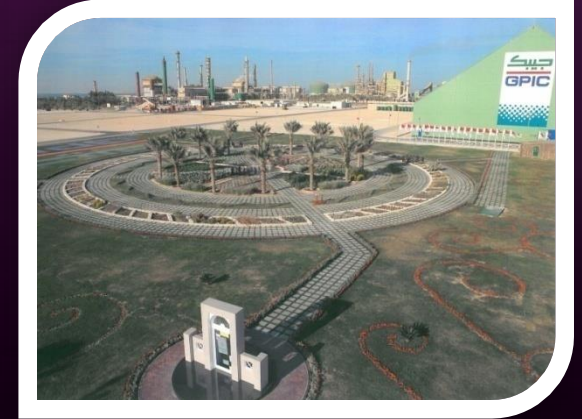


شركة الخليج لصناعة البتروكيماويات

Gulf Petrochemical Industries Company

Toward Reliability Excellence



GPIC in Brief

- Established in December 1979
- Joint-venture between the Government of Bahrain (The Oil & Gas holding company), Kingdom of Saudi Arabia (SABIC) & Kuwait (PIC)
- Utilises Natural Gas as a raw material
- Produces: Ammonia, Methanol and Urea
- Started production in 1985
- Production capacity: 1,500,000 tonnes annually
- Manpower: 481 employees



Our Values

Mission

TO Add value to our Customer & Shareholders,

- ✓Producing high quality Products
- ✓Focusing on customers
- ✓Optimizing business in cost effective, environmentally friendly & socially responsible way.
- ✓Embracing Knowledge, creativity and best practice

Vision

To be a global, dynamic, world-class organization of choice recognized for excellence.

