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December 29, 1997

Ms. Cynthia Pederson, Director
Director of Division of Nuclear Materials Safety
United States Nuclear Regulatory Commission
801 Warrenville Road
Lisle, Illinois 60532-4351

SERIAL: GDP-97-0217

**Portsmouth Gaseous Diffusion Plant (PORTS)
Docket No. 70-7002**

Transmittal of the Revised Corrective Action Plan for the Portsmouth Nuclear Criticality Safety Program

Dear Ms. Pederson:

(Note: This letter was originally submitted to the NRC on December 22, 1997, however the USEC letter number on the cover page was incorrect. The correct letter number is GDP 97-0217. Thus, this letter supersedes the previous version submitted to you on December 22, 1997. Thank you.)

This letter provides the information requested in Nuclear Regulatory Commission (NRC) letter dated December 1, 1997. This NRC letter requested that USEC:

1. Provide a revised Corrective Action Plan which integrates USEC letters dated November 7 and 10, 1997, (GDP-97-2028 and GDP-97-2030) and incorporates the specific commitments, including schedules and completion dates, made during teleconferences held on November 12 and 18, 1997.

Response: Enclosed is the PORTS Nuclear Criticality Safety (NCS) Program revised Corrective Action Plan. This Corrective Action Plan integrates USEC letters dated November 7 and 10, 1997, (GDP-97-2028 and GDP-97-2030), and incorporates the commitments, including schedules and completion dates, made during teleconferences held on November 12 and 18, 1997. This revised Corrective Action Plan is more comprehensive than the plan previously provided because, in part, it addresses enhancements to nuclear criticality safety programmatic controls and related management systems. The schedules provided in the enclosed Corrective Action Plan continue to represent target dates. By the end of January 1998, these dates will be reevaluated based on experience gained during implementation of the plan.

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2. Identify those areas involving the initial development of the nuclear criticality safety approvals (NCSAs) and the implementation of NCSA requirements in the field, where additional corrective or compensatory actions may be warranted.

Response: Sections B and D of the Corrective Action Plan discuss immediate and compensatory actions (i.e., the interim NCSA review process), respectively. These actions were developed based, in part, on root cause analysis performed to date on NCS related Event and Problem Reports. These measures will be implemented over and above existing program requirements. Examples include:

- the use of additional review groups during the drafting of NCSA/Es;
- improved procedural guidance on NCSA/E development and activation;
- an additional review of Problem Reports on a daily basis to ensure that the proper immediate actions and reporting were taken;
- implementation of a second management review team for each NCSA/E prior to PORC review; and
- the establishment of an NCS Duty Engineer program to provide readily available support to the Plant Shift Superintendent.

Additional corrective actions to address programmatic improvements are discussed in Section E of the Plan. As programmatic improvements are identified through a review of existing NCS program requirements against applicable industry standards, completion of the comprehensive root cause analysis, and the vertical slice review, a feedback mechanism will be in place to adjust the interim NCSA process as necessary. Furthermore, lessons learned from implementation of the interim NCSA review process will be fed back to the programmatic review and improvement effort as appropriate.

3. Identify any interim compensatory measures which assure that management and staff, especially those principally responsible for operational safety features and particularly for those involving single contingency systems, understand their responsibilities and are implementing the controls in accordance with managements' expectations.

Response: Compensatory measures (i.e., additional training) to improve the understanding of management and staff are discussed in the Corrective Action Plan, Section D.5.

4. Describe and provide supporting justification for any interim compensatory actions which are relied upon until long term corrective actions become fully effective in correcting root causes and preventing the recurrence of similar nuclear criticality safety problems.

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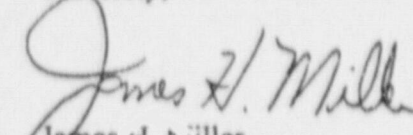
Response: The descriptions of immediate and compensatory actions are provided in Sections B and D of the attached Corrective Action Plan. As discussed in Section B.1 of the Corrective Action Plan, an evaluation of NCS program safety was performed. USEC concluded from these reviews that: (a) the evaluations performed were of sufficient scope and depth to provide an adequate assessment of program safety; and (b) the findings to date do not represent an immediate safety problem.

In order to keep NRC abreast of improvements to the PORTS NCS program, USEC will provide NRC with a quarterly update report of the enclosed Corrective Action Plan. Accordingly, USEC will submit the first update report to the NRC by January 31, 1998.

Enclosure 1, Table 2 lists the commitments made in this submittal. Enclosure 2 provides a list of NCSAs that are being reviewed as part of the NCS Corrective Action Plan. As was documented in USEC letter GDP-97-0211 dated December 12, 1997, NRC agreed to extend the due date for this letter to December 22, 1997.

If you have questions regarding this submittal, please contact Ron Gaston at (740) 897-2710.

Sincerely,


James H. Miller
Vice President, Production

Enclosures (2): As stated

cc:

NRC Document Control Desk
NRC Resident Inspector - PORTS
NRC Resident Inspector - PGDP
DOE Regulatory Oversight Manager

Enclosure 1
PORTS Nuclear Criticality Safety Program
Revised Corrective Action Plan

A. Background

As part of the Certification Application effort, PORTS NCSA/Es were upgraded to provide more rigorous and accurate NCS documentation. This effort was completed in December of 1996. Subsequent to this effort, in early 1997, USEC began to question the effectiveness of the NCS program. This concern was based, in part, on the large number of Problem Reports being generated that identified problems with the implementation of the NCS program. In October 1997, it was determined that the NCSA controls developed to keep cooling water from entering the process gas system during the cell treatment process were not being properly maintained. Further evaluation of this event determined that the respective NCSA/E was flawed. Subsequent to this event, it was identified that Engineering Notices (ENs) were being used to amend requirements in NCSAs, effectively circumventing the NCS review and approval process.

The identification of these problems and the recognition that they represent deficiencies in the implementation of the NCS program have resulted in the need to establish a comprehensive Corrective Action Plan. The goals of this Plan are to put in place a high quality NCS program and to ensure that NCS implementing documents provide the necessary level of safety. These goals will be accomplished by:

- (1) Ensuring the safety of ongoing Fissile Material Operations (FMOs);
- (2) Identifying the scope and depth of the deficiencies (root causes);
- (3) Initiating an interim program to review and correct NCSAs in a prioritized manner based on their potential risk;
- (4) Evaluating and upgrading NCS programmatic controls and related management systems;
- (5) Reviewing completed NCSAs against the enhanced program for potential changes; and
- (6) Improving the NCS training for NCS and site personnel.

