



Fresno, CA
VA Medical Center
Fresno, CA
April 27-29, 2016

Boiler Plant Program Review

Boiler Efficiency Institute LLC.

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5-17-2016

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Boiler Plant Program Review

2 OVERVIEW

Per contract VA255-15-Q-0762 the Boiler Efficiency Institute has been employed to perform a boiler plant program review at 8 VA hospitals from September 2015 – September 2016. A team consisting of VACO personnel and 2 BEI Engineers performed a detailed review of the boiler plant program over the course of three eight hour days.

The primary objective of this work is to provide support documentation to be used to develop a national strategy to strengthen the Boiler Operations program. This review includes qualitative and quantitative surveys of each boiler plants long term plans, leadership, and operational efficiency. This information should help VACO determine which facilities are meeting long term goals and why long term goals are or are not being met.

The team reviewed boiler plant and hospital documentation, conducted interviews with management, conducted interviews with staff, conducted interviews with VISN personnel and performed a few selected safety tests from the Boiler Plant Safety Device Testing Manual 3rd Edition.

Seven sites of interest have been identified for review:

Canandaigua, NY

Fresno, CA

Beckley, WV

Long Beach, CA

Orlando Lake Nona, FL

Durham, NC

Shreveport, LA

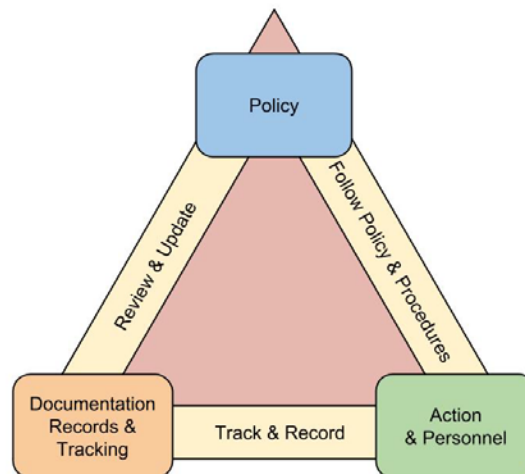
3 EVALUATION CRITERIA

A high performing, safe, and efficient boiler program includes: a complete up to date library of boiler plant policies, personnel who take systematic action, and proper documentation of all maintenance, training, and testing done. Essentially, a boiler program can be evaluated using three distinct categories.

Are there written policies in place?

Are personnel qualified and acting systematically to achieve the requirements of the directive?

Are these actions being properly documented?



Policies are imperative as they guide boiler plant personnel and management on how decisions should be made. Policies give personnel the necessary tools to make routine and emergency boiler plant decisions in the best interest of the facility in support of the mission. Policies must be frequently reviewed to ensure they reflect the facilities current needs in support of the mission.

Actions and the qualified **personnel** that execute them are the heart of any boiler plant program. Boiler plant personnel and management must be qualified for the job at hand and take policy driven, **systematic actions** that result in full compliance with the directive. Though proper action can still occur without them, policy driven actions should be guided by written SOPs. Non-policy driven action based on oral procedure can lead to confusion, non-compliance and reduced operational efficiency.

Documentation and progress **tracking** are also essential parts of a safe and efficient boiler program. Documentation allows boiler plant personnel and management to understand boiler plant trends, verify proper training, and improve operational efficiency. For example, the documentation of safety testing can flush out unseen boiler safety problems. This documentation is also useful to protect operators and is a **record** of how and when personnel accomplish their duties. As the boiler plant changes with time and technology, it is important that documentation be frequently reviewed and updated to reflect the most current state of the boiler plant and its operation.

4 DASHBOARD SUMMARY

Below is a summary of the data collected over the course of a three-day review in Fresno, CA. The data is graphically depicted in figure 4-1. Detailed information is recorded in Section 5 and Appendix A.

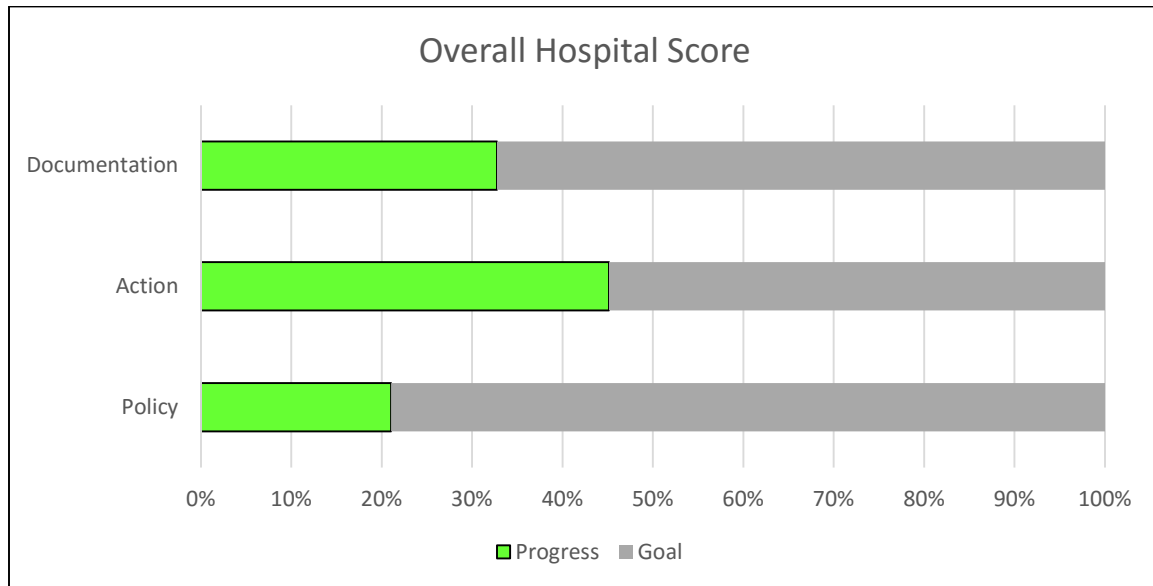


Figure 4-1. Overall Hospital Score

Did sites follow-up and correct deficiencies?

Immediately after the BEI visit, approximately \$170,000 of changes were made. Unfortunately, these changes addressed only a small portion of the deficiencies cited. Most of the changes appear to be respect to the low water safeties but it was difficult to determine the exact nature of the expenditures.

If funding was needed to correct deficiencies was the funding request for local station funds, NRM or other (specify)?

The site did ask for and received NRM funds. Unfortunately, they have not done an in-depth survey to define equipment deficiencies, and, as a result, have not received funding to replace/upgrade numerous pieces of equipment in an old plant. There are numerous examples of the site using local station funds to maintain, replace pieces of boiler equipment.

Did the site receive funding?

They did receive NRM funds for those items requested.

Did the site institute changes, if yes please specify?

They changed leadership and have in place a leadership team capable of achieving a high degree of compliance. Much training and guidance will be required to take advantage of the latent capability to achieve a high level of compliance.

Did the site take action to sustain compliance, if yes specify what actions?

The site did write SOP's for testing but based those on an out of date testing manual. They have tested but their test procedure did not identify any significant corrections that should be made. Management seems eager to institute a sound program to move the facility to compliance.

How was the local program improved?

The site initially installed some equipment to move towards compliance but did not really sustain a sound program.

Overall condition of plant?

The boilers have reached their end of life but plans are underway to install new boilers. New DA and condensate tanks/pump have been installed. The plant is neat, has no leaks, and appears to be efficient.

Engagement of plant operators and supervisor?

Engagement of supervisory personnel is excellent. Boiler plant supervisor and operators genuinely care. They realize they have problems and are determined to improve.

What is the age of the equipment? Is any equipment in need of replacement per VA Directive?

Most of the plant dates from 1978 with the exception of new DA/Condensate tank/pumps which were recently installed. Also the burners were replaced within the last 10 years.

Were the boiler plant operators and supervisors involved in the facility condition assessment?

The supervision appears to have been minimally involved since, for example, the boiler was given an A grade. The consultant made numerous errors in completing the FCA.

Are items on the FCA for the boiler plant being addressed?

Yes. The replacement of the DA/condensate tank and pumps are examples of this action.

Is there a formal local process for bringing up boiler plant deficiencies and is there evidence this is being followed?

An SOP for this activity and most other activities is lacking. New leadership is planning on implementing an SOP for this action. To date, it appears that deficiencies are handled locally at the operational level on an ad hoc basis.

What success has been accomplished i.e. after the BEI safety device inspection? Did they address the other two boilers that BEI did not inspect?

Minimal success as described above. We found that they made improvements to boiler 1 but not boiler 2 or 3.

Were items corrected?

Items were corrected to some extent. Discussions were held about a possible follow-up BEI safety training program that will focus on achieving a near 100% compliance on one boiler to serve as a roadmap for plant personnel to achieve this level of compliance for the entire plant.

Did they address the other plant equipment deficiencies? What processes were put into place to address the corrections on an ongoing basis?

Yes. The DA, DA overflow valve, condensate tank, and pumps are examples of plant items corrected. At present there is no formal process to address corrections on an ongoing basis but plans are underway to develop SOP's for the procedures.

Did the site implement training?

