INSTRUMENT FUNCTION OUTLINE DEPARTMENT 246

TITLE REBOILER FURNACE COIL FLOW LOOP NUMBER 307-5

SHEET 1 OF 4 CLASSIFICATION FI-307-5

WRITTEN BY V. Brawley DATE 5/25/72 REV.BY DATE REV.NO.

1.0 NEED FOR LOOP

This loop is needed to shut down the furnace in case of low flow in the circulating line. Low flow would not give the proper heat transfer needed for vaporization in the column and would cause pluggage in the furnace circulating line due to overheating.

1.1 DESCRIPTION OF LOOP

1.1.1 Function

The function of this loop is to indicate the flow rate of crude through the furnace coil and shut down the furnace burners in case of a minimum flow.

1.1.2 Accuracy Required

± 2%

1.1.3 Accomplishment of Function

The circulating flow rate of crude through the furnace coil is measured by an orifice plate. The flow rate shows on the indicator. At the low flow set point, the contact in the indicator will open and energize a relay. The relay will shut down the furnace burners and bring in an alarm.

PCB-ARCH-EXT0373563

2.0 COMPONENT AND CALIBRATION DATA

OPERATING DATA

A. Indicator & Switch

Location: North side of furnace, 1st level.

Range: 0-105 (0-1000 GPM)
Span: 0-50" H_2O
Set Point: 25" H_2O (420 GPM or (4.20 on scale)
Action: Contact to open on low flow.
Liquid: SpGr. 1.3

B. Orifice (FE-307-5)

Location: 7 feet above the indicator.

Size: 520 Plate

C. Relay (#10 CR)

Location: Inside furnace field cabinet.

MECHANICAL DATA

A. Barton Flow Indicator Model 277

Range: 0-105 = 0-50" W.C.

Contacts - Open on low flow.

IPMO - 257

C. Relay

Allen Bradley 700N

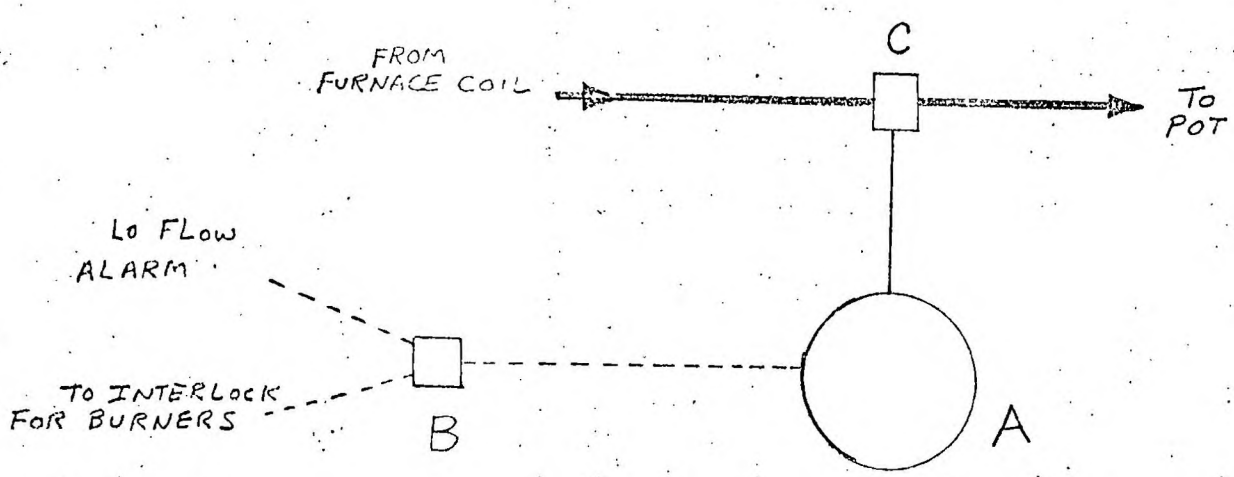
PCB-ARCH-EXT0373564

INSTRUMENT FUNCTION OUTLINE | DEPARTMENT 246

TITLE REBOILER FURNACE COIL FLOW | LOOP NUMBER 307-5

SHEET 3 OF 4 | CLASSIFICATION FI-307-5

Written by ____ Date ____ Rev. by ____ Date ____ Rev. Number ____



PCB-ARCH-EXT0373565

3.0 OPERATION OF LOOP

3.1 NORMAL OPERATION

3.1.1 Start-Up Instructions

Crude must be circulating through the furnace coil.

3.1.2 Shut-Down Instructions

The column must be on total reflux or all the burner off.

3.1.3 Normal Operating Instructions

The indicator will read 1,000 GPM.

3.1.4 Routine Checks Required

Check the indicator at least 2 times a shift.

3.2 INTERLOCKS AND ALARMS

At low flow set point (420 GPM) the furnace will shutdown and an alarm will sound in the control room, the telalarm window "furnace shutdown" will light. Also, an alarm will sound in the furnace field cabinet.

3.3 ABNORMAL OPERATION

3.3.1 Air Failure

Air failure will not affect this loop but the furnace will shut down due to other interlocks.

3.3.2 Power Failure

A power failure will shut this loop down.

3.3.3 Also see Drawings 2417, E5, I5, and IFO's FIC-307-1 and B-307-1.

REVIEW

PCB-ARCH-EXT0373566

INSTRUMENT FUNCTION OUTLINE DEPARTMENT 240

TITLE RESIDUE TANK LEVEL LOOP NUMBER 312-3

SHEET 1 OF 5 CLASSIFICATION LIA-312-3
WRITTEN BY V. Brawley DATE 5/18/72 REV.BY DATE REV.NO.

1.0 NEED FOR LOOP

Residue from 1-312 is fed to the existing No. 2 still for distillation. Surge tank level must be known prior to pumping residue from the still pot after a column run.

1.1 DESCRIPTION OF LOOP

1.1.1 Function

The function of this loop is to provide an indication of the residue tank level at both the control panel and in the field. Also to give an alarm on high or low level and to shutdown the column pot circulating pump on high level.

1.1.2 System Performance Required

± 2%

1.1.3 Accomplishment of Function

The level in the tank is sensed by a displacer type level transmitter which sends a 3-15 psig air signal to a 0-100% indicator on the control panel as well as a field mounted 0-100% indicator. This signal also sends an air signal to two pressure switches in the field panel. One switch is for low alarm and the other operates a relay which shuts down pump 1-306 and gives an alarm on high level.

NOTE: On MCS-1016 operation, the level transmitter is calibrated to read 100% with the tank 100% full. Due to the difference in gravity on "mono" operation, it will read 75% with the tank full. Therefore, during "mono" operation, it will be necessary to use a factor of 1.33 X's indicator reading to obtain correct level %.

PCB-ARCH-EXT0373567

INSTRUMENT FUNCTION OUTLINE		DEPARTMENT	246
TITLE	RESIDUE TANK LEVEL	LOOP NUMBER	312-3
SHEET	2 OF 5	CLASSIFICATION	LIA-312-3

2.0 COMPONENT AND CALIBRATION DATA

OPERATING DATA

A. Transmitter

Location: On top of the residue tank, east end.

Air Supply: 20 PSIG
Scale: 0-100 Linear

Output: 3-15 PSIG

B. Indicator

Location: On panel board in control room.

Scale: 0-10 Linear

Input: 3-15 PSIG

C. Mercoid Switches (2- High and Low Levels).

Location: Inside furnace field cabinet.

