

**Summary Highlights of NRC/DOE Technical Exchange and
Management Meeting on
DOE's Key Technical Issue Agreement Item Planning Strategy
and Discussion of Fiscal Year 2002 Agreements**

April 15-16, 2002
Las Vegas, Nevada

Introduction and Objectives

This Technical Exchange and Management Meeting to discuss the Key Technical Issues (KTIs) is one in a series of meetings related to the U.S. Nuclear Regulatory Commission (NRC) and U.S. Department of Energy (DOE) issue resolution process. Consistent with NRC regulations on prelicensing consultations and a 1992 agreement with the DOE, staff-level resolution can be achieved during prelicensing consultation. The purpose of issue resolution is to assure that sufficient information is available on an issue to enable the NRC to docket a proposed license application. Resolution at the staff level does not preclude an issue being raised and considered during the licensing proceedings, nor does it prejudice what the NRC staff evaluation of that issue will be after its licensing review. Issue resolution at the staff level, during prelicensing, is achieved when the staff has no further questions or comments at a point in time regarding how the DOE is addressing an issue. Pertinent additional information (e.g., changes in design parameters) could raise new questions or comments regarding a previously resolved issue.

Issues are "closed" if the DOE approach and available information acceptably address staff questions such that no information beyond what is currently available will likely be required for regulatory decision making at the time of any initial license application. Issues are "closed-pending" if the NRC staff has confidence that the DOE proposed approach, together with the DOE agreement to provide the NRC with additional information (through specified testing, analysis, etc.) acceptably addresses the NRC's questions such that no information beyond that provided, or agreed to, will likely be required at the time of initial license application. Issues are "open" if the NRC has identified questions regarding the DOE approach or information, and the DOE has not yet acceptably addressed the questions or agreed to provide the necessary additional information in a potential license application.

The objective of this meeting was to discuss DOE's KTI Agreement Item Planning Strategy and the KTI agreements DOE plans to address in Fiscal Year (FY) 2002. No new agreements were reached at this meeting, however, the due dates and/or documentation method for several agreements were changed, one agreement was modified, and two were closed as discussed below. A table identifying the KTI agreement, the new due date, and related comments, if any, is provided as Attachment 1. The modification of Igneous Activity Agreement 2.17 is provided as Attachment 2. The agenda and the attendance list are provided as Attachments 3 and 4, respectively. Copies of the presenters' slides are provided as Attachment 5. Highlights from the Technical Exchange and Management Meeting are discussed below.

Summary of Meeting

1) Overview of KTI Issue Resolution Status

NRC provided an overview of the status of issue resolution. The NRC stated that of the 293 DOE/NRC KTI agreements, 38 have been formally closed and an additional 15 are under NRC review. The NRC noted that this meeting is the first of two meetings in which all the agreements will be discussed. During this meeting, DOE provided information pertaining to the agreements which it plans to address during the remainder of FY 2002. A meeting to discuss the FY 2003 and beyond agreements was tentatively scheduled for June 2002.

NRC stated that it does not plan to formally review or endorse the DOE planning strategy, but that it would like to understand the process DOE used to determine the priority and work scope for addressing the agreements. The NRC further stated that it believes the KTI agreements are the vehicle for future issue resolution discussions, that it is interested in having additional technical exchanges and Appendix 7 meetings to discuss the specific key technical issues, and that it believes continued discussions between the NRC and DOE technical leads is warranted.

DOE representatives expressed plans to address all the agreements prior to submitting a license application, although some information pertaining to a few agreements may be provided after the license application is submitted. DOE stated that it is reviewing the Yucca Mountain Review Plan closely, and plans to provide comments within the 90 day comment period. DOE further stated that it agreed with the NRC that continued discussions between the NRC and DOE technical leads for specific key technical issues is warranted.

2) DOE's KTI Agreement Item Planning Strategy

DOE discussed its KTI Planning Strategy in a presentation given by Mark Wisenburg. DOE provided a summary of the KTI agreements and stated that it agreed with the NRC regarding the completion of 38 agreements. DOE then presented an overview of its KTI Planning Strategy. DOE described a four step process to obtain a coarse binning of disposition methods for each of the 293 agreements. DOE then provided the definition for each bin, the schedule for addressing the agreements, and a method for documenting the work scope needed to address the agreements. The NRC noted that it would not challenge the binning of the agreements, but was more interested in how DOE planned to address the NRC's information needs for each agreement.

The NRC asked whether DOE used risk information to prioritize the agreements. DOE stated that risk information was used in part, but noted that other factors contributed to the final schedule. The NRC suggested that risk information be used as much as possible to ensure that the most risk significant items get addressed early in the issue resolution process.

DOE discussed the overall partitioning of the KTI agreements by schedule and disposition bin. DOE stated that it plans to address all the agreements by the time of license application and that based on current plans, it believes that final information pertaining to ten agreements would be provided after license application. The NRC agreed that some information could be provided after license application, but DOE would need to provide enough information in the license application for the NRC staff to accept the license application for review. DOE then discussed the overall partitioning by disposition bin.

3) Fiscal Year 2002 Agreements

DOE then discussed a table (see table titled "Milestone FY02 - Agreement Items") which included the agreements it plans to address in the remainder of FY 2002. The DOE table included the agreement statement, schedule for the agreements, bin deposition, and description of the DOE bases for the binning. DOE and NRC discussed all the agreements on the agenda, noting several specific agreements that would be discussed in more detail later in the meeting. For approximately two thirds of the agreements, DOE plans to provide the information as called for in the agreements, either in the documents named in the agreements or in different documents which meet the intent of the agreements. NRC stated that this was acceptable and an updated schedule was provided by DOE. NRC comments regarding the agreements are included in Attachment 1, along with the revised DOE schedule. The NRC and DOE also discussed several specific agreements in more detail, as discussed below.

Total System Performance Assessment and Integration (TSPAI) Agreement 3.19 - DOE stated that it planned to provide sensitivity studies, in part, to address this agreement. NRC discussed several questions with regard to the DOE approach. In response, DOE stated that it plans to: evaluate the combined effects of uncertainty in its analyses; look at intermediate values which might lead to less conservative results; and evaluate ways to ensure that the waste package would not mask barrier performance. NRC stated that it would need some explanation from DOE on the appropriateness of the use of the model and the technical basis for why the sensitivity studies are acceptable.

TSPAI Agreement 3.22 - DOE stated that it planned to provide sensitivity studies, in part, to address this agreement. NRC stated that this approach was acceptable and that it would review the information when submitted.

Unsaturated and Saturated Flow Under Isothermal Conditions (USFIC) Agreement 5.09 - DOE stated that it would provide the requested information. NRC questioned what kind of visual representations would be included in the report. DOE discussed the visual representations and both the NRC and DOE agreed that additional discussions and possibly a site visit may be worthwhile.

USFIC Agreement 3.01 - DOE stated that it planned to provide sensitivity studies, in part, to address this agreement. NRC stated that it had the same comments as in TSPAI Agreement 3.19. The NRC also questioned whether DOE was looking at risk dilution. DOE stated that it was.

USFIC Agreement 3.02 - DOE stated that it planned to provide sensitivity studies, in part, to address this agreement. NRC questioned whether DOE was going to include documentation for the Pagany Wash and Alcove 1 tests. DOE stated that it was not planning to include the information and that the sensitivity studies are expected to show that the testing information was not needed.

TSPAI Agreement 2.05 - DOE stated that it had submitted the information pertaining to the agreement in a letter dated April 5, 2002. NRC stated that it had received the information and that it was under review.

TSPA Agreement 2.06 - DOE stated that it would like the NRC to review whether this agreement could be closed based on its response to TSPA Agreement 2.05. NRC stated that it would review the information DOE submitted on April 5, 2002, and evaluate whether the information adequately addressed both agreements. NRC stated that it would list TSPA Agreement 2.06 as "Received."

