



Client:
CNRL

| | |
|-----------|--------|
| UT SURVEY | Accept |
| PSV INSP | Accept |
| VTE INSP | Accept |
| VTI INSP | N/A |

EQUIPMENT DEFICIENCY SUMMARY

| | | | | | |
|----------------|-----------------|------------|---------|---------------------|----------------|
| District: | Medicine Hat | Facility | Knappen | Location/LSD | 16-01-002-12W4 |
| Equipment Name | INLET SEPARATOR | | | Prov Reg No.: | 0433542 |
| Serial No.: | 4811 | Equip No.: | 7052 | National Board No.: | |

UT SURVEY LATEST UT DATE USED IN SUMMARY June 30, 2018

| LOCATION | Nom - CA | Low RDG | Avg RD | TMin | UT Flag | RECOMMENDATION | QUALITY ACTION | RESULT |
|----------|----------|---------|--------|------|--------------------------|----------------|----------------|--------|
| N/A | | | | | No TMLs Flagged for This | N/A | N/A | Accept |

PSV INSPECTION LATEST PSV INSP DATE USED IN SUMMARY June 29, 2018

| DEFICIENCY | RECOMMENDATION | QUALITY ACTION | RESULT |
|-----------------------|----------------|----------------|--------|
| No Deficiencies Found | N/A | N/A | Accept |

VISUAL EXTERNAL INSPECTION LATEST VTE DATE USED IN SUMMARY June 29, 2018

| DEFICIENCY | RECOMMENDATION | QUALITY ACTION | RESULT |
|-----------------------|----------------|----------------|--------|
| No Deficiencies Found | N/A | N/A | Accept |

VISUAL INTERNAL INSPECTION LATEST VTI DATE USED IN SUMMARY

| DEFICIENCY | RECOMMENDATION | QUALITY ACTION | RESULT |
|------------|----------------|----------------|--------|
| N/A | N/A | N/A | N/A |



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PRESSURE EQUIPMENT DATA REPORT

EQUIPMENT GENERAL INFORMATION

| | | | |
|--------------------------|-----------------|----------------------------|------------|
| District: | Medicine Hat | | |
| Facility: | Knappen | | |
| Location /LSD: | 16-01-002-12W4 | Operating Province: | Alberta |
| Equipment Name: | INLET SEPARATOR | | |
| Equipment Status: | Operating | Orientation: | Horizontal |
| Skid No.: | Unit: | | |

EQUIPMENT STATIC DATA

| | | | | | |
|--------------------------------|-----------------------|---------------|-------------------------|-------------|--------------|
| AB Registration No.: | 0433542 | | Serial No.: | 4811 | |
| Registration No./Other: | | | Equipment No.: | 7052 | |
| CRN NO.: | N6728.2 | | Unique ID No.: | | |
| National Board No.: | | | Oncor ID No.: | 168595 | |
| Manufacturer: | BIMAC INDUSTRIES LTD. | | Year Built: | 1997 | |
| MAWP: | 720.00 (psi) | 4964.26 (Kpa) | Temperature: | 120.00 (F) | 48.89 (C) |
| Diameter.: | 36.000 (In) | 914.400 (mm) | Length: | 192.00 (In) | 4876.80 (mm) |
| Radiography: | RT2 | | Heat Treatment: | No | |
| Corrosion allowance: | (In) | 0.000 (mm) | MDMT: | -20.00 | |
| Lining Or Coated: | No | | Painted: | Yes | |
| Insulated: | No | | Internally Clad: | No | |
| Hand Hole: | No | | Support Type: | Saddle | |
| Manway: | Yes | | Manway Size(In): | 24.00 | |
| Capacity/Volume(m3): | | | Nozzle Rating: | 300.00 | |

