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Conf. 9310102--28

WSRC-MS-93-454

**SAVANNAH RIVER SITE (SRS) IMPLEMENTATION  
PROGRAM PLAN  
FOR DNFSB RECOMMENDATION 90-2 (U)**

by

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**A paper for presentation at the  
Fourth DOE - Natural Phenomena Hazards Mitigation Conference  
Atlanta, Georgia  
October 19-22, 1993**

**and publication in the proceedings**

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# SAVANNAH RIVER SITE (SRS) IMPLEMENTATION PROGRAM PLAN FOR DNFSB RECOMMENDATION 90-2

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## ABSTRACT

The Defense Nuclear Facilities Safety Board (DNFSB) based on its review and evaluation of the content and implementation of standards relating to design, construction, operation, and decommissioning of Defense Nuclear Facilities has made the recommendations (90-2) which when implemented would assure comparable or equivalent levels of safety to the environment, public and workers as required for the commercial nuclear facilities.

DOE has accepted the DNFSB 90-2 recommendations and have directed SRS and other M&Os to implement them. The implementation program commits to developing Requirement Identification Documents (RIDs) for all defense nuclear facilities in the DOE complex. At SRS the program was started with a pilot project for Defense Waste Processing Facility. DOE has identified twenty functional areas each requiring a RID. The various activities for a facility are designated as a separate functional area (e.g., Maintenance, Fire Protection, QA, Nuclear Safety, Engineering Design, etc.). SRS-DWPF 90-2 program is being implemented in phases, developing a limited number of RIDs in each phase. The primary sources for the requirements are Federal and state laws, regulations and permits and DOE Orders.

DNFSB Recommendations 90-2 is applicable to all defense nuclear facilities under DOE complex. SRS being one of the first to implement these recommendations obviously is going through a learning process. This paper summarizes the approach used by SRS 90-2 Team in the development of RIDs. The authors feel that individuals/teams within the DOE complex may find our approach as a helpful guidance as they proceed for the 90-2 implementation.

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The information in this article was developed during the course of work under Contract No. DE-AC09-89SR18035 with the U.S. Department of Energy.

## INTRODUCTION:

On March 8, 1990, the Defense Nuclear Facilities Safety Board (DNFSB) issued Recommendation 90-2 [1] to the Secretary of Energy. This recommendation, based upon the DNFSB review and evaluation of the content and implementation of standards relating to the design, construction, operations, and decommissioning of defense nuclear facilities of the Department of Energy (DOE), called for three actions:

(1) identification of specific standards that apply to DOE facilities; (2) assessment of the adequacy of those standards for protecting public and worker health and safety; and (3) determination of the extent to which they are being implemented.

Specifically, the DNFSB recommended that DOE [1]:

Identify the specific standards/requirements which DOE considers applicable to the design, construction, operations, and decommissioning of defense facilities of DOE (including all applicable Departmental Orders, regulations, and standards...

Provide DOE's views on the adequacy of the standards by evaluating their applicability and sufficiency for protecting the public health and safety at defense nuclear facilities and determine the extent to which the standards/requirements have been implemented at these facilities.

The benefits of the 90-2 program result from the preparation of a Requirements Identification Document (RID). The RID contains the necessary and sufficient requirements to design, construct, operate, and decommission a nuclear facility that address the safety of the public, workers and the environment. This RID becomes the contractual basis between the DOE and the facility operator and is also used as the basis for assessments of the facility

## SCOPE:

The scope of the 90-2 program is delineated in the recent response from DOE to the DNFSB in revision 4 of their implementation plan [2]:

The Standards/ Requirements Program described in the DOE Implementation Plan [2] applies to all programs, activities, operations, sites, and facilities under the sponsorship or direction of the Assistant Secretaries and Directors who manage new and existing DOE facilities.

Because the program is evolving, the initial efforts are to focus on facilities that are of particular interest to the DNFSB and have a major DOE mission.

At the Savannah River Site (SRS), the Defense Waste Processing Facility (DWPF) for vitrification of high level liquid waste meet these criteria requiring 90-2 program implementation. At SRS the program has been started with a pilot project for DWPF and are now being extended for other facilities at the site.

