

ROP Resources

Summary of 2004 Resources Used

A summary of staff resources expended for the Reactor Oversight Process (ROP) during the first five annual review periods is provided in Table 1. The five periods are the first year of ROP implementation and fiscal years (FY) 2001 through 2004.¹

Total staff effort during the first two periods, the first year of ROP implementation and FY 2001, remained relatively constant at 5,623 hours per site and 5,531 hours per site, respectively. However, in SECY-03-0062, "Reactor Oversight Process Self-Assessment for Calendar Year 2002," the staff reported a significant reduction in the staff hours expended for the ROP in 2002, with the bulk of the reduction in baseline inspection activities. A number of events during the 2002 inspection cycle challenged the ability of the NRC staff to complete the required baseline inspections. These challenges required regional staff to implement short-term coping strategies that resulted in reduced baseline inspection effort in completing the program.

The challenges experienced in 2002 continued into 2003; however, effective staff intervention in 2003, in the form of assistance from other NRC offices and continuation of the coping measures, significantly reduced the impact. Increases in the regional inspection budget in 2004 and action by regional offices in filling open inspector positions prevented the difficulties experienced in 2002 and 2003 from extending to the 2004 inspection cycle.

The inspection effort in 2004 increased noticeably over 2003. Overall staff effort was 9.1 percent greater in 2004 than in 2003. An increase was evident in all areas of the ROP except for plant specific inspections.

Baseline inspection effort in 2004 was 9.2 percent higher than in 2003. This increase was fairly evenly distributed among all baseline procedures except for IP 71152B, the biennial inspection of Problem Identification and Resolution, where the increase was approximately 25 percent. Effort for this procedure increased both in the number of sites inspected in 2004 and the average effort per site. However, it should be noted that this procedure was revised in September 2003 and the estimated effort to complete the procedure increased approximately 20 percent.

Effort for plant-specific inspections decreased 7.8 percent from approximately 24,600 hours in 2003 to 22,700 hours in 2004.

A significant increase was also seen in the 2004 inspection effort for safety issues and generic safety issues inspections (SIs and GSIs). This increase is the result of the continuing high level of inspection activity associated with temporary instructions issued in 2003 and in 2004 for

¹ The ROP is implemented on a calendar year basis; however, the staff obtained and reported resource data on a fiscal year basis in order to meet the schedule requirements for this paper. There is no reason to believe that the results would be significantly different if the staff collected and reported resource data on a calendar year basis.

issues related to safeguards, material accountability, containment sump blockage, and reactor vessel head and vessel head penetrations.

The effort expended in 2004 for performance assessment increased slightly. The relatively stable level of effort in this area reflects an established process for performance assessment activities. The effort reported for the "other activities," such as inspection-related travel, is typically a function of the effort expended for direct inspection and usually tracks the direct inspection effort.

Because of its balanced distribution among all elements of the ROP, the increased inspection effort in 2004 cannot be attributed to any one factor. It is most likely the result of increased regional inspection staffing levels of approximately 15 full time equivalents (FTE) in FY 2004 and increases in the number of qualified inspectors as recent new hires and regional Nuclear Safety Professional Development Program (NSPDP) graduates enter the inspector workforce.

Since 1995, inspection resource use has decreased significantly, specifically direct inspection effort has decreased approximately 30 percent. However, the staff believes that resource savings are reaching a limit as available efficiencies are exhausted. Future resource savings may only be possible through significant revisions of the ROP. A number of initiatives, such as the revised engineering inspections and the baseline program reevaluation, are currently underway to determine if resource efficiencies or improved effectiveness can be achieved.

ROP Resource Model/ Regional Inspection Budget

A number of adjustments were made to the ROP resource model as a result of experience gained during the 2002 and 2003 inspection cycles:

- Resources for supplemental and reactive inspections have been increased by 15 FTE to provide for regulatory oversight of a plant under IMC 0350, followup activities to verify licensees' improvement plans pursuant to Inspection Procedures 95002 and 95003, and plant-specific inspections required by current events.
- Resources for performance assessment activities have been increased by 4.8 FTE.
- Program development resources have been reduced by 2 FTE.

These changes are reflected in the regional inspection budget for FY 2004 and beyond. Issues related to inspection resources are reviewed as part of the ongoing ROP self-assessment and resources are adjusted as required by program needs. One item that will be reevaluated is the impact on plant status activities of the increased PI&R effort in all baseline inspection procedures.

In SECY-04-0053, "Reactor Oversight Process Self-Assessment For Calendar Year 2003," the staff committed to address the resource issues associated with the site status of Millstone. The current resource model treats Millstone Units 2 and 3 as two single-unit sites instead of one dual-unit site. This treatment allocates additional inspection resources to Millstone to address unique site features and historical circumstances that are currently being resolved. Indian Point Units 2 and 3 are similarly treated as two single-unit sites.