TSPA Agreement 3.38, 3.39, 3.40, 3.41, and 4.01 - DOE stated that it would submit a process and approach guidelines document in May 2002 to address these five agreements. DOE stated that some of the NRC comments regarding these agreements would be included in the Methods and Approach document which is scheduled to be provided to the NRC in September 2002. However, DOE stated that the information in the guidelines document should satisfactorily resolve all five agreements. NRC stated that it would review the guidelines document as it pertained to all five agreements and would provide DOE the results in two or three months. NRC noted that the intent of the agreements was more outcome driven, but that it would determine, based on its review, whether the agreements were adequately addressed. DOE noted that if, after the NRC review is complete, consolidation of the agreements is appropriate, it would be willing to discuss it. The NRC questioned whether the implementation information would be available to NRC at least six months prior to a potential license application. DOE confirmed that it plans to have supporting documentation available at that time. There was also some discussion on the need to update the Final Environmental Impact Statement as new information becomes available or as design changes are made.

Structural Deformation and Seismicity (SDS) Agreement 3.03 - DOE stated that it would address the eight points in the NRC's letter of August 3, 2001, in its submittal for this agreement. NRC questioned how reviewers would know that the analysis and model report (AMR) is not up to date since DOE will provide information in a letter report. DOE stated that separate documentation was developed and that the AMR was not being updated. DOE stated that this letter report would just address the information requested in the NRC letter. NRC asked where the additional mapping to the south of the repository would be documented. DOE stated that the information would be made available upon receipt from the U.S. Geological Survey (USGS).

Thermal Effects on Flow (TEF) Agreement 2.03 - NRC stated that it had reviewed the three AMRs already provided for this agreement and did not have any questions at this time. The NRC stated that the intent of the remaining document for this agreement was to show the implementation of the information. NRC stated that keeping the agreement open just to track implementation was not needed and this agreement could be listed as "Complete." The NRC noted that it would continue to review DOE documents as they pertain to this agreement.

TEF Agreement 2.06 - NRC stated that this agreement was listed as complete in a NRC letter dated August 6, 2001, therefore no additional information is needed at this time.

Container Life and Source Term (CLST) Agreement 5.06 and 5.07 - DOE described the approach it was using in the criticality area. DOE stated that it expected to screen criticality out on the basis of probability and that it would follow the methodology it outlined in its criticality topical report. NRC questioned why a different methodology was used in the Technical Update Impact Letter report and whether the methodology DOE was using had changed since DOE provided Revision 1 to the Topical Report in February 2001. DOE stated that the NRC should not review the Technical Update Impact Letter report and that the NRC should continue to review the Topical Report. The Technical Update Impact Letter report documented a scoping

calculation for information purposes only and not for technical review. DOE stated that they are interested in receiving the NRC comments on the Topical Report. NRC stated that the meeting to discuss criticality, as well as some issues within the CLST KTI is needed and proposed a May 14-15, 2002, date. DOE stated that it would work with the NRC to set up the meeting.

CLST Agreement 1.05, 1.06, and 1.07 - DOE discussed its revised approach and stated that it intends to use the five-year exposed samples testing for Alloy 22 results to address these agreements. NRC questioned whether related agreements (CLST.1.03 and 1.04; TSPAI.3.01, 3.04, and 3.05) would be discussed accordingly in the DOE submittal. DOE stated that they would be. DOE stated that based on the information to date, general corrosion of the waste packages is not a major issue. NRC noted that it believed this was true for only low temperatures, information to make that determination for high temperatures was not available. DOE stated it would provide justification for testing methodology changes in the letter report.

Igneous Activity (IA) Agreement 1.02 - NRC stated that prior to DOE submitting information pertaining to this agreement, that it recommended two meetings be set up. The first meeting would discuss the new aeromagnetic data, the second meeting would discuss the interpretation of the data. NRC proposed July 9-10, 2002, as a tentative date for the first meeting. DOE stated that it would work with the NRC to formalize the date.

IA Agreement 2.09 - DOE stated that they would provide the information called for in the agreement in a letter report which would summarize the results of its study. NRC stated that it was concerned about the use of average data, which would not factor in thermal buoyancy, which may underestimate transport. DOE stated that it would provide the justification for the use of average data, or whatever data is used, in the letter report.

IA Agreement 2.13 - NRC and DOE discussed whether this agreement could be combined with IA Agreement 2.17. NRC proposed adding one additional sentence to IA Agreement 2.17, DOE stated that this was acceptable to them. As a result of this modification to IA Agreement 2.17, IA Agreement 2.13 is listed as "Complete." Attachment 2 provides the rewrite of IA Agreement 2.17.

4) Public Comments

Mr. Leon Reiter, Nuclear Waste Technical Review Board staff, questioned DOE's plans to prepare its safety case. His questions were related to the performance assessment, multiple barriers, and groundwater infiltration. DOE representatives stated that the safety case is being prepared and will be presented in its Safety Analysis Report (SAR). DOE also discussed resiliency of the system and defense in depth as it relates to system capability, groundwater transport, and dose.

Mr. John Kessler, Electric Power Research Institute, stated that clarification from the NRC would be helpful on those agreement items involving the use of risk information. NRC stated that it would expect to have continuing discussions with DOE on these matters and provide feedback as materials are submitted providing risk bases.

Ms. Susan Lynch, State of Nevada, asked if dates for upcoming meetings could be provided sooner. The NRC stated that it was currently implementing a process to provide early notification to stakeholders, via e-mail, that meeting dates had been formally established.

Handwritten signature of Janet Schlueter, consisting of a stylized 'J' and 'S' followed by the letters 'FOR'.

Janet Schlueter
Chief, High Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards
Nuclear Regulatory Commission

Handwritten signature of April V. Gil in cursive script.

April V. Gil
Team Lead
Regulatory Interactions and Policy Development
Office of Licensing & Regulatory Compliance
Department of Energy

**Fiscal Year 2002 Key Technical Issue Agreements
Revised Schedule**

Attachment 1

<u>KTI Agreement</u>	<u>Schedule</u>	<u>Notes</u>
CLST.1.05	6/02	Discussed in meeting summary. DOE to provide basis for closure.
CLST.1.06	6/02	Discussed in meeting summary. DOE to provide basis for closure.
CLST.1.07	6/02	Discussed in meeting summary. DOE to provide basis for closure.
CLST.1.17	6/02	Information will be provided in a different document than discussed in the agreement.
CLST.2.07	6/02	Information will be provided in a different document than discussed in the agreement. DOE will propose that CLST.2.07 be closed and information be provided in CLST.2.04. DOE needs to address TSPAI.2.02 (35).
CLST.5.06	7/02	Discussed in meeting summary. DOE to provide basis for closure. DOE needs to address GEN.1.01 (21).
CLST.5.07	7/02	Discussed in meeting summary. DOE to provide basis for closure.
CLST.6.04	Submitted	DOE provided information in letter dated 1/31/02. NRC to review. Agreement listed as "Received."
ENFE.1.07	9/02	Information will be provided in a different document than discussed in the agreement. DOE needs to address TSPAI.2.02 (J-9 and J-21).
ENFE.2.07	9/02	Information will be provided in a different document than discussed in the agreement.
ENFE.2.08	9/02	DOE will provide information noted in agreement. DOE needs to address TSPAI.2.02 (55).
ENFE.4.06	FY03	Agreement moved to FY03. DOE needs to address GEN.1.01 (37).
IA.1.02	9/02	Discussed in meeting summary. DOE will provide information noted in agreement.
IA.2.02	8/02	Information will be provided in a different document than discussed in the agreement.
IA.2.03	6/02	Information will be provided in a different document than discussed in the agreement.
IA.2.09	6/02	Discussed in meeting summary.
IA.2.10	7/02	Information will be provided in a different document than discussed in the agreement. DOE will include information in IA.2.18 and 2.19 and provide the basis for closing the agreement.

