

Exhibit M

Applicant's Financial Capability

Mist Resiliency Project
August 2024

Prepared for



Northwest Natural Gas

Prepared by



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List of Attachments

Attachment M-1. Miller Station Power Line Decommissioning Estimate

Attachment M-2. Miller Station Decommissioning Estimate

Attachment M-3. North Mist Compressor Station Decommissioning Estimate

Attachment M-4. Northwest Natural Gas 2022 Annual Report

Attachment M-5. Facility Bond Revision

Attachment M-6. Letter from Legal Counsel

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Oregon Administrative Rule (OAR) 345-021-0010(1)(m) requires proponents to provide information about the applicant's financial capability. The details normally discussed in this exhibit are included in the Project Description and OAR Division 27 Compliance document, which can be found at the beginning of this Request for Amendment to Site Certificate. However, supplemental information has been provided here regarding the Miller Station Power Line Decommissioning Estimate (Attachment M-1), the Miller Station Decommissioning Estimate (Attachment M-2), the North Mist Compressor Station Decommissioning Estimate (Attachment M-3), the Northwest Natural Gas 2022 Annual Report (Attachment M-4), the Facility Bond Revision (Attachment M-5), and Northwest Natural's Letter from Legal Counsel (Attachment M-6).

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Attachment M-1. Miller Station Power Line Decommissioning Estimate

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Miller Station Power Feed Retirement Costs (High Level)



Northwest Natural (NWN)

157831-BMcD-EST-003

Miller Station Power Feed

Project No. 157831

Revision A

2/15/2024

1.0 HIGH LEVEL RETIREMENT COST

As requested, BMcD has prepared the following explanation of the assumptions used for our estimate of the decommissioning cost (**\$1055,952000**) for the Miller Station Power Feed. This cost is based in 20234 US Dollars and does not compensate for any potential escalation or inflation between now and the end of the plant's useful lifespan. The total installed cost for the Miller Station Power Feed was issued separately. The TIC estimate includes the basis used to complete the estimate. Due to the nature of this scope this estimate assumes the contractor performing the decommissioning scope will be direct hired and managed by Northwest Natural and any EPC fees or markups are not included in this estimate. Pricing in this estimate was calibrated with estimates provided with the North Mist 01 installation. This was used as a similar project to scale the costs of facility removals.

1.1 Details

~~• Scrap Value of Insulated Copper Wire - \$45,000~~

~~The scrap value copper wire will vary based on market pricing at the time of decommissioning. The assumption is that all equipment at the end of a 30-year life cycle will be sold for scrap at the current Portland market rates. The current rate for Insulated Copper Wire averages \$1.75 per Pound. These values do not factor in any pickup fees or trucking costs to move the salvage material to the salvage yard.~~

- Removal cost of Insulated Copper Wire - **\$1059,952000**

Costs to remove all copper wire and fiber cable and hauled off site. It is expected that the underground raceways and cable splice vaults will be abandoned in place. Removal of electrical equipment is excluded from this cost estimate.

Mobilization/Demobilization

SubTotal **13112**

Office

	Months	Rate/Month
Office trailer	0.5	1000
Office Consumables	0.5	750

\$ 500
\$ 330.00

SubTotal **\$ 830**

Based on Estimated 11 working days (10 Hrs per day) ~15Cal days

Personell

	# Persons	Hours	\$/Hour
Super	1	110	\$ 130
Forman	1	110	\$ 103
Light Equipment Operator	1	110	\$ 79
Electrician - Journeyman	2	110	\$ 94
Electrician - Apprentice	2	110	\$ 87

\$ 14,300
\$ 11,305
\$ 8,639
\$ 20,684
\$ 19,206

SubTotal **\$ 74,135**

**Equipment
(Includes FOG in Rate)**

	Qty	Days	\$/Day
Skidsteer Loader	1	7	\$ 585
Flatbed Truck	1	7	\$ 460
F250	1	11	\$ 180
F150	1	11	\$ 145
Cable Reel Trailer	1	11	\$ 260

\$ 4,095
\$ 3,220
\$ 1,980
\$ 1,595
\$ 2,860

SubTotal **\$ 13,750**

Misc / Consumables

	Qty	Days	\$/day	\$/DL Hours
Small Tools & Supplies (ST&S)				\$ 2.50

\$ 1,925

SubTotal **\$ 1,925**

Disposal

	QTY	Loads	\$/Loads	\$/LB
MV Cable (Salvage)	26134.5			\$ -
MV Cable (Pickup Fee)	2		\$ 750	
Dump Fees	2		\$ 350	

\$ - No Salvage allowed in Estimate
\$ 1,500
\$ 700

SubTotal **\$ 2,200**

SUM Sub Total \$ 105,952

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Attachment M-2. Miller Station Decommissioning Estimate

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Mist Miller Compressor Unit Retirement Costs (High Level)



Northwest Natural (NWN)

Mist Miller Unit 700 and 800 Project

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Revision A

2/9/2024

Table of Contents

1.0	HIGH LEVEL RETIREMENT COST	1-2
1.1	Details	1-2
2.0	PROCESS FLOW DIAGRAMS (UNIT 700 AND 800 MIST MILLER STATION).....	2-4

1.0 HIGH LEVEL RETIREMENT COST

As requested, Basic Systems, Inc. has prepared the following explanation of the assumptions used for our estimate of the decommissioning cost (~~\$1,663,485,588,000~~) for the Mist 2.0 Compressor Station. This cost is based in 2023 US Dollars and does not compensate for any potential escalation or inflation between now and the end of the plant's useful lifespan. The total installed cost for the compressor station was issued separately. The TIC estimate includes the basis used to complete the estimate. Pricing in this estimate was calibrated with estimates provided with the North Mist 01 installation. This was used as a similar project to scale the costs of facility removals.

1.1 Details

1.21.1

- ~~Scrap Value of Equipment, Pipe, Steel, and Insulated Copper Wire - (\$200,000)~~

~~The scrap value of all equipment, piping, steel, and copper wire will vary based on market pricing at the time of decommissioning. The assumption is that all equipment at the end of a 30-year life cycle will be sold for scrap at the current Portland market rates. The current rate for Steel is \$133.50 per Ton, Transformers/Electrical Equipment is \$0.19 per Pound, and Insulated Copper Wire averages \$1.75 per Pound.~~

- Removal cost of Equipment, Pipe, Steel, and Insulated Copper Wire - ~~\$1,029,000,078,000~~

Costs to remove all mechanical equipment, electrical equipment, process building, pipe racks, platforms, facility piping and any other miscellaneous steel. This assumes that all structural steel, pipe, and copper wire will be cut into smaller pieces that can fit into a dumpster and that all equipment is small enough or will be broken down into smaller pieces that can fit on a standard tractor trailer for transport.

- Removal of Foundations - ~~\$507,919,200~~

Foundation removal assumes that all foundations that extend above grade will be removed, and the concrete broken down into pieces that can fit into a dumpster that can be hauled off to an appropriate disposal facility. All drilled piers that are more than 1' below

grade will be left in place, and any other drilled piers will be cut/knocked down to 1' below grade. This value does not factor in any trucking costs to move the concrete waste off site.

- Remove yard stone and hydroseed - ~~\$12750,316000~~.

It is assumed that all gravel on site will be removed and hauled off site and the existing soil will be prepped and then hydroseeded. This value does not factor in any trucking costs to move the yard stone off site or to bring in any import soil.

2.0 PROCESS FLOW DIAGRAMS (STATION)

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FITTINGS

- REDUCER
- CENTRIFUGAL PUMP
- DIAPHRAGM PUMP
- CONTACTOR
- VERTICAL FILTER SEPARATOR
- HORIZONTAL FILTER SEPARATOR
- KNOCK OUT
- HEAT EXCHANGER
- BOTTLES WITH CYLINDER
- SILENCER
- TURBINE METER
- POSITIVE DISPLACEMENT METER
- FILTER
- TEE STRAINER
- Y-TYPE STRAINER
- STRAIGHTENING VANE
- HOSE
- ORIFICE FLANGE
- FLANGED CONNECTION
- RUPTURE DISC
- ORIFICE
- SCREENED CAP
- FLAPPER CAP
- CAP
- PLUG
- QUICK OPENING CLOSURE
- SCREENED WENT

FITTINGS CONT.

- CAM LOCK QUICK CONNECT WITH CAP
- ROTARY PUMP
- FLAME ARRESTOR
- PULSATION DAMPENER
- HEATER
- SPACER PLATE W/ TEST TAP
- FLEXIBLE CONNECTION
- EXPANSION JOINT
- INSULATED UNION
- RATE COMPENSATING HEAT DETECTOR
- START-UP SCREEN
- VALVE OPERATOR MUFFLER
- FLOW RESTRICTING TEE
- UNIT HEATER
- BLANK OR SPACER RING
- GAS SAMPLING PROBE
- THERMOWELL

INSTRUMENT LEGEND

- LOCAL MOUNTING
- REMOTE MOUNT (LOCAL)
- REMOTE PANEL MOUNT
- INSTRUMENT FUNCTION CODE LOOP NUMBER
- OPERATOR INTERFACE GRAPHIC DISPLAY (OPI)
- COMPLEX ELECTRICAL INTERLOCK

VALVES

- RELIEF VALVE
- PRESSURE REDUCING REGULATOR, SELF CONTAINED
- PRESSURE REDUCING REGULATOR
- 2-WAY SOLENOID VALVE
- VALVE WITH ELECTRIC OPERATOR
- VALVE WITH PNEUMATIC OPERATOR
- VALVE WITH PNEUMATIC OVER HYDRAULIC OPERATOR
- 4-WAY VALVE WITH SOLENOID
- 3-WAY VALVE
- BALL VALVE
- PLUG VALVE
- GATE VALVE
- GLOBE VALVE
- NEEDLE VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- ANGLE VALVE
- J-WAY SOLENOID
- INSTRUMENT BLOCK AND BLEED VALVE
- VALVE WITH DIAPHRAGM (PRESSURE BALANCED) ACTUATOR
- 5-WAY MANIFOLD

CONNECTIONS

- ENGINE CONNECTION
- ENGINE TUBING CONNECTION
- EQUIPMENT CONNECTION ROUTING SCHEDULE

INSTRUMENT ABBREVIATIONS

- A/A: AUTO/MANUAL SELECTOR
- A/R: AIR RELEASE
- AS: AIR SUPPLY
- C.S.D.: COMPRESSOR SHUTDOWN
- ES: ELECTRICAL SUPPLY
- ESR: EMERGENCY SHUTDOWN LOGIC
- F.C.: FAIL CLOSED
- F.O.: FAIL OPEN
- F.L.: FAIL LAST POSITION
- G.S.: GAS SUPPLY
- I: INTERLOCK LOGIC
- I/I: CURRENT ISOLATION
- I/G.K.: INSULATING GASKET KIT
- I/P: ELECTRIC TO PNEUMATIC
- KI: CONSTANT
- L.C.: LOCKED CLOSED
- L.O.: LOCKED OPEN
- N.C.: NORMALLY CLOSED
- N.O.: NORMALLY OPEN
- N.F.: NON-FREEZE
- O/C: OPEN/CLOSE SELECTOR
- P/E: PNEUMATIC TO ELECTRIC
- PB: PULSATION DAMPENER
- PR: PROCESS VARIABLE
- RTD: RESISTIVE TEMPERATURE DEVICE
- SP: SET POINT
- S/S: START/STOP SELECTOR
- TC: THERMOCOUPLE
- TP: TEST POINT

PANEL LEGEND

- ESD: ESD PANEL
- ESP: UNIT BALANCE OF PLANT PANEL
- MCC: MOTOR CONTROL CENTER
- SCP: STATION CONTROL PANEL
- UCP: UNIT CONTROL PANEL
- RTU: FUEL MEASUREMENT PANEL
- RIU-1: UNIT #1 REMOTE INTERFACE PANEL
- RIU-2: UNIT #2 REMOTE INTERFACE PANEL
- RIU-A: REMOTE INTERFACE PANEL A
- RIU-B: REMOTE INTERFACE PANEL B
- HCP1: HEATER CONTROL PANEL 1
- HCP2: HEATER CONTROL PANEL 2

PIPE LINE IDENTIFICATION SYSTEM

PIPING LINE NUMBERS ARE MADE UP OF FOUR (4) SETS OF CHARACTERS.

A. THE FIRST SET OF CHARACTERS IS THE SIZE OF THE PIPE.

B. THE SECOND SET OF CHARACTERS IS THE PIPING SYSTEM IDENTIFICATION.

C. THE THIRD SET OF CHARACTERS IS THE PIPING SEQUENCE LINE NUMBER IDENTIFICATION.

D. THE FOURTH SET OF CHARACTERS IS THE PIPING SPECIFICATIONS TO BE USED.

EXAMPLE: 8"-02-2-06 IS THE LINE DESIGNATION FOR 8" PIPE, GAS DISCHARGE, 2ND LINE MARKED, 1444 PSIG DESIGN AT 130 DEG. F

INSTRUMENTATION FUNCTION CODES (IDENTIFICATION LETTERS)

FIRST LETTER	MEASURED OR INITIATING VARIABLE	MODIFIER	SUCCEEDING LETTERS		
			READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	CLOSED
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)			PRIMARY ELEMENT	
F	FLOW RATE	RATIO (FRACTION)			
G	GAGING (DIMENSIONAL)		CLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE			CONTROL STATION	
L	LIGHT		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE OR INTER-MEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE (OVERLOAD)		ORIFICE (RESTRICTION)		OPEN
P	PRESSURE OR VACUUM			POINT (TEST CONNECTION)	
Q	QUANTITY OR EVENT	INTEGRATED OR TOTALIZE			
R	RADIOACTIVITY		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY			VALVE DAMPENER	VALVE DAMPENER
W	WEIGHT OR FORCE		WEIGHT OR FORCE		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	USER'S CHOICE (STATUS)			RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

PROCESS LINE SYMBOLS

- PRIMARY PROCESS LINES
- SECONDARY PROCESS LINES
- EXISTING MATERIAL
- PNEUMATIC SIGNAL
- CAPILLARY
- ELECTRICAL SIGNAL
- SPREAD SPECTRUM RADIO SIGNAL
- HYDRAULIC SIGNAL
- COMMUNICATION DATA HIGHWAY LINK
- INSULATED LINE
- HEAT TRACED & INSULATED LINE
- E = ELECTRIC

STATION INSTRUMENTATION LIST

STATION NUMBER	DESCRIPTION
100 - 199	UTILITY
200 - 299	
300 - 399	
400 - 499	
500 - 599	
600 - 699	
700 - 799	UNIT 700
800 - 899	UNIT 800
900 - 999	
1000 - 1099	
1100 - 1199	
1200 - 1299	

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XX/XX/2023

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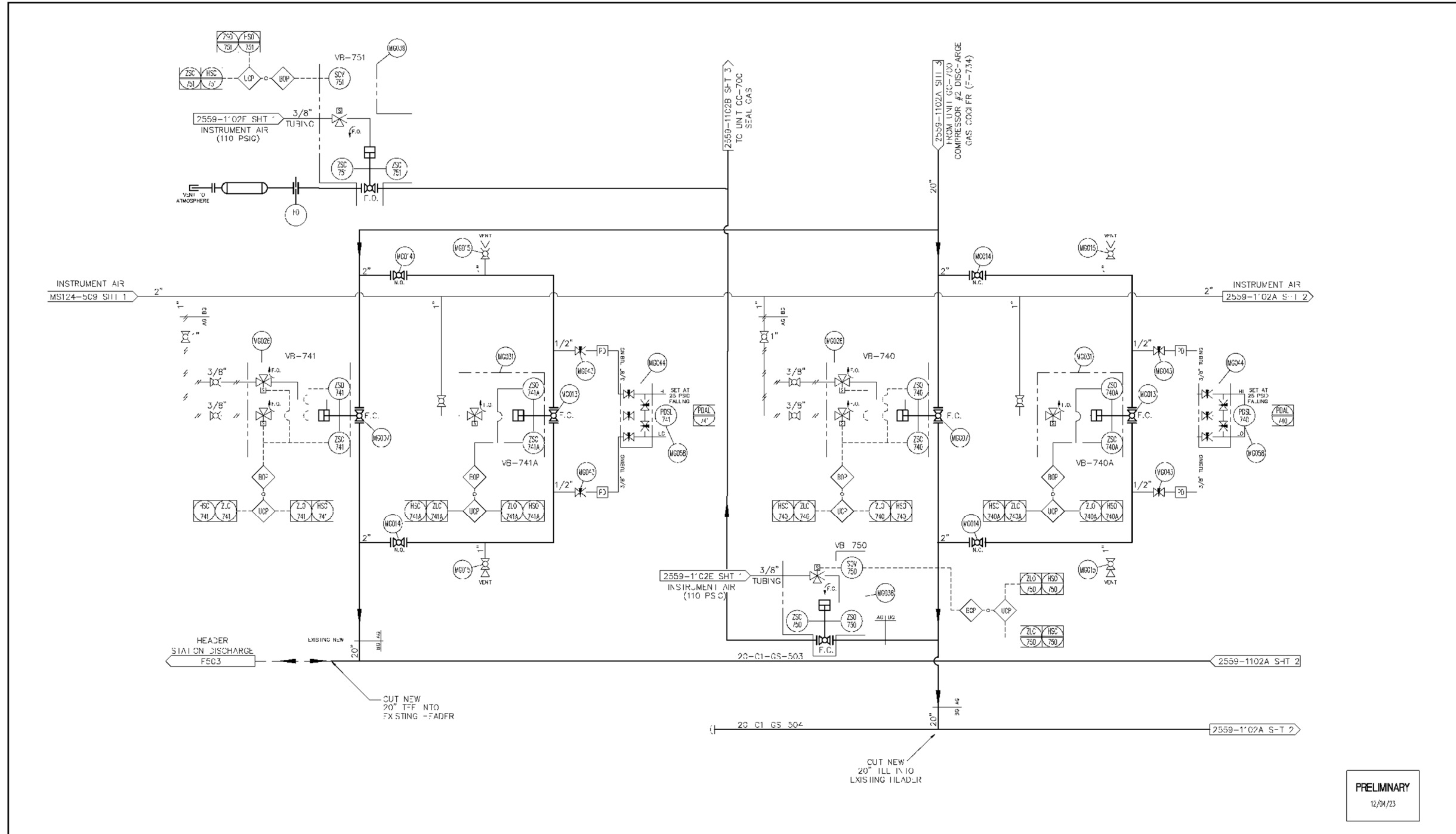
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SHEET 1 OF 1

