

## PRESSURE VESSEL & COLUMN INSPECTION REPORT

**LSD:** 12-27-049-19W5      **Date:** 2014-03-20      **SAP Equipment ID** 66069776

| VESSEL STATIC DATA                      |  |                         |                      |                             |  |                                |  |                              |  |
|---|--|-------------------------|----------------------|-----------------------------|--|--------------------------------|--|------------------------------|--|
| <b>Plant:</b> MINEHEAD                  |  |                         | <b>OP Unit:</b>      |                             |  | <b>System:</b>                 |  |                              |  |
| <b>Prov. Insp . #:</b> 0488071          |  |                         | <b>CRN:</b> K0270.23 |                             |  | <b>Equip Tag#:</b> 66069776    |  |                              |  |
| <b>Equipment Description:</b> SEPARATOR |  |                         |                      |                             |  | <b>Serial #:</b> 005739-200    |  |                              |  |
| <b>Manufacturer:</b> Nusco              |  |                         |                      |                             |  | <b>Vessel Class:</b> vessel    |  |                              |  |
| <b>Internal Access:</b> No              |  |                         | <b>Description:</b>  |                             |  | <b>Year Built:</b> 2002        |  |                              |  |
| <b>MAWP:</b> 9929 kpa                   |  |                         | <b>At Temp</b> 38 C  |                             |  | <b>MDMT:</b> -29 C             |  |                              |  |
| <b>Code:</b>                            |  |                         | <b>RT:</b> RT2       |                             |  | <b>PWHT:</b> No                |  |                              |  |
| <b>Diameter:</b> 406 mm                 |  | <b>Length:</b> 2286 mm  |                      | <b>(T/T):</b> mm            |  | <b>OAL:</b> mm                 |  | <b>Orientation:</b> Vertical |  |
| <b>SHELL</b>                            |  | <b>Mat'l:</b> SA-106 B  |                      | <b>Thickness:</b> 26.19 mm  |  | <b>Corr Allowance:</b> 1.59 mm |  |                              |  |
| <b>HEAD</b>                             |  | <b>Mat'l:</b> SA-516 70 |                      | <b>Thickness:</b> 20.65 mm  |  | <b>Corr Allowance:</b> 1.59 mm |  |                              |  |
| <b>Nozzle</b>                           |  | <b>Mat'l:</b>           |                      | <b>Thickness:</b>           |  | <b>Corr Allowance:</b>         |  |                              |  |
| <b>Internal Coating:</b>                |  |                         |                      | <b>Internal Clad:</b> No    |  | <b>Capacity:</b> m3            |  |                              |  |
| <b>Manway:</b> No                       |  |                         |                      | <b>Inspection Port:</b> Yes |  | <b>Skirt</b> X                 |  | <b>Legs</b> <b>Saddle</b>    |  |
| <b>Nozzle Rating:</b> lb ANSI           |  |                         |                      | <b>Painted:</b> Yes         |  | <b>Insulated:</b> No           |  |                              |  |

| PROCESS DATA                   |  |  |  |  |                          |  |  |  |  |
|--------------------------------|--|--|--|--|--------------------------|--|--|--|--|
| <b>Production Description:</b> |  |  |  |  | Sweet      Sour:         |  |  |  |  |
| <b>Operating Pressure</b> kpa  |  |  |  |  | <b>Operating Temp:</b> C |  |  |  |  |

| PSV STATIC DATA |            |          |          |        |                 |                          |              |                |              |                 |
|-----------------|------------|----------|----------|--------|-----------------|--------------------------|--------------|----------------|--------------|-----------------|
| Tag #           | Serial No. | Location | Size(mm) |        | Set Press (kPa) | Capacity Imperial (SCFM) | Manufacturer | Model          | Last Service | Service Company |
|                 |            |          | Inlet    | Outlet |                 |                          |              |                |              |                 |
|                 | 1296-8     | Shell    | 25.40    | 25.40  | 9929            | 5181                     | TAYLOR       | 82E835131<br>1 | 2009/03/02   | WIZARD.         |

| PSV DETAILS       |                     |             |             |  |  |  |  |  |  |
|-------------------|---------------------|-------------|-------------|--|--|--|--|--|--|
|                   | Type(Thread/Flange) | ANSI Rating | Size(In/mm) |  |  |  |  |  |  |
| <b>PRD Inlet</b>  | Threaded            | N/A         | 25.40       |  |  |  |  |  |  |
| <b>PRD Outlet</b> | Threaded            | N/A         | 25.40       |  |  |  |  |  |  |

| NDE Equipment Records          |             |              |        |         |          |
|--------------------------------|-------------|--------------|--------|---------|----------|
| Procedure #                    | Description | Manufacturer | Model# | Serial# | Due Date |
| **** See Associated NDE Report |             |              |        |         |          |

