

Air Force Materiel Command

Developing, Fielding, and Sustaining America's Aerospace Force



U.S. AIR FORCE

Pressure and Hazardous Material Systems (PHMS) Certification

10 May 2011

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Technical Director
USAF/AEDC**

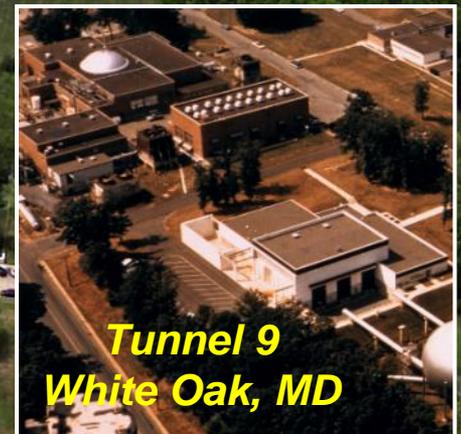
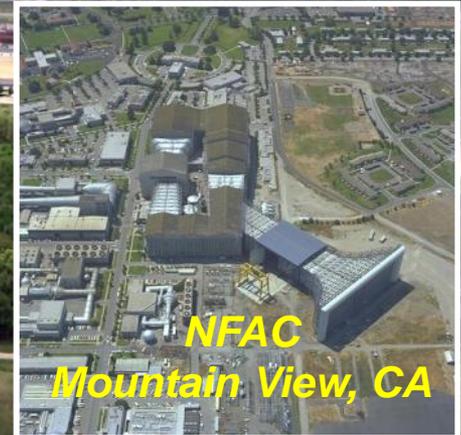
AEDC-2011-060 Distribution Statement A Public Release

Integrity - Service - Excellence

\$11.3 billion replacement value
5-year funding average: \$ 368 million

43 test cells

- **Approximately 2,400 people employed including military, government civilians, and contractor personnel**
- **Approximately 40,000 acres encompassing a 4,000 acre industrial site**





Outline



1. Department of Defense	2. Department of Defense	3. Department of Defense	4. Department of Defense
5. Department of Defense	6. Department of Defense	7. Department of Defense	8. Department of Defense

- **Purpose/Significance**
- **The Goal of Certification**
- **Program History at AEDC**
- **What Qualifies as PHMS?**
- **The Certification Process**
- **Current Status**
- **Future Expectations**
- **Summary**

Purpose/Significance



Office of the President	Office of the Vice President for Academic Affairs	Office of the Vice President for Student Affairs	Office of the Vice President for International Affairs
Office of the Vice President for Research	Office of the Vice President for Information Technology	Office of the Vice President for Health and Safety	Office of the Vice President for Administration

- **The purpose of this briefing is to familiarize the conference attendees with PHMS Certification**
- **Significance of certification**
 - Required to perform the mission.
 - Aging systems, budgets stretched to cover mnx
 - Systems lack tech data and configuration history.
 - No in-service inspection
 - Severe system failures (NASA, DoD and Industry).
 - Significant potential energy (hazard/severity)
 - We have demonstrated certification can be performed at a fraction of replacement cost (10%)



Intent



1. Department of Defense	2. Department of Defense	3. Department of Defense	4. Department of Defense
5. Department of Defense	6. Department of Defense	7. Department of Defense	8. Department of Defense

- **Bring aged/unknown configurations up to Code.**
- **Reduce operational risk/lower probability of failure.**
- **New PHMS would be acquired and maintained to Code by other projects.**
- **Once a system is certified, it would be maintained in a certified condition-configuration.**

The Goal of Certification



ANS	ANS	ANS	ANS
ANS	ANS	ANS	ANS

- 1. Provide the baseline documentation verifying that a pressure system was designed, constructed, inspected, repaired and tested in accordance with applicable codes and standards.**
- 2. Provide a system that is considered safe for operation at AEDC.**
- 3. Create ISI plans and PM procedures**
 - a) To maintain certification.**
 - b) Monitor for areas of degradation in the future.**

Program History at AEDC



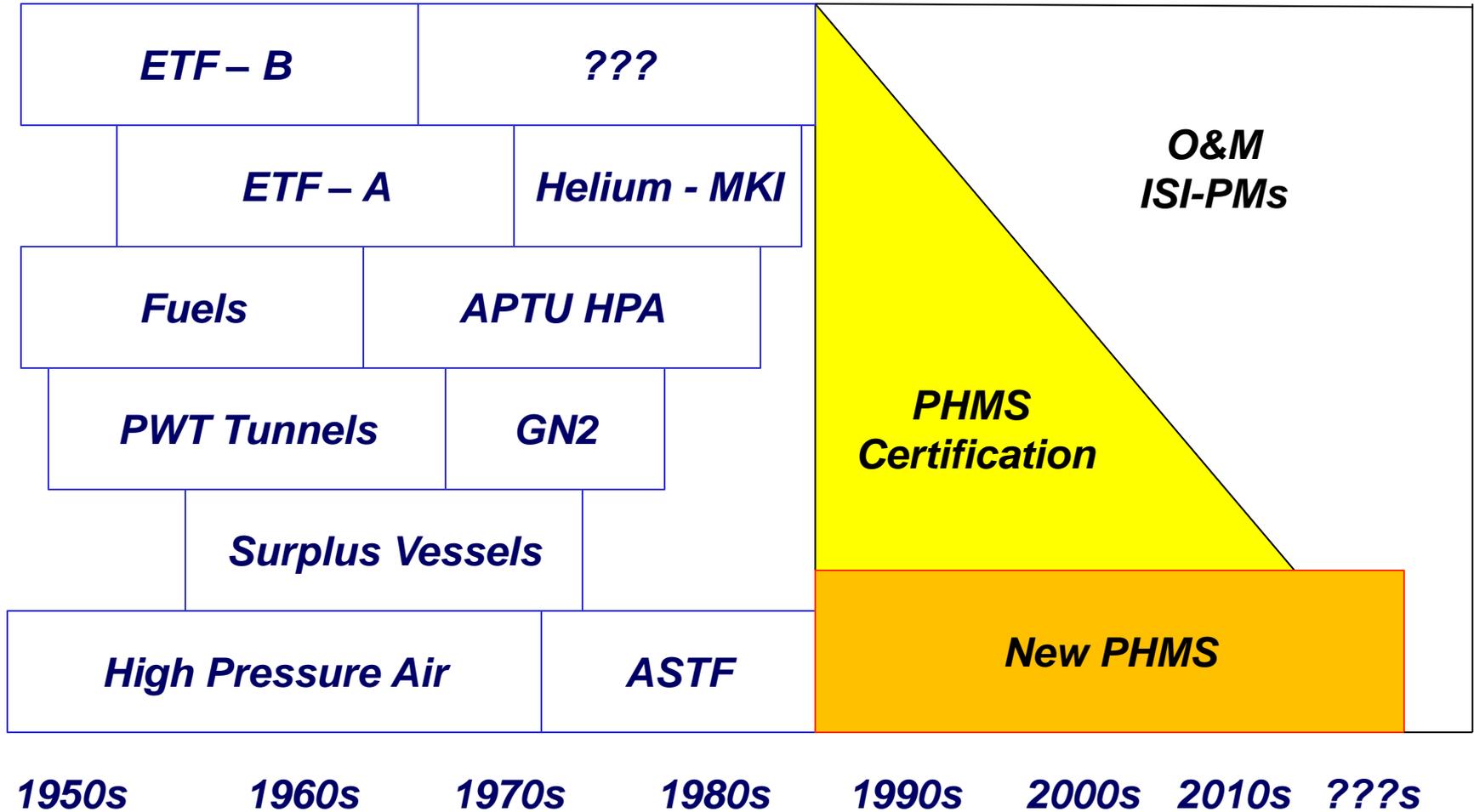
1. AEDC	2. AEDC	3. AEDC	4. AEDC
5. AEDC	6. AEDC	7. AEDC	8. AEDC

- **AEDC program began in 1989 with award of certification contract.**
 - Approximately \$3M/year program (\$60M/20 yrs).
 - 150 original systems.
 - Decisions at initial contract award not to include J6, ASTF, SL, Hydraulics.
- **AEDC PHMS Systems have a replacement value > \$500M (estimate) .**

Program History at AEDC



1. AEDC	2. AEDC	3. AEDC	4. AEDC
5. AEDC	6. AEDC	7. AEDC	8. AEDC



PHMS by Definition



1. University of Mississippi	2. Department of Mechanical Engineering	3. Department of Industrial Engineering	4. Department of Chemical Engineering
5. Department of Civil Engineering	6. Department of Environmental Engineering	7. Department of Environmental Health and Safety	8. Department of Safety

- **Non-Category D pressure systems**
 - The design gauge pressure exceeds 150 psi
 - The design temperature is less than -20 or greater than 366°F
 - The fluid handled is flammable or toxic
- **Any additional system that is deemed to be mission critical can be included.**
- **Defined in AEDC Safety and Pressure Design Standards.**



Exclusions



Office of the President	Office of the Vice President for Academic Affairs	Office of the Vice President for Student Affairs	Office of the Vice President for Administration
Office of the Vice President for International Affairs	Office of the Vice President for Information Technology	Office of the Vice President for Research and Innovation	Office of the Vice President for Safety and Security

- **Plumbing, Sewer Systems, Potable Water Supply Piping.**
- **Non-Industrial Fire Sprinkler Piping.**
- **Electrical Conduit.**
- **Test Articles.**
- **Facility Heating, Ventilating, and Air Conditioning.**
- **Piping of Plastic, Glass, or Any Nonmetallic Material.**

Note: Defined in AEDC Safety and Pressure Design Standards.