GPIC Corporate Values

Excellence

Integrity & Fairness

Respect

Transparency

Safety

Professionalism

Social Responsibility

Creativity

Teamwork

Longest Continuous Production Period



Methanol Plant
961 Days



Ammonia Plant
950 Days

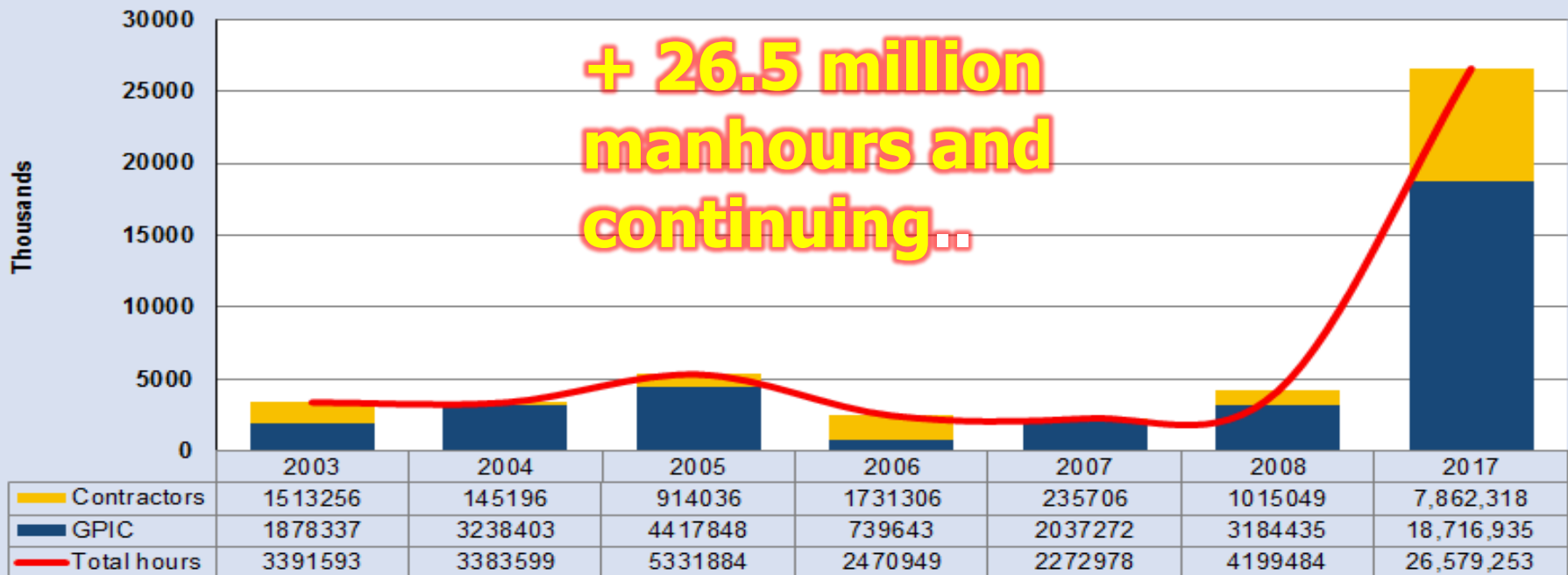


Urea Plant
941 Days

**Work Achieved
Safely Without
any Lost Time
Accidents
GPIC/Contractors**

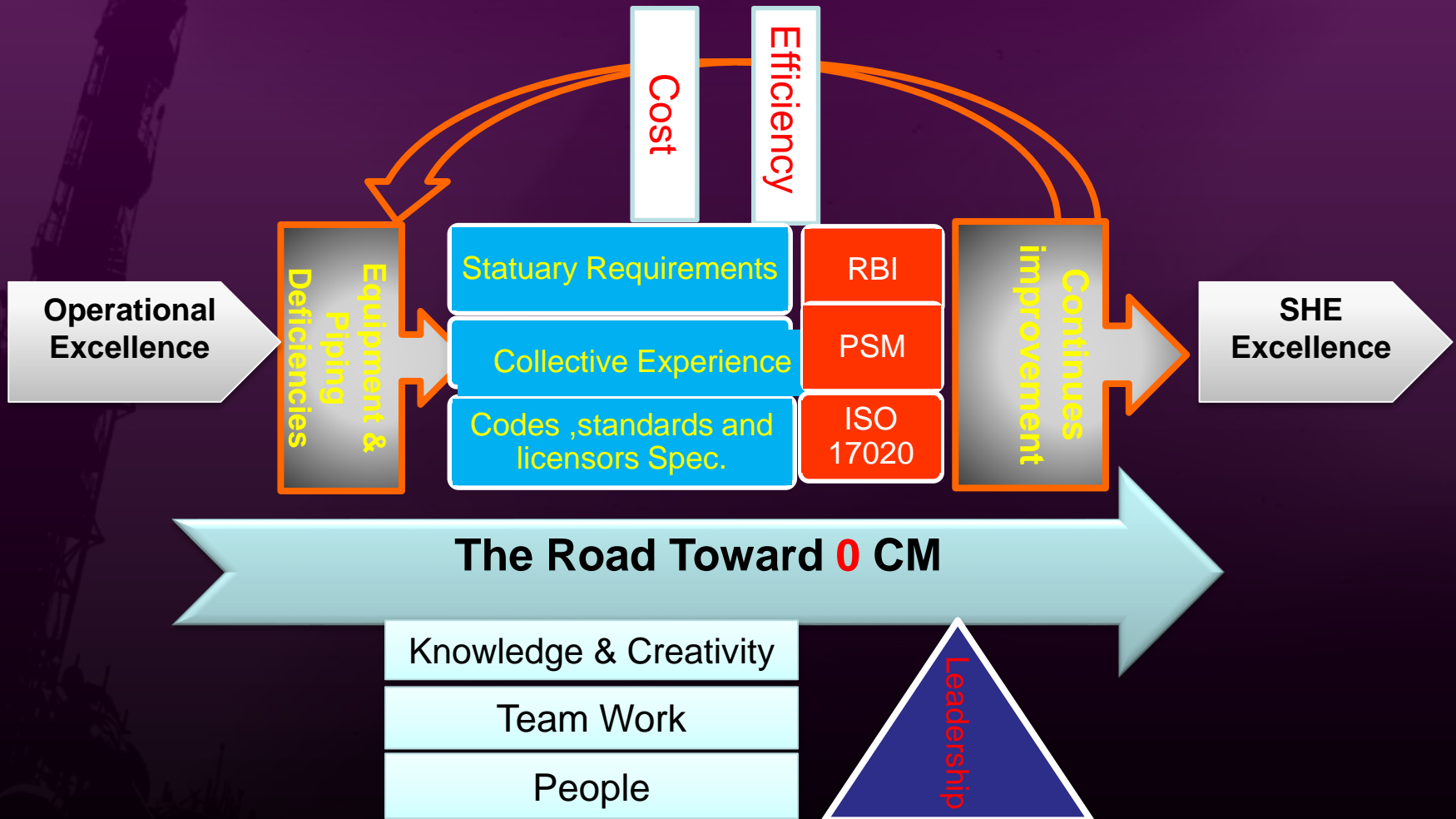
Combined LTA Performance as on 30/09/2017

**+ 26.5 million
manhours and
continuing..**



Inspection Reliability Mission Zero Corrective Maintenance

Inspection Reliability Goal Minimize Unplanned Outages with Embedded Safety



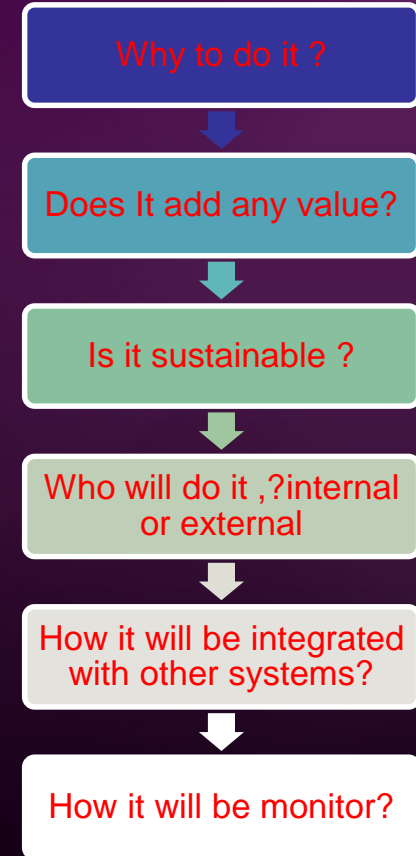
Management System & Certifications ...



Integrated Reliability Systems

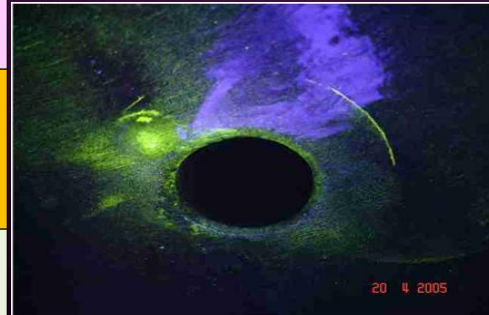
•Programs objective : is to Enhance the overall inspection practices & reliability with a structured, scientific & proven technology

