination and events section. This program, described in SECY-96-107, "Uniform Tracking of Agency Generic Technical Issues," May 14, 1996, included screening all materials events to identify, track, and resolve generic issues. Even though informal reviews have been conducted for several years, many of the formal processes described below were established in 1996 and are still evolving.

The lack of any significant overlap or duplication in the materials program is attributed to the fact that resources for a sophisticated assessment program involving multiple, independent reviews have never been justified nor allocated for materials events. The focus of this self-assessment was on HQ functions and processes, absent significant known problems in regional activities. A regional self-assessment to identify possible improvements would be not worthwhile because of the small 5.9 FTE involved. The ability to perform any assessment beyond initial screening has been acknowledged as a known weakness in the materials program. If all of the materials recommendations in this report are implemented, it would result in an increase of 3.7 FTE (17 percent) in currently budgeted resources and an increase of \$254,000, as shown in Tables 4 and 5.

Table 4 Projected Changes Resulting from Materials Program Recommendations

Office	FY94	FY99		Recommended Changes		
	FTE '	FTE	FTE	FTE	Percent	
AEOD	6	1.0	0.0	- 1.0	-100%	
NMSS	2	14.3	14.3	0.0	0%	
Regions	15	5.9	5.9	0.0	0%	
OSP	<1	0.9	0.9	0.0	0%	
RES	NA	NA	4.7	+ 4.7	+100%	
Total	24	22.1	25.8	+ 3.7	+ 17%	

In addition to the identified 3.7 FTE an additional \$254,000 is needed for generic materials event studies.

* The bases of the FY94 Milhoan report FTE are not well documented, but appear to include functions outside the current selfassessment scope. Since much of the materials program did not exist in 1994, no comparison between the FY94 and FY99 resources is made. Table 5 -Materials Operational Safety Data Review

			Ma	terials	s Produc	cts			
Description		FY9 Curre	9 Budg nt Estir	get nate		Contribution to NRC Strategic Goals		Recommendations	Potential Resource
	AEOD FTE	NMSS FTE	REG FTE	OSP FTE	Contract \$K	Material Safety	Inform the Public		Change
Bulletins and Generic Letters		0.1				High	High	Leave as is	None
Reactive Inspection Reports		1.1	2.0		\$ 15	High	Low	Leave as is	None
Regulations		2.1	0.3		\$ 183	High	Low	Leave as is	None
Information Notices, Administrative Letters, and NMSS Licensee Newsletters		0.5				Medium	High	Leave as is	None
Event Notification Reports	Note *					Medium	High	Leave as is	None
Morning Reports/Preliminary Notifications			0.4			Medium	High	Leave as is	None
All Agreement States Letters				0.1		Medium	Medium	Leave as is	None
Generic Material Events Studies	Note *					Medium	Medium	Restore Funding Transfer to RES	+ 3.5 FTE * \$ 254,000
Regulatory Guidance		1.1	0.8		\$ 39	Medium	Low	Leave as is	None
Agreement State Event Reporting Guidance				0.2		Medium	Low	Leave as is	None
Abnormal Occurrence Report	Note *					Low	Note °	Transfer to RES	+ 0.5 FTE *
AEOD Annual Report	Note *					Low	Medium	Transfer to RES	+ 0.2 FTE ^b
Product Totals:		4.9	3.5	0.3	\$ 237				+ 4.2 FTE + \$ 254,000

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Table 5 (Cont.)

			N	lateria	als Data	bases		
Description		FYS Curre	99 Buc ent Est	lget timate		Products or Processes Supported	Recommendations	Potential Resource Change
	AEOD FTE	NMSS FTE	REG FTE	OSP FTE	Contract \$K			
Nuclear Material Events Database	1.0				\$ 350	Daily Screening Event Followup Weekly Assessment Generic Followup AEOD Annual Report Guidance Regulations Agr. State Reporting AC Report	Retain function, but Transfer to RES	- 0.5 FTE ⁶
Events Tracking System		0.6				Daily Screening Event Followup Week!y Assessment Generic Followup Op Events Briefing	Increase Efficiency	None
Database Totais:	1.0	0.6	0	0	\$ 350		-	- 0.5 FTE

Table 5 (Cont.)

Materials Assessment Processes											
Description		FY9 Curre	9 Bud nt Esti	get imate		Products or Processes	Recommendations	Potential Resource Change			
	AEOD FTE	NMSS FTE	REG	OSP FTE	Contract \$K	Supported					
Reactive Inspections		1.2	2.4		\$ 15	Inspection Reports MR/PN Daily Screening Event Followup NMED	Leave as is	None			
Deily Screening and Regional Calls		1.5				Event Followup Weekly Assessment Events Tracking System	Leave as is	None			
Event Followup		2.2				Weekly Assessment Events Tracking System	Leave as is	None			
Weekly Assessment of Generic Issues		0.7				Bulletin/GL IN/AL/Newsletter Generic Followup Op. Events Briefing Events Tracking System	Leave as is	None			
Generic Followup		2.8 °				Bulletin/GL IN/AL/Newsletter Op. Events Briefing	Leave as is	None			
Monthly Operational Events Briefing		0.4		0.1		Event Followup Generic Followup Bulletin/GL IN/AL/Newsietter NMED Events Tracking System	Leave as is	None			
Agr. State Event Notification and Reporting				0.5		Agr. State Guidance NMED Op Events Briefing AO Report	Increase Efficiency	None			

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Table 5 (Cont.)

Materials Assessment Processes											
Description		FY9 Curre	9 Bud nt Esti	iget mate		Products or Processes	Recommendations	Potential Resource Change			
	AEOD FTE	NMSS FTE	REG FTE	OSP FTE	Contract \$K	Supported					
AEOD Engineering Review (NMAS)	Note *					AEOD Studies AO Report	Sunset	None			
Assessment Processes Totals:		8.8	2.4	0.6	\$ 15		•	None			
Overall Totals:	1.0	14.3	5.9	0.9	\$ 602			+ 3.7 FTE + \$254,000			

Notes for Table 5:

a. Resources for Headquarters Operations Officers are budgeted in AEOD's Incident Response Division and will be included in the incident response self assessment.

b. AEOD materials efforts were budgeted at 0.5 FTE for "NMED" and 1.5 FTEs for "Generic Materials Event Studies" in the AEOD FY98 budget to support work on NMED, generic materials studies, the AO Report to Congress, the AEOD Annual Report, and AEOD engineering review. A planned increase of 2.0 FTE and \$254,000 for "Generic Materials Event Studies" in the AEOD FY99 President's budget was eliminated along with the previously budgeted 1.5 FTE resources. The AEOD FY99 current budget was revised to 1.0 FTE and \$350,000 for "NMED," which included resources for preparing the AO Report to Congress. In fact 2.0 FTE have continued the AEOD materials effort. The -0.5 FTE reduction in NMED resources in this table reflects the actual resources used to support NMED and the remainder was applied to the budget resources for preparing the Abnormal Occurrence Reports to Congress. To continue the AEOD annual report function, additional resources would have to be allocated. AEOD Engineering Review is recommended to be sunset.

c. The contribution to the NRC strategic goal of Informing the public is considered high for Congress, but low for the general public.

d. Special followup of spent fuel cask weld issues accounts for 1.3 FTE. This is budgeted in FY99 only.

4.2 Froducts

This section contains a brief description, findings, conclusions, and recommendations on the products produced as a result of the analysis and evaluation of materials operational safety data.

4.2.1 Bulletins and Generic Letters

These generic communications are used to address significant generic issues that may involve new staff positions that were previously unpublished. Materials BLs and GLs are used for the same purposes and in a similar manner as reactor BLs and GLs described in Section 3.2.1. of this report. Procedures for preparing materials BLs and GLs are provided in IMC 0730, "Generic Communications Regarding Materials and Fuel Cycle Issues." NMSS typically issues less than five of these documents each year. Bulletins and generic letters are considered to make a high contribution to the materials safety goal and the public information goal.

Recommendation: Leave as is.

4.2.2 Reactive Inspection Reports

Reactive inspection reports document the results of special inspections performed to investigate significant events. As such, they provide details about what happened, root causes, and licensee corrective actions to prevent recurrence. Reactive inspection reports are considered to make a high contribution to the materials safety goal, but a low contribution to the public information goal. The focus of this self-assessment was on HQ functions and processes. No significant problems were identified in the reactive inspection area and no recommendations for effectiveness or efficiency improvements were made. A self-assessment by inspection staff would be necessary to identify possible improvements, but given the small FTE involved, regional materials processes are not expected to be reviewed separately.

Recommendation: Leave as is.

4.2.3 Regulations

NMSS has lead responsibility for maintaining regulations for materials programs. When the review of operational data indicates a weakness in existing regulations or a need for new regulations, appropriate technical staff are tasked with a rulemaking effort. Revised regulations are considered to make a high contribution to the materials safety goal and a low contribution to the public information goal. No improvements for effectiveness or efficiency savings were identified.

Recommendation: Leave as is.

4.2.4 Information Notices, Administrative Letters, and NMSS Licensee Newsletters

These generic communications are used to provide information on recently identified safety issues and administrative matters, but do not require any specific action or written response.

They allow licensees to consider actions to avoid problems that other licensees have experienced. Although INs, ALs, and NMSS newsletter articles may contain similar information, there is little duplication. Generally, NMSS staff are tasked with preparing an IN or a newsletter article concerning an event, but not both. ALs are used to convey administrative matters that may not be event-related, such as informing licensees of NRC organization changes or administrative procedure changes to implement new regulations. These generic communications are considered to make a medium contribution to the materials safety goal and a high contribution to the public information goal. No effectiveness or efficiency improvements were identified.

Recommendation: Leave as is.

4.2.5 Event Notification Reports

EN reports document the information provided to the NRC's Operations Center concerning an event. This includes the initial report and any updates provided to the Operations Center. Decisions to activate the NRC's Incident Response Plan are documented in these reports. Decisions to dispatch a formal IIT, or an AIT are also documented in these reports. ENs were considered to make a medium contribution to the materials safety goal and a high contribution to the public information goal. No improvements in effectiveness or efficiency were identified.

Recommendation: Leave as is.

4.2.6 Morning Reports/Preliminary Notifications

MRs and PNs are issued by regional staff to document events reported directly to the Regional office, or to provide additional information for significant events already reported to the NRC's Operations Center. They provide a means of quickly disseminating significant investigation findings. MRs and PNs were considered to make a medium contribution to the materials safety goal and a high contribution to the public information goal. No effectiveness or efficiency improvements were identified.

Recommendation: Leave as is.

4.2.7 All Agreement State Letters

All Agreement State Letters are used to provide event reporting information to the Agreement States for use in their programs, (e.g. event reporting guidance, Nuclear Material Events Database (NMED) training information, and updated information on NMED. All Agreement State Letters were considered to make a medium contribution to the materials safety goal and a medium contribution to the public information goal. No effectiveness or efficiency improvements were identified.

Recommendation: Leave as is.

4.2.8 Generic Materials Event Studies

AEOD had a viable generic materials event studies program in 1988. However, AEOD has undertaken only three studies since 1995, using an *ad hoc* approach. The first study addressed industrial radiography exposure events (INEL-95/0387, "Human Performance Evaluation of Industrial Radiography Exposure Events") and the second study addressed loss of control of materials events from 1987 through 1994 (INEL-95/0110, "Loss of Control of Radiological Material Events Study 1987-1994"). An update of the second study, completed in September 1998, extended the review of loss-of-control events through 1997. Materials event studies can identify generic problems, trends, and patterns that individual event foliowup may miss. Such studies could have a greater contribution to the NRC's strategic goals, if more were conducted. Ideas for studies could come from the NMSS event screening process, OSP, or Agreement States. When performed and published, event studies make a medium contribution to the materials safety goal, and a medium contribution to the public information goal. However, all FY99 resources have been eliminated for this effort.

The Milhoan report of August 8, 1994, recommended that the nuclear materials event review and follow up program add additional resources to attain a more formal structure like the reactor program. AEOD had begun to address this and had planned in FY99 to implement a more comprehensive program including generic materials event studies to evaluate trends and generic issues. The AEOD resources for this were changed to 0 FTE to meet budget cutting goals. To meet the NRC materials safety strategic goal, resources must be allocated to generic materials event studies. To appropriately balance the materials effort in this area with the reactor efforts, approximately 3.5 FTE will be needed. The probability of a materials event is higher than a potential reactor accident, but its consequences are more limited. While reactor events in this country have not caused deaths, materials events have resulted in injuries and fatalities. The NRC must perform generic materials studies because most materials licensees do not have the resources devoted to regulatory affairs or industry groups that can support similar studies like the reactor industry has. In addition, NRC generic materials study analysts must develop more of the information in a study internally because materials licensees do not provide as much information as reactor licensees. Therefore, additional materials FTE resources are required to perform studies similar to the reactor line of business.

The long-term generic reactor and materials events studies have been independent from the program offices since their inception based on the TMI accident recommendations and should remain so. To maintain this independence, the generic materials events studies should be performed in an independent office that has agency-wide responsibilities, such as Research. Since NMED and the AO Report combined expend less than 1 FTE, the responsible analysts should be part of this group and perform generic materials studies as well.

NRC's current materials events assessment efforts are directed to day-to-day review and followup of events. While this is a necessary part of a comprehensive materials events assessment program, experience has shown that it not sufficient to capture precursor information. A failure to feedback lessons-learned information from precursor events has been documented in some caser, involving materials events. For example, a finding of the IIT team investigating a personnel contamination incident at the Massachusetts Institute of Technology, documented in NUREG-1535, "Ingestion of Phosphorus-32 at Massachusetts Institute of

Technology, Identified on August 19, 1995," was that a contributing cause of the incident was that,

The NRC did not disseminate information about known precursor events and did not inform licensees of the circumstances of a similar incident at the National Institutes of Health until 4 months after the incident was reported.

Recommendation: Refund the program to establish generic materials events studies and transfer responsibility for performing these studies to an independent office. If this recommendation is not accepted, all of the AEOD materials resources should be transferred to NMSS, for efficiency.

4.2.9 Regulatory Guidance

NMSS has lead responsibility for maintaining licensing and inspection guidance for materials programs. When the review of operational data indicates a weakness in existing guidance or a need for new guidance, appropriate technical staff are tasked with preparing new guidance. Revised guidance was considered to make a high contribution to the materials safety goal and a low contribution to the public information goal. No improvements in effectiveness or efficiency were identified.

Recommendation: Leave as is.

4.2.10 Agreement State Event Reporting Guidance

OSP has lead responsibility for developing and updating guidance to Agreement States on reporting event information to the NRC. Guidance has been provided on prompt notification of significant events to the NRC's Operations Center and reporting of routine Agreement State events, including follow-up and close-out information to NMED. In addition, OSP provides guidance to its staff on receipt, coordination, and screening of Agreement State materials events. Agreement State event reporting guidance was considered to make a medium contribution to the materials safety goal and a low contribution to the public information goal. No improvements to attain effectiveness or efficiency savings were identified.

Recommendation: Leave as is.

4.2.11 Abnormal Occurrence Report

Section 208 of the *ERA* of 1974 defines an AO as an unscheduled incident or event that NRC determines to be significant from the standpoint of public health or safety. The *Federal Reports Elimination and Sunset Act* of 1995 requires that AOs be reported to Congress annually. The NRC publishes the AO report on a FY basis to satisfy this requirement. The AO Reports are the primary source of information about whether or not the agency's performance goals are being met. The Commission has supported this effort and recently directed the staff to increase the number of other event reports contained in Appendix C of the AO report.

