VORTEX
Progress Report for October 1960

W. B. Crowley

October 31, 1960

This is an informal report intended primarily for internal or limited external distribution. The opinions and conclusions stated are those of the author and may or may not be those of the Laboratory.

Work performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory under Contract W-7405-ENG-48.
This document was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor the University of California nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the University of California, and shall not be used for advertising or product endorsement purposes.

This report has been reproduced directly from the best available copy.

Available to DOE and DOE contractors from the Office of Scientific and Technical Information
P.O. Box 62, Oak Ridge, TN 37831
Prices available from (615) 576-8401, FTS 626-8401

Available to the public from the National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Rd.,
Springfield, VA 22161
DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.
2. Facility Construction

Work continued on the 8ft Access Road which will be completed before start of general construction.

The 16 ft. diameter sphere fabrication has been completed and it will be subjected to vacuum and hydrostatic test in the first two weeks of November. The final dimensional inspection and radiographic inspection will be performed in the same period and the sphere is scheduled for shipment November 13, 1960 from Salt Lake.

The manipulator fabrication has been completed by General Mills and the unit was test run in their Milwaukee plant during the week of November 24, 1960.

Three firm proposals for furnishing the canning machinery were received on the due date, October 31 - of these Sprague Engineering, Gardena, California appears low at $99,500, however all bids are currently undergoing evaluation.

Due to a two-week delay in printing the Plans and Specifications the bid opening date for the general contract is postponed from November 22 to December 6, 1960.

3. Facility Budget

The new financial plan for this project was established at the $3.5 million which had been requested in May. This advice was received from both ABC-SAM and ABC-LV branches in the first week of October.

COPD

OCT 6 1965

FEB 1 1 '63 IVN.
4. Test Work

Shop contact trips to Los Angeles were made on October 6 and 31, 1960 to check fabrication of the scale model probes. The order for the associated hydraulic system was placed on October 21, 1960.

Only three shots were fired during the month of October - this was due to the intricacies of the hardware involved in each.

The first shot, October 7, 1960 was a second "water-bag" test at double the H.E. weight used in the first, (reported for September). This shot, like the first, demonstrated zero shock attenuation as compared to a straight air medium. All significant shock characteristics fell on the "air" curves within the limits of experimental error.

The other two shots were for the purpose of testing a more brittle capsule - earlier tests of scaled ductile aluminum capsules have indicated strong asymmetry of the shock wave with consequent unfavorable stress patterns on the sphere. The first of the two capsules was mild steel, which broke up moderately well but failed to indicate improvement in stress pattern. The second shot was in a hydrogen-embrittled mild steel capsule - again the stress pattern was relatively unchanged although fragmentation was much more satisfactory than either the earlier aluminum or the normal mild steel.

In summary, the capsule material selection and design remains an interesting problem.

B. SUPPLEMENTAL

1. Facility Design

The three chemical processing sections of the specifications were generally so poorly written and contained so many detail errors that H&N and LRL agreed to their replacement by addendum.

A meeting was held in Livermore on October 28, 1960 attended by Hancock and Van Lente of H&N, and Heckman, Coe and Crowley of LRL to work out the detail corrections. H&N is to revisit Livermore on Friday November 4 with proof copies of the rewritten sections. It is expected that the addendum can be issued before November 11 which is well in advance of the bid opening December 6.
2. **Facility Construction**

The sphere inspections and test at CR&I, Salt Lake will be attended by various LRL personnel in accordance with their interests and responsibilities. The current scheduling is as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>LRL Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensional Insp.</td>
<td>Nov. 1-3</td>
<td>Castro</td>
</tr>
<tr>
<td>Vacuum Test</td>
<td>Nov 4 &amp; 5</td>
<td>Castro</td>
</tr>
<tr>
<td>Strain Guaging</td>
<td>Nov. 7</td>
<td>Walker, *Morgan</td>
</tr>
<tr>
<td>Hydrostatic Test</td>
<td>Nov. 8</td>
<td>Walker, *Morgan, Crowley</td>
</tr>
<tr>
<td>Radiographic Insp.</td>
<td>Nov. 10 &amp; 11</td>
<td>**Hile, *** Marcellin, Crowley</td>
</tr>
</tbody>
</table>

* Morgan, Roger - Strain Gauge Technician  
* Hile, Jack - Non destructive testing  
*** Marcellin, Wayne - Welding Engineer

---

**DISTRIBUTION**

1 of 4/A - W. Arnold/R. Stone  
2 of 4/A - L. Crooks  
3 of 4/A - B. Crowley  
4 of 4/A - F. Fairbrother