Types of Systems Certified by PHMS



1. Safety of Life	2. Safety of Property	3. Safety of Environment	4. Safety of Health
5. Safety of Production	6. Safety of Quality	7. Safety of Efficiency	8. Safety of Reliability

High Pressure Air



Types of Systems Certified by PHMS



1. Quality Management System	2. Safety Management System	3. Environmental Management System	4. Occupational Health and Safety Management System
5. Information Management System	6. Financial Management System	7. Human Resource Management System	8. Project Management System

- Gaseous Nitrogen



Types of Systems Certified by PHMS



1. Pipeline Safety	2. Hazardous Materials	3. Pipeline Security	4. Pipeline Integrity
5. Pipeline Construction	6. Pipeline Operations	7. Pipeline Maintenance	8. Pipeline Inspection
9. Pipeline Testing	10. Pipeline Repair	11. Pipeline Replacement	12. Pipeline Decommissioning

- Liquid Nitrogen



Types of Systems Certified by PHMS



1. Safety	2. Health	3. Environment	4. Security
5. Quality	6. Reliability	7. Integrity	8. Compliance

- Liquid Oxygen



Types of Systems Certified by PHMS



1. Pipeline Safety	2. Hazardous Materials	3. Pipeline Safety	4. Pipeline Safety
5. Pipeline Safety	6. Pipeline Safety	7. Pipeline Safety	8. Pipeline Safety

JP Fuels



Types of Systems Certified by PHMS



1. Safety of Life	2. Safety of Property	3. Safety of Environment	4. Safety of Health
5. Safety of Production	6. Safety of Operations	7. Safety of Maintenance	8. Safety of Inspection

- Steam



Types of Systems Certified by PHMS



1. Safety of the	2. Safety of the	3. Safety of the	4. Safety of the
5. Safety of the	6. Safety of the	7. Safety of the	8. Safety of the

- Fire Suppression



Types of Systems Certified by PHMS



1. Penyelenggaraan	2. Pemeliharaan	3. Pengawasan	4. Pengujian
5. Pengoperasian	6. Pengangkutan	7. Penghapusan	8. Penggantian

- Gaseous Helium



Types of Systems Certified by PHMS



1. Safety of the system	2. Integrity of the system	3. Reliability of the system	4. Availability of the system
5. Environmental protection	6. Health and safety of personnel	7. Compliance with regulations	8. Cost-effectiveness

- Butane



Types of Systems Certified by PHMS



PHMS	PHMS	PHMS	PHMS
PHMS	PHMS	PHMS	PHMS

- Process Air (Wind Tunnel Ducting)



Certification Requirements



Office of the President	Office of the Vice President for Academic Affairs	Office of the Vice President for Student Affairs	Office of the Vice President for International Affairs
Office of the Vice President for Research	Office of the Vice President for Health Affairs	Office of the Vice President for Information Technology	Office of the Vice President for Administration

- **A pressure system is certified when inspection, analysis, and testing are performed and documented in accordance with the requirements of AEDC Engineering & Safety Standards.**
- **Certification of an existing system whose history is not well documented, may be accomplished through reverse engineering/analysis, inspection, and test.**
- **Existing systems shall be certified as resources become available or when modified.**
- **Certification documentation for pressure systems, provided in a Certification Report, shall be retained by the support contractor or organization responsible for the pressure system.**

The Certification Report



1. AEDC	2. AEDC	3. AEDC	4. AEDC
5. AEDC	6. AEDC	7. AEDC	8. AEDC

- **PHMS CERTIFICATION REPORT.**
 - The Certification Report includes documentation verifying that a pressure system was designed, inspected, and tested in accordance with AEDC-ENGR-STD-T-2 and is safe for operation at AEDC.
 - The Certification Report is broken down into 8 sections at AEDC.

8 Steps to Certification



1. University of the Philippines	2. Department of Education	3. Department of Health	4. Department of Labor
5. Department of Transportation	6. Department of Agriculture	7. Department of Environment and Natural Resources	8. Department of Social Welfare and Development

- **Section 1.0**
 - **Project Plan**
 - This section defines the technical approach used to certify the piping system.
 - This section shall include a description of the system, existing records, the design and operating conditions, as well as man-hour estimates and schedule.
 - **Non-Destructive Examination (NDE) Plan**
 - This section contains the initial NDE to confirm design parameters and identify deficiencies.
 - NDE requirements, acceptance criteria, and supporting tasks are also contained here.

8 Steps to Certification



1. Project Approval	2. Project Definition	3. Project Planning	4. Project Execution	5. Project Closeout
6. Project Review	7. Project Evaluation	8. Project Reporting	9. Project Archiving	10. Project Completion

- **Kickoff meetings are held with Asset Owners, System Engineers, and PHMS Personnel.**



8 Steps to Certification



1. University of the Philippines - Diliman	2. University of the Philippines - Diliman	3. University of the Philippines - Diliman	4. University of the Philippines - Diliman
5. University of the Philippines - Diliman	6. University of the Philippines - Diliman	7. University of the Philippines - Diliman	8. University of the Philippines - Diliman

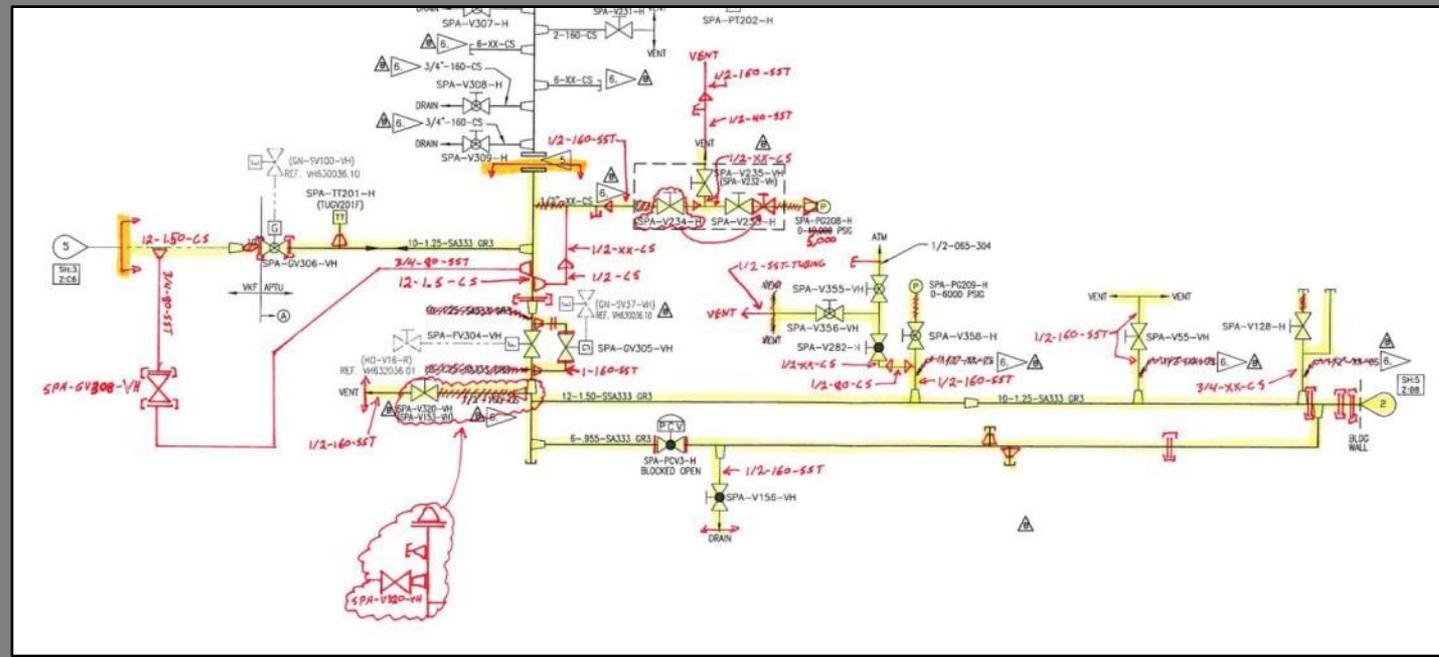
- **Section 2.0: Config Identification Report**
 - **Collection and review of available documentation pertaining to the Project.**
 1. **System Schematics and Fabrication or Construction Drawings**
 2. **Device and Component Data**
 3. **Dimensional and As-built Data**
 4. **Piping and Component Material Identification**
 - **System schematic redlined to reflect the current configuration.**
 - **Device and component ratings verified.**
 - **List of deficiencies found during the identification effort.**

