



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION IV

611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-8064

DEC 19 1996

CAL 96-005A

Dr. John Meason  
Commander  
U.S. Army White Sands Missile Range  
ATTN: STEWS-DT (Maeson)  
White Sands Missile Range  
White Sands, New Mexico 88002-5048

SUBJECT: CONFIRMATORY ACTION LETTER RESPONSE

Dear Dr. Meason:

This refers to your letter dated November 15, 1996, in response to our Confirmatory Action Letter (CAL) dated October 24, 1996.

After reviewing your response, we find additional information is required. Specifically, Item 2 of your response stated that a validation study would be done to support design changes. Please confirm that a report of the results of this study will be submitted to the NRC. Also, Item 6 of the CAL specified that proposed changes to existing procedures or any new procedures developed in response to other actions specified in the CAL would be submitted to the NRC. In addition, if you determine that procedural changes are not necessary, you are to provide the bases for your decision to the NRC. Please confirm this notification in writing after you have completed the engineering analyses and validation study specified in the CAL.

Your confirmation of the items noted above should be provided to the Region IV office within 15 days of the date of this letter.

Should you have any questions concerning this letter, please contact Robert A. Brown at (817) 860-8130 or Linda Howell at (817) 860-8213.

Sincerely,

Ross A. Scarano, Director  
Division of Nuclear Material Safety

cc w/enclosure:  
NRC Public Document Room  
New Mexico Radiation Control Program Director

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PDR ADOCK 03000935  
C PDR

Department of the Army  
White Sands Missile Range

-2-

bcc w/encl. to DMB (IE36) *IE 67*

bcc w/o encl. distrib. by RIV:  
JLieberman, D/OE (2) (7 H5)  
LJChandler, Asst. GC/OGC (15 B18)  
HLThompson, DEDS (17 G21)  
CPaperiello, D/NMSS (T8F5)  
LWCamper, IMAB/NMSS (T8F5)  
RIV Cordinator, OEDO (17 G21)

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LJCallan, RA  
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WLBrown, RC  
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LLHowell  
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Department of the Army  
White Sands Missile Range

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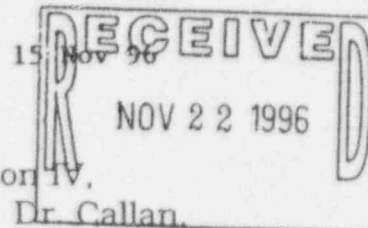


REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
U.S. ARMY WHITE SANDS MISSILE RANGE  
WHITE SANDS MISSILE RANGE, NEW MEXICO 88002



STEWS-DT-O (70)



MEMORANDUM FOR U.S. Nuclear Regulatory Commission, Region IV,  
611 Ryan Plaza Drive, Suite 400, ATTN: Dr. Callan,  
Arlington, TX 76011

SUBJECT: Engineering Study of the Gamma Range Facility (GRF) Source  
Carrier and Transfer Process

1. Pursuant to your 24 Oct 96 letter (Docket Number: 030-0935, License Number: 30-02405-01, Confirmatory Action Letter, U.S. Nuclear Regulatory Commission, Region IV), this organization respectfully submits the following enclosed plan and proposed schedule to be incorporated in License Number 30-02405-01, by reference.
2. Please find the enclosed plan and schedule as this organization's approach in addressing the GRF Medium Source Carrier Failures. This organization will utilize an outside consulting agent (Mechanical Engineering Department, New Mexico State University) to perform the actual study. In general, the study will determine the underlying causes of the failure of the source carrier and capsule assembly. As a result of the engineering analysis, develop a set of design modifications and/or operating procedural changes. Based on the findings and conclusions of the study, conduct a validation study to support the design changes.
3. Subject study will specifically address failures to GRF Medium Sources #5 and #8 (Serial Nos. 175-90-4 and 175-90-1), but will also include an assessment of all other medium, large, and cesium sources. Once the engineering analysis is complete White Sands Missile Range will submit to the NRC for review any design modifications and/or operations procedural changes. Prototype testing will follow new design and procedural changes to validate and support the effectiveness prior to final implementation.
4. Request your issuance of this submittal in the form of a license amendment.