NORTHWEST NATURAL GAS
MIST MILLER COMPRESSOR STATION

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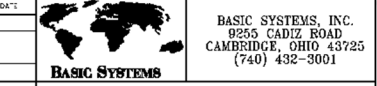
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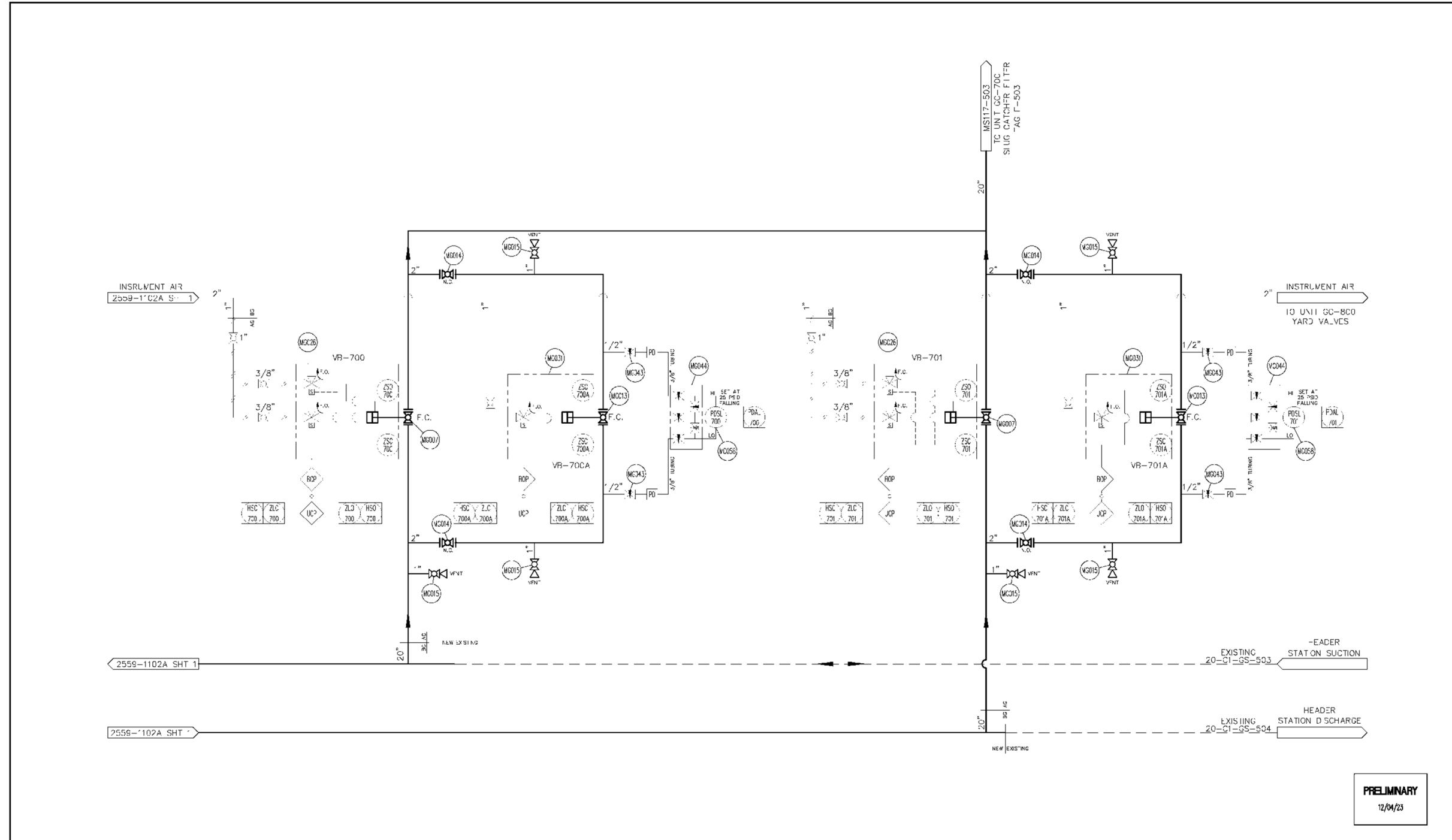
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NORTHWEST NATURAL GAS
MIST MILLER COMPRESSOR STATION

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DRAWING NUMBER: 2559-1102A
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SHEET: 1 of 5
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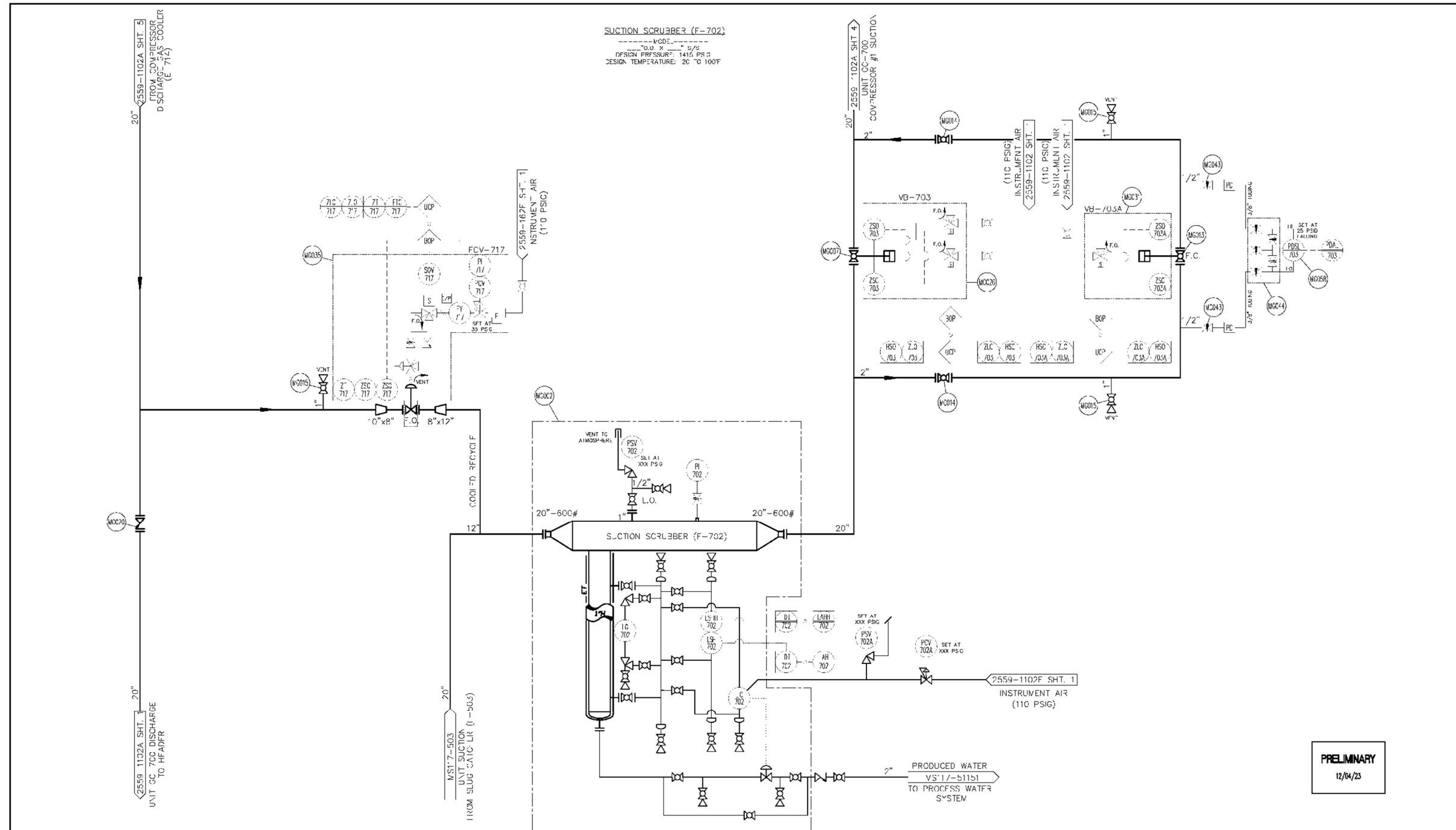
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MIST MILLER COMPRESSOR STATION**

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DATE 12/04/23
SHEET 2 of 5
DWG NO. 2559



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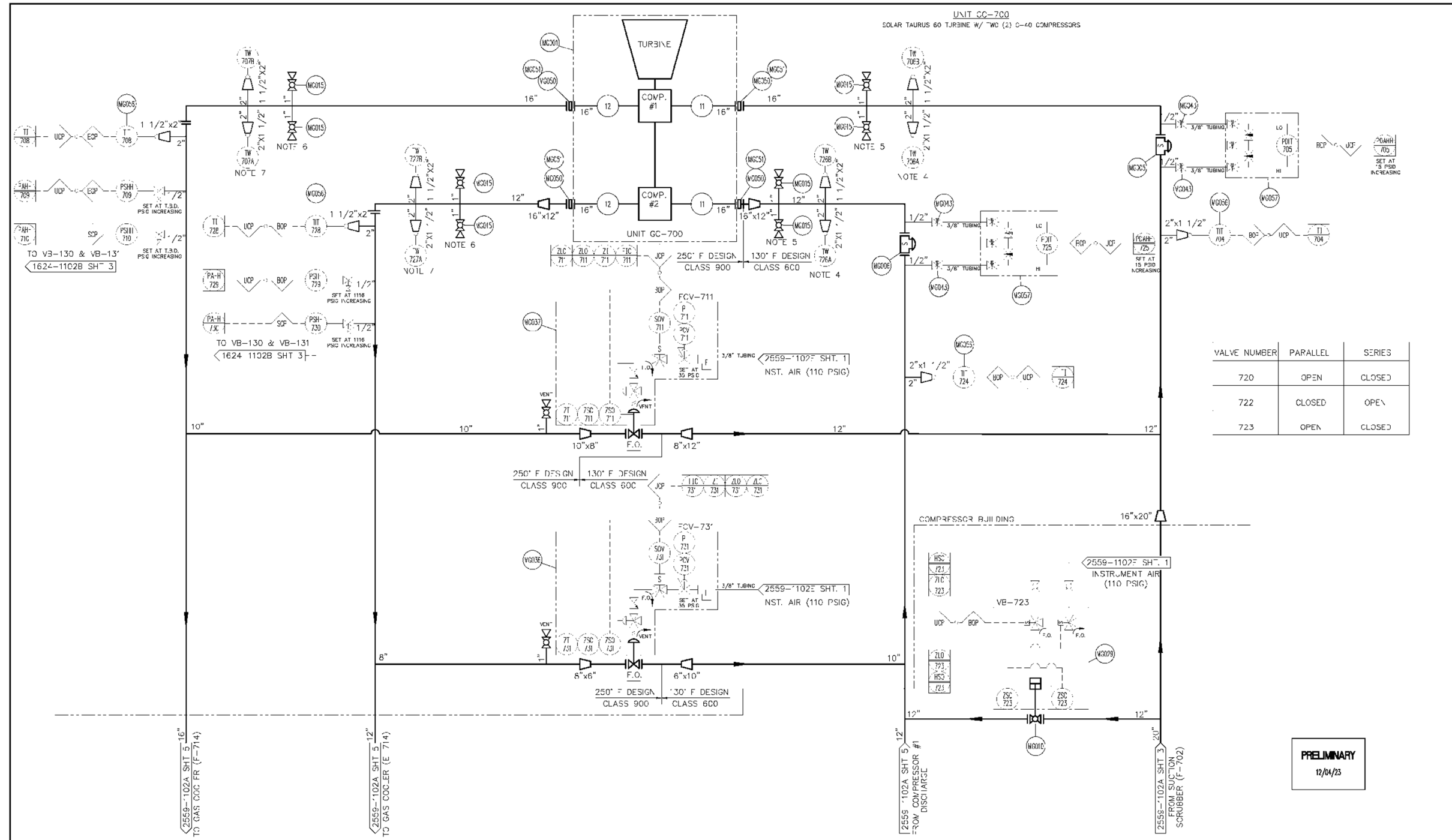

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P&ID - MAIN GAS
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NORTHWEST NATURAL GAS
MIST MILLER COMPRESSOR STATION

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DDC	9/18/23	2559-1102A	b	3 of 5
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VALVE NUMBER	PARALLEL	SERIES
720	OPEN	CLOSED
722	CLOSED	OPEN
723	OPEN	CLOSED

PRELIMINARY
12/04/23

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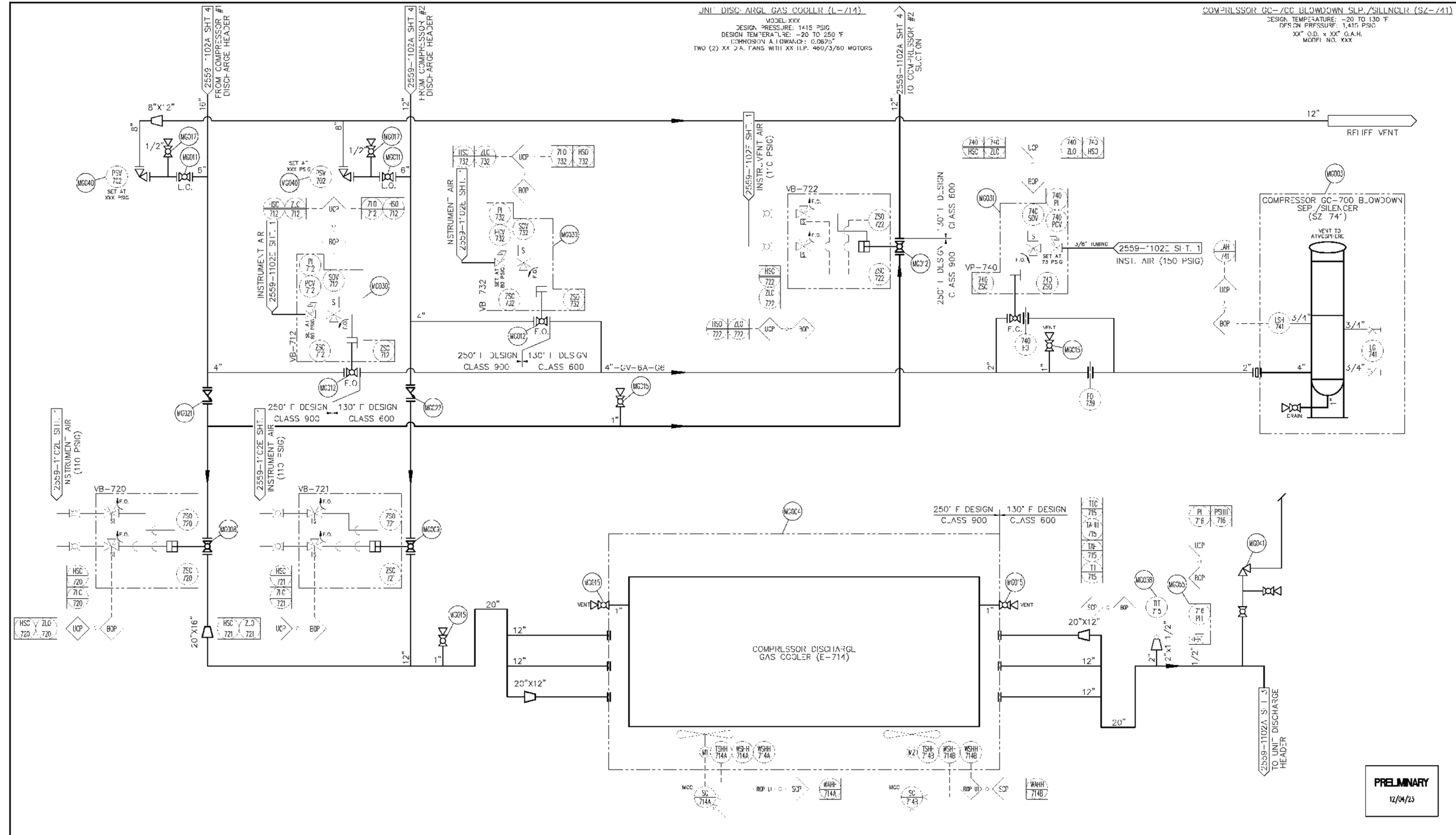
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**NORTHWEST NATURAL GAS
 MIST MILLER COMPRESSOR STATION**

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SHEET	2559



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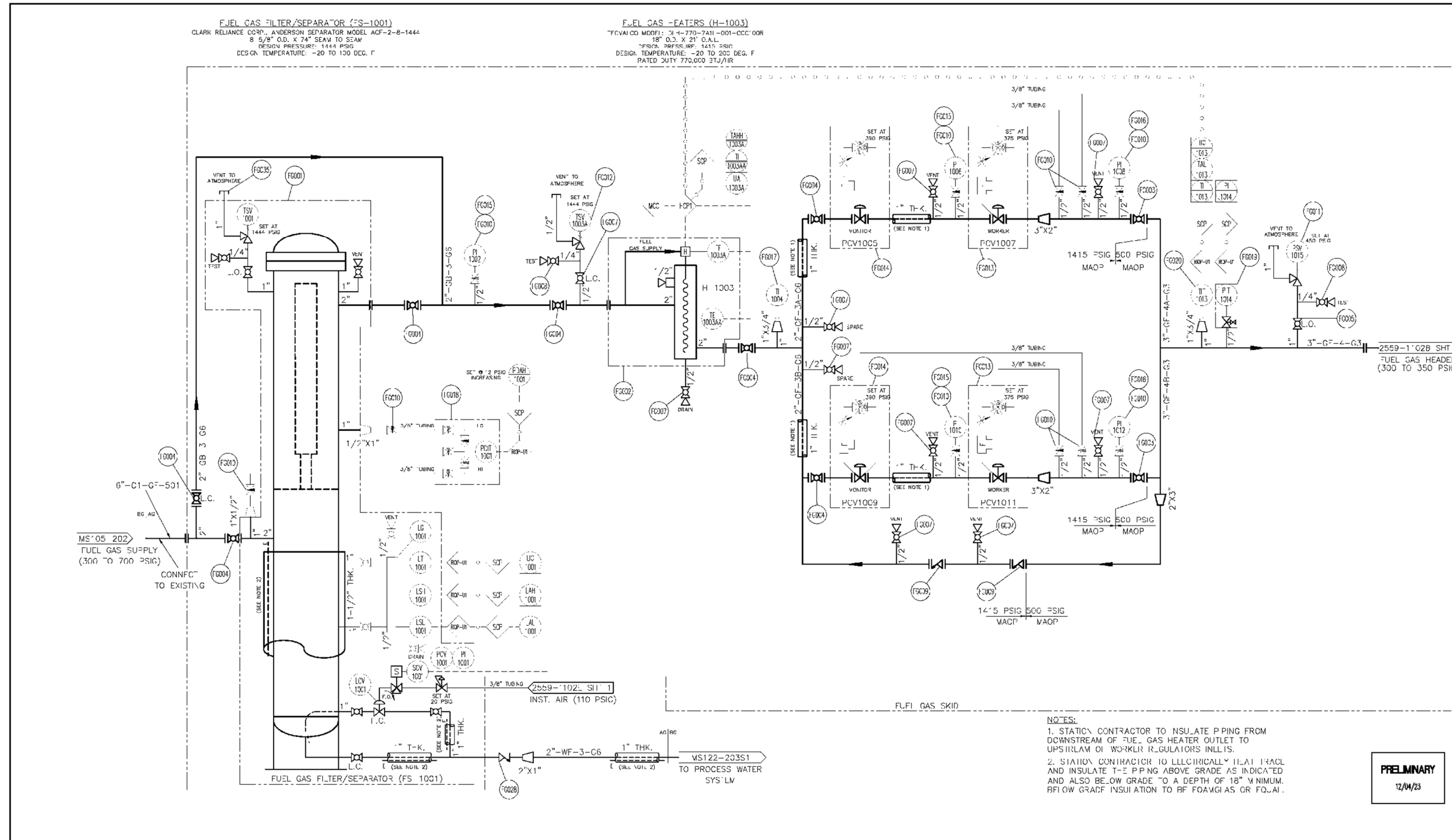
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NORTHWEST NATURAL GAS
MIST MILLER COMPRESSOR STATION

DRAWN BY: DDC
DATE: 9/18/23
SCALE: NONE



NOTES:
 1. STATION CONTRACTOR TO INSULATE PIPING FROM DOWNSTREAM OF FUEL GAS HEATER OUTLET TO UPSTREAM OF WORKER REGULATIONS INLLIS.
 2. STATION CONTRACTOR TO ELABORATELY TRAIL AND INSULATE THE PIPING ABOVE GRADE AS INDICATED AND ALSO BELOW GRADE TO A DEPTH OF 18" MINIMUM. BELOW GRADE INSULATION TO BE FOAMGLAS OR EQUIV.