Limited training has been implemented. An example is sending operators to a Cleaver Brooks workshop. Unfortunately, these workshops do not emphasize safety. Management plans to visit the Portland VA and use their resources and experience in developing a training program. Management is considering scheduling BEI training.

Were standard operating procedures put into place or revised, etc.?

Some SOPs were put in place. However, these need updating and used for training. Numerous other SOPs should be developed.

Boiler Safety Device Compliance. (Summary from Safety Device Training conducted April 2016)

Partial safety device testing was performed on one boiler only (subsequent boilers, ancillary devices and general plant safety was not evaluated).

Total Devices Tested	6
Safety Devices Found Fully Compliant	0
Safety Devices Found Not Compliant	6
Safety Devices Repaired During Training	0
Safety Devices Left as Non-Compliant	6

All of the safety devices tested were found out of compliance. Please see section 6 for full details.

5 REPORT DOCUMENTATION

5.1 ENTRANCE MEETING (1HR) – TO DISCUSS THE OBJECTIVES AND METHODS OF THE REVIEW.

Included: VAMC management and invited staff

Name (Please Print)	Title / location*	phone
Gerald A Lucas	Chief M&R	
James Novotny	Operations Supervisor	
Allan Federman	VISN Engineer	
David Alvarez	VACO – Review team	601-455-9456
Rob Engle	BEI – Review team	334-821-3095
David Dyer	BEI – Review team	334-821-3095

*All personnel are from the inspected facility unless otherwise noted.

Entrance Meeting Summary:

An in briefing was held on Wednesday, April 27, 2016. Central office was represented by David Alvarez and the BEI representatives were Rob Engle and David Dyer. The local VA attendees are listed in the table above. The purpose of the meeting was to provide the local VA senior administration with the purpose and scope of the boiler plant review being conducted. The meeting lasted approximately 30 minutes. Mr. Alvarez gave an overview explaining that this review was one of several boiler plant reviews across the agency with an aim of determining what factors contribute to a high performing boiler plant. He explained that we would be providing a report summarizing our findings and providing local personnel with suggestions for improvement of their boiler operation. BEI personnel then provided some additional detail. The meeting concluded with an expression of appreciation by Mr. Alvarez for the time and effort by the local VA staff in hosting the review and a pledge by the local VA administration to provide any assistance needed for a successful review.

5.2 AUDIT PROCESS AND RESULTS

This inspection was performed using the question rubric filled out in Appendix A. All questions were evaluated on a No, Partial, and Yes basis. A “No” evaluation was given to an item that appeared to be completely inadequate or missing. A “Partial” evaluation was given to items that have been attempted and have some proper information, but do not completely satisfy the directive or best practices. A “Yes” evaluation meets the minimum criteria in the spirit of the directive or best practices.

Scoring is generated based on the No, Partial, and Yes responses as listed above. A “No” response is awarded zero points. A partial response is awarded one point. A “Yes” response is awarded two points. This scoring system is used to generate the graphics and tables

Questions are grouped into distinct categories:

- Management
- Directive
- Training
- Parts & Supplies
- References
- Records
- Physical Observations of Boiler Plant
- Facility Condition Assessment (FCA)
- Testing & Inspection

The scores for each group are summarized in tables, and the results are displayed graphically in horizontal bar charts. The bar charts indicate the percentage of total amount of points awarded on a scale of the total points possible.

The graphics and tables are to be used as a guide to help the facility improve its compliance with the directive and to achieve best practices exhibited in high performing boiler programs.

5.3 CATEGORY 1 – MANAGEMENT SUMMARY

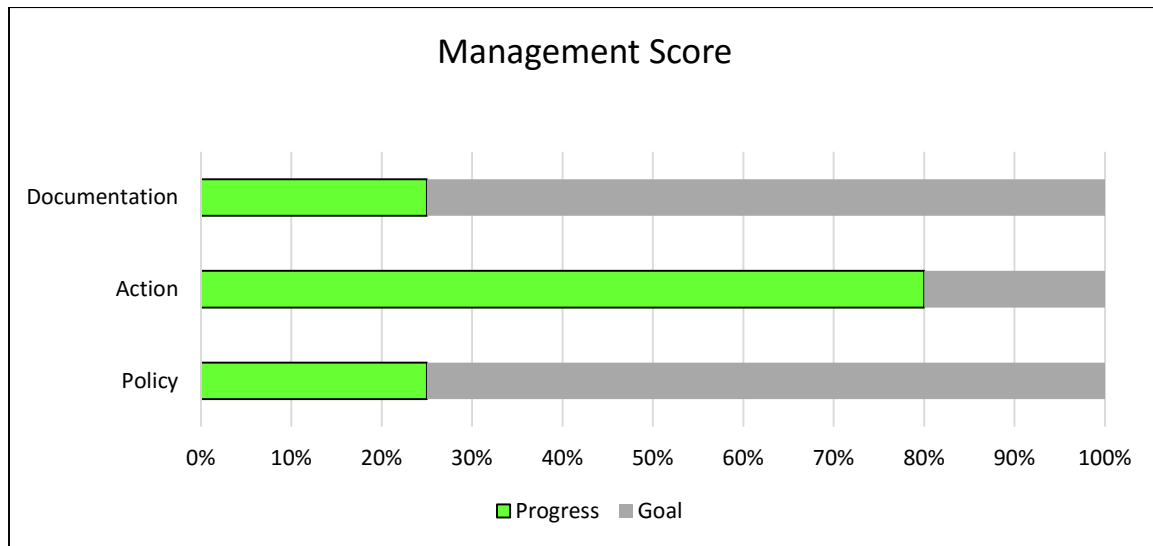


Figure 5-1

1. Management		Response count			Totals	
	Max Points Possible	No - 0 points each	Partial-1 point each	Yes-2 points each	Total Score	Percent
Policy	4	1	1	0	1	25%
Action	10	0	2	3	8	80%
Documentation	4	1	1	0	1	25%

Deficiencies found include but are not limited to:

- Safety device deficiencies are not tracked to completion and documented. There is evidence that safety device deficiencies are not being remedied.
- Chief Engineer is not involved in approving the competency of new employees.
- Many policies are out of date and or missing. It will be important to ensure policies and procedures are kept separate.
- There should be a single document that shows current and past safety device failures.
- The planning and documentation of the boiler plant staff training should be improved.

General Notes and information:

- The program is required to have current policies and procedures; this must be reviewed and updated to ensure future compliance and staff has written guidance on the tasks and requirements of the plant.
- There is no documentation for the training and competency of new employees.
- Recommend the competency of new employees include review and approval of the Chief Engineer.

5.4 CATEGORY 2 – DIRECTIVE 2008-062

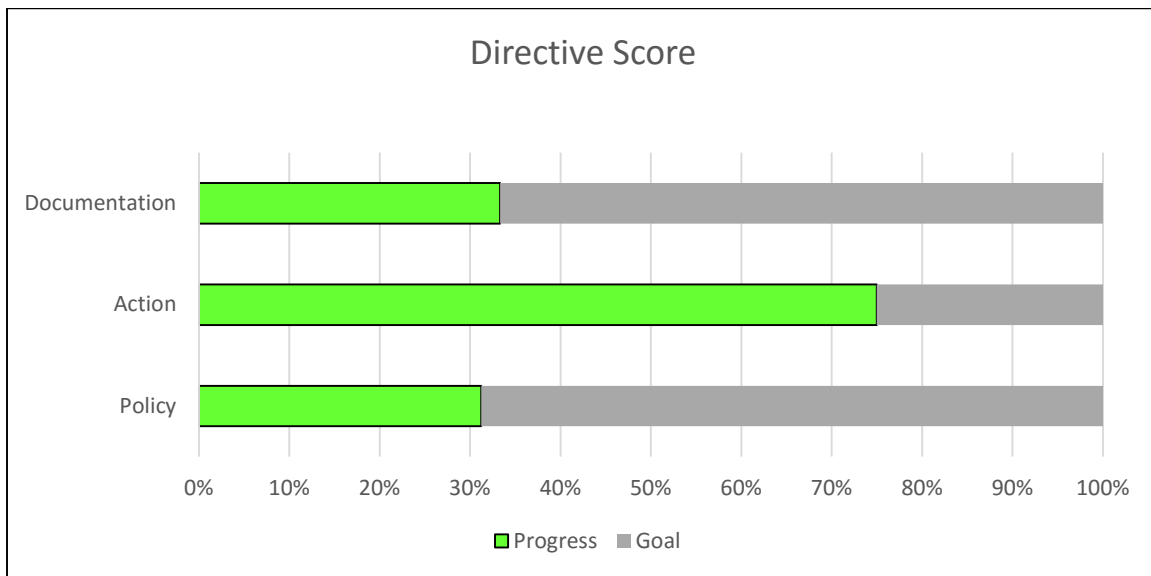


Figure 5-2

2. Directive		Response count			Totals	
	Max Points Possible	No - 0 points each	Partial-1 point each	Yes-2 points each	Total Score	Percent
Policy	16	5	1	2	5	31%
Action	16	1	2	5	12	75%
Documentation	18	6	0	3	6	33%

Deficiencies found include but are not limited to:

- Daily logs are reviewed; however, the process should be better documented.
- Boiler plant safety policy should include the creation of ISMs for safety devices that are out of service.
- There should be better documentation for closing the ILSM loop (documentation on the date and results of the completed work.)
- Site specific test procedures should be created for this facility.
- Up-to-date boiler plant drawings and control drawing should be created.
- An annual fuel polishing program should be implemented.
- A testing program for the emergency water from the tower should be created.

