In 2008, GAO reported on three key safety issues raised in GAO’s 2008 report by implementing GAO’s recommendations or taking other actions. NRC implemented the recommendation on multiple spurious operations (malfunctions caused by fire that could cause safety-related equipment to malfunction) by issuing new guidance or requiring additional modifications at the 36 plants with 57 reactors operating under deterministic regulations. NRC did not implement the recommendations to address the effectiveness of fire wraps or the extended use of interim compensatory measures plants use instead of repairing or replacing damaged safety equipment; however, NRC did take some actions, including (1) evaluating and reporting on corrective actions plants used to mitigate safety concerns associated with fire wraps and (2) developing metrics to gauge the progress of NRC’s staff in resolve underlying issues related to the extended use of compensatory measures. According to NRC, plants transitioning to a risk-informed fire safety approach are continuing to resolve these issues through modifications and analyses required as part of the transition process. GAO visited two transitioning plants and observed examples of such modifications.

According to NRC officials, plant operators, and others GAO spoke with, the risk-informed regulatory approach to fire safety offers benefits over the deterministic approach, but NRC made adoption of the risk-informed approach voluntary because it considers plants that meet deterministic requirements to be safe. NRC officials stated that the risk-informed approach (1) will provide plant operators with information to help them quantifiably reduce risk and with flexibility in areas that do not affect risk and (2) allow operators to more easily demonstrate compliance with simplified licensing requirements. According to some of the plant operators, consultants, and experts GAO spoke with, plants will improve their safety using the risk-informed approach. NRC considered mandating the risk-informed approach, but it did not do so because of uncertainties over whether the agency could determine if the approach could improve protection of health and safety enough to impose new regulations. NRC considers plants that meet deterministic requirements to be safe, including plants that do so through approved exceptions to these requirements; thus, it does not plan to further analyze whether the risk-informed approach should be mandatory.

Plant operators, consultants, and experts GAO spoke with identified three challenges that may affect NRC’s transition schedule and the number of plants that ultimately transition to the risk-informed approach. First, transition costs have been higher than initially expected, and operators from all of the nontransitioning plants GAO contacted cited this as reason they are remaining under the deterministic approach. Second, according to some operators, consultants, and experts, the absence of fire data may hinder the development of realistic risk assessments and contribute to overly conservative NRC risk assessment guidance, potentially leading to a misallocation of resources. NRC and other stakeholders disagreed with this assessment. Third, few people have expertise in risk analysis and fire modeling, and some operators, consultants, and experts expressed concern that the need for such expertise could compete with other safety-related efforts. However, most consultants and experts GAO spoke with believed that the number of people with expertise will be sufficient to support the transition effort.