Department of Energy
Washington, DC 20585

NOV 0 5 1996

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW
Suite 700
Washington, D.C. 20004

Dear Mr. Chairman:

Thank you for providing your staff's observations from their recent visit to HB-Line at the Savannah River Site (SRS). We share your concern that the review process used to assess HB-Line's readiness to shift to Plutonium-242 (Pu-242) operations may not have been as comprehensive as it should have been -- a conclusion that was further emphasized by two operational occurrences that took place subsequent to your staff's visit. I asked the Department of Energy Savannah River Field Office (DOE-SR) to write a response to your staff's report. This response is enclosed.

As a result of the two operational occurrences, HB-Line was placed in warm standby in accordance with applicable operational safety requirements. While HB-Line was in warm standby, DOE-SR notified Westinghouse Savannah River Company (WSRC) that DOE-SR would withhold authorization to return HB-Line to an operational mode until WSRC provided evidence that the facility's conduct of operations posture had been improved. Upon completion of conduct of operations upgrades, a DOE-SR evaluation determined that HB-Line readiness was sufficient to support phased-in Pu-242 operations with senior supervisory attention. First, a series of flushes necessary to prepare HB-Line for receipt of Pu-242 was authorized. The HB-Line successfully completed these flushes while concurrently working to complete pre-restart requirements from the corrective action plans for the operational occurrences and readiness reviews. DOE-SR has validated closure of these pre-restart requirements, and we are about to introduce Pu-242 solutions into HB-Line. Operations will continue with senior supervisory attention.

The HB-Line and the other SRS processing facilities are vital to our plans to stabilize nuclear materials. We realize that continuing vigilance is required to maintain a high level of conduct of operations, conduct of maintenance, etc., at these facilities in these times of fiscal, work force, and programmatic change and uncertainty. In fact, it is our assessment that one of the underlying causes of the HB-Line problems was the loss, over a relatively short period of time, of key management and operations staff. While we have attempted to institutionalize the requirements for proper management of our nuclear facilities so that success is not dependent upon a particular individual's background, capabilities, and experience, the importance of maintaining reasonable continuity in key positions cannot be

ignored. To that end, I have asked my staff to be cognizant of this potential vulnerability in the future so that mitigating actions can be taken to minimize potential impacts.

If you have any further questions or comments on this matter, please contact me or have your staff contact John Ford (301)903-3782 of my staff.

Sincerely,

Alvin L. Alm
Assistant Secretary for
Environmental Management

Enclosure

cc: Mark Whitaker

DOE F 1325.8

United States Government **Department of Energy (DOE)**

memorandum

Savannah River Operations Office (SR)

DATE: OCT 28 1996

REPLY TO ATTN OF: NMSD (Bill Dennis/(803) 952-3054)

SUBJECT: Response to Defense Nuclear Facility Safety Board (DNFSB) Trip Report on HB-Line

TO: Director, Savannah River Office (EM-63), HQ

We appreciate the opportunity to provide a formal reply to the findings of the DNFSB team that reviewed HB-Line on August 20, 1996, through August 22, 1996. The substance of the findings was reviewed with us by the team and subsequently by Mr. Kent Fortenberry soon after completion of the review. As a result we were able to initiate immediate actions to address the findings.

We were initially surprised by the poor performance of the operators in the interviews conducted by the review team, and believed that to a significant extent the poor performance was a result of "boardmanship: and not lack of knowledge. We immediately initiated a joint Westinghouse Savannah River Company (WSRC)/SR program to interview all shifts to determine the extent of weakness in the areas covered by the review team. In analyzing the results of these interviews, we concluded that there were significant areas of weakness and initiated immediate corrective action in the form of additional training.

Information concerning the additional training provided is described in the attached WSRC response to the trip report. The WSRC response also contains additional information on and actions in response to each observation made in the trip report. SR endorses the information provided and is validating corrective action where appropriate.