General Notes and information:

- The generator testing program is up to date and appears to be excellent.
- This facility is reporting the FCA report accurately.
- There is no lone soul policy. However, there is an hourly countdown timer that contacts police if not properly reset.
- Up to date single line diagrams for the plant should be created.

- Recommend developing a site specific testing protocol, with a more robust documentation process. This should include an overarching summary if device failures and test for trending, and tracking corrections to completion.
- There is a well that will run the entire campus in emergency, the well is currently used for irrigation. No policies are in place to require the testing and upkeep of the well for emergency use in the boiler plant. Also, to allow testing, proper valve alignment will be necessary to test the boiler access to the well and not switch the entire hospital over to well water.
- The facility should develop a system of review to ensure all required documents are accurate, complete and up to date.
- There is a policy that requires providing adequate emergency fuel for the boiler plant. However, this policy does not include testing or maintaining this oil. Policy should include testing and filtering annually. Also, the burners installed do not allow for quick transition to oil fuel. This process will take multiple days as the burner must be replaced and all safeties set as they have never been tested. Nor has the oil system been fired since installed.

5.5 CATEGORY 3- TRAINING

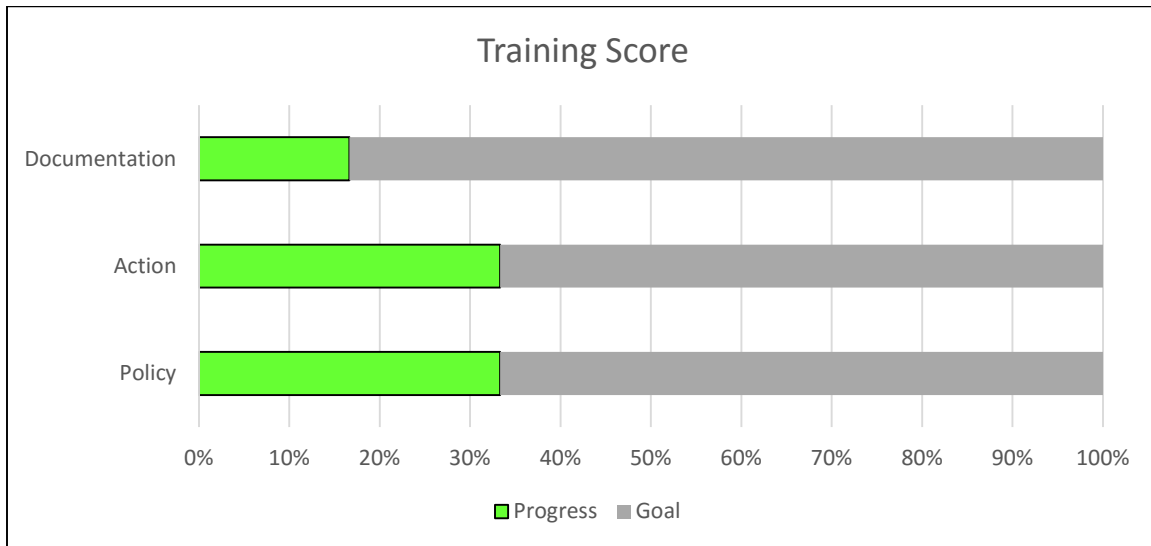


Figure 5-3. Training

3. Training		Response count			Totals	
	Max Points Possible	No - 0 points each	Partial-1 point each	Yes-2 points each	Total Score	Percent
Policy	6	2	0	1	2	33%
Action	6	1	2	0	2	33%
Documentation	6	2	1	0	1	17%

Deficiencies found include but are not limited to:

- Policies, SOP, and documentation for training operators on plant equipment, handling emergency situations, OSHA, MSDS, electrical safety, etc. should be created.
- The annual emergency training for the operators should be documented. This training should be supervised, and not self-proctored.
- There should be a written operator training program.
- There are no normal operating procedures or emergency operating procedures in the boiler plant. These should be created.
- NFPA-70E Training for Boiler and HVAC Staff is incomplete. Although not required at the same level as electrical staff, testing and inspection of safety devices may require access to live circuitry.

General Notes and information:

- This site is training operators in several ways. There is TMS based training and they have recently sent operators to a Cleaver Brooks school. This is great. Additional material should include creating normal and emergency operating procedures and training operators annually on using them.
- Recommend a policy and documentation method for an annual plant-specific training program compliant with the Directive to be developed. The very detailed annual competency checklist would be an excellent starting point.

- The boiler plant needs a training program that has long range goals and competencies in mind and lays out a general plan on how it will be achieved.
- No formalized or structured training plan in place for new Boiler Plant employees. It is recommended that staff working in conjunction with Education establish “Items” within TMS to create individualized training plans for Operators that can be easily monitored and tracked.

5.6 CATEGORY 4- PARTS AND SUPPLIES

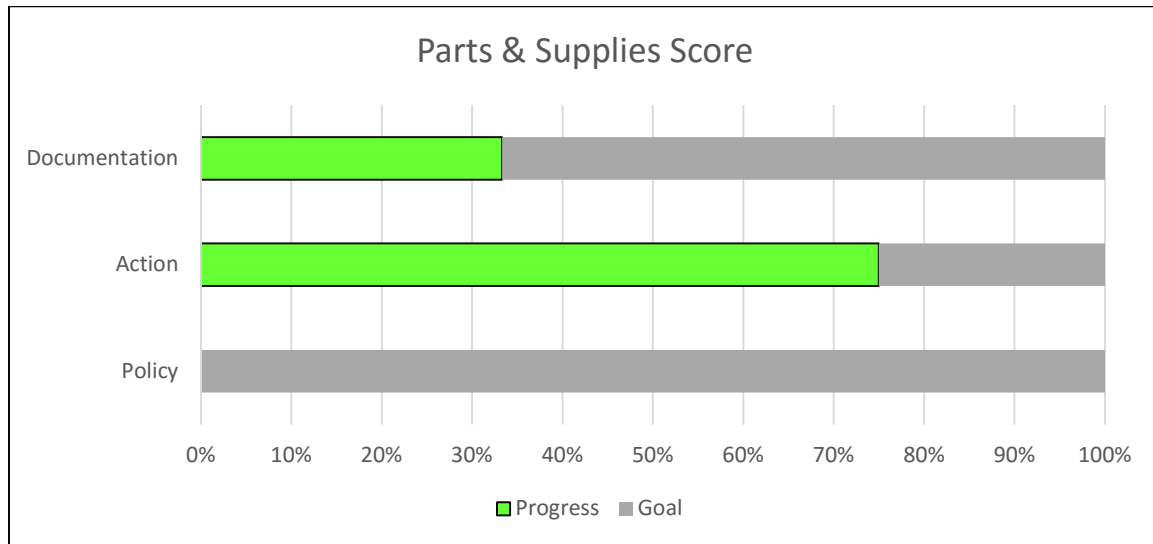


Figure 5-4. Parts & Supplies

4. Parts & Supplies		Response count			Totals	
	Max Points Possible	No - 0 points each	Partial-1 point each	Yes-2 points each	Total Score	Percent
Policy	6	3	0	0	0	0%
Action	8	1	0	3	6	75%
Documentation	6	2	0	1	2	33%

Deficiencies found include but are not limited to:

- There are missing long lead parts in stock for the maintenance and repair of the boilers. These would include (Gas valves, Flame Scanners, BMS, etc.). It should also be noted that the budget has been cut by ~20%
- Policies, SOP, and documentation should be created for the following: common parts inventory, emergency parts inventory, acquisition and tracing of parts.

General Notes and information:

- The plant could benefit from a formal inventory system with stock and par levels established.
- Plant tools are minimal and the spare parts inventory is not organized or systematic. Recommend that efforts be made to gradually increase inventory until it can match and address needs that might arise resultant from failure of devices described within the Testing Manual.
- This facility works well with many other departments and can access a wide variety of common parts located in those departments.

- The plant is aware of how to order parts, and how to track delivery timeframes.
However, a SOP for ordering should be created.