Significant materials events included in the AO report are identified through the materials events assessment process and input from Agreement States, Regions, Operations Center, OSP, and NMSS. An analysis of the events including a determination of the causes, licensee corrective actions, and NRC/Agreement State actions is also developed through the materials events assessment process. The AO report was considered to make a low contribution to the materials safety goal. The primary purpose of AO reports is to inform the public's representatives in the U.S. Congress of the events and other problems the NRC deals with each year. The AO report makes a high contribution toward informing Congress, it makes a much lower contribution toward informing the public. While there are various documents available on these events through the public document room and NRC external Web page, this report summarizes the years significant events in a single reference document. This effort may be most efficiently undertaken by analysts working with the NMED database and generic materials events studies in an independent office. (Also see Section 3.2.15 of this report.)

Recommendation: Transfer responsibility for the AO report to an independent office, along with generic materials event studies. If generic materials event studies are not funded, this should be transferred to NMSS for efficiency.

4.2.12 AEOD Annual Report

The AEOD Annual Report, NUREG-1272, Vol. __, No.2, "Annual Report 199_, Nuclear Materials" contains a compilation of data on materials events reported to the NRC by licensees, Agreement States, and the public. The data are aggregated and presented by event type; however, the data aggregation is not predicated on a detailed analysis. Currently, the AEOD annual report is the only publication that contains all of the materials events reported to the NRC. The AEOD annual report is considered to make a low contribution to the materials safety goal and a medium contribution to the public information goal. However, all FY99 resources have been eliminated and no future annual reports will be published by AEOD.

Recommendation: Retain the function, but transfer responsibility for publishing materials events information previously contained in the AEOD Annual Report to an independent office, if generic materials events studies are funded.

4.3 Databases

This section contains a brief description, findings, conclusions, and recommendations on the database used in the analysis and evaluation of materials operational safety data.

4.3.1 Nuclear Material Events Database

NMED is an agency-wide computer database of materials events reported to the NRC by licensees, Agreement States, and the public. Documentation of an event can range from initial reports such as PNs, MRs, or EN reports, to investigation reports, consultant reports, and enforcement action documents. The NMED contractor consolidates this information into a

single record for each event that references all of the applicable documents. AEOD currently manages NMED as part of its materials events assessment responsibility via a contract with INEEL. NMED has become an essential tool in the materials events assessment process and supports several processes and products including event screening, assessment of generic issues, event studies, the AEOD Annual Report, and the AO report. NMED is used by staff in NMSS, OSP, RES, the regions, and the Agreement States as well as NRC contractors. In addition, NMED has become an efficient method of sharing information between NRC and Agreement States, and among the Agreement States.

For FY99, resources for all AEOD materials events assessment activities except NMED, have been eliminated. Since NMED is an essential tool in the independent assessment of materials events, and includes data from various NRC offices and Agreement State, it should be co-located in an independent office with the analysis and trending functions.

Recommendation: Transfer the responsibility and resources for NMED to an independent office, along with generic materials events studies. If generic materials events studies are not funded, transfer this to NMSS for efficiency.

4.3.2 Events Tracking System

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NMSS performs a daily screening of events for immediate concerns, a weekly review of events for generic issues, and a monthly briefing of upper management on significant operational events. The results of the various NMSS reviews are documented and tracked in the ETS established by NRR to document and track reviews of reactor events. NMSS began using ETS in 1996 when much of its current program was established. The use of an existing tracking system was an efficient way of implementing the new NMSS generic issues program quickly; however, the fields and reports in ETS are designed for reactor events and meet most but not all NMSS needs. In addition, ETS is an outdated computer system that does not support data input by multiple users. NMSS and NRR staff are using an inefficient data entry process. NMSS reviews are documented on paper, mailed to NRR for data entry, entered, printed, and mailed back to NMSS for verification. Efforts by NRR to upgrade the ETS to a Microsoft™ Windows-based program have been unsuccessful. NMSS has recently developed a tracking system using MicrosoftTM Access to facilitate regional coordination activities involving events. enforcement actions, and licensee bankruptcies. This system can easily be changed to suit NMSS needs and is compatible with the NMED system, which facilitates the downloading and screening of Agreement State event reports. NMSS is currently entering data in both tracking systems which is a duplication of effort.

Recommendation: Use the new NMSS system to track the assessment of materials events, and stop using ETS to avoid deplication of effort.

4.4 Assessment Processes

This section contains a brief description, findings, conclusions, and recommendations on the assessment processes used in screening and assessing the significance of materials operational safety data.

4.4.1 Reactive Inspections

When an event is reported, inspection supervisors must decide whether to dispatch one or more inspectors immediately (typically within 2 days) or conduct a special inspection before the next routine inspection (typically within a few weeks). If the event is complex and highly significant, a team of inspectors may be dispatched to conduct a formal, in-depth investigation. Reactive inspection are considered to make a high contribution to the materials safely goal, but a low contribution to the public information goal. The focus of this real-assessment was on HQ functions and processes. No significant problems were identified in the reactive inspection area and no recommendations for effectiveness or efficiency improvements were made. A self-assessment by inspection staff would be necessary to identify possible improvements, but given the small FTE involved, regional materials processes are not expected to be reviewed separately.

Recommendation: Leave as is.

4.4.2 Daily Screening and Regional Calls

Each morning, an NMSS Regional Coordinator (RC) participates in a call with each region to discuss event reports received since the last call, and obtain any additional information the regions may have concerning new or previously reported events. The RC disseminates information to the appropriate NMSS technical divisions concerning events in their program areas. The RC also conducts a daily briefing for the Director, Division of Industrial and Medical Nuclear Safety (IMNS). During this briefing, the events are screened to identify any urgent issues that need to be addressed before the weekly assessment of generic issues. No improvements for effectiveness or efficiency were identified.

Recommendation: Leave as is.

4.4.3 Event Followup

RCs coordinate requests for additional information and other event-specific followup actions with the Regions, other offices, and other NMSS technical divisions as appropriate. In addition, the RC prepares summaries of information concerning significant events for the NMSS Office Director. No improvements for effectiveness or efficiency were identified.

Recommendation: Leave as is.

4.4.4 Weekly Assessment of Generic Issues

The iMNS is responsible for coordinating the NMSS Generic Issues Program. Each week, the MNS Generic Assessment Panel (GAP) meets to assess the significance of events related to LNNS program areas and to identify generic issues that need to be addressed. Events related to ther program areas are referred to the appropriate NMSS technical division for assessment. Each event is entered into an events tracking system to document the results of the assessment and ensure that each event is closed out. No improvements for effectiveness or efficiency savings were identified.

Recommendation: Leave as is.

4.4.5 Generic Followup

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The assessment of ger eric issues often identifies a need for a generic followup action. This action may involve disseminating information to licensees through a generic communication, revising licensing or inspection guidance, or searching NMED for reports of similar problems. These are generally short-term actions. Occasionally, a long-term action, such as a research study or a rulemaking, is identified. Almost all NMSS resources related to materials events assessment are budgeted on the coordination, screening, tracking, and followup of materials events. NMSS has recently expanded its screening to include all Agreement State event reports and events at U.S. DOE facilities. The remaining resources allow for reactive searches of NMED data on an *ad hoc* basis only. No routine trending or long-term analysis of data is performed by NMSS. There are no FY99 current estimate budgeted resources for generic event studies by AEOD or NMSS and comprehensive assessments and trending of the data in NMED is severely limited. Generic materials events studies recommendations are addressed in Section 4.2.8.

Recommendation: Leave as is.

4.4.6 Monthly Operational Events Briefing

Each month, the NMSS Office Director is briefed on significant operational events. This briefing includes participation by AEOD, OSP. RES, the Office of Enforcement, the Office of the Inspector General, the Office of International Programs, and the Office of Congressional Affairs. Each region participates by telephone. Agreement State staff may also participate by telephone, as required. This briefing provides an effective forum for disseminating information to many interested parties, and allows them to discuss issues with NMSS management. No improvements for effectiveness or efficiency savings were identified.

Recommendation: Leave as is.

4.4.7 Agreement State Event Notification and Reporting

OSP has lead responsibility for advising and coordinating Agreement State notification and reporting of event information to NRC. This includes activities for prompt notification to the NRC's Operations Center of significant events, and reporting of routine events and followup information to NMED. Agreement State event information is transmitted to the NRC by either electronic submittals directly to the NMED contractor, or written reports mailed to the Director, OSP. The portion submitted by written report is screened by OSP for completeness before it is forwarded to the NMED contractor for data entry. The number of Agreement States using electronic submittals is increasing and NMSS has recently expanded its daily screening to include Agreement State event records in NMED. Therefore, independent screening of written reports by OSP staff is no longer necessary.

Recommendation: OSP screening of written Agreement State event information for completeness should be discontinued. If additional information is required to assess the significance of an Agreement State event, NMSS should initiate requests for additional information through regional office staff or directly to the Agreement State.

> The NMED project manager should notify OSP of any significant events in NMED records that were not reported as significant events by Agreement States. The NMED Project Manager should also provide OSP with information on Agreement State records submitted to NMED with incomplete information. OSP would use this information to followup with Agreement States concerning the timeliness and completeness of event reporting during program reviews and periodic meetings.

4.4.8 AEOD Engineering Review

The AEOD Nuclear Materials Assessment Staff (NMAS) reviews ENs, MRs, and PNs daily to identify events that meet the criteria for AOs. The results of these reviews are documented in AEOD's tracking system database. Events found to meet the AO criteria are referred to the AEOD AO coordinator for processing. Regional staff and Agreement State staff prepare AO write-ups, and NMSS staff also screen events for AOs. AEOD screening of events is a duplicative effort and is recommended to be sunset as an efficiency measure.

Recommendation: Sunset AEOD engineering review of operational safety data.

5 RESPONSE TO STAFF REQUIREMENTS MEMOS AND STRATEGIC ASSESSMENT AND REBASELINING STEERING COMMITTEE ISSUES

This section responds to the broad issues identified in Appendix A of this report regarding the efficiency and effectiveness of agency-wide events assessment and review of operational safety data, especially SRM SECY-97-225 and Strategic Assessment and Rebaselining Steering Committee (SARSC) 97-157, 158, and 159.

Other questions in Appendix A necessitated detailed answers. The many recommendations in Sections 3 and 4, pragmatically detailing how current Agency-wide events assessment and review of operational data can be made more efficient and effective, are too numerous to repeat here. These sections address what and how operational safety data should be analyzed; what level of redundancy, diversity, and independence of review is necessary for each function; consolidation of effort for efficiency solvings; and termination of nonessential products. Appendices B and C address how and by whom the various functions and output are used, and Section 3.6 reflects ongoing communication with industry to avoid duplication of effort. The report reflects program changes in scope, efficiency, and incorporation of new technology since the program was reviewed in 1994. Future oversight of operational safety data review processes will continue under the agency's "Program and Resource Management" program.

5.1 Strategic Assessment and Rebaselining Steering Committee 97-157

Given the differences in performance, risk, and external factors between power reactors and materials lines of business, what is the appropriate level and balance in operating experience review between the lines of business?

A well-coordinated process exists to collect operational safety data from power reactors and provide feedback to the power industry. Prompt assessment of operating events is conducted daily. Generic issues that require prompt response are identified and GLs, BLs, and INs are issued by NRR. Long-term studies on the generic issues are performed. Generic safety issues involving new requirements are referred to RES for prioritization and evaluation to justify imposition of the new requirements.

NMSS established a program similar to the reactor program to screen operational safety data, identify generic safety issues, and track followup actions. Daily operational information is obtained from each region and the NMSS divisions are informed of operational events applicable to their responsibilities. Each week, GAP reviews event reports and other operational information to identify generic issues and determine followup actions.

The balance and level of resources used in operating experience review in the power reactor and materials lines of business can not be compared simply on risk alone. Risk assessments for power reactors are usually more developed and quantified while most materials risk assessments are qualitative. Reactor accidents have a lower probability of occurrence and potentially higher consequences than materials events. Even so, a materials event, involving high individual exposures, have lead to individual injuries and deaths. The resources necessary to perform an appropriate level of operating experience review and feedback in the power reactor and materials lines of business are influenced by many factors. The number of events, the significance of those events, and the event information available establishes the minimum resources needed for their assessment. There are 102 licensed power reactors compared with 5,840 materials licensees and approximately 16,000 Agreement State materials licensees. While the number of power reactor events has been decreasing significantly over the past few years, the number of NRC and Agreement State material event reports remains at about 2000 per year on about 1100 events per year, despite a reduction in the number of NRC licensees. During the last year, NMSS has added Agreement State and Department of Energy events to those events it screens. Reactor licensees have a substantial infrastructure that provides a good deal of event information, while materials licensees do not always have the resources or experience to do so, necessitating additional NRC assessment effort.

NMSS has made significant advances in the review of operational safety data since the 1994 Milhoan report. However, there is no routine, long-term analysis of materials operational safety data. The interoffice group recommends that the current AEOD functions related to materials be combined with generic materials events studies in an independent office. The level and balance in operating experience review between the power reactor and materials lines of business was found to be appropriate except for generic materials events studies, which were eliminated from the FY99 budget in a July 29, 1998 letter from the Chairman to Senator Domenici. These studies are necessary to identify and feedback trends and patterns in materials operating experience to both NRC and Agreement State licensees, as well as areas for regulatory improvement to NMSS. Increased resources are needed to achieve effectiveness in the generic feedback of materials operational safety data to reduce the frequency of similar events. If all of the materials recommendations in Tables 4 and 5 and Section 4 of this report are implemented, it would result in an increase of 3.7 FTE (17 percent) in FY99 current estimate budget resources and \$254,000 due primarily to the need to refund generic materials event studies. However, these resources are not budgeted and cannot be reprogrammed from current resources.

5.2 Strategic Assessment and Rebaselining Steering Committee 97-158

How should the level of collection and review of experience respond to changes in the NRC inspection program, risk and performance considerations, and licensee self-assessment?

The regulations governing the reporting of reactor operational safety data, 10 CFR 50.72 and 50.73, are broadly written to include risk-significant events and conditions. Specific guidance on reporting is provided in NUREG-1022, Rev. 1, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," which was revised in January 1998. Regulations affecting both reactor and materials licensees and reporting requirements are being appropriately adjusted by the respective program offices as new information becomes available. Operational safety data reviews provide insight regarding the specifics of risk-significant events or conditions. In turn, these insights are fed back to the industry through NRC generic communications.

Rulemaking has commenced to revise the specific reporting requirements of 10 CFR 50.72 and 50.73 to make them more risk-informed. This will include eliminating or reducing the reporting of information with little or no safety/risk significance and improving reporting of risk-significant information. Also, the initial reporting times are being extended, consistent with the need for prompt NRC action.

5.3 Staff Requirements Memo SECY-97-225 and Strategic Assessment and Rebaselining Steering Committee 97-159

Can the agency wide events and assessment and review of operational data be made more efficient and effective? [SRM SECY-97-225]

In view of internal and external impacts for collecting, review, and feedback of operating experience for reactors and materials lines of business, how can the agency-wide events assessment and review of operational data be made more efficient and effective? [SARSC 97-159]

The recommendations in this report pragmatically detail now current agency-wide events assessment and review of operational data can be made more efficient and effective at this time. As risk-informed, performance-based regulation develops, it is possible that further reductions can be achieved in the future. Comparisons with the estimated FY94 resources within the current scope (Table 1) in the Milhoan report show a 25-percent reduction in resources used over the past 4 years. If the recommendations in this report are implemented, a further 10.5 FTE reduction in current resources can be achieved.

Industry analysis of operational safety data has been recognized in the recommendation that industry action be credited in assessing the need for GLs and INs. The recommendations in this report to reduce the level of the NRC's effort on BLs, GLs, reactive inspections, and risk-based PIs, reflect the understanding that the NRC cannot relinquish its responsibility to independently analyze significant events at this time. The NRC is presently working with industry to develop risk-based performance measures.