The remainder of this Plan lists both completed actions and actions which remain to be completed. Those actions remaining to be completed have, for completeness been broken into sub-tasks which are contained in the body of the plan by task number. Each remaining task is preceded by a short description. The date by which each overall task will be completed is contained in Table 2.

B. Immediate Compensatory Actions

In November 1997, USEC recognized, based on the magnitude of the deficiencies being identified, that immediate compensatory measures would be required while an overall NCS program upgrade was being formulated. These immediate actions included an evaluation of program safety, shutdown

of certain FMOs, and the implementation of an additional review of past problems. These actions are discussed in more detail below.

1. Evaluation of Program Safety

An evaluation of NCS program safety was initiated in order to provide management with confidence that the findings identified to date do not represent an immediate safety problem. The following specific actions were initiated in order to provide this level of confidence.

- (a) Walkdown of NCSAs Associated with SAR Accident Scenario - Walkdowns were performed on 13 NCSAs determined to be associated with the Safety Analysis Report (SAR) accident analysis. These walk-downs were completed and concluded that the associated NCSA controls were adequately implemented. Twenty-two PRs were identified, one of which was a 24-hour NRC event report.
- (b) Review of Surveillance Requirements - A review was performed to verify that NCS surveillances and Technical Safety Requirement (TSR) surveillances for single contingency FMOs were being performed. No surveillances were overdue.
- (c) Building Review of NCSAs - The managers for each building in which FMOs are performed have begun to review the implementation status of the existing NCSAs in their buildings. These reviews are to ensure that the descriptions in Part A of the NCSAs are accurate and complete and that the controls identified in Part B and Part C are being implemented. The plan for performing these reviews follows:

Task 1	Building Review of NCSAs
<u>Subtask No.</u>	<u>Description</u>
1.1	Develop a list of NCSAs by facility. Assign reviews and schedule for completion.
1.2	Develop review guidance for building personnel.
1.3	Perform training of building personnel, using the guidance developed in Subtask 1.2.
1.4	Perform reviews of NCSAs. Report completion to Nuclear Safety Manager.
1.5	Write Problem Reports for identified deficiencies.
1.6	Evaluate Problem Reports for reportability.
1.7	Develop corrective action to address deficiency identified in Problem Report.
1.8	Implement corrective actions.

- (d) Review of NCSAs Completed by Non-qualified Personnel - It was determined that NCS engineers that were not properly qualified authored certain NCSAs. These NCSAs are being reevaluated by qualified NCS personnel. The plan for performing these reviews follows:

Task 2 Review of NCSAs Completed by Non-qualified Personnel

<u>Subtask No.</u>	<u>Description</u>
2.1	Develop list of individuals who are not qualified.
2.2	Develop list of NCSAs that were authored or peer reviewed by these individuals.
2.3	Write a review plan.
2.4	Assign review team(s).
2.5	Review NCSAs on the list against the guidance provided in the review plan. Document deficiencies in a Problem Report. The Problem Report system will be used to document and initiate the corrective actions for these deficiencies.
2.6	For NCSAs that have identified deficiencies, assign a qualified NCS engineer to correct problems.
2.7	Correct NCSAs.

- (e) Review of Event Reports - A focused review was performed of all event reports where either single or double contingency was lost. Each event was evaluated to ascertain what conditions remained which would have prevented a criticality. This review concluded that conservatism built into the NCSA/E process were effective in providing protection even under a loss of contingency situation.

2. FMOs Shutdown

FMOs such as cell treatment activities and those covered by NCSA/Es which were improperly altered by ENs were either brought into compliance or stopped until compliance was achieved by either changing the requirements or changing the activity. In addition, FMOs may be stopped as a result of the reviews performed under Task 2.

3. Daily Review of Problem Reports

A team of NCS personnel has been assembled to review Problem Reports, on a daily basis, to ensure that the proper immediate actions and reporting were taken. In addition, a flowchart for providing assistance to the PSS for NCS PRs has been developed and is being used by NCS personnel in responding to requests from the PSS. The purpose of the flowchart is to ensure that the thought process for all NCS engineers is consistent when responding to the PSS. Also, a two man rule for responding to NCS PRs has been put into effect along with implementation of the Duty NCS engineer. These activities will be proceduralized.

C. Root Cause Analysis

Three separate root cause evaluations of problem reports related to the NCS program have been, or are being, performed since the cell treatment NCSA problem was identified: 1) an informal evaluation performed by the Nuclear Safety Manager; 2) a TapRoot review on NCS Problem Reports from 1997 performed by the Corrective Action Program Manager; and 3) an ongoing TapRoot evaluation on the 1997 NCS related Problem Reports intended to drive the individual root causes down to a Level 5 (specific) cause. These Problem Reports included deficiencies identified in NRC Inspection Reports and Internal Assessment Findings. The details of each of the three evaluations follow.

1. Nuclear Safety Manager - This evaluation was performed to support the development of an initial corrective action program. Four specific root causes were cited: management systems failure; technical rigor in the development and implementation of NCSAs was inadequate; the Audit and Evaluation Process did not work to detect NCS problems; and the Standard, Policy, or Admin Control (SPAC) governing the development of NCSAs was confusing or incomplete. These root causes were used to justify the main thrust of the corrective action program which was described in USEC letter GDP-97-2030, dated November 10, 1997.
2. Corrective Action Program Manager - To provide a more detailed evaluation of the root causes, the Corrective Action Program Manager performed a formal TapRoot root cause determination. Problem reports written against the NCS program in 1997 were evaluated to determine near root causes and then an aggregate set of those near root causes was evaluated. The near root causes were largely grouped into three main root cause focus areas: NCSA/E errors- 84, Procedure flowdown errors-95, and Failure to follow procedures-124. The aggregate set determination yielded three root causes:
 - a. Errors in the NCSAs-Some NCSAs were determined to have technical errors which made it difficult to implement their requirements in the field.
 - b. Inadequate implementation-In some cases the requirements contained in the NCSAs were not adequately implemented in the field.
 - c. Self-assessment and internal corrective action processes were inadequate to detect and correct the problems.
3. Comprehensive Root Cause Evaluation-In response to questions regarding assurance that all root causes have been identified and are being addressed in the corrective action program, a third root cause evaluation was initiated. This TapRoot evaluation was performed by a team consisting of the Nuclear Safety Manager (part time), PORC chairman (part time), a TapRoot process

facilitator, and a number of individuals who were familiar with the details and history surrounding the Individual Problem reports themselves. At a minimum, two individuals plus the facilitator were present for the evaluation of each Problem Report.