We have also reviewed our Readiness Assessment to determine whether or not it should have revealed the weaknesses found by the DNFSB review team. We have concluded that the scope of the Readiness Assessment was too limited to have revealed these weaknesses. In establishing the basis and guidelines for the DOE-SR readiness review for Pu-242 operations, we took into account recent successful completion of the Cassini (Pu-238) program and the inherent lower risk posed by the Pu-242 material. We did not consider there was objective evidence of any significant adverse trend in quality of operations in the HB-Line facility. As a result, the Readiness Assessment was designed to be narrow in scope and shallow in depth in that it focused almost exclusively on changes required for Pu-242 processing. As noted in your report, the assessment met the requirements of DOE Order 425.1, Startup and Restart of Nuclear Facilities. In retrospect, we believe that we erred in not taking into account the extended (4-month) period of relatively low activity in the facility, the shifting of WSRC management focus away from HB-Line operations toward F-Area and H-Canyon restarts, and the distraction caused by a general air of concern over job security among WSRC personnel. Had this been taken into account, we

feel that we would have chosen to expand the breadth and depth to include expanded field observation of facility operations and operator performance. The need to consider a proposed operation in the context of overall operational environment is an important lesson which will be incorporated into future assessment planning.

We incorporated concepts of enhanced independence and additional observation of field operations into a subsequent review of HB-Line. As a result of two recent Operational Safety Requirements (OSR) violations, the DNFSB review team observations, and poor performance by HB-Line during the Materials Control and Accountability routine inventory, we commissioned a special readiness assessment to obtain objective evidence of HB-Line readiness to begin Pu-242 operations. This assessment was led by Assistant Manager for Material and Facility Stabilization Technical Division personnel supported by an outside expert (Mr. Bill Webb), who had served on the recent F-Canyon, FB-Line and Defense Waste Processing Facility Operational Readiness Reviews. The assessment team concluded that: "Although a number of deficiencies were identified, this evaluation determined that there are no serious concerns precluding HB-Line normal operations.

We are presently validating closure of pre-restart actions from the corrective action plans for the two OSR violations, the DNFSB review, and our original readiness assessment. Upon completion of the closure process, we expect that the SR Manager will authorize commencement of Pu-242 operations in HB-Line by October 30, 1996.

Any questions you or your staff may have may be directed to me or W. C. Dennis at (803) 952-3054.

L. C. Sjostrom
Assistant Manager for Material
and Facility Stabilization

NMSD:WCD:sl

UD-97-0022

Attachment:
WSRC Response to Trip Report

Westinghouse
Savannah River Company

P.O. Box 616
Aiken, SC 29802

NMS-96-0106, Rev. 1
Retention: 5 Years
RIDs #1104

OCT 2 8 1996

Mr. Leonard C. Sjostrom, Assistant Manager
for Material and Facility Stabilization
U. S. Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, SC 29802

Dear Mr. Sjostrom:

RESPONSE TO DNFSB TRIP REPORT ON HB-LINE (U)

Ref: Letter, John T. Conway to Alvin L. Alm, 10/16/96; with attached DNFSB staff trip report on August 20-22 HB-Line Review, 9/5/96.

The WSRC Nuclear Materials Stabilization and Storage Division response to the referenced letter is provided below. In addition, the response to the DNFSB staff trip report is attached for your information and your further detailed discussions with DOE-HQ. If any additional questions arise please contact me, ext. 2-4409, or Bob McQuinn, ext. 8-2666, of my staff.

It is recognized that the level of execution of programs during recent DNFSB staff reviews (8/20-22) was less than expected by Senior Management. After the DNFSB review in HB-Line, WSRC Senior Management conducted an in-depth review of all HB-Line crews and programs and executed a corrective action plan. The review revealed that the programs that were in place would have prevented the OSR violations in HB-Line with proper execution. The underlying symptom in HB-Line was a lack of adequate management attention. As a result of these concerns, the Deputy Facility Manager position was staffed, a position that had been unfilled since early 1995. This addition to the organization has already shown benefit and will continue to strengthen the management team and facility. In addition, a Senior Supervisory Watch program for HB-Line has been implemented to maintain and broaden the management focus.

