

January 27, 1999

The Honorable Shirley Ann Jackson  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: ACNW VISIT TO GERMAN WASTE ISOLATION AUTHORITIES AND  
FACILITIES, SEPTEMBER 14-18, 1998, GENERAL OBSERVATIONS AND  
IMPRESSIONS

Dear Chairman Jackson:

The ACNW traveled in September 1998 to Brunswick (Braunschweig), Germany for a week-long program of discussions with our German colleagues. This trip included visits to laboratories and underground facilities for nuclear waste isolation. The program was arranged by the final disposal group of the German Reactor Safety Committee. The German-U.S. group was joined on September 15 by representatives from France, Sweden, and Switzerland for a full day of presentations and discussions of current developments with respect to waste isolation in the five countries. This letter report outlines some general impressions and observations from the trip. A more detailed trip report is being prepared and will be forwarded.

### **Waste Isolation Facilities**

Germany has selected dome salt as the rock medium for high-level waste disposal. Surface and underground facilities at the Gorleben mine are nearing completion. Underground research experiments are being conducted at Gorleben; the previous underground research facility at Asse is being closed.

Konrad, a former iron ore mine, has been developed for disposal of intermediate-level waste and an application for permission to open the facility has been submitted<sup>1</sup>.

Morsleben is an operating repository for intermediate-level waste, adapted from a salt mine in the former East Germany, close to Gorleben. Plans are to close Morsleben in the year of 2005,

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<sup>1</sup>The newly elected Social Democratic government recently denied this application – indicating that, for Germany, one site is sufficient to handle all nuclear waste. Thus, Konrad is apparently no longer an option for intermediate level waste.

replacing it with Konrad or Gorleben, which are considered to offer superior long-term waste isolation.

### **German Waste Isolation Philosophy**

- (1) German authorities emphasize the goal of permanent disposal of long-lived radioactive waste in geological formations. There is no provision in the repository design for retrieval, although a strategy for retrieval has been outlined to strengthen public confidence in the overall safety of underground disposal, and
- (2) German authorities consider salt, which is essentially a viscous fluid, to be the ideal medium for waste isolation. Creep of the rock, accelerated by heat generated by the waste, ensures early permanent encapsulation of the canisters and isolation from ground-water flow. Demonstration of long-term isolation in other rock types is more difficult and involves greater uncertainty.

### **Comparison With the U.S. Approach**

The German approach contrasts with that followed in the U.S. in several aspects. The U.S. uses bedded salt at the Waste Isolation Pilot Plant (WIPP) for isolation of transuranic waste. Unlike WIPP, Gorleben is not considered to have significant mineral resources in the vicinity, and consideration of human intrusion is not required by the German licensing authority.

The proposed U.S. High-Level Waste Repository at Yucca Mountain is in tuff, above the water table in an oxidizing zone. Gorleben, as with all other planned high-level waste repositories world-wide, is below the water table.

The U.S. repository isolation strategy places considerable reliance on long-lived engineered barriers; Germany does not. The U.S. uses probabilistic risk assessment (PRA) in repository Total System Performance Assessment (TSPA). Germany's TSPA is at an earlier stage of development and relies on deterministic analysis. Although somewhat skeptical of PRA, German scientists are eager to discuss TSPA experience with U.S. colleagues. German colleagues proposed a discussion on this topic at a follow-up meeting.

### **Public Acceptance of Geological Isolation**

The most consistent universal and enduring message, echoed by all countries, was that, technical excellence notwithstanding, geological isolation of nuclear waste will fail as a concept without public acceptance. Perhaps the most direct example is the judgment of the Seaborn Committee (Canada) on the Canadian repository concept—which may be summarized as “The concept is technically acceptable—but not socially acceptable—and hence is rejected.”

Many countries are experiencing similar levels of public resistance to plans for geological isolation. This resistance adds urgency to the need for all concerned with U.S. waste isolation to establish effective interactions with the U.S. public.

### **International Interaction**

All participants agree enthusiastically that the visit and discussions with our European colleagues served as an excellent vehicle for “calibration” of the U.S. approach to waste isolation. The comparisons of approaches to waste disposal and isolation are not possible in an entirely single Nation (i.e., U.S.) setting.

The ACNW strongly endorses the Commission’s commitment to international collaboration and exchange and recommends continuation of this type of interaction.

Sincerely,

/s/

B. John Garrick  
Chairman