The first step in this evaluation was to identify, in flow chart form, the process of development, review and approval, activation, and implementation of a typical NCSA. Each step in the process was assigned an identifying number. The Problem Reports were evaluated to a Level 4 "near root cause". Each Problem Report was also associated with a specific step number. The results are as follows:

<u>Step Number</u>	<u>Step Description</u>	<u>Number of Problem Reports Associated</u>
1	Identification of Fissile Material Operation	5
2	Part A Prepared	28
3	Part B, Part C Prepared	52
4	NCS Subcommittee	1
5	PORC	1
6	Procedure Development	18
7	Procedure Review Board	0
8	PORC	0
9	Verification Walkdown	28
10	Activation	1
11	Use (implementation)	113
12	Monthly Ops walkdown	1
13	Biennial NCS walkdown	1
14	Self Assessments	4

The above results were then evaluated against the TapRooT list of root causes. For each step, the basic root causes which clearly did not apply were eliminated and those which did, or could, apply were captured on a list of root causes to be treated. The result of this evaluation is a list of root causes sorted by process block number. This sort is shown in Table 1.

The root causes listed in Table 1 will be corrected as part of the NCS corrective action program.

Validation of the results of the root cause evaluation and other completion activities will be completed in accordance with Task 6 which is located in Section E of this plan.

D. Interim NCSA Review Process

While the longer term upgrades to the NCS administrative control process are identified, developed, and implemented, a number of enhancements will be added to the NCSA development, approval, and implementation process. They include:

1. Enhanced Review Process (Murder Board)

To ensure that the NCSA development process is carried out properly, an additional review board has been added to enhance the PORC and subcommittees' review. This review board is referred to as the murder board and works in accordance with a formal charter. The owner (operations) and developer (NCS Engineer) will be tasked with presenting drafted NCSAs in front of a board consisting of a minimum of four professionals representing Nuclear Safety, Operations, Maintenance, Work Control, or Safety, Safeguards and Quality whose task is ensuring that aspects of the draft NCSA (e.g., assumptions, calculations, procedure steps) are correct. This satisfaction is created by obtaining the appropriate answers to questions from the board from the NCSA developer and/or owner. The murder board concept has been borrowed from the reactor industry where it has proven to be successful in improving the quality of final documents such as NCSAs. This addition to the existing process will improve the quality of the NCSAs and help the NCS and Procedure Review Board subcommittees of the PORC improve the quality of their reviews. The Murder Board will be used until USEC is satisfied that the quality of NCSA development and review has reached an acceptable level. Discontinuing the use of the Murder Board will not be considered until at least May 31, 1998.

The Murder Board will review major revisions of NCSAs and new NCSAs. At the discretion of the Nuclear Safety Manager, minor changes to NCSAs will be excused from Murder Board review.

2. Involvement by Owners and Engineering

As noted in the root cause results, the lack of ownership by the actual users (owners) of the NCSAs has been responsible for a large portion of the NCSA problems. This lack of ownership has contributed to the technical shortcomings of the NCSAs when proper support and reviews of draft NCSAs were not adequately performed, and contributed to a lack of understanding of the final NCSAs themselves, resulting in implementation deficiencies.

To correct this problem, representation by the implementing organization in the form of a management individual and a hands-on user (typically an hourly person), a System Engineer, and a NCS engineer will be required on the team which develops the NCSA, supports its progress through the review and approval process, and performs the required plant walkdowns to verify the NCSA. This will help ensure the technical accuracy of the NCSA, ensure that any required actions can actually be physically accomplished, and that the procedures implementing NCSA actions are correct. It will also help ensure that the actual implementation in the field will be correct. (Note: Murder Board members cannot be used as members of the walkdown and review teams. However, members of the murder board will accompany the review teams on field walkdowns of selected NCSAs.)

In addition, a review will be performed to verify all PORC approved NCSA's are being implemented or are in the process of being implemented in the field.

3. Revise NCS Procedures

In order to ensure the interim NCS administrative controls are implemented correctly and consistently, the procedures which provide the administrative controls will be revised to reflect the interim changes. Refer to Section E, Task 12 (NCS Policies and Procedures) for a discussion of the plan to implement these procedure revisions.

4. Review/Walkdown NCSAs using the Prioritized List

In parallel with activities to improve the NCS program, existing NCSAs will be subjected to the NCSA Upgrade Project on a prioritized basis. The list of applicable NCSAs, by priority, is included in Enclosure 2. This will ensure that high risk NCSAs are reviewed for technical adequacy and proper procedural flowdown and implementation as soon as practical.

As the long term programmatic improvements are implemented, NCSAs which have been subjected to the interim process will be evaluated to determine if they need to be reverified to ensure they reflect all program improvements. Once the NCS program improvements have been incorporated into procedures and site personnel training is complete, this new program will be used to finish the reviews and walkdowns on the remainder of the NCSAs. The plan for performing these reviews follows:

Task 3 NCSA Upgrade Project

<u>Subtask No.</u>	<u>Subtask Description</u>
3.1	Classify the NCSAs into three groups according to priority.
3.2	Verify that all PORC approved NCSAs are activated or progress toward activation is being accomplished.
3.3	Form review groups consisting of representatives from NCS, Systems Engineering, Operations Management, and a hands-on operator or maintenance technician.
3.4	Develop a procedure for the performance of reviews and walkdowns. Maintain procedure current through life of upgrade project.
3.5	Table top scrub NCSAs and their supporting documents
3.6	Field walkdown all NCSAs.
3.7	Ensure consistency with PGDP NCSAs for similar activities.
3.8	Accelerate processing of identified changes to NCSAs and procedures.
3.9	Review and approve NCSA/implementing procedure changes.
3.10	Walkdown PORC approved NCSAs to document their readiness for activation.

