Process Engineering Department
Ponca City, Oklahoma

CLASS "A" DESIGN
AMS EMERGENCY KILL SYSTEM
ABERDEEN PVC PLANT

October 29, 1980

FINAL ISSUE

Lawrence J Kardos

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DTH 000104395

conoco

Interoffice Communication

To C. L. Miller, Aberdeen, Mississippi

From L. Z. Kardos, Ponca City, Oklahoma

Date October 29, 1980

Subject Final Issue of AMS Emergency Kill System--Aberdeen PVC Plant

Attached is the revised Class "A" design for the new AMS Emergency Kill System. This issue incorporates comments generated during the September 22, 1980, plant review meeting. The major changes from the previous issue are listed below:

1. Modify piping to use one injection line from grade to reactor top head for each AMS injection pot.

2. Relocate the AMS emergency injection header to reactor top head.

3. Add specifications for two AMS drum pump flex hoses (HF-102 and HF-202).

Lawrence Z. Kardos
Chemical Engineer
Chemicals Division
Process Engineering Department

ke
Enc
CC:
RAF(2):VEM:CRM:SJV:JB:JAD:AHS
MPB:VLT:RDM:JHM:WRF:DJR
CLP(3):RDJ:KRB

DTH 000104396

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AMS EMERGENCY KILL SYSTEM

ABERDEEN PVC PLANT

CLASS "A" DESIGN

AMS EMERGENCY KILL SYSTEM

ABERDEEN PVC PLANT

Basis

1. Provide separate emergency AMS addition pots to each existing reactor (total of eight). These pots are to provide 15-20 gallons AMS addition capacity and are located at grade.

2. Provide for automatic AMS addition from the board.

3. Provide for manual AMS addition from the reactor top head platform.

4. Provide for manual AMS injection from any pot to any reactor within a module, using high pressure flex hoses and the AMS emergency injection header.

LZK:ke
10/29/80

CLASS "A" DESIGN

AMS EMERGENCY KILL SYSTEM

ABERDEEN PVC PLANT

Process Description

Thirty-gallon pots are provided at grade for each of the reactors. The pots are to be filled with 20 gallons of AMS whenever a reactor is in polymerization. Level gauges are provided on each pot. It is recommended that the operator check the level at the beginning of each shift.

Each AMS pot will be maintained under 300 psig nitrogen pressure from a single 300 SCF nitrogen cylinder located at grade. Separate nitrogen cylinders are provided for each pot. The operator should check the nitrogen cylinder pressure and the AMS pot pressure at the beginning of each shift.

Spares are provided for each nitrogen addition cylinder. When a cylinder pressure falls below 1,200 psig, it should be removed from the rack and replaced.

AMS is pressured into the reactor through an existing nozzle on the reactor top head. Two automatic plug valves are provided in series (to minimize AMS leakage into the reactor). A pressure gauge is provided between the automatic valves to detect leakage. After each usage of AMS, the AMS addition line should be depressured to the reactor during the dump or rinse operation by closing the block valve at the AMS pot and opening the valves from the board.

The automatic AMS addition valves are to fail as is on loss of instrument air. The valves will be actuated by nitrogen. This precludes any freezing problems due to water in the instrument air system. A nitrogen cylinder (and spare) and a nitrogen header system are provided for this usage. A low pressure alarm will alert the boardman when cylinder pressure falls below 600 psig. To allow switching nitrogen cylinders quickly, the spare cylinder must be hooked up to the header.

A manual AMS injection line is also provided and serves as a back-up system should the automatic injection line not operate. Each manual injection line has two plug valves in series to minimize leakage of AMS into the reactor, and a pressure gauge between these valves to detect pressure buildup caused by leaks. These injection lines are operated by manually opening the two plug valves in series and pressuring the AMS into the reactor. The operator will then close these valves once the proper amount of AMS has been injected as indicated by the local low level indicator light.

An AMS emergency header will be provided to allow for the operating flexibility of being able to kill any reactor using any injection pot in the same reactor module. This allows the operator to manually inject AMS from another pot should the reactor's injection pot not function, or to allow for a rapid second addition of AMS should a reactor require it.

To kill a reactor using a remote injection pot, the operator will first block the manual injection line leading from the injection pot that belongs to the reactor to be killed. Two, 3/4-inch high pressure flex hoses will then be used to connect the pot to be used to the injection system of the reactor to be killed. This is done by attaching one end of each hose to the 3/4-inch connection on the manual injection line of the two systems that are to interface. The other end of the flex hoses are then connected to the AMS emergency injection header (1-HM-1900 for the V-11 area and 1-HM-2900 for the CRD area). The valves on the hose connections are all opened, and AMS is injected into the reactor by opening the manual block valves on the manual injection line of the reactor to be killed.

The AMS injection pots will be filled manually with a bucket through a funnel or with a drum pump through a special hose connection. The operator will block in, and vent the injection pot through a bleed valve on top of the pot. This allows the pot to be filled with the required amount of AMS (approximately 20 gallons) without pressure venting through the filling line. The filling line and bleed valves are closed and the system is readied for operation by checking that all valves are in their proper position and then pressurizing the pot to 300 psig.

UTILITIES

AMS EMERGENCY KILL SYSTEM

ABERDEEN PVC PLANT

Instrument Nitrogen	-
Pressurizing Nitrogen	100 SCF/Injection (1)
Utility Air	25 SCFM (2)

(1) This is the required volume for a complete drain of the injection pot.
(2) This is the required utility air for one drum pump under normal operation. Use is intermittent.

LZK:ke
10/29/80

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EQUIPMENT LIST

AMS EMERGENCY KILL SYSTEM

V-11 REACTOR AREA

ABERDEEN PVC PLANT

Item No.	Service
FA-110	AMS Injection Pot for D-300
FA-120	AMS Injection Pot for D-400
FA-130	AMS Injection Pot for D-500
FA-140	AMS Injection Pot for D-600
GA-100	Drum Pump (Pneumatic) for V-11 area
HF-100	Emergency Injection Flex Hose for V-11 area
HF-101	Emergency Injection Flex Hose for V-11 area
HF-102	Drum Pump Flex Hose for V-11 area
PA-100	Instrument Nitrogen Bottle for V-11 area
PA-100-S	Instrument Nitrogen Bottle for V-11 area (spare)
PA-110	Pressurizing Nitrogen Bottle for FA-110
PA-110-S	Pressurizing Nitrogen Bottle for FA-110 (spare)
PA-120	Pressurizing Nitrogen Bottle for FA-120
PA-120-S	Pressurizing Nitrogen Bottle for FA-120 (spare)
PA-130	Pressurizing Nitrogen Bottle for FA-130
PA-130-S	Pressurizing Nitrogen Bottle for FA-130 (spare)
PA-140	Pressurizing Nitrogen Bottle for FA-140
PA-140-S	Pressurizing Nitrogen Bottle for FA-140 (spare)

LZK:ke
10/29/80

EQUIPMENT LIST

AMS EMERGENCY KILL SYSTEM

CRD REACTOR AREA

ABERDEEN PVC PLANT

Item No.	Service
FA-210	AMS Injection Pot for D-741
FA-220	AMS Injection Pot for D-742
FA-230	AMS Injection Pot for D-743
FA-240	AMS Injection Pot for D-744
GA-200	Drum Pump (Pneumatic) for CRD area
HF-200	Emergency Injection Flex Hose for CRD area
HF-201	Emergency Injection Flex Hose for CRD area
HF-202	Drum Pump Flex Hose for CRD area
PA-200	Instrument Nitrogen Bottle for CRD area
PA-200-S	Instrument Nitrogen Bottle for CRD area (spare)
PA-210	Pressurizing Nitrogen Bottle for FA-210
PA-210-S	Pressurizing Nitrogen Bottle for FA-210 (spare)
PA-220	Pressurizing Nitrogen Bottle for FA-220
PA-220-S	Pressurizing Nitrogen Bottle for FA-220 (spare)
PA-230	Pressurizing Nitrogen Bottle for FA-230
PA-230-S	Pressurizing Nitrogen Bottle for FA-230 (spare)
PA-240	Pressurizing Nitrogen Bottle for FA-240
PA-240-S	Pressurizing Nitrogen Bottle for FA-240 (spare)

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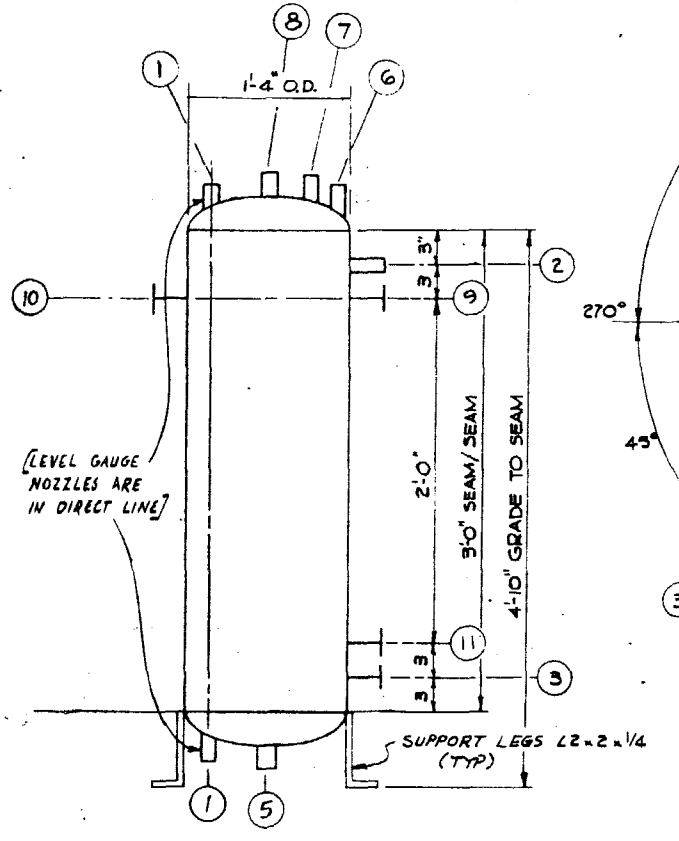
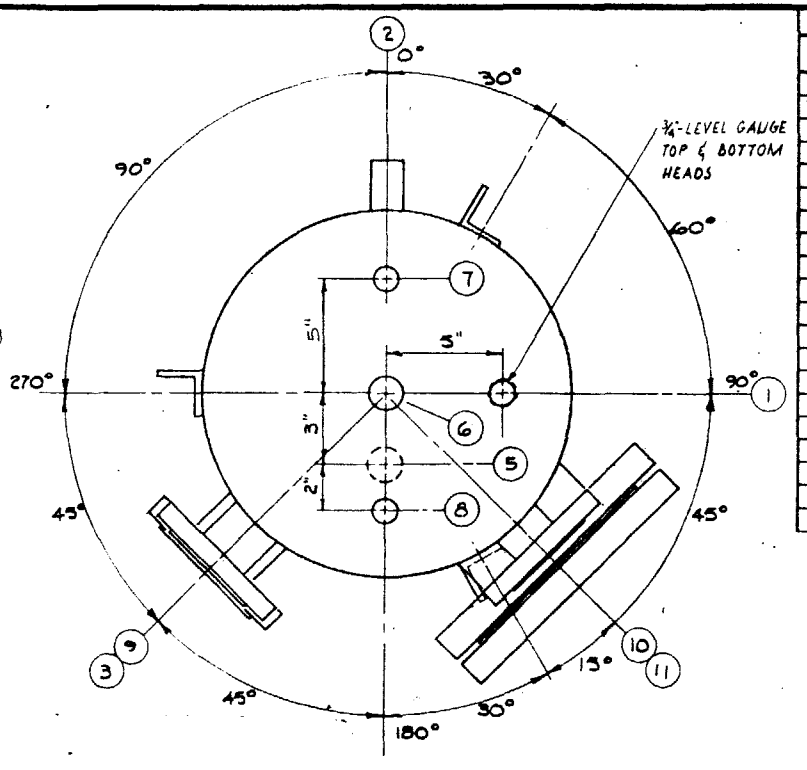
LZK:ke
10/29/80



ELEVATION AMS INJECTION BOMB



PLAN

NOZZLE SCHEDULE

Mark	No. Req'd	Size	Rating	Facing	Proj.	Nozzle Wall	Service
1	2	¾"	6000	CPLG	SCRD	—	LEVEL GAUGE
2	1	¾"	6000	CPLG	SCRD	—	AMS INLET
3	1	3"	300	RF	3"	.438	LEVEL SWITCH
5	1	1"	6000	CPLG	SCRD	—	AMS OUTLET
6	1	1"	6000	CPLG	SCRD	—	SAFETY VALVE
7	1	1"	6000	CPLG	SCRD	—	NITROGEN INLET
8	1	¾"	6000	CPLG	SCRD	—	PRESSURE GAUGE
9	1	2"	300	RF	3"	.343	SPARE
10	1	2"	300	RF	3"	.343	FUNNEL
11	1	6"	300	RF	5½"	.432	MANHOLE INSPECTION W/ BLD. FLG.

