

## PROCESSING LABORATORIES

### VACUUM LABORATORY (F-201)

Figures 10 and 11 show detailed views of the vacuum system used in processing the samples returned in ALSRC #1004, the Documented Sample Container (see Table 2). The system was used for sample photography, microscope examination, sample weight determinations (beam balance) and gas analysis. The cabinet was kept under hard ( $0.133 \text{ mN/m}^2$  or  $10^{-6}$  torr) vacuum.

Upon entering the atmospheric sterilization cabinets, the ALSRC was subjected to a nitrogen purge, then washed twice in a peracetic acid solution and rinsed twice with deionized water. This was repeated before the container was dried with hot nitrogen. This procedure was repeated for items leaving the system.

Upon removal from the ALSRC container, samples were weighed, brushed off, photographed, placed in vacuum containers and stored in the sample carousel. The carousel was kept closed off from the main chamber, to prevent contamination of all samples during a possible glove rupture. The sample carousel could be detached from the glove chamber, and was intended to be kept under its own vacuum indefinitely.

During the processing of the samples, a leak developed in one of the gloves causing the interstitial glove to go to atmospheric pressure. However, the pressure inside F-201 was believed not to have risen above 2 cm. of mercury. Samples in F-201 at the time were 10017, 10018, 10019, and 10020.

### BIOLOGICAL PREPARATION LABORATORY (BIO-PREP)

The Bio-Prep Lab consisted of several glove cabinets, connected together and filled with nitrogen. (Fig. 12).

The Bio-Prep Lab was not originally going to be used to process samples other than for biological experiments, but due to the glove rupture in F-201, the samples contained in ALSRC 1003, the Bulk Sample Container, were processed in the Bio-Prep Lab.

### PHYSICAL CHEMICAL TESTING LABORATORY (PCTL)

PCTL was used for the petrographic study and chemical analyses of small subsamples. It consisted of six nitrogen atmosphere processing cabinets that housed an X-ray diffractometer, X-ray fluorescence analysis unit, an optical emission spectrograph, and three petrographic microscopes. There was little control over extraneous materials, since only small samples were handled in this cabinet system and materials such as refractive index oils were kept inside the cabinet.

At first, sample splits removed from rocks in the F-201 and Bio-Prep Labs, were examined and analyzed in PCTL. Later in the mission processing, the Contingency Sample was transferred to PCTL for initial photography and description. Early principal investigator allocations were made in PCTL.