Set Point: High: 14 PSIG
Set Point: Low: 4 PSIG

MECHANICAL DATA

A. Transmitter

Fisher Gov. 2500T Displacer
125" Long x 3/4" Extension-8.5"

Calibration:

0 Grams = 3 PSIG
1060 Grams = 15 PSIG

Torque Tube K-Monel

IMPO -127

B. Fisher Porter Ind. Controller

Model 51-1310
Input 3-15 psi
Output 3-15 psi
Action Reverse

IMPO - 126

C. Switches

Mercoid Mod. AP 153-R 36

PCB-ARCH-EXT0373568

INSTRUMENT FUNCTION OUTLINE

TITLE RESIDUE TANK LEVEL

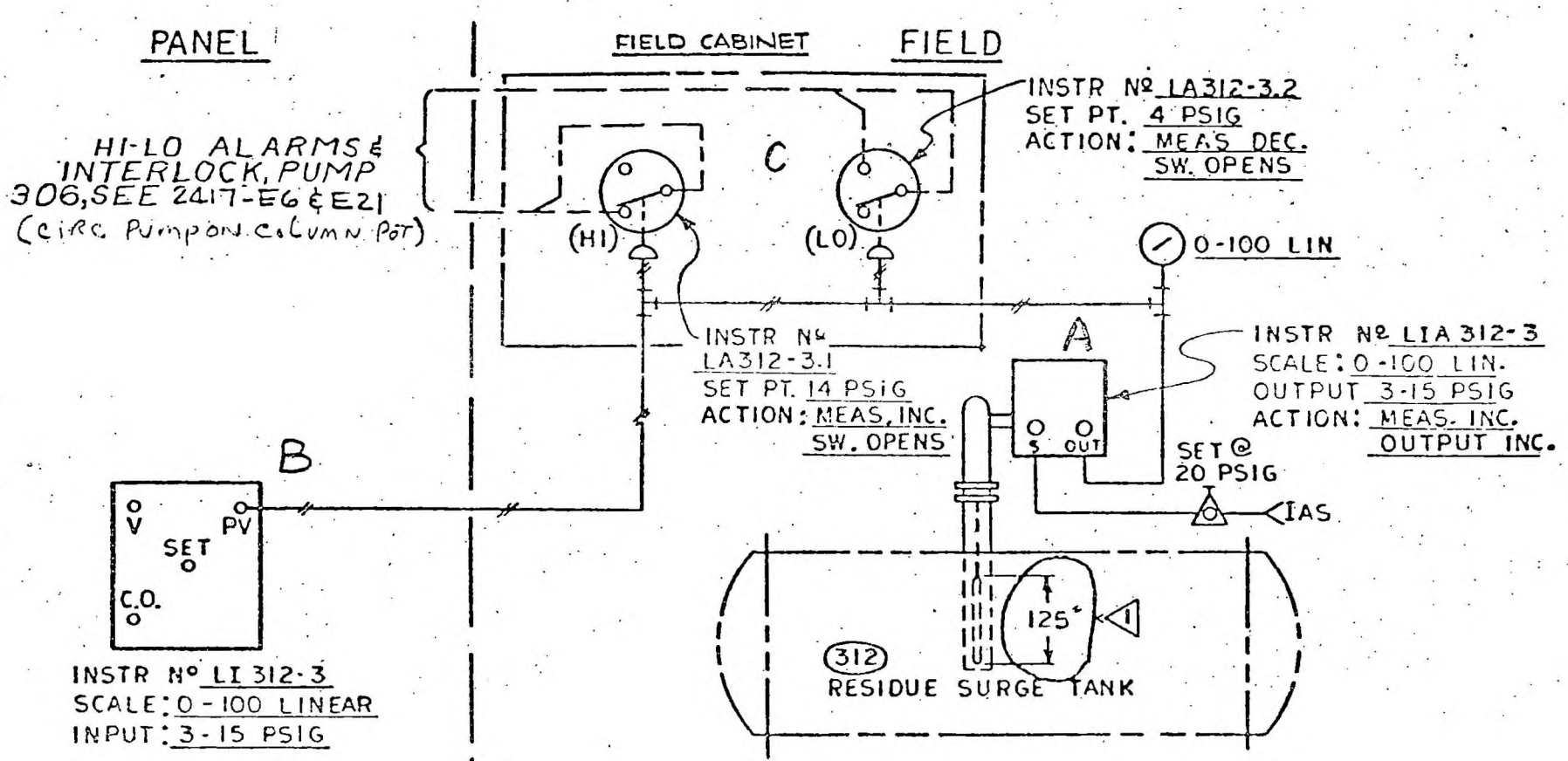
SHEET 3 OF 5

WRITTEN

DEPARTMENT

LOOP NUMBER 312-3

CLASSIFICATION LTA-312-3



BILL OF MATERIAL

MARK NO	QUAN	SPEC 2417	P.O. NO. 2417-9	DESCRIPTION
LI 312-3	1	12	0012	FISCHER & PORTER MOD# 51-1352EPAC PNEU. INDICATOR
LA 312-3.1	1	54	0015	MERCOID MOD# AP-153-R36 MERCURY SPDT SW.
LA 312-3.2	1	54	0015	MERCOID MOD# AP-153-R36 MERCURY SPDT SW.
LIA 312-3	1	34	0020	FISHER MOD# 2500T-249BP TRANSMITTER & IND.

MARK NO.	QUAN	SPEC	P.O. NO	DESCRIPTION

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INSTRUMENT SCHEMATIC DIAGRAM

LOOP NO LIA 312-3

FUNCTION LEVEL IND. OF ITEM 312

CEA NO	REFERENCE NO
2417	I 3 B

PCB-ARCH-EXT0373569

TITLE RESIDUE TANK LEVEL

LOOP NUMBER 312-3

SHEET 4 OF 5

CLASSIFICATION LIA-312-3

WRITTEN BY DATE REV.BY DATE REV.NO.

3.0 OPERATION OF LOOP

3.1 NORMAL OPERATION

3.1.1 Start-Up Instructions

No special instructions.

3.1.2 Shut-Down Instructions

Do not allow the high-level interlock to shut down the circulating pump on the column pot.

3.1.3 Normal Operating Instructions

It is necessary to watch only the level indicator to be sure it appears to be working.

3.1.4 Routine Checks Required

Watch the level indicator as often as necessary to keep from pumping too much into the tank and from pumping the tank empty. Some liquid should be left in the tank for circulation, usually around 10% (1.0 on the indicator scale).

REVIEW

PCB-ARCH-EXT0373570

3.0 OPERATION

3.1 NORMAL OPERATION

Typical level indicator loop.

3.2 INTERLOCKS

3.3 ABNORMAL OPERATIONS

3.3.1 Air Failure

Air failure to this loop will cause loss of indication and an alarm indicating low level.

3.3.2 Power Failure

Power failure to the loop will cause the annunciator to be inoperative and pump 1-306 will shut down.

PCB-ARCH-EXT0373571

INSTRUMENT FUNCTION OUTLINE | DEPARTMENT 246

TITLE FUEL OIL STORAGE TANK LEVEL | LOOP NUMBER 316-1

SHEET 1 OF 5 | CLASSIFICATION LI 316-1

WRITTEN BY V. Brawley DATE 5/8/72 REV.BY _____ DATE _____ REV.NO. _____

1.0 NEED FOR LOOP

A level gauge is needed for proper oil inventory control. Fuel oil is needed as back-up fuel for the reboiler operation.

1.1 DESCRIPTION OF LOOP

1.1.1 Function

The function of this loop is to provide an indication of the level of oil in the fuel oil storage tank and to actuate an alarm upon high or low level.

1.1.2 System Performance Required

± 2%

1.1.3 Accomplishment of Function

The level in the fuel oil tank is sensed by a diaphragm type level transmitter which sends a 3-15 psig proportional signal to a 0-100% indicator mounted near the tank. This signal is also sent to two pressure switches mounted in the field panel which actuate an alarm on high or low level.

PCB-ARCH-EXT0373572

2.0 COMPONENT AND CALIBRATION DATA

OPERATING DATA

A. Transmitter

Location: Bottom of the storage tank, east side.

Scale: 0-100 Linear
Span: 0-205" H_2O
Air Supply: 20 PSIG
Output: 3-15 PSIF

B. Mercoid Switches (2- High & Low Levels).

Location: Inside the furnace field cabinet.