## BACKGROUND:

The recently issued revision 4 to the DOE-HQ implementation plan for 90-2 provides the background for the program [2]:

Until recently (1989) DOE conducted its defense-related nuclear operations primarily as an oversight organization with respect to its major management and operating contractors. In keeping with this management approach, which was considered necessary and appropriate at the time, individual contractors at defense nuclear facilities were responsible for formulating, selecting, and administering standards/ requirements controlling design, construction, and conduct of operations. Government approval of the individual contractor practices was vested with each DOE Operations Office Manager. Due to the dearth of nuclear industry standards/requirements when these facilities were constructed and first operated, these contractors had to knowledgeably apply non-nuclear industry standards/requirements and, in many cases, formulate appropriate detailed technical standards/requirements to address their unique applications. However, over the years, the standards/requirements adopted have not been codified or tracked; thus, the historical baseline has not been established. Further, modern practices and standards/ requirements were often not assessed or adopted as they became available. These are some of the reasons that a well-documented body of external codes and standards/ requirements has not been implemented for DOE defense nuclear facilities. The DOE shortcomings include the following:

- DOE, in many cases, does not have generic requirements comparable to the commercial industry;
- DOE does not have documents equivalent to the Nuclear Regulatory Commission (NRC) Standard Format and Content Guides, which define most of the environment, safety, and health (ES&H) considerations for the commercial nuclear industry;
- DOE has many varying types of operations with vastly different characteristics; generic ES&H requirements can be developed for different types of

facilities, but facility-specific requirements will be needed for facilities that are unique;

- Existing safety analysis reports (SARs), in many cases, have not included complete or sufficiently specific set of requirements; and
- Environmental and worker safety requirements not covered in the SARs must be incorporated.
- Defense Nuclear Facilities Safety Board (DNFSB) is established by the United States Congress as an overseeing organization for DOE-Defense Nuclear Facilities. The DNFSB has identified these above listed shortcomings and recommended 90-2 program to address those deficiencies.

## DEFINITIONS:

ES&H Configuration. ES&H Configuration is the breakdown of the environmental health and safety (ES&H) issues into functional areas and further division into elements and sub-elements for which requirements can be identified. The functional areas, are listed in Table 1. DOE has developed a 90-2 Implementation Guidance Document [3], to assure consistency within the functional areas. This leads to a uniform presentation of requirements for the various sites and facilities in the DOE complex.

| Table 1<br>90-2 FUNCTIONAL AREAS        |
|---|
| 1. Environmental Protection             |
| 2. Fire Protection                      |
| 3. Maintenance                          |
| 4. Operations                           |
| 5. Training and Qualification           |
| 6. Emergency Management                 |
| 7. Engineering Design                   |
| 8. Waste Management                     |
| 9. Occupational Safety and Health       |
| 10. Radiological Protection             |
| 11. Quality Assurance                   |
| 12. Nuclear Facility Safety             |
| 13. Construction                        |
| 14. Configuration Management            |
| 15. Management Systems                  |
| 16. Safeguards and Security             |
| 17. Packaging and Transportation        |
| 18. Decontamination and Decommissioning |
| 19. Environmental Restoration           |
| 20. Operational Readiness Review        |

Requirements Identification: Requirements Identification is the process of identifying the specific requirements that apply to conducting the day-to-day mission of defense nuclear facilities. The requirements are derived from the following list of potentially applicable sources, and may be used to supplement DOE Orders:

- DOE Orders, Secretary of Energy Notices, Rules, and directives;
- Federal Regulations and Laws: Environmental Protection Agency, NRC (Code of Federal Regulations, Regulatory Guides, etc.), Department of Transportation, Department of Defense, Department of Labor, Health and Human Services, etc.;
- Industry codes and standards: National Fire Protection Association, American National Standards Institute/American Nuclear Society, American Society for Quality Control, Institute of Electronics and Electrical Engineers, International Commission on Radiological Protection, etc.;
- National consensus issuances: Underwriters Laboratory, Institute of Nuclear Power Operations, Electric Power Research Institute, etc.;
- International guidance: International Atomic Energy Agency, International Nuclear Safety Advisory Group, etc.; and
- Other State and local requirements.

