ADAMS Accession No. ML033350063

Reactor Operating Experience Task Force Report

FINAL REPORT

November 26, 2003

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Reactor Operating Experience Task Force Report

Prepared by Reactor Operating Experience Task Force:

C. Ader, Task Force Leader	/RA/ Original signed by:
A. Barker, NRR	/RA/ Original signed by:
D. Beaulieu, NRR	/RA/ Original signed by:
R. Caldwell, NRR	/RA/ Original signed by:
D. Fischer, NRR	/RA/ Original signed by:
J. Ibarra, RES	/RA/ Original signed by:
I. Jung, NRR	/RA/ Original signed by:
G. Lanik, RES	/RA/ Original signed by:
D. Marksberry, RES	/RA/ Original signed by:
S. Sanders, NRR	/RA/ Original signed by:
J. Tatum, NRR	/RA/ Original signed by:
J. Vora, RES	/RA/ Original signed by:

Task Force Support Provided by:
Marcia Karabelnikoff

TABLE OF CONTENTS

APPENDICES

FIGURES

TABLES

Team Members

Members of the NRC Reactor Operating Experience Task Force are as follows:

Charles E. Ader, Manager
Allan R. Barker
David P. Beaulieu
Robert K. Caldwell
David F. Fischer
Jose G. Ibarra
Ian Jung
George F. Lanik
Don G. Marksberry
Serita Sanders
James E. Tatum
Jitendra P. Vora
M. Marcia Karabelnikoff, Secretary

Members of the NRC Reactor Operating Experience Steering Committee:

R. William Borchardt
James L. Caldwell
Jack R. Strosnider

Executive Summary

Objectives

The objective of the Reactor Operating Experience (OE) Task Force was to evaluate the agency's reactor OE program and to recommend specific program improvements. This evaluation also addresses the recommendations of the Davis-Besse Lessons Learned Task Force (DBLLTF) on OE program effectiveness as described in the March 7, 2003, Action Plan.

Observations and Conclusions

The task force conducted a broad assessment of the NRC's OE program, evaluating both the functional elements and the programmatic and process elements required for an effective program. The functional elements of an OE program involve both short-term and long-term efforts directed at identifying safety issues, assessing their significance, and taking actions to address the issues. The actions could involve informing licensees, taking regulatory action, and revising agency programs. To be effective, the functional elements need to support and work in concert with agency licensing, inspection, and research programs. The task force was also aware that during the period of this task force evaluation, the agency was taking actions related to the operating experience program to address lessons learned from the Davis-Besse event. These actions included an OE function realignment, revision of an inspection procedure to enhance the use of OE and a review of past generic communications to identify areas for additional followup. The task force attempted to acknowledge these actions in this report but, because they were recent changes, was not able to assess their effectiveness.

Overall, the task force determined that the agency's current reactor operating experience activities included each of these necessary functions. The task force found that the most significant overall program weakness was the absence of a clear agency vision of how all of the agency's OE program activities should function together and be integrated with the licensing, inspection, and research program activities. As a result the agency has not fully leveraged lessons learned from OE to further program goals. Agency-level procedures that provide this vision have not been updated since the OE functions performed by the Office for Analysis and Evaluation of Operational Data (AEOD) were reassigned in 1999 to the Office of Nuclear Reactor Regulation and the Office of Nuclear Regulatory Research and no individual was designated as having responsibility for program coordination activities. As a result, although the primary OE program functions of collecting, screening, trending and evaluating of operating experience are generally understood, the responsibilities and processes for utilizing the lessons learned from the evaluations to improve the agency's regulatory process are not well defined.

The collection, storage, and retrieval of OE information and data are vital to an effective OE program. The task force determined that although there is a large amount of OE data available, much of the data is not readily accessible, the interface is often not user friendly, and some OE information is not routinely sent to a central OE organization for screening and further dissemination. While it is important for NRC staff to have access to the appropriate OE information to perform their jobs, they must also be aware that they are an important source of OE information. Currently, there is no convenient and clearly understood process for NRC staff to forward OE information that may have generic applicability to an OE organization for followup and assessment.

There is no single agency group that provides the OE program with a focal point for coordination of screening or for management of information sources and communications activities (i.e., to perform an OE clearinghouse function). The task force found that inconsistent communication of OE information within the NRC is a weakness sometimes involving issues of untimeliness, lack of clarity and conciseness, and inadequate consideration of user needs. For example, information has not been routinely distributed to cognizant NRC technical staff, thereby limiting their awareness of industry problems and preventing them from utilizing their technical expertise to enhance the OE feedback process. In addition, OE information is not systematically used for knowledge transfer and training. However, the task force acknowledged that an efficient and effective OE program should not be constructed with excessive redundancy. Rather, it should be constructed with clearly defined roles and responsibilities that acknowledges the interdependencies among the various OE activities.

While there are a number of OE activities devoted to analysis or trending of OE data, few OE evaluations are currently being performed to identify important lessons learned regarding these trends (i.e., identify recurring events or safety issues for appropriate followup), to assess the effectiveness of past regulatory actions, or to support the needs of agency programs. The task force considered this to be a significant weakness that substantially diminishes the overall effectiveness of the OE program. In this regard, the current scope of OE evaluations is generally not tailored to support the needs of users and the responsibility to tailor the results is unclear. Such efforts must include effective communication and coordination between the users and the producers of the OE products.

Timely decisionmaking and appropriate followup are essential to an effective OE program. The task force determined that NRC processes should be enhanced to better identify the criteria for taking regulatory action, deciding on appropriate followup actions, and documenting any decisions rendered. In addition, the OE program could better support the Inspection Program by providing smart samples and inspection insights. Currently there is no established process to do this.

Finally, the task force believes that periodic assessments of the OE program are necessary to determine if the program is effective. A process should be established for performing these assessments. The process should include designation of a responsible manager to ensure that these assessments are completed.

Recommendations

The task force determined that the NRC should take actions to address the issues described in Sections 4 and 6 of this report. A consolidated list of recommendations is provided in Appendix A. Although some resource adjustments will likely be needed to implement the task force recommendations, the task force did not make specific recommendations regarding the level of resources needed to accomplish the OE program functions. The task force recognized that any decision regarding the level of resources to be allocated to the OE program requires a balancing of the needs of the OE program against the needs of other agency programs and was beyond the scope of the task force evaluation.

Abbreviations

ADAMS	Agencywide Documents Access and Management System
AEOD	Analysis and Evaluation of Operational Data, Office for (NRC)
ASP	accident sequence precursor
CFR	*Code of Federal Regulations*
DBLLTF	Davis-Besse Lessons Learned Task Force
DBNPS	Davis-Besse Nuclear Power Station
EDO	Executive Director for Operations
EPIX	Equipment Performance and Information and Exchange System (replaces Nuclear Plant Reliability Data System [NPRDS])
EN	event notification
GAO	General Accounting Office
GI	generic issues
GIP	Generic Issues Program
GL	generic letter
IAEA	International Atomic Energy Agency
IMC	Inspection Manual Chapter
IN	information notice
INPO	Institute of Nuclear Power Operations
IP	inspection procedure
IRS	Incident Reporting System
ITP	industry trends program
LER	licensee event report
MD	management directive
NEI	Nuclear Energy Institute (formerly NUMARC and USCEA)
NMSS	Nuclear Material Safety and Safeguards, Office of (NRC)
NRC	Nuclear Regulatory Commission, U.S.
NRR	Nuclear Reactor Regulation, Office of (NRC)
NSIR	Nuclear Security and Incident Response, Office of (NRC)
OE	operating experience
OERAB	Operating Experience Risk Analysis Branch
OES	Operating Experience Section
OL	office letter

ABBREVIATIONS (Cont.)

PCTF	Public Communications Task Force
REAHFB	Regulatory Effectiveness Assessment and Human Factors Branch
RES	Nuclear Regulatory Research, Office of (NRC)
SDP	significant determination process
SRM	staff requirements memorandum
TMI	Three Mile Island

1 Introduction

1.1 Objective

The objective of the Reactor Operating Experience (OE) Task Force was to evaluate the agency's reactor OE program and to recommend specific program improvements to an interoffice steering committee consisting of R. William Borchardt, Acting Deputy Director, Office of Nuclear Reactor Regulation (NRR), Jack Strosnider, Deputy Director, Office of Nuclear Regulatory Research (RES), and James Caldwell, Deputy Regional Administrator, Region III. This objective is further defined in the task force charter, which is attached to an internal memorandum dated March 28, 2003 (revised April 25, 2003), from the steering committee to Charles Ader, Manager, Reactor OE Task Force (Ref. 1). This evaluation also addresses the recommendations of the Davis-Besse Lessons Learned Task Force (DBLLTF) (Ref. 2) on OE program effectiveness as described in the March 7, 2003, Action Plan (Ref. 3).

1.2 Background

Following the discovery of degradation of the pressure boundary material of the Davis-Besse Nuclear Power Station (DBNPS) reactor pressure vessel head, the Executive Director for Operations (EDO) directed the formation of an NRC task force to conduct an independent evaluation of the NRC staff's regulatory processes related to assuring reactor vessel head integrity. The report of this task force, issued on September 30, 2002, contained a number of recommendations directed toward the NRC's OE program. The DBLLTF noted that the agency's OE procedures do not reflect the changes in the OE program since the functions of the former Office for Analysis and Evaluation of Operational Data (AEOD) were reassigned in 1999, that a number of specific OE programs have been reduced or eliminated following previous program evaluations, and that the impact of these changes on the effectiveness of the OE program has not been systematically assessed. The DBLLTF also noted that, in general, current OE reviews conducted by the NRC do not involve the review and assessment of operating failure trends or lessons learned. The DBLLTF report was reviewed by a review team consisting of several senior management personnel appointed by the EDO. The review team issued a report on November 26, 2002, endorsing all but two of the DBLLTF recommendations and sorting the recommendations into four overarching groups. On January 3, 2003, the EDO issued a memo (Ref. 4) to the Directors of NRR and RES, tasking them with developing action plans for accomplishing the high-priority items in the four groups.

By memorandum dated March 7, 2003, the Directors of NRR and RES provided their overall plans for accomplishing the DBLLTF recommendations. This overall plan included four action plans to address the high priority DBLLTF recommendations. One of the plans is the "Action Plan for Addressing Davis-Besse Lessons Learned Task Force Recommendations Regarding Operating Experience Program Effectiveness." This Action Plan has four parts: Part I, "Operating Experience Program: Objective Phase"; Part II, "Operating Experience Program: Assessment Phase"; Part III, "Operating Experience Program: Implementation Phase"; and Part IV, "Inspection Program Enhancements." The Reactor Operating Experience Task Force was formed in March 2003 to address Parts I and II of the Action Plan and to specifically address the following two high-priority recommendations from the DBLLTF:

Recommendation 3.1.6(1)

The NRC should take the following steps to address the effectiveness of its programs involving the review of OE: (1) evaluate the agency's capability to retain OE information and to perform longer-term OE reviews; (2) evaluate thresholds, criteria, and guidance for initiating generic communications; (3) evaluate opportunities for additional effectiveness and efficiency gains stemming from changes in organizational alignments (e.g., a centralized NRC operational experience "clearing house"); (4) evaluate the effectiveness of the Generic Issues Program; and (5) evaluate the effectiveness of the internal dissemination of OE to end users.

Recommendation 3.2.4(1)

The NRC should assess the scope and adequacy of its requirements governing licensee review of OE.

The Reactor Operating Experience Task Force recommendations contained in this report are intended to guide the implementation activities of Part III of the Action Plan.

1.3 Scope and Approach

The task force's efforts, as indicated in its charter, focused on an evaluation of the agency's reactor OE program activities. Consistent with its charter, the task force approached the evaluation of the agency's reactor OE program in two phases. In the objective phase, the task force identified desirable objectives and attributes for an agency reactor OE program. In the assessment phase, the task force reviewed the current agency OE programs against the objectives and attributes to identify gaps and overlaps in the current programs and to develop recommendations for program improvements. The task force also evaluated the effectiveness of the agency's Generic Issues Program (GIP), as recommended by the DBLLTF and included within the task force charter although the GIP is not part of the agency's reactor OE program.

A steering committee, consisting of three senior managers, was formed to provide counsel and guidance to the task force. The task force kept the steering committee informed of its activities and periodically briefed the members during its review. In addition, the steering committee provided comments on and endorsement of the recommended objectives and attributes that guided the assessment phase of the task force's activities.

The task force initiated its activities in April 2003, with its initial efforts devoted to developing desirable objectives and attributes for an agency OE program (objective phase). In developing objectives and attributes, the task force considered the agency's reactor OE program to encompass not only organizations directly involved in the day-to-day review of operating events, but also organizations that use operating events or are responsible for following up on OE review. These organizations include the technical divisions in NRR and RES, and the regions. The task force also considered OE to cover a wide range of information on reactor events, conditions, data collections, and analyses based on operating events and conditions.

Consistent with its charter, the task force limited its review to the reactor OE program. The Office of Nuclear Material Safety and Safeguards (NMSS) had a separate effort underway to evaluate the materials OE program. However, the task force coordinated its activities with staff

in NMSS to share information. The task force, after consultation with Office of Nuclear Security and Incident Response (NSIR) management, did not review safeguards OE due to the unique nature of that information.

During the objective phase, the task force reviewed (1) the DBLLTF report recommendations related to OE and their bases; (2) the current agency activities involving reactor OE; (3) key historical documents pertaining to the evolution of the agency's reactor OE programs, including SECY-98-228, "Proposed Streamlining and Consolidation of AEOD Functions and Responsibilities," October 1, 1998 (Ref. 5), attachments, and the associated staff requirements memorandum (SRM) dated December 10, 1998; (4) Management Directive (MD) 8.5, "Operational Safety Data Review," December 23, 1997 (Ref. 6) ; and (5) the agency's Strategic Plan (Ref. 7). As part of this effort, the task force solicited comments from and had the benefit of discussions with key internal stakeholders on a set of draft objectives and attributes. The draft objectives and attributes were provided to the steering committee by memorandum dated April 30, 2003 (Ref. 8). Following receipt of comments from the steering committee in a memorandum dated May 14, 2003 (Ref. 9), the task force provided a set of revised objectives and attributes to the steering committee on May 29, 2003 (Ref. 10). The revised objectives and attributes guided the task force's efforts during the assessment phase of its activities.

On May 8, 2003, the task force briefed the Advisory Committee on Reactor Safeguards. The purpose of the briefing was to discuss the task force charter and to discuss the draft objectives and attributes. The task force also participated in a public meeting on June 4, 2003, to discuss the agency's efforts to respond to the DBLLTF recommendations. At this meeting, the task force discussed its charter and the draft objectives and attributes with members of the industry and the public.

During the assessment phase the task force interviewed a broad spectrum of individuals involved in either reviewing or using of OE, including staff and managers from each technical branch and division at headquarters and inspectors and managers from each region. These interviews were conducted to obtain an understanding of each organization's involvement in the agency's OE activities, to assess coordination between organizational units with respect to review, evaluation and use of OE information, and to solicit views and recommendations regarding the agency's OE activities. Through this effort the task force identified functional needs and processes to meet the objectives and attributes. The task force also performed a more in-depth evaluation of the agency's current OE program activities to identify gaps and overlaps and to develop recommendations for program improvements. Consistent with its charter, the task force did not address the organizational issues regarding the OE program. During the assessment phase, the task force also met with a representative from the Institute of Nuclear Power Operations (INPO) to discuss INPO's activities involving the review and evaluation of OE, its interactions with licensees, and it's coordination with the NRC.

The task force was also aware that during the period of this task force evaluation, the agency was taking actions related to the operating experience program to address lessons learned from the Davis-Besse event. These actions included an OE function realignment, revision of an inspection procedure to enhance the use of OE and a review of past generic communications to identify areas for additional followup. The task force attempted to acknowledge these actions in this report but, because they were recent changes, was not able to assess their effectiveness.

2 Historical Perspective of the NRC's Reactor Operating Experience Program

Although the use of OE has long been a part of the NRC's activities (and those of its predecessor, the Atomic Energy Commission), the agency's programs have been shaped as a result of several past evaluations of the agency's ability to effectively and efficiently use this information to identify safety issues and learn from the experience. In the late 1970's, the NRC was primarily focused on the review and approval of reactor designs, the licensing of new plants, and the inspection of plant construction and testing. NRR had a single Division of Operating Reactors and each region had a single branch focused on operating reactors. The Office of Operations Evaluation, established by the Atomic Energy Commission in 1972 to evaluate licensee event reports (LERs) and to perform other analyses, had been dismantled in an NRC staff reorganization in 1975. While NRC requirements for reporting OE resulted in an enormous amount of data being provided to the NRC, there was no systematic method for evaluating this information. Also, at that time, individual utilities did not have the resources to systematically evaluate OE, nor was any industry group such as INPO in existence then to perform such a function.

In 1978 the General Accounting Office (GAO) evaluated the NRC's program for collecting, assessing, and disseminating OE information (Ref. 11). The GAO found that the NRC had no systematic, defined, or dedicated program to analyze OE and feed back the lessons of experience to licensees and to the nuclear industry. The GAO identified the need for the NRC to establish uniform reporting requirements and a system to "promptly identify all safety-related problems from licensee event and/or incident reports." Before the NRC could take actions in response to the GAO report, the accident at Three Mile Island (TMI), Unit 2, occurred on March 28, 1979.

In SECY-79-371, "Recommendations on Operational Data Analysis and Evaluation for Nuclear Power Plants (Task Force Report)," June 4, 1979 (Ref. 12), the staff provided the Commission the results of a task force effort to examine NRC analysis and evaluation activities. This task force was established in response to the TMI-2 accident and the GAO report. Although the task force recommended a full-time agency-wide technical organization to perform analysis and evaluation of data, it could not reach agreement on the degree of independence of that group from groups involved in day-to-day licensing and inspection activities, and therefore on its location within the organization. In SECY-79-371, the EDO recommended to the Commission that this group report to the Director of NRR. In July 1979 (Ref. 13), the Commission approved the creation of an agency-wide Operational Data and Analysis Group reporting directly to the EDO with responsibility for analyzing and evaluating operational safety data associated with all NRC activities. In response to the Commission's direction, AEOD was created as an independent office to coordinate operational data collection, to systematically analyze and evaluate operational experience, to feed back the lessons of experience to improve the safety of licensed operations, to assess the effectiveness of the agency-wide program, and to act as a focal point for interaction with outside organizations for operational safety data analysis and evaluation. Industry also took action to create INPO in 1979, in part, to provide an independent capability to evaluate operational experience and feed back lessons learned to licensees.

In February 1994, the agency established a task group to perform an interoffice evaluation of the processes for reviewing, evaluating, and following up on operational and occupational

events. The task group's report, "Report of the Review of Operational and Occupational Event Review, Evaluation, and Followup," was completed in August 1994. The task group, while concluding that the overall reactor event review and followup program was strong, identified a number of recommendations aimed at reducing or eliminating unnecessary overlap and duplication. A second study was initiated in 1998 as part of the NRC's response to the National Performance Review, with the formation of a headquarters interoffice self-assessment group. The scope of this self-assessment included the headquarters functions for the review and assessment of events and operational safety data. The self-assessment report was completed in December 1998 (Ref. 14) and also included a number of recommendations aimed at eliminating unnecessary functions as well as eliminating or reducing unnecessary overlap and duplication. In parallel with this study, as part of its initiative to streamline NRC's infrastructure, the staff proposed in SECY-98-228, to consolidate the functions performed by AEOD into other offices.

The staff continued to recognize that "maintaining a systematic process for collecting and evaluating OE and communicating the lessons learned to the NRC staff and the regulated industry remains an important NRC responsibility." In the SRM dated December 10, 1998 (Ref. 15), approving the staff's proposal for consolidating the AEOD functions in other program offices, the Commission also recognized that "[t]he lessons learned from the independent assessment of operational events must continue to be shared with the nuclear industry in an effort to improve the safety of licensed operations and to assess the effectiveness of agency wide programs." The Commission further noted that "[i]t is important that these functions continue with a degree of independence and, in particular, remain independent of licensing functions."

The recent event at Davis-Besse again raised questions regarding the effectiveness of the NRC's OE program. The DBLLTF report contained a number of recommendations on OE program improvements. The DBLLTF noted that a number of specific OE programs have been reduced in scope or eliminated following previous program evaluations, but the impact of these changes on the effectiveness of the OE program has not been systematically assessed. Although OE data is trended to support the NRC's Performance and Accountability Report, the DBLLTF noted that, generally, current OE reviews conducted by the NRC do not involve the review and assessment of operating failure trends or lessons learned.

3 Objectives and Attributes for a Reactor Operating Experience Program

As stated in the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974, the mission of the NRC, in part, is to ensure that commercial nuclear power plants are operated in a manner that provides adequate protection of public health and safety and the environment. The NRC fulfils this mission by establishing regulatory requirements for the design, construction, and operation of plants, performing licensing reviews, and overseeing plant activities. Within this framework, the primary responsibility for operating plants safely rests with the NRC licensees. Therefore they have the primary responsibility to review OE to identify safety concerns and take action to address these concerns. However, it has long been recognized that the NRC's systematic collection and evaluation of OE is also an important element of its mission. Both the industry and NRC's programs should work toward the common objective of ensuring plants are operated safely. INPO provides an independent industry capability to evaluate operational experience and feed back lessons learned to licensees. The NRC's OE program should leverage these industry efforts to avoid unnecessary duplication of efforts so as not to distract licensees from taking actions on lessons learned.

OE in this context involves a broad range of information regarding events and conditions at nuclear power plants. OE includes, but is not limited to LERs, 50.72, emergency notifications, 10 CFR Part 21 reports, component failure data, and inspection reports, as well as industry reports and foreign OE reports. The lessons learned from a thorough evaluation of OE provide a unique and valuable tool to prevent recurrence of past safety-significant events and to identify and resolve new safety issues and thereby avoid even more serious events in the future. The evaluation of OE can also provide information important to assessing the effectiveness of the NRC's regulatory programs and to informing the public about the performance of licensed plants. In this regard, the task force believes that learning and applying lessons from OE is an integral part of a healthy safety culture. Therefore sufficient methods should be in place to identify lessons learned and to internalize this information. To be effective, an agency OE program needs to support and work in concert with agency programs involved in the licensing and oversight of nuclear power plants and these programs must view lessons learned from OE reviews as beneficial and a vital component of their activities.

