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1. *C. J. Banick* AED CO 3/25/89
2. *A. D. D.* 3/28/89

Reviewing
Official: *C. J. Banick*
J. Banick, AED Class Officer
Date 3/23/89

REDOX COMMITTEE
CONFERENCE NOTES AND RECOMMENDATIONS
MEETING OF JUNE 16, 1949

25976

HDC - 1291

SR/H-946

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4 Pages No. 1 of 4
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1. Mr. E. W. Seckendorff reported, as requested by Dr. W. I. Patnode, on the preparation of a firm scope of work to be done by the Kellogg Corporation and to be incorporated in their contract.

Scope of Work
of Kellogg

2. Mr. E. W. Seckendorff reported to the Redox Committee that he had requested Mr. G. E. Hotelling to write a letter in which he suggests how procurement should be handled for the Redox Production Plant. This letter is to be submitted to the Redox Committee.

Procurement
for Redox
Production
Plant

3. General-Electric Construction Field Inspection was discussed, but no final conclusion was reached on how it should be done as this depends on future development regarding administration of construction contracts.

Field Inspection

4. Mr. MacCreedy inquired if studies have been made in bearing capacity of soil, normal and high ground water level, and other pertinent data required for the structural design of the building housing the Redox Production Plant and all the auxiliary structures.

Bearing Capacity
of (soil, etc)

Mr. E. W. Seckendorff replied that this matter is being again reviewed in connection with the relocation of the Analytical and Plant Assistance Laboratory, Building 222-S, which will be now located close to the Production Plant. (See letter, E. W. Seckendorff to O. H. Pilkey dated June 13, 1949)

5. The Redox Committee approved the purchase, for testing purposes, of One (1) Size B2 Moyno Pump from Robbins & Myers, Inc, Moyno Pump Division, Springfield, Illinois; and Four (4) extra stators to fit the above pump, one each of 20% carbon filled Fluorothene, 40% carbon filled Fluorothene, 20% graphite filled Fluorothene, and 40% graphite filled Fluorothene. (Material for this item to be furnished by General Electric Company).

Purchase of
Moyno Pump
Approved

Please refer to Purchase Requisition D-18165. Delivery five weeks. Approximate total cost: \$852.00.

MASTER

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REDUX COMMITTEE - CONFERENCE NOTES AND RECOMMENDATIONS

June 20, 1949

6. Scope Drawing Schedules, consisting of Engineering Flow Diagrams and Arrangement Drawings prepared by Mr. J. M. Frame and Mr. D. E. Irons, respectively, were reviewed.

Scope
Drawing
Schedules

The urgency of the speed up of the preparation of these drawings was discussed with Mr. Frame. From the discussion it developed that 6 to 8 weeks for each one of these drawings are required for comments. The Manufacturing Division, as well as the Technical Division will make every effort to reduce this relatively long time.

Mr. Frame and Mr. Irons are requested to reconsider and resubmit new scope drawing schedules with improved completion dates.

7. Mr. W. K. MacCready inquired why 68% Nitric Acid is required as a process raw material.

68% Nitric
Acid

Mr. J. M. Frame was requested to prepare a report on this subject.

8. Mr. T. Williams' letter of June 3, 1949, "Production Plant Pump Development" was reviewed and approved in principle.

Production
Plant Pump
Development

Mr. E. W. Seckendorff stated that R. E. Roth Company of Rockland, Illinois, will make a design and give a quotation of their pump which is similar to that now used by the Technical Division in the 300 AREA, by June 16, 1949.

With regard to Robbins-Myers Pump (Springfield, Ohio) please refer to Item 5 above on approval of purchase.

Further, the Committee was advised that the Sintron Company of Homer City, Pennsylvania, has no suitable pump.

With regard to Peerless Pump Company on the turbine pump they have for handling butane and propane, we advise that Mr. T. Williams has submitted to them pertinent data and we are now awaiting a reply.

The Redux Committee approved the suggestion by Mr. O. H. Greager that the pump development and the bearing development be separated. The urgent development of a suitable process pump for Plant No. 1 shall

REDOX COMMITTEE - CONFERENCE NOTES AND RECOMMENDATIONS

JUNE 20, 1949

be carried out under the supervision of the Redox Design Division, through Mr. T. Williams.

Pump
Development
(Cont'd)

The long range program of development of suitable bearings in process liquids is to be undertaken by the Technical Division and should be considered of lower priority than the process pump development.

