

File



Interoffice Communication

To G. G. Draper

From J. S. Robinson

Date February 7, 1975

Subject Replacement For T-252 Pit
Design 12-100-1074-JSR-Rev 1274

Introduction

Attached is a preliminary process design to eliminate the fume problem associated with T-252 pit without requiring a new vessel as proposed in the first issue of this design. This design proposes to use existing tank T-110 both for EDC separation and as a steam stripper feed drum. All streams now going into T-252 pit will be re-routed to T-110. A design will be issued in the near future for a TFE lined wet vent header for the process area. When the vent header is installed, T-110, T-102, and T-103 will be vented into it rather than to atmosphere.

Process (flowsheet Fig. 1)

T-110 will still act as an EDC settling drum. The P-252 pump suction nozzle will be located four feet above the tank bottom seam to allow space for EDC accumulation. With a normal liquid level of 6 ft., there is a surge capacity of 2300 gal., excluding the capacity in approximately the top 2½ feet which cannot be used due to T-102 elevation. Calculations and lab work by Mr. Al Peck in November 1974 indicate that EDC will separate from the water phase in T-110 up to a feed rate of 270 gpm. Existing EDC pumpout pump P-255 will continue to be used to remove the EDC layer from T-110. Since T-110 will still function as a settling drum, it cannot be agitated internally. Thorough mixing of the feed will still be required for good pH control. This can be provided with a static mixer, such as the "Kinecs", in the feed line. A static mixer will provide good mixing, on streams with relatively constant flow rates, without emulsification. The mixer will be TFE lined with an HCl resistant element such as "Hastalloy". The feed line will be extended four feet into the tank by means of a solid TFE nozzle. This will direct the incoming feed away from the pump suction and allow EDC time to separate from the water phase.

The T-110 conversion can be accomplished without relocating the P-252 pumps by running the suction line down the west side of T-252 pit. The existing inlet header may be tied into T-110 without relocating the header. T-110 is presently a glass lined vessel. However, the glass lining will be replaced with acid brick in May 1975. The new nozzles required can be installed at this time.

Since the inlet header will now run full, there is danger of corroding the existing lines that are carbon steel. To prevent this, several feet of c.s. pipe will be replaced by TFE lined pipe as shown in Fig. 2. In order to make the T-110 conversion without a purification section shutdown, a 6" TFE lined plug valve must be installed in the inlet header as shown in Figure 2. All the above inlet header

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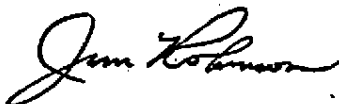
modifications must be made during the next turnaround. Otherwise, a wash section shutdown will be required for the modifications.

The existing atmospheric vent on the side of C-101 will remain in service until such time as the planned TFE lined wet vent header is installed. At that time T-110, T-102, and T-103 will be tied into the new wet vent. T-110 is higher than the T-102 water overflow nozzle. This presents the possibility - however remote - of backing acid water into T-102. As a safeguard against this occurrence, a 4" TFE lined ball type check valve should be installed in the T-102 overflow line during the next turnaround.

The additional vent pressure on T-103 should have little effect on flow of EDC from T-101 to P-110 suction, as T-101 runs at 21 psig. There is an existing underground sewer line to T-2 pit from the surface drain trench south of T-252 pit. Both the T-110 overflow line and inlet header drain line will be tied into this line and the open end in the trench plugged. The inlet header drain will have to be looped underneath the surface trench.

Instrumentation

All existing instrumentation on T-252 pit will be moved to T-110. A new D.P. cell and dip tube will be provided to detect EDC level. The new D.P. cell will be connected to an existing spare panel alarm and set to alarm at 2 ft. If desired, the EDC level signal can also be tied into a spare indicator/recorder pen to give continuous EDC level indication.



J. S. Robinson

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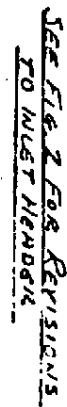
JAD-JHM-GGD(4)-JRH(4)-CEG

WORK LIST

Item No. 1 must be done during the next turnaround.

- 1) Make revisions to inlet header piping and install 6" TFE lined plug valve in header.
- 2) Tie inlet header drain into underground line to T-2 pit. Also provide tie in for new T-110 overflow line.
- 3) Fabricate and install new overflow line up to T-110.
- 4) Run instrument air lines for NLT-1.
- 5) Fabricate new P-252 suction line.
- 6) Fabricate new section of feed line necessary to tie into T-110. Install static mixer in this section.
- 7) Add new nozzles, acid brick line, and re-install T-110.
- 8) Install level gauges, level indicator dip tubes, inlet nozzle, and temperature indicator. Tie in new overflow line.
- 9) Bypass T-252 pit and make inlet header tie in to T-110. Make P-252 pump suction tie-in. Hook up level indicators.
- 10) Put T-110 in service.