For any OE program to be effective, it also must have clearly defined objectives that are consistent with and support the agency's overall goals. Prior to conducting a detailed evaluation of the agency's reactor OE activities, the task force focused on identifying objectives that it believed were important for the agency's reactor OE program and that support the agency's overall goals. The task force also identified those attributes of an OE program it believed necessary to accomplish the objectives. In developing these attributes, the task force considered the agency's reactor OE program to encompass not only organizations directly involved in the day-to-day review and response to operating events, but also organizations that use OE and are responsible for incorporating OE into NRC programs. These organizations include the technical divisions in NRR, RES, and the regions.

3.1 Objectives for a Reactor Operating Experience Program

In identifying the objectives for an agency OE program, the agency's strategic plan provided a starting point for the task force's efforts. The current strategic plan includes four performance goals: (1) maintain safety, protection of the environment, and the common defense and security; (2) increase public confidence; (3) make NRC activities and decisions more effective, efficient, and realistic; and (4) reduce unnecessary regulatory burden on stakeholders. Of these goals "[m]aintaining safety, protection of the environment, and the common defense and security is the preeminent performance goal and takes precedence over all other performance goals." A key strategy in implementing this goal relates to the use of OE. This strategy is:

We will evaluate operating experiences and the results of risk assessments for safety implications.

This strategy is further explained as follows:

We will evaluate the risk significance of operational events and trends in data in conjunction with risk assessments so that safety vulnerabilities can be identified, prioritized, communicated, and resolved on a timely basis. Operational experience will also be used by the staff to improve our regulatory activities including licensing, inspection, and risk assessments. We will also review OE of foreign plants for safety insights. We will monitor for potential adverse effects on nuclear safety from the economic deregulation and restructuring of the electric power industry.

During the period of the task force's efforts, the agency was involved in developing a revised strategic plan. The task force was aware of this activity but drafted this report before the agency completed the strategic plan. Although the task force's goal was to ensure that objectives it would recommend for the agency's reactor OE program were consistent with and supported the agency's strategic plan, the task force recognizes that the objectives may need to be revised to reflect the final Commission-approved strategic plan.

The task force was also guided by MD 8.5. As discussed later in this report, MD 8.5 was not updated following the consolidation of OE functions from AEOD into other program offices. However, MD 8.5 is the most recent agency policy document outlining the objectives of the agency's OE activities. This MD addresses both the reactor OE activities and the materials OE activities. As stated in this MD, "it is the policy of the U.S. Nuclear Regulatory Commission to have an effective coordinated program to systematically review OE of the nuclear power industry, of nonpower reactors, of licensed material in nonreactor applications, and of the control of nuclear material in accordance with regulations and to communicate the lessons learned." However, the objectives of this MD combined elements of both the objectives of an OE program and the objectives of the MD in implementing this program.

Based on a review of the agency's strategic plan and MD 8.5, the task force developed three objectives for an agency reactor OE program. These objectives guided the subsequent activities of the task group. Of these, the first objective, which is directed toward using OE to enhance safety, is the primary focus of a reactor OE program. The other two objectives are secondary objectives.

The task force recommends the following three objectives for the agency's reactor OE program.

- OE is collected, evaluated, communicated, and applied to support the agency goal of ensuring safety.

  This objective is the primary focus of the agency's reactor OE program. To accomplish this objective, the agency will have an effective, coordinated program to systematically collect and evaluate OE, identify and resolve safety issues in a timely manner, and apply lessons learned from OE to support the agency goal of ensuring safety. The agency will share OE information with the nuclear industry in a timely manner so the industry can ensure safety.

- OE is used to improve the effectiveness, efficiency, and realism of NRC decisions.

  Evaluations of OE provide fundamental information necessary to improve safety assessments and the realism of NRC decisions. Lessons learned from OE evaluations will be used to improve NRC regulatory programs, including licensing and inspection.

- The public, Congress, and other external stakeholders are provided with accurate, timely, and balanced information regarding operational experience, including actual or potential hazards to health and safety.

  Timely sharing of OE information with the public, Congress, and other external stakeholders will enhance their understanding of the performance of licensed plants.

The task force believes that these three objectives are consistent with and support the agency's strategic plan.

3.2 Attributes for a Reactor Operating Experience Program

To accomplish the above objectives, the task force also considered those attributes that it believes are necessary for an effective OE program. In identifying attributes, the task force reviewed MD 8.5, reviewed past evaluations of the agency's OE activities to understand previous weaknesses identified, reviewed the DBLLTF report to understand the bases for its findings as they related to the agency's OE activities, and solicited comments from key internal stakeholders on a draft set of attributes.

To accomplish the objectives of a reactor OE program, the task force identified the following attributes it believes are necessary for the program to be effective:

1. Clearly defined and communicated roles and responsibilities.

   Management expectations are clearly articulated and communicated and organizational roles and responsibilities clearly defined. Organizational responsibilities include collection, screening, evaluation, corrective action, and followup activities. Responsibilities for internal and external coordination and communications are also clearly defined, including the interfaces between the organizations reviewing OE and the inspection, licensing, and research organizations. A single point of contact is

established to provide overall coordination for responsibilities distributed throughout the agency.

2. Efficient collection, storage, and retrieval of OE.

   Sources of OE for collection, storage, and retrieval are identified. These sources include OE from industry and foreign sources, as well as agency-generated information. The sources of OE are sufficiently comprehensive and of sufficient quality to meet specific user needs and the collection and storage minimizes duplication by multiple organizations. Data systems provide user-friendly retrieval capabilities for a wide range of users.

3. Effective screening of OE for followup evaluation.

   OE is promptly screened for followup using appropriate criteria and thresholds to determine whether the OE is, or could be, risk significant; has, or could have, generic implications; or is, or could be, important from a public confidence perspective. Priority is assigned for evaluation commensurate with the overall significance of the OE.

4. Timely communication of OE to stakeholders for information or evaluation.

   OE is communicated to stakeholders in a timely manner for information or evaluation. The communication clearly and concisely identifies the issue of concern and puts its significance in proper perspective.

5. Timely and thorough evaluations of OE to identify trends, recurring events, or significant safety issues for appropriate followup actions.

   Timely and thorough evaluations of OE will involve both short-term and long-term efforts to identify trends, recurring events, or significant safety issues. Timely short-term evaluations are necessary to promptly initiate regulatory actions aimed at resolving immediate safety issues and precluding or correcting similar conditions at other facilities. Long-term evaluations to assess safety performance typically use a broader range of OE input, including reports on individual events and conditions, performance measures, and retrospective information. Long-term evaluations also identify trends and safety issues and their implications for NRC programs. Evaluations are sufficiently thorough to understand the event or condition, contributing factors, root causes, safety significance, and generic implications. Appropriate internal and external organizations are involved, as necessary, to ensure evaluations are complete and accurate.

6. Timely decisions on implementation and appropriate followup resulting from the review of OE.

   Timely decisions and actions are taken in response to short-term and long-term evaluations of OE. The decisions address the need for externally directed regulatory actions as well as appropriate changes to NRC programs. The OE program identifies activities or actions necessary to ensure timely implementation and followup in response to a regulatory determination. The OE program also assesses the

effectiveness of regulatory and licensee actions taken in response to a lesson learned from the OE program.

7. Periodic assessments of the OE program to determine its effectiveness and to identify needed improvements.

   Periodic assessment of the OE program is conducted to determine how effective the agency has been in using OE to reduce the severity or recurrence rate of industry events. An effectiveness review provides feedback from stakeholders to agency management and recommends corrective actions to address identified deficiencies.

4 Assessment of Reactor Operating Experience Program

The attributes discussed in Section 3 of this report address both the functional elements required to accomplish the objectives and the programmatic and process elements required for an effective OE program. These functional elements of the program involve both short-term and long-term efforts directed at identifying safety issues, assessing their significance, and taking actions to address the issues. Actions could involve informing licensees, taking regulatory action, and revising agency programs. Short-term efforts usually involve the screening and analysis of events to identify those significant events with generic applicability that need further followup to prevent similar events occurring at other facilities. Long-term efforts usually involve the analysis and evaluation of multiple events or conditions to identify trends or failure patterns that may indicate deteriorating industry safety performance, indicate a need to revise regulatory requirements or programs, or provide information to enhance agency decisionmaking. Figure 1 is a conceptual model of the necessary functions of both short-term and long-term efforts. These functions include data collection, screening, analysis and evaluation and feedback.

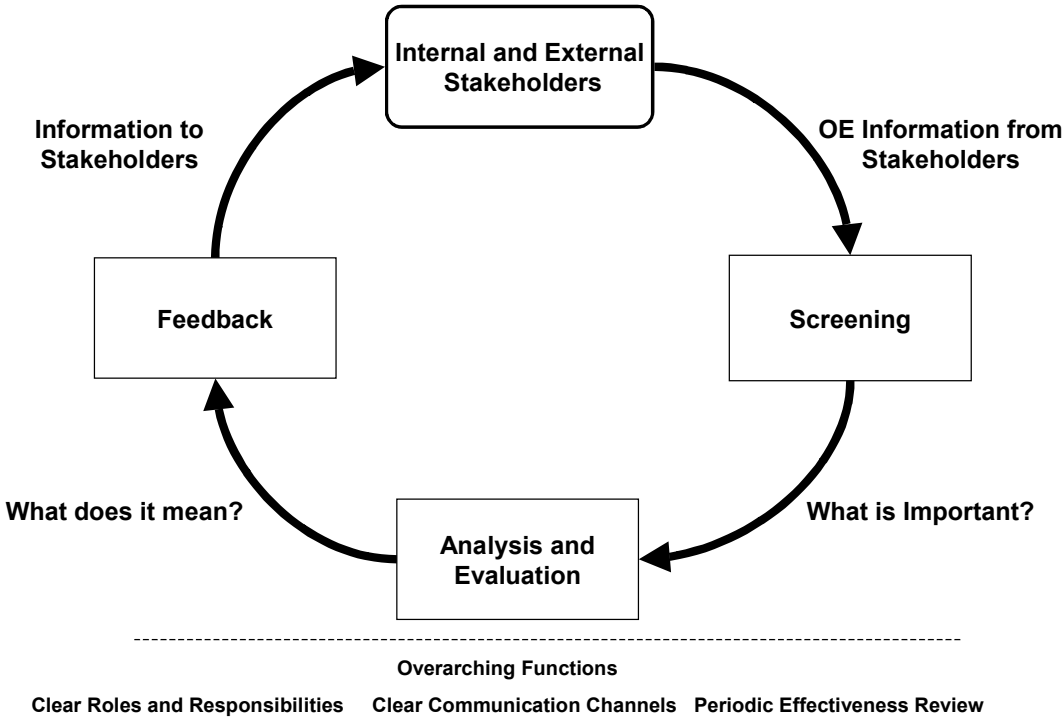

Figure 1 Operating Experience Program Functions

Overall, the task force determined that the agency's current reactor operating experience activities included each of these necessary functions. The task force found that the most significant overall program weakness was the absence of clear agency vision of how all of the agency's OE program activities should function together and be integrated with the licensing and inspection program activities. As a result the agency has not fully leveraged lessons learned from OE to achieve program goals. Agency-level procedures that provide this vision have not been updated since the OE functions performed by AEOD were reassigned in 1999 and no individual was designated as having responsibility for program coordination activities. As a result, although the primary OE program functions of collecting, screening, trending, and evaluating operating experience are generally understood, the responsibilities and processes for utilizing the lessons learned from the evaluations to improve the agency's regulatory process are not well defined.

The collection, storage, and retrieval of OE information and data are vital to an effective OE program. The task force determined that although there is a large amount of OE data available, much of the data is not readily assessable, the interface is often not user friendly, and some OE information is not routinely sent to a central OE organization for screening and further dissemination. While it is important for NRC personnel to have access to the appropriate OE information to perform their jobs, NRC personnel must also be aware they are an important source of OE information. Currently, there is no convenient and clearly understood process for NRC personnel to forward OE information that may have generic applicability to an OE organization for assessment and followup.

There is no single agency group that provides the OE program with a focal point for coordination of screening or the management of information sources and communications activities (i.e., to perform an OE clearinghouse function). The task force found that inconsistent communication of OE information within the NRC is a weakness sometimes involving issues of untimeliness, lack of clarity and conciseness, and inadequate consideration of user needs. For example, information has not been routinely distributed to cognizant NRC technical staff, thereby limiting their awareness of industry problems and preventing them from utilizing their technical expertise to enhance the OE feedback process. In addition, OE information is not systematically used for knowledge transfer and training. However, the task force acknowledged that an efficient and effective OE program should not be constructed with excessive redundancy. Rather, it should be constructed with clearly defined roles and responsibilities that acknowledges the interdependencies among the various OE activities.

While there are a number of OE activities devoted to analysis or trending of OE data, few OE evaluations are currently being performed to identify important lessons learned regarding these trends (i.e., identify recurring events or safety issues for appropriate followup), to assess the effectiveness of past regulatory actions, or to support the needs of agency programs. The task force considered this to be a significant weakness that substantially diminishes the overall effectiveness of the OE program. In this regard, the current scope of OE evaluations is generally not tailored to support the needs of identified users and the responsibility to tailor the results is unclear. Such efforts must include effective communication and coordination between the users and the producers of the OE products.

Timely decisionmaking and appropriate followup are essential to an effective OE program. The task force determined that NRC processes should be enhanced to better identify the criteria for taking regulatory action, deciding on appropriate followup actions, and documenting any

decisions rendered. In addition, the OE program could better support the Inspection Program by providing smart samples and inspection insights. Currently there is no established process to do this.

Finally, the task force believes that periodic assessments of the OE program are necessary to determine if the program is effective and a process should be established to conduct these assessments, including designating a responsible individual to ensure they are conducted.

The remainder of this chapter is structured around the attributes of an effective OE program and provides the task force's assessment of the agency's OE program against the attribute and the task force's recommendations to enhance the effectiveness and efficiency of the agency's OE program in contributing to the mission of the agency.

4.1 Clearly Defined and Communicated Roles and Responsibilities

The task force identified the need to clearly define and communicate roles and responsibilities as an overarching attribute that is critical for an effective OE program. The task force defined this attribute as follows:

Management expectations are clearly articulated and communicated, and organizational roles and responsibilities clearly defined. Organizational responsibilities include collection, screening, evaluation, corrective action, and follow up activities. Responsibilities for internal and external coordination and communications are also clearly defined, including the interfaces between the organizations reviewing OE and the inspection, licensing and research organizations. A single point of contact is established to provide overall coordination for responsibilities distributed throughout the agency.

4.1.1 Discussion

In 1999, the functions associated with the OE program were transferred to RES and NRR. Although minor adjustments have occurred in these functions since 1999, the basic responsibilities have remained unchanged since that reorganization.

The responsibilities for the short-term domestic and foreign OE reviews were consolidated with the responsibility for generic communications in NRR and are currently performed by the Operating Experience Section (OES) under the Reactor Operations Branch. The long-term analysis and evaluation responsibilities, including the accident sequence precursor (ASP) program, risk studies, performance indicator program (which included the industry trends program [ITP]), generic nuclear safety studies, regulatory effectiveness functions, and the responsibility for the abnormal occurrences reporting, were transferred to RES, along with supporting databases. The ASP program and risk studies are currently conducted by the Operating Experience Risk Analysis Branch (OERAB) in RES, which also has the responsibility to maintain the supporting databases. The generic nuclear safety studies and the regulatory effectiveness functions are being conducted by the Regulatory Effectiveness and Operational Experience Team in the Regulatory Effectiveness Assessment and Human Factors Branch (REAHFB) in RES. The responsibility for the Abnormal Occurrence Report is in the Radiation Protection, Environmental Risk, and Waste Management Branch in RES. In support of the Reactor Oversight Program and the NRC Performance and Accountability Report, the

responsibility for implementation of the performance indicator program was subsequently transferred to the Inspection Program Branch in NRR. OERAB continues to provide support for the performance indicator program. Appendix B provides a detailed description of the current reactor OE activities.

These activities make up the necessary functions of an agency reactor OE program. Prior to 1999, MD 8.5 provided agency guidance on the roles and responsibilities of the various functions of the reactor OE program. When the functions performed by AEOD were reassigned in 1999, the responsibility for revising MD 8.5 to provide updated guidance for the roles and responsibilities for the OE functions was not reassigned to another organization, although the Office of Administration currently lists NSIR as the responsible office. This MD was last revised in 1997 and continues to describe the objectives and roles and responsibilities of the OE program as they existed at that time. In addition, no other program document was put in place to communicate the roles and responsibilities of the various OE functions and the coordination and communication between the various organizations.

In spite of the lack of an overall program document governing the OE program, the task force found that, in general, the roles and responsibilities of the primary groups involved in OE reviews are understood. However, for an OE program to be effective, evaluation of OE for lessons learned is necessary and these lessons learned must be internalized and applied to improve the agency's regulatory activities. This requires not only that the roles and responsibilities for primary OE groups be defined but that the roles and responsibilities (or expectations) for the user organizations (licensing, inspection, and research) be defined and communicated. This includes the responsibilities to review and update procedures such as SRPs, review guidance, and inspection procedures, to include consideration of OE information as appropriate.

The resources devoted to OE reviews have changed significantly since 1999. What was once a branch in NRR with responsibility for short-term evaluations and generic communications is now a section within a branch. What was once a branch in AEOD responsible for the long-term generic reactor event studies and regulatory effectiveness assessments is now a team within a branch in RES. During this same period, the role of the technical branches within NRR in the review of OE was reduced. Based on task force interviews, the role of the technical staff in review of OE is limited primarily to support OES in evaluating those events requiring followup action. Although significant OE is forwarded to technical staff, all OE applicable to the technical staff's area of responsibility is not routinely forwarded to them for information. The technical staff still receives OE information through other paths, such as attendance at industry meetings and discussion with licensees or vendors. This eliminates the diverse perspective that the technical staff can bring to identifying issues of generic applicability. In addition, a number of those interviewed noted that greater access to OE information would enhance the technical staff's ability to perform their licensing review functions as well as enhance their effectiveness when performing their other regulatory duties such as evaluating technical issues, supporting development of regulations and other regulatory guidance, and participating on code committees. Interviewees did caution against providing all OE information to the technical staff and noted the need that information be filtered such that they would only be provided information directly applicable to their area of technical expertise. In this regard, several of those interviewed suggested a model where component or system engineers are designated with the lead responsibility for receipt of OE in their area of responsibility. Receipt of OE would be primarily for information, but there would be an avenue for them to feed back safety

concerns to a central clearinghouse (the recommendation for a central clearinghouse is discussed in Section 4.3).

As discussed in Section 4.5, and as noted in the DBLLTF report, there is currently limited review and evaluation of operating failure trends or lessons learned. This was a function that the Commission, in approving the consolidation of AEOD, recognized as an important function that should continue with a degree of independence. In reviewing the effectiveness of this function, the task force noted that the current role this function plays in the overall OE program is unclear. Based on interviews with NRR staff, there is no clear expectation that reports from this function be reviewed and lessons learned evaluated for applicability to NRR activities. Further, as one interviewee noted, since the reports often do not contain specific recommendations, the reports would not be assigned to NRR staff for followup action. However, interviews with RES staff indicated that, over time, they no longer make specific recommendations due to past criticisms that this is the responsibility of the licensing organizations. As noted in "Three Mile Island, A Report to the Commissioners and to the Public," January 1980 (Rogovin report) (Ref. 16), "without the authority to . . . at least require its recommendations be considered and resolved on the record by program offices within a fixed period of time, the new group may well become another isolated outpost within the staff depending for its 'clout' entirely on getting the ear of a senior program official."

A common theme during interviews with regional staff was the need for synthesized and filtered OE information as an aid to the inspection activities. Interviewees noted that there is limited time for inspectors to research past OE information such as bulletins, generic letters (GLs), information notices (INs), and reports from the OE organizations in preparing for inspections. Feedback of lessons learned to the inspection program is an important element in an effective OE program. However, the task force was not able to identify any organization which routinely synthesized the lessons learned from evaluations of OE to inform the inspection process. As a result, some individual resident inspectors maintain folders of sorted OE information and some regions are implementing a program of "value added" findings to provide important inspection lessons learned to other inspectors. Several interviewees expressed concerns that this knowledge transfer function was not being accomplished and is becoming more critical with inspection staff turnover.

As noted above, the role of independence needs to be considered in the evaluation of the agency's OE program. In the task force report attached to SECY-79-371, the role of independence was an important consideration. At that time the task force found a strong need for a dedicated independent group for the analysis of OE. The task force was concerned that otherwise the likelihood was "unacceptably high that the required competence and perspective will inevitably be compromised by other demands on their resources and independence." The current task force continues to believe that this is important and that the primary OE functions require dedicated resources that are not vulnerable to being redirected due to other "problems of the day." Another key consideration in the role of independence is the independence of perspective from the licensing organization. At the time of SECY-79-371, the task force could not reach a consensus, or even a majority, recommendation on the location within the organization of the OE analysis and evaluation function, balancing the benefit from closeness to the user offices with the independent perspective gained from a separate organization. Although the EDO recommended an organizational entity reporting to the Director of NRR, the Commission directed that the organization report to the EDO. In 1998, in response to the staff's recommendations for the consolidation of the functions of AEOD into NRR and RES, the

Commission reaffirmed the importance of the independent perspective. The current task force believes that the independence of perspective for the analysis and evaluation functions continues to be an important element of an OE program, but these functions also need to work in concert with the licensing organization. In the end, the task force views a decision on the location of these functions as a balancing of the importance of an independent perspective with the challenges in obtaining buy-in from the OE users.

4.1.2 Conclusions

The agency's current reactor OE activities include the necessary functions for an effective OE program. However, the agency lacks a clear agency vision of how all of the OE program activities should function together and with the licensing, inspection, and research program activities to meet the Commission's expectations for the use of OE. Without this vision, the agency cannot fully leverage the lessons learned from OE to achieve program goals.

