



Department of Energy

Washington, DC 20585

December 15, 1998

98-0003986

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DNF SAFETY BOARD

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

Dear Mr. Chairman:

Enclosed is the response to the Defense Nuclear Facilities Safety Board (Board) letter of October 8, 1998. The response addresses actions taken to correct the Holden Gas Furnace noncompliances, as well as additional issues raised by the Board Staff in previous site visits. These responses were addressed with the Board during discussions in Washington on October 29, 1998.

If you have any questions, please contact me or have your staff contact Phil Aiken of my staff at (301) 903-4513.

Sincerely,

Gene Ives
Deputy Assistant Secretary
for Military Application and
Stockpile Management
Defense Programs

Enclosure

cc w/enclosure:
M. Whitaker, S-3.1

9 8 / 3 9 8 6

United States Government

Department of Energy

Oak Ridge Operations Office

memorandum

DATE: November 24, 1998

REPLY TO DP-813:Hartson
ATTN OF:

SUBJECT: **RESPONSE TO DEFENSE NUCLEAR FACILITIES SAFETY BOARD LETTER**

TO: Daniel R. Rhoades, Director, Office of Site Operations, DP-24, GTN

Attached is the Y-12 Site Office response to the Defense Nuclear Facilities Safety Board (DNFSB) letter of October 8, 1998. The response addresses actions taken to correct the Holden Gas Furnace noncompliances, as well as, additional issues raised by the DNFSB Staff in previous site visits.

If you have any questions, please call Sarah E. Hartson of my staff at (423) 241-6446.


Robert J. Spence
Y-12 Site Manager

Attachment

cc w/attachment:

M. B. Whitaker, Jr., EH-9, FORS
P. D. Aiken, DP-24, GTN
M. H. McBride, SE-33, ORO
S. D. Richardson, M-2, ORO
J. C. Hall, M-1, ORO
R. D. Dempsey, DP-80, ORO
R. W. Poe, SE-30, ORO
P. Gubanc, DNFSB, 9704-2, MS 8017, Y-12

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DNFSB SAFETY BOARD

Lockheed Martin Energy Systems

Post Office Box 2009 Oak Ridge, Tennessee 37831 - 8193
Telephone: 423-574-8151 Facsimile: 423-576-4846



November 24, 1998

Mr. R. J. Spence
Y-12 Site Manager
Department of Energy, Oak Ridge Operations
Post Office Box 2001
Oak Ridge, Tennessee 37831

Dear Mr. Spence:

**Contract DE-AC05-84OR21400, Response to the Defense Nuclear
Facilities Safety Board Letter Dated October 8, 1998**

Attached you will find the response to the Defense Nuclear Facilities Safety Board letter dated October 8, 1998.

Please contact G. F. Hagan (576-8307) if you have any further questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "D. L. Mason".

D. L. Mason, Director
Resumption and Operations

DLM:jmb

Attachment: As Stated

cc/att: J. J. Bolon
B. C. Brown
L. C. Bryson
K. J. Carroll
EUO-DMC (RC)
L. A. Felton
D. D. Grandage
G. F. Hagan
S. E. Hartson, DOE-ORO
B. L. Hawks, DOE-ORO
J. W. Insalaco
N. C. Jessen

K. D. Keith
L. G. Loden
D. L. Mason
M. K. Morrow
R. L. Patton
T. B. Olberding, DOE-ORO
D. W. Sheffey
M. A. Sundie, DOE-ORO
D. L. Wall, DOE-ORO
S. A. Watkins, DOE-ORO
S. E. Wellbaum, DOE-ORO

Attachment to Letter
Mason to Spence
Dated: November 24, 1998

Response to the Defense Nuclear Facilities Safety Board Letter Dated October 8, 1998

On October 8, 1998, the Defense Nuclear Facilities Safety Board (DNFSB) presented the Department of Energy (DOE) a report outlining their staff's observations of Phase A-2 restart activities. In addition, the Board asked to be kept informed of the results of further actions to ensure the safety of operations with the Holden Gas Furnace. These results and actions relative to the Holden Furnace are described below. A brief status relative to other concerns noted in the staff's trip report are also included.