Sample of a Redlined Schematic



1. Approved by	2. Approved by	3. Approved by	4. Approved by
5. Approved by	6. Approved by	7. Approved by	8. Approved by

Device No.	Description	Manufacturer	Model	Size	Rating	Design Pressure	Remarks
SPA-GV308-VH	Valve, Ball	US Para Plate	4-80334	3/4	6130 @ -65 to 120	4400 @ 110	SN: HSA967
SPA-V205-H	VENTURI	FLOW-DYNE	NOR0100-SA	1/2" IPT	4870 PSIG	4400 PSIG	THROAT = 0.100"
SPA-V204-H	VENTURI	FLOW-DYNE	NOR0100-SA	1/2" IPT	4870 PSIG	4400 PSIG	THROAT = 0.100"
SPA-V203-H	VENTURI	FLOW-LIN	4400 PSIG	4400 PSIG	4400 PSIG	ORANGE # F-17219-4	
SPA-V202-H	VENTURI	FLOW-LIN	4400 PSIG	4400 PSIG	4400 PSIG	ORANGE # F-17219-3	
SPA-V201-H	VENTURI	FLOW-LIN	4400 PSIG	4400 PSIG	4400 PSIG	ORANGE # F-17219-2	
SPA-V200-H	VENTURI	FLOW-LIN	4400 PSIG	4400 PSIG	4400 PSIG	ORANGE # F-17219-1	
SPA-V208-H	VALVE, MANUAL	DE	1/2" NPT	18300 PSIG	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V206-H	VALVE, MANUAL	JAMESBURY	SP4MABRT	1/2" NPT	4500 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V205-VH	VALVE, MANUAL	JAMESBURY	SP4MABRT	1/2" NPT	4500 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V222-H	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V227-H	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V226-H	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V225-VH	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V224-H	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V243-H	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V242-H	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V241-H	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V235-VH	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V234-H	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK
SPA-V233-H	VALVE, MANUAL	PARKER	HELVTF	1/2" NPT	4400 PSIG	4400 PSIG	7 VALVE BLOCK

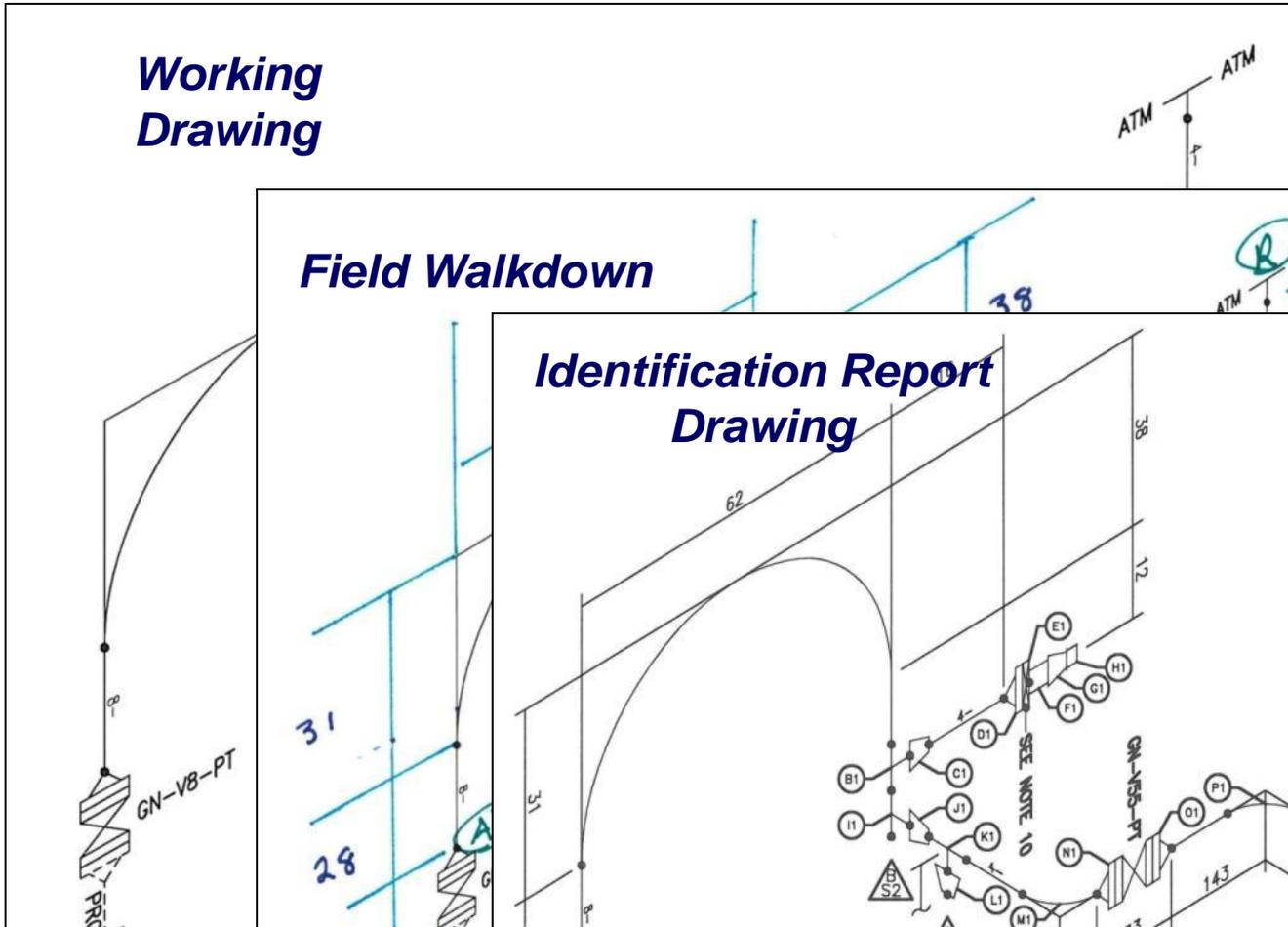


Verification of Field Configuration

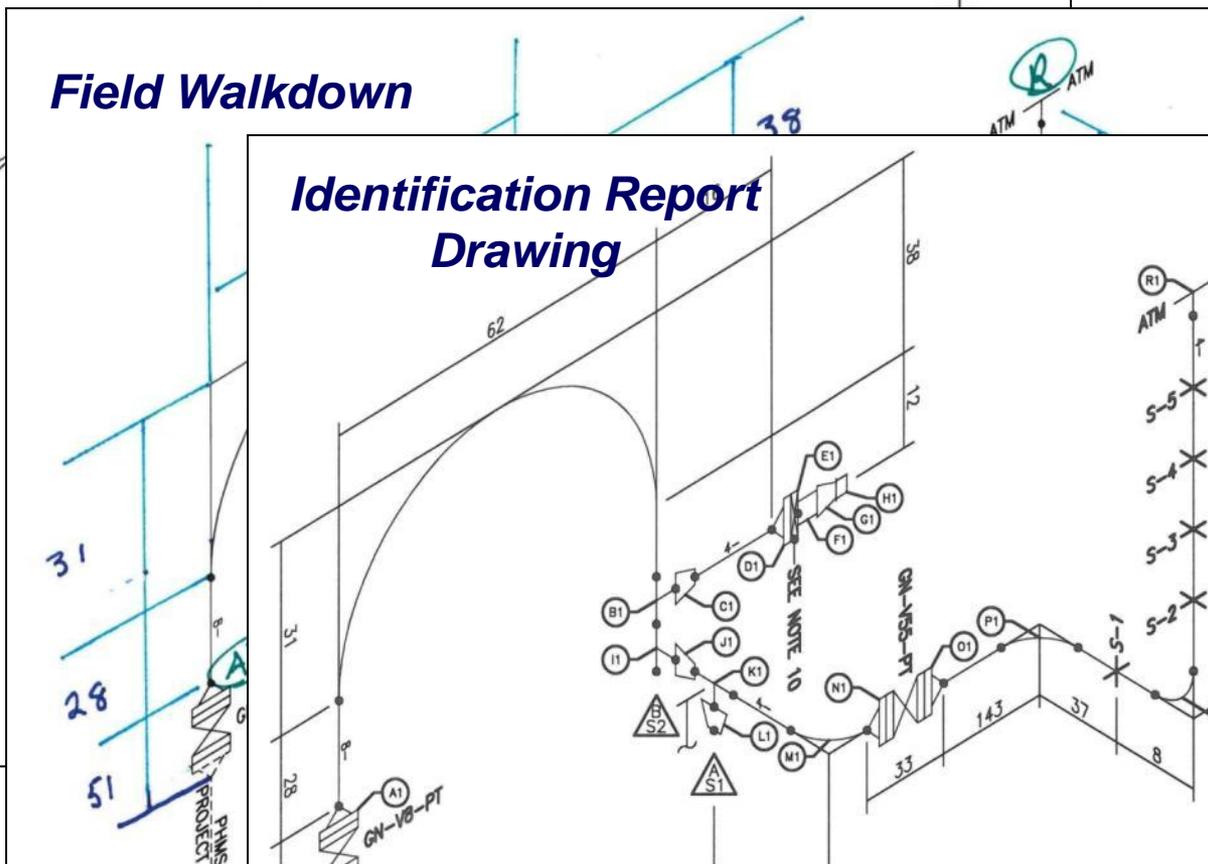


1. Name of the Project	2. Name of the Engineer	3. Name of the Supervisor	4. Name of the Professor
5. Name of the Institute	6. Name of the Department	7. Name of the Faculty	8. Name of the School