NOTE: VENT LINES SHOULD BE FOR FORWARD THE LINED
WET VENT. EXISTING ATMOSPHERIC VENT
WILL BE USED
IN INTERIOR.



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FIG. 3

T-110 NOZZLE REQUIREMENTS

NOZZLE SCHEDULE

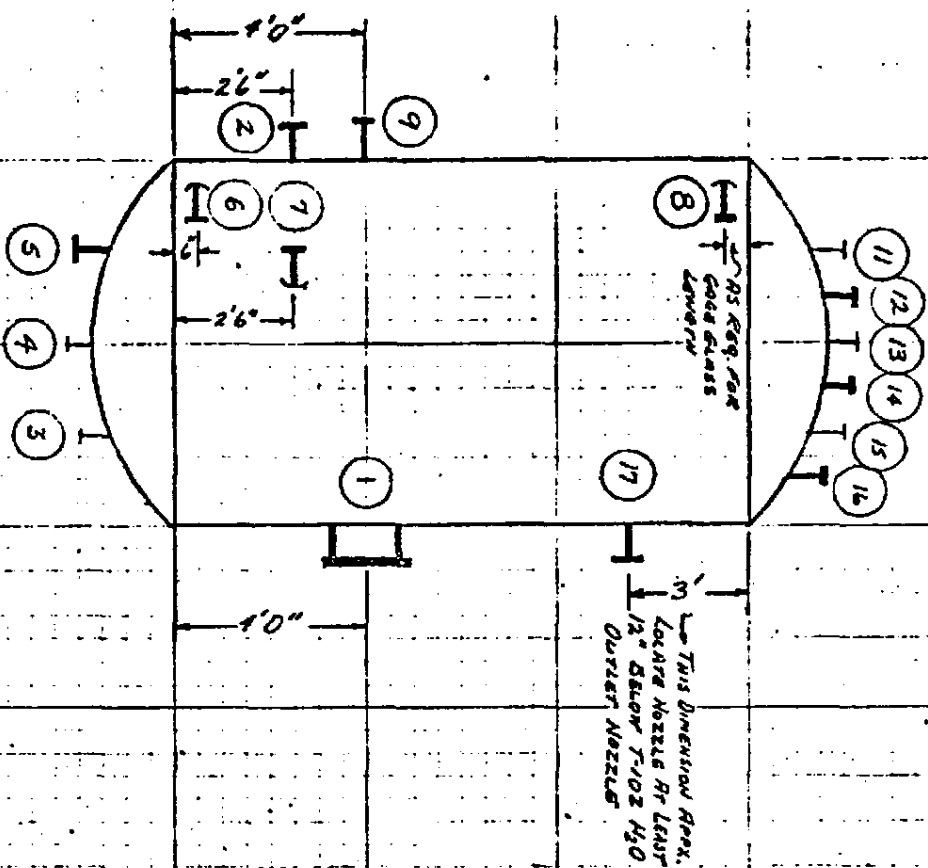
No.	SIZE	SERVICE
1	20"	MANWAY WITH DIRT ASSURING
2	6"	PROCESS INLET
3	3"	EDC PUMP OUT (EXIST.)
4	6"	DRAIN (EXIST.)
5	1"	LEVEL GAUGE
6	1"	LEVEL GAUGE
7	1"	LEVEL GAUGE
8	1"	LEVEL GAUGE
9	4"	P.252 SUCTION
10	DELETED	
11	4"	VENT (EXIST.)
12	3"	LEVEL INDICATOR
13	3"	LEVEL INDICATOR (EXIST.)
14	3"	LEVEL INDICATOR
15	3"	SYPHON BREAKER LINE (EXIST.)
16	2"	TEMP. INDICATOR
17	4"	LIQUID OVERFLOW

NOTES: 1. NOZZLE SIZES ARE FINISHED I.D.