Appendix A

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"Operational Safety Data Review Issues"
Appendix A

Operational Safety Data Review Issues

Shown below are event assessment issues raised in the NRC review of functions in response to Phase II of the Administration's National Performance Review (SECY-95-154) and the Strategic Assessment Phase I Final Report. An integrated response to these questions is found in Section 5 of this report.

Strategic Assessment Phase I Final Report, Section 7.3.24, "Operating Experience Review and Evaluation," Non-Commission Issue 11.13-2 addressed "... can the agency-wide events assessment and review of operational data be made more efficient and effective." Page 11-84 included the following internal factor/impact:

The NRC review of functions in response to Phase II of the Administration's National Performance Review (SECY-95-154) re-examined events assessment and review of operational data. The following issues and recommendations were developed and conveyed to the strategic planning effort:

Can the agency wide events assessment and review of operational data be made more efficient and effective? [SRM: SECY-97-225]

Recommended evaluating the current functions of those involved in events assessment and review of operational data (AEOD, NRR, NMSS, RES, and the regions) to determine the following:

- What are the challenges and the environment for events assessment and review of operational data in 1996 compared to 1980? What operational data should be reviewed and analyzed?
- What level of redundancy, diversity, and independence of reviews is necessary within NRC for 1996-2000, based on current experience and the environment? Can the events assessment functions and/or reviews of operational data of the various offices and regions be consolidated or made more efficient?
- Are all current office function contributions useful and necessary? Are the values added in all cases worth the resource costs?
- How and by whom are the various functions and output used? Are they
 essential? Can selected assessment and review activities be
 terminated?
- Can licensee analysis of significant events be utilized and credited as an alternative for selected NRC activities?

Section 11.13.1, "Operating Experience," in the Strategic Assessment Phase I Final Report (draft) listed 5 Strategic Issues regarding the collection, analysis and feedback of operational experience:

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- Given the differences in performance, risk, and external factors between power reactors and materials lines of business, what is the appropriate level and balance in operating experience review between the lines of business? [SARSC 97-157, WITS 97-00155]
- In view of internal and external impacts for collecting, review, and feedback of operating experience for reactors and materials lines of business, how can the agency-wide events assessment and review of operational data be made more efficient and effective? [SARSC 97-159, WITS 97-00157]
- How should the level of collection and review of experience respond to changes in the NRC inspection program, risk and performance considerations, and licensee self-assessment? [SARSC 97-158, WITS 97-00156]
- 4. What is the appropriate level of reliance by NRC on industry review of experience by line of business?
- 5. What level of oversight of the agency's overall program including operating experience review and feedback is needed to ensure responsiveness to changing internal and external factors and balance?

APPENDIX B

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CURRENT REACTOR OPERATIONAL SAFETY DATA REVIEWS

APPENDIX B

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CURRENT REACTOR OPERATIONAL SAFETY DATA REVIEWS

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Appendix B

Current Reactor Operational Safety Data Reviews

B.1 INTRODUCTION

This appendix describes the current reactor operational safety data review processes of the Office for Analysis and Evaluation of Operational Data (AEOD) in Section 2, and the Office of Nuclear Reactor Regulation (NRR) and the Regions in Section 3. Figure B-1, "Reactor Operational Safety Data Review Information Flow," shows an overview of the information flow between the assessments, offices, and followup of operating experience. More detailed charts accompany the review discussions showing the information flow in each review process. Each review is addressed individually, including purposes, inputs, processes, fiscal year (FY) 1999 full-time equivalent (FTE), and products. The resources identified are for the review and assessment of operational safety data, follow up on events or conditions, and production of products feeding back lessons learned.

B.2 OFFICE FOR ANALYSIS AND EVALUATION OF OPERATIONAL DATA

AEOD was established following the accident at Three Mile Island to systematically and independently review operational safety data and feed back important operating experience to improve nuclear safety. This section explains how these reviews are accomplished and how the feedback of operating experience currently occurs.

B.2.1 Introduction

AEOD serves as the focal point for the independent assessment of operational safety data. As such, AEOD collects, analyzes, and disseminates operational safety data, assesses performance trends from this data, and provides insights to improve understanding of the risk significance of events. AEOD data provides qualitative and quantitative information for NRC decision making, including system and component reliability studies, analyses of human performance in operating events, performance indicators (PI), abnormal occurrence (AO) reports to Congress, and accident sequence precursor (ASP) Reports.

AEOD's Incident Response Division (IRD) is involved in initiating the NRC's program for investigating operational incidents. IRD directs the NRC program for responses to incidents and is the agency incident response interface with the Federal Emergency Management Agency (FEMA) and other Federal agencies. IRD exercises oversight of the regional response programs and manages the NRC Operations Center. IRD is responsible for receiving, screening, and promptly recommunicating operational event notifications reported to the Operations Center to NRR, the Office of Nuclear Materials Safety and Safeguards (NMSS), the Office of Nuclear Regulatory Research (RES), and the regions, as appropriate, to provide timely action by the cognizant offices. IRD is responsible for preparing the AO report to Congress.



Fig. B-1 Reactor Operational Safety Data Review Information Flow.

AEOD's Safety Programs Division (SPD) is involved in collecting, analyzing, and reviewing operational safety data to identify and communicate safety lessons learned. SPD provides feedback of evaluation results to the NRC's program offices, licensees, industry groups, the public, and the international community. This feedback includes publicly available AEOD reports, staff participation at industry meetings and workshops, and staff meetings with representatives of foreign governments and international agencies to exchange information.

SPD's Reactor Analysis Branch (RAB) performs comprehensive reviews of operational safety data and conducts in-depth analyses and evaluations of significant operating events and safety issues to determine root causes of identified deficiencies. The RAB staff also develops and recommends actions which should be taken to maintain or improve public health and safety. RAB uses multidisciplined engineering analyses and evaluations to identify deficiencies in areas involving licensee programs, system performance and response, component failures, human errors, human response to accident conditions, and systems interaction between safety and nonsafety systems, and between humans and hardware. To accomplish these analyses, RAB uses a broad spectrum of operational safety data reported to or generated by the NRC in its analysis and evaluation. RAB also provides input into the periodic Senior Management Meeting (SMM).

SPD's Reliability and Risk Assessment Branch (RRAB) systematically assesses U.S. operational safety data and reliability information to identify risk trends. RRAB performs risk and reliability analyses and evaluations on the basis of operating experience to assess industry and plant performance, and identify plant outliers. RRAB also prepares the annual PI reports, directs the ASP program for operating nuclear power plants, and publishes annual ASP reports. In addition, RRAB manages the Sequence Coding and Search System (SCSS) and its associated database for storage and retrieval of safety experience, as reported in Licensee Event Reports (LERs). RRAB uses LERs as a source for reliability studies and the ASP program. These studies focus on quantifying the risk-significance of events occurring at nuclear power plants, the trends in the reliability of the various plant safety systems, and the trends in mitigating event frequencies for use in reliability studies and common-cause failure (CCF) contributors.

B.2.1.1 AEOD Operational Safety Data Reviews

AEOD's assessment of operational safety data includes both an immediate response and a longer-term analysis, as more information becomes available. A chronological overview of AEOD's assessments is given in Figure B-2.1, "Non-Emergency Event Assessment (AEOD). After the NRC's immediate response, responsibility for event review is passed from the Headquarters Operations Officer (HOO), to NRR and RAB for near-term followup and long-term generic response, respectively. AEOD operational safety data assessments differ in time, reviewers, available information, level of detail, and purpose, as follows:



Fig. B-2.1 Non-Emergency Event Assessment (AEOD).

- (1) Safety assessments are performed by AEOD's Incident Response Branch (IRB) Operations Center HOO, Regional Duty Officer (RDO), and NRC management, as needed, upon initial event notification to determine the NRC's immediate response.
- (2) Each weekday morning, RAB conducts screening in preparation for the daily Event Screening. The Event Screening with NRR's Events Assessment and Generic Communications Branch (PECB) determines the need for event followup from the resident inspector, NRR, AEOD, or a special inspection team.
- (3) The Events Assessment Panel, composed of representatives of NRR, RES, and AEOD, meets weekly to determine the plant-specific safety significance of events and the need for further NRC generic action or communication, and to recommend significant events to include in the PI and AO reports to Congress.
- (4) RAB Operational Safety Data Review of detailed LERs, foreign event reports, and other operating experience identifies generic or 10 Code of Federal Regulations (CFR) Part 21 issues for followup, generic communication, or future study. It also identifies Significant Events to be addressed by the Events Assessment Panel for reporting in the AO report to Congress, an Incident Reporting System (IRS) report to the International Atomic Energy Agency (IAEA), or SMM or Commissioner site visit analyses.

B.2.1.2 National Laboratory Operational Safety Data Reviews

AEOD contracts with Oak Ridge National Laboratory (ORNL) and Idaho National Engineering and Environmental Laboratories (INEEL) to supply products that involve screening of LERs, including the following examples:

- For the ASP program, ORNL calculates conditional core damage probabilities (CCDPs) of risk-significant events.
- (2) The SCSS is a continuously updated database managed by ORNL, of full-text LERs reported since 1981, that is searchable by NRC employees and their contractors from the NRC's Internal "home page," and by ORNL for private industry.
- (3) PIs trending the safety performance of nuclear power plants (such as automatic scrams while critical, safety system actuations and failures, and significant events) are prepared by INEEL and published annually as NRC technical report designation (NUREG) - 1187, "Performance Indicators for Operating Commercial Nuclear Power Reactors."
- (4) Plant performance assessments describing the safety performance of a plant over the prior 18 months are prepared by INEEL for use during the SMM process.

B.2.2 NRC Operations Center Safety Assessment

The Operations Center HOO receives and assesses the safety significance of licensee notifications to the NRC and immediately initiates an appropriate response to safety-significant events. Figure B-2.2, "AEOD Headquarters Operations Officer Reactor Safety Assessment," shows the information flow through the Operations Center. The NRC's incident response mode of operation is covered under the IRD self-assessment.

B.2.2.1 Immediate Operational Safety Notifications

The Operations Center's HOO receives reports required by 10 CFR 50.72 (power reactors), 10 CFR 73.71 (safeguards), 10 CFR Part 21 (defects and noncompliance), nuclear power plant and nonpower reactor licenses, and nonpower reactor technical specifications. The HOO also receives regional daily reports, allegations, IAEA-INES foreign reactor event reports, FEMA-NECC seismic notifications, and daily plant status reports.

B.2.2.2 Headquarters Operations Officer Safety Assessment

After receiving a notification from licensees and other parties by phone, the HOO determines the need for immediate NRC management attention, depending upon the safety significance of the event or condition. If immediate attention is required, the HOO notifies appropriate NRC management, who determine whether an emergency incident response is required. If immediate action is not required, the HOO notifies the RDO. The HOO notifications initiate an appropriate, coordinated response to an event or condition reported by a licensee. IRB budgeted about 7 FTE for HOOs in this process.

B.2.2.3 Notifications to Regions, NRR, and Federal Agencies

The HOO notifies the regions, NRR, and Federal agencies, as necessary, of events or conditions reported to the Operations Center, to enable them to initiate an appropriate, timely Federal response.

B.2.2.4 Emergency Notification System Reports

The HOO prepares a report of each licensee notification in an emergency notification system (ENS) database that is available to the NRC, Institute of Nuclear Power Operations (INPO), and the public through the NRC public Internet. The ENS reports provide the NRC staff with preliminary information on an event or condition that was required to be reported within a short time of its occurrence, so that NRC near-term followup can be coordinated.



Fig. B-2.2 AEOD Headquarters Operations Officer Reactor Safety Assessment.

B.2.2.5 Plant Status Reports

The HOO calls each nuclear power plant at 4:00 a.m. each morning to verify operation of the ENS phone lines. During this call, the HOO obtains the plant status and prepares a Plant Status Report. Licensees occasionally identify a change in plant conditions or discuss a plant problem that had not otherwise been reported. The Plant Status Reports are used by RAB staff to prepare for the daily Event Screening call.

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B.2.3 Event Screening

The daily Event Screening is a conference call held each workday morning to decide and coordinate followup actions on recent notifications. The purpose of the Event Screening is to identify events that warrant additional followup, to coordinate followup, and minimize duplication of effort.

B.2.3.1 Inputs

AEOD reviews 10 CFR 50.72 notifications, 10 CFR Part 21 reports, and regional Morning Reports (MRs) to understand an event's significance and to determine whether there is need for followup action such as an augmented inspection team (AIT) or Incident Investigation Team (IIT), as shown in Figures B-2.3, " Event Screening."

B.2.3.2 Event Screening Call

Each workday morning, a conference call is held between AEOD and NRR to discuss notifications made to the Operations Center since the previous morning's call, daily NRR/Regional Division of Reactor Projects (DRP) calls, and plant status reports. AEOD is usually represented by the RAB branch chief, a section chief, an RAB engineer, and the HOO. Safety questions are often raised about specific events or conditions that are followed up. This conference call is intended to ensure that important events are followed up, that coordination occurs, and that duplication of effort is minimized. Telephone calls and site visits are coordinated with NRR and the regions to avoid duplication and to minimize licensee burden. NRR has the responsibility for review, tracking, and close-out of 10 CFR Part 21 reports. RAB budgeteds 0.2 FTE for this process.

B.2.3.3 Followup

The participants in the Morning Call determine which events or conditions warrant additional NRC followup, and which NRC organization will conduct the detailed review and analysis. Most followup is performed by NRR. AEOD follows up when (1) the event is so significant that increased Operations Center staffing is needed to provide real-time monitoring of the event, (2) the event is related to an ongoing AEOD study, or (3) there is a potential generic consideration where further industry action may be warranted, and NRR and AEOD agree that AEOD will take the lead.



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Fig. B-2.3 Events Screening - RAB Participation.

B.2.4 Events Assessment Panel

An interoffice group usually meets weekly to assess significant operational safety data for two purposes:

- Review and approve proposed generic communications including administrative letters (ALs), information notices (INs), generic letters (GLs), and bulletins (BLs).
- (2) Identify safety significant events that should be included in the PI program and are candidates for inclusion in the AO report to Congress.

B.2.4.1 Inputs

Events described in 10 CFR 50.72 reports, regional daily reports, and other sources, such as IRS foreign reports, 10 CFR Part 21 Reports, etc., which appear to be significant and are selected by AEOD or NRR for follow up action, are reviewed by the Events Assessment Panel. The information involved in this review is shown in Section 3.6 of this appendix.

B.2.4.2 Assessment

The Events Assessment Panel usually meets weekly to evaluate the significance of recent events. The panel is comprised of seven members, five from NRR and one each from AEOD and RES. The panel discusses each event in detail to fully understand its generic implications and to determine whether generic communication is warranted. This discussion includes whether lessons learned from similar events have been the subject of past generic communications, whether other similar events have occurred or are possible at other plants, and whether a revision of a past generic communication should be issued or a new one written. The panel also determines an event's plant-specific safety significance. AEOD devotes about 0.1 FTE to this effort.

B.2.4.3 Output

Approved generic communications (including ALs, INs, GLs, and BLs are distributed to licensees and the public. The purpose of these generic communications is to highlight safety issues to prevent the reoccurrence of similar events. Events or conditions that are considered by the panel to meet one or more of the criteria to be classified as a significant event for the NRC PI Program are reported in the NRC headquarters (HQ)' daily highlight report, which is widely disseminated in the same manner as the regional office daily report. AO reports are submitted to Congress annually.