Mr. E. W. Seckendorff was requested to prepare a letter to Mr. R. B. Prentice, Nucleonics Department, Schenectady, to advise him of the division of this development. The Technical Division will advise him of the long range bearing development. The Redox Division, over signature of Mr. E. W. Seckendorff shall advise the General Engineering and Consulting Laboratory (Mr. Prentice) if and when they are ready for further pump development work.

Mr. W. I. Fatnode suggested that investigation be made of the possible use of a submerged gasoline dispensing pump.

The Redox Committee also requested that Mr. Williams obtain several sets of descriptive catalogs and, if possible, of designs of the Tabor pumps for starting their long-shaft development program.

9. Outline for Proposed Redox Vessel Specifications, by Mr. T. Williams, was reviewed and the following comments were made by Mr. W. K. MacCreedy:

Vessel
Specifications

Referring to proposed materials of construction for Redox Process Equipment (paragraph I), we cannot agree with the statement "all piping through concrete will be ASTM Type 347 SS" on cell space piping, fire fog piping, and Q-Meter tubes. He amplified this statement by saying that if the Redox Committee feels these pipes should be of Stainless Steel for insurance, or to avoid confusion during construction through mixing of black pipe with stainless steel pipe, he has no objection, but that process reasons do not require it, therefore the Manufacturing Divisions are not requesting it.

He further recommended that specifications on cell jumper bracing, tank supports, duct work and supports, cell block, and cell lip edging shall be specified.

JUNE 20, 1949

He also transmitted to the Chairman of the Committee a memorandum, dated May 31, 1949, from O. C. Schroeder to K. C. Vint on "Materials of Construction for 202-S Building Equipment". This memorandum is attached to these minutes as Attachment "A".

Vessel
Specifications
(Cont'd)

10. Design Basis Letters Nos. 1 to 4, submitted by Mr. D.E. Irons, were reviewed. The following comments were made:

Design Basis
Letters 1 -4

Design Basis Letter No. 1 - Electrical Distribution

Construction power shall be provided from one source, preferably from one not supplying existing manufacturing plants.

This should be discussed with Mr. Vint and Mr. Schroeder in further detail.

Design Basis Letter No. 2 - Steam Distribution

Doubt was expressed that the planned extension of the existing 10" header is sufficient as a supply to the Redox Production Area since sufficient steam must be always available for the operation of the existing standby canyon building.

It is therefore suggested that the 10" loop installation which is indicated as "future" should be installed initially.

Design Basis Letter No. 3 - Raw and Filtered Water Distribution

This letter was approved in principle, except that the raw and filtered water storage capacity is to be checked.

Design Basis Letter No. 4 - Railroads

This Design Letter was approved in principle, except that a siding is suggested alongside Buildings 203-S, 276-S, and 211-S.

O. H. Greag
W. K. H. Chandy
Edwards

6/20/49

Richland, Washington
May 31, 1949

TO: K. C. Vint

FROM: O. C. Schroeder

MATERIALS OF CONSTRUCTION FOR 202-S BLDG. EQUIPMENT

In preparation for the discussion at the Redox Committee Meeting on Materials of Construction the following items should be considered:

a) Standardization of Stainless Steels

We have received word from J. E. Hughes that the Maintenance Department is currently revising the types of stainless steels to be carried in Stores as standard stock items. They plan to carry all bar stock, angles, plate, pipe, and valves in type 347 (18-8) and 820-B (25-12) only. Stainless steels of other types are special order materials. No decision has been made, as yet, for machine bolts, screws, cap screws, washers, etc. It is my understanding that the S Division has endorsed this procedure.

We should, therefore, attempt to conform to these types as much as possible in the 202-S Building construction. The actual chemical analyses of the adopted standards are quoted from J. I. No. 700-8, Specification and Control of Stainless Steels, June 29, 1948 as follows:

	<u>347</u>	<u>820-B</u>
C	.10 Max	.07 Max
Cr	17.0/19.0	22.0 Min
Ni	9.0/12.0	12.0 Min
Mn	2.0 Max	1.25-2.50
Si	1.0 Max	.75 Max
S	.030 Max	.030 Max
P	.040 Max	.035 Max
Cb	10xC Min	10xC Min 1% Max
Se		Nil

b) Materials of Construction

The following listing represents our thinking as to materials of construction for the various equipment pieces in the 202-S Building. This listing differs considerably in some respects from the materials which were adopted for Test Plant use.

1) Vessels, Class I and II

18-8 All vessels operating at normal or near-normal temperatures.