Set Point: High-14 PSIG
Set Point: Low - 4 PSIG

MECHANICAL DATA

A. Transmitter

Foxboro 13FA
Range: 0-205" H_2O
Output: 3 - 15 PSIG

IPMO: 001

B. Alarms

Mercoid AP-153-R36
High: 14 PSIG
Low: 4 PSIG

IMPO: 250

PCB-ARCH-EXT0373573

INSTRUMENT FUNCTION OUTLINE

TITLE FUEL OIL STORAGE TANK LEVEL

SHEET 3 OF 5

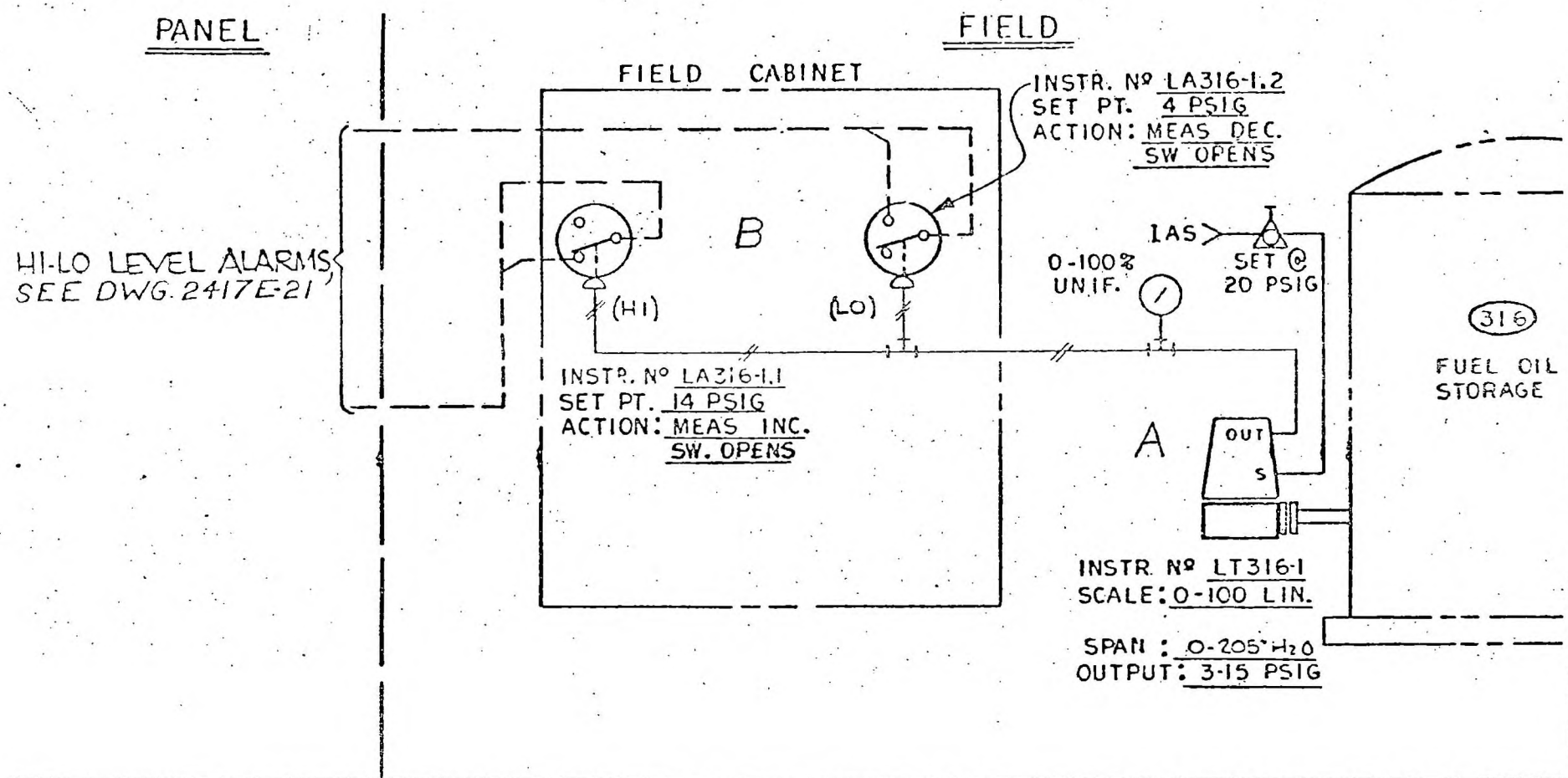
WRITTEN BY DATE REV. BY

DEPARTMENT 240

LOOP NUMBER 316-1

CLASSIFICATION LI-316-1

DATE REV. NO.



BILL OF MATERIAL

MARK NO.	QUAN	SPEC 2417	P.O. NO 2417-9	DESCRIPTION
LA 316-1.1	1	54	DWG 2417-116	MERCOID MOD. #AP-153-R36 SPDT ALARM SWITCH
LA 316-1.2	1	54	DWG 2417-116	MERCOID MOD #AP-153-R36 SPDT ALARM SWITCH
LT 316-1	1	32	0007	FOXBORO MODEL #13FA1-MK315 TRANSMITTER & INDICATOR

MARK NO	QUAN	SPEC	P.O. NO.	DESCRIPTION

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INSTRUMENT SCHEMATIC DIAG[illegible]

LOOP NO. LIA 316-1

FUNCTION LEVEL IND. & ALARM OF

CEA NO	REFERENCE NO
2417	I5C

TITLE FUEL OIL STORAGE TANK LEVEL LOOP NUMBER 316-1

SHEET 4 OF 5 CLASSIFICATION LI-316-1
WRITTEN BY DATE REV.BY DATE REV.NO.

3.0 OPERATION OF LOOP

3.1 NORMAL OPERATION

3.1.1 Start-Up Instructions

None

3.1.2 Shut-Down Instructions

None

3.1.3 Normal Operating Instructions

Level indicator should be between 10 and 90%.

3.1.4 Routine Checks Required

Check level indicator at least one time a shift.

PCB-ARCH-EXT0373575

INSTRUMENT FUNCTION OUTLINE DEPARTMENT 246

TITLE FUEL OIL STORAGE TANK LEVEL LOOP NUMBER 316-1 ~~361~~-1

SHEET 5 OF 5 CLASSIFICATION LI-316-1

WRITTEN BY DATE REV.BY DATE REV.NO.

3.0 OPERATION

3.1 NORMAL OPERATION

Typical level loop.

3.2 INTERLOCKS

None

3.3 ABNORMAL OPERATIONS

3.3.1 Air Failure

Air failure to the loop will cause loss of indication and low level alarm.

3.3.2 Power Failure

Power failure will cause alarm to be inoperative.

REVIEW

PCB-ARCH-EXT0373576

INSTRUMENT FUNCTION CODE

TITLE LIME SLURRY TANK LEVEL

LOOP NUMBER 320-1

SHEET 1 OF 5

CLASSIFICATION LI-320-1

WRITTEN BY V. Brawley DATE 5/17/72 REV.BY DATE REV.NO.

1.0 NEED FOR LOOP

The level indicator on the lime slurry tank is needed to assure the necessary amount of slurry is continuously being used from the tank and to prevent overflowing the tank.

1.1 DESCRIPTION OF LOOP

1.1.1 Function

The function of this loop is to measure and indicate the level of slurry in the lime slurry tank.

1.1.2 System Performance Required

± 2%

1.1.3 Accomplishment of Function

A displacer type level transmitter senses the level and sends a 3-15 PSIG signal to a receiver gauge, mounted near the vessel, which reads a 0-100% level. Also a level gauge is mounted in the control room.

PCB-ARCH-EXT0373577

INSTRUMENT FUNCTION OUTLINE		DEPARTMENT	246
TITLE	LIME SLURRY TANK LEVEL	LOOP NUMBER	320-1
SHEET	2 OF 5	CLASSIFICATION	LI-320-1

2.0 COMPONENT AND CALIBRATION DATA

OPERATING DATA

A. Transmitter

Location: On top of the lime slurry tank, 2nd floor.

Air Supply: 20 PSIG.

B.&C. Gauges (0-100%)

Location: 1 on top of the tank, the other on the panel board in control room.

MECHANICAL DATA

A. Transmitter

Fisher Level-Trol

Model 2500 T-249 BP

Calibration: 0 grams = 3 PSIG
1510 grams = 15 PSIG

Displacer 60" x 1-1/4" 304 S.S.

Extension 17 inches

IPMO 127

PCB-ARCH-EXT0373578

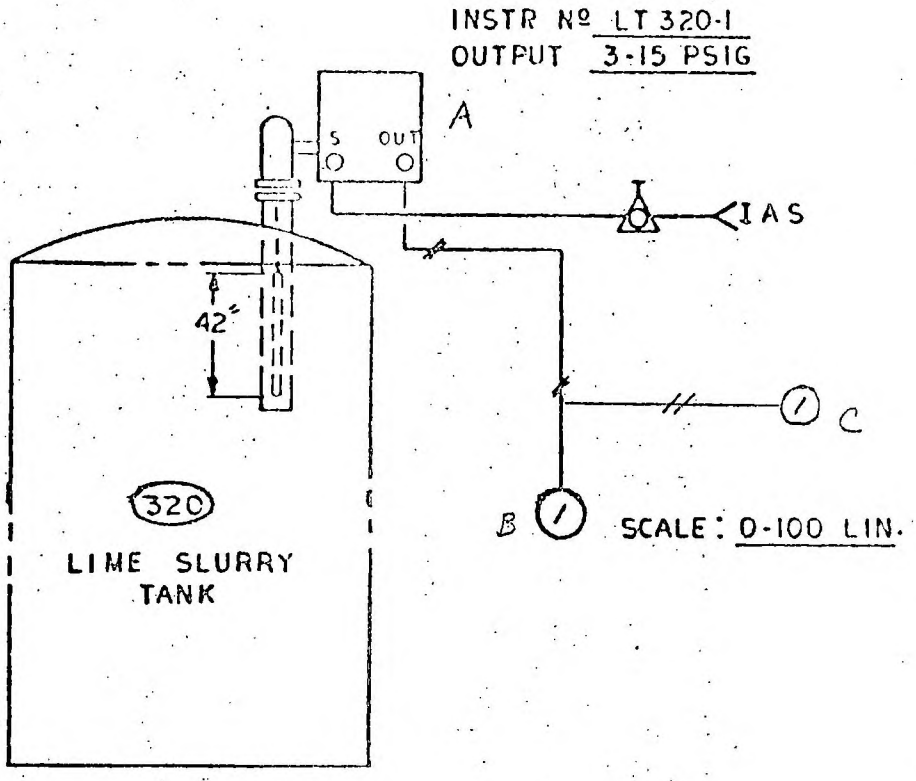
TITLE LIME SLURRY TANK LEVEL

LOOP NUMBER 320-1

SHEET 3 OF 5

CLASSIFICATION LI-320-1

WRITTEN BY DATE REV.BY DATE REV.NO.