IA.2.12	5/02	Information will be provided in a different document than discussed in the agreement.
IA.2.13	Complete	Discussed in meeting summary.
IA.2.16	6/02	Information will be provided in a different document than discussed in the agreement.
PRE.3.01	6/02 (1) 7/02 (2)	DOE will provide (1) the plan and (2) the map on the schedule indicated. An Appendix 7 meeting will be scheduled after receipt of the information.
PRE.6.01	Submitted	DOE submitted information on March 27, 2002.
PRE.6.02	Submitted	DOE submitted information on March 27, 2002.
RDTME.3.14	9/02	Information will be provided in a different document than discussed in the agreement.
RT.2.03	4/02	DOE will provide information noted in the agreement. DOE needs to address GEN.1.01 (42).
RT.2.04	4/02	Information will be provided in a different document than discussed in the agreement. DOE needs to address GEN.1.01 (42).
RT.2.05	FY03	Agreement moved to FY03. DOE needs to address GEN.1.01 (42).
RT.2.09	6/02	Information will be provided in a different document than discussed in the agreement. DOE needs to address GEN.1.01 (42).
RT.3.08	4/02	Information will be provided in a different document than discussed in the agreement. DOE needs to address GEN.1.01 (45).
RT.3.09	6/02	Information will be provided in a different document than discussed in the agreement.
SDS.3.01	FY03	Agreement moved to FY03. NRC discussed the need to discuss the four points regarding "fracture-informed" in the NRC letter dated 2/6/02.
SDS.3.03	6/02	Discussed in meeting summary.
TEF.2.03	Complete	Discussed in meeting summary.
TEF.2.06	Complete	Agreement complete per NRC letter dated August 6, 2001.
TEF.2.07	4/02	Information will be provided in a different document than discussed in the agreement. Information will also address RDTME.3.01.
TSPAI.1.01	9/02	Information will be provided in a different document than discussed in the agreement.
TSPAI.2.05	Submitted	DOE submitted information on April 5, 2002.
TSPAI.2.06	Submitted	Discussed in meeting summary.
TSPAI.3.02	4/02	DOE to provide basis for closure.

TSPAI.3.03	6/02	DOE to provide basis for closure. DOE needs to address GEN.1.01 (21).
TSPAI.3.15	9/02	DOE will provide information noted in the agreement.
TSPAI.3.19	6/02	Discussed in meeting summary.
TSPAI.3.22	8/02	Discussed in meeting summary.
TSPAI.3.37	8/02	Information will be provided in a different document than discussed in the agreement.
TSPAI.3.38	5/02	Discussed in meeting summary. DOE needs to address GEN.1.01 (78).
TSPAI.3.39	5/02	Discussed in meeting summary.
TSPAI.3.40	5/02	Discussed in meeting summary.
TSPAI.3.41	5/02	Discussed in meeting summary. DOE needs to address GEN.1.01 (120).
TSPAI.4.01	5/02	Discussed in meeting summary. DOE needs to address GEN.1.01 (56, 96)
TSPAI.4.05	4/02	DOE will provide information noted in the agreement.
USFIC.3.01	5/02	Discussed in meeting summary.
USFIC.3.02	5/02	Discussed in meeting summary.
USFIC.4.07	5/02	Information will be provided in a different document than discussed in the agreement. DOE needs to discuss GEN.1.01 (75).
USFIC.5.03	4/02	DOE will provide information noted in the agreement.
USFIC.5.05	6/02	Information will be provided in a different document than discussed in the agreement.
USFIC.5.08	5/02	DOE will provide information noted in the agreement. This will be a partial submittal.
USFIC.5.09	9/02	Discussed in meeting summary.
USFIC.5.11	6/02	Information will be provided in a different document than discussed in the agreement. DOE needs to discuss GEN.1.01 (103).
USFIC.5.13	7/02	Information will be provided in a different document than discussed in the agreement. DOE needs to discuss TSPAI.2.02 (3, 12).
USFIC.6.01	7/02	Information will be provided in a different document than discussed in the agreement.
USFIC.6.04	6/02	Information will be provided in a different document than discussed in the agreement.

MODIFICATION OF KTI AGREEMENTS
Attachment 2

IA 2.17

DOE will evaluate conclusions that the risk effects (i.e., effective annual dose) of eolian and fluvial remobilization are bounded by conservative modeling assumptions in the TSPA-SR, Rev. 00, ICN1. DOE will examine rates eolian and fluvial mobilization off slopes, rates of transport in Fortymile Wash, and rates of deposition or removal at proposed critical group location. DOE will evaluate changes in grain size caused by these processes for effects on airborne particle concentrations. DOE will also evaluate the inherent assumption in the mass loading model that the concentration of radionuclides on soil in the air is equivalent to the concentration of radionuclides on the soil on the ground does not underestimate dose (i.e., radionuclides important to dose do not preferentially attach to smaller particles). **DOE will provide the justification for the range of transition BDCFs sampled.** DOE will document the results of investigations in the AMR, Eruptive Process and Soil Distribution ANL-MGR-GS-000002, expected to be available in fiscal year 2003 and in the AMR, Input Parameter Values for External and Inhalation Radiation Exposure Analysis, ANL-MGR-000001, available FY 2003, or another appropriate technical document.

Note: Information denoted in bold above represents new material added to this agreement in the closure of IA 2.13.

Attachment 3

Agenda

Agenda
NRC/DOE Meeting on KTI Agreement Item Status
April 15-16, 2002

Room 915
9960 Covington Cross
Las Vegas, NV

INTERESTED PARTIES MAY MONITOR VIA TELEPHONE BY CALLING 702-295-4257

April 15, 2002

1:00 PM	Introductions	ALL
1:20 PM	Overview of DOE KTI Resolution Planning Strategy	DOE
2:20 PM	Summary of KTI Agreement Item Delivery Milestones	DOE
2:45 PM	Break	ALL
3:00 PM	Status of FY2002 KTI Agreement Deliverables, Path Forward, and Schedule	DOE
4:00 PM	Detailed Discussion of Specific KTI Agreement Items to be Delivered in FY2002	DOE/NRC
	4:00 PM TSPAI 3.19, 3.22, USFIC 5.09	
	4:30 PM USFIC 3.01, 3.02	
5:00 PM	Adjourn	

April 16, 2002

8:00 AM	Continued Detailed Discussion of Specific KTI Agreement Items to be Delivered in FY2002	DOE/NRC
	8:00 AM TSPAI 2.05, 2.06	
	8:20 AM TSPAI 3.38, 3.39, 3.40, 3.41, 4.01	
	9:00 AM SDS 3.03; TEF 2.03, 2.06	
9:40 AM	Break	ALL
10:00 AM	Continued Detailed Discussion of Specific KTI Agreement Items to be Delivered in FY2002	DOE/NRC
	10:00 AM CLST 5.06, 5.07, 1.05, 1.06, 1.07	
	11:30 AM IA 1.02	
	12:00 N IA 2.09, 2.13	
12:30 PM	Lunch	ALL
2:00 PM	Caucus	ALL
3:00 PM	Meeting Summary	NRC
3:30 PM	Adjourn	

Attachment 4

Attendance List

ATTENDEE SIGN-IN
NRC/DOE MEETING – KTI Agreement Item Status
APRIL 15, 2002

NAME	ORGANIZATION	PHONE NUMBER
Randy Whetsel	BSC/LAP	295-4054
MARK WISENBURK	BSC/LAP	295-3952
Kathy Marten	DOE/GC	202 586 4467
Colin Heath	Self	702 243-2486
Mark TYMAN	DOE/YMP	702-794-5457
Jim York	BSC	202-488-2303
Larry Ricketts	PSC/PASS	702-795-5443
Bob Bradbury	MTS	702-794-5424
Mingtan	BSC/LAP	702-295-3966
Ernest Hardin	BSC PA	702 295 3403
George Hoffstrom	DOE/CCO	702-794-1419
DENNIS RICHARDSON	BSC/LAP	702-295-3137
Drew Arlen	DOE	702- 794 -5537
Susan Lynch	State of NV	775-687-3744
April Gil	DOE/YMP	794-5578
Pasu Pasupathi	BSC/ESP	702-295-4249
Bob Gamble	MTS/Barr Allen	702-794-1440
STAN ECHOLS	ECG	202.537.1468
PHILIP JUSTUS	U.S NRC	902 794 5047
Robert Kellan	BSC	702-295-4503
Eric Zwahlen	MTS/Golder Associates	702-794-5569
Veronica Cornell	BSC LAP	702-295-4166
PAUL HARRINGTON	DOE OPE	702-794-5415
STEPHEN BROCOM	DOE/YMP	702 794-1359

