

UCRL-ID-126679

Enclosed Firing Structure Status

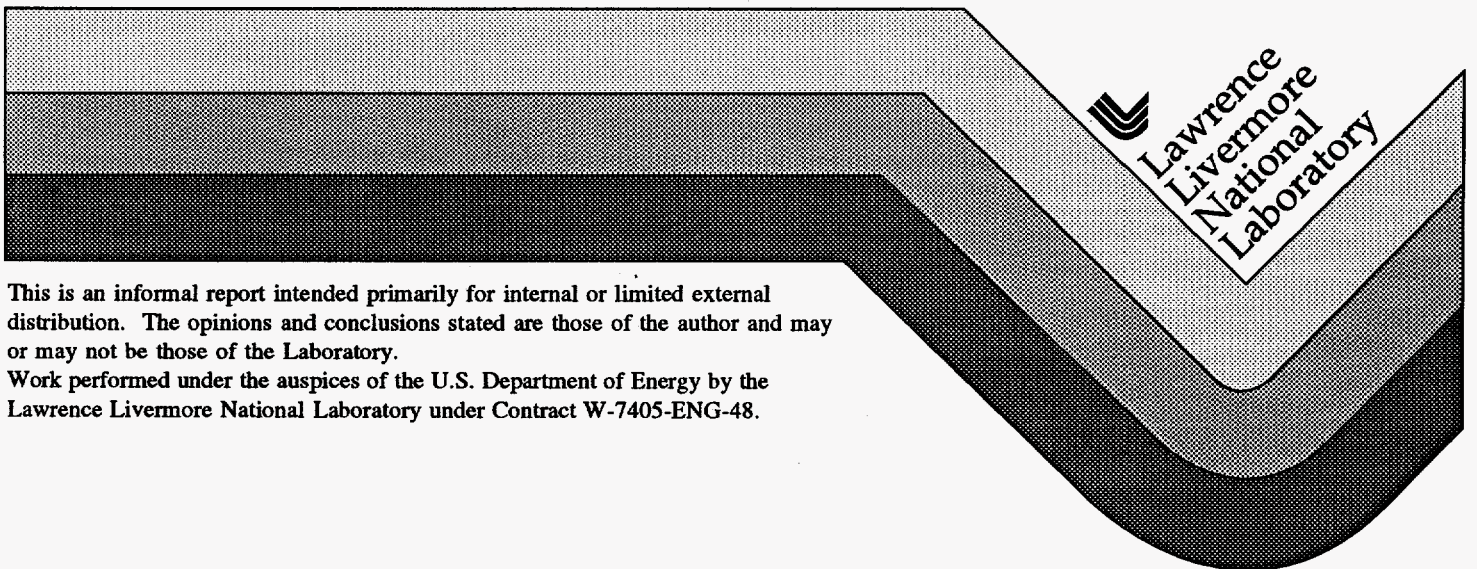
B. Crowley
F. Fairbrother

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April 21, 1958




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April 21, 1958

TO: Distribution

FROM: B. Crowley, F. Fairbrother

SUBJECT: Enclosed Firing Structure Status

I. Status as of 4/14/58

A. NTS

1. Feasibility study requested March 15 by C. E. Violet letter to Max E. Smith, Las Vegas Field Office.

Suggested design criteria.

- (1) I.R. = 5'
 - (2) Peak pressure of 1.2×10^4 psi for 300# HE equivalent.
 - (3) Porous ice be used to reduce shock impulse and provide solute for material to be recovered.
2. Agreement between C. E. Violet (L-Div), G. Higgins (Chem.), F. Fairbrother (B-Div), J. Bell (Device Engr.) that B. Crowley will coordinate the efforts of participating groups in the development of design criteria.
 3. Preliminary work on design criteria for S-300 vessel applies. (See below)

B. S-300

1. B. Crowley and Fairbrother have developed basic thickness vs radius criteria for steel vessels.
2. Thickness of 2 1/2" steel is required at a radius of 15' for a 100# HE charge (based on Rand Corporation blast effects reports RM 1913 AEC and RM 1824 AEC).
3. Preliminary cost estimate submitted for inclusion in 1960 construction budget ~\$450,000.
4. It is believed that cost can be reduced by blast shielding techniques inside the vessel. (Reduction of structural thickness)
5. Information on effectiveness of various blast shielding is not presently available.

**DECLASSIFICATION
STAMP ON REVERSE.**

[REDACTED]

[REDACTED]

[REDACTED]

Classification (Date) Changed to:

UNCLASSIFIED

(Insert appropriate classification level or indicate Unclassified)

by authority of R202-10062 12/5/85 (date)
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(Signature of person making the change)

verified by [Signature] 10/4/96 (date)
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[REDACTED]

[REDACTED]

II. Evaluation of conference with Francis Porzel, Armour Research Foundation, 4/16/58.

- A. Porzel concurs with thickness vs radius criteria developed by Crowley and Fairbrother.
- B. He suggests material reduction of costs may be achieved by blast shielding.
- C. Porzel states that a calculational code is available at Armour Research Foundation to give answers on effectiveness of various blast shields. However, he implies that providing such information may be beyond scope of his current research contract with UCRL (\$20,000 - \$30,000 could be involved).
- D. He pointedly invited a written request for design of either the entire structure or of only the blast shielding.

III. Proposed course of action.

- A. Small scale experiments 10 to 50 grams being done by Chemistry with 10" I.R. x 1/2" wall steel vessel to verify design criteria and check effect of crushed ice.
- B. Scaled down experiments at Site 300 to verify design criteria (HE charges in the one to ten pound range).
- C. Make decision on best geometries for scaled experiments.
- D. Crowley to immediately ascertain status of requested NTS feasibility study.
- E. Explore possibility of at least obtaining effectiveness information for ice blast shield in NTS container under present Armour Research contract.
- F. Obtain as much information as possible under present Armour Research contract on shock attenuation of various other materials such as sand, water, foam plastics, etc.

BC:FF:ms

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