Holden Gas Furnace

An independent management review was performed to investigate the cause(s) of difficulties associated with the Holden Gas Furnace. Specific lines of inquiry include the failure to adequately flow down the requirements from National Fire Protection Association (NFPA) and other industry guidance into the Y-12 work authorization documents. Additionally, the review process was examined to determine how the flow down of requirements was missed.

The root cause identified that Management, by failing to recognize the required level of rigor, did not require a detailed review of the applicable NFPA codes for the Operational Safety Requirement (OSR) controlled Holden Furnace. Standards flow down to plant command media was also not specific.

An in-depth review was conducted to ensure the Holden Gas Furnace met safety standards. From this review, actions to meet code requirements have been planned and are being completed. Support personnel from Maintenance and the Equipment, Testing, and Inspection (ET&I) Department have received the requisite training relative to the Holden Furnace and natural gas system.

The furnace electrical system and grounding were evaluated by the plant electrical inspector. Additional bonding was added to the exterior of the natural gas piping. The electrical "Authority Having Jurisdiction" has reviewed these actions. Follow on action is scheduled for February 1999 to achieve code compliance.

An airflow sensor has been installed in the Holden Furnace exhaust duct and interlocked with the safety circuitry. Addition of an interlock between the fan motor starter to the safety circuitry is also planned as a post-start item.

Proof of closure for the primary main natural gas shutoff valve has been installed. The secondary main gas shutoff valve has also had a position indicator installed. Administrative controls are in place to ensure proper operation of valves that could render a safety device inoperable. Pilot gas burners have independent flame supervision. Due to the unique luminous wall design of the Holden Furnace, there are no main gas burners.

Natural gas piping has been tested in accordance with NFPA 54 criteria for existing systems. Main and pilot gas safety shutoff valves have been checked for leak tightness in accordance with manufacturer's recommendations. Piping supports were evaluated by structural engineers and an additional temporary piping support was installed. Permanent support is to be added as a post-start item during the February outage to replace the temporary support. The piping will be coated during this outage as well.

Flow down of manufacturer's instructions to inspections, testing, and maintenance activities has been completed. External areas of the furnace which could exceed 160°F have been insulated or access controlled. A requisite warning label has been added at the furnace. The portable access ladder used at the Holden Furnace has been assessed by Industrial Safety Engineers. Code deviations related to the ladder have been determined to be "de minimus" in type. The need for explosion relief has been evaluated and determined not to be necessary for the Holden Furnace.

As a result of issues related to the Holden Furnace, other Enriched Uranium Operations (EUO) furnaces are receiving reviews and appropriate actions. An approved corrective action plan to address requirements flow down beginning at the site level is in place.

Status of Other Concerns Noted in Trip Report

There are currently no plans to use hydrogen in the Tube Furnaces located in Room 1010. The Tube Furnace operating procedure has been changed to remove the section that allows operation with hydrogen. The hydrogen supply to the facility is isolated using the current administrative control

procedure and is physically locked out. A maintenance work request to physically isolate the hydrogen supply from Room 1010 has been submitted and is to be completed as a pre-Phase B item.

Current operating strategies do not include the processing of volatile organic compounds in the muffle furnace. The process was analyzed on this basis. As a result, there is no specific safety control identified in the BIO to establish a procedural restriction of volatile organics in the muffle furnace. Any proposed changes to permit volatile organics to be processed in unanalyzed areas would be reviewed through the change control process, requiring a Unreviewed Safety Question Determination (USQD) and associated safety evaluations. However, given the fact that this was a permitted activity within the working life of our current labor force, the BIO will be revised to establish that these materials are to be processed in other equipment. These procedures currently contain restrictions on the use of organics; however, procedures are under review to strengthen material characterization and implementation details.

A series of activities are underway to address the concern regarding a lack of evidence demonstrating a deliberate determination of flooding scenarios and capacity of drainage features. The Nuclear Criticality Safety Organization (NCSO) has evaluated, through field walk downs, sources of potential moderators. Concerns identified in Phase A-1 relative to casting furnaces and coolant trays have been identified and corrected. Criticality Safety Requirement (CSR) required drainage features were reviewed during implementation for adequacy utilizing the judgement of the engineering staff (e.g., duct work holes with no credible water source other than condensation). These features were determined using engineering judgement. Instructions to the technical staff require that the adequacy of drainage be considered when implementing these CSRs. A review is underway to reevaluate and document the basis for these determinations.