PRELIMINARY
 12/04/23

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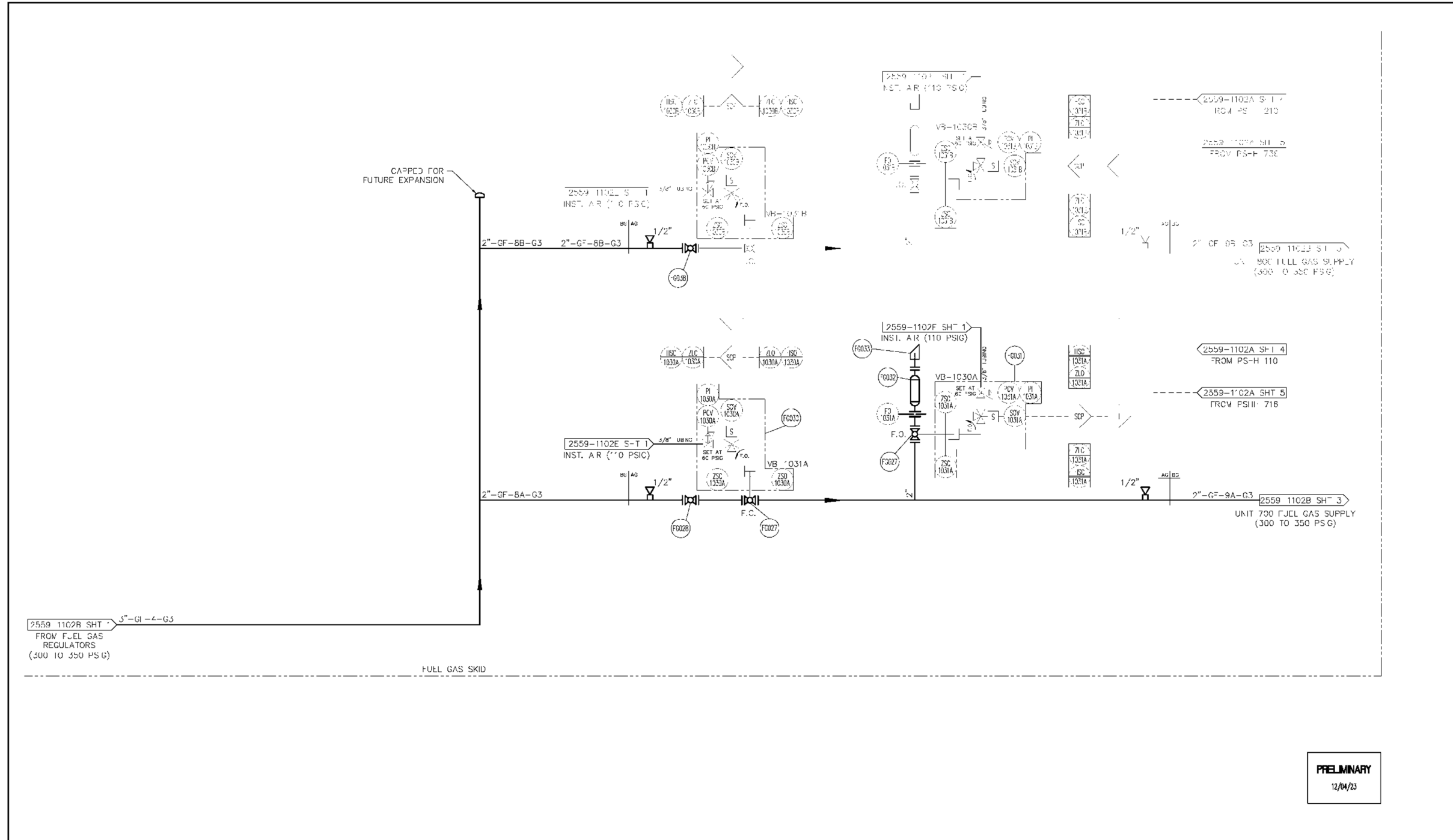
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NORTHWEST NATURAL GAS
MIST MILLER COMPRESSOR STATION

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PRELIMINARY
12/04/23

ENGINEER'S SEAL	OVERLAY NUMBERS	REFERENCE	NUMBER	NO.	DATE	REVISION	BY	CHK	APPD	NO.	DATE	REVISION	BY	CHK	APPD

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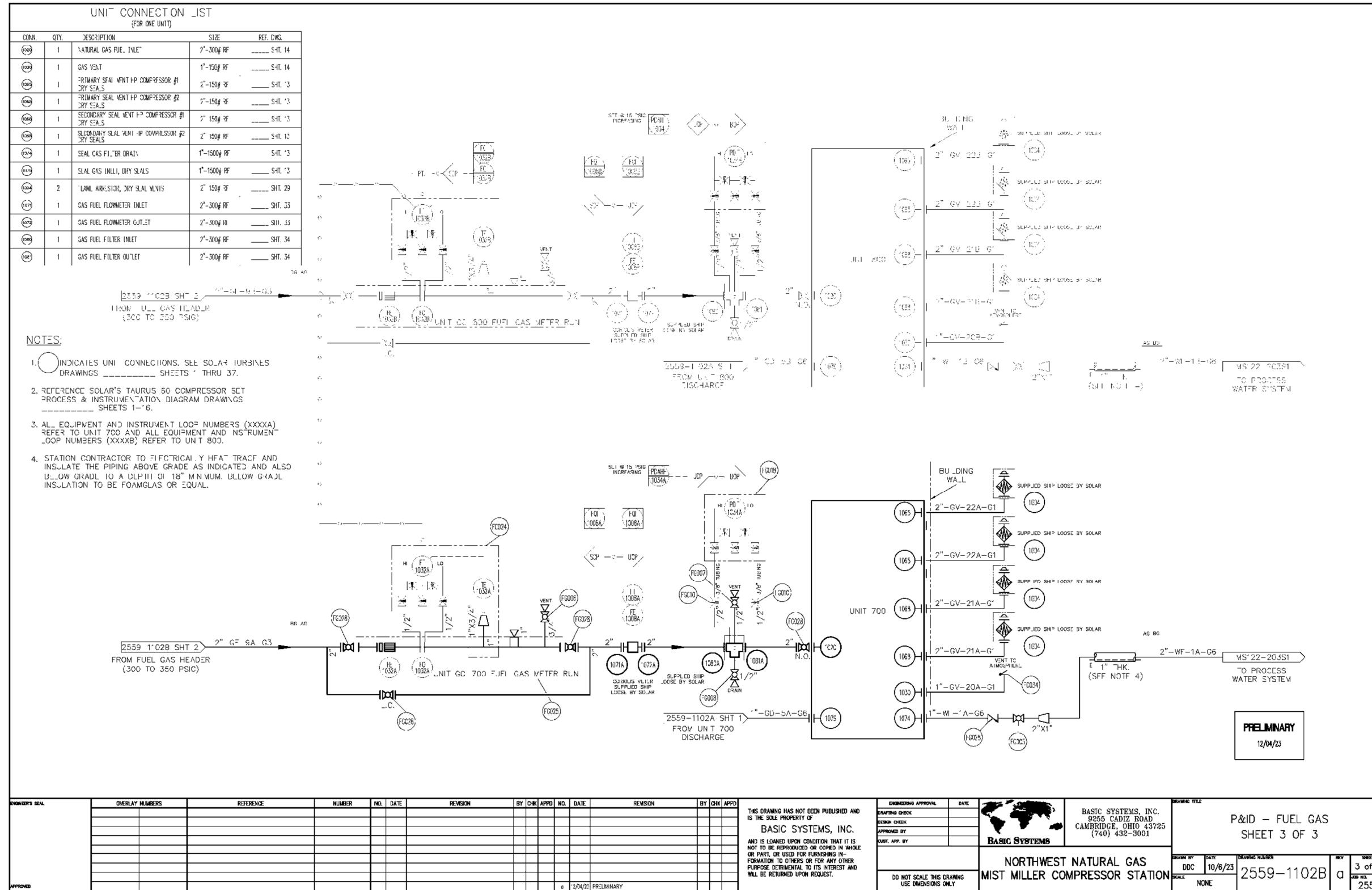
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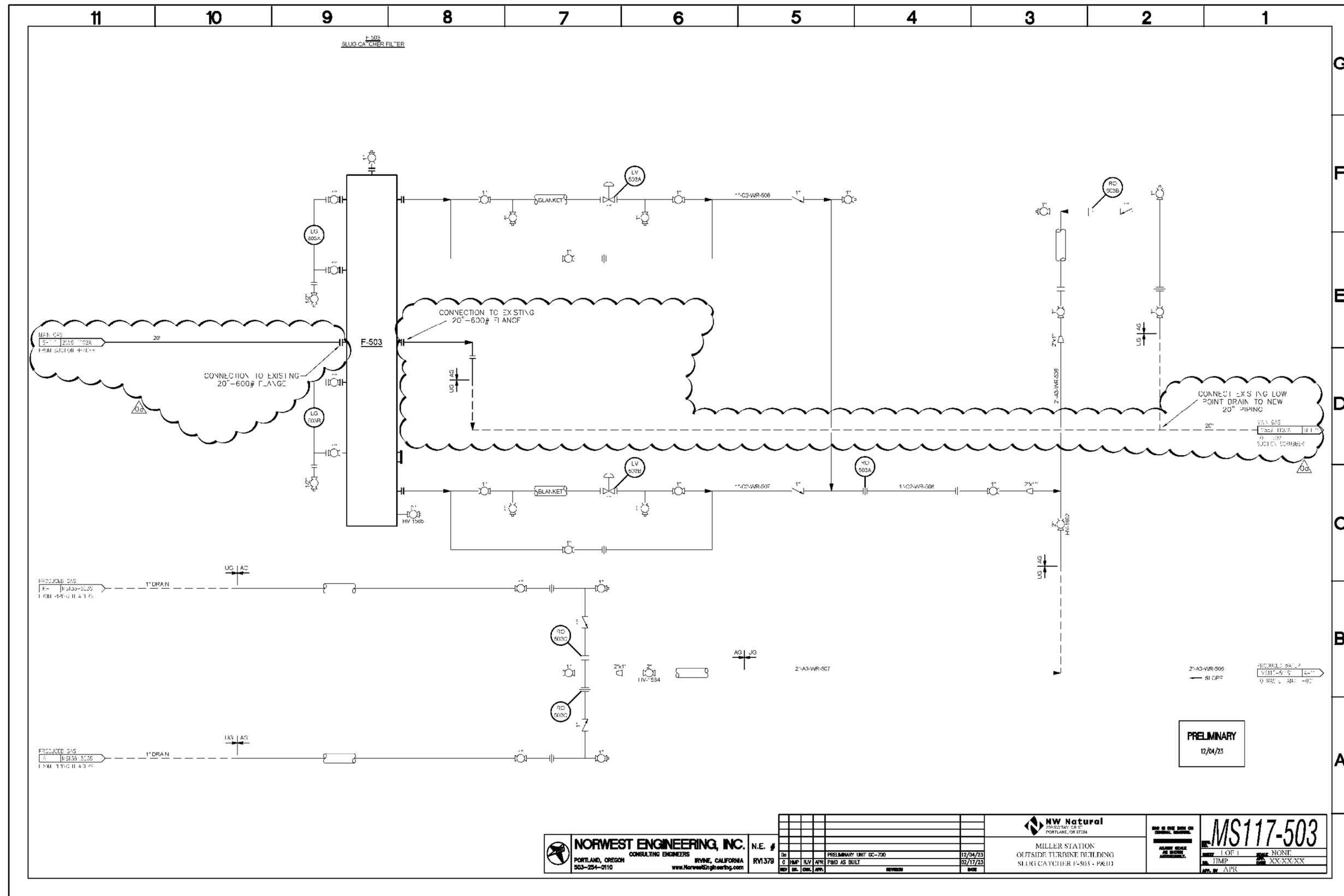


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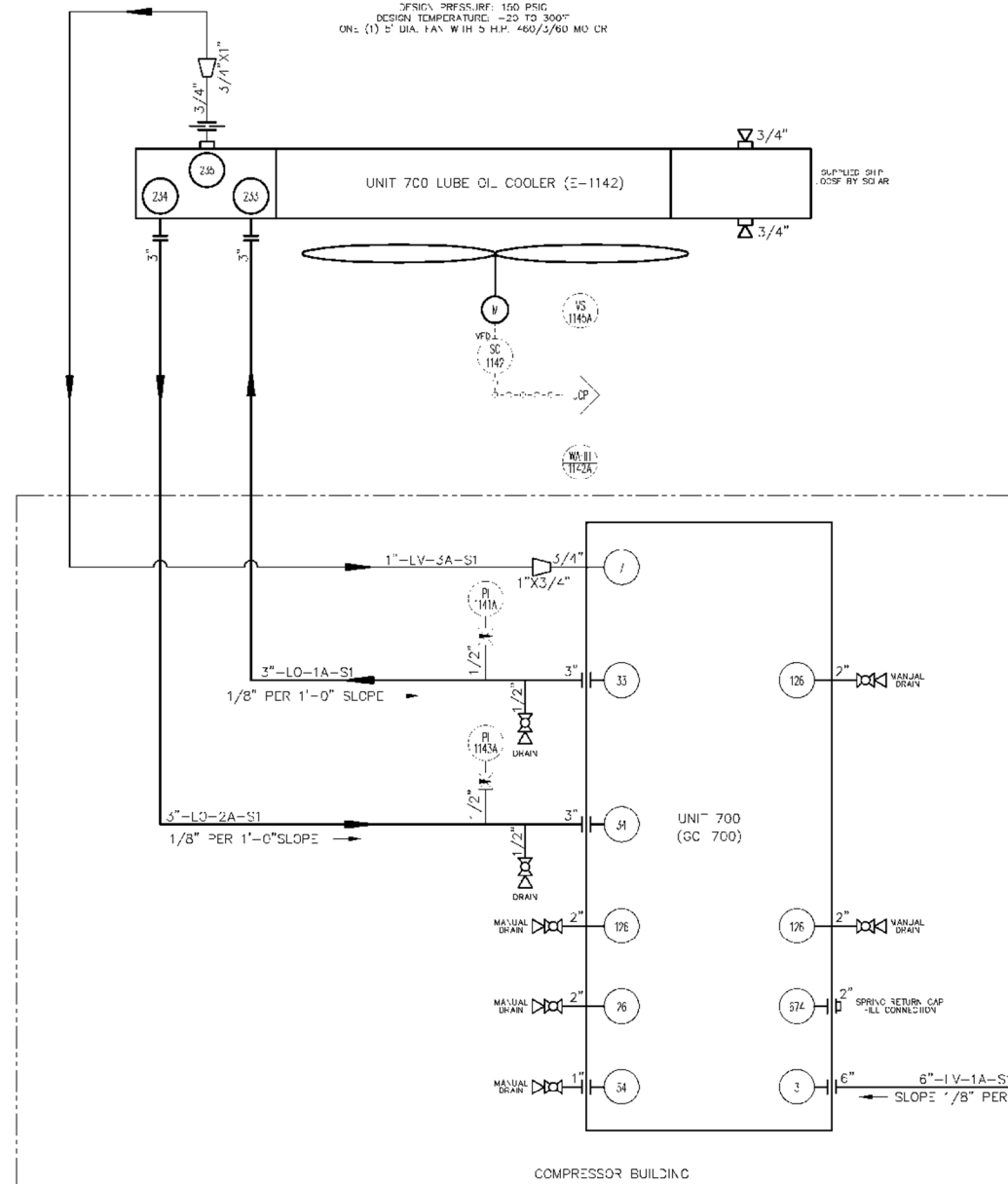
NORTHWEST NATURAL GAS
MIST MILLER COMPRESSOR STATION

DRAWING TITLE		P&ID - FUEL GAS SHEET 2 OF 3	
DRAWN BY	DATE	DRAWING NUMBER	REV
DDC	10/6/23	2559-1102B	a
SCALE	NONE		SHEET
			2 of 3
			2559





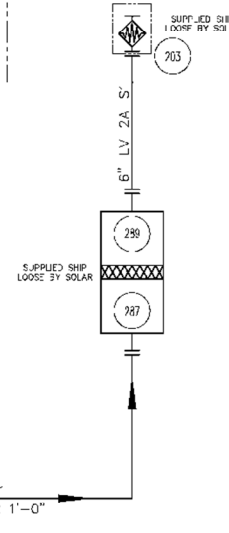
UNIT 700 & 800 LUBE OIL COOLER (E-1142A & E-1142B)
 AK-X-CHANGERS MODEL AXC 14.5090
 DESIGN PRESSURE: 150 PSIG
 DESIGN TEMPERATURE: -20 TO 300°
 ON: (1) 2" DIA. FAV WITH 5 H.P. 460/5/60 MO CR



CCVN	QTY	DESCRIPTION	SIZE	REF. DWG.
3	1	LUBE OIL TANK VENT	6" 50# RF	SHT. 13
7	1	LUBE OIL COOLER VENT	3/4" FNPT	SHT. 13
26	1	LUBE OIL TANK DRAIN	2" INPT	SHT. 13
33	1	LUBE OIL TO COOLER	3" 50# RF	SHT. 13
34	1	LUBE OIL FROM COOLER	3" 50# RF	SHT. 13
54	1	LUBE OIL FILTER DRAIN - UNFILTERED	1" 150# RF	SHT. 13
126	2	OIL DRAIN FROM URIP PAN	2" FNPT	SHT. 13 & 14
203	1	FLAME ARRESTOR, LUBE OIL TANK VENT	6" 50# RF	S-T. 30
233	1	LUBE OIL COOLER INLET	3" 50# RF	SHT. 31
234	1	LUBE OIL COOLER OUTLET	3" 50# RF	SHT. 31
239	1	LUBE OIL COOLER VENT RETURN TO TANK	3/4" FNPT	SHT. 31
287	1	LUBE OIL MIST SEPARATOR INLET	6" 50# RF	S-T. 32
288	1	LUBE OIL MIST SEPARATOR OUTLET	6" 50# RF	S-T. 32
674	1	LUBE OIL TANK FILL	2" ILL CAP	SHT. 14

NOTES:

- INDICATES UNIT CONNECTIONS. SEE SO. AIR TURBINES DRAWINGS SHEETS 1 THRU 37.
- REFERENCE SOLAR'S TAURUS 50 COMPRESSOR SET PROCESS & INSTRUMENTATION DIAGRAM DRAWINGS SHEETS 1 T-R. 16.
- ALL EQUIPMENT AND INSTRUMENT LOOP NUMBERS (11XXA) RELATE TO UNIT GC-700 AND ALL EQUIPMENT AND INSTRUMENT LOOP NUMBERS (11XXB) REFER TO UNIT GC-800.