DTH 000104404

PRESSURE VESSEL DESIGN DATA

CODE STAMP REQ'D	DESIGN IN ACCORD. W/SECT. VIII DIV. 1	ASME CODE	
DESIGN PRESS. @ TEMP.	400 PSIG @	650 °F	
OPER. PRESS. @ TEMP.	300 PSIG @	70 °F	
POSTWELD HEAT TREAT.	NO RADIOGRAPH	NO	
JOINT EFFICIENCY – SHELL	85 % HEADS	85 %	
CORROSION ALLOW. – SHELL	1/8" HEADS 1/8"	NOZZLES 1/8"	
TYPE OF HEAD	2:1 ELLIPTICAL		

MATERIAL SPECIFICATIONS

SHELL	C.S.	HEADS	C.S.
LINING		SKIRT OR SADDLES	
BASE & CHAIRS		PIPE	
FLANGES	ANSI B16.5	COUPLINGS	
GASKETS	SPIRAL WOUND PER API 601		
BOLTS (EXTERNAL)	STUD BOLTS PER ASTM A-193 GR B-7 W/ TWO HEX		
BOLTS (INTERNAL)	NUTS EA. PER ASTM A-194 GR 2-H		
INTERNALS (EXCEPT AS NOTED)			
TRAYS		CAPS	

MANWAYS & HANDHOLES PURN. W/BLD. FLG., STUDS & GASKET	YES
WIND LOAD DESIGN PER ANSI A58.1 – 1972	
EARTHQUAKE DESIGN PER U.B.C., SEC. 2314, 1970 ED., VOL. 1	
OPERATING FLUID DENSITY @ TEMP.	62.4 LBS/FT.³ @ 70 °F
FIREPROOFING (BY OTHERS) INSIDE SKIRT THK.	MATERIAL DENSITY
OUTSIDE SKIRT THK.	lbs/ft.³
INSULATION (BY OTHERS) THK. – DENSITY	lbs/ft.³
SANDBLAST ALL OUTSIDE SURFACES PER SSPC-SP6-63	YES
PAINT ALL OUTSIDE SURFACES W/INORGANIC ZINC, 2 1/2 TO 3 1/2 MILS, DFT	YES
INTERNALS TO BE INSTALLED IN	(EXCEPT AS NOTED)

STANDARD REFERENCES (* Fabricators Std. Design Accepted w/Prior Approval)

C-7	VERT. VESSEL BASE RING*	C-13	SKIRT SUPPORT
C-9	HORIZ. VESSEL SADDLES*	C-14.1	VORTEX BREAKER
C-10	SIDE MANWAY DAVIT	B-1.8	HOT INSUL. DTLS. – VERT. VESSEL
C-10.1	TOP MANWAY DAVIT	B-1.9	HOT INSUL. DTLS. – VERT. VESSEL
C-11	MANWAY HINGED COVER	B-1.10	HOT INSUL. DTLS. – HORIZ. VESSEL
C-12	VESSEL DAVIT	B-1.14	SKIRT INSUL. DETAILS
C-12.1	VESSEL DAVIT (ALTERNATE)	B-2.4	COLD INSUL. DTLS. – VESSELS

NOTES

1. EIGHT VESSELS REQD.
2. FABRICATOR SHALL DESIGN & FABRICATE LIFTING LUGS.
3. VESSELS SHALL BE DESIGNED & STAMPED PER ASME CODE SECTION VIII DIV. 1.

ISU	DATE	DESCRIPTION	BY	CKD	APD
2	8/12/80	REVISE CLASS 'A' DESIGN	CFD	LZK	RDM
1	8-6-80	CLASS A DESIGN	MCB	LZK	RDM

CONTINENTAL OIL COMPANY
ENGINEERING CENTER
PONCA CITY, OKLAHOMA

ABERDEEN MISS. PVC PLANT
AMS INJECTION BOMBS: FA-110, FA-120
FA-130, FA-140, FA-210, FA-220, FA-230, FA-240
EMERGENCY KILL SYSTEM

APPD: K.R. Bates
DATE: 8-7-80

No. SD-2838-45-1-C

C.E.D. STD. DWG. 8-1-78
F-4-548-2

ENGINEERING CENTER
PONCA CITY, OKLAHOMA
SPECIFICATION SHEET

A.F.E. NO. _____
DATE 12-6-80 W. O. NO. _____
MADE BY LZK INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B. M. NO _____ P. O. NO. _____

PLANT ABERDEEN PVC PROJECT: AMS EMERGENCY KILL SYSTEM

ITEM NO
SERVICE GA-100 + GA-200

SERVICE AMS DRUM PUMP (1)(3)

TYPE AIR-DRIVEN VERTICLE DRUM PUMP (2)

MODEL CHEMTROL SERIES CP-1040, SUPPLIED BY CELANESE PIPING SYSTEMS INC. OR A CONOCO APPROVED EQUAL

PERFORMANCE LINEAR CURVE BETWEEN 20 GPM @ 0' HEAD TO 0 GPM @ 28' HEAD

NOTE

(1) PUMPS WILL BE USED TO TRANSFER AMS FROM 55 GALLON DRUMS INTO THE INJECTION POTS. GA-100 IS FOR THE V-11 REACTOR AREA + GA-200 FOR CRD. INJECTION POT MUST BE VENTED PRIOR TO AMS TRANSFER (FILLING).

(2) PLANT AIR FROM EXISTING UTILITY STATIONS WILL BE USED TO DRIVE GA-100 AND GA-200 @ 80 PSIG

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(3) THE INJECTION POTS WILL BE FILLED BY THE DRUM PUMP USING A LOW PRESSURE FLEX HOSE. A DRUM PUMP AND HOSE WILL BE PROVIDED FOR EACH MODULE.

10/29/80

SHEET _____ OF _____ REV _____

ENGINEERING CENTER
PONCA CITY, OKLAHOMA
SPECIFICATION SHEET

A.F.E. NO. _____
DATE 8-8-80 W. O. NO. _____
MADE BY LZK INQ. NO. _____
APP'D BY RAM REQ. NO. _____
B. M. NO. _____ P. O. NO. _____

PLANT ABERDEEN PVC PROJECT: AMS EMERGENCY KILL SYSTEM

ITEM NO
SERVICE HF-100, HF-101, HF-200 AND HF-201

SERVICE: EMERGENCY AMS INJECTION FLEX HOSES

REQUIRED FOUR (1)

TYPE 10 foot Long 3/4" High PRESSURE FLEX HOSE (2) (3)(4)

FLUID SPECIFICATIONS

FLUID AMS (α-METHYLSTYRENE) LIQUID

TEMPERATURE 70°F (AMBIENT)
PRESSURE 400 psig

NOTES.

(1) Two FLEX hoses per REACTOR MODULE, 100 SERIES for THE V-11 AREA AND 200 SERIES for THE CRD
(2) Hoses ARE TO BE EQUIPED WITH QUICK-CONNECT Hose couplings (3/4").
(3) TO BE USED FOR INJECTION OF AMS FROM ANY INJECTION POT TO ANY REACTOR.
(4) CHEMICALLY ACCEPTABLE MATERIALS FOR AMS ARE VITON, POLYETHYLENE AND TEFLON

DTH 000104406

10/29/80

SHEET _____ OF _____ REV _____

ENGINEERING CENTER
PONCA CITY, OKLAHOMA
SPECIFICATION SHEET

A.F.E. NO. _____
DATE 10-1-80 W. O. NO. _____
MADE BY LBK INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B. M. NO _____ P. O. NO. _____

PLANT ABERDEEN PVC PROJECT: AMS EMERGENCY KILL SYSTEM

ITEM NO
SERVICE HF-102 & HF-202

SERVICE: AMS DRUM PUMP HOSES

#REQUIRED: TWO (1)

TYPE: 5 foot Long 3/4" Low PRESSURE FLEX HOSE (2)(3)

FLUID SPECIFICATIONS:

FLUID AMS (α-METHYLSTYRENE) LIQUID
TEMP 70°F (AMBIENT)
PRESSURE 15 PSIG (DESIGN - 20 PSIG)

NOTES

(1) ONE HOSE AND DRUM PUMP FOR EACH REACTOR MODULE

DTH 000104407

(2) HOSES ARE TO BE EACH EQUIPPED WITH ONE QUICK-CONNECT COUPLING (3/4") AND ONE SCREW COUPLING (3/4"). THE SCREW COUPLING WILL BE USED TO PERMANENTLY ATTACH THE HOSE TO IT'S RESPECTIVE DRUM PUMP.

(3) CHEMICALLY ACCEPTABLE MATERIALS FOR AMS USAGE ARE VITON, POLYETHYLENE AND TEFLON.

10/29/80

SHEET _____ OF _____ REV _____

ENGINEERING CENTER
PONCA CITY, OKLAHOMA
SPECIFICATION SHEET

A.F.E. NO. _____
DATE 6-6-80 W. O. NO. _____
MADE BY LRK INQ. NO. _____
APP'D BY RJM REQ. NO. _____
B. M. NO. _____ P. O NO. _____

PLANT ABERDEEN PVC PROJECT: AWIS EMERGENCY KILL SYSTEM

ITEM NO PA-100, 110, 120, 130, 140, 200, 210, 220, 230, 240, (1
SERVICE PA-100-S 110-S 120-S 130-S 140-S 200-S 210-S 220-S 230-S 240-S (4

SERVICE NITROGEN BOTTLES

REQUIRED 20 (2)

FLUID SPECIFICATIONS

FLUID: NITROGEN GAS
INITIAL PRESSURE: 2200 psig (3)
INITIAL CAPACITY: 300 SCF (3)

NOTE

(1) PA-100-S IS THE SPARE PAIRED WITH PA-100, ECT.

(2) ALL NITROGEN BOTTLES ARE TO BE GROUPED IN PAIRS (ACTIVE AND SPARE) WITH THE FUNCTION of EACH TO BE CLEARLY MARKED. BOTTLES ARE TO BE STORED IN BOTTLE RACKS FOR SAFTY. NO EMTPY BOTTLES ARE TO BE STORED WITH FULL BOTTLES, AND EACH BOTTLE IS TO BE MARKED AS TO ITS STATUS.