B.2.5 RAB Operational Safety Data Review

RAB engineers systematically review operational safety data reports to feed back significant lessons learned to the NRC, licensees, the public, and the international nuclear community, as shown in Figure B-2.4, "Reactor Analysis Branch Operational Safety Data Review." RAB



Fig. B-2.4 Reactor Analysis Branch Operational Safety Data Review.

engineering review of operational safety data initiates the process of feeding back lessons learned of significant operating experience to the NRC, licensees, and the public. RAB also reviews foreign IRS reports to ensure that foreign experience is factored into the U.S. operating experience.

B.2.5.1 Documents Reviewed

AEOD has primary responsibility within the NRC for the review and disposition of LERs, INPO operating experience reports, and foreign IRS reports on nuclear power plant events.

RAB performs a systematic review to document disposition and suggestions for further action on LERs and INPO Significant Operating Experience Reports, Significant Event Notifications, and Significant Event Reports. RAB reviews, analyzes, disseminates, reports from IAEA or Nuclear Energy Agency (NEA) obtained through IRS or through bilateral agreements from other governments.

RAB engineers also perform a less formal review of 10 CFR Part 50.72 reports, plant status reports, preliminary notifications (PNs), enforcement actions, regional daily reports, NRC inspection reports, INPO Operation and Maintenance Recommendations, Department of Energy (DOE) Operating Experience Weekly Summaries, and 10 CFR Part 21 reports. In the case of 10 CFR 50.72 reports and regional daily reports, this review is part of the event followup coordination effort with NRR in the Event Screening call.

B.2.5.2 Review

RAB uses specific criteria in its review of LERs to determine their safety significance and the need for further action. The staff reviews INPO reports to ensure that important new or additional information is factored into the agency's regulatory process.

The staff also reviews IRS reports to determine their applicability to U.S. nuclear plants and whether these reports should prompt NRC or industry regulatory action. These systematic reviews are proceduralized in AEOD Procedures 3 and 3.1 and shown in Figure B-2.4, "Reactor Analysis Branch Operational Safety Data Review." RAB uses the following criteria in reviewing these reports for safety significance:

- Event sequence not previously analyzed which could be far more serious with credible alternative conditions.
- (2) System interaction resulting from a previously unrecognized interdependence of systems and components.
- (3) Improper operation, maintenance, or design that has or could cause common cause/common mode failure of a safety system.
- (4) Unexpected system or component performance with serious safety implications or radiation release.
- (5) Multiple failures (including personnel errors) occurred in the event.

(6) Equipment failures (including nonsafety equipment) that caused serious transients and challenges to safety systems.

In determining the course of long-term followup to be taken for events classified as significant by AEOD's screening process, AEOD considers the following questions:

- (1) What happened?
- (2) Why did it happen?
- (3) Should it have happened?
- (4) Has it happened before?
- (5) What could have happened?
- (6) What are the lessons learned?

RAB budgeted 2.1 FTE for this review process.

B.2.5.3 Generic Reactor Event Studies

The mainstays of AEOD's operating experience feed back are SPD's technical studies. These studies analyze and evaluate a broad range of operating experience. Toward that end, the SPD studies are in-depth analyses of significant safety issues identified through the review of operating experience. The general purpose of SPD operating experience-related publications is to feed back lessons learned to the NRC, licensees, and the public, so that action may be taken to avoid similar problems in the future. They also often provide bases for regulatory action as well as industry action. Since 1980, over 400 generic reactor event studies have been identified in AEOD Annual Reports, including "Assessment of Spent Fuel Cooling," "Nuclear Power Plant Cold Weather Problems and Protective Measures," "Analysis of Allegation Data," "Reactor Coolant System Blowdown at Wolf Creek on September 17, 1994," "Operating Events with Inappropriate Bypass or Defeat of Engineered Safety Features," and "Major Disturbances on the Western Grid and Related Events."

As a result of the study process, AEOD feeds back important operating experience to the NRC, the public, industry, and the international community. Feedback mechanisms include the publicly available AEOD reports, AEOD staff attendance at industry meetings and workshops, exchange of operating experience meetings with representatives of foreign governments and international agencies, and recommendations for generic communications.

About 55 IRS reports are prepared and submitted annually to the IAEA-IRS for distribution to the international nuclear community to assist other nuclear facilities and to inform them of lessons learned to enhance plant performance. These reports address individual operating events and generic concerns identified in generic communications.

IRD prepares annual AO reports (NUREG-0900). These reports are required by law and provide information on individual events, generic concerns, or a series of incidents that, on the basis of staff recommendations, the NRC determines is significant for public health and safety. The AOs are the primary source of information on whether the agency did or did not meet its performance goals. For nuclear power plants, the major source of information input to the AO program is LERs.

RAB uses LERs as a source for new technical studies, as well as the basis for findings and conclusions in those studies. When 10 CFR Part 21 reports are pertinent to AEOD activities, RAB uses the information in the reports and INPO component failure databases in technical studies. When operating experience in an inspection report is germane to issues or events that RAB is studying, it is are considered and appropriately referenced in those studies.

RRAB uses LERs as a source for reliability studies and the ASP program. These studies focus on quantifying the risk-significance of the events, the trends in the reliability of various plant safety systems, and the trends in mitigating event frequencies for use in reliability studies and CCF contributors.

The purpose of PIs and Commissioner site visit reports is to inform NRC management of the recent performance history of specific nuclear power plants, which can be used to make decisions regarding the amount of future inspection or discussions with the licensees.

B.2.6 RRAB Analyses

The mission of the RRAB is to use operating experience to measure current industry risk, monitor trends in risk, provide technical insights associated with trends and current risk, and provide regulatory insights related to industry performance and safety. The information flow in RRAB is shown in Figure B-2.5, "Risk-Based Analysis of Reactor Operating Experience."

Industry risk is a function of the risks associated with each operating nuclear power plant. Plant risk is a combination of the frequency of having a core damaging event, the probability of having a subsequent containment failure, and an estimation of the resultant health effects on the general population resulting from associated radioactive material releases. Because the best means to prevent radioactive material releases is to avoid a core damaging event, RRAB estimates core damage event frequencies, which are a function of initiating event frequencies, safety system reliabilities, CCF probabilities, and operator error probabilities. Driving these items are factors associated with design, operations, and maintenance, which are manifestations of overall plant management.

Estimation of the factors associated with estimating core damage frequency is the primary activity of RRAB. Core damage frequency is estimated using operating experience at the system, train, or component levels. System-level data can be used directly in the calculation of system performance. Train- or component-level data can also be used with fault tree models to estimate safety system performance. RRAB's main activities include evaluating reactor operating experience using probabilistic risk analysis (PRA) and statistical methods to provide input to core damage frequency models, initiating event frequency study, system reliability studies, simplified plant models, component studies, CCF evaluations, and ASP evaluations. Data used in these evaluations come from LERs, component failures reported in the INPO Equipment Performance and Information Exchange database (EPIX) and data supporting INPO Safety System PIs, plant-specific PRAs, or requests for information.



Fig. B-2.5 Risk-Based Analysis of Reactor Operating Experience

B.2.6.1 Risk and Reliability Databases

A number of databases are necessary for risk and reliability analysis, including ASP, CCF, initiating events, loss of offsite power events, and reliability and availability data system. AEOD has budgeted 2 FTE and \$350,000 to maintain these databases. In addition, AEOD budgeted 1 FTE and \$600,000 to maintain the SCSS.

Accident Sequence Precursor Database

The precursor events from the ASP program (see Section 2.6.2 of this Appendix) comprise a unique database of historical system failures, multiple losses of redundancy, and inframeuent core damage initiators. This database contains searchable information on the events that were classified as precursors in the ASP program and the results of each study.

Common-Cause Failure Database

The CCF project has collected CCF event data from LERs and nuclear plant reliability data system (NPRDS) records from 1980 through 1995. These events have been loaded into the CCF event database, which is a reliability database. Estimates of CCF parameters for selected applications have been calculated using the database. Future efforts include updating the database with new CCF events from SCSS and EPIX, and updating the CCF parameter estimates. New components will be entered as requested by users of the database. Foreign CCF events are being collected through the International Common Cause Data Exchange Project sponsored by NEA.

Initiating Events

Initiating event frequencies are one of the vital inputs for estimating core damage frequency. Transient initiating event frequencies were last updated in a study performed in 1985. Since that time, reactor scrams have decreased significantly. The purpose of this study was to provide up-to-date frequencies for initiating events, which will be updated periodically.

Loss of Offsite Power Events Database

The Loss of Offsite Power Events Database contains records of events in which offsite power was lost to all vital buses at a plant. These events are used to estimate frequencies for plant-centered losses, grid losses, and severe weather-related losses of offsite power. These frequencies are used as inputs to reliability and risk evaluations. The database will be updated periodically.

Sequence Coding and Search System Database

AEOD is responsible for program management of ORNL's SCSS database, which has recently been converted to allowing password-protected access from a desktop computer via the Internet for all NRC employees. The database contains 45,000 LERs from 1981 onward, in both coded and full text formats. NRC offices, national laboratories, and private companies have searched this database on items of interest. LERs are entered into SCSS, screened, and

used to (1) initiate the prioritization of potential in-depth studies, (2) provide input to the PI program, (3) screen events for the ASP program, (4) provide input to system and component reliability studies, (5) provide input to the AO program, and (6) provide input to analysis and trending studies used in the SMM process. AEOD has budgeted 1.0 FTE to oversee this effort in FY99. About \$600,000 is budgeted for FY99 for ORNL to code the LERs to enable searching on many criteria or full text word, with drop down, point-and-click menus.

Reliability and Availability Data System

The purpose of the Reliability and Availability Data System is to provide the NRC and industry with a source of plant-specific and generic data regarding component-level reliability (demand failure probability, standby-stress failure rate, and operating failure rate) and availability (planned unavailability and unplanned unavailability) for use in PRAs and risk-informed regulatory applications. This will use data from several sources to estimate these parameters. Primarily, data will come from the INPO data sources, EPIX, and Safety System PI SSPI. The estimated reliability parameters output are inputs to other codes such as SAPHIRE.

B.2.6.2 Accident Sequence Precursor Program

RRAB implements the ASP program, which uses PRA techniques to estimate the CCDPs of risk-significant nuclear power plant events or conditions. The results of these analyses are indicative of the level of risk associated with operating nuclear power plants, given direct assessment of actual operating experience. Each precursor analysis receives a peer review by the affected licensee and the NRC staff before being published in the annual ASP Program. Precursor Report. The primary objective of the ASP program is to systematically evaluate U.S. nuclear power plant operating experience to identify, document, and rank those operating events which were most significant in terms of the potential for inadequate core cooling and subsequent core damage. In addition, the program has the following secondary objectives:

- (1) categorize the precursor events for plant specific and generic implications
- (2) provide a measure which can be used to trend nuclear plant core damage risk
- (3) provide a partial check on PRA-predicted dominant core damage scenarios.

LERs and other sources of operational experience data (such as AIT reports, IIT reports, and inspection reports) involving portions of postulated core-damage sequences are screened, identified, and evaluated for the ASP program by ORNL. ORNL uses SCSS to initially screen out about 50 percent of the events or conditions reported to the NRC each year in LERs. The remaining LERs are manually screened and reviewed by ORNL engineers. ORNL engineers then calculate the estimated CCDP on the relatively few (50–60) events or conditions that remain after the review phase has been completed. Those with CCDPs greater than 1x10⁻⁶ are considered ASP (i.e., operational events or plant conditions that are an important element of postulated accident sequences associated with inadequate core cooling, which would be expected to result in core damage).

During FY98, RRAB is funding ORNL in the amount of \$170,000 to perform the screening and review of operational events in the ASP Program. Budgetary and staff resource considerations have forced RRAB to reevaluate the entire ASP process for the screening, review, and analysis

of operational experience data. As a result, for FY99, RRAB had planned to start performing a portion of the screening and review of LERs in-house using 3.5 FTE and funding for ORNL in the amount of \$450,000.

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The precursor events from the ASP program comprise a unique database of historical system failures, multiple losses of redundancy, and infrequent core damage initiators. NUREG/CR-4674. Vol ____, "Precursors to Potential Severe Core Damage Accidents: 199_, A Status Report," is published annually by the NRC and ORNL adding from 9 to 14 precursors per year during recent years.

RRAB efforts are ongoing to make the ASP process more timely by reducing the time between the occurrence of an event and the issuance of the final precursor analysis of that event and streamlining the engineering review phase of the ASP process. ASP models will be used in the risk-based PIs.

B.2.6.3 Performance Indicator Program

The PI project has published data on PIs since 1987 using data from LERs, daily status reports, monthly operating reports, and collective radiation exposure data obtained from INPO. PI reports were published quarterly from 1987 to 1993, semiannually from 1993 to 1995, and annually thereafter.

PI reports are currently produced annually in NUREG-1187, "Performance Indicators for Operating Commercial Nuclear Power Reactors." These reports present plant operational and event performance data trends on the eight current PIs, which include automatic scrams while critical, safety system actuations, significant events, safety system failures, forced outage rate, equipment forced outages per 1000 commercial critical hours, collective radiation exposure, and cause codes. Future plans include replacing the eight current PIs with risk-based PIs and doing more of the work in house.

AEOD also manages a contract with INEEL to maintain and update computerized databases to support the PI program. The databases used in the PI program are Scram/Engineered Safety Feature Database, Safety System Failure Database, MORTRK (forced outage and equipment forced outage information), and SCSS. AEOD budgeted \$300,000 and 0.5 FTE overseeing the PI program.

B.2.6.4 System/Component Reliability and Risk Reports

Risk-important system reliability studies have objectively analyzed nuclear power plant operational event data in LERs, special reports, and NPRDS data records since 1987. These studies have identified significant reliability trends and patterns, and comparisons with published PRA and individual plant examination reliability data have been made and engineering insights have been developed. System studies in recent years have included reactor core isolation cooling, high-pressure core spray, isolation condenser, emergency diesel generator, high-pressure safety injection, and low-pressure injection. AEOD has budgeted 4.4 FTE and \$450,000 for these studies.

B.2.6.5 Senior Management Meeting Analyses

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AEOD provides recommendations to senior management regarding specific plants that may require increased regulatory attention, as substantiated by operational safety data and PI databases.

RAB plant performance assessments rely on 10 CFR 50.72 and 50.73 reports submitted by licensees. SCSS is used to provide some of the data input into the production of performance trend charts, including the PIs.

In addition, RAB prepares financial variable trend charts from data the licensees report to the Federal Energy Regulatory Commission. Financial summaries use observations from the financial community including Standard & Poores' valuations and Moody's debt ratings, and information from licensees' annual reports.

RRAB prepares plant performance trend charts for specific sites that identify differences between a site's operational performance and nuclear power industry trends. RRAB identifies the candidate nuclear power plants warranting further analysis during the SMM process.

INEEL prepares PIs for the nuclear power industry and uses the LERs to explain the candidate plant performance trend anomalies. RAB prepares detailed explanations from staff review of the 10 CFR 50.72 reports covering the most recent plant performance data, risk insights, and important events. RAB also prepares site-specific financial variable trend plots and provides a summary of the observations.

SPD assembles a package of PI and trend charts, explanations of plant performance, and financial anomalies for the SMM screening meetings. The cognizant RAB engineers are responsible for the integrated review of this package, which is supplied to NRC management before the SMM screening meetings.

Assessments on each selected plant are distributed before SMM screening meetings and SMMs. The operational safety data is used in the SMM process. NRC senior management uses this information as part of the process used to decide on the degree of regulatory attention that will be focused on a specific plant in the forthcoming year. RAB budgeted 2 FTE and \$300,000 for this effort for FY99.