MATERIALS/COMPONENTS

| Name | Joint Efficiency | Outside Diameter(in.) | Head Type | Material Type | Stress Value (PSI) | Nominal Thickness(In.) |
|----------|------------------|-----------------------|-------------|---------------|--------------------|------------------------|
| SHELL | 1.00 | 36.000 | | Unknown | 17500 | 0.88 |
| HEAD | 1.00 | 36.000 | Ellipsoidal | Unknown | 17500 | 0.96 |
| SHELL BT | 1.00 | 12.750 | | Unknown | 17500 | |
| HEAD BT | 1.00 | 12.750 | Ellipsoidal | Unknown | 17500 | |

PIPING STATIC DATA

| | | | |
|-------------------------------|-------------------|---|------------------|
| Primary Flange Rating: | 300 | ASME B16.5 - Table 2-1.1 @ 150F: | 740 (psi) |
| Pressure Use For TMin: | Vess Design Press | Piping Operating Press: | 720 (psi) |
| Stress Value: | 20000 (psi) | E Value: | 1.00 Joint: SMLS |

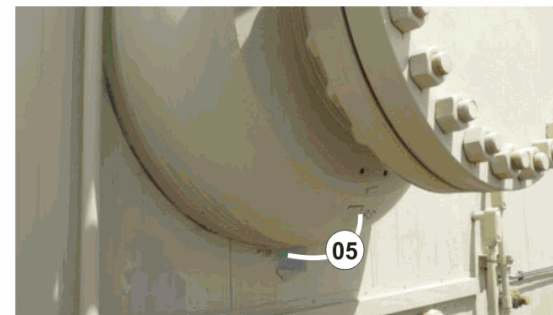
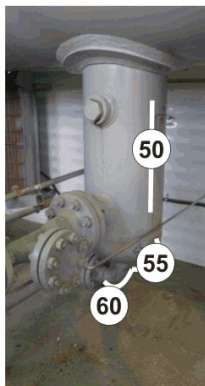
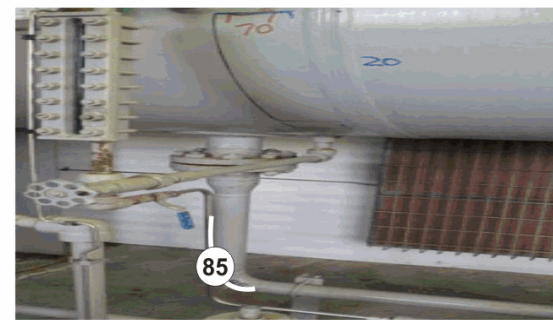
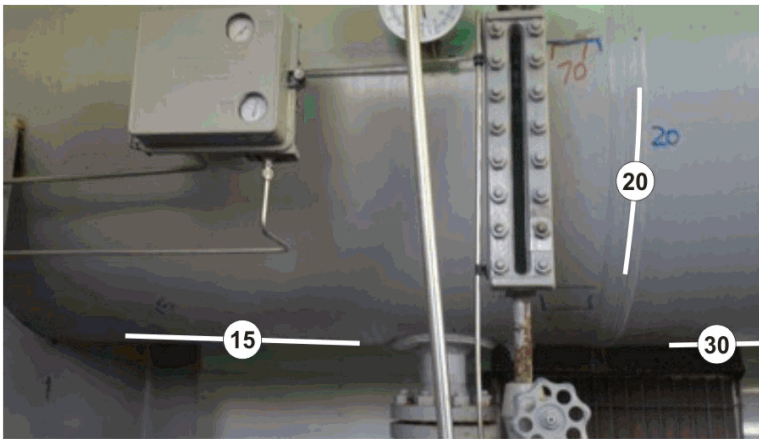
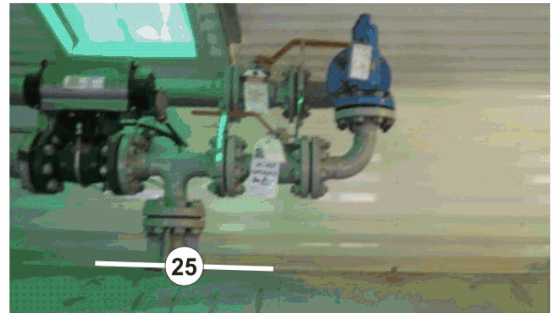
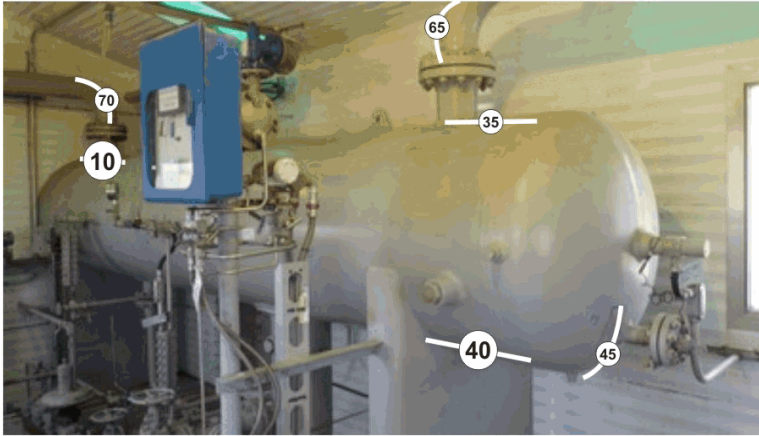
SERVICE CONDITIONS

