South Texas Project Equipment Reliability Process

Process Block 1
Performance Monitoring

System Level Performance Indicators
•Plant Health Bulletin Board

Inputs:
•Computer data
•Maintenance results
•Operator rounds and input
•System Engineer walkdowns
•Predictive Maintenance results
•Performance testing results

Actions:
•Monitor and trend component performance
•Monitor System performance and adverse affects on station performance
•Identify adverse trends or degraded performance

Process Block 2
Corrective Action

Inputs:
•Unexpected failures of in-service equipment
•Adverse equipment performance detected from performance monitoring
•Results from preventive maintenance

Actions:
•Evaluate failure impact
•Identify Maintenance Rule Functional Failures
•Determine cause and corrective actions
•Feedback to the preventive maintenance program
•Plant Health Committee identify key issues
•Plant Health Committee prioritize actions

Process Block 5
Preventive Maintenance Implementation

Inputs:
•Preventive Maintenance Activities approved by the Preventive Maintenance Review Team

Actions:
•Perform Preventive Maintenance Activities as scheduled
•Correct deficiencies
•Document as found conditions
•Provide Preventive Maintenance feedback

Process Block 3
Equipment Importance Determination

Actions:
•Assign Graded Quality Assurance Risk Ranking to system components
•Assign Plant Generation Risk Ranking to system components
•Identify system components with significant economic impacts
•Document the review results
•Document critical attributes of High Or Medium risk ranked components
•Identify run to failure components

Process Block 4
Equipment Reliability Analysis

Inputs:
•PM feedback from Preventive Maintenance Review Team and Maintenance implementation
•Performance Monitoring results
•Corrective actions
•Identified High Or Medium risk ranked components
•Identified run to failure components

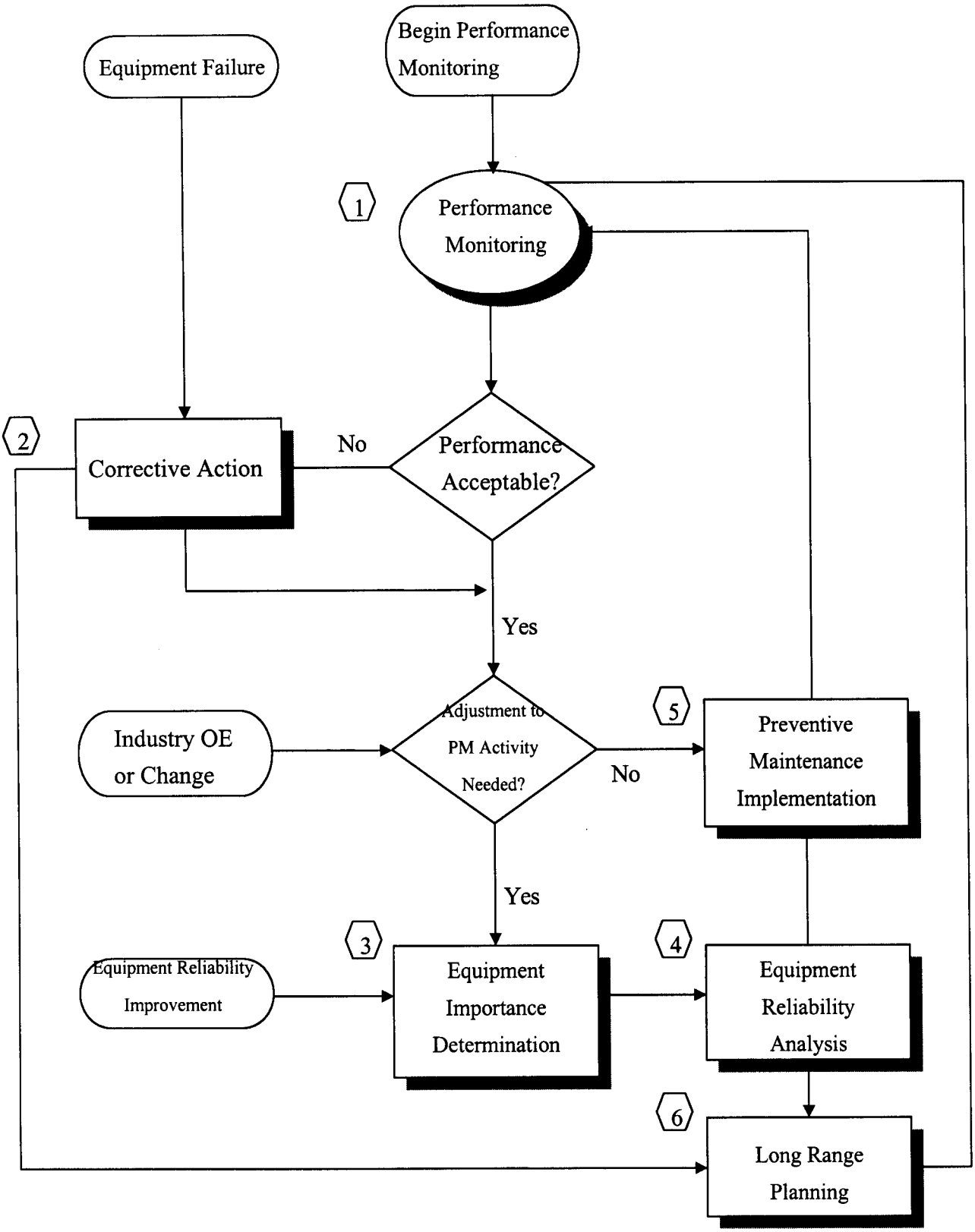
Actions:
•Identify appropriate PMs for High Or Medium risk ranked components
•Review existing PMs
•Cancel unnecessary PMs
•Evaluate PM feedback
•Preventive Maintenance Review Team approve PM changes
•Identify required modifications

