



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW, SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

July 9, 2008

Ronald E. Goans, PhD, MD, MPH



Dear Dr. Goans:

This letter is to confirm our telephone agreement of June 2, 2008, that you will assist this U. S. Nuclear Regulatory Commission (NRC) regional office by serving as a physician consultant with respect to the HF medical event described in Enclosure 1. A Charter detailing the tasks that should be completed under this contract is provided in Enclosure 2. If you encounter difficulty in completing these tasks or identify additional tasks that should be performed, please contact your NRC regional contact for this matter. This individual should also be contacted if you believe that your involvement in the case would result in a possible conflict-of-interest situation. In addition, please note the information in Enclosures 3 and 4 regarding medical consultant liability and service with other Federal departments or agencies. Please notify your NRC regional contact if you are currently performing work for other Federal departments or agencies.

It is our understanding, based on our telephone agreement of June 2, 2008, that you will not conduct an on-site visit at this time. However, based on your evaluation of medical records and interviews with involved parties, we understand that a site visit may become necessary later. Your evaluation of the incident shall include a review of all pertinent documents available, regardless of whether an on-site visit is conducted.

Based on the injury, medical conditions and medical treatment provided to a BWX Technologies employee who received a hydrogen fluoride (HF) splash to the face, please assess and describe the significance of the chemical exposure to the worker safety and health (actual and potential outcomes). Also relate this significance to the definitions and descriptions of 10 CFR 70.61 for high-consequence and intermediate-consequence chemical exposures and determine if this particular exposure event had potential or actual consequences that were either high or intermediate as defined in the regulation. If possible from review of medical records for the exposed individual and records of similar exposures available in medical and industrial publications, estimate the quantity and/or concentration of hydrogen fluoride that caused this injury and associated medical conditions.

The licensee has been notified by our office of your participation in this incident evaluation and has been informed that you may be contacting the company physician(s), the individual's physician(s) and/or the referring physician, regarding your involvement in NRC activities.

R. Goans, MD

Please inform your NRC regional contact when you have completed the tasks specified in the Charter. A report of your findings and conclusions shall be provided to us within 30 calendar days of the completion of the case review and/or site visit, unless there are extenuating circumstances that have been discussed with your NRC regional contact before the 30-day period ends. Please note that your report will be an official Agency record, and will be released to the public. Thus, it is important that all confidential information be kept out of your report.

Please follow the instructions provided in the Charter when preparing and submitting claims for reimbursement.

Thank you for your assistance in this matter. The NRC regional contact for this case is Mr. Alphonsa Gooden, and he can be reached by telephone at 404-562-4716, FAX 404-562-4955, or by e-mail at [alphonsa.gooden@nrc.gov](mailto:alphonsa.gooden@nrc.gov).

Sincerely,

**/RA/**  
Luis A. Reyes  
Regional Administrator

Enclosures:

1. Preliminary Description of Incident Form
2. Medical Consultant Charter
3. Medical Consultant Liability
4. Restrictions on Service with Other Federal Departments or Agencies
5. Medical Consultant Report
6. NRC Form 148, Voucher for Professional Services
7. NRC Form 64/64A, Travel Voucher (non-local travel)
8. SF1164, Claim for Reimbursement for Expenditures on Official Business (local travel)
9. SF1034, Public Voucher for Purchases and Services Other Than Personal

X PUBLICLY AVAILABLE                      NON-PUBLICLY AVAILABLE                      SENSITIVE                      X NON-SENSITIVE  
ADAMS: X Yes    ACCESSION NUMBER: \_\_\_\_\_

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI	RII:ORA			
SIGNATURE	AG 7/1/08	MC for 7/1/08	JS 7/3/08	VM 7/9/08			
NAME	AGooden	CPayne	JShea	VMcCree			
DATE	7/ /2008	7/ /2008	7/ /2008	7/ /2008	7/ /2008	7/ /2008	7/ /2008
E-MAIL COPY?	YES    NO	YES    NO	YES    NO	YES    NO	YES    NO	YES    NO	YES    NO

