Preparation of Waste Shipments
Cask Vendor Perspective

Ian Hunter, COGEMA, Inc.

NWTRB Meeting, Las Vegas, NV, January 21, 2004
Questions

Information Flow

- What are your key Yucca Mountain security and safety concerns?

- How have you been able to address those concerns on the basis of the information and resources that DOE has provided to date?

- What concerns have you been able to address? What does DOE need to provide to allow this to happen?

- How long will it take you to address those outstanding concerns once the DOE has provided what you need?
Lessons Learned

- What were (are) the objectives and characteristics of the shipping campaign?

- From a safety and security perspective, what worked (works) well and what did not (does not)?

- What experiences and lessons learned may be transferable to the Yucca Mountain Transportation Program?
COGEMA EXPERIENCE

- More than 3 decades of safe spent fuel transportation
- Comprehensive experience in all aspects of transportation
- A well established US presence
  - Transnuclear, Inc. was formed in 1965 specifically for spent fuel transport
  - TN, Inc. has a team of almost 100 Engineers specializing in nuclear material packaging and transportation
Example:
TN68 Dual Purpose Cask – Part 71 and Part 72 certificates
Vitrified residues (HLW) are routinely transported in heavy casks.

Up to 28 HLW canisters per cask.
Transnuclear, Inc US TRANSPORT EXPERIENCE

- Foreign research reactor fuel to Savannah River and Idaho, more than 250 shipments
- TN9 cask shipments (1980’s)
  - Dresden fuel to West Valley
  - Oyster Creek fuel to West Valley
- TN8 cask shipments
  - PWR fuel shipped from Oconee to McGuire
- Numerous PIE shipments
The COGEMA group has safely transported LWR Spent Fuel from world-wide customers:

- 30 000 MTHM over 30 years

Transportation of Vitrified Residues Canisters (HLW):

- 900 tons of HLW (1800 canisters)
CASK FLEET MANAGEMENT

- 50 Heavy Transport Casks
- 10 Special Heavy Haul Trailers
- 30 Dedicated Railcars
MULTI MODAL TRANSPORTS
The Valognes terminal. The world’s biggest facility dedicated to the transfer of casks from rail to truck.
REAL TIME TRACKING, CONTINGENCY PLANS
BEING PREPARED FOR EMERGENCIES

▶ Expertise in emergency response plan
  - Provide requirements and guidelines in the event on off-normal event or emergency
  - Heavy load recovery system
  - Address co-ordination with on-scene response personal, notifications with authorities (local, central, international jurisdictions), media communication.

▶ Expertise in security measures
  - Provide guidelines and requirements for establishing, acquiring, maintaining and integrating physical security
    - (organisation, threat assessment, staffing, security procedures, security communication, training)
PUBLIC OUTREACH

- International experience in dealing with opposition groups
- A database of Q&A
- Experienced lobbyists
- Trained media staff
ON THE MOVE: OVER 1000 TRANSPORTS/YEAR

Expertise in multi-modal transportation

*(Sea, air, road, rail)*

<table>
<thead>
<tr>
<th>Nb of annual transports</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
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<td>French spent fuel</td>
<td>157</td>
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<td>145</td>
<td>185</td>
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<td>European spent fuel</td>
<td>9</td>
<td>12</td>
<td>44</td>
<td>61</td>
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<tr>
<td>Vitrified waste (incl. Japan)</td>
<td>6</td>
<td>11</td>
<td>20</td>
<td>22</td>
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<tr>
<td>PuO2 and MOX (incl. Japan)</td>
<td>150</td>
<td>149</td>
<td>187</td>
<td>175</td>
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<td>Low Level Waste</td>
<td>643</td>
<td>684</td>
<td>757</td>
<td>700</td>
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<td><strong>Total</strong></td>
<td><strong>965</strong></td>
<td><strong>1047</strong></td>
<td><strong>1153</strong></td>
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COGEMA is a partner with Duke Energy and Stone & Webster in the DOE MOX project.

COGEMA is designing packaging for the MOX assemblies and assisting DOE with the transport.
Cogema, Inc has been contracted by BSC for designing the handling equipment for the YM Surface Facilities.
DOE-WIPP

Package for Remote Handled TRU

PacTec, has taken the RH 72B Transportation Cask from initial conceptual design and licensing, initiated in ‘97, through production of the first six packages.