5. Enhance NCSA Training

In response to recent NCS events, the General Manager conducted all-hands briefings to communicate management's expectations regarding implementation of NCS controls. To further ensure that the interim NCSA Review process is implemented correctly, training will be provided to personnel who will use, or be affected by, the interim process. The plan for developing and implementing this training follows:

Task 4 Enhance NCSA Training

<u>Subtask No.</u>	<u>Subtask Description</u>
4.1	Compile list of administrative controls document changes.
4.2	Identify target training audience by organization or job function.
4.3	Develop training module for each target group.
4.4	Develop training effectiveness evaluation tool (test)
4.5	Administer training.
4.6	Utilize effectiveness evaluation tool (test).
4.7	Retrain as indicated by test results.

In addition to the interim process training, training will be given as determined to be necessary to communicate such things as lessons learned from the NCSA walkdowns currently being performed or other information determined to be important for all affected personnel to know. The exact nature of this training may vary from required reading, memos and e-mail messages to formal classroom training, depending upon the nature and complexity of the subject matter.

6. Safety, Safeguards and Quality (SS&Q) Review of Implementation

As part of the ongoing self-assessment activities at PORTS, SS&Q will be tasked with monitoring the implementation of new NCSAs in the field. This monitoring will utilize ANSI/ASQC Z1.4, Sampling Procedures and Tables for Inspection by Attributes, for sampling guidance and is expected to take the form of a series of assessments that will begin as the NCSAs coming from the interim change process are implemented, currently scheduled for mid to late February. The plan for implementing this review process follows:

Task 5 SS&Q Review of Implementation

<u>Subtask No.</u>	<u>Subtask Description</u>
5.1	Develop list of NCSA changes from Task 3.

- 5.2 Write an Assessment Plan. The plan will include, in part, a sample review of NCSA requirements and verification of those requirements in the implementing procedures.
- 5.3 Schedule assessments as an extension of Subtask 3.10's schedule.
- 5.4 Perform assessments in accordance with applicable procedures
- 5.5 Complete a review of all canceled Engineering Notices to ensure that the Document Control Organization has functioned properly to make each controlled copyholder and each affected organization aware of the canceled Engineering Notices and therefore the cancellation of that specific operation as defined by the Engineering Notice.

E. Programmatic Upgrades

Task 6 Complete a Comprehensive Root Cause Analysis

The problem reports (and other deficiency reports) that have been written during the past year have identified many deficiencies. These deficiencies when taken individually, or as groups of similar deficiencies, can be used to identify weaknesses in the program and/or its implementation. This task is intended to ensure that lessons have been learned from our known problems, and incorporated into corrective actions. Since part of the root cause analysis has been done, this task starts with the next action to complete this task. (For the completed actions see Section C, Root Cause Analysis, of this plan.)

<u>Subtask No.</u>	<u>Subtask Description</u>
6.1	For each step of the NCSA process review a representative sample of the PRs associated with that step and identify the specific Level 5 root cause(s).
6.2	Verify that the root causes identified above are included in the summary level root causes which were identified by the root cause team. For those that are not, revise the root cause documentation, increase the sample size, and submit a lessons learned/enhancement in accordance with the procedure described in Task 9.
6.3	If the detailed review root causes are included in the summary level root causes, document the review.
6.4	For each Level 5 root cause associated with each step of the NCSA process, (See Table 1 attached) or associated Management Systems, develop programmatic changes to correct root cause as part of this Corrective Action Plan for input to Task 12.

Task 7 Compare applicable Industry standards against NCS program

To ensure that the NCS program complies with all applicable Industry standards, a detailed review will be performed. This review will be point by point, and the product of the review will be a set of NCS administrative control changes to be implemented. The plan for this review follows:

<u>Subtask No.</u>	<u>Subtask Description</u>
7.1	Review applicable Industry standards.
7.2	Develop a list of applicable requirements.
7.3	Compare requirement list to our NCS programmatic controls and develop a discrepancy list.
7.4	Evaluate discrepancies for need for immediate action, a Problem Report, or reportability.
7.5	Take any necessary immediate actions.
7.6	Evaluate discrepancies for need for interim action.
7.7	Develop and implement any interim actions required.
7.8	Develop long term programmatic enhancements, for input to task 12.

Task 8 Vertical Slice Review

To ensure that we have identified all potential areas of enhancement, an in-depth vertical slice review of the NCS program will be performed. The vertical slice review will be performed by a team consisting of the NCS Managers from PORTS and PGDP and an outside expert in NCS. Using selected NCSAs, the review will identify any enhancements that could be implemented to improve the program. The vertical slice method is intended to look at all aspects of the NCS program from the initial identification of a potential Fissile Material Operation to the use of the NCSA in the field, including on-going assessments. The subtasks of this activity are shown below.

<u>Subtask No.</u>	<u>Subtask Description</u>
8.1	Assemble the team for the vertical slice review.
8.2	Develop a procedure for doing the review. The procedure shall cover: <ul style="list-style-type: none">- selection of NCSAs to ensure that all aspects of the program are included in the review,- selection of NCSAs to ensure that all organizations affected by the NCS program are included in the review,- the methods to be used for the review,- the documentation to be provided as a result of the review,- the methods to be used to initiate changes to the NCS program (e.g., Procedure Development Forms.)

- 8.3 Conduct the vertical slice review of the program using each selected NCSA. (As each NCSA is completed, enhancements to the NCS program will be developed.)
- 8.4 Submit program enhancements to the Nuclear Safety Manager for inclusion in the continuous improvement mechanism for the NCS Corrective Action Plan. (See Task # 9).

Task 9 - Continuous Improvement Program

Throughout the NCS Corrective Action Plan implementation, there will be lessons learned for enhancements to the NCS program. Some of these lessons learned will directly affect the NCSA/Es and others will affect other aspects of the program such as procedural implementation of controls and NCSA training. In order to ensure that all lessons learned and enhancement ideas are appropriately incorporated into the NCS Corrective Action Plan, a single methodology will be utilized. The subtasks to establish and use this methodology are described below.