OFFICIAL RECORD COPY    DOCUMENT NAME: G:\FFBI\EVENTS\BWXT\BWXT MEDICAL CONSULTANT\MEDICAL CONSULTANT CONF LTR1.DOC

PRELIMINARY DESCRIPTION OF INCIDENT FORM

\*\*\*\*\*IMPORTANT\*\*\*\*\*  
REDACT INFORMATION FROM DOCUMENT  
(WHICH IS EXEMPT FROM DISCLOSURE UNDER 10 CFR 2.390)  
THEN RELEASE THE DOCUMENT

Nuclear Regulatory Commission Regional Office: RII

Date of Incident: 04/28/2008

Date of Notification: 04/28/2008

NRC Inspector (Regional Contact): Alphonsa Gooden  
Telephone number: (404) 562-4716

Medical Consultant: Ronald R. Goans  
Specialty: PhD, MD, MPH

Licensee Involved:

Name: BWX Technologies, Inc.

AU: N/A

Address: Nuclear Products Division  
P.O. Box 785  
Lynchburg, VA 24505

Telephone: (434) 522-6000

AMP: N/A

Telephone: N/A

RSO: N/A

Referring Physician: Dr. Branson

Telephone Number: N/A

Telephone: XXXXXXXXXX

NRC License No. SNM-42

Docket No. 70-27

Name and Title of Licensee contact: David Ward, Manager, Environment, Safety, Health and Safeguards

Telephone Number: (434) 522-5678

Provide a preliminary description of the incident(s) and a summary of the known circumstances resulting in radiation exposure, including all known radionuclides and activities:

Enclosure 1

**Description of Incident:**

On April 28, 2008, around 10:15 p.m., a Recovery Operator (Operator A) noted a liquid leak or spill of hydrogen fluoride (HF) from the vicinity of an HF tank drain valve. In response, the operator attempted to neutralize the HF spill using what he believed to be soda ash. While applying this chemical, an exothermic reaction occurred and the liquid erupted resulting in a splash to the operator's face, eyes, and arm. Following the eruption, another Operator (Operator B) in the vicinity responded to provide medical assistance to Operator A. Operator A was taken to the nearest eye wash station and his eyes were flushed for approximately 15 minutes. A Radiation Technician working in the area stated that he felt a burning sensation to the neck area and Operator B had trouble breathing which was later attributed to an existing asthmatic condition. Both Operators and the Radiation Technician were transported to Lynchburg General Hospital for evaluation and treatment. Prior to being transported to Lynchburg General Hospital, the BWXT emergency team treated Operator A and the Radiation Technician with calcium gluconate. Based on interviews, all three workers were surveyed for the presence of contamination prior to hospital transport and no evidence of removable contamination was found. Operator A incurred a small spot to his arm with fixed contamination. The licensee evacuated the building and deployed emergency responders to assess and neutralize the HF spill.

BWXT determined from interviews and laboratory analysis that the operator used sodium hydroxide as the "neutralizing agent" rather than sodium carbonate (soda ash).

Subsequent to treatment at the offsite medical facility, Operator A was evaluated by both his personal physician and an Optometrist in addition to the BWXT site physician and a BWXT recommended medical expert on HF. Following the event, Operator A has complained of blurred vision, and eye irritation. The personal physician of Operator A diagnosed the condition as "dry eyes" with some indication of scar tissue and a small abrasion in one eye and prescribed an eye solution and steroids to aid in relieving the dryness. No complaints or adverse health effects were reported by Operator B or the Radiation Technician.