Region I has reviewed the inspection data and model for the Millstone, Indian Point, Nine Mile Point, and Beaver Valley sites as part of an overall reevaluation of inspection resource requirements for a number of dual-unit sites that are unique due to design, vintage, or operational differences between the units. For Millstone, Nine Mile Point, and Beaver Valley, Region I has recommended that NRR approve a unique site model to account for anticipated ROP implementation challenges. This model is currently under evaluation. For Indian Point, Region I recommends maintaining the current two single-unit site model as site consolidation efforts progress. Region I and NRR will periodically assess potential efficiencies as licensees at unique sites continue to implement integration strategies.

This “unique site” approach may also apply to Arkansas Nuclear One, Units 1 and 2. The impact of this unique site model on regional inspection resource requirements and the resulting implications for the regional inspection budget will be discussed in regional division director counterpart meetings during the 2005 inspection cycle. If this approach is deemed favorable, it will be factored into the ROP resource model for future budget formulation.

ROP Efficiency Focus Group

In November 2001, the staff established the ROP Efficiency Focus Group, consisting of experienced staff from the regions and the Office of Nuclear Reactor Regulation (NRR), to explore ways to gain new efficiencies in the ROP. After evaluating a number of ideas, the focus group selected two suggestions for near-term implementation: (1) to explore less resource-intensive alternatives to the annual performance assessment meeting for plants in the licensee response column of the Action Matrix, and (2) to review the baseline inspection procedures to identify areas where consolidation is possible.

The staff has pursued both of these suggestions. In 2003, the staff revised IMC 0305 to allow increased flexibility in scheduling the annual performance assessment meeting for plants in the licensee response and regulatory response columns of the Action Matrix throughout the entire assessment period. At the discretion of regional management, the staff may now schedule annual assessment meetings for these plants within 6 months of issuing the annual assessment letter.

The suggestion to consolidate the baseline inspection procedures has been undertaken initially for four groups of procedures and has been implemented in a pilot inspection program at selected sites in each region. The results of the pilot inspections are currently being analyzed and will be reviewed and discussed in a regional division director counterpart meeting in 2005. If resource savings are realized and effectiveness is maintained, the inspection consolidation may be extended to other baseline procedures.

In addition to this pilot program, the staff is reviewing the effectiveness of the individual baseline inspection procedures and the current baseline inspection program in its entirety. The review examines the scope, frequency, productivity, and costs of the existing individual baseline inspection procedures to determine if resource savings or improved effectiveness can be gained by eliminating, revising, or combining the existing procedures. This review is described in the Inspection Program evaluation in Attachment 2 of this paper. Any decision related to the pilot consolidation program will be made in concert with this ongoing effort.

2004 Inspection Cycle

The challenge to complete the baseline inspection program at all reactor sites in 2002 was primarily attributable to a shortage of qualified inspectors and the diversion of inspection resources intended for baseline inspections to respond to unanticipated emerging events and external demands. The challenge existed primarily in Regions I and III due to the effort required in these regions to address events at Indian Point 2 and Davis-Besse, respectively. The fallout from these events impacted the other two regions to a lesser extent and continued into the 2003 inspection cycle.

Regional management implemented a number of short-term coping strategies to complete the baseline inspection program in 2002 and 2003. In addition, NRR, Region II, and Region IV provided a total of 121 staff-weeks to assist in inspections at Regions I and III (90 staff-weeks to Region III and 31 staff-weeks to Region I). Further inspection assistance was provided by contractor support and re-employment of three annuitants who used to be regional inspectors. As a result, the 2003 baseline program requirements were met in all regions.

The regional inspection budget was increased by approximately 15 FTE to provide permanent relief. Additionally, in 2003 the staff revised the resident inspector policy to allow early assignment of new resident and senior resident inspectors to a site. The new policy allows the regional administrator to assign a permanent resident inspector up to 12 months before the planned departure of the incumbent resident inspector. Similarly, the regional administrator can now assign senior resident inspectors up to 6 months before the planned departure of the incumbent. Regional management also implemented actions to reduce inspector vacancies through active recruiting, training new hires, and over-hiring in anticipation of retirements, attrition, and staff movement.

The revised resident inspector staffing policy and additional regional FTEs improved the site staffing levels with experienced and qualified resident inspectors in CY 2004 and alleviated the resource burden in completing the baseline inspection program. All four regions completed their baseline inspections in 2004 using existing regional resources without the coping measures that were necessary the previous two inspection cycles. However, regions continue to experience unanticipated, emerging events and external demands resulting from power uprates, spent fuel storage, extended recovery efforts, and safety conscious work environment issues.

