



Client:
CNRL

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

EQUIPMENT DEFICIENCY SUMMARY

| | | | | | |
|----------------|--------------|------------|----------|---------------------|------------------|
| District: | Fort St John | Facility | Ladyfern | Location/LSD | A-084-G/094-H-01 |
| Equipment Name | LINE HEATER | | | Prov Reg No.: | C73654 |
| Serial No.: | 00-2167-2 | Equip No.: | C73654 | National Board No.: | N/A |

UT SURVEY LATEST UT DATE USED IN SUMMARY September 04, 2019

| 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

| DEFICIENCY | RECOMMENDATION | QUALITY ACTION | RESULT |
|------------|----------------|----------------|--------|
| | | | |

VISUAL EXTERNAL INSPECTION LATEST VTE DATE USED IN SUMMARY September 05, 2019

| DEFICIENCY | RECOMMENDATION | QUALITY ACTION | RESULT |
|-------------------------------------|----------------|----------------|---------|
| Grounding: No Grounding is Concern, | NCR | CAR | Concern |

VISUAL INTERNAL INSPECTION LATEST VTI DATE USED IN SUMMARY

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



Client:
CNRL

PRESSURE EQUIPMENT DATA REPORT

EQUIPMENT GENERAL INFORMATION

| | | | |
|--------------------------|------------------|----------------------------|------------------|
| District: | Fort St John | | |
| Facility: | Ladyfern | | |
| Location /LSD: | A-084-G/094-H-01 | Operating Province: | British Columbia |
| Equipment Name: | LINE HEATER | | |
| Equipment Status: | Operating | Orientation: | Horizontal |
| Skid No.: | Unit: | | |

EQUIPMENT STATIC DATA

| | | | | | |
|--------------------------------|------------------------|--------------|-------------------------|-------------|--------------|
| AB Registration No.: | C73654 | | Serial No.: | 00-2167-2 | |
| Registration No./Other: | | | Equipment No.: | C73654 | |
| CRN NO.: | | | Unique ID No.: | | |
| National Board No.: | N/A | | Oncor ID No.: | 173627 | |
| Manufacturer: | Wells-Hall Fabrication | | Year Built: | 2001 | |
| MAWP: | 14.90 (psi) | 102.73 (Kpa) | Temperature: | 200.00 (F) | 93.33 (C) |
| Diameter.: | 36.000 (In) | 914.400 (mm) | Length: | 144.00 (In) | 3657.60 (mm) |
| Radiography: | | | Heat Treatment: | No | |
| Corrosion allowance: | (In) | 0.000 (mm) | MDMT: | -20.00 | |
| Lining Or Coated: | | | Painted: | Yes | |
| Insulated: | No | | Internally Clad: | | |
| Hand Hole: | No | | Support Type: | Saddle | |
| Manway: | No | | Manway Size(In): | | |
| Capacity/Volume(m3): | | | Nozzle Rating: | | |

MATERIALS/COMPONENTS

| Name | Joint Efficiency | Outside Diameter(in.) | Head Type | Material Type | Stress Value (PSI) | Nominal Thickness(In.) |
|-------|------------------|-----------------------|-----------|---------------|--------------------|------------------------|
| HEAD | 1.00 | 36.000 | Flat | Unknown | 17500 | |
| SHELL | 1.00 | 36.000 | | SA-36 | 16600 | |

PIPING STATIC DATA

| | | | |
|-------------------------------|-------------------|---|------------------|
| Primary Flange Rating: | 2500 | ASME B16.5 - Table 2-1.1 @ 150F: | 6170 (psi) |
| Pressure Use For TMin: | Vess Design Press | Piping Operating Press: | 15 (psi) |
| Stress Value: | 20000 (psi) | E Value: | 1.00 Joint: SMLS |