Individual(s) exposed:

Name: Chris Brummett

Home Address: Contact licensee for this information

Home Telephone: XXXXXXXXXX

Estimated Radiation Dose: N/A

\*\*\*\*\*IMPORTANT\*\*\*\*\*

REDACT INFORMATION FROM DOCUMENT  
(WHICH IS EXEMPT FROM DISCLOSURE UNDER 10 CFR 2.390)  
THEN RELEASE THE DOCUMENT  
MEDICAL CONSULTANT CHARTER

A. GENERAL INFORMATION

The U. S. Nuclear Regulatory Commission's (NRC's) authority and responsibility for conducting special inspections of radiation exposure incidents are provided under the Atomic Energy Act of 1954, as amended, and under the Energy Reorganization Act of 1974. The purpose of these inspections is to ascertain the facts and other related information surrounding the incident. This may involve the following tasks: determining the circumstances surrounding the incident and the root cause of the incident; evaluating the actions taken by the licensee at the time of the incident, in providing medical care to exposed persons; evaluating corrective actions taken by the licensee to preclude future similar incidents; verifying or estimating dose(s), to the exposed individual(s); evaluating the probable deterministic effects of the exposure; evaluating the notifications made by the licensee, and the licensee's follow-up plan, if available; and gathering evidence to support any necessary enforcement actions by NRC.

B. SPECIFIC GUIDANCE AND TASKS TO BE PERFORMED

1. The medical consultant shall not do the following (as applicable to the specific situation):
  - a. Enter into a physician-patient relationship with the exposed individual.
  - b. Provide medical opinions or recommendations to anyone other than NRC, without NRC's written permission, unless compelled by legal process to do so. To minimize the risk of liability, any recommendations made by a medical consultant should be accompanied by a disclaimer that the recommendation is not a substitute for the professional judgment of any physician involved with, or responsible for, the patient's or individual's care.
  - c. Recommend a particular expert. The medical consultant may indicate that the services of an expert are needed, and if asked, the consultant may identify, after consultation with NRC management, sources for identification and location of such experts. Recommendations will be in accordance with 5 CFR 2635.702, which prohibits Federal employees from using public office for the endorsement of any product, service, or enterprise. Information on 5 CFR 2635.702 is available from the regional contact listed in the cover letter.
  - d. Divulge or make known to the licensee, individual, individual's physician, or referring physician any official findings or conclusions resulting from the NRC inspection, without NRC's permission.
  - e. Evaluate the appropriateness of the prescribed treatment or its medical effectiveness (medical events), or provide an opinion on how the facility should operate.

Enclosure 2

- f. Volunteer advice to the licensee about corrective actions to be taken by the licensee.
  - g. Determine if an incident is a medical event.
2. The medical consultant shall do the following (as applicable to the specific situation):
- a. Act for, and on behalf of, the Commission, to gather medical information for the evaluation of the effects of the chemical exposure on those exposed to the chemical(s).
  - b. Assist in NRC inspection/investigative activities related to chemical exposure incidents.
  - c. Provide the date of any on-site visits at the licensee's facility, to the NRC regional contact, as soon as a visit has been scheduled.
  - d. Gather information regarding the circumstances surrounding the incident, to assist in determining the root cause(s).
  - e. Provide a professional opinion/estimate on the magnitude of the chemical exposure (quantity and/or concentration of chemical) to the exposed individual(s), and the probable error associated with the estimation of this information. If necessary, request that the licensee and/or individual's physician furnish information on bioassays, medical history, written directive, physical examinations, and other pertinent laboratory work, etc.
  - f. Assess any probable deterministic effects on the exposed individual(s).
  - g. Evaluate the medical data provided by each exposed individual's physician and interpret the results for the NRC regional office staff; keep the NRC regional or Headquarters staff informed (as appropriate) of the medical condition of the individual.
  - h. Evaluate the promptness and effectiveness of the licensee's immediate actions, in response to the incident, and corrective actions to prevent recurrence.
  - i. For medical events, gather information regarding the radiation dose actually received by the patient, as compared with the prescribed dose, to determine whether the medical event was medically or biologically significant.
  - j. For medical events, evaluate the licensee's notification to the exposed individual or individual's responsible relative or guardian or, alternatively, the licensee's reason for not informing the individual or individual's responsible relative of the medical event.
  - k. Review and evaluate the report (to individuals of exceeding dose limits) submitted by the licensee under 10 CFR 20.2205 (non-medical event) or 10 CFR Part 35 (medical event) to include an evaluation of the licensee's description of the

incident, immediate actions taken in response to the incident, steps taken or proposed regarding long-term corrective actions to prevent recurrence, and the probable effects on the exposed individual.