Process Block 6
Long-Range Planning

Inputs:
•Performance monitoring results
•Plant Health Committee prioritize actions
•Required design changes

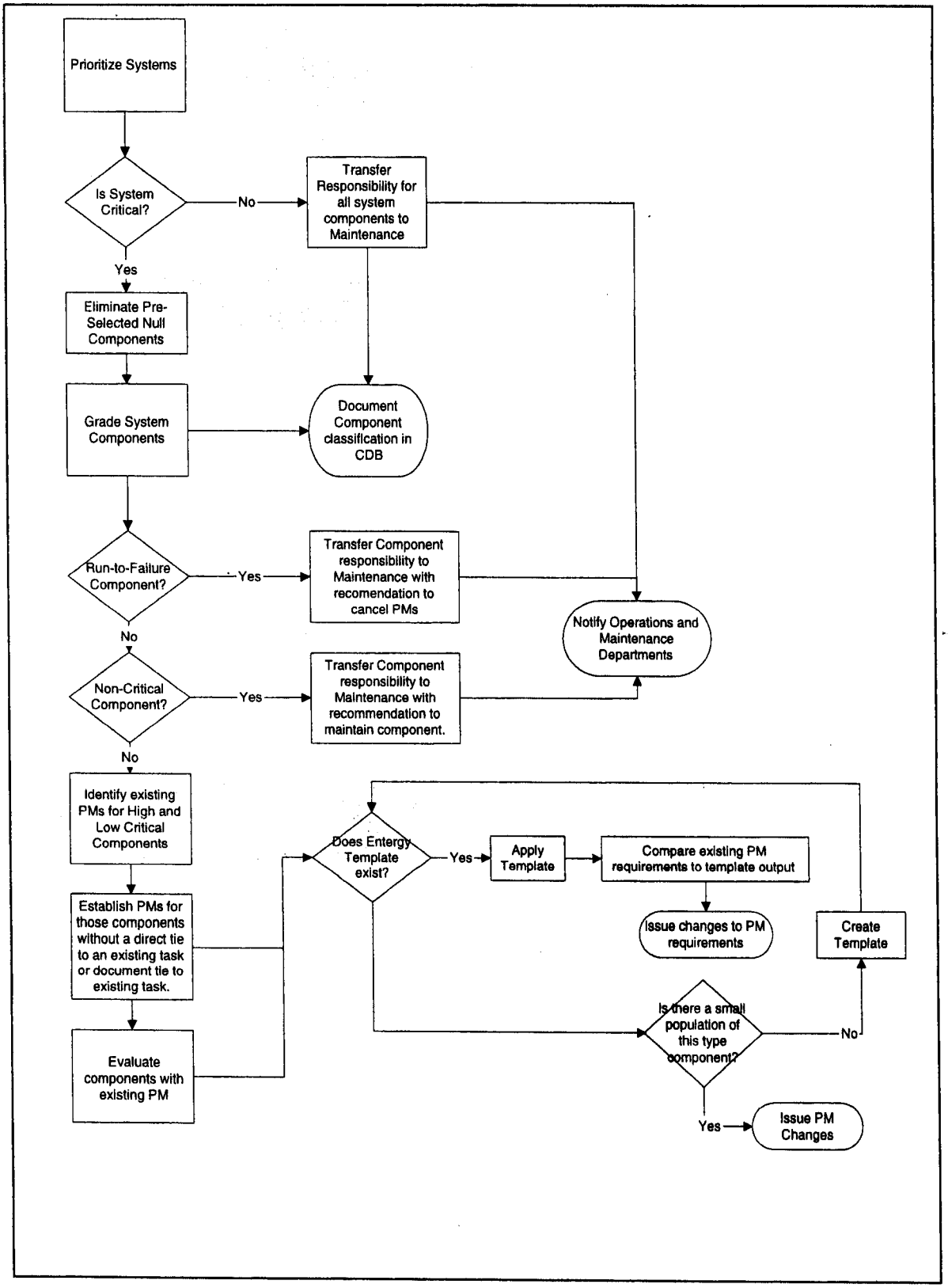
Actions:
•Develop long-term system health plans
•Develop short-term system health action plans
•Communicate to station personal issues that are affecting system health
•Communicate to station personal the priorities of actions to address system health issues
•Integrate into Site Business Plan

STP Equipment Reliability Process
Top Level Flowchart



Grand Gulf PM program

Process Flow Chart



ATTACHMENT 9.2 — CRITICAL SYSTEM DETERMINATION

System Number:

A "YES" answer to any of the questions below indicates the system is CRITICAL to the safe and reliable operation of the unit. Only Critical Systems require component classifications per Attachments 9.3 and 9.4.

