

R2/E13

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## I. SAFETY MARGIN IMPROVEMENT PROGRAM DESCRIPTION

### Introduction

The Columbia Plant has long prided itself on its safety record. Furthermore, it remains fully committed to the policy that the safety of its employees and the general public is its number one priority. This policy is implemented through a cooperative working arrangement between our manufacturing organizations (Manufacturing, Technical Services, and Product Assurance) and our Regulatory Affairs organization. This arrangement requires that the Plant's manufacturing organizations bear the primary responsibility for safety and that Regulatory Affairs provides oversight and overall policy direction for plant operations regarding regulatory requirements.

The above strategy has served the Columbia Plant very well during its two decades long history. We are, however, in a period where there are significantly heightened expectations on the part of both federal (NRC, EPA, OSHA) and state (SCDHEC) agencies. Areas where there are heightened expectations include nuclear criticality safety, radiation exposure limits (ALARA), uranium discharge limits for plant effluents, air and water quality standards, definition and disposal of hazardous wastes, fire protection safety, and industrial safety. We believe that the current regulatory environment requires that the Columbia Plant adopt a new approach to implementing its safety programs while simultaneously maintaining the fundamental strategy that our manufacturing organizations bear the primary responsibility for safety. Therefore, we are combining all of our regulatory-related and process improvement projects into one, highly structured umbrella program that builds on our existing strengths. Creation of this umbrella program assures that Plant Management will be aware of and also be able to proactively meet new regulatory requirements. This program will also allow our safety-related and process improvement initiatives to be managed in a manner that assures coordination of all project priorities, resources, schedules, and external commitment dates. We have elected to call this program the Safety Margin Improvement Program (SMIP).

### Safety Margin Improvement Program

Four major sub-programs makeup the Safety Margin Improvement Program. These sub-programs are the Criticality Safety Margin Improvement Program (CSMIP), the Environmental Protection Improvement Program (EPIP), the Industrial Safety Improvement Program (ISIP), and the Columbia Plant Process Improvement Initiatives (CPPI). An overview of each sub-

program is provided in Figure I-1. Figure I-2 cross references specific SMIP projects with the regulatory requirements and issues identified in NUREG-1324 as well as the August, 1992 NRC Operational Safety Assessment (OSA) for the Columbia Plant.

#### Criticality Safety Margin Improvement Program

The Columbia plant has been aggressively implementing manufacturing system configuration control in the chemical area since 1990. A parallel effort to perform an in-depth criticality safety assessment (CSA) for each of our wet uranium bearing processes has also been implemented. The CSMIP is built on the strengths and experiences derived from both the configuration control and CSA efforts. In addition, four new major projects have been developed to address the weaknesses and concerns identified by the NRC OSA. Specific improvements have been planned in the areas of the change control management process, criticality safety measurement control, criticality safety training for plant personnel, and plant procedure upgrades. Particular emphasis will be placed on implementation of a performance based nuclear criticality training package, and the application of root cause analysis techniques to incident investigations. Details of these programs are provided in Section 1.0 of this document.

#### Environmental Protection Improvement Program

The second component of SMIP consists of projects required to improve environmental safety in the areas of monitoring and control of plant effluents and the reduction of both chemical and radiological discharge and waste disposal levels, consistent with the ALARA principle. Periodic clean technology audits will also be part of our ongoing effort to ensure that plant practices are environmentally safe and comply with the criteria and limits specified by Federal and State agencies.

#### Radiological and Industrial Safety Margin Improvement Program

A series of programs have been identified to enhance the industrial safety at the Columbia Plant. One of these initiatives is to implement the systems, procedures and methodologies necessary to comply with the revised 10CFR20 criteria. This initiative will require modification of computer hardware and software for personnel exposure data acquisition so as to conform with internal plus external dose summation requirements. Other industrial safety related projects included in this program are fire protection, material handling and storage, a hazardous substance safety analysis, and health physics radiation protection.

