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	BNP INTE	GRATED SCHE	DULING
		REVISION 3	
	11/	EFFECTIVE DATE	
Sponsor	Superintendent.	On-Line Scheduling	= <u>11/9/97</u> Date
Concurrence	Manager - Dura	ges and Scheduling	- 11/12/97 Date
Approval	C.S.F. Director - Site O	perations	<u>11-13-97</u> Date
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REVISION SUMMARY

Revision 3 of this procedure incorporates the following changes:

FIGURE 3

- Designates approval authority for Figures 3 and 4 to the Operations Shift Superintendent on weekends, holidays, and backshifts.
- Clarifies responsibilities associated with concurrence and approval signature of Figure 3 (Step 5.2.1.12).
- Extends the time that manual entries can be added to the schedule without a Figure 3 from Wednesday of week T-3 to Tuesday of week T-2.
- Revises the format of Figure 3, Schedule Change Approval Form.

SAFETY SIGNIFICANCE

- Clarifies the definitions for low and high safety significant systems.
- Adds system 2070, CAC, to the list of high safety significant systems identified on Attachment 3, and adds 2070 to weeks A and E of Attachment 1, Twelve Week Rolling Schedule.
- Clarifies that, if needed, Equipment Out of Service(EOOS) software and/or PSA group may be consulted to assist in determination of risk significance of emergent failures/changing plant conditions.
- Divides the Approval Matrix for concurrent On-Line System Outages (formerly Allachment 2) by incorporating this information into Section 5.6.3.
- Revises the high safety significant function for the Fire Protection System (Attachment 3) to reflect that diesel driven fire pump low pressure injection is only significant during Unit Shutdown conditions and adds that fire protection in the DG, RX, SW and Control buildings is high safety significant.
- Revises the high safety significant function for RB HVAC (Attachment 3) to ide. tify that room cooling is not high safety significant.

REVISION SUMMARY

LONG RANGE PLAN

- Adds steps to the Responsibilities section for Plant Work Units to include identifying activities to be incorporated into the LRP and reviewing/updating the LRP.
- Changes titles from "LRP Responsible Manager" to "Project Manager" to align with ADM-NGGC-0102.
- Includes cost breakdown requirements for the Long Range Plan.
- Revises Figure 5, Long Range Plan Process Overview.
- Revises Section 5.7, Long Range Planning, to emphasize applicability of ADM-NGGC-0102.

ADMINISTRATIVE

- Replaces reference NGGM 305-05, Nuclear Generation Group Work Control Priority System with reference ADM-NGGC-0104.
- Adds reference Application of Probabilistic Safety Assessment to Maintenance Rule Implementation, Brunswick Nuclear Plant
- Adds reference 0PLP-01.2, Fire Protection System Operability, Action, and Surveillance Requirements.
- Deletes definition and reference to forced outage candidate list.
- Changes title from Superintendent, Outage Management to Superintendent, Outages.
- Other miscellaneous administrative changes.

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1.0 PURPOSE

1.1 Purpose

The purpose of this procedure is to provide additional instructions to identify the method by which the scheduling function identified in ADM-NGGC-0104, Work Management Process, is accomplished.

1.2 Objective

The objective of this procedure is to ensure that work is scheduled in accordance with safety regulations, Technical Specifications, Code requirements, and guidelines so that the plant is maintained in a safe, reliable, economic, and environmentally sound manner.

1.3 Scope

This procedure provides the administrative controls necessary to implement the scheduling functions identified in ADM-NGGC-0104, Work Management Process.

2.0 REFERENCES

- 2.1 ADM-NGGC-0101, Maintenance Rule Program
- 2.2 ADM-NGGC-0102, Project Review and Authorization
- 2.3 ADM-NGGC-0103, Project Management
- 2.4 ADM-NGGC-0104, Work Management Process
- 2.5 Application of Probabilistic Safety Assessment to Maintenance Rule Implementation, Brunswick Nuclear Plant
- 2.6 BSP-35, Outage Planning
- 2.7 0AP-022, BNP Outage Risk Management
- 2.8 0PLP-01.2, Fire Protection System Operability, Action, and Surveillance Requirements
- 2.9 OPLP-28, Startup And Power Ascension Management Plan For Unit Startup Following An Outage

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3.0 DEFINITIONS

3.1 Extended Work List (Forced Outage)

A list of work activities not on the Priority Work List which require a unit outage to implement. The list is used as a "pick" list should the unit have an extended forced outage. Activities are identified (sorted) by "Ready to Work" or "Not Ready to Work".

3.2 Fragnet

A detailed schedule of related work activities which includes logic relationships between the activities.

3.3 High Safety Significant System

Those systems that are significant contributors to safety based on their importance and contribution to nuclear safety as calculated in the Probabilistic Safety Assessment (PSA) for the Brunswick Nuclear Plant, and/or as determined by the Expert Panel.

3.4 Long Range Plan (LRP)

The site plan consisting of the major projects, modifications, and maintenance activities scheduled in the ten year planning window.

3.5 Low Safety Significant System

Those systems that are <u>not</u> significant contributors to salety based on their importance and contribution to nuclear safety as calculated in the Probabilistic Safety Assessment (PSA) for the Brunswick Nuclear Plant, and/or as determined by the Expert Panel.

3.6 Manual Entries

A work activity in the schedule which does not exist in AMMS but is required to support a WR/JO, or warrants schedule visibility. Due to the nature of these activities a sequential WR/JO is not warranted.

3.7 Package Ready

A work package that is complete in all respects, and ready for release to the field except for parts or other restraints which keep the activity from being implemented.

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3.0 DEFINITIONS

3.8 Priority Work List (Forced Outage)

A list of work activities identified by plant Operations as priority work which either requires Unit outage to work or should be worked before returning the Unit to service. Activities are identified (sorted) by "Ready to Work" or "Not Ready to Work". The "Ready to Work" list identifies "Task Ready" items and should be utilized to determine work which will be performed during a forced outage. The "Not Ready to Work" "st should be utilized during non-outage periods to identify those priority items that should be made "Task ready" to support forced outage accomplishment.

3.9 System Condition Statement

Conditions identified as "System Reliability" or "System Economic Alert" within the CP&L Distribution System that requires specific actions by the WCC SCO to limit high risk plant evolutions during either of the alert conditions.

3.10 System Outage

System outage refers to the condition in which a system's high safety significant function(s) is disabled and not recoverable.

3.11 Task Ready

A work package that is complete in all respects, availability of required parts and materials verified, and ready for release to the field when scheduled.

3.12 Work List Activities

Preventive or corrective work activities which do not impact system or plant operation. These work activities require minimal coordination between work groups and do not conflict with other scheduled work.

4.0 RESPONSIBILITIES

4.1 Forced Outage Coordinator

The Forced Outage Coordinator is responsible for:

4.1.1 Assembling recovery plan and schedule review comments and coordinating the resolution of those comments.

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4.1 Forced Outage Coordinator

- 4.1.2 Developing, reviewing and preparing preliminary (draft) schedules.
- 4.1.3 Recommending the release of the preliminary schedule and work list for plant review.
- 4.1.4 Producing the forced outage schedule and the corresponding work list(s).
- 4.1.5 Distributing the approved schedule and any subsequent revisions.
- 4.1.6 Developing individual "fragnets" when greater detail in scheduling will significantly enhance implementation.
- 4.1.7 Maintaining an "Extended Work List" which may be issued for management review if an extended forced outage should occur.
- 4.1.8 Updating schedule progress during periods of implementation to include analysis of the critical path recovery plan.

4.2 Implementor

The Implementor is responsible for:

- 4.2.1 Providing work progress/status to Outages and Scheduling.
- 4.2.2 Notifying Outages and Scheduling if a WR/JO must be rescheduled.

4.3 Outages and Scheduling

Outages and Scheduling is responsible for:

- 4.3.1 Developing, maintaining, and publishing worklist and schedules for the work activities governed by this procedure, including the following:
 - Weekly Schedules
 - On-line Schedule (Twelve Week Rolling Schedule)
 - Planned Outage Schedules and Forced Outage Fragnets
 - System Schedules (as needed)
 - Long Range Plan

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4.3 Outages and Scheduling

- 4.3.2 Improving plant safety and reliability by aligning scheduled work activities on a plant component basis, within the scheduling constraints allowed by the Technical Specifications and this procedure, so that the frequency of placing equipment out of service for routine maintenance is minimized.
- 4.3.3 Performance monitoring of the work management process.
- 4.3.4 Providing feedback to site management regarding the work management process.
- 4.3.5 Performing risk assessment of the schedule in accordance with Attachment 4.

4.4 Plant Engineer

The Plant Engineer is responsible for performing reviews of overall system material condition, including open items, and providing recommendations for work schedule and scope to ensure proper system performance. This, includes participating in the development of weekly schedules and on-line system outage plans and schedules by:

- 4.4.1 Identifying the system outage scope.
- 4.4.2 Requesting a system outage schedule be developed.
- 4.4.3 Participating in the development of the system outage schedule
- 4.4.4 Recording the out of service time for high safety significant systems into the Maintenance Rule database.
- 4.4.5 Evaluating the total out of service time against Maintenance Rule unavailability performance criteria.
- 4.4.6 Providing recommendations to the BESS work group schedule coordinator with respect to scheduling system unavailability for maintenance rule in-scope systems.
- 4.4.7 Participating in the development of a post-system outage critique as requested by Outages and Scheduling Section.
- 4.4.8 Reviewing the Long Range Plan and providing recommendations on scheduled activities for future years.