The Training and Qualification requirements for HB-Line supervisory personnel are compliant with DOE Order 5480.20 which requires additional (greater depth of knowledge) training for supervisors versus operators. These requirements are available in the Program Description document in conjunction with the Qualification standards for supervisors. The additional training includes both technical and supervisory managerial topics. This additional training was developed in response to DOE Order requirements in 5480.20 subsequently and in response to the Board's 1992

Report on HB-Line (Ref. NMP-NMT-96-0094). In addition, management expectation sessions combined with Alarm response and Valve manipulation training were completed to enhance the performance in HB-Line Conduct of Operations.

Engineering Change Control for HB-Line is governed by Design Authority Technical Review Process (Manual E7) and the Unreviewed Safety Question Determination (USQD) Procedure (Manual 11Q). Performance Evaluations are conducted by functional post maintenance testing upon initial installation and periodically via surveillance testing. The compressor modification paperwork reviews conducted by the DNFSB staff raised questions about the USQD performed. Prior to the installation of the portable compressor in January 1992 both an Independent Safety Review Report (ISSR engineering review - predecessor to the current program) and a USQ screening were performed and documented. Since the installation of this compressor, programs for Temporary Modifications were implemented and a determination made that this installation would be permanent. In December 1995 a Design Change Form (DCF) was originated to permanently reflect the modifications with an accompanying DATR summary to support the activity. This DATR summary relied on the original USQ Screening. To accommodate current program controls a USQD is being performed.

Issue resolution in HB-Line is managed via a structured process called the Commitment Management System (CMS). The adequacy of the level of detail required to address and close a given issue is approved by the Facility Manager or the Deputy Facility Manager. The specific item identified by the DNFSB staff, although not required for Pu-242 processing, has been closed. Improved tracking of FEB deficiencies via CMS has also been implemented.

The Readiness Assessment conducted on HB-Line met the requirements of both the WSRC 12Q manual and DOE Order 425.1, Startup and Restart of Nuclear Facilities and as such, was performance based. An independent DOE team has subsequently (since 8/22) reviewed the readiness of HB-Line Pu-242 processing capabilities and the closure of the open items is near completion.

Sincerely,

J. F. Jordan
Vice President and General Manager
Nuclear Materials Stabilization & Storage

MJK:wcc
Attachment

Distribution, Letter, J. F. Jordan to L. C. Sjostrom, NMS-96-0106, Rev. 1

cc: G. M. Nichols, DOE-SR, 703-F
W. C. Dennis, 703-F
L. H. Sain, WSRC, 703-F
R. L. McQuinn, 704-2H
M. A. Schmitz, 703-F
J. E. Dickenson, 703-F
C. R. Goergen, 221-HCAN
C. L. Martin, 221-HBL
S. A. Williams, 717-F
M. J. Kantz, 703-F
D. G. Demedicis, 704-2H
T. H. Kendrick, 221-14F

Defense Nuclear Facilities Safety Board

Subject: Review of Operational Readiness for Plutonium-242 Operations at HB-Line, Savannah River Site, August 20-22, 1996

The DNFSB staff comments from the trip report summary appear in **bold** followed by the WSRC-NMSS response.

a. **Conduct of Operations**

DNFSB Comments:
Two evolutions were observed and the operators and supervisors were interviewed. Significant weaknesses were noted in supervision of evolutions, valve control, control of changes to operating procedure, and response to alarms.

