



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U. S. ARMY ABERDEEN TEST CENTER
400 COLLERAN ROAD
ABERDEEN PROVING GROUND, MARYLAND 21005-5059

CSSTE-DTC-AT-CS-SO (11-9)

05 JUL 2002

MEMORANDUM FOR U.S. Nuclear Regulatory Commission NRC Division of Nuclear Materials Safety, Document Control Desk, Washington, DC 20555

SUBJECT: Loss of Radioactive Material

1. References:

- a. Title 10 Code of Federal Regulations, Part 20, Section 20.2201.
- b. Title 10 Code of Federal Regulations, Part 30, Section 30.50.
- c. Nuclear Regulatory Commission Incident Report # 38943.

2. Source description. Muzzle Reference Sensor (MRS) containing 10 curies of gaseous tritium and a chemical phosphor sealed in a glass vial. A muzzle reference sensor is mounted at the muzzle end of a tank gun tube to compensate for metal droop of the gun tube during firing of the round.

3. On 24 May 02, at approximately 1130 hrs the Aberdeen Test Center Radiation Safety Officer (ATC RSO) was preparing a M1 Abrams tank, SN LA19117U, for shipment to Michigan and discovered tritium (H3) contamination on the MRS above Department Of Transportation and Nuclear Regulatory Commission limits. The first wipe analysis was 162,212.8 dpm/100 cm². The ATC RSO re-ran the wipe and it showed 171,756.1 dpm/100 cm² contamination. The ATC RSO went to the tank range with his assistant to investigate and perform another wipe.

4. The event occurred at the Trench Warfare tank range, outside Building 269A, on a concrete pad area at Aberdeen Proving Ground, MD. An ATC employee, Mr. Richard Davis, had removed the MRS S/N 8963, to strip the gun tube. The gun tube and MRS were placed back on the tank prior to shipment. The MRS, gun tube, Mr. Davis' hands and the fender of the tank were swiped for contamination. The MRS was reading 148,512.4 dpm/100 cm², the gun tube 3418.555 dpm/100 cm² and the other swipes were below limits of 2000 dpm/100 cm² (Enclosure 1). The ATC RSO asked Mr. Davis to submit a urinalysis sample as a precaution and he filled it about 1530. Results of the urinalysis are negative (Enclosure 2). The ATC RSO removed the MRS, double bagged and marked the item for radioactive waste disposal. The MRS is stored in a permitted radioactive materials storage bunker at ATC. The gun tube was decontaminated using spray detergent, wiped, and the levels are within DOT limits.

NW5551 P Jkl

CSTE-DTC-AT-CS-SO

SUBJECT: Loss of Radioactive Material

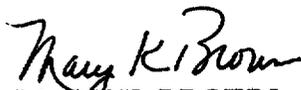
5. The tank was used on the tank range and is parked outdoors during testing and prior to this shipment. Over 200 rounds were fired through the gun tube using the subject MRS. No personnel are located near the muzzle when the tank is fired and the leakage most likely occurred during one of the test round firings. In this particular MRS the gunner saw a faint glow, so breakage was not suspected. The ATC RSO could not distinctly see a "glow" on the subject MRS. The tank will be shipped without an MRS. The tritium release dissipated off into the outdoor atmosphere. The ATC RSO does not suspect any personnel exposure, but is reporting this incident as a loss of material. An immediate reporting level for H3 contamination release under 10 CFR Part 20.2201 (a) (I) is required for H3 1000 times 1000 micro curie, or 1 curie. This item contained 10 curies of H3.

6. At 1450 hours, the ATC RSO notified the NRC Emergency Operations Center, 301-951-0550 and talked to Leigh Tyrosine. She registered the Incident report as #38943. The ATC RSO also notified the Garrison APG Radiation Safety Office, Aberdeen Test Center Command and U.S. Army Developmental Test Command headquarters.

7. Changes to the local radiation permit include: Personnel who bore sight the gun will check the MRS after bore sighting by a visual check using disposable gloves to examine the MRS for the "glow". If the glow is visible from within the tank, personnel will then proceed with firing. Personnel are instructed to immediately notify the ATC RSO if source breakage occurs or a suspected breakage (no glow) occurs.