Which is **transparent & fully auditable**



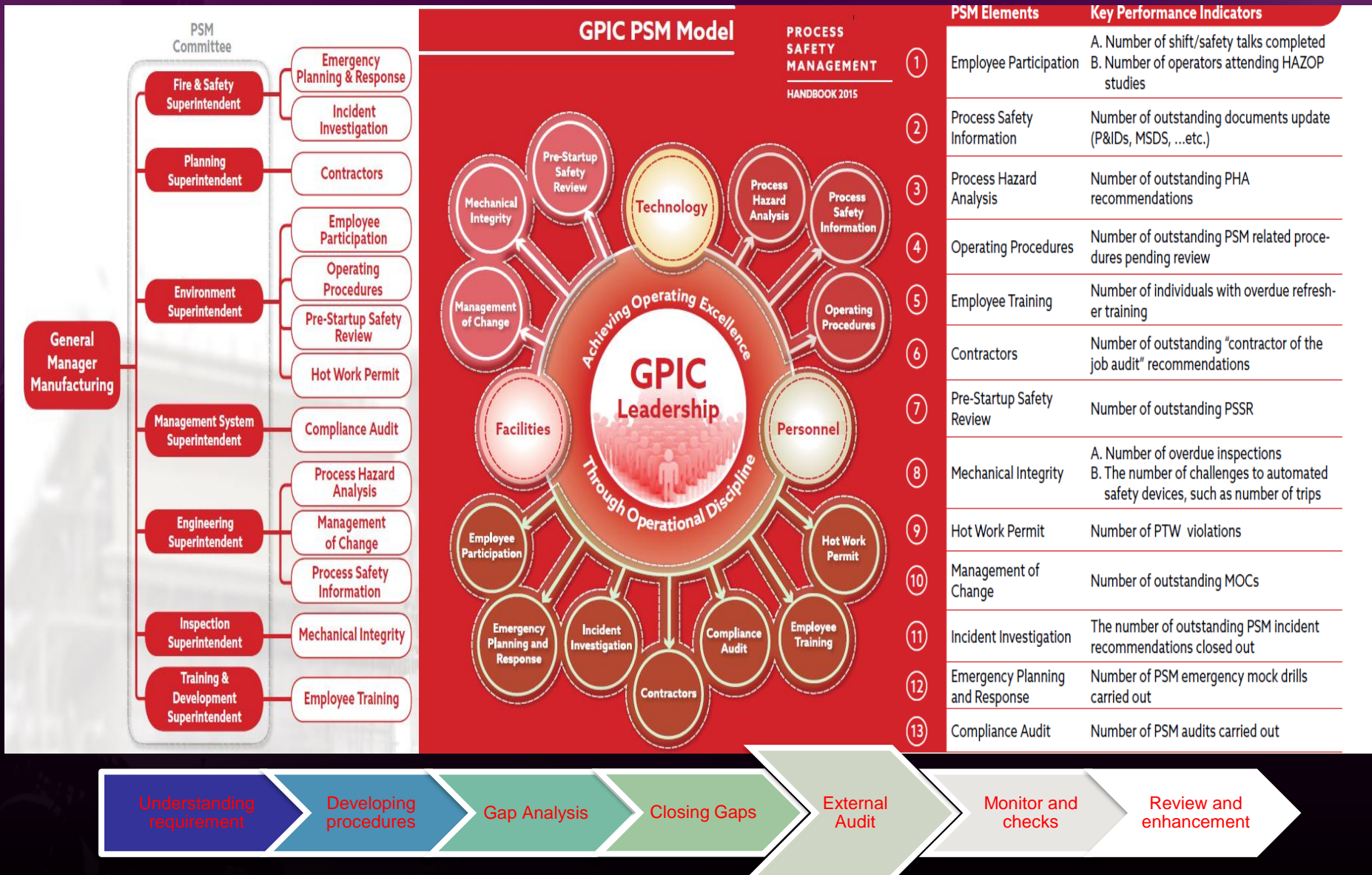
RBI Approach and integration

Technical Services Department Inspection Section							
RBI Completed							Remarks
	Ammonia	Methanol	Urea	Utilities	Product Handling & Offsite	Total	
Total (Planned)	116	152	104	58	10	440	
Total RBI Completed	100%	100%	100%	100%	100%	100%	
Technical Services Department Inspection Section							Date: 26-09-2017
Revalidation of RBI Study							Rev. 00
Year	Ammonia	Methanol	Urea	Utilities	Total	Remarks	
Total Revalidations	131	165	108	90	494	includes 54 Piping Corrosion Loops	



Around 20% enhancement in reliability assurance

PSM Approach and integration



ISO 17020 Approach and integration



CERTIFICATE OF ACCREDITATION

This is to attest that

GULF PETROCHEMICAL INDUSTRIES CO. (GPIC)

BUILDING 51 – ROAD 1401 – UM AL BAIDH-SITRA BLOCK 814, P.O. BOX 28730

MANAMA

KINGDOM OF BAHRAIN

Inspection Agency AA-760

Type C (Third-Party) Inspection Body

has met the requirements of the IAS Accreditation Criteria for Inspection Agencies (AC90), has demonstrated compliance with ISO/IEC Standard 17020:2012, Conformity assessment - Requirements for the operation of various types of bodies performing inspection, and has been accredited, commencing April 4, 2016, to provide inspection services in the approved scope of accreditation.

(See attached scope of accreditation for details of inspection, including type, range, methods or procedures.)

This accreditation certificate supersedes any IAS accreditation bearing an earlier effective date. The certificate becomes invalid upon suspension, cancellation or revocation of accreditation.
See <http://iasonline.org/forresearch.html> for current accreditation information, or contact IAS at 866-364-8201.



C.P. Ramani

C.P. Ramani, P.E., C.B.O.
President



General Management Inspection Quality Management System

GQS No. : IQMM
Issue No.: 1
Rev. No. : 3
Date : 25/08/2016
Page : 2 of 31

Inspection Quality Management Manual

Copy No.:

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Annexure (B)	Inspection Section Organization	31

Where did it help?

- Integrated inspection manual
- Detail Checklists
- Performance Evaluation
- Knowledge Transfer
- Auditable System
- Assurance and structure

Inspection Reliability Programs

Emphasis on Preventive to Minimize Corrective Maintenance

1-Positive Material Identification

2- Pre-Fabrication Inspection

3-3rd party QA/QC

4-Risk Based Inspection

5- Equipment/Piping Condition Monitoring

6-Underground & STA Survey

7-Corrosion Under Insulation

8-General Corrosion Survey

9-Fitness For Service

10-Thermographic Survey

11-Equipment With Limited Access

12-Strategic Replacement -10 Yr

13-Root Cause Failure Analysis

14- Bi-Yearly Report Analysis

On-line Condition monitoring

Applied Experience

Thermography Expanded

Nonmetallic QA/QC

Pre Mod. RBI

Inspection Support Network

Reliability Best Practices

1

- Spare Part Verification: Pre-T/A: Main machine critical spare parts physical inspection and clearance check

2

- Third Party Inspection: Additional Quality controllers for stationary equipments

3

- Vendor recommendations tracking system

4

- Detailed Risk Assessments.

