



96-0000798

## Department of Energy

Washington, DC 20585

March 8, 1996

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DNF SAFETY BOARD

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

Dear Mr. Conway:

Thank you for your letter dated December 18, 1995, regarding concerns with the proximity of the Central Training Facility (CTF) at the Defense Waste Processing Facility (DWPF) identified by your staff during a visit to the Savannah River Site on November 14, 1995. The issues raised focused on the need for further evaluation and justification of the CTF's ability to respond to hazardous material releases from DWPF, or other adjacent operating facilities. The Savannah River Operations Office (SR) has provided a response that has been coordinated with my staff and addresses the concerns raised in your memorandum.

Enclosure 1 is a memorandum from the Manager of SR that provides discussion on the specific concerns raised by your staff. Also discussed in the enclosure are the administrative and hardware changes being evaluated to improve the notification process and response actions at the CTF. Additionally, we are providing a table (Enclosure 2) indicating the dominant contributors to risk at the CTF. It is noted that while benzene releases from DWPF were considered in the analysis supporting enclosure 2, they were not significant in contribution to total risk at CTF. Based on our review of this table, it is evident that DWPF would contribute less than one percent (including benzene) of the potential risk to the CTF, and therefore we do not believe this matter impacts startup and operation of DWPF.

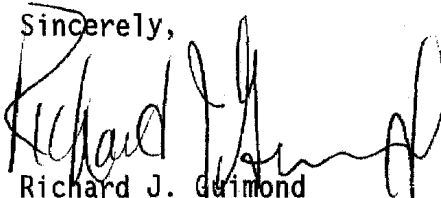
We understand this topic is scheduled for discussion during the Board's visit to Savannah River on March 11, 1996, and look forward to a productive interchange on this subject. The Savannah River staff is prepared to provide additional technical briefings related to the accidents included in the analysis and their specific contribution to risk at CTF.



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Thank you for your continuing interest and valuable comments relative to this program.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard J. Grimond". The signature is written in a cursive style with a large, prominent initial "R".

Richard J. Grimond  
Assistant Surgeon General, USPHS  
Principal Deputy Assistant Secretary  
for Environmental Management

Enclosures (2)

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DOE FORM 1  
**United States Government** **Department of Energy (DOE)**

**memorandum**

OPTIONAL FORM 99 (7-90)

**FAX TRANSMITTAL**# of pages **6**

: (SR)

**DATE:** MAR 01 1996

**REPLY TO  
ATTN OF:** SD (Edwards/803-725-1791)

**SUBJECT:** Defense Nuclear Facility Safety Board (DNFSB) Concerns for Central Training Facility (CTF)

To <b>Kurt Fisher</b>	From <b>C.T. Edwards</b>
Dept./Agency <b>DOE HQ (EM)</b>	Phone # <b>(203) 725-1791</b>
Fax # <b>(301) 903-8506</b>	Fax # <b>(203) 725-3376</b>
NSN 7540-01 317-7368	5000-101 GENERAL SERVICES ADMINISTRATION

**TO:** Assistant Secretary for Environmental Management (EM-1), HQ

The DNFSB letter of December 18, 1995, expressed concern with the proximity of the CTF to the Defense Waste Processing Facility (DWPF) and other Savannah River Site (SRS) operating facilities. It was noted that a number of transient occupants were routinely expected in CTF and a limited amount of time was available to implement protective actions due to its close proximity to potential hazards. The DNFSB requested further evaluation and justification of CTF's ability to effectively respond to hazardous material releases from DWPF or other adjacent operating facilities. A detailed discussion regarding the specific concerns raised by the DNFSB is attached.

In evaluating the DNFSB concern, the hazards from the adjacent facilities, the expected response measures, and times historically required to implement those response measures were analyzed. Results of our analysis revealed a number of potential events at the adjacent facilities that could result in consequences in excess of protective action criteria at CTF. These events include chemicals and radiological materials and are typically the result of major accidents (e.g., seismic events, catastrophic tank failures, maximum transfer errors, etc.).