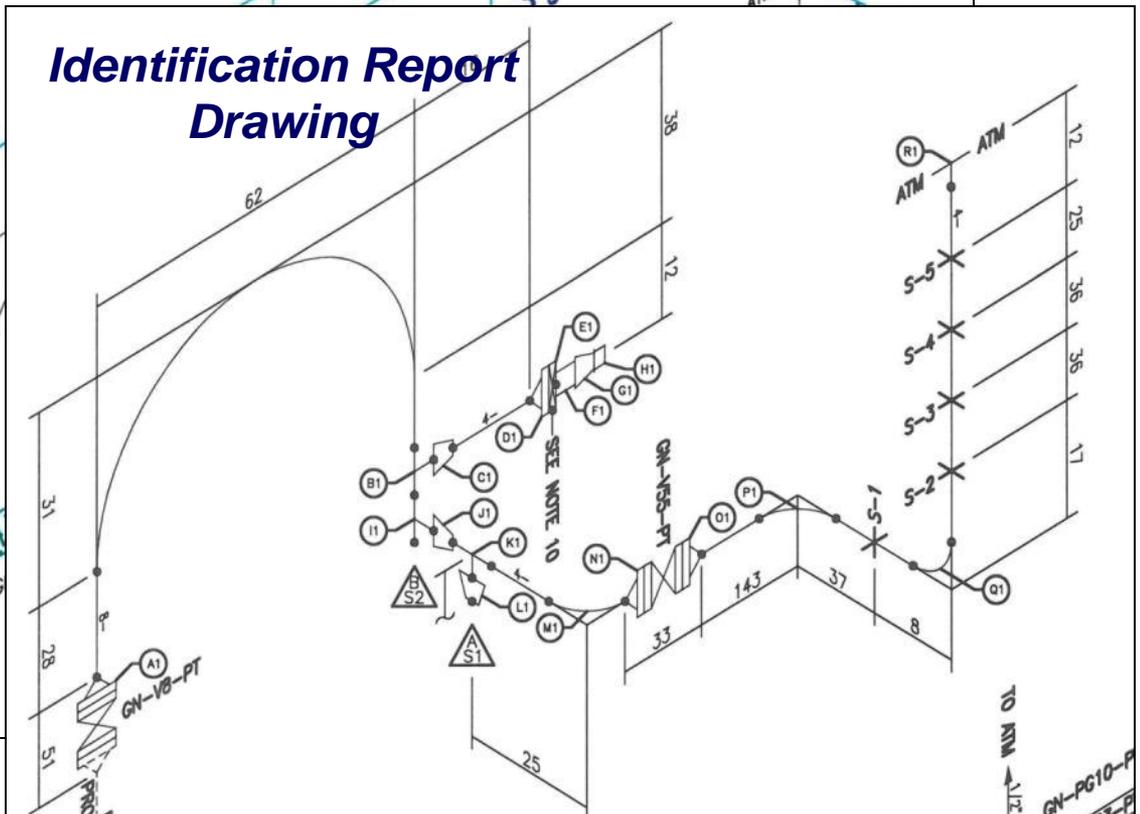
Working Drawing



Field Walkdown



Identification Report Drawing



8 Steps to Certification



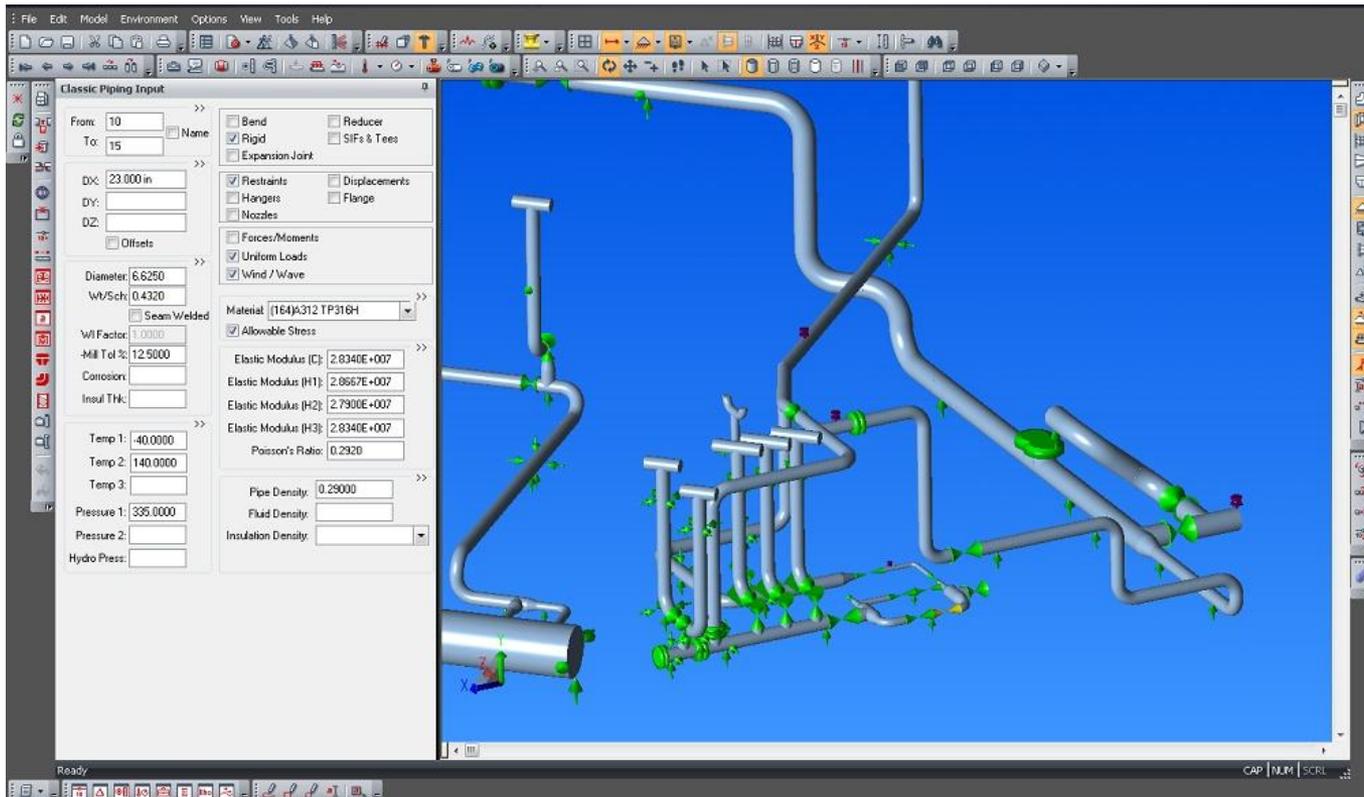
1. University of Houston	2. University of Houston	3. University of Houston	4. University of Houston
5. University of Houston	6. University of Houston	7. University of Houston	8. University of Houston

- **Section 3.0: Evaluation Report**
 - This section shall include calculations performed to verify existing system design.
 - The evaluation identifies localized problems.
 - inadequate pipe wall thickness
 - incorrect pressure rating
 - inadequate piping supports
 - All pressure retaining components of the piping system are reviewed to determine that their allowable pressure ratings are adequate for the system design.
 - Relief valve certification, pressure gauge calibration and system safety issues are addressed.
 - A combination of fatigue, fracture and finite element analyses may be used to analyze indications identified during nondestructive evaluation (NDE).