- l. Evaluate the licensee's plan for exposed individual follow-up, if available.
- m. Prepare and submit, to the NRC regional office, a report of findings and conclusions, within 30 calendar days of completion of the case review and/or site visit, unless there are extenuating circumstances. These circumstances should be communicated to NRC regional management as soon as they are discovered. If information is discovered that is directly relevant to a potential violation of NRC regulations, it should be promptly communicated to NRC. The report may be submitted on the "Medical Consultant Report" form. If the form is not used to submit the findings, you shall, at a minimum, address the items listed on the form.
- n. By no later than noon on the second Thursday of each pay period, complete and sign NRC Form 148, "Voucher for Professional Services." Provide details of the work performed during the pay period on Form 148 or complete a separate additional sheet. Send Form 148 and the summary of work performed via FAX to the FSME Coordinator. Within three business days of sending out the FAX, the consultant should mail (regular mail) the original signed Form 148 to the designated timekeeper for permanent retention.
- o. Complete and sign the NRC Form 148, "Voucher for Professional Services," along with a detailed summary of work assignments. The summary of work performed may be detailed directly on NRC Form 148 or it may be submitted on a separate sheet. Fax the signed NRC Form 148 and summary of work performed to the NRC regional contact by noon on the second Thursday of the pay period for which the requested tasks were completed. Mail the original signed Form 148 to the designated NRC HQ timekeeper within three business days of sending the fax.
- p. Prepare and submit NRC Form 64/64A, "Travel Voucher" (non-local travel) or SF1164, "Claim for Reimbursement for Expenditures on Official Business" (local travel) to the NRC regional contact for expenses incurred during days/hours worked in the region or Headquarters.

NOTE: The regional offices shall make travel arrangements through an NRC travel request (NRC Form-279).

- q. Prepare and submit SF 1034, "Public Voucher for Purchases and Services Other Than Personal," to the NRC regional contact, for administrative expenses other than those associated with salary and travel.
- r. Furnish expert testimony at inquiries or hearings and participate in selected conferences on bioeffects of radiation and radioactive materials.

3. The medical consultant may consider doing the following:

Informing the referring or individual's physician of the U.S. Department of Energy, Office of Epidemiology and Health Surveillance's Long-Term Medical Study Program. This life-time morbidity study of personnel involved in radiation incidents is maintained by the Radiation Emergency Assistance Center/Training Site of the Oak Ridge Institute of Science and Education. Information on the study is attached to the confirmation letter.

NOTE: NRC will make the referring or individual's physician aware of the study if the consultant does not inform the physician.

## MEDICAL CONSULTANT LIABILITY

Medical consultants who are appointed as Special Government Employees are considered to be Federal employees. When a Federal employee is personally sued for a common law tort committed within the scope of employment, the United States will be substituted as the defendant pursuant to the Federal Tort Claims Act. Government counsel will defend the suit on behalf of the United States. The United States will be responsible for any damages that might be awarded. In addition, the consultant would have absolute personal immunity for injury or damage arising from common law torts. A Federal employee (including present and former employees) may also be provided personal representation by the Government in a proceeding in which he or she is sued, subpoenaed, or charged in his or her individual capacity, provided the actions for which representation is requested reasonably appear to have been performed within the scope of the employee's appointment, and representation is in the interest of the United States.

The consultant's provision of professional opinions and recommendations to the U.S. Nuclear Regulatory Commission does not constitute "practice of medicine" within the scope of State licensing laws, provided the consultant does not enter into a physician-patient relationship with the patient.

