

Zion Station Decommissioning Organization  
Engineering Dept.  
ComEd

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# SAFSTOR

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## Project Plan

Revision [00] [09/25/98]

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## **1.0 INTRODUCTION**

This Project Plan (hereafter referred to as the “plan”) is a formal, approved document used to guide both project execution and project control. The plan provides a baseline for future decision making. Primary uses of this plan are to document planning assumptions and decisions, to facilitate communications among stakeholders, to identify necessary activities and to document approved scope, cost and schedule baselines as necessary. This plan is a “living document” and will be revised to communicate and document major changes to scope, cost or schedule. The scope of this plan is to identify all SAFSTOR activities categorized as follows:

- Plant modifications
- Program and procedure revision
- Securing fluid and electrical systems
- Removal of hazards

This plan does not include detailed activities associated with spent fuel shipment, Spent Fuel Nuclear Island (SFNI), Security or any demolition plans, however overall time frames for those activities are identified here for completeness.

## **2.0 DESCRIPTION**

### **A. BACKGROUND INFORMATION**

The announcement of the closing of the Zion station on 01/15/98 represented an economic decision based on future generating capacity, availability and a deregulated business environment. This closing, however, is approximately 15 years earlier than the 2013 end of license expectation, and as such represents a financial burden. The concept of SAFSTOR represents a compilation of actions taken to place the plant in a dormant condition that is both safe to the public and the employee. It allows for significant activities in the early years, (high priority) and minimal activities for later years leading up to dismantlement. Thus, the SAFSTOR project satisfies a desire to maintain a safe facility until the time when funds are available to allow for subsequent actions toward total demolition and return of the area to unrestricted use.

### **B. OBJECTIVE**

The desired objective of the plan is to establish a vision of what the facility will look like in the SAFSTOR condition and then schedule those activities to achieve that vision. A condition of the plant that allows for a safe dormant mode, in that hazardous materials are removed, electrical isolation has been performed for all designated areas, contaminated materials/areas are clearly defined, fluid systems that are drained and procedures are established for dormancy. All high priority tasks have been achieved during the early years and lower priority activities are defined and proceeding. Activities at the plant site will be limited to those that include support of the SFNI, security, controlling and monitoring effluents and maintaining structures and license.

### **C. APPROACH / SOLUTION**

The magnitude of activities to achieve SAFSTOR is such that representatives from all appropriate departments have been assembled to solicit input for any and all activities that might be considered a SAFSTOR activity. The SAFSTOR vision was defined and used as a basis for scheduling and prioritizing those activities.

Once all activities are assembled, they will be prioritized. Those activities that require dependency between departments will be defined and incorporated into the overall schedule. This approach provides for all departments to be creative in their specialties to achieve a SAFSTOR condition and allow for positive interaction in determining those activities that provide an immediate benefit (i.e. performed while manpower is available) and those that can be performed with limited staffing.

Major systems expected to be left in service during the early phases of SAFSTOR:

- Service Water - maintain fire header protection; synchronous condenser; spent fuel cooling;
- Component Cooling – spent fuel cooling;
- Domestic Water Supply - provide potable water for drinking and lavatories
- Radiological Monitoring Equipment - monitor site radiological condition

- HVAC - provide air flow for designated areas in aux, turbine and containment
- RHR - highly contaminated and potentially effects efforts in other areas of the plant; drained last.

A large portion of the SAFSTOR activities is comprised of draining and de-energization. A standard formatted work request will be utilized to insure routing goes through operating, engineering, radiation protection, maintenance and subsequent labeling to insure all parties address the activity to the final closure of marking in the field.

Staffing to achieve SAFSTOR has been pre-determined at a site level of 189. The activities associated with the SAFSTOR project are to allow subsequent operation of the facility with a staffing of 50 or less. As such, occupation of any building space will be very limited.

#### **D. PRIORITY**

Staffing for the Zion Decommissioning Organization (ZDO) has been determined and has been projected through at least the end of 1999. Therefore, along with daily activities associated with current license requirements, all SAFSTOR activities must be considered a priority. Activities directly associated with this project and deemed a priority are the draining, de-energizing and hazard removal of those components no longer necessary for operation. Freeze concerns, fire loads and radiological concerns were established as the basis for prioritization.

### **3.0 SCOPE**

The scope of this project can be divided into three phases, Study (definition), Design (planning) and Implementation.

#### **A. STUDY**

The study phase has determined that Zion station will be maintained in a SAFSTOR condition and that formation of a SAFSTOR plan is required. This plan satisfies a need for the next steps to take after the efforts of synchronous condenser and defueling. The overall plan calls for a performance of activities that will further place the condition of the plant in a safe mode within all regulatory requirements and allow for a subsequent reduced level of manpower. The implementation of a SAFSTOR condition fits within the budgetary limits of the Zion stations pre-mature closing and the availability of funds for demolition.

#### **B. DESIGN**

The design phase commences by defining the SAFSTOR concept and establishing a vision. The NRC has, along with other utilities in various stages of decommissioning, defined SAFSTOR within various degrees of commonality. **SAFSTOR** is defined as those actions taken to place **AND** maintain the facility in such a condition that will allow for safe subsequent decontamination and dismantlement so as to permit the release of the facility for unrestricted use. The work scope of SAFSTOR will be focused on activities to obtain a safe dormant condition.

The vision of the Zion SAFSTOR mode is as follows:

- Plant is dark – lighting provided as necessary to allow inspection, walk arounds, egress.
- Minimal ventilation – fans may be provided; air sampling as entries are made.
- Piping/tanks drained – all liquids removed from piping systems; sump piping operable.
- Breakers/Fuses pulled – electrical busses de-energized; electrical demands supplied from offsite
- Hazards removed – asbestos left in place
- Hot spots labeled
- SAFSTOR labeled – components and rooms marked with SAFSTOR after drained or de-energized

To achieve this, the design or planning phase will consist of collecting all submitted SAFSTOR tasks from the Operating, Engineering, HP/chemistry, Maintenance, Services and Regulatory Assurance groups and developing a priority based on our definition. Dependency between departments, overall safety and resource loading will all be factored into establishing a schedule. Integration of these activities into a station schedule will then be performed.