5.7 CATEGORY 5- REFERENCES

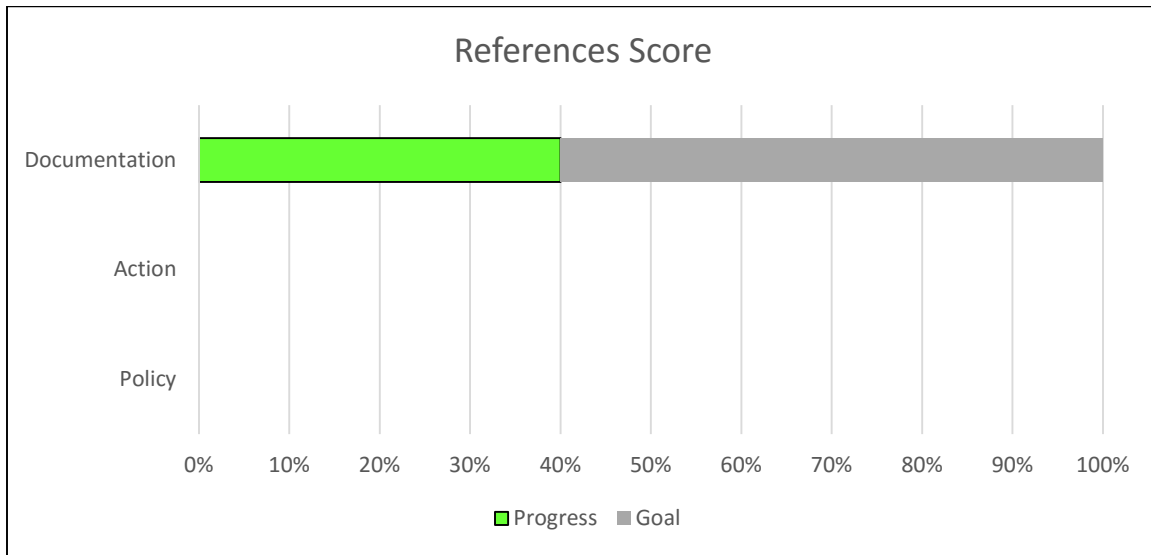


Figure 5-5. References Score

5. References		Response count			Totals	
	Max Points Possible	No - 0 points each	Partial-1 point each	Yes-2 points each	Total Score	Percent
Policy	0	0	0	0	0	N/A
Action	0	0	0	0	0	N/A
Documentation	10	3	0	2	4	40%

Deficiencies found include but are not limited to:

- No normal or emergency operating procedures exist.
- This facility is not performing any annual internal and external inspections.
- A policy for the collecting, storing and reviewing of operating logs should be created.

General Notes and information:

- The plant has a reference area with manuals and other references for operator use.
- Operating logs look good. Recommend adding Deaerator temperature and pressure to log sheet.
- Consideration should be given to digitizing as much of the reference material as possible.

5.8 CATEGORY 6- RECORDS

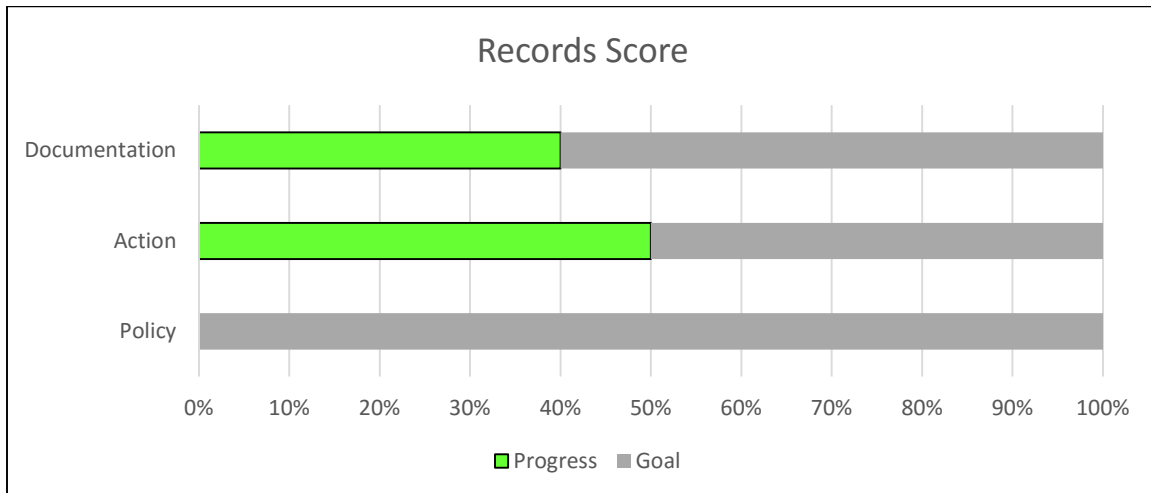


Figure 5-6. Records Score

6. Records		Response count			Totals	
	Max Points Possible	No - 0 points each	Partial-1 point each	Yes-2 points each	Total Score	Percent
Policy	4	2	0	0	0	0%
Action	4	1	0	1	2	50%
Documentation	10	3	0	2	4	40%

Deficiencies found include but are not limited to:

- Policy, SOP, and calibration as described in the directive should be established for the following: temperature, pressure gauges, and instrumentation.
- A gage, instrumentation, and temperature device calibration program should be created.
- Annual boiler inspections are not being performed.

General Notes and information:

- There is a system for record keeping and the files are available in hard copy in the plant.
- The program would benefit from the development of an electronic system which will ensure the long term maintenance of records.
- Boiler plant documentation associated with testing, inspection, maintenance, and training should be organized and made available on a Share Point. A separate file should be maintained to document "failed" Safety Devices. It is recommended that a scanner/fax machine be provided for the Boiler Plant.
- Recommendation that a Share Point be established to better organize and monitor inspections, tests, maintenance, SOP's, Boiler Logs, training, and other documentation required by the Boiler Directive. Owing to the large quantity of data/documentation maintained by the Boiler Plant, it is recommended that they be provided a scanner to digitize hardcopy records.

5.9 CATEGORY 7 – PHYSICAL OBSERVATIONS OF BOILER PLANT

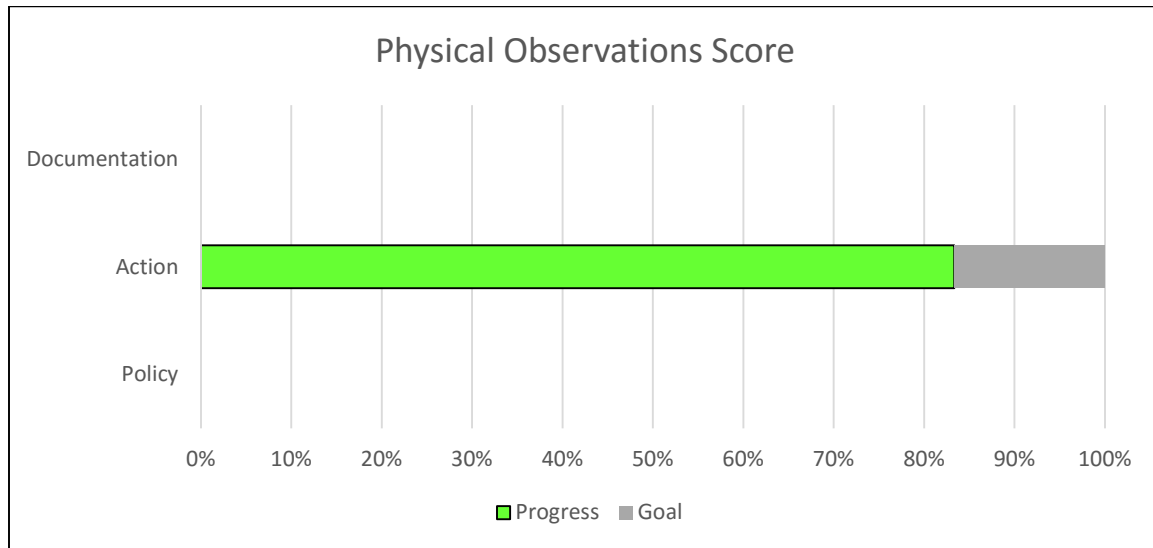


Figure 5-7. Physical Observations

7. Physical Observations B.P		Response count			Totals	
	Max Points Possible	No - 0 points each	Partial-1 point each	Yes-2 points each	Total Score	Percent
Policy	0	0	0	0	0	N/A
Action	12	0	2	4	10	83%
Documentation	0	0	0	0	0	N/A

Deficiencies found include but are not limited to:

- Ensure all Arc Flash labeling of panels is complete.
- The boiler plant could use some general cleaning.
- Electrical cabinets should be locked shut. Some panel schedules have been updated, however not all.