SAFETY MARGIN IMPROVEMENT PROGRAM

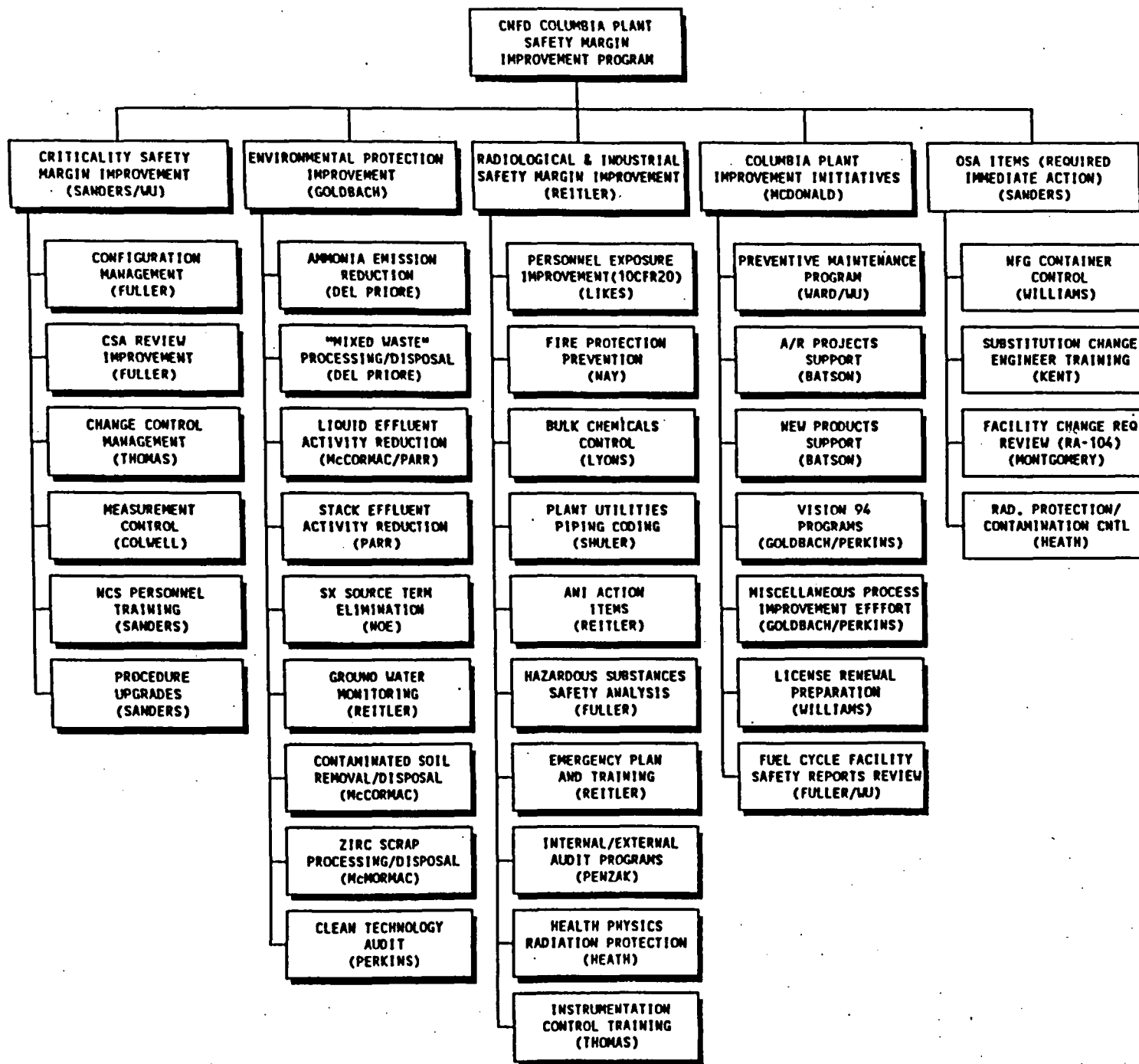


Figure 1-1

Figure F-2  
SMIP/OSA/NUREG - 1324  
Cross-Reference

Description	Program Priority	OSA Report References				NUREG-1324 References
		Weakness	Renewal	IFI's	Improvements	
<b>1.0 Criticality Safety Margin Improvement Program</b>						
<b>1.1 Configuration Management</b>			920409			3.26, 3.25
CSIP101 Configuration Control Drawing Upgrades	High					3.2.7
CSIP102 MAPCON System Implementation	High		920424, 920425			3.7
CSIP103 Equipment Spare Parts Database	High					3.2.7
CSIP104 Instrumentation Spare Parts Database	Medium					3.2.1
<b>1.2 Criticality Safety Assessment Review Improvement</b>			920409			3.9
CSIP201 Develop CSA Handbook	High	920411	920409			3.17.1, 3.22, 3.3, 3.3.1, 3.3.2
CSIP202 Prepare CSA Reports	High	920411	920409			3.17.1, 3.22, 3.3, 3.3.1, 3.3.2
CSIP203 Implement CSA Recommendations	Medium	920405				3.2.8
<b>1.3 Change Control Management</b>			920409			3.2.2, 3.4, 3.2
CSIP301 Change Control System	High		920409			3.2.2, 3.4, 3.2
CSIP302 Process Safety Review Implementation	High	920402, 920414				3.4
CSIP303 Root Cause Analysis Program Implementation	Medium	920405		920412		3.28
CSIP304 HAZOP Analysis Training						
<b>1.4 Measurement Control</b>						
CSIP401 Develop Measurement Control Plan	High	920422, 920416		920423	Imp #4	3.15
CSIP402 Evaluate Sampling Methodology	High	920422, 920416		920423	Imp #4	3.15
CSIP403 Evaluate Measurement Techniques	High	920422, 920416		920423	Imp #4	3.15
CSIP404 Develop System Bias Control	High	920422, 920416		920423	Imp #4	3.15
CSIP405 System Qualification Implementation	High	920422, 920416		920423	Imp #4	3.15
<b>1.5 Personnel Training</b>						3.5
CSIP501 Develop NCS Reference Handbook	High	920410				3.5
CSIP502 NCS Engineers Qualification	High	920410				3.5
CSIP503 NCS Training Program Overhaul	Medium		920408, 920413		Imp #1, #7	3.5
CSIP504 Plant Personnel NCS Training	Medium	920410, 920421, 920437, 920438	920413		Imp #2	3.5
<b>1.6 Procedure Upgrades</b>			920409			3.2
CSIP601 Criticality Safety Events Procedure Upgrade	High	920405, 920411				3.9
CSIP602 Plant Procedure System Improvement	High	920402, 920406, 920407, 920434			Imp #6	3.2.1
CSIP603 Safety Significant Equipment Procedure	Medium	920438	920427		Imp #3	3.9
CSIP604 Top Level Criticality Safety Events Procedure	Low	920403		920426	Imp #6	3.9