The responsibilities for the primary OE program functions of collecting, screening, trending, and evaluating of OE are generally understood. However, the responsibilities for utilizing the lessons learned from the evaluations in improving the agency's regulatory process are not well defined.

The Commission expectations for use of OE have not been clearly communicated to the staff or incorporated into agency-wide guidance documents. When the functions of AEOD were reassigned, the responsibility for updating and maintaining agency-level guidance (MD 8.5) governing the agency's reactor OE activities was not assigned to any individual. As a result, no one individual is responsible for coordinating the program.

The independence of perspective for the analysis and evaluation functions continues to be an important element of an OE program, but these functions also need to work in concert with the licensing organization. A decision on the location of these functions involves a balancing of the importance of an independent perspective with the challenges in obtaining buy-in from the OE users.

4.1.3 Recommendations

To address the issues identified in this section of the report, the Task Force made the following recommendations:

4.1.3.1 The NRC should develop and communicate a clear vision of how the agency's OE program activities should function together to meet the Commission's expectations for the use of OE. MD 8.5 should be updated to communicate this vision and the roles and responsibilities for the OE activities. Office-level procedures should be updated to be consistent with MD 8.5.

4.1.3.2 A senior manager should be assigned as a single point of contact to coordinate activities for the agency's reactor OE program, including periodic assessments and program status reports.

4.1.3.3 The responsibilities and expectations need to be clarified for utilizing the lessons learned from evaluations of trended data, reliability studies, ASP studies, and generic

reactor safety studies, including updating MD 8.5 and other appropriate procedures to explicitly include consideration of OE information.

4.2 Efficient Collection, Storage, and Retrieval of Operating Experience

The task force found that the collection, storage, and retrieval of OE information and data are vital to an effective OE program. The task force defined this attribute as follows:

Sources of OE for collection, storage, and retrieval are identified. These sources include OE from industry and foreign sources, as well as agency-generated information. The sources of OE are sufficiently comprehensive and of sufficient quality to meet specific user needs and the collection and storage minimizes duplication by multiple organizations. Data systems provide user-friendly retrieval capabilities for a wide range of users.

4.2.1 Discussion

OE information includes LERs, 50.72 event notifications, inspection reports, Incident Reporting System (IRS) reports, etc. Some of this information is systematically collected into databases and information systems. Other information is collected on a more ad hoc basis as needed for specific OE program activities or studies. The task force identified 12 databases and collections of more than 40 types of documents relating to OE. See Appendix C. The four primary databases for OE are the Agencywide Documents Access and Management System (ADAMS) (which includes LERs, inspection reports, and generic communications), the Headquarters Operations Officer Events Database (including event notifications [ENs] per 50.72, Part 21, Part 20, and Part 26), the Equipment Performance and Information and Exchange System (EPIX) maintained by INPO, and IRS maintained by the International Atomic Energy Agency (IAEA). Other databases use data from the primary database in specialized applications. These secondary databases include the ASP Database, the Human Factors Information System (HFIS) Database, the Sequence Coding and Search System (SCSS), and the Foreign Documents Database. In addition, there are many other sources of OE data or information, such as NUREG and NUREG/CR reports and old AEOD reports summarizing OE reports; most, though not all, of these can be found in the ADAMS main or legacy library.

The task force review of these data sources noted that they were comprehensive but the large amounts of data are not readily accessible in a user-friendly manner. The ability to access the data was also an issue raised during many of the interviews, especially during discussions with the regions. The regions noted that they had limited time to research the background of an area to support their inspections and a user-friendly means to access OE information (e.g., generic communications, INPO SEE-IN documents) would be valuable. The task force also noted that many interviewees were not familiar with some of the key databases and their search capabilities.

The task force noted that the NRC Web site is improving the access to OE. The Web site currently provides links to seven pages that contain OE data and 5 of the 12 databases are accessible via the Internet. However, a great variety of OE information is not available in either ADAMS or the NRC Web site. In some cases, access may be limited by agreements, such as those with INPO or IAEA IRS; in other cases, the information is in legacy libraries or on microfiche, and is not easily accessed (i.e., AEOD OE reports, earlier NUREGs, other earlier

OE summary documents, etc.). The interviewees preferred a Web-based approach to consolidation of OE data and information for viewing and retrieval. It was further suggested that a dedicated OE Web page on the NRC Web site with links to available OE data would provide a means to familiarize NRC staff with available OE databases and information sources. The task force recognizes that maintenance of Web pages requires resources; however, the potential efficiencies from easy access to information could result in effectiveness and efficiency improvements in the staff's use of OE. Furthermore, the task force believes that with proper coordination and links to OE information sources, the agency would not need a centralized file for all operational data (a suggestion in the past). Custom databases work well for the application that they were designed to support and are flexible and easier to manage on a smaller scale.

The task force also noted that several initiatives are underway to improve the collection, storage, and retrieval of OE information and data. These improvements are being designed by and tailored to specific users. The task force discussions and interviews generally supported the view that current efforts to improve existing databases and information systems will improve accessibility to OE information. These ongoing initiatives include the Reactor Operating Experience Results and Database Web page, the Inspector Electronic Support System Web page, Web-based LER Search System, the Integrated Data Collection and Coding System, the Reactor Operating Experience Information System, Web-based ASP database, and Web-based ADAMS search capability. The task force notes that the Inspector Electronic Support System initiative has the potential to address some of the issues raised during regional interviews, such as tailoring OE information to the inspector; however, the initiative it is too new for the task force to judge its effectiveness.

The task force also noted that an EPIX Ad Hoc Working Group, consisting of representatives from the NRC, industry, and INPO, is working to address issues regarding the EPIX database. EPIX contains engineering and failure information for selected components within the scope of the Maintenance Rule (10 CFR 50.65). This information that is not typically reported under the EN rule (10 CFR 50.72) or the LER rule (10 CFR 50.73). EPIX is a voluntary reporting system that was proposed in lieu of rulemaking and the NRC has established a 5-year contract with INPO for online access to EPIX data. The consistency of data in EPIX has been improving as expected for a new system; however, there is variation among licensees and continued monitoring is needed. Recently, questions have been raised regarding the usefulness and need for the voluntary reporting system. A memorandum, "Summary of EPIX Ad Hoc Working Group Meeting," May 16, 2002, indicated that in a March 2002 meeting with Nuclear Energy Institute's (NEI's) Nuclear Strategic Issues Advisory Committee, senior utility executives questioned whether the industry still benefits from continued participation in EPIX. The Ad Hoc Working Group is considering these issues.

ADAMS is the overall agency document management system and many of the documents relevant to OE are available in ADAMS. Therefore, the task force believes that the OE data collection, storage, and retrieval efforts should rely on ADAMS where possible. The task force reviewed ADAMS for sources of OE information, consistency and completeness of ADAMS documents, and ADAMS search capabilities. It found instances of incorrectly categorized documents, overlapping document types (documents assigned two categories), general document types with a wide assortment of topics, and difficulty retrieving relevant legacy documents. However, the task force also notes that plans for ADAMS improvements may address some of these concerns. These plans include improving users' ability to retrieve

information from ADAMS through further cleanup of profiling data; moving ADAMS to a Web environment and making further improvements in public and staff access; and expanding electronic submission of documents by issuing a rule that allows for voluntary electronic submission and promoting the program among vendors, licensees, and other stakeholders.

The task force review found a significant amount of OE information that is not routinely captured in a central OE organization for purposes of screening and dissemination. For example, during the period of the task force review, one task force member received e-mails containing information on degradation of buried cables. The e-mails were not initially sent to OES for screening. In addition to routine sources of foreign OE, the task force noted that there are other sources of foreign OE, such as trip reports, workshop proceedings, and conference reports, that also are not routinely sent to a central OE organization. The concept of a central clearinghouse is discussed in Section 4.3. The task force believes a clearinghouse could serve as a focal point for receipt and dissemination of OE information.

4.2.2 Conclusions

A large amount of OE data is currently available to the NRC, but some of the data is not readily accessible in a user-friendly manner. In addition, other OE information is not routinely sent to a central OE organization for screening and further dissemination.

Where possible, OE data collection, storage, and retrieval efforts should rely on ADAMS as the official agency document management system. However, OE documents being entered into ADAMS have not always been profiled with sufficient completeness and consistency to allow necessary information searches to be conducted efficiently. OE staff interaction with the ADAMS program will be needed to improve the OE document categorization guidance.

The NRC Web site is improving the access to OE, but it currently does not include some of the OE databases and information sources that could enhance an OE program and it does not yet have an easy search and retrieval capability.

The ongoing initiatives to improve OE databases and OE-related Web pages will improve the accessibility of OE information and data for specific programs. These improvements are being designed by and tailored to specific users, but may be useful to others with similar information needs. And the current efforts of the EPIX Ad Hoc Working Group to ensure that EPIX provides useful benefits to both the NRC and industry should continue, since failure of EPIX might result in another resource-consuming rulemaking effort to establish a mandatory data system.

4.2.3 Recommendations

To address the issues identified in this section of the report, the task force made the following recommendations:

4.2.3.1 As recommended in Section 4.3, a central clearinghouse function should be established to:

(a) Create and maintain an NRC OE data and information Web site;

(b) develop processes to catalog and make available current databases and document collections of OE data and information, collect and store important OE e-mails, collect and store foreign OE not reported in IRS; and

(c) coordinate efforts with the Office of the Chief Information Officer to improve search routines and improve the categorization of OE documents in ADAMS.

4.2.3.2 Continue the following ongoing initiatives to improve collection, storage, and retrieval of OE data and information while coordinating with other closely related ongoing activities: the Reactor Operating Experience Results and Database Web page, the Inspector Electronic Support System Web page, the Web-based LER Search System, the Integrated Data Collection and Coding System, the Reactor Operating Experience Information System, and the Web-based ASP database.

4.2.3.3 Continue to work with INPO and industry to improve the consistency of data entered into EPIX. In addition, RES staff, industry, and INPO representatives should continue to work together through the EPIX Ad Hoc Working Group to ensure that EPIX benefits both the NRC and industry.

4.3 Effective Screening of Operating Experience for Followup Evaluation

The task force identified the screening process as a fundamental attribute that is critical for an effective OE program. The task force further defined the elements of this attribute as follows:

Operating experience is promptly screened for followup using appropriate criteria and thresholds to determine whether the OE is, or could be, risk significant; has, or could have, generic implications; or is, or could be, important from a public confidence perspective. Priority is assigned for evaluation commensurate with the overall significance of the OE.

4.3.1 Discussion

Effective screening identifies the important safety and public interest information from the large amount of nuclear reactor OE data and information. Screening activities include some level of selection, prioritization, communication, and tracking. OE screening occurs in several NRC activities (1) the inspection program screens licensee activities to identify inspection findings; and (2) OES screens issues from the regions, 50.72 reports, and other OE information to identify items for further followup.

An issue raised in the DBLLTF report was the proposal for an OE information "clearinghouse." The task force considered that clearinghouse type functions were in many ways related to the screening activities in the current OES. Thus, for purposes of discussion, the OE information clearinghouse concept and functions are addressed as part of the screening attribute.

4.3.1.1 Regional and Resident Inspector Screening

Resident and regional inspectors are responsible for the initial identification of potential safety problems and for ensuring that licensees identify and correct safety problems in accordance with NRC regulations. MD 8.5 requires the regions to conduct prompt reviews of plant-specific

events and to coordinate regional efforts with other NRC offices. Inspection procedure (IP) 71153, "Event Followup," June 24, 2003, IP 71152, "Identification and Resolution of Problems," September 8, 2003, and IP 71111.14, "Operator Performance During Non-Routine Evolutions and Events," July 7, 2003, require the region to review site performance, in part to identify potential generic issues. Inspectors continue to collect and review information from reactor sites; however, there is no clear process for deciding what OE information headquarters needs to know and for passing the information to headquarters so that it can be disseminated to appropriate agency organizations. Currently the information reaches headquarters via the daily phone call between the regions and the respective licensing directorates.

In SECY-99-005 (Ref. 14), the staff recommended that only regional staff and NRR project managers review LERs and inspection reports. Although the regions do look at these reports for possible generic industry issues, they primarily focus on report accuracy and site-specific concerns. There is no agency group that is tasked to look at all LERs and inspection reports, to identify what issues may be occurring industry-wide. Also, interviewees indicated that NRR project managers may review LERs in conjunction with ongoing licensing actions; there is no expectation that they review all LERs for their assigned plant. Although both groups look for generic implications, interviewees did not show a clear understanding of the expectation they identify and communicate issues with potential generic applicability to headquarters organizations. Neither project managers nor regional staff are tasked to maintain an industry-wide awareness of developing issues identified in LERs, and therefore they may not detect industry-wide trends and issues.

4.3.1.2 Operating Experience Section Screening for Information and Follow-up

OES is responsible for the primary screening of OE information in NRR. Two important objectives of the screening activity are to identify OE information which needs to be distributed and to identify safety-significant events or conditions which need further followup for immediate action or a generic communication.

The OES screening activity begins with the daily review of items reported to the NRC Operations Center, issues raised by the regions during regularly scheduled morning phone calls, and various other routine sources. Additional sources of OE information reviewed by OES are listed in Appendix C. The initial screening process depends heavily on licensee 10 CFR 50.72 EN reports.

OES does not have a systematic process to screen LERs for information and followup. SECY-99-005 recommended that dedicated LER screening by OES be eliminated because it had 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. However, based on interviews, NRR project managers do not have a consistent expectation regarding their designated role in the OE program. They were not aware of expectations to raise issues with potential generic implications reported in LERs. As indicated earlier, the focus of regional LER reviews is more on extent of condition than on potential industry-wide OE applicability. Additionally, the number of LERs has decreased from over 2000 to less than 400 per year since the SECY-99-005 report and screening this number of LERs is not as significant a resource issue. Based on this information, interviewees recommended that OES should restore the practice of screening all LERs for followup and dissemination, as appropriate.

SECY-99-005 also recommended that OES not review inspection reports. Since that paper was issued, there have been significant changes in the inspection report writing process and only significant issues, as defined by risk, are now included in these reports. Approximately 500 colored inspection findings have been produced per year since the advent of the current Reactor Oversight Program and reviewing all inspection reports is now not a significant resource burden. As with LERs, the NRC does not have a systematic approach to ensure that all inspection reports are reviewed for issues with potential generic implications and OE feedback. Some interviewees said it seemed reasonable that OES should screen inspection reports for followup and information.

Currently, foreign events are screened by OES per LIC-401, and appropriate information is provided to management and the technical staff. This process is highly dependent on OES staff availability and expertise. The DBLLTF noted that foreign OE might have provided information that might have led to a different outcome at Davis-Bessie. Useful foreign OE can be had from the IRS, from the international nuclear event scale reporting network, and from trip reports of NRC personnel who attend information exchange meetings. Currently, foreign OE is screened on an ad hoc basis and all interviewees commented that the NRC should do a better job of using foreign OE.

The task force discussed the need for improved cooperation and communication among the NRC staff in gathering information to better understand an event or condition. EN reports generally contain preliminary information and may be incomplete. Ready access to more detailed information is important to determine an issue's significance and to ensure timely screening. It is periodically necessary to gather additional information through the resident inspector or the project manager or to get technical support from NRC technical staff. Perceived resource and process constraints have limited the access of OES and other OE staff to information sources at licensees and the regions. This issue is discussed in Section 4.5.

NRC management expects to be informed of important OE information and the OES screening process is providing NRR management with that information. RES participates in the morning events meeting with NRR and informs RES management and staff of important OE information. Based on interviews, this aspect of the screening process is functioning.

An important output of the OES screening process is identifying events or conditions which warrant followup with a generic communication such as an IN, bulletin, GL, or regulatory issue summary. Based on interviews, OE information is not consistently provided to the technical staff. Providing requested OE information to the NRR and RES technical staff, will result in better informed regulatory decisions and a potential to identify safety issues not recognized by OES staff.

OES screening for followup is done in accordance with NRR procedure LIC-401, "NRR Operating Experience Program," which requires all OE information to be promptly reviewed for its potential safety significance, generic implications, or regulatory importance. LIC-401 does identify a general screening criteria; however, it does not identify criteria for which items should be followed up, what issues should be passed to the technical staff, and what selected LERs (if any) should be disseminated to other OE users.

Interviews indicated that guidance has not been developed on what information would be useful to the technical staff and how to get it to the right staff member. Interviews also indicated that

the decisions on using technical staff resources for followup need to be discussed with technical branch management. Where significant effort is involved, a TAC number is needed.

4.3.1.3 Operating Experience Information Clearinghouse

The concept of an OE information clearinghouse includes the screening and selection of OE for information and followup and the dissemination of selected OE information to the agency's inspection, technical, and licensing organizations. Selected OE sources are being handled this way for the purposes currently described in LIC-401. The clearinghouse concept also includes responsibilities for facilitating communications among OE groups by scheduling regular information exchanges and issue discussions, carrying out, developing and maintaining OE-related administrative documents and procedures, and carrying out the OE database recommendations from Section 4.2.3.1 of this report. The clearinghouse function would not perform all OE functions, but would serve as a focal point to facilitate coordination of the OE functions. The clearinghouse would have the responsibility for the initial screening of incoming OE to identify significant issues that need immediate attention and would ensure distribution of appropriate OE information to other staff based on guidance (type of issue and level of significance) provided.

The task force believes two important features of an effective OE program are (1) consistent information screening (generally by a single group) to decide which items the agency should invest resources in and (2) project management duties to ensure followup actions are completed in a timely and comprehensive manner. The interviewees repeatedly expressed concern that these features did not appear to be clearly addressed. An OE clearinghouse could fix these deficiencies. Interviewees' comments are summarized below:

- Data collection for screening by a single knowledgeable group allows for consistency in how OE data is assessed, prioritized, categorized, disseminated, and helps ensure the action decisionmaking is repeatable. Also, information requirements of the users are not being routinely updated to ensure the right information is being provided to the right people and a single group would facilitate the updating process.

- Interviewees stated that there is so much OE information available that a cohesive and consistent process needs to be established so that screening and appropriate followup tasking assignments can be made and tracked to completion.

- Effective screening requires a sufficient amount of accurate information, in a timely manner, in order to properly assess a condition or an event. The information necessary to do an accurate assessment must sometimes be gathered after the initial report, a process that is unclear and inconsistent. An organization is needed to ensure agency processes support the OE program.

- The interviewees stated that many current OE products are not clear regarding what are the important lesson learned and what issues the inspection program should focus on. They said that part of the OE clearinghouse project management duties should include ensuring that agency studies and inspection reports are evaluated for OE insights and these insights should be clearly identifiable for incorporation into the applicable agency program.

- Inspection staff interviewed stated that it was important for an OE program to get significant OE out to the regions rapidly for their assessment. However, it was also noted that it is important to feed the results of OE-triggered assessments and inspections back into the OE program via an OE clearinghouse.

The consensus from the interviews was that a single agency OE screening organization would provide a clear focal point so that everyone in the agency would know where potential OE information should be sent for evaluation and action. Interviews indicated that an OE clearinghouse should be responsible for being constantly aware of what data is currently important to the agency and what information users need. Additionally, an OE clearinghouse should provide effective project management, ensuring that OE issues are properly evaluated, appropriately packaged, disseminated in a timely manner, followed to completion, and that user feedback is incorporated into the process.

4.3.2 Conclusions

There is no agency organization tasked with reviewing all of the significant OE sources (especially LERs and inspection reports) to ensure that potential industry-wide issues are being identified and addressed.

The OES screening activity has been generally effective at informing NRR management and issuing relevant generic communications on significant events and conditions. However, the NRC technical staff can benefit from more OE input and can provide additional insights to enhance the OE initial screening process.

Although some form of screening is done in most agency OE processes, there is no convenient and well-defined process for inspectors, technical staff and licensing personnel to forward issues with potential generic implications to an OE organization for screening or further dissemination. Additionally, the expectation that this information needs to be passed is not clearly communicated to the respective personnel.

Each of the agency's OE groups conducts screening to identify follow-on activities associated with its mission. However, there is no single agency group that provides the OE program with a focal point for coordinating the screening of information sources and managing communications activities, OE Web site, etc.

4.3.3 Recommendations

To address the issues identified in this section of the report, the task force made the following recommendations:

4.3.3.1 Establish an OE information clearinghouse function within a single organization to: collect, screen, prioritize, and distribute OE information to interested users; facilitate and track OE decisions and followup; facilitate communication of OE lessons learned; and coordinate NRC OE activities between organizations performing OE functions..

4.3.3.2 Develop guidance to inspectors, technical branches, and licensing personnel which provides clear expectations for identifying existing safety problems and provides better

guidance on what the inspector should look for to identify existing safety problems based on OE feedback.

4.3.3.3 Formally incorporate the review of LERs, inspection findings, and IRS reports as input to the routine OE screening process.

4.4 Timely Communication of Operating Experience to Stakeholders for Information or Evaluation

The task force identified the need for timely communication as an important attribute for an effective OE program. The task force defined this attribute as follows:

Operating experience is communicated to stakeholders in a timely manner for information or evaluation. The communication clearly and concisely identifies the issue of concern and puts its significance in proper perspective.

4.4.1 Discussion

The following discussion covers communication of OE to internal stakeholders, communication of OE to external stakeholders, communication among OE program activities, and communication of OE for knowledge transfer and training.

4.4.1.1 Communication of Operating Experience to Internal Stakeholders

OE information is currently communicated to internal stakeholders via various formal and informal channels. The channels include briefings, reports, memoranda, NRC Intranet, ADAMS, e-mails, conference calls, and face-to-face meetings and discussions. Through these channels, OE information is shared with a wide spectrum of staff and management from various offices. For this assessment, the task force focused its review on the question of whether or not the key internal users are effectively provided with the OE information they need to do their job. The key internal users were identified as the technical and inspection staff of the agency.