BILL OF MATERIAL

MARK NO.	QUAN	SPEC 2417	P O NO 2417-9-	DESCRIPTION
LT 320-1	1	34	0020	FISHER MOD 2500T-249BP PNEU. TRANSMITTER

MARK NO	QUAN	SPEC	P O NO	DESCRIPTION

INSTRUMENT SCHEMATIC DIAGRAM

LOOP NO LI 320-1

FUNCTION LEVEL IND. OF ITEM 320

C E A NO	REFERENCE NO
2417	I5D

PRINTS ISSUED TO

PCB-ARCH-EXT0373579

3.0 OPERATION OF LOOP

3.1 NORMAL OPERATION

3.1.1 Start-Up Instructions

None

3.1.2 Shut-Down Instructions

None

3.1.3 Normal Operating Instructions

Level normally is between 50 and 80%.

3.1.4 Routine Checks Required

Each shift the level is to be checked frequently to be sure the proper amount of lime slurry is being fed into the crude.

PCB-ARCH-EXT0373580

TITLE LIME SLURRY TANK LEVEL LOOP NUMBER 320-1

SHEET 5 OF 5 CLASSIFICATION LI-320-1
WRITTEN BY DATE REV.BY DATE REV.NO.

3.0 OPERATION

3.1 NORMAL OPERATION

Typical level indicator loop

3.2 INTERLOCKS

None

3.3 ABNORMAL OPERATIONS

3.1.1 Air Failure

Upon air failure there will be no indication of level.

REVIEW

PCB-ARCH-EXT0373581

INSTRUMENT FUNCTION OUTLINE DEPARTMENT 240

TITLE TEMPERED WATER CONTROLLER LOOP NUMBER 325-3

SHEET 1 OF 5 CLASSIFICATION TIC-325-3

WRITTEN BY V. Brawley DATE 5/19/72 REV.BY DATE REV.NO.

1.0 NEED FOR LOOP

This loop is needed to provide the necessary temperature for oroper condensation of vapors in the column condenser.

1.1 DESCRIPTION OF LOOP

1.1.1 Function

The function of this loop is to maintain a constant temperature of the cooling water to the column condensor and to actuate an alarm on high temperature @ 70°C.

1.1.2 System Performance Required

The temperature should be maintained ± 5°C. of set point (65°C.).

1.1.3 Accomplishment of Function

The temperature in the water line is sensed by a temperature indicating controller using a capillary bulb sensing element. The controller compares this temperature with a set point and sends a 3-51 psig air signal to a control valve to compensate for variations from the set point. As hot water leaves via the control valve, cold city make-up water enters the system in equal volume.

PCB-ARCH-EXT0373582

INSTRUMENT FUNCTION OUTLINE		DEPARTMENT	246
TITLE	TEMPERED WATER CONTROLLER	LOOP NUMBER	325-3
SHEET	2 OF 5	CLASSIFICATION	TIC-325-3

2.0 COMPONENT AND CALIBRATION DATA

OPERATING DATA

A. Controller

Location: Ground level at north side of the column.

Air Supply: 20 PSIG
Output: 3-15 PSIG
Scale: 0-100 Linear

SetPoint: 1016 - 65°C.
MONO 80°C.

Alarm is on the controller.

B. Thermocouple

Location: In the circulating pump discharge line about 6 feet above the controller.

C. Valve (ACV)

Location: By flash tank, S.W. of water break tank. About 12 feet from ground level.

Action: Air to close.

MECHANICAL DATA

A. Controller

Taylor 44D RM

Range: 0-100°C.
Output: 3 - 15 PSIG

Alarm S.W. - N.C. opens at 90°C.

IPMO 087

B.

C. Valve

Fisher Gov. 657A

Body: 1-1/2" Iron Body
Trim: 416 S.S. 17-4P-1-7/8" Linear Cage

IPMO-126

PCB-ARCH-EXT0373583

INSTRUMENT FUNCTION OUTLINE

TITLE TEMPERED WATER CONTROLLER

SHEET 3 OF 5

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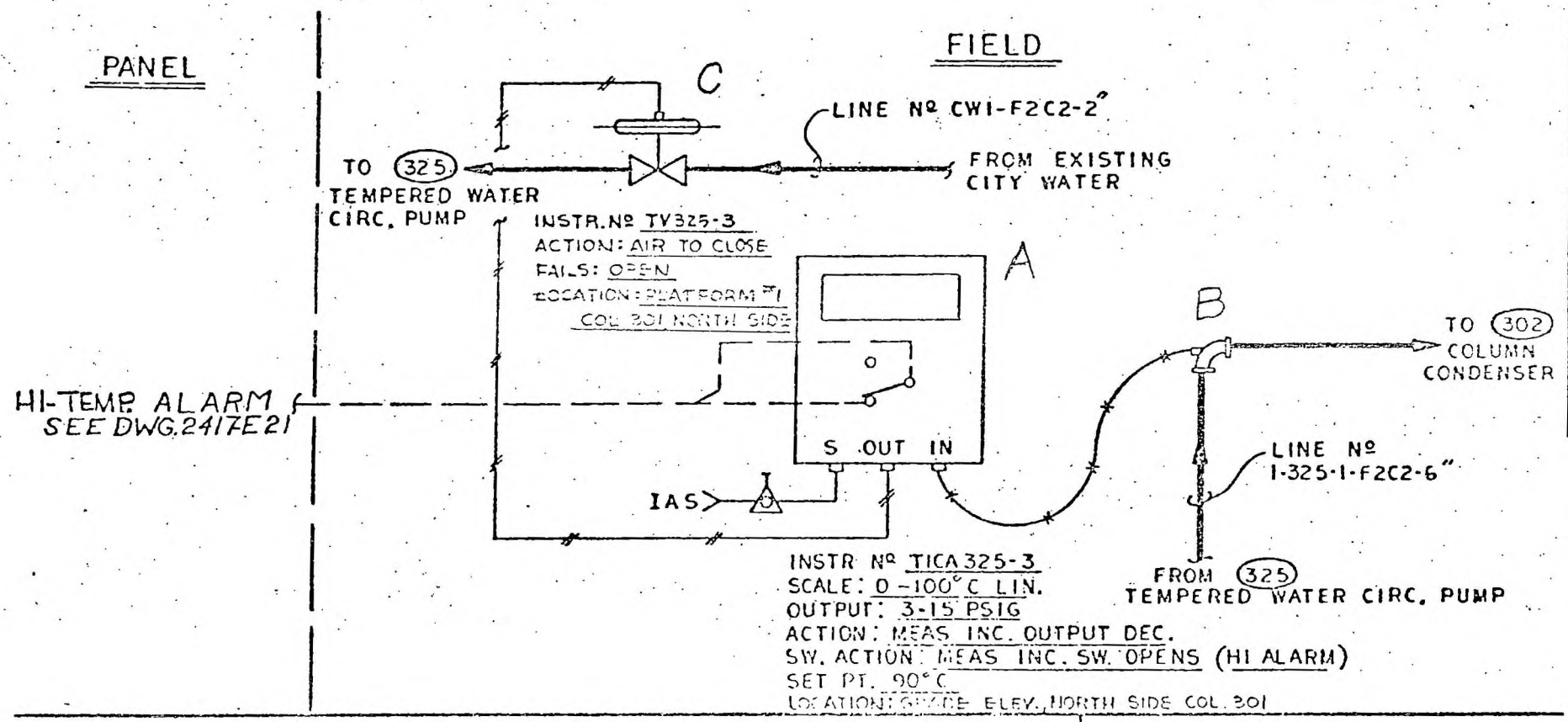

BILL OF MATERIAL

MARK NO.	QUAN	SPEC. 2417	P.O. NO. 2417-9-	DESCRIPTION
TICA 325-3	1	43	0008	TAYLOR MOD. 441RM112352-100 TEMP. IND. & CONTROLLER
TV 325-3	1	30	0020	FISHER MOD. 657-A, TEMP. CONTROL VALVE

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INSTRUMENT SCHEMATIC DIAGRAM

LOOP NO. TICA 325-3

FUNCTION TEMP. IND. ALARM CONTROL TO ITEM 325

C.E.A. NO.	REFERENCE NO.
2417	I6A

DEPARTMENT 246

LOOP NUMBER 325-3

CLASSIFICATION TIC-325-3

PCB-ARCH-EXT0373584

3.0 OPERATION OF LOOP

3.1 NORMAL OPERATION

3.1.1 Start-Up Instructions

The tempered water system must be full of water and the water supply pump must be on. This system must be in operation before the reboiler furnace is put into operation.