DOES A FUNCTIONAL FAILURE OF THE SYSTEM RESULT IN ANY OF THE FOLLOWING?

YES	NO	
☐	☐	1. Reactor Shutdown (SCRAM/Trip)?
☐	☐	2. Half SCRAM/Trip or Half Isolation?
☐	☐	3. Any Down power, unit de-rate, or delay a plant startup by more than a shift?
☐	☐	4. ESF Actuation?
☐	☐	5. Failure to respond to an ATWS event or adverse regulatory consequences?
☐	☐	6. Entry into an LCO?
☐	☐	7. Failure to control a critical safety function? a. Reactor water level or pressure b. Primary or Secondary Containment c. Drywell temperature or pressure d. Spent Fuel Pool temperature or level e. Reactivity Control
☐	☐	8. Degradation or impact to the Fire Protection System?
☐	☐	9. Degrades the capability to shutdown the Reactor and maintain it in a shutdown condition?
☐	☐	10. Loss of a Maintenance Rule System?
☐	☐	11. Emergency Operating Procedure (EOP) consideration (would the functional failure cause the inability to perform an EOP)?
☐	☐	12. Inability to prevent or mitigate the consequences of an accident that could result in potential exposure in excess of 10CFR100?
☐	☐	13. Industrial Safety Concerns?
☐	☐	14. Result in other systems to fail, cascading effects?
☐	☐	15. Substantially increase the radiation exposure for corrective maintenance vs. periodic maintenance should the system fail and require rework?
☐	☐	16. Is the system required to satisfy a regulatory requirement?

Component Number/Type : _____

"High Critical Determination"

A "YES" answer to any of the questions below indicate the component is HIGH CRITICAL, proceed to the Duty Cycle Evaluation Section if any block is checked "YES". Questions 3 and 4 must be addressed for each component; a "YES" response to question 3 or 4 indicates a single failure vulnerability has been identified.

Does the components' functional failure result in any of the following?

YES	NO	
☐	☐	1. Inability to prevent or mitigate the consequences of an accident that could result in potential exposure in excess of 10CFR100 limits.
☐	☐	2. Life threatening industrial safety concern?
☐	☐	3. **Reactor Shutdown (SCRAM/Trip)?**
☐	☐	4. **Any Down power, unit de-rate, or delay a plant startup by more than a shift?**
☐	☐	5. Entry into a Shutdown LCO?
☐	☐	6. Failure to control a critical safety function? a. Reactor water level or pressure b. Primary or Secondary Containment c. Drywell temperature or pressure d. Spent Fuel Pool temperature or level e. Reactivity Control
☐	☐	7. Loss of a Critical System Function?
☐	☐	8. Half SCRAM/Trip or Half Isolation?
☐	☐	9. Degraded capability to shutdown the Reactor and maintain it in a shutdown condition?
☐	☐	10. Loss of a Maintenance Rule High Risk System Function?
☐	☐	11. ESF Actuation?
☐	☐	12. Emergency Operating Procedure (EOP) consideration (would the functional failure cause the inability to perform an EOP)?

"Low Critical Determination"

A "YES" answer to any of the questions below indicates the component is LOW CRITICAL; proceed to Duty Cycle Evaluation Section if any block is checked YES.

Does the component's functional failure result in any of the following?

YES	NO		
☐	☐	1.	Are there adverse consequences from allowing the equipment to fail? (e.g., functional failure of a Maintenance Rule system, GL-89-13, SOER 89-03, Compliance Instrument, Security PM, Appendix R, Fire Protection Plan or Insurance Requirements)
☐	☐	2.	Is personnel radiation exposure substantially increased if the component fails and is worked on-line? (Substantially increased from performing corrective maintenance as opposed to preventive maintenance.)
☐	☐	3.	Is component required for critical system redundancy?
☐	☐	4.	Promote failure of other components?
☐	☐	5.	Non-Life Threatening industrial safety or environmental concerns encountered by allowing the component to fail?
☐	☐	6.	Entry into a Tech Spec or TRM LCO?

"Non-Critical Component Evaluation"

A "YES" answer to any of the questions below indicates the component is a NON-CRITICAL Component that may warrant periodic maintenance, otherwise the component should be considered as Run-To-Failure.

Does the component's functional failure result in any of the following?

YES	NO		
☐	☐	1.	Is the component necessary for work on a critical component (for example, isolation valves)?
☐	☐	2.	Failure of a high cost component (>$50K) that is more cost effective to maintain than to repair or replace?
☐	☐	3.	A substantial planning period, i.e. long lead time for replacement parts, which prevents a required component from being repaired in a timely fashion?
☐	☐	4.	Excessive corrective maintenance on this type component or similar components has been performed on this component and should be eliminated?
☐	☐	5.	A simple, cost effective task to maintain the component rather than running it to failure?
☐	☐	6.	Are there any other compelling reasons to perform Preventive Maintenance on the component rather than allow it to fail?