An initial design scope of activities to be addressed is as follows:

- Drain “not required” systems as defined in revision 0 Master RES Reference Document. These systems are the BD, CD, CS, DT, EHC, ES, FW, HD, HM, IW, MS, RC, PP, RH, SI  
Additional systems will be added as the plant converts to a nuclear island.
- De-energization of the systems above
- Draining of oil from systems.
- Perform a procedure review to determine those existing procedures that are either not required, still required or those requiring change.
- Remove hazardous materials. Removal of asbestos at this time is not a planned activity unless the condition is judged to be an immediate hazard or is associated with a work activity.
- Revise Fire Protection plan as it relates with SAFSTOR activities

## **STATION HARDWARE MODIFICATIONS**

Some plant changes may be required in order to place and maintain the station in a SAFSTOR mode. As these changes are identified, they will be identified within the plan.

- Fire Alarm Systems

The city of Zion has requested that all fire alarms at the Zion plant be connected directly to their alarm panel. Action plans to respond have not been asserted. Engineering has been assigned as the responsible group.

- **Spent Fuel Nuclear Island (SFNI)**

Modify the spent fuel building to be self-supporting for cooling, HVAC and supply for the spent fuel pool. This is a separately managed project

- **Buried Tanks / Piping**

Two buried tanks have been identified and are scheduled for removal. One is the fuel tank located outside the double fence between the two 8-packs. The other is the containment spray oil tank located behind the IDNS building, approximate coordinates at col-row X-24. As indicated in the schedule, the fuel tank is scheduled for removal around the week of 11/6/98 and WR 980093909 has been initiated to schedule removal of the remaining oil tank.

Buried pipe will not be removed until demolition of the facility is initiated. The cathodic protection of these pipes is scheduled for de-energization approximately 10/1/99.

- **Station Heating**

The station heating system will be modified in order to remove dependency on the Auxiliary Boiler. The '98-'99 heating season will include a smaller more efficient boiler. (temp-aux) Plastic covers over the east turbine building louvers will be installed to reduce the effect of wind. During the calendar year 1999, many systems are scheduled for draining. Heating demands will change and the station heating for "99-'00 will require a re-evaluation. One option is to install electric heaters for the main plant; local heaters in those areas where heat is still necessary is another option. This task will be assigned later.

- **Electrical Distribution**

Although the intent is to achieve a dark, non-energized facility, electrical demands within the SAFSTOR structures will still exist. Items such as lighting, sump pumps and miscellaneous demands are required with an ability to easily isolate. Options to consider are tapping off of the bus for the nuclear island in the spent fuel building however this would require a penetration from the fuel handling building into the auxiliary building area. Arranging a separate bus/ distribution panel powered by off site and located even outside could provide as a distribution point to the areas of need. Lighting could consist of strung bulbs or tie into the existing lighting cabinets. This task will be assigned later.

- **Waste Water Treatment Facility**

This task will be assigned later.

- **Potable Water**

The Zion Station source of potable water currently enters the turbine building below ground elevation at the approximate building coordinates H-5. The piping within the 560'-00" elevation is insulated but walkdown of the piping would be required to confirm all pipe branches are. As heat may no longer be supplied to some of these areas, potential freezing is a concern. Depending on the final approved physical re-location of personnel at the Zion site, this line may require re-routing and/or cutting and capping. This task will be assigned later.

- **Seismic Monitors**

In accordance with Regulatory Guide 1.12, seismic accelerometers have been placed at the Zion station. In the SAFSTOR condition, it is not clear whether this monitoring is still required. The fuel pool itself is the only seismic structure to remain. This system has both active and passive elements associated with it and will require a determination for any relocating and/or re-wiring control cables for monitoring. This task will be assigned later.

- **Spent Fuel Pool Leakage**

Existing monitoring of the spent fuel pool leakage is performed via a visual inspection of a sight glass contained within the leakage collection pipelines. Six site glasses on this piping are located within the auxiliary building pipe chase at elevation 542'-00". Since this building will be separated from the spent fuel nuclear island, some modification to these lines will be required. The re-routing of these lines will be incorporated into the design consideration of the building sumps. This task will be assigned later.

- **Building Sumps**

With the plant in a SAFSTOR mode, some equipment within the buildings will still be required to function. One of them is the building sump. The existing building sumps presently pump all collected water to the waste drain system. As this system is drained and de-energized, the collection of this water will still need to be processed. One option is to maintain the current system and occasionally operate as required. Another is to provide piping from the sumps to a central collection point and contract out collection and processing of this water. This task will be assigned later.

- **Quality Assurance Records Vault**

The existing vault room is located on the 617'-00" level at building coordinates C - 2. As systems are drained, de-energized and lighting removed, access to this location may be difficult. A nuclear tracking item (NTS # 295-201-98-CAQ00653-02) has been assigned to engineering to determine the feasibility of re-locating this facility. This room requires fire protection and temperature controls in order to be maintained.

- **Relocation**

The final personnel location on site has not been determined. Since staffing will be at an approximate 50 manpower level, both shop and office personnel can be in close proximity. The shop on the first floor of the service building(s) will presumably be functional, therefore the first floor of the east service building as well as floors 1 through 4 of the west service building may be practical. This maintains the locker room facilities, the central file room and allows room for offices and the records vault. Floors 2 through 6 of the east service building could be shut off since only office space exists at these locations. Heating and cooling of this facility would require investigation as well as offsite power supply connections. This task will be assigned later.

## STATION PROGRAM MODIFICATIONS

Numerous programs will be required to change in order to achieve SAFSTOR. The following items reflect a collection of those programs that will require some sort of change.

- Security Program

The security program will be managed as a separate task. Security will be focused on the spent fuel nuclear island.

- Procedures

A sort by responsible department of all procedures has been completed. Using the SAFSTOR vision as a basis, each department will review the list to determine if the procedure is acceptable as is, needs revising or can be voided. The breakdown of procedures is as follows:

-Operating	1526	
-Engineering	60**	
-Rad Protection	176	
-Elec. Maint	94*	
-Chemistry	289	
-MIS	XXX	
-Mech. Maint.	460*	
-Maint. Staff	24*	
-Quality Control	4	
-Reg. Assurance	12	DSAR,TS,
-Security	39	
-System Engr.	599**	
-Site Support Engr.	6**	
-Stores	7	
-Work Control	7	

- \*Combined into Maintenance department
- \*\*Combined with Engineering

A workdown schedule to determine the desired disposition of all of these procedures will be determined by 1/99. At that time, disposition of those procedures can be performed through the end of 1999 to support final plant configuration.

- Snubbers

Snubbers will be left as is in the plant until final demolition occurs. The hydraulic fluid contained within the snubber has been reviewed by engineering and is not considered a combustible or a hazardous fluid. If leakage occurs, the applicable snubber may be removed or the leakage simply cleaned up.

- Annunciators

As systems are drained and de-energized, annunciators may activate. The Operating department will generate a new/revised procedure to address this concern by 12/98.