CAESAR II™ Pipe Stress and Flexibility Analysis



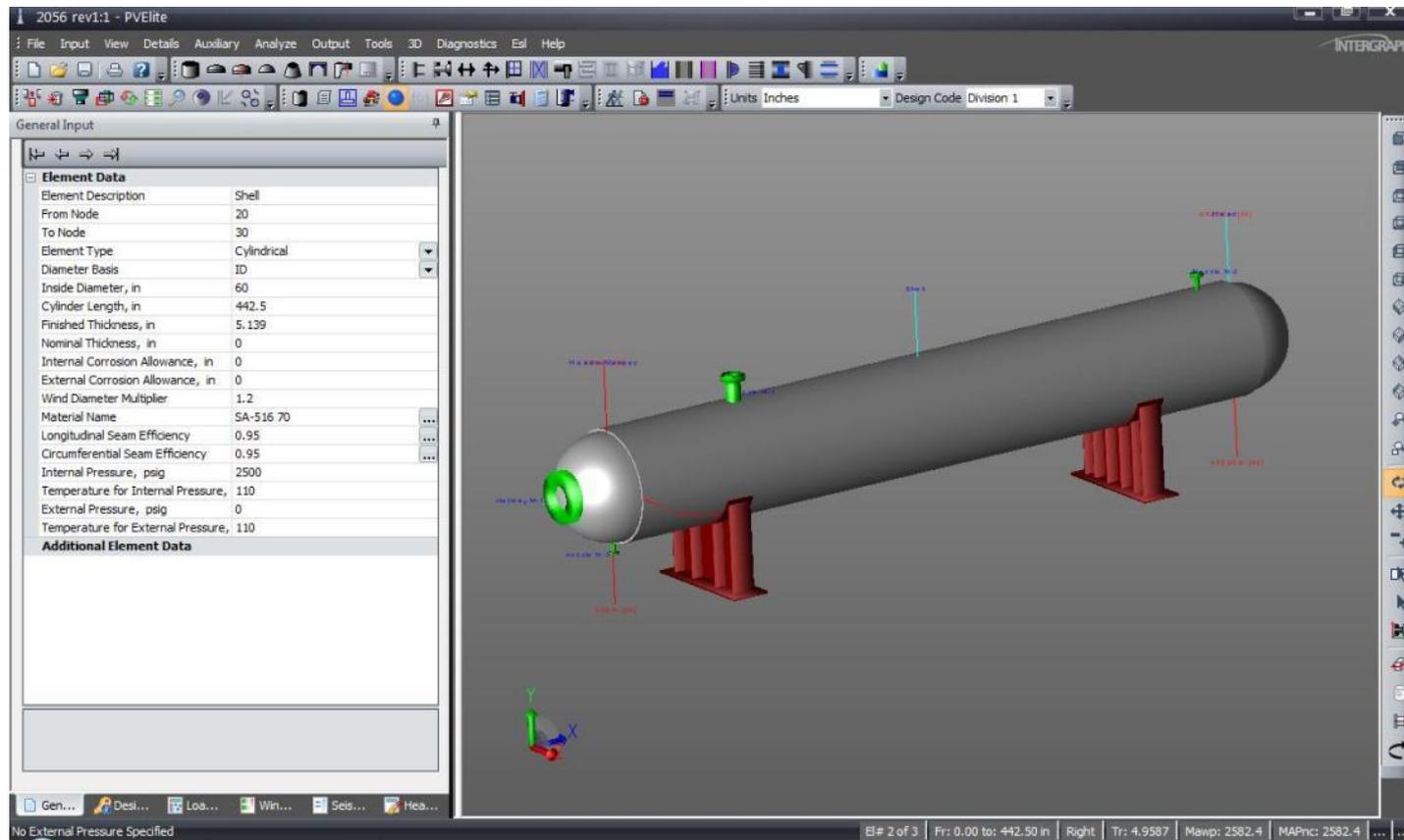
- To confirm that it is safe to operate the system at pressures up to the design conditions and within the operating envelope.



PVElite™ Pressure Vessel Analysis



- Pressure vessels are evaluated based on ASME B&PV Code.



8 Steps to Certification



1. Quality Management System	2. Personnel	3. Equipment	4. Facilities
5. Calibration	6. Inspection and Test Plans	7. Inspection and Test Reports	8. Certification

- **Section 4.0 - NDE**
 - All accessible surfaces of piping, vessels, devices, components & supports are visually examined.
 - UTT measurements are taken to verify wall thickness and aid in evaluating areas of corrosion.
 - A weld map identifying major components of the system and approximate weld locations is created.
 - All thickness measurements and any deficiencies identified are forwarded to engineering for evaluation and disposition.



Typical Inspections Performed



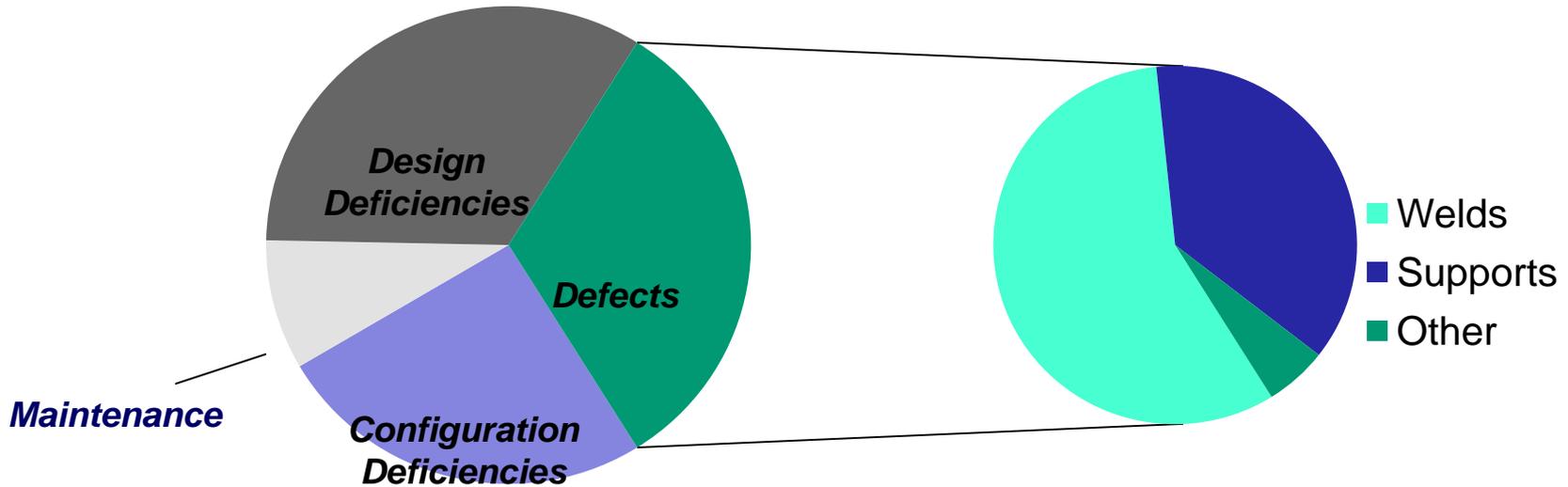
1. Quality of Work	2. Quantity of Work	3. Cost of Work	4. Safety of Work
5. Efficiency of Work	6. Reliability of Work	7. Durability of Work	8. Flexibility of Work

- **Visual Examination (VT)**
 - Piping and Vessels / Internal and External
- **Ultrasonic Thickness Testing (UTT)**
- **Magnetic Particle Testing (MT)**
- **Liquid Penetrant Testing (PT)**
- **Radiographic Testing (RT)**
- **Bubble Leak Testing (BLT)**
- **Additional Methods Available**

Common Defects



1. Quality Management System	2. Quality Control System	3. Quality Assurance System	4. Quality Improvement System
5. Quality Management System	6. Quality Control System	7. Quality Assurance System	8. Quality Improvement System