2. ALL NOZZLES ARE 150 LB. L.J.

3. NOZZLES SHOWN IN HEAVY LINES ARE NEW.

4. NOZZLE 2 TO BE LOCATED DIRECTLY BELOW NOZZLE 9 IN SAME VERTICAL PLANE.





ENGINEERING CENTER

PONCA CITY, OKLAHOMA
SPECIFICATION SHEET

A.F.E. NO. _____
DATE 2-3-75 W.O. NO. _____
MADE BY JAL INO NO. _____
APP'D BY _____ REQ NO. _____
B.M. NO. _____ P.O. NO. _____

PLANT KCM

PROJECT T-110 CONVERSION

ITEM NO NAT-1
SERVICE T-110 INLET MIXER

STATIC MIXER SPECIFICATIONS:

1. SIZE: 6" I.D.

2. MATERIALS OF CONST: BODY - TFE LINED CARBON STEEL

ELEMENT - HASTALLOY

3. FLOW RATES: 75 GPM 5% HCl IN WATER
75 GPM 2% NaOH IN WATER } TOTAL = 150 GPM

4. OPERATING CONDITIONS: TEMP - 200°F

PRESS - 5 PSIG

5. ALLOWABLE PRESS. DROP: 3" H₂O

6. NO. OF ELEMENTS: TO BE SPECIFIED BY VENDOR

CCR 000081747



CENTRAL ENGINEERING DEPARTMENT

PONCA CITY, OKLAHOMA

SPECIFICATION SHEET

DIFFERENTIAL PRESSURE TRANSMITTERS

A.F.E. NO. _____

DATE 12-31-74

W. O. NO. _____

MADE BY J.R.

INO. NO. _____

APPD BY. _____

REQ NO. _____

S. M. NO. _____

P. O. NO. _____

PLANT YCMPROJECT T-110 CONVERSION

ITEM NO.	<u>NLT-1</u>			
SERVICE LOCATION	<u>T-110 LEVEL</u>			
	<u>INDICATION</u>			
TRANSMITTER DATA				
TYPE ELECTRONIC/PNEUMATIC	<u>PNEU.</u>			
OUTPUT SIGNAL	<u>3-15 PSIG</u>			
PWR SUPPLY REQ'D	<u>-</u>			
ADJUSTABLE RANGE - IN. H ₂ O	<u>0-100</u>			
CALIBRATED RANGE - IN. H ₂ O	<u>0-50</u>			
ADJUSTABLE SUPPRESSION RANGE				
CALIBRATED SUPPRESSION RANGE				
TYPE OF SERVICE: FLOW - LEVEL	<u>LEVEL</u>			
MOUNTING YOKE - BRACKET	<u>BACKET</u>			
ELECTRICAL CLASSIFICATION	<u>N.A.</u>			
MATERIALS OF CONSTRUCTION				
BODY	<u>316 S.S.</u>			
DIAPHRAGM	<u>316 S.S.</u>			
OTHER				
ACCESSORIES				
AIR FILTER - REGULATOR	<u>✓</u>			
AIR SUPPLY GAGE	<u>✓</u>			
OUTPUT GAGE	<u>✓</u>			
OTHER				
SERVICE CONDITIONS				
FLUID	<u>WATER</u>			
TEMPERATURE °F	<u>AMBIENT</u>			
PRESSURE P.S.I.G.	<u>5 P.S.I.G.</u>			
SP. GR. @ T. & P.	<u>1.0</u>			
SEAL LIQUID	<u>NITROGEN</u>			
SEAL LIQUID SP. GR.				
MANUFACTURER	<u>FISHER</u>			
MODEL NO	<u>13-H</u>			
PRICE				

GENERAL

TYPE: MERCURYLESS - FORCE BALANCE

CASE: WEATHERPROOF

GUARANTEED CALIBRATED ACCURACY: 1/2 OF 1% OF FULL SPAN

OVERRANGE PROTECTION: EQUAL TO STATIC PRESS RATING

BODY STATIC PRESS RATING: 1500 P.S.I.G.

CONNECTIONS AIR - 1/2" N.P.T., PROCESS - 1/2" N.P.T., CONDUIT - 1/2" SIZE

NOTES

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SPECIFICATION SHEET

LIQUID LEVEL GAUGE

Item No. & Tag: NLG-1

Manufacturer: Dorel

Model No: E-900 Fluorogreen Lined

No. Required: 7

Overall Length of Each Glass: 14"

Materials of Construction:

- 1. Body: Cast Ductile Iron 60-40-18**
- 2. Cover Material: Malleable Iron**
- 3. Liner: Fluorogreen E-1600**

Glass: Reflex

Flanges: 1" - 150 lb ANSI

Operating Conditions: 200°F - 30 psig

SPECIFICATION SHEET

LIQUID LEVEL GAUGE

Item No. & Tag: NLG - 2

Manufacturer: Dorel

Model No: E-900 Flurogreen Lined

No. Required: 3

Overall Length of Each Glass: 14"

Materials of Construction:

- 1. Body: Cast Ductile Iron 60-40-18**
- 2. Cover Material: Malleable Iron**
- 3. Liner: Flurogreen E-1600**

Glass: Reflex

Flanges: 1" - 150 lb ANSI

Operating Conditions: 200°F - 30 psig