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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
60/938,726	05/18/2007		200	2103-00901		

CONFIRMATION NO. 9990

30652
CONLEY ROSE, P.C.
5700 GRANITE PARKWAY, SUITE 330
PLANO, TX 75024

FILING RECEIPT

Date Mailed: 06/11/2007

Receipt is acknowledged of this provisional Patent Application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

Applicant(s)

Eric Prim, Odessa, TX;

Power of Attorney: The patent practitioners associated with Customer Number 30652

If Required, Foreign Filing License Granted: 06/08/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US60/938,726**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

Title

NGL Recovery Process

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Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2103-00901
		Application Number	
Title of Invention	NGL Recovery Process		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Applicant Information:

Applicant 1					Remove	
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117		☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Eric		Prim			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Odessa	State/Province	TX	Country of Residence ⁱ	US	
Citizenship under 37 CFR 1.41(b) ⁱ		US				
Mailing Address of Applicant:						
Address 1		6310 Deering Road				
Address 2						
City	Odessa	State/Province	TX			
Postal Code	79762	Country ⁱ	US			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.						

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence information of this application.			
Customer Number	30652		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	NGL Recovery Process		
Attorney Docket Number	2103-00901	Small Entity Status Claimed	☐
Application Type	Provisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	42	Suggested Figure for Publication (if any)	1

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	2103-00901
		Application Number	
Title of Invention	NGL Recovery Process		

Publication Information:☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not been and will not be the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing.**Representative Information:**

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.

Please Select One: ☒ Customer Number ☐ US Patent Practitioner ☐ US Representative (37 CFR 11.9)

Customer Number 30652

Domestic Priority Information:

This section allows for the applicant to claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c). Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status

Remove

Application Number

Continuity Type

Prior Application Number

Filing Date (YYYY-MM-DD)

Additional Domestic Priority Data may be generated within this form by selecting the Add button.

Add

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

Remove

Application Number

Country ⁱ

Parent Filing Date (YYYY-MM-DD)

Priority Claimed

☐ Yes ☒ No

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Add

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.

Assignee 1

Remove

If the Assignee is an Organization check here.



PILOT EXHIBIT 2047 PAGE 005

SCOUT/CHEVRON v. PILOT - IPR2024-00385

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		2103-00901	
		Application Number			
Title of Invention		NGL Recovery Process			
Organization Name		Holloman Corporation			
Mailing Address Information:					
Address 1		5257 West Interstate 20			
Address 2					
City		Odessa	State/Province		TX
Country i	US	Postal Code		79769	
Phone Number		Fax Number			
Email Address					
Additional Assignee Data may be generated within this form by selecting the Add button. Add					

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature		/Grant Rodolph/		Date (YYYY-MM-DD)	
				2007-05-18	
First Name	Grant	Last Name	Rodolph	Registration Number	50487

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

NGL Recovery Process

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not applicable.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not applicable.

REFERENCE TO A MICROFICHE APPENDIX

[0003] Not applicable.

BACKGROUND

[0004] Carbon dioxide recovery processes may be used for extracting oil and other heavy hydrocarbons from a subterranean formation. Briefly, these processes involve the injection of carbon dioxide into an injection well, and recovering the heavy hydrocarbons and some of the carbon dioxide from at least one recovery well. In addition to the desired heavy hydrocarbons, some light hydrocarbons and natural gas liquids (NGL) are also recovered. Typically, these NGLs are compressed with the recovered carbon dioxide and reinjected into the recovery well.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 is one embodiment of a process flow diagram for the carbon dioxide injection process;

[0006] FIG. 2 is one embodiment of the relationship between horsepower and NGL recovery;

[0007] FIG. 3 is one embodiment of the NGL recovery optimization process;

[0008] FIG. 4 is an embodiment of a process flow diagram for the NGL recovery process;

[0009] FIGS. 5A – 5E are process simulation data from the process flow diagram in FIG. 4;

[0010] FIG. 6 is another embodiment of a process flow diagram for the NGL recovery process;

[0011] FIGS. 7A – 7E are process simulation data from the process flow diagram in FIG. 6;

[0012] FIG. 8 is another embodiment of a process flow diagram for the NGL recovery process;

[0013] FIGS. 9A – 9E are process simulation data from the process flow diagram in FIG. 8;
and

[0014] FIGS. 10A – 10V are piping and instrumentation diagrams for the NGL recovery process.

DETAILED DESCRIPTION

[0015] FIG. 1 illustrates a carbon dioxide injection process 100. Generally, the process 100 begins with the compression of a carbon dioxide stream in a compressor 102E. The compressed carbon dioxide is injected down hole and passed through a formation. Hydrocarbons and some carbon dioxide are recovered in a recovery well, and fed into a separator 104 that separates the heavy hydrocarbons from the light hydrocarbons and the carbon dioxide. The heavy hydrocarbons are sent to a storage tank 106 and sold, processed, or otherwise used. The carbon dioxide and light hydrocarbons are passed through a series of compressors 102A, 102B, 102C, 102D, and fed into a dehydrator 108 that removes some or substantially all of the water. The carbon dioxide and light hydrocarbons are then fed to a NGL recovery process 110, described in further detail below. In the NGL recovery process 110, the C3+ hydrocarbons (e.g. NGL) are separated from the methane, ethane, and carbon dioxide. The C3+ hydrocarbons are sold, processed, or otherwise used, while the carbon dioxide, methane, and ethane are recycled into the compressor 102E and combined with the original carbon dioxide stream, which is used to make-up the lost carbon dioxide once the recycle stream is established. Persons skilled in the art will appreciate that the compressors 102A, 102B, 102C, 102D, 102E described herein may be a single compressor or may contain fewer or more compressors than is shown in FIG. 1.

[0016] FIG. 2 is a diagram of the relationship between compression horsepower and C3+ recovery. The compression horsepower represents the power required by some or all of the compressors 102A, 102B, 102C, 102D, 102E. As can be seen, there is an exponential relationship between C3+ recovery and horsepower. While it may be possible to extract 70 – 90 percent of the C3+ from the light hydrocarbons, the compressive horsepower required to do so is very high, usually prohibitively so. In an embodiment, the present NGL process seeks to recover from about 20 percent to about 35 percent C3+ from the light hydrocarbons, thereby making the NGL process possible on a large scale and economically viable.

[0017] FIG. 3 is a flowchart of an embodiment of the optimization process 200 for the NGL recovery process and/or the carbon dioxide injection process. Briefly, the optimization process 200 comprises choosing a relatively low C3+ recovery rate, such as 5 percent, at block 202. At block 204, the equipment is sized for the recovery rate, and at block 206 the total capital equipment and operating cost of the NGL process and/or carbon dioxide injection process is estimated. On the first iteration, there is only one solution, so block 208 is skipped and the recovery rate is incremented at block 210. Blocks 204 and 206 are then repeated and the two solutions are compared at block 208. If the second solution is better (e.g. preferred, more feasible, or economically viable), then blocks 210, 204, and 206 are repeated. When the incremented solution is not better than the previous solution, then the previous solution may be the optimal solution and is used for the project. When such a process is implemented, the C3+ recovery rates are typically between about 20 percent and about 35 percent.

[0018] FIGS. 4 – 9E are process simulations for three separate hydrocarbon fields obtained using the above optimization process. Specifically, FIG. 4 is an embodiment of a process flow diagram for the NGL recovery process and FIGS. 5A – 5E are process simulation data from the

process flow diagram in FIG. 4. In addition, FIG. 6 is another embodiment of a process flow diagram for the NGL recovery process and FIGS. 7A – 7E are process simulation data from the process flow diagram in FIG. 6. Moreover, FIG. 8 is a third embodiment of a process flow diagram for the NGL recovery process and FIGS. 9A – 9E are process simulation data from the process flow diagram in FIG. 8. Finally, FIGS. 10A – 10V are piping and instrumentation diagrams for the NGL recovery process.

[0019] The separators described herein may be any of a variety of process equipment suitable for separating a stream into two separate streams having different compositions, states, temperatures, and/or pressures. For example, one or more of the separators may be a column having trays, packing, or some other type of complex internal structure. Examples of such columns include scrubbers, strippers, absorbers, adsorbers, packed columns, and distillation columns having valve, sieve, or other types of trays. Such columns may employ weirs, downspouts, internal baffles, temperature, and/or pressure control elements. Such columns may also employ some combination of reflux condensers and/or reboilers, including intermediate stage condensers and reboilers. Alternatively, one or more of the separators may be a phase separator. A phase separator is a vessel that separates an inlet stream into a substantially vapor stream and a substantially liquid stream, such as a knock-out drum or a flash drum. Such vessels may have some internal baffles, temperature, and/or pressure control elements, but generally lack any trays or other type of complex internal structure commonly found in columns. Finally, one or more of the separators may be any other type of separator, such as a membrane separator.

[0020] The reboilers and condensers described herein may be any of a variety of process equipment suitable for changing the temperature and/or separating any of the streams described herein. In embodiments, the reboilers and the condensers may be any vessel that separates an inlet

stream into a substantially vapor stream and a substantially liquid stream. These vessels typically have some internal baffles, temperature, and/or pressure control elements, but generally lack any trays or other type of complex internal structure found in other vessels. In specific embodiments, heat exchangers and kettle-type reboilers may be used as the reboilers and condensers described herein.

[0021] The heat exchangers described herein may be any of a variety of process equipment suitable for heating or cooling any of the streams described herein. Generally, heat exchangers are relatively simple devices that allow heat to be exchanged between two fluids without the fluids directly contacting each other. In the case of an air cooler, one of the fluids is atmospheric air, which may be forced over tubes or coils using one or more fans. The types of heat exchangers suitable for use with the NGL recovery process include shell and tube, kettle-type, air cooled, hairpin, bayonet, and plate-fin heat exchangers.

[0022] The compressors and pumps described herein may be any of a variety of process equipment suitable for increasing the pressure, temperature, and/or density of any of the streams described herein. Generally, compressors are associated with vapor streams and pumps are associated with liquid streams; however such a limitation should not be read into the present processes as the compressors and pumps described herein may be interchangeable based upon the specific conditions and compositions of the streams. The types of compressors and pumps suitable for the uses described herein include centrifugal, axial, positive displacement, rotary, and reciprocating compressors and pumps. Finally, the NGL recovery process may contain additional compressors and/or pumps other than those described herein.

[0023] The mixers described herein may either be a dynamic mixer or a static mixer. Dynamic mixers are mixers that employ motion or mechanical agitation to mix two or more streams. For

example, a dynamic mixer may be a tank with a paddle operating either in a continuous or batch mode. In contrast, static mixers are mixers that do not employ any motion or mechanical agitation to mix two or more streams. For example, a static mixer may be a convergence of piping designed to combine two streams, such as a pipe tee. Either type of mixer may be configured with internal baffles to promote the mixing of the feed streams.

[0024] The energy streams described herein may be derived from any number of suitable sources. For example, heat may be added to a process stream using steam, turbine exhaust, or some other hot fluid and a heat exchanger. Similarly, heat may be removed from a process stream by using a refrigerant, air, or some other cold fluid and a heat exchanger. Further, electrical energy can be supplied to compressors, pumps, and other mechanical equipment to increase the pressure or other physical properties of a fluid. Similarly, turbines, generators, or other mechanical equipment can be used to extract physical energy from a stream and optionally convert the physical energy into electrical energy. Persons of ordinary skill in the art are aware of how to configure the processes described herein with the required energy streams. In addition, persons of ordinary skill in the art will appreciate that the NGL recovery process may contain additional equipment, process streams, and/or energy streams other than those described herein.

[0025] While preferred embodiments of the invention have been shown and described, modifications thereof can be made by one skilled in the art without departing from the spirit and teachings of the invention. The embodiments described herein are exemplary only, and are not intended to be limiting. Many variations and modifications of the invention disclosed herein are possible and are within the scope of the invention. Specifically, while the process is described in terms of a continuous process, it is contemplated that the process can be implemented as a batch process. In addition, where numerical ranges or limitations are expressly stated, such express

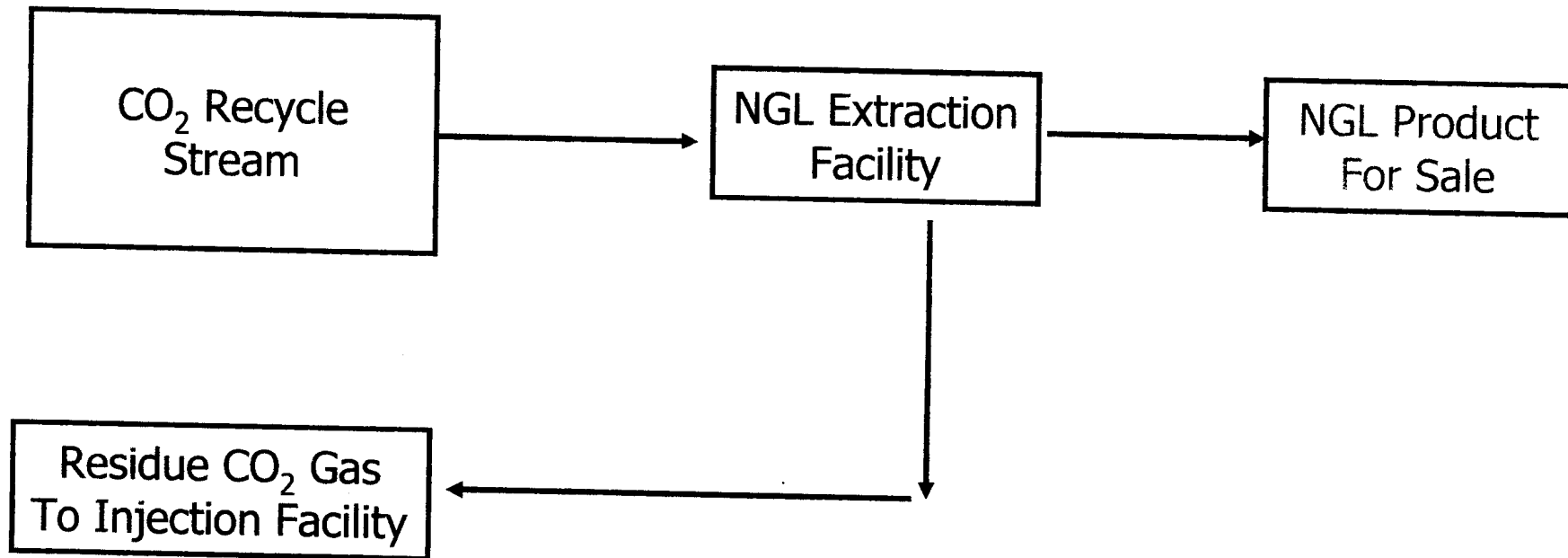
ranges or limitations should be understood to include iterative ranges or limitations of like magnitude falling within the expressly stated ranges or limitations (e.g., from about 1 to about 10 includes, 2, 3, 4, etc.; greater than 0.10 includes 0.11, 0.12, 0.13, etc.). Use of the term “optionally” with respect to any element of a claim is intended to mean that the subject element is required, or alternatively, is not required. Both alternatives are intended to be within the scope of the claim. Use of broader terms such as comprises, includes, having, etc. should be understood to provide support for narrower terms such as consisting of, consisting essentially of, comprised substantially of, etc. Moreover, the percentages described herein may be mole fraction, weight fraction, or volumetric fraction.

[0026] Accordingly, the scope of protection is not limited by the description set out above but is only limited by the claims which follow, that scope including all equivalents of the subject matter of the claims. Each and every claim is incorporated into the specification as an embodiment of the present invention. Thus, the claims are a further description and are an addition to the preferred embodiments of the present invention. The discussion of a reference in the herein is not an admission that it is prior art to the present invention, especially any reference that may have a publication date after the priority date of this application. The disclosures of all patents, patent applications, and publications cited herein are hereby incorporated by reference, to the extent that they provide exemplary, procedural, or other details supplementary to those set forth herein.

Project Benefits

- **Ability for Producer to recover incremental NGL reserves**
- Producer is returned a higher quality CO₂ stream
- Hydrocarbon removal process improves the efficiency of the CO₂ miscible flood
- Increases Estimated Ultimate Recovery
- Value added process