- Draining / De-energizing

ZAP 510-03 has been developed to define the controls involved in specifying the draining and de-energization process. This procedure, attachment XX, was approved for use on 9/15/98. Training will be given to the departments involved and work packages defining the boundaries of draining and de-energization per the procedure will be assembled. The schedule calls for approximately 22 systems to be addressed by this process by the end of 1998. A system by system schedule has been assembled and attached.

- Corrective/Preventive Maintenance Program

Functional equipment that remains as part of the SAFSTOR and SFNI projects will require a defined maintenance program. This task will be assigned later.

- Surveillance/Testing Program

SAFSTOR requires that the facility be maintained in a safe condition prior to demolition. A program that will define how that is satisfied will be assembled. This task will be assigned later.

- Quality/Corrective Action Program

The definition of this program has not been established. This task will be assigned later.

- Configuration Control Program

The procedure for draining and de-energizing establishes a process where marked up drawings will be utilized as the configuration mechanism of the plant. Folders assembled for each system will contain these as well as work requests and any other document associated with activities performed on that system as defined in the SAFSTOR plan. See revised ZAP 510-03 attached.

- Quality Assurance Program

This task will be assigned later.

- **Radiologically Controlled Areas**

It will be desirable to consolidate the radiological controlled areas. Either one or both of the containment structures may satisfy this desire. It will have to be determined what will be stored on site as waste and what components will be shipped off for burial. Economic factoring enters into the decision making. This activity will need to be investigated. This task will be assigned later.

- **Chemistry Program**

The chemistry requirements to be maintained at Zion will be more involved with the SFNI project and the spent fuel pool. This program will be defined within that project.

- **PCB Transformers**

Periodic Testing procedure, PT-135, Inspection of Transformers Containing PCB, currently defines all transformers on site that contain PCB's. As de-energization progresses and these are no longer powered, they will be removed from site. This will be monitored as part of the draining and de-energization program. As busses with these transformers are de-energized, AR's will be written to remove.

- **Emergency Plan**

The emergency plan will require changes to define the actions required as a potential result of a site emergency. Those emergencies and required actions will need to be defined along with actions required. This task will be assigned later.

### C. IMPLEMENTATION

The implementation phase of several activities has already begun. A description of those activities follows. Some of these still require action and will be assigned.

Agreement on the schedule will then initiate activity to enter this schedule into the overall site schedule.

Individual departments will be responsible for adhering to and maintaining.

- **ALARA/Rad Protection**

ZAP 600-01, ALARA Program, will be followed during all activities. Hot spots will be defined and appropriate measures taken. Options to remove, shield or post the area will occur. The SAFSTOR effort is to place the plant in a safe condition that will allow for maintaining and subsequent demolition. No radiation monitoring is included in the SAFSTOR design but shall be included in the SFNI plan. Waste disposal radiation monitoring will be included as part of sump water collection and discharge. Aux building ventilation (AV) along with filter vent (VF) will be monitored until the time when those systems will be designated for de-energizing. This is scheduled for approximately 6/00.

- **Filters**

Radioactive filters currently within the spent fuel pool are scheduled for removal on 10/3/98 and 11/7/98. System filters contained within the volume control system are scheduled for removal 3/99. This activity is timed with the schedule of draining and denergizing of the primary water (PW) system.

- **Thimble Insertion**

Radioactively hot thimbles will be inserted (stored) into the vessel. This effort is scheduled for approximately 10/19/98.

- **NaOH Tank Cleanup**

The sodium hydroxide within this tank represents a hazard. This tank is scheduled to be drained and cleaned the last quarter of 1998.

- **Fuel Transfer Canal**

In order to reduce exposure around the transfer canal in the fuel handling building, the canal will be de-conned. This effort is scheduled for December 1998.

- **Safety**

Safety is the number one priority and is vital to the success of the SAFSTOR project. Draining of all systems will be monitored by radiation protection to insure all releases are within both environmental and radiological limits. De-energizing details will be reviewed by engineering and operating to insure power is safely de-energized. Any component removal will be reviewed by engineering to insure that the remaining structure is in a sound condition.

- **Service Water / Component Cooling**

The operation of the current spent fuel cooling system and the synchronous condensers require that these two systems remain available. Cutting and capping portions of these systems to isolate from those portions that are not required may not be economically feasible. This will require a case by case evaluation, as isolation points are determined. Both systems will eventually be no longer required once the spent fuel nuclear island is operational and the synchronous condensers are no longer required. These systems are expected to be one of the last for draining and de-energizing.

- **Emergency Diesel Generators**

Maintenance of the EDGs will be determined on an as-needed basis

- **Resin Removal**

With the draining and de-energization of the primary water (PW) system scheduled for the second quarter of 1999, the resin removal system can then be drained and de-energized. The removal of resin material from all demineralizers is scheduled for September 1999. The tie line from the spent fuel demins to the spent resin storage tank will be cut and capped. This time frame coincides with the completion of SFNI.

- **Unit 1 Hatch**

Re-installation of the unit 1 hatch is scheduled for the October/November 1998 time frame. The installation will function as a controlled entry point to the containment.

- **New Fuel Movement**

Defueling the reactors is complete. Shipping offsite the new unit 1 fuel that was never inserted into the vessel has been completed. New unit 2 fuel, which was placed in the vessel, has been deconned and is in the process of being evaluated for its ability to be returned to Westinghouse.

- **Irradiated Hardware in SFP**

Over the years, as highly contaminated scrap components collected, they were deposited into the spent fuel pool. Thimble tubes are a main contributor to this collection of highly radioactive components. There is a need to know what has been collected in the bottom of the pool in order to assure control. An inventory will be performed approximately February 1999 to document. No effort will be made to remove or dispose of at this time.

## **4.0 SCHEDULE / MILESTONES**

The Project schedule will be developed, detailed and updated. Tasks will be prioritized with 1998 and 1999 activities. Attachment A provides a level 1 schedule for tasks defined at this time.

Some of the preliminary milestones for the SAFSTOR Project are identified below:

- -Assemble all departments for initial kick-off meeting
- -Collect all department SAFSTOR activities
- -Perform initial department prioritization
- -Meet with individual departments
- -Assemble Project Plan
- -Assemble necessary budgets
- -Prepare schedule
- -Procedure for draining/de-energization

## **5.0 BUDGET / COSTS**

Performance of this project will utilize existing resources (i.e. manpower) assigned to the ZDO. That budget item is a sunk cost and will not be reflected here. Those additional costs expected to be incurred as a result of SAFSTOR activities will be, for example, material removal, A/E contracted work (if required), overtime, etc. The initial Project budget will be developed and will be updated / approved per approved procedures. Actual costs will be evaluated against the approved budget during project meetings. Any variances will be brought to the attention of the Project Manager for disposition. Project cost performance will be measured against the baseline budget and adjustments made during the project.