NASA-S-67-692

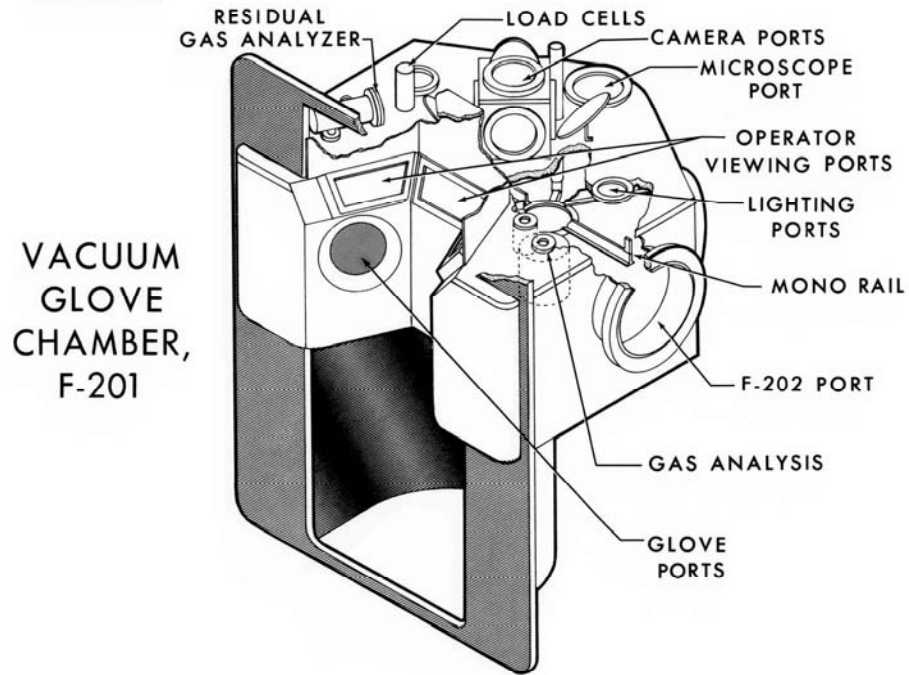


Fig. 10: F-201 System S-67-0692

NASA-S-67-6842

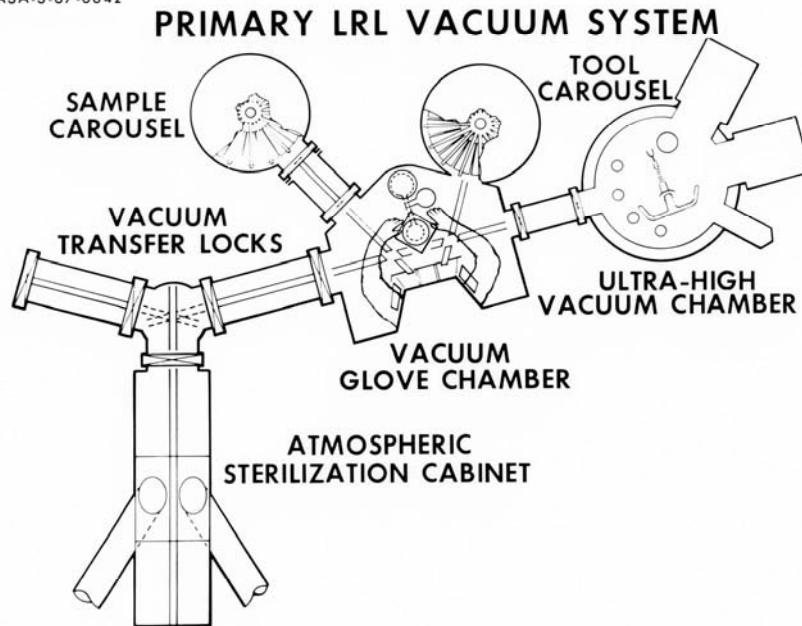


Fig. 11: F-201 System S-67-6842

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### BIOLOGICAL CABINETY

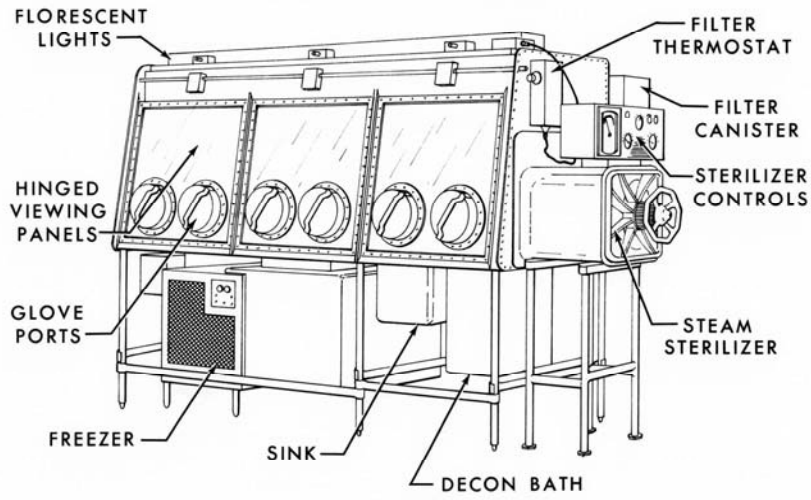


Fig. 12: Bio-Prep Lab S-67-0693

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### PHYSICAL-CHEMICAL TEST LAB

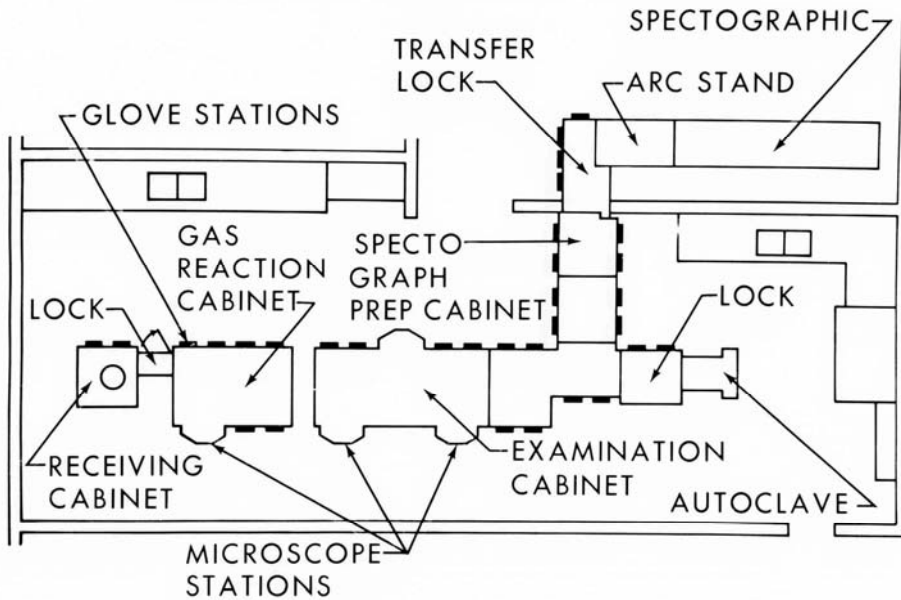


Fig. 13: Physical-Chemical Test Lab S-67-1230

### SAMPLE PACKAGING LABORATORY (SPL)

The Sample Packaging Laboratory was set up during Apollo 11 to process samples for distribution to Principal Investigators after the preliminary examination work was completed.

All chipping and other rock splitting operations (except sawing) were performed in nitrogen processing cabinets similar to the present SSPL. Rock sawing was accomplished on a wiresaw in open air. During sawing operations, samples were handled by stainless steel tongs, Teflon over-gloves, and bare hands.\*

### SAMPLE STORAGE AND PREPARATION LABORATORY (SSPL)

SSPL is the present sample processing laboratory. All samples processed in this lab are done so in a nitrogen atmosphere. Any sample placed in storage or sent to a principal investigator must have three levels of protection. This usually constitutes a hard container, and two Teflon bags, all three sealed in nitrogen.

Rock sawing is presently accomplished using a cleaned, nitrogen atmosphere bandsaw as opposed to an open-air wiresaw. This laboratory has been used to prepare all pristine Apollo 11 samples subsequent to the initial mission processing.

### RETURNED SAMPLE PROCESSING LABORATORY (RSPL)

RSPL is set up to process samples that have been returned by principal investigators. Most samples are examined and repackaged in air on a laminar flow bench. All samples must have three levels of protection before storage.

Some samples in RSPL are processed in nitrogen glove cabinets. These are usually returned display samples, which are candidates for transfer to SSPL pristine storage.

### THIN SECTION LABORATORY

For Apollo 11 many of the thin sections were produced in the laboratories of principal investigators. The curator's office presently has facilities for producing thin sections for both the curator's library, and for principal investigators upon request.

Information concerning procedures and materials used in the Thin Section Laboratory may be obtained from the Curator.

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\**Personal communication with J.E. Townsend*