In NRR, Office Instruction LIC-401 contains a description of the current OES activities, including internal OE communications. According to LIC-401, OES performs several key activities associated with internal OE communication: daily Executive Team/EDO events briefings, daily events screening and dissemination of select OE to internal users, monthly operating reactor events briefings, development and issuance of generic communications, Web posting of OE information, and issuance of Operating Experience Quarterly Reports. These individual activities are generally successful from the perspective of meeting the current needs of the information users for significant issues. The information generated by OES is also available to other potential users using the internal Web, databases, and/or ADAMS. However, the task force identified a number of areas where communication could be improved, thereby enhancing the effectiveness of the OE program.

Although a number of stakeholders receive OE information, the process for communication of OE to internal stakeholders is not systematic. For example, OES routinely reviews and screens incoming OE information, but does not systematically disseminate the OE information involving

a particular technical area to the responsible technical staff in NRR or RES. Similarly, the OE Quarterly Reports are sent to NRR and regional managers but not to RES managers.

The task force noted that OE communication to internal stakeholders is often based not on specific user need, but on who may potentially use the information. For example, long-term reviews such as risk studies and generic studies are provided to key stakeholders with potential uses noted, but these studies do not always clearly and concisely address stakeholders needs. The task force noted that this is in part due to the fact that up-front expectations for using this information are not well defined because user needs have not been clearly defined and communicated to the organization developing these studies. The task force believes improved communication between the OE activities and key stakeholder to better define their needs would improve the value of the OE products. Many of those interviewed expressed the same concerns. They stated that OE information should be communicated in a manner that satisfies the needs of the key stakeholders. However, they also emphasized that the key users should not be deluged with OE information of little significance. Many interviewees indicated that the expectations for what OE information should be routinely communicated are not clear. When asked whether or not the key stakeholders need OE information to perform their job better, the majority of interviewees agreed that increased access to OE information would enhance the effectiveness of the inspection and technical staff. Several interviewees suggested the concept of responsible system or component engineers who would receive OE related to their area of expertise. OES staff also said that identification of responsible engineers would facilitate their OE screening and communication activities.

Most interviewees favored a simplified OE communication channel between the key stakeholders and OE program to improve efficiency. The central clearinghouse concept was suggested in the DBLLTF report and was supported by a number of those interviewed. This concept is supported by the task force and is discussed in Section 4.3. A central clearinghouse could substantially simplify OE communications among various organizations. A central clearinghouse could also facilitate the communications between the regions and headquarters. This need was highlighted by many interviewees, who indicated that communication channels between the inspection staff and headquarters OE staff should be enhanced. One OE communication channel is the daily call between the regions and the respective project directorates. OES participates in this call. Although some OE information is communicated to the OE program, there is not common understanding of the purpose of the call. For example, the daily regional calls are viewed very differently by management levels in the regions, by each region, and by OES. The task force also determined that the potentially valuable OE information identified by the inspection staff and technical staff is not systematically communicated to staff engaged in other regulatory activities. For example, OE information is sometimes communicated to the technical staff from the regions, but is not provided to the OE staff for evaluation or further dissemination to other interested staff. Similarly, when OES is evaluating an event to determine the need for followup actions, there is no clear communication to the regions regarding this activity, including what organizations were involved and their roles. One interviewee noted that often the region receives requests for information from the project manager, OES, and the technical staff without understanding how the information requests were being coordinated. The task force believes a central clearinghouse could coordinate this communication effort.

4.4.1.2 Communication of OE to External Stakeholders

There are a number of channels through which OE information is communicated to external stakeholders that include the licensees, industry, Congress, and the public. The most prominent channels are NRC generic communications (e.g., INs, bulletins, and GLs). OE information is provided to Congress through Abnormal Occurrence Reports and the NRC's Performance and Accountability Report. The public has access to a significant amount of OE information through ADAMS and the NRC external Web site, including generic communications, ENs, 10 CFR Part 21 reports, and ITP information.

The task force noted that NRR revised NRR Office Instruction LIC-503, "Generic Communications Affecting Nuclear Reactor Licensees," June 2003, in response to an evaluation of the NRC generic communications program. The evaluation was prompted by comments received from the Senate Committee on Appropriations and the nuclear power industry. NRR staff subsequently met with representatives from the NEI to discuss industry views on the generic communications program and its implementation.

Most interviewees thought that the current OE communication to the external stakeholders is generally successful. They frequently referred to NRC generic communications and the significant OE information on the external Web and ADAMS as successes. However, some interviewees suggested specific improvements that could enhance external OE communications, including the enhanced timeliness of INs and improved communication of the OE results from longer term studies.

The task force found that there exist no major shortcomings in the current external OE communications. Overall, the external stakeholders are provided with a significant amount of OE information through various channels, including ever-improving information technology methods such as ADAMS and the external Web site. However, the task force notes that there are no plans to solicit feedback from external users to assess the effectiveness of the revisions to the generic communications program.

Additionally, the task force reviewed the Report of the Public Communications Task Force (PCTF), dated August 7, 2003. The PCTF was chartered to develop strategies for comprehensive and effective communications with external stakeholders. As a result, the PCTF proposed strategic-level recommendations for consideration. The task force believes that the PCTF recommendations, if implemented, would provide a sound vision for communicating OE to external stakeholders. For example, the PCTF recommended measuring the effectiveness of communication efforts (Recommendation 5) and expanding the use of plain language (Recommendation 9). Those recommendations are clearly adaptable to effective OE communications. The task force suggests that the staff consider these recommendations as part of developing an integrated OE communications plan.

4.4.1.3 Communication Among Operating Experience Program Activities

Major OE program activities are currently performed in NRR and RES. The task force noted that the communication between these program elements tends to be infrequent and somewhat ad hoc. This lack of coordination and communication is one of the major shortcomings of the current OE program and has prevented the OE program from fully meeting Commission expectations for use of OE.

Most interviewees involved in the current OE program activities agreed that the effectiveness and efficiency of the OE program could be improved by better communication among OE groups. They admitted that many of the current OE program activities have operated in isolation ever since the OE functions performed by AEOD were reassigned to different offices in 1999. As a result, they said, many OE review activities, although useful in themselves were not integrated into the overall OE program. The consequence was less-than-optimal use and application of useful OE from one OE review activity to another. For example, some short-term OE followup items were not known to those who are involved in longer term OE reviews, and vice versa. Interviewees said that the current OE activities should be better coordinated and integrated, and some recommended that OE groups communicate with each other more frequently. In order to make the coordination and integration work among interoffice OE groups, periodic branch-level meetings were also suggested. The task force believes that improved communication is a key to an integrated reactor OE program for the agency and that it would significantly enhance program efficiency and effectiveness.

4.4.1.4 Communication of Operating Experience for Knowledge Transfer and Training

OE review results, insights, and lessons learned provide significant historical and current information regarding reactor power plant safety. Both new and experienced employees could significantly benefit from significant historical OE review results, insights, and lessons learned. When asked, many of those interviewed indicated that the use of OE for knowledge transfer and training is important and is currently limited. Several interviewees thought that the area of knowledge transfer is a significant challenge for the agency because of staff turnover. Some interviewees suggested that the current training program be enhanced to cover lessons learned from OE. Suggested approaches by some of the interviewees to address the issue included the following: (1) some of the current training classes should be modified to include to more OE; (2) inspector refresher training could include important lessons learned from OE; (3) the availability and retrievability of OE on the Web should be enhanced (addressed in Section 5.2); and (4) OE groups should present tailored OE insights through seminars, counterpart meetings, and conferences. When the issue of enhanced training was discussed with representatives from the Technical Training Center, it was noted that they review OE information (e.g., generic communications, NUREG reports) for relevance to their training modules. However, their focus is primarily on new employee training. Refresher training is driven by the needs of the program office, but could be more focused on OE if requested. The task force believes that the OE insights and lessons learned are important and useful information that should be a key part of the agency's effort on knowledge transfer and training.

4.4.2 Conclusions

Inconsistent communication of OE to internal stakeholders is a weakness of the current OE program activities. In particular, OE communication to the key stakeholders does not meet the key elements of effective communication, namely, timeliness, conciseness and clarity, consideration of user needs, and feedback. Internal OE communication to the key stakeholders is often not focused on specific user needs. Further, the roles and responsibilities and expectations for OE communications are not clear and the inconsistent communication of OE to OES from internal stakeholders hampers their ability to further communicate this information to interested staff.

The generic communication procedure was recently revised based on stakeholder feedback and communication to external stakeholders is currently well defined.

There is a significant lack of communication among OE program activities, resulting in lack of coordination. Various OE program activities are operated somewhat in isolation, instead of in a coordinated and integrated manner.

Currently OE information is not systematically used for knowledge transfer and training. OE insights and lessons learned can provide valuable information for training of new and experienced NRC staff.

4.4.3 Recommendations

To address the issues identified in this section of the report, the task force made the following recommendations:

4.4.3.1 The central clearinghouse should take the lead in identifying the communication needs of internal stakeholders for OE. These needs should address the user need for OE information, the vehicle for communicating the information (including procedures that provide guidance on the type and format of information to be provided), and the responsibilities for communication. Key internal stakeholders include the Commission and Advisory Committee on Reactor Safeguards, in addition to NRR, RES, and regional staff.

4.4.3.2 The central clearinghouse should take the lead in establishing routine and frequent communication mechanisms between the various OE organizations (e.g., daily screening meetings, weekly coordination meetings, and monthly management briefings) to improve communication and coordination among the OE activities.

4.4.3.3 The OE review results, insights, and lessons learned should be better used to support the agency's knowledge transfer and training. The central clearinghouse should work with the Technical Training Center and other program offices to develop specific ways to use OE information for that purpose.

4.5 Timely and Thorough Evaluation of Operating Experience to Identify Trends, Recurring Events, or Significant Safety Issues for Appropriate Followup Actions

To develop lessons learned from OE, the task force determined that timely and thorough evaluations of OE is an important attribute of an OE program. The task force defined this attribute as:

Timely and thorough evaluations of OE involve both short-term and long-term efforts to identify trends, recurring events, or significant safety issues. Timely short-term evaluations are necessary to promptly initiate regulatory actions aimed at resolving immediate safety issues and precluding or correcting similar conditions at other facilities. Long-term evaluations to assess safety performance typically use a broader range of OE input, including reports on individual events and conditions, performance measures, and retrospective information. Long-term evaluations also identify trends and safety issues and their implications for NRC

programs. Evaluations are sufficiently thorough to understand the event or condition, contributing factors, root causes, safety significance, and generic implications. Appropriate internal and external organizations are involved, as necessary, to ensure evaluations are complete and accurate.

4.5.1 Discussion

Evaluations of OE are necessary to determine the significance of events or trends or to identify lessons learned. The results of these evaluations guide the decision process on the need for additional action. Evaluations are inherent to most of OE program activities and are currently performed in varying degrees by the staff involved in both short-term and long-term OE program activities. For example, the OES short-term followup activities involve evaluations to understand the emergent OE information from the perspective of safety significance, generic applicability, or public interest. The ITP is designed to identify trends in industry performance and the ASP program identifies risk-significant precursors. RES also performs risk and reliability studies and generic safety studies based on collected OE information. The task force review of OE focused on the evaluations performed by the primary OE functions as discussed below.

4.5.1.1 Operating Experience Section Short-term Evaluations

According to LIC-401, "NRR Operating Experience Program," March 31, 2003 (Ref. 17), OES short-term evaluations typically develop event details and determine safety significance and generic applicability. These evaluations are intended to determine appropriate regulatory actions. An OES evaluation can recommend the issuance of a generic communication. OES can also recommend an appropriate reactive inspection in accordance with MD 8.3. OES short-term evaluations are typically performed by an assigned engineer in OES and tracked by the OES electronic Reactor Operating Experience Information System. The results of the evaluations, once completed, are documented and given to the OES supervisor for closeout or additional regulatory actions.

The OES staff routinely works closely with the regional staff, NRR project managers and technical staff on the short-term evaluations. For instance, the OES staff works with the inspectors to gather information to better understand and describe an event, the information is often the basis for a generic communication. the OES staff sometimes engages the technical branch specialists for technical support on specialized areas. In many cases, OES responsibility in this regard is to coordinate the information gathering necessary to evaluate the need for a generic communication and, if the decision is made to proceed, to prepare the appropriate generic communication.

Interviews indicate that short-term OES evaluations are generally more timely for those issues that are viewed clearly as having generic applicability and judged to be significant. In these cases, sufficient information tends to be readily available, submitted by the licensee or provided by the inspection staff, for timely and thorough evaluations. For other issues, however, the task force review and interviews showed that there are sometimes significant difficulties in gathering sufficient information for an effective evaluation. It is sometimes difficult to confirm generic applicability and to gather details for significance determination in a timely manner. As an example, OES staff referred to a 10 CFR Part 21 issue related to pressure transmitters that had generic implications as well as potential safety significance. Although the Part 21 issue had

generic implications (the vendor provided a list of utilities that had the transmitters), the significance depended on whether the transmitters were used in safety-significant systems (information the vendor did not have). Additional information was needed from the licensees to determine where the transmitters were installed in order to determine significance. However, without a determination of the significance, the OES staff had difficulty obtaining information either through the project managers (due to the requirements for information requests) or through the inspection program (due to resource constraints and competing priorities). Although OES staff was eventually able to get sufficient information to close out this evaluation by discussions with regional branch chiefs and by determining that licensees were already notified by INPO, the task force review and feedback from interviews indicated that this difficulty in gathering information can be a challenge to timely and effective evaluations.

The task force review also noted that there exists a lack of clear understanding among various internal stakeholders regarding OES followup activities. Regional interviewees indicated that they were generally unfamiliar with NRR short-term OE evaluations but were willing to support them when they clearly understood what information is needed and why. The current OES process and procedures regarding information gathering as part of OES followup are not formally documented and have not been communicated to key internal stakeholders. Regional interviewees also indicated that ongoing OES evaluations should be better known by the inspection staff when the issue is potentially applicable to their plants.

4.5.1.2 Industry Trends Program

The ITP, maintained by IIPB in NRR, does agency's long-term evaluations of OE and provides insights regarding high-level industry-wide performance. If a "significant adverse trend" is identified, the NRC evaluates the trend to determine its root causes and whether the agency needs to take action. During the task force review of the ITP and based on interviews, the task force found that there is no clear process, including responsible organization, for performing an evaluation when a prediction limit is exceeded.

4.5.1.3 Accident Sequence Precursor Program

The ASP program performs in-depth analyses of operating events and conditions to determine their risk significance. The ASP evaluations are relatively long-term in order to perform thorough evaluations and provide very comprehensive risk perspectives on operating events and conditions. The task force interviewees recognized a concern regarding the timeliness of ASP evaluations. Specifically, some of the past ASP evaluations took a very long time to complete and disseminate. It is noted that OERAB has taken steps to improve the overall timeliness of ASP evaluations by streamlining the analysis and review process of the ASP evaluations.

The task force also recognized that the potential conflict between the result of an ASP analysis and that of a significant determination process (SDP) analysis has been an issue. Specifically, there have been cases where an ASP result differed from a previous SDP result for the same event or degraded condition. Interviewees stated that the conflicting results do not send the public a consistent message and sometimes cause confusion about how to interpret the results. Others indicated that the SDP and the ASP program are fundamentally different in terms of their methodology and scope. (The difference between the SDP and ASP programs are discussed in a July 12, 2002, memorandum from W. Travers to the Commission (Ref. 18).)

The task force noted an initiative is currently in place to bring the ASP and SDP programs into better agreement. SECY-03-0049, "Status of Accident Sequence Precursor (ASP) and the Development of Standardized Plant Analysis Risk (SPAR) Models," March 31, 2003, stated that the staff would "continue to coordinate efforts to improve consistency between the ASP Program and the SDP."

However, the task force review did find that there is limited evaluation of the overall ASP or SDP results to identify lessons learned or insights that should be fed back to other regulatory processes. There have been selected instances where the collected ASP events have been reviewed for specific purposes. For example, one study looked at how many of the ASP events were caused by human error and what types of human error caused the events. However, the task force believes the limited evaluation of the overall ASP results for feedback to other regulatory processes is a missed opportunity to identify lessons learned.

4.5.1.4 Reliability and Risk Studies

Reliability and risk studies, performed in OERAB in RES, are produced to address the performance of specific safety systems and components. A number of such studies have been performed and documented, including various common-cause failures, initiating event frequencies, and safety system reliabilities.

Many interviewees stated that many of these studies contain very useful information. Regional interviewees, for example, indicated that the studies were thought to have information that could be applied to the inspection process. The task force noted that these studies, generally documented as NUREGs, were thorough and typically focused on risk-significant areas such as common-cause failures and systems and components. However, many interviewees stated that the usefulness of the information in the studies has been significantly reduced due to the lack of the evaluations necessary to extract insights tailored for the users. Specifically, the users, including the inspection staff, stated that they do not have sufficient resources to glean the needed insights from the reports that are typically voluminous. For example, four common-cause failure reports were published during the period of the task force effort. Regional interviews noted that these reports, believed to be useful for inspection, were not tailored to inspection needs. Two separate regions were considering performing an evaluation of these reports for inspection applicability and use. A number of interviewees recommended that additional resources be applied to the evaluation of OE to develop insights more tailored for the inspection program. The task force believes that OE evaluations should include appropriate packaging for the users. This activity will require improved coordination with the users and additional resources. As noted by the example, the tailored products could result in an efficiency increase of the user organizations by eliminating the need by the users to glean the insights they need and an effectiveness increase by promptly applying the tailored OE insights.

4.5.1.5 Generic Reactor Safety Studies

Generic reactor safety studies are performed by REAHFB in RES. Generic reactor safety studies usually include collection and analysis of data to address a specific component or system performance issue to facilitate regulatory decisions, provide the basis for a generic communication, or address a management concern. Generic reactor safety studies may also investigate more complex events or conditions and often develop the technical basis for appropriate regulatory action. When the responsibility for these studies was transferred to RES

in 1999, the Commission emphasized that these types of studies should continue to develop lessons learned from OE. However, the task force finds that very few evaluations are currently performed — about one study a year.

Those interviewees who had worked in AEOD pointed out that the reductions were mostly in the *evaluations* rather than the *analysis* efforts. The OE program produces an abundance of data and analyses, but allocates minimal resources to determine the implications of the results of those analysis to the regulatory framework or to improve reactor safety. Interviewees believed that the evaluation of the data is an important OE function which attempts to answer the important question of "What does it mean?" beyond the routine OE analyses. They thought that this independent thinking and detailed long-term view provide important lessons learned and consequently positive feedback to the agency's regulatory framework. Several interviewees referred to the past reports that had identified safety problems and had impacted other regulatory programs. A more recent study mentioned by some of those interviewed was the study on grid stability. The task force and many of these interviewees agree that additional evaluations are important and worthwhile. The task force believes that the current level of effort is not sufficient to identify important trends, recurring events, and safety issues. The DBLLTF report also noted that the current NRC reviews of OE do not involve the review and assessment of operating failure trends.

As discussed earlier, interviewees indicated that these evaluations would be more valuable if they were tailored for the users (e.g., as input to the inspection program or for purposes of knowledge transfer). One suggestion was that the inspection program branch should be responsible for taking the OE evaluation results and making changes to the inspection program, where warranted, in a way that supports consistent use by all regions and inspectors. However, they also stressed that the users should not be deluged with the OE results.

Many interviewees indicated that thorough evaluations should include enhanced consideration of foreign OE information. They referred to the DBLLTF evaluation of the insights that could have been gained from foreign OE. Instead of expanding the collection of foreign OE without specific needs, the task force and several interviewees thought that it would be more efficient and effective to use available channels to request specific foreign experience to support focused OE evaluations. The task force also noted the need to obtain additional information from domestic licensees sometimes requires site visits or communication with the licensees.

4.5.2 Conclusions

Although there are a number of OE activities devoted to analysis or trending of OE data, due to limited resources, few OE evaluations are currently being performed to identify important lessons learned regarding these trends, recurring events, and safety issues for appropriate followup. There is also a need to enhance the use of foreign OE in some of these evaluations.

There are occasional difficulties in obtaining information necessary to perform appropriate and timely OE evaluations. Lack of access to information from inspectors and licensees sometimes hinders evaluation efforts related to OES short-term evaluations and some of the long-term evaluations. The followup actions as a result of OE evaluations would be more effective if the process for obtaining access to information from inspectors and licensees was clarified.

To improve effectiveness, OE evaluations should be used to develop tailored products to support the needs of the users. Such efforts must include better communication and coordination between the users and the producers of the OE products. Results from OE evaluations should be better communicated to the users.

4.5.3 Recommendations

To address the issues identified in this section of the report, the task force made the following recommendations:

4.5.3.1 Additional OE evaluations should be performed to identify trends, recurring events, and safety issues for appropriate followup actions and to develop lessons learned to feed back to the regulatory programs and industry. Foreign OE should be appropriately considered and assessed as appropriate in OE evaluations.

4.5.3.2 OE evaluations should package the results to meet the needs of the information users. The OE information clearinghouse should play a key role in coordinating OE evaluations with the stakeholders.

4.5.3.3 The OE clearinghouse should clarify the process of obtaining information from inspectors and licensees to support OE evaluations; in some cases, this would include site visits for fact finding by evaluation staff.

4.6 Timely Decisions on Implementation and Appropriate Followup Resulting From the Review of Operating Experience

The task force believes that a systematic decisionmaking process based on OE and follow-on verification of effective implementation are very important as parts of an effective OE program. The task force defined this attribute as follows:

Timely decisions and actions are taken in response to short-term and long-term evaluations of operating experience. The decisions address the need for externally directed regulatory actions as well as appropriate changes to NRC programs. The operating experience program identifies activities or actions necessary to ensure timely implementation and followup in response to a regulatory determination. The operating experience program also assesses the effectiveness of regulatory and licensee actions taken in response to a lesson learned from the operating experience program.

4.6.1 Discussion

OE evaluations as detailed in section 4.5 are conducted to provide a basis for taking appropriate followup actions. In this attribute, the task force reviewed the effectiveness of (1) the agency's decisionmaking processes for actions in response to various OE evaluations and (2) the processes for ensuring timely implementation of the actions taken and activities for appropriate followup. The results are discussed below.

