

## Summary Points

- In December 2001, the Board advised Secretary of Energy Spencer Abraham that it would provide comments within a few weeks on the DOE's work related to a possible site recommendation. The Board's comments were sent in a letter to the Secretary and Congress on January 24, 2002.
- The Board conducted a review of the DOE's work related to site recommendation as part of its ongoing congressionally mandated technical and scientific evaluation of DOE activities. The Board's view is that when the DOE's work is taken as whole, the technical basis for the DOE's repository performance estimates is weak to moderate at this time.
- The Board makes no judgment on whether the site should be recommended or approved. That is a judgment for policy-makers who will factor into their decision policy considerations and a determination of how much technical certainty is needed for the decision.
- The DOE's performance assessment (PA) model is complicated. While, at this point, no individual technical or scientific factor has been identified that would automatically eliminate Yucca Mountain from consideration, uncertainties due to gaps in data and basic understanding result in the Board having limited confidence in current performance estimates that are the products of the DOE's PA model. The Board believes that confidence in performance estimates can be increased.
  - If the site recommendation is approved, a vigorous, well-integrated scientific investigation should be continued to increase basic understanding of the potential behavior of the proposed repository system.
  - High temperatures in the DOE's base-case repository design increase uncertainties and decrease confidence in the performance of waste package materials. Adopting a low-temperature design might reduce uncertainties, but a full and objective comparison of design concepts should be completed before DOE selects a repository design.
  - As the Board has recommended for several years, uncertainties should be identified, quantified, and communicated; multiple lines of evidence should be used to supplement the results of performance assessments; and arguments related to defense-in-depth should be strengthened. Other actions, including fully integrating scientific and engineering work, monitoring repository performance, developing a strategy for modifying or stopping repository development if necessary, and continuing external review of DOE activities, also could increase confidence.

- It will not be possible to eliminate all technical uncertainty at Yucca Mountain or at any other site. Policy-makers will decide how much uncertainty is acceptable at the time various decisions are made on repository development.