ATTENDEE SIGN-IN
NRC/DOE MEETING – KTI Agreement Item Status
APRIL 15, 2002

NAME	ORGANIZATION	PHONE NUMBER
AL Aziz Edeebanah	BSC / LANL	702 295 6606
ZELL PETERMAN	USGS	303-236-7883
John Kessler	EPRI	850-855-2069
Leon Reiter	NETKB	703-235-4490
Dave Diodato	"	703 235-4473
Rod McCullen	NET	202-739-8082
Jerry McNeish	BSC/PA	702 295 6858
S. J. CEREGHINO	BSC	702 295 3944
Jim Houseworth	BSC/LBNL	702-295-7611
Jim Andersen	NRC	301-415-5717
Mike Markley	NRC	301-415-6885
Bill Reamer	NRC	301-415-7000
Jennivieve Novero	BSC/BAA	702-295-4056

ATTENDEE SIGN-IN
NRC/DOE MEETING – KTI Agreement Item Status
APRIL 16, 2002

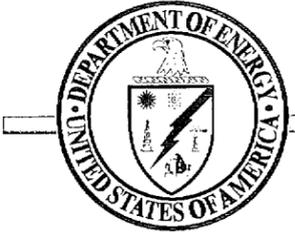
NAME	ORGANIZATION	PHONE NUMBER
Leon Reiter	NWTRB	(703) 235-4490
Bob Bradburn	MTS	(702) 794-5424
JERRY McNEISH	BSC/PA	702 295 6858
Zell Peterman	USGS	302-236-7883
Gary Patterson	USGS	303-236-5050
Randy Whetzel	BSC/LAP	295-4054
MARK WENTBURN	BSC/LAP	295-3952
Jim York	BSC	202-488-2303
Susan Lynch	State of NV	775-687-3744
John Kessler	EPRI	650-855-2069
STAN ECHOLS	ECG	202-537-1468
Eric Zwahlen	MTS/Gilder	702-794-5569
ERIC SMISTAD	DOE	702-794-8873
Bob Andrews	BSC	702 295 5549
Paul R. Diefen	LANH	702-295-3549
Rod McCallen	MEI	202-735-8082
TERRY CRUMP	BSC	702 295-4708
April Mel	DOE/YMP	702 794-5578
Bill Keamer	NRC	301-415-7000
Mike Markly	NRC	301-415-6885
PHILIP S. JUSTUS	U.S. NRC	702 794 5047
DAVID SASSANI	MTS/GAI	702-794-5501
Doag Brownson	BSC	702-295-4651
Jennivieve Novero	BSC/BAA	702-295-4050

Sign up Sheet 4.15.02

NRC/DOE meeting on KTI Agreement Item Status

Name	Organization	Phone #
John Bradbury	DWM	301-415-6597
King Stablein	NRC/DWM	301-415-7445
James Firth	NRC/DWM/EPAB	301-415-6628
Neil Coleman	HLWB	301-415-6615
David Brooks	HLWB	(301) 415-7284
John TRAPP	" "	301-415-8063
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James Firth	NRC/DWM/EPAB	301-415-6628
John TRAPP	" " " "	301-415-8063
Surdia Wastler	NRC/DWM/EPAB	301-415-8733
Tae Ahn	NRC/DWM/HLWB	301-415-5812
Neil Coleman	NRC/DWM/HLWB	301-415-6615
Jeffrey Pottle	NRC/DWM/HLWB	301-415-6703
Mevaj Rahimi	NRC/DWM/EPAB	301-415-6616
King Stablein	NRC/DWM/HLWB	301-415-7445

Attachment 5
Presentation Slides



U.S. Department of Energy
Office of Civilian Radioactive Waste Management

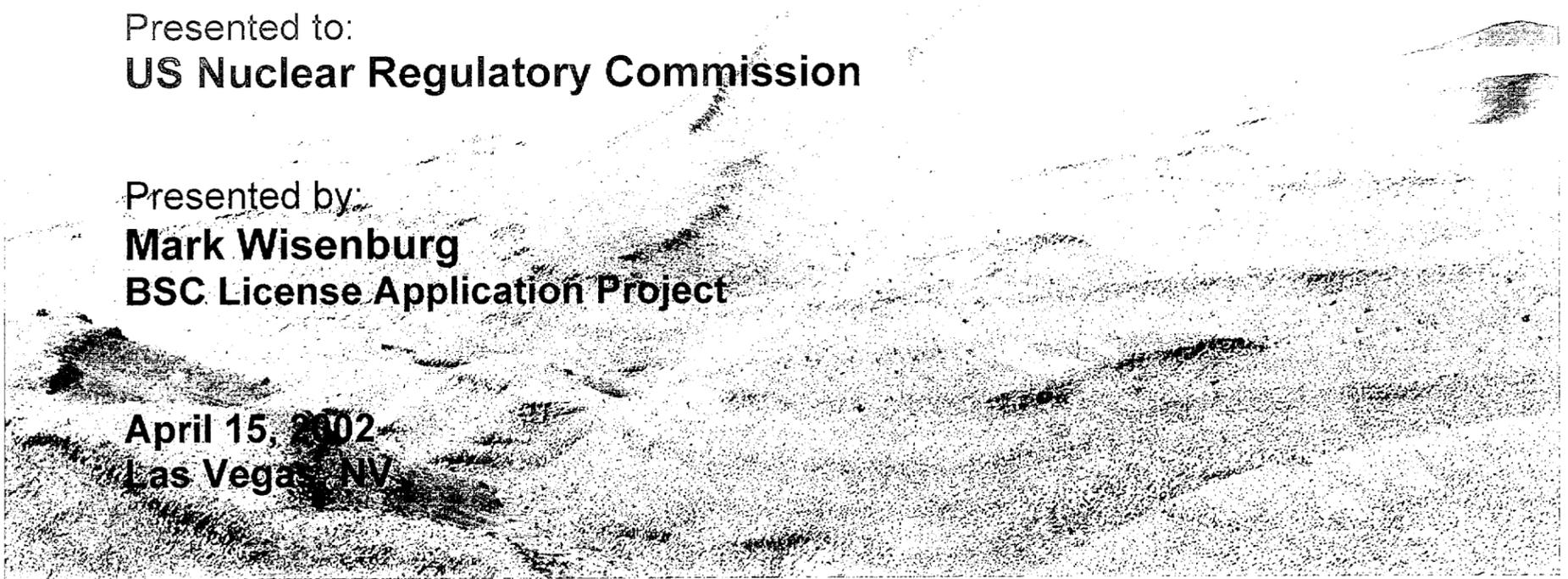


KTI Planning Strategy for December 2004 License Application

Presented to:
US Nuclear Regulatory Commission

Presented by:
Mark Wisenburg
BSC License Application Project

April 15, 2002
Las Vegas, NV



Key Technical Issue Agreement Summary

(reflects activities through April 9, 2002)

KTI ID	Agreements Reached (1)	Documentation Received for Agreement (3)	Documentation Partly Received for Agreement (4)	Documentation Not Received for Agreement	Need Additional Information (5)	Agreements Complete (2)
USFIC	27	0	1	22	0	4
IA	22	0	1	14	0	7
CLST	58	1	3	32	13	9
SDS	10	4	2	0	3	1
RT	29	1	2	22	2	2
ENFE	41	3	7	19	2	10
TEF	15	1	4	5	1	4
RDTME	23	0	2	21	0	0
TSPAI	58	0	0	57	0	1
PRE-C**	9	0	0	9	0	0
GEN	1	0	0	1	0	0
TOTAL	293	10	22	202	21	38

** Note: Pre-closure Safety is not considered a Key Technical Issue, but is listed as a topic of interest to the NRC.

1. The total of agreements reached between NRC and DOE at technical exchange meetings.
2. Agreements closed by NRC for which it has reviewed all documentation and has no further questions.
3. Agreements for which NRC has received all documentation but has not completed its review.
4. Agreements for which NRC has received a portion of the documents agreed to.
5. Agreements for which NRC has received complete or partial documentation, but has requested further information via a formal letter.