SERVICE CONDITIONS

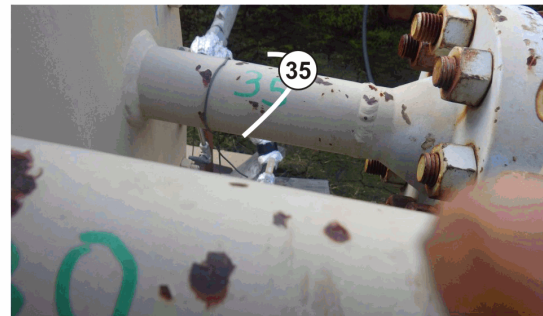
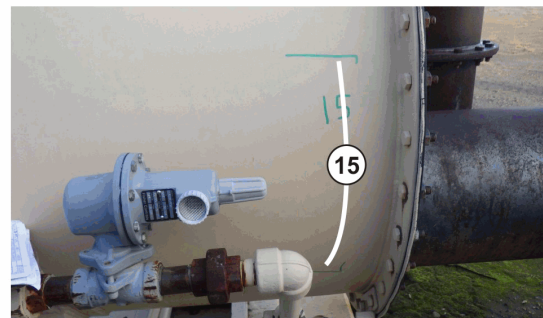
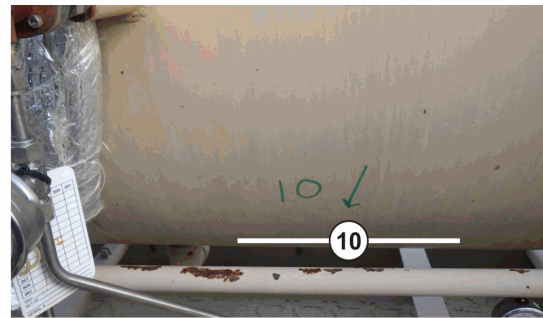
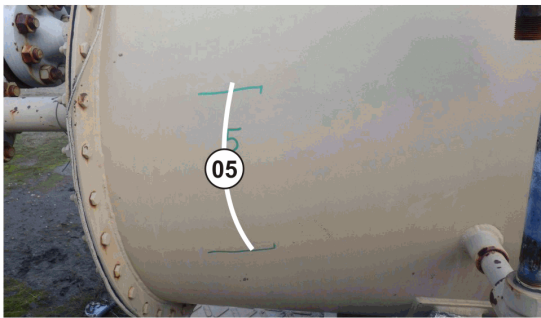
| | | | | |
|--------------|-------------|-------------------|------------|---------------|
| Sweet | Sour | Oil | Gas | Water |
| Amine | LPG | Condensate | Air | Glycol |

COMMENTS

| |
|--|
| |
|--|

EXAMINATION ILLUSTRATION

| | | | | | |
|--------------------|--------------|-------------------|----------|----------------------------|------------------|
| DISTRICT: | Fort St John | FACILITY: | Ladyfern | LOCATION/LSD: | A-084-G/094-H-01 |
| EQUIP NAME: | LINE HEATER | | | PROV REG No.: | C73654 |
| SERIAL No.: | 00-2167-2 | Equip No.: | C73654 | National Board No.: | N/A |



NOTES:

C73654



Client:
CNRL

ULTRASONIC CORROSION SURVEY REPORT

| | | | | | |
|--------------------|--------------|-------------------|----------|----------------------------|------------------|
| DISTRICT: | Fort St John | FACILITY: | Ladyfern | LOCATION/LSD: | A-084-G/094-H-01 |
| EQUIP NAME: | LINE HEATER | | | PROV REG No.: | C73654 |
| SERIAL No.: | 00-2167-2 | Equip No.: | C73654 | National Board No.: | N/A |

SUMMARY

| TYPE | LAST INSPECTIONS | INSPECTION INTERVAL (YEARS) | CORROSION RATE (IN/YR) | | REMAINING LIFE (YEARS) | NEXT INSPECTION DATE |
|--------|------------------|-----------------------------|------------------------|-----------|------------------------|----------------------|
| | | | SHORT TERM | LONG TERM | | |
| VESSEL | Sep 4, 2019 | 5.0 | 0.0000 | 0.0000 | 198.0 | Sep 4, 2024 |
| PIPING | | | | | | |

VESSEL SURVEY READINGS

| POINT NUMBER | TYPE | POINT DATA (INCH) | | | DATE | SURVEY READINGS | | | CALCULATIONS | | | |
|--------------|-------|-------------------|--------|--------|----------|-----------------|-------|--------------|-----------------|-----------|----------------|-------------|
| | | NOM. | C.A. | NOM-CA | | LOW | AVG | T Req (inch) | short term corr | long term | remaining life | Flag |
| 05 | SHELL | 0.0000 | 0.0000 | 0.0000 | Sep 4/19 | 0.373 | 0.380 | 0.016 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS |
| 10 | SHELL | 0.0000 | 0.0000 | 0.0000 | Sep 4/19 | 0.382 | 0.390 | 0.016 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS |
| 15 | SHELL | 0.0000 | 0.0000 | 0.0000 | Sep 4/19 | 0.376 | 0.385 | 0.016 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS |

INSPECTOR-EQUIPMENT DATA

| Inspected By | Signature | CGSB Level | CGSB No. | Survey Dat | UT Equipment | Due Date OF Calibration | NDE Procedure # |
|------------------|-----------|------------|----------|------------|--------------------------|-------------------------|-----------------|
| Jamey Tanasichuk | | SNT LV 2 | 11444 | 09/04/2019 | DanaTr 1_05063860_Echo 9 | 08/02/2019 | WQS UT-001 |