4.6.1.1 Decisions for Actions in Response to OE Evaluations

A variety of possible actions can be taken in response to OE evaluations. They include changes in facility operations or procedures; modifications to the facility components, systems, or structures; improvements in operator or staff training; changes in regulations or regulatory guides; changes in licensing review procedures or criteria; changes in the inspection program; changes in research and risk assessment activities; and the issuance of a generic communication. The types of staff actions depend generally on the safety significance and generic implications that are assessed during OE evaluations. Currently, NRR makes the majority of decisions for agency action based on evaluation of OE. Specifically, OES makes day-to-day decisions for event followup, dissemination of OE to stakeholders for information and evaluation, issuance of generic communications, and closeout of follow-up assignments. OES occasionally works with the technical and inspection staff on decisions requiring more in-depth technical expertise or involving the inspection program. Results of RES evaluations are typically sent to NRR for appropriate actions and to the regions and other RES divisions for information.

The task force noted that the results of some OE evaluations are routinely used by various internal organizations. For example, the OERAB risk and reliability studies are used for updating the SPAR models, which are developed by OERAB, and the OES significant event determinations and OERAB ASP results are input to ITP. These evaluations are part of a fairly well defined process. For other emerging event or condition-based OE evaluations or long-term studies, the task force examined whether the decisionmaking process was systematic, traceable, and consistent.

NRR Office Instruction LIC-401 describes the process by which OES screens OE for followup evaluation. As discussed in Section 4.3, LIC-401 provides criteria for determine which events or conditions should be further evaluated. However, the criteria are very general and the thresholds and steps for what regulatory actions should be taken are not clearly defined. As a result, LIC-401does not provide a basis for consistent decisionmaking by OES staff and the bases for OES decisions on OE are not well understood by other internal stakeholders. This has resulted in instances where decisions for additional action were not timely or well coordinated. Interviewees referred to the auxiliary feedwater event at Point Beach (discussed in IN 2002-29, “Recent Design Problems in Safety Functions of Pneumatic Systems,” October 15, 2002) as an example where the decision to communicate to internal and external stakeholders was not timely or well coordinated. The regions were not systematically notified of the issue for generic applicability and the associated IN was not issued until 11 months after the condition was discovered. Interviews found that individual regions followed up on the condition based on their own assessment of the significance and potential generic applicability.

The NRR decision process for proposed generic communications is described in Office Instruction LIC-503. It identifies what types of issues need to be addressed by each generic communication product; however, it lacks specific criteria or thresholds for deciding when to issue an IN or RIS. This contributed to the delay in issuing the IN on the Point Beach auxiliary feedwater event. Some interviewees noted that the decision process for issuing INs is not well understood throughout the agency.

The task force review of long-term evaluations performed by RES noted that these reports are generally sent to NRR for review and actions as appropriate, but with no specific

recommendations. They are sent to the Associate Director for Projects in NRR, who coordinates NRR activities and also distributes the reports to the appropriate technical divisions and branches for information. Interviews and task force discussions indicated that the process for NRR decisions for subsequent actions based on the RES reports is not well defined and understood. Some interviewees thought that this often led to untimely or limited consideration of the insights contained in the reports. In this regard, the task force reviewed the process for review of five RES reports issued over the last 2 years. None of the sampled five reports contained any specific recommendations for NRR actions except for occasional mentioning of planned or ongoing NRR activities pertinent to the issues in the report. As a result, there was no NRR followup, not was the information systematically disseminated to the staff. In one case, an IN on fire protection issued by the staff made use of the information in one of the five reports. However, development of this IN was not part of the formal process and was initiated by the NRR staff. Some RES reports have occasionally been used in an informal manner as a source of information for subsequent staff actions or decisionmaking.

The task force found that without clear guidance on the process for decisionmaking on OE evaluations, the process is somewhat ad hoc and many of the decisions are not well documented and communicated to the stakeholders. For example, NRR decisions for actions and their bases regarding RES reports are not well documented and communicated. As another example, OES decisions and bases for closing out followup items are typically not communicated to others although the information is documented and stored. Task force discussions and interviews indicated the importance of traceability and consistency for decisions from the perspectives of gaining lessons learned from past decisions and establishing a clearer understanding of the process for stakeholders. Interviewees also noted that there are no clear roles, responsibilities, or management expectations regarding the use of long-term OE evaluations.

4.6.1.2 Timely Implementation and Followup

The task force believes that once the decisions for action are made in response to OE evaluations, it is important for the OE program to ensure that the actions are carried out in a timely and effective manner. Many interviewees indicated that this area of the OE program is currently weak. They indicated that the current OE program generally "stops on dissemination" of OE information. They referred to the current OE products, such as generic communications, that are not systematically followed up on by verifying that the associated safety concerns are fully resolved. OES routinely closes out its assigned followup of an item when a generic communication is issued or other regulatory actions, such as an inspection, are taken or planned to be taken; but it does not ensure decisions are made on the need to verify the effectiveness of implementation by either the licensees or the NRC staff. Another example involves RES evaluations. In many cases, RES action is considered to be complete when the report is issued. Currently, there is no clear process for tracking decisions related to issues that are identified in these reports. The DBLLTF report illustrated the potential ramifications of not verifying effective implementation by the licensee. At Davis-Besse, the staff failed to confirm the effectiveness of the licensee's continued compliance with the committed boric acid program.

LIC-503 includes discussion of NRR followup actions for generic communications. It states that the NRR lead technical branch will coordinate with the NRR lead project manager for preparing appropriate guidance for NRR project managers to use when reviewing the licensee's response to generic communications and reviewing the inspection report if a temporary instruction has

been issued. The lead technical contact or the appropriate project manager will evaluate, with the help of a consultant or technical staff, each licensee response for timeliness, completeness, and technical adequacy. An assessment of the need for a temporary instruction is either made along with the proposal to issue the generic communication or later, based on an assessment of licensee responses. The task force found that for several recent significant safety issues, appropriate NRC followup through temporary instruction inspections is occurring. Examples include NRC GL 2003-01, "Control Room Habitability," June 12, 2003, and NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors, June 9, 2003." However, since the process has limited guidance, interviewees indicated that decisions on needed agency followup and the logic for those decisions for each issue do not always appear to be consistent. In addition, the task force did not identify a process to determine when long-term verification should be considered.

The task force noted that the agency typically has not reassessed significant issues associated with past generic communications. The DBLLTF report identified that the boric acid corrosion control program inspection procedure, developed in response to GL 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants, March 17, 1988," was not implemented at Davis-Besse. During discussions with INPO, it was noted that INPO has a process for designating selected significant operating event reports for long-term followup during INPO's periodic assessment process to ensure effective industry performance. However, the task force recognizes that in response to recommendation 3.1.2.5 of the DBLLTF report, NRR has initiated an activity to revisit selected generic letters and bulletins that address similar long-term programmatic requirements. Following completion of this activity, NRR plans on revising the process for requiring verification of significant generic communications to address recommendation 3.1.2.1 of the DBLLTF.

4.6.2 Conclusions

Overall, the current agency decisionmaking process for disposition of OE evaluations and recommendations is not systematic. This current process limits the effectiveness of using insights from the OE program. Such decisions should be based on a clearly defined process that is well understood by the various OE stakeholders. A systematic process would result in consistent and traceable regulatory actions based on OE.

The current followup process for OE generally stops without verifying effective implementation. OE followup items are often closed without confirming that the issues of concern have been adequately resolved. As an example, the NRC does not fully verify licensee implementation of commitments in response to a generic letter or bulletin.

4.6.3 Recommendations

To address the issues identified in this section of the report, the task force made the following recommendations:

4.6.3.1 Adopt systematic processes and standardized criteria that guide the agency's timely decisions for actions in response to OE to assure that OE insights and lessons learned are effectively incorporated into the regulatory framework, including licensing and inspection. Implementing procedures and guidance should be incorporated in the processes.

4.6.3.2 Improve the process for followup of OE to verify adequate resolution of the issues of concern, including effective implementation of internal and external actions stemming from OE insights and lessons learned. Implementing procedures and guidance should be incorporated in the processes.

4.7 Periodic Assessments of the Operating Experience Program To Determine Its Effectiveness and To Identify Needed Improvements

The task force determined that periodic assessments of the OE program are necessary to determine its effectiveness and to identify needed improvements. The task force defined this attribute as follows:

Periodic assessment of the OE program is conducted to determine how effective the agency has been in using OE to reduce the severity or recurrence rate of industry events. An effectiveness review provides feedback from stakeholders to agency management and recommends corrective actions to address identified deficiencies.

4.7.1 Discussion

Assessments of the OE program have been undertaken several times since the inception of AEOD following the TMI-2 accident. In fact, AEOD was created as an independent office as an outcome of an assessment of the agency's OE activities in response to a GAO study and the accident at TMI-2. Several of the more recent assessments were done by AEOD, including SECY-99-005, which was the basis for the consolidation of AEOD's functions into other NRC program offices. That assessment and the assessment reported in the 1994 report were primarily directed toward identifying potential efficiencies and eliminating overlapping and duplicative activities. Some of the earlier assessments focused on positive accomplishments of the OE program which contributed to improved reactor safety. At least one of the assessments stressed the "independent" role of AEOD in the OE program. However, these past assessments often were the result of specific perceived problems or other external drivers and were not part of a routine periodic assessment that was part of the OE program. For example, the 1998 study was initiated as part of the National Performance Review. The current Reactor Operating Experience Task Force efforts to evaluate the effectiveness of the OE program are a result of recommendations from the DBLLTF report.

During the time when AEOD was the focal point for the OE program, AEOD published an annual report which contained a description of AEOD's OE activities, major accomplishments of the past year, listings of all previous OE reports, industry and performance indicator trends, and many other items of interest to the OE community. The AEOD report, although not a true assessment of the OE program, was a status report on OE activities. AEOD also contributed to the NRC annual report so that the status of the OE program was reported along with other major NRC activities. As part of the efficiencies gained with the consolidation of AEOD, the annual report for AEOD was eliminated. When approving the consolidation, the Commission directed staff to determine, after a year of experience with the new organization, to provide the Commission any suggestions for achieving further efficiencies. This review was assigned to the Office of Human Resources and was completed in June 2000. The Office of Human Resources did not provide any specific suggestions for further efficiencies but did state that overall opportunities for improving efficiency and effectiveness will continue to be an expected outcome

from regular program and resource reviews. However, this review did not assess the effectiveness of the OE program to determine if Commission expectations were met.

Several current NRC programs, including the ASP program, the ITP, and the Reactor Oversight Program, report an assessment of program status via an annual SECY paper. However, there is no periodic SECY for the OE program.

The task force believes that periodic assessments of the agency OE program are necessary to assess the program effectiveness. MD 8.5, although out of date, included an expectation that "regular assessments of operating and occupational safety data activities will be performed." Interviewees were also in agreement that program assessments are important and that well-defined metrics could provide rapid feedback on program performance. Interviewees were also in agreement that metrics would be difficult to define. There was also a consensus that OE program objectives and expectations need to be clearly identified as the basis for an OE program assessment.

Some suggestions for assessment ideas from interviews of NRC staff and management include (1) reviewing safety significant events during a given time period and assessing the role of the OE program in identification and effective followup of those events; (2) assess the progress in implementing specific program improvements related to recommendations discussed elsewhere in this report; and (3) developing a measure of the trends in recurring events or the number of precursors.

Other suggestions for assessment of the OE program could include program aspects that are more process related. Some techniques that could be employed include (1) interviewing agency personnel to determine their awareness of lessons learned from OE that apply to their jobs, (2) reviewing recent industry events to determine if similar events are recurring, (3) reviewing inspection findings to determine if event precursors to significant events are being identified, (4) reviewing industry corrective actions implemented in response to agency communications, and (5) reviewing how agency evaluations are used to support staff activities.

This report provides the OE task force steering committee a number of recommendations. The steering committee and NRC management will decide which of those recommendations will be selected for implementation. Finally, an implementation phase will begin to put the selected recommendations into practice. Task force discussions conclude that an assessment of the progress of the implementation phase within 1 year of completion of the implementation phase would be an appropriate assessment activity, with the results reported in a SECY paper.

The task force and several of those interviewed believed that a program status report, similar to that prepared for the ASP program and the Reactor Oversight Program, could be a means of program assessment. A routine status report could include overall program accomplishments, in addition to results of program metrics and other defined program effectiveness measures that would be planned. Periodic assessments could also involve key stakeholder external to the OE program or the Advisory Committee on Reactor Safeguards to provide for an outside perspective. These assessments, if performed regularly, need not be resource intensive and should preclude the need for infrequent, but resource-intensive, in-depth assessments such as the current task force effort.

4.7.2 Conclusions

Periodic assessments of the OE program are necessary to determine if the program is effective. There is currently no process to conduct this assessment.

4.7.3 Recommendations

To address the issues identified in this section of the report, the task force made the following recommendations:

4.7.3.1 The designated single point of contact (Recommendation 4.1.3.2) should conduct an assessment of the initial implementation of the OE task force recommendations which are selected by NRC management for implementation approximately 1 year following initial implementation.

4.7.3.2 The designated single point of contact should develop and collect appropriate OE program effectiveness measures and metrics, with links to the performance goals in the NRC strategic plan and the attributes of the OE program.

4.7.3.3 Thereafter, periodic assessment (approximately every 3 years) should be conducted. This assessment should involve stakeholders external to the OE program and be reported in a paper to the Commission.

5 Assessment of the Scope and Adequacy of NRC Requirements Governing the Licensee Review of Operating Experience

The following recommendation from the DBLLTF report was designated a high-priority recommendation and included in the scope of the Reactor Operating Experience Task Force efforts:

> 3.2.4(1) The NRC should assess the scope and adequacy of its requirements governing licensee review of operating experience.

The basis for this recommendation was three-fold: (1) the lessons from a Davis-Besse event in 1998 involving a significant boric acid-induced corrosion of the pressurizer spray valve should have resulted in the identification of the vessel head penetration nozzle leaks at an earlier time; (2) the licensee did not include LERs within the scope of its OE review program, which may account for a general lack of awareness of pertinent industry trends; and (3) in general, the processing of external OE was not thorough or timely.

5.1 Discussion

To address this recommendation, the task force reviewed the current regulations and other requirements that govern licensees' review of OE. The task force also reviewed the current inspection activities focused on licensees' programs for the review of OE. This review also involved discussions with Office of General Counsel (OGC) and Office of Enforcement staff.

Three regulations pertain to the licensees' review of OE. These are 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," and 10 CFR 50.73, "Licensee Event Report System." Criterion XVI, "Corrective Action," of 10 CFR Part 50, Appendix B, states:

> Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective actions taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management.

The NRC staff has interpreted and applied Criterion XVI as requiring licensees to identify and correct conditions adverse to quality regardless of whether the licensee identified the adverse condition from its own plant's OE or from review of other plants' OE. Based on discussions with staff from OGC and the Office of Enforcement the NRC uses a standard of "reasonableness" to assess licensee compliance with the requirement to identify and correct an adverse condition identified by external OE. For example, if an NRC IN or a 10 CFR Part 21 report identifies a condition adverse to quality that is within the scope of Appendix B and is clearly applicable to a licensee's facility, the staff interprets Criterion XVI as requiring a licensee to take action to correct the condition. The task force review determined that the Davis-Besse spray valve was

within the scope of Appendix B and, therefore, believes that Criterion XVI provides sufficient regulatory authority to support the determination that the licensee failed to take adequate corrective action to address this adverse condition. Criterion XVI requires that conditions adverse to quality be "promptly identified and corrected," which the staff has interpreted and applied to timeliness concerns involving both internal and external OE.

Paragraphs a(1) and a(3) of the maintenance rule, 10 CFR 50.65, require that:

> (a)(1) Each holder of a license to operate a nuclear power plant . . . shall monitor the performance or condition of structures, systems, or components, against licensee-established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components are capable of fulfilling their intended functions. Such goals shall be established commensurate with safety and, where practical, take into account industry-wide **operating experience** [emphasis added]. When the performance or condition of a structure, system, or component does not meet established goals, appropriate corrective action shall be taken.
>
> (a)(3) Performance and condition monitoring activities and associated goals and preventive maintenance activities shall be evaluated at least every refueling cycle provided the interval between evaluations does not exceed 24 months. The evaluations shall take into account, where practical, industry-wide **operating experience** [emphasis added]. Adjustments shall be made where necessary to ensure that the objective of preventing failures of structures, systems, and components through maintenance is appropriately balanced against the objective of minimizing unavailability of structures, systems, and components due to monitoring or preventive maintenance.

The reporting requirement specified in 10 CFR 50.73, "Licensee event report system," paragraph (b)(5), is that the licensee event report shall contain "Reference to any previous similar events at the same plant that are known to the licensee." This requirement is narrow compared to the wide range of safety issues that are of interest in an OE program in that the licensees are only required to review events at the "same plant," thereby excluding the need to review external OE. In addition, 50.73(b)(2)(C) states the LER must include the "dates and approximate times of occurrences," as appropriate for the specific event. Licensee reviews of the plants' operating history to fulfil this requirement are similarly narrow in scope, dealing only with occurrences related to the specific event.

Following the accident at TMI-2, the NRC issued NUREG-0737, "Clarification of TMI Action Plan Requirements," October 31, 1980, which provided post-TMI guidance that had been approved for implementation. NUREG-0737, Item I.C.5, "Procedures for Feedback of Operating Experience to Plant Staff," was identified as applicable to both operating reactors and applicants for an operating license regarding development of a program for the review of both plant-specific and industry-wide OE. Specifically, NUREG-0737, Item I.C.5, contained the following provision:

> In accordance with Task Action Plan I.C.5, Procedures for Feedback of Operating Experience to Plant Staff (NUREG-0660), each applicant for an

operating license shall prepare procedures to assure that operating information pertinent to plant safety originating both within and outside the utility organization is continually supplied to operators and other personnel and is incorporated into training and retraining programs. These procedures shall:

(1) Clearly identify organizational responsibilities for review of operating experience, the feedback of pertinent information to operators and other personnel, and the incorporation of such information into training and retraining programs;

(2) Identify the administrative and technical review steps necessary in translating recommendations by the operating experience assessment group into plant actions (e.g., changes to procedures; operating orders);

(3) Identify the recipients of various categories of information from operating experience (i.e., supervisory personnel, shift technical advisors, operators, maintenance personnel, health physics technicians) or otherwise provide means through which such information can be readily related to the job functions of the recipients;

(4) Provide means to assure that affected personnel become aware of and understand information of sufficient importance that should not wait for emphasis through routine training and retraining programs;

(5) Assure that plant personnel do not routinely receive extraneous and unimportant information on operating experience in such volume that it would obscure priority information or otherwise detract from overall job performance and proficiency;

(6) Provide suitable checks to assure that conflicting or contradictory information is not conveyed to operators and other personnel until resolution is reached; and,

(7) Provide a periodic internal audit to assure that the feedback program functions effectively at all levels.

NUREG-0737, Item I.C.5, went on to state that:

Each utility shall carry out an operating experience assessment function that will involve utility personnel having collective competence in all areas important to plant safety. In connection with this assessment function, it is important that procedures exist to assure that important information on operating experience originating both within and outside the organization is continually provided to operators and other personnel and that it is incorporated into plant operating procedures and training and retraining programs.

Those involved in the assessment of operating experience will review information from a variety of sources. These include operating information from the licensee's own plant(s), publications such as IE Bulletins, Circulars,

> and Notices, and pertinent NRC or industry assessments of operating experience. In some cases, information may be of sufficient importance that it must be dealt with promptly (through instructions, changes to operating and emergency procedures, issuance of special changes to operating and emergency procedures, issuance of special precautions, etc.) and must be handled in such a manner to assure that operations management personnel would be directly involved in the process. In many other cases, however, important Information will become available which should be brought to the attention of operators and other personnel for their general information to assure continued safe plant operation. Since the total volume of information handled by the assessment group may be large, it is important that assurance be provided that high-priority matters are dealt with promptly and that discrimination is used in the feedback of other information so that personnel are not deluged with unimportant and extraneous information to the detriment of their overall proficiency. It is important, also, that technical reviews be conducted to preclude premature dissemination of conflicting or contradictory information.

The schedule for implementing NUREG-0737, Item I.C.5, was January 1, 1981. NUREG-0737 was sent to licensees under a 10 CFR 50.54(f) letter requesting licensees to confirm that the implementation date would be met. Subsequently, the NRC issued to each licensed power reactor a plant-specific confirmatory order which imposed as a license condition that the licensee commit to certain TMI-related provisions set forth in NUREG-0737, including the specific provision to "Implement procedures for feedback of operating experience." Approximately half of the 104 currently licensed power reactors received their initial operating license prior to the TMI-2 accident and thus received an individual confirmatory order. With few exceptions, plants that were licensed after the TMI-2 accident did not receive an order imposing NUREG-0737 provisions as requirements. Instead, those licensees discussed the NUREG-0737 items in their safety analysis report[1]. The NRC conducted post-implementation reviews for NUREG-0737, Item I.C.5.

In support of industry efforts to reduce duplication of efforts in reviewing OE (by centralizing screening of the data) and to ensure that plant resources can focus on evaluation and implementation of the lessons learned, NRC issued GL 82-04, "Use of INPO SEE-In Program," on March 10, 1982, to endorse the use of INPO's Significant Event Evaluation and Information Network (SEE-IN) program as an acceptable method for meeting *part* of TMI Action Item I.C.5. SEE-IN is a mechanism for the centralized collection and screening of events reported by both U.S. and foreign nuclear plants. Full participation by licensees enhances their capability to meet the intent of TMI Action Plan Item I.C.5, by permitting them to focus their resources on evaluating and responding to OE information which has already been screened, rather than having to review the entire body of material available. Regarding the DBLLTF report statement that the licensee did not include LERs within the scope of its OE review program, Davis-Besse's approach is consistent with the guidance provided in GL 82-04. This task force found no evidence to suggest that licensee use of the INPO SEE-In program is less effective than requiring every licensee to screen all external OE. To the contrary, INPO use of a core group

[1] The task force did not review the implementation at all 104 currently licensed power reactors, but did a sampling, supplemented by discussions with NRR staff.

of experienced personnel to screen industry experience likely improves the overall effectiveness of licensee OE programs.