| | | | | |
|--------------|-------------|-------------------|------------|---------------|
| Sweet | Sour | Oil | Gas | Water |
| Amine | LPG | Condensate | Air | Glycol |

COMMENTS

EXAMINATION ILLUSTRATION

| | | | | | |
|--------------------|-----------------|-------------------|---------|----------------------------|----------------|
| DISTRICT: | Medicine Hat | FACILITY: | Knappen | LOCATION/LSD: | 16-01-002-12W4 |
| EQUIP NAME: | INLET SEPARATOR | | | PROV REG No.: | 0433542 |
| SERIAL No.: | 4811 | Equip No.: | 7052 | National Board No.: | |



NOTES:

A0433542



Client:
CNRL

ULTRASONIC CORROSION SURVEY REPORT

| | | | | | |
|-------------|-----------------|------------|---------|---------------------|----------------|
| DISTRICT: | Medicine Hat | FACILITY: | Knappen | LOCATION/LSD: | 16-01-002-12W4 |
| EQUIP NAME: | INLET SEPARATOR | | | PROV REG No.: | 0433542 |
| SERIAL No.: | 4811 | Equip No.: | 7052 | National Board No.: | |

SUMMARY

| TYPE | LAST INSPECTIONS | INSPECTION INTERVAL (YEARS) | CORROSION RATE (IN/YR) | | REMAINING LIFE (YEARS) | NEXT INSPECTION DATE |
|--------|------------------|-----------------------------|------------------------|-----------|------------------------|----------------------|
| | | | SHORT TERM | LONG TERM | | |
| VESSEL | Jun 30, 2018 | 5.0 | 0.0005 | 0.0005 | 198.0 | Jun 30, 2023 |
| PIPING | Jun 30, 2018 | 5.0 | 0.0033 | 0.0033 | 74.1 | |