Reliability Best Practices

6

- Established procedure for Manpower Trade Test.

7

- Review all IMS relevant procedures

8

- Awareness presentation by Maintenance Superintendents prior to Turnaround.

9

- Presentations by Area Leaders to Operations, Inspection, Engineering and Technicians.

10

- Workshops, arranging technical meetings with contractors

Reliability Best Practices

11

- Turnkey projects management and supervision by GPIC Maintenance Area Leaders.

12

- Contingency Team

13

- Root cause analysis

14

- Process incident reporting.

15

- HAZOP Studies

Reliability Best Practices

- 16 • Issuing Rolling 10 years Turnaround plan (2012 to 2022)
- 17 • TA Briefing & Debriefing
- 18 • Early appointment of Area Leaders
- 19 • Internal manpower utilization
- 20 • Classification of TA action reports

Reliability Best Practices

21

- Early mobilization of Resources

23

- Calibration, Testing and certification of Lifting and Measuring tools

24

- Acoustic Valve Leak Test.

25

- Modern Electrical Testing Techniques: Thermograph / Motor Circuit Evaluator

Reliability Best Practices

26

- E-learning

27

- Critical Joints Tightening: Dedicated team with specialist supervisor

28

- In-house house design, engineering and implementation

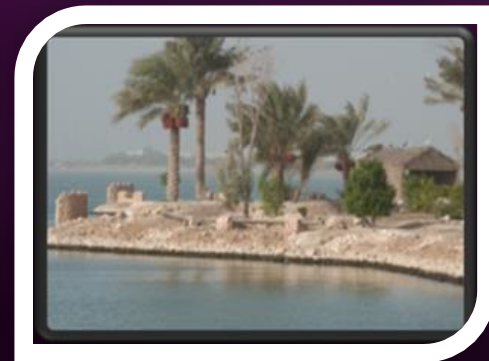
29

- Blinds Management

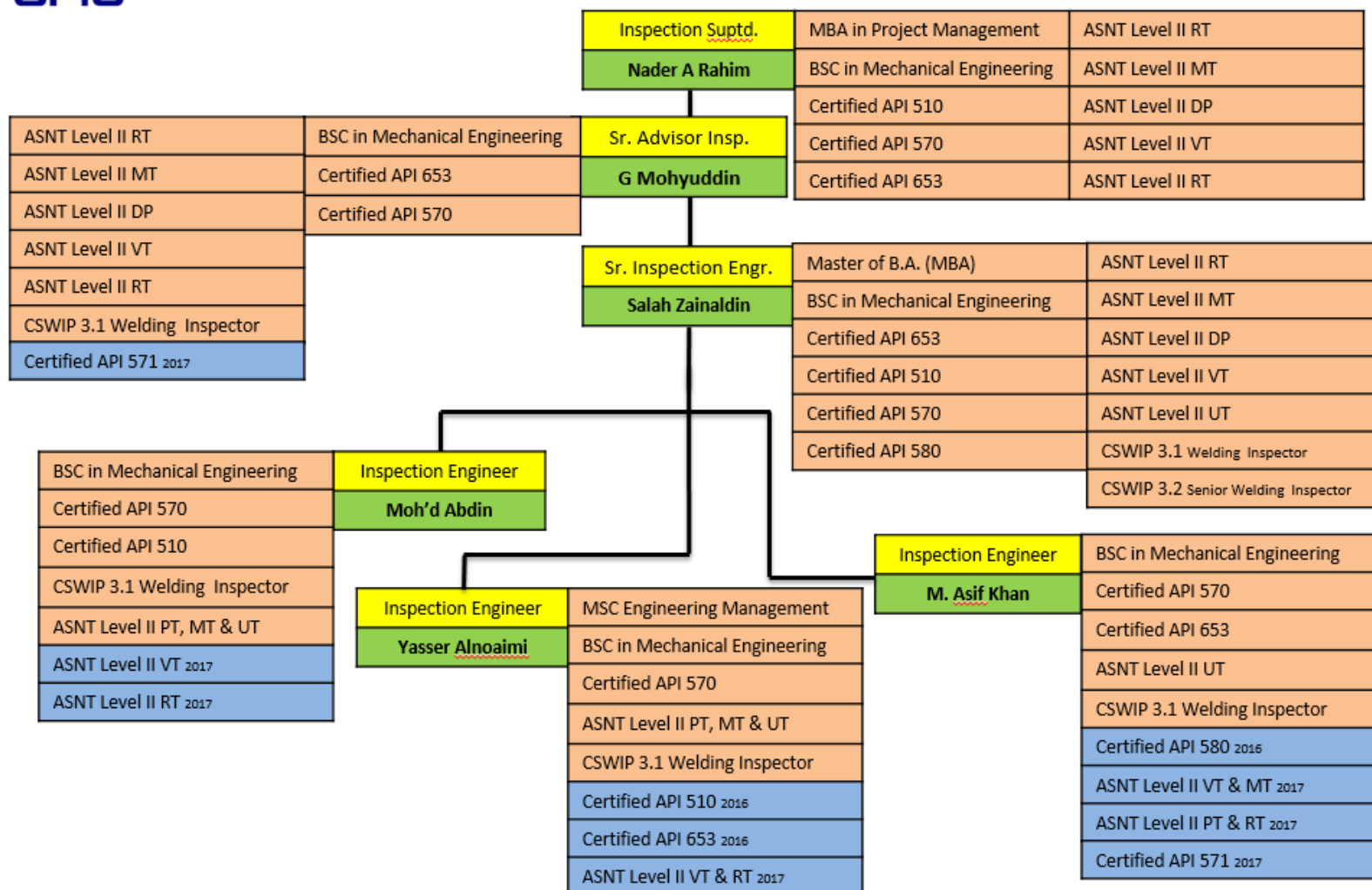
30

- Enhanced Night Shift Coverage

Thank You



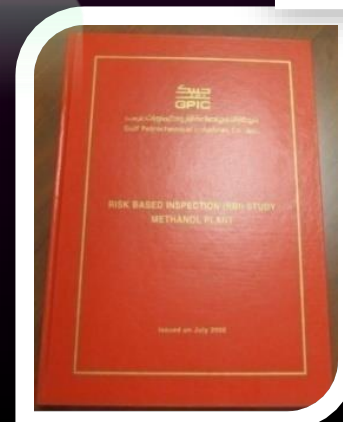
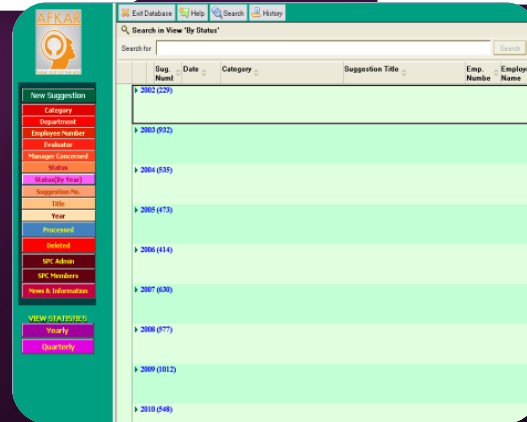
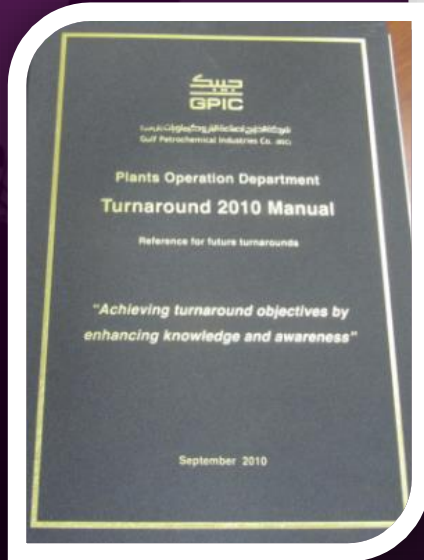
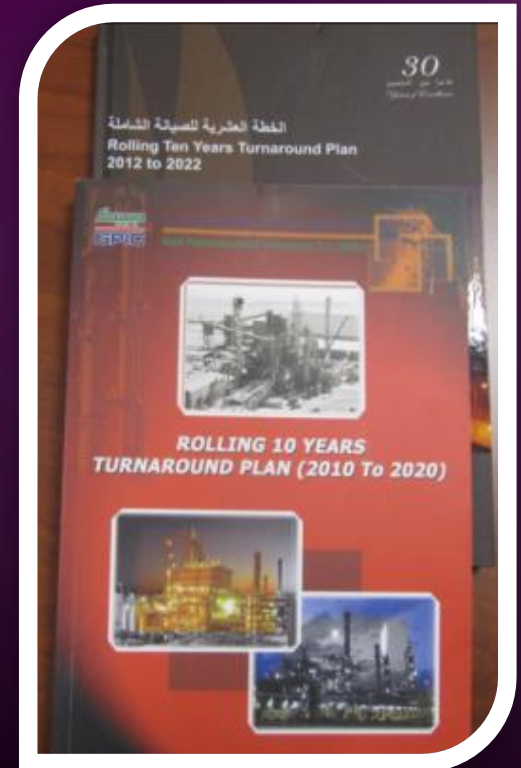
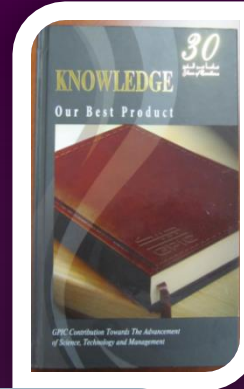
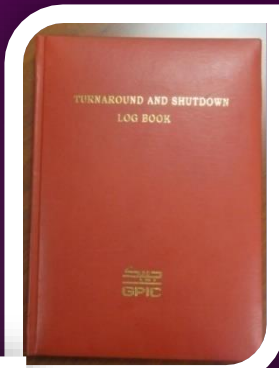
Inspection Section Qualification



- ANST = American Society of Non Destructive testing.
- API = American Petroleum Institute

Date: 16-07-2017

Transparent Knowledge Culture

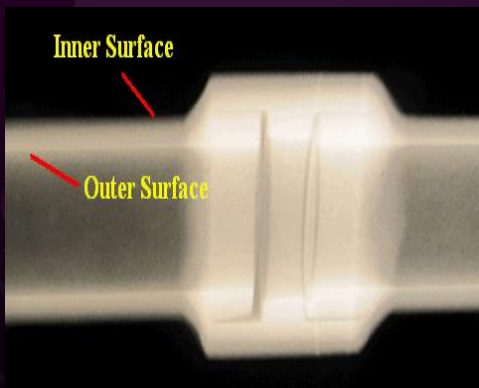


Back

Corrosion under insulation Inspection Program

Total Numbers----694 (lines, Instrument,& Equipment)

Ammonia =158
Methanol =57
Urea =42
Utilities =58



View of external scaling on a piping without wastage



Positive Material Identification Program

- 1- When receiving the material at the warehouse .
- 2- Before fabrication.
- 3- During manufacturing
- 4- Existing piping during installation.

Inspection Section - Report ref ISP/MISC/478/2010 - IBM Lotus Notes

File Edit View Create Actions Section Tools Window Help

Open Home Workspace nader.abdullah - Mail RepP Inspection Section - Report ref ISP...