PRELIMINARY
12/04/23

ENGINEER'S SEAL	OVERLAY NUMBERS	REFERENCE	NUMBER	NO.	DATE	REVISION	BY	CHK	APPD	NO.	DATE	REVISION	BY	CHK	APPD

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ENGINEERING APPROVAL	DATE
DRAFTING CHECK	
ESTIMATOR CHECK	
APPROVED BY	
CURT. APP. BY	



BASIC SYSTEMS, INC.
 9255 CADIZ ROAD
 CAMBRIDGE, OHIO 43725
 (740) 432-3001

ENGINEERING APPROVAL	DATE
DRAFTING CHECK	
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CURT. APP. BY	

P&ID - LUBE OIL
 SHEET 1 OF 1

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**NORTHWEST NATURAL GAS
 MIST MILLER COMPRESSOR STATION**

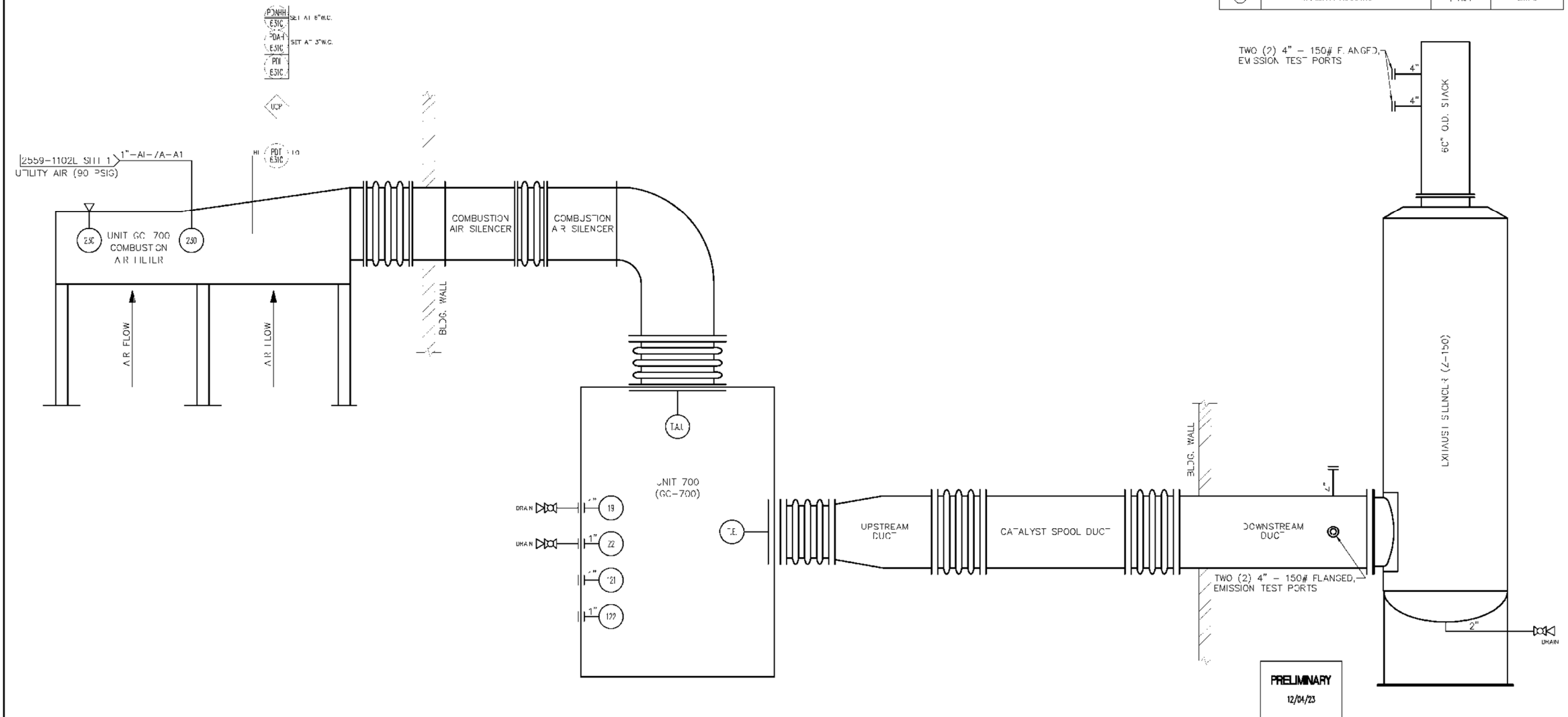
DRAWN BY: AMC DATE: 10/24/23 DRAWING NUMBER: 2559-1102C

REV: a 1 of 1
 SHEET NO: 2559

NOTES:

1. ○ INDICATES UNIT CONNECTIONS. SEE SOLAR TURBINES DRAWINGS SHEETS 1 THRU 37.
2. REFERENCE SOLAR'S TAURUS 60 COMPRESSOR SET PROCESS & INSTRUMENTATION DIAGRAM DRAWINGS SHEETS 11-R, 16.
3. ALL EQUIPMENT AND INSTRUMENT LOOP NUMBERS (XXXX) REFER TO UNIT GC-700 AND ALL EQUIPMENT AND INSTRUMENT LOOP NUMBERS (XXXXB) REFER TO UNIT GC-800.

UNIT CONNECTION LIST (FOR ONE UNIT)				
CONN.	QTY.	DESCRIPTION	SIZE	REF. DWG.
19	-	ENGINE EXHAUST COLLECTOR AND COMBUSTOR DRAIN	1" 150# RF	SHT. 14
22	-	ENGINE AIR INLET DUCT DRAIN	1" 150# RF	SHT. 14
21	-	ON LINE CLEANING FLUID INLET	1" 150# RF	SHT. 14
22	-	ON CRANK CLEANING FLUID INLET	1" 150# RF	SHT. 14
23	-	AIR SUPPLY PNEUMATIC	1" FNPT	SHT. 8



ENGINEER'S SEAL	OVERLAY NUMBERS	REFERENCE	NUMBER	NO.	DATE	REVISION	BY	CHK	APPD	NO.	DATE	REVISION	BY	CHK	APPD

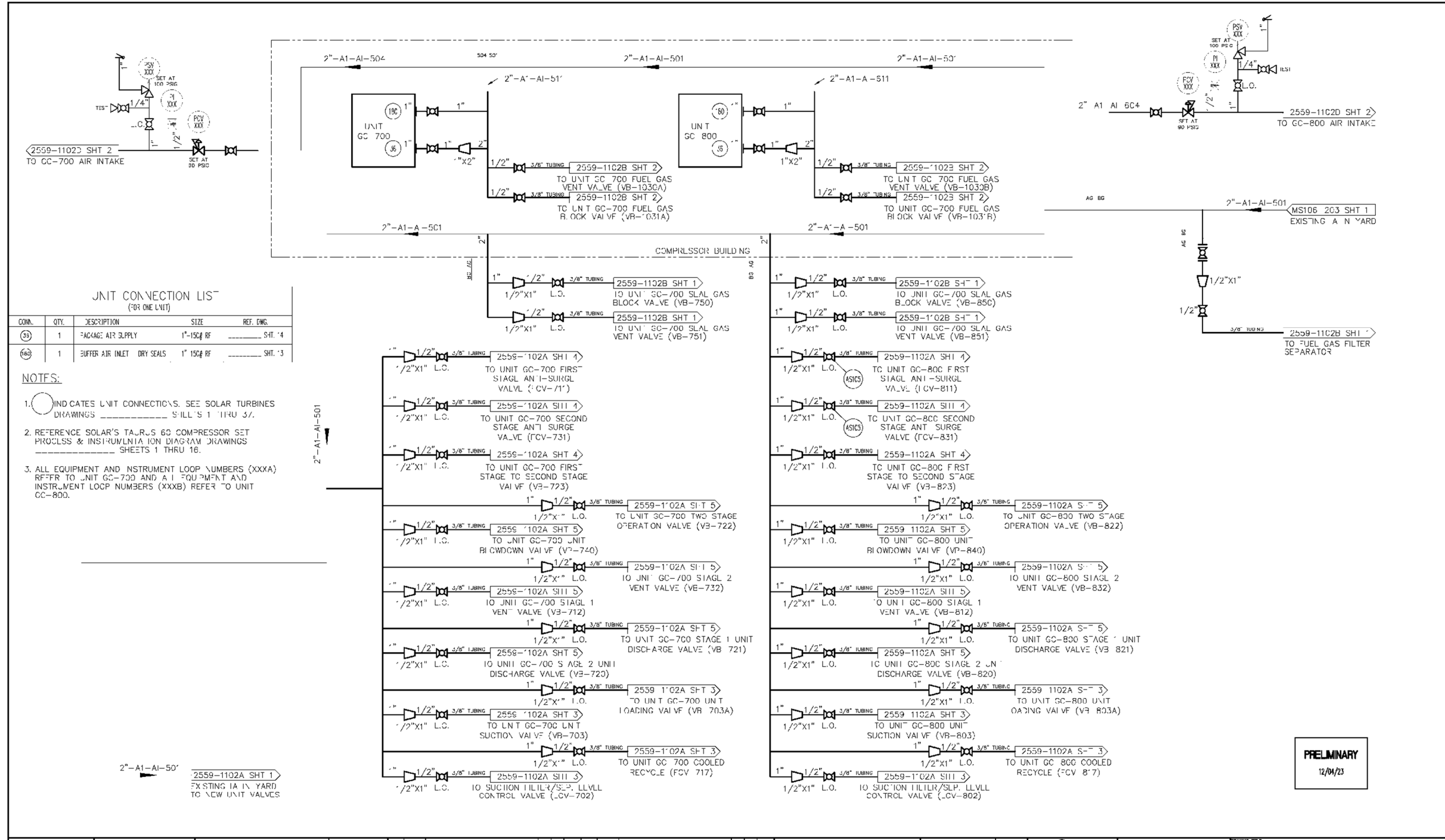
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ENGINEERING APPROVAL	DATE
DRAFTING CHECK	
DESIGN CHECK	
APPROVED BY	
CURT. APP. BY	

BASIC SYSTEMS

**NORTHWEST NATURAL GAS
 MIST MILLER COMPRESSOR STATION**

DRAWING TITLE		P&ID - ANCILLARY SHEET 1 OF 1	
DRAWN BY	DATE	DRAWING NUMBER	REV
AMC	10/24/23	2559-1102D	a
SCALE	NONE		SHEET 1 of 1
			2559



UNIT CONNECTION LIST
(FOR ONE UNIT)

CON.	QTY.	DESCRIPTION	SIZE	REF. DWG.
39	1	PACKAGE AIR SUPPLY	1" 1504 RF	SHT. 4
60	1	BUFFER AIR INLET DRY SEALS	1" 1504 RF	SHT. 3

- NOTES:**
1. CIRCLES INDICATE UNIT CONNECTIONS. SEE SOLAR TURBINES DRAWINGS - SHEETS 1 THRU 3.
 2. REFERENCE SOLAR'S TUBING 60 COMPRESSOR SET PROCESS & INSTRUMENTATION DIAGRAM DRAWINGS SHEETS 1 THRU 16.
 3. ALL EQUIPMENT AND INSTRUMENT LOOP NUMBERS (XXXX) REFER TO UNIT GC-700 AND ALL EQUIPMENT AND INSTRUMENT LOOP NUMBERS (XXXB) REFER TO UNIT GC-800.

PRELIMINARY
12/04/23

ENGINEER'S SEAL	OVERLAY NUMBERS	REFERENCE	NUMBER	NO.	DATE	REVISION	BY	CHK	APPD	NO.	DATE	REVISION	BY	CHK	APPD

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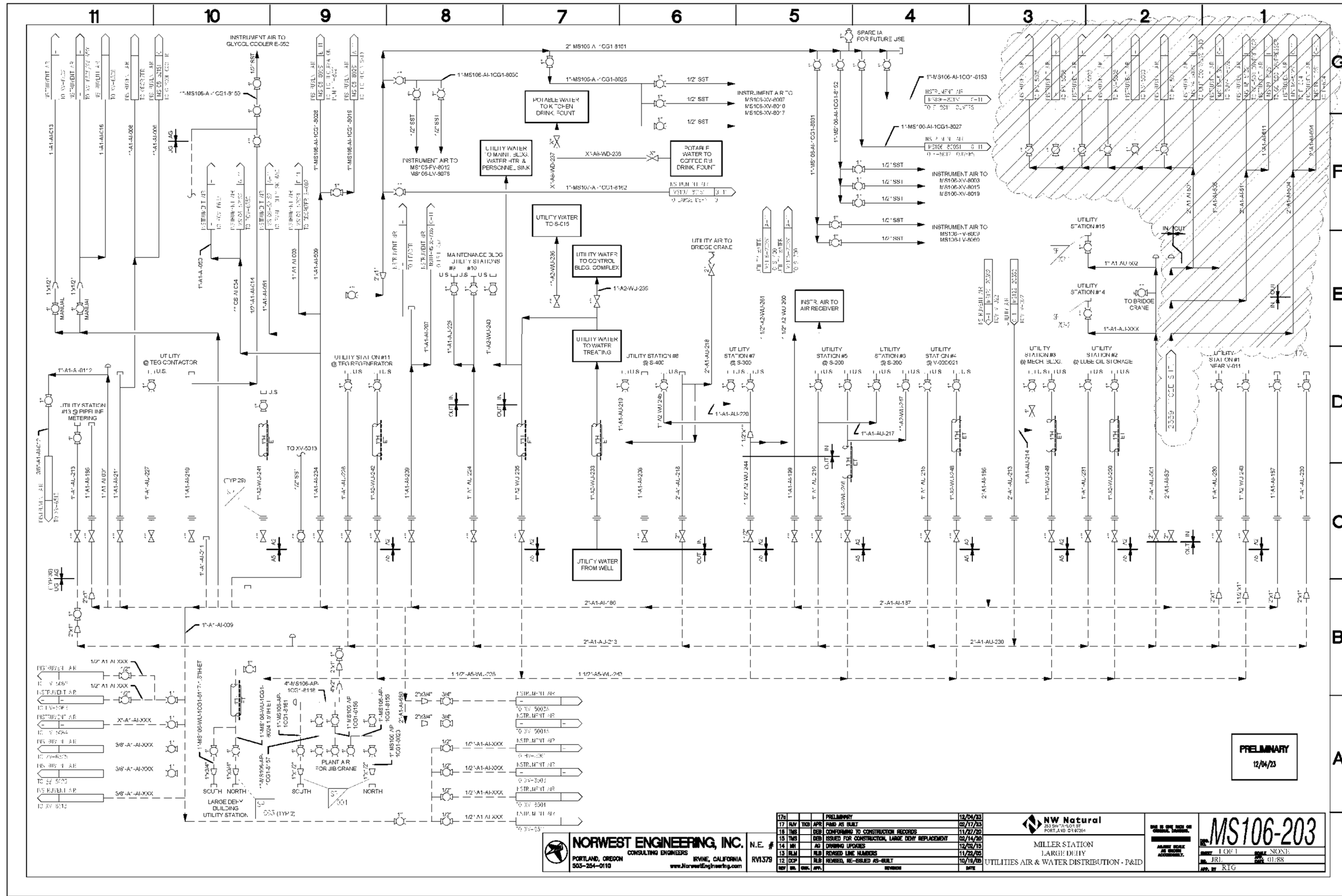
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REVISION CHECK: [Signature] DATE: [Date]
APPROVED BY: [Signature] DATE: [Date]
CURR. APP. BY: [Signature] DATE: [Date]

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CAMBRIDGE, OHIO 43725
(740) 432-3001

**NORTHWEST NATURAL GAS
MIST MILLER COMPRESSOR STATION**

DRAWING TITLE: P&ID - AIR SYSTEM SHEET 1 OF 2
DRAWN BY: AMC DATE: 10/24/23 DRAWING NUMBER: 2559-1102E REV: 1 of 2 SHEET: 2559
SCALE: NONE



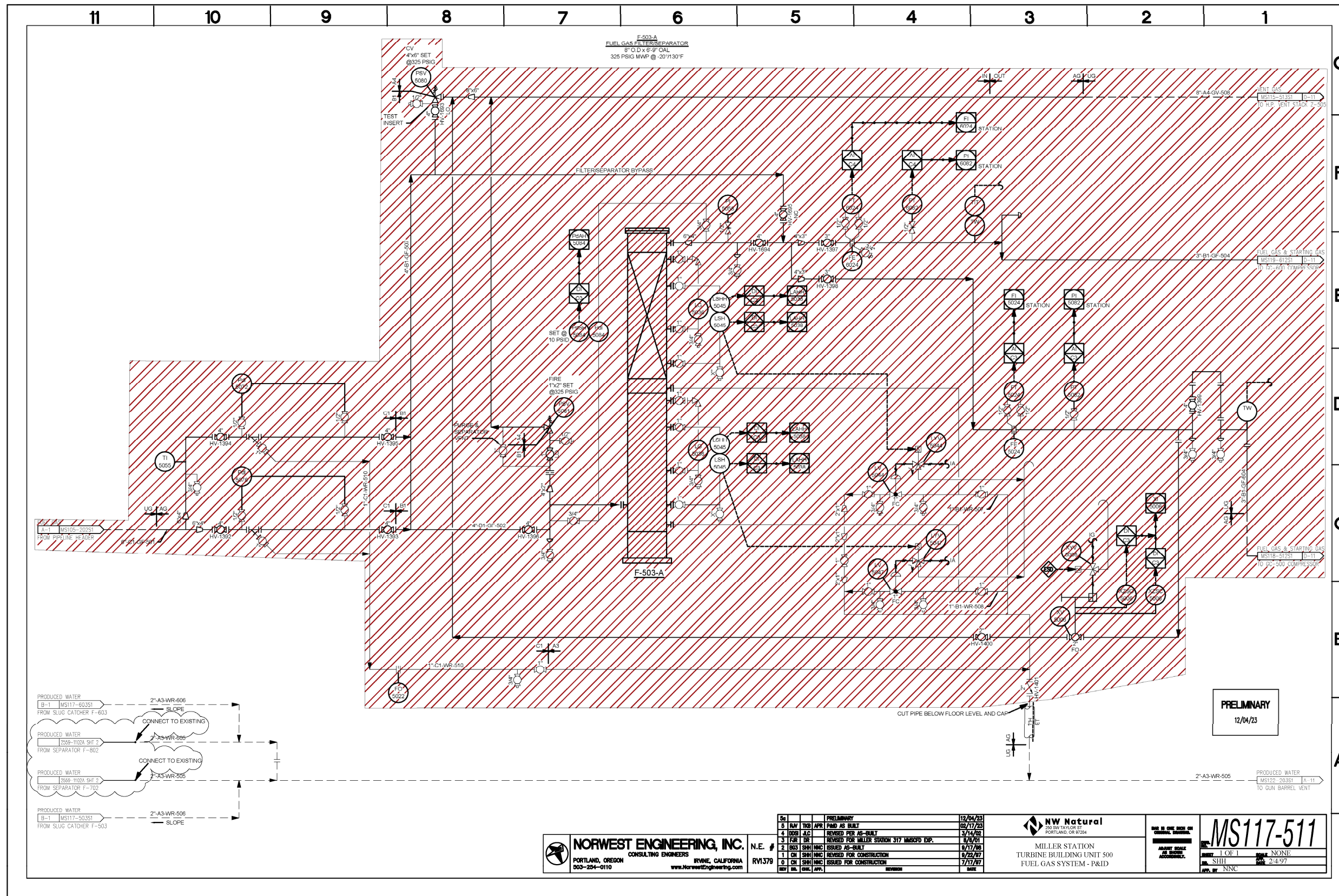
PRELIMINARY
12/04/23

NORWEST ENGINEERING, INC.
CONSULTING ENGINEERS
PORTLAND, OREGON 503-254-0110
IRVINE, CALIFORNIA
www.norwestengineering.com

17	PRELIMINARY	12/04/23
16	ISSUED FOR BIDDING	02/17/23
15	ISSUED FOR CONSTRUCTION RECORD	11/27/20
14	ISSUED FOR CONSTRUCTION, LARGE DEHY REPLACEMENT	02/14/20
13	REVISED LINES	12/02/19
12	REVISED LINE NUMBERS	11/22/19
11	REVISED, RE-ISSUED AS-BUILT	10/19/19
10	REVISED	09/11/19

NW Natural
200 SW 4th Street
Portland, OR 97204
MILLER STATION
LARGE DEHY
UTILITIES AIR & WATER DISTRIBUTION - P&ID

MS106-203	
DATE: 12/04/23	SCALE: NONE
DRAWN BY: JRL	CHECKED BY: JLR
APP. BY: RIG	



NORWEST ENGINEERING, INC.
PORTLAND, OREGON 503-224-0110
CONSULTING ENGINEERS IRVINE, CALIFORNIA
www.NorwestEngineering.com