<u>Subtask No.</u>	<u>Subtask Description</u>
9.1	Develop or revise a procedure applicable to all personnel involved in the NCS Corrective Action Plan implementation, that provides the guidance for documenting lessons learned and enhancement ideas. The procedure shall cover: <ul style="list-style-type: none"> - use of a standard format. - a documented disposition for each lesson learned to identify how and when to incorporate the enhancement into the process. - A documented identification of the potential affect of the enhancement on previous work performed under the NCS Corrective Action Plan. - Primary users of the lessons learned/enhancement mechanism. - How the lessons learned will be shared with all affected organizations. Training will be utilized as necessary to ensure proper understanding of the lessons learned.
9.2	Implement the new procedure.
9.3	Track the disposition of each lesson learned/enhancement idea to ensure that those agreed to by the Nuclear Safety Manager are incorporated into the NCS program.
9.4	For those NCSAs that are affected by changes in the program due to lessons learned throughout the program, ensure that there is a positive control mechanism to track the need for a re-review to incorporate the lessons learned.

Task 10 Personnel Qualification Verification

To ensure all PORTS NCS personnel qualification requirements meet applicable industry standards, a detailed review of qualification requirements will be accomplished to verify their adequacy. Engineers not meeting upgraded standards will be retrained as necessary. The plan to accomplish these reviews follows:

<u>Subtask No.</u>	<u>Subtask Description</u>
10.1	Review available qualification requirements in applicable industry guidance.
10.2	Compare guidance to existing administrative control procedures.
10.3	Resolve any identified discrepancies (revise procedures).
10.4	Compare qualification requirements to NCS engineers' records
10.5	Generate list of people to have upgrade qualifications.
10.6	Utilizing the new procedures, qualify individuals identified in step 10.5.

Task 11 Outside/Independent Assessments

As part of the effort to identify potential areas of improvement, assessment reports performed by independent groups, e.g., George Bidinger, Quality Assurance and the Plant Performance Review Committee, etc., will be re-reviewed and re-evaluated to identify problem areas in the NCS program and to ensure proper closure of the issues. Additionally, NRC inspection reports will be evaluated for similar problem areas. Problems identified through this review will be considered for programmatic improvements. The plan for performing these reviews follows:

<u>Subtask No.</u>	<u>Subtask Description</u>
11.1	Identify reports that fall within the scope of this task.
11.2	Review each report and document potential problem areas.
11.3	Compare the list of problem areas with the list of known deficiencies identified through other means (e.g., comprehensive root cause, ANSI reviews, etc.)
11.4	For those problem areas that were not documented under other tasks, identify potential programmatic improvements using the process established for feedback of lessons learned and enhancements, (See Task #9).

Task 12 Policy/Procedure Revision and Training

The NCS program from beginning to end (each step of the process) has had problem reports associated with it over the past year. The root cause evaluation has identified the problem reports

from 1997 and the steps of the NCS program to which they are associated. In order to provide long term enhancements to the NCS program and thereby ensure that the NCSA/Es and their implementation is excellent, we plan to upgrade NCS policies and procedures.

As programmatic upgrades are identified, it is expected that a number of procedures and other administrative control documents will need to be changed. These changes will also have to be communicated to affected personnel through training. Changes will need to be coordinated to maximize efficient use of procedure and training resources. The plan to accomplish needed changes to policies/procedures follows:

<u>Subtask No.</u>	<u>Subtask Description</u>
12.1	Implement procedure changes for interim program as described in Section D.
12.2	Develop list of needed procedure changes, new procedures, from the applicable tasks.
12.3	Accomplish procedure changes (including required reviews).
12.4	Develop training modules.
12.5	Identify target audience for training.
12.6	Administer needed training.
12.7	Implement procedure changes.

Task 13 Revise Training Program for Site Personnel

One of the identified root causes for NCSA implementation problems was that the training on NCSAs was not effective. To address this, the overall training for NCSAs will be evaluated to identify improvements which are needed. The plan to accomplish this review and upgrade follows:

<u>Subtask No.</u>	<u>Subtask Description</u>
13.1	Evaluate results of prior training.
13.2	Develop a list of programmatic problems.
13.3	Perform a root cause evaluation on each identified problem.
13.4	Identify actions to address root causes.
13.5	Incorporated improvements into the training administrative control process.
13.6	Upgrade training modules to reflect improvements.
13.7	Determine retraining required to reflect upgrades.
13.8	Administer required retraining using the revised program.

Task 14 Corrective Action Program Enhancements

As a result of the review of the current NCS program implementation deficiencies, it is apparent that many of the existing problems have been in existence for some time, (e.g., there are 500+ problem reports related to NCS from 1997.) If our corrective action program was effective many, if not most, of the NCS problems should have been solved after their first appearance. While this ineffectiveness of the corrective action program for PORTS is applicable to areas other than NCS, the subtasks described below are intended to focus on the NCS related portions of the corrective action program.

<u>Subtask No.</u>	<u>Subtask Description</u>
14.1	Evaluate the PR procedure and form to determine what improvements are required to better document the following: <ul style="list-style-type: none">- immediate actions taken,- actions taken to prevent recurrence,- extent of condition evaluation,- root cause determination,- corrective actions taken,- basis for safety and compliance with TSRs and NCSAs.
14.2	Ensure that the team assigned to determine the response to an NCS related PR includes a representative from the NCS organization.
14.3	All NCS PRs should include an evaluation for the extent of condition of the problem on other activities and equipment.
14.4	Evaluate the administrative system of the corrective action program, especially the status tracking and action response mechanism, to streamline the process so the reporting of completed actions and tracking of open items is less time intensive.

Task 15 Configuration Management Program Enhancements

As changes are made to the NCS program, it is imperative that supporting design documents are changed appropriately to maintain their accuracy and consistency with one another. The plan for effecting the needed changes to design documents follows:

<u>Subtask No.</u>	<u>Subtask Description</u>
15.1	Develop program changes to ensure that engineering documents are maintained consistent with NCSAs.
15.2	Implement the new program requirements.