These requirements are to adequate to umbrella the safety assumptions of defense nuclear facilities to assure adequate protection of the public and workers. In areas where the existing requirements are not adequate to provide an acceptable level of protection, DOE will develop new or modified requirements.

Requirements Identification Document: A Requirements Identification Document (RID) sets forth the individual construction, design, operation, and decommissioning requirements for DOE sites and facilities. The RIDs are living documents, to be revised appropriately based on change to the site or facility's mission or change to the applicable requirements. For contractor operations, DOE approved RIDs will become part of the operating basis that is enforced by contract.

Facility RID: The Facility RID contains the complete body of requirements applicable to a specific facility. "Facility," as used in the Implementation Plan, includes physical buildings, processes, operations, etc., which support a specific mission. The accomplishment of a facility mission may involve one or more activities.

Site RID: The Site RID contains requirements that are applicable site-wide and are necessary for safe operation of the site and its associated facilities, and that are not the direct responsibility of a specific facility manager (e.g., a site-wide fire department). The standards/requirements in a Site RID will not normally be duplicated, although they may be supplemented, in a Facility RID.

Requirements Adequacy Assessment: Requirements adequacy assessment is the process of determining whether the RIDs represent a sufficient basis for meeting DOE safety policies and objectives.

Requirements Implementation Assessment: Requirements implementation assessment is the systematic process by which a determination is made whether or not the requirements specified in a RID are being met.

## **SRS 90-2 IMPLEMENTATION PROGRAM:**

The DWPF at SRS has been selected as a pilot facility in the DOE program plan, and WSRC has initiated a the preparation of functional area RIDs for DWPF. The program is being implemented in three phases. Phase I of the program began in July 1992 and completed in December . In phase I, five functional areas were selected by DWPF management based on the importance of the topics to the status of the facility. The first five functional areas completed are: Environmental Protection; Fire Protection; Maintenance; Operations; and Training and Qualification. Phase II was completed in July, 1993 and includes functional area RIDs for Engineering and Design; Emergency Preparedness; Occupational Safety and Health; Radiological Protection; Quality Assurance; Nuclear Safety; and Waste Management;

The DWPF 90-2 program plan encompasses six tasks: (1) Assemble the project team and provide them with training and orientation; (2) Define the ES&H functional area bases for DWPF; (3) Identify the functional area

requirements; (4) Assess the adequacy of the requirements; (5) Conduct an assessment of the compliance of DWPF to the requirements; (6) Turnover the applicable requirements document and the completed assessment to DWPF configuration management and to DOE HQ.

The DWPF RIDs and the their compliance assessments are documented on a database that will be maintained and controlled by DWPF configuration management. Presently WSRC is using a database called WRIMS. This database is being used by all Westinghouse M&Os that are implementing 90-2 programs. By using the same database we are reducing cost by sharing in the development of the RIDs.

The DWPF RIDs serves as a model and source for other facility RIDs being prepared along with SRS-Site RID.

## **FACILITY DESCRIPTION:**

The DWPF vitrification building receives washed sludge and precipitate via inter-area transfer lines from waste tanks in the H-Area tank farm. The DWPF product is a canistered borosilicate glass containing essentially all of the radioactive waste originating in the feed.

The principal building and support systems associated with the vitrification process include:

- Inter-area transfer system

The system consists of four inter-area transfer lines between the H-area tank farm and the vitrification building.

- Vitrification Building

The vitrification building houses a glass melter and all associated equipment required to vitrify the high level radioactive waste.

- Glass Waste Storage Building

Glass Waste Storage Building provides a temporary location for filled canisters.

- Organic Waste Storage Tank

The Organic Waste Storage Tank is a 150,000-gal double-wall tank that stores organic waste recovered from the precipitate hydrolysis process.

## ES&H BASIS:

For the preparation of a comprehensive and effective RID it is important to identify the ES&H issues associated with the facility hazards.