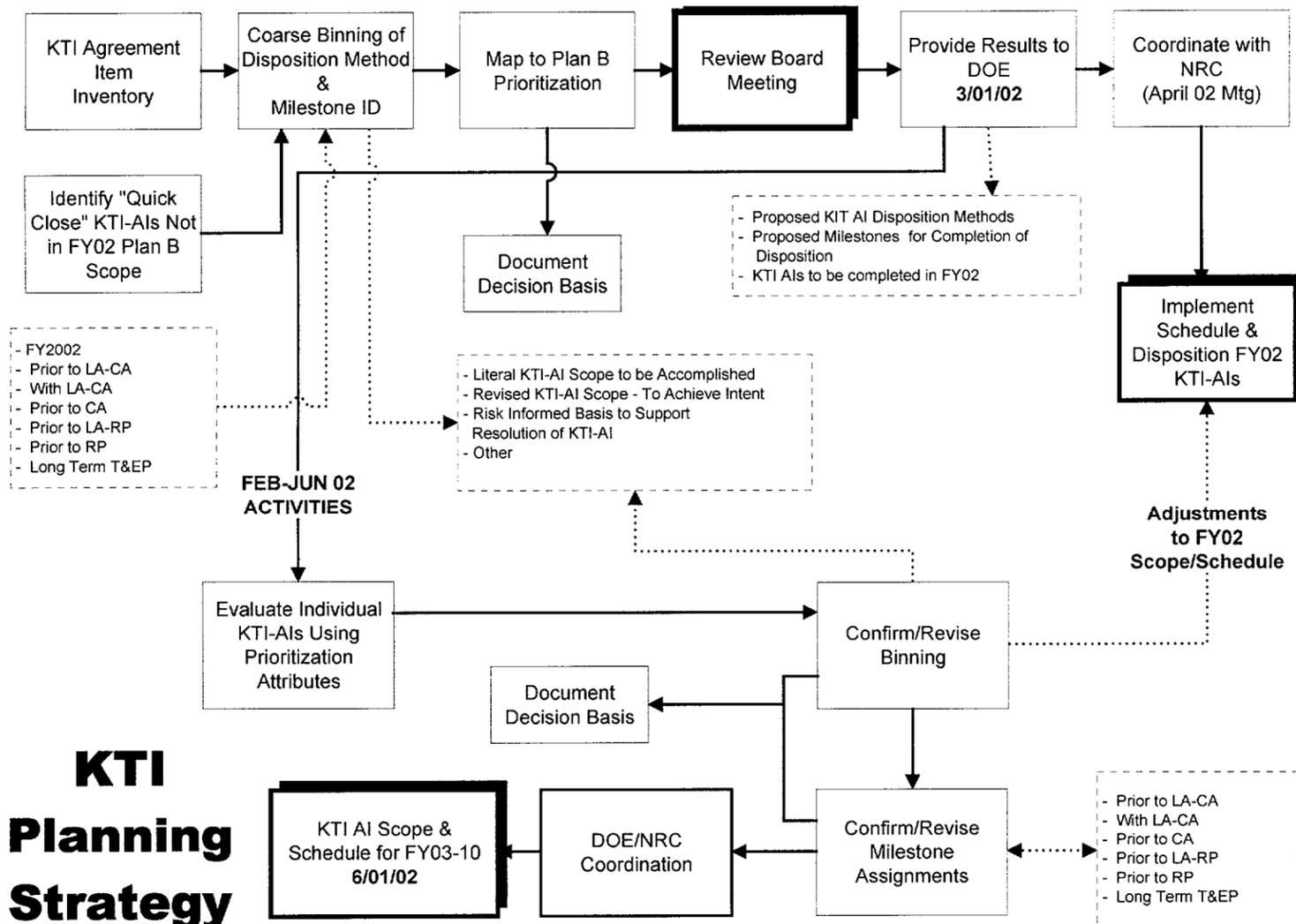


Key Technical Issues

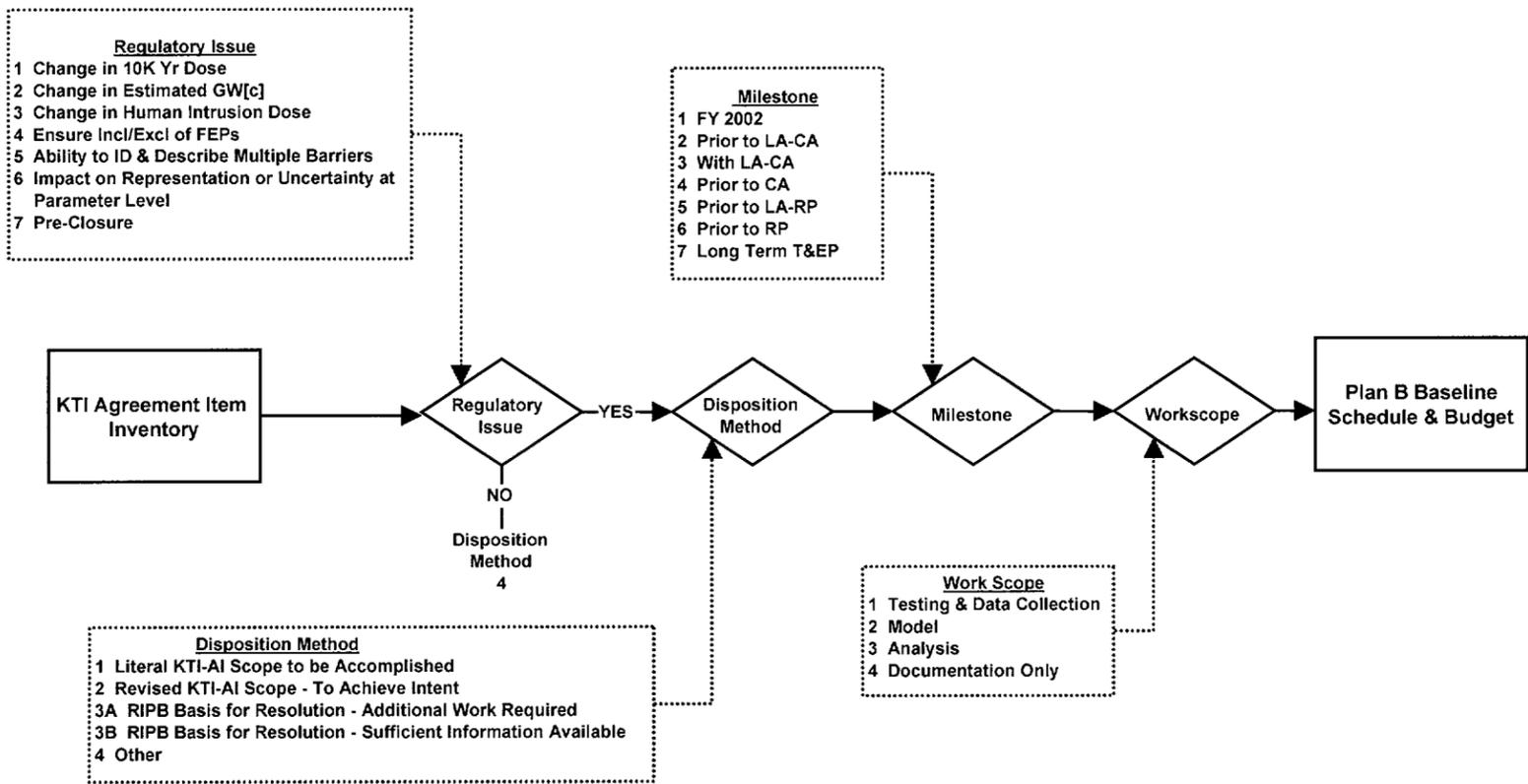
- **Prelicensing consultations on Key Technical Issues with NRC resulted in 293 agreement items**
- **Items currently being prioritized based on their risk significance**
- **All agreement items will be resolved at LA submittal but some will not be completed until later**
- **Some agreement items have been overcome by events based on new project approaches**