Close Print Check Equipment Details Edit Document Check RBI Data Send for Feedback

جيپك GPIC GULF PETROCHEMICAL Technical Service Inspector

Final Status: Report closed

Date:	20/09/2010	Reference:
Category:	Miscellaneous	Equip Line No:
Unit:	--	Equip Line Name:
Subject:	Positive Material Identification (Bolts/Nuts/Washers)---P.O No: 4500003735	

Attachments :

Prepared by: Rishan Parindran Approved By:

For Information: TSM, MTM, MS, PLS, ENS, AS, MOS, US, URS, PHES, SSS, SPRE, Planning Engineer, Thomas/ENG/TEC/GPIC, sarai nair/MT/TEC/GPIC, abdulrahman alkhud/MTP/TEC/GPIC

For Action:

PMI of the new items received at the warehouse against P.O No: 4500003735 was carried out and be

DETAILS:

Materials: DIN 931 (Hexagonal Bolt), DIN 934 (Hexagonal Nut) & DIN 125 (Fender Washer)
Grade: 316
Size: 3/4"

Manufacturer: Asia Bolts Industries L.L.C.

OBSERVATIONS:

1. Random Positive Material Identification (PMI) was carried out with the X-MET 3000TX, Alloy Analyzer on the above materials and found to be matching with the P.O requirement.
2. Material certificate submitted along with the above materials was confirmed and accepted.

CONCLUSION:

- Above items are acceptable for use.

start Inspection Section - ... Microsoft PowerPoint ... PMI untitled - Paint Office (Network) EN 10:31 AM

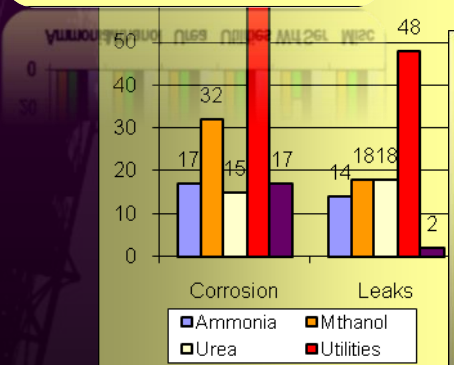
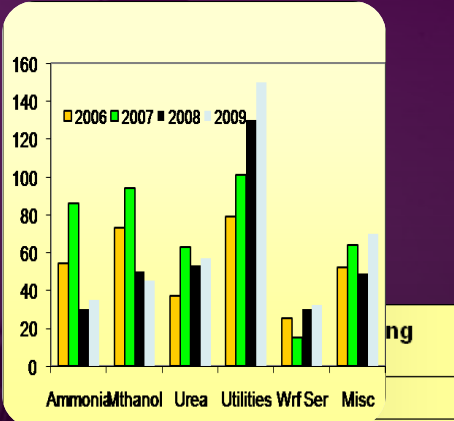


Equipment with limited access inspection Program

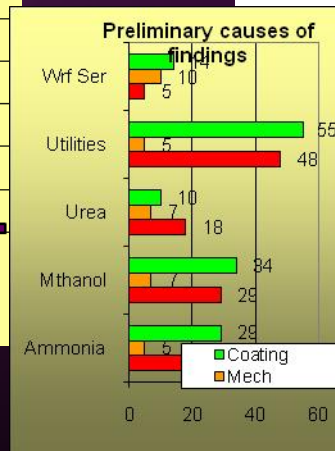
- Identification of equipment
- Review History
- Operation Criticality
- RBI study
- Agreed Action Plan

1	Equipment with limited inspection-Methanol Plant									
2	SR#	EQUIP. NO.	DESCRIPTION	S/D	Operational critical	present inspection satisfactory	Inspection plan / recommendation	Action to be completed by	Methanol Supt comment on inspection plan & action	RBI recommendation (last Insp Date)
3	Priority 1: T/A equipment, critical from operation point of view and present inspection not satisfactory									
4	1	E-0004	CONDENSER	YES	Y	N	Carry out eddy current inspection of tubes every 10Yr	T/A2011	agreed	2023
5	2	F-0007	SEPARATOR	YES	Y	N	shell thickness.Internal visual.	Sep-07	agreed	2024
6	3	B-1201	REFORMER	YES	Y	N	one off inspection plan to be charted out for inspection of inlet pigtail and header every 15 yr	TA2007/2009	Due to reformer tube replacement the pigtails and the sub header cannot be offered for inspection in 2007. The main header out side the reformer can be inspected.	considered & discounted
7	4	B-1203	FLARE	YES	Y	N	Drum internal inspection planned every 6 Yr	T/A2007	agreed	2008
8	5	EB-1202-1A(S)	HP STEAM SUPERHEATER	YES	Y	N	replacement philosophy	as per rolling 10 plan??	to be replaced in 2009	2024
9	6	EB-1202-1B(S)	HP STEAM SUPERHEATER	YES	Y	N	replacement philosophy	as per rolling 10 plan??	agreed	2019
10	7	EB-1202-2(S)	FEED STEAM SUPERHEATER	YES	Y	N	replacement philosophy	as per rolling 10 plan??	agreed	2007
11	8	EB-1202-3	FEED STOCK PREHEATER	YES	Y	N	replacement philosophy	as per rolling 10 plan??	agreed	2011
12	9	EB-1202-5(S)	STEAM	YES	Y	N	replacement philosophy	as per rolling 10 plan??	agreed	2033
13	10	E-1209A	AIR COOLER(FAN)	YES	Y	N	Window cutting on the header EC testing of tubes to be planned every 10 Yr	Ta2007	to be carried out in TA2009 due to work load in the area	2007
14	11	E-1209B	AIR COOLER(FAN)	YES	Y	N	Window cutting on the header EC testing of tubes to be planned every 10 Yr.Further course of action to be planned based on E-1209-A inspection results in TA 2009.		to be carried out in TA2009 due to work load in the area	2007
15	12	ZB-1202	PROCESS GAS HEADER SYSTEMS	YES	Y	N	100% UT and MPI of welds. Replica on hot spot areas.	TA2007	agreed	2007
16	13	EU-1401-A	OIL COOLER(K-1401)	YES	Y	N	IRIS of tubes at random every 10 Yr. Shell thickness	T/A2009	agreed	Not done
17	14	EU-1401-B	OIL COOLER(K-1401)	YES	Y	N	IRIS of tubes at random every 10 Yr. Shell thickness (A is representative of B)		agreed	Not done
18	15	E-1402	INTER STAGE COOLER(K-1401)	YES	Y	N	EC of tubes to be planned every 10 Yr. Shell thickness	TA2011/TA2009	agreed	2029
19	16	E-1404	NATURAL GAS PREHEATER	YES	Y	N	EC of tubes to be planned every 10 Yr. Shell thickness	TA2009	agreed	2011
20	17	E-1502(S)	START UP HEATER	YES	Y	N	IRIS of tubes and shell side hydrotest every 10 Yr. Shell thk.	TA2007	agreed	2013