3.1.2 Shut-Down Instructions

The reboiler furnace must be off before shutting this system down. It is also advisable to close the dead-head valve at the vacuum jet.

3.1.3 Normal Operating Instructions

The circulating pump will be running. The water supply pump will be running and the temperature at set point. The set points are: 65°C. - MONO - 80°C.

3.1.4 Routine Checks Required

Check the multipoint recorder frequently to be sure the temperature is under control.

PCB-ARCH-EXT0373585

3.0 OPERATION

3.1 NORMAL OPERATION

Typical local temperature control loop.

3.2 INTERLOCKS

3.3 ABNORMAL OPERATIONS

3.3.1 Air Failure

Air failure to the loop will cause the control valve to open.

3.3.2 Power Failure

Loss of power will cause the alarm to be inoperative.

REVIEW

PCB-ARCH-EXT0373586

INSTRUMENT FUNCTION OUTLINE

DEPARTMENT 246

TITLE LIGHT ENDS RECEIVER LEVEL

LOOP NUMBER 328

SHEET 1 OF 5

CLASSIFICATION LIA-328

WRITTEN BY V. Brawley DATE 5/22/72 REV.BY DATE REV.NO.

1.0 NEED FOR LOOP

Reliable level measurement is essential in this receiver for proper balance of light ends received from the column and LE's feed to the chlorinators.

1.1 DESCRIPTION OF LOOP

1.1.1 Function

The function of this instrument is to measure and indicate the level of material in the light ends receiver and to provide an alarm on high or low level.

1.1.2 System Performance Required

± 2%

1.1.3 Accomplishment of Function

A diaphragm type level transmitter senses the liquid level in the tank and sends a proportional 3-15 psig air signal to a 0-100% indicator mounted near the transmitter. This signal is also sent to two pressure switches in the field cabinet which are set to provide an alarm at the panel on high or low level.

PCB-ARCH-EXT0373587

INSTRUMENT FUNCTION OUTLINE		DEPARTMENT	246
TITLE	LIGHT ENDS RECEIVER LEVEL	LOOP NUMBER	328
SHEET	2 OF 5	CLASSIFICATION	LIA-328

2.0 COMPONENT AND CALIBRATION DATA

OPERATING DATA

A. Transmitter

Location: Ground level, north side of tank.

Air Supply: 20 PSIG

Span: 150" W.C.

Output: 3-15 PSIG

B. Mercoid Switches (2- One high and One Low Levels)

Location: Inside furnace field cabinet.

Set Point-High: 14.5 PSIG
Set Point-Low: 4 PSIG

MECHANICAL DATA

A. Transmitter

Foxboro 13FA
Range: 0-150" W.C.

Output: 3-15 PSIG

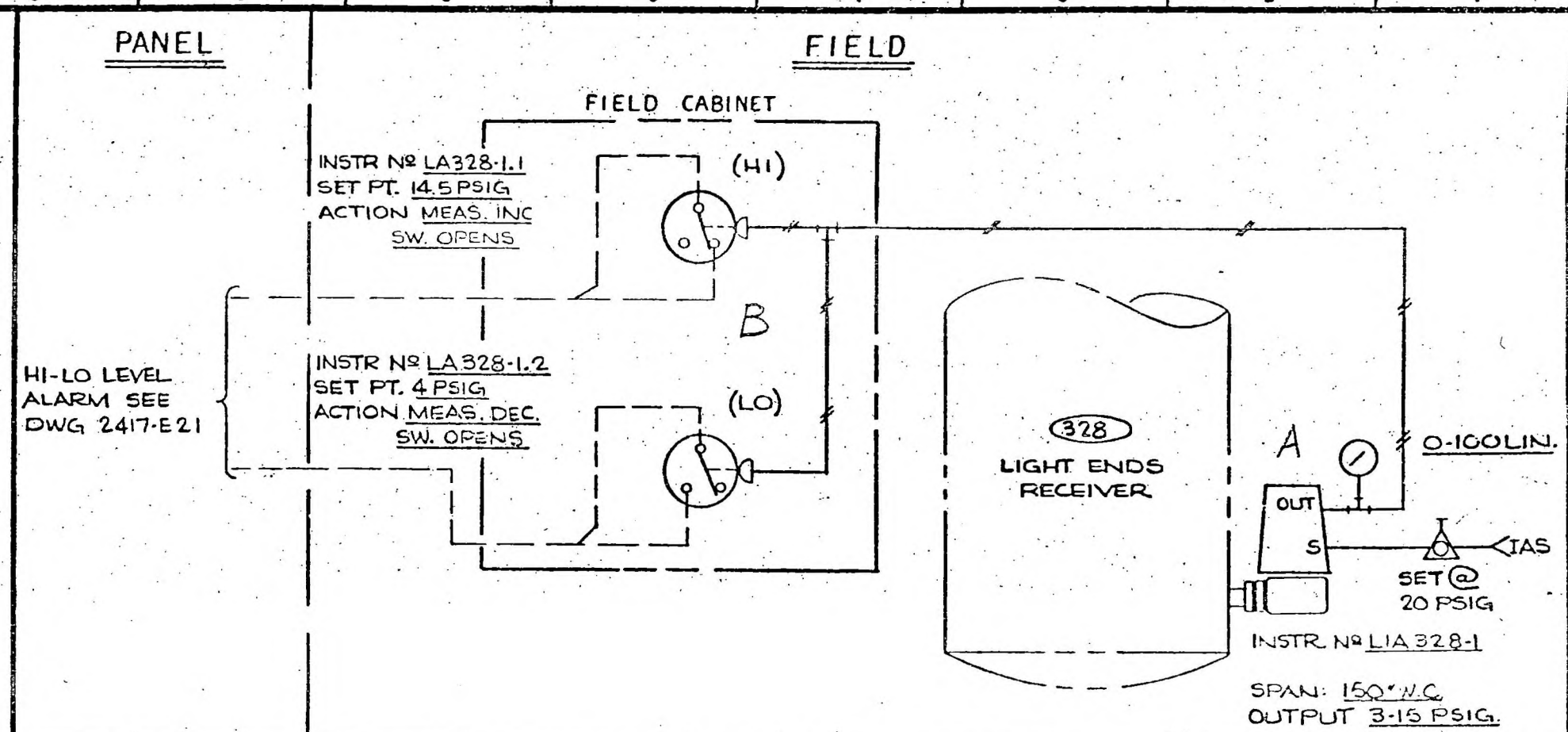
IPMO: 001

B. Switches

Mercoid AP-153-R36

High: 14.5 PSIG
Low : 4 PSIG

PCB-ARCH-EXT0373588



BILL OF MATERIAL

MARK NO.	QUAN	SPEC 2417	P.O. NO 2417-9-	DESCRIPTION
LIA 328-1	1	32	0043	FOXBORO MOD. 13FAI-MK 1-3:5 LEVEL TRANSMITTER
LA 328-1.1	1	54	DWG 2417 116	MERCOID MOD.# AP-153-R36 PRESSURE SWITCH
LA 328-1.2	1	54	DWG 2417-116	SAME AS ABOVE

MARK NO	QUAN	SPEC	P.O. NO	DESCRIPTION

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INSTRUMENT SCHEMATIC DIAGRAM
LOCATION LIA 328-1
FUNCTION LEVEL INDICATION & ALARM, IT. 37B

C.E.A. NO.	REFERENCE NO.
2417	I 7 B

LIA-329

PCB-ARCH-EXT0373589

3.0 OPERATION OF LOOP

3.1 NORMAL OPERATION

3.1.1. Start-Up Instructions

None

3.1.2. Shut-Down Instructions

None

3.1.3 Normal Operating Instructions

Unknown - tank not in service as of 5/72.