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4.5 Plant Work Units

The plant work units, such as Operations, BESS, Maintenance, E&RC, and Outages and Scheduling, are responsible for:

- 4.5.1 Maintaining a file of Forced Outage "Priority Ready to Work" packages and verifying that the packages have no restraints for implementation. "Priority Ready To Work" packages requiring clearances will have a copy of the clearance in the package.
- 4.5.2 Notifying the Forced Outage Coordinator of any changes to the "Ready to Work" list.
- 4.5.3 Reviewing and recommending items for addition to or deletion from the forced cutage "Priority" and "Extended" Work Lists.
- 4.5.4 Reviewing and approving the Forced Outage Schedule.
- 4.5.5 Notifying the Forced Outage Coordinator of changes to the schedule or the "Priority Ready To Work" list.
- 4.5.6 Identifying activities to be incorporated into the Long Range Plan.
- 4.5.7 Reviewing the Long Range Plan and providing updates for assigned activities.

4.6 Project Manager (Long Range Flan)

The LRP Project Manager is the individual responsible for ensuring schedule, cost, and supporting information as shown in the LRP for assigned activities is accurate.

4.7 Project Manager (System Outages and Downpowers)

The Project Manager is responsible for the development, execution, and post activity critique of the plan and schedule for assigned activities, such as unit downpowers and on-line system outages. Typical tasks include:

- 4.7.1 Conducting initial scope meetings to identify WR/JOs, Engineering documents, LCOs, Operator Workarounds, RTGBs, PTs, MSTs, PMs, etc., which are proposed for the system outage or downpower.
- 4.7.2 Reviewing lessons learned from previous system outages or downpowers.
- 4.7.3 Tracking and ensuring compliance to milestones. Initiating a Condition Report for non-compliance.
- 4.7.4 Reviewing progress with Superintendent, On-line Scheduling as requested.
- 4.7.5 Processing scope changes after scope is frozen utilizing Figure 3.
- 4.7.6 Ensuring radiation dose budget is identified and communicated to the site.
- 4.7.7 Briefing applicable site personnel on the schedule and expectations prior to implementation.
- 4.7.8 Participating in Readiness Challenge meetings.
- 4.7.9 Conducting and documenting formal post-work critiques.

4.8 Work Group Schedule Coordinator

The work group schedule coordinators for on-line schedule development are responsible for:

- 4.8.1 Ensuring their work group is properly represented at each on-line schedule development meeting.
- 4.8.2 Reviewing the schedule and worklist prior to the meeting, identifying and communicating conflicts, concerns and comments prior to the meeting.
- 4.8.3 Notifying Outages and Scheduling prior to changing the scope of corrective action or duration of work and assisting in the review of possible schedule impact.

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4.8 Work Group Schedule Coordinator

- 4.8.4 Obtaining approval for items remaining on the schedule which are not "package ready" or "task ready".
- 4.8.5 Assisting in reviews of system or component backlogs and emergent work to incorporate work activities into the ε,ppropriate work windows.
- 4.8.6 Incorporating schedule changes resulting from implementor walkdowns, such as work duration, interference removal, support requirements, clearances, etc.
- 4.8.7 Providing manpower resource availability to Outages and Scheduling at least 7 weeks ahead of the work week initially and subsequent resource availability changes as they occur.
- 4.8.8 Minimizing unavailability of high safety significant systems through effective coordination of work activities.
- 4.8.9 Reviewing ESF system/train outages in accordance with the 12 week schedule and/or Attachment 4 for on-line system outages.

4.9 Work Week Manager

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The Work Week Manager is responsible for:

- 4.9.1 Functioning as the Operations Work Group Coordinator.
- 4.9.2 Monitoring and expediting the preparation and implementation of the schedule, including system outages, plant evolutions, and individual work activities.
- 4.9.3 Review and resolution of Technical Specification compliance issues related to the schedule.
- 4.9.4 Obtaining approval for Operations items remaining on the schedule which are not "package ready" or "task ready".
- 4.9.5 Performing risk assessment of the schedule in accordance with Attachment 4.
- 4.9.6 Approval of the Weekly Schedule.
- 4.9.7 Ensuring work is accomplished as scheduled.

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5.0 INSTRUCTIONS

5.1 Initial Scheduling of On-line Activities

During the WR/JO initiation and review process WR/JOs are classified into categories, prioritized, and approved for scheduling. These categories include refuel outages, on-line system/train windows, and forced cutages.

The basis for the schedule for the operating cycle is the Twelve Week Rolling Schedule identified in Attachment 1. This rolling schedule is comprised of recurring "windows of opportunity" for implementing work on plant systems. The system windows are aligned to minimize the risk of challenging the unit(s)

- 5.1.1 Outages and Scheduling will review the maintenance backlog and identify the appropriate work week for the WR/JOs and Action Requests in AMMS in accordance with the twelve week rolling schedule or outage schedule.
- 5.1.2 Cutages and Scheduling will review and revise the WR/JO priority and work condition code in AMMS as necessary to ensure the codes are appropriate.
- 5.1.3 Outages and Scheduling will align schedule dates for related work activities to minimize the number of times equipment is taken out of service and system or component unavailability.

5.2 On-line Schedule Development

Beginning seven weeks prior to the implementation week, schedule development begins for on-line activities. This is accomplished in six stages by utilizing a team approach. The team consists of work group schedule coordinators for Maintenance, Operations, BESS, E&RC, Materials, and Scheduling.

NOTE: Figure 5.1 and 2 provide an overview of the deliverables contained in the steps below.

5.2.1 On-line Schedule Development Cycle

 Outages and Scheduling will produce the work lists and schedules and coordinate the meetings identified below.

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- Outages and Scheduling may deviate from the schedule identified below if deemed appropriate based on factors such as holidays, and alternate work schedules.
- Superintendent, Online Scheduling may authorize omission of deliverables identified below, if deemed appropriate.
- 4. Work group coordinators and Outages and Scheduling will review and develop the schedule for the implementation week in accordance with the methodology identified in Section 5.6 and Attachment 4.
- Post work tests required to support system operability will be coordinated by Operations and are not normally scheduled.
- During the development cycle, On-line Scheduling will monitor work window scope, development of work window and system outage schedules, and the completion of prerequisites including:
 - a. Evaluation of total duration available for the work window.
 - Time and resource requirements to complete the scheduled work.
 - Risk associated with work scope expansion and meeting plant conditions.
- 7. Common work activities will be evaluated for impact to both units by the work group coordinators and On-line Scheduling.

NOTE: 0PLP-28, STARTUP AND POWER ASCENSION MANAGEMENT PLAN FOR UNIT STARTUP FO'LOWING AN OUTAGE, Attachment 11 can be used to identify common systems.

- 8. The Final Work Schedule will:
 - Include approved carryover items from the previous work week. Approval of these items will be requested by the Work Group Schedule Coordinator via Figure 3.
 - Include "Work List activities". Work List activities are authorized to be worked at any time during the scheduled work week.

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- Contain a cover sheet, on-call roster, schedule, resolution report, and system fragnets as needed.
- Include status 02, 10 and 11 activities on the resolution report.
- A Project Manager should be assigned for the following types of activities unless deemed unnecessary by the Superintendent, On-line Scheduling.
 - a. System Outages on High Safety Significant systems.
 - b. Unit downpowers involving the following:
 - Non-routine unit downpowers which include maintenance activities requiring external coordination, such as vendors, contractors and consultants.
 - Activities which result in the unavailability of a High Safety Significant system.
 - Activities which result in a Technical Specification system being imperable.
 - 10. Due to increased potential for System Reliability or Economics Alerts:
 - a. During December, January, and February, evolutions which have the potential to initiate a plant transient should be scheduled during the later part of the morning (starting at 1000 hours) or as coordinated with the System Dispatcher.
 - During June, July, and August, evolutions which have the potential to initiate a plant transient should be scheduled during the early part of the day (completed prior to 1300 hours) or as coordinated with the System Dispatcher.
- 11. Manual entries to the online schedule will be requested and approved in accordance with Attachment 5, On-line Schedule Manual Entry Form. Figure 3 will also be required for approval following the schedule development meeting on Tuesday of Week T-2.

- Changes to the schedule will be requested and approved via Figure 3 as directed throughout Section 5.2. Signatures on the Figure 3 represent the following:
 - a. The Implementing Superintendent's signature represents concurrence that:
 - Resources are available to implement the activity as requested.
 - Actions required by others are accurately identified on the Figure 3.
 - Assessment of how the work scope will affect the component/system, if identified in the risk assessment, is accurate.
 - The Engineering Superintendent's signature represents concurrence that:
 - Engineering products, if a plicable, are available to support the requested schedule.
 - Engineering resources, if required, are available to support the requested schedule.
 - The assessment of risk is accurate.
 - The requested change is consistent with system goals and/or performance criteria.
 - c. The Operations Superintendent's signature represents concurrence that:
 - The assessment of risk is accurate.
 - Operations resources, if required, are available to support the requested schedule.