(3) TO BE CONFIRMED BY VENDOR

(4) 100 SERIES ARE FOR V-11 AREA AND 200 SERIES ARE FOR CRD.

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10/29/80

SHEET _____ OF _____ REV _____

INSTRUMENT LIST

AMS EMERGENCY KILL SYSTEM

V-11 REACTOR AREA

ABERDEEN PVC PLANT

Item No.	Service
CV-110	Automatic Injection Line On/Off Control Valve for FA-110
CV-111	Automatic Injection Line On/Off Control Valve for FA-110
CV-120	Automatic Injection Line On/Off Control Valve for FA-120
CV-121	Automatic Injection Line On/Off Control Valve for FA-120
CV-130	Automatic Injection Line On/Off Control Valve for FA-130
CV-131	Automatic Injection Line On/Off Control Valve for FA-130
CV-140	Automatic Injection Line On/Off Control Valve for FA-140
CV-141	Automatic Injection Line On/Off Control Valve for FA-140
HS-110	Automatic Injection Hand Switch for D-300
HS-120	Automatic Injection Hand Switch for D-400
HS-130	Automatic Injection Hand Switch for D-500
HS-140	Automatic Injection Hand Switch for D-600
LG-110	FA-110 Level Gauge
LG-120	FA-120 Level Gauge
LG-130	FA-130 Level Gauge
LG-140	FA-140 Level Gauge
LLI-110	FA-110 Low Level Indicator
LLI-111	FA-110 Low Level Indicator
LLI-120	FA-120 Low Level Indicator
LLI-121	FA-120 Low Level Indicator
LLI-130	FA-130 Low Level Indicator
LLI-131	FA-130 Low Level Indicator
LLI-140	FA-140 Low Level Indicator
LLI-141	FA-140 Low Level Indicator
LS-110	FA-110 Level Switch
LS-120	FA-120 Level Switch
LS-130	FA-130 Level Switch
LS-140	FA-140 Level Switch

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Instrument List
Page 2

Item No.	Service
PAL-101	V-11 Area Instrument Nitrogen Bottle Low Pressure Alarm
PAL-110	FA-110 Low Pressure Alarm
PAL-120	FA-120 Low Pressure Alarm
PAL-130	FA-130 Low Pressure Alarm
PAL-140	FA-140 Low Pressure Alarm
PCV-100	V-11 Area Instrument Nitrogen Pressure Regulator
PCV-110	FA-110 Pressure Regulator
PCV-120	FA-120 Pressure Regulator
PCV-130	FA-130 Pressure Regulator
PCV-140	FA-140 Pressure Regulator
PG-110	FA-110 Pressure Gauge
PG-120	FA-120 Pressure Gauge
PG-130	FA-130 Pressure Gauge
PG-140	FA-140 Pressure Gauge
PG-112	Manual Injection Double Block Pressure Gauge
PG-122	Manual Injection Double Block Pressure Gauge
PG-132	Manual Injection Double Block Pressure Gauge
PG-142	Manual Injection Double Block Pressure Gauge
PG-113	D-300 Pressure Gauge (existing)
PG-123	D-400 Pressure Gauge (existing)
PG-133	D-500 Pressure Gauge (existing)
PG-143	D-600 Pressure Gauge (existing)
PG-115	PCV-110 Inlet Pressure Gauge
PG-125	PCV-120 Inlet Pressure Gauge
PG-135	PCV-130 Inlet Pressure Gauge
PG-145	PCV-140 Inlet Pressure Gauge
PG-116	PCV-110 Outlet Pressure Gauge
PG-126	PCV-120 Outlet Pressure Gauge
PG-136	PCV-130 Outlet Pressure Gauge
PG-146	PCV-140 Outlet Pressure Gauge
PG-117	Automatic Injection Double Block Pressure Gauge
PG-127	Automatic Injection Double Block Pressure Gauge
PG-137	Automatic Injection Double Block Pressure Gauge
PG-147	Automatic Injection Double Block Pressure Gauge
PG-118	PCV-100 Outlet Pressure Gauge
PG-119	PCV-100 Inlet Pressure Gauge

Instrument List
Page 3

Item No.	Service
PSV-110	FA-110 Pressure Relief Valve
PSV-120	FA-120 Pressure Relief Valve
PSV-130	FA-130 Pressure Relief Valve
PSV-140	FA-140 Pressure Relief Valve
RD-110	FA-110 Rupture Disc
RD-120	FA-120 Rupture Disc
RD-130	FA-130 Rupture Disc
RD-140	FA-140 Rupture Disc

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10/29/80

INSTRUMENT LIST

AMS EMERGENCY KILL SYSTEM

CRD REACTOR AREA

ABERDEEN PVC PLANT

Item No.	Service
CV-210	Automatic Injection Line On/Off Control Valve for FA-210
CV-211	Automatic Injection Line On/Off Control Valve for FA-210
CV-220	Automatic Injection Line On/Off Control Valve for FA-220
CV-221	Automatic Injection Line On/Off Control Valve for FA-220
FA-230	Automatic Injection Line On/Off Control Valve for FA-230
FA-231	Automatic Injection Line On/Off Control Valve for FA-230
FA-240	Automatic Injection Line On/Off Control Valve for FA-240
FA-241	Automatic Injection Line On/Off Control Valve for FA-240
HS-210	Automatic Injection Hand Switch for D-741
HS-220	Automatic Injection Hand Switch for D-742
HS-230	Automatic Injection Hand Switch for D-743
HS-240	Automatic Injection Hand Switch for D-744
LG-210	FA-210 Level Gauge
LG-220	FA-220 Level Gauge
LG-230	FA-230 Level Gauge
LG-240	FA-240 Level Gauge
LLI-210	FA-210 Low Level Indicator
LLI-211	FA-210 Low Level Indicator
LLI-220	FA-220 Low Level Indicator
LLI-221	FA-220 Low Level Indicator
LLI-230	FA-230 Low Level Indicator
LLI-231	FA-230 Low Level Indicator
LLI-240	FA-240 Low Level Indicator
LLI-241	FA-240 Low Level Indicator
LS-210	FA-210 Level Switch
LS-220	FA-220 Level Switch
LS-230	FA-230 Level Switch
LS-240	FA-240 Level Switch

DTH 000104412

Instrument List
Page 2

Item No.	Service
PAL-201	CRD Area Instrument Nitrogen Bottle Low Pressure Alarm
PAL-210	FA-210 Low Pressure Alarm
PAL-220	FA-220 Low Pressure Alarm
PAL-230	FA-230 Low Pressure Alarm
PAL-240	FA-240 Low Pressure Alarm
PCV-200	CRD Area Instrument Nitrogen Pressure Regulator
PCV-210	FA-210 Pressure Regulator
PCV-220	FA-220 Pressure Regulator
PCV-230	FA-230 Pressure Regulator
PCV-240	FA-240 Pressure Regulator
PG-210	FA-210 Pressure Gauge
PG-220	FA-220 Pressure Gauge
PG-230	FA-230 Pressure Gauge
PG-240	FA-240 Pressure Gauge
PG-212	Manual Injection Double Block Pressure Gauge
PG-222	Manual Injection Double Block Pressure Gauge
PG-232	Manual Injection Double Block Pressure Gauge
PG-242	Manual Injection Double Block Pressure Gauge
PG-213	D-741 Pressure Gauge
PG-223	D-742 Pressure Gauge
PG-233	D-743 Pressure Gauge
PG-243	D-744 Pressure Gauge
PG-215	PCV-210 Inlet Pressure Gauge
PG-225	PCV-220 Inlet Pressure Gauge
PG-235	PCV-230 Inlet Pressure Gauge
PG-245	PCV-240 Inlet Pressure Gauge
PG-216	PCV-210 Outlet Pressure Gauge
PG-226	PCV-220 Outlet Pressure Gauge
PG-236	PCV-230 Outlet Pressure Gauge
PG-246	PCV-240 Outlet Pressure Gauge
PG-217	Automatic Injection Double Block Pressure Gauge
PG-227	Automatic Injection Double Block Pressure Gauge
PG-237	Automatic Injection Double Block Pressure Gauge
PG-247	Automatic Injection Double Block Pressure Gauge
PG-218	PCV-200 Outlet Pressure Gauge
PG-219	PCV-200 Inlet Pressure Gauge

Instrument List
Page 3

Item No.	Service
PSV-210	FA-210 Pressure Relief Valve
PSV-220	FA-220 Pressure Relief Valve
PSV-230	FA-230 Pressure Relief Valve
PSV-240	FA-240 Pressure Relief Valve
RD-210	FA-210 Rupture Disc
RD-220	FA-220 Rupture Disc
RD-230	FA-230 Rupture Disc
RD-240	FA-240 Rupture Disc

LZK:ke
10/29/80

CONOCO

Continental Oil Company
Engineering Center
Ponca City, Oklahoma
Control Valves

SPECIFICATION SHEET
PROJECT NO
A F E NO
DATE 6-5-80 INQ NO
MADE BY LBK REQ NO
APP'D BY RDM P O NO

PLANT ABERDEEN PVC PROJECT AMS EMERGENCY KILL SYSTEM

	GENERAL			CV-110, 120, 130, 140		CV-111, 121, 131, 141		CV-210, 220, 230, 240		CV-211, 221, 231, 241
1	ITEM NO. & TAG (1)									
2	SERVICE									
	# REQUIRED			4		4		4		4
3	LINE SIZE									
4	MANUFACTURER (5)			TUFLINE		TUFLINE		TUFLINE		TUFLINE
5	MODEL NO.									
6										
	SERVICE CONDITIONS									
7	FLUID			AMS		AMS		AMS		AMS
8	TEMP °F	NORMAL	MAX	70	120	70	120	70	120	70	120
9	PRESS., INLET,	NORMAL	MAX	300	400	300	400	300	400	300	400
10	Δ P	MIN. NORMAL	MAX		400		400		400		400
11	MOLECULAR WEIGHT		A.P.I.	118		118		118		118	
12	SP. GR. @ 60 F.		@ F.T.	0.91		0.91		0.91		0.91	
13	WEIGHT % VAPOR IN		OUT	0	0	0	0	0	0	0	0
14	VISCOSITY @ F.T. & P.										
15	RATE NOR. LB HR. (SCFH) GPM										
16	RATE MAX. LB HR (SCFH) GPM										
17	NORMAL FLOW Cv										
18											
	BODY									
19	BODY SIZE	PORT SIZE		1"		3"		1"		3"	
20	TYPE (ANGLE OR GLOBE)										
21	MATERIAL			304 SS		304 SS		304 SS		304 SS	
22	END CONNECTIONS			1"-300# RF		3"-300# RF		1"-300# RF		3"-300# RF	
23	BONNET										
24	Cv										
25	LUBRICATOR	ISO. VAL									
26	PACKING										
27	TRAVEL INDICATOR										
28	FIRE SAFE			YES		YES		YES		YES	
	TRIM									
29	TYPE INNER VAL	NO. OF PORTS		PLUG		PLUG		PLUG		PLUG	
30	PLUG & SEAT MATERIAL			304 SS		304 SS		304 SS		304 SS	
31				W/TFE SLEEVES		W/TFE SLEEVES		W/TFE SLEEVES		W/TFE SLEEVES	
	ACTUATOR									
32	TYPE									
33	FAILURE POSITION			AS IS (2)		AS IS (2)		AS IS (2)		AS IS (2)	
34											
	POSITIONER									
35	INPUT SIGNAL	OUTPUT SIGNAL									
36	BYPASS	GAUGES									
37	MANUFACTURER										
38	MODEL NO.										
	ACCESSORIES									
39				(3) (4)		(3) (4)		(3) (4)		(3) (4)	

NOTES: (1) 100 SERIES IS FOR V-11 AREA AND 200 SERIES IS FOR CRD

DTH 000104415

( ) INDICATES ITEM CHANGED ON LATEST REVISION.
(X) INDICATES MANUFACTURER TO GIVE REQUESTED INFORMATION IN HIS QUOTATION.

