REDOX COMMITTEE

CONFERENCE NOTES AND RECOMMENDATIONS

MEETING OF JUNE 9, 1949.

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1. E. W. Seckendorff brought to the attention of the Redox Committee a report on the rate of comments on Engineer's Flow Sketches by other groups.

Comments
on
Flow Sketches

It was agreed that the Technical and Manufacturing Divisions will make every effort to expedite the comments on flow sketches so that the work can continue without delay.

E. W. Seckendorff reported that the Specification for 68% Nitric Acid, by Mr. R. B. Richards, and Mr. R. E. Smith of the Technical Division, had been received and that Mr. Frame of the Design Division reported that it is incomplete.

68% Nitric
Acid
Specification

Dr. W. I. Patnode suggested that a process raw material list shall be prepared which shall form a check-list on raw material specifications. Mr. J. M. Frame will be requested to prepare such a list.

It was agreed that all requests on raw material specifications shall be addressed to Mr. O. C. Schroeder who will cooperate, if and when necessary, with other groups.

E. W. Seckendorff reported that the memorandum from Cartmell, via Schroeder to Mr. Frame on the Dissolver Off-Gas and Ventilation Air Treatment has been received.

Dissolver
Off-Gas and
Ventilation
Air Treatment

No comments.

The Manufacturing Division submitted their policy and philosophy on spare and auxiliary equipment which is made a part of these minutes as Attachment "A".

Policy on
Installation
Standby
Equipment

This paper was accepted by the Redox Committee as satisfactory.

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5. Schedule of Scope Drawings, Specifications and, Arrangement Drawings was discussed with Mr. J. M. Frame.

Schedule of
Scope Drawings
Specifications
and Arrangement
Drawings

Comments by the Redux Committee were that close coordination between the preliminary drawings and final drawings for Flowsheets should be accomplished.

The whole situation will be brought up again when a drawing schedule has been prepared by Mr. Frame.

It is hoped that from these drawing schedules, both by Process and Layout Groups, it will be possible to visualize when the Kellogg Corporation will begin design work.

6. The Status Report of the Redux Design Group was accepted without comment.

Status Report

7. The review of the Redux Mechanical Development Program was discussed in detail.

Mechanical

Comments and Recommendations were submitted by the Manufacturing Division which were accepted by the Redux Committee. These comments form Attachment "B" to these Notes.

Mr. T. Williams is requested to review these comments with Mr. O. C. Schroeder and prepare a revised Mechanical Development program to be submitted to the Chairman of the Redux Committee for approval by the Committee.

8. Scope of Work for Waste Disposal Facilities - 241-S was approved as revised.

Scope of Work
Waste Disposal
Facilities

Copy of the Revised Scope of Work is Attachment "C" to these Notes.

O. H. Gregg

W. K. MacCready

W. K. MacCready

REDOX GENERAL DESIGN PHILOSOPHYSPARE AND AUXILIARY EQUIPMENT

The following statements outline briefly the Manufacturing Divisions' policy regarding standby equipment and certain other auxiliary equipment necessary to the operation of the Redox Plant.

A. Standby Equipment and Lines

1. Major Process Equipment Pieces - No spares are required for major process equipment which operates either continuously or batchwise. The proposed 15% plant down-time allowed for maintenance should be adequate in lieu of installed spares. (Exception: - dissolvers, which are subject not only to plant down-time but also to adverse weather conditions in their operation, should be provided with one spare unit.)
2. Transfer Lines to and from Reactors - One spare line through concrete should be provided for each transfer line (feed, scrub, or extractant) to the reactors and for each return line (Product and uranium streams, and organic and aqueous waste) from the reactors.
3. Flow Control and Proportioning Equipment
 - a. "Cold" extractant and Scrub Streams

One set of flow control equipment and (if required) proportioning equipment should be provided for each cold extractant and scrub stream to the reactors. The necessary block valves, tees, and space should be provided for the installation of a spare control and proportioning unit for each stream if and when it is desired.

For those pumping units supplying pressure to ANN and organic feed headers, a duplicate pumping unit with associated valving should be installed.

- b. "Hot" Feed and Scrub Streams

One pumping unit and flow control device should be installed for each "hot" feed and scrub stream in the process.

Auxiliary equipment (spare utility connections, etc.) and tank design should be provided which will permit the installation of a second pump with its associated control equipment for each stream (utilizing the spare line through concrete requested in 2 above) if and when it is desired.

