Update on H Area Operations

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Savannah River Site Citizens Advisory Board
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Acronyms

NNSA - National Nuclear Security Administration
MTR - Material Test Reactor
MOX - Mixed Oxide
MFEF - Mixed Oxide Fuel Fabrication Facility
IAEA - International Atomic Energy Agency
HFR - High Flux Isotope Reactor
HPEA - High Efficiency Particulate Air
HEU - Highly Enriched Uranium
dSA - Documented Safety Analyses
CNRLL - Canadian Nuclear Laboratories Limited
ARRA - American Recovery and Reinvestment Act
AROD - Amended Record of Decision
Al - cold - Aluminum clad

Acronyms

WIPP - Waste Isolation Pilot Plant
U - Uranium
TSR - Technical Safety Requirements
TRU - Transuranic Waste
STD - Standard
SRS - Savannah River Site
SRE - Sodium Reactor Experiment
SNF - Spent Nuclear Fuel
SA - Supplemental Analyses
Pu - Plutonium
PISA - Potential Inadequacy in the Safety Analyses
Recovery from the Agitator event
Pu Oxide Production
Dissolved SNF
Readiness Assessments for the purification of the uranium from
Continued Processing of Al-clad Spent Nuclear Fuel (SNF)
This year is again a very busy year for H Area

H Area: H-Canyon and HB-Line
Facility
Plutonium Processing for Mixed Oxide Fabrication

Requirements (DSATSR) for HB-Line

Documented Safety Analysis/Technical Safety
Implementation of DOE STD 3009 compliant
documentation and required modifications, including

- Develop/Implement all required safety basis

- For ramp up in oxide production rate.

- Reconfigure process operations and staffing to allow

- Startup to produce plutonium oxide

- Prepare H-Canyon/HB-Line and support facilities for

Program using non-pit material stored in K Area.

Area for a mission to produce plutonium oxide for its surplus plutonium disposition

In November 2011, the National Nuclear Security Administration (NNSA) decided to use H
2014 and produced the first can of oxide on August 27, 2014.

- Introduced plutonium solution to the facility on August 8.
- Assessment and concluded the facility ready to start oxide production.
- Savannah River completed its H-B-Line Readiness Assessment.
- Savannah River completed its H-B-Line multiple shift operations.
- Savannah River Nuclear Solutions has hired staff to support the improvement to oxide production and the facility has implemented the DSA/TSR requirements.
- Savannah River approved the Documented Safety Analysis/Technical Safety Requirements (DSA/TSR).
- H-Canyon continuous dissolution of non-plutonium changes, training, etc.
- Completed multiple safety basis changes, procedures.

Progress/Current Status:
Processed 60 bundles of Al-clad MTR SNF this fiscal year (through end of June 2015)

• only generate approximately 35 high level waste glass canisters
• Processing the SNF identified in the AROD will generate
  and shipped for use at Tennessee Valley Authority (TVA)
• SNF will be dissolved, uranium recovered, purified, down blended,
  SRS initiating processing Al-clad SNF on September 16, 2014

- 200 High Flux Isotope Reactor (HFIR) Cores
- 1000 Material Test Reactor (MTR) Bundles
  Enriched Uranium Al-clad SNF up to 10%

DOE approves a Supplemental Analysis (SA) and Amended Record

H-Canyon - Spent Fuel Disposition
The processing of the Canadian Target Residue Materials (Liquid) will generate less Authority for fabrication into reactor fuel.
The purified HEU solution will be down blended and shipped to Tennessee Valley.
Purifying the HEU solution, and discard the fissile products to the liquid waste system.
Savannah River Site will receive the HEU solution, process through H-Canyon.
Quantity of material is approximately 6,000 gallons of solution plus flush material.

This is being conducted as part of the Material Management and Minimization Program to eliminate weapons-usable nuclear material.

US origin HEU and fissile products

Limited (limited) which is the resulting solutions from the processing of targets that contain
Canadian Nuclear Laboratories Limited (CNLL) (formely Atomic Energy of Canada
The Department is planning on bringing material to the Savannah River Site from

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IAEA

Canada and the site will return the seals to CNER on the
Agency (IAEA) will apply seals to the container in

It is planned that the International Atomic Energy

Weight Transport cask: the HEU liquid content in the legal
configuration and the HEU liquid content in the legal

Regulatory Commission for the 4 small canisters
License application has been approved by the Nuclear

International Legal Weight Transport cask

Solution will be shipped in a spent fuel cask,
2015, SRNS then completed a Readiness Assessment, SP shade the RA and validated closure of corrective actions, and operations were resumed on July 12.

- Upon discovery, operations were suspended and vessels were evaluated to Line and H-Canyon.
- After sampling, but without agitation, three transfers were made between HB-32 and H-Canopy.
- Personal recognition.
- Variable speed drives on the agitators tripping off-line without operations.
- The facility experienced a loss of power in the facility which resulted in the criticality controls.
- To ensure representative sample prior to transfer to H-Canyon as one of its facilities.
- The facility safety basis credits the thorough mixing of the solutions in HB-Line.

Fissile limits defined in the criticality analyses were never violated.

HB-Line Agitator Event
Recover from the agitator event and resume plutonium operations
Continue with preparations to receive HEU Liquid from Canada
Performance readiness assessments to resume full facility operations
Continuous dissolution of HEU Al-clad SNF
Nuclear materials processing
H-Canyon Complex remains a unique national asset for large scale