3.1.4 Routine Checks Required

Unknown

PCB-ARCH-EXT0373590

INSTRUMENT FUNCTION OUTLINE

DEPARTMENT 246

TITLE LIGHT ENDS RECEIVER LEVEL

LOOP NUMBER 328

SHEET 5 OF 5

CLASSIFICATION LIA-328

WRITTEN BY _____ DATE _____ REV.BY _____ DATE _____ REV.NO. _____

3.0 OPERATION

3.1 NORMAL OPERATION

Typical level loop.

3.2 INTERLOCKS

None

3.3 ABNORMAL OPERATIONS

3.3.1 Air Failure

Air failure to the loop will cause loss of indication and the low level alarm will actuate.

3.3.2 Power Failure

Power failure will cause alarms to be inoperative.

REVIEW

Robert Heidin

INSTRUMENT FUNCTION OUTLINE DEPARTMENT

TITLE #2 INTERMEDIATE STORAGE LEVEL LOOP NUMBER 329-1

SHEET 1 OF 5 CLASSIFICATION LIA-329-1

WRITTEN BY V. Brawley DATE 5/22/72 REV.BY DATE REV.NO.

1.0 NEED FOR LOOP

The still pot is both batch charged and "chain" fed with Aroclors in this tank. Accurate level measurement is essential for this very active in-process tank for smooth refining operations.

1.1 DESCRIPTION OF LOOP

1.1.1 Function

The function of this loop is to measure and indicate the level of material and to alarm on high level.

1.1.2 System Performance Required

± 2%

1.1.3 Accomplishment of Function

A diaphragm type level transmitter senses the liquid level in the tank and sends a proportional 3-15 psig air signal to a 0-100% indicator on the panel and also one near the transmitter. This signal is also sent to a pressure switch which actuates an alarm on high level.

PCB-ARCH-EXT0373592

INSTRUMENT FUNCTION OUTLINE	DEPARTMENT 246
TITLE #2 INTERMEDIATE STORAGE LEVEL	LOOP NUMBER 329-1
SHEET 2 OF 5	CLASSIFICATION LIA-329-1

2.0 COMPONENT AND CALIBRATION DATA

OPERATING DATA

A. Transmitter

Location: Bottom of tank, east side.

Air Supply:	20 PSIG
Output:	3-15 PSIG
Scale:	0-100 Linear
Span:	485" W.C.
Sp.Gr.:	1.25

B. Mercoid Switch

Location: In furnace field cabinet.

Set Point: 14.5 PSIG
(For high level alarm)

MECHANICAL DATA

A. Transmitter

Foxboro 13FA1

Range:	0-344" W.C.
Output:	3-15 PSIG

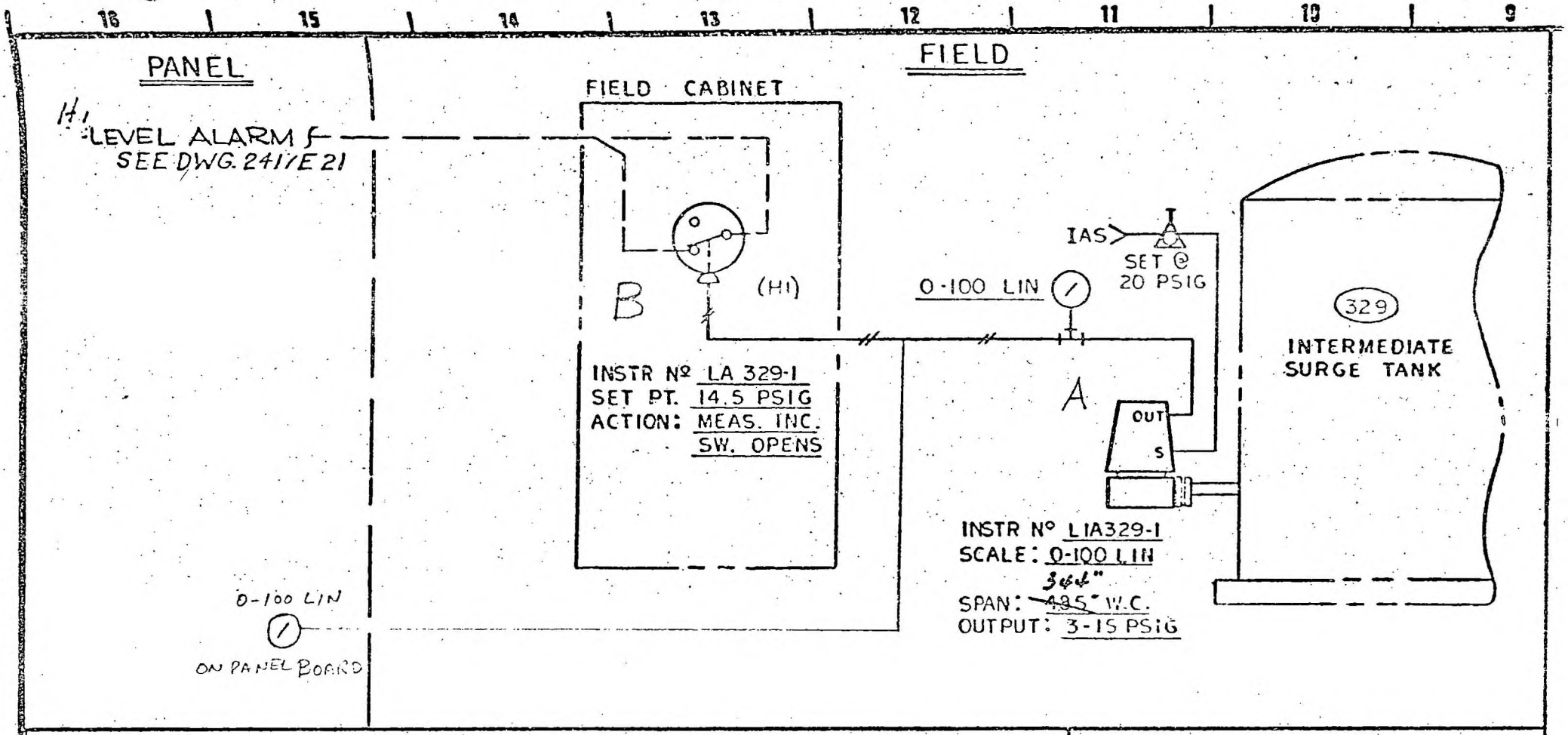
IPMO - 001

B. Pressure Switch

Mercoid AP-153-R36

Set Point: 14.5 PSIG on Rise

PCB-ARCH-EXT0373593



BILL OF MATERIAL

MARK NO.	QUAN	SPEC. 2417	P.O. NO. 2417-9-	DESCRIPTION
LIA 329-1	1	32	0038	FOXBORO MOD. # 13FA1-HK315 LEVEL TRANSMITTER & IND.
LA 329-1	1	54	DWG 2417-116	MERCOID MOD. #AP-153-R36 PRESSURE SWITCH

MARK NO.	QUAN	SPEC.	P.O. NO.	DESCRIPTION

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INSTRUMENT SCHEMATIC DIAGRAM

LOOP NO. LIA 329-1

FUNCTION LEVEL INDICATION & ALARM IT 329

C.E.A. NO.	REFERENCE NO.
2417	17 A

LIA-329-1

PCB-ARCH-EXT0373594

3.0 OPERATION OF LOOP

3.1 NORMAL OPERATION

3.1.1 Start-Up Instructions

None

3.1.2 Shut-Down Instructions

It may be necessary to shut down either the column (if the level is low) or the continuous chlorinators (if the level is high) before any work can be done to the transmitter. The tank must be completely empty before the transmitter can be removed.

3.1.3 Normal Operating Instructions

The level will be between 20% and 90%.

3.1.4 Routine Checks Required

Check the level frequently so the tank don't go empty (this would cause a loss of vacuum on the column and an emission), also so the tank doesn't run over.

PCB-ARCH-EXT0373595

3.2 INTERLOCKS

None

3.3 ABNORMAL OPERATIONS

3.3.1 Air Failure

Air failure to the loop will cause loss of indication.

3.3.2 Power Failure

Loss of power will cause alarm to be inoperative.

NOTE: N_2 is used to blanket the tank when making MONO. The zero of level transmitter should be set after N_2 blanketing system is in operation. N_2 enters and is regulated @ 4" W.C. and relieves at 7" W.C.. Since the low side is not compensated, it will be necessary to run the zero elevated @ almost 5" W.C.