B.2 6.6 Risk-Based Performance Indicator Development

The RRAB plan to develop risk-based PIs is under review with an estimated completion date of January 2001. This effort includes the following phases:

- development and award of a technical contract for statistical analyses of various data
- definition of appropriate risk-based PIs with the assistance of a technical support group consisting of members of the various NRC program offices

 public workshops to refine the risk-based PIs, including the elimination or modification of indicators that duplicate industry indicators

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 a trial period for the proposed risk-based PIs before they are adopted and used in the regulatory process

Progress briefings to both the NRC Advisory Committee on Reactor Safetgyards (ACRS) and the Commission will periodically be conducted during this process. Meetings with the Nuclear Energy Institute (NEI) have already been undertaken to understand, comment on, and possibly adopt some of the PIs which NEI is developing for industry use in monitoring plant safety performance using risk-informed measures.

The following are currently under consideration as future risk-based PIs:

- INPO scrams and NRC initiating event analysis
- system reliability trends of risk important system and CCF data
- INPO/World Association of Nuclear Operators capability factor indicators
- ASP analysis of significant events
- INPO collective radiation exposure
- risk insights derived from operating experience using initiating event fequencies, system reliability studies, CCFs, PRAs, and plant-specific risk models
- insights derived from contributions to risk-based indicators

For FY99, RRAB budgeted 2.25 FTE and \$100,000 for the development of risk-based PIs, but funding this effort will require an additional \$450,000 that has not been budgeted.

B.2.7 AEOD Annual Report

Part 1 of the AEOD Annual Report covers power reactors and presents an overview of operating experience of the nuclear power industry from the NRC's perspective, including comments about the trends of some key performance measures. The report includes the principal findings and issues identified in AEOD studies over the past year and summarizes information from LERs and reports to the U.S. Nuclear Regulatory Commission's (NRC) Operations Center. Plant operating statistics (scram rates, forced outage rates, engineered safety feature actuation rates) are included in the AEOD Annual Report.

It also discusses the IIT program, summarizes IIT and AIT reports, and lists the AEOD technical reports issued since 1980. Primarily overhead FTE and \$35,000 was used to assemble this report. However, the AEOD FY99 budget assumed the discontinuation of this report because of an upcoming agency reorganization which eliminates AEOD as a separate office.

B.2.8 Comparison of Resources With Previous Studies

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The "Report of the Review of Operational and Occupational Event Review, Evaluation, and Follow up," August 1, 1994, attributed 37 FTE to the AEOD reactor program. This compares to the 24.65 FTE budgeted for AEOD in Table 4 of this current assessment.

B.3 OFFICE OF NUCLEAR REACTOR REGULATION AND REGIONS

B.3.1 Introduction

Operational safety data review impacts virtually every function of the agency. For these purposes, event operational safety data review encompasses the prompt review of source data, the prompt followup of selected portions of that source data, and the generation of event-related products. Overall, the general process is depicted in Figure B-3.1, "Non-Emergency Event Assessment (NRR/Regions)." Other end uses of event information for assessment purposes such as plant performance reviews, systematic assessments of licensee performance, enforcement, and the SMM are not within the scope of the NRR and regional reviews for this report. Also, emergency response and generic activities, such as those covered by NRR Office Letter (OL) 504, "Procedure for Development, Implementation and Management of Action Plans," are not within the scope. However, AEOD activities include studies and SMM input as discussed in Section B-2 of this Appendix.

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The general policy and requirements for this function are provided in Management Directive (MD) 8.5, "Operational Safety Data Review." NUREG-0325, "NRC Organization Charts and Functional Statements," also defines functional responsibilities. Most notably, PECB is charged with systematically assessing and screening all nuclear power-related events, reports, and data to determine their significance and need for additional evaluation or plant-specific actions. PECB is also responsible for the development, coordination, and issuance of generic communications identified from operating experience.

B.3.2 Operational Safety Data Review

Operational safety data review includes a variety of often interrelated activities by different organizations at different times and for different purposes. For instance, NRR reviews of operational safety data are primarily to identify generic issues whereas the regions focus more on the plant specific aspects of an event. The following examples illustrate some of the more significant activities:

- Event Notification, MR, and PN generation and dissemination
- (2) Daily regional/NRR Call
- (3) Daily event screening meeting
- (4) Followup
- (5). Development of generic communications



Fig. B-3.1 Non-Emergency Event Assessment (NRR/Regions).

B.3.3 Event Notification, Morning Report, and Preliminary Notification Generation and Dissemination

The broad dissemination of the MRs and PNs enables regional offices and HQ staff to exchange information in a systematic way each day. Dissemination of the event notifications generated by IRD gives the staff access to information concerning operations at the plants. Management briefings ensure that upper management is aware of significant operating events or items of potential interest to the public or elected officials. The information is put on the 'Internet to increase NRC openness and transparency of the regulatory process.

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B.3.3.1 Report Generation

The various reports are generated in different ways. The immediate operational safety notifications (pursuant to requirements in 10 CFR 50.72, 50.55e, 21, 26.73 and 50.9) are generated by individual plant licensees on the basis of events or conditions identified at their facilities. Notifications are called into the NRC Operations Center, where the HOO prepares the reports. Typically, reactor licensees also directly inform the resident inspectors of all reportable events.

MRs are governed by NRC Inspection Manual Chapter (IMC) 0230, "Morning Report," and various regional instructions. The MR system allows the regions and HQ divisions or branches to identify and report on significant items and items of interest. The MRs receive management review, typically at the regional division director level or higher. These reports do not include allegations or information exempt from public disclosure (proprietary, safeguards, classified).

PNs are prescribed by NRC IMC 1120, "Preliminary Notifications," and various regional instructions. The purpose of the PN system is to promptly provide to the Commissioners and other NRC and Agreement State management new and current information on matters that are of significant safety or safeguards concern or have, or potentially could have, high public interest and to provide to others in the NRC and the Agreement States on a less urgent basis, information on matters that are the subject of PNs. PNs receive extensive management review and typically are approved by a regional administrator.

B.3.3.2 Report Dissemination

These reports generally serve as the foundation of most event reviews and receive wide dissemination. The process is graphically depicted in Figure B-3.2, "REG/NRR Call." When the HOO receives an event notification, the HOO informs the RDO. The NRR emergency officer is notified if warranted. Every business day, AEOD provides the reports electronically to NRR.



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PECB, with contractor support, provides broad dissemination of these reports as well as MRs and daily plant status reports within the agency on the local area network servers throughout the NRC. These reports are also posted to the external Web page on a daily basis. PNs use a different distribution network and are sent to cognizant individuals via electronic mail throughout the day as they are released. PNs are also posted to the external Web page on approximately a daily basis.

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The highlights from these reports are discussed in several meetings throughout the course of every morning. The Executive Director for Operations (EDO) staff briefs the EDO every morning at 7:30 a.m. on the day's significant events. This meeting is routinely attended by several EDO staff members, PECB, and the NRR office director. The EDO may also subsequently discuss events of interest with the Chairman. The events are also briefly presented and discussed by PECB in a short meeting of the NRR Executive Team chaired by the NRR deputy office director at 7:45 a.m. The threshold criteria for which events are briefed is determined by the judgement of the responsible staff. Requests for information or assignments can be made at any of these meetings. These reports are also discussed at the daily regional/NRR Call and the daily Events Screening meeting, which is discussed below.

B.3.3.3 Products

The result of this communication process is an informed staff better able to perform their duties and assignments from management to obtain additional information. Approximately 2.4 regional FTE and 0.1 NRR FTE are budgeted for the preparation of MRs and PNs. Additionally, NRR budgeted approximately 0.1 NER FTE to support management briefings of daily events.

B.3.4 Regional/NRR Call

The regional/NRR call provides a forum to brief regional and NRR management on the operational status and concerns of the reactor plants in that region. It also allows the sharing of operational experience that may be applicable to other facilities and provides a cue to PECB for items or issues worthy of further follow up and review. The meeting also allows the identification of events or issues that require a MR or PN.

B.3.4.1 Inputs

These calls are conducted daily for each of the four regions. During the calls, all of the event notifications with additional amplifying information are discussed, as well as any information of interest that had not been formally reported. To support this meeting, many activities have to take place. Different regions and different branches within the regions may have different protocols, but typically the required routine activities include the NRC resident staff performing some initial inspections activities of plant status (board walkdowns, review of operating logs, discussions with plant staff, etc.). In addition, the resident staff communicate their observations to the branch chief via conference call (this call may include the regional DRP branch chiefs will convey this information during the joint regional/NRR conference calls. B.3.4.2 Call

The NRR/Regions Project Calls are conducted at four different times throughout the morning (Region I:8:00 a.m.; Region II:8:15 a.m.; Region III:9:15 a.m.; Region IV:11 a.m.) and serve as an important means of communication among regional management and between the regions and NRR. The calls are typically chaired by the regional DRP division director and attended by Regional DRP and Division of Reactor Safety (DRS) management, NRR project directors, PECB, and EDO staff members. During the calls, all of the event reports of the day are discussed as well as any additional items of interest regarding the plants operations. The threshold for what additional items to discuss is determined by the judgement of the responsible staff. As a result of these discussions, the region may opt to generate a MR or PN to amplify or provide information that has not been reported. After this meeting, some regions will conduct a stand-up briefing of the regional administrator on the events of greatest significance.

B.3.4.3 Products

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The products of this process are an informed staff better able to perform their duties and decisions to generate a MR or PN. Approximately 3.3 regional FTE and 1 NRR FTE are budgeted in support of the daily NRR/regional project calls.

B.3.5 Event Screening

The purpose of the screening process is to identify potential generic issues and potentially significant events for assignment.

B.3.5.1 Inputs

PECB has the lead responsibility within NRR for reviewing operational safety data and coordinating efforts with other NRC offices. There are numerous sources of operational data that are screened and reviewed by PECB for potentially safety-significant plant-specific information as well as for potentially generic issues. The primary and most immediate sources of information have been discussed previously, as follows:

- Immediate Operational Safety Notifications (pursuant to 10 CFR 50.72, 50.55e, 21, 26.73, and 50.9) (~1300/yr)
- Regional and HQ MRs (~400/yr)
- Plant Status Reports (250/yr)
- Region/Project's Daily Status Calls
- PNs (~400/yr)

The plant status reports are generated by the HOO as a result of communications with the licensee control rooms every night to check the communications system. The plant status reports contain basic information such as current operating mode and power level. The report receives the same distribution as the event notifications.

In addition to these sources of information, there are numerous other sources of data which are reviewed. These additional sources of information include the following examples:

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- Inspection Reports (~1000/yr)
- LERs (~1100/yr)
- 10 CFR Part 21 Reports (~300/yr)
- IAEA IRS reports (100/yr)
- Enforcement Notifications
- INPO Documents (~50)
- ASP Analyses (~10)
- DOE Reports (~70)
- Other information provided by licensees or members of the staff

B.3.5.2 Screening

The primary duties and responsibilities for the review of operational safety data are documented in MD 8.5 and supplemented for NRR by NRR OL 503, "Procedure for Integrated Identification, Evaluation, Prioritization, Management, and Resolution of Generic Issues." The daily event notifications, MRs, plant status reports, and PNs are reviewed by the entire PECB staff and discussed at an 8:50 a.m. conference call that also includes representatives of NRR's Human Factors Assessment Branch (HHFB), Probabilistic Safety Assessment Branch (SPSB), and AEOD's RAB. This call also discusses feedback from the NRR/regional project calls. The 8:50 a.m. call is a forum for multidisciplinary discussion of the daily event information. At the conclusion of the call, PECB management makes a preliminary assessment and assigns events for a more formal and detailed followup process.

In addition to the daily events which are reviewed at the daily 8:50 a.m. call, the PECB staff also reviews many other documents such as LERs, inspection reports, foreign events, enforcement notifications, DOE reports, and others listed in NRR OL 503. Some of these reviews such as LERs and foreign events are replicated in other offices. The purpose of this screening is to identify potential generic issues. If a potential generic issue is identified, the cognizant PECB engineer will inform his section chief who will decide if additional followup is warranted. Other NRR branches may also conduct reviews of operational data. These branches include HHFB, SPSB, Safeguards Branch (PSGB), and Emergency Preparedness and Radiation Protection Branch (PERB).

B.3.5.3. Purpose and Products

The products of the process are assignments for additional followup. PECB generates approximately 400 of these assignments per year. NRR budgeted approximately 4.4 FTE on the entire screening process in the FY99 budget. The regions budgeted approximately 12 FTE on the development and screening of information.

B.3.6 Followup

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This Section discusses the followup process, including its inputs and products.

B.3.6.1 Inputs

As a result of the screening process or management direction, events are assigned for more detailed followup. PECB assigns approximately 400 events or issues to a responsible engineer for followup each year. Resident Inspectors and regional inspectors also will perform routine followup of events and issues resulting from the review of operational safety data.

B.3.6.2 Followup Process

The purpose of the followup phase is to obtain sufficient information to make a reasoned assessment as to an event's significance and determine the need for additional generic action. From a regional standpoint, the followup provides a factual basis to develop an assessment of licensee performance, licensee corrective actions, and the need for enforcement action.

For NRR, followup comprises the gathering of additional information sufficient to define the plant-specific significance and generic implications. The followup can be of a plant-specific nature, a generic nature, or a combination of the two. The processes are generally depicted in Figures B-3.3, "Event Follow Up" and B-3.4, "Generic Follow Up." The followup information is developed by the PECB engineer with the assistance of cognizant staff and other resources. This additional information comes from databases, discussions with licensees, resident inspectors, manufacturers, owners groups, etc. Staff may need to consult design and licensing documents. PECB also has a small contract with Pacific Northwest National Laboratory to perform PRA of operating events. The determination of generic implications can be time-consuming, given the variation in plant design and operation. However, the staff makes an initial regulatory assessment to provide the justification for why further regulatory action is not required while the generic issue is resolved. At the conclusion of the followup, the PECB engineer summarizes the event and makes a presentation to the NRR/AEOD/RES Events Assessment Panel, which meets on a weekly basis.

The charter for the panel is documented in Attachment 1 to NRR OL 503. The primary tasks of panel are to determine the plant specific significance of the event for the AEOD PI program (i.e., significant event) in accordance with established criteria, and also to determine the need for any further generic action, such as a generic communication or other generic activity, and establish an appropriate schedule and priority. The results of the followup and the panel's decisions are documented and archived in the Events Tracking System (ETS). ETS is a word searchable database that contains many source documents and all of the PECB staff assessments of followup.

Regional followup of operational events can occur through routine inspection activities or through specially chartered inspections such as special inspections, AITs, or IITs. The findings and assessments are documented in inspections reports; enforcement actions may be taken on the basis of these findings.







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B.3.6.3 Products

The actual products of this process include documentation of assessment in ETS, classification as a Significant Event, proposal to classify as an AO, issuance of a Technical Assignment Code (TAC) for a generic communication, decision to develop a Task Action Plan in accordance with NRR OL 504, or a referral to consider as a Generic Safety Issue (GSI) or for rulemaking. Inspection reports, with possible enforcement implications, are also generated as a result of the followup process. PECB also issues a MR summarizing any significant event determination and also issues MRs summarizing technical findings that do not rise to the level of a generic communication. MRs are not issued that duplicate previous information in ENS reports or other MRs. Finally, operating reactor briefs or ACRS briefs may be given on the basis of information developed during the followup.

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Approximately 22.1 regional FTE and 6.5 NRR FTE are budgeted on the followup process. Additionally, approximately 0.3 NRR FTE and 0.1 regional FTE is spent on operating reactor or ACRS briefs. In addition, 0.5 NRR FTE and 0.5 NRR FTE are spent on the events assessment panel and ETS, respectively. Finally, the AO and significant event programs require approximately 0.1 NRR FTE each.