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- d. E&RC Programs Superintendent's signature represents concurrence that:
 - E&RC support, if required, is available to support the requested schedule.
 - Impact of the change on ALARA goals has been evaluated and communicated to Supt. On-Line Scheduling.
- e. The On-Line Scheduling Superintendent's signature represents concurrence that:
 - The assessment of risk is accurate.
 - The required concurrence signatures have been obtained.
 - Schedule development and authorization requirements identified in 0AP-025 have been achieved.

5.2.2 Stage I - System Outages and Unit Downpowers

- The Work Group Schedule Coordinators will provide manpower resource availability to Outages and Scheduling at least 7 weeks ahead of the work week.
- The Plant Engineer will normally identify the need for a system outage by Monday of Week T-7.
- A Project Manager will normally be assigned for the system outage by Monday of Week T-7.
- 4. In Week T-6 the Project Manager will normally:
 - Identify the preliminary scope of the System outage.
 - Initiate schedule development and initial schedule reviews by the Plant Engineer and Work Week Manager.
- Outages and Scheduling will normally issue a preliminary system outage schedule (fragnet) on Wednesday of Week T-5 for scheduled system outages.

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5.2.3 Stage II - Final Work List (Week T-4)

- The Final Work List will be developed by incorporating PMs, PTs, MSTs, Models, Action Requests and WR/JOs.
- 2. The Final Work List will normally be issued on Monday of Week T-4.
- The Final Work List will normally be reviewed on Thursday of Week T-4.
- For system outages the Project Manager should receive resolution of Engineering issues for activities in the system outage by Monday of Week T-4.

5.2.4 Stage III - Preliminary Work Schedule (Week T-3)

NOTE: The Preliminary Work Schedule places the Final Work List in schedule format.

- 1. The Preliminary Work Schedule will include WR/JOs with work status codes 02 through 20, Action Requests, and "manual entries".
- The Preliminary Work Schedule will normally be issued on Monday of Week T-3.
- The Preliminary Work Schedule will normally be reviewed on Wednesday of Week T-3.
- 4. The preliminary system outage schedule will normally be reviewed on Wednesday of Week T-3.
- The review of the Preliminary Work Schedule on Wednesday of Week T-3 results in the "Scope Freeze" of the Work Schedule, including the system outage scope.

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5.2.4 Stage III - Preliminary Work Schedule (Week T-3)

- To add a work activity to the schedule after the Wednesday review meeting the requestor will:
 - Obtain concurrence via Figure 3, Schedule Change Approval Form.
 - Deliver the Figure 3 and Figure 4 if applicable, to the Daily Schedule Review Meeting for review when feasible.
 - Obtain approval from the Superintendent, On-line Scheduling, or designee, via Figure 3, Schedule Change Approval Form.
- 7. On-line Scheduling will:
 - Input the schedule change approved via Figure 3.
 - Enter the reason for change (for schedule deletions) in the AMMS Scheduling Comments field.
 - Enter the risk assessment information from Figure 4 in the AMMS Scheduling Comments field, if applicable.
- Scheduled work packages should be planned and reviewed by Wednesday of Week T-3. Packages not planned will be discussed at the schedule review meeting.
- The Superintendent, On-line Scheduling may assign action items to the work group schedule coordinators to provide clarification or xplanation of restraints and may request anticipated resolution dates is identified.

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5.2.5 Stage IV - Final Work Schedule (Week T-2)

- Clearar ses should be prepared for the scheduled activities by Sunday of Week T-2 at 24:00 hours.
- The Final Work Schedule will normally be issued on Monday of Week T-2.
- On Wednesday of Week T-2 Work Week Managers will normally perform an internal review of the Finai Work Schedule.
- The Final Work Schedule will normally be approved by management on Thursday of Week T-2.
- After approval of the Final Work Schedule deletions from the schedule will be requested via Figure 3.
- 6. To remain on the schedule after the schedule development meeting on Tuesday of Week T-2, WR/JOs shall be "task ready" or approved at or before the meeting by the Implementing Superintendent or above and the Work Week Manager via Figure 3, Schedule Change Approval Form.
- If a WR/JO is removed from the schedule because it is not task ready, On-line Scheduling should enter appropriate comments in the AMMS Scheduling Comments field.
- The Work Week Manager and Work Group Schedule Coordinators shall track work package development for WR/JOs which are not "task ready" after Tuesday to ensure no scheduling conflicts arise.
- Following issuance of the Final Work Schedule and prior to implementation of the schedule (Week T-0) a final risk assessment of the schedule will be performed by the Work Week Manager and Online Scheduling using the methodology described in Attachment 4.
- Following the schedule development meeting on Tuesday of Week T-2, manual entries to the schedule will be requested and approved via Attachment 5 and Figure 3.

5.2.6 Stage V - Schedule Review (Week T-1)

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- 1. The Final System Outage Schedule will normally be reviewed with the Plant General Manager during Week T-1.
- 2. The system outage "team" should perform a final review of outage readiness and prepare pre-job briefs by Friday of Week T-1.
- 3. A risk assessment using methodology such as Equipment Out of Service (EOOS) of the Final Work Schedule should be performed.

5.2.7 Stage VI - Work Week (Week T-0)

- During Week T-0 the Work Schedule will be updated and published as deemed appropriate by the Superintendent, On-line Scheduling, based on the impact of emergent changes.
- 2. Operations will conduct a Daily Schedule Review Meeting to facilitate schedule adherence.
- Addition of carryover items for the subsequent week will be requested by the Work Group Schedule Coordinator via Figure 3, for approval no later than the Friday Daily Schedule Review Meeting.
- Publication of a revised work schedule, if needed will:
 - a. Include changes approved since the last publication.
 - b. Exclude items that are field work complete.
 - Reflect status changes from AMM^{**}.

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5.3 Authorization of Non-Scheduled Priority 1, 2, or 3 Work

On occasion windows of opportunity will exist that will allow the accomplishment of priority 1, 2, or 3 work that is not on the Work Schedule. In order to accommodate this work and ensure the impact has been reviewed by the Work Week Manager and On-line Scheduling Unit or the Shift Outage Manager during outages, the following shall take place:

On-Line Work Activities

- 5.3.1 For on-line work activities the requesting unit representative will:
 - 1. Contact the Work Week Manager for preliminary review of impact to the schedule.
 - Obtain concurrence in accordance with Figure 3.

NOTE: The Superintendent, On-line Scheduling or his designee will determine which concurrence signatures are required and "N/A" those which are not.

- 3. Obtain determination if the change impacts plant risk as described in Attachment 4 and if so obtain a risk assessment via Figure 4.
- 4. Deliver the work package attached to Figure 3, and Figure 4 if applicable, to the Daily Schedule Review Meetings for approval, when feasible.
- 5. Obtain approval from the Superintendent, On-line Scheduling, or designee, via Figure 3, Schedule Change Approval Form.

NOTE: The Operations Shift Superintendent may approve Figures 3 and 4 on weekends, holidays, or backshifts. Operations will then deliver the original Figures 3 and 4 to Online Scheduling.

6. Return the dispositioned Work Package to the Implementing organization.

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5.3 Authorization of Non-Scheduled Priority 1, 2, or 3 Work

- 5.3.2 The Discipline Scheduler will schedule approved work activities in the on-line schedule.
- 5.3.3 Work packages not approved for schedule addition are retained by the Implementing organization until scheduled.
- 5.3.4 For on-line work the Discipline Schedulers will enter the risk assessments information from Figure 4 in the AMMS scheduling comments field, if applicable.

Outage Work Activities

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5.3.5 For outage work packages, the requesting unit will deliver the work package to the Shift Outage Manager (SOM) for disposition. Figure 3 is not required.

- The SOM will evaluate if the proposed work is significant to safety in accordance with 0AP-022 Section 8.0.
- 2. The SOM will evaluate outage scope addition/change requirements in accordance with BSP-35.
- 3. The SOM will annotate approval directly on the outage work package rather than using a Figure 3.
- 4. The requesting unit will return the outage work package to the Implementing unit.
- 5. The Implementing unit will obtain WCC authorization for the outage werk package.

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5.4 Post Work Critiques

- 5.4.1 Post Work critiques will be performed by the Project Manager following System Outages and Unit Downpowers as deemed appropriate by the Superintendent, On-Line Scheduling.
- 5.4.2 The critique will include each work group involved.
- 5.4 3 The critique will include the following information:
 - Unit number
 - System number
 - Division and Train
 - Scheduler name
 - Comparison of scheduled versus actual Work Window start and finish dates and time.
 - Comparison of scheduled versus actual system unavailability time.
 - Comparison of scheduled versus actual LCO time.
 - Original scope description.
 - Identification of scope changes.
 - Identification and explanation of scope not completed.
 - Identification of lessons learned.
 - Identification of applicable CRs

5.5 Schedule Development of Outage Activities

- 5.5.1 Work scope and schedule development for planned Unit outages will be controlled in accordance with BSP-35, Outage Planning.
- 5.5.2 The process for work scope control and scheduling for forced Unit outages is described in Section 5.8.