## **6.0 ORGANIZATION**

A. Project Sponsor - D. Bump	X-4301
B. Project Manager - R. L. Krawczyk	X-2662
C. Operating Department - R. Landrum	X-3714
R. Pocius	X-2301
D. Regulatory Assurance - J. Waters	X-2984
E. Maintenance - G. Depta	X-4025
F. Training - W. Meade	X-78-4309
G. Materials Management - J. Wu	X-3321
M. Gooder	X-2332
H. Chemistry - M. Beaumont	X-2695
I. Security - T. Sovey	X-2265
J. Radiation Protection - R. Schuster	X-2975

## **7.0 COMMUNICATIONS / REPORTING**

Communications will occur in the following ways. First, informally at project meetings and during conference calls. There is a cross section of site support members on the project team. It will be the responsibility of the people representing an area to feed information back to that area as well as making their concerns known to the team. Additionally, anyone can participate on the team or in team communications.

Second, meeting notes will not be provided from the meetings/calls. There may be, in the form of E-mail correspondence, action plans, updates to action plans or monthly updates.

Third, site meetings/briefings will be held to update Senior Managers and obtain their concurrence on strategies.

## **8.0 RISK**

The risk associated with this project is not achieving the plant condition that will allow for a reduced level of staff operation. Currently Zion station is in a safe configuration. Failure to meet scheduled tasks may affect short term staffing beyond expected staff reduction time frames. To overcome this potential, management will be forced to recognize the priority associated with the tasks at hand. Schedule performance will be critical.

## **9.0 PERFORMANCE MEASURES**

The success of this project will not only be measured by budget and schedule performance, but also by the effect on safety. ALARA will be a performance practice by which to measure success, however, no specific ALARA goals will be quantified.

Specific Performance indicators such as those priorities to be completed within 1998 as well as those by mid 1999 will be established after the scope has been better defined.

## **10.0 LICENSING STRATEGY**

The performance of the SAFSTOR does not address any licensing strategy. No activities will be performed, however, that violate our licensing commitments. Changes to both the DSAR and Tech Specs subsequent to the operation of the spent fuel nuclear island will be necessary to proceed with SAFSTOR after not required systems are drained and de-energized. It is required, however, that a Post-Shutdown Decommissioning Activities Report (PSDAR) be issued within 2 years of the filing of the plant closure. No major demolition activities will occur prior to that filing. Although not directly a function under this plan, this project will support activities to comply with that requirement.

## **11.0 CONTRACTING / PROCUREMENT**

LATER AS REQUIRED

## **12.0 CONTROLS**

The function of project controls is early detection and actions taken to mitigate variances between baseline and actual project performance. These actions permit timely and appropriate corrective action by the Project Manager. These control functions will be utilized during all phases of the project. The Plan will be used as the baseline in the determination of variances.

## **13.0 ATTACHMENTS**

- A. Schedule
- B. ZAP 510-03 Plant Lay-up Program
- C.

## **14.0 CHECKLISTS**

1. To be determined.
- 2.
- 3.

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**ATTACHMENT 1**

**SCHEDULE**

# SAFSTOR

9/28/98  
REV 3

ID	Project No.	Task Name	Q3 '98		Q4 '98		Q1 '99			Q2 '99		Q3 '99			Q4 '99			Q1 '00			Q2 '00					
			J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
1		OPERATING ACTIVITIES																								
2	OA-1	EVALUATE OPS DEPT PROCEDURES																								
3	OA-2	DISPOSITION OPS DEPT PROCEDURES																								
4	OA-3-1	DRAIN / DE-ENERGIZE PRIORITY "1" SYSTEMS																								
5	OA-3-2	DRAIN / DE-ENERGIZE PRIORITY "2" SYSTEMS																								
6	OA-3-3	DRAIN / DE-ENERGIZE PRIORITY "3" SYSTEMS																								
7	OA-3-4	DRAIN / DE-ENERGIZE PRIORITY "4" SYSTEMS																								
8	OA-3-5	DRAIN / DE-ENERGIZE PRIORITY "5" SYSTEMS																								



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REV 3

ID	Project No.	Task Name	8	Q3 '98				Q4 '98			Q1 '99			Q2 '99			Q3 '99			Q4 '99			Q1 '00			Q2 '00		
				J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
33		RAD PROTECTION ACTIVITIES																										
34	RP-1	EVALUATE RP DEPT PROCEDURES					8/31				1/5																	
35	RP-2	DISPOSITION RP DEPT PROCEDURES								1/5																		
36	RP-3	SPENT FUEL PIT FILTER REMOVAL																										
37	RP-4	NaOH REMOVAL and TANK CLEANING					10/5				12/4																	
38	RP-5	TANK & SUMP CLEANUP (IN HOUSE 13)					10/5				12/31																	
39	RP-6	TANK & SUMP CLEANUP (CONT. 4)								1/5																		
40	RP-7	RESIN REMOVAL																										
41	RP-8	TRANSFER CANAL DECON																										
42	RP-9	OIL REMOVAL																										
43	RP-10	RP TO REVIEW HOT SPOT DRAWINGS	7/20																									
44	RP-11	MISC SYSTEM FILTER REMOVAL	7/20																									
45	RP-12	INSERT THIMBELS																										
46	RP-13	SFP INVENTORY																										

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ID	Project No.	Task Name	B	Q3 '98			Q4 '98			Q1 '99			Q2 '99			Q3 '99			Q4 '99			Q1 '00			Q2 '00		
				J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
47		REGULATORY ASSURANCE ACTIVITIES																									
53	RA-1	DSAR																									
54	RA-2	PDTS		7/20								12/31															
55	RA-3	PSDAR		7/20					10/30																		
												</															



# SAFSTOR

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REV 3

ID	Project No.	Task Name	B	Q3 '98				Q4 '98			Q1 '99			Q2 '99			Q3 '99			Q4 '99			Q1 '00			Q2 '00		
			J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
79		ADMINISTRATION																										
80	AD-1	SURVEY - LIST ALL PRCEDURES	7/20																									