SHEET 1 OF 2 REV.

4-435
REV. 7-24-80
10/29/80

ENGINEERING CENTER
PONCA CITY, OKLAHOMA
SPECIFICATION SHEET

A.F.E. NO. _____
DATE 6-5-80 W. O. NO. _____
MADE BY LZK INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B. M. NO. _____ P. O NO. _____

PLANT ABERDEEN PVC PROJECT: AMS EMERGENCY KILL SYSTEM

ITEM NO
SERVICE CONTROL VALVES

NOTES (CONTINUED)

(2) INSTRUMENT AIR TO VALVES IS TO BE NITROGEN, PROVIDED BY PA-100/100-S IN THE V-11 AREA AND PA-200/200-S IN THE CRD N_2 SUPPLY SYSTEM IS TO BE WITHOUT BLEEDS OR LEAKS. VALVES AND HAND SWITCHES ARE TO BE TIED INTO THE 24 VDC BACKUP POWER.

(3) PROVIDE BOARD-MOUNTED HAND SWITCH FOR EACH VALVE PAIR. THE SWITCH POSITIONS ARE TO BE off/AUTO/MANUAL WITH INDICATOR LIGHTS. THE MANUAL SWITCH FUNCTIONS AS A MOMENTARY CONTACT - DEAD MAN SWITCH TO OVER-RIDE THE VALVE-LEVEL SWITCH INTERLOCK. FOR THE INJECTION POTS, BOARD INDICATION OF VALVE POSITION TO BE OBTAINED FROM POSITION SWITCHES MOUNTED ON EACH CONTROL VALVE

(4) CONTROL VALVES ARE TO BE EQUIPPED WITH MANUAL OPERATORS FOR EMERGENCY USE, AND LOCAL POSITION INDICATORS.

(5) OR CONOCO APPROVED EQUAL

DTH 000104416

CONOCO

ENGINEERING CENTER

PONCA CITY, OKLAHOMA

SPECIFICATION SHEET

GAUGE GLASSES & COCKS

A.F.E. NO. _____
DATE 6-5-80 W. O. NO. _____
MADE BY GBK INQ. NO. _____
APP'D BY RDM REQ NO. _____
R.M. NO. _____ P.O. NO. _____

PLANT ABERDEEN PVC PROJECT AMS EMERGENCY MILL SYSTEM

1	GAUGE GLASSES					31	GAUGE COCKS				
2	SUPPLY	GAUGES & COCKS		GAUGES ONLY		32	SUPPLY		COCKS ONLY		
3	NO NIPPLES REQUIRED					33	TYPE	OFFSET		ANGLE	
4	TYPE	TRANSPARENT	TUBULAR	REFLEX X		34	CONNECTIONS-NPT				
5	CONNECTIONS	1/2"	3/4" X	"		35		VESSEL	GAUGE	GAUGES	
6		TOP & BOTTOM X	SIDE	BACK		36		MALE	FEMALE	FEMALE	
7		WELDING PAD	OTHER			37		1/2"	1/2"	1/2"	
8	MATERIAL	STEEL	OTHER			38		3/4"	3/4"	3/4"	
9	MINIMUM RATING	400	PSIG @	120 °F		39		OTHER			
10						40			BODY	TRIM	
11	TAG No.	LG-110, 120, 130, 140				41	MAT'L				
12		LG-210, 220, 230, 240				42	MINIMUM RATING		PSIG @	°F	
13						43	CONSTRUCTION:		PLAIN	QUICK	
14						44			CLOSING	CLOSING	
15						45			HANDWHEEL	LEVEL HANDLE	
16						46	VESSEL CONN.		PLAIN UNION	SOLID SHANK	
17						47			SPHERICAL UNION	OTHER	
18	ACCESSORIES					48					
19	ILLUMINATORS:					49	GAUGE CONN.		PLAIN UNION	PLAIN	
20	MICA SHIELDS:					50			SPHERICAL UNION	OTHER	
21	HEATING-COOLING CHAMBERS					51					
22	INTERNAL	EXTERNAL				52	BONNET	SCREWED	UNION	BOLTED	
23	NON-FROSTING TYPE:					53	SCREW	INSIDE	OUTSIDE		
24	CALIBRATED SCALE					54	RENEWABLE SEAT		YES	NO	
25	SUPPORT PLATES:					55	BALL CHECKS		YES	NO	
26	GUARD RODS:					56	PACKING		MFR STD	OTHER	
27	OTHER					57					
28						58	MFR MODEL NO.				
29						59					
30						60					

61/62	TAG NO.	REV.	QUAN.	NO. OF SECT.	VISIBLE LENGTH	Q CPLGS	MFR. MOD. NO.	OPER. PRESS	OPER. TEMP.	SERVICE	ACCES-SORIES	NOTES
63								PSIG	°F			
64	LG-110		1	3	33 3/4"			300	70	FA-110		
65	LG-120		1	3	33 3/4"			300	70	FA-120 (vall)		
66	LG-130		1	3	33 3/4"			300	70	FA-130		
67	LG-140		1	3	33 3/4"			300	70	FA-140		
68												
69	LG-210		1	3	33 3/4"			300	70	FA-210		
70	LG-220		1	3	33 3/4"			300	70	FA-220		
71	LG-230		1	3	33 3/4"			300	70	FA-230 (cdd)		
72	LG-240		1	3	33 3/4"			300	70	FA-240		
73												
74												
75												
76												
77												
78												
79												
80												

NOTES

DTH 000104417

4-446-S

10/29/80

INSTRUMENT SOCIETY OF AMERICA

SHEET 1 OF 1 REV.

ENGINEERING CENTER

PONCA CITY, OKLAHOMA

SPECIFICATION SHEET

LIQUID LEVEL INSTRUMENTS

A.F.E. NO. _____
DATE 6-5-80 W.O. NO. _____
MADE BY LZK INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B.M. NO. _____ P.O. NO. _____

PLANT ABERDEEN PVC PROJECT AMS EMERGENCY KILL SYSTEM

1	TAG NO.	LLI-110,120,130,140	LLI-111,121,131,141	LLI-210 220 230 240	LLI-211,221,231,2
2	SERVICE	Low Level Indicator	Low Level Indicator	Low Level Indicator	Low Level Indicato
3	# REQUIRED	4	4	4	4
4	INSTRUMENT, TYPE	LIGHT (1)	LIGHT (2)	LIGHT (1)	LIGHT (2)
5	LOCATION	BOARD	LOCAL	BOARD	LOCAL
6	[redacted]	(3) (4)	(3) (4)	(3) (4)	(3) (4)
7	LOCATION				
8	RANGE, INCHES				
9	INTERFACE				
10	UPPER DENSITY, LB./CU. FT.				
11	LOWER DENSITY, LB./CU. FT.				
12	TEMPERATURE °F				
13	PRESSURE PSIG				
14	VALVE TYPE				
15					
16	LOCATION				
17	MATERIAL				
18	BODY SIZE / PORT SIZE				
19	PLUG FORM				
20	ΔP / MIN. / NOR. / MAX.				
21	CALC. Cv / VALVE Cv				
22	AIR TO OPEN OR CLOSE				
23	MAXIMUM SHUTOFF ΔP				
24	FLUID				
25	TEMPERATURE °F				
26	PRESSURE PSIG				
27	°API (M.W.)				
28	SP. GR. AT STD. COND.				
29	SP. GR. AT P. & T.				
30	WEIGHT % VAPOR IN-OUT				
31	VISCOSITY AT P. & T.				
32	RATE, NORMAL				
33	RATE				
34	MAX. / MIN.				
35	NOTES				

DTH 000104418

(1) THESE ARE BOARD MOUNTED LOW LEVEL INDICATOR LIGHTS, WHICH RECEIVE SIGNALS FROM THEIR RESPECTIVE LOW LEVEL SWITCH [Eg. LLI-110 IS CONNECTED TO LS-110]

(2) THESE ARE LOCAL LOW LEVEL INDICATOR LIGHTS MOUNTED NEAR THE DOUBLE BLOCK VALVES ON THE MANUAL INJECTIO LINE AT THE REACTOR TOP HEAD. IT IS TO BE VISIBLE TO THE OPERATOR DURING ACTIVATION OF THESE VALVES. INDICATORS WILL BE ACTIVATED BY THEIR RESPECTIVE SWITCH. [Eg LLI-111 IS CONNECTED TO LS-11

(3) ALL SWITCHES AND INDICATOR LIGHTS ARE TO BE TIED INTO THE 24 VDC BACKUP POWER SUPPLY

(4) 100 SERIES IS FOR THE U-11 AREA AND 200 SERIES IS FOR THE CRD.

SHEET ____ OF ____ REV. ____

ENGINEERING CENTER

PONCA CITY, OKLAHOMA
SPECIFICATION SHEET
LIQUID LEVEL INSTRUMENTS

A.F.E NO ____
DATE 6-5-80 W.O. NO ____
MADE BY LZK INQ. NO. ____
APP'D BY RDM REQ NO. ____
B M NO ____ P O NO ____

PLANT ABERDEEN PVL PROJECT AMS EMERGENCY KILL SYSTEM

1	TAG NO.	LS-110, 120, 130, 140	LS-210, 220, 230, 240
2	SERVICE	LOW LEVEL SWITCH	LOW LEVEL SWITCH
3	# REQUIRED	4	4
4	INSTRUMENT, TYPE	SWITCH (1)(2)	SWITCH (1)(2)
5	LOCATION	LOCAL (4)	LOCAL (4)
6	ELEMENT, TYPE	MECHANICAL FLOAT	MECH FLOAT
7	LOCATION	FA-110, 120, 130, 140	FA-210, 220, 230, 240
8	RANGE, INCHES	(3)	(3)
9	INTERFACE	N_2 (GAS) / AMS (Liq)	N_2 (GAS) / AMS (Liq)
10	UPPER DENSITY, LB./CU. FT.	1.55	1.55
11	LOWER DENSITY, LB./CU. FT.	56.8	56.8
12	TEMPERATURE °F Norm	70	70
13	PRESSURE PSIG Norm (Max)	300 (400)	300 (400)
14	VALVE TYPE		
15			
16	LOCATION		
17	MATERIAL		
18	BODY SIZE / PORT SIZE		
19	PLUG FORM		
20	ΔP / MIN. / NOR. / MAX.		
21	CALC. Cv / VALVE Cv		
22	AIR TO OPEN OR CLOSE		
23	MAXIMUM SHUTOFF ΔP		
24	FLUID		
25	TEMPERATURE °F		
26	PRESSURE PSIG		
27	°API (M.W.)		
28	SP. GR. AT STD. COND.		
29	SP. GR. AT P. & T.		
30	WEIGHT % VAPOR IN-OUT		
31	VISCOSITY AT P. & T.		
32	RATE, NORMAL		
33	RATE		
34	MAX. / MIN.		
35	NOTES:		

DTH 000104419

(1) THE LOW LEVEL SWITCHES WILL EACH OPERATE OFF ONE AMS INJECTION POT, AND ARE INTERLOCKED WITH THEIR CORRESPONDING CONTROL VALVE PAIR. [E.g. LS-110 IS ATTACHED TO FA-110 AND INTERLOCKED WITH CV-110 AND CV-111. IT WILL ALSO ACTIVATE LLI-110 (BOARD) AND LLI-111 (LOCAL)]. IF ANY CONTROL VALVE PAIR IS OPENED VIA THE AUTO MODE OF IT'S CORRESPONDING BOARD MOUNTED HAND SWITCH, THEY WILL BE CLOSED BY A SIGNAL FROM THE INTERLOCKED LOW LEVEL SWITCH WHEN THE AMS LEVEL IN THE INJECTION POT HAS DROPPED TO THE SWITCH. THIS INTERLOCK IS TO BE OVER-RIDEN BY THE MANUAL MODE OF THE BOARD-MOUNTED HAND SWITCH.