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5.6 On-line System Outages And Voluntary LCO Entry

Planning or scheduling of on-line system outages on high safety significant systems or LCO entries during plant operations shall be performed in accordance with the following guidelines. This guidance is applicable to on-line operation including operation during providudate power ascension from Mode 2 through 100% stable power operation is.

5.6.1 System Outage & LCO General Guidance

- 1. The intent of this guideline is to enhance the reliability and availability of Maintenance Rule systems, structures, and components.
- It is acceptable to enter an LCO or an on-line system outage, when the intent is to, increase reliability or to reduce shutdown risk associated with safe shutdown/decay heat removal systems or components.
- 3. LCOs should not be entered if the work will not be completed prior to a planned reactor mode change.
- 4. The total out-of-service time for Technical Specifications required equipment and high safety significant systems or components should be minimized in order to balance systems availability and reliability.
- 5. The following Figures and Attachments provide additional information associated with the instructions below:
 - Figure 2, On-line Schedule Development: System Outage Deliverables
 - Attachment 1, Twelve Week Rolling Schedule
 - Attachment 3, High Safety Significant Functions
 - Attachment 4, Methodology for Assessing and Managing Plant Risk

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5.6.2 System Outage Pre-Planning

 Pre-planning shall be conducted to identify related preventive maintenance, corrective maintenance, inspections, testing, major/minor modifications, and commitments that could be performed during the out-of-service time frame. The identified system outage scope will enhance system reliability and maximize system availability.

- 2. Preplanning should assure procedures, parts, permits, clearances, manpower and tools required for the work activity are ready and special training performed prior to removing the equipment from service.
- 3. On-line system outages on high safety significant systems will be worked on a 24 hour per day basis and have a Project Manager assigned unless prior Superintendent, On-line Scheduling approval is obtained.
- 4. Contingency plans and compensatory measures will be developed as deemed appropriate by the Project Manager. The Project Manager will evaluate worst-case scenarios and discuss during pre-job briefings how Operators would respond given the unavailability of certain equipment.

5.6.3 System Outage Authorization

- Plant General Manager approval is required prior to scheduling:
 - System outages on HPCI.
 - HPCI outages concurrent with another system outage.
 - EDG outages concurrent with a RCIC outage or Service Water outage
 - More than two high safety significant systems to be out of service concurrently.
 - Activities which exceed one half the allowable LCO time.

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5.6.3 System Outage Authorization

- 2. Work Week Manager and Superintendent, On-Line Scheduling approval is required prior to scheduling:
 - System outages.
 - Combinations of system outages.
 - More than two maintenance rule systems to be unavailable concurrently.
- 3. PSA guidance is required prior to entering system outage combinations exceeding 7 days in length.

NOTE: Combinations of a system and/or the support systems required to provide the high safety significant function are considered as one high safety significant system.

EXAMPLE: Combinations of the following systems for one diesel generator would be considered one high safety significant system outage:

- 5095, Diesel Generators
- 5100, Diesel Fuel Oil
- 5105, Diesel Lube Oil
- 5110, Diesel Jacket Water
- 5111, DG Service Water & Demineralized Water
- 5112, Diesel Generator Starting Air
- 5113, Diesel Generator Intake/Exhaust
 - 4. On-line Scheduling will ensure the appropriate level of management has approved system outage entry in accordance with these guidelines.

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5.6.4 Emergent Failures/Changing Plant Conditions

- 1. If an emergent component failure occurs or plant conditions change, the Shift Superintendent shall determine if the failure or change in plant conditions impacts plant risk by using the methodology identified in Attachment 4.
- 2. To manage the risk impact of emergent failures or changing plant conditions the Shift Superintendent will:
 - a. Ensure applicable Technical Specification requirements are met.
 - b. Ensure the plant is maintained in a safe and stable condition.
 - Return the component or system to service as soon as possible.
 - Minimize routine maintenance on the system during repair activities.
 - e. Be aware of the risk significance of the emergent failure or change in plant conditions, including severe weather conditions, and the impact on the Operator's ability to control the plant, mitigate events, or place and maintain the unit in a shutdown condition.

NOTE: Equipment Out of Service (EOOS) software and/or the PSA group may be consulted to assist with determination of risk significance, if needed.

- f. Delay scheduled system outages which have not started until plant conditions are favorable or until a risk assessment determines that beginning the system outage is acceptable.
- g. Determine whether implementation of contingency plans or compensatory measures are war anted for plant configuration to ensure that back-up systems are available and functional.
- When notified by the Unit SCO that a System Reliability or System Economics Alert has been issued by the System Dispatcher, the WCC SCO will:
 - Review authorized work activities. The Weekly Schedule, AMMS, logs and the FIN team SCO may be used to identify authorized work activities.

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5.6.4 Emergent Failures/Changing Plant Conditions

 Identify those activities that may constitute a high risk evolution or condition. The following is a list of MSTs that have been identified as high risk evolutions:

Half Scram MSTs

1

RPS27Q, Scram Discharge Volume Half Scram (also valving on reference Leg)

Valving on Critical Reference Leg MSTs FWC21Q, FWC RSDP RPV Channel Calibration RSDP21Q, RSDP and RTGB Panel RPV Water Level Indication RCIC27Q, RCIC High Water Level RSDP Trip

- c. Identify the necessary actions to be taken relative to the risk associated with each activity.
- d. Perform necessary actions for a System Reliability Alert including
 - Monthly, quarterly, and refueling frequency half scram and half Group 1 MSTs should be delayed based on not exceeding the over due date.
 - MST FWC21Q, RSDP21Q, and RCIC27Q should be delayed based on not exceeding the over due date.
 - Based on its urgency, critical or high risk evolutions identified by the WCC SCO or defined in OPLP-17 should be delayed.
 - e. Perform necessary actions for a System Economic Alert including:
 - With the exception of RPS27Q, monthly, and quarterly frequency half scram and half Group 1 MSTs should be performed as scheduled.
 - Refueling frequency half scram and half Group 1 MSTs should be delayed based on not exceeding the over due date.

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5.6.4 **Emergent Failures/Changing Plant Conditions**

> MST FWC21Q, RSDP21Q, and RCIC27Q should be delayed based on not exceeding the over due date. Based on its urgency, critical or high risk evolutions identified by the WCC SCO or defined in OPLP-17 should be delayed.

- f. Notify the Implementing Organization's Superintendent or scheduling coordinator of the following:
 - Impending alert condition
 - Anticipated length or changes in length of alert condition
 - Scheduled activities which should be stopped, if feasible
 - Scheduled activities which should be delayed
- Notify the Control Room of the status of work activities that q. constitute a high risk evolution or condition.

5.7 Long Range Planning

ADM-NGGC-0102 provides instructions and requirements for long range planning. This procedure should be used in conjunction with ADM-NGGC-0102

NOTE: Figure 5 provides an overview of the long range planning process.

5.7.1 Long Range Plan Scope

The BNP Long Range Plan (LRP) identifies the major activities proposed to be implemented through the end of licensed plant life. This includes pending and authorized Projects (as defined in ADM-NGGC-0102) as well as major maintenance activities. The following types of major maintenance activities may be included:

- Major programs/initiatives (include those with defined durations, exclude ongoing baseload items)
- **Refueling Outages**
- Annual Emergency Preparedness Exercises
- Activities consuming significant resources or dose
- Significant NRC or INPO Assessments and Evaluations
- Corrective Maintenance
- Preventive Maintenance with a frequency greater than every refueling cycle

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5.7.2 Identification Of Activities To Be Included In The LRP

- Addition of activities to the LRP should be proposed via Attachment 6, BNP Long Range Plan Activity Identification Form, or via ADM-NGGC-0102 Form 1, Phased Project Authorization Form.
- The Outages and Scheduling (O&S) LRP Coordinator may add activities to the LRP without use of Attachment 6.
- 3. ESY analysis has not been performed the benefit to cost ratio and net present value may be omitted.
- 4. The cost estimate should be identified by the following cost types:
 - Materials (GSM)
 - Contract services (LNC)
 - Company labor (GSL)
 - Other (GSO)
- Approval signature by Sponsor/Initiator's Section Manager and by Section Managers impacted by the project (minor support involvement excluded) is required.
- 6. The approved Attachment 6 should be submitted to the Outages & Scheduling (O&S) LRP Coordinator.
- 7. If cost estimate ≥ \$50k, the O&S LRP Coordinator will coordinate with Financial Services Unit to obtain:

Authorization requirements (phased or routine)

Classification ruling (O& VI or capital)

Assignment of FAIM number, if applicable

- 8. The O&S LRP Coordinator will maintain a list of proposed additions and periodically obtain management review and approval.
- 9. The O&S LRP Coordinator will update the LRP accordingly.

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5.7.3 LRP / Business Plan Interface

Updates and publications of the LRP will be integrated with the Business Planning Calendar.

5.7.4 Publication of the Long Range Plan

- 1. The LRP should be dynamically maintained throughout the year and periodically reviewed by the PRG.
- 2. The LRP will be formally reviewed by the PRG and approved by the Site Vice President twice a year as identified in ADM-NGGC-0102.