There are two baseline IPs that provide for an inspection of OE. IP 71152, "Identification and Resolution of Problems," September 8, 2003, states that in selecting issues for biannual inspection, it is mandatory for inspectors to inspect a sample of issues identified through NRC generic communications, as well as, a sample of issues identified through industry OE exchange mechanisms (including Part 21 reports, nuclear steam supply system vendor reports, Electric Power Research Institute reports, experience reports from similar facilities, and LERs). IP 71152 was recently revised to make these samples mandatory rather than simply a consideration. The recent revision to IP 71152 also added that for a subset of the samples chosen for review, the scope of the review should be expanded to at least 5 years. Among the samples chosen for this extended review should be those issues whose significance might be age dependent, such as issues associated with erosion of piping, boric acid accumulations, aging of electronic components, environmental qualification, etc.

The other baseline IP that inspects licensee use of OE is IP 71111.12, "Maintenance Effectiveness," July 1, 2002, which evaluates maintenance rule implementation regarding whether the licensee is appropriately taking into account industry-wide OE when establishing and periodically evaluating equipment performance goals.

5.2 Conclusion

(1) Current NRC requirements related to licensee review of OE include:

(a) 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action"

(b) 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants"

(c) 10 CFR 50.73, "Licensee event report system"

(d) NUREG-0737, Action Item I.C.5, "Procedures for Feedback of Operating Experience to Plant Staff"

The task force believes that the scope and adequacy of its requirements related to licensee review of OE are currently acceptable based on (1) the understanding that all currently licensed plants have a process for feedback of OE and (2) fact that, for safety-related systems, structures, and components, 10 CFR 50, Appendix B, Criterion XVI provides a regulatory basis that NRC has used to address instances where the licensees failed to promptly identify and correct conditions adverse to quality that were the subject of internal and/or external OE.

(2) IP 71152 is the key baseline IP for evaluating the licensee's utilization of external OE. This task force determined that recent changes to IP 71152 enhanced NRC baseline inspection efforts for evaluating licensee utilization of OE.

5.3 Recommendations

Based on the conclusion that the scope and adequacy of NRC requirements related to licensee review of OE are currently acceptable, the task force provides no specific recommendation to enhance these requirements. Notwithstanding, the task force recognizes that the increased NRC focus (including recent enhancements to IP 71152) may identify issues that would provide the basis for the NRC to revisit these requirements.

6 Assessment of the Effectiveness of the Generic Issues Program

As part of the DBLLTF high-priority recommendation regarding the assessment of the NRC programs involving the review of OE, the DBLLTF recommended that the effectiveness of the GIP be evaluated. Specifically, the GIP was identified as Item 4 of Recommendation 3.1.6(1):

> 3.1.6(1) The NRC should take the following steps to address the effectiveness of its programs involving the review of OE: . . . (4) evaluate the effectiveness of the Generic Issues Program.

The DBLLTF also made the following observation related to the GIP:

> Some NRC staff believe that the implementation effectiveness of the GIP is limited because the resolution of issues is typically protracted. The treatment of a candidate issue in accordance with MD 6.4 may take a year or more to analyze and longer to effectively close out by verification inspections, which are required under this program. Because of this view, in conjunction with the thresholds established for GI formulation, it appears that a number of emerging issues are being addressed directly through the issuance of information notices [INs], bulletins, or GLs rather than submitting an issue as a candidate GI in accordance with MD 6.4.

Because the GIP is separate from the OE program, the task force assessed its effectiveness separately. The review of OE is only one way of identifying potential generic issues (GIs).

6.1 Discussion

The GIP is the agency program for the resolution of GIs that may involve new or revised rules, new or revised guidance, or revised interpretations of rules or guidance that affect licensees. A GI is a regulatory matter (i.e., an issue involving the design, construction, operation, or decommissioning of several or a class of NRC licensees) that is not sufficiently addressed by existing rules, guidance, or programs and may be an adequate protection issue, a substantial safety enhancement issue, or a burden reduction issue. The GIP is managed by RES, and M.D. 6.4, "Generic Issues Program," December 4, 2001 (Ref. 19), is the agency procedure governing the program.

MD 6.4 was issued in December 2001 (a draft was issued for trial use in June 1999). This MD provides guidance for all seven stages of the GI process: (1) issue identification, (2) initial screening, (3) technical assessment, (4) regulation and guidance development, (5) regulation and guidance issuance, (6) implementation, and (7) verification. Prior to the issuance of MD 6.4, RES Office Letter (OL) No. 7, "Procedures for Identification, Prioritization, Resolution, and Tracking of Generic Issues," issued in February 1996 (Ref. 20), provided guidance for the GIP. However, RES OL No. 7 only provided guidance for the first three stages of the GI process. GIs were considered "resolved" after the technical resolution stage identified recommended actions and the responsibility for the issue was transferred to another program (e.g., rulemaking). The regulation and guidance development was not tracked by the GIP, nor was the implementation and verification. RES OL No. 7 has not been updated to reflect the issuance of MD 6.4, nor does it reflect the current organizational responsibilities in RES.

Candidate GIs can be proposed by individuals and organizational units within the Nuclear Regulatory Commission (NRC), industry groups, or the public. Once proposed, candidate GIs are screened to determine whether they should be processed as a GI, excluded from further analysis, or sent to another program for review. Issues that involve compliance with existing regulations are examples of GIs that are sent to another program office for review. As part of screening, issues are evaluated for risk significance, and if certain thresholds are met, detailed analyses may be performed. Following an analysis, recommendations are made which may include both industry and NRC actions. For an issue to be classified as a GI (e.g., involving adequate protection, substantial safety enhancement, or burden reduction), certain core damage or large early release frequency thresholds must be met, which may also involve a cost benefit analysis made on the basis of dollars per person-REM.

The current guidance for identifying GIs is in MD 6.4. In part the guidance reads: "Individuals and organizational units within the NRC, industry groups, or the public who wish to nominate a GI for review must submit the information requested in the attached Appendix A, Candidate Generic Issue Submittal Process, Table A1, Candidate Generic Issue Submittal Format, to the GIP Manager in RES." This information is requested to help define the candidate GI in sufficient detail to allow RES to make an assessment of this issue without having to gather additional information gathering to understand the candidate issue.

The 13 items requested by MD 6.4 Table A1 in submitting a candidate GI require specific details. Item 7, Safety Issue, requires the submitter to discuss the risk potential (i.e., potential contribution to risk, core damage frequency, or public radiation exposure). This item needs to be as specific as possible in terms of an objectively observable characteristic, such as the presence or absence of a particular design feature. Item 8, Possible Solutions, requests that sufficient attention should be devoted to the proposed issue to suggest a possible or alternative solution (e.g., design and hardware changes or additions, procedural changes, changes in plant staffing and/or management, accident management changes). On the first page of Appendix A, additional guidance is provided that reads: "It is not necessary to fill out every section of Table A1 in detail for the candidate GI to be considered by the NRC." The guidance continues by stating: "candidate GI submittals that lack critical information will be returned to the submitter for revision and resubmission." However, the guidance does not indicate of which items are considered critical. Previously, RES OL No. 7 indicated that the information, to the extent practical, should be provided in sufficient detail to permit the proposed issue to be analyzed and prioritized with a minimum of additional information gathering.

The task force's interviews highlighted a lack of understanding of the process for identifying GIs among the staff. Although a number of interviewees were familiar with the GI process, some interviewees indicated that it was their understanding that office-level concurrence was required to identify a GI. Other interviewees were unaware that there was a GIP. A common theme emerged from interviews with regional staff. The regional inspection staff communicates plant issues to the appropriate headquarters staff through communication briefings with the expectation that the headquarters staff will identify candidate GIs.

An objective of MD 6.4 is to "ensure that program and regional offices maintain a coordinated and efficient capability" for issue identification. The task force reviewed relevant documents related to this objective. Draft NRR Office Instruction LIC-401, "NRR Operating Experience Program," issued in March 2003, indicates that one outcome of the evaluation of OE by OES is the identification of a GI and references RES OL No. 7 for guidance. NRR Office Instruction

LIC-503, "Generic Communications Affecting Nuclear Reactor Licensees," issued in June 2003, also directs that an emergent issue requiring more rigorous assessment as a potential GI should be forwarded to RES, in accordance with RES OL No. 7. Inspection Manual Chapter (IMC) 0970, "Potentially Generic Items Identified by Regional Offices," December 11, 2000, provides NRR guidance for processing potentially safety questions after they have been identified by the regional offices. This procedure directs that potentially generic safety questions be provided to REXB/NRR by the regions. REXB will determine whether actions are needed or the information should be provided to other organizational units for followup, including providing input to activities of RES. However, IMC 0970 does not refer to the GIP or to MD 6.4. The NRC Web site provides a description of the GIP, but does not give the staff or the public information about how to identify a candidate GI.

Once candidate issues are identified, MD 6.4 provides for a disciplined program that screens candidate issues to determine the significance of the issue and whether it warrants expenditure of NRC resources. The MD provides a documented process for deciding the need for further action and tracks the resolution of issues through to completion, including implementation and verification for those issues requiring licensee action. The guidance provided in MD 6.4 regarding the technical assessment phase reflects the agency's safety goal policy and the backfit regulations (10 CFR 50.109). Based on a review of recent GIs and on interviews with staff familiar with the GIP, the time from issue identification to completion of the technical assessment phase is often longer than a year. This is attributed both to resource constraints and to the complexity of the issues. Detailed analysis and research is required to determine their significance. Resources for GI assessment and implementation are allocated through the Planning, Budgeting, and Program Management process and compete with other priority issues. However, one interviewee, referring to a recent GI on hydrogen control, indicated that when an issue is a high priority, it can proceed along promptly. The task force was not able to assess the time required for a GI to be closed out by verification inspections. The tracking of GI through to verification was only recently included in the GIP. No issues have been completed under the new MD that required implementation by licensees, and no verification inspections have been done.

6.2 Conclusions

1. The GIP provides a documented decision process for the screening and assessment of GIs and will track the resolution of issues through to completion, including implementation and verification for those issues requiring licensee action. However, since MD 6.4 was issued, no GI has been fully gone through the new GI process.

2. The GIP depends on other programs (e.g., the OE program) to identify new candidate issues. However, the process for and responsibility to identify candidate issues have not been effectively communicated to staff.

3. Agency administrative processes have not been integrated. MD 6.4 was issued in December 2001. The NRR Office Instructions LIC-401 and 503 were issued after the issuance of MD 6.4, but still refer to RES OL No. 7. RES OL No. 7 has not been updated to reflect MD 6.4. IMC 0970 does not refer to MD 6.4.

6.3 Recommendations

To address the issues discussed in this section of the report, the task force made the following recommendations:

6.3.1 As GIP manager, RES should work with NRR and the regions to communicate to staff a description of the GIP and the process and responsibility for identifying candidate GIs.

6.3.2 RES and NRR should update their procedures to reflect the issuance of MD 6.4.

6.3.3 After sufficient experience is gained using MD 6.4, RES should assess the effectiveness of the GIP.

7 REFERENCES

1. U.S. Nuclear Regulatory Commission, memorandum from R.W. Borchardt et al. to C.E. Ader, Subject: Charter for Operating Experience Task Force, April 25, 2003 (ML031200535).

2. U.S. Nuclear Regulatory Commission, Final Report, "Degradation of the Davis-Besse Nuclear Power Station Reactor Pressure Vessel Head Lessons Learned Report," September 30, 2002 (ML022760414).

3. U.S. Nuclear Regulatory Commission, memorandum from S. Collins and A.C. Thadani to W. Travers, Subject: Actions Resulting From the Davis-Besse Lessons Learned Task Force Report Recommendations – Correction, March 7, 2003 (ML030660105).

4. U.S. Nuclear Regulatory Commission, memorandum from W.D. Travers to S. Collins and A.C. Thadani, Subject: Actions Resulting from the Davis-Besse Lessons Learned Task Force Report Recommendations, January 3, 2003, (ML023640431).

5. U.S. Nuclear Regulatory Commission, SECY-98-228, "Proposed Streamlining and Consolidation of AEOD Functions and Responsibilities," October 1, 1998.

6. U.S. Nuclear Regulatory Commission, Management Directive 8.5, "Operational Safety Data Review," December 23, 1997.

7. U.S. Nuclear Regulatory Commission, "FY2000–2005 Strategic Plan, Volume 2," NUREG-1614, Vol. 2, September 2000.

8. U.S. Nuclear Regulatory Commission, memorandum from C.E. Ader to W.R. Borchardt et al., Subject: Proposed Operating Experience Program Objectives and Attributes, April 30, 2003 (ML031200312).

9. U.S. Nuclear Regulatory Commission, memorandum from R.W. Borchardt, et al., to C.E. Ader, Subject: "Operating Experience Program Objectives and Attributes," May 14, 2003 (ML031350156).

10. U.S. Nuclear Regulatory Commission, memorandum from C. E. Ader to R.W. Borchardt, et al., Subject: Operating Experience Program Objectives and Attributes, May 29, 2003 (ML031590535).

11. United States General Accounting Office, "Reporting Unscheduled Events At Commercial Nuclear Facilities: Opportunities to Improve Nuclear Regulatory Commission Oversight," January 1979.

12. U.S. Nuclear Regulatory Commission, SECY-79-371, "Recommendations on Operational Data Analysis and Evaluation for Nuclear Power Plants (Task Force Report)," June 4, 1979.

13. U.S. Nuclear Regulatory Commission, memorandum from S. Chilk to L. Gossick, Subject: SECY-79-371 – Recommendations on Operational Data Analysis and Evaluation for Nuclear Power Plants (Task Force Report), July 12, 1979.

14. U.S. Nuclear Regulatory Commission, SECY-99-005, "Self-Assessment of Operational Safety Data Review Processes," January 6, 1999, with attached report, "Self-Assessment of Operational Safety Data Review Process," December 17, 1998.

15. U.S. Nuclear Regulatory Commission, Staff Requirements Memorandum, "SECY-98-228 – Proposed Streamlining and Consolidation of AEOD Functions and Responsibilities," December 10, 1998.

16. U.S. Nuclear Regulatory Commission, M. Rogovin et al., "Three Mile Island, A Report to the Commissioners and to the Public," January 1980.

17. U.S. Nuclear Regulatory Commission, NRR Office Instruction LIC-401, "NRR Operating Experience Program," March 31, 2003.

18. U.S. Nuclear Regulatory Commission, memorandum from W. Travers to the Commission, Subject: Response to Staff Requirements Memorandum SRM-M020319, Dated April 1, 2002, Briefing on Office of Nuclear Regulatory Research (RES) Programs, Performance, and Plans, July 12, 2002.

19. U.S. Nuclear Regulatory Commission, Management Directive 6.4, "Generic Issues Program," December 4, 2001.

20. U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research Office Letter No. 7, "Procedures for Identification, Prioritization, Resolution, and Tracking of Generic Issues," February 16, 1996.

APPENDICES

APPENDIX A

CONSOLIDATED TABLE OF RECOMMENDATIONS

Appendix A Consolidated Table of Recommendations

Recommendation Number	Recommendation
4.1.3.1	The NRC should develop and communicate a clear vision of how the agency's OE program activities should function together to meet the Commission's expectations for the use of OE. MD 8.5 should be updated to communicate this vision and the roles and responsibilities of the OE activities. Office level procedures should be updated to be consistent with MD 8.5.
4.1.3.2	A senior manager should be assigned as a single point of contact to coordinate activities for the agency's reactor OE program, including periodic assessments and program status reports.
4.1.3.3	The responsibilities and expectations need to be clarified for utilizing the lessons learned from evaluations of trended data, reliability studies, ASP studies, and generic reactor safety studies, including updating MD 8.5 and other appropriate procedures to explicitly include consideration of OE information.
4.2.3.1	As recommended in Section 4.3, a central clearinghouse function should be established to: (a) Create and maintain an NRC OE data and information Web site; (b) Develop processes to catalog and make available current databases and document collections of OE data and information, collect and store important OE e-mails, collect and store foreign OE not reported in IRS; and (c) Coordinate efforts with the Office of the Chief Information Officer to improve search routines and improve the categorization of OE documents in ADAMS.
4.2.3.2	Continue the following ongoing initiatives to improve collection, storage, and retrieval of OE data and information while coordinating with other closely related ongoing activities: the Reactor Operating Experience Results and Database Web page, the Inspector Electronic Support System Web page, the Web-based LER Search System, the Integrated Data Collection and Coding System, the Reactor Operating Experience Information System, and the Web-based ASP database.
4.2.3.3	Continue to work with INPO and industry to improve the consistency of data entered into EPIX. In addition, RES staff, industry, and INPO representatives should continue to work together through the EPIX Ad Hoc Working Group to ensure that EPIX benefits both the NRC and industry.

Appendix A Consolidated Table of Recommendations (Cont.)

Recommendation Number	Recommendation
4.3.3.1	Establish an OE information clearinghouse function within a single organization to: collect, screen, prioritize, and distribute OE information to interested users; facilitate and track OE decisions and followup; facilitate communication of OE lessons learned; and coordinate overall NRC OE activities.
4.3.3.2	Develop guidance to inspectors, technical branches, and licensing personnel which provides clear expectations for identifying existing safety problems and provides better guidance on what the inspector should look for to identify existing safety problems based on OE feedback.
4.3.3.3	Formally incorporate the review of LERs, inspection findings, and IRS reports as input to the routine OE screening process.
4.4.3.1	The central clearinghouse should take the lead in identifying the communication needs of internal stakeholders for OE. These needs should address the user need for OE information, the vehicle for communicating the information (including procedures that provide guidance on the type and format of information to be provided), and the responsibilities for communication. Key internal stakeholders include the Commission and Advisory Committee on Reactor Safeguards, in addition to NRR, RES, and regional staff.
4.4.3.2	The central clearinghouse should take the lead in establishing routine and frequent communication mechanisms between the various OE organizations (e.g., daily screening meetings, weekly coordination meetings, and monthly management briefings) to improve communication and coordination among the OE activities.
4.4.3.3	The OE review results, insights, and lessons learned should be better used to support the agency's knowledge transfer and training. The central clearinghouse should work with the Technical Training Center and other program offices to develop specific ways to use OE information for that purpose.
4.5.3.1	Additional OE evaluations should be performed to identify trends, recurring events, or safety issues for appropriate followup actions and to develop lessons learned to feed back to the regulatory programs and industry. Foreign OE should be appropriately considered and assessed as appropriate in OE evaluations.
4.5.3.2	OE evaluations should package the results to meet the needs of the information users. The OE information clearinghouse should play a key role in coordination OE evaluations with the stakeholders.

Appendix A Consolidated Table of Recommendations (Cont.)

Recommendation Number	Recommendation
4.5.3.3	The OE clearinghouse should clarify the process of obtaining information from inspectors and licensees to support OE evaluations; in some cases, this would include site visits for fact finding by evaluation staff.
4.6.3.1	Adopt systematic processes and standardized criteria that guide the agency's timely decisions for actions in response to OE to assure that OE insights and lessons learned are effectively incorporated into the regulatory framework including licensing and inspection. Implementing procedures and guidance should be incorporated in the processes.
4.6.3.2	Improve the process for follow-up of OE that verifies adequate resolution of the issues of concern including effective implementation of internal and external actions stemming from OE insights and lessons learned. Implementing procedures and guidance should be incorporated in the processes.
4.7.3.1	The designated single point of contact (Recommendation 4.1.3.2) should conduct an assessment of the initial implementation of the OE task force recommendations which are selected by NRC management for implementation approximately 1 year following initial implementation.
4.7.3.2	The designated single point of contact should develop and collect appropriate OE program effectiveness measures and metrics, with links to the performance goals in the NRC strategic plan and the attributes of the OE program.
4.7.3.3	Thereafter, periodic assessment (approximately every 3 years) should be conducted. This assessment should involve stakeholders external to the OE program and reported in a paper to the Commission.
5.3	Based on the conclusion that the scope and adequacy of NRC requirements related to licensee review of OE are currently acceptable, the Task Force provides no specific recommendation to enhance these requirements. Notwithstanding, the Task Force recognizes that the increased NRC focus (including recent enhancements to IP 71152) may identify issues that would provide the basis for the NRC to revisit these requirements.
6.3.1	As GIP manager, RES should work with NRR and the regions to communicate to staff a description of the GIP, and the process and responsibility for identifying candidate GIs.
6.3.2	RES and NRR should update their procedures to reflect the issuance of MD 6.4.
6.3.3	After sufficient experience is gained using MD 6.4, RES should assess the effectiveness of the GIP.

APPENDIX B

CURRENT REACTOR OPERATING EXPERIENCE PROGRAM REVIEW

Appendix B Current Reactor Operating Experience Program Review

A. Introduction

This appendix describes the current operating experience (OE) program activities. It supplements the main report of the task force by providing an overview of those activities.

Currently, key OE activities are primarily conducted by the Offices of Nuclear Reactor Regulation (NRR) and Nuclear Regulatory Research (RES). In NRR, the Operating Experience Section (OES) under Reactor Operations Branch (ROB) is the focal point of the agency's activities involving events assessment for generic applicability and generic communications. The Performance Assessment Section (PAS) in the Inspection Program Branch (IIPB) has responsibility for the Industry Trends Program (ITP). In RES, the Operating Experience Risk Analysis Branch (OERAB) has responsibility for the Accident Sequence Precursor (ASP) program and risk and reliability studies. The Regulatory Effectiveness and Operating Experience Team (REOET) in the Regulatory Effectiveness Assessment and Human Factors Branch (REAHFB) conducts long-term generic safety studies and regulatory effectiveness assessments. The organization of the headquarters OE activities is depicted in Figure B-1.