(CONT)

SHEET 1 OF 2 REV ____

10/29/80

ENGINEERING CENTER
PONCA CITY, OKLAHOMA
SPECIFICATION SHEET

A.F.E. NO. _____
DATE 6-5-80 W. O. NO. _____
MADE BY LBS INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B. M. NO. _____ P. O. NO. _____

PLANT ABERDEEN PVC PROJECT: AMS EMERGENCY KILL SYSTEM

ITEM NO
SERVICE Low LEVEL SWITCH (CONTINUED)

NOTES (CONTINUED)

(2) ALL SWITCHES AND INDICATORS ARE TO BE TIED INTO THE 24 VDC BACKUP POWER SUPPLY

(3) THE Low LEVEL SWITCH FLANGE IS 3" ABOVE THE BOTTOM SEAM of THE AMS INJECTION POT

(4) 100 SERIES IS FOR THE V-11 AREA AND THE 200 SERIES IS THE CRD

DTH 000104420

10/29/80

SHEET 2 OF 2 REV

CONOCO

Continental Oil Company
Engineering Center
Ponca City, Oklahoma
Pressure Instruments

SPECIFICATION SHEET
PROJECT NO. _____
A.F.E. NO. _____
DATE 6-6-80 INQ. NO. _____
MADE BY LZK REQ. NO. _____
APP'D. BY RDM P.O. NO. _____

PLANT ABERDEEN P/C **PROJECT** AMS EMERGENCY KILL SYSTEM

1	TAG NO	PAL-101, 201	PAL-110, 120, 130, 140	PAL-210, 220, 230, 240	
2	SERVICE	N_2 CYLINDER PRESS	INJECTION POT PRESS.	INJECTION POT PRESS.	
3	# REQUIRED	2	4	4	
4	INSTRUMENT, TYPE	ALARM	ALARM (3)	ALARM (3)	
5	LOCATION	BOARD (1)	BOARD (1)	BOARD (1)	
6	RANGE, PSIG	0-600 (2)	0-300 (5)	0-300 (5)	
7	ELEMENT				
8	TYPE / MATERIAL	SWITCH	SWITCH	SWITCH	
9	LOCATION	INSTRUMENT N_2 HEADER	INJECTION POTS (4)	INJECTION POT (6)	
10	TEMPERATURE °F				
11	PRESSURE PSIG				
12	VALVE TYPE				
13					
14	LOCATION				
15	MATERIAL				
16	BODY SIZE / PORT SIZE				
17	PLUG FORM				
18	Δ P / MIN. / NOR. / MAX.				
19	CALC Cv / VALVE Cv				
20	AIR TO OPEN OR CLOSE				
21	MAX. SHUTOFF Δ P				
22	FLUID				
23	TEMPERATURE °F				
24	PRESSURE PSIG				
25	°API (M.W.)				
26	SP. GR. AT STD. COND.				
27	SP. GR. AT P.&T.				
28	WEIGHT % VAPOR IN-OUT				
29	VISCOSITY AT P.&T.				
30	RATE, NORMAL				
31	RATE / MAX. / MIN.				
32	NOTES				

DTH 000104421

(1) INDICATORS AND ALARMS ARE TO BE TIED INTO THE 24 VDC BACKUP POWER SUPPL

(2) MAXIMUM PRESSURE 2400 PSIG. PRESSURE SWITCH TO BE INSTALLED ON THE N_2 CYLINDER MANIFOLD. SETPOINT IS 600 PSIG.

(3) PROVIDE ONLY ONE BOARD MOUNTED ALARM, WHICH IS TO BE TIED INTO ALL OF THE INJECTION POT PRESSURE SWITCHES. PROVIDE A BOARD MOUNTED INDICATOR LIGHT FOR EACH SWITCH, TO INDICATE WHICH SWITCH TRIPPED THE ALARM.

(4) PAL-110, 120, 130, 140 ARE ACTIVATED BY SWITCHES ON FA-110, 120, 130, 140 RESPECTIVELY IN THE V-11 REACTOR MODULE.

(5) SETPOINT TO BE 250 PSIG AND ADJUSTABLE FROM BACK OF PANEL.

(6) PAL-210, 220, 230, 240 ARE ACTIVATED BY SWITCHES ON FA-210, 220, 230, 240 RESPECTIVELY IN THE CRD REACTOR MODULE.

SHEET ____ OF ____ REV. ____

ENGINEERING CENTER
PONCA CITY, OKLAHOMA
SPECIFICATION SHEET

A.F.E. NO. _____
DATE 6-6-80 W. O. NO. _____
MADE BY LZK INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B. M. NO. _____ P. O. NO. _____

PLANT ABERDEEN PVC PROJECT: AMS EMERGENCY KILL SYSTEM

ITEM NO. SERVICE	PCV-100 AND PCV-200 (1) (3)
# REQUIRED	2
SERVICE	PA-100/100-S AND PA-200/200-S
MANUFACTURER	VICTOR OR CONCO APPROVED EQUAL
MODEL #	VTS 700 MD E
LINE SIZE, INCHES	1/4
FLUID	NITROGEN GAS
TEMPERATURE, °F	70°
INLET PRESSURE, PSIG, MAX	2200
OUTLET PRESSURE, PSIG, NORM-MAX	40-125
SPECIFIC GRAVITY @ T AND P	0.97
VISCOSITY @ T AND P, CP	0.018
MOLECULAR WEIGHT	28
RATE, SCFH, NORM-MAX-MIN	(2) 1400 - - 0
PRESSURE GAUGE RANGE - INLET (OUTLET)	0-3000psig (0-200psig)

NOTES:

(1) NITROGEN CYLINDER PRESSURE REGULATOR WITH SAFETY VALVE AND INLET, OUTLET PRESSURE GAUGE TO HAVE SOFT SEAT TO PREVENT PRESSURE LEAKAGE AT NO FL

DTH 000104422

(2) TO BE CONFIRMED BY VENDOR SUPPLYING ALL OF THE AUTOMATIC INJECTION LINE CONTROL VALVE ACTUATORS, BASED ON ACTUATOR REQUIREMENTS.

(3) 100 SERIES IS THE V-11 AREA AND 200 SERIES IS FOR THE CRD.

10/29/80

SHEET _____ OF _____ REV _____

ENGINEERING CENTER
PONCA CITY, OKLAHOMA
SPECIFICATION SHEET

A.F.E. NO. _____
DATE 6-6-80 W. O. NO. _____
MADE BY LBK INQ. NO. _____
APP'D BY RJM REQ. NO. _____
B. M. NO. _____ P. O. NO. _____

PLANT ABERDEEN PVC PROJECT: AMS EMERGENCY KILL SYSTEM

ITEM NO / SERVICE	PCV-110, 120, 130, 140	PCV-210, 220, 230, 240 (1)
# REQUIRED	8	
SERVICE	PA-110, 120, 130, 140 AND PA-210, 220, 230, 240 RESPECTIVELY (2)	
MANUFACTURER	CIRCLE SEAL OR CONOCO APPROVED EQUAL	
MODEL #	1R 10 - 580 - G	
LINE SIZE, INCHES	1/4	
FLUID	NITROGEN GAS	
TEMPERATURE, °F	70	
INLET PRESSURE, PSIG, MAX	2200	
OUTLET PRESSURE, PSIG, NORM - MAX	300 - 400	
SPECIFIC GRAVITY @ T AND P	0.97	
VISCOSITY @ T AND P, cP	0.018	
MOLECULAR WEIGHT	28	
RATE, SCFM MAX	200	

NOTES:

DTH 000104423

(1) NITROGEN CYLINDER PRESSURE REGULATOR WITH PRESSURE GAUGES, PRESET/ADJUSTABLE SAFTY VALVE AND BRASS BODY. TO HAVE SOFT SEAT FOR DEAD END SERVICE.

(2) 100 SERIES IS FOR THE V-11 REACTOR MODULE AND 200 SERIES FOR THE CRD

(3) THIS IS MAXIMUM FLOW THROUGH REGULATOR

10/29/80

SHEET _____ OF _____ REV _____

CONOCO

ENGINEERING CENTER

PONCA CITY, OKLAHOMA
SPECIFICATION SHEET
PRESSURE GAUGES

A.F.E. NO. _____
DATE 6-5-80 W.O. NO. _____
MADE BY GZK INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B.M. NO _____ P.O. NO. _____

PLANT ABERDEEN PVC PROJECT AMS EMERGENCY KILL SYSTEM

TAG NO.	SERVICE	INSTRUMENT RANGE, PSIG	OPERATING PRESS. PSIG	OPERATING TEMP. °F	LOCATION
PG - 110	FA - 110	0-400	300	70	FA - 110
PG - 120	FA - 120				FA - 120
PG - 130	FA - 130				FA - 130
PG - 140	FA - 140				FA - 140
PG - 112	LINE HM-1011 DOUBLE BLOCK	0-400	0	70	LINE HM-1011
PG - 122	" HM-1021 " "				" HM-1021
PG - 132	" HM-1031 " "				" HM-1031
PG - 142	" HM-1041 " "				" HM-1041
PG - 113	D-300 (EXISTING) (1)	0-200	150	225	D-300
PG - 123	D-400 (EXISTING) (1)				D-400
PG - 133	D-500 (EXISTING) (1)				D-500
PG - 143	D-600 (EXISTING) (1)				D-600
PG - 115	PCV-110 INLET PRESS.	0-3000	2200	70	PCV - 110 (2)
PG - 125	PCV - 120 " "				PCV - 120 (2)
PG - 135	PCV - 130 " "				PCV - 130 (2)
PG - 145	PCV - 140 " "				PCV - 140 (2)
PG - 116	PCV-110 OUTLET PRESS.	0-400	300	70	PCV - 110 (2)
PG - 126	PCV - 120 " "				PCV - 120 (2)
PG - 136	PCV - 130 " "				PCV - 130 (2)
PG - 146	PCV - 140 " "				PCV - 140 (2)
PG - 117	LINE HM-1012 DOUBLE BLOCK	0-400	0	70	LINE HM-1012
PG - 127	" HM-1022 " "				" HM-1022
PG - 137	" HM-1032 " "				" HM-1032
PG - 147	" HM-1042 " "				" HM-1042
PG - 118	PCV-100 OUTLET PRESS.	0-200	40	70	PCV - 100 (2)
PG - 119	PCV-100 INLET PRESS	0-3000	2200	70	PCV - 100 (2)

NOTES:

(1) THESE PRESSURE GAUGES ARE EXISTING AT THE AUTOMATIL INJECTION LINE NOZZLE. THEY ARE TO BE RELOCATED FROM THE NOZZLE TO THE AUTOMATIC INJECTION LINE. (SEE P&I)

(2) THESE GAUGES TO BE SUPPLIED WITH REGULATOR

DTH 000104424

QUOTATION WILL NOT BE CONSIDERED IF SUPPLIER DOES NOT COMPLETE RIGHT HAND COLUMN.