5.8 Forced Outage Schedulir g

The following identifies the process to be used for the preparation, review, approval, distribution, and revision of the BNP Forced Outage Schedule(s).

5.8.1 Forced Outage Schedule Composition

- 1. The Forced Outage Schedule should be based on those activities on the Priority Work List which are task ready.
- Those activities on the Priority Work List which are not task ready should receive attention during non-outage periods to be made "Task-ready" to support forced outage accomplishment.

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5.8.1 Forced Outage Schedule Composition

- 3. The Schedule "Priority Ready to Work" list should consist of priority items identified by Operations which possess the following attributes:
 - a. Those packages identified by AMMS with a 1540 (Implementor Review Complete) status through a 20 status with support items (clearance, RWP, scaffolding plan, etc.) complete should be included.

NOTE: Status 1540 indicates that prerequisites for work have been satisfied and when plant conditions allow, work may proceed immediately.

- b. The ready to work status of each activity has been verified by the Forced Outage Coordinator.
- Work activities whose duration is greater than 24 hours should be excluded, unless approved by Management.
- d. The plant mode required for implementation should be 3 or 4.
- e. Work requiring vendor support or off-site expertise which cannot be mobilized within 12 hours should be excluded.
- f. Work which affects the corresponding operating unit should be excluded (i.e., work should not be scheduled that would place the operating unit in an LCO or in anyway jeopardize its ability to maintain an operating status).
- g. Work which requires a "Safe Shutdown" Risk Assessment or decreases safe shutdown "defense in depth" should be excluded, unless approved by management.
- 4. The Forced Outage Schedule should be formatted to depict the following outage scenarios:
 - a. Mode 3 Outrge (3 day schedule).
 - b. Mode 4 outage with no drywell entry (5 day schedule).
 - Mode 4 outage with drywell entry (7 day schedule).

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5.8.1 Forced Outage Schedule Composition

- 5. Each scenario identified in Step 5.8.1.4 should include:
 - a. Items required to return the unit to an operating status (i.e., critical path recovery plan to be incorporated at the time of the outage).
 - Previously identified items that are required by Technical Specifications or a Regulatory Commitment to be corrected prior to Mode ascension once in that mode.
 - c. Those work items identified by Operations that would affect future plant operations if they failed subsequent to restart.
 - d. Periodic Tests (PTs) and Maintenance Surveillance Tests (MSTs) that are required to be current prior to leaving the applicable mode.
 - e. Shutdown and startup sequences.

5.8.2 Forced Outage Schedule Preparation and Review

- 1. The Superintendent, Outages will:
 - a. Ensure that comments received from the Plant General Manager, Operations, Maintenance, E&RC and Engineering are incorporated into the forced outage program by the Forced Outage Coordinator.
- The Forced Outage Coordinator will:
 - a. Conduct forced outage planning/review meetings as necessary to maintain current forced outage schedules.
 - Ensure comments are incorporated into the schedule and the "Priority r'eady to Work" list.
 - c. Produce a schedule that conforms to Step 5.8.1.5 and the "Priority Ready to Work" list.

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5.8.2 Forced Outage Schedule Preparation and Review

- d. The "Priority Ready to Work " list should contain the attributes shown in Figure 6.
- e. Maintain an "Extended Work" list to be used in the event that an extended forced outage should occur. This includes verifying the ready to work status of each activity on the "Extended Ready To Work" list.

5.8.3 Forced Outage Schedule Approval and Distribution

- The Superintendent, Outages will:
 - a. Ensure that the Forced Outage Schedules are reviewed with the appropriate managers prior to issuing the schedules. Emphasis will be on changes since the previous schedule was issued.
 - b. Issue the approved schedule on the first Monday of each month for Unit 2 and the third Monday of each month for Unit 1. The schedule will be issued electronically or manually to :
 - Plant General Manager
 - Work Control Center
 - Work Week Managers
 - NRC Site Representative
 - Superintendent On-line Scheduling
 - Operations Manager
 - **Operations Shift Superintendent**
 - I&C and Mechanical Superintendents
 - Engineering Manager
 - Maintenance Manager
 - E&RC Manager
 - Outage and Scheduling Manager

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5.8.4

Forced Outage Schedule Revision

- The Forced Outage Coordinator will:
 - a. Between revisions, receive proposed changes to the schedule anytime during the month, review the proposed changes and incorporate the necessary changes into the next schedule revision.
 - b. Identify revisions to the schedule beginning with the year and followed by a numerical designator for the appropriate month (i.e., 97-5 for May).
 - c. If issued manually include a cover letter identifying and explaining the changes from the previous Forced Outage

5.8.5 Forced Outage Schedule Implementation

- 1. The On-line Scheduling unit representative on the Scram Incident Investigation Team (SIIT) Roster or the Operations Shift Supermember should call the Superintendent, on-line Scheduling and the Superintendent, Outage Management to notify them that the unit is in a forced outage.
- 2. Upon notification of the forced outage, the Superintendent, on-line Scheduling or the Superintendent, Outage Management should call the Unit Lead Scheduler, Forced Outage Coordinator, and the Discipline Scheduler and provide them with the direction required to effect unit recovery and startup.
- 3. The Unit Lead Scheduler should develop a Recovery Plan that corrects the condition that placed the unit in a forced outage.
- 4. The Forced Outage Coordinator should coordinate the integration of items from the "Priority Ready To Work" list, with the appropriate Forced Outage Schedule, the Critical Path Recovery Plan, and activities from the On-line Weekly Schedule required to support startup into the Integrated Forced Outage Schedule.

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# Page 1 of 1 On-line Schedule Development: Routine Deliverables

WEEKS T-7/T-5 WEEK T-4	WEEK T-3	WEEK T-2	WEEK T-1	WEEK T-0
Monday: Issue Final Work List <u>Thursday:</u> Final Work List Review meeting	Monday: Issue Preliminary Work Schedule Mednesday: Preliminary Schedule Review meeting WR/JO planning & reviews complete (Maintenance) Scope Frozen	Sunday: Clearances prepared Monday: Issue Final Work Schedule Issue Final Sonedule Review meeting WR/JOS Task Ready (restraints removed) Or Figure 3 approved to remain on the schedule Mednesday: Work Week Manager internal review of schedule	Final Risk Assessment completed	Schedule implementation Daily Schedule Review Meetings Revised Weekly Schedule Issued as needed

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#### Page 1 of 1 On-line Schedule Development: System Outage Deliverables

WEEKS T-7/T-5	WEEK T-4	WEEK T-3	WEEK T-2	WEEK T-1	WEEK T-0
<ul> <li>Monday (Week T-7): Need for System Outage identified</li> <li>Project Manager assigned</li> <li>Monday (Week T-6): Original scope identified</li> <li>Begin schedule (fragnet) development</li> <li>Minday (Week T-6):</li> <li>Project Manager, System fagineer, and Work Week Manager initial review of schedule</li> <li>Meek T-6 &amp; T-5:</li> <li>Schedule comments incorporated</li> <li>Wednesday (Week T-5):</li> <li>Issue Preliminary System Outage Schedule</li> </ul>	Monday: Engineering Complete- To Include But Not Limited to: - ESRs/ Minor Mod packages - Special Procedures - Review Team Evaluations Complete	Wednesday: Preliminary System Outage Schedule Review Meeting WR/JO planning & reviews complete Scope frozen Work package restraints identified	Monday: Issue Final schedule for PGM review Coverage determined <u>Tuesday:</u> Final System Outage Schedule Review Meeting WR/JOS Task Ready (restraints removed) or Figure 3 approved to remain on the schedule	Final Schedule reviewed with PGM Team perform final review of outage readiness: Parts ALARA Schedule Manpower Clearances PMTs/LCOs WR/JO scope Compensatory Measures Pre-job briefs prepared	Saturday through Friday: Schedule implementation

NOTE: Superintendent, On-line Scheduling may authorize omission of deliverables if deemed appropriate.

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#### FIGURE 3 Page 1 of 1 Schedule Change Approval Form

SECTION I: SC	ECTION I: SCHEDULE ITEM SPECIFICS						
Unit: Work	Week(s): _	Date:		Requester:			
WR/JO-PM/JO	System #	Current Sche	eduled Date	Rescheduled Da	te		
Reason For Cha	nge:						
Manpower Available	? <u>Y/N</u>	Support Available?	Y/N/NA	ALARA Planned?	<u>Y /N /NA</u>		
WRJO Planned?	Y/N/NA	Materials Available?	Y/N/NA	LCO Required?	<u>Y / N</u>		
Clearance Prepared	?Y/N/NA	ESR Approved?	Y/N/NA				

## SECTION II: RISK ASSESSMENT

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Does the change impact plant risk as described in Attachment 4. Circle one: Yes / No If yes, proceed to Figure 4. If no, provide explanation below.