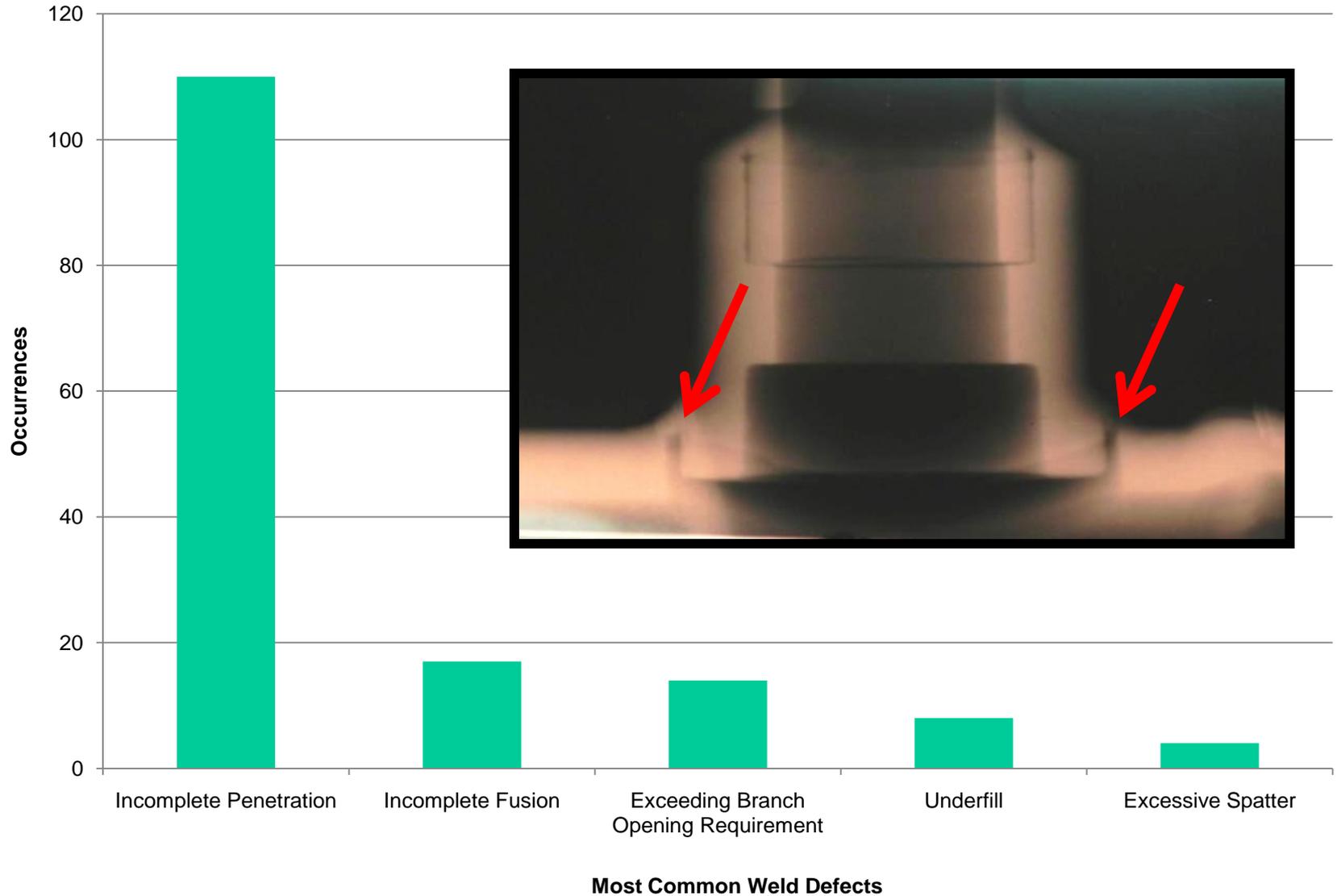


Each piping system, including components and workmanship, shall be examined in accordance with the applicable requirements of AEDC Engineering Standards and National Consensus Codes. Techniques used include: Visual, Ultrasonic Thickness, Magnetic Particle, Liquid Penetrant, and Radiographic tests.

Weld Defects Summary (6 Projects)



1. Project Name	2. Project Location	3. Project Start Date	4. Project End Date
5. Project Manager	6. Project Sponsor	7. Project Budget	8. Project Status



Visual Examination



1. Penyelidikan dan Penyelidikan	2. Penyelidikan dan Penyelidikan	3. Penyelidikan dan Penyelidikan	4. Penyelidikan dan Penyelidikan
5. Penyelidikan dan Penyelidikan	6. Penyelidikan dan Penyelidikan	7. Penyelidikan dan Penyelidikan	8. Penyelidikan dan Penyelidikan



Ultrasonic Thickness



1. Penyelidikan dan Penyelidikan	2. Penyelidikan dan Penyelidikan	3. Penyelidikan dan Penyelidikan	4. Penyelidikan dan Penyelidikan
5. Penyelidikan dan Penyelidikan	6. Penyelidikan dan Penyelidikan	7. Penyelidikan dan Penyelidikan	8. Penyelidikan dan Penyelidikan

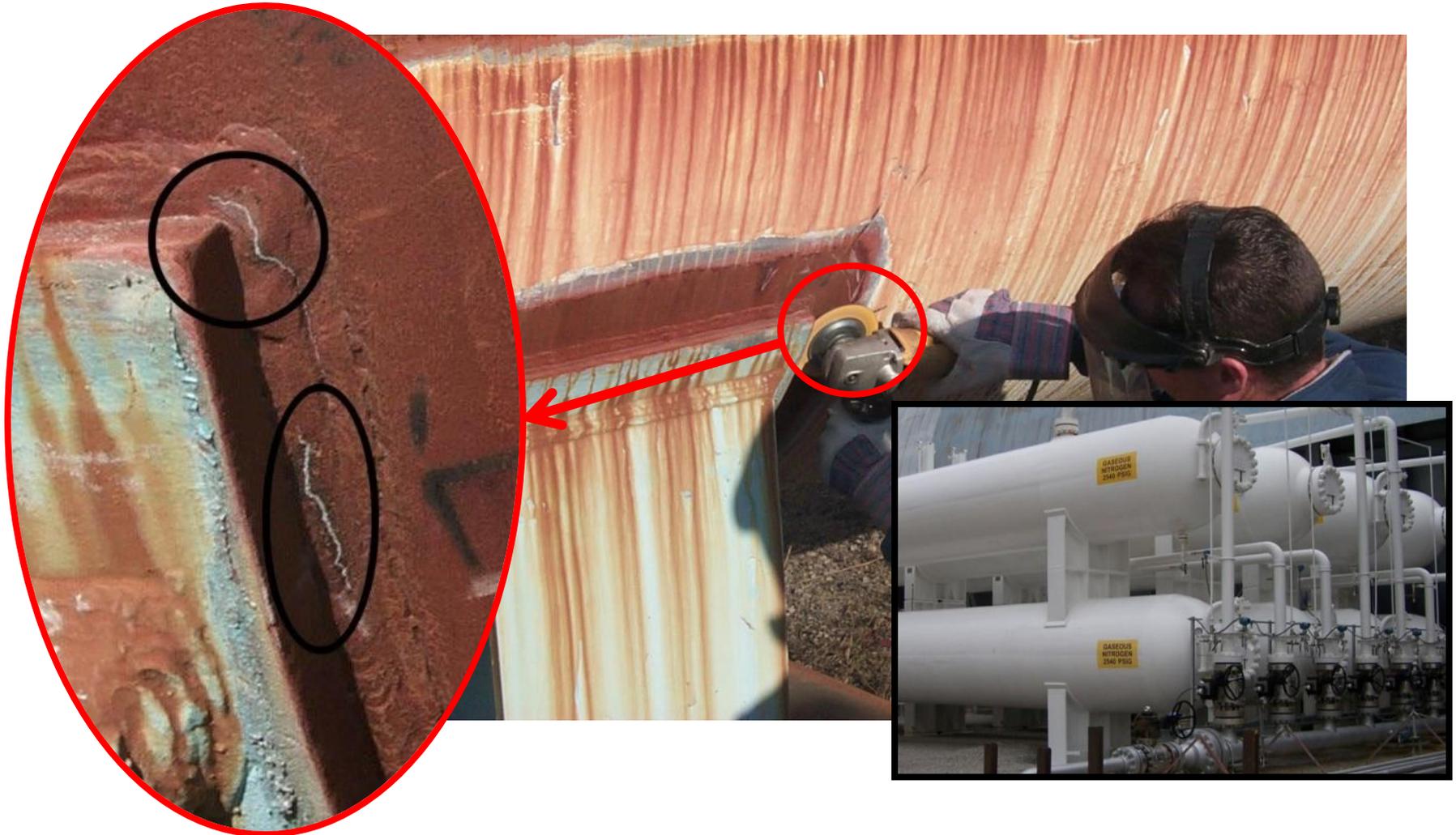


Magnetic Particle



1. To provide	2. To provide	3. To provide	4. To provide
5. To provide	6. To provide	7. To provide	8. To provide

Crack in Saddle Support Weld



Liquid Penetrant



1. To meet the	2. To meet the	3. To meet the	4. To meet the
5. To meet the	6. To meet the	7. To meet the	8. To meet the

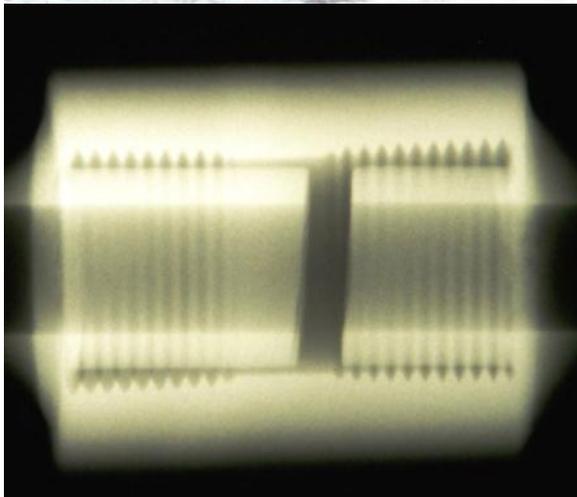


Radiographic Testing



1. University of Tennessee	2. Department of Nuclear Engineering	3. Radiographic Testing	4. Non-Destructive Testing
5. Radiographic Testing	6. Radiographic Testing	7. Radiographic Testing	8. Radiographic Testing