SHEET _____ OF _____ REV _____

CONOCO

ENGINEERING CENTER

PONCA CITY, OKLAHOMA

SPECIFICATION SHEET

PRESSURE GAUGES

A.F.E. NO. _____
DATE 6-5-80 W. O. NO. _____
MADE BY LBK INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B. M. NO _____ P. O. NO. _____

PLANT ABERDEEN PVC PROJECT: AMS EMERGENCY KILL SYSTEM CRP

TAG NO.	SERVICE	INSTRUMENT RANGE, PSIG	OPERATING PRESS, PSIG	OPERATING TEMP., °F	LOCATION
PG - 210	FA-210	0-400	300	70	FA - 210
PG - 220	FA-220				FA - 220
PG - 230	FA - 230				FA - 230
PG - 240	FA - 240				FA - 240
PG - 212	LINE HM-2011 DOUBLE BLOCK	0-400	0	70	LINE HM - 2011
PG - 222	" HM-2021 " "				" HM - 2021
PG - 232	" HM-2031 " "				" HM - 2031
PG - 242	" HM-2041 " "				" HM - 2041
PG - 213	D-241	0-200	150	225	D - 241
PG - 223	D - 242				D - 242
PG - 233	D - 243				D - 243
PG - 243	D - 244				D - 244
PG - 215	PCV - 210 INLET PRESS.	0-3000	2200	70	PCV - 210 (1)
PG - 225	PCV - 220 " "				PCV - 220 (1)
PG - 235	PCV - 230 " "				PCV - 230 (1)
PG - 245	PCV - 240 " "				PCV - 240 (1)
PG - 216	PCV - 210 OUTLET PRESS	0-400	300	70	PCV - 210 (1)
PG - 226	PCV - 220 " "				PCV - 220 (1)
PG - 236	PCV - 230 " "				PCV - 230 (1)
PG - 246	PCV - 240 " "				PCV - 240 (1)
PG - 217	LINE HM-2012 DOUBLE BLOCK	0-400	0	70	LINE HM - 2012
PG - 227	" HM-2022 " "				" HM - 2022
PG - 237	" HM-2032 " "				" HM - 2032
PG - 247	" HM-2042 " "				" HM - 2042
PG - 218	PCV-200 OUTLET PRESS	0-200	40	70	PVC - 200 (1)
PG - 219	PCV-200 INLET PRESS	0-3000	2200	70	PVC - 200 (1)

NOTES

(1) THESE PRESSURE GAUGES TO BE SUPPLIED WITH REGULATOR

DTH 000104425

QUOTATION WILL NOT BE CONSIDERED IF SUPPLIER DOES NOT COMPLETE RIGHT HAND COLUMN.

SHEET _____ OF _____ REV _____

ENGINEERING CENTER

PONCA CITY, OKLAHOMA

SPECIFICATION SHEET

RELIEF VALVES

A.F.E NO. _____
DATE 6-6-80 W. O NO. _____
MADE BY LZK INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B M NO. _____ P O NO. _____

PLANT ABERDEEN PVC PROJECT AMS EMERGENCY KILL SYSTEM

	GENERAL				
1	ITEM NO. & TAG	PSV-110, 120, 130, 140	PSV-210, 220, 230, 240 (1)		
2	RELIEVES EQUIPMENT NO.	FA-110, 120, 130, 140	FA-210, 220, 230, 240		
3	MANUFACTURER	FARRIS (2)	FARRIS (2)		
4	MODEL NO.	26 DA 22	26 DA 22		
5	# REQUIRED	4	4		
	SERVICE CONDITIONS				
6	FLUID	AMS	AMS		
7	STATE	LIQUID	LIQUID		
8	REQUIRED CAPACITY LB/HR	4830	4830		
9	MOL. WT. / SP. GR.	118 / 0.91	118 / 0.91		
10	VISCOSITY				
11	COMPRESSIBILITY FACTOR @ RELIEF	0.47	0.47		
12	DESIGN PRESS. OF EQUIPMENT PSIG	400	400		
13	PRESS OPERATING / RELIEVING	300 / 400	300 / 400		
14	TEMP °F FLOWING / RELIEVING	70 / 725	70 / 725		
15	BACK PRESSURE PSIG	0	0		
16	DIFFERENTIAL SET PRESSURE PSIG	400	400		
17	ACCUMULATION %	10	10		
18	BLOW DOWN %				
19					
	BASIS OF SELECTION				
20	CODE REQUIREMENT				
21	FIRE WETTED AREA (ft^2)	17.2	17.2		
22	INSULATION THICKNESS	NONE	NONE		
23	OTHER BASIS				
24					
	DESIGN DETAILS				
25	DESIGN TYPE	STANDARD	STANDARD		
26	SEAT TYPE				
27	BONNET (OPEN OR CLOSED)				
28	INLET SIZE, RATING, FACING	1" - 300# RF	1" - 300# RF		
29	OUTLET SIZE, RATING, FACING	2" - 150# RF	2" - 150# RF		
30	CALCULATED AREA	0.096	0.096		
31	ORIFICE LETTER / ACTUAL AREA	D / 0.11	D / 0.11		
	MATERIALS				
32	BODY / BONNET	C.S. / C.S.	C.S. / C.S.		
33	SEAT & DISK				
34	GUIDE & RING				
35	SPRING	TUNGSTEN STEEL	TUNGSTEN STEEL		
36	BELLOWS				
	ACCESSORIES				
37	LIFTING LEVER (PLAIN OR PACKED)				
38	GAG				
39	CODE STAMP				
40	CAP (SCREWED OR BOLTED)				
41	OTHER				

DTH 000104426

NOTES: SEE PAGE 2 of 2

MANUFACTURER SHALL VERIFY SELECTION OF ORIFICE SIZE AND MATERIALS.
VALVES SHALL MEET DIMENSION REQUIREMENTS OF API RP-526.
VALVES SHALL MEET TEST REQUIREMENTS OF API RP-527.

SUPPLIER TO COMPLETE FORM BY FURNISHING INFORMATION FOR BLANK SPACES

SHEET 1 OF 2 REV.

4-436-S

REV. 12-80

10/29/80

ENGINEERING CENTER
PONCA CITY, OKLAHOMA
SPECIFICATION SHEET

A.F.E. NO. _____
DATE 6-6-80 W. O. NO. _____
MADE BY LEK INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B. M. NO. _____ P. O. NO. _____

PLANT ABERDEEN PVC PROJECT: AMS EMERGENCY KILL SYSTEM

ITEM NO.
SERVICE RELIEF VALVES (CONTINUED)

NOTES:

(1) THE 100 SERIES IS USED FOR THE V-11 REACTOR MODULE AND THE 200 SERIES FOR THE CRD.

(2) OR Conoco APPROVED EQUAL.

DTH 000104427

ENGINEERING CENTER

PONCA CITY, OKLAHOMA

SPECIFICATION SHEET

RUPTURE DISK

A.F.E. NO. _____
DATE 6-6-80 W. O. NO. _____
MADE BY LEK INQ. NO. _____
APP'D BY RDM REQ. NO. _____
B. M. NO _____ P. O NO. _____

PLANT ABERDEEN PVC PROJECT: AMS EMERGENCY KILL SYSTEM

ITEM NO.
SERVICE RD-110, 120, 130, 140 RD-210, 220, 230, 240

SERVICE FA-110, 120, 130, 140 AND FA-210, 220, 230, 240 RESPECTIVELY (1)

REQUIRED 8

LINE SIZE, INCHES 1

DISK SIZE INCHES 1

MANUFACTURER BS + B (OR CONOCO APPROVED EQUAL)

TYPE S-90 (2)(3)

RELIEF CONDITIONS 400 PSIG 725 °F

OPERATING CONDITIONS 300 PSIG 70°F

DISK MATERIAL NICKEL

NOTES:

(1) 100 SERIES IS FOR THE V-11 REACTOR MODULE AND 200 SERIES IS FOR THE CRD

(2) RUPTURE DISKS TO BE PROVIDED WITH 2½" PRESSURE GUAGE AND EXCESS FLOW CHECK VALVE ASSEMBLIES

(3) RUPTURE DISK SAFETY HEADS TO BE BS+B MODEL SRB-7RS STAINLESS STEEL HEADS.

DTH 000104428

10/29/80

SHEET _____ OF _____ REV _____

PIPING SCHEDULE

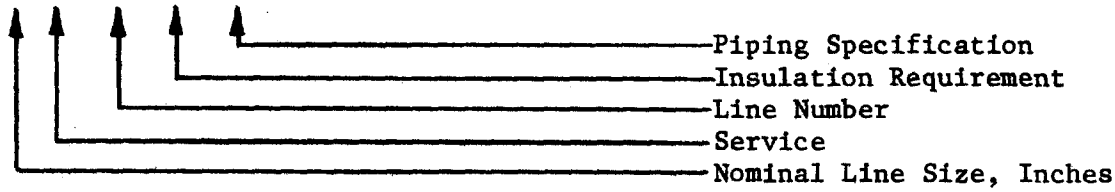
AMS EMERGENCY KILL SYSTEM

ABERDEEN PVC PLANT

The following piping schedule uses a system of numbers and letters as a line designation. This system denotes line size, service, line number, insulation requirement, and piping specification

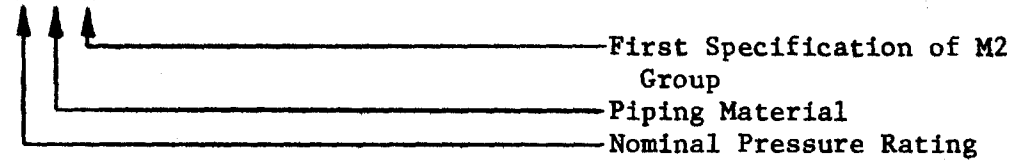
Sample Line Designation

2-HM-2001-N-A2-2



Sample Piping Specification

M 2-1



Service Designations Used

Designation	Service
AI	Instrument Air (Nitrogen)
HM	Miscellaneous Hydrocarbons (AMS)
IN	Inert Gas (Nitrogen)

