Discussion of the Physical Security Plan (PSP) for Hematite Site

Presentation to USNRC
August 2, 2006

(CLOSED MEETING)

BNFL

14-1

Withhold pursuant to 10CFR2.390

AGENDA

- Introduction
- Meeting Objectives/Project Status – K. Hackmann
- Regulatory Basis – J. Nardi
- Site Knowledge – J. Nardi
- Burial Pit Logs – J. Nardi
- Westinghouse Conclusions – J. Nardi
- Graded Approach for Hematite PSP – J. Nardi
- Open Discussion and Resolution - All

Meeting Objectives

- Discuss the basis for security designation
- Overview of the proposed approach to graded Hematite PSP
- Open Discussion
- Agreement on path forward

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Project Status

- PSP
  - Draft of PSP developed by USProtect -
  - Westinghouse has put PSP review on hold /
  - Facility upgrades also on hold
- Potential Project Impact
  - 18 month schedule delay
  - $5M project impact

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Regulatory Basis for SGI Designation

- 10 C.F.R. § 73.21
- 10CFR73.21 (a)(1) requires that SGI protections be afforded certain physical-security-related information by each licensee who "possesses a formula quantity of strategic special nuclear material."
- Westinghouse believes it is unrealistic to expect that individual discrete items or an accumulated quantity of such items will approach a fraction of a formula quantity.

Proposed Designation for PSP

- Nevertheless, as a conservative measure, Westinghouse is proposing to apply SGI protection to elements of security planning covered by 10 CFR § 73.21(b)(1).

SGI designation will provide conservative protection for Hematite security-related information.

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Site Knowledge

- Administrative Controls
- Oversight Inspections
- Discussions with Former UNC Employees
- Site Investigations and Characterization
- Burial Pit Management
- Value of Enriched Uranium

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Administrative Controls

- Approved Material Control and Accountability Program
- Physical Inventories conducted
- Resident Inspector - Defense Contract Administration Services (DCAS)
- Regulatory Inspections

Site has always operated under Administrative Controls

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Oversight Inspections

- Frequent AEC Inspections
  - For period of 10/64 through 2/72 there were 21 documented inspections
- Resident DCAS Inspector issued monthly reports

Site operated with regulatory and government contract oversight

NRC Historical Review – NUREG-0350

- NRC study published in 1977
- Evaluated material inventory difference for Strategic Special Nuclear Material (SSNM) licensed facilities
- Conclusion regarding Hematite
  - inventory differences contributed significantly less than 1% of the amount of material within the plant during the inventory period
  - inventory difference consistent with the accuracy of the measurement techniques available at that time
  - no special investigative actions were required

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Discussions with Former UNC Employees

- Included more than 20 persons
- Included various levels of organizational responsibility

Information obtained does not indicate that Westinghouse should anticipate finding significant discrete items

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Investigations and Characterization

- NRC Burial Pit Investigation, July 1983 (NUREG/CR-3387)
  - Surface radiation measurements
  - Surface soil samples, 11 samples in burial pit area
    - Consistent with Low Enriched Uranium (LEU)
    - <1.1 pCi/g U-235
  - Cores in burial pit area – 14 holes
    - Gamma logged holes
    - No sample greater than 10% U-235 or 21 pCi/g U-235
- Site Characterization Report data is consistent with USNRC study

NRC investigation and site results do not indicate that Westinghouse should anticipate finding significant discrete items

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Burial Pit Management

- Regulatory limit was 50 milliCuries (until 5/70)
- UNC memorandum of 7/19/65 provides approach to meet regulatory limit (See HSA, App. A)
- Memo provides table of limits vs. enrichment and use of Sum-of-Fraction approach (examples)
  - >50% to 100% 790 grams U
  - 3% 32,000 grams U
  - Natural & depleted 150,000 grams U
- Logs were maintained on all pits

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Example: Calculation for Pit #33

Designation in Log Book Entry	# of entries	grams U	Limit per UNC memo	Sum Of Fractions
"Mixed" or Blank*	160	345.7	790	0.4376
97%	134	281.2	790	0.3559
93%	8	16.5	790	0.0209
LEU	27	156.2	32,000	0.0049
Totals		799.6 (~ 630 g ^{235}U)		0.82

*** Assumed 97% Enrichment.**

Continued reliance on burial pit logs to justify graded PSP is appropriate

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Value of Enriched Uranium

- Value of uranium at contemporary prices was approximately $12.68 per gram of U-235 at 93% (10 times the price of gold)
- Value of uranium losses was closely tracked by company & government

UNC Employees substantiated being financially motivated to track uranium and minimize losses

Conclusions

- SGI designation will provide conservative protection for Hematite security-related information.
- Available evidence supports Westinghouse belief it is unrealistic to expect that individual discrete items or an accumulated quantity of such items will approach a fraction of a formula quantity.
- Westinghouse will have a graded PSP with measures to address contingencies.

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Open Discussion & Resolution

- Westinghouse needs confirmation that its PSP designation is appropriate in order to move ahead with plans to further characterize burial areas and plan for ultimate remediation.