

March 31, 2003

The Honorable Pete V. Domenici, Chairman  
Subcommittee on Energy and Water Development  
Committee on Appropriations  
United States Senate  
Washington, D.C. 20510

Dear Mr. Chairman:

Public Law 108-7, 117 Stat. 11, Consolidated Appropriations Act, 2003, directed the Nuclear Regulatory Commission (NRC) to report to Congress by March 31, 2003, on efficiencies gained through implementation of the Reactor Oversight Process. Our report in response to that request is enclosed.

Please do not hesitate to contact the Commission if you need additional information.

Sincerely,

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Richard A. Meserve

Enclosure: As stated

cc: Senator Harry Reid

## EFFICIENCIES GAINED THROUGH IMPLEMENTATION OF THE REACTOR OVERSIGHT PROCESS

### Introduction

Implementation of the Reactor Oversight Process (ROP) in April 2000 has brought about a number of improvements and efficiencies in the oversight of operating reactors. These improvements have been realized from maturation and evolution of the ROP through the first three inspection cycles (April 2000 - December 2002).

The previous oversight process was developed when the nuclear power industry was not as mature and there was less operational experience on which to base rules and regulations. Conservative judgments were applied in developing rules and regulations. Significant plant operating events occurred with some frequency, and therefore the oversight process tended to be reactive and prescriptive. This process was not predictable since it relied on post-event decisions, rather than objective guidelines, to determine the regulatory response to industry problems.

The new ROP is risk-informed, predictable, and transparent to the public. The primary measure of plant safety performance is provided by objective performance indicators (PIs) that are supplemented by baseline inspection in areas where required performance information cannot be provided adequately by an indicator. The baseline inspection program provides the necessary inspection effort needed to ensure that plants meet the safety objectives. It is applied uniformly at all reactor sites by NRC resident inspectors and inspectors from the regional offices.

Plants that do not meet the safety objectives, as measured by the PIs and inspection findings, receive increased inspection commensurate with the safety significance of the findings. Inspections beyond the baseline program, even at plants performing well, are conducted if there are operational problems or events the NRC believes require greater scrutiny. Generic problems, affecting some or all plants, also result in additional inspections.

The assessment of plant performance under the ROP is substantially improved from the previous process. Together, the PIs and inspection findings provide the information needed to support an assessment of plant safety performance, conducted on a quarterly basis, with the results posted on the NRC's external web site. The new assessment process also includes expanded reviews on a semi-annual basis which encompass inspection planning and a performance report. The semi-annual reports are also posted on the NRC's web site. This systematic and transparent process enables the ROP to be effective, predictable, and visible.

### Discussion

Efficiency gains have been achieved in the implementation of the ROP, as evidenced by a decrease of nearly 6% in the total staff effort required for oversight activities to implement the ROP at operating power reactors between CY 2000 and CY 2002 (353,000 hours in CY 2000; 333,000 hours in CY 2002). The decrease in required staff effort to implement activities related

to the baseline inspection element of the ROP is approximately 8% during the same period (279,000 hours in CY 2000; 257,000 hours in CY 2002).<sup>1</sup>

Although some of these efficiency gains are the result of increased familiarity with the new ROP, there have been real savings in the area of inspection preparation and documentation (117,000 hours in CY 2000; 90,000 hours in CY 2002). This 23% savings can be attributed directly to the revised and streamlined documentation requirements for inspection reports for the ROP, as detailed in the new NRC Inspection Manual Chapter 0612, and to the adoption of integrated quarterly inspection reports by the regional offices.

The direct inspection effort associated with baseline inspection activities was reduced from 128,500 hours to 119,000 hours between CY 2001 and CY 2002. Although some of this reduction reflects efficiency gains, a number of unique events during the CY 2002 inspection cycle challenged the ability of the NRC to complete the required baseline inspections (e.g., inspection effort required at Davis-Besse and resulting inspections of reactor pressure vessel heads, public outreach effort at Indian Point, greater than anticipated inspection effort for plants with performance problems). These challenges required the agency staff to implement short-term coping strategies, such as inspecting the minimum procedure samples permitted by the inspection procedure, and postponement of some inspections that did not need to be performed annually. Nonetheless, the baseline inspection program was completed at all reactor sites in the CY 2002 inspection cycle.