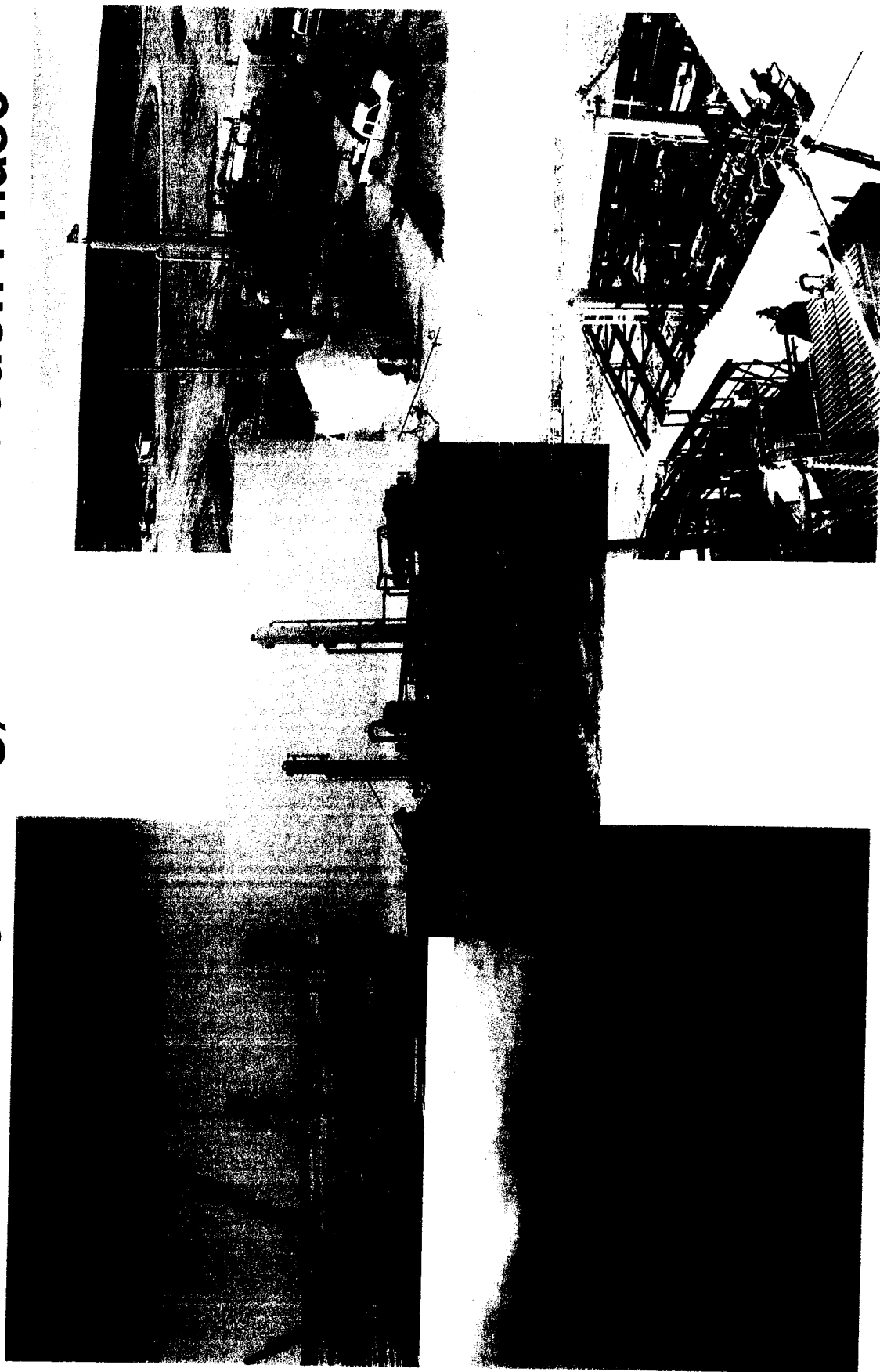
Simplified CO₂ Process Summary



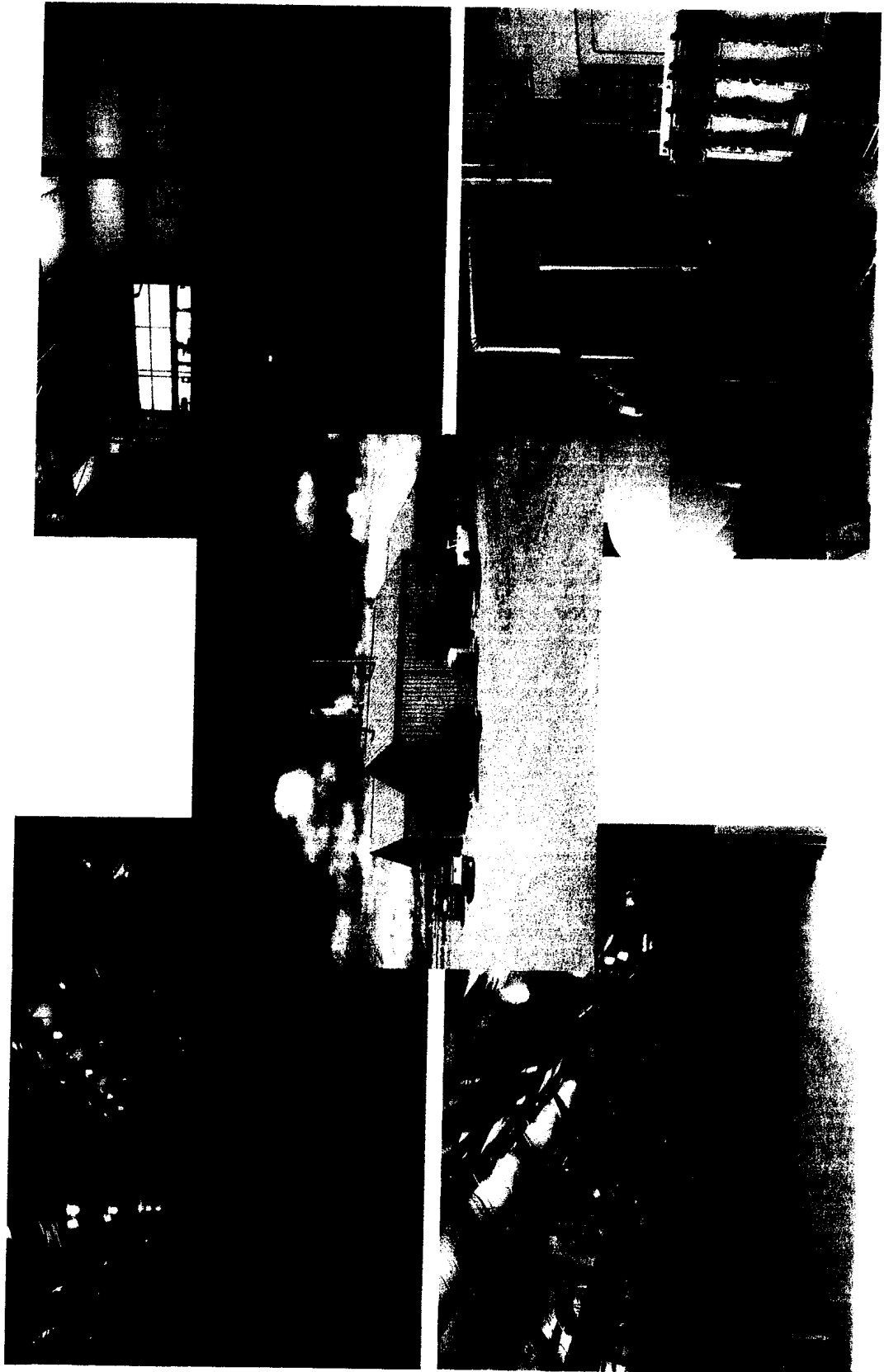
Commercial Proposal

- Percent of liquids
 - CO₂ Processing Partners and Producer share NGL production/NGL value
- Flexible contract structure
 - Allow producer to “Book” barrels
 - Take-in kind or market option

Monell CO₂ Processing Facility (Monell, Wyoming) – Construction Phase



Monell CO2 Processing Facility (Monell, Wyoming)



Why CO_2 Processing Partners??

- Ability to quickly execute
- Core business dedication
- Cost effective
- Minimal resource requirements from Producer
- NO capital risk to Producer

CLAIMS

What is claimed is:

1. An optimization process comprising:
 - choosing a natural gas liquids (NGL) recovery rate;
 - sizing a plurality of process equipment for the NGL recovery rate;
 - developing a first project estimate based on the size of the process equipment; and
 - entering an iterative loop comprising:
 - incrementing the NGL recovery rate;
 - sizing a plurality of process equipment for the incremented NGL recovery rate;
 - developing a second project estimate based on the size of the process equipment;
 - comparing the first project estimate to the second project estimate;
 - if the second project estimate is better than the first project estimate, saving the second project estimate as the first project estimate and repeating the loop; and
 - if the second project estimate is not better than the first project estimate, using the first project estimate as an optimized solution.

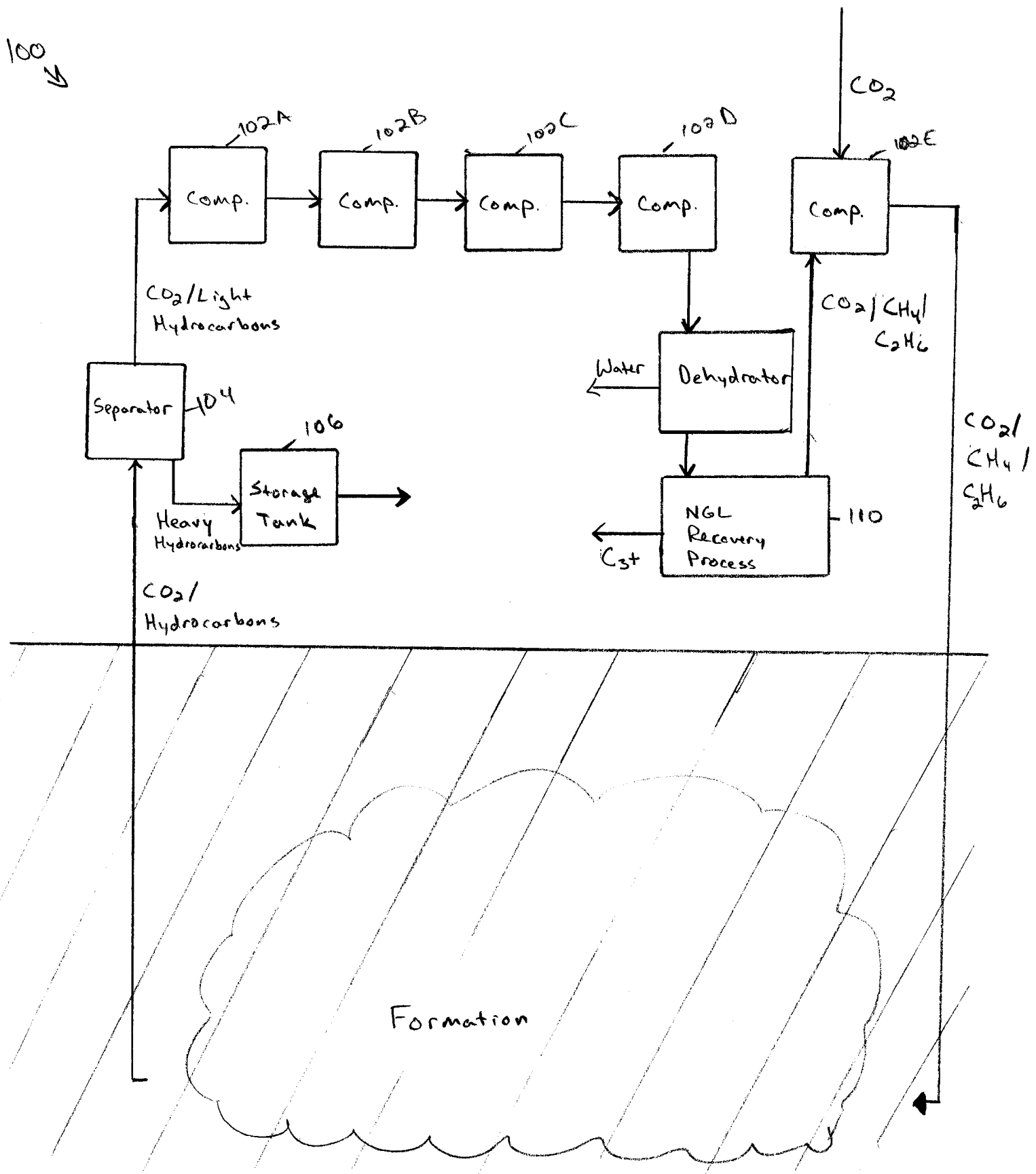


Fig.1

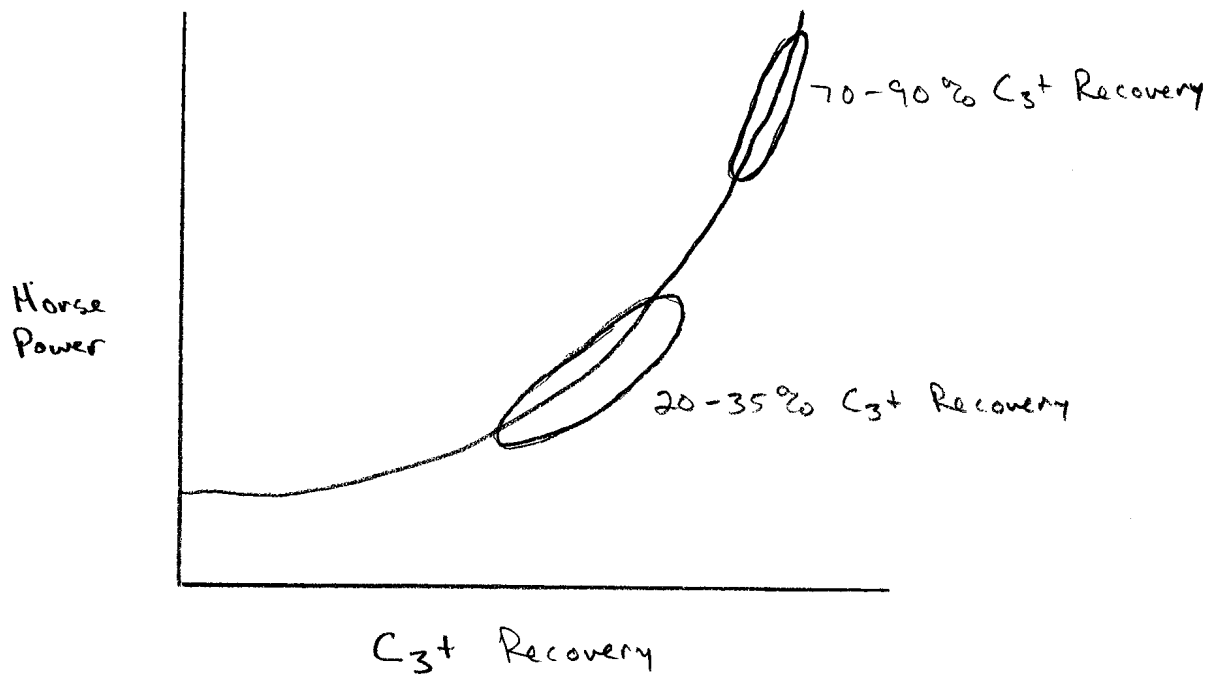


Fig.2

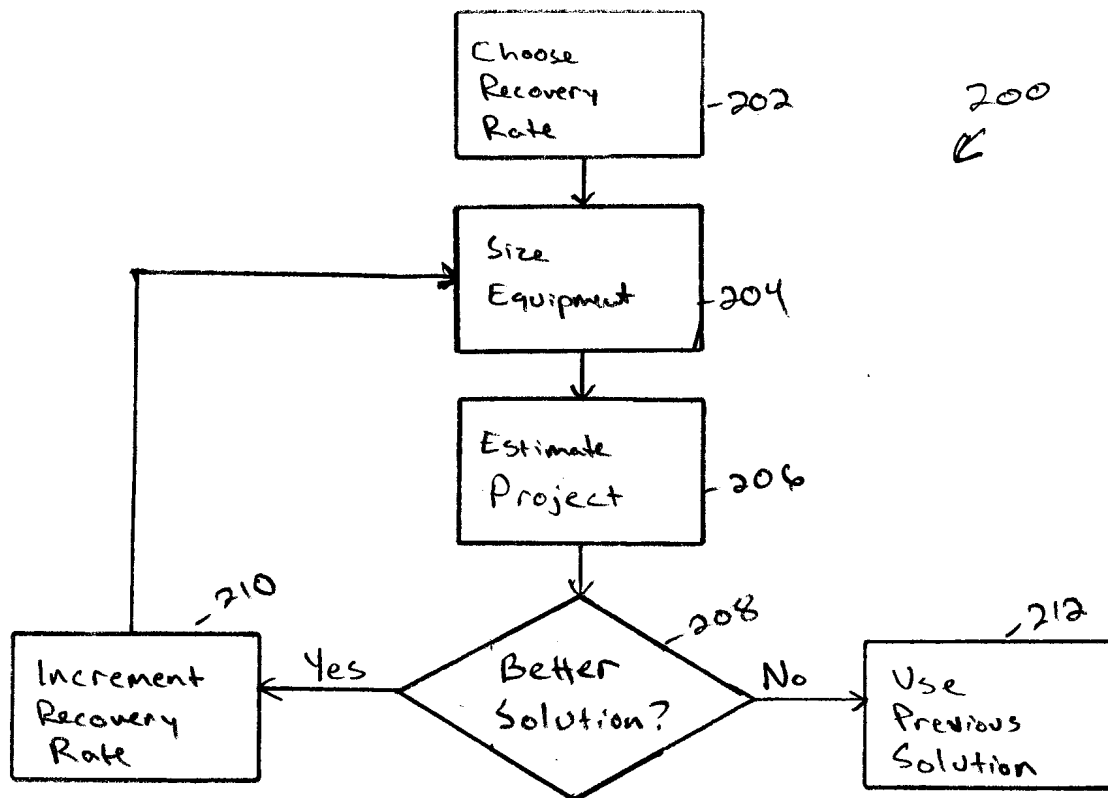
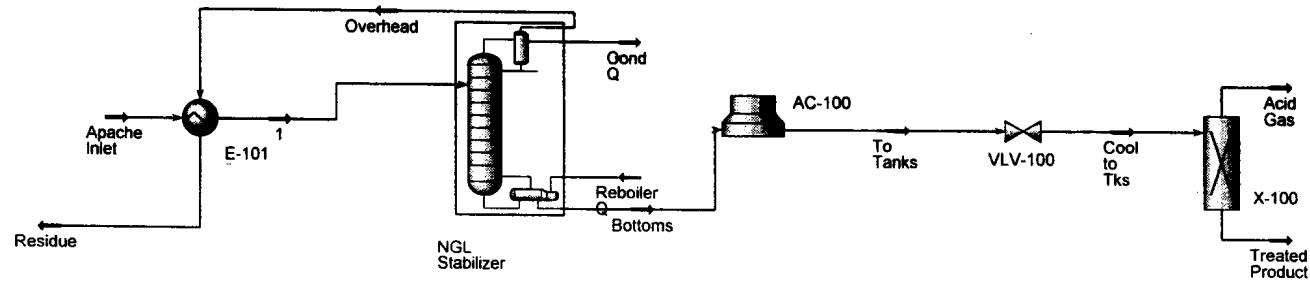
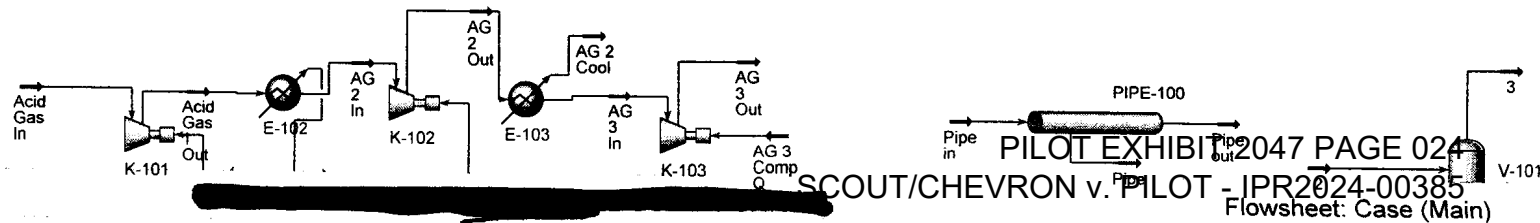
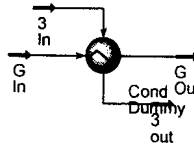
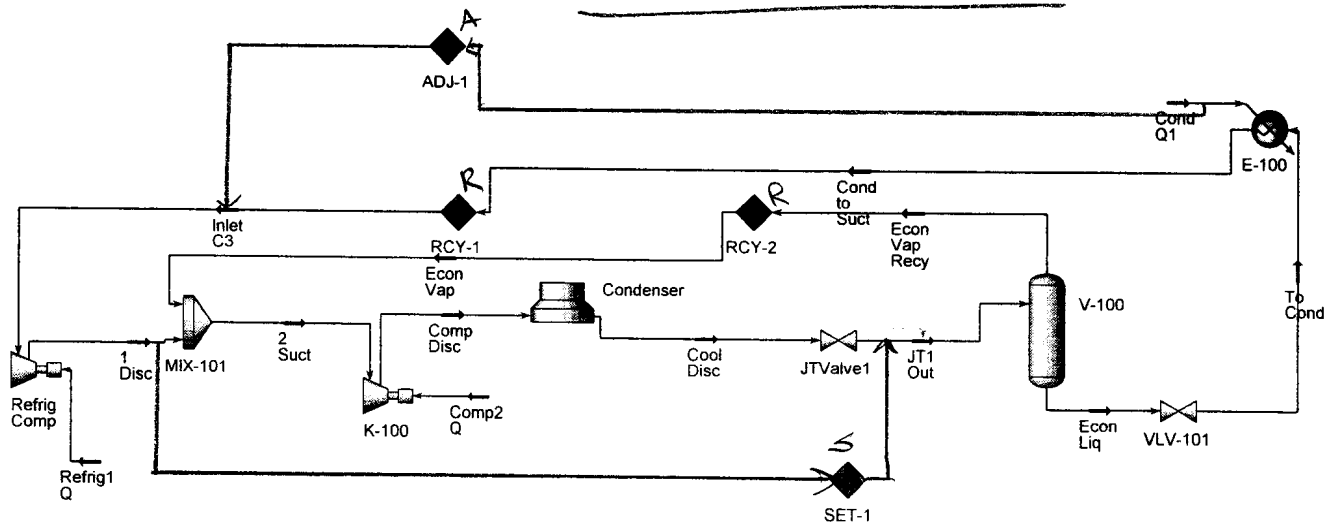