VESSEL SURVEY READINGS

| POINT NUMBER | TYPE | POINT DATA (INCH) | | | DATE | SURVEY READINGS | | | CALCULATIONS | | | | Flag |
|--------------|----------|-------------------|--------|--------|-----------|-----------------|-------|--------------|-----------------|-----------|----------------|-------------|------|
| | | NOM. | C.A. | NOM-CA | | LOW | AVG | T Req (inch) | short term corr | long term | remaining life | | |
| 05 | HEAD | 0.9640 | 0.0000 | 0.9640 | Jun 30/18 | 0.970 | 1.000 | 0.714 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 10 | SHELL | 0.8750 | 0.0000 | 0.8750 | Jun 30/18 | 0.884 | 0.900 | 0.729 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 15 | SHELL | 0.8750 | 0.0000 | 0.8750 | Jun 30/18 | 0.881 | 0.890 | 0.729 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 20 | SHELL | 0.8750 | 0.0000 | 0.8750 | Jun 30/18 | 0.884 | 0.895 | 0.729 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 25 | SHELL | 0.8750 | 0.0000 | 0.8750 | Jun 30/18 | 0.889 | 0.900 | 0.729 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 30 | SHELL | 0.8750 | 0.0000 | 0.8750 | Jun 30/18 | 0.874 | 0.880 | 0.729 | 0.0000 | 0.0000 | 3162.9 | NO COMMENTS | |
| 35 | SHELL | 0.8750 | 0.0000 | 0.8750 | Jun 30/18 | 0.884 | 0.895 | 0.729 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 40 | SHELL | 0.8750 | 0.0000 | 0.8750 | Jun 30/18 | 0.864 | 0.880 | 0.729 | 0.0005 | 0.0005 | 267.8 | NO COMMENTS | |
| 45 | HEAD | 0.9640 | 0.0000 | 0.9640 | Jun 30/18 | 0.967 | 0.995 | 0.714 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 50 | SHELL BT | 0.0000 | 0.0000 | 0.0000 | Jun 30/18 | 0.936 | 0.950 | 0.258 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 55 | HEAD BT | 0.0000 | 0.0000 | 0.0000 | Jun 30/18 | 0.702 | 0.730 | 0.253 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |

PIPING SURVEY READINGS

| POINT NUMBER | TYPE | SIZE | SCH | POINT DATA (INCH) | | | DATE | SURVEY READINGS | | | CALCULATIONS | | | | Flag |
|--------------|-----------|------|-----|-------------------|--------------|--------|-----------|-----------------|-------|--------------|-----------------|---------------------|----------------|-------------|------|
| | | | | NOM. | Mill Tol./CA | NOM-CA | | LOW | AVG | T Req (inch) | short term corr | long term corr rate | remaining life | | |
| 60 | 90L 2 XXS | 2.00 | XXS | 0.4360 | 0.0545 | 0.3815 | Jun 30/18 | 0.505 | 0.530 | 0.043 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 65 | 90L 6 XS | 6.00 | XS | 0.4320 | 0.0540 | 0.3780 | Jun 30/18 | 0.366 | 0.380 | 0.119 | 0.0030 | 0.0030 | 81.3 | NO COMMENTS | |
| 70 | 90L 6 80 | 6.00 | 80 | 0.4320 | 0.0540 | 0.3780 | Jun 30/18 | 0.496 | 0.520 | 0.119 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 75 | 90L 6 80 | 6.00 | 80 | 0.4320 | 0.0540 | 0.3780 | Jun 30/18 | 0.493 | 0.515 | 0.119 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS | |
| 80 | 90L 6 XS | 6.00 | XS | 0.4320 | 0.0540 | 0.3780 | Jun 30/18 | 0.361 | 0.380 | 0.119 | 0.0033 | 0.0033 | 74.1 | NO COMMENTS | |
| 85 | 90L 2 XS | 2.00 | XS | 0.2180 | 0.0273 | 0.1908 | Jun 30/18 | 0.197 | 0.215 | 0.043 | 0.0010 | 0.0010 | 159.8 | NO COMMENTS | |

INSPECTOR-EQUIPMENT DATA

| Inspected By | Signature | CGSB Level | CGSB No. | Survey Dat | UT Equipment | Due Date OF Calibration | NDE Procedure # |
|---------------|---|------------|----------|------------|----------------------|-------------------------|-----------------|
| Codey Chmilar |  | SNT LV 2 | 20906 | 06/30/2018 | 109_81583903_EPOCH 4 | 04/22/2019 | WQS UT-001 |



Client:
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| | | | | | |
|-----------------|-----------------|------------|---------|---------------------|----------------|
| District | Medicine Hat | Facility | Knappen | Location/LSD | 16-01-002-12W4 |
| Equipment Name: | INLET SEPARATOR | | | Prov Reg No.: | 0433542 |
| Serial No.: | 4811 | Equip No.: | 7052 | National Board No.: | |