# SAFSTOR

9/28/98  
REV 3

ID	Project No.	Task Name	8	Q3 '98				Q4 '98				Q1 '99			Q2 '99			Q3 '99				Q4 '99			Q1 '00			Q2 '00				
				J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	J	J	J
81		CHEMISTRY ACTIVITIES																														
82	CH-1	EVALUATE CHEM DEPT PROCEDURES																														
83	CH-2	DISPOSITION CHEM DEPT PROCEDURES																														

# SAFSTOR SYSTEMS

PRIORITY "1" SYSTEMS

CD, FW, HD, HM, MS, ES, BD, EHC, IW, PP, NTp, SI,  
CS, RC, DT

PRIORITY "2" SYSTEMS

CR, IC, LL, NR, RP, RVH, TC

PRIORITY "3" SYSTEMS

NTp, Dwcont, (WS)MU, CA

PRIORITY "4" SYSTEMS

PW, VC

PRIORITY "5" SYSTEMS

RR, PV, ME, DW, BG, CA, CH, CP, EG

PRIORITY "6" SYSTEMS

SW, CC, OV, MP, IA, HS, HT, GE, GS, GC, AP, AV, CV,  
DC, IP, IS, PA, PV, RV, TT, TV, CO, DG/DO, RM/PR/AR,  
SS, WD, WG # EIA (electrical)

**ATTACHMENT 2**

**ZAP 510-03 PLANT LAY-UP PROGRAM**

# PLANT LAYUP PROGRAM

September 15, 1998

Zion Station

UNIT 1, 2 AND COMMON

- Change entire procedure to define the administrative process of controlling those systems and equipment which are to be drained and/or placed in a condition of safe storage.



**Table of Contents**

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**A. PURPOSE**

The purpose of this procedure is to define the administrative process of controlling those systems and equipment which are to be drained and/or placed in a condition of safe storage.

**B. SCOPE**

This procedure shall be used to place a system or equipment in safe storage (SAFSTOR as defined in this procedure). This procedure provides the method for implementing and controlling the activities to drain and/or deenergize a system. These activities include; (1) establishing instructions, in the form of a Special Procedure, for Operating personnel to make the required valve and breaker alignments, (2) providing drawings which identify the activities to be performed, (3) identify the work activities to be performed by the Maintenance Personnel, (4) providing the Shift Supervisor with the authority to approve minor alterations to the system to allow for the completion of draining as needed, and (5) establishing a method of control for the as-left condition of the system.

Since the process of placing a system into safe storage results in draining and deenergizing a system that has been classified as "Not Required", all activities defined and controlled by this procedure will, therefore, be performed on systems and components that no longer "prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public". As such, the controls and requirements of this procedure do not fall under the requirements of 10CFR50, Appendix B, and supersede the requirements of the plant modification program, ZAP 510-02.

C. DEFINITIONS

1. Engineering OOS

An Out-Of-Service condition on a component or system established and controlled by Engineering.

2. Master RES Reference Document

The Master RES Reference Document (OSR 27/98) consists of: (1) The Required Equipment Status List. This list is a summary of each system's classification; Operable, Required, Functional and/or Not Required, (2) A written justification for the selection of those systems that must be considered "Operable" and "Required", and those systems that can be considered "Functional" and "Not Required". This justification is given in part as a checklist defining the criteria that was used to classify the system and a brief description of the basis for the conclusion, and (3) A set of marked plant drawings showing the RES designations and their boundaries.

3. SAFSTOR

The method of decommissioning which the facility is placed in a safe stable condition and maintained in that state until it is subsequently decontaminated and dismantled to levels that permit license termination. During SAFSTOR, a facility is left intact, but fuel has been removed from the reactor vessel and radioactive liquids have been drained from systems and components and then processed.

**D. PROCEDURE**

**1. General**

- 1.1 This procedure may be used to place systems that are classified as "Not Required" in SAFSTOR. The Master RES Reference Document identifies those systems classified as "Not Required" and provides the basis for the classification.**
- 1.2 The Master RES Reference Drawings identify the boundaries for "Not Required" systems.**
- 1.3 Activities to place a system in SAFSTOR do not require a separate evaluation pursuant to 10CFR50.59 provided that: all the activities are "Approved Activities" identified in Appendix B of this procedure, all activities are contained within the "Not Required" boundary of the system, AND the "Not Required" boundary is maintained by an Engineering OOS. Refer to Appendix A for justification.**
- 1.4 A SAFSTOR Package consists of all documents to implement SAFSTOR of the system. This includes Attachment 1, SAFSTOR Authorization sheet, the associated Special Procedure, the associated markup drawings, the work package, and all Work Add Sheets (Attachment 2).**
- 1.5 An Engineering OOS shall be established to control the "Not Required" boundary. A separate OOS shall be established for the implementation of the work to drain and deenergize the system.**

**2. Preparing A SAFSTOR Package**

- 2.1 The preparer shall prepare a Special Procedure in accordance with ZAP 110-02. The Special Procedure shall provide the step-by-step instructions that are to be taken by Operating personnel to drain and deenergize the system. These instructions should also direct the activities of other departments. The Shift Supervisor will direct the coordination of all activities through the Special Procedure. Appendix A provides the safety evaluation for the implementation of the special procedure and associated work activities.**
- 2.2 The preparer shall initiate an Action Request for activities to be performed by Maintenance personnel.**
- 2.3 The preparer shall complete the "Request" section of Attachment 1, SAFSTOR Authorization. The "Description" section of Attachment 1 shall briefly describe the activities that are to be performed on the system.**

- 2.4 Route Attachment 1 and the Special Procedure to Engineering for review and approval.
3. Engineering Review And Approval
    - 3.1 Engineering shall review and approve all activities associated with placing a system in SAFSTOR. This review shall include the following:
      - a. Review of the activities to be performed and method of SAFSTOR.
      - b. Verifying the affected portion of the system is within the "NOT REQUIRED" boundary as defined in the Master RES Reference Document.
      - c. Approving the associated Special Procedure
    - 3.2 Engineering shall markup the appropriate controlled drawing(s) showing the activities to be performed and the as-left configuration of the system. The markups of the drawings shall be detailed to the extent that all alterations to the system (e.g.; pipes capped, wires determined, etc.) shall be identified and located. The markups shall be performed in red. Standard symbols as defined in P. & I.D. M-18 and M-19 should be used as required for piping drawings. Valve positions contrary to the drawing shall be identified and the required position stated. Breakers and fuses that are to remain open or removed shall be identified and the required position stated. Each markup drawing affected by the SAFSTOR shall be signed by Engineering.
    - 3.3 Verify that the affected portion of the system is bounded by an Engineering OOS. Identify the Engineering OOS on the markup drawing(s).
    - 3.4 Approval of the activities shall be signified by the Engineering review and approval of Attachment 1.
    - 3.5 Route the SAFSTOR Package to Operating for authorization to start work.
  4. Authorization, Revisions And Completion Of Work