General Notes and information:

5.10 CATEGORY 8 – FACILITY CONDITION ASSESSMENT (FCA)

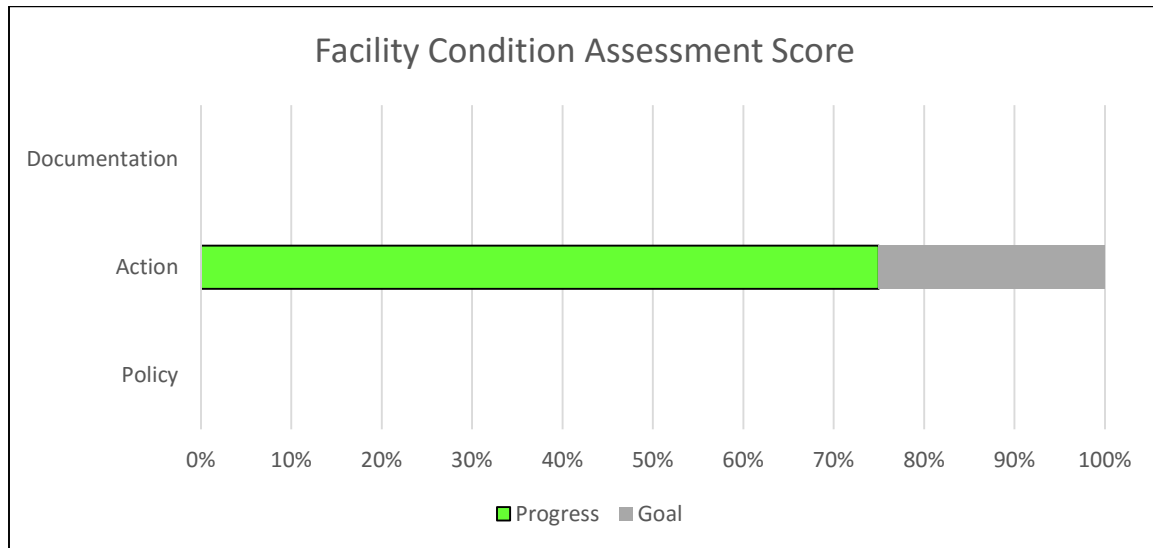


Figure 5-8. Facility Condition Assessment

8. Facility Condition Assessment		Response count			Totals	
	Max Points Possible	No - 0 points each	Partial-1 point each	Yes-2 points each	Total Score	Percent
Policy	0	0	0	0	0	N/A
Action	4	0	1	1	3	75%
Documentation	0	0	0	0	0	N/A

Deficiencies found include but are not limited to:

- The fuel oil pumps have been graded "D". Also, the boilers have been incorrectly labeled an "A" when they should be rated lower. This rating was given based on the pending replacement.
- A new boiler plant is scheduled to be installed this money is UESC / NRM.

5.11 CATEGORY 9 – TESTING AND INSPECTION

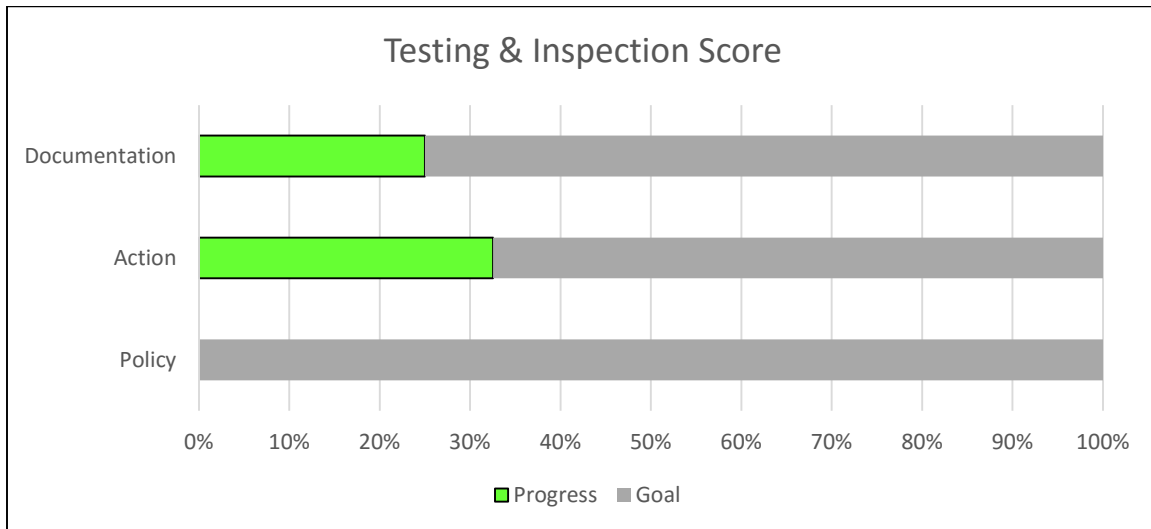


Figure 5-9. Testing & Inspection Score

9. Testing & Inspection		Response count			Totals	
	Max Points Possible	No - 0 points each	Partial- 1 point each	Yes-2 points each	Total Score	Percent
Policy	2	1	0	0	0	0%
Action	126	28	29	6	41	33%
Documentation	4	1	1	0	1	25%

Deficiencies found include but are not limited to:

- Annual inspections are not being performed.
- Policies for safety device testing have not been established.
- Several of the Semi-annual safety tests are not being performed.
- Many of the monthly boiler safety tests are not being performed as required in the VA directive. (See Appendix A for more details.)
- Site specific testing procedures should be created. The safety testing manual 3rd edition procedures should be used as a starting place.
- Burner vibration testing is not being performed on a 6-month interval.
- Boiler fouling and combustion gas flow checks are not being done.
- 6 month testing of combustion gas leaks into the boiler plant should be performed.
- Written procedures should be reviewed on a 6-month frequency.
- The deaerator and condensate tank are not being inspected and cleaned yearly.
- Burner tuning data should be documented and archived for at least 3 years. This document should include the as found tune, tuned to data, and reasons for the current tune.
- Cleaning the fire side and water side of the boiler are not being done yearly.

General Notes and information:

- The semi-annual and annual safety testing is being done in house.

5.12 TESTING BOILER INFORMATION

Boiler # 3	
Manufacturer:	Trane
Model:	FTBB-316F-4A-5200-GP
Serial #: National Board No.:	NB# 8018
Typical Operating Pressure:	100 psig
Date of Manufacture:	1978
Design Pressure/Capacity:	200 psig / 10,000 lb/hr
Burner	
Manufacturer:	Powerflame NVAC7-GO-30
Fuels:	Nat Gas / #2 FO

Comments: This boiler plant is scheduled for replacement.

5.13 ADDITIONAL SAFETY TESTING / TRAINING DONE

- There is only 1 proof of closure switch on the main gas block valves.
- There is no safety valve following the PRV that serves the deaerator.
- The DA low water alarm is not independent of the differential pressure sensor that controls the water level.

5.14 EXIT MEETING WITH VAMC MANAGEMENT

Below is a summary of the exit meeting with VAMC management. In this meeting, the contractor summarized the findings and recommendations gathered throughout the review session.

Name (Please Print)	Title / location*	phone
Gerald A Lucas	Chief M&R	
James Novotny	Operations Supervisor	
Allan Federman	VISN Engineer	
David Alvarez	VACO – Review team	601-455-9456
Rob Engle	BEI – Review team	334-821-3095
David Dyer	BEI – Review team	334-821-3095

Exit Meeting Summary:

Exit Meeting Summary:

An out briefing was held Thursday, February 24, 2016. Central Office and BEI were represented by the same individuals. The local VA representatives are listed in the table above. The purpose of the meeting was to provide the local VA administration with the findings of the review. Mr. Alvarez led the discussion. He discussed the major findings of the inspection listed below:

1. The boiler plant has made significant effort since the last boiler inspection, however, these changes addressed only a small portion of the deficiencies cited. Most of the changes appear to be respect to the low water safeties but it was difficult to determine the exact nature of the expenditures.2. One of the items that will need to be addressed on the list of tasks is the development/update of SOPs and Policies. Many policies are out of date and or missing.

3. The accuracy of previous boiler safety testing reports was discussed. The boilers are significantly out of compliance with VA directive.

Rob Engle then followed with a detail description of the deficiencies found. The VA staff agreed to make the effort to implement the suggestions coming from the review. The meeting was concluded.

6 SAFETY TESTING (PARTIAL SURVEY)

Device Testing / Results Summary:

Total Devices Tested	6
Safety Devices Found Fully Compliant	0
Safety Devices Found Not Compliant	6
Safety Devices Repaired During Training	0
Safety Devices Left as Non-Compliant	6

Of the 6 safety devices tested, 0 were found compliant and 6 were found failed and not repaired.

Policy / Procedure

This VA performs their own semi-annual and annual safety testing. Much of this testing is not being performed properly (This is considered NON-COMPLIANT).

The stock Safety Testing Manual 3rd edition can be used for most of the tests. Some test procedures used should be updated and made site specific. These procedures should be reviewed, updated, and verified in order to ensure compliance.

Action

The safety device testing survey was conducted by boiler operators and overseen by Rob Engle and David Dyer (BEI).

Safety Device Performance:

Safety Test	Procedure Not Adequate	Issue last Inspection	Compliant as found	Failed Repaired	Failed Not Repaired
Low Fire Proving Switch (Air)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments: A separate low fire proving switch could not be found. Install switch and set so that the low fire proving switch (air) is not be made above a 5%-point load increase above low fire.					

Safety Test	Procedure Not Adequate	Issue Last Inspection	Compliant as found	Failed Repaired	Failed Not Repaired
Low Fire Proving Switch (Gas)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments: A separate low fire proving switch could not be found. Install switch and set so that the low fire proving switch (gas) is not be made above a 5%-point load increase above low fire. There is no external low fire proving switch (gas).					

Safety Test	Procedure Not Adequate	Issue Last Inspection	Compliant as found	Failed Repaired	Failed Not Repaired
Purge Airflow Proving Switch	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments: This switch is plumbed from before the mesh burner to after the mesh burner. Since the mesh can become clogged, this is not an adequate position to prove purge. This switch should be plumbed for easy testing and measure the pressure differential from downstream of the mesh burner to the boiler outlet.					

