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P. 44

By 10/26/61
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Mr. Kenneth F. Hertford, Manager
Santa Fe Operations Office
U. S. Atomic Energy Commission
P. O. Box 5400
Albuquerque, New Mexico

SUBJECT: ROVER TEST SITE

Dear Mr. Hertford:

The following is our best estimate at this time of the facilities and services which we will expect your office to include in your proposal as budget items in support of the UCRL ROVER TEST PROGRAM:

These items are listed by unit and then broken down into the fiscal year in which they will be required. A few items will be listed under Fiscal 1958, which are not detailed in the following list as our thoughts on these items are very tentative:

I. CONSTRUCTION ITEMS. (Capital and Non-Capital)

A. Test Stand Assembly consisting of:

1. Firing point building. This building to be approximately 5,000 square feet and of a type which can be rolled back from the device or folded down from around the device when the unit is placed in operation. A 30 ton crane will be required to service the area under the building and to handle loads onto trucking external to the building. A rather heavy floor slab including one or more sub-surface access tunnels may be required. This building may not have to be air-conditioned, but will certainly require heating for cold-weather occupancy.
2. Control Bunker. Approximately 4,000 square feet, which will house the control and recording equipment for operating the device. This bunker will have to be air-conditioned and the location and type of structure have not yet been decided. There will be the installation of a considerable number of cables between the bunker and the firing point although we do not anticipate requiring any major coaxial cable installation.

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UNCLASSIFIED
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Authority of R2D2-BY-10261 1-30-95 (date)
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Signature of person making the change: *William K. ...* 6-15-95 (date)
Signature of person verifying this is the correct document or model: *Richard A. ...* (date)
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3. **Diagnostics Bunker** - of approximately 1,500 square feet. This bunker will house equipment for observing nuclear reactions and recording other data of an electronic nature which the experiments require. This bunker may have to be located fairly close to the firing point and be suitably sheltered either by geographic location or by concrete. There will be a reasonable number of cables installed between this bunker and the firing point although again, we do not anticipate coaxial cable requirements. This bunker will require air-conditioning.
4. **Photographic bunker** - approximately 1,500 square feet. This bunker will house photographic equipment and controls with which to photograph the progress of the reaction. Some electronic equipment will also be included in this bunker. Because of the sensitivity of photographic emulsions, the interior of this bunker will have to be sheltered from the firing point by concrete or burial. It is anticipated that periscopes will be used to obtain line-of-sight from this bunker to the firing point. This building will have to be air-conditioned.
5. **Dewar Pad and shelter.** This dewar is for storage of the liquid Nitrogen and should be capable of storing about 1×10^5 liters of liquid for several days. In addition to the dewar, we would ask you to install propellant valving and piping, subsidiary supply vessels and controls as furnished by UCRL.
6. **Propellant Pump Pad and Shelter** - a small building with minimum services. UCRL will supply the propellant pump complex and its controls although we would expect you to physically install these units.
7. **Heavy Water System** - to include storage pad and shelter, heavy water storage tanks, heavy water pump, piping and controls, and heavy water to distilled water heat exchanger.
8. **Distilled water system** consisting of pads and/or shelters, two 50,000 gallon storage tanks, all water pumps, water piping, controls, methods for filling. We would expect

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you to supply initial 50,000 gallon filling of distilled water and modest amounts of made up distilled water as required by a closed system.

NOTE: All Heavy Water and cooling water piping shall be of a type which will put negligible contaminants into the system. Cooling water storage tanks may be wooden. Propellant piping will be specially designed insulated piping furnished by UCRL.

B. The establishment of a headquarters area and the construction of the following buildings at that area:

1. A storage building for classified and SS material. We would anticipate that this would be a building of about the size of Building 10 at Nevada Test Site. It would be serviced by a crane of 10-ton capacity. This building will require security fencing suitable for storage of category 1 quantities of SS materials.
2. A headquarters building of approximately 15,000 square feet which would contain space for at least the following activities:
 - a. Ready-room and lunch room.
 - b. General Offices (12)
 - c. First Aid
 - d. Mechanical Shop
 - e. Electrical Shop
 - f. Photographic Section
 - g. Rad-Safe
 - h. Security
 - i. Drafting room and data analysis
 - j. Weather Room
 - k. Equipment room for heat, air conditioning, ventilation, etc.
 - l. Sanitary Facilities including showers for men and women.

This building should be air-conditioned. Water can probably be supplied to this building in a manner similar to that used at the present CP.

3. A warehouse of 10,000 square feet for storage of materials to support this program. This building to be of normal warehouse construction, heated for cold weather. It should contain two warehouse offices, an issue storeroom section, and a tool-crib section.