- 4.1 The Shift Supervisor shall review the SAFSTOR Package. This review shall include the following:
  - a. Review of the activities to be performed and method of SAFSTOR.
  - b. Verifying the Work Request is ready for use.
  - c. Verifying the associated Special Procedure is approved for use.
  - d. Verifying the Engineering OOS is established.
  - e. Verifying the OOS for the work is established
- 4.2 Authorization to start work shall be signified by the Shift Supervisor signing on Attachment 1. Operating shall control the SAFSTOR Package during performance of the work.
- 4.3 All additional work activities identified after authorization to start work shall be documented on Attachment 2, Work Add Sheet. This Attachment shall be used describe and approve the additional work to be performed. A copy of the Attachment(s) shall be placed in the work package. Those activities not listed in Appendix B, "Approved Activities" shall be approved by Engineering prior to implementation. All Work Add sheets approved for use shall be identified on Attachment 1 by sequential numbering.
- 4.4 When all work activities are completed, the Shift Supervisor shall sign Attachment 1 and route the SAFSTOR Package to Engineering.
5. Master RES Reference Document Revision
  - 5.1 Engineering shall maintain the SAFSTOR Package for all completed work.
  - 5.2 The markup drawings associated with the implementation of SAFSTOR shall be added to the Master RES Reference document and become the RES Drawings. All Master RES Drawings that are revised shall be signed by Engineering.
  - 5.3 Engineering shall forward a copy of the revised Master RES Drawing(s) to Operating.
  - 5.4 Engineering shall complete Attachment 3, Drawing Revision For SAFSTOR and forward to Central File.

## APPEND'X A

### Evaluations Pursuant To 10CFR50.59

The purpose of this Appendix is to provide justification for performing activities to place systems in a condition of SAFSTOR pursuant to the requirements of 10CFR50.59. The following pages provide the safety evaluation that can be used for implementing the associated special procedures and work activities identified in Appendix B.

#### 10CFR50.59 SAFETY EVALUATION

Safety Evaluation Tracking No.: \_\_\_\_\_

List the documents implementing the proposed change. (Mod #, Temporary Alt #, Procedure #, DCR #, NWR #, etc.):

ZAP 510-03 and associated Special Procedures for draining and/or deenergizing systems

Station/Unit: Zion / Units 1 and/or 2      Applicable Modes: Defueled

Other Relevant Plant Conditions (Permanent/Temporary etc.): All fuel has been removed from the reactors and is stored in the spent fuel pool.

System(s) affected: Various: all systems classified as "Not Required" in the Master RES Reference Document

Equipment Name(s): Various: all equipment classified as "Not Required" in the Master RES Reference Document

EPN: N/A

#### NOTE

Consider the need for this activity on the other Unit or Train if not already addressed.

1a. Describe the proposed activity.

This safety evaluation is for draining and deenergizing systems for safe storage. The activities of placing a system in safe storage include: draining to normal sumps and/or tanks, leaving valves open that normally would be closed, deenergizing equipment and instruments, cutting and capping lines, attaching hoses to piping for routing water, inserting blanks between flanges, removing equipment and determining wires.

1b. Describe the reason for the proposed activity.

To place the systems in a safe stable condition until it is subsequently decontaminated and dismantled to levels that permit license termination (defined as SAFSTOR).

APPENDIX A (Continued)

- 2a. List the SAR sections reviewed, including approved pending UFSAR changes, which describe the affected systems, structures, or components (SSCs) or activities. Also list the SAR accident analysis sections that discuss the affected SSCs or their operation. List any other controlling documents such as SERs, previous modifications or Safety Evaluations, etc.

The Master Required Equipment Status Reference Document (RES) was developed through a controlled process which began with a review of the UFSAR. The purpose of this review was to identify those accidents and/or malfunction sequences described in the UFSAR that are applicable assuming that both unit's reactors are defueled with fuel in the spent fuel pool. From those accidents and/or malfunction sequences that are applicable, the systems and components required to prevent and/or mitigate these accidents as described in the UFSAR, were identified as applicable to the current licensing basis.

Secondly, a review of the current Technical Specifications was made. The systems and equipment which are required to be operable (per Technical Specifications) with no fuel in the reactor core were identified as "Operable" on the RES.

Refer to the Basis Section of the Master RES Reference Document for the specific system to be drained to obtain specific UFSAR and Technical Specification Sections and other controlling documents.

- 2b. State the SAR sections, paragraphs, or drawings that are impacted by this change.

Refer to the Basis Section of the Master RES Reference Document for the specific system to be drained

---

- 2c. Describe the change to the SAR words and drawings resulting from the proposed change described in Item 1a.

The revision to the SAR would be to delete all reference to the system or to state that the system has been permanently been drained, deenergized and abandoned in place.

- 2d. Is this a:

- Change to the facility as described in the SAR  
or  
 Change to a procedure as described in the SAR  
or  
 Test or experiment not described in the SAR

NOTE

For design changes, Exhibit I, Design Issues Worksheets should be reviewed and applicable items should be used to answer the remaining questions.

APPENDIX A (Continued)

3. Does the proposed activity involve an analog to digital conversion?

- YES - Review EPRI "Guideline on Licensing Digital Upgrades" (EPRI TR-102348) and continue to next Step.
- NO - Continue to next Step.

4. Describe the functions of the affected systems, structures or components.

The functions of the systems are irrelevant since the "Not Required" systems do not: (1) perform any specified safety function, (2) have any operability requirements per the Technical Specifications or licensing commitments, and (3) prevent or mitigate the consequences of any design accidents or malfunctions, in the current plant condition

5. Describe how the proposed activity will affect plant operation when the changed SSCs function as intended (i.e., focus on system operation/interactions in the absence of equipment failures). Consider all applicable operating modes. Include a discussion of any changed interactions with other SSCs. For a test or experiment, discuss the impact on the safe operation of the plant of any new technique or new system configuration.

There will be no effect on plant operation. These systems are currently not operating and there is no requirement or advantage for them to be operating.

6. Describe how the proposed activity will affect equipment failures. In particular, describe any new failure modes and their impact during applicable operating modes and applicable accident conditions.

There will be no effect on equipment failures. All failures associated with operating equipment are no longer applicable since the equipment will be deenergized and out-of-service. All alterations to the system configuration will result in the remainder of the system to be in compliance with the existing standard or code so as any structural failures will not be affected.