WSRC Response:
To strengthen the conduct of disciplined operations in HB-Line, facility management instituted several enhancements. The first was to staff the Deputy Facility Manager position to provide additional management presence. The next was to clearly define and document management expectations regarding conduct of operations. This was done via issuance of formal guidance in the areas of direct supervision during evolutions, conduct and content of pre-job briefings, use of working copies of procedures by in-field personnel, and operation of the facility with a defense in depth approach within alarm limits. Thirdly, to ensure a consistent level of knowledge and understanding, training was given to all Operations personnel and STEs in the areas of operation within safety envelope and authorization basis, verbatim procedure compliance (including a practical exercise), utilization of IPCs, valve operations (including a practical exam), and alarm response. Next, the alarm response program was enhanced by development and implementation of 30 alarm response procedures (ARPs) for process safety-related alarms. This was done to replace an existing general facility alarm response procedure which was adequate for process alarms. Finally, to reinforce these management expectations and ensure a heightened performance level in the area of disciplined operations, a Senior Supervisory Watch (SSW) was implemented. The specific areas of focus by the SSW are discussions reinforcing management expectations on verbatim procedure compliance, safety system operability, system alignments and valve operation, radiological work practices, pre-job briefings, command and control, equipment and system status, and casualty response.

b. **Training and Qualification**

DNFSB Comments:
Shift managers and first-line supervisors were not trained to an increased depth contrary to the requirements of the applicable DOE Order. Additionally, there was no different qualification card for personnel in these supervisory positions, to ensure their additional responsibilities were covered adequately.

WSRC Response:
At the time of the September 1992 DNFSB report on Operational Readiness of HB-Line, the facility was in the process of implementing a training program per DOE 5480.20 via a Training Implementation Matrix (TIM). This included delta training for supervisors. To that end, supervisors and operators in HB-Line have been trained and certified in accordance with DOE Order 5480.20A. Supervisors have been trained to an increased level as compared to operators both in management skills via additional courses, and in technical and process knowledge via additional learning objectives covered in common courses. The existing qualification standards (cards) for supervisors are being revised to more accurately reflect this difference. Shift Managers and Supervisors are being briefed so that they are aware of this.

c. **Safety Documentation**

DNFSB Comments:
No deficiencies were noted with the incorporation of process limits and controls into the operating procedures.

WSRC Response:
None required.

d. **Issue Resolution**

DNFSB Comments:
Several errors were noted in the completed actions for findings developed during the FEB review and the RA by WSRC. These errors appeared to be due to the summary nature of the corrective actions developed by WSRC.

WSRC Response:
Management issues are managed and tracked to closure via a facility Commitment Management System (CMS). Corrective actions are captured in CMS. This system has proven adequate in tracking and disposition of facility issues.

In the instance cited in the DNFSB discussion of this observation, six maintenance procedures were found to be technically deficient during the 1995 FEB review. These six procedures were thought to be revised prior to completion of the FEB. The practice at that time was to exclude immediately corrected FEB deficiencies

from CMS. Therefore, no CMS action was initiated. However, a corrective action was issued in CMS to upgrade maintenance procedures in general via a maintenance procedures improvement program initiative. When the corrective actions for this 1995 FEB item were reviewed in total for closure prior to the 1996 FEB visit, it was found that several of the specific technical procedure deficiencies identified were not fully completed, all of which have since been closed. In the future, all FEB findings and associated corrective actions will be tracked via CMS even though corrected immediately, to ensure proper completion and closure.

The compressor modification paperwork reviews conducted by the DNFSB staff raised questions about the USQD performed. Prior to the installation of the portable compressor in January 1992 both an Independent Safety Review Report (ISSR engineering review - predecessor to the current program) and a USQ screening were performed and documented. Since the installation of this compressor, programs for Temporary Modifications were implemented and a determination made that this installation would be permanent. In December 1995 a Design Change Form (DCF) was originated to permanently reflect the modifications with an accompanying DATR summary to support the activity. This DATR summary relied on the original USQ Screening. To accommodate current program controls a USQD is being performed.

