

EQUIPMENT INTERNAL INSPECTION REPORT

Customer:	TAQA North	ITS Job No.:	1829
District:	Northern	Date:	18-Jul-2012
Facility:	Chinchaga Gas Plant	LSD:	C-32-H/94-H-08
Equip. Description:	Propane Bullet	Serial No.:	393508
Equip./OIP No.:	603VP005	PRN:	A601541
Equip. Type: <input type="checkbox"/> Column <input type="checkbox"/> Cooler <input type="checkbox"/> Exchanger <input type="checkbox"/> Furnace <input type="checkbox"/> Heater <input type="checkbox"/> Plate Exchanger <input type="checkbox"/> Reboiler <input checked="" type="checkbox"/> Vessel <input type="checkbox"/> Other:			

Head (1)	Head (2)	Shell	Boot Shell/Head
<input type="checkbox"/> Top <input type="checkbox"/> North <input checked="" type="checkbox"/> West	<input type="checkbox"/> Bottom <input checked="" type="checkbox"/> South <input type="checkbox"/> East	<input type="checkbox"/> Top <input type="checkbox"/> Bottom	<input checked="" type="checkbox"/> Not Applicable
<input type="checkbox"/> Flat <input type="checkbox"/> FLG <input type="checkbox"/> ELL <input type="checkbox"/> ECC <input checked="" type="checkbox"/> HEMI	<input type="checkbox"/> Flat <input type="checkbox"/> FLG <input type="checkbox"/> ELL <input type="checkbox"/> ECC <input checked="" type="checkbox"/> HEMI	<input checked="" type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition
<input checked="" type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Internal Corrosion
<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Internal Corrosion	<input checked="" type="checkbox"/> Pitting: 0.040 in <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>
<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion
<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked
<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked	<input type="checkbox"/> Blistered	<input type="checkbox"/> Blistered
<input type="checkbox"/> Blistered	<input type="checkbox"/> Blistered	<input type="checkbox"/> Scale	<input type="checkbox"/> Scale
<input type="checkbox"/> Scale	<input type="checkbox"/> Scale	<input type="checkbox"/> Coated	<input type="checkbox"/> Coated
<input type="checkbox"/> Coated	<input type="checkbox"/> Coated	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage
<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Bulged/ Distorted/ Deformation	<input type="checkbox"/> Bulged/ Distorted/ Deformation
<input type="checkbox"/> Bulged/ Distorted/ Deformation	<input type="checkbox"/> Bulged/ Distorted/ Deformation	<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> See Comments
<input checked="" type="checkbox"/> See Comments	<input checked="" type="checkbox"/> See Comments		

Channel Head	Internal Welds	Internal Nozzles	Drum
<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Good Condition	<input type="checkbox"/> Mud <input type="checkbox"/> Steam
<input type="checkbox"/> Good Condition	<input type="checkbox"/> Poor Quality	<input type="checkbox"/> Internal Corrosion	<input checked="" type="checkbox"/> Not Applicable
<input type="checkbox"/> Internal Corrosion	<input checked="" type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Internal Corrosion
<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Cracked	<input type="checkbox"/> Pitting: <small>(max depth)</small>
<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked	<input type="checkbox"/> Scale	<input type="checkbox"/> Wear/Erosion
<input type="checkbox"/> Blistered	<input type="checkbox"/> Scale	<input type="checkbox"/> Coated	<input type="checkbox"/> Cracked
<input type="checkbox"/> Scale	<input type="checkbox"/> Coated	<input type="checkbox"/> Plugged	<input type="checkbox"/> Blistered
<input type="checkbox"/> Coated	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Poor Welding	<input type="checkbox"/> Scale
<input type="checkbox"/> Mechanical Damage	<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> Leaking	<input type="checkbox"/> Coated
<input type="checkbox"/> Bulged/ Distorted/ Deformation		<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage
<input type="checkbox"/> See Comments		<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> Bulged/ Distorted/ Deformation
			<input type="checkbox"/> See Comments

Internal Protection	Vessel Internals	Heating Coil (A)	Heating Coil (B)
<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Adequate Cleaning	<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable
<input type="checkbox"/> Coating <input type="checkbox"/> Lining	<input type="checkbox"/> Vortex Breaker(s)/Deflection Plate(s) Damage	<input type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Good Condition		<input type="checkbox"/> Corrosion	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Blister(s)		<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Pitting: (max depth)
<input type="checkbox"/> Dis-bonded	<input type="checkbox"/> Weir(s)/ Baffle(s)/ Divider(s) Damage	<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked
<input type="checkbox"/> Chipped		<input type="checkbox"/> Scaled	<input type="checkbox"/> Scaled
<input type="checkbox"/> Holidays/Cracked	<input type="checkbox"/> Spray Nozzles Damaged/ Missing	<input type="checkbox"/> Worn	<input type="checkbox"/> Worn
<input type="checkbox"/> Mechanical Damage		<input type="checkbox"/> Loose	<input type="checkbox"/> Loose
<input type="checkbox"/> Missing	<input type="checkbox"/> Down-comer Corrosion	<input type="checkbox"/> Poor Installation	<input type="checkbox"/> Poor Installation
<input type="checkbox"/> See Comments		<input type="checkbox"/> See Comments	<input type="checkbox"/> See Comments
	<input type="checkbox"/> See Comments		

