

## EQUIPMENT INTERNAL INSPECTION REPORT

<b>Customer:</b>	TAQA North	<b>ITS Job No.:</b>	1829
<b>District:</b>	Northern	<b>Date:</b>	17-Jul-2012
<b>Facility:</b>	Chinchaga Gas Plant	<b>LSD:</b>	C-32-H/94-H-08
<b>Equip. Description:</b>	Propane Bullet	<b>Serial No.:</b>	393504
<b>Equip./OIP No.:</b>	603VP006	<b>PRN:</b>	A601537
<b>Equip. Type:</b> <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 checked="" type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Good Condition <input type="checkbox"/> Internal Corrosion
<input checked="" type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Pitting: 0.040 in <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>
<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion
<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked
<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Blistered	<input type="checkbox"/> Blistered
<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked	<input type="checkbox"/> Scale	<input type="checkbox"/> Scale
<input type="checkbox"/> Blistered	<input type="checkbox"/> Blistered	<input type="checkbox"/> Coated	<input type="checkbox"/> Coated
<input type="checkbox"/> Scale	<input type="checkbox"/> Scale	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage
<input type="checkbox"/> Coated	<input type="checkbox"/> Coated	<input type="checkbox"/> Bulged/ Distorted/ Deformation	<input type="checkbox"/> Bulged/ Distorted/ Deformation
<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage	<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> See Comments
<input type="checkbox"/> Bulged/ Distorted/ Deformation	<input type="checkbox"/> Bulged/ Distorted/ Deformation		
<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"/> Weir(s)/ Baffle(s)/ Divider(s) Damage	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>
<input type="checkbox"/> Dis-bonded		<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked
<input type="checkbox"/> Chipped	<input type="checkbox"/> Spray Nozzles Damaged/ Missing	<input type="checkbox"/> Scaled	<input type="checkbox"/> Scaled
<input type="checkbox"/> Holidays/Cracked		<input type="checkbox"/> Worn	<input type="checkbox"/> Worn
<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Down-comer Corrosion	<input type="checkbox"/> Loose	<input type="checkbox"/> Loose
<input type="checkbox"/> Missing		<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
	<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: <small>(max depth)</small>	<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: <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Internal Corrosion
<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Pitting: <small>(max depth)</small>
<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-1829-02-EDP for the WFMPI results and locations.
- All nozzle welds, circumferential and longitudinal welds have no signs of corrosion, erosion, preferential attack, or issues except on the C7 weld at the 6 O'clock position.
- 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 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.
- The 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.
- On the East end of the vessel, there is corrosion noted on the shell floor. The corrosion is out 5" from the C7 weld and is 9" parallel with C7 weld. The deepest area noted in this corrosion on the shell side is 0.040".
- Minor corrosion is noted on the head side which is 2" 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 is no confirmation if they were functional.

**Recommendations:**

- Review TOFD results from 3rd party (FOCUS) NDE company.
- Label PSV (with serial number 15543) 603SVVP006.

**Pictures:**



Photo 1: Overview



Photo 2: Nameplate



Photo 3: OIP Number

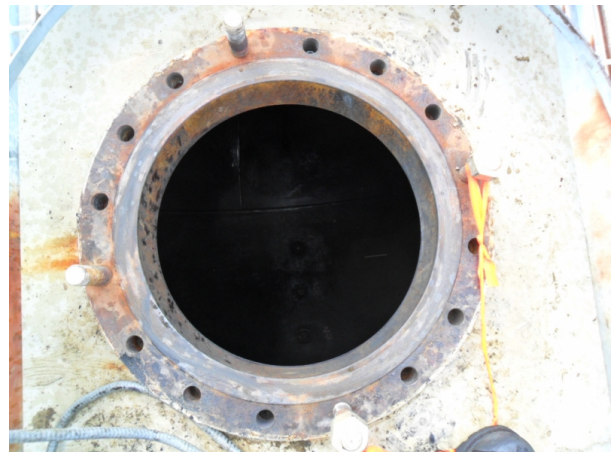


Photo 4: Manway



**Pictures:**



Photo 11: Nozzles



Photo 12: Nozzles (2)



Photo 13: Nozzles (3)



Photo 14: Nozzles (4)



Photo 15: Nozzles (5)



Photo 16: Nozzles (6)

**Pictures:**



Photo 17: Nozzles (7)



Photo 18: Nozzles (8)

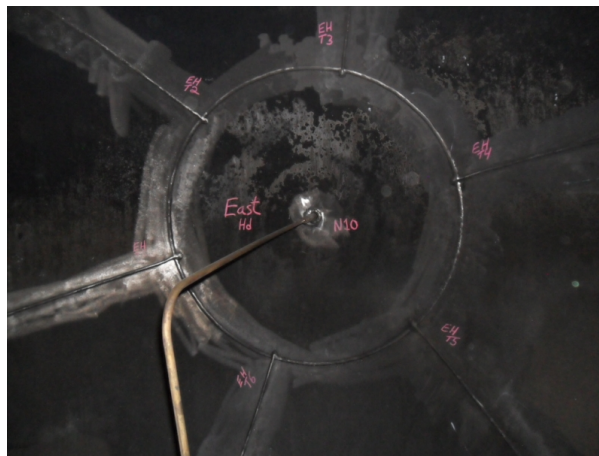


Photo 19: Nozzles (9)

**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