The WSRC RA closure package referenced in the DNFSB discussion to this observation had been properly dispositioned. The RA finding itself found 10 procedures with safety limits/requirements discrepancies. Procedure changes (PCRs) were submitted for all 10 procedures, although only 6 related to Pu-242 operation. The remaining 4 PCRs were for H-Canyon operating procedures. The RA finding was closed upon validation that the 6 affected procedures were revised and approved. The 4 PCRs for H-Canyon are being processed per the standard procedures revision program.

e. <u>Level of knowledge</u>

DNFSB Comments:
Interviews of shift personnel and two engineers revealed weaknesses in understanding of the authorization basis, valve control, process chemistry and nuclear reaction, and procedures for responding to alarms and their use.

WSRC Response:
The level of knowledge deficiencies noted in the DNFSB observation were validated by subsequent facility management interviews and observations. In an effort to strengthen knowledge and understanding, qualification training (including a written and practical exam) was given to Operations shift personnel. Topical areas covered were authorization basis for Pu-242 versus Pu-238, alpha-n reaction, radiation affects of processing Pu-242, valve operations, procedure compliance, utilization of IPCs, and alarm response actions.

The level of knowledge of the STEs and understanding of alpha-n reaction and radiolysis was enhanced by their participation in the Operations training referenced above. The third knowledge weakness identified by the DNFSB was in the calculation of receipt batch sizes of Pu-242 from H-canyon. Facility management review of this area found the STEs were trained in this calculation, demonstrated performance during the recent Pu-238 mission, and could describe the basis for the calculation. Articulation of this capability and understanding was less than adequate during the DNFSB review.

f. **Readiness Assessment (RA)**

DNFSB Comments:
Although the Readiness Assessment by DOE and WSRC complied with the requirements of the DOE Order, the actual assessments performed appeared ineffective in determining the state of readiness of conduct of operations and procedures and lacked independence.

WSRC Response:

Although the WSRC HB-Line Readiness Assessment (RA) complied with the DOE Order, the RA was ineffective and did not identify the conduct of operations and procedure deficiencies noted by the DNFSB staff. The RA also lacked independence. The scope and focus of the WSRC-HBL Readiness Assessment (RA) was based on the strong performance in HB-Line Cassini campaign and the fact that no indications of significant weaknesses existed in other than the focus areas. Subsequent to the OSR violations in HB-Line, an in-depth critique was performed and an expanded review was performed. Resumption of HB-Line operations was constrained to resolution of newly identified corrective actions.

The Readiness Assessment (RA) for Pu-242 processing was conducted from March to June 1996, during the final processing of Cassini Mission materials. The RA was coordinated by a member of NMS&S senior management in H-Area and performed by direct line management (functional area managers). The primary focus of the RA was twofold. The first focus of the assessment was to review facility programs, such as training and procedures and other functional areas, for implementation of specific changes introduced as a result of processing Pu-242 instead of Pu-238. Additionally, the second focused action was performed to broadly look at the past six months of self-assessment program findings for any adverse performance trends or significant open deficiencies and then to validate closure through document review and field observations. Since the RA was conducted during a period of HB-Line operating evolutions, there was increased confidence of evaluations being performance based by the reviewers. The twofold focused approach resulted in corrective actions which were closed by WSRC. However, the RA did not identify any major weaknesses in plant, procedures, personnel, or performance that would preclude safe and successful processing of Pu-242 solutions to oxide.

The programs and personnel performance were validated via performance based observations conducted throughout the RA process by WSRC.

Several months later, at the time of the DNFSB staff review of HB-Line operations in August, 1996, the facility was in the midst of a flush program preparing for Pu-242 receipt. WSRC used observations provided by the DNFSB staff to conduct focused facility management CONOPS interviews and an additional assessment. WSRC staffed the HB-Line Deputy Facility Manager position with an independent line manager who conducted an HB-Line field observation based, independent management assessment of performance.

The independent assessment recognized that the quality of CONOPS performance of personnel had declined below management expectations since the completion of the Cassini mission. The performance was the direct result of inadequate management attention and complacency in operations both given as causes to the August 20, 1996, HB-Line OSR violation occurrence. Corrective actions to address these deficiencies have since been implemented.