7. Identify each accident or anticipated transient, including LOCA and transient analysis, (i.e., large/small break LOCA, loss of load, turbine missiles, fire, flooding) described in the SAR where any of the following is true:

- The proposed activity alters the initial conditions used in the SAR analysis
- The changed SSC is explicitly or implicitly assumed to function during or after the accident
- Operation or failure of the changed SSC could lead to the accident

<u>ACCIDENT</u>	<u>SAR SECTION</u>
All	15.1 to 15.6
All	15.8

APPENDIX A (Continued)

8. List each Technical Specification (Safety Limit, Limiting Safety System Setting or Limiting Condition for Operation) where the requirement, associated action items, associated surveillances, or bases may be affected. To determine the factors affecting the specification, it is necessary to review the SAR, including approved pending UFSAR changes, where the Bases Section of the Technical Specifications does not explicitly state the basis.

<u>TECHNICAL SPECIFICATION</u>	<u>SECTION</u>
<u>None</u>	

9. Will the proposed activity require a new Technical Specification, Technical Specification revision, or other Operating License amendment?

**NOTE**

**If a Technical Specification revision or other Operating License amendment is required, contact Regulatory Assurance. When completing Step 16, indicate that a Technical Specification revision is required.**

- YES - A new Technical Specification will be required, or a limiting condition more conservative than an existing Tech Spec needs to be established, and the Tech Spec should be changed to bring it into conformance. Notify Regulatory Assurance that a License Amendment will be needed and proceed to the next step.
- YES - The proposed activity would be in CONFLICT with the existing Tech Spec or Operating License conditions, or require NEW Tech Specs or License conditions. Notify Regulatory Assurance that a License Amendment is needed and proceed to Step 16. NRC approval is required before implementation.
- NO - Proceed to next Step.

10. To determine if the activity may increase the probability or the consequences of an accident previously evaluated in the SAR, use one copy of this step to answer the following questions for each accident listed in Step 7 that is affected in a different manner. Provide the rationale for all answers.

Affected accidents: All SAR Section: 15.1 to 15.6 and 15.8

- 10a. May the probability of the accident be increased?  YES  NO

Since all fuel has been removed from the reactors, the accidents can no longer occur.

- 10b. May the consequences of the accident (off-site dose) be increased?  YES  NO

Since the accidents can no longer occur, the consequences can not increase.

APPENDIX A (Continued)

**If any answer to Step 10 is YES, then an Unreviewed Safety Question exists.  
Proceed to Step 16. If all answers are NO, proceed to next step.**

11. To determine if the activity increases the probability or consequences of a malfunction of equipment important to safety for either the analyzed accidents or other SAR requirements, answer the questions below. Provide the rationale for all answers.

- 11a. May the probability of a malfunction of equipment important to safety increase?  YES  NO

**The systems are to be drained and deenergized and do not provide any safety functions for the facility in the defueled condition.**

- 11b. May the consequences of a malfunction of equipment important to safety increase?  YES  NO

**There will be no effect on equipment malfunctions. All malfunctions associated with operating equipment are no longer applicable since the equipment will be deenergized and out-of-service. All alterations to the system configuration will result in the remainder of the system in compliance with the existing standard or code so as any structural failures will not be affected. Therefore, there will be no increase in the consequences of any malfunctions.**

**If the answer to Step 11 is YES, then an Unreviewed Safety Question exists.  
Proceed to Step 16. If the answer is NO, proceed to next step.**

**NOTE**

**Certain changes can impact the environment. They can include, but are not limited to: increase in noise level or heat discharged, change in station discharge quality (nonradiological liquid or gaseous effluents), changes to pollution control equipment, activities affecting vegetation or animal life, excavating land that was not disturbed during site preparation and plant construction. Consult Regulatory Assurance or Environmental Services to determine whether an environmental evaluation, or a permit or permit change is required.**

APPENDIX A (Continued)

12. Based on your answers to Steps 2, 5 and 6, may the change adversely impact systems or functions so as to create the possibility of an accident or malfunction of a type different from those evaluated in the SAR?

YES  NO

Describe the rationale for your answer:

Work activities that are performed within a NOT REQUIRED boundary of a system can be treated as maintenance on a system that is permanently out-of-service. This is due to the evaluation from the Master RES Reference Document which has concluded that systems classified as "Not Required" do not: (1) perform any specified safety function, (2) have any operability requirements per the Technical Specifications or licensing commitments, and (3) prevent or mitigate the consequences of any design accidents or malfunctions in the current plant condition. All work performed on these systems will be administratively controlled within the "Not Required" boundary by isolation of the system by an out-of-service. The activities of placing the system in SAFSTOR will render the system incapable of performing any of its design functions; however, it has been determined, through the evaluation for the RES that these systems perform no safety function and/or are not needed for safe operation of the facility in the current and/or future state of the facility. It is true that the activities associated with SAFSTOR are, or could be, considered "changes to the facility as described in the SAR". The activities of placing a system in SAFSTOR include: draining to normal sumps and/or tanks, leaving valves open that normally would be closed, deenergizing equipment and instruments, cutting and capping lines, attaching hoses to piping for routing water, inserting blanks between flanges, removing equipment and determining wires. In all cases, no unreviewed safety question can result from these activities.

If the answer to Step 12 is YES, then an Unreviewed Safety Question exists. Proceed to Step 16. If the answer is NO, proceed to next step.

APPENDIX A (Continued)

13. Determine if parameters used to establish the Technical Specification limits are changed. Use one copy of this page to answer Steps 13 and 14 for each Technical Specification listed in Step 8.

Affected Technical Specification(s): None

**CHECK APPROPRIATE CONDITION:**

- The change does not affect any parameters upon which Technical Specifications are based; therefore, there is no reduction in the margin of safety - proceed to Step 15.
- All changes to the parameters or conditions used to establish the Technical Specification requirements are in a conservative direction. Therefore, the actual acceptance limit need not be identified to determine that no reduction in margin of safety exists - proceed to Step 14.
- The Technical Specification or SAR provides a margin of safety or acceptance limit for the applicable parameter or condition. List the limit(s)/margin(s) and applicable reference for the margin of safety below - proceed to Step 14.
- The applicable parameter or condition change is in a potentially non-conservative direction and neither the Technical Specification, the SAR, or the SER provides a margin of safety or an acceptance limit. Request Regulatory Assurance assistance to identify the acceptance limit/margin for the Margin of Safety determination by consulting the SAR, SER's or other appropriate references. List the agreed limit(s)/margin(s) below. Proceed to Step 14.