Task 16 Revise Assessment Programs

As part of the overall upgrade of our NCS program, evaluation of supporting programs will be done and any changes or improvements identified as necessary will be accomplished. Among the most important of these programs is the assessment program. All of the various assessment processes will be reviewed for potential improvements. The plan to accomplish these reviews follows:

<u>Subtask No.</u>	<u>Subtask Description</u>
15.1	Develop criteria for assessment program reviews.
16.2	Review each assessment program against criteria.
16.3	List any identified problems.
16.4	Perform a root cause evaluation on each identified problem.
16.5	Develop list of root causes.
16.6	Develop corrective action plan for each program.
16.7	Train affected personnel
16.8	Implement upgraded assessment programs.

Task 17 Oversight of Plan Implementation.

To provide assurance that the Corrective Action Plan is being implemented in accordance with management's expectations, SS&Q will perform bi-monthly assessments, to verify proper implementation. The first assessment will be completed before the first quarterly review.

<u>Subtask No.</u>	<u>Subtask Description</u>
17.1	Develop assessment plan and schedule to be used to evaluate the effectiveness of Corrective Action Plan implementation.
17.2	Perform assessments as defined in the assessment plan.

F. Schedule

See Table 2.

G. Evaluation and Feedback

As this Plan is implemented, adjustments to action scope, prioritization, and schedules may be required. At least each quarter, a formal review will be performed to assess the adequacy and effectiveness of the program. Included in this review will be an assessment of the existing schedule and the findings from the applicable SS&Q assessment addressed by Task 17.

Task 18 Evaluation and Feedback

<u>Subtask No.</u>	<u>Description</u>
18.1	Gather pertinent status information.
18.2	Compare status with the respective Task requirement and schedule.
18.3	Initiate any required corrective actions.
18.4	Factor in lessons learned through Task 9.
18.5	Report to management.

Table 1. Level 5 Root Cause by Process Block Number

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
No SPAC*	X		X									X	X	X
SPAC not Strict Enough	X										X			
Confusing or incomplete SPAC	X	X	X						X					
Technical error	X		X			X					X			
Procedure use not required but should be			X						X		X	X	X	X
Procedure difficult to use			X											
Task not analyzed				X										
Accountability				X						X	X			
Procedure facts wrong						X								
Training Lesson Plan									X					
No way to implement SPAC										X	X			

* SPAC-Standards, Policies, or Administrative Controls

NOTE: For NCSA process step names, refer to Section C.3.

Table 2. Implementation Schedule End Dates

Task#	Description	Target Date
1	Facility review of NCSAs	12/24/97
2	Review of NCSAs regarding qualifications	2/28/98
3	NCSA/Es Upgrade Project	Pri 1 3/27/98 Pri 2 7/31/98 Pri 3 4/30/99
4	Enhance NCSA Training (Interim Process)	2/28/98
5	SS&Q Review of Implementation	Pri 1 4/27/98 Pri 2 8/31/98 Pri 3 5/31/99
6	Complete Comprehensive Root Cause Analysis	2/28/98
7	Compare applicable industry standards against NCS Program	1/31/98
8	Vertical Slice Review	3/31/98
9	Continuous Improvement Program	1/31/98
10	Personnel Qualification Verification	3/31/98
11	Outside/Independent Assessments	4/30/98
12	Policy/Procedure Revision and Training	12/31/98
13	Revise Training Program for Site Personnel	4/30/98 (Subtask 13.5)
14	Corrective Action Program Enhancements	6/30/98
15	Configuration Management Program Enhancements	2/28/98
16	Revise Assessment Programs	3/31/98
17	Oversight of Plan Implementation	4/30/99 (bi-monthly)
18	Evaluation and feedback	Quarterly starting on 1/31/98
19	Evaluate continued use of Murder Board	Not before 5/31/98

ENCLOSURE 2

LIST OF CURRENT NCAs

PRIORITY	NCSANBR	SUBJECT
1	0326_013.A03	Cascade Operations in the X-326 Building (Implemented)
1	0326_014.0C1	Operation of Seal Exhaust Stations with the Kinney Vacuum Pump, Model KT-170LP in the X-326 Facility
1	0326_015.A02	Extended-Range Product (200), Withdrawal Station
1	0326_024.301	Feeding of 5-inch, 8-inch and 12-inch HEU Cylinders at the X-326 Product Withdrawal and Product Purification
1	0326_025.A00	Handling and Storage of Seals with Unknown Enrichment in X-326
1	0330_004.A02	Cascade Operations in the X-330 Building (Implemented)
1	0330_005.A00	X-330 Area 2 Seal Exhaust
1	0330_006.A01	X-330 Area 3 Seal Exhaust and Wet Air Evacuation
1	0330_007.A00	Tails Withdrawal Station
1	0330_013.A00	Long Term Storage of PEH Converter in X-330
1	0333_015.A02	Cascade Operations in the X-333 Building (Implemented)
1	0333_016.A01	X-333 Area 1 Seal Exhaust and Wet Air Evacuation
1	0333_017.A00	Low Assay Withdrawal (LAW) Station
1	0342A001.001	General Handling, Weighing, & Storage
1	0342A002.A01	Autoclave Operation
1	0342A004.A01	Oil Interceptor
1	0342A005.001	Sump
1	0343_001.001	General Handling, Weighing, & Storage
1	0343_002.A01	Autoclave Operation
1	0343_003.101	Oil Interceptors
1	0343_005.A02	Waste Streams
1	0344A001.A02	Autoclave Operation
1	0344A002.A01	Gulper System
1	0344A003.A00	X-344A Scale Pits and Sumps
1	0344A011.A00	Technetium (Tc) Trap in Autoclave