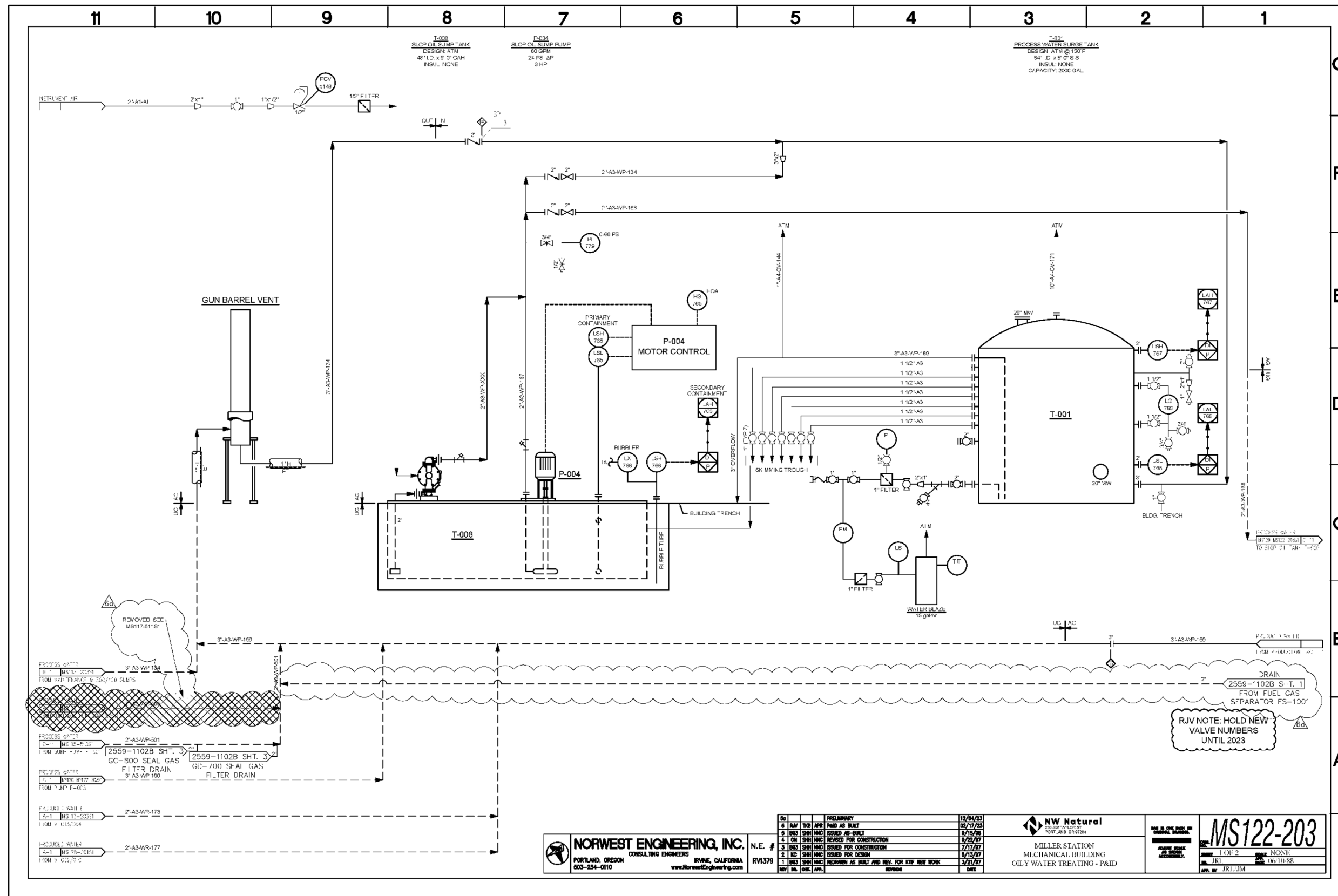
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5	12/04/23	PRELIMINARY		12/04/23
4	02/17/23	REVISED FOR CONSTRUCTION		02/17/23
3	03/14/22	REVISED FOR MILLER STATION 317 MAKEUP EXP.		03/14/22
2	08/01/21	ISSUED AS-BUILT		08/01/21
1	09/17/20	ISSUED AS-BUILT		09/17/20
0	09/22/17	REVISED FOR CONSTRUCTION		09/22/17
0	07/17/17	ISSUED FOR CONSTRUCTION		07/17/17
0	08/01/16	ISSUED FOR CONSTRUCTION		08/01/16

NW Natural
200 SW TAYLOR ST
PORTLAND, OR 97204

MILLER STATION
TURBINE BUILDING UNIT 500
FUEL GAS SYSTEM - P&ID

MS117-511

NO. 1 OF 1
SHEET 2-4-97
REV. BY: NNC



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 PORTLAND, OREGON 503-254-0110
 CONSULTING ENGINEERS IRVINE, CALIFORNIA
 www.NorwestEngineering.com

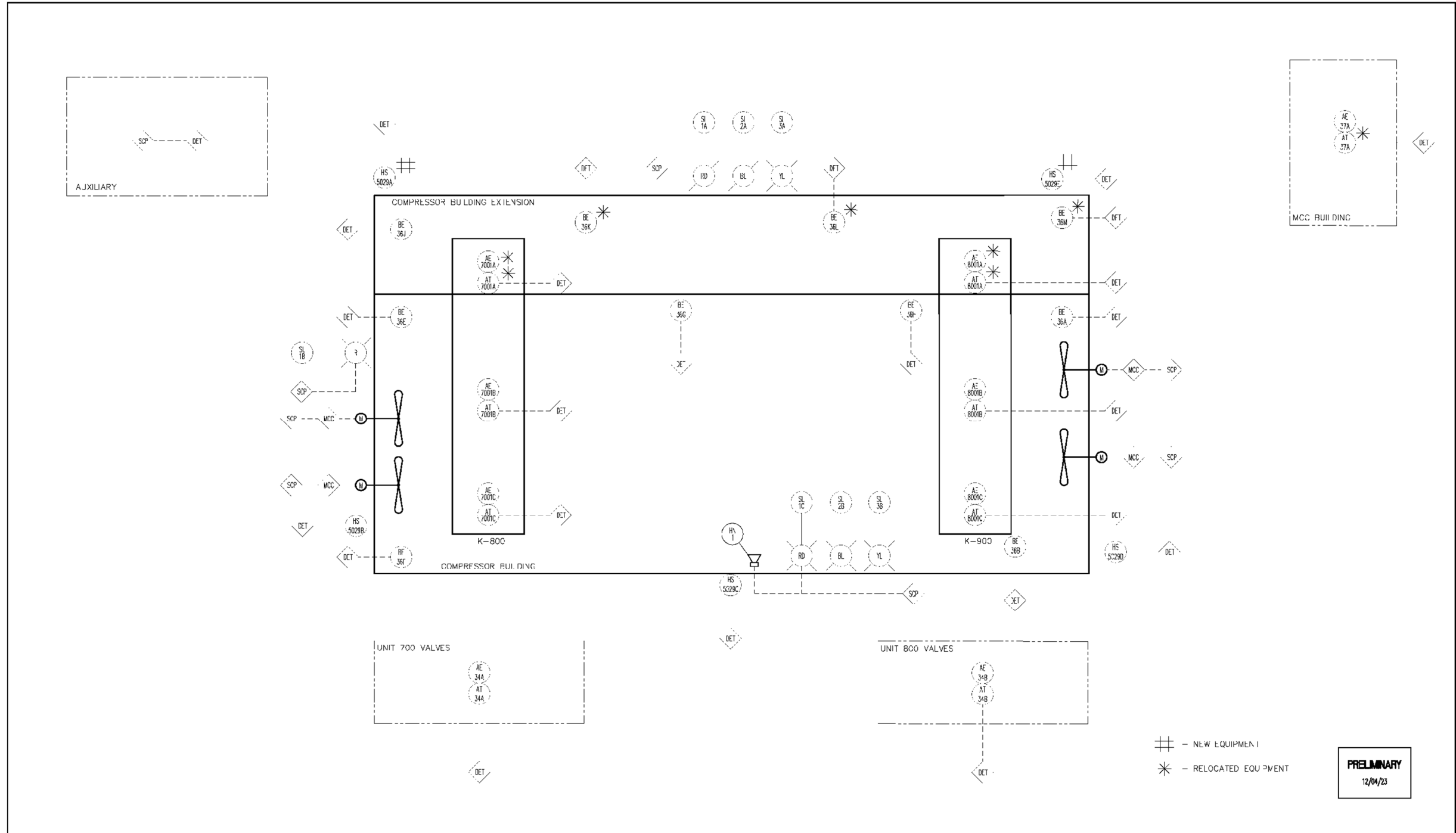
NO	REV	DATE	DESCRIPTION	BY	CHKD
6	REV	12/04/23	PRELIMINARY		
5	REV	02/17/23	PAID AS BUILT		
4	ON	11/25/22	ISSUED AS-BUILT		
3	ON	09/22/22	ISSUED FOR CONSTRUCTION		
2	ON	07/17/22	ISSUED FOR DESIGN		
1	ON	05/15/22	ISSUED FOR DESIGN		
0	ON	03/21/22	ISSUED FOR DESIGN		

NW Natural
 200 SW 7th Ave, 10th Fl
 PORTLAND, OR 97204

MILLER STATION
 MECHANICAL BUILDING
 OILY WATER TREATING - P&ID

MS122-203

NO. 100-2 NONP
 DATE 06/10/88
 REV. BY JRI/JM



DESIGNER'S SEAL	OVERLAY NUMBERS	REFERENCE	NUMBER	NO.	DATE	REVISION	BY	CHK	APPD	NO.	DATE	REVISION	BY	CHK	APPD

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 DRAWING CHECK: _____
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 QUOT. APP. BY: _____

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 CAMBRIDGE, OHIO 43725
 (740) 432-3001

**NORTHWEST NATURAL GAS
 MIST MILLER COMPRESSOR STATION**

DRAWING TITLE: P&ID - ESD SHEET 1 OF 1

DRAWN BY: AMC DATE: 10/24/23 DRAWING NUMBER: 2559-1102F REV: 1 of 1 SHEET NO.: 2559

SCALE: NONE

PRELIMINARY
 12/04/23

	Totals	Days
Removal cost of equipment Pipe, steel insulated Copper wire	\$ 1,029,078.75	45
Removal of foundations	\$ 507,192.50	15
Removal Yard stone and hydroseed	\$ 127,316.88	5
	\$ 1,663,588.13	

Mobilization SubTotal **40000**

Hydrovac Day \$/Day
 12 5500 SubTotal **66000**

Office Months Rate/Month
 Office trailer 2 1000 \$ 2,000
 Office Consumables 2 750 \$ 1,455.00
 SubTotal **\$ 3,455**

This will be \$0.6/DL Hours

Personell Based on Estimated 45 working days
 (10 Hrs per day) ~70Cal days

	# Persons	Hours	\$/Hour	
Super	1	450	\$ 150	\$ 67,500
Forman	1	450	\$ 120	\$ 54,000
Operator	3	450	\$ 120	\$ 162,000
Mill Wright	2	150	\$ 120	\$ 36,000
Electrician/Controls	2	175	\$ 120	\$ 42,000
Labor	6	450	\$ 90	\$ 243,000
Welder	2	300	\$ 140	\$ 84,000
				SubTotal \$ 688,500

Equipment

	Qty	Days	\$/Day		\$FOG/Mont Avg
Crane	1	6	5500	\$ 33,000	5250
Manlift	1	40	225	\$ 9,000	1200
Back Hoe	1	45	650	\$ 29,250	720
Jack Hammer (BH Attachment)	1	40	150	\$ 6,000	720
Trenching Machine	1	15	75	\$ 1,125	900
Weld Rig	2	30	200	\$ 12,000	720
Service rig	1	4	1000	\$ 4,000	0
Front end Loader	2	35	650	\$ 45,500	900
F250	1	45	175	\$ 7,875	900
F150	1	45	150	\$ 6,750	900
Van	1	19	125	\$ 2,375	720
Trailers (pickup pulled)	1	10	60		900
				SubTotal \$ 156,875	\$ 1,152.50

Misc / Consumables

	Qty	Days	\$/day	\$/DL Hours	
Trailer	1	45	325		SubTotal \$ 38,749
Weld rod					
cutting wheels					
shovels/Hand equipment					
Small Tools & Supplies (ST&S)				\$ 3.75	\$ 9,094
FOG - Small Misc			\$ 45.00		\$ 15,030

Disposal

	QTY	loads	\$/Loads	
Concrete	140	8		\$ -
Dirt	20	3		\$ -
Steel	10	3		\$ -
Equipment (Units)	2	2		\$ -
Large Equipment (Pipe/Ducting etc.)	2	4		\$ -
Dump Fees		20	350	\$ 7,000
				SubTotal \$ 7,000

Trucking

	Days	\$/Day	
(Includes Operator) Twin Axel Dump	15	900	\$ 13,500
Tractor Trailer	5	3000	\$ 15,000
			SubTotal \$ 28,500

Notes - Assumed Pad (40x9x5 (feet) = ~70CY (per Unit)

Note - Assumed 20 CY for misc

SUM Sub Total **\$ 1,029,079**

Mobilization

SubTotal **10000**

Hydrovac

Day \$/Day
4 5500

SubTotal **22000**

Office

Months Rate/Month
Office trailer 0.5 1000
Office Consumables 0.5 750

\$ 500

\$ 810.00

SubTotal **\$ 1,310**

This will be \$0.6/DL Hours

Personell

Based on Estimated 40 working days (10 Hrs per day) ~60Cal days

	# Persons	Hours	\$/Hour
Super	1	150	\$ 150
Forman	1	150	\$ 120
Operator	3	450	\$ 120
Mill Wright	0	150	\$ 120
Electrician/Controls	0	150	\$ 120
Labor	8	150	\$ 90
Welder	0	150	\$ 140

\$ 22,500

\$ 18,000

\$ 162,000

\$ -

\$ -

\$ 108,000

\$ -

SubTotal **\$ 310,500**

Equipment

	Qty	Days	\$/Day
Crane	1	5	5500
Manlift	0	10	225
Back Hoe	2	15	650
Jack Hammer (BH Attachment)	2	15	150
Trenching Machine	1	1	75
Weld Rig	1	0	200
Service rig	1	5	1000
Front end Loader	3	15	650
F250	2	15	175
F150	2	15	150
Van	1	15	125
Trailers (pickup pulled)	3	10	60

\$ 27,500

\$ -

\$ 19,500

\$ 4,500

\$ 75

\$ -

\$ 5,000

\$ 29,250

\$ 5,250

\$ 4,500

\$ 1,875

\$ 1,800

SubTotal **\$ 99,250**

\$FOG/Mont Avg

5250

1200

720

720

900

720

\$ 1,152.50

900

900

900

720

900

Misc / Consumables

	Qty	Days	\$/day	\$/DL Hours
Trailer	1	45	325	
Weld rod				
cutting wheels				
shovels/Hand equipment				
Small Tools & Supplies (ST&S)				\$ 3.75

SubTotal **\$ 25,133**

\$ 5,063

FOG - Small Misc

\$ 45.00

\$ 5,445

Disposal

	QTY	loads	\$/Loads
Concrete	140	20	
Dirt	20	10	
Steel	10	0	
Equipment (Units)	2	0	
Large Equipment (Pipe/Ducting etc.)	2	0	
Dump Fees		30	350

\$ -
\$ -
\$ -
\$ -
\$ -
\$ 10,500

SubTotal **\$ 10,500**

Trucking

(Includes Operator Twin Axel Dump
Tractor Trailer

Days	\$/Day
15	900
5	3000

\$ 13,500
\$ 15,000

SubTotal **\$ 28,500**

Notes - Assumed Pad (40x9x5 (feet) = ~70CY (per Unit)

SUM Sub Total **\$ 507,193**

Mobilization

SubTotal **5000**

Hydrovac

Day \$/Day
0 5500

SubTotal **0**

Office

Months Rate/Month
Office trailer 0 1000
Office Consumables 0 750

\$ -
\$ 210.00

SubTotal **\$ 210**

This will be \$0.6/DL Hours

Personell

Based on Estimated 40 working days (10 Hrs per day) 7 Cal days

	# Persons	Hours	\$/Hour
Super	1	50	\$ 150
Forman	1	50	\$ 120
Operator	3	50	\$ 120
Mill Wright	0	50	\$ 120
Electrician/Controls	0	50	\$ 120
Labor	4	50	\$ 90
Welder	0	50	\$ 140

\$ 7,500
\$ 6,000
\$ 18,000
\$ -
\$ -
\$ 18,000
\$ -

SubTotal **\$ 49,500**

Equipment

	Qty	Days	\$/Day
Crane	0	5	5500
Manlift	0	5	225
Back Hoe	0	5	650
Jack Hammer (BH Attachment)	0	5	150
Trenching Machine	0	1	75
Weld Rig	0	0	200
Service rig	0	5	1000
Front end Loader	3	5	650
F250 (2 x 4 days, 1 x 5 days)	1	9	175
F150	1	5	150
Van	1	5	125
Trailers (pickup pulled)	1	5	60

	\$FOG/Month	Avg
	\$ -	5250
	\$ -	1200
	\$ -	720
	\$ -	720
	\$ -	900
	\$ -	720
	\$ -	0
	\$ 9,750	900
	\$ 1,575	900
	\$ 750	900
	\$ 625	720
	\$ 300	900

SubTotal **\$ 13,000**

\$ 1,152.50

Misc / Consumables

	Qty	Days	\$/day	\$/DL Hours
Trailer	1	45	325	
Weld rod				
cutting wheels				
shovels/Hand equipment				
Small Tools & Supplies (ST&S)				\$ 3.75

SubTotal **\$ 19,107**

\$ 1,313

FOG - Small Misc

\$ 57.63

\$ 3,169

Disposal

	QTY	loads	\$/Loads
Concrete	0	0	
Dirt	20	10	
Rock	10	50	
Equipment (Units)	0	0	
Large Equipment (Pipe/Ducting etc.)	0	0	
Dump Fees		60	350

\$ -
\$ -
\$ -
\$ -
\$ -
\$ 21,000

SubTotal **\$ 21,000**

Trucking

(Includes Operator Twin Axel Dump
Tractor Trailer

Days	\$/Day
5	900
5	3000

\$ 4,500
\$ 15,000

SubTotal **\$ 19,500**

Notes - Assumed Pad (40x9x5 (feet) = ~70CY (per Unit)

SUM Sub Total **\$ 127,317**

Attachment M-3. North Mist Compressor Station Decommissioning Estimate

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North Mist 2.0, Wellpads and Laterals Retirement Costs (High Level)



Northwest Natural (NWN)

157831-BMcD-EST-002

North Mist 2 FEED Project

Project No. 157831

Revision B

1/23/2024

Table of Contents

1.0	HIGH LEVEL RETIREMENT COST	1-2
1.1	Details	1-2
2.0	PROCESS FLOW DIAGRAMS (STATION, WELLPADS AND LATERALS) 2-32-	4

1.0 HIGH LEVEL RETIREMENT COST

As requested, BMcD has prepared the following explanation of the assumptions used for our estimate of the decommissioning cost ~~(\$6,550,000)~~ 6,473,859 for the Mist 2.0 Compressor Station. This cost is based in 2023 US Dollars and does not compensate for any potential escalation or inflation between now and the end of the plant's useful lifespan. The total installed cost for the compressor station, wellpads and laterals was issued separately. The TIC estimate includes the basis used to complete the estimate. Pricing in this estimate was calibrated with estimates provided with the North Mist 01 installation. This was used as a similar project to scale the costs of facility removals.