25-12 All vessels operating at elevated temperatures (still, condensers, dissolvers, etc.). These vessels may have 18-8 jacket sheets.

2) Pipe Through Concrete

18-8 The majority of the process pipe through concrete including steam and jacket lines. Jacket outlet lines in concrete (to the sewer) may be cast iron or tile as they are in the present buildings.

25-12 This material should be used for special services only, i.e. where thermally hot materials must be transferred from cell to cell or tank to tank as we may have to do in the case of 80°C HNO₃ in the AMH Recovery system.

Steel (or black iron) All the electrical conduit through concrete. All cell spray piping, Fire-Fog piping, and Q Meter tubes.

3) Cell Jumpers and Connector Heads

Cell jumpers should follow the general pattern noted in 2 above. This will mean that we may have a very small number of 25-12 connector blocks in the plant; the vast majority being 18-8. The remainder of the connector head parts should be of a non-corrosive materials as is now planned. Since we will want to retain the non-corrosive connector head features in the electrical jumpers, we may want to depart from present practice and fabricate the electrical jumpers of stainless steel also.

4) Cold Chemical Piping

18-8 Cold chemical tanks, headers, vents, and piping in the chemical make up system. (Exception - 50% Caustic will use steel)

25-12 No anticipated usage.

5) Ventilation

Tin, galvanized sheet or other normal duct materials in that ductwork that is accessible for repair and/or replacement (this will be mainly in the air supply ducts to the various areas).

Corrosion resistant materials for that ductwork which may contribute to the spec problem and that which is inaccessible for repair and/or replacement. This may be 18-8 or some less expensive corrosion resistant material.

NOTE: Kellex Test Plant drawings have shown extensive use of corrosion resistant exterior support and bracing framework for hot ductwork. It is our opinion that painted steel would be entirely satisfactory in these locations.

6) Cell Accessories

Steel Cover block edges, cover block bails, cell step plates, wall connector support beams, tank supports*, and guides.

Corrosion Resistant Material - kick plates behind wall connectors.

- * The mechanical group is currently considering I beam supports shimmied into place on the floor of the cell. No superfinished concrete floor would then be needed. If this should be adopted, we would probably want the beams of corrosion resistant material to withstand acid leaks onto the floor.

7) Jumper Bracing and Motor Housings, etc.

The Test Plant planning visualized a 405 series high chrom iron for jumper bracing because of its non-rusting properties and the destructive affinity of hexone for normal paints. We would recommend the normal painted steel for the following reasons:

A) Effect of Hexone

With the proper individual tank venting system and adequate cell ventilation, there should be little difficulty with hexone vapors reacting on some of the more easily obtainable paints on steel jumper supports and other auxiliary equipment. This has been the Oak Ridge experience in their Hexone recovery cell operation. They have noted no ill effects of whatever hexone vapor there is in the air on painted surfaces. Hexone spills and leaks are, of course, another matter.

B) Extent of Application

While structural shapes are available in the 405 series high chrom steels, special 405 motor castings, etc. would be required to complete the protection. An alternate to this would be to "can" the motors in a corrosion resistant shroud and purge the can with air or H_2 for cooling.

C) Cost

The following is quoted from information gathered by A. B. Snyder on the cost of black iron vs. 405 series high chrom iron in jumper bracing construction:

"The bracing of a typical process jumper would require about 125# of material, excluding lead counterweights. Painting of the jumper bracing is indeterminant due to the number to be done at one time; but to do one, 6 hours labor is necessary for three coats. Tabulated below is the comparison.

125# 405 ss	@ \$0.415	51.90	
125# Black Iron	@ 0.062		\$ 7.25
Painting, 6 hours	@ \$5/ hr.		30.00
		\$ 51.90	\$37.25

Bracing with 405 SS would thus cost about \$14.65 more on the average than painted black iron.

C
O
P
Y

K. C. Vint

-4-

ATTACHMENT "A" TO HDC-1291
May 31, 1949

The above estimate is based on angle iron prices, this being considered an average shape. Channel runs about 10% higher. For your information, other comparative prices are quoted as follows:

<u>Type</u>	<u>Price/#</u>
304	\$0.470
347	0.555
405	0.415
410	0.400
416	0.405
420	0.455
430	0.405
440 a,b,c	0.455
440 f	0.465

Black Iron costs \$0.062/# in lots greater than 5 tons.

OSC:ABS:ej

cc: WK MacCready
JB Hughes
OC Schroeder