PRIORITY	NCSANBR	SUBJECT
1	0705_012.A00	Small Parts Handtables Operations
1	0705_015.A06	Waste Water Treatment (Microfiltration System)
1	0705_018.A02	8- and 12-inch Cylinder Cleaning
1	0705_024.0C5	Calciners Solution Recovery
1	0705_034.A02	Spray Booth Operations
1	0705_038.A01	Truck Alley Cleaning
1	0705_039.A02	Oil and Grease Removal System
1	0705_042.A00	Small Equipment Tear-Down ("Blue Room")
1	0705_082.A00	"A", "B", "C" Loop Pre-Evaporator Systems
1	0705_086.A00	"A", "B", and "C" Loop Post Evaporator Systems
1	0705_132.A00	Replacing 8" and 12" HEU Cylinder Valves
1	0710_009.A00	Storage Requirements for Fissile Material Transfer (Uranium Chain of Custody) Room
1	0710_026.A00	Sampling, Transporting, and Handling in X-710
1	PLANT004.A01	Storing and Handling of Large Cylinders of Uranium Material
1	PLANT006.A02	General Use of Small Diameter Containers for Storing High Enriched Material
1	PLANT029.A00	Cascade Datum Systems
1	PLANT030.A02	Evacuation Booster Stations
1	PLANT033.A01	Surge Drums
1	PLANT038.A00	Inter-Building Tie Lines
1	PLANT043.A00	Fissile Material Transport
1	PLANT049.0C1	Always-Safe Portable Small UF6 Release Gulpers
1	PLANT054.A00	Lube Oil System
1	PLANT055.A00	Laundry
1	PLANT062.A00	Cascade Maintenance
1	PLANT076.A00	Oil Interceptors and Sumps in X-343 and X-342

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PRIORITY	NCSANBR	SUBJECT
1	PLANT079.A01	Opening Equipment containing Greater than A Safe Mass of Uranium-Bearing Material

TOTAL PRIORITY : 51

PRIORITY

PRIORITY	NCSANBR	SUBJECT
2	0326_022.101	X-326 Use of Portable HEPA Ventilation Units for Specific Activities
2	0330_003.101	Storage and Handling of Seals in X-330
2	0342A006.A02	Waste Streams
2	0343_008.001	Disposal of Pigtails, Manifolds, Cylinder Safety Valves, and Other Used Autoclave Components
2	0344A006.A03	Sample Cylinder Handling and Storage
2	0344A007.A04	Waste Streams
2	0344A010.0C1	Disposal of Pigtails, Manifolds, and Cylinder Safety Valves, and Other Used Autoclave Components
2	0705_002.A02	2.5-Ton, 10-Ton, and 14-Ton Cylinder Cleaning
2	0705_010.101	Small Parts Glass Bead Blaster
2	0705_033.1C4	South Annex Operations - Cascade Equipment
2	0710_004.101	Gulpers for Mass Spectrometers
2	0710_006.A00	Uranium Sampling Laboratory
2	0710_008.A01	UF6 Isotopic Standards Preparation Laboratory
2	0710_011.A00	Process Spectrometry Laboratory
2	0710_012.A01	Uranium Analysis Laboratory
2	0710_020.A00	Process Chemistry Laboratory
2	0710_021.A00	Process Services Laboratory
2	0760_003.A01	Sample Buggy Repair
2	PLANT011.001	Use of Portable HEPA Ventilation Units for Specific Maintenance Activities
2	PLANT012.A01	Favorable Geometry Vacuum Cleaner
2	PLANT013.A00	Batching Solutions and Solids
2	PLANT018.A01	Dry Active Waste (Contaminated Burnables) in Waste Generation Areas and in Interim Storage

PRIORITY	NCSANBR	SUBJECT
2	PLANT022.A00	Sample Cylinder Handling and Storage
2	PLANT025.A01	General Use of Small Diameter Containers for Storing up to 10% Enriched Material
2	PLANT031.A02	Use of Portable Infrared Analyzers (PIRA Buggies, FTIRs, etc.)
2	PLANT044.A00	Cold Recovery - Cold Traps
2	PLANT048.A00	Contaminated Metal
2	PLANT050.A00	Use, Handling, and Storage of Fixed HEPA Filters and Prefilters
2	PLANT051.A00	Cold Recovery Chemical Traps
2	PLANT052.A00	Cold Recovery - Holding Drums
2	PLANT053.A01	Uranium Analysis and Sampling
2	PLANT057.001	Use of Gas Sampling Cart
2	PLANT060.A01	Cylinder Valve Replacement
2	PLANT063.A00	Building Decontamination Activities
2	PLANT064.A00	Handling and Storage of Seals in X-326, X-330, X-333
2	PLANT065.A00	Use of Limited-Safe Geometry Vacuum Cleaners
2	PLANT068.A00	Negative Air Machine (NAM)
2	PLANT069.A00	Test Buggies
2	PLANT075.A00	Batching of Contaminated Components Which Are Exposed to UF6 or Other Non-Oily Uranium Processes
2	PLANT078.A00	Use of Leadour 1S Cylinders at PORTS

TOTAL PRIORITY : 40

PROCTNAC

PRIORITY	NCSANBR	SUBJECT
3	0326_001.A02	Nuclear Criticality Safety of Shutdown and Standby X-326 Cells
3	0326_016.A00	Operating Floor Freon Degradar
3	0326_027.A00	Operation of the X-326 NDA Laboratory
3	0330_009.001	Flushing/Cleaning of 1/2" Vented Cavity Pipes and Compressor "B" Seal Cavities, X-330
3	0333_007.A01	1000 CFM Negative Air Machine

PRIORITY	NCSANBR	SUBJECT
3	0333_018.001	Freezer/Sublimator
3	0333_022.A00	Flushing/Cleaning of Vented Cavity Pipes and Compressor "B" Seal Cavities
3	0333_023.A01	Long Term Storage of 33-8-6 Stage 7 PEH Compressor
3	0344A004.A00	Evacuation System and Cold Traps
3	0344A005.A02	X344A Small Diameter Container Storage
3	0700_001.001	Fissile Material at The Radiation Instrument Calibration Facility.
3	0700_002.A01	Heavy Metals Sludge Storage
3	0700_004.A00	X-700 Converter Disassembly and Repair Area
3	0700_005.A00	Glass Bead Blasting
3	0700_006.A00	Biodenitrification (Pilot Plant and New Plant)
3	0700_007.A00	Cleaning Tank #3/ Converter Flushing Station
3	0700_016.A01	Uranium Bearing Materials Storage Area Between Columns D10 and D12
3	0700_017.A00	RCRA 90 Day Storage Area Bounded by Columns E2, E3, F2, and F3
3	0700_018.A00	X-700 Large Sandblasting Operation
3	0700_019.A00	Routine Operations in x-700 Cleaning Tanks 1, 2, 4, 5
3	0700_020.A00	Operation of the X-700 Chemical Tanks 1, 2, 4, and 5
3	0705_004.A00	5-inch Cylinder Cleaning
3	0705_005.A00	Small Cylinder Rinse Pit
3	0705_009.A00	Seal Dismantling Room
3	0705_011.A01	Small Parts Pit
3	0705_014.A01	Leaching/Complexing Handtable
3	0705_020.A00	Flocculation & Filtration of Solutions from Leaching Operations
3	0705_021.A01	B-Area Batching Handtable Operations
3	0705_022.A01	B-38, B-1, and Dissolver Solution Storages
3	0705_023.A00	Operation of the "A," "B," and "C" Loop Extractor/Stripper Systems