KTI Planning Strategy



KTI Binning



Definitions for Disposition Bins

- **Complete**
 - All sub-components of a KTI agreement are statused by the NRC as received, superceded by another agreement, or complete and there is no outstanding request for additional information (RAI) from the NRC. In the event NRC subsequently issues an RAI against a KTI agreement statused as complete, that KTI agreement will be reopened and statused accordingly
- **Bin 1 – Literal KTI-AI Scope to be Accomplished**
 - Additional analyses, modeling, data collection, testing or documentation will be provided to the NRC as specified and documented in the original KTI agreement during an NRC/DOE Technical Exchange. While the scope will be the same as stated in the original agreement, the schedule for submittal of the information to the NRC may be changed

Definitions for Disposition Bins

(Continued)

- **Bin 2 – Revised KTI-AI Scope – to Achieve Intent**
 - **Additional analyses, modeling, data collection, testing or documentation will be provided different from that specified and documented in the original KTI agreement during an NRC/DOE Technical Exchange. Even though the scope of information to be provided will be different than that originally documented in the KTI agreement during an NRC/DOE Technical Exchange (e.g., because of new information or a more efficient approach), DOE expects that the intent of the original agreement will be achieved. The schedule for submittal of the information to the NRC may also be changed from that stated in the original agreement**



Definitions for Disposition Bins

(Continued)

- **Bin 3 – Risk Informed Performance Based Basis to Support Resolution of KTI-AI**
 - Additional analyses and documentation that includes risk information will be provided to the NRC as an alternative basis for closure of the KTI agreement. Generally the risk information will demonstrate that the subject of the original KTI agreement does not contribute significantly to overall system performance. This disposition method will be used only where the risk information provides a rigorous and comprehensive justification for resolution of the KTI agreement

- **Bin 4 – Other**
 - DOE considers there is a basis for resolution as a result of changed circumstances, e.g., a change in design or licensing basis



KTI Agreement Item Disposition Bins

Bin #	Disposition Method Bin
1	Literal KTI-AI Scope to be Accomplished
2	Revised KTI-AI Scope - To Achieve Intent
3A	Risk Informed Basis to Support Resolution of KTI-AI / Additional Work Required
3B	Risk Informed Basis to Support Resolution of KTI-AI / Sufficient Information Available
4	Other
C	Complete



KTI Agreement Item Milestone Bins

Milestone #	Milestone
1	FY 2002
2	Prior to LA-CA
3	With LA-CA
4	Prior to CA
5	Prior to LA-RP
6	Prior to RP
7	Long Term T&EP

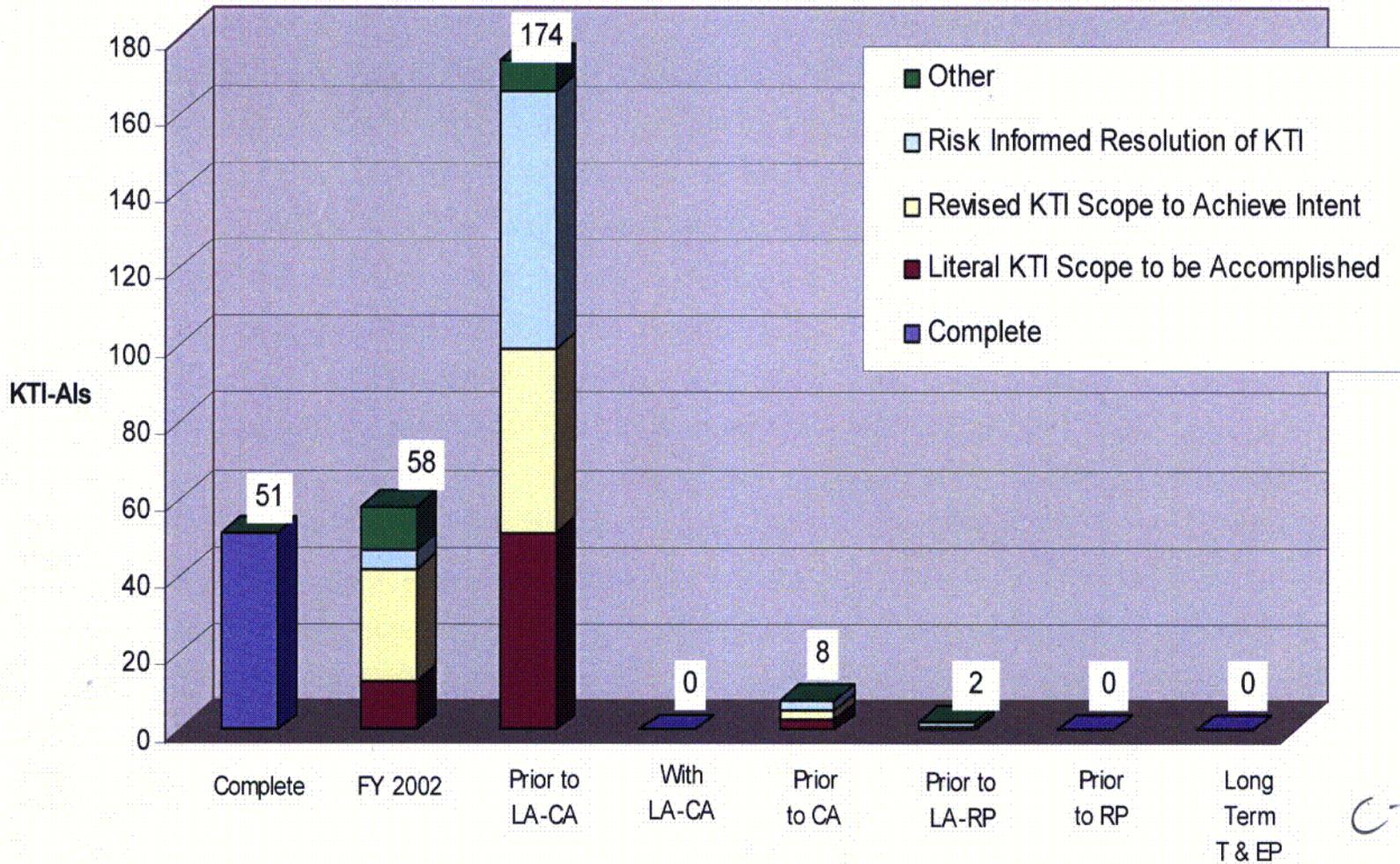
KTI Binning Summary

Disposition Method	Milestone								Total
	Complete	FY 02	Prior to LA-CA	With LA-CA	Prior to CA	Prior to LA-RP	Prior to RP	Long Term	
Complete	51	0	0	0	0	0	0	0	51
Literal Scope	0	13	51	0	3	0	0	0	67
Revised Scope	0	29	48	0	2	1	0	0	80
RIPB Resolution	0	5	67	0	3	1	0	0	76
Other	0	11	8	0	0	0	0	0	19
Total	51*	58	174	0	8	2	0	0	293