Insulation Requirements

N	No Insulation Required

Nominal Pressure Ratings

B	300-Pound Class
M	125-Pound Class

Piping Material

2	Carbon Steel

DTH 000104429

LZK:ke
10/29/80

V-11

PROCESS PIPING SCHEDULE
PROCESS ENGINEERING DEPARTMENT

Date 6-5-80 Made By LZK
Project AMS EMERGENCY KILL SYSTEM
Plant ABERDEEN PVC

Line Designation	Service From	Service To	V L	Flow Rate Lb/Hr (Hot BPSD)	Normal °F	Normal PSIG	At T and P Lb/CF (Sp Gr)	At T and P Visc Cp	Press Drop PSI/100'	Velocity Ft/Sec	Remarks
1-AI-1001-N-M2-2	AI-1009	CV-110/CV-111	V	—	70	40	0.29	0.018	—	—	
1-AI-1002-N-M2-2	"	CV-120/CV-121	V	—	70	40	0.29	0.018	—	—	INSTRUMENT N_2 (1)
1-AI-1003-N-M2-2	"	CV-130/CV-131	V	—	70	40	0.29	0.018	—	—	LINES TO DOUBLE
1-AI-1004-N-M2-2	"	CV-140/CV-141	V	—	70	40	0.29	0.018	—	—	BLOCK CONTROL VALVES
1-AI-1009-N-M2-2	PA-100	—	V	—	70	40	0.29	0.018	—	—	INSTRUMENT N_2 HEADER (1)
1-HM-1011-N-B2-1	FA-110	D-300	L	34000	70	300	56.8	0.95	126	27.7	MANUAL INJECTION LINE
1-HM-1012-N-B2-1	FA-110	D-300	L	34000	70	300	56.8	0.95	126	27.7	AUTOMATIC " "
1-HM-1021-N-B2-1	FA-120	D-400	L	34000	70	300	56.8	0.95	126	27.7	MANUAL " "
1-HM-1022-N-B2-1	FA-120	D-400	L	34000	70	300	56.8	0.95	126	27.7	AUTOMATIC " "
1-HM-1031-N-B2-1	FA-130	D-500	L	34000	70	300	56.8	0.95	126	27.7	MANUAL " "
1-HM-1032-N-B2-1	FA-130	D-500	L	34000	70	300	56.8	0.95	126	27.7	AUTOMATIC " "
1-HM-1041-N-B2-1	FA-140	D-600	L	34000	70	300	56.8	0.95	126	27.7	MANUAL " "
1-HM-1042-N-B2-1	FA-140	D-600	L	34000	70	300	56.8	0.95	126	27.7	AUTOMATIC " "
1-IN-1100-N-B2-1	PA-110	FA-110	V	273.2	70	300	1.67	0.018	0.464	9.1	
1-IN-1200-N-B2-1	PA-120	FA-120	V	273.2	70	300	1.67	0.018	0.464	9.1	PRESSURIZING N_2
1-IN-1300-N-B2-1	PA-130	FA-130	V	273.2	70	300	1.67	0.018	0.464	9.1	LINES TO INJECTION
1-IN-1400-N-B2-1	PA-140	FA-140	V	273.2	70	300	1.67	0.018	0.464	9.1	POTS
1-HM-1900-N-B2-1	—	—	L	24000	70	300	56.8	0.95	64	19.6	EMERGENCY AMS HEADER
											DTH 000104430

NOTES: (1) SEAL WELDED TO MINIMIZE LEAKAGE

CRD

PROCESS PIPING SCHEDULE
PROCESS ENGINEERING DEPARTMENT

Date 6-5-80 Made By LZK
Project AMS EMERGENCY KILL SYSTEM
Plant ABERDEEN PVC

Line Designation	Service From	Service To	V L	Flow Rate Lb/Hr (Hot BPSD)	Normal °F	Normal PSIG	At T and P Lb/CF (Sp Gr)	At T and P Visc Cp	Press Drop PSI/100'	Velocity Ft/Sec	Remarks
1-AI-2001-N-M2-2	AI-2009	CV-210/CV-211	V	—	70	40	0.29	0.018	—	—	
1-AI-2002-N-M2-2	"	CV-220/CV-221	V	—	70	40	0.29	0.018	—	—	INSTRUMENT N_2 (1)
1-AI-2003-N-M2-2	"	CV-230/CV-231	V	—	70	40	0.29	0.018	—	—	LINES TO DOUBLE
1-AI-2004-N-M2-2	"	CV-240/CV-241	V	—	70	40	0.29	0.018	—	—	BLOCK CONTROL VALVES
1-AI-2009-N-M2-2	PA-200	—	V	—	70	40	0.29	0.018	—	—	INSTRUMENT N_2 HEADER (1)
1-HM-2011-N-B2-1	FA-210	D-741	L	34000	70	300	56.8	0.95	126	27.7	MANUAL INJECTION LINE
1-HM-2012-N-B2-1	FA-210	D-741	L	34000	70	300	56.8	0.95	126	27.7	AUTOMATIC " "
1-HM-2021-N-B2-1	FA-220	D-742	L	34000	70	300	56.8	0.95	126	27.7	MANUAL " "
1-HM-2022-N-B2-1	FA-220	D-742	L	34000	70	300	56.8	0.95	126	27.7	AUTOMATIC " "
1-HM-2031-N-B2-1	FA-230	D-743	L	34000	70	300	56.8	0.95	126	27.7	MANUAL " "
1-HM-2032-N-B2-1	FA-230	D-743	L	34000	70	300	56.8	0.95	126	27.7	AUTOMATIC " "
1-HM-2041-N-B2-1	FA-240	D-744	L	34000	70	300	56.8	0.95	126	27.7	MANUAL " "
1-HM-2042-N-B2-1	FA-240	D-744	L	34000	70	300	56.8	0.95	126	27.7	AUTOMATIC " "
1-IN-2100-N-B2-1	PA-210	FA-210	V	273.2	70	300	1.67	0.018	0.464	9.1	
1-IN-2200-N-B2-1	PA-220	FA-220	V	273.2	70	300	1.67	0.018	0.464	9.1	PRESSURIZING N_2
1-IN-2300-N-B2-1	PA-230	FA-230	V	273.2	70	300	1.67	0.018	0.464	9.1	LINES TO INJECTION
1-IN-2400-N-B2-1	PA-240	FA-240	V	273.2	70	300	1.67	0.018	0.464	9.1	POTS
1-HM-2900-N-B2-1	—	—	L	24000	70	300	56.8	0.95	64	19.6	EMERGENCY AMS HEADER

NOTES: (1) SEAL WELDED TO MINIMIZE LEAKAGE

TIE-IN LIST

AMS EMERGENCY KILL SYSTEM

ABERDEEN PVC PLANT

V-11 Reactor Area

1. Tie-in line AI-1009 to the instrument nitrogen header for the expansion AMS emergency kill system (expansion design line No. 1-AI-1127-N-M2-2).

2. Tie-in line 1-HM-1900 to the AMS emergency injection header for the expansion (expansion design line No. 1-AMS-1126-N-B2-2).

3. Tie-in line 1-HM-1012 to the existing four-inch nozzle on the top head of reactor D-300.

4. Tie-in line 1-HM-1011 to the existing six-inch nozzle on the top head of reactor D-300.

5. Tie-in line 1-HM-1022 to the existing four-inch nozzle on the top head of reactor D-400.

6. Tie-in line 1-HM-1021 to the existing six-inch nozzle on the top head of reactor D-400.

7. Tie-in line 1-HM-1032 to the existing four-inch nozzle on the top head of reactor D-500.

8. Tie-in line 1-HM-1031 to the existing six-inch nozzle on the top head of reactor D-500.

9. Tie-in line 1-HM-1042 to the existing four-inch nozzle on the top head of reactor D-600.

10. Tie-in line 1-HM-1041 to the existing six-inch nozzle to the top head of reactor D-600.

CRD Reactor Area

11. Tie-in line AI-2009 to the instrument nitrogen header for the expansion AMS emergency kill system (expansion design line No. 1-AI-2075-N-M2-2).

12. Tie-in line 1-HM-2900 to the AMS emergency injection header for the expansion (expansion design line No. 1-AMS-2073-N-B2-1).

13. Tie-in line 1-HM-2012 to the existing three-inch nozzle on the top head of reactor D-741.

14. Tie-in line 1-HM-2011 to the existing six-inch nozzle on the top head of reactor D-741.

Tie-In List
Page 2

15. Tie-in line 1-HM-2022 to the existing three-inch nozzle on the top head of reactor D-742.

16. Tie-in line 1-HM-2021 to the existing six-inch nozzle on the top head of Reactor D-742.

17. Tie-in line 1-HM-2032 to the existing three-inch nozzle on the top head of reactor D-743.

18. Tie-in line 1-HM-2031 to the existing six-inch nozzle on the top head of reactor D-743.

19. Tie-in line 1-HM-2042 to the existing three-inch nozzle on the top head of reactor D-744.

20. Tie-in line 1-HM-2041 to the existing six-inch nozzle on the top head of reactor D-744.

LZK:ke
10/29/80

FA-110 AMS INJECTION POT 1'-4" ø x 3'-0" T-T

D-300 POLYMERIZATION REACTOR

FA-120 AMS INJECTION POT 1'-4" ø x 3'-0" T-T

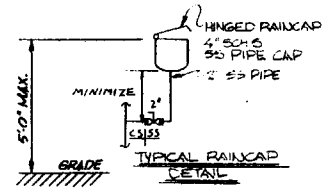
D-400 POLYMERIZATION REACTOR

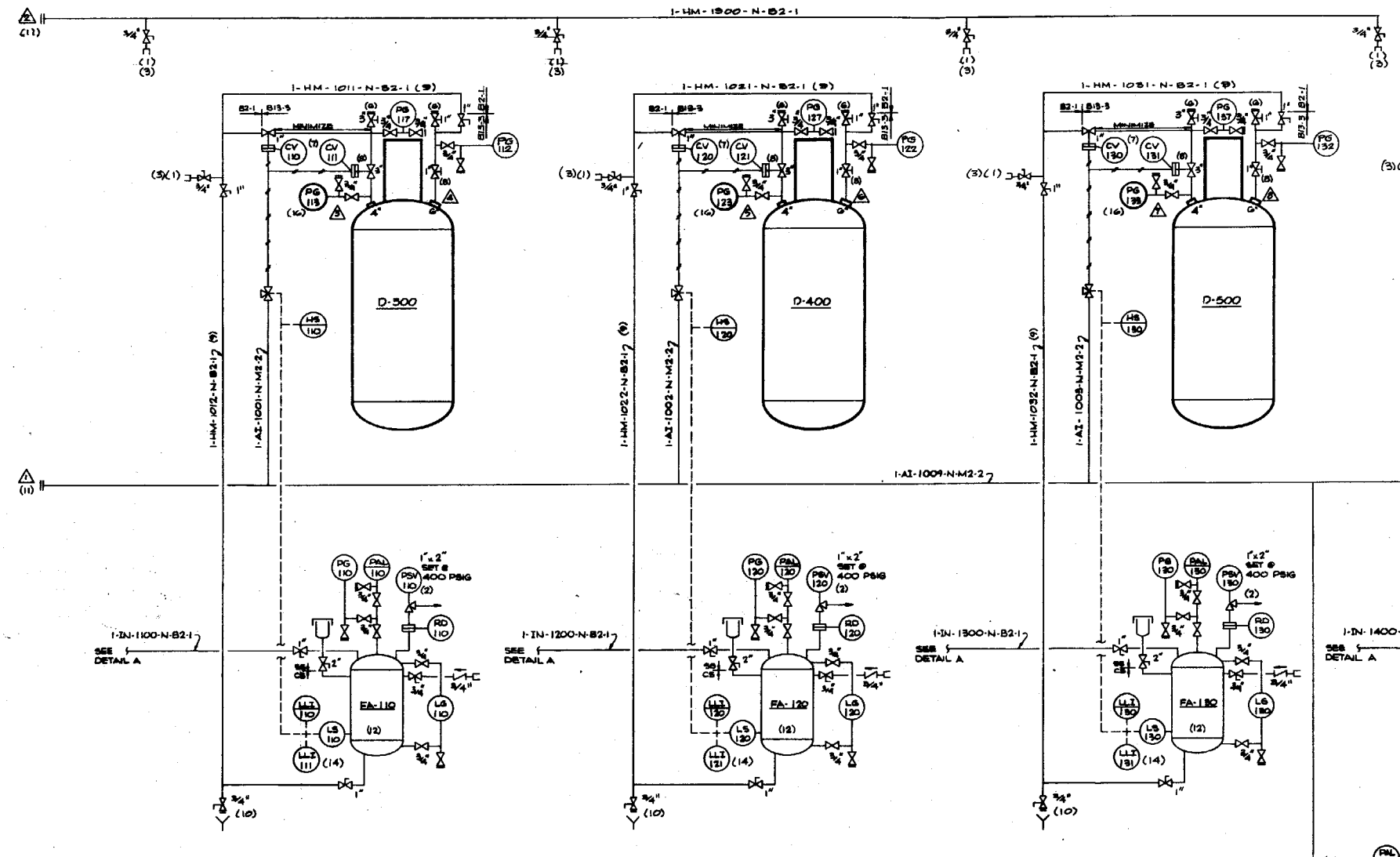
FA-130 AMS INJECTION POT 1'-4" ø x 3'-0" T-T