PRIORITY	NCSANBR	SUBJECT
3	0705_025.A00	Nitrous Oxide (NOx) Scrubber System
3	0705_027.A03	Heavy Metals Precipitation
3	0705_028.A00	Technetium Ion Exchange
3	0705_030.A00	Recovery Elevator
3	0705_031.A00	Equipment Disassembly in the North Teardown Area
3	0705_035.A05	Tunnel Storage
3	0705_037.A00	Ground Water Sumps
3	0705_040.A00	Overhead Storage
3	0705_041.A00	C-Area Material Handling & Storage
3	0705_043.A00	Elevator Tunnel
3	0705_044.001	Maintenance Shop
3	0705_050.A00	X-705 Process Laboratory
3	0705_051.A01	Solution Preparation
3	0705_055.A00	Facility Drains
3	0705_064.A00	Seal Can Handling and Storage in X-705
3	0705_071.001	2.5-ton, 10-ton, and 14-ton Cylinder Drying
3	0705_072.A00	Inspection and Testing of UF6 Cylinders
3	0705_073.001	Genie Model AWP30 Manlift
3	0705_075.A00	F- Area Fissile Material Handling and Storage
3	0705_076.A00	Inadvertent Containers
3	0705_083.A01	"A", "B", and "C" Loop Concentrate Storage and Metering Systems
3	0705_084.A00	"A" and "B" Loop Raffinate Storage and Recycle System
3	0705_085.A00	"A", "B," "C" Loop T-Water Storages
3	0705_099.A01	Post Evaporator Spray Condenser and Sample Condenser Systems
3	0705_100.A02	Pre-Evaporator Spray Condenser and Sample Condenser Systems

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PRIORITY	NCSANBR	SUBJECT
3	0705_102.A00	B Area Condensate Drain System
3	0705_103.A00	Process Vent System
3	0705_105.A01	Cylinder Cleaning Gulper System
3	0705_107.A00	2.5-ton, 10-ton, and 14-ton Cylinder Receiving & Storage
3	0705_108.001	SES (Solution Enrichment System) 2 (X-705)
3	0705_110.A01	Used Microfilters Removal and Storage
3	0705_111.A01	Buffing Booth
3	0705_114.A00	Facilities Utilities/Services - Process Steam
3	0705_122.A02	Blending Cylinder Wash Solution
3	0705_123.A00	Small Cylinder Receipt and Storage
3	0705_124.A01	F-Area Oxide Glovebox
3	0705_126.A00	RCRA 90 Day Storage Area Roughly Bounded by Columns F-23,G-23, F-24 and G-24
3	0705_127.A00	Classified Scrap Metal (Seal Parts Only)
3	0705_128.A00	Storage of 8-inch EBS Pipe in the Large Parts Cage
3	0705_129.A00	Decontamination of Unfavorable Geometry Parts in Tunnel Spray Booths
3	0705_130.A00	Testing of the 5-inch and 8- & 12-inch Cylinder Cleaning Operations
3	0705_131.A00	Draining, Transferring, and Collecting Uranium-Bearing Liquids in X-705
3	0710_001.101	Use of Nilfisk Model 80 Portable Vacuum in X-710
3	0710_007.A00	Small Diameter Container Storage in X-710
3	0710_014.A00	X-Ray Fluorescence Laboratory
3	0710_015.A02	Handling of Samples and Process Waste in ES&H Analytical Labs
3	0710_022.A00	Laboratory Standards and Controls
3	0710_023.A00	Miscellaneous Uranium Operations
3	0710_024.A00	Handling and Storage of Sources
3	0710_025.A00	Handling and Storage of Samples from ES&H Analytical Labs

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PRIORITY	NCSANBR	SUBJECT
3	0710_027.A00	Uranium Sampling Laboratory HEU Operations
3	0720_001.A02	Cleaning Lightly Contaminated Floor Areas
3	0720_003.A01	Dry Blast Machines for Non-Visibly Contaminated Parts
3	0720_009.A00	Small Parts Glovebox
3	0720_014.A00	Valve Shop Vapor Degreaser
3	0720_015.A02	Cleaning and Decontaminating Space Recorder Cans
3	0720_016.A00	Transmitter Cleaning Station
3	0720_018.A00	Hydro Table in the X-720 Hydro Shop
3	0847_001.A03	General Storage of Uranium-Bearing Waste, XT-847
3	0847_002.001	Storage of B-25 Waste Boxes at XT-847
3	PLANT001.0C1	Storing Small Diameter Containers in Plastic Bags, Plant
3	PLANT002.0C1	Water Cooling of UF6 Cylinders at LAW, ERP, Tails, X-342 and X-343
3	PLANT014.A00	Use of Unsafe Geometry Vacuum Cleaners
3	PLANT016.A00	Use of Commercial Floor Scrubbing Machines and Power Sweepers
3	PLANT017.A00	Storage and Handling of B-4 Pumps
3	PLANT028.A03	Removal and Handling of PEH Equipment
3	PLANT034.A00	Liquid Waste Collection and Sampling Systems
3	PLANT036.A00	Storage of Safe Batch Containers
3	PLANT037.A00	Use of Small Diameter Container Carts
3	PLANT045.A01	Limited Safe Volume Containers
3	PLANT066.A02	Mop Buckets
3	PLANT070.A00	Miscellaneous Waste Accumulation Areas
3	PLANT071.A00	Use of Portable HEPA Ventilation Units
3	PLANT073.A01	Removal and Handling of Two Compressors Above Mass Removal Limit and Installation of Replacement Compressors
3	PLANT074.A00	Decontamination Using a Steam Jenny

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PRIORITY	NCSANBR	SUBJECT
3	PLANT077.A00	Long Term Storage of Legacy PEK Equipment

TOTAL PRIORITY : 176

PRIORITY