B.3.7 Development of Generic Communications

Generic Communications are used for numerous purposes including, to inform the regulated community of potential generic information, to provide new staff technical or policy positions, to request specific actions be taken in response to a safety concern, and to require the submittal of technical information in accordance with the requirements of 10 CFR 50.54(f).

B.3.7.1 Input

The input for the generic communication process is the issuance of a TAC authorized by the Events Assessment Panel. The nomination of a candidate generic communication to the panel can be from a PECB engineer as a result of independent followup, or at the suggestion of a technical branch, region or senior manager.

B.3.7.2 Generic Communications

There is a spectrum of generic communications products available to the staff. Generic communications are described in NRC IMC 0720, "NRC Bulletins and Information Notices," and consist of GLs, BLs, INs, and administrative letters (ALs). GLs and BLs require responses and are major efforts; these are typically developed by the technical branches with coaching from PECB. They receive review by the Committee To Review Generic Requirements and the ACRS, and they are usually published for public comment. The Commission may also review these generic documents before issuance. INs and ALs are generally less complicated and contain no requirements; hence they require less effort to prepare and issue. INs and ALs are developed and drafted by many organizations including PECB, NRR technical branches, and the regions. Many generic communications require coordination and input from many different NRR branches and the regions.

B.3.7.3 Products

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It is estimated that in FY99, 65 INs, 5 ALs, 9 GLs, and 2 BLs will be issued. A total of approximately 16.4 FTE are budgeted by NRR in FY99 in the generic communication area. The breakdown is roughly 9.7 FTE for BLs and GLs, and 6.7 FTE for INs and ALs.

B.3.8 Comparison of Resources with Previous Report

The "Report of the Review of Operational and Occupational Event Review, Evaluation, and Followup," August 1, 1994, which was sponsored by James L. Milhoan, attributed 175 FTE to the reactor event oversight process, including 53 FTE from NRR and 84 FTE from the regions. This compares to 30 FTE estimated for NRR and 39.9 FTE for the regions for operational safety data review in this current review. The previous report used a very expansive definition of event assessment and included many NRR activities that are beyond the scope of the current review. These activities include SMM preparation, incident response, security inspections, AIT and IIT inspections, review of BL and GL responses, and closeout inspections of multiplan actions. If only equivalent activities are compared, the same NRR activities that will require 30 FTE in FY99, required approximately 39.5 FTE for the period analyzed in the previous report.

APPENDIX C

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CURRENT MATERIAL OPERATIONAL SAFETY DATA REVIEWS

APPENDIX C

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CURRENT MATERIALS OPERATIONAL SAFETY DATA REVIEWS

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APPENDIX C

CURRENT MATERIALS OPERATIONAL SAFETY DATA REVIEWS

C.1 INTRODUCTION

Materials operational safety data reviews are conducted by three U.S. Nuclear Regulatory Commission (NRC) offices: the Office for Analysis and Evaluation of Operational Data (AEOD), the Office of Nuclear Materials Safety and Safeguards (NMSS), and the Office of State Programs (OSP).

- AEOD maintains the NRC Operations Center to which materials events are reported. AEOD has lead responsibility for maintaining the Nuclear Material Events Database (NMED) and providing technical assistance and training to every NRC and Agreement States office. AEOD also has lead responsibility for coordinating the reporting of events that rise to the level of an abnormal occurrence.
- NMSS has lead responsibility for the evaluation and assessment of all materials events occurring in both Agreement and Non-Agreement States, including events involving the security of special nuclear material. NMSS is responsible for the licensing and inspection of all material activities regulated by the NRC, and issuing all generic communications regarding materials issues.
- OSP has lead responsibility to establish and provide guidance to Agreement States on reporting of event information to The NRC. OSP also supports NMSS, in coordination with AEOD, and Regional staff in the review, analysis, and assessment of Agreement State materials events for completeness of information, safety significance, or for identification of generic issues or trends.

This appendix describes the current materials operational safety data reviews in these three offices. Figure C-1, "Materials Operational Safety Data Review Information Flow," shows the general information flow for these reviews. A detailed discussion of the reviews is provided in Sections C.2, C.3, and C.4. Section C.2 discusses the reviews performed by the AEOD, Section C.3 discusses the reviews performed by NMSS, and Section C.4 discusses the reviews performed by OSP. Each review is discussed individually, including inputs, processes, and products. The resources budgeted for each review and the purpose of each review/product is discussed also.

The purpose of these reviews is to achieve the objectives stated in MD 8.5, Operational Safety Data Review. The objectives are:

8.5-021 To ensure that the immediate and long-term safety and safeguards concerns identified from operating experiences are documented, analyzed, resolved, and disseminated so that the margin of safety is maintained.



Fig. C-1 Materials Operational Safety Data Review Information Flow.

- 8.5-022 To ensure that program and regional offices maintain a coordinated and efficient capability to effectively collect, review, and analyze operational data as related to radiation safety, including identification of potential generic issues.
- 8.5-023 To establish responsibilities for tracking and resolving potential generic issues, as they relate to the functional responsibilities of each office.
- 8.5-024 To increase the effectiveness of NRC regulatory programs and licensee operations to ensure safety and safeguards by prompt dissemination of concerns and lessons learned from operating experience.
- 8.5-025 To ensure that Congress, the public, Agreement States, and the nuclear industry are provided with current information regarding operational experience, including the actual and potential hazards to health and safety that have been inferred from operational data.
- 8.5-026 To increase coordination among offices to delete unwarranted duplication of efforts and increase the effectiveness of operational safety data review.

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C.2 OFFICE FOR ANALYSIS AND EVALUATION OF OPERATIONAL DATA

C.2.1 Introduction

AEOD event assessment occurs in a continuum as more information becomes available. Responsibility for event review is passed from the headquarters operations officer (HOO), after the NRC's immediate response, to NMSS and Nuclear Material Assessment Staff (NMAS) for near-term follow up and long-term generic response. AEOD material event assessments primarily involve a systematic review of events to identify events that meet the Abnormal Occurrence (AO) reporting criteria, and an ad hoc review of events for generic significance. An overview of this process is shown by a flow chart in Figure C-1.

- Immediate safety assessment by AEOD's Incident Response Division (IRD) HOO, regional duty officer (RDO), NMSS emergency officer (EO), and NRC management as needed, upon initial event notification to determine the NRC's immediate response.
- Daily review by NMAS of event notifications (ENs), morning reports (MRs), and preliminary notifications of occurrences (PNOs) to determine if the reported events meet the criteria for AO reporting. In addition, on an ad hoc basis, events not meeting the AO criteria may be selected by the NMAS staff for follow-up.

C.2.2 Headquarters Operations Officer

The NRC's Operations Center is staffed by a HOO 24 hours everyday to receive reports required by Title 10 of the Code (Federal Regulations (CFR).

The HOO determines the need for immediate NRC management attention to the telephone notifications from licensees and other parties. If immediate NRC management attention is not required, the HOO notifies the appropriate regional duty officer. If immediate NRC management attention is required, the HOO notifies appropriate NRC personnel, who decide whether an emergency incident response is required, as shown in Figure C-2.1, "ADOD Headquarters Operations Officer Material Assessment."

The HOO documents these reports in a computerized database that is available to NMAS staff, Idaho National Engineering and Environmental Laboratory (INEEL), OSP, NMSS, and NRC regions, and the public via the Internet.

C.2.3 NMAS Event Review

NMAS staff manages a contract with INEEL to review and code reported material events, and enter the data in NMED. The INEEL also screens material events for events that meet the criteria for AO reporting.



Fig. C-2.1 AEOD Headquarters Operations Officer Material Event Assessment

NMAS in the Response Coordination Section of the AEOD Incident Response Division is responsible for the review of material events data within AEOD. On a daily basis, the staff reviews all ENs, MRs, and PNOs for events that meet the criteria for AO reporting. In addition, on an ad hoc basis events not meeting the AO reporting criteria may be selected for further review or follow-up. The follow-up typically involves further evaluation of event(s) and recommendations to NMSS to issue an information notice or other generic communications, such as an article in the NMSS newsletter. The AEOD reviewer determines if an event is a potential AO, based on the guidelines set forth in the NRC policy statement published in the Federal Register on December 19, 1996 (61 FR 67072). Figure C-2.2, "Response Coordination Section Material Event Assessment," gives an overview of this process as it would be implemented with a full material assessment staff. With the current staff of two working full time equivalents (FTE) (1 FTE in fiscal year [FY]99 budget), the assessment process depicted in Figure C-2.2 involves only a review of events by NMAS and an informal close out by NMAS.

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C.2.4 Sources of Material Events Data

C.2.4.1 NRC Licensee and Agreement State Immediate Notification and Written Event Reports

Reports of nuclear material events are submitted to the NRC by NRC licensees, non-licensees, and by Agreement States. NRC and Agreement State regulations governing the use of licensed material include requirements to report specific off-normal conditions or events to the NRC or respective State agency. For NRC licensees, the requirements are contained in 10 CFR Parts 20, 30, 40, and 70 and in the CFRs for specific licensed programs (for example, 10 CFR 34 for industrial radiography licensees, and 10 CFR 35 for medical licensees). Agreement State programs have compatible regulations that apply to their respective licensed programs. The NRC also receives reports of events from operators of steel scrap metal facilities, commercial land-fill facilities and common carrier operators. Some reports are received directly while others may come through a third party, such as a State agency or the National Response Center. Events reported by scrap metal facilities and land-fill operators typically involve the inadvertent receipt of radioactive material. Events reported by common carriers usually are reported under applicable Department of Transportation (DOT) regulations and involve a spill or loss of licensed material, or damage to licensed material or packaging as a result of a vehicle accident or other mishap.

Regardless of the source, the type of material events defined by ARC and compatible Agreement State reporting requirements are:

- Personnel overexposures (10 CFR 20)
- Medical misadministration (10 CFR 35)
- Release of material (contamination) (10 CFR 20)
- Loss of control of licensed material (10 CFR 20)
- Leaking sources (10 CFR 31, 10 CFR 35, LC)



Fig. C-2.2 Response Coordination Section Material Event Assessment.

- Equipment problems (10 CFR 31, 34, 35, 39)
- Transportation events (10 CFR 71)
- Fuel cycle events (10 CFR 40, 70, 76, LC)
- Non-power reactor events (10 CFR 50)

Material events reported pursuant to a specific 10 CFR reporting requirement, or equivalent Agreement State reporting requirement are referred to as required reporting events (RREs). Agreement States report events to the NRC, for which there is an equivalent NRC reporting requirement. Reports of off-normal conditions or events submitted to the NRC by NRC licensees, Agreement States, and non-licensees that do not fall within the scope of reporting regulations are referred to as voluntary reported events (VREs). Agreement States are encouraged to report VREs to the NRC, where a determination is made that the event may have generic implications.

For some RREs, NRC and Agreement State regulations require licensees to promptly notify the respective agency for "prompt notification events," within 4 to 24 hours after the occurrence of the event. Agreement States are requested to report "prompt notification events" to the NRC within 24 hours following notification to the Agreement State by its licensees. Guidance on Agreement State reporting of events to the NRC is contained in the Appendix, "Handbook on Nuclear Material Event Reporting in the Agreement State," to the OSP procedure OSP SA-300, "Reporting Material Events." Staff guidance suggests monthly reporting to the NRC for the remaining RREs.

C.2.4.2 Event Data Derived from Inspection Reports and Enforcement Notices

During routine and special NRC inspections of licensed facilities, previously unreported event information required by regulation to be reported to the NRC may be discovered. The event information is documented in the inspection report and is captured in the NMED collection process by the NMED contractor, who reviews (via the Regulatory Information Distribution System [RIDS]) all inspection reports for materials events data. The NMED contractor also reviews enforcement documents that are distributed through the RIDS for materials events data.

C.2.5 Comparison of Resources with Previous Report

Section 3.2 of the "Report of the Review of Operational and Occupational Event Review, Evaluation, and Follow up" August 8, 1994, sponsored by James L. Milhoan, contains the following recommendation:

The nuclear materials event review and follow up program has less resources and formal structure than the reactor program. Some of the positive aspects of the reactor program are not included in the nuclear materials program. Recent management initiatives in NMSS, OSP, and AEOD have begun to address the issues of resources and processes. The task group concluded that additional efforts are needed if a fully effective event review and follow up program is to be achieved.

AEOD had planned in FY99 to develop and implement a more comprehensive program for assessing material operating experience, including a formal review process for selecting significant events, and the performance of case studies and engineering evaluations to evaluate trends and generic issues. The flow chart in Figure C-2.2 shows the components and processes planned for the comprehensive materials assessment program. Studies of materials operating experience were eliminated in the FY99 budget as noted in a July 29, 1998, letter from the Chairman to Senator Domenici, to meet budget cuts. However, such studies are necessary to identify and feed back trends and patterns in materials operating experience to licensees as well as areas for regulatory improvement to NMSS; this report recommends refunding these studies.

C.3 OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

C.3.1 Introduction

NMSS is responsible for the licensing, inspection, and environmental reviews of all non-reactor activities regulated by the NRC, including safeguards technical reviews. These activities involve thousands of licensees conducting a wide range of operations. The following technical divisions are responsible for reviewing operational data related to the specified program areas:

- IMNS: The Division of Industrial and Medical Nuclear Safety (IMNS) is responsible for industrial, commercial, medical, and academic activities. This includes sealed source and device evaluations.
- FCSS: The Division of Fuel Cycle Safety and Safeguards (FCSS) is responsible for fuel cycle activities associated with uranium conversion and reactor fuel fabrication. This includes safeguards and threat assessment activities related to special nuclear material.
- DWM: The Division of Waste Management (DWM) is responsible for low-level waste, decommissioning, uranium recovery, and high-level waste repository activities.
- SFPO: The Spent Fuel Project Office (SFPO) is responsible for spent fuel storage activities, and domestic and international transportation of radioactive materials.

Figure C-3, "NMSS Operational Safety Data Reviews," shows the process information flow for the NMSS program that are described in the following subsections.

C.3.2 Inputs

There are numerous event reports and other operational data that are assessed to identify material issues requiring regulatory followup actions. The following reports are primary sources of material events. These reports are generated by the response actions taken after the NRC learns of a material event.

- ENs Documentation of prompt, telephonic reports to the NRC Operations Center. These
 reports can be in the form of telephone calls, faxes, or e-mails. They include reports from
 NRC licensees required by regulations and license conditions, reports from Agreement
 States of significant events in their areas of jurisdiction, and reports from members of the
 public. (~500/yr)
- Preliminary Notifications (PNs) NRC reports (usually from the regions) providing early notice of significant events. (~200/yr)





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 Morning Reports (MRs) – Daily NRC reports (usually from the regions) containing (1) descriptions of events not already reported in an EN or PN, (2) additional information related to earlier reports, and (3) other items of interest. (~60/yr).

In addition to these reports, a number of written reports provide input to the material events assessment process. The written reports are typically issued anywhere from a few days to a few months after an event is discovered. These written reports include the following:

- NRC licensee reports These are often followup reports submitted 15-30 days after a
 prompt telephonic report. They may also be the initial report of an event that does not
 require a prompt telephonic report (i.e., a leaking sealed source, the loss of a small quantity
 of material, etc.).
- NRC Inspection Reports These include reactive inspections focusing on a significant event, and routine inspections that followup on events reported since the last inspection.
- Agreement State Reports The Agreement States provide routine submittals (usually once/month) of events reported to them by their licensees and other parties. Some Agreement States transmit the reports electronically to the contractor that maintains NMED, and some send hard copy reports to the OSP which distributes them through the NRC document control system to the NMED contractor and other NRC offices.
- U.S. Department of Energy (DOE) Operating Experience Weekly Summaries The DOE Office of Nuclear and Facility Safety publishes a weekly operating experience summary to provide feedback and exchange information about significant events at DOE facilities. DOE operates a number of facilities similar to NRC-licensed facilities. These include fuel cycle facilities, laboratories, irradiators, sealed source operations, decommissioning activities and remediation projects.
- Other information (news reports, etc.)