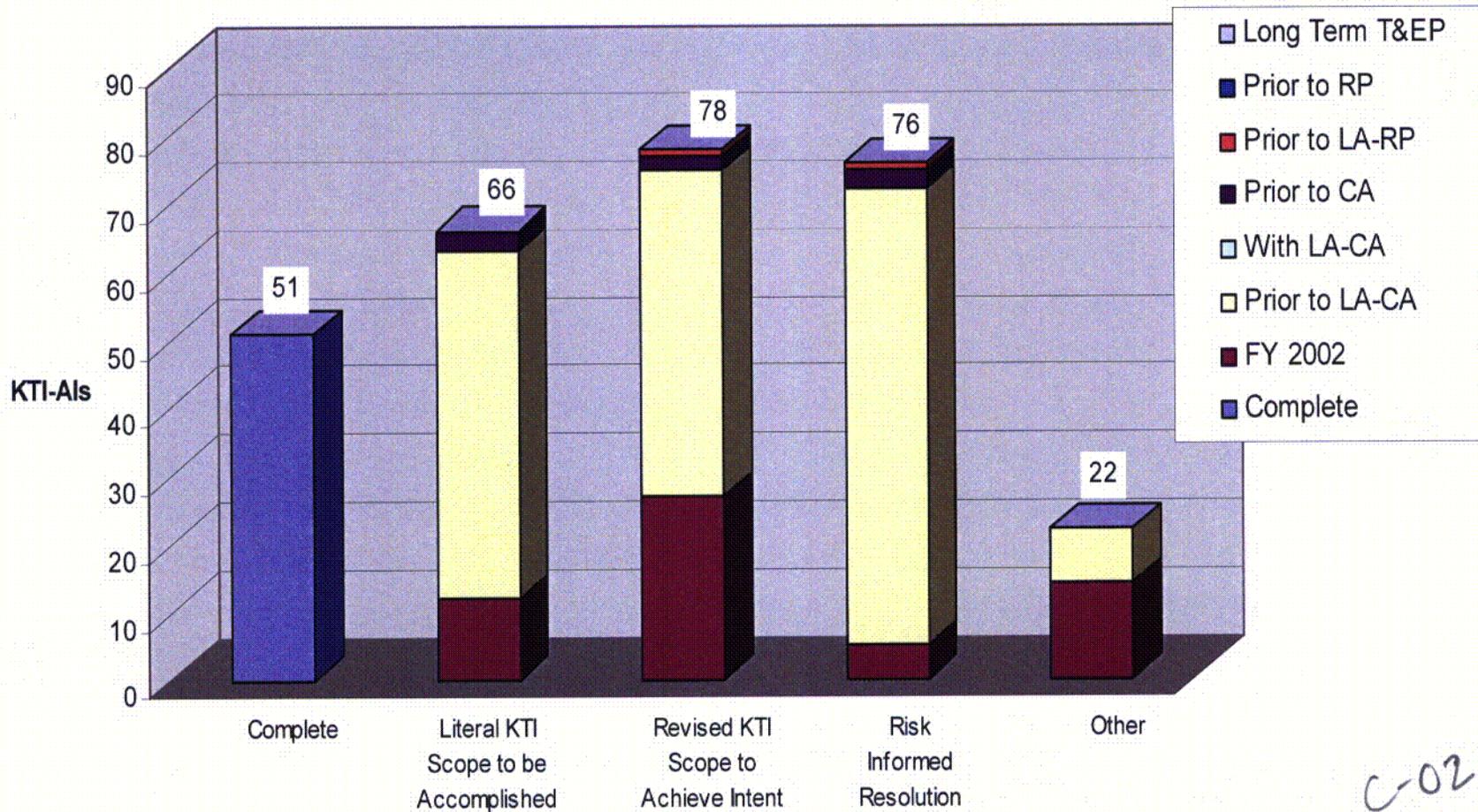
*Includes 38 KTI Agreement Items stated as "Complete" by the NRC and 13 KTI Agreement Items submitted by DOE for NRC review.



KTI Agreement Items by Milestone



KTI Agreement Items by Disposition Bin



C-02



Milestone FY02 - KTI Agreement Items

KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
CLST.1.05.01	KCL0105 Provide additional details on sensitivities, resolution of measurements, limitations, and deposition of silica for the high sensitivity probes. DOE will document the results of the sensitivity probes including limitation and resolution of measurements as affected by silica deposition in the Alloy 22 AMR and Ti Corrosion AMR (ANL-EBS-MD-000003 and ANL-EBS-MD-000004) prior to LA.	prior to LA	15-Jun-02	30-Jun-02	4	DOE considers this agreement item resolved because the test methodology has changed. High sensitivity probes will no longer be used. Information will be provided to NRC to demonstrate that the Agreement Item has been overtaken by events.
CLST.1.05.02	KCL0105 Provide additional details on sensitivities, resolution of measurements, limitations, and deposition of silica for the high sensitivity probes. DOE will document the results of the sensitivity probes including limitation and resolution of measurements as affected by silica deposition in the Alloy 22 AMR and Ti Corrosion AMR (ANL-EBS-MD-000003 and ANL-EBS-MD-000004) prior to LA.	prior to LA	15-Jun-02	30-Jun-02	4	DOE considers this agreement resolved because the test methodology has changed. High sensitivity probes will no longer be used. Information will be provided to NRC to demonstrate that the Agreement Item has been overtaken by events.
CLST.1.06	KCL0106 Provide the documentation on testing showing corrosion rates in the absence of silica deposition. DOE will document the results of testing in the absence of silica deposits in the revision of Alloy 22 AMR (ANL-EBS-MD-000003) prior to LA.	prior to LA	15-Jun-02	30-Jun-02	4	DOE considers this agreement item resolved. Information will be provided to NRC to demonstrate that silica is present at all times. Submittal will include discussion of potential beneficial or deleterious effects of silica free environment.
CLST.1.07	KCL0107 Provide documentation for the alternative methods to measure corrosion rates of the waste package materials (e.g., ASTM G-102 testing) or provide justification for the current approach. DOE will document the alternative methods of corrosion measurement in the revision of Alloy 22 AMR (ANL-EBS-MD-000003, prior to LA.	prior to LA	15-Jun-02	30-Jun-02	2	Scope of information to be provided to NRC is sufficient to close agreement. Method of documentation differs from Agreement text. Agreement will be addressed by letter that will contain justification of current approach. AMR to be updated at a later time. AMR not to be submitted and not needed for KTI closure.
CLST.1.17	KCL01017 Provide additional detail on quality assurance acceptance testing. DOE stated that it would provide guidance and criteria in the next revision of the Technical Guidance Document (TGD) for LA. The development of the LA sections and associated programs and process controls for the procurement and fabrication of waste package materials and components will be included. This will include consideration of the controls for compositional variations in Alloy 22. The TGD revision will be issued by June 2001, contingent upon NRC publication of the final 10 CFR 63 and the Yucca Mountain Review Plan.	01-Jul-01	15-Jun-02	30-Jun-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Agreement will be addressed by letter that will provide detail on QA acceptance testing which will be included in the LA Products and Guidance Database which has replaced the TGD.

Milestone FY02 - KTI Agreement Items

KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
CLST.2.07.01	KCL0207 Provide documentation for the fabrication process, control, and implementation of the phases which affect the TSPA model assumptions for the waste package (e.g., filler metal, composition range). DOE stated that updates of the documentation on the fabrication processes and controls (TDR-EBS-ND-000003, Waste Package Operations Fabrication Process Report and TDP-EBS-ND-000005, Waste Package Operations Closure Weld Technical Guidelines Document) will be available to the NRC in January 2001.	31-Jan-01	15-Jun-02	30-Jun-02	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text. Updated information to be provided via letter report. Submittal letter of 2/2/01 did not answer question.
CLST.2.07.02	KCL0207 Provide documentation for the fabrication process, control, and implementation of the phases which affect the TSPA model assumptions for the waste package (e.g., filler metal, composition range). DOE stated that updates of the documentation on the fabrication processes and controls (TDR-EBS-ND-000003, Waste Package Operations Fabrication Process Report and TDP-EBS-ND-000005, Waste Package Operations Closure Weld Technical Guidelines Document) will be available to the NRC in January 2001.	31-Jan-01	15-Jun-02	30-Jun-02	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text. Updated information to be provided via letter report. Submittal letter of 2/2/01 did not answer question.
CLST.5.06	KCL0506 Provide a "what-if" analysis to evaluate the impact of an early criticality assuming a waste package failure. DOE stated that it would provide the requested analyses prior to LA. Actual schedule to be provided pending DOE planning process.	prior to LA	15-Jun-02	1-Jul-02	4	DOE considers this agreement item resolved because consistent with the final 10CFR63 risk informed, performance based framework, postclosure criticality will be treated as any other FEP. Post closure criticality is expected to be screened out on the basis of probability. Information will be provided to NRC to demonstrate that the Agreement Item has been overtaken by events.
CLST.5.07	KCL0507 Provide sensitivity analyses that will include the most significant probability/consequence criticality scenarios. DOE stated that it would provide the requested analyses prior to LA. Actual schedule to be provided pending a DOE planning process.	prior to LA	15-Jun-02	1-Jul-02	4	DOE considers this agreement resolved because consistent with the final 10CFR63 risk informed performance based framework, postclosure criticality will be treated as any other FEP. Post closure criticality is expected to be screened out on the basis of probability. Information will be provided to NRC to demonstrate that the Agreement Item has been overtaken by events.
CLST.6.04	KCL0604 Provide temperature distribution (CCDF) of the drip shield as a function of time under the current EBS design. DOE stated that the temperature distribution will be provided in the next revision of the AMR, ANL-EBS-MD-000049, Rev 00, ICN 01, which will be available in January 2001.	31-Jan-01	1-Sep-02	15-Sep-02	1	DOE believes this agreement item should be closed because ANL-EBS-MD-000049, REV 00, ICN 02 was submitted to the NRC on Jan. 31, 2002. This document provides the information required under this agreement. THE TRANSMITTAL LETTER DID NOT MENTION THIS KTI.