Determination by		1	
	(Print Name)	/ (Sign Name)	
Comments:			
Concurrence:	/ Implementing Supt./Date	Engineering Supt.	/ /Date
	Operations Supt./Date	E&RC Programs Supt.	/ /Date
Approval	Supt., On-line Scheduling /	Date	
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## FIGURE 4

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## **Risk Assessment of Schedule Changes /Emergent Activities**

NOTE: The risk assessment methodology identified in Attachment 4 shall be used to perform this assessment. Equipment Out of Service (EOOS) software and/or the PSA group may be consulted to assist with risk assessment if needed.

WR/JO-PM/JO# System #____

**RISK ASSESSMENT** 

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Prepared by:	T 141 -	 1	
	l itle:	/ Date	
Annequali			
Approval:			

Supt., On-Line Scheduling

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/ Date



FIGURE 5 Page 1 of 1 Long Range Planning Process Overview

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	FIGUR	E 6			
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Forced Outage	Priority	Ready	То	Work	List

	Page 1	of 1		
Forced Outage	Priority	Ready	To Work Lis	st

12-Jun-97	BRUNSWICK NUCLEAR PLANT					Page 1		
	UNIT 2 FORCED OUTAGE WORKLIST							
	PRIORITY - READY TO WORK							
WRJO Unit Tax Number	Trouble Description	Location	Status	Network	Crew	Crw Sz	Dur	CR
Tag Nomeer	Repair Instructions	Clearance Number	Block	Activity	Skill	Prty	,	115
WCD AMMS Sys		RWP Number						
964DTI1 2 2-MVD-V56	TROUBLE DESC. EDB?LOC: TB2 EL021 NE G/16A AFTER	T32 EL021 NE G/16A	1540	X8	727	2	3	YY
1 D 3060	STROKING CLOSED ON A SHUTDOWN OF THE 28 SJAE, 2-MVD- V56 FAILED TO OPEN WHEN THE 28 SJAE WAS PLACED IN HALF		RED	X0XXXXXX	T EL	3		NN
	LOAD. THE VALVE ALSO DID NOT OPEN WHEN THE LOCAL CONTROL SWITCH WAS USED AT THE SJAE PANEL. THE BREAKE	971064						
	REPAIR INST: SUMLIARY: VALVE 2-MVD-V56 FAILED TO OPEN							
	VALVE HAD TO FE MANUALLY BACKED OFF THE CLOSED SEAT.							
	THEN IT OPERATED PROPERLY ELECTRONICALLY. THIS IS THE SECOND FAILURE OF THIS TYPE FOR THIS VALVE.							
PEAHNO1 2 2-MVD-TR-2	TROUBLE DESC: LOCATION- 2B RFP ROOM UNDER GRATING.		1546	X8	Z63	2	9	YY
2 H 3060	CLEAN THE STRAINER ON THIS TRAP DURING THE NEXT	29700480	RED	XOXXXX	ME	3		NN
	REPT WAS FOUND CLOGGED WITH PIPE SCALE, HINDERING	971064						
	CLEANED A							
	REPAIR INST: SUMMARY: DISASSEMBLE TRAP, INSPECT, CLEAN AND REASSEMBLE.							
	M84 PREWORK: N/A							
	*							
96AHND1 2 2-MVD-TR-2	TROUBLE DESC: LOCATION- 28 REP ROOM UNDER GRATING.		1540	XB	Z63	2	8	YY
3 H 3060	DOWNPOWER. THE SAME STEAM TRAP STRAINER ON THE 2A	29700614	RED	KOXXXXX	ME	3		NN
	PROPER TRAP OPERATION. THE TR-2 AND TR-1 TRAPS WERE	971064						
	CLEANED A							
	AND REASSEMBLE.							
	M84 PREWORK: N/A							

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#### ATTACHMENT 1 Page 1 of 3 Twelve Week Rolling Schedule

WEEK "A"	WEEK "B"	WEEK "C"	WEEK "D"
ECCS	ECCS	ECCS	ECCS
DG1/CS/SLC PT- 6.1 PT- 7.1.8 PT-12.2A MST-CS21Q MST-CS22Q UNIT 1 DIV 1	DG2/RHR "A"         DG3/HPCI/SBGT         DG4/RC           PT- 8.1.3A/B/C         2-PT- 9.2         PT-10.1           PT- 8.1.4A, PT- 8.2.2C         PT- 9.3A         PT-12.2           PT- 8.2.4, PT-12.2B         PT-12.2C         1-PT-40           2-PT-40.2.5, 2-PT-40.2.8         PT-15.6         1-PT-40           2-PT-40.2.9         1-MST-HPC126Q         1-PT-40           MST-RHR22Q         UNIT 2 DIV I         2-MST-40           UNIT 1 DIV II         UNIT 2         1000000000000000000000000000000000000		DG4/RCIC PT-10.1.1A, 1-PT-10.1.1 PT-12.2D, PT-23.1.3 1-PT-40.2.5 1-PT-40.2.8 1-PT-40.2.9 2-MST-ADS21Q 2-MST-ADS21Q 2-MST-RCIC27O UNIT 2 DIV II
High Safety Significant Systems	High Safety Significant Systems	High Safety Significant Systems	High Safety Significant Systems
1005, 1070 2J35 (NOTE: 1) 2040, 2070, 3050, 4060 4060 (2C CSW PUMP) 5010 5095, 5100, 5105 (DG 1) 5110, 5111, 5112 (DG 1) 5113 (DG 1) 5145 5175 U 1 DIV I 5240 (1A-1, 1A-2) 6175 (Diesel pump) 8185	1011, 1080 2045 (NOTE: 1) 3070 4060 (1C CSW PUMP) 5095, 5100 (DG 2) 5105, 5110 (DG 2) 5111, 5112 (DG 2) 5113 (DG 2) 5170 (NOTE: 1) 5175 U 1 DIV II 5230 5240 (1B-1, 1B-2) 6175 (MDFP)	2095 4060 (2A NSW PUMP) 5065 5095 (DG 3) 5100 (DG 3) 5110 (DG 3) 5110 (DG 3) 5111 (DG 3) 5112 (DG 3) 5113 (DG 3) 5113 (DG 3) 5175 U 2 DIV I 5240 (2A-1,2A-2)	2100 4060 (1A CSW PUMP) 5095 (DG 4) 5100 (DG 4) 5105 (DG 4) 5110 (DG 4) 5111 (DG 4) 5112 (DG 4) 5113 (DG 4) 5135 5175 U 2 DIV II 5240 (2B-1, 2B-2) 5245
BOP 2010, 3020, 4010 5035, 5250, 6060 6160, 7045, 8055 8270	BOP 3025, 4015, 5040 5255, 6070, 6240 7060, 8065, 8275	BOP 1050, 2020, 3030 4040, 5045, 5259 6075, 6195, 6245 6281,7070 7071 (NOTE: 1) 8075, 8280	BOP 1065, 3040, 4045 5050, 5185, 5260 6080, 6180, 6260 7075, 8110, 8290 8580

#### NOTES:

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2: BOP, High Safety Significant and ECCS work may be performed during weeks other than shown provided a risk assessment in accordance with Attachment 4 determines risk to be acceptable.

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#### ATTACHMENT 1 Page 2 of 3 Twelve Week Rolling Schedule

WEEK "E"	WEEK "F"	WEEK "G"	WEEK "H"
ECCS	ECCS	ECCS	ECCS
DG1/CS "A"/SLC PT- 6.1 PT- 7.1.8 PT- 7.2.4A PT-12.2A UNIT 1 DIV 1	DG2/RHR "B" PT- 8.1.3A/B/C PT- 8.1.4B PT- 8.2.2B, PT- 8.2.4 PT-12.28 MST-RHR21Q MST-RHR24Q MST-RHR26Q UNIT 1 DIV II	DG3/HPCI/SBGT 1-PT- 9.2 PT- 9.3A PT-12.2C PT-15.6 2- MST-HPCI26Q UNIT 2 DIV I	DG4/RCIC PT-10.1.1A, PT-12.2D PT-23.1, PT-23.1.3 2-PT-24.1-2 MST-RCIC21Q MST-RCIC22Q MST-RCIC23Q MST-RCIC23Q MST-RCIC26Q UNIT 2 DIV II
High Safety Significant Systems	High Safety Significant Systems	High Safety Significant Systems	High Safety Significant Systems
1005, 1070 2035 (NOTE: 1) 2040, 2070, 3050, 4060 4060 (18 CSW PUMP) 5010 5095, 5100, 5105 (DG 1) 5110, 5111, 5112 (DG 1) 5113 (DG 1) 5145, 5175 U 1 DIV I 5240 (1A-1, 1A-2) 6175 (Diesel pump) 8185	1011, 1080 2045 (NOTE: 1) 3070 4060 (1B NSW PUMP) 5095, 5100, 5105 (DG 2) 5110, 5111, 5112 (DG 2) 5113 (DG 2) 5170 (NOTE: 1) 5175 U 1 DIV II 5230, 5240 (1B-1, 1B-2) 6175 (MDFP)	2095 4060 (2A NSW PUMP) 5065, 5095, 5100, 5105 (DG 3) 5110, 5111, 5112 (DG 3) 5113 (DG 3) 5175 U 2 DIV I 5240 (2A-1, 2A-2)	2100 4060 (2B NSW PUMP) 5095, 5100, 5105 (DG 4) 5110, 5111, 5112 (DG 4) 5113 (DG 4) 5135 5175 U 2 DIV II 5240 (2B-1, 2B-2) 5245
BOP	BOP	BOP	BOP
2010, 5055, 5265 6085, 6165, 6235 6261, 7095, 8310	3060, 4070, 5060 5200 6004 (Includes SPDS) 6095, 6200, 6265 7100, 8195	2020, 4075 5205, 6005, 6115 6202, 6270,6281 7071 (NOTE: 1) 7105, 8065, 8220 8275, 8355	2055, 3076, 5005 5070, 5210, 6010 6125, 6205, 6280 7110 8230, 8370, 8580

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2: BOP, High Safety Significant and ECCS work may be performed during weeks other than shown provided a risk assessment in accordance with Attachment 4 determines risk to be acceptable.