Fig.3

NGL process



Condenser Q Process



1	 Holloman Corporation Calgary, Alberta CANADA			Case Name:		
2				Unit Set:		
3				Date/Time:		
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6	Workbook: Case (Main)					
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10	Material Streams					
11	Name	Bottoms	Overhead	Apache Inlet	1	Inlet C3
12	Vapour Fraction	0.0000	1.0000	0.9838	0.9392	1.0000
13	Temperature (F)	202.6	4.011	104.0	45.00	-5.059
14	Pressure (psig)	340.0	330.0	340.0	335.0	20.00
15	Molar Flow (MMSCFD)	1.119	15.88	17.00	17.00	2.717
16	Mass Flow (lb/hr)	7947	7.254e+04	8.049e+04	8.049e+04	1.316e+04
17	Liquid Volume Flow (USGPM)	25.84	192.3	218.1	218.1	51.86
18	Heat Flow (Btu/hr)	-8.443e+06	-2.577e+08	-2.639e+08	-2.658e+08	-1.378e+07
19	Name	Comp Disc	Cool Disc	JT1 Out	Cond to Suct	1 Disc
20	Vapour Fraction	1.0000	0.0000	0.1647	1.0000	1.0000
21	Temperature (F)	158.3	120.0	89.32	-5.059	115.2
22	Pressure (psig)	235.3	230.3	150.3	20.00	135.3
23	Molar Flow (MMSCFD)	3.255	3.255	3.255	2.719	2.717
24	Mass Flow (lb/hr)	1.576e+04	1.576e+04	1.576e+04	1.316e+04	1.316e+04
25	Liquid Volume Flow (USGPM)	62.12	62.12	62.12	51.89	51.86
26	Heat Flow (Btu/hr)	-1.570e+07	-1.794e+07	-1.794e+07	-1.379e+07	-1.327e+07
27	Name	Econ Vap	Econ Liq	2 Suct	Econ Vap Recy	To Cond
28	Vapour Fraction	1.0000	0.0000	1.0000	1.0000	0.3271
29	Temperature (F)	89.32	89.32	110.4	89.32	1.717
30	Pressure (psig)	150.3	150.3	135.3	150.3	25.00
31	Molar Flow (MMSCFD)	0.5377	2.719	3.255	0.5362	2.719
32	Mass Flow (lb/hr)	2604	1.316e+04	1.576e+04	2596	1.316e+04
33	Liquid Volume Flow (USGPM)	10.26	51.89	62.12	10.23	51.89
34	Heat Flow (Btu/hr)	-2.661e+06	-1.529e+07	-1.593e+07	-2.653e+06	-1.529e+07
35	Name	Residue	To Tanks	Cool to Tks	2	3
36	Vapour Fraction	1.0000	0.0000	0.0000	0.9986	1.0000
37	Temperature (F)	97.39	120.0	120.9	104.0	104.0
38	Pressure (psig)	325.0	635.3	200.3	685.3	685.3
39	Molar Flow (MMSCFD)	15.88	1.119	1.119	50.00	49.93
40	Mass Flow (lb/hr)	7.254e+04	7947	7947	2.291e+05	2.286e+05
41	Liquid Volume Flow (USGPM)	192.3	25.84	25.84	612.3	610.7
42	Heat Flow (Btu/hr)	-2.558e+08	-8.862e+06	-8.862e+06	-8.005e+08	-7.995e+08
43	Name	4	Acid Gas In	Acid Gas 1 Out	AG 2 In	AG 2 Out
44	Vapour Fraction	0.0000	1.0000	1.0000	0.9514	1.0000
45	Temperature (F)	104.0	120.0	310.0	120.0	387.2
46	Pressure (psig)	685.3	4.304	35.30	30.30	285.3
47	Molar Flow (MMSCFD)	0.06827	0.1056	0.1056	0.1056	0.1056
48	Mass Flow (lb/hr)	530.8	413.0	413.0	413.0	413.0
49	Liquid Volume Flow (USGPM)	1.511	1.020	1.020	1.020	1.020
50	Heat Flow (Btu/hr)	-9.131e+05	-7.377e+05	-7.186e+05	-7.485e+05	-7.125e+05
51	Name	AG 3 In	AG 3 Out	G In	G Out	3 In
52	Vapour Fraction	0.9203	0.9461	0.6175	0.2829	0.0000
53	Temperature (F)	120.0	215.3	45.00	36.55	23.00
54	Pressure (psig)	280.3	635.3	680.3	675.3	45.30
55	Molar Flow (MMSCFD)	0.1056	0.1056	66.00	66.00	11.47
56	Mass Flow (lb/hr)	413.0	413.0	3.025e+05	3.025e+05	5.554e+04
57	Liquid Volume Flow (USGPM)	1.020	1.020	808.2	808.2	218.9
58	Heat Flow (Btu/hr)	-7.585e+05	-7.466e+05	-1.072e+09	-1.082e+09	-6.694e+07
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66	Hypotech Ltd.			Page 1 of 5		

1	 Holloman Corporation Calgary, Alberta CANADA			Case Name:		
2				Unit Set:		
3				Date/Time:		
4						
5						
6						
7	Workbook: Case (Main) (continued)					
8						
9						
10	Material Streams					
11	Name	3 out	Acid Gas	Treated Product	Pipe in	Pipe out
12	Vapour Fraction	1.0000 *	1.0000	0.0000	0.9986	0.9986
13	Temperature (F)	19.08	100.0 *	111.8	104.0 *	104.0 *
14	Pressure (psig)	40.30	5.304 *	185.3 *	685.3 *	684.8
15	Molar Flow (MMSCFD)	11.47	0.1030	1.016	50.00 *	50.00
16	Mass Flow (lb/hr)	5.554e+04	446.4	7501	2.291e+05	2.291e+05
17	Liquid Volume Flow (USGPM)	218.9	1.100	24.74	612.3	612.3
18	Heat Flow (Btu/hr)	-5.779e+07	-1.083e+06	-7.779e+06	-8.005e+08	-8.004e+08
19						
20	Compositions					
21	Name	Bottoms	Overhead	Apache Inlet	1	Inlet C3
22	Comp Mole Frac (H2S)	0.0421	0.0327	0.0333 *	0.0333	0.0000 *
23	Comp Mole Frac (Nitrogen)	0.0000	0.0058	0.0054 *	0.0054	0.0000 *
24	Comp Mole Frac (CO2)	0.0500	0.8359	0.7842 *	0.7842	0.0000 *
25	Comp Mole Frac (Methane)	0.0000	0.0558	0.0521 *	0.0521	0.0000 *
26	Comp Mole Frac (Ethane)	0.0281	0.0348	0.0343 *	0.0343	0.0000 *
27	Comp Mole Frac (Propane)	0.1728	0.0313	0.0406 *	0.0406	1.0000 *
28	Comp Mole Frac (i-Butane)	0.0789	0.0022	0.0072 *	0.0072	0.0000 *
29	Comp Mole Frac (n-Butane)	0.2388	0.0015	0.0171 *	0.0171	0.0000 *
30	Comp Mole Frac (i-Pentane)	0.0887	0.0000	0.0058 *	0.0058	0.0000 *
31	Comp Mole Frac (n-Pentane)	0.0866	0.0000	0.0057 *	0.0057	0.0000 *
32	Comp Mole Frac (n-Hexane)	0.1063	0.0000	0.0070 *	0.0070	0.0000 *
33	Comp Mole Frac (n-Octane)	0.1077	0.0000	0.0071 *	0.0071	0.0000 *
34	Comp Mole Frac (H2O)	0.0000	0.0000	0.0000 *	0.0000	0.0000 *
35	Name	Comp Disc	Cool Disc	JT1 Out	Cond to Suct	1 Disc
36	Comp Mole Frac (H2S)	0.0000	0.0000 *	0.0000	0.0000	0.0000
37	Comp Mole Frac (Nitrogen)	0.0000	0.0000 *	0.0000	0.0000	0.0000
38	Comp Mole Frac (CO2)	0.0000	0.0000 *	0.0000	0.0000	0.0000
39	Comp Mole Frac (Methane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
40	Comp Mole Frac (Ethane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
41	Comp Mole Frac (Propane)	1.0000	1.0000 *	1.0000	1.0000	1.0000
42	Comp Mole Frac (i-Butane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
43	Comp Mole Frac (n-Butane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
44	Comp Mole Frac (i-Pentane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
45	Comp Mole Frac (n-Pentane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
46	Comp Mole Frac (n-Hexane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
47	Comp Mole Frac (n-Octane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
48	Comp Mole Frac (H2O)	0.0000	0.0000 *	0.0000	0.0000	0.0000
49	Name	Econ Vap	Econ Liq	2 Suct	Econ Vap Recy	To Cond
50	Comp Mole Frac (H2S)	0.0000 *	0.0000	0.0000	0.0000	0.0000
51	Comp Mole Frac (Nitrogen)	0.0000 *	0.0000	0.0000	0.0000	0.0000
52	Comp Mole Frac (CO2)	0.0000 *	0.0000	0.0000	0.0000	0.0000
53	Comp Mole Frac (Methane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
54	Comp Mole Frac (Ethane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
55	Comp Mole Frac (Propane)	1.0000 *	1.0000	1.0000	1.0000	1.0000
56	Comp Mole Frac (i-Butane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
57	Comp Mole Frac (n-Butane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
58	Comp Mole Frac (i-Pentane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
59	Comp Mole Frac (n-Pentane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
60	Comp Mole Frac (n-Hexane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
61	Comp Mole Frac (n-Octane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
62	Comp Mole Frac (H2O)	0.0000 *	0.0000	0.0000	0.0000	0.0000
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66	Hypotech Ltd. Page 2 of 5					

1		Case Name: [REDACTED]
2		Unit Set: [REDACTED]
3		Date/Time: [REDACTED]
4		
5	Holloman Corporation	
6	Calgary, Alberta	
7	CANADA	

Workbook: Case (Main) (continued)

Compositions

Name	Residue	To Tanks	Cool to Tks	2	3
Comp Mole Frac (H2S)	0.0327	0.0421	0.0421	0.0240 *	0.0240
Comp Mole Frac (Nitrogen)	0.0058	0.0000	0.0000	0.0137 *	0.0137
Comp Mole Frac (CO2)	0.8359	0.0500	0.0500	0.8235 *	0.8241
Comp Mole Frac (Methane)	0.0558	0.0000	0.0000	0.0630 *	0.0630
Comp Mole Frac (Ethane)	0.0348	0.0281	0.0281	0.0428 *	0.0428
Comp Mole Frac (Propane)	0.0313	0.1728	0.1728	0.0131 *	0.0131
Comp Mole Frac (i-Butane)	0.0022	0.0789	0.0789	0.0042 *	0.0042
Comp Mole Frac (n-Butane)	0.0015	0.2388	0.2388	0.0062 *	0.0062
Comp Mole Frac (i-Pentane)	0.0000	0.0887	0.0887	0.0036 *	0.0036
Comp Mole Frac (n-Pentane)	0.0000	0.0866	0.0866	0.0014 *	0.0013
Comp Mole Frac (n-Hexane)	0.0000	0.1063	0.1063	0.0012 *	0.0011
Comp Mole Frac (n-Octane)	0.0000	0.1077	0.1077	0.0030 *	0.0025
Comp Mole Frac (H2O)	0.0000	0.0000	0.0000	0.0002 *	0.0002
Name	4	Acid Gas In	Acid Gas 1 Out	AG 2 In	AG 2 Out
Comp Mole Frac (H2S)	0.0255	0.6207 *	0.6207	0.6207	0.6207
Comp Mole Frac (Nitrogen)	0.0027	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (CO2)	0.4139	0.2931 *	0.2931	0.2931	0.2931
Comp Mole Frac (Methane)	0.0148	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (Ethane)	0.0362	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (Propane)	0.0268	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (i-Butane)	0.0164	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Butane)	0.0313	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (i-Pentane)	0.0349	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Pentane)	0.0162	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Hexane)	0.0312	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Octane)	0.3500	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.0001	0.0862 *	0.0862	0.0862	0.0862
Name	AG 3 In	AG 3 Out	G In	G Out	3 In
Comp Mole Frac (H2S)	0.6207	0.6207	0.0240 *	0.0240	0.0000 *
Comp Mole Frac (Nitrogen)	0.0000	0.0000	0.0137 *	0.0137	0.0000 *
Comp Mole Frac (CO2)	0.2931	0.2931	0.8235 *	0.8235	0.0000 *
Comp Mole Frac (Methane)	0.0000	0.0000	0.0630 *	0.0630	0.0000 *
Comp Mole Frac (Ethane)	0.0000	0.0000	0.0428 *	0.0428	0.0000 *
Comp Mole Frac (Propane)	0.0000	0.0000	0.0131 *	0.0131	1.0000 *
Comp Mole Frac (i-Butane)	0.0000	0.0000	0.0042 *	0.0042	0.0000 *
Comp Mole Frac (n-Butane)	0.0000	0.0000	0.0062 *	0.0062	0.0000 *
Comp Mole Frac (i-Pentane)	0.0000	0.0000	0.0036 *	0.0036	0.0000 *
Comp Mole Frac (n-Pentane)	0.0000	0.0000	0.0014 *	0.0014	0.0000 *
Comp Mole Frac (n-Hexane)	0.0000	0.0000	0.0012 *	0.0012	0.0000 *
Comp Mole Frac (n-Octane)	0.0000	0.0000	0.0030 *	0.0030	0.0000 *
Comp Mole Frac (H2O)	0.0862	0.0862	0.0002 *	0.0002	0.0000 *

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Holloman Corporation
Calgary, Alberta
CANADA

Case Name: [REDACTED]

Unit Set: [REDACTED]

Date/Time: [REDACTED]

Workbook: Case (Main) (continued)

Unit Ops

Operation Name	Operation Type	Feeds	Products	Ignored	Calc. Level
V-100	Separator	JT1 Out	Econ Liq Econ Vap Recy	No	500.0 *
V-101	Separator	2	4 3	No	500.0 *
E-100	Heater	To Cond Cond Q1	Cond to Suct	No	500.0 *
SET-1	Set			No	500.0 *
ADJ-1	Adjust			No	3500 *
X-100	Component Splitter	Cool to Tks	Acid Gas Treated Product	No	500.0 *
PIPE-100	Pipe Segment	Pipe in	Pipe out Pipe Q	No	500.0 *

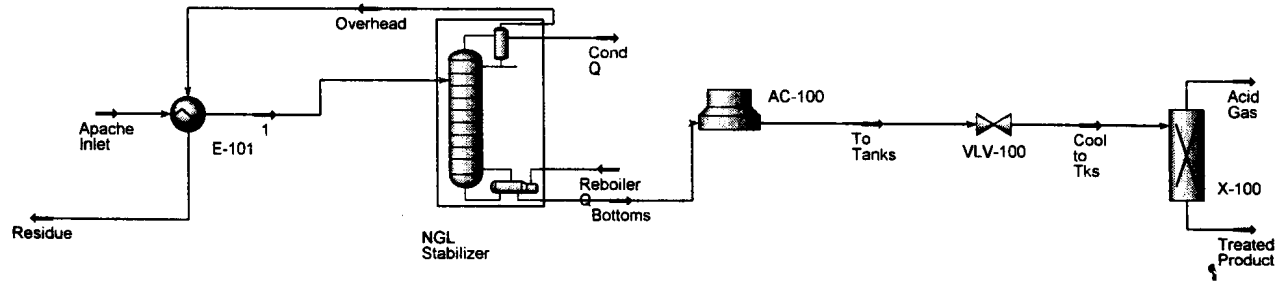
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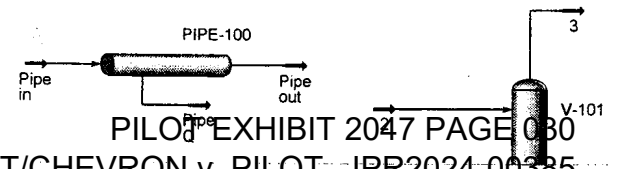
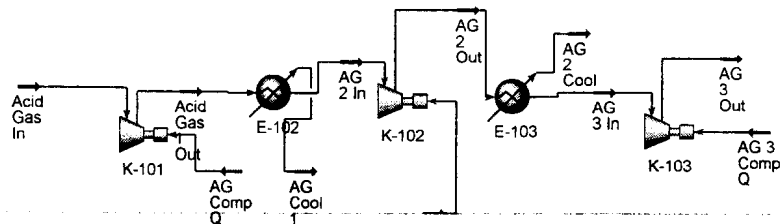
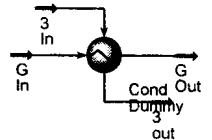
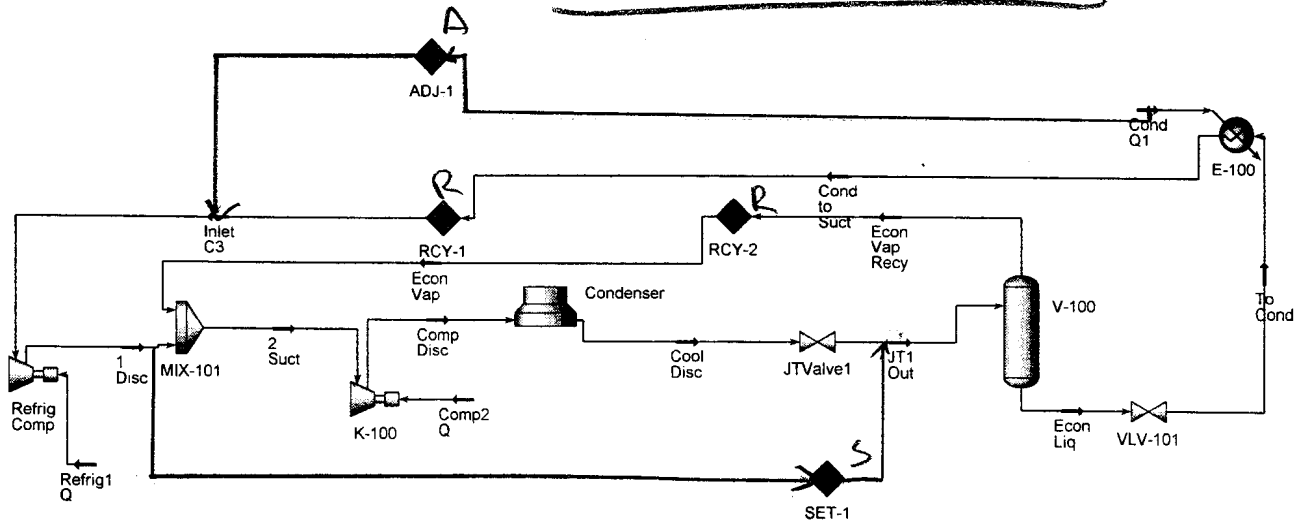
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Fig. 66 SCOUT/CHEVRON v. PILOT - IPR2024-00385

NGL Process



Condenser Q Process



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Holloman Corporation
Calgary, Alberta
CANADA

Case Name: [REDACTED]

Unit Set: [REDACTED]

Date/Time: [REDACTED]

Workbook: Case (Main) (continued)

Unit Ops

Operation Name	Operation Type	Feeds	Products	Ignored	Calc. Level
V-100	Separator	JT1 Out	Econ Liq Econ Vap Recy	No	500.0 *
V-101	Separator	2	4 3	No	500.0 *
E-100	Heater	To Cond Cond Q1	Cond to Suct	No	500.0 *
SET-1	Set			No	500.0 *
ADJ-1	Adjust			No	3500 *
X-100	Component Splitter	Cool to Tks	Acid Gas Treated Product	No	500.0 *
PIPE-100	Pipe Segment	Pipe in	Pipe out Pipe Q	No	500.0 *

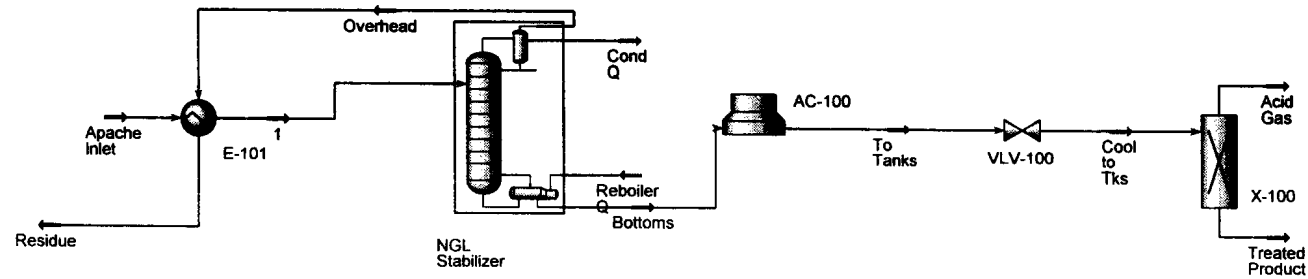
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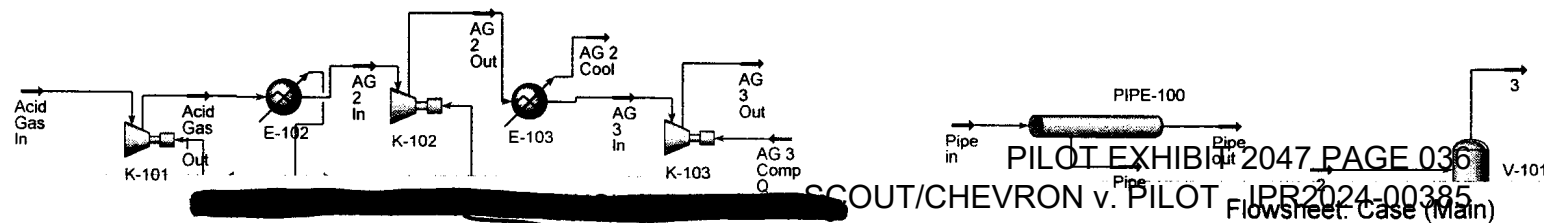
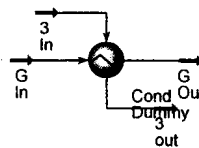
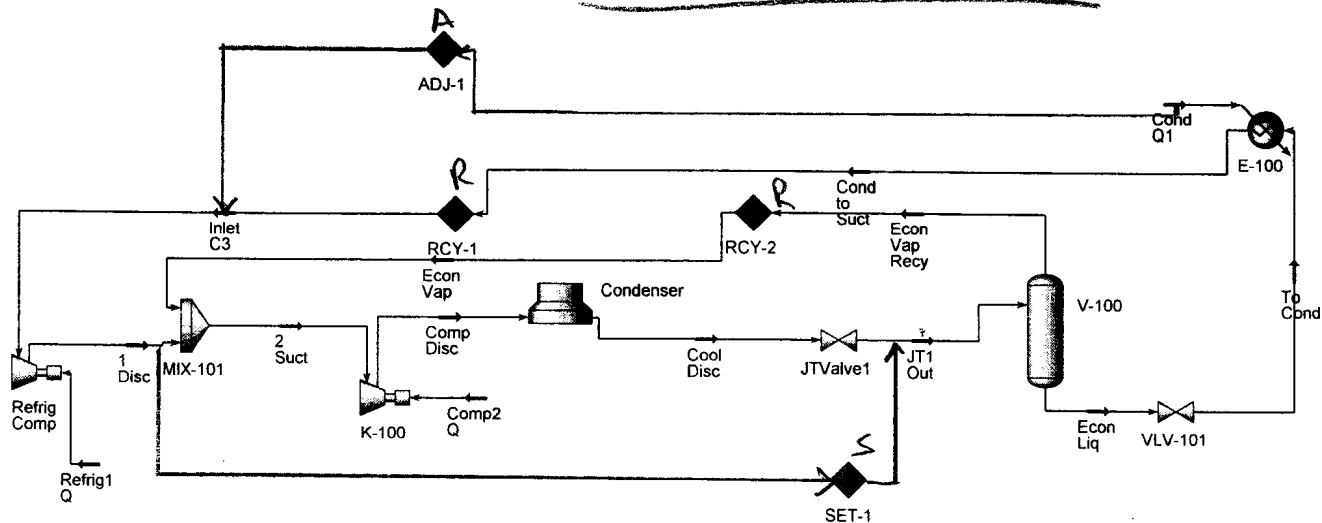
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PILOT EXHIBIT 2047 PAGE 035
Fig. 506 SCOUT/CHEVRON v. PILOT - IPR2024-00385