1.1 Details

- ~~Scrap Value of Equipment, Pipe, Steel, and Insulated Copper Wire - \$200,000~~

~~The scrap value of all equipment, piping, steel, and copper wire will vary based on market pricing at the time of decommissioning. The assumption is that all equipment at the end of a 30-year life cycle will be sold for scrap at the current Portland market rates. The current rate for Steel is \$133.50 per Ton, Transformers/Electrical Equipment is \$0.19 per Pound, and Insulated Copper Wire averages \$1.75 per Pound. These values do not factor in any pickup fees or trucking costs to move the salvage material to the salvage yard.~~

- Removal cost of Equipment, Pipe, Steel, and Insulated Copper Wire - \$4,572,283~~\$4,500,000~~

Costs to remove all mechanical equipment, electrical equipment, process building, pipe racks, platforms, facility piping and any other miscellaneous steel. This assumes that all structural steel, pipe, and copper wire will be cut into smaller pieces that can fit into a dumpster and that all equipment is small enough or will be broken down into smaller pieces that can fit on a standard tractor trailer for transport.

- Removal of Foundations - \$508,720~~\$500,000~~

Foundation removal assumes that all foundations that extend above grade will be removed, and the concrete broken down into pieces that can fit into a dumpster that can be hauled off to an appropriate disposal facility. All drilled piers that are more than 1' below

grade will be left in place, and any other drilled piers will be cut/knocked down to 1' below grade. This value does not factor in any trucking costs to move the concrete waste off site.

- Remove yard stone and hydroseed - ~~\$127,316,\$150,000.~~

It is assumed that all gravel on site will be removed and hauled off site and the existing soil will be prepped and then hydroseeded. This value does not factor in any trucking costs to move the yard stone off site or to bring in any import soil.

- Decommission of Surface equipment at the wellpads & Pipeline - ~~\$1,265,539\$1,200,000~~

The decommissioning of the surface equipment at the wellpads and pipelines includes removal of the Newton, Stegosaur, and Medicine equipment, purging the pipelines, and abandon in place.

2.0 PROCESS FLOW DIAGRAMS (STATION, WELLPADS AND LATERALS)

	Totals	Days
Removal of equipment cost pipe steel and insulated copper wire		
Control room	\$ 458,923.38	15
Compressor building	\$ 1,588,389.63	45
Dehy	\$ 1,124,423.63	30
Piping/Filters and associated equipment	\$ 1,400,546.88	40
Sub Total	\$ 4,572,283.50	
Decommission of surface equipment at the wellpads and pipeline		
Newton Removal	\$ 421,846.38	15
Stegasoaur Removal	\$ 421,846.38	15
Medicine Removal	\$ 421,846.38	15
Sub Total	\$ 1,265,539.13	
Removal of foundations	\$ 508,720.13	15
Removal of yard stone and Hydro Seed	\$ 127,316.88	5
	\$ 6,473,859.63	

Mobilization SubTotal **45000**

Hydrovac Day \$/Day
 5 5500 SubTotal **27500**

Office Months Rate/Month
 Office trailer 1.5 1000 \$ 1,500
 Office Consumables 1.5 750 \$ 1,200.00
 SubTotal **\$ 2,700**

This will be \$0.6/DL Hours

Personell Based on Estimated 30 working days (10 Hrs per day) ~45Cal days

	# Persons	Hours	\$/Hour	
Super	1	300	\$ 150	\$ 45,000
Forman	1	300	\$ 120	\$ 36,000
Operator	5	300	\$ 120	\$ 180,000
Mill Wright	2	200	\$ 120	\$ 48,000
Electrician/Controls	2	300	\$ 120	\$ 72,000
Labor	6	300	\$ 90	\$ 162,000
Welder	4	300	\$ 140	\$ 168,000
				SubTotal \$ 711,000

Equipment

	Qty	Days	\$/Day		\$FOG/Mont Avg
Crane	1	5	5500	\$ 27,500	5250
Manlift	1	30	225	\$ 6,750	1200
Back Hoe	5	30	650	\$ 97,500	720
Jack Hammer (BH Attachment)	3	30	150	\$ 13,500	720
Trenching Machine		10	75	\$ -	900
Weld Rig	1	20	200	\$ 4,000	720
Service rig	1	4	1000	\$ 4,000	0 \$ 1,152.50
Front end Loader	2	20	650	\$ 26,000	900
F250	1	30	175	\$ 5,250	900
F150	1	30	150	\$ 4,500	900
Van	1	30	125	\$ 3,750	720
Trailers (pickup pulled)	1	10	60		900
				SubTotal \$ 192,750	

Misc / Consumables

	Qty	Days	\$/day	\$/DL Hours	
Trailer	1	45	325		SubTotal \$ 36,474
Weld rod					
cutting wheels					
shovels/Hand equipment					
Small Tools & Supplies (ST&S)				\$ 3.75	\$ 7,500
FOG - Small Misc			\$ 57.63		\$ 14,349

Disposal

	QTY	loads	\$/Loads	
Concrete	200	25		\$ -
Dirt	20	5		\$ -
Steel	30	15		\$ -
Equipment	15	15		\$ -
Large Equipment (Pipe/Ducting et	10	8		\$ -
Dump Fees		68	350	\$ 23,800
Liquid disposal fees (Tankers)		6	3000	\$ 18,000
				SubTotal \$ 23,800

Trucking

(Includes Operator)

	Days	\$/Day	
Twin Axel Dump	53	900	\$ 47,700
Tractor Trailer	5	3000	\$ 15,000
Tanker	5	4500	\$ 22,500
			SubTotal \$ 85,200

Notes - Assumed Pad (40x9x5 (feet) = ~70CY (per Unit)

Note - Assumed 20 CY for misc

SUM Sub Total **\$ 1,124,424**

Mobilization

SubTotal **30000**

Hydrovac

Day \$/Day
5 5500

SubTotal **27500**

Office

Months Rate/Month
Office trailer 0.5 1000
Office Consumables 0.5 750

\$ 500
\$ 570.00

SubTotal **\$ 1,070**

This will be \$0.6/DL Hours

Personell

Based on Estimated 15 working days (10 Hrs per day) ~21Cal days

Persons Hours \$/Hour
Super 1 150 \$ 150
Forman 1 150 \$ 120
Operator 5 150 \$ 120
Mill Wright 2 100 \$ 120
Electrician/Controls 3 150 \$ 120
Labor 5 150 \$ 90
Welder 2 100 \$ 140

\$ 22,500
\$ 18,000
\$ 90,000
\$ 24,000
\$ 54,000
\$ 67,500
\$ 28,000

SubTotal **\$ 304,000**

Equipment

Qty Days \$/Day
Crane 0 6 5500
Manlift 1 10 225
Back Hoe 5 10 650
Jack Hammer (BH Attachment) 3 10 150
Trenching Machine 0 10 75
Weld Rig 2 10 200
Service rig 1 1 1000
Front end Loader 1 10 650
F250 1 10 175
F150 1 10 150
Van 1 10 125
Trailers (pickup pulled) 1 10 60

\$ -
\$ 2,250
\$ 32,500
\$ 4,500
\$ -
\$ 4,000
\$ 1,000
\$ 6,500
\$ 1,750
\$ 1,500
\$ 1,250

SubTotal **\$ 55,250**

\$FOG/Mont Avg
5250 \$ 1,152.50
1200
720
720
900
720
0
900
900
720
900

Misc / Consumables

Qty Days \$/day \$/DL Hours
Trailer 1 45 325
Weld rod
cutting wheels
shovels/Hand equipment
Small Tools & Supplies (ST&S) \$ 3.75
FOG - Small Misc \$ 57.63

SubTotal **\$ 24,353**

\$ 3,563
\$ 6,166

Disposal

	QTY	loads	\$/Loads	
Concrete	50	5		\$ -
Dirt	20	1		\$ -
Steel	10	5		\$ -
Equipment (Units)	2	0		\$ -
Large Equipment (Pipe/Ducting etc.)	2	0		\$ -
Dump Fees		11	350	\$ 3,850
				SubTotal \$ 3,850

Trucking

	Days	\$/Day	
(Includes Operator) Twin Axel Dump	11	900	\$ 9,900
Tractor Trailer	1	3000	\$ 3,000
			SubTotal \$ 12,900

SUM Sub Total **\$ 458,923**

Mobilization

SubTotal **44225**

Hydrovac

Day \$/Day
11 5500

SubTotal **60500**

Office

Months Rate/Month
Office trailer 2 1000
Office Consumables 2 750

\$ 2,000
\$ 1,530.00
SubTotal **\$ 3,530**

This will be \$0.6/DL Hours

Based on Estimated 40 working days (10 Hrs per day) ~60Cal days

Personell

	# Persons	Hours	\$/Hour
Super	1	450	\$ 150
Forman	1	450	\$ 120
Operator	5	450	\$ 120
Mill Wright	2	150	\$ 120
Electrician/Controls	2	150	\$ 120
Labor	10	450	\$ 90
Welder	3	450	\$ 140

\$ 67,500
\$ 54,000
\$ 270,000
\$ 36,000
\$ 36,000
\$ 405,000
\$ 189,000
SubTotal **\$ 1,057,500**

Equipment

	Qty	Days	\$/Day
Crane	1	6	5500
Manlift	2	45	225
Back Hoe	5	45	650
Jack Hammer (BH Attachment)	1	45	150
Trenching Machine			75
Weld Rig	3	45	200
Service rig	1	6	1000
Front end Loader	2	35	650
F250	1	45	175
F150	1	45	150
Van	2	20	125
Trailers (pickup pulled)	2	20	60

	\$/FOG/Mont Avg
\$ 33,000	5250
\$ 20,250	1200
\$ 146,250	720
\$ 6,750	720
\$ -	900
\$ 27,000	720
\$ 6,000	0
\$ 45,500	900
\$ 7,875	900
\$ 6,750	900
\$ 5,000	720
\$ 900	900
SubTotal \$ 304,375	

\$ 1,152.50

Misc / Consumables

	Qty	Days	\$/day	\$/DL Hours
Trailer	1	45	325	
Weld rod				
cutting wheels				
shovels/Hand equipment				
Small Tools & Supplies (ST&S)				\$ 3.75

SubTotal **\$ 44,760**
\$ 9,563

FOG - Small Misc

\$ 57.63

\$ 20,572

Disposal

	QTY	loads	\$/Loads
Concrete	250	28	
Dirt	20	2	
Steel	30	6	
Equipment (Units)	3	3	
Large Equipment (Pipe/Ducting et	3	3	
Dump Fees		42	350

\$ -
\$ -
\$ -
\$ -
\$ -
\$ 14,700

SubTotal **\$ 14,700**

Trucking

(Includes Operator)

	Days	\$/Day
Twin Axel Dump	32	900
Tractor Trailer	10	3000

\$ 28,800
\$ 30,000

SubTotal **\$ 58,800**

Notes - Assumed Pad (40x9x5 (feet) = ~70CY (per Unit)

SUM Sub Total \$ 1,588,390

Mobilization SubTotal **45000**

Hydrovac Day \$/Day
 15 5500 SubTotal **82500**

Office Months Rate/Month
 Office trailer 2 1000 \$ 2,000
 Office Consumables 2 750 \$ 1,275.00
 SubTotal **\$ 3,275**

This will be \$0.6/DL Hours

Based on Estimated 40 working days (10 Hrs per day)
 ~60Cal days

Personell # Persons Hours \$/Hour
 Super 1 400 \$ 150 \$ 60,000
 Forman 1 400 \$ 120 \$ 48,000
 Operator 5 400 \$ 120 \$ 240,000
 Mill Wright 2 150 \$ 120 \$ 36,000
 Electrician/Controls 3 175 \$ 120 \$ 63,000
 Labor 12 400 \$ 90 \$ 432,000
 Welder 3 200 \$ 140 \$ 84,000
 SubTotal **\$ 963,000**

Equipment Qty Days \$/Day \$FOG/Mont Avg
 Crane 0 6 5500 \$ - 5250
 Manlift 0 40 225 \$ - 1200
 Back Hoe 5 40 650 \$ 130,000 720
 Jack Hammer (BH Attachment) 2 40 150 \$ 12,000 720
 Trenching Machine 0 10 75 \$ - 900
 Weld Rig 3 40 200 \$ 24,000 720
 Service rig 1 4 1000 \$ 4,000 0 \$ 1,152.50
 Front end Loader 2 35 650 \$ 45,500 900
 F250 1 40 175 \$ 7,000 900
 F150 1 40 150 \$ 6,000 900
 Van 1 20 125 \$ 2,500 720
 Trailers (pickup pulled) 1 10 60 900
 SubTotal **\$ 231,000**

Misc / Consumables Qty Days \$/day \$/DL Hours
 Trailer 1 45 325 SubTotal **\$ 41,322**
 Weld rod
 cutting wheels
 shovels/Hand equipment
 Small Tools & Supplies (ST&S) \$ 3.75 \$ 7,969
 FOG - Small Misc \$ 57.63 \$ 18,728

Disposal		QTY	loads	\$/Loads	
	Concrete	140	8		\$ -
	Dirt	20	3		\$ -
	Steel	10	3		\$ -
	Equipment (Units)	2	2		\$ -
	Large Equipment (Pipe/Ductin	2	1		\$ -
	Dump Fees		17	350	\$ 5,950
					SubTotal \$ 5,950

Trucking		Days	\$/Day	
(Includes Operator)	Twin Axel Dump	15	900	\$ 13,500
	Tractor Trailer	5	3000	\$ 15,000
				SubTotal \$ 28,500

Notes - Assumed Pad (40x9x5 (feet) = ~70CY (per Unit)

SUM Sub Total **\$ 1,400,547**

Mobilization

SubTotal **10000**

Hydrovac

Day \$/Day
5 5500

SubTotal **27500**

Office

Months Rate/Month
Office trailer 0.5 1000
Office Consumables 0.5 750

\$ 500
\$ 810.00

SubTotal **\$ 1,310**

This will be \$0.6/DL Hours

Personell

Based on Estimated 40 working days (10 Hrs per day) ~20Cal days

	# Persons	Hours	\$/Hour
Super	1	150	\$ 150
Forman	1	150	\$ 120
Operator	2	450	\$ 120
Mill Wright	2	150	\$ 120
Electrician/Controls	1	150	\$ 120
Labor	4	150	\$ 90
Welder	1	150	\$ 140

\$ 22,500
\$ 18,000
\$ 108,000
\$ 36,000
\$ 18,000
\$ 54,000
\$ 21,000

SubTotal **\$ 277,500**

Equipment

	Qty	Days	\$/Day
Crane	1	2	5500
Manlift	1	10	225
Back Hoe	1	10	650
Jack Hammer (BH Attachment)	1	15	150
Trenching Machine	1	10	75
Weld Rig	1	10	200
Service rig	1	4	1000
Front end Loader	1	15	650
F250	1	15	175
F150	1	15	150
Van	1	15	125
Trailers (pickup pulled)	1	10	60

\$ 11,000
\$ 2,250
\$ 6,500
\$ 2,250
\$ 750
\$ 2,000
\$ 4,000
\$ 9,750
\$ 2,625
\$ 2,250
\$ 1,875

SubTotal **\$ 45,250**

\$FOG/Month	Avg
5250	
1200	
720	
720	
900	
720	
0	\$ 1,152.50
900	
900	
900	
720	
900	

Misc / Consumables

	Qty	Days	\$/day	\$/DL Hours
Trailer	1	45	325	
Weld rod				
cutting wheels				
shovels/Hand equipment				
Small Tools & Supplies (ST&S)				\$ 3.75

SubTotal **\$ 27,236**

\$ 5,063

FOG - Small Misc

\$ 57.63

\$ 7,549

Disposal

	QTY	loads	\$/Loads
Concrete	140	4	
Dirt	20	3	
Steel	10	3	
Equipment (Units)	2	2	
Large Equipment (Pipe/Ducting etc.)	2	1	
Dump Fees		13	350

\$ -
\$ -
\$ -
\$ -
\$ -
\$ 4,550

SubTotal **\$ 4,550**

Trucking

(Includes Operator Twin Axel Dump
Tractor Trailer

Days	\$/Day
15	900
5	3000

\$ 13,500
\$ 15,000

SubTotal **\$ 28,500**

Notes - Assumed Pad (40x9x5 (feet) = ~70CY (per Unit)

SUM Sub Total \$ 421,846

Mobilization

SubTotal **10000**

Hydrovac

Day \$/Day
4 5500

SubTotal **22000**

Office

Months Rate/Month
Office trailer 0.5 1000
Office Consumables 0.5 750

\$ 500
\$ 810.00

SubTotal **\$ 1,310**

This will be \$0.6/DL Hours

Personell

Based on Estimated 40 working days (10 Hrs per day) ~60Cal days

	# Persons	Hours	\$/Hour
Super	1	150	\$ 150
Forman	1	150	\$ 120
Operator	3	450	\$ 120
Mill Wright	0	150	\$ 120
Electrician/Controls	0	150	\$ 120
Labor	8	150	\$ 90
Welder	0	150	\$ 140

\$ 22,500
\$ 18,000
\$ 162,000
\$ -
\$ -
\$ 108,000
\$ -

SubTotal **\$ 310,500**

Equipment

	Qty	Days	\$/Day
Crane	1	5	5500
Manlift	0	10	225
Back Hoe	2	15	650
Jack Hammer (BH Attachment)	2	15	150
Trenching Machine	1	1	75
Weld Rig	1	0	200
Service rig	1	5	1000
Front end Loader	3	15	650
F250	2	15	175
F150	2	15	150
Van	1	15	125
Trailers (pickup pulled)	3	10	60

	\$/FOG/Mont	Avg
Crane	\$ 27,500	5250
Manlift	\$ -	1200
Back Hoe	\$ 19,500	720
Jack Hammer (BH Attachment)	\$ 4,500	720
Trenching Machine	\$ 75	900
Weld Rig	\$ -	720
Service rig	\$ 5,000	0
Front end Loader	\$ 29,250	900
F250	\$ 5,250	900
F150	\$ 4,500	900
Van	\$ 1,875	720
Trailers (pickup pulled)	\$ 1,800	900

\$ 1,152.50

SubTotal **\$ 99,250**

Misc / Consumables

	Qty	Days	\$/day	\$/DL Hours
Trailer	1	45	325	
Weld rod				
cutting wheels				
shovels/Hand equipment				
Small Tools & Supplies (ST&S)				\$ 3.75

SubTotal **\$ 26,660**

\$ 5,063

FOG - Small Misc

\$ 57.63

\$ 6,973

Disposal

	QTY	loads	\$/Loads
Concrete	140	20	
Dirt	20	10	
Steel	10	0	
Equipment (Units)	2	0	
Large Equipment (Pipe/Ducting etc.)	2	0	
Dump Fees		30	350

\$ -
\$ -
\$ -
\$ -
\$ -
\$ 10,500

SubTotal **\$ 10,500**

Trucking

	Days	\$/Day
(Includes Operator Twin Axel Dump	15	900
Tractor Trailer	5	3000

\$ 13,500
\$ 15,000

SubTotal **\$ 28,500**

Notes - Assumed Pad (40x9x5 (feet) = ~70CY (per Unit)

SUM Sub Total \$ 508,720

Mobilization

SubTotal **5000**

Hydrovac

Day \$/Day
0 5500

SubTotal **0**

Office

Months Rate/Month
Office trailer 0 1000
Office Consumables 0 750

\$ -
\$ 210.00
SubTotal **\$ 210**

This will be \$0.6/DL Hours

Personell

Based on Estimated 40 working days (10 Hrs per day) 7 Cal days

	# Persons	Hours	\$/Hour
Super	1	50	\$ 150
Forman	1	50	\$ 120
Operator	3	50	\$ 120
Mill Wright	0	50	\$ 120
Electrician/Controls	0	50	\$ 120
Labor	4	50	\$ 90
Welder	0	50	\$ 140

\$ 7,500
\$ 6,000
\$ 18,000
\$ -
\$ -
\$ 18,000
\$ -
SubTotal **\$ 49,500**

Equipment

	Qty	Days	\$/Day
Crane	0	5	5500
Manlift	0	5	225
Back Hoe	0	5	650
Jack Hammer (BH Attachment)	0	5	150
Trenching Machine	0	1	75
Weld Rig	0	0	200
Service rig	0	5	1000
Front end Loader	3	5	650
F250 (2 x 4 days, 1 x 5 days)	1	9	175
F150	1	5	150
Van	1	5	125
Trailers (pickup pulled)	1	5	60

	\$/FOG/Mont	Avg
	\$ -	5250
	\$ -	1200
	\$ -	720
	\$ -	720
	\$ -	900
	\$ -	720
	\$ -	0
	\$ 9,750	900
	\$ 1,575	900
	\$ 750	900
	\$ 625	720
	\$ 300	900
SubTotal	\$ 13,000	

\$ 1,152.50

Misc / Consumables

	Qty	Days	\$/day	\$/DL Hours
Trailer	1	45	325	
Weld rod				
cutting wheels				
shovels/Hand equipment				
Small Tools & Supplies (ST&S)				\$ 3.75

SubTotal **\$ 19,107**

\$ 1,313

FOG - Small Misc

\$ 57.63

\$ 3,169

Disposal

	QTY	loads	\$/Loads
Concrete	0	0	
Dirt	20	10	
Rock	10	50	
Equipment (Units)	0	0	
Large Equipment (Pipe/Ducting etc.)	0	0	
Dump Fees		60	350

\$ -
\$ -
\$ -
\$ -
\$ -
\$ 21,000

SubTotal **\$ 21,000**

Trucking

(Includes Operator Twin Axel Dump
Tractor Trailer

Days	\$/Day
5	900
5	3000

\$ 4,500
\$ 15,000

SubTotal **\$ 19,500**

Notes - Assumed Pad (40x9x5 (feet) = ~70CY (per Unit)

SUM Sub Total **\$ 127,317**

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Attachment M-4. Northwest Natural Gas 2022 Annual Report

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**NW Natural
HOLDINGS™**

Meeting the Moment

DECARBONIZE.
DIVERSIFY.
DELIVER.