Uncommon Defect No Thread Engagement



Bubble Leak



1. Nama	2. No. Matrik	3. Nama Pengeri	4. Nama Penyelia
5. No. Matrik	6. Nama Pengeri	7. Nama Penyelia	8. No. Matrik



Additional Methods



1. Faculty of Engineering	2. Department of Mechanical Engineering	3. Department of Industrial Engineering	4. Department of Chemical Engineering
5. Department of Civil Engineering	6. Department of Environmental Engineering	7. Department of Electrical Engineering	8. Department of Electronic Engineering

- **UT Volumetric/Shear Wave Testing**
- **Eddy Current Testing**
- **Acoustic Emission Testing**
- **Helium Mass Spectrometer Test**
- **Magnetic Flux Leakage Testing**
- **Vacuum Decay Test**
- **Cold Shock Test**
- **Bore Scope/Bore Probe**
- **Hydrostatic Pressure/Leak Test**
- **Pneumatic Pressure/Leak Test**

Planning and Tracking NDE



1. Date of Issue	2. Date of Review	3. Date of Approval	4. Date of Completion

NDE Matrix

ITEM	VT	RT	MT	PT	UT	HPT/PPT	HLT/PLT	CERT/CAL
Piping	ASD	ASD		ASD	ASD	X	X	
Supports	ASD			ASD				
Dehydrator	ASD		ASD		ASD			
Filter	ASD				ASD			
Heat Exchangers	ASD				ASD			
Pressure Gauges	ASD							X
Relief Valves	ASD							X

NDE Traveler

NDE TEST PLAN					
PACKAGE CONTENTS	YES	NO	PACKAGE CONTENTS	YES	NO
1. NDE Plan	X		6. Schedule		X
2. Drawings	X		7. NDE Reports	X	
3. Sketches		X	8. NDE Matrix	X	
4. Work Clearance	X		9. Specification		X
5. Facility Impact		X	10. Other		X

NDE REQUIREMENTS		
DISCIPLINE	DISPOSITION	STATUS
VT	Approved	Completed
RT	Approved	Completed
PT	Approved	Completed
UT	Approved	Completed
MT	Approved	Completed
HPT/PPT		
HLT/PLT		
GAGECAL		
RVCERT		

8 Steps to Certification



1. University of the Philippines	2. Department of Education	3. Bureau of Technical Education	4. Bureau of Vocational Education
5. Bureau of Secondary Education	6. Bureau of Elementary Education	7. Bureau of Higher Education	8. Bureau of Adult Education

- **Section 5.0 - Monitor Report & Deficiency Correction**
 - **Documentation of repairs and corrections made as a result of inspection or analysis.**
 - **Documents shall include.**
 - **Repair procedures used**
 - **Follow up NDE Reports**
 - **Revised drawings**
 - **Additional calculations as necessary**

8 Steps to Certification



1. University of the Philippines	2. Department of Mechanical Engineering	3. Institute of Mechanical Engineering	4. Office of the Dean
5. Office of the Registrar	6. Office of the Controller	7. Office of the Treasurer	8. Office of the Director of Student Services

- **Section 6.0 - Final Certification Tests.**
 - Pressure system test certificates shall be completed for each test.
 - This section shall include documentation verifying pressure system relief devices and pressure gauges have been pressure tested or calibrated for the intended service.
 - Relief device certificates shall specify model number, serial number, set points, orifice size, flow capacity verified, and signature of test technician.
 - Gauges shall be checked against a calibrated gauge during system pressure test.

8 Steps to Certification



1. University of the Philippines - Diliman	2. Department of Electrical Engineering	3. Power and Energy Engineering Institute	4. Center for Power and Energy Research
5. Center for Power and Energy Research	6. Center for Power and Energy Research	7. Center for Power and Energy Research	8. Center for Power and Energy Research

- **Section 7.0 In-Service Inspection/Test Plan.**
 - To maintain confidence in the safety of certified systems, an in-service inspection test program shall be established and executed.
 - Inspection is performed as part of the Center's preventive maintenance program to ensure continued safe, reliable and effective operation as well as to maintain the certification of the PV/S.
 - The system specification must be reviewed to ensure it remains accurate and current.
 - During walkdown, components or devices must be examined for damage, wear, corrosion, loose, missing parts, etc.
 - Any problem and/or discrepancy must be forwarded for resolution.

8 Steps to Certification



1. Safety of the system	2. Safety of the personnel	3. Safety of the environment	4. Safety of the equipment
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**SAMPLE ISI PLANNING MATRIX
PROJECT 4021 PMEL GN2 SUPPLY SYSTEM**

Description	Initial Cert. (2010)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
pressure vessels	VT, UTT, MT, RT, HPT					VT, UTT, RT					VT, UTT
pipng	VT, UTT, PT, RT, PPT, HPT, BLT					VT, UTT					VT, UTT
tubing	VT, UTT, BLT					VT, UTT, BLT					VT, UTT, BLT
pipng supports	VT					VT					VT
hand regulators	VT, C					VT					VT
filters	VT					VT					VT
pressure gauges	VT, C					VT					VT
Relief Devices	VT, RDC					VT					VT
system	CIVR	CIVR	CIVR	CIVR	CIVR	CIVR**	CIVR	CIVR	CIVR	CIVR	CIVR**

CIVR**: Every fifth year, the system engineer/manager or designee shall be accompanied by a person designated by the operating contractor's Safety Office and knowledgeable in pressure systems, to perform the CIVR.

Notes: (1) The inspection intervals listed in this matrix are based on applicable codes and standards, findings at the baseline inspection, and results of the certification analyses/evaluation. The inspection intervals shall be reviewed and adjusted throughout the life of the system to incorporate safety related code changes, unanticipated rates of degradation, or other relevant factors.

EXAMINATION AND TEST METHODS

RT = Radiographic Testing	HLT = Hydrostatic Leak Test	HMST = Helium Mass Spectrometer Test
UTT = Ultrasonic Testing	ET = Eddy Current Testing	MT = Magnetic Particle Testing
VT = Visual Testing	CIVR = Configuration Item Verification Review	HPT = Hydrostatic Pressure Test
PT = Liquid Penetrant Testing	BLT = Bubble Leak Test	R = Recertification Required
UTV = Ultrasonic Volumetric Test	AET = Acoustic Emission Testing	MFL = Magnetic Flux Leakage Testing
PPT = Pneumatic Pressure Test	RDC = Relief Device Certification	VDT = Vacuum Decay Test
PLT = Pneumatic Leak Test	C = Calibration	CST = Cold Shock Test

8 Steps to Certification



1. University of the Philippines	2. Office of the President	3. Office of the Vice President for Academic Affairs	4. Office of the Vice President for Administration	5. Office of the Vice President for Finance and Administration	6. Office of the Vice President for International Affairs	7. Office of the Vice President for Student Affairs	8. Office of the Vice President for Technology and Information Systems
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- **Section 8 - Summary of Conclusions and Recommendations.**
 - This section consists of any other additional data necessary to document the certification, such as a Physical Configuration Audit (PCA) certificate.
 - A pressure test IAW applicable Code serves as the Functional Configuration Audit (FCA)

Note: Certification does not include flow or system efficiency analysis.