NGL Process



Condenser Q Process





Holloman Corporation
Calgary, Alberta
CANADA

Case Name: [REDACTED]

Unit Set: [REDACTED]

Date/Time: [REDACTED]

Workbook: Case (Main)

Material Streams

Name	Bottoms	Overhead	Apache Inlet	1	Inlet C3
Vapour Fraction	0.0000	1.0000	1.0000	0.9988	1.0000
Temperature (F)	199.4	4.617	104.0	30.00	-5.059
Pressure (psig)	340.0	330.0	340.0	335.0	20.00
Molar Flow (MMSCFD)	0.1763	16.82	17.00	17.00	10.88
Mass Flow (lb/hr)	1153	7.968e+04	8.083e+04	8.083e+04	5.267e+04
Liquid Volume Flow (USGPM)	3.894	199.5	203.4	203.4	207.6
Heat Flow (Btu/hr)	-1.278e+06	-3.025e+08	-3.016e+08	-3.032e+08	-5.518e+07
Name	Comp Disc	Cool Disc	JT1 Out	Cond to Suct	1 Disc
Vapour Fraction	1.0000	0.0000	0.1647	1.0000	1.0000
Temperature (F)	158.3	120.0	89.32	-5.059	115.2
Pressure (psig)	235.3	230.3	150.3	20.00	135.3
Molar Flow (MMSCFD)	13.02	13.02	13.02	10.87	10.88
Mass Flow (lb/hr)	6.304e+04	6.304e+04	6.304e+04	5.266e+04	5.267e+04
Liquid Volume Flow (USGPM)	248.5	248.5	248.5	207.5	207.6
Heat Flow (Btu/hr)	-6.279e+07	-7.178e+07	-7.178e+07	-5.516e+07	-5.311e+07
Name	Econ Vap	Econ Liq	2 Suct	Econ Vap Recy	To Cond
Vapour Fraction	1.0000	0.0000	1.0000	1.0000	0.3271
Temperature (F)	89.32	89.32	110.4	89.32	1.717
Pressure (psig)	150.3	150.3	135.3	150.3	25.00
Molar Flow (MMSCFD)	2.142	10.87	13.02	2.145	10.87
Mass Flow (lb/hr)	1.037e+04	5.266e+04	6.304e+04	1.038e+04	5.266e+04
Liquid Volume Flow (USGPM)	40.88	207.5	248.5	40.93	207.5
Heat Flow (Btu/hr)	-1.060e+07	-6.116e+07	-6.371e+07	-1.061e+07	-6.116e+07
Name	Residue	To Tanks	Cool to Tks	2	3
Vapour Fraction	1.0000	0.0000	0.0000	0.9986	1.0000
Temperature (F)	76.45	120.0	120.4	104.0	104.0
Pressure (psig)	325.0	635.3	200.3	685.3	685.3
Molar Flow (MMSCFD)	16.82	0.1763	0.1763	50.00	49.93
Mass Flow (lb/hr)	7.968e+04	1153	1153	2.291e+05	2.286e+05
Liquid Volume Flow (USGPM)	199.5	3.894	3.894	612.3	610.7
Heat Flow (Btu/hr)	-3.009e+08	-1.340e+06	-1.340e+06	-8.005e+08	-7.995e+08
Name	4	Acid Gas In	Acid Gas 1 Out	AG 2 In	AG 2 Out
Vapour Fraction	0.0000	1.0000	1.0000	0.9514	1.0000
Temperature (F)	104.0	120.0	310.0	120.0	387.2
Pressure (psig)	685.3	4.304	35.30	30.30	285.3
Molar Flow (MMSCFD)	0.06827	0.1056	0.1056	0.1056	0.1056
Mass Flow (lb/hr)	530.8	413.0	413.0	413.0	413.0
Liquid Volume Flow (USGPM)	1.511	1.020	1.020	1.020	1.020
Heat Flow (Btu/hr)	-9.131e+05	-7.377e+05	-7.186e+05	-7.485e+05	-7.125e+05
Name	AG 3 In	AG 3 Out	G In	G Out	3 In
Vapour Fraction	0.9203	0.9461	0.6175	0.2829	0.0000
Temperature (F)	120.0	215.3	45.00	36.55	23.00
Pressure (psig)	280.3	635.3	680.3	675.3	45.30
Molar Flow (MMSCFD)	0.1056	0.1056	66.00	66.00	11.47
Mass Flow (lb/hr)	413.0	413.0	3.025e+05	3.025e+05	5.554e+04
Liquid Volume Flow (USGPM)	1.020	1.020	808.2	808.2	218.9
Heat Flow (Btu/hr)	-7.585e+05	-7.466e+05	-1.072e+09	-1.082e+09	-6.694e+07

HYPOTECH

Holloman Corporation

Calgary, Alberta

CANADA

Case Name:

Unit Set:

Date/Time:

Workbook: Case (Main) (continued)

Material Streams

Name	3 out	Acid Gas	Treated Product	Pipe in	Pipe out
Vapour Fraction	1.0000 *	1.0000	0.0000	0.9986	0.9986
Temperature (F)	19.08	100.0 *	115.4	104.0 *	104.0 *
Pressure (psig)	40.30	5.304 *	185.3 *	685.3 *	684.8
Molar Flow (MMSCFD)	11.47	0.01048	0.1659	50.00 *	50.00
Mass Flow (lb/hr)	5.554e+04	48.82	1105	2.291e+05	2.291e+05
Liquid Volume Flow (USGPM)	218.9	0.1188	3.776	612.3	612.3
Heat Flow (Btu/hr)	-5.779e+07	-1.653e+05	-1.175e+06	-8.005e+08	-8.004e+08

Compositions

Name	Bottoms	Overhead	Apache Inlet	1	Inlet C3
Comp Mole Frac (H2S)	0.0094	0.0030	0.0031 *	0.0031	0.0000 *
Comp Mole Frac (Nitrogen)	0.0000	0.0008	0.0008 *	0.0008	0.0000 *
Comp Mole Frac (CO2)	0.0500	0.9493	0.9400 *	0.9400	0.0000 *
Comp Mole Frac (Methane)	0.0000	0.0222	0.0219 *	0.0219	0.0000 *
Comp Mole Frac (Ethane)	0.0000	0.0157	0.0156 *	0.0156	0.0000 *
Comp Mole Frac (Propane)	0.2794	0.0088	0.0116 *	0.0116	1.0000 *
Comp Mole Frac (i-Butane)	0.1265	0.0002	0.0015 *	0.0015	0.0000 *
Comp Mole Frac (n-Butane)	0.2985	0.0001	0.0031 *	0.0031	0.0000 *
Comp Mole Frac (i-Pentane)	0.0713	0.0000	0.0007 *	0.0007	0.0000 *
Comp Mole Frac (n-Pentane)	0.0617	0.0000	0.0006 *	0.0006	0.0000 *
Comp Mole Frac (n-Hexane)	0.0482	0.0000	0.0005 *	0.0005	0.0000 *
Comp Mole Frac (n-Octane)	0.0550	0.0000	0.0006 *	0.0006	0.0000 *
Comp Mole Frac (H2O)	0.0000	0.0000	0.0000 *	0.0000	0.0000 *

Name	Comp Disc	Cool Disc	JT1 Out	Cond to Suct	1 Disc
Comp Mole Frac (H2S)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (Nitrogen)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (CO2)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (Methane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (Ethane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (Propane)	1.0000	1.0000 *	1.0000	1.0000	1.0000
Comp Mole Frac (i-Butane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Butane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (i-Pentane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Pentane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Hexane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Octane)	0.0000	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.0000	0.0000 *	0.0000	0.0000	0.0000

Name	Econ Vap	Econ Liq	2 Suct	Econ Vap Recy	To Cond
Comp Mole Frac (H2S)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Nitrogen)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (CO2)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Methane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Ethane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (Propane)	1.0000 *	1.0000	1.0000	1.0000	1.0000
Comp Mole Frac (i-Butane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (n-Butane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (i-Pentane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (n-Pentane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (n-Hexane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (n-Octane)	0.0000 *	0.0000	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.0000 *	0.0000	0.0000	0.0000	0.0000

Hypotech Ltd.

Page 2 of 5

1		Holloman Corporation	Case Name: [REDACTED]	
2		Calgary, Alberta	Unit Set: [REDACTED]	
3		CANADA	Date/Time: [REDACTED]	
4				
5				

Workbook: Case (Main) (continued)

Compositions

Name	Residue	To Tanks	Cool to Tks	2	3
Comp Mole Frac (H2S)	0.0030	0.0094	0.0094	0.0240 *	0.0240
Comp Mole Frac (Nitrogen)	0.0008	0.0000	0.0000	0.0137 *	0.0137
Comp Mole Frac (CO2)	0.9493	0.0500	0.0500	0.8235 *	0.8241
Comp Mole Frac (Methane)	0.0222	0.0000	0.0000	0.0630 *	0.0630
Comp Mole Frac (Ethane)	0.0157	0.0000	0.0000	0.0428 *	0.0428
Comp Mole Frac (Propane)	0.0088	0.2794	0.2794	0.0131 *	0.0131
Comp Mole Frac (i-Butane)	0.0002	0.1265	0.1265	0.0042 *	0.0042
Comp Mole Frac (n-Butane)	0.0001	0.2985	0.2985	0.0062 *	0.0062
Comp Mole Frac (i-Pentane)	0.0000	0.0713	0.0713	0.0036 *	0.0036
Comp Mole Frac (n-Pentane)	0.0000	0.0617	0.0617	0.0014 *	0.0013
Comp Mole Frac (n-Hexane)	0.0000	0.0482	0.0482	0.0012 *	0.0011
Comp Mole Frac (n-Octane)	0.0000	0.0550	0.0550	0.0030 *	0.0025
Comp Mole Frac (H2O)	0.0000	0.0000	0.0000	0.0002 *	0.0002
Name	4	Acid Gas In	Acid Gas 1 Out	AG 2 In	AG 2 Out
Comp Mole Frac (H2S)	0.0255	0.6207 *	0.6207	0.6207	0.6207
Comp Mole Frac (Nitrogen)	0.0027	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (CO2)	0.4139	0.2931 *	0.2931	0.2931	0.2931
Comp Mole Frac (Methane)	0.0148	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (Ethane)	0.0362	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (Propane)	0.0268	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (i-Butane)	0.0164	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Butane)	0.0313	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (i-Pentane)	0.0349	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Pentane)	0.0162	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Hexane)	0.0312	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (n-Octane)	0.3500	0.0000 *	0.0000	0.0000	0.0000
Comp Mole Frac (H2O)	0.0001	0.0862 *	0.0862	0.0862	0.0862
Name	AG 3 In	AG 3 Out	G In	G Out	3 In
Comp Mole Frac (H2S)	0.6207	0.6207	0.0240 *	0.0240	0.0000 *
Comp Mole Frac (Nitrogen)	0.0000	0.0000	0.0137 *	0.0137	0.0000 *
Comp Mole Frac (CO2)	0.2931	0.2931	0.8235 *	0.8235	0.0000 *
Comp Mole Frac (Methane)	0.0000	0.0000	0.0630 *	0.0630	0.0000 *
Comp Mole Frac (Ethane)	0.0000	0.0000	0.0428 *	0.0428	0.0000 *
Comp Mole Frac (Propane)	0.0000	0.0000	0.0131 *	0.0131	1.0000 *
Comp Mole Frac (i-Butane)	0.0000	0.0000	0.0042 *	0.0042	0.0000 *
Comp Mole Frac (n-Butane)	0.0000	0.0000	0.0062 *	0.0062	0.0000 *
Comp Mole Frac (i-Pentane)	0.0000	0.0000	0.0036 *	0.0036	0.0000 *
Comp Mole Frac (n-Pentane)	0.0000	0.0000	0.0014 *	0.0014	0.0000 *
Comp Mole Frac (n-Hexane)	0.0000	0.0000	0.0012 *	0.0012	0.0000 *
Comp Mole Frac (n-Octane)	0.0000	0.0000	0.0030 *	0.0030	0.0000 *
Comp Mole Frac (H2O)	0.0862	0.0862	0.0002 *	0.0002	0.0000 *

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Case Name: [REDACTED]
Unit Set: [REDACTED]
Date/Time: [REDACTED]

11	Name	3 out	Acid Gas	Treated Product	Pipe in	Pipe out
12	Comp Mole Frac (H2S)	0.0000	0.1584	0.0000	0.0240 *	0.0240
13	Comp Mole Frac (Nitrogen)	0.0000	0.0000	0.0000	0.0137 *	0.0137
14	Comp Mole Frac (CO2)	0.0000	0.8416	0.0000	0.8235 *	0.8235
15	Comp Mole Frac (Methane)	0.0000	0.0000	0.0000	0.0630 *	0.0630
16	Comp Mole Frac (Ethane)	0.0000	0.0000	0.0000	0.0428 *	0.0428
17	Comp Mole Frac (Propane)	1.0000	0.0000	0.2970	0.0131 *	0.0131
18	Comp Mole Frac (i-Butane)	0.0000	0.0000	0.1345	0.0042 *	0.0042
19	Comp Mole Frac (n-Butane)	0.0000	0.0000	0.3174	0.0062 *	0.0062
20	Comp Mole Frac (i-Pentane)	0.0000	0.0000	0.0758	0.0036 *	0.0036
21	Comp Mole Frac (n-Pentane)	0.0000	0.0000	0.0656	0.0014 *	0.0014
22	Comp Mole Frac (n-Hexane)	0.0000	0.0000	0.0512	0.0012 *	0.0012
23	Comp Mole Frac (n-Octane)	0.0000	0.0000	0.0584	0.0030 *	0.0030
24	Comp Mole Frac (H2O)	0.0000	0.0000	0.0000	0.0002 *	0.0002

27	Name	Reboiler Q	Cond Q	Refrig1 Q	Comp2 Q	Cond Q1
28	Heat Flow (Btu/hr)	5.666e+06	6.236e+06	2.065e+06	9.209e+05	6.000e+06
29	Name	AG Comp Q	AG Cool 1	AG 2 Cool	AG 2 Comp Q	AG 3 Comp Q
30	Heat Flow (Btu/hr)	1.913e+04	2.984e+04	4.604e+04	3.595e+04	1.194e+04
31	Name	Pipe Q				
32	Heat Flow (Btu/hr)	-4892				

	Operation Name	Operation Type	Feeds	Products	Ignored	Calc. Level
35	NGL Stabilizer	Distillation	1	Bottoms	No	2500 *
37			Reboiler Q	Overhead		
38				Cond Q		
39	E-102	Cooler	Acid Gas 1 Out	AG 2 In	No	500.0 *
40				AG Cool 1		
41	E-103	Cooler	AG 2 Out	AG 3 In	No	500.0 *
42				AG 2 Cool		
43	RCY-1	Recycle	Cond to Suct	Inlet C3	No	3500 *
44	RCY-2	Recycle	Econ Vap Recy	Econ Vap	No	3500 *
45	MIX-101	Mixer	Econ Vap	2 Suct	No	500.0 *
46			1 Disc			
47	JTValve1	Valve	Cool Disc	JT1 Out	No	500.0 *
48	VLV-101	Valve	Econ Liq	To Cond	No	500.0 *
49	VLV-100	Valve	To Tanks	Cool to Tks	No	500.0 *
50	E-101	Heat Exchanger	Apache Inlet	1	No	500.0 *
51			Overhead	Residue		
52	Cond Dummy	Heat Exchanger	G In	G Out	No	500.0 *
53			3 In	3 out		
54	Condenser	Air cooler	Comp Disc	Cool Disc	No	500.0 *
55	AC-100	Air cooler	Bottoms	To Tanks	No	500.0 *
56	Refrig Comp	Compressor	Inlet C3	1 Disc	No	500.0 *
57			Refrig1 Q			
58	K-100	Compressor	2 Suct	Comp Disc	No	500.0 *
59			Comp2 Q			
60	K-101	Compressor	Acid Gas In	Acid Gas 1 Out	No	500.0 *
61			AG Comp Q			
62	K-102	Compressor	AG 2 In	AG 2 Out	No	500.0 *
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64	K-103	Compressor	AG 3 In	AG 3 Out	No	500.0 *
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Holloman Corporation
Calgary, Alberta
CANADA

Case Name: [REDACTED]

Unit Set: [REDACTED]

Date/Time: [REDACTED]

Workbook: Case (Main) (continued)

Unit Ops

Operation Name	Operation Type	Feeds	Products	Ignored	Calc. Level
V-100	Separator	JT1 Out	Econ Liq Econ Vap Recy	No	500.0 *
V-101	Separator	2	4 3	No	500.0 *
E-100	Heater	To Cond Cond Q1	Cond to Suct	No	500.0 *
SET-1	Set			No	500.0 *
ADJ-1	Adjust			No	3500 *
X-100	Component Splitter	Cool to Tks	Acid Gas Treated Product	No	500.0 *
PIPE-100	Pipe Segment	Pipe in	Pipe out Pipe Q	No	500.0 *

Hyprotech Ltd.