2022 ANNUAL REPORT



President and CEO David H. Anderson with Construction Crew Leaders at newly renovated Vancouver, Washington Resource Center.

To Our Shareholders

In 2022, NW Natural Holdings demonstrated our continued commitment to decarbonization, diversification, growth and strong financial performance.

It was a transformative year on many fronts. We grew our customer base at our gas and water utilities, began operation of our first renewable natural gas (RNG) facility under the landmark Oregon Senate Bill 98, producing RNG on behalf of our gas utility customers, closed our largest water and wastewater acquisition to date, and began construction of the first RNG facilities we're investing in through our competitive RNG business.

We also increased dividends for the 67th consecutive year and were recognized by Ethisphere as one of the 2022 World's Most Ethical Companies¹. Recently, we learned we were recognized again by Ethisphere in 2023.

We're proud to operate three growing businesses that provide essential services, and I'm grateful for your confidence. I'm also grateful for our dedicated employees, whose steadfast focus on service, innovation and environmental stewardship allows us to meet the moment in these changing times.

Corporate Profile

NW NATURAL HOLDINGS (NYSE: NWN) is headquartered in Portland, Oregon, and, with its predecessors, has been doing business for 164 years. It owns a regulated natural gas distribution company (NW Natural), water and wastewater utilities (NW Natural Water), a renewable natural gas business (NW Natural Renewables), and other business interests.

ETHISPHERE[®]
WORLD'S MOST
ETHICAL
COMPANIES[®]
2022 - 2023

¹ "World's Most Ethical Companies" and "Ethisphere" names and marks are registered trademarks of Ethisphere LLC

2022 Highlights

NET INCOME

Reported net income for 2022 of \$86.3 million or \$2.54 per share, an increase of 10% in net income, compared to \$78.7 million or \$2.56 per share for 2021. The company's earnings per share for 2022 were affected by issuing common shares.



- Increased dividends paid for the 67th consecutive year, one of the longest records on the NYSE.
- Recognized by Ethisphere as one of the 2022 World's Most Ethical Companies^{®1}



The natural gas utility achievements in 2022 included:

Customer Growth

- Achieved an annual customer growth rate of 1.1% by adding 8,600 new natural gas meters, bringing the people we serve to approximately 2.5 million through nearly 795,000 meters.

Customer Service

- Ranked second in the West for large gas utilities and scored among the top 10 utilities in the nation in the annual J.D. Power Gas Utility Residential Customer Satisfaction Study.

Reliability & Resiliency

- Invested nearly \$340 million in our gas utility infrastructure. This included projects to support safety, reliability, growth and investments in technology.
- With cold temperatures on Dec. 22, 2022, NW Natural hit a record sendout of 8 million therms. The system performed very well.

Oregon Rate Case

- Received approval for Oregon rate case, with a \$59.4 million increase in the revenue requirement to recover investments in system reliability, resilience and upgrades to technology, including cybersecurity and our enterprise resource planning system.

Gas Utility Decarbonization

- On track to meet or exceed our voluntary carbon savings goal² of 30% by 2035, making progress toward our vision to be a provider of net carbon-neutral energy by 2050.
- Began operation of first RNG facility under the landmark Oregon Senate Bill 98.
- Completed a series of hydrogen-blend tests at our Sherwood operations and training center.
- Made progress on a turquoise hydrogen pilot project that is designed to turn methane into clean hydrogen and solid carbon in the first half of 2023.
- Began a pilot to test equipment that captures carbon from existing boilers and converts it to potassium carbonate for soap products.

² Voluntary emissions savings goal equivalent to 30% of the carbon emissions from our sales customers gas use and company operations in 2015.



Water and Wastewater Utility Growth and Service

- Closed largest acquisition to date increasing our customer base by approximately 70% and experienced strong 3.8% organic customer growth across the business.
- Supported safe and reliable service for 155,000 people through approximately 62,500 connections.



Competitive RNG

- On track to begin producing renewable natural gas in 2023 at two RNG facilities we're investing in through a partnership with EDL.



For the second year in a row, we ended with the lowest number of workplace injuries in nearly two decades.



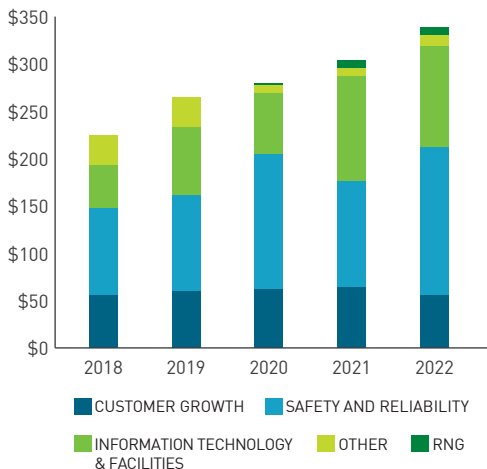
NW Natural[®]

Natural Gas Utility

Safety Guides All We Do

Operating safely is our greatest responsibility to customers, employees and communities we serve. Proactive field visits help us prevent safety issues across our service territory, and our 24/7 emergency response system allows us to quickly dispatch responders to damage and odor calls.

CAPITAL EXPENDITURES
(in millions)



Total investment in capital expenditures during 2022 was \$338 million on an accrual basis and includes cloud-based software.

Our Journey to Zero on-the-job safety initiative continued to deliver results in its third year, with the lowest number of workplace injuries in nearly two decades and a 25% increase in near-miss reporting (good-catch rate) from 2021. We also rolled out Work Ready, an app-based movement program, designed to help employees move better and support health and well-being. The last three years are among the best years for safety performance since 2009.

To support our goal of meeting or exceeding federal and state pipeline safety regulations, we maintain a rigorous program to inspect our transmission system with a combination of technologically advanced inline inspection tools and direct assessments. Our modernized pipe network allows us to use inline methods for most inspections. At the end of 2022, we had inspected about 2.5 times the amount of pipeline required by PHMSA safety regulators.

With no cast iron or bare steel pipe in our system, we operate one of the most modern distribution systems in the nation. In 2022, we invested nearly \$340 million in our natural gas infrastructure to support safety, system reliability, growth and improvements. Those investments included system reinforcement projects,

maintaining our valuable storage facilities and renovations at several of our service centers with a focus on seismic resiliency.

We continue to prioritize technology and cybersecurity investments to protect the safety and security of our critical systems and customer data. In 2022, we implemented a major upgrade to our enterprise resource planning system and made significant investments in enhanced cybersecurity protocols, systems and staff.

Growth & Service Achievements

The labor market and unemployment remained stable in 2022, while the housing market cooled as interest rates rose. In spite of this, we connected 8,600 new meters, for an overall growth rate of 1.1%.

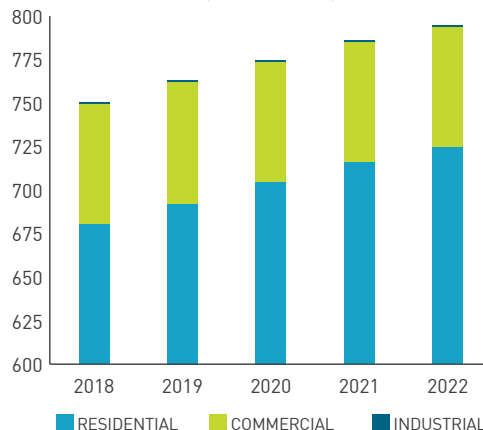
We are honored that our customers again ranked NW Natural second in the West among large gas utilities in the annual J.D. Power Gas Utility Residential Customer Satisfaction Study. It is the 19th year we have ranked in the top two in the West in the study's 21-year history. NW Natural also scored in the top 10 in the nation among large gas utilities this year. We also earned 2022 Environmental Champion recognition from Escalent, based on high marks for environmental stewardship in a customer survey. We were among 31 utilities to be recognized out of 140 utilities ranked.

Rates & Regulation

In October 2022, NW Natural received approval for an Oregon rate case, with a \$59.4 million increase in the revenue requirement and rate base of \$1.76 billion. The rate base increase of \$320 million compared to the last rate case allows us to recover investments in system reliability, resilience, technology upgrades and RNG. For Washington, the second year of a multiyear rate case went into effect, increasing the revenue requirement by \$3.0 million. We also received approval for annual purchase gas adjustments in Oregon and Washington, which update rates for projected gas costs in 2023. New rates went into effect in November 2022.

Even with new rates, our customers are paying less for their total bill than they did 15 years ago. Yet recognizing this is a time of energy market disruption and inflationary pressure, NW Natural worked with

UTILITY METERS AT YEAR-END
(in thousands)



We added 8,600 new customers in 2022, and now serve nearly 795,000 customers.

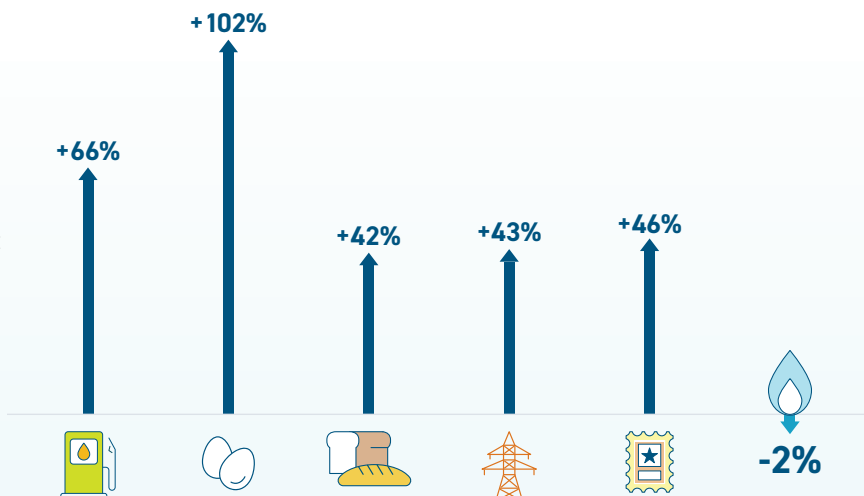
regulators and stakeholders to support customers with a rate mitigation tariff that smoothes the rate impacts over the year. To further help Oregon customers with household incomes less than 60% of the state median income, we introduced an income-qualified discount program that allows them to save 15% to 40% on monthly bills.

In September 2022, we filed our Integrated Resource Plan with Oregon and Washington regulators. This is the first plan to include comprehensive analysis to support implementation of the transformative climate policies adopted in both states. The long-term resource acquisition plan—which looks out to 2050—is designed to achieve emissions reductions at the least cost and risk, while continuing to provide safe and reliable service.

OUR CUSTOMERS ARE PAYING LESS THAN THEY DID 15 YEARS AGO

Despite this period of extraordinary market conditions, NW Natural customers are still paying less than they did 15 years ago for their natural gas bills.

Source: National data from Bureau of Labor Statistics, U.S. Postal Service, and NW Natural bills 2022 vs. 2007



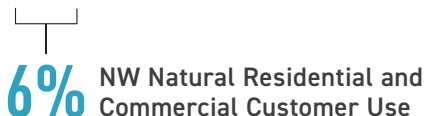
We believe climate change requires rapid innovation and collective action, which is why we're working to reduce emissions on multiple fronts

Justin Palfreyman, Senior Vice President of Strategy and Business Development with Anna Chittum, Director of Renewable Resources at the Lexington RNG Facility, which is the first facility under Senate Bill 98 and was completed in 2022.

Decarbonization

We believe climate change requires rapid innovation and collective action, which is why we are working to reduce emissions on multiple fronts and reimagining the role of our system and the fuel that we deliver. NW Natural has one of the tightest systems in the nation, and we use that modern system to deliver more energy in Oregon than any other utility. On the coldest winter days, we provide about 90% of the energy our residential space and water heating customers need. Natural gas use in our customers' homes and businesses accounts for approximately 6% of Oregon's annual greenhouse gas emissions.³ We're working to reduce that number even further.

OREGON GREENHOUSE GAS EMISSIONS BY SECTOR



Source: Oregon DEQ In-Boundary GHG Inventory 2019 data.

Since we launched our Low Carbon Pathway in 2016, we've made steady progress toward our voluntary goal of 30% carbon savings by 2035.

Our 2021 Destination Zero report analyzes scenarios for achieving carbon neutrality for our residential and commercial customers by 2050. We believe a combination of decarbonization measures that include energy efficiency, renewable energy, carbon offsets and carbon capture are needed in a low-carbon future. Replacing conventional natural gas over time with net carbon-neutral alternatives like RNG and clean hydrogen is central to achieving that vision.

In January 2022, operations began at our first RNG facility under Oregon Senate Bill 98 with BioCarbN and Tyson Foods. A second facility is slated to be completed in the spring of 2023. Groundbreaking Oregon legislation enables us to procure and invest in RNG and clean hydrogen on behalf of our customers. To date we have signed agreements with options to purchase or develop RNG totaling about 3% of NW Natural's current annual sales volume in Oregon, and we are pursuing additional RNG supply for the benefit of our customers.

Our engineering team completed hydrogen blend tests of 5%, 10% and 15% at our Sherwood operations and training center. We also made progress on an exciting turquoise hydrogen pilot project designed to turn methane into clean hydrogen and solid carbon in partnership with Modern Electron. We expect that pilot to go live in the first half of 2023.

In another pilot project, we're working with a handful of commercial customers to test CarbinX equipment that is designed to capture carbon from existing boilers and reduce energy use. The captured carbon dioxide is converted to potassium carbonate, which can be used to make soap products.

As part of our focus on decarbonization innovation and collaboration, NW Natural team members joined policymakers on a RNG and clean hydrogen fact-finding trip to Denmark to understand how that country is implementing these strategies. Notably, Denmark is already delivering roughly 30% RNG in its gas system, and is working towards meeting 75% of its gas demand from RNG by 2030 and 100% by 2034. Hydrogen has also gained momentum, and Denmark considers it part of its long-term energy future.

These projects are just the beginning. NW Natural is a 164-year-old company that has evolved many times since 1859 to meet the essential energy needs of our region. We're committed to implementing climate solutions that work for our environment, our customers, and our communities. The renewable supply is growing, the necessary technology exists, and our modern storage and delivery system is ready.



Gas process and storage equipment at the Nature Energy Korskro Biomethane Plant in Denmark.

³ NW Natural sales load data from the Oregon Department of Environmental Quality In-Boundary Greenhouse Gas Inventory, 2019 data.

Our main focus is working toward a portfolio of RNG projects that generate stable, growing income and cash flows and fit our overall corporate strategy



NW Natural
RENEWABLES™

Competitive Renewables

Launched as a competitive RNG business in 2021, NW Natural Renewables is investing in renewable energy in support of the transition to a decarbonized future. It is focused on the production and supply of RNG, helping a variety of sectors decarbonize using existing waste streams and renewable energy sources.

NW Natural Renewables' first project is with EDL, a leading global producer of sustainable distributed energy. The project includes a total \$50 million investment toward the development of two RNG production facilities, which are under construction and on track to begin operations in the second quarter of 2023. NW Natural Renewables has contracted to take a 20-year supply of RNG from the facilities.

We're excited about additional opportunities in this fast-growing market. Given our size and expertise, we believe we have a competitive edge that allows us to be nimble and tailor our approach to each project.



Construction in progress at the two RNG facilities EDL is building.



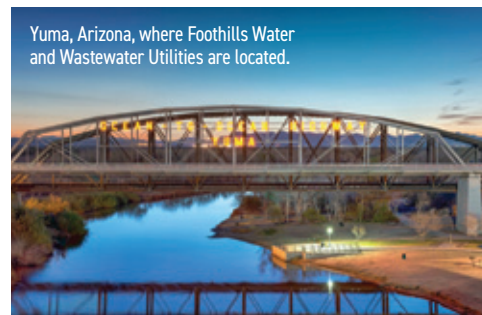
NW Natural
WATER™

Water & Wastewater Utilities

In 2022, we continued our disciplined acquisition strategy and saw strong organic growth in our water and wastewater utilities. Organic customer growth was 3.8% across the utilities, with extraordinary growth of 8% in Texas and 4% in Idaho Falls. In October 2022, we closed our largest water and wastewater acquisition to date in Yuma, Arizona, increasing our total connections by approximately 70%. The acquisition in this fast-growing area positions us for future acquisitions and growth. We also closed acquisitions in Texas, Idaho and Washington.

At the same time, we continued to invest in safety, system reliability and information technology with nearly \$20 million of infrastructure spend last year. We focused on collaborative, transparent and productive relationships with regulators and constructive general rate cases. In 2022, we completed three rate cases to recover essential investments in these systems.

Today, NW Natural Water provides water and wastewater services to approximately 155,000 people through over 62,500 connections, with approximately \$260 million of cumulative investment. We continue to see opportunity for growth and investment in this sector in the years ahead.



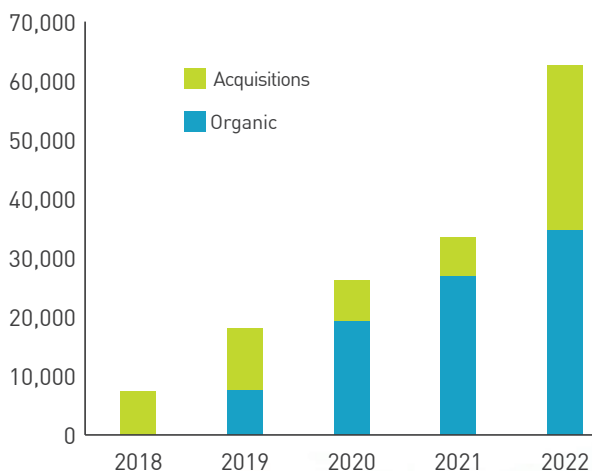
Yuma, Arizona, where Foothills Water and Wastewater Utilities are located.