Client:
CNRL

GENERAL INTERNAL COMPONENT INFORMATION

| | |
|---------------------------------------|--------------------------------------|
| District: Fort St John | Skid No.: |
| Facility: Ladyfern | Location (LSD): A-084-G/094-H-01 |
| Name & Equip No: LINE HEATER - C73654 | Orientation: Horizontal |
| Company: CNRL | Cost Code: |
| Status: Operating | Operating Province: British Columbia |

NAMEPLATE DATA

| | |
|--------------------------------|---|
| Registration Number: | Registration Number (Other): |
| Serial Number: 00-2167-2 | Manufacturer: WELLS-HALL FABRICATION |
| Year Built: 2001 | Design Pressure: 5624.00 (psi) 38776.36 (Kpa) |
| Internal Component: COIL #1 | Design Temperature: 200.00 (F) 0.00 (C) |
| Equipment Type: coil | Size Diameter: 2.38 (In) 60.33 (mm) |
| Material Type: Unknown | Size Length: (In) (mm) |
| S Value: 17500.00 | CRN: |
| Joint Efficiency: 1.00 | X-RAY: 100% |
| Corrosion Rate Allowance: (In) | Heat Treatment |

ASSOCIATED EQUIPMENT

| Registration Number | Equipment Number | Equipment Name |
|---------------------|------------------|----------------|
| C73654 | C73654 | LINE HEATER |

GENERAL COMMENTS

2" XXH 4 PASS COIL



Client:
CNRL

ULTRASONIC CORROSION SURVEY REPORT

| | | | | | |
|--------------------|--------------|-------------------|----------|----------------------------|------------------|
| DISTRICT: | Fort St John | FACILITY: | Ladyfern | LOCATION/LSD: | A-084-G/094-H-01 |
| EQUIP NAME: | COIL #1 | | | PROV REG No.: | |
| SERIAL No.: | 00-2167-2 | Equip No.: | | 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 | | | | | | Sep 4, 2019 |
| PIPING | Sep 4, 2019 | 0.0 | 0.0000 | 0.0000 | 198.0 | |

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 | | |
| 20 | BAND 2 | XXS | 2.00 | XXS | 0.4360 | 0.0545 | 0.3815 | Sep 4/19 | 0.445 | 0.460 | 0.334 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS |
| 25 | BAND 2 | XXS | 2.00 | XXS | 0.4360 | 0.0545 | 0.3815 | Sep 4/19 | 0.446 | 0.460 | 0.334 | 0.0000 | 0.0000 | 198.0 | NO COMMENTS |

INSPECTOR-EQUIPMENT DATA

| Inspected By | Signature | CGSB Level | CGSB No. | Survey Dat | UT Equipment | Due Date OF Calibration | NDE Procedure # |
|------------------|-----------|------------|----------|------------|--------------------------|-------------------------|-----------------|
| Jamey Tanasichuk | | SNT LV 2 | 11444 | 09/04/2019 | DanaTr 1_05063860_Echo 9 | 08/02/2019 | WQS UT-001 |



Client:
CNRL

GENERAL INTERNAL COMPONENT INFORMATION

| | |
|---------------------------------------|--------------------------------------|
| District: Fort St John | Skid No.: |
| Facility: Ladyfern | Location (LSD): A-084-G/094-H-01 |
| Name & Equip No: LINE HEATER - C73654 | Orientation: Horizontal |
| Company: CNRL | Cost Code: |
| Status: Operating | Operating Province: British Columbia |

NAMEPLATE DATA

| | |
|--------------------------------|---|
| Registration Number: | Registration Number (Other): |
| Serial Number: 00-2167-2 | Manufacturer: WELLS-HALL FABRICATION |
| Year Built: 2001 | Design Pressure: 2025.00 (psi) 13961.97 (Kpa) |
| Internal Component: COIL #2 | Design Temperature: 200.00 (F) 0.00 (C) |
| Equipment Type: coil | Size Diameter: 2.38 (In) 60.33 (mm) |
| Material Type: Unknown | Size Length: (In) (mm) |
| S Value: 17500.00 | CRN: P2215.21 |
| Joint Efficiency: 1.00 | X-RAY: 100% |
| Corrosion Rate Allowance: (In) | Heat Treatment |

ASSOCIATED EQUIPMENT

| Registration Number | Equipment Number | Equipment Name |
|---------------------|------------------|----------------|
| C73654 | C73654 | LINE HEATER |