REDOX GENERAL DESIGN PHILOSOPHY - SPARE AND AUXILIARY EQUIPMENT

4. Other Continuously Operating "Hot" Transfer Flow and Control Equipment

See 3-b above.

B. Auxiliary Equipment

1. An alternate route (by jet) should be provided from process tanks where a "hot" pump is the only outlet means.
2. A means of liquid level determination should be provided on all cell vessels (including phase separators, coolers, etc.) regardless of process requirements.
3. Microphones should be provided on all cell vessels containing rotating equipment or critical jets (those jets which must empty a tank completely for process reasons.)
4. Standard tank spray-jacket-temperature indicator (or recorder) combinations should be provided for all equipment handling product streams and any other equipment subject to precipitates. Remaining tanks should be supplied with jackets and temperature indicators (or recorders) in accordance with process requirements only.

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MECHANICAL DEVELOPMENT PROGRAM
REVIEW

Ref: Webster's Review to Williams 5/25/49

The reference review will be the subject of consideration by the Redox Committee in the near future. It may be well to make the following additional points known to Mac as added background information.

1. Remote Connectors

It is noted in the review that two additional connector sizes, namely; 3" and 4" have been drawn up for use in the Redox Main Plant. This makes a total of five different sizes which we now have available for use. It would appear that the emphasis should be placed on obtaining a standard connector design utilizing one connector block size only and boring it to fit the needs of the jumper. This is in line with present plant practice where one block size is used for connectors ranging from 1" to 3" in size (including the 4 piper lubrication, liquid level, and sampling connectors). Some action of this sort will be necessary if we intend to standardize the size of the piping through concrete to a reasonable extent. It may well be, however, that the small size units (1", for example) will find rather extensive use in 3rd cycle Pu tankage where the volume is low and the tanks are small. With the above in mind, it may be well to revise Recommendation No. 2 concerning pipe connectors to include a standard block size covering a wider range of pipe sizes.

In the case of the electrical connector, the recommendation concerning button type connectors and numbers of circuits in a given connector should be made specific to the point where these changes are made mandatory. Our own feelings as well as those of the Electrical Division and the Electrical portion of the Design Division concerning the plug type of contact is most certainly sufficient grounds to have these changes made. We believe 21 contact connectors should be eliminated. Our analysis fails to show need for more than an 8-point, possibly a 6-point, connector.

Some means of meeting Underwriters standards without employing the proposed "flexible" pipe assembly would be welcome.

2. Concrete Coatings

Late results on the testing of the "Amercoat" paint which is mentioned in this section indicate that the coating is unsatisfactory in Hexone service. The failure of the "Amercoat" leaves only flame sprayed Polythene as a material which fulfills the specifications which were set up. Some saving may be realized by using special coatings only where they are absolutely required. We should certainly not expect to use flame sprayed Polythene or its equal in those locations where Hexone is not present. The use of such expensive coatings even in organic areas should be seriously questioned.

3. Samplers

In our opinion, none of the samplers which Kellex has worked on to date (hypodermic type, mechanical type, and the 4-way valve suggested by the Design Division) is a decided improvement over the types now being used in the 221 Buildings. The Q-Smith Sampler, on the other hand, seems to offer sufficient advantage over what we now have to make a thorough investigation of the principle here at Hanford advisable. It is our opinion that Kellex should spend no more money on sampler development until we can complete the tests on the Q-Smith Sampler. If the Q-Smith Sampler does not develop favorable performance it is suggested that the present 221-type sampler be used.

4. Crane and Optics

Utilization of the C Plant crane for Main Plant service, either in whole or in part, is principally dependent upon building layout and a study of economic considerations which is being made to determine the cost of converting to a Ward-Leonard system of controls. On 6/6 a member of G.E.C.L., who designed a similar system for the Test Plant crane, will be in Richland for a meeting with Design and Services & Facilities representatives who are currently making the conversion study. Since adaptability of Ward-Leonard controls is entirely feasible, cost will remain as the principal factor in a final decision to proceed with design plans for conversion.

In the event there is not too great a demand from canyon layout on the optical system, there is every chance that C Plant opticals can be converted for use. Here again economics will be a prime consideration. Arrangements have been made with the Instrument Division to work out a cost estimate as soon as we can deliver our requirements to them. This, of course, must necessarily await building layout.