### INSPECTION SUMMARY

PSV IS PAST 5 YEAR SERVICE INTERVAL. UT PERFORMED - NO CORROSION NOTED

### RECOMMENDATIONS

RECOMMEND SERVICING PSV. VESSEL IS FIT FOR SERVICE

### NONCONFORMANCES/INSPECTION DEFICIENCIES



# PRESSURE VESSEL & COLUMN INSPECTION REPORT

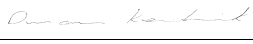
**LSD:** 12-27-049-19W5      **Date:** 2014-03-20      **SAP Equipment ID** 66069776

## INSPECTION PLANNING

|                     |            |                      |       |                     |            |
|---------------------|------------|----------------------|-------|---------------------|------------|
| Inspection Strategy | _____      | Availability         | _____ | Inspection Interval | _____      |
| Inspection Date     | 2014/03/20 | Date of Last Inspect | _____ | Date of Next Insp   | 2018/03/20 |

## REPORT CERTIFICATION

The SignatureS below certify that inspections/tests have been completed in accordance with the identified inspection strategy and that the specified equipment is considered fit for service until the date of next inspection.

|                               |                 |   |        |       |      |            |
|-------------------------------|-----------------|---|--------|-------|------|------------|
| Inspected by                  | Duncan Kendrick |  | Cert # | _____ | Date | 2014/03/20 |
| Reviewed and Approved by      | _____           | _____   |        |       | Date | _____      |
| Criticality Assessment Rerun  | _____           | Inspection Planning Rerun   |        |       |      |            |
| Assessed Next Inspection Date | _____           |   |        |       |      | _____      |

## PRESSURE VESSEL & COLUMN INSPECTION REPORT

**LSD:** 12-27-049-19W5      **Date:** 2014-03-20      **SAP Equipment ID** 66069776

### DETAILED INSPECTION VISUAL EXTERNAL

| ID  | Description                           | Condition | Location | NCR | Comments                                 |
|-----|---------------------------------------|-----------|----------|-----|--|
| V1  | General Other (Please Explain)        | Accept    |          |     | GOOD CONDITION.                          |
| V2  | General Corrosion                     | Accept    |          |     | NO CORROSION                             |
| V3  | General Leaks                         | Accept    |          |     | NO LEAKS                                 |
| V4  | Vibration                             | N/A       |          |     |  |
| V5  | Dissimilar Flange Rating              | N/A       |          |     |  |
| V6  | Ladder/Stairway                       | N/A       |          |     |  |
| V7  | Heads                                 | Accept    |          |     | GOOD CONDITION.                          |
| V8  | Guy Wires                             | N/A       |          |     |  |
| V9  | Electrical Ground                     | Accept    |          |     | GOOD CONDITION.                          |
| V10 | Painted Inactive Corrosion            | N/A       |          |     |  |
| V11 | Coating/Painting                      | Accept    |          |     | GOOD CONDITION.                          |
| V12 | Expansion Joint or Bellows            | N/A       |          |     |  |
| V13 | Gauge/Site Glass                      | Accept    |          |     | GOOD CONDITION.                          |
| V14 | Shell                                 | Accept    |          |     | GOOD CONDITION.                          |
| V15 | Jacket                                | N/A       |          |     |  |
| V21 | Support Other (Please explain)        | Accept    |          |     | WELDED SECURE                            |
| V22 | Foundation                            | Accept    |          |     | GOOD CONDITION.                          |
| V23 | Anchor Bolts                          | N/A       |          |     |  |
| V24 | Saddle/Skirt                          | Accept    |          |     | GOOD CONDITION.                          |
| V25 | Davit                                 | N/A       |          |     |  |
| V26 | Fireproofing                          | N/A       |          |     |  |
| V31 | Connections Other (Please explain)    | Accept    |          |     | GOOD CONDITION.THREADED                  |
| V32 | Small Branches                        | N/A       |          |     |  |
| V33 | Nozzles                               | Accept    |          |     | GOOD CONDITION.                          |
| V34 | Manways                               | N/A       |          |     |  |
| V35 | Reinforcing Pads                      | N/A       |          |     |  |
| V36 | Inadequate Thread Engagement          | N/A       |          |     |  |
| V37 | Bolting                               | Accept    |          |     | GOOD CONDITION.                          |
| V38 | Flanges                               | Accept    |          |     | GOOD CONDITION.                          |
| V39 | Leak Clamps                           | N/A       |          |     |  |
| V41 | Insulation Other (Please explain)     | N/A       |          |     |  |
| V42 | Damage                                | N/A       |          |     |  |
| V43 | Penetrations                          | N/A       |          |     |  |
| V44 | Insulation Jacket                     | N/A       |          |     |  |
| V45 | Banding                               | N/A       |          |     |  |
| V46 | Seals/Joints                          | N/A       |          |     |  |
| V51 | Relief Devices Other (Please explain) | Accept    |          |     | GOOD CONDITION.LAST SERVICE DATE 2009/03 |
| V52 | Corrosion                             | Accept    |          |     | NO CORROSION                             |
| V53 | Leaks                                 | Accept    |          |     | NO LEAKS                                 |
| V54 | Restricted Inlet/Outlet               | N/A       |          |     |  |