Based on our overall evaluation, we have concluded that CTF's existing emergency response program is consistent with the SRS Emergency Plan and provides a level of protection commensurate with that at other SRS administrative facilities. Although our analysis identified potential events with high consequences at CTF, the probability of the events is low, and we believe CTF's program is commensurate with that risk. For these reasons, we believe no additional actions are necessary to meet minimum response standards.

In an effort to provide continuous improvement, SRS constantly evaluates and implements changes to the SRS Emergency Management Program. Attached is a discussion of administrative and hardware changes being evaluated to improve the notification process and response actions at CTF. The administrative changes, if not already completed, will be implemented soon. A decision on hardware changes is expected by March 29, 1996.

It must be noted that SRS operating facilities have approved safety documentation that provides the authorization basis for facility operations and determines the acceptable risks to onsite and offsite populations. Should the unexpected occur, SRS has an emergency response program in place to mitigate the effects of the event for CTF and other onsite and offsite populations. We

EM-1

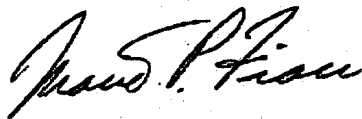
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MAR 01 1996

recognize the need for timely protective actions in response to these events; however, no specific time requirement exists for implementation of onsite protective actions in the DOE emergency management system or the commercial nuclear industry. Our goal is to keep response times to a minimum commensurate with the risk. The SRS drill and exercise program provides continuing practice to strengthen our response capabilities and ensures personnel preparedness.

This response has been coordinated with Jim Cruickshank of your staff and informally with the DNFSB staff. We believe it addresses the DNFSB concerns; however, their staff has indicated a desire for more than just administrative changes. The DNFSB appears to be particularly interested in the installation of hazardous material monitors at the CTF ventilation intakes. Although this option is still under consideration, we do not believe it to be a cost-effective measure for the Site to implement. Typically, use of these systems has been limited to critical emergency response facilities (e.g., Control Room, Technical Support Center) in nuclear power plants, not onsite administrative facilities. In addition, implementation of these systems at CTF would imply their need in many similar situations onsite. We do not believe such application is warranted at this time. Use of these systems in this manner will set a precedent at SRS as well as the entire DOE complex.

If you have any further questions or need additional information, please contact me or have your staff contact Ms. Christina T. Edwards, Safety Division, at (803) 725-1791.



Mario P. Fiori  
Manager

SD:CTE:cljb

GE-96-0117

Attachment  
Specific Concerns

cc w/atth:

J. Cruickshank (EM-70), HQ  
T. Tuccinardi (NN-60), HQ  
K. Fisher (EM-32), HQ

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Attachment, Memo: Flori/Alm, "DNFSB Concerns for CTF," date **MAR 01 1986**.

For clarity, the following facilities are considered in close proximity to CTF:

- Defense Waste Processing Facility (DWPF)/Late Wash Facility
- Tritium Processing Facilities
- H Canyon/Outside Facilities, HB Line
- Receiving Basin for Offsite Fuels (RBOF)
- H-Area Tank Farm
- In-Tank Precipitation (ITP)/Extended Sludge Processing Facility
- New Waste Transfer Facility
- Consolidated Incineration Facility (CIF), including the Spent Solvent Storage Tanks

### **Credible Accident Response Times**

Credible times available for response may be approximated based on the distances from each facility to CTF, the plume travel time for both 95% historical adverse and 50% historical average meteorology, and the time required for the contaminant to infiltrate CTF. The time for a plume to travel to CTF ranges from four to eight minutes and two to six minutes for 95% historical adverse and 50% historical average meteorology, respectively. Once a plume reaches CTF, the building air exchange rate, with the ventilation running and/or secured, can be used to approximate the additional amount of time required for the contaminant to infiltrate CTF and exceed a protective action criteria. Reference the Westinghouse Savannah River Company (WSRC) technical reports WSRC-TR-96-0030 (revision 1) and WSRC-TR-96-0033 (revision 0).