C.3.3 Assessments

C.3.3.1 Reactive Inspections

When an event is reported, inspection supervisors must decide whether to dispatch one or more inspectors immediately (typically within 2 days), or conduct a special inspection before the next routine inspection (typically within a few weeks). This decision is based on the information available, the immediate implications of the event, and the discretion of the supervisors. Guidelines for dispatching inspectors are provided in Inspection Manual Chapter (IMC) 1301. If the event is complex and highly significant, a formal investigation by a team of inspectors is conducted in accordance with MD 8.3. Reactive inspections for material events are typically conducted by inspectors in one of the regional offices. However, some fuel cycle and transportation inspectors are located at headquarters and technical experts from headquarters often serve as members of inspection teams. The budgeted resources for this assessment are provided in Table C-3.1, "Authority and Resources for Material Reactive Inspections."

Table C-3.1 Authority and Resources for Material Reactive Inspections

uthority	rity Management Directive 8.3, Incident Investigation Program Inspection Manual Chapter 1301, Response to Non-Emergency Incidents				
Resources	IMINS FY99 Budget	IMINS FY99 Budget Oversee Events and Problem Facilities/Reactive Inspections/Incident Response HQ = 0.3 FTE (assumed 80% is inspection) RGNS = 4.7 FTE (assumed 80% is inspection) Contract Support For Events HQ = HQ = 0.3 FTE and \$30 K			
	FCSS FY99 Budget	<u>GDP Inspections (Reactive)</u> HQ = 0.7 FTE			
	SFPO FY99 Budget Response to Incidents and Events HQ = 0.5 FTE				
	DWM FY99 Budget	(No resources budgeted in this area.)			
	Grand Total	NMSS = 2.3 FTE and \$30 K Regions = 4.7 FTE			
	Inspection Total	NMSS = 1.2 FTE and \$15 K (assumed 50% of effort) Regions = 2.3 FTE (assumed 50% of effort)			
	Report Total	NMSS = 1.1 FTE and \$15 K (assumed 50% of effort) Regions = 2.4 FTE (assumed 50% of effort)			
		Note: Assumed 0.1 FTE per region for PN/MR preparation (total of 0.4 FTE) so only 2.0 FTE was used for mactive inspection reports.			

C.3.3.2 Daily Screening and Regional Calls

To implement Management Directive (MD) 8.5, Operational Safety Data Review, NMSS has established a generic issues program to screen operational data, identify generic issues, and track the resolution of the issues. IMNS has the lead responsibility for coordinating the generic issues program for NMSS. Each morning, an IMNS regional coordinator (RC) participates in a call with each region to discuss event reports received since the last call and obtain any additional information the regions may have concerning new or previously reported events. Information on new and pending enforcement actions is exchanged also.

After the morning calls are complete, the RC determines whether there is information involving operations or facilities outside of IMNS responsibilities. If so, this information is forwarded to the appropriate NMSS technical division. The RC conducts a daily briefing for the IMNS division director. The budgeted resources for this assessment are provided in Table C-3.2, "Authority and Resources for Daily Screening and Regional Calls."

Table C-3.2	Authority an	d Resources	for Daily	v Screening	and Regional Calls	
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Authority	Management Directive NMSS Policy and Pro	Management Directive 8.5, Operational Safety Data Review NMSS Policy and Procedures Letter 1-55, Regional Coordination Procedures				
Resources	IMNS FY99 Budget	Generic Issues Followup/Regional Coordination (estimated out of 2.8 FTE for this budget item)	HQ =	1.0 FTE		
	FCSS FY99 Budget	Threat and Event Assessment and DBT (estimated out of 4.0 FTE for this budget item)	HQ ≈	0.5 FTE		
	SFPO FY99 Budget	No resources budgeted.				
	DWM FY99 Budget No resources budgeted.					
	Total	NMSS = 1.5 FTE				

C.3.3.3 Event Followup

If the daily screening generates questions concerning immediate followup actions or other issues requiring immediate coordination, the RC will contact the appropriate individuals and obtain additional information. This may involve coordination with other headquarters offices, regions, Agreement States, licensees, or other parties associated with the issue. For events of interest to upper management, the RC prepares a summary of the latest information for the NMSS Director's use during the Friday Executive Director of Operations staff meeting. These summaries are updated if significant new information becomes available. The budgeted resources for this followup are provided in Table C-3.3, "Authority and Resources for Event Follow Up."

Authority	Management Directive 8.5, Operational Safety Data Review NMSS Policy and Procedures Letter 1-55, Regional Coordination Procedures			
Resources	IMNS FY99 Budget	Misadministration Event Evaluation (estimated out of 0.5 FTE for this budget item)	HQ =	0.4 FTE
		Human Factors Support	HQ =	0.4 FTE
		Generic Issues Followup/Regional Coordination (estimated out of 2.8 FTE for this budget item)	HQ =	0.4 FTE
	FCSS FY99 Budget	Threat and Event Assessment and DBT (estimated out of 4.0 FTE for this budget item)	HQ ≈	0.9 FTE
	SFPO FY99 Budget	No resources budgeted.		
	DWM FY99 Budget	UR Event and Inspection Followup (estimated out of 1.0 FTE for this budget item)	HQ =	0.1 FTE
	Total	NMSS = 2.2 FTE		

C.3.3.4 Weekly Assessment of Generic Issues

At the end of each week, the RC prepares an assessment package for each new materials event reported to the NRC. In addition, the RC reviews Agreement State event records in the

NMED and prepares an assessment package for each Agreement State event that appears to involve a significant or potentially generic issue. These packages are provided to the coordinator for the IMNS Generic Assessment Panel (GAP). This panel consists of the IMNS deputy division director and the three IMNS branch chiefs. The GAP coordinator prepares an agenda for the weekly GAP meeting. In addition to the RC input, the GAP coordinator reviews the DOE Operating Experience Weekly Summary and prepares an assessment package for any DOE events that are similar to an NMSS program area. Responses to actions previously assigned by GAP are added to the agenda also.

Representatives from the other NMSS divisions are invited to attend the weekly GAP meetings, however GAP only assesses items related to IMNS program areas. Items related to other program areas are referred to the appropriate NMSS division for the assessment of generic issues. The assessment determines whether there are significant issues warranting the attention of the NMSS Office Director. If so, the item is designated as a candidate for the monthly Operational Events Briefing. At a minimum, potential AOs and new generic safety issues are reviewed at this briefing. The assessment also determines if a generic followup action is required. The budgeted resources for this assessment are provided in Table C-3.4, "Authority and Resources for Weekly Assessment of Generic Issues."

Authority Management Directive 8.5, Operational Safety Data Review NMSS Policy and Procedures Letter 1-57, NMSS Generic Issues Program				
Resources	IMNS FY99 Budget	Generic Issues Followup/Regional Coordination (estimated out of 2.8 FTE for this budget item) Operational Data Analysis (estimated out of 1.0 FTE for this budget item)	HQ = HQ =	0.4 FTE 0.2 FTE
	FCSS FY99 Budget	Threat and Event Assessment and DBT (estimated out of 4.0 FTE for this budget item)	HQ =	0.1 FTE
	SFPO FY99 Budget	No resources budgeted.		
	DVMM FY99 Budget	No resources budgeted.		An OF Manual , and the Experience concernation of
	Total	NMSS = 0.7 FTE		

Table C-3.4 Authority and Resources for Weekly Assessment of Generic Issues

C.3.3.5 Generic Followup

Generic followup actions typically include requests for more information to assess specific events, searches for similar events in NMED, and preparation of generic communications. Most generic communications are information notices or articles for the NMSS Licensee Newsletter (issued quarterly). Occasionally, an administrative letter (AL), bulletin (BL), generic letter (GL) is prepared also. If the assessment identifies weaknesses in licensing or inspection guidance, or NRC regulations, staff may be tasked with preparing new guidance or initiating a rulemaking action. The budgeted resources for this followup are provided in Table C-3.5, "Authority and Resources for Generic Followup."

Authority	Management Directive 8.5, Operational Safety Data Review NMSS Policy and Procedures Letter 1-57, NMSS Generic Issues Program			
Resources	IMNS FY99 Budget	Misadministration Event Evaluation (estimated out of 0.5 FTE for this budget item)	HQ =	0.1 FTE
		Human Factors Support (estimated out of 0.5 FTE for this budget item)	HQ =	0.1 FTE
		Generic Issues Followup/Regional Coordination (estimated out of 2.8 FTE for this budget item)	HQ =	0.4 FTE
		Operational Data Analysis (estimated out of 1.0 FTE for this budget item)	HQ =	0.5 FTE
	FCSS FY99 Budget	Threat and Event Assessment and DBT (estimated out of 4.0 FTE for this budget item)	HQ =	0.4 FTE
	SFPO FY99 Budget	Gas Ignition - Weld Team Followup	HQ =	1.3 FTE
	DWM FY99 Budget	No resources budgeted.		
	Total	NMSS = 2.8 FTE	Contract of Contract	

Table C-3.5 Authority and Resources for Generic Followup

C.3.3.6 Monthly Operational Events Briefing

Each month, the operational events briefing coordinator reviews the assessment packages to identify which new events are designated as candidates for the briefing. These new items and a list of all followup items from the last briefing are e-mailed to each NMSS division and the OSP to confirm that they intend to provide a briefing on items in their program areas, and identify any additional items that should be included. The final agenda is typed and e-mailed to staff in NMSS, OSP, each regional office, Office of Nuclear Regulatory Research (RES), AEOD, Office Enforcement, Office of Inspector General, Office of International Programs, and Office of Congressional Affairs. OSP coordinates Agreement State staff participation in the briefings. (See Staction C.4.3 (2) for further information on Agreement State staff participation.) A telephone bridge is provided for regional and Agreement State staff.

During the operational events briefing, the NMSS office director is provided the status of investigations and other followup actions. Additional followup actions are tasked as appropriate. If the staff has identified a new generic safety issue, the prioritization of the issue is reviewed and approved at the briefing before it is transmitted to RES for entry into the Generic Issues Management and Control System. The briefing coordinator records the results of the briefing for each event discussed and prepares an update of the agenda after each briefing deleting the items dropped, listing the followup actions for open items, and listing any additional items that were discussed during the briefing. The budgeted resources for this briefing are provided in Table C-3.6, "Authority and Resources for Monthly Operational Events Briefing."

Authority Management Directive 8.5. Operational Safety Data Review NMSS Policy and Procedures Letter 1-57, NMSS Generic Issues Program Resources IMNS FY99 Budget Generic Issues Followup/Regional Coordination HQ = 0.2 FTE (estimated out of 2.8 FTE for this budget item) HQ = 0.1 FTE **Operational Data Analysis** (estimated out of 1.0 FTE for this budget item) FCSS FY99 Budget HQ = 0.1 FTE Threat and Event Assessment and DBT (estimated out of 4.0 FTE for this budget item) SFPO FY99 Budget No resources budgeted. **DWM FY99 Budget** No resources budgeted. Total NMSS = 0.4 FTE

Table C-3.6 Authority and Resources for Monthly Operational Events Briefing

C.3.4 Events Tracking System Database

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The assessment packages prepared for each event consist of a data entry form for the events tracking system (ETS) and a copy of all reports related to the event. After each GAP meeting, the GAP coordinator records the results on the data entry form for each item and mails them to the Office of Nuclear Reactor Regulation (NRR) for entry into the tracking system. An NRR staff member in the Events Assessment and Generic Communications Branch enters the information on the forms into ETS, prints updated forms for each item, and returns the forms to the GAP coordinator. The GAP coordinator reviews the forms for accuracy and files them. This inefficient method of data entry is used because the existing version of ETS will not support direct access by multiple offices. NMSS began using ETS in 1996 because it needed a tracking system for its new generic issues program and NRR offered the use of its tracking system. However, ETS is designed to track reactor events and modifying the system to meet NMSS needs is difficult.

For events outside of IMNS program areas, the GAP coordinator prepares no'es referring the events to the appropriate NMSS division for assessment. The lead NMSS division records the results/status of its assessments on the ETS data entry forms and returns the forms to the GAP coordinator. The GAP coordinator includes this information in the packages mailed to NRR for entry into the tracking system.

For Agreement State events, each region may assist GAP in coordinating requests for additional information with the appropriate State agency. Responses are transmitted back through the RC's to the GAP coordinator who places the items on the agenda for the next GAP meeting and includes the information in the packages mailed to NRR for entry into the tracking system. The budgeted resources for maintaining this database are provided in Table C-3.7, "Authority and Resources for the Events Tracking System."

Authority	Management Directive 8.5, Operational Safety Data Review NMSS Policy and Procedures Letter 1-57, NMSS Generic Issues Program			
Resources	IMNS FY99 Budget	Generic Issues Followup/Regional Coordination (estimated out of 2.8 FTE for this budget item) Operational Data Analysis (estimated out of 1.0 FTE for this budget item)	HQ = HQ =	0.4 FTE 0.2 FTE
	FCSS FY99 Budget	No resources budgeted.		
	SFPO FY99 Budget	No resources budgeted		STATE OF THE LAST OF THE PARTY AND A STATE OF THE STATE OF T
	DWM FY99 Budget	No resources budgeted.		
	Total	NMSS = 0.6 FTE		

Table C-3.7 Authority and Resources for the Events Tracking System

C.3.5 Products

C.3.5.1 Bulletins and Generic Letters

These generic communications are used to address significant generic issues that may involve new staff positions previously unpublished. (BLs) and GLs may request licensees to take specific actions to address a safety issue and require a response to the NRC concerning the requested actions. The procedures for these documents are provided in IMC 0730, "Generic Communications Regarding Materials and Fuel Cycle Issues." If a GL states a new staff position or requests new licensee commitments, NMSS informs the Commission before (if practicable) or immediately after the GL is issued. NMSS typically issues less than five of these documents each year. BLs and GLs are considered to make a high contribution to the material safety goal and the public information goal. The budgeted resources for these products are provided in Table C-3.8, "Authority and Resources for Generic Communications."

Authority	Inspection Manual Chapter 0730, Generic Communications Regarding Material and Fuel Cycle Issues			
Resources	IMNS FY99 Budget	Generic Communications	HQ =	0.4 FTE
	FCSS FY99 Budget	(No resources budgeted in this area.)		
	SFPO FY99 Budget	Prepare Bulletins and Information Notices	HQ =	0.2 FTE
	DWM FY99 Budget	(No resources budgeted in this area.)		
	Grand Total	NMSS = 0.6 FTE		
		For Bulletins/Generic Letters, assume 0.1 FTE. For Info. Notices, Administrative Letters, and Newsletter, assume 0.5 FTE.		

Table C-3.8 Authority and Resources for Generic Con	imunications
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C.3.5.2 Reactive Inspection Reports

These reports document the results of special inspections performed to investigate significant events. They provide details about what happened, the root causes, and licensee corrective actions to prevent recurrence. Reactive inspection reports are considered to make a high contribution to the material safety goal, but a low contribution to the public information goal. The budgeted resources for these products are provided in Table C-3.1.

. C.3.5.3 Information Notices, Administrative Letters, and NMSS Licensee Newsletters

These forms of generic communications are used to provide information on recently-identified safety issues, but do not require any specific action nor written response. They allow licensees to consider actions to avoid problems that have been experienced by other licensees. Generic communications were considered to make a medium contribution to the material safety goal and a high contribution to the public information goal. The budgeted resources for these products are provided in Table C-3.8.