Demister Screen	Refractory	Manway	Trays
<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable
<input type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Dislodged	<input type="checkbox"/> Cracked (minor)	<input type="checkbox"/> Coating Damage	<input type="checkbox"/> Collapsed
<input type="checkbox"/> Broken	<input type="checkbox"/> Spalling	<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Distorted
<input type="checkbox"/> Missing	<input type="checkbox"/> Missing	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Loose
<input type="checkbox"/> Tie-downs Missing	<input type="checkbox"/> Damaged	<input type="checkbox"/> Seal Face Corrosion	<input type="checkbox"/> Missing
<input type="checkbox"/> Fouling	<input type="checkbox"/> Cracked (severe)	<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Wear
<input type="checkbox"/> Corrosion	<input type="checkbox"/> See Comments	<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> Corrosion
<input type="checkbox"/> See Comments			<input type="checkbox"/> Poor
			<input type="checkbox"/> Valve Caps Missing
			<input type="checkbox"/> See Comments

Tube Sheet	Firetube(s)	Tube Bundle	Tubes
<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable
<input type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Corrosion	<input type="checkbox"/> Corrosion	<input type="checkbox"/> Corrosion	<input type="checkbox"/> External Corrosion
<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Internal Corrosion
<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Pitting: (max depth)
<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked	<input type="checkbox"/> Wear/Erosion
<input type="checkbox"/> Damaged	<input type="checkbox"/> Scaled	<input type="checkbox"/> Damaged	<input type="checkbox"/> Cracked
<input type="checkbox"/> See Comments	<input type="checkbox"/> Coated	<input type="checkbox"/> Plugged	<input type="checkbox"/> Thinning
	<input type="checkbox"/> Heat Impinged	<input type="checkbox"/> Scaled	<input type="checkbox"/> Heat Impinged
	<input type="checkbox"/> Burner Misalignment	<input type="checkbox"/> See Comments	<input type="checkbox"/> Bulged/Distorted
	<input type="checkbox"/> Damaged Supports		<input type="checkbox"/> Leaking
	<input type="checkbox"/> Damaged Guides/ Tracks		<input type="checkbox"/> See Comments
	<input type="checkbox"/> See Comments		

Observations:

☒ **Vessel in Good Condition**

☐ **Based on API 510 Visual Internal Inspection this vessel is fit for service**

- The Tee welds are numbered West to East T1 - T12, and the Circumferential welds are numbered the same C1 - C7. The cans are numbered west to east from Can 1 - Can 6.
- There is a 3rd party (FOCUS) which is doing TOFD on the welds also. See their results.
- See MT-1829-01-EDP for the WFMPI results and locations.
- See UT-1828-01-MAJ for the shear-wave results on the West Head.
- All nozzle welds, circumferential and longitudinal welds have no signs of corrosion, erosion, preferential attack, and issues except on the C7 weld at the 6 O'clock position. The longitudinal weld profile West of T10 from 35 - 49 inches is flush with the shell wall. There are no issues.
- N1, N2, N3, N4 are on the West Head. N5, N6, N7 are on shell floor in Can 1. M1 and N8 are in Can 1 on top of the shell at the 12 O'clock position. N9 is in Can 6 at 12 O'clock position. This is where the multi-port PSV is mounted. N10 is on the East Head.
- Manway and manway sealing areas have no corrosion, erosion or mechanical damage, or issues.
- Both heads have mill scale still present and have a slight product residue.
- The shell walls have the same slight product residue as the heads and a heavier sludgy residue also noted approximately 1/8 inch thick. There was no corrosion found behind this residue. There are no concerns.
- On the East end of the vessel, there is corrosion noted on the shell floor. The corrosion is out 9" from the C7 weld and is 7" parallel with C7 weld. The deepest area noted in this corrosion on the shell side is 0.040".
- There is minor corrosion noted on the head side which is 1" out from the C7 weld and 6" long that runs parallel with the C7 weld and the deepest area found is 0.010".
- The volume gauge mechanism on the west head is functional but requires to be calibrated as it shows a volume when empty - operations were notified.
- The float mechanisms were pulled out and laid upon the catwalk. There was no confirmation if they were functional.
- The west head between T3 and T4 was an indication found on the outer diameter of the weld profile. This was Shear-wave UT'd (see UT-1828-01-MAJ) for the shear-wave results on the West Head.