Safety Test	Procedure Not Adequate	Issue Last Inspection	Compliant as found	Failed Repaired	Failed Not Repaired
Combustion Air Pressure Switch	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments: This switch is not plumbed for testing. There is no way to test.					

Safety Test	Procedure Not Adequate	Issue Last Inspection	Compliant as found	Failed Repaired	Failed Not Repaired
Low Gas Pressure Switch	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments: The switch did not trip within the required 80% of regulated pressure. The regulated gas pressure is 0.96 psig at low fire and flame failure occurred at 0.56 psig. The switch did not activate. This switch should be set to activate at 0.77 psig or higher.					

Safety Test	Procedure Not Adequate	Issue Last Inspection	Compliant as found	Failed Repaired	Failed Not Repaired
High Gas Pressure Switch	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments: This switch is located downstream of the flow control valve. This is not VA compliant. This switch should be modified for easy testing and located upstream of the flow control valve. See Safety Testing Manual 3 rd edition.					

7 APPENDIX A – FIELD NOTES & MARCH 2016 INSPECTION REPORT

GUIDELINES FOR ASSESSING MEDICAL CENTER'S BOILER PLANT PROGRAM									
Question	Eval Category	Chief Engineer	B. P. Super	Safety Champior	Operators	BEI Staff Evaluation	Hosp Director	union	
Site: <u>Fresno, CA</u> Program Review Date: <u>April 27-29, 2016</u>									
Category 1 - Management:									0 1 2
In general, how does the Medical Center approach the important issues that deal with the boiler plant?									No Part Yes
1-1p	p	E	S	C		D	U	Are there written Medical Center or engineering policies that specify a systematic way to address safety device deficiencies in the boiler plant?	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
1-1a	a	E	S	C		D	U	Are safety device deficiencies in the boiler plant, systematically dealt with in a timely manner? (1-2 months). If not site the evidence that this issue has been elevated to the next higher level for action (Chief Engineer, EOC Committee, local resource board, director, VISN)	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
1-1d	d	E	S	C		D	U	Are safety device deficiencies tracked to completion in writing with an estimated completion date regardless of cost on a regular and recurring basis? If yes, what mechanism?	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Comments: <p>There is no policy for addressing safety device Failures.</p> <p>There needs to be a site specific program put into place.</p> <p>Some safety device deficiencies are dealt with in a timely manner, however, there is evidence that some failures have been around for years.</p> <p>Safety device failures are not tracked to completion. There should be a centralized list put into place.</p>									

1-2p	p	E S	D U	Is there a policy and SOP in place for training new employees?	X		
1-2a	a	E S	D U	Are all new employees trained and deemed competent by the Boiler Plant Supervisor and Chief Engineer?		X	
1-2d	d	E S	D U	Is training of new employees documented in writing? When a new employee is deemed competent, is this signed by BP Supervisor and Chief Engineer?	X		
<p>Comment:</p> <p>No policies or SOP exist for training of new boiler plant employees.</p> <p>There is no documentation for the training and competency of new employees.</p> <p>The Chief Engineer should be involved in deeming new boiler operators competent.</p>							
1-3a	a	E S C	D U	Does the Directors office approve the quarterly compliance survey? Is there a mechanism to verify its accuracy?			X
1-3a	a	E S C	D U	Does the Chief Engineer verify and approve the quarterly survey?			X
1-3a	a	E S C	D U	Does the Boiler Plant Supervisor verify and approve the quarterly survey?			X
<p>Comments:</p> <p>The only mechanism for proving the accuracy of the quarterly compliance survey is the chain that the document passes through. It goes through the Boiler Plant Supervisor to the Chief Engineer to the Director.</p> <p>No policies for anyone to verify results.</p>							

Category 2 - Directive 2008-062:				0	1	2
Is there evidence that the chief engineer, boiler plant supervisor/leader and boiler plant operators are familiar with and have acted upon the current Boiler Plant Operations Directive (2008-062)? Is it actively enforced? What is this evidenced by?				No	Part	Yes
2-1d	d	S	Review the facility's quarterly compliance survey posted on CEOSH's Web site: http://vaww.ceosh.med.va.gov/01HE/Pages/DataReports.shtml#Boiler . Is it accurate?			X
Comments: <p style="text-align: center;">This facility is reporting the FCA report accurately.</p>						
2-2p	p	E S C O D	Is there a policy and SOP in place for notifying the Medical Center Director when a boiler safety is non-functioning?			X
2-2a	a	E S C O D	Is the Medical Center Director notified when any boiler safety device is non-functioning, and as a result of the non-functioning safety device/s are interim safety measures put into place and changes to procedures assessed and required due to the non-functioning safety device or device failure?			X
2-2d	d	E S C O D	Are the notification and interim safety measures documented in writing and updated when repairs have been made?			X
Comments: <p style="text-align: center;">There should be better documetnation for closing the ILSM loop (documentation on the date and results of the completed work.)</p>						
2-3p	p	E S C O	Is there a policy and SOP in place for reviewing daily logs?	X		
2-3a	a	E S C O	Are daily logs reviewed and actions taken as necessary? Cite evidence.			X
2-3d	d	E S C O	Is there a systematic record of this review?	X		
Comments: <p style="text-align: center;">There are no policies for reviewing the daily logs, however, there is evidence of their review by the boiler plant supervisor. Since they went totally electronic, there is no record of this review.</p>						

2-4p	p	S O	Is there a lone soul policy and SOP in place for performing safety checks on boiler plant staff?	X		
2-4a	a	S O	Are safety checks performed and documented by police multiple times per shift on each shift. (maybe via phone, two-way radio, etc.)?			X
2-4d	d	S O	Is there record of these safety checks being performed?	X		
Comments: <p>There is no lone soul policy. However, there is an hourly countdown timer that contacts police if not properly reset.</p> <p>There is no record of any call back information from either the boiler plant or police.</p> <p>Policies and SOP should be implemented and any call backs from the police documented.</p>						
2-5p	p	S C O	Is there a policy in place to update the single line diagrams of the boiler plant when changes occur?	X		
2-5a	a	S C O	Are single line diagrams of the boiler plant equipment and connected loads current and up to date?		X	
2-5d	d	S C O	Is there a document that contains the current revision dates for all boiler plant drawings.	X		
Comments: <p>No policies requiring single line diagrams exist for the boiler plant. Single line diagrams should be revisited and reviewed annually.</p>						
2-6p	p	E S C O	Is there a policy for providing and testing emergency power to the boiler plant?			X
2-6a	a	E S C O	Is there evidence that emergency power system is regularly tested under load?			X
2-6d	d	E S C O	Is there several years of documentation of the boiler plant emergency power being tested?			X
Comments: <p>This program appears to be excellent.</p>						

2-7p	p	E S C O	Is there a policy for providing and testing the emergency water source to the boiler plant?	X		
2-7a	a	E S C O	Is there an emergency water source provided for the boiler plant?			X
2-7d	d	E S C O	Is there several years of documentation of the boiler plant emergency water source being tested?	X		
Comments: <p>There is a well that will run the entire camups in emergency, the well is currently used for irrigation. No policies are in place to require the testing and upkeep of the well for emergency use in the boiler plant. Also, to allow testing, proper valve alignment will be necessary to test the boiler access to the well and not switch the entire hospital over to well water.</p>						
2-8p	p	E S C O	Is there a policy for providing and testing the emergency fuel source to the boiler plant?		X	
2-8a	a	E S C O	Is the emergency fuel source to the boiler plant tested monthly on every boiler?	X		
2-8d	d	E S C O	Is there at least a year of documentation of monthly testing of the emergency fuel source?	X		
Comments: <p>There is a policy that requires providing adequate emergency fuel for the boiler plant. However, this policy does not include testing or maintaining this oil. Policy should include testing and filtering annually.</p> <p>Also, the burners installed do not allow for quick transition to oil fuel. This process will take multiple days as the burner must be replaced and all safeties set as they have never been tested. Nor has the oil system been fired since installed.</p>						
2-9p	p	E S C	Is there a policy in place to have current site specific safety device testing procedures in place?	X		
2-9a	a	E S C	Do they have written safety device testing procedures specific to their site?		X	
2-9d	d	E S C	Is there a change log / record of all past safety device testing procedures as well as the current procedure on file?	X		
Comments: <p>This site was using a customized version of the Safety Testing Manual 2nd edition. This is not adequate. The facility should begin using the Third Edition immeidietly and work on creating a cutsomized version of the third edition.</p>						

Category 3- Training				0	1	2
Is the on-going boiler plant operator training evidenced by?				No	Part	Yes
3-1p	p	S C O	Are there current written SOPs for training operators on the operation of boiler plant equipment?	X		
3-1a	a	S C O	Have operators been trained on the operation of the boiler plant equipment?		X	
3-1d	d	S C O	Is there documentation of operator training on boiler plant equipment?	X		
Comments: No ongoing training or documentation. OJT only for training on equipment.						
3-2p	p	S C O	Are there current written SOPs describing how to train operators on emergency situations?	X		
3-2a	a	S C O	Are the operators trained yearly in handling emergency situations?	X		
3-2d	d	S C O	Is there documentation for each operator in handling emergency situations? (Yearly)	X		
Comments: No documentation or procedures for emergency operating procedures.						
3-3p	p	S C O	Is there a policy requiring operators be trained in the following: OSHA, MSDS, Boiler Plant Operations SOPs, electrical safety (Lockout-Tag out), call back procedures, and emergency procedures?			X
3-3a	a	S C O	Have all operators been trained in the following: OSHA, MSDS, Boiler Plant Operations SOPs, electrical safety (Lockout-Tag out), call back procedures, and emergency procedures?		X	
3-3d	d	S C O	Is there documentation that operators have been trained in the following: OSHA, MSDS, Boiler Plant Operations SOPs, electrical safety (Lockout-Tag out), call back procedures, and emergency procedures? Verify in TMS.		X	
Comments: This site is training operators in several ways. There is TMS based training and they have recently sent operators to a Cleaver Brooks school. This is great. Additional material should include creating normal and emergency operating procedures and training operators annually on using them.						