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|     |                        |     |  |  |  |
|-----|------------------------|-----|--|--|--|
| V55 | Manual Operation Lever | N/A |  |  |  |
|-----|------------------------|-----|--|--|--|

### DETAILED INSPECTION OTHER TECHNIQUES

| ID | Location | Observation/Measurement | Acceptance Criteria | NCR | Comments |
|----|----------|-------------------------|---------------------|-----|----------|
|    |          |                         |                     |     |          |

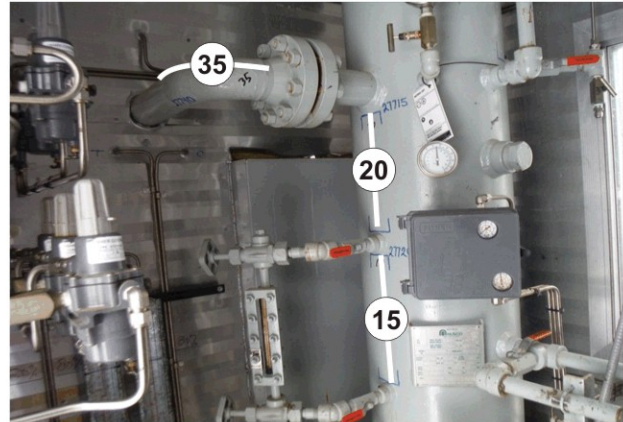
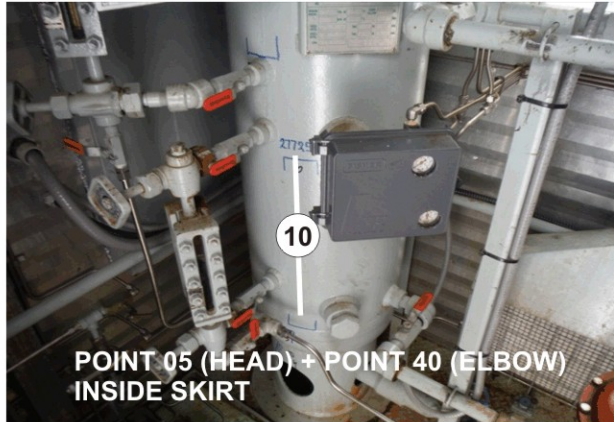
### DETAILED INSPECTION UT THICKNESS

| CML            | Nom. Thickness (mm) | CURRENT READINGS (mm) | short term corr rate (mm/y) | long term corr rate (mm/y) | remaining life (year) | Survey Date | Comments |
|----------------|---------------------|-----------------------|-----------------------------|----------------------------|-----------------------|-------------|----------|
| 05 (HEAD)      | 20.65               | 21.49                 | 0.0000                      | 0.0000                     | 198.0                 | 2014/03/20  |          |
| 10 (SHELL)     | 26.19               | 28.52                 | 0.0000                      | 0.0000                     | 198.0                 | 2014/03/20  |          |
| 15 (SHELL)     | 26.19               | 27.89                 | 0.0000                      | 0.0000                     | 198.0                 | 2014/03/20  |          |
| 20 (SHELL)     | 26.19               | 27.91                 | 0.0000                      | 0.0000                     | 198.0                 | 2014/03/20  |          |
| 25 (SHELL)     | 26.19               | 27.64                 | 0.0000                      | 0.0000                     | 198.0                 | 2014/03/20  |          |
| 30 (HEAD)      | 20.65               | 21.51                 | 0.0000                      | 0.0000                     | 198.0                 | 2014/03/20  |          |
| 35 (90L 3 STD) | 5.49                | 5.33                  | 0.0123                      | 0.0123                     | 173.8                 | 2014/03/20  |          |
| 40 (90L 2 160) | 8.74                | 7.59                  | 0.0921                      | 0.0921                     | 58.9                  | 2014/03/20  |          |
| 45 (90L 2 XS)  | 5.54                | 5.03                  | 0.0409                      | 0.0409                     | 69.8                  | 2014/03/20  |          |
| 50 (90L 3 STD) | 5.49                | 5.74                  | 0.0000                      | 0.0000                     | 198.0                 | 2014/03/20  |          |