Figure 1-2  
SMIP/OSA/NUREG - 1324  
Cross-Reference

Description	Program Priority	OSA Report References				NUREG-1324 References
		Weakness	Renewal	IFI's	Improvements	
<b>2.0 Environmental Protection Improvement Program</b>			<b>920409</b>			<b>3.11</b>
2.1 Ammonia Emission Reduction	High					3.11
2.2 Mixed Waste Processing/Disposal	High					3.11, 3.16
2.3 Liquid Effluent Activity Reduction	High					3.11
2.4 Stack Effluent Activity Reduction						
2.5 SX Source Term Elimination						
2.6 Ground Water Monitoring	Medium					3.11
2.7 Contaminated Soil Removal/Disposal	Medium					3.11, 3.16
2.8 Zirc Scrap Processing/Disposal	Low					3.11, 3.16
2.9 Clean Technology Audit	Medium					3.11, 3.16
<b>3.0 Industrial Safety Improvement Program</b>			<b>920409</b>			
3.1 Personnel Exposure Improvement (10CFR20)	High	920429, 920430, 920433		920428, 920431, 920432	Imp#7,#8,#9,#10,#12, #13,#14,#15,#16,#17	3.8
3.2 Fire Protection Prevention	Medium		920409	920441	Imp #22	3.10
3.3 Bulk Chemical Control	Medium			920439	Imp #21	3.10
3.4 Plant Utilities Piping Coding	Medium					3.10
3.5 ANI Action Items	Medium					3.10
3.6 Hazardous Substance Safety Analysis	Medium	920403		920439 920440	Imp #18	3.17.1, 3.17.2
3.7 Emergency Plan and Training	Medium	920436, 920437, 920438	920435		Imp #19, #20	
3.8 Internal/External Audit Programs	Medium		920408, 920409			
3.9 Health Protection Radiation Protection	Medium		920408, 920409			
3.10 Instrumentation Control Training						
<b>4.0 Columbia Plant Improvement Initiatives</b>			<b>920409</b>			
4.1 Preventative Maintenance Program	High		920425, 920427			3.7
4.2 A/R Projects Support	High					
4.3 New Products Support	High					
4.4 Vision 94 Programs	Medium					
4.5 Miscellaneous Process Improvement Effort	Medium					
4.6 License Renewal Preparation	Low		920409			3.2.7
<b>6.0 Operational Safety Assessment Action Items</b>						
5.1 NFG Container Control	High	920420				3.14
5.2 Substitution Change Engineer Training	High	920410				3.8
5.3 Facility Change Request Review (RA-104)	High	920414				
5.4 Radiation Protection/Contamination Control	High	920430				

### Columbia Plant Process Improvement Initiatives

The fourth component of SMIP consists of programs required to improve the manufacturing operations of the Columbia Plant to meet the challenges of an ever-changing business environment and the new generation of regulatory requirements. Key tasks encompassed by this program include enhancement of our Maintenance Planning and Control System (MAPCON), new capital investments for facility upgrades and implementation of new products, and a major process improvement initiative (Vision 94) which will significantly improve the operating efficiency of the Columbia Plant.

### SMIP Program

Columbia Plant Management has created a project organization to plan, control, and coordinate all program activities within SMIP. This project is supported by engineers and technicians from the Technical Services and Regulatory Affairs Departments. Several of these engineers will work full-time on SMIP, while many others will be involved on a part time basis. This approach allows the Columbia Plant Management to direct and control the regulatory workload on a project basis, thereby allowing adequate coordination of project activities, priorities, resource requirements, schedules and external commitments. This approach utilizes the organization's existing strengths and talents to satisfy all of our business and regulatory requirements. Furthermore, it represents a commitment on the part of the Columbia Plant to manage safety improvement in a comprehensive manner. Periodic internal management reviews of the entire program are planned and will remain the responsibility of Westinghouse. The elements of SMIP related to the August, 1992, NRC OSA weaknesses and the Criticality Safety Margin Improvement Program will be reported separately to the NRC for review.