External Inspection

| | | | | | | |
|------------|---------------|---------------|------------|--|-------|------------|
| Inspector: | Codey Chmilar | API510#:73856 | Signature: |  | Date: | 06/29/2018 |
|------------|---------------|---------------|------------|--|-------|------------|

External Corrosion

Isolated Minor :<0.020 external corrosion was found on South Piping
INLET PIPING STARTING TO SHOW SURFACE CORROSION
Isolated Minor :<0.020 external corrosion was found on West Shell
SURFACE CORROSION

Accept

External Damage

There was no external corrosion found on the vessel/piping

Accept

Leakage

No Leaks were found on the vessel or piping connections

Accept

Vessel and Piping Supports

Vessel support is Saddle and is acceptable

Accept

Vessel support anchor bolts are in place and acceptable

Accept

Vessel Foundation is Metal and is acceptable

Accept

Piping is supported by clamp and is acceptable

Accept

Insulation/Paint

| | Type | Findings | |
|---------------|---------|-----------------|--------|
| Vessel | Painted | PeelingBubbling | Accept |
| Inlet Piping | Painted | PeelingBubbling | Accept |
| Outlet Piping | Painted | Peeling | Accept |

Pressure Envelope Flanging

| | Bolting | Thread engagement | Gaskets | Flange Rating | |
|---------------|---------|-------------------|---------|---------------|--------|
| Manway | Accept | Accept | Accept | Accept | Accept |
| Vessel | NA | | | | Accept |
| Inlet Piping | Accept | Accept | Accept | Accept | Accept |
| Outlet Piping | Accept | Accept | Accept | Accept | Accept |
| Other Piping | Accept | Accept | Accept | Accept | Accept |

General

Pressure Gauge is acceptable, Temp Gauge is acceptable, Level Gauge is acceptable, Grounding is acceptable, Vibration is acceptable, Davit is acceptable,

Accept

Comment



Client:
CNRL

PRESSURE RELIEF VALVE SUMMARY

| | | | | | |
|------------------|--------------|------------------|---------|----------------------|----------------|
| District: | Medicine Hat | Facility: | Knappen | Location/LSD: | 16-01-002-12W4 |
|------------------|--------------|------------------|---------|----------------------|----------------|

PSV STATIC DATA

| | | | |
|---------------------------------|---------------|-----------------------------------|---------------|
| Tag/Equip No.: | 4150-V4 | Serial No.: | 45650 |
| Manufacturer: | Mercer | CRN No.: | 0G2606.5C |
| Model No.: | 9152G111723S | Code Stamp: | |
| Side (Shell or Tube): | Shell | Outlet Size: | 3 |
| Inlet Size: | 2 | Outlet Type / ANSI Rating: | Flanged / 150 |
| Inlet Type / ANSI Rating | Flanged / 300 | | |

PSV SERVICE DATA

| | | | |
|----------------------------|---------------|---------------------------|--------------|
| Set Date: | 18 Oct, 2017 | Service Interval: | 60 |
| Set Pressure (psig) | 720 | Capacity (scfm): | 5713 |
| Service Company: | UNIFIED VALVE | Next Service Date: | 18 Oct, 2022 |

PSV FIELD INSPECTION

Inspector Codey Chmilar **Company** Western Quality Services **Signature:**  **Inspection Date:** 29-Jun-2018

Inspection Type:

| | | | | |
|---------------------|---------------------|---|--|--------|
| RESTRICTIONS | BLINDS | INLET: | No Blinds found btwn vessels and psv inlet | Accept |
| | | OUTLET: | No blinds found btwn PSV and discharge point | Accept |
| | REDUCERS | INLET: | No reducers found btwn Vessel(s) and PSV Inlet | Accept |
| | | OUTLET: | No reducers found btwn PSV and Discharge Point | Accept |
| | BLOCK VALVES | INLET: | Inlet Block valve is locked open | Accept |
| | | OUTLET: | Outlet Block valve is locked open | Accept |
| SERVICING | SET PRESSURE | PSV set pressure is at or less than MAWP of all linked vessels in the system. | | Accept |
| | SERVICE DATE | PSV set date is current at time of inspection | | Accept |
| | SERVICE SEAL | Service seal is intact | | Accept |
| OPERATION | TAGGING | Service tag is properly attached to the psv | | Accept |
| | VIBRATION | None | | Accept |
| | DISCHARGE | PSV Discharge point is in a safe location and is acceptable | | Accept |
| | LEAKS | INLET: | No visible leaks found at psv inlet connection | |
| OUTLET: | | No visible leaks found at psv outlet connection | | Accept |
| INSTALLATION | PSV SUPPORTS | PSV supported | | Accept |
| | ANGLE | PSV is installed in the proper upright positon | | Accept |

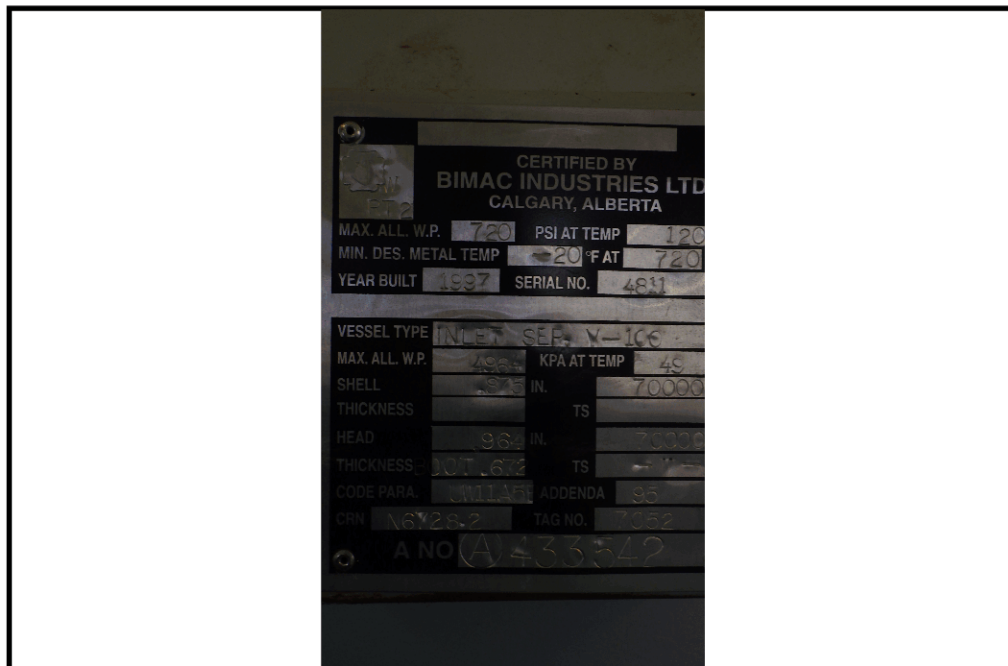
EQUIPMENT PROTECTED

| Prov Reg No. | Equipment No. | Serial No. | Equipment Name | Status | MAWP |
|--------------|---------------|------------|-----------------|-----------|--------|
| 0433542 | 7052 | 4811 | INLET SEPARATOR | Operating | 720.00 |