The hazards associated with DWPF are assessed in the DWPF Hazards Assessment and the DWPF SAR. These hazards are analyzed using specific assumptions and classifications unique to DWPF. "Safety Class" items and the items "important to safety" identified in the current DWPF Hazards Assessment and in the DWPF SAR have been addressed in the RID. The Hazards Assessment and the DWPF SAR are currently being reevaluated for safety classification. If the reevaluation identifies additional Safety Class items, the applicable "Safety Class Systems" requirements will be added in the future revisions of this RID. To provide a basis for weighing the need for requirements, the hazards defined by the DWPF Hazards Assessment and the DWPF SAR, were summarized. That summary is provided below.

### Hazard Assessment

- Chemical Hazards. Protection of personnel from chemical hazards and protection of the environment from chemical releases is a safety issue. The DWPF Hazards Assessment concludes that the maximum postulated chemical hazard results from an explosion causing a complete spill of the maximum inventory of the Sludge Receipt and Adjustment Tank. This results in a moderate off-site and a high on-site hazard. Release of the inventory of the Chemical and Industrial Waste Treatment System could exceed the acceptable limits, therefore a hazard analysis was performed.

The Feed Storage System also result in high on-site postulated hazards. A moderate on-site hazards results from a postulated explosion of the Organic Waste Storage Tank. These hazards are based on airborne chemical concentrations without any credit taken for engineered safety features or administrative controls to mitigate consequences.

- Radiological Hazards. From the initial design phase of DWPF, protection of personnel and the environment from exposure to the release of radioactive materials has been considered a safety issue. The maximum radiological hazard results from a postulated explosion and complete spill of the

maximum inventory of the Sludge Receipt and Adjustment Tank. This scenario results in a high off-site and a high on-site hazard. Also resulting in a high on-site hazard is a postulated explosion in the Auxiliary Pump Pit or the Low Point Pump Pit releasing the maximum inventory in the affected pit. Moderate on-site exposure results from the generation of contaminated dust in the vault area of the Glass Waste Storage Building from a postulated collapse of the operating area concrete floor.

### Safety Analysis

- Analysis of Operation. The evaluation of the safety of DWPF is accomplished in the DWPF SAR by the identification of hazards associated with the facility-- and the analysis of the response of the facility to postulated events involving those hazards. The events are analyzed in terms of minimization of the causes of the events, quantitative determination and mitigation of the consequences, and the ability to cope with each event. A postulated event is considered credible only if its annual frequency of

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occurrence is  $1 \times 10$  or greater.

- Classification of Structures, Components, and Systems. Classification of equipment in the DWPF SAR is based on an analysis of the various structures, components, and systems. Each structure, component, and system is evaluated in terms of its importance in protecting the safety of co-located onsite workers and the public.

No "safety related" design requirements (e.g., electrical separation, environmental qualification, single failure criteria) beyond seismic and tornado protection were required as an integral part of DWPF design. The necessity of these requirements to assure protection of the environment and the health and safety of the public and co-located onsite workers had to be determined on a component by component basis in the development of each affected RID.

## RID DEVELOPMENT PROCESS:

DWPF 90-2 Implementation Program Plan requires preparation of a RID for each of the twenty functional areas established to address necessary statutory conditions and protect the environment and the safety

and health of the public and worker. The process used by the SRS 90-2 team to prepare the RIDs is as follows:

- Identification of Functional Area Experts (FAEs), Facility Technical Experts (FTEs) and Subject Matter Experts (SMEs).
- Identification of the Environmental, Safety, and Health (ES&H) basis for use in RID development.
- Preparation of the functional area outline.
- Identification of standards applicable to each functional area.
- Identification of requirements from standards applicable to each functional area and documentation in RIDs.
- Assessment of the applicability and sufficiency of requirements in the RIDs.
- Approval of RIDs.