We deliver solutions to some of DOE’s biggest problems.
TN Gemini US is TRUPACT-III

- PacTec is developing TRUPACT-III for DOE/WTS, based on the TN Gemini.
COGEMA IN THE US

TN supplied DOE casks for West Valley shipments

TN REG and TN BRP casks were safely shipped in 2003
TN DRY STORAGE
SERVING TWENTY ISFSI LOCATIONS

San Onofre
Rancho Seco
INEEL/TMI
Prairie Island
Duane Arnold
Point Beach
Palisades
Susquehanna
Millstone
Oyster Creek
Peach Bottom
Calvert Cliffs
North Anna
Surry
Brunswick
McGuire
Oconee
H.B. Robinson
Crystal River (Future)
### US DRY STORAGE CUSTOMERS

#### Total Fuel Stored By Vendor

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<thead>
<tr>
<th>Vendor</th>
<th>Fuel Stored</th>
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<tbody>
<tr>
<td>BFS</td>
<td>10.3%</td>
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<tr>
<td>Holtec</td>
<td>17.9%</td>
</tr>
<tr>
<td>Transnuclear</td>
<td>62.2%</td>
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<tr>
<td>GNB</td>
<td>4.5%</td>
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<tr>
<td>NAC</td>
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<tr>
<td>Westinghouse</td>
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<tr>
<td>Total</td>
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#### Dry Storage Systems

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<tr>
<th>Model</th>
<th>Loaded Casks</th>
<th>SFAs</th>
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<tbody>
<tr>
<td>BFS</td>
<td>10.3%</td>
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<tr>
<td>Transnuclear</td>
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#### Casks SF

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<td>40 960</td>
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<td>Crystal River</td>
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<td>Davis-Besse</td>
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<td>3 72</td>
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<tr>
<td>Duane Arnold</td>
<td>61BT</td>
<td>10 610</td>
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<tr>
<td>INEEL/TMI-2</td>
<td>12T</td>
<td>29 177</td>
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<tr>
<td>Millstone</td>
<td>32PT</td>
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<tr>
<td>North Anna</td>
<td>32PTH</td>
<td>—</td>
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<tr>
<td>Oconee</td>
<td>24P</td>
<td>78 1872</td>
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<tr>
<td>Oyster Creek</td>
<td>61BT</td>
<td>8 488</td>
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<td>Palisades</td>
<td>32PT</td>
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<td>Rancho Seco</td>
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<td>Robinson</td>
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<td>Prairie Island</td>
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<td>17 680</td>
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<tr>
<td>Surry</td>
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<td>20 640</td>
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<tr>
<td>Total</td>
<td>313</td>
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SURRY AND NORTH ANNA TN 32 CASKS

- Site Specific license
  - First TN 32 loaded in 1996
  - 20 casks loaded at Surry
  - 19 casks loaded at North Anna
  - 53 casks ordered
Dual Purpose BWR casks (Part 71 & Part 72 licensed)

- 20 Casks loaded
- 44 Casks Ordered
- Ready to ship to Yucca Mountain
TN 40 CASKS AT PRAIRIE ISLAND
VENDOR PERSPECTIVE

- Transnuclear, Inc. provides cask and transport solutions to the commercial sector
- Transnuclear, Inc. has also provided DOE with shipping casks
- Transnuclear, Inc. can provide DOE a gateway to the worldwide operational experience of COGEMA is a safe spent fuel transport system which spans more than three decades.
CHARACTERISTICS OF THE YM SHIPPING CAMPAIGN?

- Long distances from the sites to the YM facility
- Multi modal shipments will be required (Truck/rail/barge)
- Multiple stakeholders – states, tribes etc.
- Safety and Security are of PRIMARY IMPORTANCE

COGEMA’S WORLDWIDE SHIPPING CAMPAIGNS

Same order of magnitude, Multimodal shipping, Trans-continental distances, Multiple Stakeholders etc.

SIMILAR CHARACTERISTICS TO YM
WHAT WORKS WELL?

- The regulations for packaging and transportation are well established and effective
- IAEA regulations adopted worldwide
- Cask safety has been demonstrated by:
  - An excellent safety record
  - Public demonstration tests

Any ‘Package Performance tests’ should be at regulatory limits. This will increase public confidence.
USING LESSONS LEARNED?

- US experience—domestic and FRR programs
- WORLDWIDE – COGEMA experience in safely shipping thousands of casks over long distances
  - Pre planning, public outreach, logistics, fleet management, emergency planning, etc.
  - Security aspects
    - COGEMA casks have been tested for sabotage/aircraft crash
    - Shipments have been carefully managed from a security aspect. (convoys of casks)

Public outreach is an industry priority. We share a collective responsibility for promoting safe transportation systems.
OTHER LESSONS LEARNED FOR YM?

- COGEMA Worldwide experience can be adapted for use in the US

Examples

- YM Surface Facility mechanical handling equipment is being designed by a COGEMA team of engineers in Las Vegas right now.

COGEMA has the technology and infrastructure to help DOE make the best use of our experience.
WHAT SHOULD DOE PROVIDE TO VENDORS?

- An opportunity to learn what the COGEMA Group has to offer DOE
  - Initial meeting with G. Lanthrum’s team scheduled for January 27, 2004
  - Other meetings?
- A clear statement of DOE needs for casks
  - Bare fuel only?
  - Heavy casks/LWT casks?
  - Fuel specifications
  - Interfaces/constraints

CONTINUE TO TALK TO US
INDUSTRY WANTS THE PROGRAM TO SUCCEED
THANK YOU