Acceptance Limit(s)/Margin(s)  
of Safety

SAR Documents & Sections

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

14. DETERMINE, based upon the response to Step 13, whether or not the margin of safety is reduced (i.e.: the new values are outside of the acceptance limits). Include the rationale for the determination and a discussion of compensating factors used to reach the conclusion.

- YES - Margin of Safety IS reduced.
- NO - Margin of Safety is NOT reduced. Proceed to next Step.

Discussion:

\_\_\_\_\_  
\_\_\_\_\_

**If the response to Step 14 is "YES", the Margin of Safety is reduced and an Unreviewed Safety Question exists. Proceed to Step 16.**

APPENDIX A (Continued)

**NOTE**

**In some cases, the proposed activity being evaluated may be a candidate for adding words to the UFSAR. Consideration should be given to adding a discussion of key regulatory issues, regulatory documents (Generic Letters, Regulatory Guides, NRC Bulletins, etc.), station commitments and new equipment. (See Regulatory Guide 1.70 for level of detail)**

15. Is a change to the UFSAR needed?

- YES - UFSAR/Changes have been initiated via
- Tracking Control No.: \_\_\_\_\_
- OR**
- All applicable changes are attached. Proceed to next step.
- NO - Proceed to next step.

APPENDIX A (Continued)

16. Check one of the following:

- No Unreviewed Safety Question will result (Steps 10, 11, 12, and 14) AND no Technical Specification revision (Step 9) is required. The proposed activity may be implemented under the provision of 10CFR50.59 in accordance with applicable procedures.
- An Unreviewed Safety Question was identified in either Steps 10, 11, 12, or 14. The proposed activity cannot be implemented under the provisions of 10CFR50.59 and SHALL NOT be implemented without NRC approval.
- A new Technical Specification, Technical Specification revision (Step 9), or other License Amendment is required. Notify Station Regulatory Assurance that a License Amendment is required. Mark below as applicable.
- The change provides more conservative operational restrictions than those in the current Technical Specifications. In order to assure safe operation the following shall be performed:
  - A Reportability Review
  - A License Amendment Request. Regulatory Assurance concurs that administrative controls shall be implemented until receipt of the approved License Amendment.

Regulatory Assurance Concurrence:

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Print / Signature / Date

- The proposed activity is not a Facility change and shall not be implemented under 10CFR50.59.
- The proposed activity is a Facility change. Mark below as applicable.
  - A revision to an existing Technical Specification is required. The change SHALL NOT be installed until receipt of License Amendment
  - The installation work for this change will not conflict with any existing Technical Specifications. On Site Review may authorize installation, but not operation, prior to receipt of NRC approval of the License Amendment.

APPENDIX A (Continued)

**NOTE**

**Partial modifications and/or separate 10CFR50.59 reviews for portions of the work may be used to facilitate installation.**

- 17. Assign a Safety Evaluation tracking number and write it on page 1 of this form. Signatures below may be obtained prior to assigning a tracking number.
- 18. The preparer has determined that the documentation is adequate to support the above conclusion.

Preparer: \_\_\_\_\_ Date: \_\_\_\_\_  
                    Print           /           Signature

Dept. / Location: \_\_\_\_\_ Phone: \_\_\_\_\_

- 19. The reviewer has determined that the documentation is adequate to support the above conclusion and agrees with the conclusion.

Reviewer: \_\_\_\_\_ Date: \_\_\_\_\_  
                    Print           /           Signature

Dept. / Location: \_\_\_\_\_ Phone: \_\_\_\_\_

**APPENDIX B**

**Approved Activities For SAFSTOR**

The following activities may be performed on any system placed in SAFSTOR under the direction of this procedure.

Engineering approval is required to perform activities not identified in this Appendix or identified "Activities" that can not meet the associated "Criteria".

ACTIVITY	CRITERIA
Valve alignments contrary to Special Procedure	Operating Department concurrence
Deenergize equipment	Operating Department concurrence
Draining of piping	Liquid effluent to normal drain path or container
Cut and remove section of piping or equipment	Remaining piping cut back to within 1 foot of nearest supports
Drill drain holes in piping	Any location. Drain hole diameter < 1/2 pipe diameter
Loosen bolted flanges	All bolts remain threaded on flange (3 thread min.)
Remove bolts from flanges	Pipe supports span < 12 feet
Remove Fuses	Equipment fed within Engineering OOS
Remove/Rack-out breakers	Deenergized wiring determinated from cabinet
Determinate/Cut electrical wiring	Ends taped; associated feed breaker removed

**ATTACHMENT 1**  
**SAFSTOR Authorization**

**Request:**

WR# \_\_\_\_\_ Sys \_\_\_\_\_ Special Procedure # \_\_\_\_\_

Description:

Prepared By: \_\_\_\_\_

**Engineering Review:**

Affected Drawings: \_\_\_\_\_

Boundary Drawings(Master RES): \_\_\_\_\_ Eng  
OOS# \_\_\_\_\_

Reviewed By: \_\_\_\_\_ Date \_\_\_\_\_  
Engineer (Mech)

Reviewed By: \_\_\_\_\_ Date \_\_\_\_\_  
Engineer (Elec)

Approved By: \_\_\_\_\_ Date \_\_\_\_\_  
Eng. Supv.

**Operating Review:**

Authorization To Start Work: \_\_\_\_\_ Date \_\_\_\_\_  
Shift Supervisor

Work Add Sheets (# and brief discription; N/A if none used):

Work Completed: \_\_\_\_\_ Date \_\_\_\_\_  
Shift Supervisor

ATTACHMENT 2

Work Add Sheet

Sheet # \_\_\_\_\_

WR # \_\_\_\_\_ Sys \_\_\_\_\_ Special Procedure # \_\_\_\_\_

Description of Work To Be Added:

Is the work activity to be added listed on the Approved Activities, Appendix B?

YES, N/A Engineering approval       NO, Obtain Engineering approval

Approved By: \_\_\_\_\_ Date \_\_\_\_\_  
Engineering

Approved By: \_\_\_\_\_ Date \_\_\_\_\_  
Shift Engineer

**ATTACHMENT 3**

**Drawing Revision For SAFSTOR**

To: Central File

The following drawings have been affected by SAFSTOR activities. Please advise all requests for these drawings to review the Master RES Reference Drawings for changes to the system which may not be reflected in the controlled drawing.

Drawing	#	WR #
---------	---	------

Approved By: \_\_\_\_\_ Date \_\_\_\_\_  
Engineering