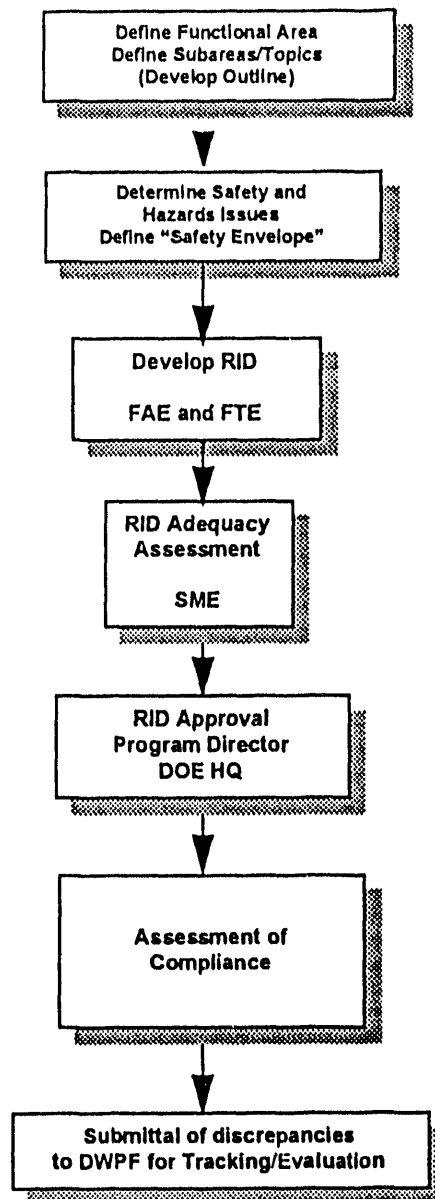
The Figure 1 provides a flow diagram of the RID development process for DWPF at SRS.

Identification of FAEs, FTEs and SMEs. The FAEs were selected based on their experience and knowledge in the functional area. Typically an FAE will have five or more years direct functional area experience. The FTEs (Facility Technical Experts) were identified by WSRC DWPF management based on their knowledge of and experience in the application of functional area topics at DWPF. The FAEs maintained contact with DWPF FTEs during development of the RIDs. The SMEs (Subject Matter Experts) were selected by the DOE Office of Waste Management based on the SME's knowledge and experience in the corresponding functional area. Commercial nuclear backgrounds; supervisory, managerial, and independent assessment experience; and non-involvement in DWPF activities and oversight, were considerations in the selections of the SMEs.

Identification of ES&H Basis for RID Development. The FAEs and FTEs prepared the ES&H basis used for the development of functional area RIDs. The basis includes hazards identified in the DWPF Safety Analysis Report and the DWPF Hazards Assessment that require actions to protect the environment and safety and health of the public and DWPF workers.

Preparation of the Functional Area Outlines. The breakdown of functional area into elements and sub-elements was accomplished by the interaction between FAEs, FTEs, DOE, and other functional area experts at the Site. These experts considered outlines of functional areas developed at other sites and the DOE-Headquarters (HQ) draft of guidance for functional area configuration [3] in preparing outlines for collating requirements

Figure 1  
90-2 Implementation Sequence



needed to address statutory conditions and potential ES&H hazards at DWPF. Unless deviations were necessary to satisfy the uniqueness of DWPF or to continue practices consistent with the commercial nuclear industry, the DOE-HQ draft guidance was followed to support consistency throughout DOE.

Identification of Applicable Standards. Applicable standards, including DOE Orders, for each functional area were initially identified by FAEs using their knowledge and experience. The SMEs supplemented the standards selected by the FAEs with the pertinent documents that were identified by electronic searches of computer databases containing world-wide industry and Federal standards, reviews of available DOE-HQ and other site RIDs, and discussions with other functional area experts known by the SMEs or available at SRS.

Identification of Requirements and Documentation in RIDs. The FAEs used federal and state laws, regulations, and permits; DOE Orders; Federal Facility Compliance Agreements; and industry and Federal standards to identify requirements that met statutory conditions and provide protection of the environment and personnel against the potential hazards defined in the ES&H basis.

The FAEs collated the requirements under appropriate elements of the RID. Each requirement entry from a source document listed the applicable document acronym and paragraph number as the Requirement Source. Documents that specified particular requirements from other documents as mandatory actions were listed as Requirement Authority for those entries. Other documents that addressed the same requirement, but were considered of lesser importance to DOE than the Requirement Source document, were listed as Related References. Requirements that were directly excerpted from documents were identified by quotation marks. A sample of a page from a DWPF RID is shown on Attachment I. Paraphrasing of requirements was limited to cases where direct excerpts were impractical.

Requirement statements that were not mandated by laws, regulations, permits, DOE Orders, Federal Facility Compliance Agreements, and other DWPF commitments are italicized in the RID. The italicized requirements are recommendations for adoption at DWPF and does not become mandatory until approved by DOE.

Requirement statements in RIDs from DOE Orders containing "should" actions are considered mandatory "shall" actions. Requirement statements in RIDs from

industry codes and standards and national consensus documents containing "should" actions are to be carried out as specified in those documents. In other words, all statements contained in a RID are considered mandatory requirements for the protection of the public, workers and the environment.

Assessment of Applicability and Sufficiency of RID Requirements. The SMEs assessed the applicability and sufficiency of requirements in their assigned RIDs by initially discussing with FAEs and the FTEs the source documents used in developing the documents and any problems encountered in satisfying the protection needs of the ES&H basis. SMEs then assessed the applicability of the requirements by reviewing the draft RIDs to ensure that the source documents used were current, requirements were relevant to DWPF, statutory requirements were complete, and the best choice of available commercial nuclear and chemical industry standards were used. SMEs conducted the sufficiency assessment by weighing the requirements contained in the draft RIDs against the protection needed to address the hazards identified in the ES&H basis. Additional requirements from the universe of standards were used to correct weaknesses found in needed protection. The SMEs used personal knowledge and reference information, searches of computer databases of standards, discussions with other people from DOE and the commercial industry who were knowledgeable of the functional areas, and RIDs from other sites to obtain these additional requirements.

Approval of RIDs. After the FAEs and SMEs were finished developing their RIDs and assessing the adequacy of requirements contained in those documents, the RIDs were reviewed by other members of the Program Team and DWPF resident experts and cognizant engineers in the areas involved. Comments received from those reviews were resolved by the SMEs and FEs and the resulting RIDs were certified, by the signatures of the SMEs and FEs, as meeting the objectives of the DWPF 90-2 Program Plan. The RIDs were sent to the WSRC Deputy Director and DOE Director of the 90-2 Program Team for concurrence followed by the review and concurrence of the WSRC Manager of DWPF and the DOE Director of the Defense Waste Processing Division. The RIDs were then sent to the DOE-HQ for approval by the Assistant Secretary for Environmental Restoration and Waste Management. Any comments resulting from the concurrence and approval process are returned to the DWPF 90-2 Program Team for resolution.

Upon approval of the RIDs by DOE, requirements recommended in the RIDs for adoption at DWPF become mandatory. The approved RIDs are used for compliance assessments and are transferred to the DWPF Configuration Management group for maintenance and control.

#### Programmatic Interfaces:

Many required support services for DWPF are provided by centralized site organizations. Requirements for those support services are documented on Site RIDs for appropriate functional areas. DWPF RIDs define interfaces with Site RIDs by cross-reference. The DWPF RID boundary for these interfaces is the DWPF access control fence which is defined in the DWPF Safety Analysis Report (SAR). Examples of these interfacing support services follow:

- Administrative Support (Human Resources, Procurement, etc.)
- Quality Assurance
- Nuclear Safety
- Emergency Preparedness (Site response plans)
- Fire Department Response
- Safeguard and Security (Security Force, Investigations, etc.)
- Management Systems
- Facilities/Utilities Infrastructure (Electrical Power, Steam, Water, Office Space, etc.)
- Training
- Environmental Services

SRS Site RIDs are being developed following a similar approach and using where applicable the DWPF functional area RIDs. Moreover, Westinghouse M&O sites are working jointly as a team to develop single RIDs for W-M&O sites by sharing resources, avoiding duplication, providing consistency with resulting cost savings.

#### ORGANIZATION:

The DWPF 90-2 organization is shown in Figure 2. The 90-2 program for DWPF is under the cognizance of DOE-HQ EM30. DOE-HQ provides the Independent Subject Matter Experts to work at the Savannah River Site. The 90-2 program for the SRS DWPF is under the auspices of the DOE-DWPF Field Office. The DOE Field Office has appointed a DOE DWPF Program Director with responsibility for the day to day implementation of the DWPF 90-2 Program. The Independent Subject Matter Experts review and comment on the work assigned to them by the DOE Program Director. Assisting the Program Director is the Deputy Program Director from WSRC who assists in the day to day operation of the program. The Program Director and his Deputy are responsible for : (1) program support, (2) preparation and adequacy of the RIDs, (3) the compliance assessments of the RIDs, and (4) arranging for program QA reviews.

#### **STAFFING:**

The success of the program relies on assembling a team of Functional Area Experts, , and Subject Matter Experts knowledgeable in specific functional area topics and Facility Technical Experts knowledgeable in the application of the functional area topics at DWPF. This team will then work together to develop the functional area RID, assessing the adequacy of the requirements in the RID. The DOE provides the SMEs who will participate as required in the DWPF 90-program. The use of SMEs not associated with the DWPF facility provides an independent assessment to assure credibility of the program.

#### **CONCLUSION:**

DNFSB recommendations 90-2 is being implemented at the DOE - Complex. Site and Facility RIDs are being developed for twenty functional areas identified by DOE-HQ. The RID development program is followed by a compliance program. The RIDs add value to the safe operation of the facilities. The 90-2 being a new program and SRS being one of the first sites to implement the program has had gone through extensive developmental and learning curves to standardize an acceptable and cost effective RID preparation procedures. Westinghouse M&O sites have been working closely with each other sharing information and whenever appropriate preparing single functional area RIDs for W M&O sites thereby not only avoiding duplication of effort, but achieving consistency and uniformity in a most cost

ef effective way. Moreover with the development and  
in implementation of electronic database network system  
be between W M&O sites using Westinghouse Requirement  
Id Identification Management System (WRIMS) database,  
th the sites now have access to each other's RIDs.

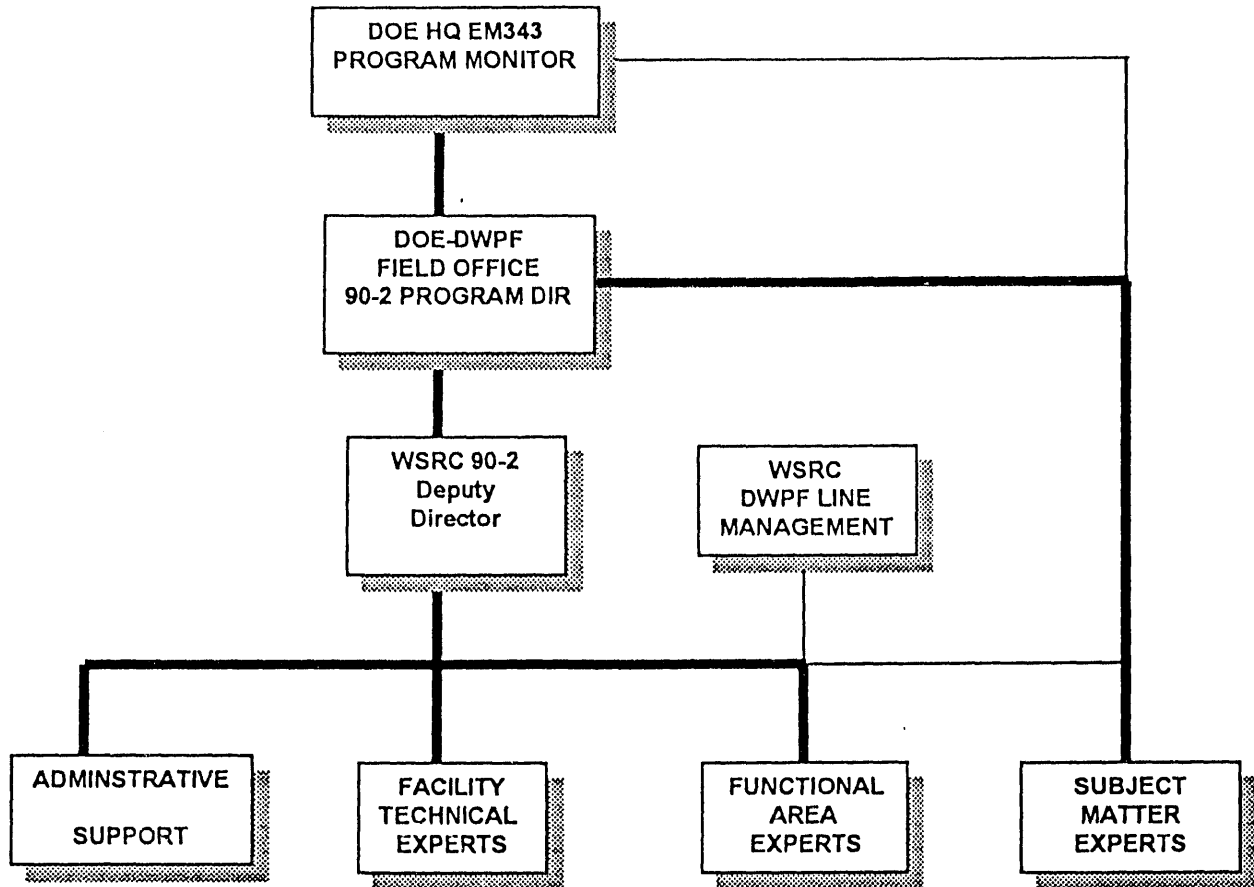
Ct Currently only a number of DOE sites have initiated the  
90 90-2 program but in the near future, by DOE mandate,  
all all sites are required to implement 90-2 program. The  
in intent of this paper is to share the RID development  
ex experience at SRS with the other sites at DOE complex.  
Tl The authors are hopeful that professionals involved in  
90 90-2 implementation program at other DOE sites would  
be benefit from our experience.

## R REFERENCES:

- [1] [1] DNFSB Recommendation 90-2, Memo from J.T. Conway, Chairman DNFSB to J.D. Watkins, Secretary, DOE, March 8, 1990.
- [2] [2] DOE Implementation Plan in response to Recommendation 90-2 of the Defense Nuclear Facility Safety Board, Rev. 4, July 1993.
- [3] [3] DNFSB 90-2, ES&H Configuration Guidelines, Office of Environmental Restoration and Waste Management, Draft C, 1993.
- [4] [4] DWPF Program Plan for DNFSB Recommendation 90-2, Rev.1, August 14, 1992.
- [5] [5] DWPF Safety Analysis Report (SAR), Rev. 3, August 1992.

FIGURE 2

DWPF 90-2 PROGRAM ORGANIZATION



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**Attachment 1**  
**SAVANNAH RIVER SITE - DEFENSE WASTE PROCESSING FACILITY**  
**REQUIREMENTS IDENTIFICATION DOCUMENT - ENGINEERING DESIGN**  
**Revision 0 July 30, 1993**

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**2.2.3**

**Design Control**

**Requirement Source: DOE Order 4700.1, Chapter III, Part D, 2.C**

"Design controls should be established to enable designs to be correctly translated into specifications, drawings, procedures, and instructions. The measures for accomplishing these translations and the attendant design reviews and provisions for independent assessment inputs should be addressed. Design change control, including field changes, should be subject to design control measures commensurate with those applied to the original design, and should be approved by the organization that performed the original design."

**REQUIREMENT AUTHORITY:**

1. None

**RELATED REFERENCES**

1. DOE Order 5700.6C, 9.b.2(b)
2. ANSI NQA-1 - 1989, Supplement II & III
3. ANSI N45.2.11 - 1974, 2.0

**2.2.3.1.**

**Design Input**

**Requirement Source: ASME NQA-1 - 1989, Supplement 3S-1, 2**

"Applicable design input, such as design bases, performance requirements, regulatory requirements, codes, and standards, shall be identified and documented, and their selection reviewed and approved by the responsible design organization. The design input shall be specified and approved on a timely basis and to the level of detail necessary to permit the design activity to be carried out in a correct manner and to provide a consistent basis for making design decisions, accomplishing design verification measures, and evaluating design changes. Changes from approved design inputs, including the reason for the changes, shall be identified, approved, documented, and controlled."

**REQUIREMENT AUTHORITY:**

1. None

**RELATED REFERENCES**

1. ANSI N45.2.11-1974, 3.0
2. DOE Order 5700.6C, Attachment I, Criteria B-26
3. DOE Order 6430.1A, 1300-3

**DATE  
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**END**