C.3.5.4 Event Notification Reports

EN reports document the information provided to the NRC Operation Center concerning an event. This includes the initial report and any updates provided to the Operations Center. Decisions to activate the NRC Incident Response Plan are documented in these reports. Decisions to dispatch a formal Incident Investigation Team, or an Augmented Inspection Team are documented in these reports also. EN reports are considered to make a medium contribution to the material safety goal and a high contribution to the public information goal. The budgeted resources for these products are covered by the HOO budget addressed in the incident response self assessment report so they are not duplicated here.

C.3.5.5 Morning Reports and Preliminary Notifications

MRs and PNs are issued by regional staff to document events reported directly to the regional office, or to provide additional information for significant events already reported to the NRC Operations Center. They provide a means of quickly disseminating significant investigation findings. MRs and PNs are considered to make a medium contribution to the material safety goal and a high contribution to the public information goal. The budgeted resources for these products are provided in the note at the bottom of Table C-3.1.

C.3.5.6 Regulatory Guidance

NMSS has lead responsibility for maintaining licensing and inspection guidance for materials programs. When the review of operational data indicates a weakness in existing guidance or a need for new guidance, appropriate technical staff are tasked with preparing new guidance. Revised guidance is considered to make a medium contribution to the material safety goal and a low contribution to the public information goal. The budgeted resources for these products are provided in Table C-3.9, "Authority and Resources for Regulatory Guidance."

Authority	Legislation authorizing (i.e., Atomic Energy A	implementation of regulatory programs ct, Energy Reorganization Act, etc.)		
Resources	IMNS FY99 Budget	Licensing Guidance/Program Development	HQ = RGNs =	3.5 FTE 5.9 FTE
		Inspection Guidance/Program Development	HQ = RGNs =	1.5 FTE 0.8 FTE
	FCSS FY99 Budget	Regulations and Guidance Development (assumed 33% is guidance)	HQ = RII =	1.7 FTE/ \$145 K 0.1 FTE
		Inspection Program Development	HQ =	1.2 FTE
	SFPO FY99 Budget	Update Sperit Fuel Inspection Program Develop/Update Regulatory Guides Develop/Update Standard Review Plans	HQ = HQ = HQ =	0.2 FTE 0.1 FTE 0.5 FTE/\$50 K
	DWM FY99 Budget	Develop Guidance for LLW Program Develop SDMP Rule and Guidance (assumed 33% is guidance.)	HQ = HQ =	1.1 FTE/\$100 K 1.0 FTE/ \$94 K
	Grand Total	NMSS = 10.8 FTE and \$389 K Regions = 7.8 FTE		
	Event Total	NMSS = 1.1 FTE and \$39 K (assumed 1 Regions = 0.8 FTE (assumed 10% event n	0% event re elated)	lated)

Table C-3.9 Authority and Resources for Regulatory Guidance

C.3.5.7 Regulations

NMSS has lead responsibility for maintaining regulations for materials programs. When the review of operational data indicates a weakness in existing regulations or a need for new regulations, appropriate technical staff are tasked with a rulemaking effort. Revised regulations are considered to make a medium contribution to the material safety goal and a low contribution to the public information goal. The budgeted resources for these products are provided in Table C-3.10, "Authority and Resources for Regulations."

Authority	Legislation authorizing implementation of regulatory programs (i.e., Atomic Energy Act, Energy Reorganization Act, etc.)			
Resources	IMNS FY99 Budget	Implement Semiannual Rulemaking Plan	HQ = RGNs =	8.0 FTE/ \$879 K 0.8 FTE
		Technical Support - Materials Safety Rulemakings	HQ = RGNs =	3.2 FTE 0.8 FTE
		Part 35	HQ = RGNs =	2.0 FTE/ \$60 K 1.6 FTE
	FCSS FY99 Budget	Regulations and Guidance Development (assumed 67% is rulemaking)	HQ = Ril =	3.5 FTE/\$295 K 0.2 FTE
	SFPO FY99 Budget	Update Transportation Regulations (Part 71) Update Spent Fuel Storage Regulations (Part 72) Update Safeguards Regulations (Part 73)	HQ = HQ = HQ =	0.2 FTE 0.6 FTE 0.1 FTE
	DWM FY99 Budget	Uranium Recovery Part 41 Rulemaking Develop SDMP Rule and Guidance (assumed 67% is rulemaking)	HQ = HQ =	1.0 FTE/\$410 K 2.0 FTE/\$190 K
	Grand Total	NMSS = 20.6 FTE and \$1,834 K Regions = 3.4 FTE		
	Event Total	NMSS = 2.1 FTE and \$183 K (assumed 10% Regions = 0.3 FTE (assumed 10% event relate	event relat	ed)

Table C-3.10 Authority and Resources for Regulations

C.3.6 Comparison of Resources with Previous Report

The 1994 "Report of the Review of Operational and Occupational Event Review, Evaluation, and Followup" (a.k.a., the Milhoan report) estimated the resources expended by NMSS and the regions on materials events. A comparison of the resource estimates is provided in Table C-3.11, "Comparison of Resources," below. It is difficult to make any comparison to the resource estimates in this report because the bases for the 1994 estimates are not well documented. It is our understanding that the 1994 estimates were based on actual time charges rather than the budgeted resources used for this report. In addition, the 1994 estimates appear to include time spent on enforcement actions, training, and other areas not included in this report. These inconsistencies account for much of the large decrease in regional FTE. The large increase in NMSS resources reflects the establishment of several activities that did not exist in NMSS in 1994.

The 1994 report concluse ad that material event review was less formal than reactor event review, and the effection energy of the materials program was limited by resources. In a 1995 memorandum responding to the report, NMSS stated that it endorsed the goal of improving its event review program but it did not have the resources to establish a dedicated events assessment group without adversely impacting other priority work.

In December 1995, the staff briefed the Commission on mechanisms for addressing generic safety issues. NMSS informed the Commission that it did not have a formal generic issues

program nor a dedicated group like the Events Assessment Branch in NRR. As a result of direction received at this briefing, resources were allocated to establish a formal NMSS generic issues program including a regional coordination and events section. This program was described in SECY-96-107, "Uniform Tracking of Agency Generic Technical Issues," May 14, 1996. The program included the screening of all material events to identify, track, and resolve generic issues. Even though informal reviews have been conducted for several years, many of the current assessments were established in 1996 and are still evolving.

Office	FT94 Milhoan Report FTE	F199 Budget FTE
NMSS	2	14.3
Regions	15	5.9

Table C-3.11 Comparison of Resources

C.4 Office of State Programs

C.4.1 Introduction

Each Agreement State has responsibility to establish and implement compatible regulatory programs under Section 274 of the Atomic Energy Act of 1954, as amended (AEA). In accordance with compatible Agreement State regulations, Agreement State licensees report to Agreement State regulatory agencies the occurrence of events which are similar to the types of events that NRC licensees report to the NRC under equivalent NRC regulations. Agreement States, in turn, notify the NRC of the occurrence of such events and provide copies of event report information to the NRC. Information reported by Agreement States is entered into the NMED and is evaluated and analyzed by the NRC staff, along with NRC licensee report information, for safety significance and generic implications.

OSP procedure OSP SA-300, "Reporting Material Events", and its Appendix, "Handbook on Nuclear Event Material Reporting in the Agreement States," provide guidance to the NRC staff and the Agreement States on reporting Agreement State licensee materials events. A flow chart on Agreement State Materials Events is provided in Figure C-4, "OSP Agreement States Materials Events."

C.4.2 Inputs

There are a number of documents which contain information about events that have occurred in Agreement States. These include:

- ENs Documentation of prompt, telephonic reports by Agreement States to the NRC Operations Center, i.e., reports of events required to be reported by Agreement State licensees within 24 hours or less. These reports can be in the form of telephone calls, faxes, or e-mails.
- PNs Documentation of an event having possible safety or safeguards significance. The information presented is as initially received without complete verification or evaluation and is essentially all that is know at the time the PN is prepared.
- Agreement State Event Reports Agreement States provide to the NRC (usually OSP or AEOD) written or electronic event reports which may include: copies of licensee reports to Agreement States, copies of Agreement State inspections/investigations, consultant reports, hard copies of NMED data sheets or electronic NMED reports. Any written documentation provided to OSP by Agreement States is distributed through the NRC document control system to the NMED contractor for entry into NMED and to other NRC Offices in accordance with established distribution codes.
- Potential AO Write-ups The Agreement States provide to the NRC, copies of potential AO write-ups for events which potentially meet the AO reporting criteria.



Fig. C-4 OSP Agreement State Materials Events

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 NMED – NMED is an electronic database designed and maintained by AEOD to provide a national repository of event information for both NRC and Agreement State licensee events. The information identified above is used as input data for the NMED database.
 NMED is updated by the NRC and Agreement State staff as new information becomes available including final event close-out information.

C.4.3 Event Notification, Reporting and Assessment

The notification, reporting, and assessment of events occurring in Agreement States has been divided into two major parts as follows: (1) notification to and initial assessment by the NRC of significant events occurring in Agreement States; and (2) reporting to and assessment by the NRC of routine events occurring in Agreement States, and reporting and assessment of followup information involving both significant and routine events. Guidance contained in the "Handbook on Nuclear Material Event Reporting in the Agreement States" differentiates between and provides different guidance relating to how initial notification of significant events, and reporting of routine events and follow-up information should be handled. Significant events are defined as events which Agreement State licensees are required to report immediately, or within 24 hours, to the Agreement State regulatory agency. For significant events, Agreement States are requested to report all such events to the NRC Operations Center within 24 hours of their receipt of such event reports from Agraement State licensees. Routine events are defined as those events which Agreement State licensees are required to report to the Agreement State regulatory agency within time frames longer than immediate or 24 hours (e.g., 30-day event reports). Agreement States are requested to provide routine event reports to the NRC (AEOD NMED contractor or OSP). Agreement States are also requested to provide follow-up and close-out information on all events to the NRC (AEOD NMED contractor or OSP) so that a complete and accurate record, including event close-out information is available in NMED.

 Notification to and Initial Assessment by NRC of Significant Events Occurring in Agreement States.

Following receipt of notification by an Agreement State of a significant event, several immediate actions are taken by the NRC staff. AEOD Operations Center staff provides prompt notification to other NRC staff including the appropriate Regional Duty Officer and the NMSS Duty Officer. Following initial notification to the NRC staff, several possible actions may occur depending on the significance of the event, decisions made at the time of the notification and based on initial assessments by the NRC staff who were notified.

For some events, Regional staff (the Regional State Agreement Officer or Division of Nuclear Materials Safety staff) will assume lead responsibility for interaction with the Agreement State to follow the course of the event, follow State investigation and response activities and to offer NRC assistance. In such cases, Regional staff will keep other NRC staff informed about the current status of the event, will prepare and issue a PN and subsequent updated PNs, and, if requested or agreed to by the State, may send a representative to the incident site to follow State response/investigation activities. This individual will also serve as a conduit for assessing the need for and helping ensure NRC assistance is available, if requested.

In other cases, NMSS or AEOD may assume a more direct lead responsibility for the NRC's activities relating to the event. Such interactions may include one or more conference calls between NRC staff (NMSS, AEOD, OSP, and Region), with or without Agreement State staff participation. Such calls are set up through Operations Center phone bridges. During such calls, NRC and State staff may discuss the nature and significance of the event, status of State response actions, appropriateness of current and future State response actions, NRC and other federal assistance available, and need for notification and involvement of other federal agencies, such as the FBI. In addition, based on initial NRC staff assessment of the event, AEOD may take action to activate the Federal Radiological Emergency Response Plan if assistance of other federal agencies is required for response to the event.

All events reported to the Operations Center are entered into the EN database and distribution channel. Information about significant events initially reported to the Operations Center is also entered into NMED by the AEOD contractor.

(2) Reporting to and Assessment by the NRC of Routine Events Occurring in Agreement States, and Reporting and Assessment of Follow-up Information Involving both Significant and Routine Events.

Agreement States are requested to provide routine event reports to the NRC (AEOD NMED contractor or OSP). Agreement States are also requested to provide follow-up and close-out information on all events to the NRC (AEOD NMED contractor or OSP) so that a complete and accurate record, including event close-out information is available in NMED. The Agreement States are also requested to screen material events against the AO reporting criteria, to identify any events which qualify as potential AOs and to prepare and submit to the NRC (OSP) potential AO write-ups.

The process followed by the NRC for assessment of all Agreement State events is described in Appendix C Section 3. This process includes discussion of current Agreement State events during the daily NMSS regional coordinator calls, daily regional coordinator briefings to IMNS management, IMNS entry of Agreement State event information into the ETS, review of such events by the Generic Assessment Panel, and assessment during monthly operational events briefings . NMSS, AEOD, OSP and Regional staff participate in the monthly operational events briefings. IMNS and OSP staff coordinate in the preparation of the briefing agenda on Agreement State events to be included for discussion at the briefings. A description of these activities is contained in Section C.3 and is not repeated here. For Agreement State events having particular health and safety significance (e.g., overexposure), involving unusual circumstances (ruptured source or laboratory contamination event) or generic implications (equipment malfunction or source rod weld failure), Agreement State staff is invited and participates in the operational events briefings. Their participation provides State staff the opportunity to discuss first hand the status of State response and assessment activities, their views on possible safety or generic issue implications, address NRC staff questions and comments about the event, and to discuss actions taken by State staff to close out the event. Information having generic implication or which should be communicated to licensees or all Agreement States is identified during the operational events briefings and is tracked by NMSS staff until the action is closed.

C.4.4 Estimation of Event Reporting Resources for the FY99 Budget

Based on the FY 99 budget, about 0.9 FTE is budgeted by OSP (covers OSP staff and Regional staff supported by the OSP budget), for the following activities:

- OSP coordination with AEOD, NMSS, regions and Agreement States in the notification, reporting, review and assessment of incidents and events;
- OSP activities to develop and update event reporting guidance to Agreement States.
- OSP activities to screen Agreement State reports, such as event reports, potential AO write-ups, NMED reports, and follow-up information.

The procedure authorizing these functions is provided in Table C-4.1, "Authority and Resources for OSP Materials Events Assessment."

Table C-4 Authority and Resources for OSP Materials Events Assessment

Authority:	OSP Procedure SA-300, "Reporting Material events" and its Appendix, "Handbook on Nuclear Event Material Reporting in the Agreement States" Management Directive 8.1, "Abnormal Occurrence Reporting Procedure" Management Directive 8.5, "Operational Safety Data Review"
Resources:	OSP = 0.9 FTE

C.4.5 Products

During FY 97, the following products were completed or issued:

- 3 all Agreement State letters were issued providing guidance to Agreement States on event reporting, AO reports and NMED;
- 1000 Agreement State NMED reports (hard copy and electronic) were entered into NMED
- 4 AO Reports from Agreement States were included in the NRC's AO Reports to Congress.

C.4.6 Comparison of Resources with Previous Report

The "Report of the Review of Operational and Occupational Event Review, Evaluation, and Followup," dated August 8, 1994, which was sponsored by James L. Milhoan, attributed less than 1 FTE to the OSP event reporting program. This compares to 0.9 FTE estimated

for OSP for event reporting process in the current review. The FTE value for OSP in the previous report did not include Regional State Agreement Officer's efforts to assist in working with the Agreement States to obtain event reporting information; their activities were included in region's FTE. If equivalent activities are compared, the same OSP activities that will require 0.9 FTE in FY99, required approximately 1.25 FTE for the period analyzed in the previous report.

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