Reflecting on 2022, I'm beyond proud of all that we accomplished. We met the moment, delivering for our customers and keeping our employees safe while innovating, evolving and growing.

Thank you for your confidence and trust in our company and our vision for the future. It means the world to us.

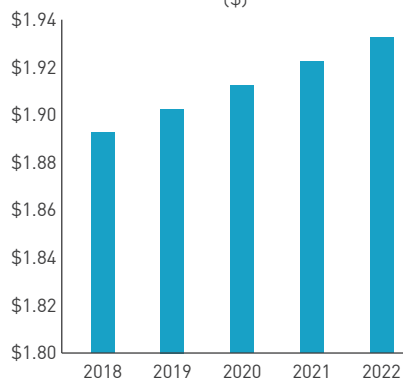
David H. Anderson
President and Chief Executive Officer

WATER UTILITY CUSTOMERS AT YEAR-END



We added over 29,000 new customers in 2022, and now serve over 62,500 customers.

DIVIDENDS PAID PER SHARE (\$)



The current indicated annual dividend is \$1.94 per share. Future dividends are subject to Board of Director discretion and approval. Annual dividends paid per share in 2022 increased for the 67th consecutive year.

Financial Overview

2022

2021

KEY HIGHLIGHTS

Consolidated financial facts (\$000):

Operating revenues	1,037,353	860,400
Net income	86,303	78,666
Financial ratios (%):		
Return on average common equity	8.2	8.6
Capital structure ¹ at year-end:		
Long-term debt	53.2	52.8
Common stock equity	46.8	47.2

COMMON STOCK

Shareholder data (000):

Average shares outstanding—diluted	33,984	30,752
Year-end shares outstanding	35,525	31,129
Per share data (\$):		
Diluted earnings	2.54	2.56
Dividends paid	1.93	1.92
Book value at year-end	33.09	30.04
Market value at year-end	47.59	48.78

NW Natural Gas Service Territory



NATURAL GAS DISTRIBUTION OPERATING HIGHLIGHTS

Gas deliveries (000 therms)	1,252,337	1,184,775
Margin ² (\$000)	505,875	479,811
Degree days	2,712	2,378
Meters at year-end	794,497	785,897
Employees at year-end	1,149	1,173

WATER OPERATING HIGHLIGHTS

Connections at year-end	62,592	33,417
Employees at year-end	105	61

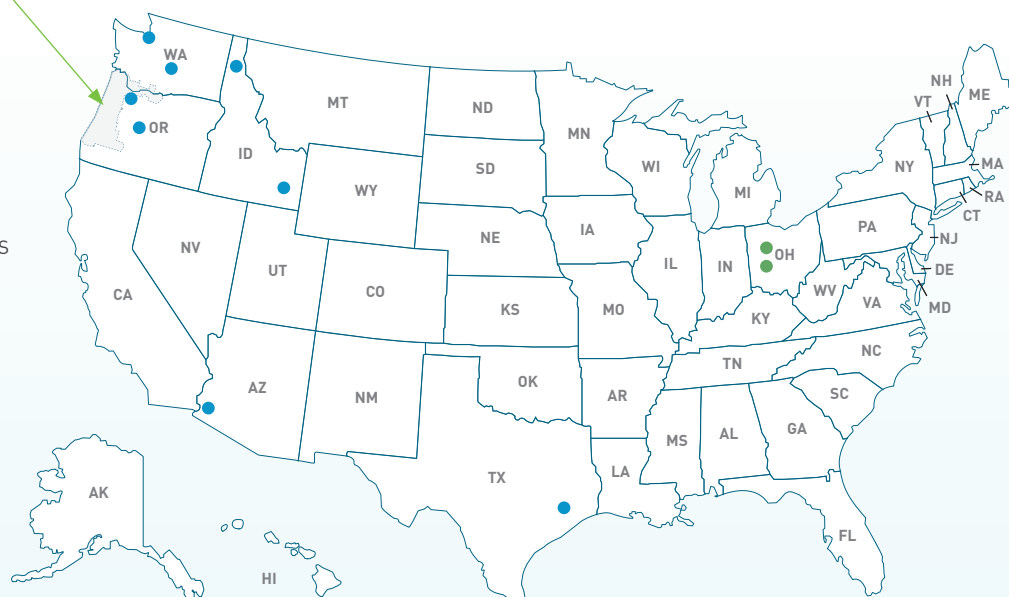
DIVIDENDS PAID ON COMMON STOCK (per share)

Payment date		
February	0.4825	0.4800
May	0.4825	0.4800
August	0.4825	0.4800
November	<u>0.4850</u>	<u>0.4825</u>
Total dividends paid	1.9325	1.9225

¹ Includes current maturities of long-term debt and excludes short-term debt.

² References to the margin refer to natural gas distribution segment.

- NW NATURAL GAS
- NW NATURAL WATER
- NW NATURAL RENEWABLES





DAVID H. ANDERSON
President and Chief Executive Officer, NW Natural Holdings and NW Natural



TIMOTHY P. BOYLE
President and Chief Executive Officer and Chairman of the Board, Columbia Sportswear Company



MONICA ENAND
Founder and Former Chief Executive Officer, Zappos



KAREN LEE
Chief Executive Officer of Plymouth Housing



HON. DAVID K. MCCURDY
Former President and CEO of the American Gas Association



SANDRA MCDONOUGH
Former President and CEO of Oregon Business & Industry



NATHAN I. PARTAIN
Former President and Co-Chief Investment Officer of Duff & Phelps Investment Management Co.



JANE L. PEVERETT
Former President and Chief Executive Officer, British Columbia Transmission Corporation



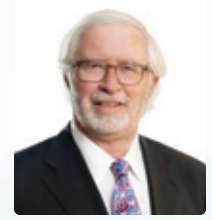
KENNETH THRASHER
Former Chairman of the Board, Compli Corporation



MALIA H. WASSON
Chair of the Board, NW Natural Holdings and NW Natural; Chief Executive Officer, Sand Creek Advisors



CHARLES A. WILHOITE
Managing Director, Willamette Management Associates, a Citizens Company



STEVEN E. WYNNE
Independent Director, NW Natural and Executive Vice President, Moda, Inc.

NW NATURAL SENIOR MANAGEMENT



DAVID H. ANDERSON¹
President and Chief Executive Officer



FRANK BURKHARTSMEYER¹
Senior Vice President and Chief Financial Officer



JAMES DOWNING
Vice President and Chief Information Officer



SHAWN M. FILIPPI^{1,2}
Vice President, Chief Compliance Officer and Corporate Secretary



JON HUDDLESTON
Vice President Engineering and Utility Operations



ZACHARY D. KRAVITZ
Vice President, Rates and Regulatory



JUSTIN B. PALFREYMAN²
Senior Vice President, Strategy and Business Development, and President, NW Natural Water



MELINDA ROGERS
Vice President, Chief Human Resources and Diversity Officer



KIMBERLY RUSH
Senior Vice President Operations and Chief Marketing Officer



MARDILYN SAATHOFF¹
Senior Vice President, Regulation and General Counsel



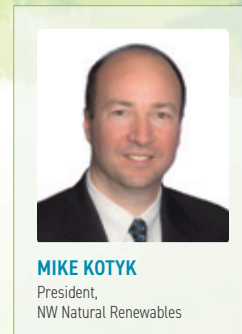
DAVID WEBER
Vice President, Gas Supply and Utility Support Services



KATHRYN WILLIAMS
Vice President, Public Affairs and Sustainability



BRODY J. WILSON^{1,2}
Vice President, Chief Accounting Officer, Controller and Treasurer



MIKE KOTYK
President, NW Natural Renewables

¹ Also officers at NW Natural Holdings
² Also officers at NW Natural Water

Notice of Annual Meeting

The 2023 Annual Meeting of Shareholders is scheduled to be held at 2 p.m., Thursday, May 25, 2023. We are expecting to conduct an entirely virtual Annual Meeting. A meeting notice and proxy statement describing our plans for conducting the meeting will be sent to all shareholders who hold shares as of the record date, April 6, 2023. Such plans may be supplemented or revised as appropriate.

Dividend reinvestment and direct stock purchase plan

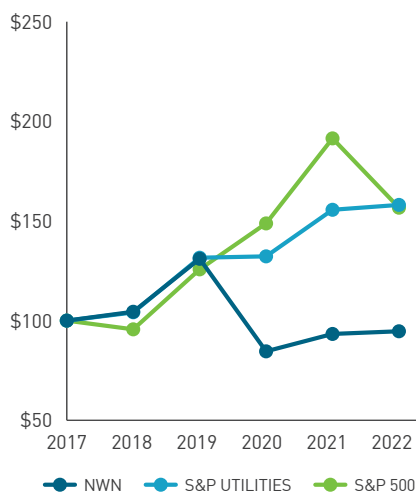
Participants may make an initial investment in company stock and common shareholders of record may reinvest all or part of their dividends in additional shares under the company's plan. Cash purchases may also be made. Participants in the plan bear the cost of brokerage fees and commissions for shares purchased on the open market to fulfill purchases under the plan. A prospectus will be sent upon request.

Scheduled dividend payment dates

Subject to Board approval, the following dates are scheduled for dividend payment:

February 15, 2023
 May 15, 2023
 August 15, 2023
 November 15, 2023

COMPARISON OF FIVE-YEAR CUMULATIVE TOTAL RETURN
 (Based on \$100 invested on 12/31/2017)



Total shareholder return (annualized) over the five years ending December 31, 2022 for NW Natural Holdings was 1.44%, compared to Standard & Poor's (S&P) Utilities Index return of 1.57%, and the S&P 500 Index return of -18.17%.

Certifications

The Chief Executive Officer certified to the NYSE on June 20, 2022, that as of that date, he was not aware of any violation by the company of NYSE's corporate governance listing standards, and the company had filed with the Securities and Exchange Commission (SEC), as exhibits 31.3 and 31.4 to its Annual Report on Form 10-K for the year ended Dec. 31, 2021, the certificates of the Chief Executive Officer and the Chief Financial Officer of the company certifying the quality of the company's public disclosure. For the year ended Dec. 31, 2022, the certificates of the Chief Executive Officer and Chief Financial Officer are attached as exhibits 31.3 and 31.4 to the Form 10-K included in this Annual Report.

Contact the NW Natural Holdings Board

Concerns may be directed to the nonmanagement directors by writing to:

Northwest Natural Holding Company
 Board of Directors
 c/o Corporate Secretary
 250 SW Taylor Street
 Portland, OR 97204

Forward-looking statements

The statements made in this Annual Report that are not purely historical, including statements regarding plans, goals, strategies, commitments, success, opportunities, dividends, earnings, financial value, financial results, future events, performance, stability, continuation of past practices, future demand or preference for gas, strategic goals and visions, environmental initiatives, decarbonization and role of natural gas and the gas delivery system, including competitive renewable natural gas strategy, decarbonization goals and timelines, energy efficiency measures, use of renewables, carbon emissions, targets and savings, renewable natural gas or hydrogen purchases, projects, investments or other renewable initiatives, including the construction of and production by RNG facilities, procurement of renewable natural gas or hydrogen for customers, technology and policy innovations, commodity costs, customer rates and service, competitive position,

revenues, customer and business growth, capital expenditures, system and infrastructure investments, emergency preparedness and response, technology and cybersecurity investments, system reliability, safety and implementation of safety initiatives, system and operational resiliency, business continuity, environmental stewardship, securities issuances, including sustainable financings, regulatory proceedings and actions including, but not limited to, our rate cases and the timing and results thereof, rate recovery, effects of regulatory mechanisms, the regional and national economy, business development and new business initiatives, water and wastewater acquisitions, partnerships, investment strategies, planned acquisitions and integration thereof, likelihood and success associated with any transaction, operating plans and implementation, system modernization and efficiency, diversity, equity and inclusion initiatives, and effects of legislation or changes in laws or regulations, including but not limited to carbon and renewable natural gas and hydrogen regulations are forward-looking statements within the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. NW Natural's actual results could differ materially from those anticipated in these forward-looking statements as a result of risks and uncertainties, including those described in the attached report on Form 10-K. For a more complete description of these risks and uncertainties, please refer to our filings with the SEC on Forms 10-K and 10-Q.

Request for publications

The following publications may be obtained without charge by contacting the Corporate Secretary at NW Natural's address: Annual Report; Form 10-K; Form 10-Q; Form 8-Ks; Corporate Governance Standards; Director Independence Standards; Code of Ethics; and Board Committee Charters. These publications, as well as other filings made with the SEC, are also available on our website at nwnaturalholdings.com. Our SEC filings are also available through the SEC's website (sec.gov).



PRODUCED BY NW NATURAL'S CORPORATE COMMUNICATIONS

PHOTO CREDITS: DALE HEADRICK - Page 4: field technician; ROBBIE MCCLARAN - Page 2: Vancouver Resource Center. **OTHER** - Page 6: Lexington RNG Facility, courtesy Anna Chittum; Page 7: Nature Energy Korskro Biomethane Plant, courtesy Chris Kroeker; Page 8: Limestone and Lorain RNG Facilities, courtesy Adam Larky.

PRINTING: Donnelley Financial Solutions

Investor and Shareholder Information



NIKKI SPARLEY

Director, Investor Relations
and Treasury
Toll free (800) 422-4012, Ext. 2530
Direct (503) 721-2530
nikki.sparley@nwnatural.com



CATHY CROWN

Manager, Shareholder Services
Toll free (800) 422-4012, Ext. 2402
Direct (503) 220-2402
cathy.crown@nwnatural.com

STOCK TRANSFER AGENT AND REGISTRAR

For common stock:
American Stock Transfer
& Trust Company
6201 15th Avenue
Brooklyn, NY 11219
(888) 777-0321
web: astfinancial.com
email: info@astfinancial.com

TRUSTEE AND BOND PAYING AGENT

For bond issues:
Deutsche Bank
Trust Company Americas
60 Wall Street
New York, NY 10005
(800) 735-7777

Living Our Core Values Every Day



Integrity

- Earned the prestigious distinction as one of the Ethisphere® Institute's 2023 World's Most Ethical Companies® for the second year in a row



Safety

- No cast iron or bare steel pipe in the natural gas system, making our system one of the tightest and most modern in the nation
- Laser focused on employee safety with our Journey to Zero program, which has resulted in better employee health and safety



Caring

- Helps low-income customers manage their natural gas bills through a variety of programs
- Donates time and money to local nonprofits in the areas we serve with a heightened focus on organizations that demonstrate a commitment to diversity, equity and inclusion



Service Ethic

- Consistently receive top-level customer satisfaction scores in J.D. Power and Escalent studies



Environmental Stewardship

- Partners with Energy Trust of Oregon to offer natural gas customers energy-efficiency programs and services as we work toward a net carbon-neutral future
- Supports water conservation and encourages customers to reduce water use and has installed technology to help minimize water leakage across its infrastructure



Learn more about how our values guide our work: nwnatural.com/esgreport

"World's Most Ethical Companies" and "Ethisphere" names and marks are registered trademarks of Ethisphere LLC





**NW Natural
HOLDINGS™**

250 SW TAYLOR STREET
PORTLAND, OREGON 97204
NWNATURALHOLDINGS.COM
NYSE: NWN

ETHISPHERE®
WORLD'S MOST
ETHICAL
COMPANIES®
2022 - 2023

Our Core Values

Integrity
Safety
Caring
Service Ethic
Environmental Stewardship

Our Mission

We provide safe, reliable and affordable utility services and renewable energy in a sustainable way to better the lives of the communities we serve.

Our Vision

Lead in service excellence, innovation and environmental stewardship by harnessing our passion for customers.



Attachment M-5. Facility Bond Revision

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SURETY RIDER

To be attached to and form a part of

Bond No. 6053326

dated November 9, 2001
effective (MONTH-DAY-YEAR)

executed by Northwest Natural Gas Company, as Principal,
(PRINCIPAL)

and by SAFECO Insurance Company of America, as Surety,

in favor of State of Oregon, acting by and through the Energy Facility Siting Council
(OBLIGEE)

in consideration of the mutual agreements herein contained the Principal and the Surety hereby consent to changing

The Bond Amount from:

Four Million Five Hundred Fifty-seven Thousand Eight Hundred & 00/100 (\$4,557,800.00)

To:

Four Million Eight Hundred Twenty-seven Thousand & 00/100 (\$4,827,000.00)

Nothing herein contained shall vary, alter or extend any provision or condition of this bond except as herein expressly stated.

This rider is effective March 6, 2024
(MONTH-DAY-YEAR)

Signed and Sealed March 6, 2024
(MONTH-DAY-YEAR)

Northwest Natural Gas Company
(PRINCIPAL)

By: [Signature]
(PRINCIPAL)

SAFECO Insurance Company of America
(SURETY)

By: [Signature]
Krista M. Lee, Attorney-in-Fact



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

Certificate No: 8204867

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Krista M. Lee all of the city of Seattle, state of Washington each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 15th day of February, 2021.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America



By: [Signature of David M. Carey]

David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 15th day of February, 2021, before me personally appeared David M. Carey, who acknowledged himself to be Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: [Signature of Teresa Pastella]

Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that this power of attorney executed by said Companies is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 6th day of March, 2024



By: [Signature of Renee C. Llewellyn]

Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries,

Attachment M-6. Letter from Legal Counsel

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March 14, 2024

Oregon Department of Energy
625 Marion St. NE
Salem, OR 97301-3737

RE: Request for Amendment No. 13 to the Mist Underground Natural Gas Storage Site Certificate

Dear Sir or Madam:

I am Vice President, Corporate Secretary and Chief Compliance Officer for Northwest Natural Gas Company (“NW Natural”). NW Natural is the Site Certificate Holder for the Mist Underground Natural Gas Storage Facility (the “Mist Facility”). NW Natural is submitting its Request for Amendment No. 13 to the Mist Underground Natural Gas Storage Site Certificate with the Oregon Energy Facility Siting Council, for the purposes described in the Amendment filing.

In connection with the Request for Amendment, and in accordance with OAR 345-021-0010(1)(m)(A), I have examined originals or copies certified or otherwise identified to my satisfaction of the books and records of NW Natural and such other documents as I have deemed necessary and appropriate for the purposes of this opinion. In rendering this opinion expressed below, I also have assumed (i) the authenticity of all the documents submitted to me as original and (ii) the conformity to original documents of all documents submitted to me as copies.

Based on the foregoing, to the best of my knowledge, subject to NW Natural meeting all applicable federal, state and local laws (including all rules and regulations promulgated thereunder), NW Natural continues to have the legal authority to construct and operate the Mist Facility, and to construct and operate the expansion of the Mist Facility as described in the Request for Amendment, without violating NW Natural’s articles of incorporation, bond indenture agreements, common stock covenants, or similar agreements, in each case, as amended (“Agreements”).

I am an active member of the Oregon State Bar. By issuing this opinion, I do not hold myself out as an expert in, and am not expressing an opinion with respect to, the law of any jurisdiction other than the law of the State of Oregon. Further, the foregoing opinion is limited solely to whether the Applicant has the authority under its Agreements to construct and operate the Mist Facility.

I express no opinion as to the applicability of, or compliance with, any federal, state or local laws (including all rules and regulations promulgated thereunder) to such construction and operation or as to the effects of the foregoing laws on such construction and operation.

Very truly yours,



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