IE-07

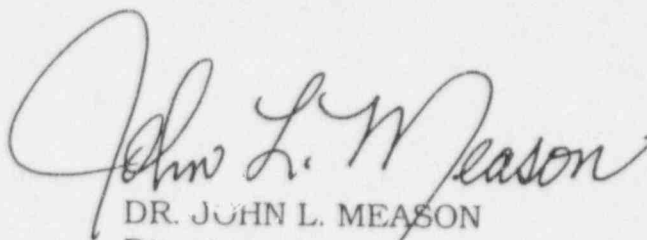
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STEWS-DT-O

SUBJECT: Engineering Study of the Gamrna Range Facility (GRF) Source  
Carrier and Transfer Process

5. Any questions in this regard, please contact either Mr. Roland Penny or  
Mr. Richard Williams, 505-678-4161 or 2699.

FOR THE COMMANDER:

A handwritten signature in cursive script, reading "John L. Meason". The signature is written in dark ink and is positioned above the printed name and title.

DR. JOHN L. MEASON

Director

Applied Technology, Test and  
Simulation

Encl

CF:

Cdr, TECOM, ATTN: AMSTE-SM-S (Mr. Aaserude), APG, MD 21005-5055

Cdr, AMC, ATTN: AMSCF-P (Mr. J. Manfre), 5001 Eisenhower Avenue,  
Alexandria, VA 22333-0001

**Department of Mechanical Engineering**



New Mexico State University  
Box 30001/Las Cruces, New Mexico 88003-0001 USA  
Telephone (505)646-3502 FAX (505)646-6111

DATE: 11/13/96

TO: Mr. Roland Penny  
Division Chief  
Operations and Support Division  
STEWS-DT-O  
WSMR, NM 88002

FROM: Edgar Conley  
Associate Professor  
econley@nmsu.edu  
(505)646-5698

A handwritten signature, likely of Edgar Conley, consisting of stylized initials and a surname.

RE: Failure Analysis and Remediation

Dear Sir,

This proposal responds to the NRC Region IV letter dated 10/24/96. Three objectives and a schedule to obtain them within a reasonable time frame are proposed.

1. The first objective is to determine the underlying causes of the failure of the cobalt source carrier/capsule assembly. We propose an engineering evaluation of the assembly that will include, but not be limited to, the effects of the assembling operation (e.g. preload), material properties (particularly those related to fatigue strength), potentially destructive vibrational modes of the assembly, stress concentrations in both the capsules and carriers, short and long term effects of gamma radiation on the material properties, and operating parameters that affect carrier accelerations. We shall also assess the two remaining carriers and, based upon their nominal use, evaluate the expected residual life. During this phase, we shall rely on the DATTS staff to

provide the pneumatic conveyor system operating information which is required to model the carrier accelerations and resulting stresses.

2. The second objective is to generate and submit for review a set of design changes in any or all of the components that affect the physical loads imposed on the source capsules. This plan will have as its basis the engineering evaluation of step one. Potential design changes will include, but not be limited to, the design and assembly of the carriers and capsules, the pneumatic conveyance, the operating procedures and parameters that affect the system operation, and the air handling system.

Inherent in the engineering evaluation of step one is a sensitivity analysis which should help indicate the most critical among the many engineering parameters that affect the carriers. Thus, the evaluation should provide some indication of the loading conditions that should be confirmed - by a series of field and/or laboratory tests, if necessary. This decision, whether to conduct such tests at the WSMR site or at the PI's laboratories, and which tests to conduct, shall be made in concert with the DATTS staff.

Finally, the above mentioned sensitivity analysis should help indicated the most economic means toward sensible design changes, those that maintain the effectiveness of the facility, if such changes are deemed necessary.

3. The third objective is to propose for review a validation study to determine the extent to which the design changes under consideration as a result of step two ameliorate the potential for capsule/carrier failure during the anticipated lifetime.

Schedule:

Engineering Evaluation	duration 6 months	Jan '97 - June '97
Design Modifications	duration 2 months	July '97 - Aug '97
Validation Study	duration 12 months	Sept '97 - Aug '98