Recommendations:

- Have the indication repaired on the west head prior to putting back into service.
- Review TOFD results from 3rd party (FOCUS) NDE company.
- Label PSV (with serial number 15541) 603SVVP005 and reattach the nameplate.

Pictures:



Photo 1: Overview



Photo 2: Nameplate

Pictures:



Photo 3: OIP Number



Photo 4: Manway



Photo 5: Manway Cover



Photo 6: Corrosion on East End



Photo 7: Corrosion on East End (2)



Photo 8: Corrosion on East End (3)

Pictures:

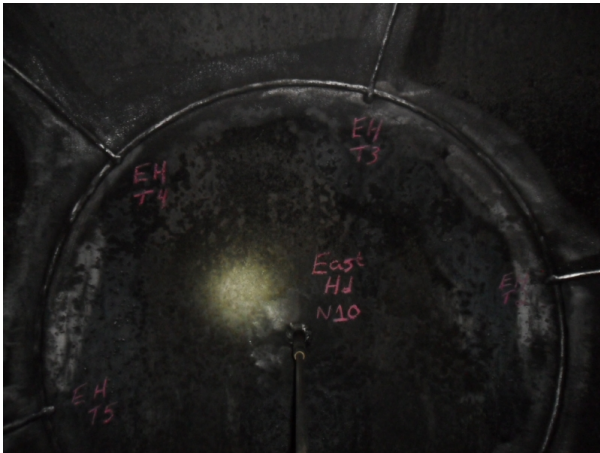


Photo 9: East Head Overview

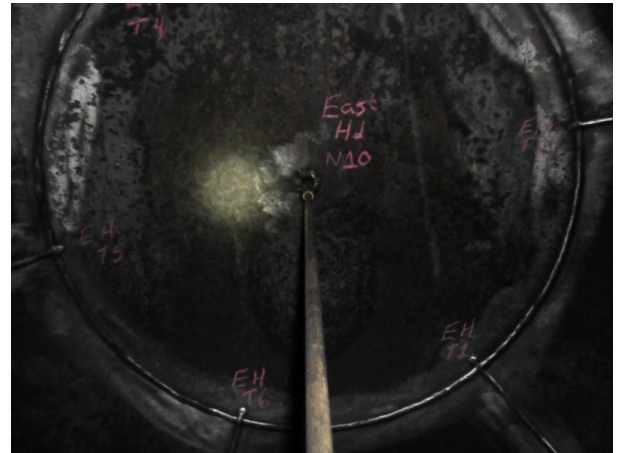


Photo 10: East Head Overview (2)

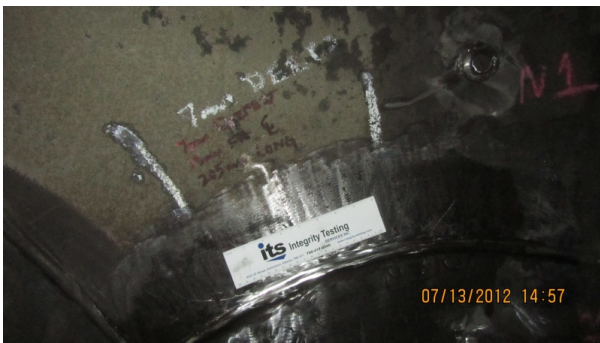


Photo 11: Indication on West Head



Photo 12: Nozzles



Photo 13: Nozzles (2)

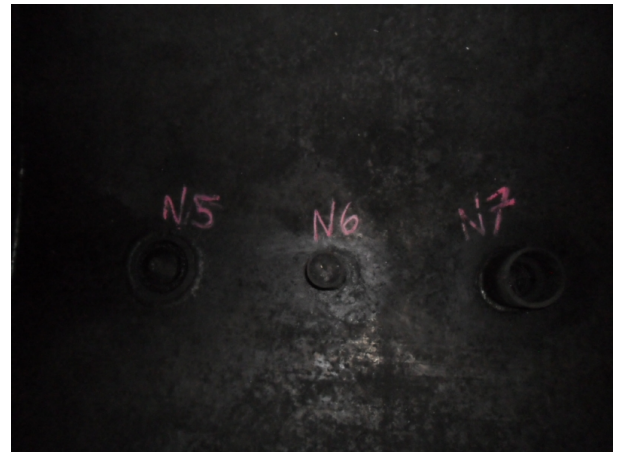


Photo 14: Nozzles (3)

Pictures:



Photo 15: Nozzles (4)



Photo 16: Nozzles (5)



Photo 17: Nozzles (6)



Photo 18: Nozzles (7)



Photo 19: Nozzles (8)



Photo 20: Nozzles (9)

Pictures:



Photo 21: Multi Port PSV

Additional Comments:

None

Internal Inspection Performed By:

Print Name: Erwin Pederson

Signature:

Erwin Pederson

Certification No.:

API 510: 33075

IPV: 000406

PEI Class 2: 154

Report Reviewed:

[Signature]
Initial