Bi-Yearly Report Analysis



"Deterioration of protective coating internal and/or external is the main contributor to corrosion & leaks reported"



Corrosion: are those process specific such as erosion ,pitting,& thinning
Mech: to do with wear /tear , weld failures
Coating: to do with protective coating (external & internal) issues

Sr.No.	Action /Recommendation	Responsible Person
1		

History

Refresh

Select Keywords

Keywords
3mm/large hole
3mm/small hole>1mm
General Wastage
Item Rupture
Local Rupture
Local Wastage
Not Applicable
Other
Pin Hole
Porosity

OK

Cancel

Select Keywords

Keywords

General Corrosion (Thinning / Wa
Amine Corrosion
Carbon Dioxide Corrosion
Sour Water (Wet H2S) Corrosion
Ammonia Bisulphide Corrosion
Preferential Phase Leaching
High Temperature Sulphidic Corro
High Temperature H2S H2 Corros
External Corrosion (Atmospheric)
Pitting
Crevice Corrosion
Shielding Corrosion
Corrosion Under Insulation

OK

Cancel

Select Keywords

Keywords
External Coating Damage
Internal Lining Damage
Wrong Procedure
Weld Defect
Wrong Material
Unknown
Not applicable

OK

Cancel

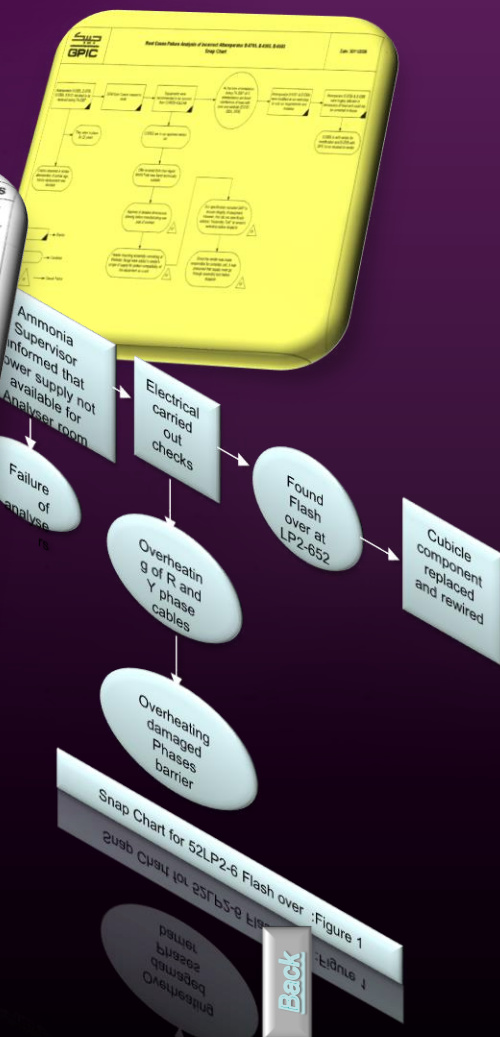
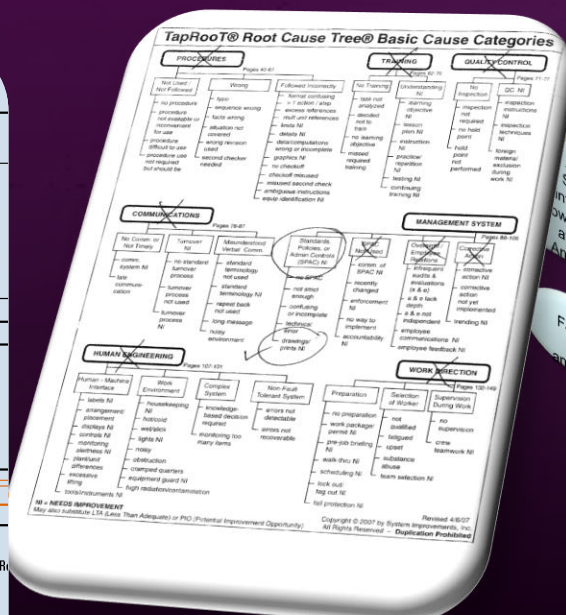
Type	Item Type	Failure Mode	Damage Mechanism	Main Cause	Report Criticality
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Back

Root Cause Failure Analysis Program

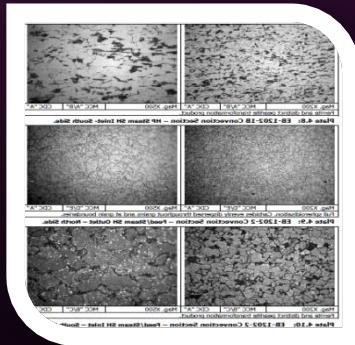
- TapRoot Methodology
- 35 trained in TapRoot
- RCFA Database
- Dedicated SOP