The historic response times discussed below are based on data derived from a two year period of emergency response drills and exercises conducted at DWPF, the Tritium Facilities, and H Canyon/HB Line. CTF response times are based on data from two emergency response drills and responses to two actual tornado warning (i.e., shelter) events, an actual tritium release (i.e., remain indoors), and an inadvertent fire alarm (i.e., building evacuation).

- **Event Occurrence to Event Recognition:** Depending on the type of scenario and the extent of play, the time between event occurrence and event recognition ranged from five to eight minutes, with an average of seven minutes.
- **Event Recognition to CTF Notification:** Once the facility recognized the event, the time for this information to reach CTF ranged from three to eight minutes, with an average of five minutes.
- **CTF Notification to Implementation of Protective Actions:** Once notification was received, Facility Fire Wardens were able to implement protective actions, including shutdown of building ventilation systems (if applicable), in an average of three minutes.

Overall, the average time from event occurrence to implementation of protective actions at CTF is approximately 15 minutes. This average 15 minutes time period is reasonable based on operations response to annunciators, written procedures, training, and on-going emergency response drills and exercises. It is reasonable to assume that this time period would also prevail in an actual emergency response.

Attachment, Memo: Flori/Alm, "DNFSB Concerns for CTF," date MAR 01 1996

### **Expected Response Measures**

The CTF emergency procedure consistently implements the response measures identified in the SRS Emergency Plan. The following protective actions are available to CTF for immediate implementation:

- Remain Indoors
- Shelter
- Evacuation

For CTF, the most appropriate action for an airborne release of hazardous materials is to have personnel stay inside the building (i.e., shelter or remain indoors). This is based on CTF's close proximity to the adjacent facilities (i.e., short plume transit time) and the consequences of the events which have the potential to impact CTF.

As an immediate protective action, evacuation would only occur should the occupants of CTF be at greater risk inside the building than outside (e.g., fire, confirmed bomb threat, etc.).

CTF's emergency procedure provides the expected response measures to be implemented by the Facility Fire Wardens for each protective action. The Facility Fire Wardens are trained and drilled to ensure adequate implementation of their emergency procedure responsibilities. These responsibilities include such actions as securing building ventilation systems, sweeping corridors and classrooms for personnel, securing exterior doors, etc.

In addition, Site Training Department policy requires instructors to provide information to students regarding their expected responses to emergency events in CTF. This information includes identification of rally points, evacuation routes, shelter instructions, etc.

### **Evacuation Routes and Means**

Although evacuation would not be the primary protective action for CTF, evacuation routes from the building to the pre-designated rally points have been identified. The evacuation routes are contained in the CTF emergency procedure and are posted in CTF classrooms and corridors. In addition, should relocation of personnel at CTF be required, site-level procedures EPIP 6Q-300 and EPIP 6Q-103 are in place to implement the necessary actions. Based on consequence assessment calculations, the Emergency Duty Officer or the Emergency Director would determine relocation requirements. The identified procedures direct the activation of a pre-designated reception center, selection of an appropriate relocation route, and assembly of the necessary resources (e.g., security escorts, transportation means, personnel, and supplies for monitoring and decontamination, etc.) to support the relocation.