Category 4- Parts and Supplies				0	1	2
				No	Part	Yes
4-1p	p	S C O	Is there a written policy that addresses having common parts in stock?	X		
4-1a	a	S C O	Is there an adequate stock of most common parts?			X
4-1d	d	S C O	Is there a current inventory list and parts supplier list for the common parts.	X		
Comments: <p style="text-align: center;">This facility works well with many other departments and can access a wide variety of common parts located in those departments.</p> <p style="text-align: center;">There needs to be a policy that requires commom parts. A proper inventory system should be created.</p>						
4-2p	p	S C O	Is there a written policy that addresses having emergency parts in stock?	X		
4-2a	a	S C O	Is there an adequate stock of emergency parts?	X		
4-2d	d	S C O	Is there a current inventory list and parts supplier list for emergency parts?	X		
Comments: <p style="text-align: center;">Several long lead parts should be acquired: Maxon valves, Flame Scanner, BMS, etc.</p> <p style="text-align: center;">There needs to be a policy that requires emergency parts. A proper inventory system should be created.</p>						

4-3a	a	S C O	Is the parts storage area organized and accessible?			X
Comments: Parts are warehoused within many departments throughout the facility. They were generally well organized.						
4-4p	p	E S C O	Is there a SOP for acquiring needed materials for the boiler plant (less than and more than \$2,500)?	X		
4-4a	a	E S C O	Are all needed materials acquired in a timely manner? If not explain why (what are the problems)?			X
4-4d	d	E S C O	Is there tracing information, documentation and an estimated time of arrival for parts ordered through contracting?			X
Comments: <p>Need to establish written procedure for ordering parts.</p> <p>Recommend all SOPs being in one notebook in a standardized place.</p> <p>The boiler plant supervisor has access and knows how to use the ECMS tracking system.</p> <p>The boiler plant supervisor has relatively easy access to the purchasing card held by Jerry the Chief M&R.</p>						

Category 5- References				0	1	2
				No	Part	Yes
5-1d	d	E	Is a hard copy of VA Boiler Plant Directive 2008-062 on hand or bookmarked and readily available on the computer in the boiler plant?			X
Comments:						
5-2d	d	S C O	Are written <i>emergency</i> operating procedures available to operators on all shifts (not locked in office)?	X		
Comments: No EOP's exist.						
5-3d	d	S C O	Are written <i>normal</i> operating procedures available to operators on all shifts (not locked in office)?	X		
Comments: No normal operating procedures exist for boiler operators.						
5-4d	d	S C O	Are manufacturer's instructions for all major equipment: boilers, burners, burner management controls, pumps, deaerator, water softener, emergency generator, combustion controls, instrumentation, and schematic boiler control wiring diagrams for troubleshooting readily available?			X
Comments: Have all of the above paperwork.						
5-5d	d	S C O	Are records of the last safety device testing inspection, and internal and external inspection of boiler vessels readily available?	X		
Comments: This facility is not performing any annual inspections.						

Category 6- Records				0	1	2
				No	Part	Yes
6-1p	p	S C O	Is there a policy or SOP for the calibration of temperature indicators and pressure gages used in the boiler plant (boiler pressure, deaerator pressure and temperature, etc.)?	X		
6-1a	a	S C O	Are instruments calibrated every 6 months and gauges and temperature indicators every year?	X		
6-1d	d	S C O	Is there a log of calibration dates for temperature indicators and pressure gages used in the boiler plant (boiler pressure, deaerator pressure and temperature, etc.)?	X		
Comments: <p style="text-align: center;">No calibration program exists.</p>						
6-2p	p	S O	Is there a policy or SOP for the collection and review of daily plant operating logs?	X		
6-2a	a	S O	Are daily plant operating logs (steam produced, fuel used, flue gas oxygen, flue gas temperature, steam pressure, deaerator temperature and pressure, other data) being properly collected with hourly readings and operating notes?			X
6-2d	d	S O	Are daily plant operating logs (steam produced, fuel used, flue gas oxygen, flue gas temperature, steam pressure, deaerator temperature and pressure, other data) being maintained with hourly readings and operating notes?			X
Comments: <p style="text-align: center;">An policy for the collecting, storing and reviewing of operating logs should be created.</p> <p style="text-align: center;">Operating logs look good. Recommend adding Deaerator temperature and pressure to log sheet.</p>						

6-3d	d	S C O	Are boiler inspection reports for current year and past two years readily available?	X		
Comments: <div>Boiler inspections are not being preformed.</div>						
6-4d	d	S C O	Is there evidence that deficiencies listed in the boiler inspection reports or burner and interlock testing reports have been corrected?	X		
Comments: <div>Some of the deficiencies have been remedied, but many have not.</div>						
6-5d	d	S O	Is there evidence that emergency power system is regularly tested under load?			X
Comments: <div>Yes.</div>						

Category 7 - Physical Observations of Boiler Plant					0	1	2
How often do you visit the plant, walk around and visit with operators (all shifts)					No	Part	Yes
7-1	a	S	B	Are the steam safety valve vents discharged outside?			X
Comments: The steam safety vent pipes discharge outside.							
7-2	a		B	Are water level gage glasses and sight flow indicators clean on boilers, de-aerator, condensate storage tank, blow-off tank and other equipment?			X
Comments:							
7-3	a		B	Are boiler water level gage glasses and pressure gages easily visible from main floor in front of boilers?			X
Comments:							
7-4	a	S	B	Are electrical and control cabinets closed and locked and all breakers properly labeled?		X	
Comments: Electrical cabinets should be locked shut. Some panel schedules have been updated, however not all.							
7-5	a		O B	How is the overall cleanliness of the boiler plant?		X	
Comments: The boiler plant could use some general cleaning.							
7-6	a		O B	Do the boiler plant operators work well together? (As a team)			X
Comments: Boiler plant operators appear to work well together.							

Category 8 - Facility Condition Assessment (FCA)				0	1	2
				No	Part	Yes
8-2	a	E S	In the FCA, are all items graded A,B, or C? (NOTES -for comments only: if not how many items are graded D and/or F? Are there construction projects identified for corrections (Major, Minor, NRM Station Level) to identify these issues?)		X	
Comments: <div> <p>The fuel oil pumps have been graded "D".</p> <p>Also, the boilers have been incorrectly labeled an "A" when they should be raed lower. This rating was given based on the pending replacement.</p> </div>						
8-3	a	E S	Are there construction projects identified for corrections (Major, Minor, NRM, Station Level) to identify these issues?			X
Comments: <div> <p>A new boiler plant is scheduled to be installed this money is UESC / NRM.</p> </div>						

Category 9 - Testing and Inspection				0	1	2	
Are inspections and testing conducted in accordance with the following frequencies?				No	Part	Yes	
9-0	a	Does your Qualified Professional Inspector (QPI) meet the minimum criteria?			X		
<div>No one is inspecting the boilers.</div>							
<div>a. Key to Frequency Abbreviations</div> <div>(1) H = Hourly.</div> <div>(2) D = Daily. VHA DIRECTIVE 2008-062 CORRECTED COPY October 15, 2008 B-2</div> <div>(3) M = Once per month.</div> <div>(4) 6M = Once every 6 months.</div> <div>(5) Y = Once per year.</div> <div>(6) 6Y = Once every 6 years.</div>							

9-1	a	S C	(1) High pressure boilers (above 15 psig): Inspect furnace and other internal surfaces, closures and accessories. Y	X		
Comments: Not on file.						
9-2	a	S C	(2) High pressure boilers (above 15 psig): Inspect exterior of Unit, casing, supports, closures, accessories, valves, controls. Y	X		
Comments: Not on file.						
9-3	a	S C	(3) Deaerator: Inspection and wet magnetic particle testing of welds of pressure vessel interior. 6Y			X
Comments: The deaerator and condensate tanks are new.						
9-4	a	S C	(4) Boiler fouling and combustion gas flow check. Y			X
Comments: Are doing APCD checks monthly.						
9-5	a	S C	(5) Tube leak check. Y	X		
Comments: No inspections being done.						
NOTE: The items preceding (2b(1) through 2b(5) must be accomplished by a Qualified Professional Inspector. The following items (2b(6)) through						

9-6	a	S C	(6) Low pressure boilers (15 psig and below): inspect interior and exterior, supports, closures, accessories, valves, and controls. Y			
Comments: N/A						
9-7	a	S C	(7) Deaerator: interior cleaning and visual inspection. Y	X		
Comments: The deaerator is not being inspected and cleaned yearly. Should be added to the PM.						
9-8	a	S C	(8) Adjust burner combustion settings and calibrate oxygen trim. 6M			X
Comments: This test is being monthly according to staff. They reported that tuning was done as a part of the AQMD report.						
9-9	a	S C	(9) Check vibration of burner fans. 6M	X		
Comments: Not being done.						
9-10	a	S C	(10) Calibrate instrumentation, monitoring, and control systems. 6M	X		
Comments: Not being done.						
9-11	a	S C	(11) Calibrate pressure gages and thermometers. Y	X		
Comments: Not being done.						

