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Revision 2

OFFICE OF SAFETY REGULATION POSITION ON TAILORING FOR SAFETY

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Office of Safety Regulation

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PREFACE

As directed by Congress in Section 3139 of the *Strom Thurmond National Defense Authorization Act for Fiscal Year 1999,* the U.S. Department of Energy (DOE) established the Office of River Protection (ORP) at the Hanford Site to manage the River Protection Project (RPP), formerly known as the Tank Waste Remediation System. ORP is responsible for the safe storage, retrieval, treatment, and disposal of the high level nuclear waste stored in the 177 underground tanks at Hanford.

The initial concept for treatment and disposal of the high level wastes at Hanford was to use private industry to design, construct, and operate a Waste Treatment Plant (WTP) to process the waste. The concept was for DOE to enter into a fixed-price contract for the Contractor to build and operate a facility to treat the waste according to DOE specifications. In 1996, DOE selected two contractors to begin design of a WTP to accomplish this mission. In 1998, one of the contractors was eliminated, and design of the WTP was continued. However, in May 2000, DOE chose to terminate the privatization contract and seek new bidders under a different contract strategy. In December 2000, a team led by Bechtel National, Inc. was selected to continue design of the WTP and to subsequently build and commission the WTP.

A key element of the River Protection Project Waste Treatment Plant (RPP-WTP) is DOE regulation of safety through a specifically chartered, dedicated Office of Safety Regulation (OSR). The OSR reports directly to the ORP Manager. The regulation by the OSR is authorized by the document entitled *Policy for Radiological, Nuclear, and Process Safety Regulation of the River Protection Project Waste Treatment Plant Contractor* (DOE/RL-96-25) (referred to as the Policy) and implemented through the document entitled *Memorandum of Agreement for the Execution of Radiological, Nuclear, Process Safety Regulation of the RPP-WTP Contractor* (DOE/RL-96-26) (referred to as the MOA). These two documents provide the basis for the safety regulation of the RPP-WTP at Hanford.

The foundation of both the Policy and the MOA is that the mission of removal and immobilization of the existing large quantities of tank waste by the RPP-WTP Contractor must be accomplished safely, effectively, and efficiently.

The Policy maintains the essential elements of the regulatory program established by DOE in 1996 for the privatization contracts. The MOA clarifies the DOE organizational relationships and responsibilities for safety regulation of the RPP-WTP. The MOA provides a basis for key DOE officials to commit to teamwork in implementing the policy and achieve adequate safety of RPP-WTP activities.

The Policy, the MOA, the RPP-WTP Contract, and the four documents incorporated in the Contract define the essential elements of the regulatory program being executed by the OSR. The four documents incorporated into the Contract (and also in the MOA) are as follows:

> *Concept of the DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor,* DOE-96-0005,
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> *DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor,* DOE/RL-96-0003,
>
> *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor,* DOE/RL-96-0006, and
>
> *Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards and Requirements for the RPP Waste Treatment Plant Contractor,* DOE/RL-96-0004.

DOE patterned its safety regulation of the RPP-WTP Contractor to be consistent with the concepts and principles of good regulation (reliability, clarity, openness, efficiency, and independence) used by the Nuclear Regulatory Commission (NRC). In addition, the DOE principles of integrated safety management were built into the regulatory program for design, construction, operation, and deactivation of the facility. The regulatory program for nuclear safety permits waste treatment services to occur on a timely, predictable, and stable basis, with attention to safety consistent with that which would occur from safety regulation by an external agency. DOE established OSR as a dedicated regulatory organization to be a single point of DOE contact for nuclear safety oversight and approvals for the WTP Contractor. The OSR performs nuclear safety review, approval, inspection, and verification activities for ORP using the NRC principles of good regulation while defining how the Contractor shall implement the principles of standards-based integrated safety management.

A key feature of this regulatory process is its definition of how the standards-based integrated safety management principles are implemented to develop a necessary and sufficient set of standards and requirements for the design, construction, operation, and deactivation of the RPP-WTP facility. This process meets the expectations of the DOE necessary and sufficient closure process (subsequently renamed Work Smart Standards process) in DOE Policy 450.3, *Authorizing Use of the Necessary and Sufficient Process for Standards-based Environment, Safety and Health Management*, and is intended to be a DOE approved process under DOE Acquisition Regulations, DEAR 970.5204-2, *Laws, Regulations and DOE Directives,* Section (c). DOE approval of the contractor-derived standards is assigned to the OSR.

The RPP-WTP Contractor has direct responsibility for WTP safety. DOE requires the Contractor to integrate safety into work planning and execution. This integrated safety management process emphasizes that the Contractor's direct responsibility for ensuring that safety is an integral part of mission accomplishment. DOE, through its safety regulation and management program, verifies that the Contractor achieves adequate safety by complying with approved safety requirements.

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Copies may be purchased for a duplication fee.

RECORD OF REVISION		
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7/98	0	New
9/98	1	Address BNFL comments
9/01	2	General update and inclusion of additional references to ISM related documents

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OFFICE OF SAFETY REGULATION
POSITION ON TAILORING FOR SAFETY

1.0 PURPOSE

The purpose of this position paper is to set forth the Office of Safety Regulation's (OSR's) position and expectations on implementing work-based[1] tailoring of hazard controls and standards for the River Protection Project-Waste Treatment Plant (RPP-WTP) Program.

Tailoring the selection and implementation of hazard controls and their related standards is critical to achieving adequate safety in the RPP-WTP Program. A key element in achieving tailoring for adequate safety is proper implementation of the standards identification process over the remaining life of the project. This paper describes OSR expectations regarding implementation of the standards identification process and tailoring for the life of the project for ensuring demonstrable adequate safety. The Contractor has taken the first steps toward meeting this objective. The OSR will continue to focus upon the adequacy of tailoring throughout the lifetime of the RPP-WTP Program.

2.0 INTRODUCTION

In the context of this paper, the term "tailoring" is defined in DOE G 450.4-1, *Integrated Safety Management System Guide,* as follows:

> "Adapting a safety program, practice, or requirement within the integrated safety management system to suit the need or purposes of a particular operation/activity, taking into account the type of work and associated hazards."[2]

The expectation of tailoring safety in the design, construction, and operation of the facility is embedded in virtually all Contract documents governing the RPP-WTP Program. DOE/RL-96-25, *Policy for Radiological, Nuclear, and Process Safety Regulation of the RPP-WTP Contractor*, among other things, identifies efficiency as one of the five implementing principles. In describing the principal of efficiency, DOE/RL-96-25 states the following:

> "…DOE shall define top-level radiological, nuclear, and process safety standards and principles, and rely upon the contractor to submit to the Safety Regulation Official for approval, the *subordinate standards and requirements that will efficiently and effectively achieve conformance* to these top level safety standards and principles…" (Emphasis added.[NNK1])

The concepts of efficiency and effectiveness of the subordinate standards is the key element of tailoring. For the RPP-WTP Contract,[3] this requirement for tailoring is implemented through

[1] In the context of this paper, the term "work-based" connotes that which can be explicitly related to the specific waste processing approach being proposed for the RPP-WTP.
[2] DOE G 450.4-1, *Integrated Safety Management System Guide,*, Volume 2, Appendix A, p. A-7.
[3] Contract No. DE-AC27-01RV14136 between DOE and Bechtel National Inc., dated December 11, 2000.

integrated safety management (ISM) and DOE/RL-96-0004, *Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards and Requirements for the RPP Waste Treatment Plant Contractor,* which embodies the principles of ISM. The basic steps involved in ISM as given in DNFSB/TECH-16, *Integrated Safety Management*, are listed below:

- Identify applicable requirements
- Define work
- Analyze hazards
- Develop and implement controls
- Perform work
- Assess, feedback, and improve.

This ISM process, when properly implemented, can ensure that the framework for protecting the public, the workers, and the environment is adapted to the specifics of the work and results in a tailored safety approach.

Tailored safety, based on the ISM process, should result in control strategies and solutions that are neither more nor less than necessary to meet the top-level safety requirements (DOE/RL-96-0006, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for RPP-WTP Contractor*). Efficiency and effectiveness are inherent to this process. Therefore, when properly implemented, the ISM process should result in a "least-cost" approach to implementing safety while achieving the mission objectives.

This basic construct of ISM is also embodied in DOE/RL-96-0004, which provides a process for identifying subordinate standards that, when properly implemented, will meet the requirement of tailored safety. This paper describes OSR expectations for tailoring and implementing RL-96-0004 to achieve tailoring.

3.0 POSITION

Tailoring for safety is expected throughout the life of the Contract. During the design completion phase of the Design, Construct, and Commission (DCC) Contract, refinement and articulation of hazards control strategies and subordinate standards using the standards identification process (DOE/RL-96-0004) is expected. Execution of this process must include the tailoring of hazard control strategies and hazard control solutions (see Section 7, "Definitions"). The control strategies and control solutions must be tailored to the work (see "Definitions") and to the relative magnitude of the hazards. Tailoring control strategies and structure, system, and component (SSC) requirements must include explicit evaluation and accommodation of the following:

- The degree of defense in depth required

- The degree of reliability and availability required in various environments (e.g., during earthquakes)

- The degree of resistance to common-mode and common-cause failure

- The operating environment in which the SSCs must function
- The operating capacity that the SSCs must maintain
- The degree of confidence in the SSCs' performance (e.g., margins and quality assurance).

In a similar manner, the Contractor's safety management processes must be tailored, including management plans and procedures, to the relative risks of the work and its associated hazards.

To build a record for the Contractor and the OSR to track and defend, clear documentation and justification of tailored strategies and standards are required. This documentation should explicitly show the linkage between work, its hazards, and associated tailored hazard control strategies.

4.0 JUSTIFICATION

Contract evolutions have led to the establishment of a DCC Contract. Since the objectives for the DCC Contract mirror those for the earlier contracts (Parts A and B), the Contract expectations related to the standards identification process remain unchanged. This standards identification process still must be implemented to effectively and efficiently achieve adequate safety.

5.0 IMPLEMENTATION EXPECTATIONS

The OSR has not had a firm basis for confidence in the Contractor's full implementation of the standards identification process during Parts A and B of the Contract.[4] The OSR expects that during the implementation of the DCC Contract, the Contractor will fully implement the standards identification process as a part of ISM to ensure that the design meets the requirements of tailoring and adequate safety. This section provides the OSR's perspective on the basic tailoring framework and elaborates on selected critical steps in the standards identification process required to achieve tailoring.

5.1 Basic Tailoring Framework[5]

The framework for tailoring is described, as follows, in DOE/RL-96-0005, *Concept of the DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor*[6]:

> The basic concept of DOE's regulatory approach to radiological, nuclear, and process safety is that the Contractor be responsible for (1) achieving adequate

[4] Part A and B refer to the Contract previous to the current DCC Contract. The Contract was rebid at the end of Part B1, resulting in the current DCC Contract and a new Contractor.

[5] DOE G 450.3-3, *Tailoring for Integrated Safety Management Applications*, provides a general description of concepts of tailoring. This position paper is intended to address the tailoring framework in the context of RPP-WTP.

[6] Section 1, p. 1.

> safety, (2) complying with applicable laws and legal requirements, and (3) conforming with top-level safety standards and principles stipulated by DOE. Consistent with applicable laws and legal requirements, *the Contractor is required to tailor the exercise of this responsibility to the specific hazards associated with its activities*. (Emphasis added.)

The requirement to use the DOE-stipulated standards identification process described in DOE/RL-96-0004 is contained in DOE/RL-96-0005.[7] The "essential elements" of the process are part of the basis on which the DOE has sanctioned[8] the RPP-WTP regulatory approach (DOE/RL-96-25). Adherence to the essential elements is expected.

The Contractor is required to use the process[9] described in DOE/RL-96-0004 throughout the lifetime of the project. As the detailed definition of work (design) matures and the understanding of hazards and their control evolves, specific hazard controls and related standards will be refined. This refinement leads to "tailoring" the standards to the specific work envisioned by the project.

The construct of the process in DOE/RL-96-0004 is shown in Figure 1. The work-based process accommodates and facilitates tailoring of the control strategies and standards to the work depending on the degree of work definition, through iteration between several steps of the process. The extent of iteration depends on maturity of work definition, including design, with lesser and lesser need (or value) for iteration as the design reaches maturity.

Participants in each step of this standards identification process should be integrally associated with plant design, as opposed to individuals exclusively dedicated to staffing the standards selection process. Designers should participate in the standards selection process, understand the hazards, and be involved in selecting hazard control strategies while ensuring that compliance with law, conformance to top-level standards, and adequate safety are achieved. In the next section, the eight steps[10] of Figure 1 are discussed.

5.2 Essential Process Steps

The standards identification process identifies eight essential steps to ensure that the process can be relied upon to provide adequate safety, tailored to the needs of the mission.

The first step, process initiation, is a preparatory step. Its purpose is to ensure that adequate resources with appropriate technical background are available and organized to carry out the standards identification process. Accumulation and organization of the input information required to carry out the process are also part of this step. Proper completion of this step ensures that the subsequent steps can be successfully performed.

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7 Section 2, p. 2.

8 Section 6, Item 2, p. 3.

9 It is not always necessary to evoke the entire process shown in Figure 1 when minor perturbations arise, as long as the logic for modification of a hazard control strategy and/or standard is documented.

10 Revision 0 of the standards identification process had only seven steps. A hazards control step has been broken out separately to emphasize the importance of this step to the OSR.

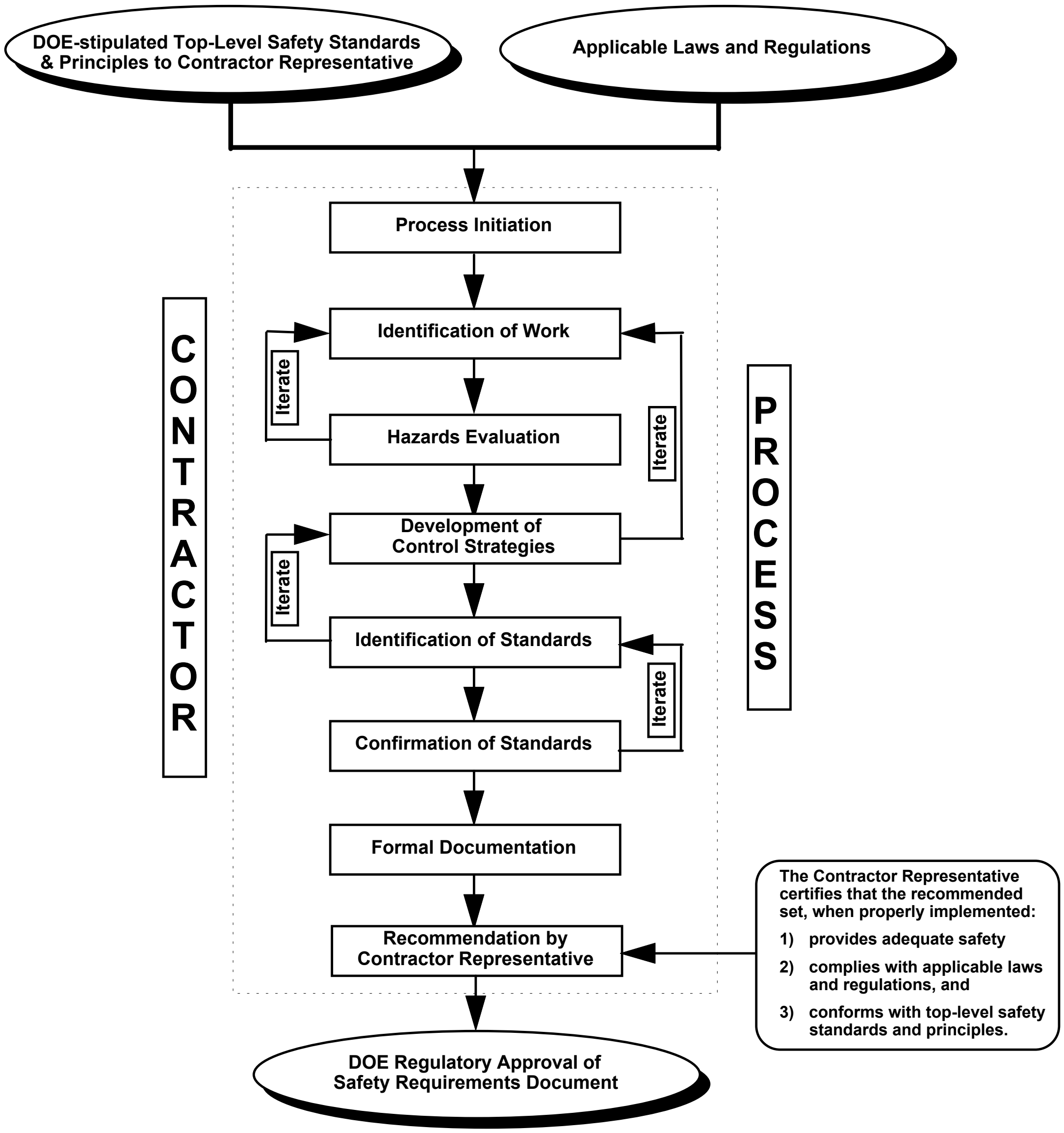

Figure 1. Standards Selection Identification Process

The next three steps, listed below, are most critical and need to be viewed as part of an integrated process that goes to the heart of ISM:

- Identification of work
- Hazards evaluation
- Development of control strategies.

Sections 5.2.1 through 5.2.3 elaborate on the implementation of these three essential and critical steps. Section 5.2.4 addresses other essential steps in the standards identification process, and Section 5.2.5 discusses the expectation regarding explicit linkages between work, hazards analysis, hazards control, standards selection, and standards implementation that should result from following the standards identification process. Several terms used below are defined in Section 7.

5.2.1 Identification of Work

Identification of work involves identifying and documenting the work that the Contractor needs to perform. To properly identify this work, normal engineering processes would require a defining the project mission and identifying the functions and processes that must be performed to achieve the mission objectives. Initial tradeoff studies would be carried out to select the optimum functions, processes, and parameters. Functional requirements would also be defined. This "systems engineering" work establishes the basis for the subsequent steps of hazard evaluation and development of control strategies. This process is iterative. Outcomes of the steps of hazard evaluation and development of control strategies may require reconsideration of identification of work.

The product from the identification of work step includes, at a minimum, descriptions of the overall processes and key SSCs and operations. Evidence of appropriate staffing, adequate technical resources, and a properly managed process should be apparent. Documentation of the results should be part of the Safety Requirements Document (SRD) submittal package. The information should be under configuration control so that subsequent changes to the process and facility design can be assessed for their impact on the hazard assessment and subsequent decisions.

Work activity experts, who perform this step or a review,[11] should have sufficient knowledge of the overall waste processing approach to understand the impact of proposed work (or changes) on the overall facility design.

5.2.2 Hazards Evaluation

The Contractor’s hazards evaluation is the key element in identifying and characterizing the hazards associated with the Contractor’s planned activities. Hazard Evaluation involves the performance of hazards analysis and the assessment of measures for controlling the hazards. Typically, hazard evaluation[12] includes the following components:

- Systematically identifying the hazards at the facility
- Comprehensively identifying potential accident/event sequences
- Estimating the harmful effects (consequences) of postulated accidents
- Identifying and describing potential (administrative and engineered) controls that are relied on to reduce the likelihood or consequences of accidents
- Determining how reliable the potential controls need to be to achieve adequate safety

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11 Such reviews may take place at any time but are regularly scheduled to occur at the time of the Standards Approval Regulatory Action, Construction Authorization Request, and Request for Authorization for Production Operations.

12 American Institute of Chemical Engineers (AIChE) *Guidelines for Hazards Evaluation Procedures*, provides one possible approach to hazard evaluation for Hazard Category 2 and 3 facilities.

- Identifying measures necessary to ensure the availability and reliability of identified safety systems.

The Contractor's hazards evaluation process should provide relevant, reliable, and sufficient results to support decisions regarding hazards control measures and selection of standards. As a minimum, the comprehensive approach to hazards evaluation, the methodology for identifying and quantifying work hazards, the methodology for identifying potential accident scenarios, and the methodology for conducting consequence assessments should be described and the results documented. Assumptions, such as quantity and form of material at risk, the rate of release, and relevant process conditions that may drive or inhibit the potential accident, must be clearly stated. There should be evidence of appropriate staffing and adequate technical resources and structure applied to the hazards evaluation process. Documentation of the results should be part of the SRD submittal package or incorporated by reference. The information should be under configuration control so that any subsequent changes to the process and facility design can be assessed for their impact on the hazard evaluation and subsequent decisions.

As the facility and process design develops, the hazards identification step should refine the list of hazards to accurately identify *how much of what* (energy, chemicals, radionuclides) *is where* for all potential modes of operation. As the design further develops, the accident identification methods can be changed, e.g., from the relatively simple "what-if/checklist" method to hazard and operability (HAZOP) studies to generate a more comprehensive set of potential accidents. Relatively sophisticated accident analysis methodologies such as event tree and fault tree analyses can be performed on particularly critical areas of the process and facility design to help identify accident scenarios involving simultaneous failures of hardware components or of administrative controls. After potential accident controls are identified, final selection of controls can be guided, in part, by applying the "Failure Modes and Effects" analysis methodology to evaluate the effectiveness and reliability of the alternative control strategies available to the process designers. Although accident controls have traditionally been selected on the basis of worst-case accident scenarios, a tailored approach to selecting controls will also evaluate "more-likely" accident scenarios to better allocate limited resources for increased risk reduction. Additionally, as the design evolves, accident assumptions should be refined to more accurately reflect the physics, chemistry, and mechanics of the process and to tailor the consequence assessment to fit the actual process conditions and the facility and process design.

Iteration and integration are expected between identification of work and hazard evaluation and also within the overall process of hazard evaluation (which includes identifying controls that may need to be adjusted based on the outcome of the results of the evaluation). While a set of recommended standards is an outcome of this process, the documentation of the process and its outcome are equally important.

5.2.3 Development of Control Strategies

This process step clarifies expectations that hazard control strategies and (eventually) solutions be integrally connected to identifying work and hazards. Work activity experts and hazards assessment experts provide consultation, which in turn enables hazards control experts to develop hazard control strategies and solutions. The hazards control experts are expected to explain the rationale for their selection of hazard control strategies and solutions to the process management team.

The hazard control strategy is expected to be a narrative defining the overall approach to control a specific pre-identified hazard. Selecting a hazard control strategy (out of several available choices) requires judgment. Selecting a strategy is more subjective than the other steps in the process and is inductive. The Contractor has flexibility in selecting the control strategies. The degree of conservatism incorporated into the design depends on judgmental decisions made at this step. Due to the flexibility and judgment of this step, this part of the process must be clearly documented to indicate selection of the hazard control strategies and to show the linkage of control strategies to the respective hazards.

The control strategy for each hazard or class of hazards should be described in terms of the safety functions required (such as limit release of radionuclides) and in terms of the set of design features, administrative controls/procedures, and management systems selected for implementing the strategy. This material should provide a direct link between control strategy and hazard.

The SSCs or administrative controls that will be relied on for implementing the strategy should be identified. The documentation should provide a direct link between the control strategy and the associated SSCs.

5.2.4 Other Essential Steps

The standards identification process also involves the following four additional steps:

- Identification of standards
- Confirmation of standards
- Formal documentation (includes disposition of findings)
- Recommendation by Contractor representative.

Subordinate standards should be selected to implement the control strategies identified in the previous steps of the process. The standards may be selected from any source, including consensus standards from international sources, or may be ad hoc; but the standards selected must be fully consistent with the control strategy. In the interest of tailoring, it may be desirable to select only portions of a consensus standard, omitting those portions of the consensus standard not required to implement the control strategy. The feedback loop from standards identification to development of control strategies shown in Figure 1 is intended to recognize that the control strategy may need to be modified based on the selected standard. Such modifications are appropriate and expected as part of tailoring as long as the modified strategy continues to effectively control the associated hazard.

The last three steps are adequately described in DOE/RL-96-0004, and additional clarification is not required to present the concepts in this position paper.

5.2.5 Expectation of Linkages

Completion of the standards identification process must enable explicit linkage between work, hazards analysis, hazard controls, standards selection, and standards implementation. This linkage does not mean that each of the thousands of individual hazards that have been identified must directly connect to corresponding individual standards. It does mean, however, that for any specific hazard associated with any waste treatment process element, a logical explanation can be constructed for how the hazard is controlled and the role of the SSCs related to its control.

5.3 Tailoring Beyond the Start of Construction

Tailoring should continue through construction and operation. For example, as construction begins, the Contractor may discover that design changes are needed due to constructability discoveries. Operational experience may indicate that alternative hazard control strategies are called for or even that work definition needs to be reconsidered. For example, after operations begin, unanticipated hazards may become manifested; plant behavior may depart from expectations; and/or new information may arise that conflicts with the initial assumptions made in the design. Tailoring is a continuing requirement throughout the life of the project.

5.4 Justification for Adequate Safety

As part of the certification step[13] in the standards identification process, the Contractor certifies that the standards set will provide "adequate safety" when properly implemented. To support this certification, the Contractor is expected to have developed justification of adequate safety.

Section 6, "Regulatory Process Elements," of DOE/RL-96-25 describes the role of the standards identification process in ensuring adequate safety:

> "Standards Identification - A DOE-defined process shall be established and stipulated to the contractor for the contractor's preparation of a set of subordinate safety standards and requirements. This process shall have, as a minimum, the following characteristics:
>
> Result in an assured and stable basis for adequate safety for workers and the public…"

Thus, the Contract suggests that a properly implemented standards identification process ensures adequate safety. The OSR expects that to meet this objective of demonstrable adequate safety, the Contractor's implementation of the standards identification process will have certain minimum attributes as described below. Comprehensiveness and credibility are key components in all instances.

The identification of hazards must be comprehensive, and the assessment of events that are associated with those hazards must be credible. Credible hazard control strategies or solutions

[13] Referred to as the Recommendation by Contractor Representative step.

must be tailored to the relative magnitude of the hazard and must be work-based. The logic used to arrive at the control strategies/solutions must be presented along with the plan to accommodate uncertainties in the related analyses. Credible functional requirements must be defined to clearly show what needs to be accomplished through the various safety provisions.

The description and analysis of design basis internal and external events are an integral part of the standards identification process. The Contract defines design basis events (DBEs) as follows:

> "Postulated events providing bounding conditions for establishing the performance requirements of structures, systems, and components…"

The delineation of DBEs must be accompanied by the association of related events defined in the hazards assessment to ensure that all hazards have been addressed. DBEs must be described in a work-based context. For example, a DBE for spills would consider the volume of material at risk by consideration of tank capacities, etc. In addition, selection of SSCs important to safety must be done in the context of DBEs, and the method used for the selection of SSCs important to safety must be clearly specified.

Both design requirements and the definition of implementing standards must be DBE-based. For example, an unmitigated design basis earthquake, once analyzed, may present an unacceptable quantitative risk (probability and consequence) to public and worker receptors. From this analysis, functional requirements of SSCs important-to-safety can be specified. For example, the Contractor may specify that HEPA filters must operate in a corrosive environment, achieve decontamination factors of 1000, and be 99.99% reliable. In this hypothetical example, the Contractor may elect to use UL 586-90, *High Efficiency Particulate Air Filter Units*, as a consensus standard for HEPA filter units to meet the functional requirements that have been defined.

Finally, programs must be specified and implemented to ensure that the selected and maintained hazard control solutions are implemented as intended.

6.0 DEFINITIONS

The following terms or phrases are not defined in the glossaries of DOE/RL-96-0003 through DOE/RL-96-0006. These definitions are derived from understanding the context in which they are used in the Contract.

hazard control strategy – A set of generally described provisions (barriers, dilution/dispersal, physical limitations on material quantities, administrative material controls, confinement, ventilation of flammable gas, etc.) and/or approaches (defense in depth, use of passive features, prevention, mitigation, etc.) that are intended to ensure adequate control of a specific hazard and associated accidents in the context of the work.

hazard control solution – A set of specifically defined provisions and/or approaches that are intended to ensure adequate control of a specific hazard and associated accidents in the context of the work.

work – Functional description of a set of activities (e.g., process operations) that will produce the intended outcome or objective (such as achieving a mission in terms of specified functional requirements).

7.0 REFERENCES

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8.0 LIST OF TERMS

DBE	design basis event
DCC	Design, Construct, and Commission (Contract)
DOE	U.S. Department of Energy
HAZOP	hazard and operability

ISM	integrated safety management
ORP	Office of River Protection
OSR	Office of Safety Regulation
RPP-WTP	River Protection Project-Waste Treatment Plant
SCC	systems, structures, and components
SRD	Safety Requirements Document
WTP	Waste Treatment Plant

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[NNK1]Check against new version of the policy.