8. For further information please contact Mr. John C. Beckman at 410-278-9618.

2 Encls
as


MARY K. BROWN
Colonel, OD
Commanding

CF:
U.S. Nuclear Regulatory Commission, Region 1, 475 Allendale Rd; King of Prussia,
PA 19406-1415
Commander, U.S. Army Developmental Test Command, CSTE-DTC-IM-F/Bob Aaserude
Commander, U.S. Army Garrison Aberdeen Proving Ground, AMSSB-GSH-E/Matthew
Wiherle

8 Jul 02

MEMORANDUM FOR U.S. Nuclear Regulatory Commission NRC Division of Nuclear Materials Safety, Document Control Desk, Washington, DC 20555

SUBJECT: NRC Incident Report # 38943.

1. ATC planned to prepare the enclosed report within the 30-day time frame. The ATC Commander requested specific wording and changes to the memorandum during the time that I was attending a conference and subsequently on vacation. No other personnel in my office were prepared to answer changes in the memorandum.
2. ATC apologizes for the delay in delivering the report.
3. Please feel free to contact the undersigned for any questions at 410-278-9618.

Encl


JOHN C. BECKMAN
RSO

USER: 1 ID:TRITIUM PRESET TIME: 3.00 FRI 24 MAY 2002 10:07
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCE:U ES232:U
H#: 1 AGC:N QCF:N RCM:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 0.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON FRI 09 NOV 2001 14:05
UNKNOWN ID:TRITIUM UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS): 4489.500
QUENCH COEFF A: 4.088387 B:-0.0039593 C:-0.0000112 D:-0.0000000135
STANDARD ID:COUNTED9NOV01
QUENCH LIMITS LOW:26.00 HIGH:369.0

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
1	1-	1	146027.00	0.30	3.00	3.49	-1.0	114
						%EFF:59.78	ISO1 DPM :244361.0	
2	1-	2	27.00	22.22	3.00	7.01	1.0	114
						%EFF:59.29	ISO1 DPM :45.54105	
3	1-	3	19.67	26.04	3.00	10.53	142.0	
						%EFF:26.02	ISO1 DPM :75.56910	
4	1-	4	57304.33	0.48	3.00	14.10	100.0	
						%EFF:35.33	ISO1 DPM :162212.8	

Handwritten: 162212.8
Handwritten: MRS
Handwritten: HOT

USER: 1 ID:TRITIUM PRESET TIME: 3.00 FRI 24 MAY 2002 11:51
 SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
 H#: 1 AQC:N QCF:N RCM:N
 CHANNEL 1-LL: 0 UL: 400 2SIGMA: 0.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON FRI 09 NOV 2001 14:05
 UNKNOWN ID:TRITIUM UNKNOWN REPLICATES: 1
 UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
 QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS): 4489.500
 QUENCH COEFF A: 4.086367 B:-0.0039593 C:-0.0000112 D:-0.0000000135
 STANDARD ID:COUNTED9NOV01
 QUENCH LIMITS LOW:26.00 HIGH:369.0

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#		ERR
1	1- 1	1	145786.33	0.30	3.00	3.49	-1.0		114
							%EFF:59.76 ISO1 DPM	:243958.3	<i>H3 spike</i>
2	1- 2	1	27.33	22.09	3.00	7.02	1.0		114
							%EFF:59.29 ISO1 DPM	:46.10328	<i>C14</i>
3	1- 3	1	20.67	25.40	3.00	10.53	144.0		
							%EFF:25.61 ISO1 DPM	:80.69259	<i>Blank</i>
4	1- 4	1	60675.67	0.47	3.00	14.10	100.0		
							%EFF:35.33 ISO1 DPM	:171756.1	<i>HOT</i>