Surveillance periodicity has changed as better information has been developed and experience gained in implementing these. Frequencies are established considering the nature of the surveillance and how it is to be implemented. Some surveillances are best incorporated into operating procedures or round sheets while others are better performed utilizing a specific surveillance procedure. These different implementation methods will lead to differences in surveillance frequency. Guidance, in the form of a letter, has been issued to process engineering staff relative to the selection of surveillance frequencies.

Changes to the Surveillance Database are permitted for frequency changes per Y10-37-046. The change which was the subject of this concern, occurred due to actions to bring the program into

compliance with Y10-37-046. The surveillance coordinator is assigned (per this procedure) the task of updating the Surveillance Database, schedule, and report. An approved data sheet is in place.

The frequencies of inspections of specific drain holes can be different even on the same equipment. The four drains for the Holden Gas Furnace are 1 1/2" drain pipes. These are inspected annually. The annual frequency for the drains was chosen due to the low expectancy for buildup of material in the drains and to coincide with the furnace cleaning process. There are two 1/2" drain holes in the cooling hood associated with the Holden Furnace. No likely source for liquid introduction to these hoods exists. A quarterly inspection was chosen for the cooling hood drains due to the potential for dust buildup at the drains. The canning hood has one 1 1/8" drain hole. There is no source for liquid introduction to the canning hood. A quarterly inspection frequency was chosen due to the possibility of solids buildup as a result of overfilling the receiving can and leakage around the can. The exhaust duct has two drains that consist of 1/2" tubing which drain into water filled seal pots. These drains are located at low points in the duct system. There is no source for liquid introduction into the exhaust duct. The exhaust systems are a closed system and no liquid flows through the duct. A quarterly inspection frequency was chosen due to the potential for solids buildup in the duct work.

In general, administrative CSR controls are implemented directly in performance steps. Determinations that some controls are best implemented through the "precautions and limitations" have been made. For example, there are a number of controls (primarily mass limits) that are implemented through the precautions and limitations section. This practice has been reviewed by the engineering staff. There also have been deficiencies in the identification of CSR control steps in procedures, listing of all the affected drawings, adding the designator "N" to components on the Master Equipment List. These were identified and corrected, largely through the Management Internal Assessment process. Continued attention to these details will be required during Phase B efforts.

A series of improvements were implemented in the mapping of safety controls from requirements documents to implementing directives. These improvements occurred over the course of Phase A activities. The evidence of the mapping task is found in different formats. The current method integrates input to the linking database with the mapping process. Currently, the A-2 specific data has been entered into the linking database. Verification of this data (modeled after approach used by Savannah River's ITP process) is scheduled for completion in November 1998. The change control process now includes updates to the linking database. This is the process intended for the future mapping of controls, therefore this format variety is not expected during Phase B.

Relative to the calibration status of safety components, the OSR calibrations are noted on the status board in the Building 9212 Shift Manager's office. The Shift Manager also tracks the operational status of equipment. The Preventive Maintenance Manager identifies equipment out of calibration for evaluation by the Shift Manager. The knowledge of calibration status is communicated by exception reporting.

The current Lockout/Tagout (LO/TO) procedure is being broadened to include the use of existing LO/TO process during operations when energy or material isolation is required to ensure personnel safety even though no service or maintenance activities are being performed. LO/TO for non-service/maintenance activities will be accomplished using departmental locks with no overlocking by individuals.

An organizational Operational Safety Board has been established for EUO as an element of our Integrated Safety Management approach. This board is chaired by the Director, Resumption and Operations, and approves all corrective action plans. The chairman's responsibilities include ensuring deficiencies are evaluated for programmatic inadequacies as part of the development of corrective action plans. The root cause analysis results are reviewed by this board. If these issues extend beyond the EUO organization, they are forwarded to the appropriate Functional Area Manager. The board's charter has been modified since the staff visit to clearly delineate this responsibility.