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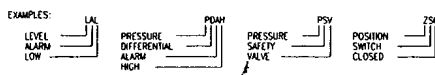
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Fig. S05

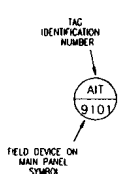
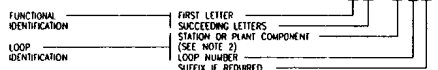
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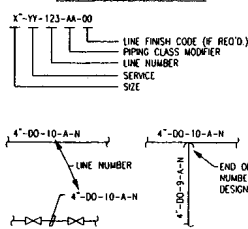
FIRST LETTER(S)		SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A ANALYSIS (TABLE 4)		ALARM		
B BURNER (COMBUSTION)				
C CONDUCTIVITY (ELECTRICAL)			CONTROL	CLOSED (NOTE 5)
D DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E VOLTAGE (EMF)		PRIMARY ELEMENT		
F FLOW RATE	RATIO (FRACTION)			
G GAGING (DIMENSIONAL)		GLASS		
H HAND (MANUALLY INITIATED)				HIGH (NOTE 7)
I CURRENT (ELECTRICAL)		INDICATE		
J POWER	SCAN			
K TIME OR TIME SCHEDULE			CONTROL STATION	
L LEVEL		LIGHT (PILOT)		LOW (NOTE 7)
M MOISTURE OR HUMIDITY				MOIST OR INTERMEDIATE
N UNIT (NOTE 3)				
O NOT USED		ORIFICE (RESTRICTION)		OPENED (NOTE 6)
P PRESSURE OR VACUUM		(TEST CONNECTION)		
Q QUANTITY OR EVENT	INTEGRATE OR TOTALIZE	RECORD OR PRINT		
R RADIOACTIVITY	SAFETY			
S SPEED OR FREQUENCY			SWITCH	
T TEMPERATURE			TRANSMIT	
U ULTRAVIOLET (FLAME)		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V VIBRATION		VALVE, DAMPER OR LOUVER		
W WEIGHT OR FORCE		WELL		
X STATION (NOTE 4)		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y SURGE		RELAY OR COMPUTE (SEE TABLE 3)		
Z POSITION		DRIVE, ACTUATOR OR UNCLASSIFIED TRANSDUCER		



INSTRUMENT TAG NUMBER LEGEND:



LINE IDENTIFICATION



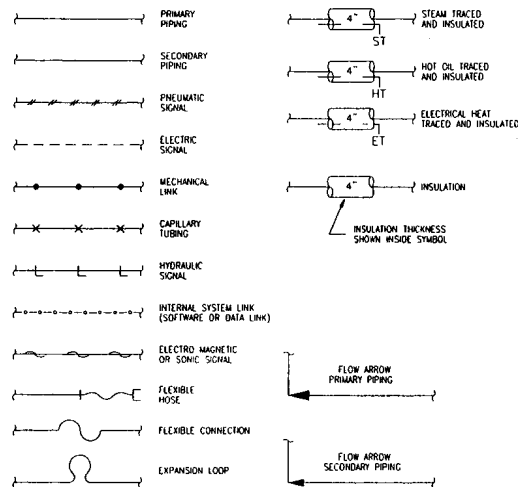
SERVICE

AB	BREATHING AIR
AC	COMBUSTION AIR
AD	INTAKE AIR
AE	VENTILATION-COOLING AIR
AF	AUXILIARY WATER
AG	CHEMICAL MODIFIER (ADDITION)
AH	CLOSED DRAIN
AI	DIESEL FUEL
AK	OPEN DRAIN
AL	ACID GAS
AM	FUEL GAS
AN	FUEL OIL
AO	FRESHWATER
AP	INERT GAS
AQ	GLYCOL
AR	HEAT MEDIA
AS	HYDRAULIC OIL
AT	INSTRUMENT AIR
AW	INSTRUMENT GAS

PIPING CLASSIFICATION

A	150 ANSI	E	9
AN	150 ANSI-NACE	EN	9
AS	150 ANSI-SS	F	1
B	300 ANSI	G	2
BN	300 ANSI-NACE	H	1
BS	300 ANSI-SS	I	1
C	400 ANSI	J	1
DN	600 ANSI-NACE	K	1

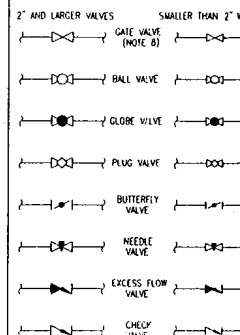
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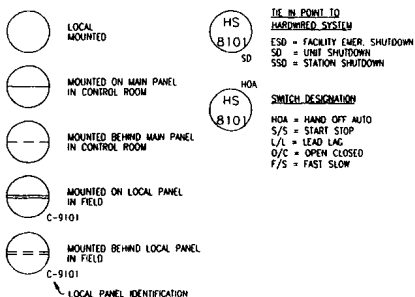
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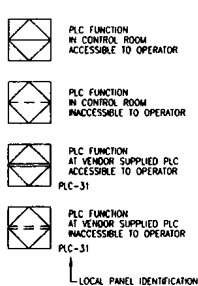


INSTRUMENT SYMBOLS



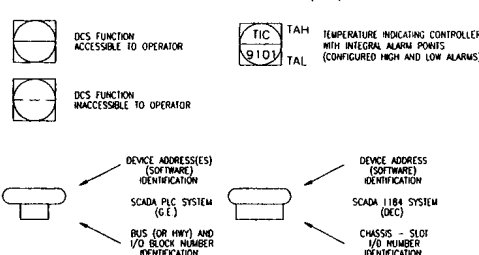
INSTRUMENT SYMBOLS

PROGRAMMABLE LOGIC CONTROLLERS (PLC)



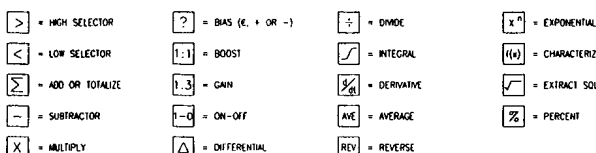
INSTRUMENT SYMBOLS

DISTRIBUTED CONTROL SYSTEMS (DCS)



RELAY OR COMPUTED FUNCTION IDENTIFICATION

COMPUTED FUNCTION DESIGNATIONS

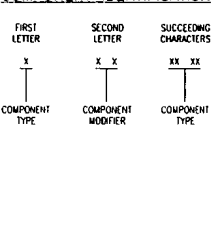


FUNCTIONAL DESIGNATION

FOR ANALYTICAL INSTRUMENTS

DESIGNATION	SIGNAL	RELAY/ANALYZER FUNCTION DESIGNATIONS (FROM/TO)	IDENTIFIER	DESCRIPTION
A	ANALOG		C1	METHANE
B	BINARY		C2	ETHANE
D	DIGITAL		C3	PROPANE
E	VOLTAGE		C4	BUTANE
H	HYDRAULIC		C5	GASOLINE
I	CURRENT (ELECTRICAL)		O2	OXYGEN
O	ELECTROMAGNETIC OR SONIC		N2	NITROGEN
P	PNEUMATIC		CO	CARBON MONOXIDE
R	RESISTANCE (ELECTRICAL)		CO2	CARBON DIOXIDE
			H2O	WATER (DEW POINT)
			H2S	HYDROGEN SULFIDE

COMPONENT IDENTIFICATION



MODIFIER

AA	BI-DIRECTIONAL	AV	METERING VESSEL
AB	BLOWDOWN	AW	NATURAL DRAFT
AC	BOILER	AX	PIPELINE
AD	COALESCE	AY	PRODUCTION, HYDROCARBON
AE	COMPRESSOR	AZ	PRODUCTION, WATER
AF	CONDENSER	AI-A9	FLOWLINE SEGMENT
AG	CONTROL UNIT	BA	PROCESS, OTHER
AH	DEPARTING	BB	PUMP
AJ	FILTER	BC	REBOILER
AK	FILTER-SEPARATOR	BD	SEPARATOR
AL	FORCED DRAFT	BE	SERVICE
AM	FRESHWATER KNOCKOUT	BF	SCRUBBER
AN	GENERATOR	BG	SHELL AND TUBE
AP	HEATER	BH	SUMP
AQ	INCOMING	BI	TANK
AR	INJECTION GAS	BJ	TREATER
AS	INJECTION GAS LEFT	BL	VOLUME BOTTLE
AT	INJECTION WATER	BM	WATER TREATING
AU	METER	BZ	OTHER

IDENTIFIER

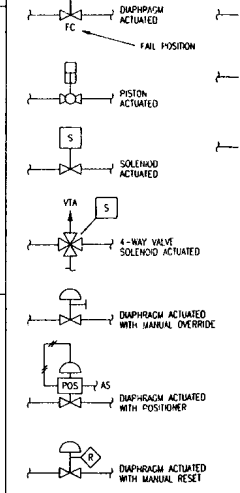
0000	PIPING ASSEMBLIES
1000	PRESSURE VESSELS
2000	ATMOSPHERIC VESSELS
3000	HEATED VESSELS
4000	HEAT EXCHANGERS
5000	COMPRESSORS
6000	PUMPS
7000	GENERATORS
8000	BUILDING AND EQUIPMENT
9000	MISCELLANEOUS

TYPE

A	ATMOSPHERIC VESSEL (AMBIENT TEMPERATURE)	H	HEAT EXCHANGER
B	ATMOSPHERIC VESSEL (HEATED)	J	INJECTION LINE
C	COMPRESSOR (AMBIENT TEMPERATURE)	K	PIPELINE
D	COMPRESSOR (HEATED COMPONENT)	L	PLATFORM
E	EXPLOSION PROTECTED (HEATED COMPONENT)	M	PRESSURE VESSEL (AMBIENT TEMPERATURE)
F	FLOWLINE	N	PRESSURE VESSEL (HEATED)
G	HEADER	O	PUMP
		P	WELLHEAD
		Z	OTHER

CONT

(S)



URS FIELD SERVICE, LLC

IFICATION SYSTEM

PIPING CLASS

A	150 ANSI	E	900 ANSI
AN	150 ANSI-NACE	EN	900 ANSI-NACE
AS	300 ANSI	F	1500 ANSI
BS	300 ANSI-NACE	H	2500 ANSI
C	400 ANSI	I	API 1,000
D	600 ANSI	J	API 5,000
DN	600 ANSI-NACE	K	API 10,000

LINE FINISH CODES

C	COLD CONSERVATION
H	HEAT CONSERVATION
N	NONE
PP	PERSONNEL PROTECTION
UC	UNDERGROUND

LINE CONTINUATION

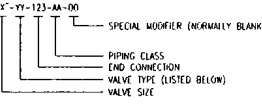
CONTINUATION ARROW (NOTE 10)

TO RICH OIL FLASH DRUM

DWG NUMBER

DESTINATION DRAWING NUMBER

VALVE NOMENCLATURE



VALVE TYPES

VB	BALL	VC	GATE	VO	GLOBE
VE	CHECK	VN	NEEDLE	VY	BUTTERFLY

END CONNECTIONS

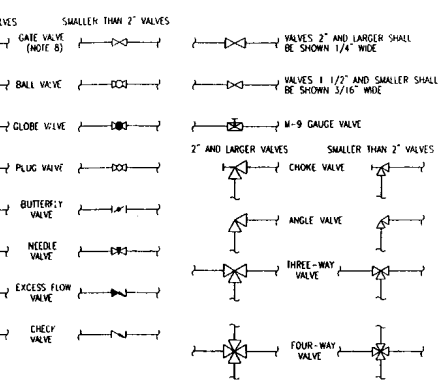
F	FLANGED	I	THREADED
V	WELDED	S	SOCKETWELDED

GENERAL NOTES

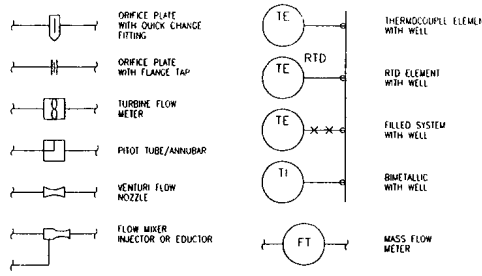
- THIS LEGEND SHEET SHOWS THE STANDARD SYMBOLS & PRACTICES FOR PIPING & INSTRUMENTATION DIAGRAMS. FOR ANY SPECIAL SYMBOL OR FUNCTION, SEE "INSTRUMENT SOCIETY OF AMERICA" (ISA) STANDARD 55.1 AND 55.3, LATEST REVISION.
- FOR INFORMATION ON PIPING SPECIFICATIONS, LINE NUMBERS AND EQUIPMENT NUMBERS, SEE "HOLLAND CORPORATION, ENGINEERING SPECIFICATIONS, DESIGN AND CONSTRUCTION OF PIPING SYSTEMS" STANDARDS: 70-01-00 THRU 90-30-00.
- "N" AS THE FIRST LETTER FOR INSTRUMENT IDENTIFICATION IDENTIFIES THE INSTRUMENT AS BEING UNIT ORIENTED IN ITS PURPOSE OR FUNCTION. SUCH AN INSTRUMENT CANNOT BE IDENTIFIED THROUGH ANY ONE SPECIFIC FIRST LETTER BECAUSE OF MULTIPLE FUNCTIONS RELATED TO ONE SYSTEM OR UNIT. EXAMPLE BEING A UNIT OR ALARM SHUTDOWN.
- "X" AS THE FIRST LETTER FOR INSTRUMENT IDENTIFICATION IDENTIFIES THE INSTRUMENT AS BEING PLANT OR STATION ORIENTED IN ITS PURPOSE OR FUNCTION. SUCH AN INSTRUMENT CANNOT BE IDENTIFIED THROUGH ANY ONE SPECIFIC FIRST LETTER BECAUSE OF MULTIPLE FUNCTIONS RELATED TO MORE THAN ONE SYSTEM OR UNIT. EXAMPLE BEING A CONTROLLER RECEIVING AND REACTING TO MULTIPLE INPUTS OF VARIOUS FIRST LETTER DESIGNATIONS AND BEING AN INTEGRAL PART OF TWO OR MORE SYSTEMS OR UNITS. UNIT OR SYSTEM ESD OR SHUTDOWNS AND PLANT OR STATION ESD'S WILL NOT BE CONSIDERED AS A SYSTEM OR UNIT.
- "C" AS A MODIFIER (LAST LETTER), DENOTES THAT THE DEVICE IS IN OR APPROACHING THE FULLY CLOSED POSITION.
- "O" AS A MODIFIER (LAST LETTER), DENOTES THAT THE DEVICE IS IN OR APPROACHING THE FULLY OPEN POSITION.
- "LL" OR "HH" AS MODIFIERS (LAST LETTERS) SHALL BE USED TO INDICATE A SHUTDOWN SWITCH OR SHUTDOWN ALARM.
- THE GATE VALVE SYMBOL IS ALSO USED FOR UNIDENTIFIED VALVES.
- CONTROL VALVES SHALL SHOW VALVE FAILURE POSITION. REFER TO ABBREVIATIONS.
- CONTINUATION ARROWS SHALL BE USED WHENEVER LINES LEAVE ONE DRAWING AND ARE CONTINUED ON ANOTHER DRAWING. THE CONTINUATION ARROW SHOULD INDICATE THE DIRECTION OF FLOW.
- HIGH POINT VENTS AND LOW POINT DRAINS NOT SHOWN ON P&ID'S.
- ALL INSTRUMENT BLEED CONNECTIONS SHALL BE PIPED TO OPEN DRAIN SYSTEM.

MANUALLY OPERATED VALVES

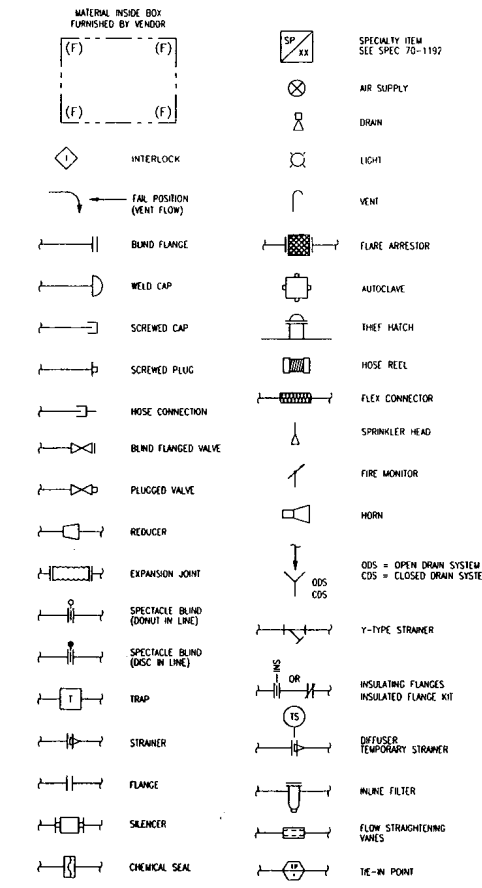
BY ADDING AN ACTUATOR TO THE BASIC VALVE SYMBOL THE VALVE BECOMES A CONTROL VALVE



PRIMARY ELEMENTS



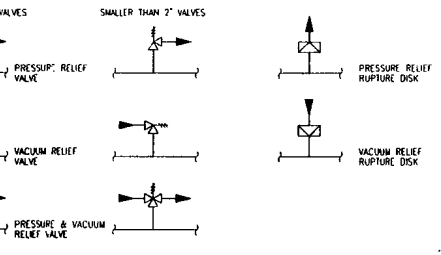
MISCELLANEOUS SYMBOLS



ABBREVIATIONS

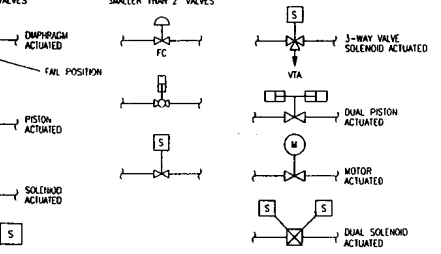
A	ANALOG SIGNAL	MS	INSTRUMENT AIR SUPPLY
ADMT	ADAPTIVE CONTROL MODE	KP	INTER-CONNECT PIPING
AC	AIR TO CLOSE	I	INTERFACE
AO	AIR TO OPEN	KS	INSTRUMENT GAS SUPPLY
AS	AIR SUPPLY	LC	LOCKED CLOSED
AVG	AVERAGE	LO	LOCKED OPEN
BF	BLIND FLANGE	M	MOTOR ACTUATOR
BSW	BASIC SEDIMENT & WATER	MAN	MANUALLY CONTROL MODE
C	CATCHER AUTO MANUAL	MCC	MOTOR CONTROL CENTER
CC	CORROSION COUPON	MIN	MINIMIZING CONTROL MODE
CDS	CLOSED DRAIN SYSTEM	MLW	MINIMIZING CONTROL MODE
CF	CUSTOMER FURNISHED	WMP	MAX WORKING PRESSURE
CRL	COMPUTER REMOTE LOCAL	MC	NORMALLY CLOSED
CSC	CAR SEAL CLOSED	MO	NORMALLY OPEN
CSD	CAR SEAL OPEN	NS	NITROGEN SUPPLY
CWR	COOLING WATER RETURN	O	ELECTROMAGNETIC OR SONIC SIGNAL
CWS	COOLING WATER SUPPLY	OP	OPERATING PRESSURE
CWO	CHAIN WHEEL OPERATED	OPT	OPERATING CONTROL MODE
D	DERIVATIVE CONTROL MODE	OT	OPERATING TEMPERATURE
DBB	DOUBLE BLOCK & BLEED	P	PNEUMATIC SIGNAL
DFF	SUBTRACT	PLC	PROPORTIONAL CONTROL MODE
DR	DIRECT-ACTING	PLC	PURGE OR FLUSHING DEVICE
E	VOLTAGE SIGNAL	R	PROGRAMMABLE LOGIC CONTROLLER
ELEV	ELEVATION	R	RESET OF FAIL-LOCKED DEVICE
ES	ELECTRIC SUPPLY	RES	RESISTANCE (SIGNAL)
ESD	EMERGENCY SHUTDOWN	REV	REVERSE-ACTING
ESP	ELECTRICAL SUBMERSIBLE PUMP	RTO	RESISTANCE (-TYPE) TEMPERATURE DETECTOR
(F)	FURNISHED BY VENDOR	S	SOLENOID ACTUATOR
FC	FAIL CLOSED	SC	SAMPLE CONNECTION
FI	FAIL INDETERMINATE	SP	SET-POINT
FL	FAIL LOCKED	SR	SQUARE ROOT
FO	FAIL OPEN	SR	STRESS RELIEVE
GS	GAS SUPPLY	S/S	SEAM TO SEAM
H	HYDRAULIC SIGNAL	SS	STEAM SUPPLY
HCI	HOSE CONNECTOR	T	TRAP
HCI	HEAT CONSERVATION INSULATION	T/T	TANGENT TO TANGENT
HQA	HAND/OFF/AUTO	WS	WATER SUPPLY
HS	HYDRAULIC SUPPLY	X	MULTIPLY
I	CURRENT (ELECTRICAL) SIGNAL		UNCLASSIFIED ACTUATOR
I	INTERLOCK		

SAFETY DEVICES

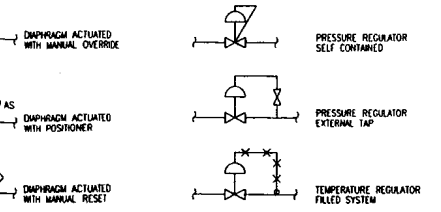


CONTROL VALVES

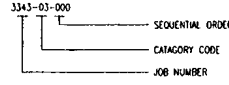
(SEE NOTE 9)



REGULATORS



DRAWING AND SPECIFICATION NUMBERING SYSTEM



DRAWING CATEGORY CODE

00	GENERAL	07	INSTRUMENTATION
01	PROCESS/MECHANICAL	08	FIRE & SAFETY
02	LAYOUTS	09	STRUCTURAL
03	PIPING	10	CIVIL
04	STANDARDS	11	ARCHITECTURAL
05	ELECTRICAL	12	OPEN
06	OPEN	13	PIPELINE

REVISIONS	BY	CHKD	APP	DATE	APP	DATE	ENGINEERING RECORD	DATE
							DWG No. 3343	
							SCALE: NONE	
							DO NOT SCALE DRAWING	
							USE DIMENSIONS ONLY	