(12) Operational Testing of Boiler Safety Devices, such as:

9-12a	a	S C	(a) Low-water cutoff (slow drain) M		X	
Comments: Test procedure done by blowing down gage glass. Slow drain is required. Water level not recorded in test.						
9-12b	a	S C	(b) Fire each boiler and the pilot on the alternate fuel for 1 hour M	X		
Comments: This has never been done.						
9-12c	a	S C	(c) Low-water cutoff shunt switch M		X	
Comments: Not being done. Blowdowns are done daily. The shunt is tested informally. This should be a formal test.						
9-12d	a	S C	(d) Auxiliary low-water cut-off (slow drain) M	X		
Comments: Primary low water cutoffs are tested per the PM, however there is no PM for the aux low-water cutoff (probe).						
9-12e	a	S C	(e) Auxiliary low-water cut-off shunt switch M		X	
Comments:						
9-12f	a	S C	(f) High-water alarm M		X	
Comments: Not being done.						

9-12g	a	S C	(g) Low-water alarm M		X
Comments:			The test data is inadequate (no data).		
9-12h	a	S C	(h) High-steam pressure cut-out (recycle) 6M		X
Comments:			The test data is inadequate (no data).		
9-12i	a	S C	(i) High-steam pressure cut-out (non-recycle) 6M		X
Comments:			The test data is inadequate (no data).		
9-12j	a	S C	(j) Steam safety valves (raise boiler pressure until valve pops) 6M		X
Comments:			The test data is inadequate (no data).		
9-12k	a	S C	(k) Steam safety valves (accumulation test at high fire) Y		X
Comments:			The test data is inadequate (no data).		
9-12l	a	S C	(l) Flame scanner M	X	
Comments:			Not done.		
9-12m	a	S C	(m) Check gas vent for leaks 6M		X
Comments:			The test data is inadequate (no data).		

9-12n	a	S C	(n) High-gas fuel pressure cut-off 6M			X
Comments: Test data is inadequate. Done yearly.						
9-12o	a	S C	(o) Low-gas fuel pressure cut-off 6M			X
Comments: Test data is inadequate.						
9-12p	a	S C	(p) Gas fuel safety shut off valves proof of closure 6M		X	
Comments: There is only one.						
9-12q	a	S C	(q) Leak test gas fuel safety shut off valves 6M			X
Comments: The test data is inadequate (no data).						
9-12r	a	S C	(r) High-fuel oil temperature cut-off (heated fuel) 6M			
Comments: N/A						
9-12s	a	S C	(s) Low-fuel oil temperature cut-off (heated fuel) 6M			
Comments: N/A						
9-12t	a	S C	(t) Low-atomizing pressure for fuel oil 6M			X
Comments: The test data is inadequate (no data).						

9-12u	a	S C	(u) High-fuel oil pressure cut-off 6M	X		
Comments:		Not tested. Boiler never run on oil.				
9-12v	a	S C	(v) Low-fuel oil pressure cut-off 6M	X		
Comments:		Not tested. Boiler never run on oil.				
9-12w	a	S C	(w) Fuel oil safety shut off valves proof of closure 6M	X		
Comments:		Not tested. Boiler never run on oil.				
9-12x	a	S C	(x) Leak test fuel oil safety shut off valves 6M	X		
Comments:		Not tested. Boiler never run on oil.				
9-12y	a	S C	(y) Check operation of Liquid Petroleum Gas pilot 6M	X		
Comments:		Not tested. Boiler never run on oil.				
9-12z	a	S C	(z) Low-pilot gas pressure cut-out 6M		X	
Comments:		The test data is inadequate (no data).				
9-12aa	a	S C	(aa) Forced draft fan motor interlock 6M		X	
Comments:		The test data is inadequate (no data).				

9-12bb	a	S C	(bb) Forced draft fan damper wide open for purge 6M	X		
Comments: No external switch installed.						
9-12cc	a	S C	(cc) Boiler outlet damper wide open for purge 6M	X		
Comments: Not tested.						
9-12dd	a	S C	(dd) Purge air flow interlock 6M		X	
Comments: The test data is inadequate (no data).						
9-12ee	a	S C	(ee) Timing for pre-purge 6M	X		
Comments: Not tested.						
9-12ff	a	S C	(ff) Timing for post-purge 6M	X		
Comments: Not tested.						
9-12gg	a	S C	(gg) Igniter timing 6M		X	
Comments: The test data is inadequate (no data).						
9-12hh	a	S C	(hh) Low fire position interlock 6M	X		
Comments: Switches are not installed.						

9-12ii	a	S C	(ii) Combustion air interlock 6M		X	
Comments:			The test data is inadequate (no data).			
9-12jj	a	S C	(jj) Main flame out; i.e., time to close valves 6M		X	
Comments:			The test data is inadequate (no data).			
9-12kk	a	S C	(kk) Ignition flame out; i.e., it is time to close valves 6M		X	
Comments:			The test data is inadequate (no data).			
9-12ll	a	S C	(ll) Minimum igniter flame test 6M		X	
Comments:			The test data is inadequate (no data).			
9-12mm	a	S C	(mm) Scanner not sensing ignition spark 6M		X	
Comments:			The test data is inadequate (no data).			
9-12nn	a	S C	(nn) Low-oxygen alarm and/or cut-out 6M	X		
Comments:			Not being done.			
9-12oo	a	S C	(oo) Pre-purge setting of flue gas recirculation damper 6M			
Comments:			No FGR.			
9-12pp	a	S C	(pp) Interlock of building outside air damper with burner control 6M	X		
Comments:			Not being tested.			
NOTE: The preceding safety devices are essential for ensuring the safest possible operation. Any boilers not so equipped must be immediately						

(13) Boiler Plant Safety and Operational Duties

9-13a	a	S C O	(a) Overall plant operation H			X
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Comments:

Logs look ok.

9-13b	a	S C O	(b) Blowdown water columns D		X	
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Comments:

Operators need procedures for normal operating procedures. This should include blowing down both of the water columns daily. Doing this at the beginning of each shift is recommended.

9-13c	a	S C O	(c) Testing and adjusting water treatment D			X
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Comments:

Looks OK.

9-13d	a	S C O	(d) Check furnace pressure 6M	X		
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Comments:

Not being done.

9-13e	a	S C O	(e) Check combustion gas leaks into boiler room 6M	X		
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Comments:

Not being done.

9-13f	a	S C O	(f) Clean waterside of boilers Y	X	
Comments: <div>Not being done yearly.</div>					
9-13g	a	S C O	(g) Clean fireside and repair refractory Y	X	
Comments: <div>Not being done yearly.</div>					
9-13h	a	S C O	(h) Operation of deaerator high and low water alarms M		X
Comments: <div>Not being done.</div>					
9-13i	a	S C O	(i) Operation of deaerator steam pressure or temperature control M		X
Comments: <div>The test data is inadequate (no data).</div>					
9-13j	a	S C O	(j) Operation of condensate storage tank high and low water alarms M		X
Comments: <div>The test data is inadequate (no data).</div>					

9-13k	a	S C O	(k) Operation of all other alarm devices M		X	
Comments: Some additional tests exist with AEMS / MURS						
9-13l	a	S C O	(k) Operation of boiler economizers; temperatures in or out D			X
Comments: Recorded daily.						
9-13m	d	S C	(m) Review written procedures 6M	X		
Comments: Not being done.						
9-14p	p	E S C O	Is there a Policy and SOP for annual and semi-annual safety testing on each boiler?	X		
9-14a	a	E S C O	Is testing being conducted properly and in accordance with the directive / policies?		X	
9-14d	d	E S C O	Is the documentation of the annual and semi-annual being done properly and are several years of data on file?		X	
Comments: Documentation is poor. All data exists within AEMS / MURS. No policies could be found.						

Category 10 - Tracer Activity				0	1	2
Safety Device Failure - Steps to review from failure to functioning:				No	Part	Yes
10-1	S C O	a) Did failure cause any adverse events? If yes, who was notified, how and when?				
10-2	E S C	b) How was failure communicated to all operators (check daily logs), Chief Engineer (email, face to face) and director (email, face to face)?				
10-3	E S C O	c) Was the failure evaluated and procedures changed to limit risk until correction was made?				