GENERAL COMMENTS

2" XH 6 PASS COIL



Client:
CNRL

ULTRASONIC CORROSION SURVEY REPORT

| | | | | | |
|--------------------|--------------|-------------------|----------|----------------------------|------------------|
| DISTRICT: | Fort St John | FACILITY: | Ladyfern | LOCATION/LSD: | A-084-G/094-H-01 |
| EQUIP NAME: | COIL #2 | | | PROV REG No.: | |
| SERIAL No.: | 00-2167-2 | Equip No.: | | 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 | | | | | | Sep 4, 2019 |
| PIPING | Sep 4, 2019 | 0.0 | 0.0002 | 0.0002 | 439.5 | |

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 | |
| 30 | BAND 2 XS | 2.00 | XS | 0.2180 | 0.0273 | 0.1908 | Sep 4/19 | 0.215 | 0.225 | 0.120 | 0.0002 | 0.0002 | 592.3 | NO COMMENTS |
| 35 | BAND 2 XS | 2.00 | XS | 0.2180 | 0.0273 | 0.1908 | Sep 4/19 | 0.214 | 0.225 | 0.120 | 0.0002 | 0.0002 | 439.5 | NO COMMENTS |

INSPECTOR-EQUIPMENT DATA

| Inspected By | Signature | CGSB Level | CGSB No. | Survey Dat | UT Equipment | Due Date OF Calibration | NDE Procedure # |
|------------------|-----------|------------|----------|------------|--------------------------|-------------------------|-----------------|
| Jamey Tanasichuk | | SNT LV 2 | 11444 | 09/04/2019 | DanaTr 1_05063860_Echo 9 | 08/02/2019 | WQS UT-001 |



Client:
CNRL

| | | | | | |
|-----------------|--------------|------------|----------|---------------------|-----------------|
| District | Fort St John | Facility | Ladyfern | Location/LSD | A-084-G/094-H-0 |
| Equipment Name: | LINE HEATER | | | Prov Reg No.: | C73654 |
| Serial No.: | 00-2167-2 | Equip No.: | C73654 | National Board No.: | N/A |

External Inspection

| | | | | | | |
|------------|------------------|--|------------|--|-------|------------|
| Inspector: | Jamey Tanasichuk | ABSA PESL #:000411 SASK PEI#:089 CL2 | Signature: | | Date: | 09/05/2019 |
|------------|------------------|--|------------|--|-------|------------|

External Corrosion

There was no significant external corrosion found on the vessel/piping

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 does not have additional supports but is supported by connected piping and is acceptable

Accept

Insulation/Paint

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

Pressure Envelope Flanging

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

General

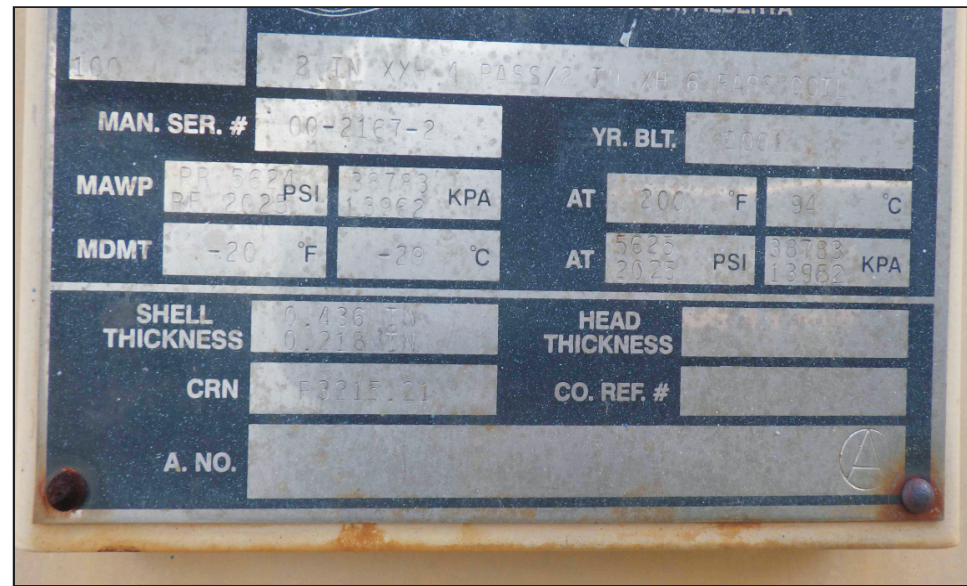
Temp Gauge is acceptable, Ladder/Stairway is acceptable, VESSEL ATMOSPHERIC

Accept

Grounding: No Grounding is Concern,

Concern

Comment



NAMEPLATE



OVERALL



ID



NO GROUND