MCS
run

USER: 1 ID:TRITIUM PRESET TIME: 3.00 FRI 24 MAY 2002 12:30
 SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
 H#: 1 AQC:N QCF:N RCM:N
 CHANNEL 1-LL: 0 UL: 400 2SIGMA: 0.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON FRI 09 NOV 2001 14:05
 UNKNOWN ID:TRITIUM UNKNOWN REPLICATES: 1
 UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
 QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS): 4489.500
 QUENCH COEFF A: 4.086367 B:-0.0039593 C:-0.0000112 D:-0.0000000135
 STANDARD ID:COUNTED9NOV01
 QUENCH LIMITS LOW:26.00 HIGH:369.0

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
1	1- 1	1	145850.67	0.30	3.00	3.49	-1.0	114
							%EFF:59.76 ISO1 DPM :244066.0	<i>spike</i>
2	1- 2	1	20.00	25.82	3.00	7.02	1.0	114
							%EFF:59.29 ISO1 DPM :33.73411	<i><14</i>
3	1- 3	1	29.00	21.44	3.00	10.53	142.0	
							%EFF:26.02 ISO1 DPM :111.4324	<i>OK</i>
4	1- 4	1	48356.00	0.53	3.00	14.14	112.0	
							%EFF:32.56 ISO1 DPM :148512.4	<i>MRS</i>
5	1- 5	1	1128.67	3.44	3.00	17.71	110.0	
							%EFF:33.02 ISO1 DPM :3418.555	<i>gun tube</i>
6	1- 6	1	59.67	14.95	3.00	21.28	111.0	
							%EFF:32.79 ISO1 DPM :181.9792	<i>hands ok</i>
7	1- 7	1	46.00	17.03	3.00	24.83	111.0	
							%EFF:32.79 ISO1 DPM :140.2976	<i>finder ok</i>



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CSTE-DTC-AT-CS-SO (11-9c1)

29 MAY 2002

MEMORANDUM FOR U.S. Army Center for Health Promotion and Preventive Medicine,
(MCHB-TS-LRD/Mr. Ron Swatski), Aberdeen Proving Ground, MD 21010-5422

SUBJECT: Priority Request for U.S. Army Center for Health Promotion and Preventive
Medicine (CHPPM) Radiochemistry Analysis Service

1. Request the services of the CHPPM Radiochemistry Division to perform a priority tritium radiobioassay analysis for the following sample (Encl). Personnel contamination was not detected, but a urinalysis is provided as a precaution.

DAVIS, Richard, SSN: ██████-8050, spot sample.

2. Request you send original copy of reports to Kirk, U.S. Army Health Clinic,
ATTN: Occupational Health Clinic, and a copy to this office.

3. Point of contact for this office is John C. Beckman, extension 3-9618.

FOR THE COMMANDER:

Encl
as


RICHARD B. SHIPE
Acting Dir, Command Staff

MCHB-TS-LRD (11-9c1)

05 JUN 2002

MEMORANDUM FOR Kirk US Army Health Clinic, Laboratory Services,
Aberdeen Proving Ground, MD 21005-5001

SUBJECT: Bioassay Result

1. Analytical Results.

a. Result of analyzing urine bioassay specimen for tritium, DLS ID Number 5382001, is listed in the enclosure. The radioanalytical result has been forwarded to the Health Physics Program of USACHPPM to determine any dose that may result. The dose will then be forwarded to the U.S. Army Ionizing Radiation Dosimetry Center. For further information on the Health Physics Program, please contact Mr. Dunston, DSN 584-3548.

b. This sample was analyzed on 29 May 02 by Tritium in Urine by Distillation, method number H 001.005, on a Beckman LS6500B liquid scintillation counter. The MDA is 0.003 microcurie per liter with a derived investigational level of 2.8 microcuries per liter. Other specific compliance information is listed on the enclosure.

2. Point of Contact. For additional information on profile number 25509-1236, work order number 5382, is Mrs. A. Christman, DSN 584-3983.

FOR THE COMMANDER:

Encl
asRONALD J. SWATSKI
Chief, Radiologic, Classic and
Clinical Chemistry Division

Angel
WRITER: all
CHIEF: J 4 June 02
TEAM LEADER: SCB 6/4/02
LOG OUT: all