Program Improvements

A number of initiatives currently underway may provide resource savings and improved program effectiveness.

- Review of baseline procedures and baseline inspection program

The review examines the scope, frequency, productivity, and costs of the existing individual baseline inspection procedures to determine if resource savings or improved effectiveness can be gained by eliminating, revising or combining the existing procedures.

- Pilot engineering inspections

The staff initiated a pilot program to improve the ability to identify significant design issues at commercial nuclear power plants, including development of a new inspection procedure. The program responds to lessons learned from past inspections and events, and is intended to provide a more focused inspection of engineering activities, thereby improving the effectiveness of the current engineering inspections.

- Continued effort to streamline the SDP process and improve timeliness per the SDP Improvement Plan

The ongoing initiatives to improve SDP efficiency and effectiveness are continuing. The staff maintained the SDP Improvement Plan to address key stakeholder recommendations.

Additional notebook enhancements are planned. The next significant step in the enhancement of the phase 2 process for reactor safety findings will be the development of the pre-solved Phase 2 tables, which is currently scheduled for completion by the end of CY 2005.

- Pursue and evaluate credit for licensee self-assessment

The staff is considering allowing licensees to substitute a self-assessment for specific, predetermined NRC baseline inspections, as long as the self-assessment is conducted in accordance with an NRC-approved industry self-assessment process. The NRC would still monitor these self-assessments, but the staff anticipates that there could be significant resource savings to the NRC and its licensees for these inspectable areas. The NRC plans to conduct a pilot program to ascertain the feasibility of the licensee self-assessment process.

- Pilot program of the Mitigating Systems Performance Index (MSPI)

The staff completed a one-year pilot program of the Mitigating Systems Performance Index (MSPI) in early 2004. In SECY-04-0053, the staff documented several technical MSPI issues that were unresolved at the completion of the MSPI pilot. The issues have since been addressed or resolved and the staff has agreed to move forward with MSPI implementation. Currently, the staff and industry are working together to address implementation issues for the MSPI. The current tentative target date for full implementation is January 2006.

- Continued hiring by all four regions, as needed, to avoid staffing shortfalls

These initiatives are being pursued as part of the ongoing long-term ROP program improvement efforts.

During the 2004 inspection cycle, the staff also initiated an effort to review regional inspection practices. The objectives of this effort are:

- To understand the reasons for regional differences in resource expenditure rates for the ROP and to identify best practices in conducting inspections.
- To ensure selected regional policies and practices are consistent with program policy.

- To solicit regional feedback on headquarters' support to the regions and to recommend improvements.

The plans and objectives for this regional benchmarking effort are currently being reviewed by NRR management. The staff expects to complete this effort during the first half of 2005.

Table 1
Resources Expended
(Total Staff Effort Expended at Operating Power Reactors)

	52 weeks initial implementation 4/2/00-4/1/01	52 weeks FY 2001 9/24/00-9/22/01	52 weeks FY 2002 9/23/01-9/21/02	52 weeks FY 2003 9/29/02-9/27/03	52 Weeks FY 2004 9/28/03-9/25/04	% ¹ FY03-04
Baseline/Core						
Direct Inspection Effort	128,447	130,330	119,884	123,027	133,028	8.1%
Inspection Prep/Doc	115,935	109,227	91,385	91,230	100,904	10.6%
Plant Status	<u>43,751</u>	<u>46,191</u>	<u>44,228</u>	<u>46,755</u>	<u>51,073</u>	<u>9.2%</u>
Subtotal	288,133	285,748	255,497	261,012	285,005	9.2%
Plant Specific Inspections						
Direct Inspection Effort	11,295	8,436	9,354	14,647	12,720	(13.2%)
Inspection Prep/Doc	<u>6,683</u>	<u>6,161</u>	<u>7,715</u>	<u>9,978</u>	<u>9,971</u>	---
Subtotal	17,978	14,597	17,069	24,625	22,691	(7.8%)
GSI/SI	2,416	918	1,718	3,953	7,293	84.5%
Performance Assessment	21,017	19,845	17,293	20,013	21,261	2%
Other Activities	47,190	49,471	43,627	48,058	54,040	12.4%
Inspection Related Travel						
Routine Communication						
Regional Support						
Enforcement Support						
Significance Determination Process						
Review of Technical Documents						
Total Staff Effort (regular + nonreg hrs)	376,734 hrs	370,579 hrs	335,204 hrs	357,661 hrs	390,290 hrs	9.1%
Total Staff Effort/Operating Site	5,623 hrs/site	5,531 hrs/site	5,003 hrs/site	5,338 hrs/site	5,825 hrs/site	