5257 West Interstate 20
P.O. Box 69410
Odessa, Texas 79763

NGL RECOVERY PLANT
PIPING & INSTRUMENTATION DIAGRAM
SYMBOL LEGEND

DWG No. 3343-01-000
CAD FILE 3343-01-000
REV 1

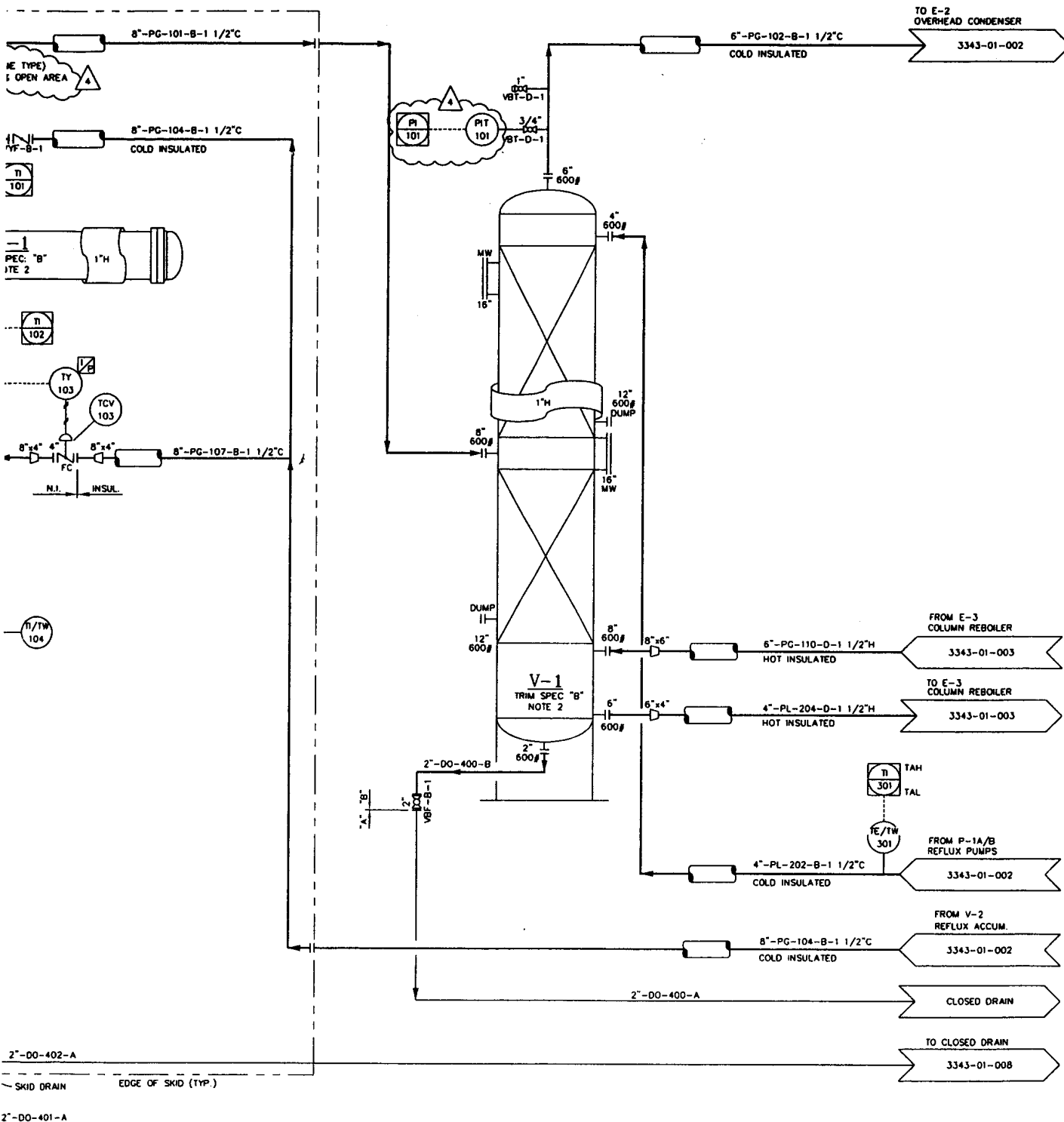
D

E

F

V-1
NGL FRACTIONATOR
48" O.D. x 45'-0" S/S
DESIGN: 700 PSIG @ +27° TO 450° F

IMP 160° F
F TO F ON



BY	CHK'D	APP	DATE	APP	DATE	ENGINEERING RECORD	DATE
						DRN:	
						CHK:	
						APP:	
						W.O. No:	3343
						SCALE:	NONE
						DO NOT SCALE DRAWING	
						USE DIMENSIONS ONLY	



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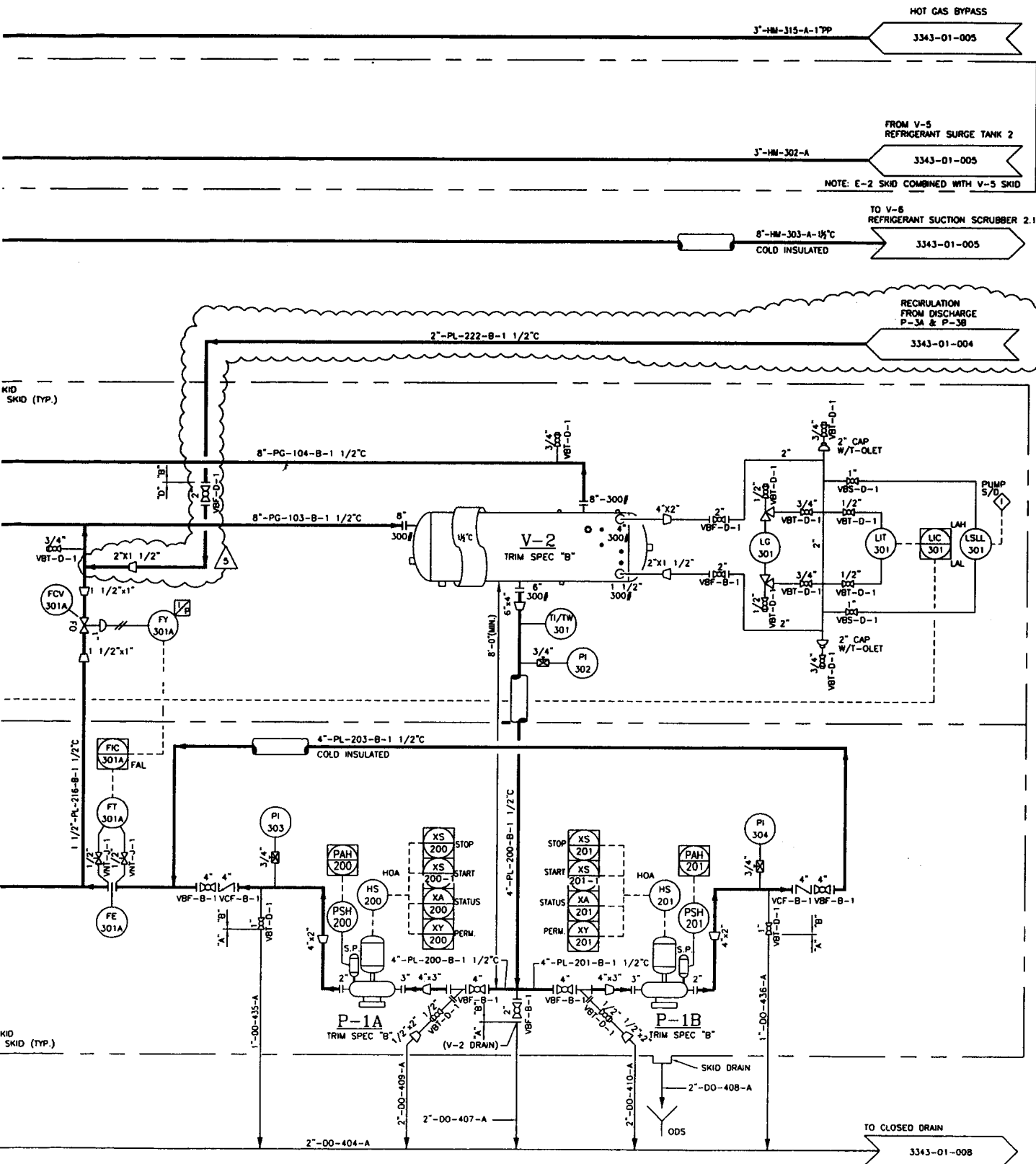
NGL RECOVERY PLANT
PIPING & INSTRUMENTATION DIAGRAM
GAS/GAS EXCHANGER
NGL FRACTIONATOR

DWG. No. 3343-01-001

CAD FILE: 3343-01-001 REV 4

V-2
REFLUX ACCUMULATOR
36" O.D. x 15'-0" S/S
700 PSI @ 450'

P-1A P-1B
REFLUX PUMPS
7.5 HP
100 GPM @ 50 PSID
SP GR 64
VISCOSITY .1 CP



BY	CHKD	APP	DATE	APP	DATE	ENGINEERING RECORD	DATE
						DRN:	
						CHK:	
						APP:	
						W.D. No.:	3343
						SCALE:	NONE
						DO NOT SCALE DRAWING USE DIMENSIONS ONLY	



5257 West Interstate 20
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NGL RECOVERY PLANT
PIPING INSTRUMENTATION DIAGRAM
OVERHEAD CONDENSER & REFLUX ACCUMULATOR

DWG. No. 3343-01-002

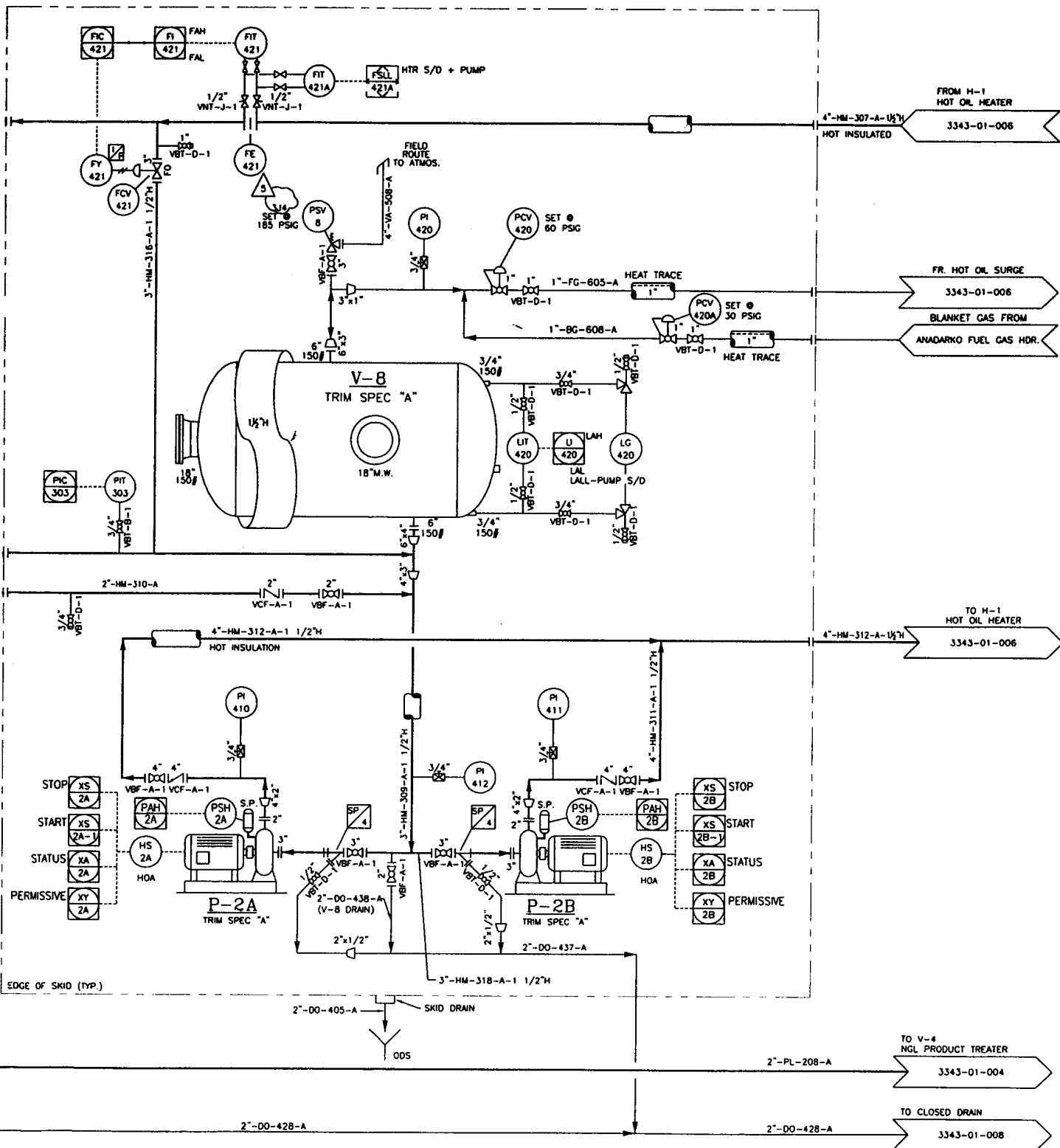
CAD FILE: 3343-01-002 REV 5

V-8

HOT OIL SURGE DRUM
MAWP 185 PSIG @ 650°F
6'-7" O.D. x 10'-4" T/T

P-2A, P-2B

HOT OIL PUMPS
15 HP
225 GPM @ 30 PSID
DESIGN: 150 PSIG @ -20 TO 500° F



DESIGNS	BY	CHK'D	APP	DATE	APP	DATE	ENGINEERING RECORD	DATE
							CHK:	
							CHK:	
							APP:	
							APP:	
							W.D. No.:	3343
							SCALE:	NONE
							DO NOT SCALE DRAWING	
							USE DIMENSIONS ONLY	



5257 West Interstate 20
P.O. Box 89410
Odessa, Texas 79763

NGL RECOVERY PLANT
PIPING & INSTRUMENTATION DIAGRAM
COLUMN REBOILER, PRODUCT COOLER & HOT OIL

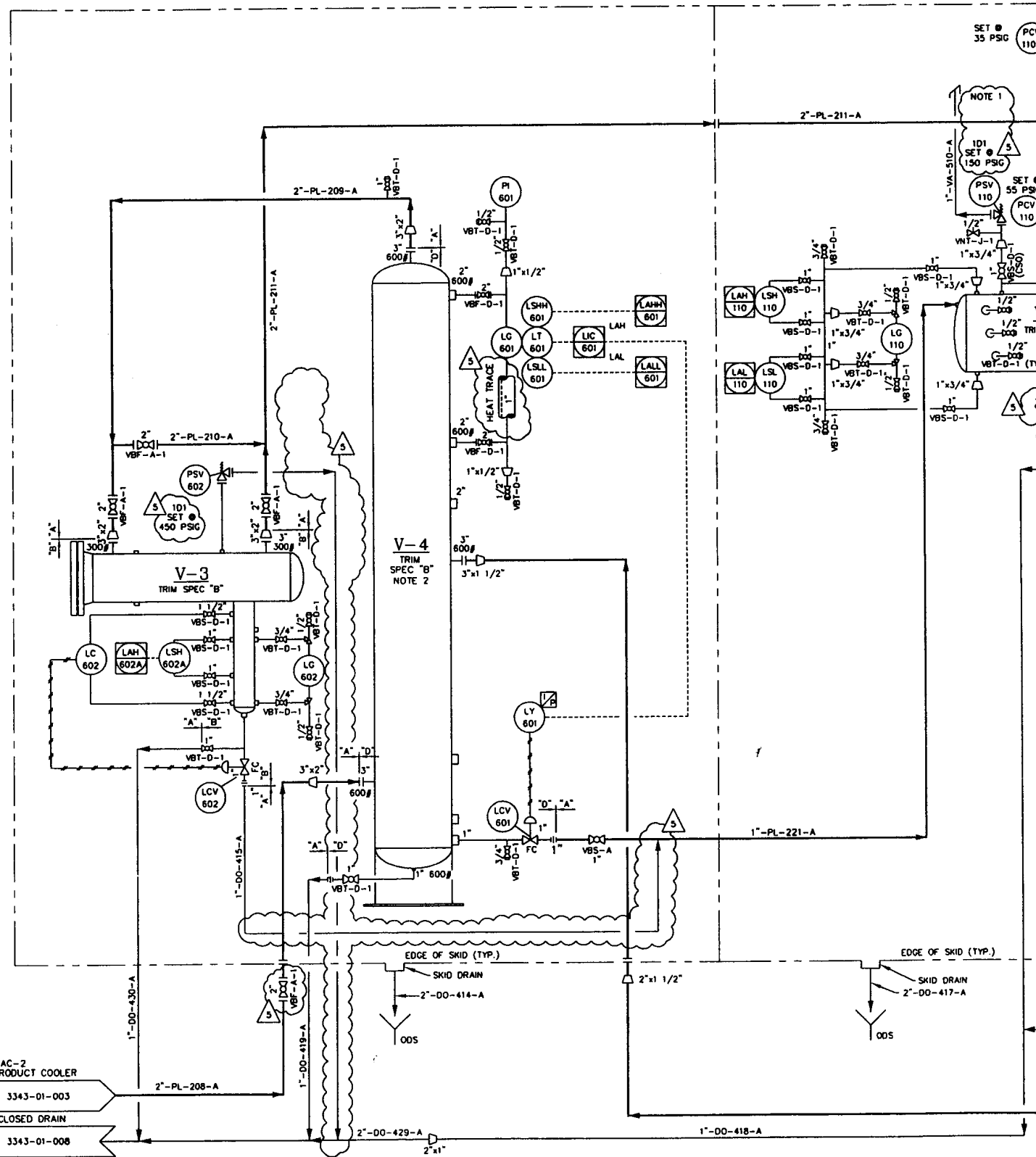
DWG. No. 3343-01-003

CAD FILE: 3343-01-003 REV 5

V-3
PRODUCT COALESCER
 MAWP 450 PSIG @ 200° F
 1'-8" O.D. x 6'-8"

V-4
NGL PRODUCT TREATER
 MAWP 1000 PSIG @ 650° F
 MAX T. 650° F
 20" O.D. x 33'-6" LG.

V-10
AMINE FLASH TANK
 MAWP 150 PSI @ 200° F
 24" DIA. x 6'-0" LG.



FROM AC-2
 NGL PRODUCT COOLER
 3343-01-003
 TO CLOSED DRAIN
 3343-01-008

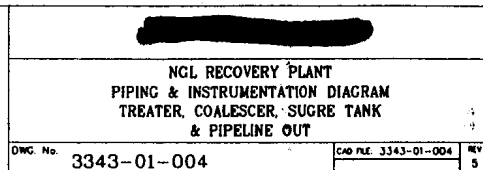
URS
 FIELD SERVICE, L.L.C.

NOTES	DWG. NO.	REFERENCE DRAWINGS	NO.	DATE	REVISIONS
1. ATMOSPHERIC RELIEF/VENTS SHALL BE OUTSIDE BUILDING.			0		
2. OUT OF SPEC CONNECTIONS ON EXISTING PURCHASED EQUIPMENT: MATCH EXIST. CONN'S. USE TRIM SPEC FOR APPURTENANCES.			1		
3. FIELD TO PROVIDE HYDROSTATIC VENTS AND DRAINS.			2		
4. FOR TRIM SPEC SEE PIPING CLASS UNDER LINE IDENTIFICATION SYSTEM ON 3343-01-000.			3		
			4		
			5		

P

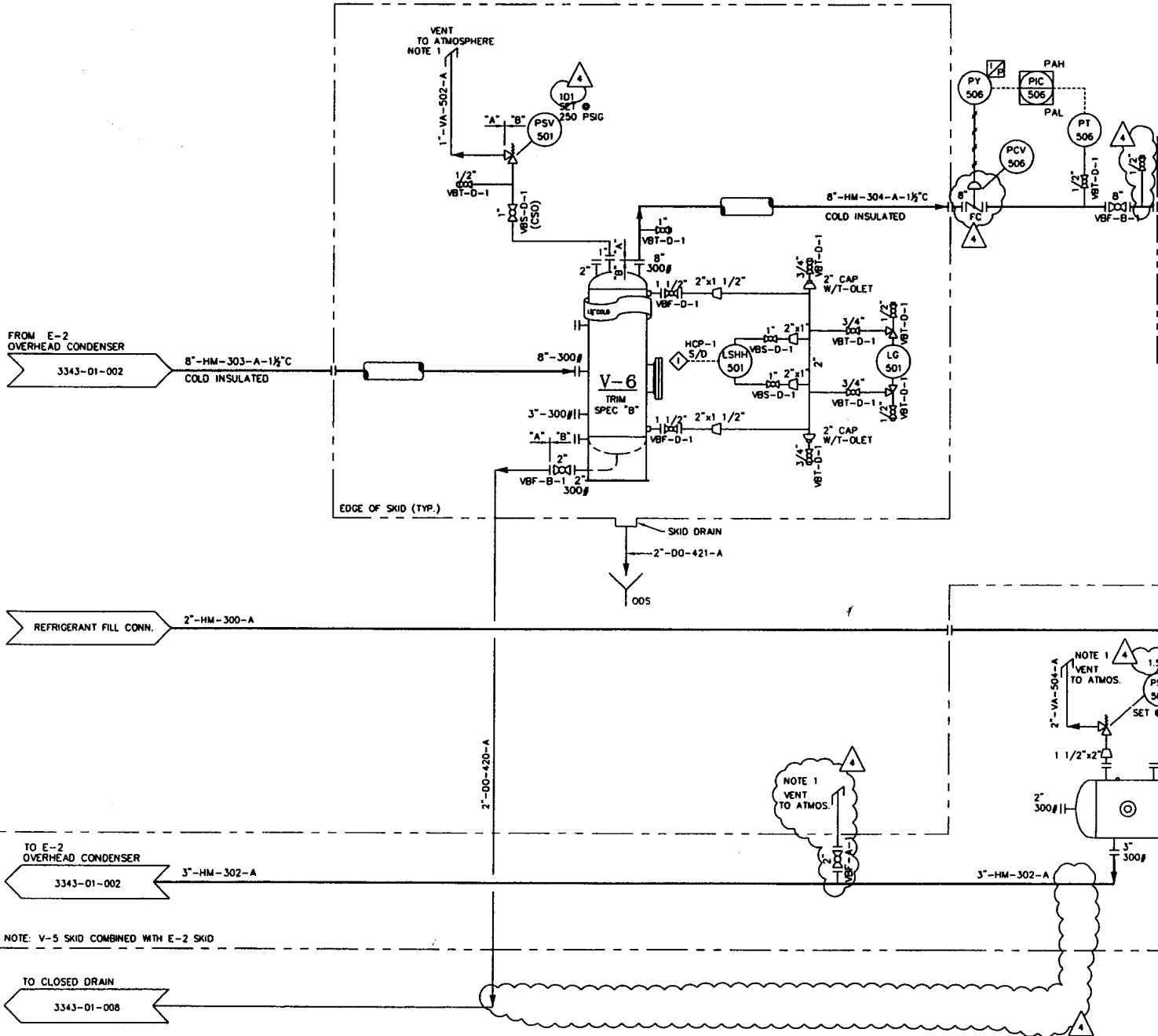
P-3A, P-3B

PRODUCT PIPELINE PUMPS
DESIGN: 700 PSIG SUCTION, 1000 PSIG DISCHARGE
● -20 TO 200° F
20 HP, 20 GPM ● 700 PSIG



V-6
REFRIGERANT
SUCTION SCRUBBER 2.1
4'-0" I.D. x 8'-0" S/S
660 PSIG @ 270°F
MAWP -20° F @ 660 PSI

HCP
REFR
SCRE
600
MAWP



URS
FIELD SERVICE, L.L.C.