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#### ATTACHMENT 1 Page 3 of 3 Twelve Week Rolling Schedule

WEEK "I"	WEEK "J" WEEK "K" WEEK		WEEK "L"
ECCS	ECCS	ECCS	ECCS
DG1/CS "B"/SLC/RWCU	DG2/RHR	DG3/ HPCI/ SBGT	DG4/RCIC
PT-6.1	PT- 8.1.3A/B/C	PT- 4.1.1, PT- 9.3A	PT-10.1.1A
PT-7.1.8	PT- 8.2.4	PT-12.2C, PT-15.6	2-PT-10.1.1
PT- 7.2.4B	PT-12.2B	PT-15.7	PT-12.2D
PT-12.2A	MST-RHR25Q	MST-HPCI21Q	PT-23.1.3
PT-14.6	MST-RHR27Q	MST-HPCI22Q	1-MST-ADS21Q
1-PT-24.1-1	MST-RHR28Q	MST-HPC123Q	1-MST-RCIC27Q
UNIT 1 DIV 1	UNIT 1 DIV II	MST-HPCI27Q	UNIT 2 DIV II
		UNIT 2 DIV I	
High Safety Significant Systems	Hign Safety Significant Systems	High Safety Significant Systems	High Safety Significant Systems
1005, 1070	1011, 1080	2095	2100
2035 (NOTE: 1)	2045 (NOTE: 1)	4060 (2A CSW PL'MP)	4060 (28 CSW PUMP)
2040, 2070, 3050, 4060	5070	5065	5095 (DG 4)
4060(1A NSW pump)	4060 (1C CSW PUMP)	5095 (DG 3)	5100 (DG 4)
5010	5095, 5100 (DG 2)	5100 (DG 3)	5105 (DG 4)
5095, 5100, (DG 1)	5105, 5110 (DG 2)	5105 (DG 3)	5110 (DG 4)
5105, 5110 (DG 1)	5111, 5112 (DG 2)	5110 (DG 3)	5111 (DG 4)
5111, 5112 (DG 1)	5113 (DG 2)	5111 (DG 3)	5112 (DG 4)
5113 (DG 1), 5145	5170 (NOTE: 1)	5112 (DG 3)	5113 (DG 4)
5175 U 1 DIV I	5175 U 1 DIV II	5113 (DG 3)	5135
5240 (1A-1, 1A-2)	5230	5175 U 2 DIV I	5175 U 2 DIV II
8175 (Diesel pump) 8185	5240 (1B-1, 1B-2) 6175 (MDFP)	5240 (2A-1, 2A-2)	5240 (2B-1, 2B-2) 5245
BOP	BOP	BOP	BOP
2010, 3077	2115, 3080 , 5020	2020, 2117, 3100	2190, 4005, 5030
5075, 5215, 6015	5080, 5195, 6020	5025, 5085, 6030	6040, 6152, 6225
6130, 6210, 6281	6135, 6215, 6282	6140, 6220, 6281, 7005	7015, 8045, 8260
8020, 8232, 8340	8035, 8240, 8400	7071 (NOTE: 1)	8500 8580
8390		8040, 8250, 9300	0000,0000

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#### ATTACHMENT 2 Page 1 of 2 Priority System Criteria Summary

The Nuclear Generation Group Work Control Priority System is provided in ADM-NGGC-0104. This attachment provides guidance specific to the implementation of this system at Brunswick Nuclear Plant. The examples provided in this attachment take precedence over ADM-NGGC-0104.

PRIORITY	BRUNSWICK CRITERIA SUMMARY		
BNP PRI #E	Emergency (Work Immediately) Definition: Those items that have an immediate and direct impact on the health ind safety of the general public, pose a significant industrial hazard, or require immediate attention to prevent the deterioration of plant conditions to a possible unsafe or unstable level.		
	Examples: This classification includes work activities required to support mitigation of plant conditions defined in Tech. Spec. 3.0.3, plant shutdowns required by Tech Spec 3.0.5, Emergency Operating Procedures, and at the discretion of the Shift Superintendent, emergency activities associated with Abnormal Operating Procedures.		
	Work Control Response: Begin work immediately and notify management; planning shall be performed in parallel with work activity. The activities that are accomplished shall be documented after the fact or when parallel paperwork development catches up with the work being performed. Activities should receive the same degree of review as if they were preplanned.		
BNP PRI #1	Urgent (Plan and Work Immediately) Definition: Those items that have a near-term direct impact on the health and safety of the general public, the reliability of power generation or industrial safety.		
	<ul> <li>Examples: This classification includes: T/S LCOs ≤ 7 days, loss of plant capacity ≥ 50 MWe, or affects the ability of the plant to respond to emergency or accident conditions. Specific examples include:</li> <li>T/S LCO of ≤ 7 days</li> <li>UAT/SAT Overheating</li> <li>T/S Action Step requiring a power reduction</li> <li>Significant loss of public address (PA), security systems, or plant lighting</li> <li>Significant loss of fire protection capability</li> <li>Action of #7 days per the requirements of OPLP-01.2, Fire Protection System Operability, Action, and Surveillance Pequirements.</li> </ul>		
	Work Control Response: Work authorized on a 24 hr/day - 7 day/week basis required to support plant reliability, capacity, or availability. These items will be blocked as Urgent and worked after expedited planning and authorization.		

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### ATTACHMENT 2 Page 2 of 2 Priority System Criteria Summary

BNP PRI #2	Emergent (Expedite Schedule)
	Definition: Those items which have a reasonable possibility of affecting safe, economical, reliable, and environmentally sound plant operations.
	<ul> <li>Examples: Those work items judged to have a possible impact on safe, reliable, and environmentally sound plant operation including activities that affect SALP indicators, mils/kWh, and plant capacity of ≥5 MWe. Specific examples include:</li> <li>Maintenance Rule A1 System Corrective Actions</li> <li>Loss of ≥ 5 MWe (i.e., CWIPs, FW HTR LVL CNTLS)</li> <li>Surveillance test support work identified during testing</li> <li>LCO conditions &gt; 7 days</li> <li>Personnel safety issues</li> <li>Action of &gt; 7 days per the requirements of 0PLP-01.2 and 0PLP-01.5, Alternative Shutdown Capability Controls.</li> <li>Release of CFCs from refrigeration units, excluding process chillers (Turbine Building chillers)</li> <li>Work Control Response: Expedite schedule; plan and work as soon as possible. Generally, work activities that cannot be delayed until the next scheduled work window. These items will be reviewed by Outages and Scheduling, Implementing organization and Operations for schedule impact and either approved via Figure 3 for work item addition or blocked for early completion.</li> </ul>
BNP PRI #3	Routine (Plan and Schedule per 12-Week or Outage Corredule) Definition: Those items which do not have a significant impact on safe, economic, reliable, and environmentally sound plant operation.
	Examples: Those items that are routine activities which can be planned and scheduled in accordance with the normal work control process for developing the rolling on-line schedule and outage schedule. Specific examples include:
	- Items not causing active LCO conditions
	<ul> <li>Chronic radiation exposure</li> <li>Preventive and corrective maintenance to improve reliability</li> </ul>
	- Backlog reduction items
	<ul> <li>Items with Work Condition Codes of D, E, or F</li> <li>Most major/minor modifications</li> </ul>
	Work Control Response: Plan and schedule per the rolling on-line schedule or planned outage scope. Operations review of the schedule determines the work control process response of how rapidly these items are worked.
BNP PRI #4	Nonscheduled
	Definition: Work items which are not scheduled and not priority E or 1-3.
	Examples: These items are either Minor Work, Operational Support, or Maintenance Support related activities that do not require the activity to be scheduled in order to work the activity.
	Work Control Response. This work will not be scheduled; it will be worked as "fill-in" and controlled by the Work Group responsible for implementation.