REVIEW

PCB-ARCH-EXT0373596

INSTRUMENT FUNCTION OUTLINE | DEPARTMENT 246

TITLE LIME SLURRY CONTROL VALVE TIMER | LOOP NUMBER 352-1

SHEET 1 OF 5 | CLASSIFICATION KIC-352-1

WRITTEN BY V. Brawley DATE 5/18/72 REV.BY _____ DATE _____ REV.NO. _____

1.0 NEED FOR LOOP

Allow lime slurry to be mixed on a semi-continuous basis with the crude Aroclors on the way to intermediate storage. Lime mixing on this basis is necessary to neutralize essentially all the HCL dissolved in the Aroclors prior to charging the Aroclors to the still pot. This in turn is required to minimize the potential of chloride stress corrosion cracking in the 316 S.S. column.

1.1 DESCRIPTION OF LOOP

1.1.1 Function

The function of this loop is to control the flow rate by lime slurry addition to the product going to intermediate storage.

1.1.2 System Performance Required

± 2%

1.1.3 Accomplishment of Function

The flow rate is adjusted by two timers mounted on the panel which control the amount of time a pneumatic actuated ball valve is open and how long it is closed each cycle. The valve is continuously cycled open and closed after the open-close selector switch is turned to "open".

PCB-ARCH-EXT0373597

INSTRUMENT FUNCTION OUTLINE		DEPARTMENT	246
TITLE	LIME SLURRY CONTROL VALVE TIMER	LOOP NUMBER	352-1
SHEET	2 OF 5	CLASSIFICATION	KIC-352-1

2.0 COMPONENT AND CALIBRATION DATA

OPERATING DATA

A. Flow Valve

Location: On stair landing, north of #9 chlorinator on 2nd level

B. Solenoid Valve

Location: On stair landing, north of #9 chlorinator on 2nd level by the flow valve.

C. Timers (2)

1 for seconds open

1 for minutes closed

Location: On panel board in control room.

MECHANICAL DATA

A. Flow Valve

Hills McCanna F602CS PCS
1/4" Chrom. Plt. Ball - Valve -
Operator = Ramcon

Model R35FS
Air to Open

B. Solenoid Valve

ASCO 8317A 35

110 V 11 Watts

C. ATC Timer 305D

PCB-ARCH-EXT0373598

INSTRUMENT FUNCTION OUTLINE

DEPARTMENT 246

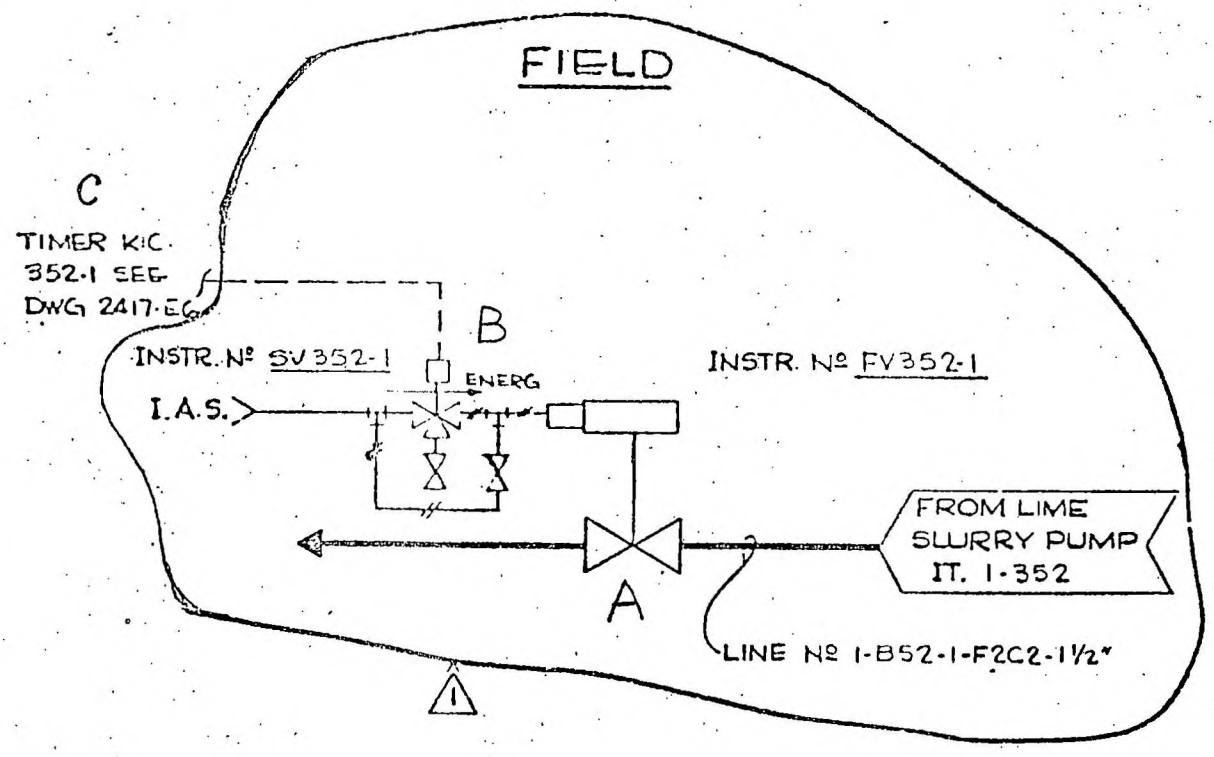
TITLE LIME SLURRY CONTROL VALVE TIMER

LOOP NUMBER 352-1

SHEET 3 OF 5

CLASSIFICATION KIC-352-1

WRITTEN BY _____ DATE _____ REV.BY _____ DATE _____ REV.NO. _____



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BILL OF MATERIAL

MARK NO	QUAN	SPEC	P O NO	DESCRIPTION
FV 352-1	1	30	0099	HILLS-McCANNA ¼" BALL VALVE W/ RAYDON ACTUATOR ADJUSTABLE STOPS 3 WAY 120V SOLENOID VALVE.

MARK NO	QUAN	SPEC	P O NO	DESCRIPTION

DISTRIBUTION SCHEMATIC DIAGRAM

LOOP NO FV-352-

FUNCTION LIME SLURRY CONTROL

C E A NO	REFERENCE NO
2417	ISD

PRINTS ISSUED TO P

PCB-ARCH-EXT0373599

3.0 OPERATION OF LOOP

3.1 NORMAL OPERATION

3.1.1 Start-Up Instructions

Continuous chlorinators should be running, set the timers and turn the selector switch to "open".

3.1.2 Shut Down Instructions

Set the selector switch on "closed".

3.1.3 Normal Operating Instructions

The light on the panel board will be on. The timers working and the level in the lime slurry tank going down at a steady rate.

3.1.4 Routine Checks Required

Check the above at least 4 times a shift to be sure the necessary percent of slurry is being added.

PCB-ARCH-EXT0373600

INSTRUMENT FUNCTION OUTLINE DEPARTMENT 246

TITLE LIME SLURRY CONTROL VALVE TIMER LOOP NUMBER 352-1

SHEET 5 OF 5 CLASSIFICATION KIC-352-1
WRITTEN BY DATE REV.BY DATE REV.NO.

3.0 OPERATION

3.1 NORMAL OPERATION

The slurry timer is turned on during the time material is going to intermediate storage from the chlorinators.

3.1.1 Start-Up Instructions

Set "open" timer for number of seconds valve is to be open (0-6 sec.).
Set "cycle" timer for number of minutes valve is to be closed (0-6 min.).
Turn selector switch to "open" position.

3.2 INTERLOCKS

3.3 ABNORMAL OPERATIONS

3.3.1 Air Failure

Upon air failure valve will fail closed.

3.3.2 Power Failure

Upon power failure valve will fail closed.

REVIEW

PCB-ARCH-EXT0373601

INSTRUMENT FUNCTION OUTLINE | DEPARTMENT 246

TITLE #2 & #3 ABSORBERS FLOW CONTROLLER | LOOP NUMBER 541-1

SHEET 1 OF 4 | CLASSIFICATION FICA-541-1

WRITTEN BY V. Brawley DATE 5/23/72 REV.BY _____ DATE _____ REV.NO. _____

1.0 NEED FOR LOOP

This loop is needed to insure proper flow of aroclor to the absorbers.

1.1 DESCRIPTION OF LOOP

1.1.1 Function of Loop

The function of this loop is to control the flow of material into the absorbers and to sound an alarm if flow is too low.

1.1.2 System Performance Required

The flow rate should be maintained ± 1/2 GPM of set point.

1.1.3 Accomplishment of Function

The flow rate is sensed by a differential pressure transmitter across an orifice plate in the line. The transmitter sends a 3-15 psig air signal to a flow indicating controller. The controller compares this signal to a set point and sends a 3-15 psig air signal to a control valve to compensate for variation from set point. The transmitter also sends an air signal to a pressure switch which activates an alarm on low flow.

