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The following is a summary of steps taken on the recommendations made by the Consultants' Committee on Special Hazards, on December 29.

The existing oil reservoir on the seal exhaust pump does not meet the requirements of an 'always-safe' geometry. On January 12 a request for engineering services was initiated; however, no design work has been started to date by the Design Group since an experimental field design has been under test in the field at K-305-1 at SV-1 position.

The Special Hazards Group considers this experimental design as a great improvement over the existing oil reservoir, but the set-up still leaves some question as to the possibility of oil being overfilled into the baffle chamber. A redesign is under consideration.

The seal exhaust vent boxes located on the roof of the buildings are not of an 'always-safe' geometry and consideration is being given to replacing them with an inexpensive cylindrical sheet metal container.

In order to guarantee that the boron shields in the carbon traps do not interfere with the radium scanning techniques, a work order has been issued for the installation of a metal guide which would permit the boron shield to be orientated in a fixed position. The installation was started on February 7 at SV-1 in K-312-2 when a minor explosion of the carbon trap halted further installation of the guides. Pending a complete investigation of the explosion and methods of dumping the traps, a redesign will be necessary.

The boron shields will be removed from the carbon traps and checked to see that they meet the design specifications. All the carbon traps in the specified assay (approximately 3% and above) region will be refilled or a new shield installed with boron carbide. The borax now employed in the shields has an affinity for water, hence it will be replaced by the boron carbide. Several traps have been replaced with boron carbide; however, their exact locations are not known.

An improved method of carbon trap scanning is now being employed. Under the present method of scanning, a background of zero reading is obtained

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on a portable wagon with the equivalent distance and source strength. The carbon trap readings are then taken at two inch intervals along the trap with the same radium source located at the opposite side of the trap.

The ratio of the trap readings to the background readings can then be interpreted in terms of weight of UF_6 present. Previous methods of scanning did not detect large quantities of uranium in the trap.

As an aid in the detection of minute quantities of uranium deposits in the carbon traps and the seal exhaust oil reservoirs, a very sensitive high pressure Argon probe is now being employed. The calibration of this instrument is now in progress.

4 & 5) Plans are now underway for a complete plant survey of all equipment handling enriched uranium materials. A worksheet is now under consideration upon which all radiation readings will be logged of all the critical locations in the buildings including all cooler heads, after-coolers, bypass lines, and pump casings. The log will include the following items:

a) Building bypass lines.

- 1) A line diagram showing all the building lines.
- 2) Building number, date, instrument used, and name of inspector.
- 3) Space provided for noting all readings above background.

b) Cells.

- 1) Cell number, date, instrument used, and name of inspector.
- 2) A block diagram of the cell with its coolers, aftercoolers, and pump casings shown.
- 3) Space provided for noting all readings above background.

It is intended that the Uranium Accountability Group will receive a copy of all logs filled out with the original on file in the area office.

To date a preliminary survey of process piping in bypass housings and in cells was made in several areas in order to obtain data for a calibration of instruments. Ten Sampson instruments are on order for this survey and deliveries are expected to start on March 1.

6) A meeting of the committee to evaluate the Benedict formula for establishing minimum cascade operating temperatures was held on Thursday, February 15. A review of the current situation revealed that all portions of the plant are operating within the limits of the formula with the exception of the K-402 and K-311 sections. Dr. Henry stated that the position of the Radiation Hazards Department had been modified by Dr. Macklin's work to the point where they felt that it was not necessary to set up conditions which would prevent condensation in the case of obvious equipment failure but rather that minimum conditions should be based on the prevention of slow accumulations brought about by instrument deviations, etc. It was agreed that Process Engineering would make a survey of past errors or

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misalignment of instruments which might cause condensation of the type under concern and then, on the basis of the temperatures required to protect against the total accumulated error plus a nominal margin of 10°F., a minimum operating temperature statement would be worked out by the committee.

- 7) Under emergency conditions of operations involving abnormal pressures and temperatures, the cascade is sectionalized over the entire region affected by isolating every building on inverse recycle. This standard practice of sectionalization is well within the limits of safety as specified in reports K-675 and KLI-763. In the event of a constant frequency failure, when supervisory control of the building motor operated valves is lost, the individual buildings are isolated manually.

The planned emergency power supply will start automatically when a power failure occurs, thus permitting automatic sectionalization at the following points:

- a) Between K-305-12 and K-306-1.
- b) Between K-305-8 and K-305-9.
- c) Between K-304-5 and K-305-1.

With the cascade sectionalized at these points, it is highly improbable that critical accumulations can be achieved by condensing UF₆ on the cooler coils since the inventories in these sections are in the region of sub-criticality as indicated by the reports mentioned above.

Besides the above sectionalization, the emergency power can then be employed to further sectionalize the cascade by isolating a building at a time in the event it had not already been isolated manually. The above sectionalization is sufficient for the inventory and assay estimates anticipated for the combined operations of K-25, K-27, K-29, K-31, C-31, and C-33.

In the event a condensation has occurred, elaborate precautions will be taken to prevent hydrogenous materials, including water and personnel, from entering the area near the site. A designated boundary will be established immediately and guards posted at regular intervals to enforce these restrictions. The plant emergency director will be in complete charge of all action taken in the vicinity of the condensation site.

As an added precaution, all intercell coolers in the size 3 and 4 equipment will be inspected to insure that the coolant system is cut and blanked in each cell and intersection cell.

In addition to these items a policy has been established whereby a copy of all emergency operational procedures will be forwarded to the Special Hazards Group for review. The constant frequency failure procedure has been written to incorporate recent revisions, and four copies were forwarded to Dr. Henry for distribution to the Consultants' Committee.

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