NOTES	DWG. NO.	REFERENCE DRAWINGS	NO.	DATE	REVISIONS
1. ATMOSPHERIC RELIEF/VENTS SHALL BE OUTSIDE BUILDING.			0		
2. OUT OF SPEC CONNECTIONS ON EXISTING PURCHASED EQUIPMENT MATCH EXST. CONN'S. USE TRIM SPEC FOR APPURTENANCES.			1		
3. FIELD TO PROVIDE HYDROSTATIC TESTS AND DRAINS.			2		
4. FOR TRIM SPEC SEE PIPING CLASS UNDER LINE IDENTIFICATION SYSTEM ON 3343-01-000.			3		
			4		

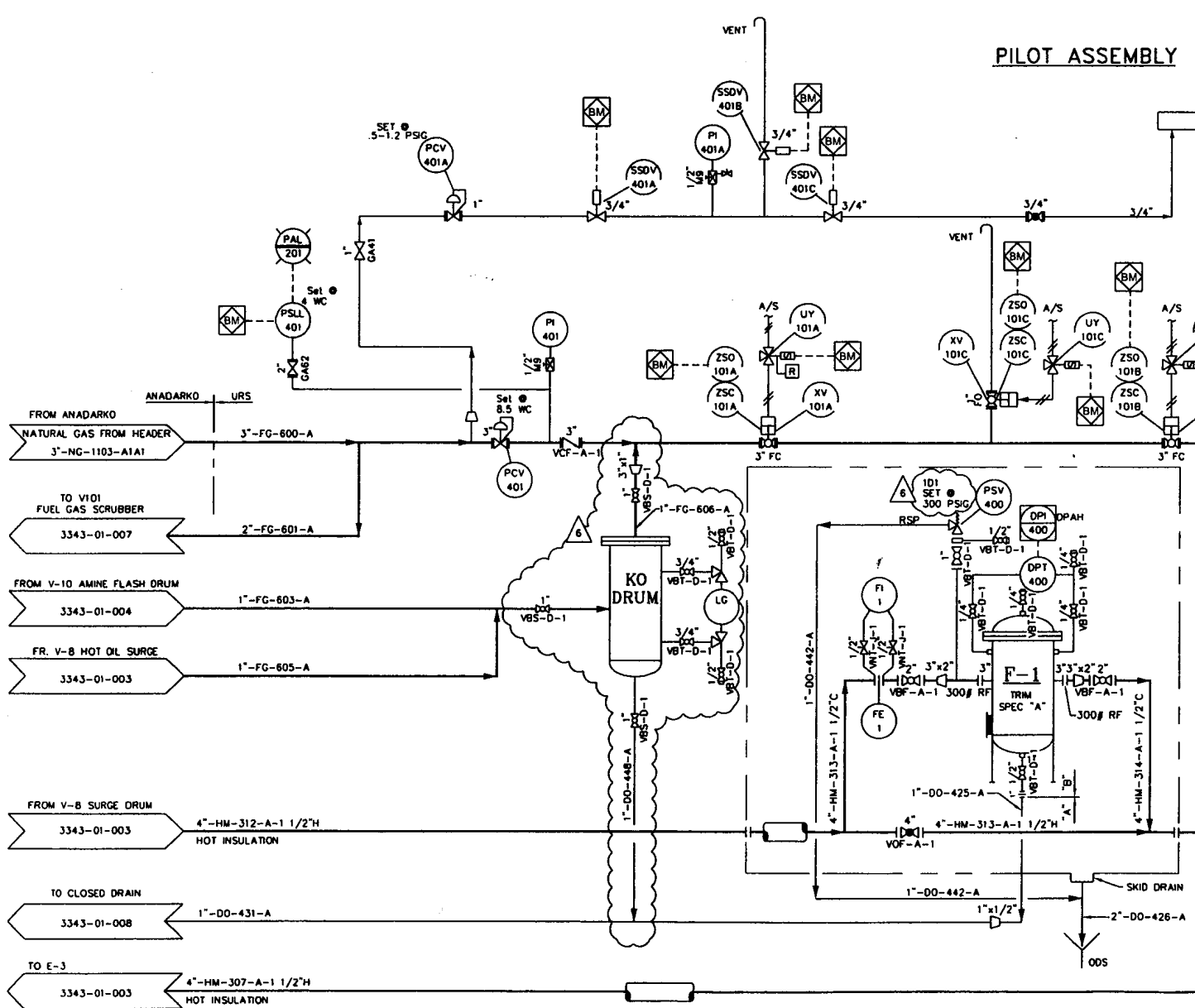
ATTACHED IMAGES

1

F-1

HOT OIL FILTER
12 3/4" O.D. x 4'-3" E-S
MAWP: 300 PSIG @ 450°F

PILOT ASSEMBLY



URS

FIELD SERVICE, L.L.C.

NOTES

1. ATMOSPHERIC RELIEF/VENTS SHALL BE OUTSIDE BUILDING.
2. OUT OF SPEC CONNECTIONS ON EXISTING PURCHASED EQUIPMENT. MATCH EXIST. CONN'S. USE TRIM SPEC FOR APPURTENANCES.
3. FIELD TO PROVIDE HYDROSTATIC VENTS AND DRAINS.
4. FOR TRIM SPEC SEE PIPING CLASS UNDER LINE IDENTIFICATION SYSTEM ON 3343-01-000.

DOC. NO.

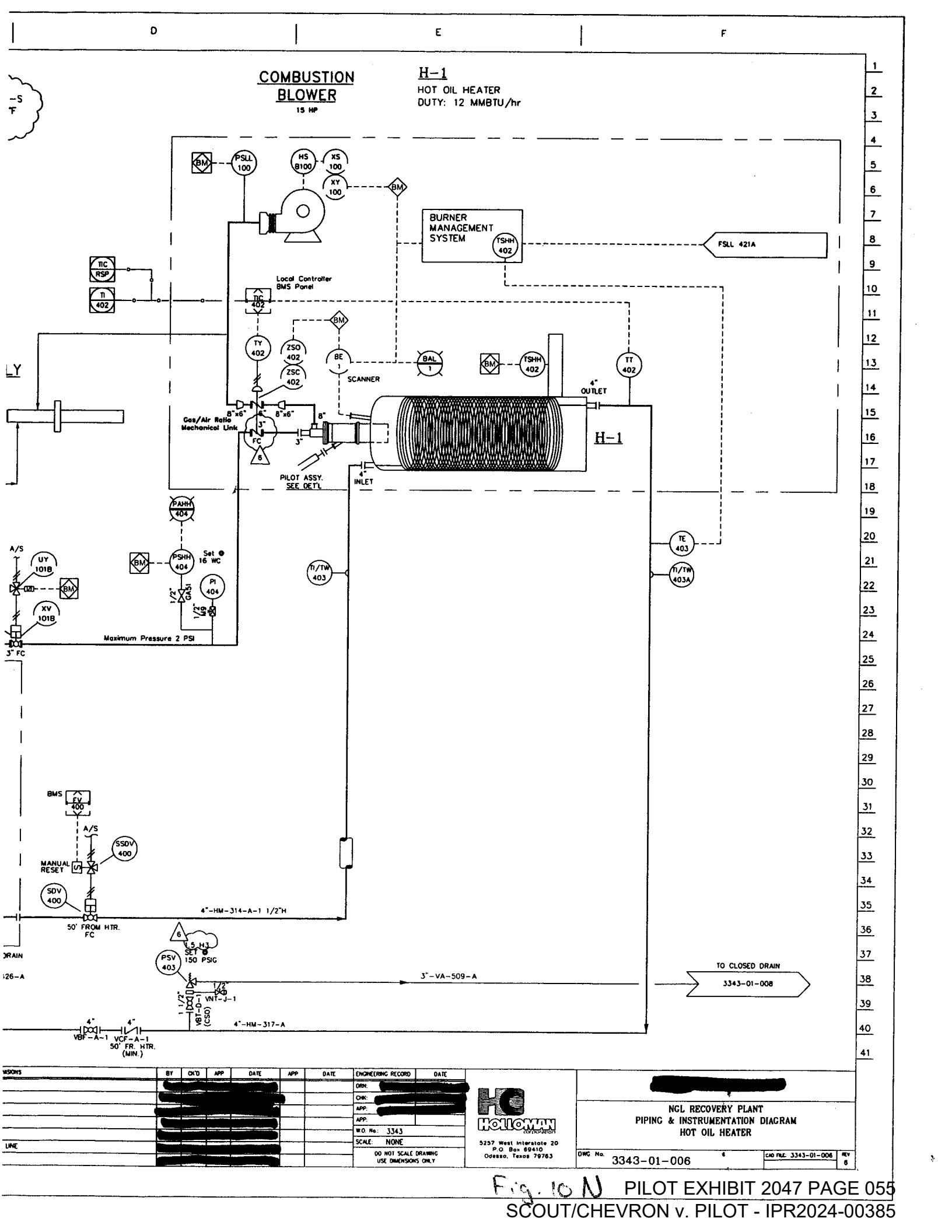
REFERENCE DRAWINGS

NO.

DATE

REVISIONS

ATTACHED SHEETS



WISCONS	BY	CHKD	APP	DATE	APP	DATE	ENGINEERING RECORD	DATE	HC Holloway 5257 West Interstate 20 P.O. Box 89410 Odessa, Texas 79763		NGL RECOVERY PLANT PIPING & INSTRUMENTATION DIAGRAM HOT OIL HEATER	
							DRN:					
							CHK:					
							APP:					
							APP:					
LINE							W.O. No.:	3343	DO NOT SCALE DRAWING USE DIMENSIONS ONLY		DWG. No.	3343-01-006
							SCALE:	NONE				
											CAD FILE:	3343-01-006
											REV	6

P100A&B **AMINE CHARGE PUMPS**

MODEL: WHEATLEY
CAPACITY: 6.5 GPM
DISCHARGE: 1200 PSI
RPM: 500
HP: 5

F101 **SOLIDS FILTER**

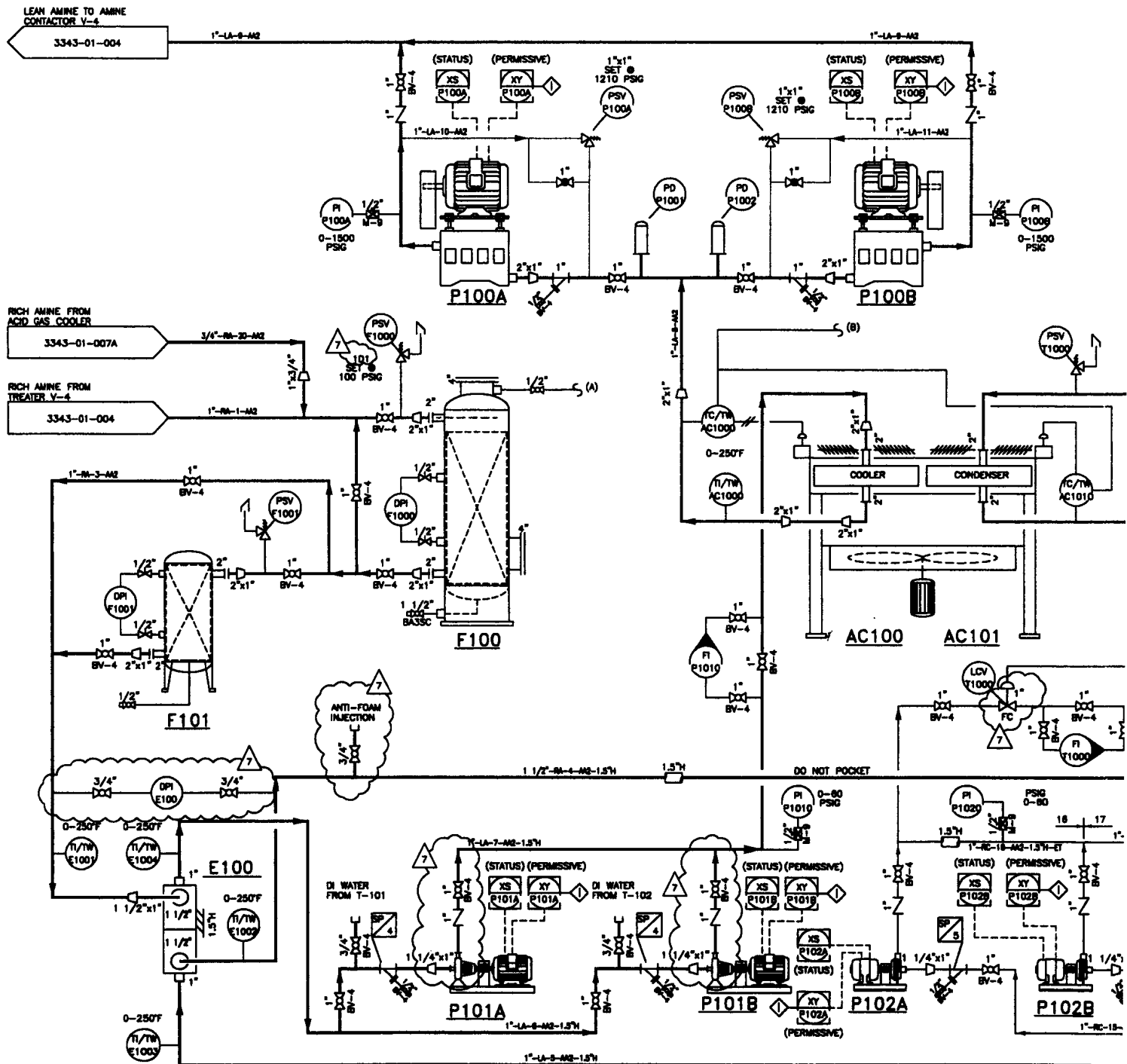
DIA.: 6 5/8"
LENGTH: 2'-9 1/2" S/S
DESIGN PRESS.: 150 PSIG @ 100°F
CAPACITY:
MATERIAL: SA106-B
INSULATION: NONE
CODE: ASME VIII

F100 **CARBON FILTER**

DIA.: 12 3/4" O.D.
LENGTH: 7'-0" S/S
DESIGN PRESS.: 255 PSIG @ 150°F
CAPACITY:
MATERIAL: SA516-70
INSULATION: NONE
CODE: ASME VIII

E100 **LEAN/RICH EXCH.**

DUTY: 193.3 MBTU/HR
SIZE: 3" SCH 40 PIPE x 19'-9" 254 SQ. FT.
TYPE: TUBE IN TUBE
D.P. SHELL: 150 PSIG @ 500°F
D.P. TUBE: 150 PSIG @ 500°F
INSULATION: 1.5"H



URS
FIELD SERVICE, L.L.C.

1. FOR TBM SPEC SEE PIPING CLASS UNDER LINE IDENTIFICATION SYSTEM ON 3343-01-000.

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		

P101A&B BOOSTER PUMPS

254 SQ. FT.
MODEL: GOULDS 3742 1"x1.25"-5"
CAPACITY: 8.5 GPM
DISCHARGE: 125 PSIG (MAX)
RPM: 3455
HP: 2

AC100 AMINE COOLER

DUTY: 96.7 MBTU/HR
D.P. TUBE: 100 PSIG @ 250°F
MOTOR QTY.: (1)
HP: 2
RPM: 1800

P102A&B REFLUX PUMPS

MODEL: GOULDS 3742 1"x1.25"-5"
CAPACITY: 2.8 GPM
DISCHARGE:
RPM: 3600
HP: 2

T100 AMINE STILL/REFLUX ACCUM.