PARTICULARS OF EVENT				
Date of Incident: 18/03/2010				
Location: Utilities Plant				
Person Reporting Event		Department: TECHNICAL SERVICES		
Badge No.: 987		Section: INSPECTION		
Name: NADER ABOLRAHIM AHMED				
GPIC Dept.: TECHNICAL SERVICES		Type of Event: Electrical Static Failure	Failure Nature: OneOff	
Describe briefly what happened:				
<p>At 09:45 hrs, Urea Plant Tripped due to Boiler B-52018 tripping, caused by 3.3kV Bus Bar-B outage at Substation No.2. The FCW Pump motor MP-32018 identified as the primary source of fault initiation and its CB failed to trip & isolate the fault, triggering the Sub Station-2 Bus Bar-B outage.</p>		<p>Attach related form FR-ISP-02:</p> <p>RCFA FR-ISP-02- MP3201A.doc</p>		
RCFA ADMIN REPORT				
5 Ways Investigation Report:		Does this report require TapRoot study:		
<p>As per ES presentation and the general discussion on 19/3/2010 operation morning meeting: Initial investigation by electrical section and operation attribute the outage to motor & CB failure.</p>		<p>Yes <input checked="" type="radio"/> No <input type="radio"/></p>		
BASIC ("ROOT") CAUSES:-				
Main Root Cause → Sub Root Cause → Basic Root Cause				
CORRECTIVE ACTIONS				
WHAT CORRECTIVE ACTIONS HAVE OR WILL BE TAKEN?	BY WHOM?	BY WHEN?	STATUS	REMARKS
To establish a team to meet and issue RCFA study report.	abdulameer almulla/ELE/MNT/GPIC	30/03/2010		
		16		



Fitness For Service Program

- Specialized Service provider
- FFS on operating & removed items.
- Confirmation process.
- Regular intervals



Back

Management of Lesson Learned

ID	Employee ID	entered to system	Action By	Suggestion	Turnaround Related	My Remarks
1	1231	TRUE	US	Provide depressurizing point for MT 6401 NG fuel line in adip unit		
2	1231	FALSE	MOS	Provide two side spool blinds for TV 15501-B flanges	TRUE	
3	1231	TRUE	SAO	Each plant should have internal operation auditor to cross check the isolation and PTW system	TRUE	
4	341	FALSE	SHEM	Minimize radio use or allocate more channels	TRUE	People cut in, emotions flare, less work
5	341	FALSE	SAO	Operators should carry small explosive meters	TRUE	
6	341	TRUE	SAO	Regular housekeeping activities should be assigned to an operator	TRUE	
7	341	FALSE	ES	Standards for electrical cables should improve	FALSE	Cables now are easily cut
8	1459	TRUE	SHEM	Provide masks and safety equipment to all people working near reformer area as to not inhale insulation	TRUE	
9	1472	FALSE	SHEM	Safety tape (red & white) is haphazardly fixed around the area preventing access to some places that need not be quarantined. Cones should be used instead	TRUE	makes it look better as well

810	FALSE	US	Especially in Chimera Plant workers were found standing on insulated pipes and damaging them. Attention to be given to this issue and workers to be informed.	TRUE		
358	810	FALSE	POM	On at least two occasions N2 was used by contractors for pneumatic tools. These service parts are to be used by operators only. Consider providing locking facilities and different fittings/heads	TRUE	
TA 2007 359	830	TRUE	MS	To Fix The Bundle Puller In ADIP. The Rails Must Be Removed By Unscrewing The Bolts. This requires lifting. If we Installed Hinges On the Rails For E-0001a/B And E-0003 we will not need to remove the whole rail, just free one end of it.	TRUE	Recommended
TA 2007 360	202	TRUE	PLS/MS	To Hire The Required Fabricators And Welders For The TA. If The Fabrications And Welding Activities Are Assigned To A Contractors As Package Contract. In Order To Start This Approach It Is Advised To Start With One Plant Or The Modification.	TRUE	Recommended
TA 2007 361	902	TRUE	PLS	In Utility Plant The Contractors Doesn't Have A place To Wash Their Hands Like In The Other Plant. So They Wash Their Hand Using Drinking Water which is not sanitary or organized.	TRUE	Recommended
TA 2007 362	902	TRUE	MS	There Are Many Steel Valves In Area 31, They Are Damaged By The Nature Of The Water. They Should Be Changed To PVC Type.	TRUE	Recommended
TA 2007 363	641	TRUE	MS	To Inspect Vapor Console On T-1901-3 The Inlet Pipes Must Be Removed which will require lifting and some mechanical work force. But if we insert a Spool In T1901-3 Inlet Pipe we will be able to Reduce Time And Effort And Usage Of Lifting.	TRUE	Recommended
TA 2007 364	1078	TRUE	PLS	To Highlight On Daily Basis In The Progress Shutdown Report The Status Of Addition Material Required that Was Not Included In Material Reservation Budget.	TRUE	Recommended
TA 2007 365	1078	TRUE	PLS/MS	To Avoid As Much As Possible Not To Award The Most Of The Major Jobs To One Contractor.	TRUE	Recommended
1078	TRUE		PLS/MS	To Avoid As Much As Possible Merging The Manpower Supply Contractor With Major Job Contractor [I.E. MCSC]	TRUE	Recommended

General Corrosion survey

- ✓ Equipment , piping, structure, and fire proofing , instrumentation
- ✓ Done every 6 years

Close Print Check Equipment Details Edit Document Check RBI Data Send

Date:	20/03/2007	Reference
Category :	Ammonia	Equip/Lin
Unit:	02	Equip/Lin
Subject : External corrosion survey-Unit 02		
Attachments :		
Prepared by	Nader Abdulrahim	
For Information	TSM, POM, MTM, MMS, CE, MOS, US, URS, WS, SS	
For Action	AS, PLS.	
OBSERVATIONS :		
External corrosion survey of unit 02 equipment was carried out on 18/3/2007. The survey applicable to extend the scope of inspection if considered necessary due to external indicators.		
The general condition of the unit equipment and associated piping were observed to be satisfactory.		
The finding are summarized below		
Equipment	Name	Action Required
E0200	Extraction Cooler	Satisfactory
E0201A	Interstage Cooler	Satisfactory
E0201B	Interstage Cooler	Satisfactory
E0201C	Interstage Cooler	Satisfactory
E0202	Surface Condenser	End cover to be painted. Note: this can be done after the T/A
EU0202-1A	Oil Cooler	Satisfactory
EU0202-1B	Oil Cooler	Satisfactory
F0200	Extraction Separator	Satisfactory
F0201A	Interstage Separator	Satisfactory
F0201B	Interstage Separator	Satisfactory



General view shown the clamp

Fire Proofing compound at support



View of the Methanol line at supports

view of crack in the fire proofing compound in the ground elbow near road C

Back