PHOTOGRAPHS



LSD

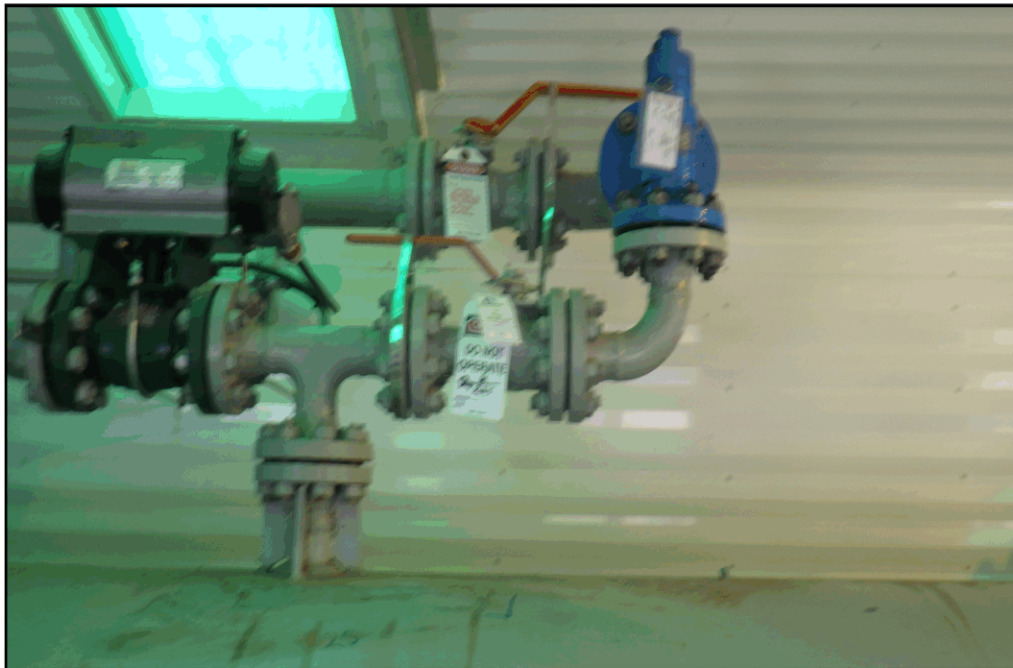


NAMEPLATE

PHOTOGRAPHS



OVERALL

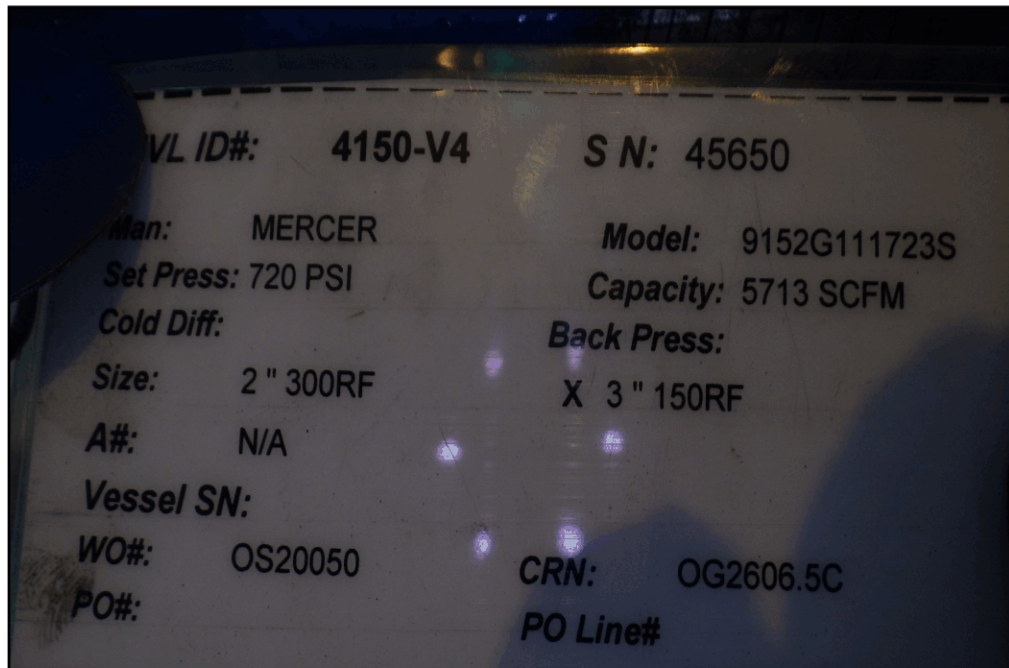


PSV

PHOTOGRAPHS



PSV NAMEPLATE



PSV TAG

PHOTOGRAPHS



INLET BLOCK VALVE SEAL



OUTLET BLOCK VALVE SEAL