DIA.: 12 3/4" O.D.
LENGTH: 36'-0" S/S
DESIGN PRESS.: 25 PSIG @ 300°F
MATERIAL: SA516-70
INSULATION: 1.5"
CODE: ASME VIII

AC101 REFLUX CONDENSER

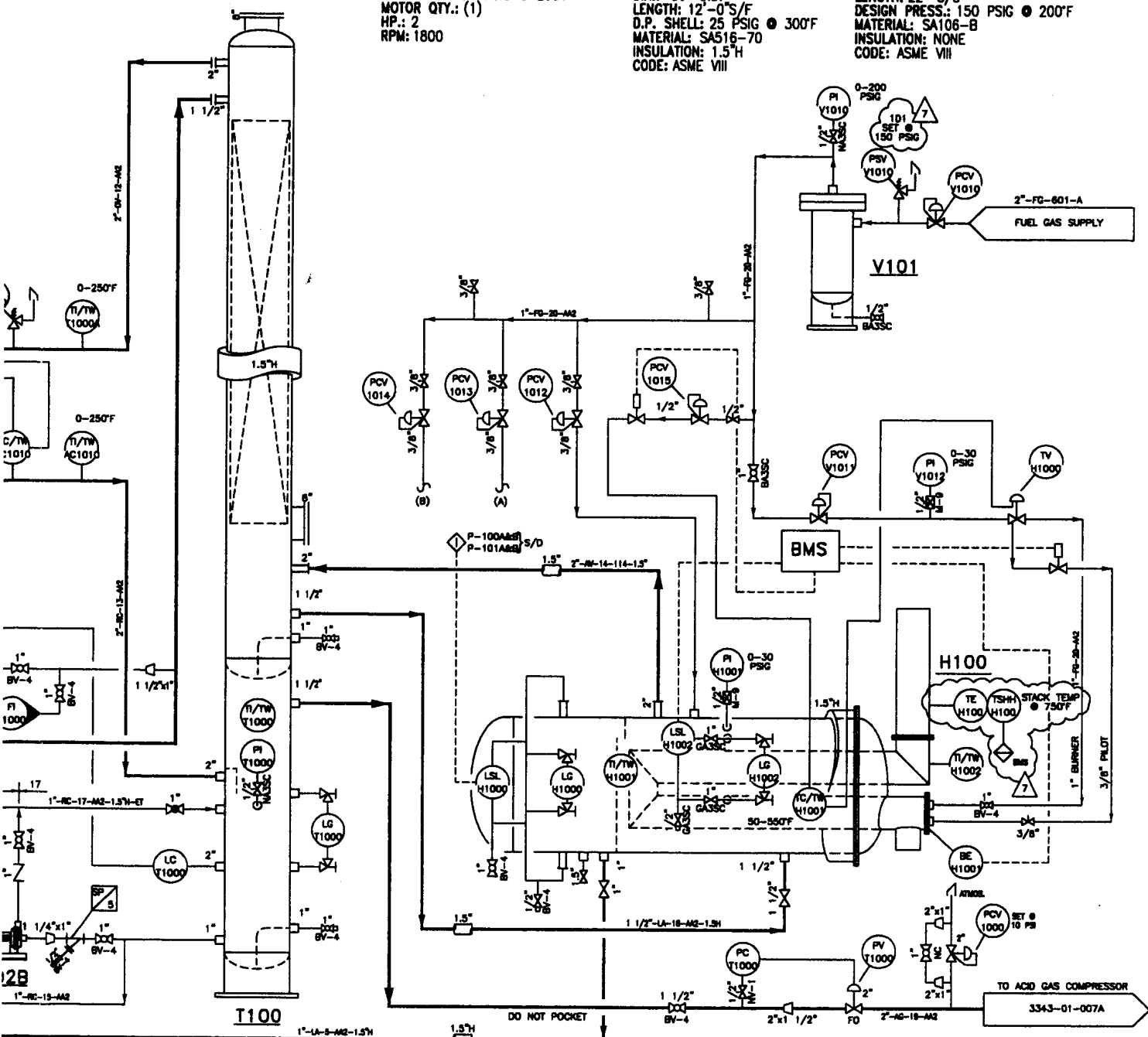
DUTY: 89.8 MBTU/HR
D.P. TUBE: 100 PSIG @ 250°F
MOTOR QTY.: (1)
HP: 2
RPM: 1800

H100 AMINE REBOILER

DUTY: 1.7 MBTU/HR
DIA.: 36" O.D.
LENGTH: 12'-0" S/F
D.P. SHELL: 25 PSIG @ 300°F
MATERIAL: SA516-70
INSULATION: 1.5"
CODE: ASME VIII

V101 FUEL GAS SCRUBBER

DIA.: 8 5/8" O.D.
LENGTH: 22" S/S
DESIGN PRESS.: 150 PSIG @ 200°F
MATERIAL: SA106-B
INSULATION: NONE
CODE: ASME VIII



REVISION	BY	CHKD	APP	DATE	DATE	ENGINEERING RECORD	DATE
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Holloway
5557 West Interstate 20
P.O. Box 66410
Odessa, Texas 79763

NGL RECOVERY PLAN
PIPING & INSTRUMENTATION DIAGRAM
6 GPM AMINE UNIT

DWG. No. 3343-01-007

Rev 7

M-102
L.T. PUMP MOTOR
H.P.: 3/4
RPM: 1800
460/3/60
TEFC

P-101
LIQUID TRANSFER PUMP
CAPACITY: 6 GPM
DISCHARGE: 50 PSIG

V-101
SUCTION SCRUBBER
16" O.D. x 36" S/S
125 PSIG

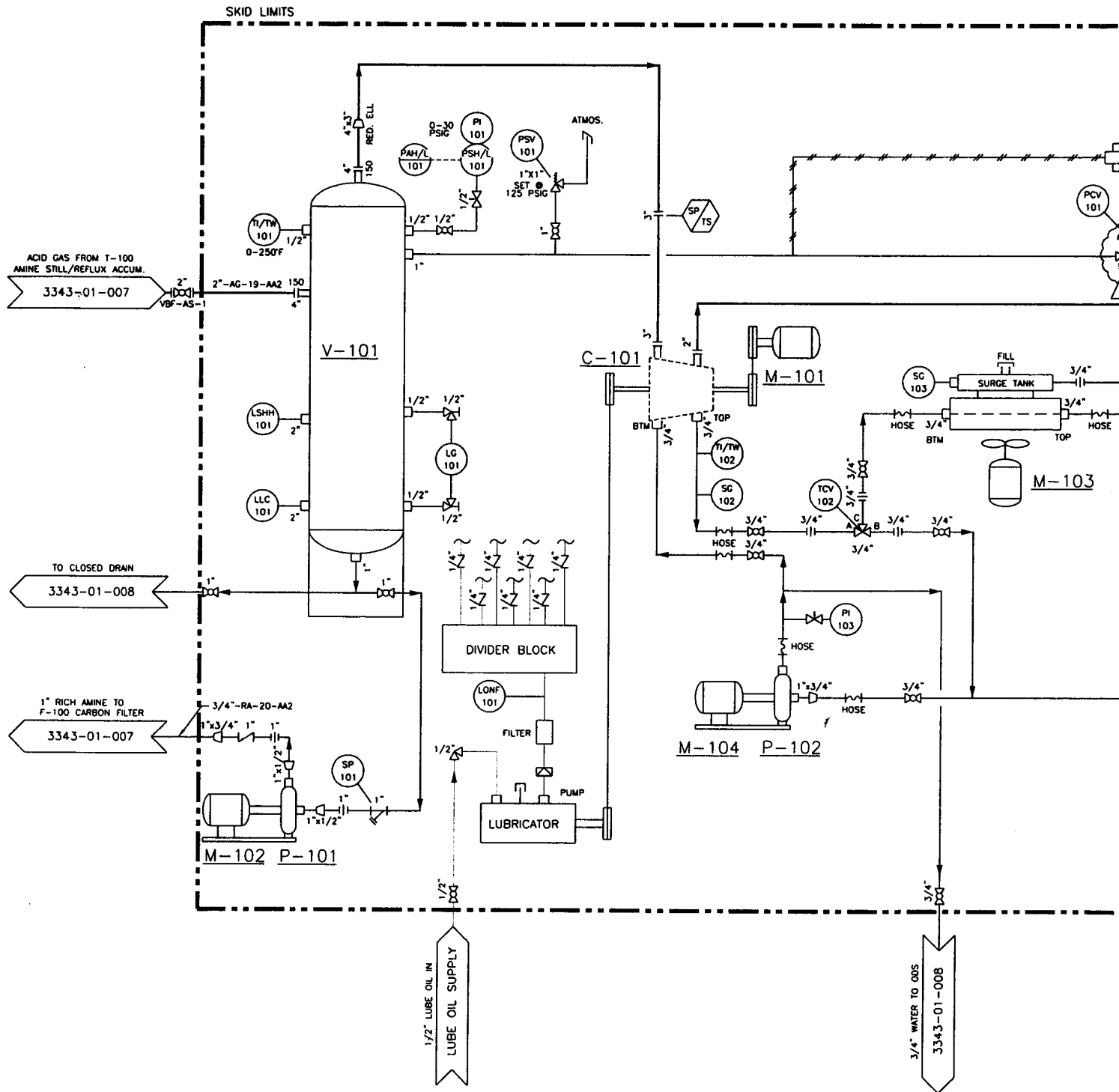
C-101
ACID GAS COMPRESSOR
AC MODEL: 2088

M-101
COMPRESSOR MOTOR
H.P.: 20
RPM: 1800
460/3/60
TEFC

P-102
JACKET WATER PUMP
CAPACITY: 6 GPM
DISCHARGE PRESSURE: 15PSIG
RPM: 3600

M-104
J.W. PUMP MOTOR
H.P.: 3/4
RPM: 1800
460/3/60
TEFC

M-103
SURGE TANK
H.P.: 3/4
RPM: 1800
460/3/60
TEFC



NOTES:
10. FOR TRIM SPEC SEE PIPING CLASS UNDER LINE IDENTIFICATION SYSTEM ON 3343-01-000.

NOTES		DRG. NO.	REFERENCE DRAWINGS	NO.	DATE	REVISIONS
1. ATMOSPHERIC RELIEF/VENTS SHALL BE OUTSIDE BUILDING.				0		
2. OUT OF SPEC CONNECTIONS ON EXISTING PURCHASED EQUIPMENT. MATCH EXIST. CONN'S. USE TRIM SPEC FOR APPURTENANCES.				1		
3. FIELD TO PROVIDE HYDROSTATIC VENTS AND DRAINS.				2		
4. REMOVABLE SPOOL REQ'D.				3		
5. CONTROL TUBING TO BE 316 STAINLESS.				4		
6. PCV-101 KIMRAY MODEL 130-SMT-D-ELECTROLESS NICKEL PLATED				5		
7. TCV-102 THERMOSTATIC CONTROL VALVE						
8. SUCTION SCRUBBER & PIPING TO BE PLASTIC COATED						
9. SKID IS TO BE DECKED						

URS

FIELD SERVICE, L.L.C.

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SCOUT/CHEVRON v. PILOT - IPR2024-00385

A

B

C

S-1

SUMP

---GALLON CAPA

OPEN DRAIN SYSTEM

FROM ACID GAS COMPRESSOR
JACKET WATER DRAIN

3343-01-007A

3/4"-DO-444-A

FROM AMINE SKID DRAIN

3343-01-007

BY OTHERS

FROM IAC-90 & H-200 SKIDS

3343-01-009

2"-DO-432-A

FROM F-1 SKID DRAIN

3343-01-006

2"-DO-426-A

FROM E-3/V-9 SKID DRAIN

3343-01-003

2"-DO-411-A

FROM V-8/P-2A & P-2B SKID DRAIN

3343-01-003

2"-DO-409-A

FROM V-5/E-2 SKID DRAIN

3343-01-005

2"-DO-424-A

2"-DO-401-A

FROM V-6 SKID DRAIN

3343-01-005

2"-DO-422-A

FROM MCP-1 SKID DRAIN

3343-01-005

2"-DO-422-A

FROM P-3A & P-3B SKID DRAIN

3343-01-004

2"-DO-416-A

FROM V-3/V-4 SKID DRAIN

3343-01-004

2"-DO-414-A

FROM V-7/V-10 SKID DRAIN

3343-01-004

2"-DO-417-A

FROM V-2/P-1A & P-1B SKID DRAIN

3343-01-002

2"-DO-408-A

FROM E-1 SKID DRAIN

3343-01-001

2"-DO-401-A

LAH
S-12"-150# RF
ANNULUS
LEAK DET.3"-150# RF
LOADOUT
SUCTION
STINGER

SUM

S-1

NOTES

1. FOR TRIM SPEC SEE PIPING CLASS UNDER LINE IDENTIFICATION
SYSTEM ON 3343-01-000.

DWG. NO.

REFERENCE DRAWINGS

NO.

DATE

REVISIONS

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FIELD SERVICE, L.L.C.

ATTACHED IMAGES

D

E

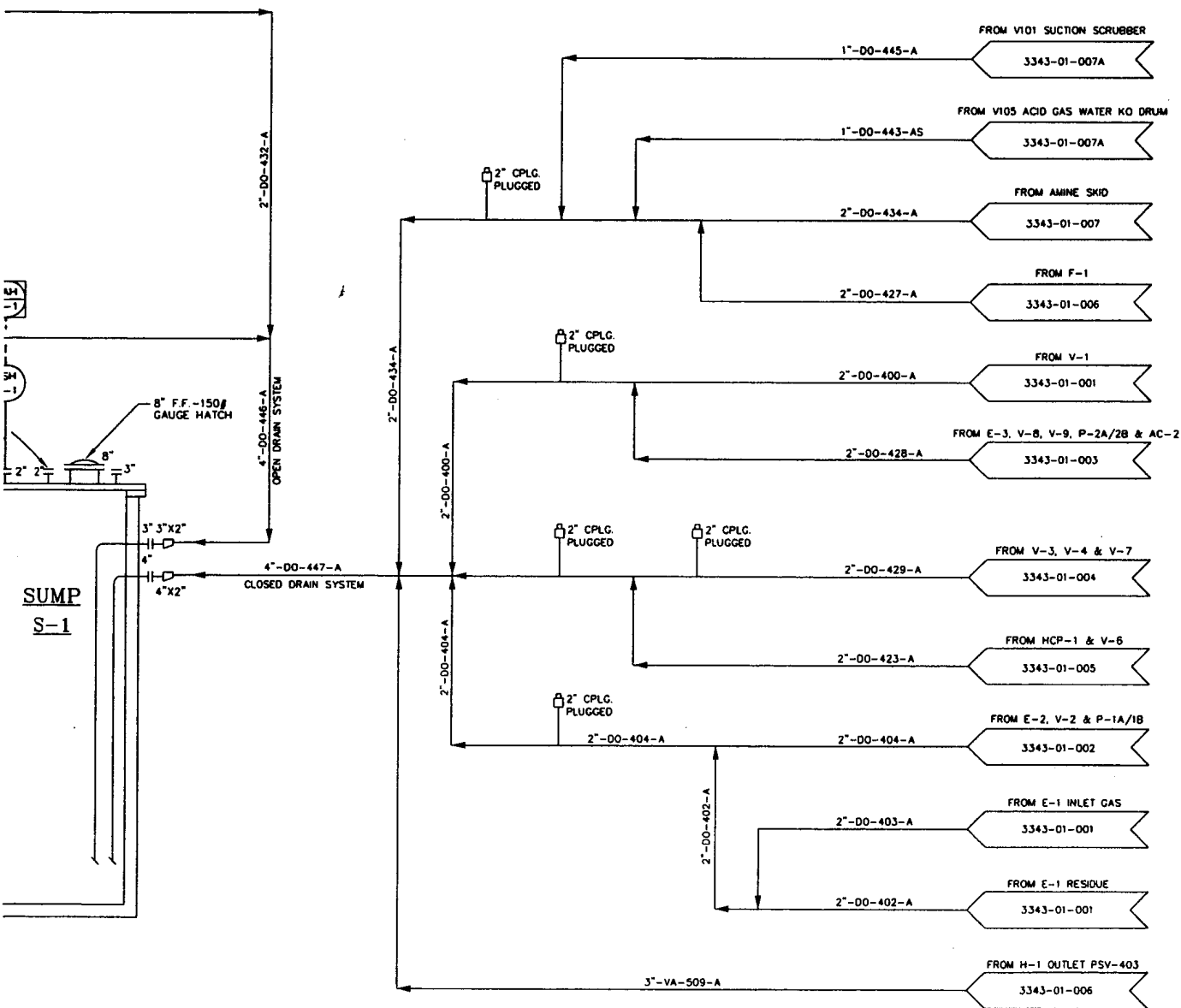
F

i-1

JMP

LOW CAPACITY

CLOSED DRAIN SYSTEM



REVISIONS	BY	CHK'D	APP	DATE	APP	DATE	ENGINEERING RECORD	DATE
							DRN:	
							CHK:	
							APP:	
							APP:	
							W.O. No.: 3343	
							SCALE: NONE	
							DO NOT SCALE DRAWING USE DIMENSIONS ONLY	



3237 West Interstate 20
P.O. Box 89410
Odessa, Texas 79763

NGL RECOVERY PLANT
PIPING & INSTRUMENTATION DIAGRAM
OPEN AND CLOSED DRAIN SYSTEM

DWG. No. 3343-01-008

CAD FILE: 3343-01-006

REV 4

Fig. 10 T

PILOT EXHIBIT 2047 PAGE 061

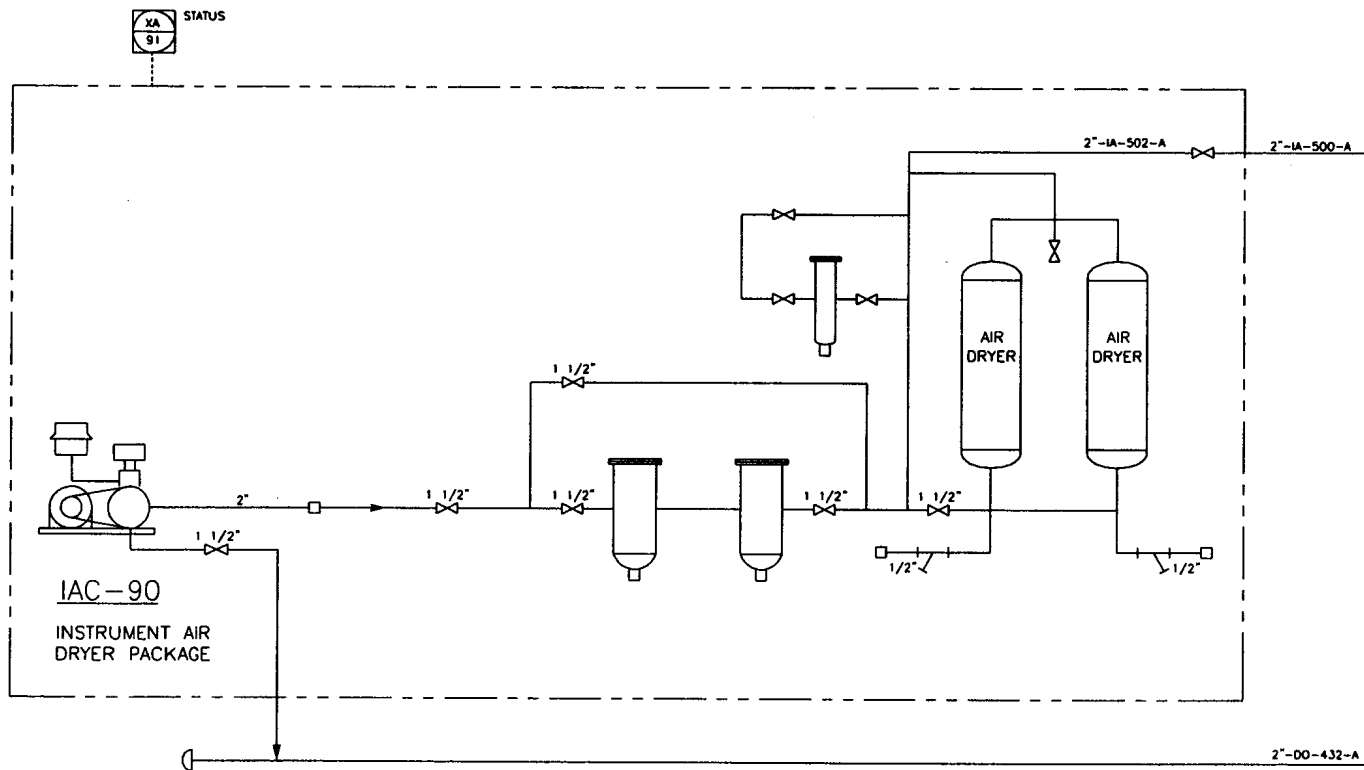
SCOUT/CHEVRON v. PILOT - IPR2024-00385

A

B

C

IAC-90
INSTRUMENT AIR
COMPRESSOR
--- SCFM AT --- PSIG
MOTOR: --- HP



ENGINEER SEAL

NOTES

DWG. NO.

REFERENCE DRAWINGS

NO.

DATE

REVISIONS

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ATTACHED IMAGES

URS

FIELD SERVICE, L.L.C.

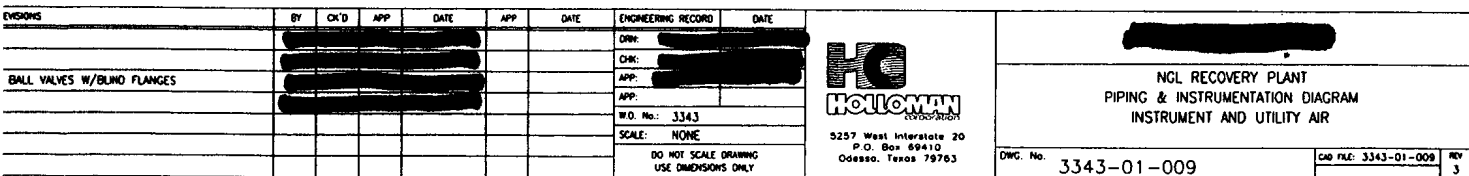
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Fig. 10 U

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41	42



Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		NGL Recovery Process		
First Named Inventor/Applicant Name:		Eric Prim		
Filer:		Grant Rodolph/Jean Brown		
Attorney Docket Number:		2103-00901		
Filed as Large Entity				
Provisional Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Provisional application filing	1005	1	200	200
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				200

Electronic Acknowledgement Receipt

EFS ID:	1788127
Application Number:	60938726
International Application Number:	
Confirmation Number:	9990
Title of Invention:	NGL Recovery Process
First Named Inventor/Applicant Name:	Eric Prim
Customer Number:	30652
Filer:	Grant Rodolph/Jean Brown
Filer Authorized By:	Grant Rodolph
Attorney Docket Number:	2103-00901
Receipt Date:	18-MAY-2007
Filing Date:	
Time Stamp:	10:28:19
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$200
RAM confirmation Number	1511
Deposit Account	501515
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 and 1.17	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	2103-00901_ApplicationData Sheet.pdf	1006084	no	4
Warnings:					
Information:					
2		2103-00901_Specification.PDF	563569	yes	14
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	13	
	Claims		14	14	
Warnings:					
Information:					
3	Drawings	2103-00901_Drawings.PDF	2193760	no	42
Warnings:					
Information:					
4	Fee Worksheet (PTO-06)	fee-info.pdf	8085	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			3771498		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.