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NUCLEAR REGULATORY COMMISSION

Preliminary Observations on Its Process to Oversee the Safe Operation of Nuclear Power Plants

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Highlights

Highlights of GAO-06-888T, a testimony before the Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, U.S. House of Representatives

Why GAO Did This Study

The Nuclear Regulatory Commission (NRC) has the responsibility to provide oversight to ensure that the nation's 103 commercial nuclear power plants are operated safely. While the safety of these plants has always been important, since radioactive release could harm the public and the environment, NRC's oversight has become even more critical as the Congress and the nation consider the potential resurgence of nuclear power in helping to meet the nation's growing energy needs.

Prior to 2000, NRC was criticized for having a safety oversight process that was not always focused on the most important safety issues and in some cases, was overly subjective. To address these and other concerns, NRC implemented a new oversight process—the Reactor Oversight Process (ROP). NRC continues to modify the ROP to incorporate feedback from stakeholders and in response to other external events.

This testimony summarizes information on (1) how NRC oversees nuclear power plants, (2) the results of the ROP over the past several years, and (3) the aspects of the ROP that need improvement and the status of NRC's efforts to improve them. This testimony discusses preliminary results of GAO's work. GAO will report in full at a later date. GAO analyzed program-wide information, inspection results covering 5 years of ROP operations, and detailed findings from a sample of 11 plants.

www.gao.gov/cgi-bin/getrpt?GAO-06-888T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Jim Wells (202) 512-3841 or wellsj@gao.gov.

What GAO Found

NRC uses various tools to oversee the safe operation of nuclear power plants, including physical plant inspections and quantitative measures or indicators of plant performance. To apply these tools, NRC uses a risk-informed and graded approach—that is, one considering safety significance in deciding on the equipment and operating procedures to be inspected and employing increasing levels of regulatory attention to plants based on the severity of identified performance problems. The tools include three types of inspections—baseline, supplemental, and special. All plants receive baseline inspections of plant operations almost continuously by NRC inspectors. When NRC becomes aware of a performance problem at a plant, it conducts supplemental inspections, which expand the scope of baseline inspections. NRC conducts special inspections to investigate specific safety incidents or events that are of particular interest to NRC because of their potential significance to safety. The plants also self-report on their safety performance using performance indicators for plant operations related to safety, such as the number of unplanned reactor shutdowns.

Since 2001, NRC's ROP has resulted in more than 4,000 inspection findings concerning nuclear power plant licensees' failure to comply with regulations or other safe operating procedures. About 97 percent of these findings were for actions or failures NRC considered important to correct but of low significance to overall safe operation of the plants. In contrast, 12 of the inspection findings, or less than 1 percent, were of the highest levels of significance to safety. On the basis of its findings and the performance indicators, NRC has subjected more than three-quarters of the 103 operating plants to oversight beyond the baseline inspections for varying amounts of time.

NRC has improved several key areas of the ROP, largely in response to independent reviews and feedback from stakeholders. These improvements include better focusing its inspections on those areas most important to safety, reducing the time needed to determine the risk significance of inspection findings, and modifying the way that some performance indicators are measured. NRC also recently undertook a major initiative to improve its ability to address plants' safety culture—that is, the organizational characteristics that ensure that issues affecting nuclear plant safety receive the attention their significance warrants. GAO and others have found this to be a significant shortcoming in the ROP. Although some industry officials have expressed concern that its changes could introduce undue subjectivity to NRC's oversight, given the difficulty in measuring these often intangible and complex concepts, other stakeholders believe its approach will provide NRC better tools to address safety culture issues at plants. NRC officials acknowledge that its effort is only a step in an incremental approach and that continual monitoring, improvements, and oversight will be needed to fully detect deteriorating safety conditions before an event occurs.