One other area of significant, improved efficiency is enforcement. The previous oversight program relied heavily on civil penalties when violations occurred, while the ROP makes broader use of other enforcement tools. The ROP has resulted in measurable efficiency in implementing enforcement activities (3800 hours were required for inspection staff effort related to enforcement in CY 2000; in CY 2002, enforcement activity charges by the inspection staff were 2200 hours. These hours do not include NRR program support or Office of Enforcement expenditures). A summary tabulation of inspection staff resources expended in the ROP and on Enforcement is attached.

Implementation of the ROP, with its resulting efficiencies, has provided the NRC the flexibility to apply limited inspection resources to areas where they are needed in response to declining performance, significant inspection findings, and unanticipated events. While timeliness challenges currently persist in some areas, the new process is more effective in correcting performance or equipment problems because the agency's response is generally more timely and more predictable. The NRC staff anticipates that there may be some additional, marginal resource savings in specific elements of the ROP in the future.

One element of the ROP for which efficiency improvements have not yet fully materialized is the Significance Determination Process (SDP). The SDP is the process used by the NRC staff to evaluate inspection findings to determine their safety significance. This involves assessing how the inspection findings affect the risk of a nuclear plant accident, either by potentially causing an accident or by impairing the ability of plant safety systems or

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<sup>1</sup>A number of inspections scheduled in CY 2002 were postponed to CY 2003 in order to apply inspection resources to more immediate needs. The estimated charges for these postponed inspections are included in the CY 2002 hours.

personnel to respond to an accident. The NRC staff has identified significant initiatives to improve the SDP. The NRC staff's SDP Improvement Initiative identified a course of action to improve the effectiveness and the efficiency of the process.

In parallel with the staff's SDP Improvement Initiative, the Executive Director for Operations directed the formation of the Significance Determination Process Task Group (SDPTG) to conduct an independent and objective review of the SDP in order to address program weaknesses identified by internal review panels and the Office of the Inspector General. The SDPTG completed its review of the process and issued a final report that provides observations, conclusions, and recommendations to address underlying concerns, including whether to retain certain aspects of the current SDP, specifically, the Reactor Safety Phase 2 approach. The NRC staff is currently evaluating this report. Recommendations made by the Task Group that are not already addressed by the SDP Improvement Initiative will be evaluated and incorporated, as appropriate.

In addition to the SDP Improvement Initiative and Task Group to improve the overall effectiveness and efficiency of the SDP, the NRC staff is actively exploring areas in which changes and improvements to the ROP may provide efficiency gains and additional resource savings. These include development and pilot implementation of the Mitigating Systems Performance Index (MSPI) to improve the effectiveness of the safety system unavailability performance indicators, and formation of the ROP Efficiency Focus Group to identify and develop ways in which to achieve further efficiency gains in the ROP.

ROP Resources Expended  
Total Hours

	CY 2000	CY 2001	CY 2002
Baseline Inspection Activities			
Direct Inspection Effort	130,000	128,500	119,000
Inspection Prep/Doc	117,000	104,500	90,000
Plant Status_	32,000	46,000	44,000
(CY 2002 postponed inspections)			<u>4,000</u>
Baseline Inspection Totals	279,300	279,000	257,000
Enforcement Activities	3,800	2,600	2,200
All Oversight Activities	353,000	350,700	333,000

Identical letter sent to:

The Honorable Pete V. Domenici, Chairman  
Subcommittee on Energy and Water Development  
Committee on Appropriations  
United States Senate  
Washington, D.C. 20510  
cc: Senator Harry Reid

The Honorable David L. Hobson, Chairman  
Subcommittee on Energy and Water Development  
Committee on Appropriations  
United States House of Representatives  
Washington, D.C. 20515  
cc: Representative Peter J. Visclosky