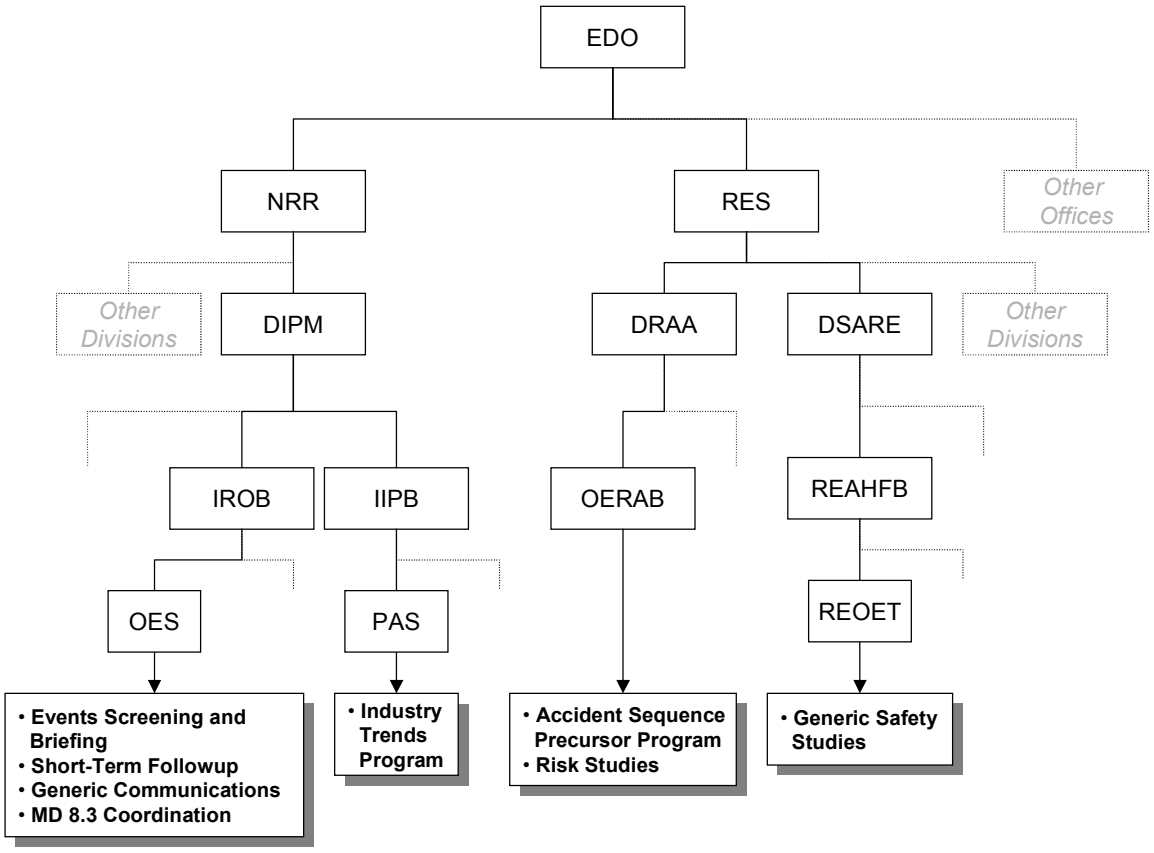

Figure B-1. Headquarters Organizations Responsible for Operating Experience

This appendix also describes several OE-related activities, including the Performance Indicators (PIs) program and the agency reporting of Abnormal Occurrences (AOs). In addition, the NRC Operations Center activities in the Office of Nuclear Security and Incident Response (NSIR) and Regional activities related to the OE program are described.

B. Office of Nuclear Reactor Regulation

B.1 Overview

Within NRR, OES functions as the focal point and has the primary responsibility for most of the NRR's current OE activities. Major OES activities include events assessment (screening and follow up of OE information), generic communications, management briefings, and NRR coordination of event response process. OES implements the NRR responsibilities prescribed in Management Directives (MD) 8.5, "Operational Safety Data review," December 23, 1997, and those prescribed in MD 5.12, "International Nuclear Event Scale Participation," March 13, 2002 and MD 8.3, "NRC Incident Investigation Program," March 27, 2001. The ITP monitors trends in indicators of industry performance as a means to confirm that the safety of operating power plants is being maintained. The NRC formally reviews these indicators as part of the Agency Action Review Meeting (AARM) each year, and any adverse trends are reported to Congress in the NRC's Performance and Accountability Report.

B.2 Events Assessment: Screening and Follow up (OES/IROB/DIPM)

NRR Office Instruction LIC-401, "NRR Operating Experience Program," March 31, 2003, provides a detailed description of the current OES activities. Fundamentally, OES is tasked to promptly review and analyze emergent OE information for risk significance, generic implications, and regulatory importance. Regulatory importance generally refers to aspects such as high public interest. The OE information that OES reviews typically include the following:

- Operations Center reports, including 10 CFR 50.72 reports, daily plant status reports, Morning Reports (MRs), and security-related reports;
- NRC-generated reports, including Preliminary Notifications (PNs);
- Results from the daily regional calls;
- Vendor/industry information such as 10 CFR 21 reports, Institute of Nuclear Power Operations (INPO) reports, and information obtained from the weekly conference calls with INPO;
- Foreign events such as the Incident Reporting System (IRS) reports, International Nuclear Event Scale (INES) reports; and
- Media/press coverage.

The OES screening for potential risk significance is generally based on the principles prescribed in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," issued in July 1998. For example, an event or degraded condition is considered potentially safety significant if the preliminarily estimated conditional core damage probability (CCDP) is greater than 1E-6.

The estimated risk is then used as an input to the overall safety significance decision making process, along with other traditional engineering factors. The OES staff evaluation of the potential risk significance, combined with their assessment of the potential applicability to other plants, and regulatory importance of the issue provide the basis for NRC decision making regarding NRC actions. OE information that has low safety significance, no generic implications, or low regulatory importance is screened out and does not require any follow-up actions. Decisions to screen out issues are typically made during the daily OES morning meeting.

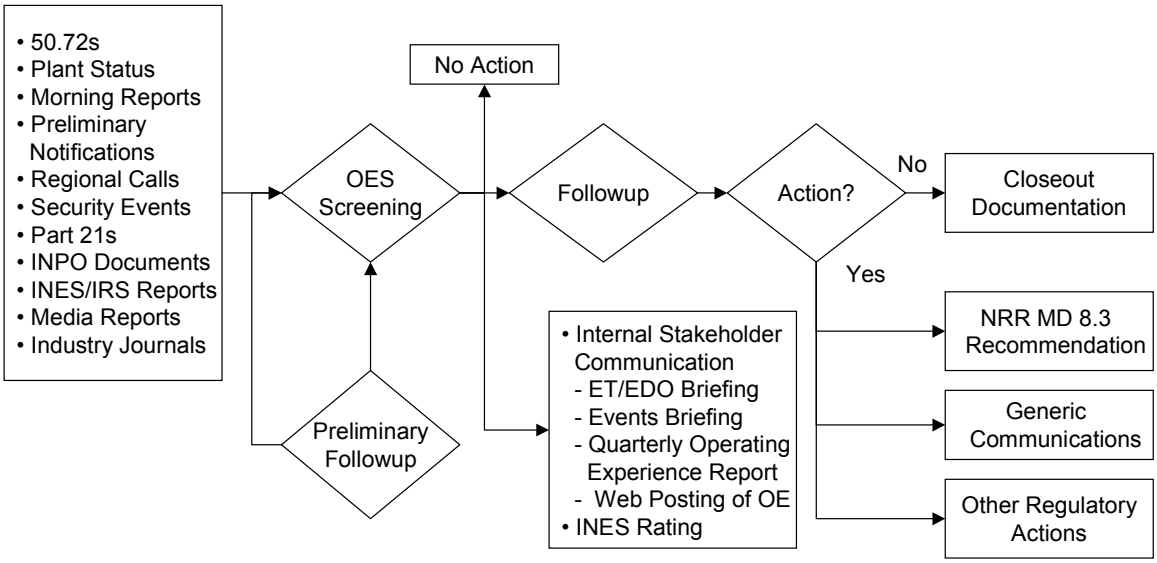

Figure B.2 OES Operating Experience Activities Overview

For 'screen-in' OE information, OES follow-up activities typically involve information gathering and evaluations to determine the overall significance to support NRC decision making regarding the need for additional regulatory actions. These follow-up activities routinely require some coordination and communication with responsible technical branches, regional offices, resident inspectors, licensees, and NRC management. If the OES followup review concludes that the OE information has low safety significance, no generic implications, and low regulatory importance, OES recommends no additional action and closes out the event. The closeout of formally assigned events requires a brief documentation of the event and summary findings. The OE information and documented results of OES follow-up activities are retained for future reference, retrieval, and use. As part of its follow-up, OES determines Significant Events which are provided to the ITP for an indicator of industry performance.

In accordance with MD 8.3 and Office Instruction LIC-401, OES has the primary responsibility for coordinating the Headquarters activities to formulate an NRR recommendation for

appropriate post-event reactive inspection regarding a Special Inspection, an Augmented Inspection Team (AIT), or an Incident Investigation Team (IIT).

B.3 Internal Communication and Management Briefings (OES/IROB/DIPM)

OES is responsible for communication of OE to various internal stakeholders for information and evaluation. Appropriate internal stakeholders are promptly informed of OE information that has potential or actual safety significance, generic implications, and/or regulatory importance. Such internal communication activities include:

- Daily events briefings to the NRR Executive Team (ET) and the Executive Director for Operations (EDO);
- Prompt management or lead technical branch awareness;
- Issuance of headquarters MRs;
- Monthly Operating Events Briefing; and
- Operating Experience Quarterly Report.

The NRR ET is briefed on plant events, daily plant status, and noteworthy media reports daily at 7:45 a.m. by an OES staff. The staff also participates in the 8:00 a.m. daily EDO events briefing along with an ET member. This activity keeps NRR upper management and EDO informed of emergent reactor OE information. It also provides an efficient and effective communication channel for addressing questions by the ET on a specific OE or OE-related subjects. OES also notifies appropriate management and technical staff when significant OE is identified. Once a month, OES performs Operating Reactor Events Briefing to NRR and all regional management teams on recent events of safety significance or interest, as well as other significant OE-related insights and lessons learned. Occasionally, OES informs technical staff responsible for the relevant technical area of OE information.

OES issues Operating Experience Quarterly Reports to all NRR and regional management. This report summarizes Significant Events, or events of interest and contains agency actions taken in response and the lists of generic communications recently issued and under development. Many of the products that OES generate are stored in databases, Web, and/or ADAMS for use by other internal staff. OES also functions as a resource for those who need OE-related information.

B.4 External Communication and Generic Communications (OES/IROB/DIPM)

OES informs external stakeholders, e.g., licensees and the public, of OE information that has potential or actual safety significance, generic implications, and/or regulatory importance via various channels including:

- Generic Communications, i.e., Bulletins (BLs), Generic Letters (GLs), Regulatory Issue Summaries (RISs), and Information Notices (INs);
- MRs and PNs
- Web posting of OE-related information
- INES ratings and IRS reports

LIC-503 provides guidance on the current generic communication process and includes general criteria for implementing each generic communication product. All agency generic communications are coordinated by OES. Generic communications, except INs, originated from NRR require management (Leadership Team or higher) endorsement. INs are originated by a variety of organizations including technical branches, the regional staff, OES and RES. The technical branches consult with OES to obtain approval to begin preparing an IN and OES also initiates INs. OES works with the regions and licensees as necessary to ensure the accuracy and appropriateness of the information contained in an IN prior to its issuance.

OES also functions as the NRR focal point for coordinating and distributing MRs and PNs. Most PNs and the majority of MRs are issued typically by regions. Inspection Manual Chapters 0230 and 1120 provide guidance for developing and issuing MRs and PNs respectively.

A significant amount of OE information has increasingly been posted on the external NRC Web. OES routinely posts OE information on the Web. Examples include past generic communications, 50.72s, plant status reports, MRs, Part 21 reports, and PNs.

B.5 Industry Trends Program (IIPB/DIPM)

The ITP (1) monitors, assesses, and responds to trends in industry-wide performance PIs for operating reactors, and (2) communicate the results to Congress and other stakeholders. SECY-01-0111, "Development of an Industry Trends Program for Operating Power Reactors," June 22, 2001, outlines the development and criteria for the ITP. The results of the program are reported to the Commission, and to Congress each year as part of the NRC's Performance and Accountability Report.

The ITP monitors trends in industry safety performance so that the staff can identify and address adverse industry trends. The indicators consisted of the seven indicators in the AEOD indicator program and the results of the ASP Program. In addition, the staff is developing more risked-informed industry-wide indicators using data from the 18 plant-level indicators submitted by licensees for the ROP PI Program. The staff also identified potential indicators for initiating events that are anticipated to be available from RES OE data. The indicators are being consolidated into an Industry Initiating Events Performance Indicator.

Once an adverse trend is identified, the staff assesses the safety significance of the underlying issues. The issues will be assigned to the appropriate branch of NRR for initial review. The branch will then engage NRC senior management and initiate early interaction with industry. Depending on the issue, the process could include requesting industry groups such as NEI or various owners groups to provide utility information. The NRC may also consider safety inspections at plants as a means to obtain information. Additionally, issues underlying the adverse trend may also be addressed as part of the generic safety issue process by RES. NRC may consider additional regulatory actions as appropriate, such as issuing generic correspondence to disseminate or gather information, or conducting special inspections for generic issues. The process also includes consideration of whether any actions proposed by the NRC to address the issues constitute a backfit.

The ITP results are reviewed annually during the Agency Action Review Meeting (AARM) to assess the appropriateness and effectiveness of staff actions and to recommend any additional actions.

B.6 Other Operating Experience Related Activities

B.6.1 Performance Indicators (IIPB/DIPM)

PIs are one source of OE used by the inspection staff to monitor plant performance. Each licensee electronically submits the performance assessment data to the NRC quarterly.

PIs, together with risk-informed baseline inspections, are intended to provide a broad sample of data to assess licensee performance in the risk-significant areas of each cornerstone of safety. They are not intended to provide complete coverage of every aspect of plant design and operation. It is recognized that licensees have the primary responsibility for ensuring the safety of the facility. Performance evaluation thresholds are established to help determine the level of regulatory engagement appropriate to licensee performance in each indicator. Further, based on past experience it is expected that a limited number of risk-significant events will continue to occur with little or no indication of declining performance. Follow-up inspections will be conducted to ensure that the cause of these events are well understood and that licensee corrective actions are adequate to prevent recurrence.

C. Office of Nuclear Reactor Research

C.1 Overview

In RES, OERAB and REAHFB perform longer-term OE activities including the ASP program, risk studies, and generic safety studies.

C.2 Accident Sequence Precursor Program (OERAB/DRAA)

The ASP Program was established in 1979 in response to the Risk Assessment Review Group report (see NUREG/CR-0400, September 1978). The primary objective of the ASP Program is to systematically evaluate domestic nuclear plant OE to identify, document, and rank the operating events that were most likely to lead to inadequate core cooling and severe core damage (precursors), if additional failures had occurred. The ASP Program provides a comprehensive risk analysis of initiating events and degraded conditions at nuclear power plants.

To identify potential precursors, the ASP program reviews initiating events and conditions, mostly identified from licensee event reports, and analyzes any identified potential precursors and calculates a CCDP. An event with a CCDP or a condition with a change in core damage probability (ΔCDP or importance) greater than or equal to 1.0×10^{-6} is considered a precursor in the ASP Program.

The ASP program also categorizes the precursors by their plant-specific and generic implications, provides a measure for trending nuclear plant core damage risk, and provides a partial check on dominant core damage scenarios predicted by probabilistic risk assessments (PRAs).

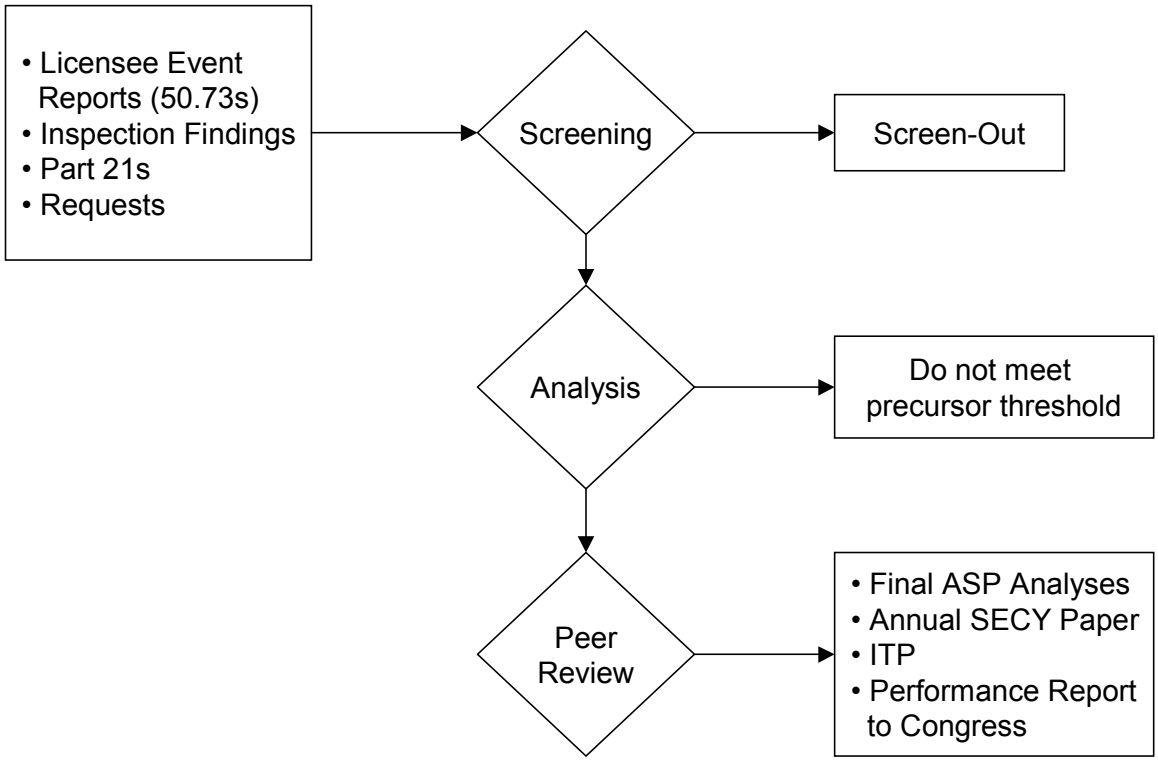

Figure B-3 Accident Sequence Precursor Program Overview

Results from the ASP Program are used to:

- Input to the Performance and Accountability Report to Congress: "significant" precursors (CCDP or ΔCDP $\geq$ 1 x 10^{-3}) and statistically significant adverse trend of all precursors.
- Input to the ITP.
- Report historical trends and insights to Commission, staff, and the public in the annual SECY paper.
- Input to engineering studies to determine the safety significance of potential regulatory issues.
- Develop improved risk analysis methods for use in the Significant Determination Process (SDP) analyses.
- Make improvements to the NRC Systematic Plant Analysis of Risk (SPAR) PRA models.

ASP results are documented as follows:

- Final analyses are provided to the licensee and made available to NRC staff in ADAMS. (Due to the potential sensitive information contained in precursor analyses, issuance of preliminary and final ASP analysis to the public were suspended following the terrorist attacks on September 11, 2001.)
- Final analyses of precursors since 1969 are entered into the ASP Database. Results of historical trends and insights are documented in a publically available annual SECY paper.

C.3 Risk Studies (OERAB/DRAA)

The reliability analysis of safety-related components based on nuclear power plant OE has been performed by the NRC since the 1970's. The analysis of OE data for the development of initiating event frequencies have been performed since early 1980. Risk-important system component reliability studies have objectively analyzed OE data since 1987.

The objectives of risk studies are to:

- Update risk parameters (e.g., failure probabilities, initiating event frequencies) based on OE;
- Compare these estimates with the assumptions, models, and data used in PRAs and other regulatory issues; and
- Review the operational data from an engineering perspective to determine trends and patterns on plant performance and provide insights into the failures and failure mechanisms associated with the operation of the system.

Each study analyzed OE data contained in licensee event reports (LERs), supplemented with data from other sources, such as the Nuclear Plant Reliability Data System (now EPIX), Nuclear Safety Analysis Center reports, and proprietary industry fire databases.

The risk-important components and systems reliability studies being updated on a periodic basis are as follows:

System reliability studies

High-Pressure Coolant Injection (BWR)
Reactor Core Isolation Cooling (BWR)
High-Pressure Core Spray (BWR)
Isolation Condenser (BWR)
High Pressure Safety Injection (PWR)
Auxiliary Feedwater (PWR)
Emergency Diesel Generator Power System
Reactor Protection Systems (all vendors)

Initiating event studies

Transients
Loss of offsite power
Loss of service water
Fires

Component reliability studies

Motor-operated valves
Air-operated valves
Motor-driven pumps
Turbine-driven pumps

Common-cause failure studies

Emergency diesel generators
Pumps
Motor-operated valves
Air-operated valves
Check valves
Relief valves
Safety valves
Batteries/changers
Circuit breakers
Heat exchangers

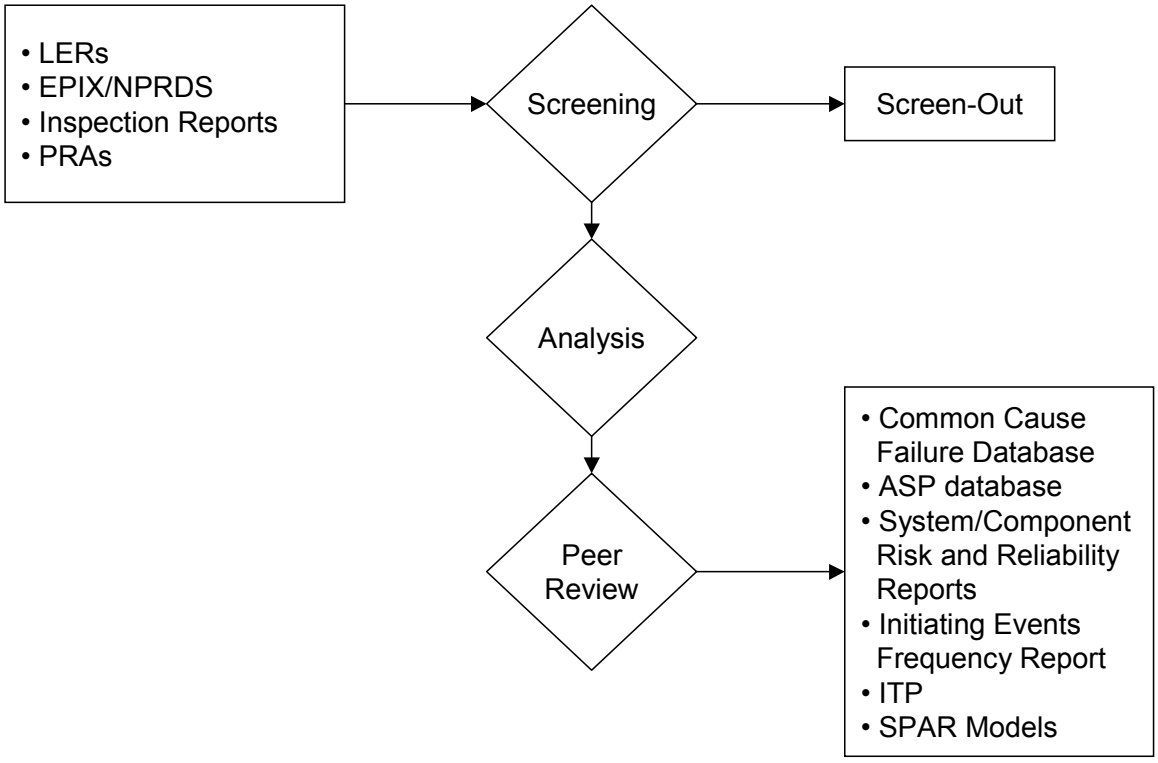

Figure B-4 Risk Studies Overview

Results from the risk studies are used in various regulatory activities including enhancement of SPAR models, risk-informed reviews of proposed license amendments, and plant inspections of risk-important systems.