Attachment, Memo: Fiori/Alm, "DNFSB Concerns for CTF," date MAR 01 1996

## Identification of Hardware and/or Operational Procedure Upgrades which would provide a Higher Level of Safety

### 1. Program improvements already implemented:

- Revision of the DWPF emergency procedure requiring direct notification of the H-Area Emergency Coordinator (via ringdown telephone) for S Area events which involve an airborne release of hazardous materials. This procedure change reduces the time between event recognition and CTF notification by removing the Emergency Duty Officer (EDO) from the notification loop to H-Area at this point in the event.
- Upgrade of the CTF emergency response drill program to include participation in S and H Area drills. CTF is currently required to conduct one shelter, one remain indoors, and one evacuation protective action drill on an annual basis. This change will require CTF to conduct one of these drills in coordination with an H Area drill and one in coordination with an S Area drill. This change will improve coordination between S Area, H Area, and CTF and provide practice in implementing the expected response measures.
- Developed a standing order for the H Area Emergency Coordinator to implement Remain Indoors as an area protective action for any H or S Area event involving an airborne release of hazardous materials. Based on the close proximity of these facilities and the consequences of the potential events, this is the most appropriate protective action. This will reduce the amount of time between event recognition and CTF notification by eliminating the need to step through the existing flowchart for protective actions. This action is an interim measure until an area-wide protective action procedure is developed.

### 2. Program improvements committed for implementation:

- Review and revision of the CTF emergency procedure to clarify and streamline expected response measures. This may reduce the time between CTF notification and implementation of protective actions if any streamlining can be realized.
- Establish formal training for each instructor which includes scripted information on expected response measures for presentation to students at each course. This will help reduce the time between CTF notification and implementation of protective actions by reinforcing the response measures for the students as well as the instructors.
- Develop an H Area-wide protective action procedure. This will provide the H Area Emergency Coordinator with specific direction for implementation of area protective actions based on facility events within and adjacent to H Area. This will reduce the amount of time between event recognition and CTF notification by providing protective actions based on pre-identified facility events.

Attachment, Memo: Fiori/Alm, "DNFSB Concerns for CTF," date MAR 21 1996

3. Program improvements under evaluation:

- Installation of in-line hazardous material detection monitors at CTF.
- Installation of HVAC automatic shutdown controls in CTF (panic buttons).
- Installation of emergency notification systems from affected facilities to CTF.
- Implementation of an in-house CTF habitability survey capability.
- Upgrade of the H Area Public Address System.

**Cost-safety Benefit of Implementing Identified Beneficial Hardware and/or Operational Procedure Upgrades:**

The program improvements completed or committed for completion (e.g., operational procedure upgrades and administrative changes) will be accomplished with existing resources. However, the program improvements under evaluation (i.e., hardware upgrades) require additional analysis before consideration will be given to their implementation. A description of each hardware upgrade is provided below. A cost-benefit analysis will be completed for all upgrades by March 29, 1996, except for number one which will be completed by March 6, 1996.

1. Installation of in-line hazardous material detection monitors at CTF:

**Benefit:** Will provide real-time detection of a hazardous material release and shutdown of the CTF ventilation system. Ventilation shutdown is not dependent on recognition of the event at the incident facility and therefore reduces the time required to implement protective actions.

2. Installation of HVAC automatic shutdown controls in CTF (panic buttons to be located in strategic areas throughout CTF):

**Benefit:** Reduces the time required to shutdown building ventilation systems thus reducing the time required to implement protective actions.

3. Installation of emergency notification systems from affected facilities to CTF:

**Benefit:** Provides direct notification to CTF from the affected facility. Reduces the amount of time between event recognition and CTF notification by eliminating the interim notification through the H Area Emergency Coordinator at this point in the event.

4. Implementation of an in-house CTF habitability survey capability:

**Benefit:** Use of existing training staff (industrial hygiene, radiological control) in CTF to provide real-time data regarding facility habitability. On-going facility protective action decisions would be made based on real-time data.



## **Dominant Contributors to Risk**

- **50% - Tritium release due to fire in 232-H.**
- **19% - H-Canyon frame waste recovery fire.**
- **11% - CCl<sub>4</sub> 5000 gallon spill from tank rupture.**
- **9% - H-Canyon; Various transfer errors (7 total)**
- **5% - Tritium release due to fire in 234-H**
- **3% - H-Canyon; Various coil/tube failures (4 total)**
- **2% - Tritium; Tank deflagration**
- **1% - Remainder of all other analyzed accidents.**