D-500 POLYMERIZATION REACTOR

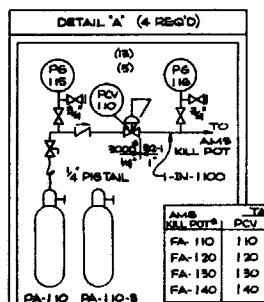
FA-140 AMS INJECTION POT 1'-4" ø x 3'-0" T-T

D-600 POLYMERIZATION REACTOR

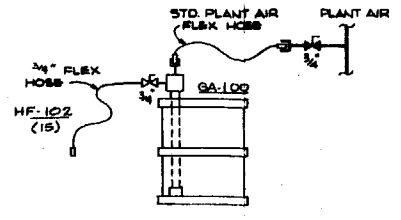




DETAIL "A" (4 REQ'D)



AMS KILL POT*	TABLE A PCV	PA	PG
FA-110	110	110, 110-S	115, 116
FA-120	120	120, 120-S	125, 126
FA-130	130	130, 130-S	135, 136
FA-140	140	140, 140-S	145, 146



Notes:

1. Minimize the distance from the header hose connection to the manual injection line hose connection (+5 feet). These connections are to be easily accessible to the operator at the reactor top head level.
2. Discharge piping away from any relief valve is to be directed towards grade.
3. COUPLING TO BE AMERICAN FLO THE SERIES.
4. ALL VALVES ARE 3/4" UNLESS OTHERWISE SPECIFIED.
5. Nitrogen lines are to be seal welded to minimize leakage.
6. The three-inch bleed valve on the automatic injection line is to be located directly above the three-inch on/off control valve, which is in a direct line with the reactor nozzle. Similarly, the one-inch bleed valve is located above the one-inch bleed valve on the manual injection line. These valves will be used for inspection of the ANS inlet nozzles on the reactor top head and must be full port valves.
7. Provide easy access to manual operators on all of the automatic injection line control valves.
8. Minimize the distance between the double block valves. Also, minimize the vertical distance from the reactor nozzle to the closest block valve.
9. Lines are to be seal welded to minimize leakage.
10. Low point drain.
11. Tie-in points to expansion design.
12. Injection pots located at grade.
13. All nitrogen bottles are to be chained in bottle racks to prevent damage to cylinders and to protect the operator.
14. Indicator is to be located at the top head such that it is visible to the operator as the manual bleed valves are operated.
15. Drum pump hose is to be permanently attached to the drum pump.
16. Existing pressure gauge relocated from the 4-inch nozzle to the automatic injection line.

DTH 000104434

No.	Date	Description	By	Chk'd	Appd
2	10/29/80	REVISE CLASS 'A' DESIGN	CPS	TJK	RDM
1	9/29/80	CLASS 'A' DESIGN	CPS	TJK	RDM

Conoco Inc.
Engineering Center
Ponca City, Oklahoma

P & I DIAGRAM
Y-11 AMS EMERGENCY KILL SYSTEM
ABERDEEN PVC PLANT

Appd R.D. McM
Date 8/29/80

No. SD-2838-42-2-L

FA-210 AMS INJECTION POT 1'-4" ø x 3'-0" T-T

D-741 POLYMERIZATION REACTOR

FA-220 AMS INJECTION POT 1'-4" ø x 3'-0" T-T

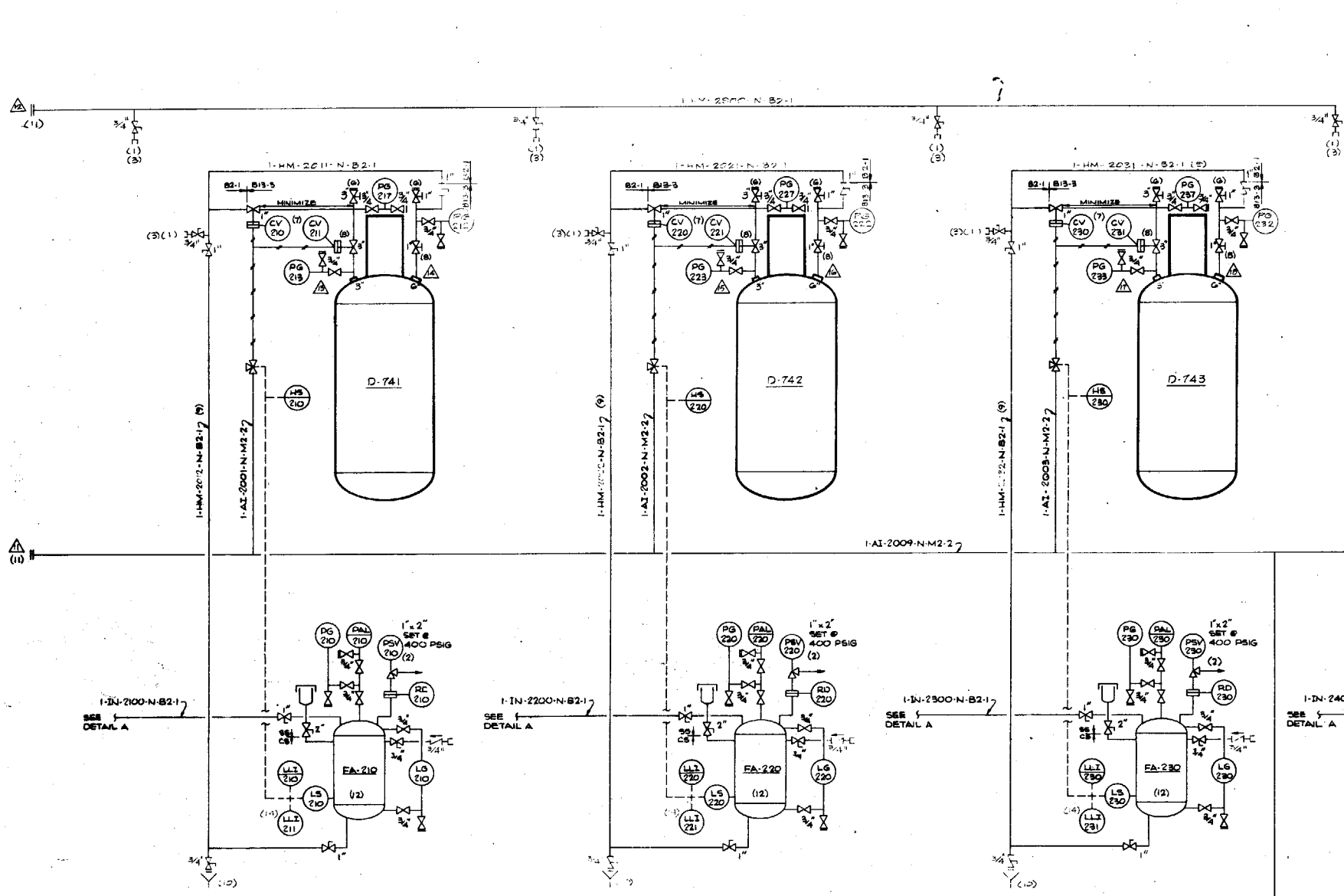
D-742 POLYMERIZATION REACTOR

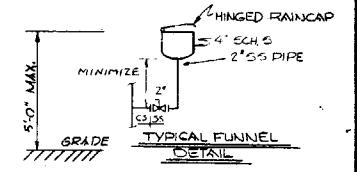
FA-230 AMS INJECTION POT 1'-4" ø x 3'-0" T-T

D-743 POLYMERIZATION REACTOR

FA-240 AMS INJECTION POT 1'-4" ø x 3'-0" T-T

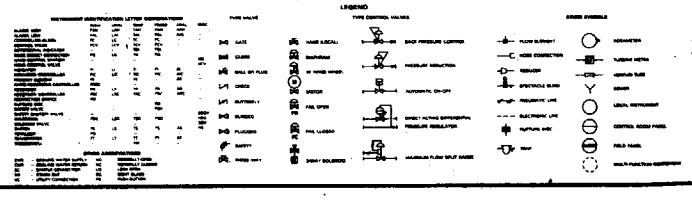
D-744 POLYMERIZATION REACTOR

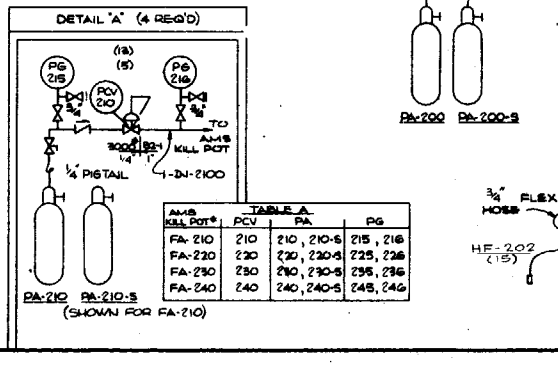


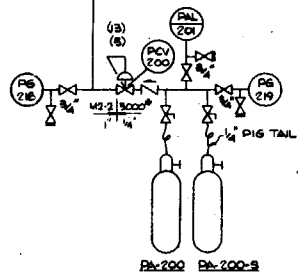


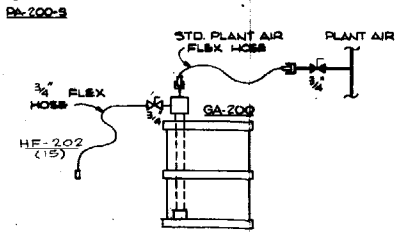
Notes:

1. Minimize the distance from the header hose connection to the manual injection line hose connection (5 feet). These connections are to be easily accessible to the operator at the reactor top head level.
2. Bleeders piping away from any relief valve is to be directed towards grade.
3. COUPLING TO BE AEROQUIP FD-56 SERIES
4. ALL VALVES ARE 3/4" UNLESS OTHERWISE SPECIFIED
5. Nitrogen lines are to be seal welded to minimize leakage.
6. The three-inch bleed valve on the automatic injection line is to be located directly above the three-inch on/off control valve, which is in a direct line with the reactor nozzle. Similarly, the one-inch bleed valve is located above the one-inch block valve on the manual injection line. These valves will be used for inspection of the AMS inlet nozzles on the reactor top head and must be full port valves.
7. Provide easy access to manual operators on all of the automatic injection line control valves.
8. Minimize the distance between the double block valves. Also, minimize the vertical distance from the reactor nozzle to the closest block valve.
9. Lines are to be seal welded to minimize leakage.
10. Low point drain.
11. Tie-in points to expansion design.
12. Injection pots located at grade.
13. All nitrogen bottles are to be chained in bottle racks to prevent damage to cylinders and to protect the operator.
14. Indicators is to be located at the top head such that it is visible to the operators as the manual block valves are operated.
15. Drum pump hose is to be permanently attached to the drum pump.









DTH 000104435

No.	Date	Description	By	Chd	Appd
2	2/26/86	REVISE CLASS "A" DESIGN	CPS	LEK	RVM
1	11/15/85	CLASS "A" DESIGN	CPS	LEK	RVM

Conoco Inc.
Engineering Center
Ponca City, Oklahoma

P & I DIAGRAM
FOR AMS EMERGENCY KILL SYSTEM
ABERDEEN PVC PLANT

Appd: K. D. Mallory
Date: 8/14/86

No SD-2838-42-3-L