Results, engineering insights, methodology, and data are documented in the NUREG-series for the first set of studies. Recent NUREGs are available in ADAMS and the NRC external Web. In addition, failure and demand data used in the analyses are stored in databases.

C.4 Generic Reactor Safety Studies (REOET/REAHFB/DSARE)

RES currently performs generic reactor safety studies in the Regulatory Effectiveness Assessment and Human Factors Branch, Regulatory Effectiveness and Operational Experience Team (REOET). The intent of these studies is to analyze significant safety issues identified through the review of OE to feedback the lessons learned to avoid similar problems in the future. This function was transferred to RES when AEOD was dissolved. In addition, prior to dissolving AEOD a new function to perform regulatory effectiveness assessment was given to AEOD by the Commission. This regulatory effectiveness assessment function was also transferred to RES.

Topics for these RES studies are proposed by the staff and approved by management, or directed by management, as was the case for all the regulatory effectiveness assessments conducted to-date. The range of topics for these RES studies is very diverse. The process to select study topics starts with an awareness of what keeps recurring at the plants by keeping up-to-date on the daily reported events. Recurring issues with safety significance implications are selected for study after management approval. The process then proceeds with a collection of relevant OE by doing a search of the LER database and other OE information. Most of the selected LERs are reviewed carefully in order to extract the relevant study information. A voluminous amount of information is then analyzed, applicable regulatory requirements addressed for the study issue, and the issue's potential safety risk significance determined, either quantitative or qualitative. Finally, draft findings and conclusions are developed.

Critical RES reports require that the assessments be issued for internal and public comment and the comments resolved. If the findings and conclusions have significant regulatory implications, RES and NRR interact to develop proposed actions before the final report is issued. The RES studies are sent to NRR, and NRR determines what actions will be taken and what feedback to the industry will be issued.

Regulatory Effectiveness Assessments are a form of OE studies. Regulatory effectiveness assessments consist of comparing the original regulatory expectations to outcomes after several years that the regulation has been in effect. The first step of the assessment identifies the original intent of the regulation and the parameters that can be measured. Then many years of OE are collected, analyzed, and measured against the parameters.

Most of the RES studies have been either published as NUREGs or converted to NUREGs. Recent RES studies issued include: energetic electrical fires; electric grid performance; Fort St. Vrain OE relevant to new gas-cooled reactor designs; ATWS Rule Regulatory

Effectiveness Assessment; Station Blackout Rule Regulatory Effectiveness Assessment; 10 CFR 50 Option B of Appendix J Regulatory Effectiveness Assessment; Backfit Audit Assessment; and USI A-45, Shutdown Heat Removal Requirements, Regulatory Effectiveness Assessment.

C.5 RES Support of the Industry Trends Program and Reactor Oversight Process

C.5.1 RES Support to ITP

ITP was developed in 2001 and uses significant input from OERAB in RES. An NRR User Need was issued to request RES support for the establishment of risk-informed thresholds for the indicators using SPAR models, and for development of additional risk-informed indicators from OE studies performed by OERAB.

The intended use of RES products is the following:

- The NRC staff will use risk-informed thresholds for industry performance indicators allowing a predictable agency response to industry-level information. The data from the OE studies will be used to refine the current set of industry-level indicators with more risk-informed ones.

- The staff posts the industry indicators with their thresholds on its Web site. Establishing thresholds will clearly show the performance of industry in relationship to these standards. Additional indicators developed from OE studies will provide a more comprehensive, risk-informed view of industry performance.

- The thresholds are intended to establish a new performance measure for the NRC's Strategic Plan which would complement or replace the current performance measure of "no statistically significant adverse industry trends in safety performance." The new measure would monitor the level of performance rather than only trends in performance. Establishing thresholds will preclude potentially unnecessary reporting to the Commission and Congress of any adverse trends in the ROP PIs and indicators from the initiating events studies that do not have substantial risk significance.

The scope for RES tasks includes the following:

- Develop risk-informed thresholds, using SPAR models, for: the ASP events; the ROP PIs in the initiating events and mitigating systems cornerstones; and the initiating events discussed in SECY-01-0111.

- Update data for the system reliability, component reliability, common-cause failures, and fire studies from OE studies performed by OERAB. Develop risk-informed thresholds for these indicators. Establish a process to provide periodic updates to this data consistent with the ITP.

C.5.2 RES Support of the Performance Indicators Program

The risk-based performance indicators (RBPIs) are integrated indicators that are necessary in the identification of threshold values for RBPIs and in the development of an integrated indicator. RES has completed the first phase of developing RBPIs, which included examining the feasibility of (1) reliability and availability indicators for the mitigating systems cornerstone, (2) indicators for the containment barrier cornerstone, and (3) indicators for shutdown and fire events. NRR and RES have agreed on new tasks to use the RBPI work to enhance the current set of indicators for the ROP.

The current user need requests follow-on support from RES in the continued development of selected RBPIs, including the development of risk-informed, plant-specific thresholds using risk models. This support is anticipated to address concerns related to the current PIs identified as a result of self-assessment activities and input from industry and other external stakeholders. The establishment of risk-informed, plant-specific thresholds for the ROP PIs is dependent on the availability of robust risk models.

The intended use of RES products is the following:

- Support a pilot program for unreliability/Safety System Unavailability indicators - this task will allow development of additional PIs that would supplement the ROP to address industry concerns on the use of fault exposure hours for the current unavailability PIs.

- Develop risk-informed, plant-specific thresholds for all performance bands for the unreliability and unavailability indicators for all plants - this task will enhance the ROP PI thresholds by making the thresholds plant-specific.

- Support technology transfer of the RBPIs for shutdown to the shutdown SDP, as requested by the Probabilistic Safety Assessment Branch (SPSB) in NRR - this task may be used to enhance the shutdown SDP in IMC 0609 Appendix G.

- Examine the feasibility of developing PIs for containment - this task will enable monitoring of aspects of plant operation not currently covered by PIs in the Barrier Integrity cornerstone.

- Examine the feasibility of developing approaches for higher level indicators that can be implemented efficiently, effectively, and consistently - this task may reduce the number of PIs in the ROP, and will better risk-inform the indicators in the Initiating Event, Mitigating system, and Barrier Integrity cornerstones, which will improve both licensee and NRC focus on the most risk-significant aspects of plant operation.

The scope for RES tasks includes the following:

- Develop risk-informed, plant-specific thresholds for all performance bands for the unreliability and unavailability indicators for the pilot plants using SPAR models and provide an internal report.

- Based on the results of the pilot program, develop an approach for establishing risk-informed, plant-specific thresholds for all performance bands for the unreliability and unavailability indicators for all plants using SPAR models.

- Support technology transfer of RBPIs for shutdown to the shutdown SDP, as requested by SPSB in NRR.

- Examine the feasibility of developing PIs for containment to enhance the Barrier Integrity cornerstone.

- Examine the feasibility of applying risk-informed approaches for the development and use of higher level indicators to reduce the number of PIs in the ROP, including system-level unreliability and unavailability PIs. Conduct a feasibility study of risk-informed methods to integrate PI data by cornerstone and at various levels, including the functional level and plant level.

C.6 Abnormal Occurrence (AO) Reporting

An AO is defined as an unscheduled incident or event that the NRC determines is significant from the standpoint of public health or safety. Federal Law requires that AOs be reported to Congress annually. To disseminate information widely to the public, the NRC issues a *Federal Register* notice describing AOs at facilities licensed or otherwise regulated by the NRC or an Agreement State. The AO report includes events other than AOs that are of interest to Congress and the public as "Other Events of Interest."

MD 8.1, "Abnormal Occurrence Reporting Procedure," updated on June 11, 2001, describes procedures, roles and responsibilities associated with the agency's AO reporting. It also contains the specific criteria for AOs. This directive is implemented by RES. NRR has the primary responsibility for the review and identification of nuclear reactor events for potential AOs and coordinates with the regional offices. The regional offices prepare writeups for events within their respective regions that they believe are potential AOs. NRR prepares writeups for potential AOs if their organization is most knowledgeable. The writeups are sent to RES for processing and the AO report gets approval from the Commission. The AO report is then sent to Congress and also released to the public.

D. Other Offices

D.1 Office of Nuclear Security and Incident Response (NSIR)

Division of Incident Response Operations maintains the Agency's Incident Response Program and the NRC Operations Center. Events are received by the Operations Center 24 hours a day, 365 days a year. The events are typically reported from a nuclear power plant's control room over the Emergency Notification System, which is part of the NRC Emergency Telecommunications System. The events are received by a Headquarters Operations Officer (HOO), who in turn generates a short report detailing the information. The telephone

conversation(s) associated with the notification are recorded for archival purposes. During a significant event, the recording will be used to reconstruct the sequence of events.

The event reports form part of the HOO Events Database and are used to inform other divisions of the agency of the event, to aid in the statistical analysis of event frequency, and to inform the public and other federal agencies. The event reports are reviewed and released every workday morning to other file servers for access by NRC staff and NRC contractors. The event reports are also placed on the NRC Public Web site by the Office of Chief Information Officer.

D.2 Regional Offices

Various Regional office activities are relevant to OE. Region-generated OE-related documents include inspection reports (via IMC 0612), MRs (via IMC 0230), and PNs (via IMC 1120). The daily regional call is a communication channel that OE information is routinely communicated to headquarters. In addition, the inspection staff are significant users of OE. For example, previous generic communications are routinely referenced to establish whether or not the licensee has a performance deficiency, given an event or degraded condition at a plant. The regional staff also support the headquarters follow-ups of OE often providing additional details or prompt feedback regarding plant-specific events or conditions.

The regional staff occasionally recommend and are involved in the development of generic communications. In coordination with OES and/or headquarters technical staff, they input OE information into and verify the accuracy of the generic communications.

Another OE-related activity is the MD 8.3 process. For significant operational events, the regional offices work with headquarters to develop a recommendation for an adequate agency response in terms of a Special Inspection, Augmented Inspection Team, or Incident Investigation Team. The regional staff develops and shares the detailed event information.

When conducting an inspection, OE is expected to be incorporated into the preparation phase of every inspection procedure under 2515, "Light Water Reactor Inspection Program." Inspection procedure 71152, "Problem Identification & Resolution," is an inspection procedure in the ROP baseline program that has a line item to review OE. Inspection Procedures 71153, "Event Follow Up," and 71111.14, "Personnel Performance During Nonroutine Plant Evolutions," require the inspection staff to look for generic issues.

IMC 0970, "Potentially Generic Items Identified by Regional Offices," is available to the regional staff for communicating OE information that has potential generic implications to the headquarters OE group.

APPENDIX C

SOURCES OF OPERATING EXPERIENCE INFORMATION AND DATA

Appendix C: Sources of Operating Experience Information and Data

This appendix provides two tables that summarize sources of operating experience available to staff. Most of these sources are also available to the pubic.

- Table C.1 lists the various sources of operating experience. These sources include official documents, Agency's databases, records available only at the plant site, and proprietary information and data from the industry.

- Table C.2 summarizes operating experience databases currently available to NRC staff and currently being maintained.

Table C.1 Information sources containing operating experience that are available to NRC staff

Required by Regulations	NRC Generated	Industry Generated
☐ Event Notifications (50.72) ☐ Licensee Event Reports (50.73) ☐ Reporting of defects and nonconformance (Part 21) ☐ Bi-annual reports on changes to facility (50.59) ☐ Monthly Operating Reports ☐ Response to inspection findings ☐ Response to bulletins and generic letters ☐ Research reactor Technical Specification notifications ☐ Construction deficiency reports (50.55e) ☐ Technical Specifications required reports ☐ Radiological records, reports (Part 20) ☐ Fitness for duty notifications (26.73)	☐ Inspection reports (Special Inspections, Augmented Inspection Team, Incident Investigation Team, Supplemental Inspections, 0350 Panel Reports) ☐ Significant Determination Process (SDP) worksheets ☐ Information Notices ☐ Preliminary Notifications ☐ Morning Reports ☐ Daily plant status ☐ Enforcement Notifications ☐ Weekly reports to the Commission ☐ Differing Professional Opinion/View (DPO/DPV) ☐ Monthly NRR management briefings ☐ TIAs ☐ Office of Investigation reports/allegations ☐ ACRS transcripts/slides ☐ RES risk studies ☐ Accident Sequence Precursor (ASP) database ☐ Annual ASP report ☐ Generic Safety Issues (NUREG-0933) ☐ Generic Issues (2.206/2.802) ☐ RES operational experience reports ☐ RES generic reactor safety studies ☐ Annual Abnormal Occurrence Report ☐ Performance indicators ☐ Agency Task Force Reports ☐ Technical Branch Reports	☐ INPO's EPIX component database ☐ INPO reports - Significant Operating Experience Reports (SOER) - Significant Event Reports (SER) - Significant Event Notifications (SEN) ☐ Vendor/NSSS bulletins ☐ EPRI reports ☐ Nuclear plant experience (red/blue binders; 1970–1996) ☐ Industry Journals ☐ "Industry reports" <u>Media reports</u> ☐ Inside NRC/Nuclear News Flashes ☐ Licensee press releases ☐ NRC press releases ☐ Daily "In the news" ☐ Other news articles ☐ Nuclear News (ANS)

Table C.1 Information sources containing operating experience that are available to NRC staff (Cont.)

Other NRC Information *(not recorded)*	**Other Plant Information** *(Available at site only)*	**Foreign Experience**
☐ NRR Projects morning status calls ☐ Resident inspector daily status calls ☐ Inspector walkdown observations ☐ Commissioners' assistant's briefings ☐ Regulatory enforcement conference ☐ Weekly INPO call ☐ EDO Morning Meeting ☐ NRR Management Morning Meeting	☐ Corrective action program reports ☐ Plant logs ☐ Nonconformance reports ☐ Quality Assurance (QA) audit reports ☐ Self assessment reports ☐ Shift/daily turnover meeting	☐ Papers at international meetings ☐ Foreign operating experience reports ☐ Inside NRC/Nuclear News Flashes ☐ IAEA databases - Incident reporting system (IRS) - IRS (research reactors) - NEWS (INES) ☐ WANO event notifications and analysis reports (applicable WANO reports are disseminated as INPO SERs and SENs.) ☐ Other media reports

Table C.2 Summary of operating experience databases

Database name	Description
Accident Sequence Precursor (ASP) Database	ASP database contains the final analysis results of over 900 precursors from the ASP Program (1969–Present). This database is undergoing beta testing and will be available to NRC staff through the RES Reactor Operating Experience Results and Databases internal Web page. However, the database is not currently available to the public due to the potential sensitive nature of ASP results. The database is maintained by RES/OERAB and INEEL.
ADAMS	ADAMS is the Agency's official records keeping system. The ADAMS database contains all official internally generated and externally submitted records starting in April 2000. In addition, document titles and citations from the old NUDOCS can be searched from the ADAMS Legacy Library. ADAMS main and legacy libraries will be made available over the Web. The ADAMS Public Library is currently available over the NRC Public Web site. ADAMS is maintained by the Office of the Chief Information Officer.
Common-Cause Failure (CCF) Database and Analysis System	CCF is a database and analysis code designed to estimate industry reliability and availability parameters for selected components in risk-important systems. CCF data and parameters are used by NRC PRA analyst to update SPAR models. This data is also used by industry to update plant-specific PRA models. CCF analysis software and data is available in CD format to NRC staff and licensees, but is not publically available due to the proprietary EPIX data. The database is maintained by RES/OERAB and INEEL.
Headquarters Operations Officer (HOO) Events Database	The HOO database contains reports of Event Notifications (50.72, Parts 20, 21, 30, 40, 50, 70, 72, and 76) Power Plant Status reports and ENS notifications of invalid actuations of safety systems under LER reporting rule [50.73(a)(2)(iv)(A)]. This data is made available to staff in database format by NRR's Event Tracking System (to be replaced by ROE, see below). Electronic format of these reports is available on the NRC Public Web site. The database is maintained by NSIR/DIRO.
Equipment Performance and Information Exchange (EPIX) Database	EPIX database contains engineering and failure information for selected components within the scope of the Maintenance Rule (10 CFR 50.65) and for other equipment failures that cause power reductions. EPIX reports are provided by licensees on a voluntary basis. EPIX also provides access for retrieval of data reported to NPRDS. EPIX data are used for the development and update of special studies; and input to NRC databases, systems, and models to provide risk information for NRC regulatory programs. EPIX is available to NRC staff and NRC contractors through a password protected INPO Web site. EPIX is a proprietary database maintained by INPO.

Table C.2 Summary of operating experience databases (Cont.)

Database name	Description
Human Factors Information System (HFIS) Database	HFSI contains information about human performance issues from NRC inspection reports, licensed operator examination reports, and from LERs. NRC uses this information to assist in its programmatic oversight of training, procedures, organizational processes, human-system interface, communication, and inspections. HFIS database is available in CD format to NRC staff and the public. Annual plant reports are available on the NRC Public Web site. The database is maintained by NRR/IROB.
Human Reliability Analysis Information Base (INFORM)	INFORM is a data repository to support HRA and human factors activities. It will provide a capability to: • Perform a systematic analysis for, and improve our understanding of, the drivers of events involving human failure. • Incorporate operational experience in the estimates of human failure event probabilities (currently derived primarily on the basis of expert opinion or look-up tables). • Use real event experience as a technical basis to ask questions and resolve issues related with licensee applications related to HRA and human factors. Input into INFORM are LERs. This database is under development by RES/PRAB and INEEL, INFORM will be integrated with the Integrated Data Collection and Coding System (see below).
Integrated Data Collection and Coding System (IDCCS)	IDCCS is designed to: • Integrate, consolidate, and automate (as appropriate) the data collection, coding, and analyses needed for the Industry Trends Program and updates to risk studies • Eliminate duplication of coding similar fields • Capture coding in a single LER review and coding session • Ensure compatibility with existing data for each risk study This database will replace other INEEL maintained databases used to support updates of risk studies and performance indicators (PI), such as LERTRK, Monthly Operating Report data (MORP1), outage data (MORP2), and ex-AEOD PI data. IDCCS will also replace, in part, the Sequence Coding and Search System (SCSS). Future plans are to make the database available to NRC staff on the RES Reactor Operating Experience Results and Databases internal Web page. The database is maintained by RES/OERAB and INEEL.

Database name	Description
IAEA's Incident Reporting System (IRS)	IRS is a world-wide database that contains "individual event reports" which include a detailed description and analysis of events of international interest. When information is considered time sensitive, a short preliminary report is distributed within one month of the event. In all cases a main report is produced (usually within three months) and in some cases a follow-up report is distributed. This database is used by NRR/OES and other NRC staff to assess foreign operating experience. IRS is available to NRC staff through a password protected INPO Web site. A listing of IRS reports with links to the reports are also available to NRC staff on the NRR Reactor Operating Experience Web page. IRS is a proprietary database maintained by IAEA.
Licensee Event Report Search System (LERSS)	LERSS provides full-text search capability to LERs dating from about 1985. This system will replace, in part, Sequence Coding and Search System (SCSS). This database will be available to NRC staff through the RES Reactor Operating Experience Results and Databases internal Web page. The database is maintained by RES/OERAB and INEEL.
Reactor Operating Experience (ROE) Information System (formally Event Tracking System)	ROE provides searchable operating experience data in the form of Event Notifications (50.72), Morning Reports, and Power Plant Status reports obtained through the NRC Operations Center database. Reports are made available to ROE each morning by the HOO Events database (see above). In addition, ROE provides draft information and integrated tools that are used only by NRR/OES for work planning and preliminary event evaluation. The latter part of the system is only available to NRR/OES. ROE is available to NRC staff through a file server. Electronic format of these reports is available on the NRC Public Web site. The database is maintained by NRR/OES.
Reliability and Availability Data System (RADS)	RADS is a database and analysis code designed to estimate industry and plant-specific reliability and availability parameters for selected components in risk-important systems. Inputs into RADS include Integrated Data Collection and Coding System (IDCCS) and EPIX. Reliability data and parameters are used by NRC PRA analyst to update SPAR models. RADS analysis software and data is available in CD format to NRC staff and licensees, but not publically available due to the proprietary EPIX data. The database is maintained by RES/OERAB and INEEL.
Sequence Coding and Search System (SCSS)	SCSS is designed for storing, retrieving, and analyzing operating experience data as described LERs. LER descriptive text is analyzed to coded, searchable, time-ordered sequences of coded events. (This system will be replaced by LERSS and IDCCS on January 2004.)