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### ATTACHMENT 3 Page 1 of 2 High Safety Significant Functions

System	Description	on High Safety Significant Function	
1000	Containment Isolation Valve Pseudo System	This pseudo-system is referenced in the Maintenance Rule Program as a means to monitor reliability of containment isolation valves as measured by 10CFR50 Appendix J and the IST program. For the purposes of this procedure system 1011, PCIS, provides the high safety significant function.	
1005	Nuclear Boiler	Reclosure of SRVs following transients. Manual RPV pressure reduction with SRVs to allow low pressure system injection and ECCS instrumentation actuation. System must be Operable as per Technical Specifications to maintain system function.	
1011	PCiS	Isolation of HPCI/RCIC and prevent containment bypass/maintain containment integrity. Technical Specifications requirements must be met to maintain system function.	
1070	CRD	Provide high pressure injection for transients. Removing one pump from service constitutes a system outage.	
1080	RPS	Shutdown reactor for all plant initiating events. System must be Operable as per Technical Specifications to maintain system function.	
2035	Core Spray	Provide low pressure injection.	
2040	SLC	Mitigate ATWS.	
2045	RHR	Provide containment cooling and low pressure injection. One RHR pump per loop is required to maintain system function. Also provides shutdown cooling during Unit outages.	
2045	RHR SW	Provide cooling water for suppression pool cooling. One pump per loop is required to maintain system function.	
2070	CAC	Provide alternate source of hcut removal by venting through the hardened wet well vent path.	
2095	HPCI	Provide high pressure injection for transients and SBO.	
2100	RCIC	Provide high pressure injection for transients and SBO.	
3050	Feedwater	Provide a flow path for low pressure injection for decay heat removal and high pressure injection for transients. Both pumps are required to maintain system function.	
3070	Condensate	Provide low pressure injection. Two Condensate pumps and two Condensate boosters pumps are required to maintain system function	
4060	Service Water	Provide cooling water for RHR HX, vital header, EDGs and miscellaneous BOP loads. Removal of any two pumps per Unit fr service disables system function.	

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## ATTACHMENT 3 Page 2 of 2 High Safety Significant Functions

System	Description	High Safety Significant Function			
5010	EHC	Ensure bypass valve operation for RPV pressure reduction during transients. Both pumps are required to maintain the system function. One cooler is required to maintain system function.			
5065	Generator Isolated Phase Bus	Supports transmission of electrical power to UAT during normal Operations and from UAT during back feed configuration.			
5095 5100 5105 5110 5111 5112 5113	EDGs and support systems	Mitigate loss of offsite power. Loss of one train of a support system disables the function of that system but does not disable the function of the diesel generator (5095).			
5135	230KV Switch, ard	Provide electrical power to BOP and emergency buses. System must be Operable as per Technical Specifications to maintain system function.			
5145	SAT, UAT	Provide electrical power to BOP and emergency buses. System must be Operable as per Technical Specifications to maintain system function.			
5170	4KVAC	Provide electrical power to BOP and emergency buses. System must be Operable as per Technical Specifications to maintain system function.			
5175	480VAC	Provide electrical power for numerous safety-related loads for various accident scenarios. E-Busses are required to be Operable as per Technical Specifications to maintain system function.			
5230	250VDC	Provide power for HPCI, RCIC, EDGs. Both batteries are required to maintain system function.			
5240	125VDC CHARGERS	Provide power for HPCI, RCIC, EDGs. Both chargers are required to maintain system function.			
5245	125VDC BATTERY	Provide power for HPCI, RCIC, EDGs Both batteries are required to maintain system function.			
6175	FPS	Provide diesel-driven fire pump low pressure RPV injection during Shutdo: Provide fire protection in the Diesel Generator, Reactor, Service Water and Control Buildings. FPS must be operable or compensatory measures in accordance with 0PLP-01.2 must be in place to maintain system function.			
7071	SBGT	Provide secondary containment protection during shutdown. System's high safety significant function not applicable during Unit on-line operation.			
7110	Fuel Pool Cooling	Remove decay heat in fuel pool with fuel off loaded. System's high safety significant function not applicable during Unit on-line operation.			
8180	RB HVAC	Provide secondary containment during Unit outages. System's high safety significant function not applicable during Unit on-line operation.			

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#### ATTACHMENT 4 Page 1 of 3 Methodology for Assessing and Managing Plant Risk

- 1. Maintenance will be scheduled in accordance with Attachment 1, Twelve Week Rolling Schedule when possible.
- On-line system outages, voluntary LCO entries, and ECCS work windows will integrate maintenance and testing activities.
- 3. Risk impact of work activities which could affect the availability of those systems used to ensure defense-in-depth for Technical Specification action statements or risk management will be evaluated. This includes surveillance tests that do not render equipment inoperable, but could result in a trip or other event.
- 4. Risk impact of work activities that could initiate a plant transient if performed incorrectly will be evaluated. Maintenance Rule Scoping Questions may be used to identify potential transient initiators. Pre-job briefs will include compendatory measures to guard the redundant train or system and contingency plans for anticipated failures.
- Risk impact of work activities which could affect reactivity management will be evaluated. Pre-job briefs will include actions to monitor reactivity changes and mitigating operator actions.
- System outages of more than one high safety significant system at a time shall be avoided unless determined acceptable by risk assessment.
- Scheduling more than two maintenance rule "in-scope" systems to be unavailable at a time shall be minimized in order to reduce the cumulative risk impact of multiple systems out of service.
- Nuclear Service water pumps shall not be scheduled to be out of service unless all four EDGs are available.
- On-line maintenance which requires entry into a voluntary LCO will be scheduled to NOT EXCEED one half the allowable LCO time, unless prior Plant General Manager approval is obtained.
- 10. Impact to the opposite Unit will be evaluated for common 3/stems. OPLP-28 Attachment 11 may be used to identify common systems.
- 11. ALARA and industrial safety issues should be evaluated.
- 12. Work, such as visual inspections, which does not require a clearance or does not render equipment unable to perform its functions should be scheduled in accordance with the 12 week rolling schedule to minimize the consequences associated with identification of required maintenance.

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#### ATTACHMENT 4 Page 2 of 3 Methodology for Assessing and Managing Plant Risk

13. Based upon probabilistic safety assessment (PSA) insights the dominant accidents types for BNP include station blackout, transients at high pressure, loss of decay heat removal, small break LOCA, and ATWS. Provided below are guidelines specific to the dominant accident type.

#### 13.1 Station Blackout

- 13.1.1 Maintenance on has a high potential of challenging the ability to main on off-site power to Class 1E systems, should not be scheduled concurrent with system outages on Emergency Diesel Generators (EDG) or HPCI or RCIC.
- 13.1.2 Prior to starting a circulating water intake pump concurrent with E-Bus or EDG work consider the effect on E-Bus voltage.

#### 13.2 Plant Transients

- 13.2.1 Maintenance/testing which has a high potential to cause a plant trip (high rink evolutions), in conjunction with system outages on Feedwater, CRD, HPCI or RCIC should be minimized.
- 13.2.2 Maintenance should be scheduled to prevent system outage overlap which would result in entry into Tech. Spec. 3.0.3 or 3.0.5.

#### 13.3 Loss of Decay Heat Removal

System outages of more than one of the following systems at a time should be minimized:

- 2045 RHR
- 3070 Condensate
- 4060 Service Water
  - 501J EHC

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#### ATTACHMENT 4 Page 3 of 3 Methodology for Assessing and Managing Plant Risk

#### 13.4 Small Break LOCA

Defense in depth for the small break LOCA scenario is provided by Technical Specification requirements.

#### 13.5 ATW'S

System outages on systems needed to control level during an ATWS, such as HPCI, RCIC, CRD, RHR, and Condensate/Feedwater in conjunction with maintenance on SLC should be minimized.

- 14. Authorization for scheduled System Outages will be obtained in accordance with Section 5.6.3.
- 15. If needed, Equipment Out Of Service (EOOS) software and/or the PSA group may be consulted to assist with determination of risk significance.

# ATTACHMENT 5 Page i of 1 On-line Schedule Manual Entry Form

Associated WR/JO #	(If applicable)			
Activity Description				
Unit	Unit 1 Unit 2 Both			
St. t Date & Time				
Crew Code				
Duration				
Shift	D (Days) N (Nights) A (Around the clock)			
Clearance	Yes No			
LCO	Yes No When Worked			
RWP	Yes No			
Scaffold	Yes No			
System				
Contact Person & extension				

Requested by: ____

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Approved by: Outages & Scheduling Representative

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		ACTI	BNP LONG	RANGE I	PLAN ION FORM	1		
	SYSTEM #	FAIM	140.:	ES	R NO.	PROJ	ECT TYPE	
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Implemen								
Totals								
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CATEGO	RY: Regulatory	Requirement 🗆		Economic Ben	efit 🗆	Managemen	t Discretion 🗆	
Benefit C	st Ratio (Hard Do	llars)	B/E:	Net Pres	Net Present Value (\$000's) (Hard Dollars)			
			S	CHEDULE			nder spension binsunstansassassa	
	STUDY		DESIGN		IMPLEMENT		Outage Required?	
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Compli te	-	Comple	Complete		Complete		0	
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Initiating Section Manager					MAINTENANCE			
					DOTHER			

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#### **ENCLOSURE 3**

#### BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2 DOCKET NOS. 50-325 AND 50-324 LICENSE NOS. DPR-71 AND DPR-62 RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION AND SUPPLEMENT TO REQUEST FOR LICENSE AMENDMENTS DIESEL GENERATOR SURVEILLANCE REQUIREMENTS

**TECHNICAL SPECIFICATION PAGES - UNIT 1**