| Inspected By      | Signature   | CGSB Level | CGSB No. | Survey Date | UT Equip             | Due Date OF Calibration | NDE Procedure No. |
|-------------------|---|------------|----------|-------------|----------------------|-------------------------|-------------------|
| Gordon Derewianko |  | 1          | 13896    | 03/20/2014  | 101_91637903_EPOCH4+ | 06/27/2014              | WQS UT-001        |

**EXAMINATION ILLUSTRATION**

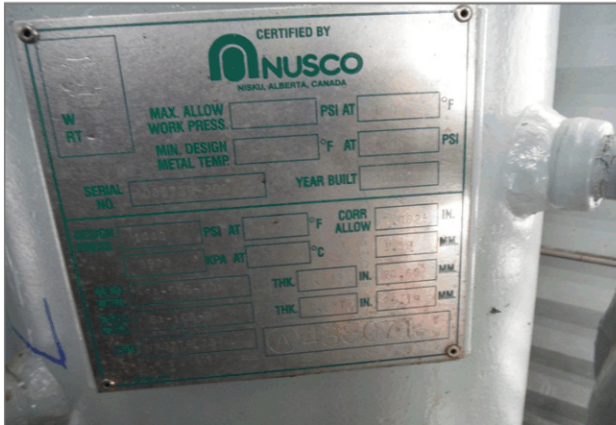
|             |                  |            |          |                     |                |
|-------------|------------------|------------|----------|---------------------|----------------|
| DISTRICT:   | FOOTHILLS ANSELL | FACILITY:  | MINEHEAD | LOCATION/LSD:       | 12-27-049-19W5 |
| EQUIP NAME: | SEPARATOR        |            |          | PROV REG No.:       | A#0488071      |
| SERIAL No.: | 005739-320       | Equip No.: | 66069776 | National Board No.: |                |



NOTES:

**PHOTOGRAPHS**

|             |            |                     |           |
|-------------|------------|---------------------|-----------|
| EQUIP NAME: | SEPARATOR  | PROV REG No.:       | A#0488071 |
| SERIAL No.: | 005739-320 | Equip No.:          | 66069776  |
|             |            | National Board No.: |           |



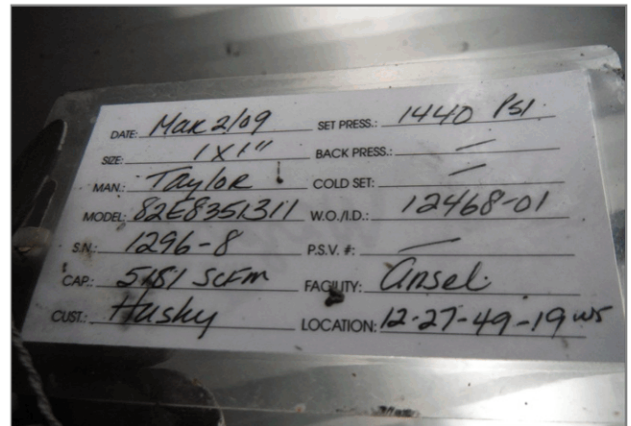
NAMEPLATE



OVERALL



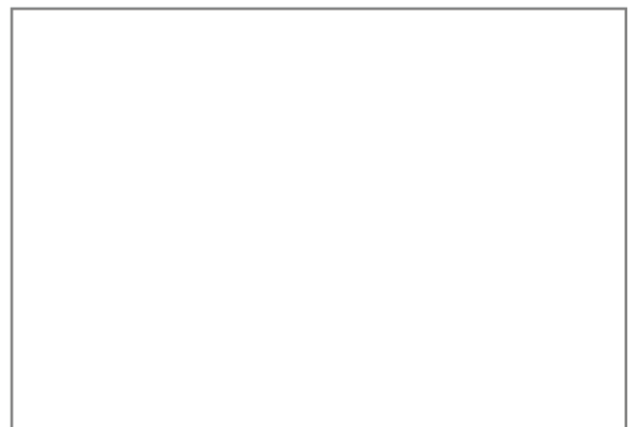
PSV



PSV TAG



LSD



NOTES: