PREPARATIONS AND PLANNING FOR EPA RECERTIFICATION OF THE WASTE ISOLATION PILOT PLANT

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ABSTRACT

The Waste Isolation Pilot Plant (WIPP) Recertification Project was established to meet the requirement of the WIPP Land Withdrawal Act (LWA)[1] to demonstrate continued compliance with U.S. Environmental Protection Agency (EPA) disposal regulations at five-year intervals. This paper delineates the objective of the first recertification effort, sets out project goals, and establishes guiding assumptions. It describes the overall direction for a highly complex and interdependent set of tasks leading to recertification of the WIPP repository in 2004.

This paper also lays out a high-level schedule for producing the WIPP Compliance Recertification Application (CRA). The major principle behind recertification is that the EPA recertification decision will not involve rulemaking or judicial review. To ensure that the EPA is able to retain this principle, the U.S. Department of Energy (DOE) will not be incorporating changes through the recertification process. Only changes previously approved by the EPA will be included in the CRA. The EPA can approve significant changes to the current WIPP Certification through rulemaking. Non-significant changes are approved without rulemaking through the planned change reporting process [Title 40 Code of Federal Regulations (CFR), Section 194.4(b)].

The EPA WIPP Recertification Guidance[2] is clear in that, if the DOE proposes significant changes to the WIPP disposal system, those changes must be reviewed and approved by the EPA prior to or following recertification, through a "planned change" process. Integral to the recertification effort is the concept of a "blackout period" during which the DOE will not submit to the EPA significant changes to the WIPP Compliance Certification. This blackout period is intended to allow the EPA sufficient time to act on planned change requests prior to recertification, anticipating that a rulemaking may be required for such allowances.

As planned, the DOE will provide, as part of the CRA, the results of impact, performance, and compliance assessments that examine the combined effects of changes made to the disposal system since the initial WIPP Compliance Certification. This assessment will be performed utilizing repository monitoring data and the results of any compliance-related experiments. Compliance areas that have not changed since the submission of the first application (Compliance Certification Application, or CCA) will be incorporated into the CRA by reference. The first CRA will be precedent setting, in that any processes developed and materials submitted

to EPA will no doubt guide future recertification efforts for the operational life of the WIPP repository.

INTRODUCTION

The requirement for site certification stems from the WIPP LWA passed by Congress in 1992 and amended in 1996. This public law established and authorized the EPA as the facility regulator. From this law came the need for certification criteria as eventually published in 40 CFR 194. Once the Part 194 criteria were final, a certification application to demonstrate regulatory compliance was developed by the DOE and submitted to the EPA in October 1996. Issuance of EPA certification required public rulemaking and, thus, required a period in which interested parties had a chance to voice their concerns with the information that was submitted and the regulatory process by which the EPA made a decision. On May 18, 1998, the EPA published a final rule certifying that the DOE demonstrated adequate compliance with 40 CFR 191, Subparts B and C.

Also mandated by the LWA is the requirement that DOE submit documentation of continued compliance to the EPA every five years from the initial date of waste emplacement. The certification and recertification criteria, as established in Part 194 Subparts B and C, and §194.64, mandate that the WIPP documentation must contain specific information pertaining to repository performance and site characterization. The effort associated with completing and submitting the CRA will involve a wide range of disciplines and extensive involvement of the various entities that support WIPP. This effort requires the organization and control that define a project. Therefore, this undertaking is designated as the Recertification Project and has been planned and managed under accepted practices for project management.[3]

PROJECT FOUNDATION

A Recertification Project Manager has been assigned by the DOE Carlsbad Field Office (CBFO) to coordinate this project. This responsibility consists of ensuring a project plan is developed and that the plan integrates activities with the WIPP Scientific Advisor, the WIPP Managing and Operating Contractor (MOC), and all other WIPP organizations who have an active role in the project. CBFO has established Sandia National Laboratories (SNL) as the Scientific Advisor, and as the project management for the WIPP recertification effort. The managing and operating contractor of the facility is Westinghouse TRU Solutions (WTS), with Los Alamos National Laboratories (LANL) and the Carlsbad Field Office Technical Assistance Contractor (CTAC) as project-supporting organizations. Any DOE-designated oversight groups, additional contractors, and independent analysis teams will be established as needed.

The original compliance application discusses a broad range of WIPP related activities under the 40 CFR 191, Subpart B umbrella (e.g. the 20 years of WIPP site evaluation studies, active and passive institutional controls [PICs], post-operational monitoring, etc.). The CRA will consist of appropriate updates within each category in which work has been performed. This information will include the most recent monitoring data, results of field and laboratory studies, and may include the incorporation of such data into the modeling calculations, performance assessments (PA), and compliance assessments (CA) depending on the significance of the data to the overall system model.

Project Enabling Objectives

As a tool to help guide the planning, several measurable objectives have been set to accomplish the mission. The following is a list of the Project objectives:

- Complete the final CRA documentation and submit to the EPA by November 15, 2003
- Complete the first draft of the CRA in May 2003
- Provide the EPA with any new or revised information that differs from the information in the most recent application
- Provide detailed information in the CRA of any EPA-approved changes or modifications to the certification
- Meet with the EPA at least twice a year to discuss issues related to recertification
- Align the monitoring and experimental programs such that all qualified data collected up through the end of September 2002 are made available to the Scientific Advisor by the middle of October 2002
- As part of the planned change process (40 CFR 194.4(b)), DOE will request that non-compliance related information from the CCA be removed from the compliance baseline. If approved, the range of information in the CRA will be reduced to only that relevant to the 40 CFR 191, Subpart B and C Standards
- Project participants will provide timely status reports to the project manager as scheduled or as requested. These reports will be combined, summarized and submitted in a quarterly project status report to CBFO

Project Assumptions

As part of planning the project, certain assumptions needed to be identified in order to facilitate project planning and execution. The assumptions for the Recertification Project are as follows:

- PA and CA will be used to support the CRA documentation, as required. Though, factors necessary for conducting complete or partial assessments must be identified first
- Proposed changes to the compliance certification that may require public rulemaking will be submitted to the EPA at least 11 months prior to the November 2003 submittal date of the CRA
- Format of the CRA will remain consistent with the 1996 Application
- Technical Exchange meetings between the EPA and DOE will provide direction for major project decisions
- The EPA will issue a recertification decision by the end of May 2004
- There will be no disruption in waste handling operations due to the recertification process
- Complete monitoring and experimental data will be submitted to the Scientific Advisor on or prior to the desired date ("PA freeze date")
- The project manager will control the execution of project activities
- DOE-CBFO will make upper-level decisions regarding the project planning, strategy, scope, and changes thereof
- The DOE will be prepared to provide additional information after the submittal of the CRA, as requested by the EPA

PROJECT CONTROL AND RESPONSIBILITY

The Recertification Project has a work structure that involves participants from each organization. Each Recertification Project Participant is responsible for completing a portion of the work. The lead person from each of these organizations is responsible for ensuring that their portion is completed on time, and to the satisfaction of the CBFO. Combined, the lead personnel make up the Integrated Project Team and represent each organization that supports WIPP. Summarized below are the responsibilities of each organization:

CBFO, ORC – Responsible for ensuring all recertification activities are completed and documentation is sufficient for submittal to the EPA; also responsible for approving major changes to the Recertification Project.

SNL, Scientific Advisor and Recertification Project Manager - Integration of all activities leading toward the submittal of the CRA; sensitivity analysis, PA, scientific experimentation, computer modeling, and any DOE-required compliance assessment

WTS, MOC – Producing, collecting, and assembling the CRA documentation; activities related to monitored parameters; providing SNL with the monitoring data and operational information for input into impact assessments and relevant performance assessment calculations

LANL - Actinide chemistry experimental studies

CTAC – Collection of information on generator-site compliance and audits; quality assurance overview of project documentation; audits of each WIPP organizational QA program as it relates to Compliance Certification.

Figure 1 depicts the project organization and reporting structure. It is the responsibility of the Project Manager to ensure that involved organizations complete the project activities in a timely manner. It is also the responsibility of the Project Manager to acquire documentation that is justifiable, technically accurate, meets all quality assurance requirements, completed as scheduled, and that all documents reflect the most recent information. Activities for each organization are described in the Project Scope portion, provided in the next Section of this paper.

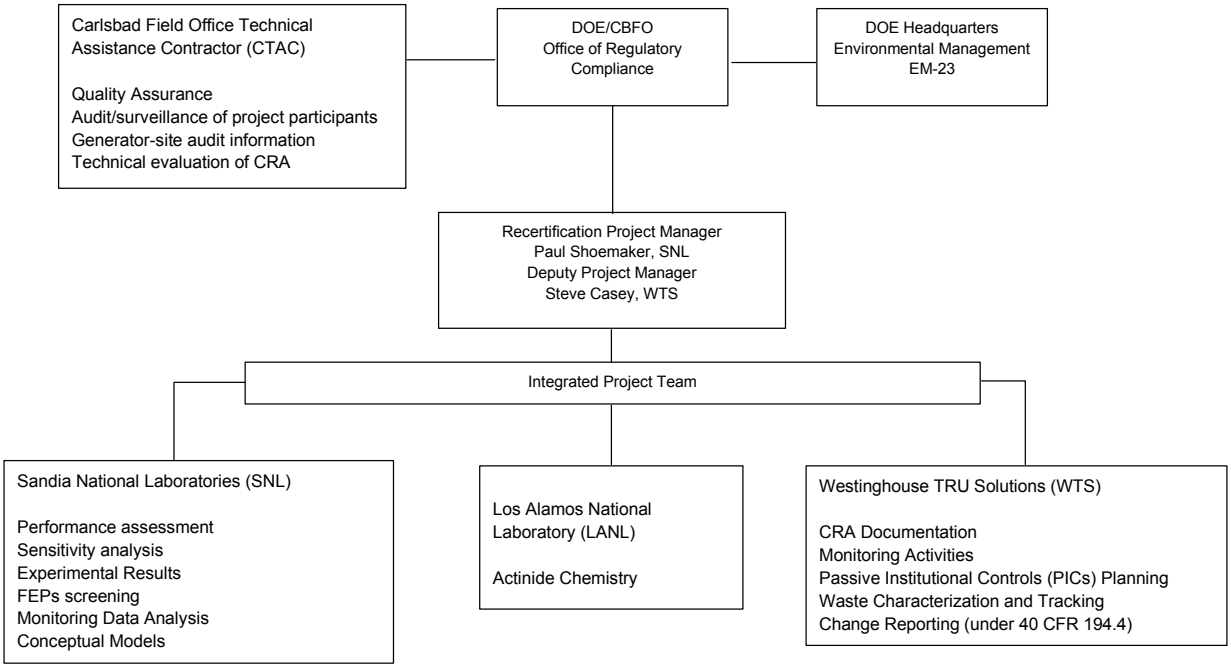

Fig. 1. Recertification Project Organization

Since each organization has different responsibilities, the individual work schedules will vary from one another. However, activities in one organization will have dependencies on those in another organization. Well-integrated relationships among the participants must be formulated from the start, and maintained throughout the life of the project. These activities have been planned by each of the organizations and incorporated into the integrated Project schedule, as summarized in Figure 2. The Recertification Project Manager will coordinate these activities to ensure successful results.

PROJECT SCOPE

The scope of the Recertification Project is taken directly from the certification criteria in 40 CFR 194, Subparts B and C. This range of work includes documenting the DOE activities in the areas of containment requirements, assurance requirements, individual and groundwater protection requirements, and any processes involved in justifying and validating such documentation (e.g. QA records, expert elicitations, or incorporation of the peer review process). The duration of work continues from the present time until the EPA provides a recertification decision. The project scope is sufficient to include the submittal of the CRA and provision of any additional information requests from the EPA. According to the Project schedule, the Project start date is May 2000 and finish date is the end of June 2004. This schedule is based on the scope of work described below.

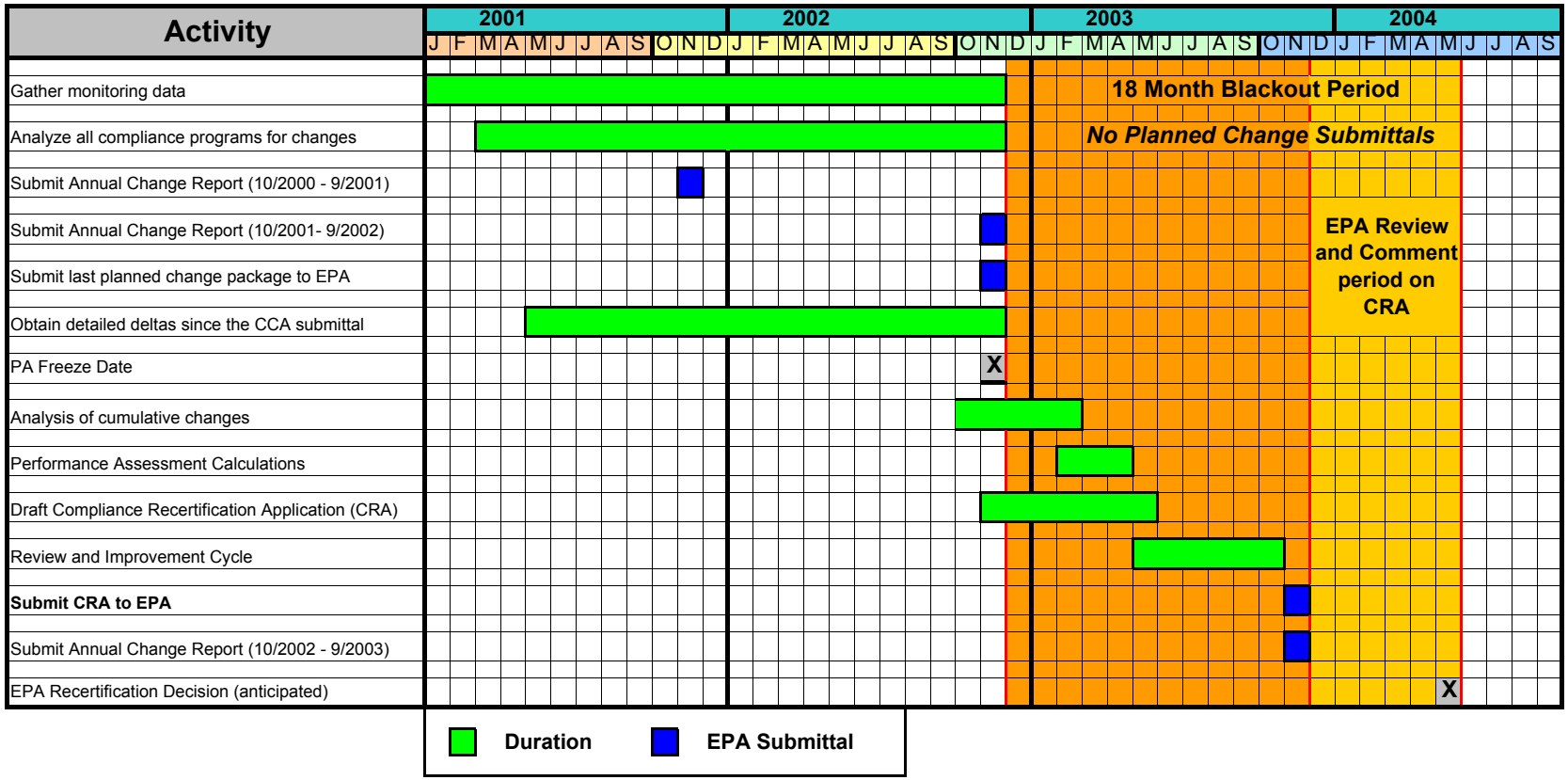

Fig. 2. Overview of WIPP Recertification Activities.

Scope of Work

A work breakdown structure (WBS) was prepared for the recertification effort to ensure the capture of essential activities and to determine the order in which each will be executed. Through collaboration with personnel representing CBFO, SNL, LANL, CTAC, and various sections within the WTS, a project schedule has been developed from the WBS. The WBS currently includes the relevant portions from each of the main categories within the WIPP compliance baseline. The current compliance baseline consists of the 1996 CCA and all relevant subsequent materials in EPA Air Docket A-93-02.[4,5] This includes information such as the EPA Compliance Application Review Documents (CARDs), Technical Support Documents (TSDs), and the EPA certification decision (i.e. Final Rule).[6]

Once the EPA recertifies the WIPP, the new compliance baseline will be established in EPA Air Docket A-98-49. The project-defined regulatory compliance categories (adopted from 40 CFR 191 and 194) are detailed in Table I. Expanded information on the Recertification compliance issues, and details on the overall project can be found in the Recertification Project Plan.[7]

Table I. Compliance Activities and Regulatory Drivers

Compliance Area	Specific Focus	Applicable Regulatory Drivers
Monitoring	Environmental	Title 40 CFR Parts 191.14(b), 194.15(a)(1 and 2) and 194.42, EPA Compliance Certification
	Groundwater	Title 40 CFR Parts 191.14(b), 194.15(a)(1 and 2) and 194.42, EPA Compliance Certification
	Geomechanical, geotechnical, and subsidence	Title 40 CFR Parts 191.14(b), 194.15(a)(1 and 2) and 194.42, EPA Compliance Certification
	WIPP Waste Information System (WWIS)	Title 40 CFR Parts 191.14(b), 194.15(a)(5), 194.42, and the EPA Compliance Certification
PICs	Awareness Triggers	Title 40 CFR Parts191.14(c) and 194.43(a)(3)
	Permanent Markers	Title 40 CFR Parts 191.14(c), 194.43(a)(1), and Condition 4 of the EPA Compliance Certification.
	Records and Archiving	Title 40 CFR Parts 191.14(c), 194.43(a)(2) and Condition 4 of the EPA Compliance Certification
Natural Resource Tracking	Delaware Basin Surveillance	Title 40 CFR Parts 191.14(e), 194.33, and 194.42, 194.45, and the EPA Compliance Certification
Waste Information	Waste Characterization Activities and National TRU Programs Interface	Title 40 CFR 194.8, 194.24, and Condition 2 of the EPA Compliance Certification
CRA Documentation	Updated or changed information	WIPP Land Withdrawal Act, Section 8(f)
WIPP experimentation, testing, analyses and calculations	Panel Closure System	Title 40 CFR 191.14(d), 191.24, 194.15(a)(3) and 194.42, and 194.44, and Condition 1 of the EPA Compliance Certification
	Backfill	
	Groundwater issues	
	DRZ	
Long-term Repository Performance	Scenario analysis	Title 40 CFR 191.13, 194.25, 194.31, 194.32, and 194.34
	FEPs screening	
	Performance Assessment	
	Compliance Assessment	Title 40 CFR 191.15, 191.24, 194.54 and 194.55
Computer Codes/modeling	Updates and/or revisions	Title 40 CFR 194.22 and 194.23
	QA	
Actinide Chemistry	Disposal Room Chemistry	Title 40 CFR 194.15(a)(3)
Generator Site Audit Information	Waste Characterization Processes	Title 40 CFR 194.8
Quality Assurance	CRA Documentation, monitoring, data collection, and experimental programs	Title 40 CFR 194.22, Condition 3 of the EPA Compliance Certification

Project Schedule

The project schedule reflects activities that are planned for completion prior to the initiation of any PA calculations. This will allow the capture of all modifications and non-significant changes that were reported in one of the previous Annual Change Reports. Significant changes will require EPA approval through the public rulemaking process.

The cumulative effect of changes to the Compliance Certification will be evaluated based on the impacts to assumptions and conceptual models, as well as the influence on long-term stability and performance of the disposal-system. An overview of the project schedule can be found in Figure 2.

As part of the SNL activities, varying degrees of assessments and sensitivity analyses will evaluate the cumulative effect of all EPA approved changes, since the 1998 Certification, and the new monitoring data at the specified data cut-off date. This cut-off date is otherwise known as the "PA Freeze Date." After the PA Freeze Date, no further planned changes or monitoring data can be incorporated into the performance assessment calculations prior to the submittal of the CRA.[8]

As changes occur throughout the operational life of the WIPP, PA and CA calculations will be necessary to ensure continued compliance. The CBFO, with input from the Scientific Advisor, will determine the need to perform revised PA and/or CA calculations. If any assessments are performed, all documentation will be completed by SNL and submitted to WTS for input into the CRA. In the event the PA calculations do not need to be done, detailed justification summarizing the net effect of all the changes to the Compliance Certification will be provided by SNL for inclusion to the CRA documentation.

PROJECT STRATEGY

The Recertification Project strategy incorporates the ongoing compliance activities performed by the project participants, as well as developing a CRA that contains only the information necessary for making a compliance determination. Described below are strategies related to document layout and approach, and long-term impact assessments.

Blackout Period

Prior to submitting the CRA to the EPA, the DOE will institute what is referred to as a "blackout period." During this period, DOE will refrain from submitting planned changes to the EPA. This duration of time will be sufficient to allow the EPA to review and render decisions on DOE-proposed changes prior to the submittal of the CRA. It is anticipated that the blackout period will begin in December 2002 and last until the EPA publishes a "*notice in the Federal Register announcing the Administrator's decision whether or not to recertify the WIPP facility* [40 CFR 194.64(e)]." This provides sufficient time to incorporate into the CRA the details of any modifications the certification, and evaluate the combined impacts of all changes to the repository performance.

Documentation Strategy

In putting together the appropriate documentation for the CRA, the Integrated Project Team will evaluate those portions of the original application for areas in which information has changed through the EPA change-approval process. Changes since the submittal of the CCA (October 1996) will be detailed and captured from Annual Change Reports, any modifications, and from determinations referenced by the EPA in the Certification Decision, Final Rule. The EPA CARDs and other Docket information will be used as a metric for capturing CCA information differences between October 1996 and May 1998. This information (EPA approved changes, changes from the Annual Report, and EPA CARD and Docket information) will be consolidated into a categorical list of changes since the submittal of the CCA. This list will also be used in the impact assessment strategy discussed below.

Project participants will evaluate each of the compliance areas listed in Table I for changes that are listed on the consolidated categorical list. Areas of change in the compliance baseline will be identified, and re-writes shall be developed by either WTS or SNL. This information will be reviewed and approved by the Integrated Project Team.

Long-term Impact Assessment Strategy

The compilation of changes to information within the original certification will be assessed for any impact on assumptions or conceptual models, as well as their impact to the long-term performance of the disposal system. This will include the changes made after the application was submitted but prior to the EPA final rule, non-significant changes reported to the EPA (e.g. "Annual Change Reports"), and any changes requiring a modification to the certification. Analysis of the monitoring data will be evaluated in the impact assessments. This will begin from the last point at which data were reported as part of the CCA.

A logical, step-wise sequence will be followed when assessing these changes. This will follow the same order as that in the original application. This process is outlined as follows:

(1) Create and utilize a comprehensive list of changes since the submittal of the original application in 1996.

(2) Examination of the Features, Events, and Processes (FEPs) that describe the disposal system (site, facility, and waste characteristics); if the previous assumptions remain valid, and the screening arguments remain unchanged, then the assessment will move on to the next step.

(3) Assess the extent that the conceptual models, codes, and the input parameters remain valid; any potentially significant change will be examined for its impact on repository performance. For any potentially significant changes, the DOE will document reasons for such deviations and determine the effect of any such change. Often, the impact will not be determined until PA calculations are completed. Decisions related to changing conceptual models, codes, and input parameters will be justified with proper documentation.

(4) Evaluate scenarios as appropriate. The scenario development uses fixed numerical values for specific portions related to the disposal system. Much like the FEPs, these scenarios will be examined for changes to the individual portions. So long as previous assumptions remain valid, there is no need to modify the modeling scenarios and thus, the assessment process continues to the next sequence. Otherwise, the scenario numerical values may require revision to more accurately reflect the modified depiction of the repository. Changes to the intrusion scenarios or conceptual models will require a peer review prior to use in the PA calculations. Peer reviews will be performed as dictated by 40 CFR §194.27.

(5) Evaluate consequence and probability of each scenario as necessary. Values for consequence and probability will be reexamined to ensure that the baseline is correct. If steps 2 through 4 are completed and documented without any changes to the original assumptions, fixed values, models, or input range values, then the assessment is considered to be complete. If not, the process moves to step 6.

(6) Conduct PA and/or CA as necessary. The decision to proceed down this path is dictated by the first four steps. Any of the previous steps could trigger the need to perform an impact assessment. If there are changes which were not accounted for in the compliance baseline, then these need to be screened for their potential to impact the long-term performance of the repository. This impact screening will determine if a CA or PA will be needed for the Recertification Project.

STAKEHOLDER INVOLVEMENT

The participation of non-WIPP related persons or organizations will be encouraged throughout the project. For the most part, this will consist of information releases provided by the DOE through the WIPP monthly newsletter (on-line version). Feedback received from the news releases will be responded to on an individual basis, as received. The last phase of the Recertification Project will entail the most involvement of the non-WIPP related organizations.

The CBFO will set up public information exchange meetings regarding the recertification effort. This will provide the public with insight into the project activities. The project participants will be ready to provide clarification on new information bearing on assertions of continued compliance. Further details regarding outreach efforts can be found in the DOE-Carlsbad Stakeholder Outreach Plan.[9]

SUMMARY

Recertification of WIPP, especially in today's climate, is both an environmental and a national security issue. It is in the nation's interest to illustrate that WIPP continues to comply with applicable federal law and regulatory requirements, and to do so in a seamless manner, such that waste handling operations at WIPP continue in an uninterrupted manner. With oversight from the DOE's Carlsbad Field Office, the institutional members of the WIPP community intend to pursue the goal of recertification for the repository in a transparent and efficient manner, mindful of the precedent-setting nature of this initial recertification process. It is our belief that execution of the recertification approach delineated above will satisfy these requirements.

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