## RESTRICTIONS ON SERVICE WITH OTHER FEDERAL DEPARTMENTS OR AGENCIES

An employee who serves two or more Federal Departments or agencies is required to inform each of his or her arrangement(s) with the other. If the individual's appointments are made on the same date, the aggregate of the estimates of the days of services will determine the decision, by each agency, as to whether the individual is "Regular" or "Special." If, after being employed by one department or agency, a Special Government Employee is appointed by another agency, the second agency must make an estimate of the individual's days of service for the remaining portion of the 365-day period which was initiated by the first appointment. The sum of the estimate and of the actual number of days of service to other departments or agencies, during the prior portion of such 365-day period, will determine whether the individual is "Regular" or "Special." Close coordination between the agencies and the appointee must be maintained to ensure that the 130-day limitation is not inadvertently exceeded.

MEDICAL CONSULTANT REPORT  
(To Be Completed By Medical Consultant)  
**Official Use Only**

Medical Consultant Name: \_\_\_\_\_ Report Date: \_\_\_ / \_\_\_ / \_\_\_  
Signature: \_\_\_\_\_

Licensee Name: \_\_\_\_\_  
License No. \_\_\_\_\_ Docket No. \_\_\_\_\_  
Facility Name: \_\_\_\_\_

Incident Date: \_\_\_ / \_\_\_ / \_\_\_

Individual's Physician Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Referring Physician's Name: \_\_\_\_\_  
(Medical Event Only)  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Individuals Contacted During Investigation: \_\_\_\_\_  
(Name and Title) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Records Reviewed: (General Description)**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Estimated Dose to Individual or Target Organ: \_\_\_\_\_ Probable Error Associated  
with Estimation: \_\_\_\_\_ Prescribed Dose (Medical Event Only): \_\_\_\_\_  
\_\_\_\_\_ Method Used to Calculate Dose: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



1. Based on your review of the incident, do you agree with the licensee's written report that was submitted to Nuclear Regulatory Commission (NRC), pursuant to 10 CFR 20.2205 or 35.3045, in the following areas:

a. Why the event occurred: Yes No

b. Effect on the individual: Yes No

c. Licensee's immediate actions on discovery: Yes No

d. Improvements needed to prevent recurrence: Yes No

2. In areas where you do not agree with the licensee's evaluation (report submitted under 10 CFR 20.2205 or 10 CFR 35.3045), provide the basis for your opinion:

---

---

---

---

---

3. Did the licensee notify the referring physician of the medical event ?

Yes No

Did the licensee notify the individual or responsible relative or guardian?

Yes No

4. If the individual or responsible relative or guardian was not notified of the incident, did the licensee provide a reason for not providing notification, consistent with 10 CFR 35.3045? Yes No

Briefly explain the licensee's response:

---

---

---

---

5. Provide an opinion of the licensee's plan for exposed individual follow-up, if available.

**MEDICAL CONSULTANT REPORT (SHORT FORM)**

(To Be Completed By Medical Consultant, If Site Visit Is Not Necessary)

**Medical Consultant Name:** \_\_\_\_\_ **Report Date:** \_\_\_ / \_\_\_ / \_\_\_

**Signature:** \_\_\_\_\_

**Licensee Name:** \_\_\_\_\_

**License No.:** \_\_\_\_\_

**Docket No.** \_\_\_\_\_

**Facility Name:** \_\_\_\_\_ **Incident Date:** \_\_\_ / \_\_\_ / \_\_\_

—

**Estimated Dose to Individual or Target Organ:** \_\_\_\_\_

**Probable Error Associated with Estimation:** \_\_\_\_\_

**Prescribed Dose (Medical Event only):** \_\_\_\_\_

**Method Used to Calculate Dose:**

**General Description of Records Reviewed:**

**Individuals Contacted (Name and Title)**

**Description of Incident:**

**Why Site Visit Is Not Required:**

**Assessment of probable deterministic effects of the radiation exposure on the individual:**