5. Metering Pumps

Recent head producing pump discussion has led to an agreement between Technical and the Design Division to procure the two pumps which most nearly conform to Redox process needs for life and performance tests. Since the Roth pump is practically identical with the submerged pump developed by G.E.C.L. any further work at Schenectady seems to be unnecessary. The Moyno pump manufactured by Robbins and Meyers will also be subjected to test following a brief study which will suit it to our particular problem.

Even more important and yet farther from solution is the problem of bearing studies, which is in a bad state. Practically nothing of value has resulted from something like two years of work. Concentrated study and action will therefore be initiated by Technical and Design who will clarify and set up an intensive program with D. E. Garr of G.E.C.L. No further work beyond this for Plant No. 1 is recommended by us.

6. Transfer Pumps

No comment

7. Corrosion

No comment

WASTE DISPOSAL FACILITIES - 241-S
PROJECT C-187-D

SCOPE OF WORK

6-3-49

The scope of this part of Project C-187-D is intended to include all installation and construction work necessary or required for completion of a waste disposal facility, designated as 241-S, in the 200-West Area and located as shown on Hanford Works Drawing H-2-1770. This part of the project is comprised of parts as follows:

- (1) The preparation of the site including the construction of temporary fencing and/or alteration of existing fencing for the purpose of isolating the construction areas from restricted areas.
- (2) The grading or construction of temporary patrol roads adjacent to the temporary construction fencing.
- (3) The construction of access roads to the construction site.
- (4) The construction or installation of railroad facilities as required for construction of the waste disposal facility.
- (5) The erection of a temporary 1000 KVA substation at the tank farm site. The construction of a temporary 13.8 KV tap line from the temporary substation to existing power source. The installation of communication lines and facilities if not provided by the contractor.
- (6) The moving, erection, and installation of subcontractor's construction plant as required.
- (7) The moving to the construction site and the erection and repair of a radio-graphic laboratory, a first aid building and office or offices as required for joint use of the Commission and the Contractor. The installation of utilities for the aforementioned buildings.
- (8) The construction or installation of temporary and/or permanent steam and water lines to the tank farm site from existing plant facilities.

- (9) The earthwork including excavation, backfilling, and grading as required for the preparatory work, the utilities, and for construction of the 12-tank farm, diversion box, catch tank, waste cribs, retention basin, waste lines and facilities.
- (10) The construction of a battery of 12 mild steel lined concrete tanks with dome risers, dome riser accessories, hatchways, air condensers, nozzles, connecting and interconnecting piping. The 241-S tanks to be equal in size and capacity (approximately 758,000 gallons) and similar in detail to those of the 241-BY tank farm.
- *(11) The construction of a diversion box, designated as 241-S-151, of approximately equal size and similar to the existing 241-TX-153 diversion box in the 200 West Area. The diversion box to be complete with connecting and interconnecting piping and equipment. All inlet lines to be stub ended 90' from the diversion box.
- (12) The installation of a catch tank adjacent to the 241-S-151 diversion box with risers, accessories, connecting and interconnecting piping.
- (13) The construction of reinforced concrete and other waste line encasements and the installation of waste lines therein in the general vicinity of the 241-S-151 diversion box and 241-S tank farm. Waste line and encasement construction to include test risers, anchors and thermocouples.
- * (14) The construction of the 216-S waste cribs and the installation of connecting and interconnecting piping. The Health Instrument Division shall determine the suitability of the ground by making test holes.
- * (15) The construction of the 241-S retention basin with inlet and outlet or other connecting lines and the excavation or construction of drainage ditches and culverts as required. The retention basin shall have a capacity to retain wastes for a period of 5 hours.
- ** (16) The construction or erection of permanent fencing to enclose the tank farm area, the retention basin and the diversion box.

* Revised

** Original (16) omitted

- (17) The construction of a permanent 2300 volt power line from existing facilities to the site of the 241-S-151 diversion box. The installation of other permanent electrical power facilities including power outlets, and rectifiers for cathodic protection.
- (18) The installation of conductors, anodes, electrical bonds, wiring and equipment as required for cathodic protection of waste lines and tanks.
- (19) The drilling or sinking of test wells.
- (20) General clean-up of the site and disposal or storage of excess materials as directed by the Contractor.
- (21) Sidewalks over the tanks and floodlighting the tank farm area will not be required.

Submitted by M. J. Ruthenford

Revised 6-3-49

D. E. Irons