

The Role of Transportation for Yucca Mountain Integration

Bob Quinn
BNG Fuel Solutions

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Overview of YM Transportation Integration

- Transportation integration issues
- Logistical issues
- Fuel form options
- Transportation infrastructure
- Where we are on fuel transport capacity
- Summary and comments

Transportation Integration Issues

- Transportation is the vital link between “customers” and Yucca Mountain
- Despite DOE arguments to the contrary, the “Standard Contract” includes all fuel forms, standard or not. The real issue is timing.
- Model based on acceptance of bare fuel only is unrealistic
- Model based on acceptance of canistered fuel only is similarly unrealistic

Logistical Issues

- Transport logistics face a variety of physical interface compatibility issues
 - Wet load bare fuel at utility sites
 - Dry transfer of loaded canisters
 - Dry unloading of bare fuel at YM fuel receipt facility
- Must service a variety of payload types
 - High burnup fuel
 - High heat load fuel
 - Damaged fuel
 - Variety of cladding materials and conditions
 - Variety of fuel types (UO₂, MOX)

Fuel Form Options

- Bare fuel with and without control components
- Damaged fuel in cans
- Fuel canisters (DOE)
- Fuel in DPCs
- Fuel in MPCs (Navy fuel)

Transportation Infrastructure

- Fleet composition driven by interfaces
- Variety of casks required to service customer-specific physical constraints
 - Size
 - Weight
- Current U.S. licensed casks include large (125+ ton) rail casks and LWT casks with small payloads
- Optimized system would address interface issues while maintaining maximum payloads
 - Small rail casks and OWT casks are currently missing from the mix

Where We Are on Shipping Bare Fuel ...

- Current licensed US transport casks can take up to 65% of expected fuel inventory through 2015
 - With minor mods, this could increase up to 80-90%
- Plant interface issues (crane limitations, lack of rail access, etc.) decrease this to around 40%
- So where are we?
 - Current licensed US casks don't get us all the way there
 - Internationally, casks exist in variety of sizes
 - We can easily develop/license the needed casks to complete the fleet for optimized service
- International experience, and utility experience: “been there, done that”

...and Canistered Fuel

- Fuel in dual-purpose canisters is ideal for transport to Yucca Mountain
- Can be placed directly on the aging pad until it is cool enough to place for disposal
- Use of existing technologies for transport of this fuel can greatly enhance fuel acceptance rates at Yucca Mountain
- A “win-win” situation?
 - However, utilities want fuel taken from their pools to avoid further dry storage

Summary and Comments

- Effective transportation requires a well-integrated system
- 100% standardization is a dream
- Standardized interfaces are achievable for the receipt facilities
- Considerable work needs to be done to achieve an integrated system
- Customer/DOE transportation interaction needed to develop solution
- A robust fleet with a full range of cask types and sizes, adequate support facilities, and the ability to accept both bare fuel and canistered fuel provides a success path to Yucca Mountain