PCB-ARCH-EXT0373602

2.0 COMPONENT AND CALIBRATION DATA

OPERATING DATA

A. FT-541-1 Differential Press. Trans

Location: Ground level, NE of Tank 530.

Supply: 20 psig
Output: 3-15 psig
Flow: 0-15 gpm
Span: 0-100" W.C.

B. FIC-32 Flow Indicating Controller

Location: Panel

Input: 3-15 psig
Output: 3-15 psig
Action Inc. Input
Dec. Output
Supply: 20 psig

C. FV-32 Control Valve

Location: 14' level, NE of Tank 530

Input: 3-15 psig
Action: Air to Open
Fails Close

D. FSA-32 Pressure Switch

Location: Panel

Input: 3-15 psig
Set Point: 33%
FCT: Lo Flow Alarm at 3.3 GPm
SPDT Contact/115 V., 10A

MECHANICAL DATA

A. Foxboro Integral Orifice Diff. Press. Trans. W/Piped & Mt'd. Air Set W/Gauge

Model #: 13A-HS2
Range: 0-200 to 0-850" W.C.
Calibrated Range: 0-400" W.C.
Body: 316 S.S.
Process Conn: 1/2" NPT
Orifice: .350" Bore
.316 S.S.
Accuracy: 1/2%
Serial #: 1947915

IPMO: 001

B. Fisher & Porter Flow Ind. Controlle

Model #: 51-1351 ABEC
Range: 3-15 psig sq. rt.
Scale: 0-100 sq. rt.
Prop. Band: 2-500%
Reset Rate: .02 to 5 min.
Accuracy: 1/2%
IMO:
IPMO: 165

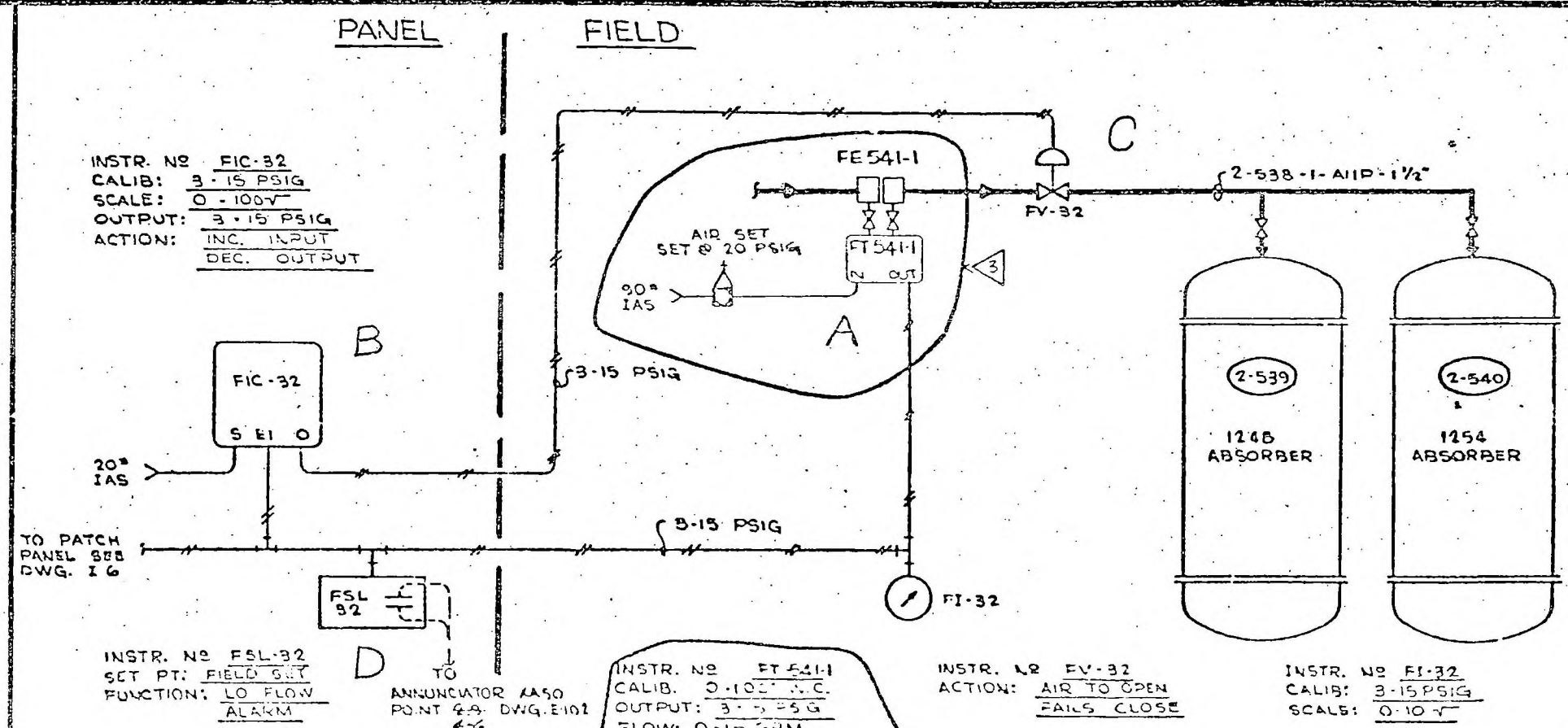
C. Fisher Gov. Control Valve #667-BF

Actuator Size 30 Travel 3/4"
1" 150# Flg. 316 S.S. Body
Packing Set 1U2546-0101
3/4" 316 S.S. Trim, Micro-Flute
Valve Plug 2J7335-3507
Valve Ring 1R1262-3507
Teflon Packing, Skirt-Top Guiding
Spare Valve S.C. 07-75671
IMO: 45
IPMO: 126
Serial #: 4435034

D. Barksdale Pressure Switch #DIT-H18

Range: 0-18 psig
Bronze Diaphragm: 1/4" IPS
Conduit Conn: 1/2" NPS
Setting Trips at 4.08# on drop
Stores Code: 44-73246

PCB-ARCH-EXT0373603



BILL OF MATERIAL

MARK NO	QUAN	SPEC. 1800	P O NO 1800-9	DESCRIPTION
FIC-32	1	12.1	0079	FISCHER & PORTER 5-1-BSIABEC INDICATING CONTROLLER
FT-541-1	1	2417-32	2417-0062	FOXBORO [illegible] TRANSMITTER W/FIELD & NTD AIRSET W/ GAGE
FI-541-1	1	2417-32	2417-0062	FOXBORO 3-12" RECEIVER GAGE [illegible] W/FT 541-1
FV-32	1	10.2	0055	[illegible] CONTROL VALVE FOR [illegible]
FSL-32	1	13.1	0112	BARKSDALE DIT-HIS PRESSURE SWITCH

MARK NO	QUAN	SPEC	P O NO	DESCRIPTION
FE541-1	1	2417-45	2417-0067	DANIEL MOD. M30 FW METER RUN

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INSTRUMENT SCHEMATIC DIAGRAM
LOOP NO. FICA-32
FUNCTION ABSORBERS INLET FLOW CONTR & ALARM

CEA NO	REFERENCE NO
1800	I-12 B

PCB-ARCH-EXT0373604

INSTRUMENT FUNCTION OUTLINE | DEPARTMENT 246

TITLE #2 & #3 ABSORBERS FLOW CONTROLLER | LOOP NUMBER 541-1

SHEET 4 OF 4 | CLASSIFICATION FICA-541-1

WRITTEN BY | DATE | REV.BY | DATE | REV.NO.

3.0 OPERATION OF LOOP

3.1 NORMAL OPERATION

3.1.1 Start-Up Instructions

The column should be running, on 1016, and ready to cut forward from total reflux.

3.1.2 Shut-Down Instructions

The column must be on total relfux, or down.

3.1.3 Normal Operating Instructions

The controller set point will be about 95 (14 gpm) during the 1st part of a run. After the reflux ratio changes the set point will be about 65 (9 gpm) on the controller. The flow is acutally split to send an equal amount of product through the two absorbers and flow is balanced sending a equal amount of flow through the two rotometers.

3.1.4 Route Checks Required

Check the level in the receiver frequently to hold it at 20%. Check the rotometers at least 2 times a shift to keep the flow equalized through the absorbers.

3.2 INTERLOCKS AND ALARMS

If the flow drops to about 3 gpm, the alarm will sound on the annunciator and the window marked "low flow #2 & 3 absorber".

3.3 ABNORMAL OPERATION

3.3.1 Air Failure

If the air fails, the valve will close and the alarm will sound.

3.3.2 Power Failure

If the power fails, the alarm will not sound.

REVIEW

3.3.3 Other

None

PCB-ARCH-EXT0373605