Results of Certification



1. Quality Management System	2. Quality Control System	3. Quality Assurance System	4. Quality Improvement System
5. Quality Management System	6. Quality Control System	7. Quality Assurance System	8. Quality Improvement System

Existing Pipe Under Insulation



Inspected



After Repair



Results of Certification



1. Quality of Work	2. Quality of Work	3. Quality of Work	4. Quality of Work
5. Quality of Work	6. Quality of Work	7. Quality of Work	8. Quality of Work

Crack at Branch Weld



Repaired



Results of Certification



1. Board of Directors	2. Executive Director	3. President of the Board	4. Vice President of the Board
5. Secretary of the Board	6. Treasurer of the Board	7. Chairman of the Board	8. Members of the Board

Pressure Vessels with Multiple Defects



New Replacement Vessels



Results of Certification



1. Nama Unit	2. No. Unit	3. Nama Pegawai	4. No. Pegawai
5. Nama Unit	6. No. Unit	7. Nama Pegawai	8. No. Pegawai

Radiograph showing
Rejectable Weld
Indications



Indications in Weld are
Removed



Weld Repaired





Current Status

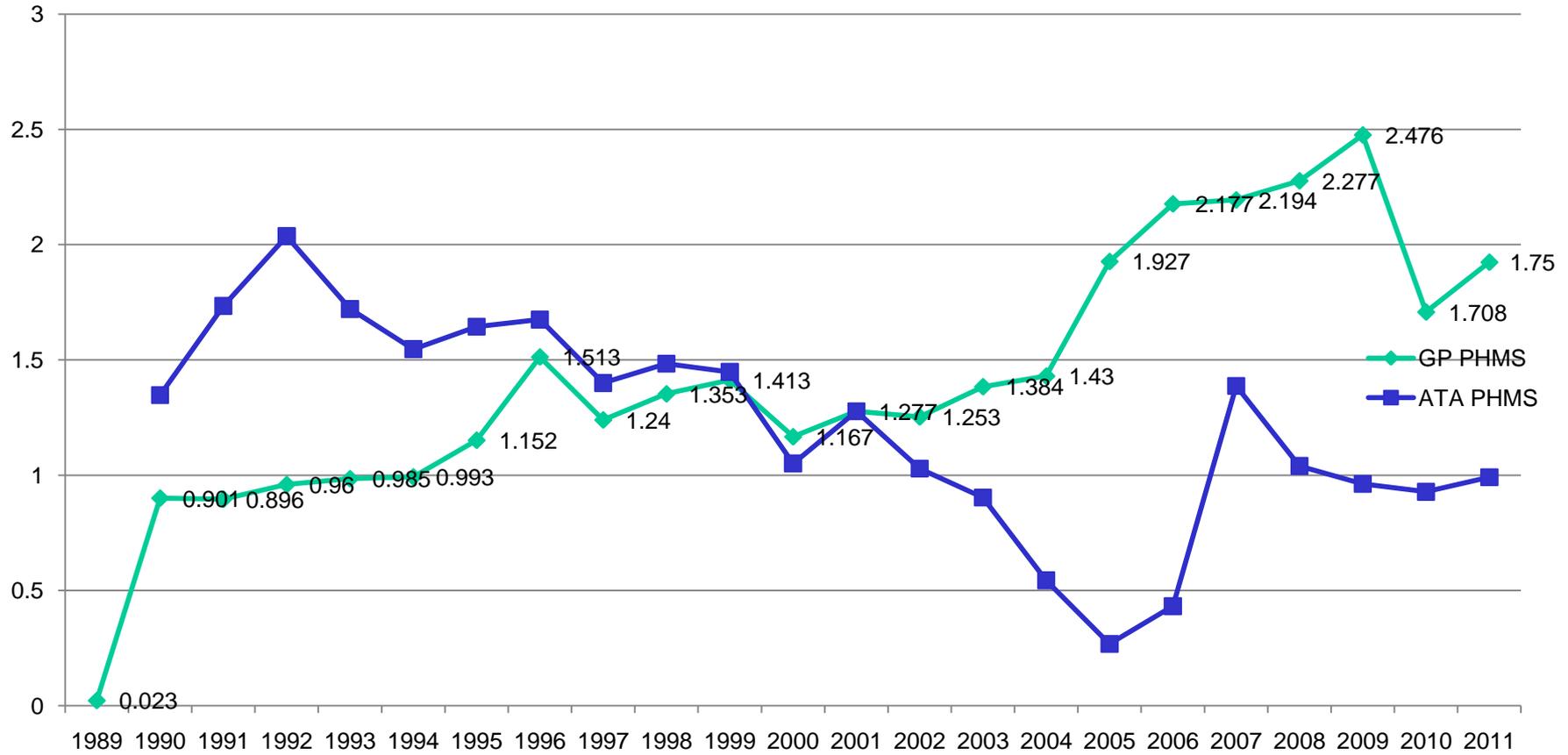


• Completed		159
– Projects Completed	149	
– Studies Completed	10	
• In Progress		63
– Evaluation Phase	30	
– Repair Phase	33	
• Stopped/cancelled		56
• <u>To be Started</u>		<u>59</u>
• Total Projects		337
• Adds (FY11)		
– J4/J6 Steam Distribution		
– Arcs HPA		
• Potential Adds (hydraulics)		

Program Funding



Department of Health Services			
Department of Health Services			



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
GP PHMS	0.023	0.901	0.896	0.96	0.985	0.993	1.152	1.513	1.24	1.353	1.413	1.167	1.277	1.253	1.384	1.43	1.927	2.177	2.194	2.277	2.476	1.708	1.75
ATA PHMS		1.347	1.734	2.037	1.721	1.547	1.644	1.675	1.4	1.484	1.448	1.051	1.277	1.029	0.903	0.544	0.268	0.432	1.387	1.04	0.962	0.928	0.991
PHMS Activities	116	116	116	116	116	116	190	190	190	190	190	190	190	193	205	226	244	268	269	271	316	324	335

Project Level Metrics



Project #	Project Name	Project Status	Project Manager

PHMS Project #	Project Title	Milestone	Description of Work	Milestone completed	% Comp	Notes	MHr. est.	Points avail	Points achieved
Evaluation Phase									
2237	VKF GN2 Bottle- seal air	Kick off	Kick off project and evaluation	11/18/2010	100%	Placed on the stopped work list.			
2235	VKF Dryer 19-HPA	Kick off	Kick off project for evaluation	11/18/2010	100%				
0107	J6 GN2 Vessels	GP Eval/insp Ves 1 & 2	Eval, clean, Hydro, and reinstall		40%	in repair	112 add		
0107	J6 GN2 Vessels	GP evaluation/insp vessel 3 & 4	Disconnect, remove, evaluate, clean, Hydro, and reinstall		0%				
Repair Phase									
3010	C2 GN2	repair/replace	recert. R.V.'s, replace underrated parts, make weld repairs		0%	no access due to testing			
3017	ASTF Heater fuel	repair/replace	replace underrated parts, make weld repairs, modify supports		0%	no access due to testing			
0108	J6 LN2	repair/replace	replace underrated parts, make weld repairs, modify supports		0%	in repair pulled up due to ASTF test			
3002	C1 & C2 GN2 Dist.	repair/replace	replace underrated parts, make weld repairs, modify supports		0%	no access due to testing			
2069	VKF H1B Heater Piping	repair/replace	additional repairs		0%	in work	80		
2051	VKF Process Air Dryer	repair/replace	replace underrated parts, make weld repairs, modify supports		0%	as much repair as outage allows			
3003-1	ASTF Fuel System #1	repair/replace	repair cracks in welds		0%	in repair(pulled up due to testing)			
Close out/PM Establishment									
2069	VKF H1B Heater Piping	Close out	Document repairs & mods for GP		90%				
2250	VKF Seal Air Sys. HPA	Close out	Document repairs & mods for GP		95%				
3001	ASTF GN2 System	Close out	Pressure test/closeout		80%				

Backlog = 3 or more years in evaluation or 2 or more years in repair phase

Future Expectations



1. Air Force	2. Air Force	3. Air Force	4. Air Force
5. Air Force	6. Air Force	7. Air Force	8. Air Force

- **Carryovers, new starts, etc (previously discussed).**
- **Process Improvements – Initiatives.**
 - **New PHMS database created by AF.**
 - **GP-ATA working on PHMS process improvements rolled up from evaluation reports.**
 - **Working to combine FMEA-Certification processes.**
 - **Working to close gaps in HP AIR AP-7200.**
 - **Working new kick-off and close-out KPI/OI.**
 - **Summary of deficiencies and defects to help us improve overall PHMS maintenance and repair.**
 - **Looking at ways to improve new acquisitions, designs, maintenance, welding, material selection, etc.**

Additional FY11 Actions



- **Update T Standards.**
 - **ASME/NB-23 issues (OSHA).**
 - **New vessels should be Code Stamped.**
 - **Issue is with existing non-stamped vessels requiring repair or alteration.**
 - **AFI requires regular hydro tests and other requirements AEDC-does not concur.**
- **Making sure our outside contractors deliver quality welding, properly designed PHMS and records are filed and updated per T Stds.**



Summary



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- **Program supports mission and reduces risk.**
- **Improvement noted in completing repairs and closeout.**
- **Growing number of projects – less funding.**
 - **Other efforts that manage PHMS should be ensuring “re-certification” is not required and that certification is maintained.**
 - **We have averaged 8 projects/yr.**
 - **This adds up to 8 more years w/no more adds.**
- **The importance of sustaining certification and keeping remaining life up to date cannot be overstated!**



Questions?



1. Genel Bilgi	2. Kuruluş	3. Görev ve Yetki	4. Üyeleri
5. Organizasyon	6. Eğitim	7. Araştırma ve Geliştirme	8. İşbirlikleri