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- C. Dissection Building for crude disassembly of devices. This building will require personnel shielding. The hot area should be serviced by a crane of 30-ton capacity. UCRL intends to provide manipulators and special handling equipment although we will ask you to handle the installation of some of this equipment.
- D. Cryogenics Plant to the following general specifications: Production of 1,000 liters per hour para hydrogen with storage for 2×10^5 liters of this product. A feed and purification system to convert ammonia or methane to hydrogen gas for operation of the cryogenics plant. Suitable storage as required for feed material and hydrogen gas. A nitrogen plant (as part of the 1,000 liter per hour hydrogen plant) plus additional capacity of 50% - 100% to serve other phases of the program. There should be facilities for storing this surplus nitrogen at the plant.
- E. Transport Dewars suitable for transporting liquid hydrogen and liquid nitrogen within the test area.
- F. Warehouse at Mercury of approximately the same size and type as your present warehouses to act as a receiving point for commercial shipments of material for this program.
- G. Graveyard for storage of used assemblies prior to dissection. This would be an area approximately a quarter of a square mile with security fencing. This area would contain several concrete pads or pits for storage of used units with appropriate shelters to protect them from the elements.
- H. Wheeled coffin for transporting used assemblies from firing point to graveyard and disassembly building.

II. Facilities. We would expect you to provide the following general site facilities used in conjunction with the test sites:

- A. Good paved roads into the area to all buildings. These roads would be the same quality as the main road connecting Mercury to the CP.
- B. Supply suitable power, substations, and distribution within the test area to take care of all normal buildings, lighting, services, and experimental equipment. It is estimated that for the items listed through Fiscal 1957, 500 kilowatts of power will be

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sufficient. When the cryogenics plant is put into operation, this power requirement may increase to two or more megawatts.

- C. Normal water supply for sanitary and personnel use. Technical water needs are specified under the technical facility.
- D. We would ask you to supply all necessary security for this program including fencing, guard posts, badges, patrols and air surveillance as required to maintain security in line with the classification of the program.
- E. Communications requirements will probably be telephone, teletype and radio. We anticipate that by the end of Fiscal 1957 we will require 40 telephone locals within the test area, and one unclassified teletype machine in the headquarters building, and probably one channel of radio communication.

III. SUPPORT SERVICES

- A. It is anticipated that during Fiscal 1957 between 50 and 70 people from UCRL will be at the Test Site working on this program. These people will be on long-term assignment and should be furnished with the best living quarters available. With a view to securing this, we would like to consider the assignment of three barracks, preferably of the type of "F" and "Q" or, alternately of the type of "W" "X" and "Y". In the latter, we would not propose to assign more than three men to any one room.
- B. After construction of the headquarters building, we would like to have a lunch room operated as a portion of the ready room in which people would be able to get a good hot lunch five or six days a week.
- C. During Fiscal 1957 we anticipate that some 25 vehicles will be required for assignment to UCRL for transportation of personnel and equipment.
- D. Some office set up in the headquarters building will be required in which files, mail, secretarial services, etc. can be provided. It is anticipated that this service may be furnished by contractor people assigned to UCRL for work direction.
- E. We would expect to obtain all trade & Architectural Engineers support from the site contractors. After construction this support

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would not only be used for minor construction and modification but for maintenance of experimental equipment within the scope of the available crafts. We will expect you to furnish personnel to operate the cryogenics plant.

- F. We would like a weather service available for assistance and consultation on possible fallout patterns from operation of our test program. Initially, during the last portion of Fiscal 1956, we would like to get as complete a picture as possible of the micrometeorology of the valley in which this program will be located.
- G. We will require use of about 1,000 square feet of Mercury office space for this project.

Sincerely yours,

ORIGINAL SIGNED BY
DUANE C. SEWELL

DUANE C. SEWELL
Scientific Operations
Director
UCRL-Livermore

DCS:bs

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FISCAL 1956

- A-E Test Stand No. 1
- A-E Classified Storage Building
- A-E Dissection Building
- A-E Headquarters Building
- A-E Site Warehouse
- A-E Graveyard
- A-E Test Stand No. 2
- Start A-E Cryogenics Plant
- Start Road Construction (Capital)

FISCAL 1957

- Construct Test Stand No. 1
(by 1 January 1957)
- Construct Classified Storage Bldg.
- Construct Headquarters Building
- Construct Site Warehouse Bldg.
- Construct Mercury Warehouse Building
- Construct Graveyard
- Construct Test Stand No. 2
- Construct Dissection Building
- Finish A-E Cryogenics Plant
- Start Construction Cryogenics Plant
- A-E Test Stand No. 3 & 4
- Transport Dewars available

FISCAL 1958

- Complete construction cryogenics plant
- Construct Test Stand No. 3 & 4
- Design and construct additional dissection facilities
- Start A-E on 3,000 liter per hour cryogenics plant

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