Milestone FY02 - KTI Agreement Items

KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
ENFE.1.07.01	KEN0107 Provide physical evidence that supports the model of matrix fracture interaction precipitation effects (e.g., coring). The DOE will provide the following evidence that supports the model of matrix/fracture interaction precipitation effects: (1) Existing data from the Single Heater Test (SHT) of post-test overcoring Mineralogy-Petrology (Min-Pet) analysis (SHT final report [MOL.20000103.0634] and DTN LASL831151.AQ98.001) is expected to be provided to the NRC in March 2001. (2) Results of ongoing sidewall sampling Min-Pet analyses of DST samples are expected to be provided to the NRC in FY 02. (3) The DOE expects to provide the Drift-Scale Coupled Processes (DST and THC Seepage) Models AMR (MDL-NBS-HS-000001) Rev 01 to the NRC as evidence of matrix-fracture interaction in March 2001.	31-Mar-01	NA	NA Information has been submitted to NRC	2	Scope of information provided to NRC sufficient to close agreement [Issue is related to TSPA 3.28, TSPA 3.29, and RT 3.05]
ENFE.1.07.02	KEN0107 Provide physical evidence that supports the model of matrix fracture interaction precipitation effects (e.g., coring). The DOE will provide the following evidence that supports the model of matrix/fracture interaction precipitation effects: (1) Existing data from the Single Heater Test (SHT) of post-test overcoring Mineralogy-Petrology (Min-Pet) analysis (SHT final report [MOL.20000103.0634] and DTN LASL831151.AQ98.001) is expected to be provided to the NRC in March 2001. (2) Results of ongoing sidewall sampling Min-Pet analyses of DST samples are expected to be provided to the NRC in FY 02. (3) The DOE expects to provide the Drift-Scale Coupled Processes (DST and THC Seepage) Models AMR (MDL-NBS-HS-000001) Rev 01 to the NRC as evidence of matrix-fracture interaction in March 2001.	31-Mar-01	NA	NA Information has been submitted to NRC	2	Scope of information provided to NRC sufficient to close agreement. Issue is related to TSPA 3.28, TSPA 3.29, and RT 3.05]
ENFE.1.07.03	KEN0107 Provide physical evidence that supports the model of matrix fracture interaction precipitation effects (e.g., coring). The DOE will provide the following evidence that supports the model of matrix/fracture interaction precipitation effects: (1) Existing data from the Single Heater Test (SHT) of post-test overcoring Mineralogy-Petrology (Min-Pet) analysis (SHT final report [MOL.20000103.0634] and DTN LASL831151.AQ98.001) is expected to be provided to the NRC in March 2001. (2) Results of ongoing sidewall sampling Min-Pet analyses of DST samples are expected to be provided to the NRC in FY 02. (3) The DOE expects to provide the Drift-Scale Coupled Processes (DST and THC Seepage) Models AMR (MDL-NBS-HS-000001) Rev 01 to the NRC as evidence of matrix-fracture interaction in March 2001.	FY 2002	15-Sep-02	30-Sep-02	1	Data collected after AMR - MDL-NBS-HS-000001 Rev 01 ICN 01 will be submitted via letter report. [Issue is related to TSPA 3.28, TSPA 3.29, and RT 3.05]
ENFE.2.07	KEN0207 Identify specific coupling relationships that are included and excluded from TSPA, including Onsager couples, and give technical bases for their inclusion or exclusion. The DOE will identify specific coupling relationships that are included and excluded from TSPA, including Onsager couples, and give the technical basis for inclusion and exclusion. This information will be documented in a revision to the Engineered Barrier System Degradation, Flow, and Transport PMR (TDR-EBS-MD-000006), expected to be available by September 2001.	09-30-01	1-Sep-02	30-Sep-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Information will be provided via letter report. PMR will not be revised.

Milestone FY02 - KTI Agreement Items

KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
ENFE.2.08	KEN0208 Provide stronger technical basis for the suppression of individual minerals predicted by equilibrium models. The DOE will provide additional technical basis for suppression of individual minerals predicted by equilibrium models, in a revision to the Engineered Barrier System: Physical and Chemical Environment Model AMR (ANL-EBS-MD-000033), expected to be available in FY02.	FY 2002	1-Sep-02	15-Sep-02	1	Scope of information to be provided to NRC as stated in Agreement text.
ENFE.4.06.02	KEN0406 Provide documentation to demonstrate suitability of the bounding values used for colloid transport through the perturbed near-field environment. For example, consider sensitivity analyses to investigate the effects of varying colloid sorption parameters (Kc) on repository performance. The DOE will evaluate the suitability of the colloid transport model under perturbed conditions as discussed in agreement #3 for this subissue. As part of this work, the DOE will consider sensitivity analyses to investigate the effects of varying colloid sorption parameters (Kc) on repository performance. The DOE will also provide the TSPA-SR (TDR-WIS-PA-000001) Rev 00 ICN 01 in January 2001. The TSPA-SR includes sensitivity studies in the form of barrier degradation and parameter sensitivity analyses that investigate the effect of sorption and colloid parameters on repository performance.	FY 2002	Will be submitted in FY 2003	Will be submitted in FY2003	1	Scope of information to be provided to NRC as stated in Agreement text.
IA.1.02	KIA0102 Examine new aeromagnetic data for potential buried igneous features (see U.S. Geological Survey Open-File Report 00-188, on-line version 1.0), and evaluate the effect on the probability estimate. If the data survey specifications are not adequate for this use, this action is not required. (AC 1-7) DOE agreed and its initial evaluation of the report with proposed actions resulting from the review will be available to the NRC by October 11, 2000. will document the results of the evaluation in an update to the AMR, <i>Characterize Framework for Igneous Activity at Yucca Mountain, Nevada</i> (ANL-MGR-GS-000001), expected to be available in FY 2003.	11-Oct-00	30-Aug-02	16-Sep-02	1	Scope of information to be provided to NRC as stated in Agreement text. Letter report with results of PSHA sensitivity and reference to USGS OFR-02-020 will be submitted to NRC.
IA.2.02	KIA0202 Document results of sensitivity studies for particle size, consistent with the above item. (Eruptive AC-1) DOE agreed and will document the waste particle size sensitivity study in a calculation document. This will be available to the NRC in FY2002.	FY 2002	31-Jul-02	14-Aug-02	2	This information is documented in the SSPA Vols. I and II. Letter report will be submitted to NRC summarizing information in SSPA Vol I, sec 14.3.3.4 and Vol II, sec 3.3.1.2.2.
IA.2.03	KIA0203 Document how the tephra volumes from analog volcanoes represent the likely range of tephra volumes from Yucca Mountain Region (YMR) volcanoes. (Eruptive AC-1) DOE agreed and will document the basis for determining the range of tephra volumes that is likely from possible future volcanoes in the YMR in the Eruptive Processes AMR (ANL-MGR-GS-000002). This will be available to the NRC in FY2002.	FY 2002	31-May-02	14-Jun-02	2	The basis for tephra volumes is documented in Table 4 of ANL-MGR-GS-000001. Letter report summarizing information in ANL-MGR-GS-000001, Table 4 will be submitted to NRC.

Milestone FY02 - KTI Agreement Items

KTID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
IA.2.09	KIA0209 Use the appropriate wind speeds for the various heights of eruption columns being modeled. (Eruptive AC-5) DOE agreed and will evaluate the wind speed data appropriate for the height of the eruptive columns being modeled. This will be documented in a calculation document. This will be available to the NRC in FY 2002.	FY 2002	31-May-02	14-Jun-02	2	This information is documented in the SSPA Vols. I and II. Letter report will be submitted to NRC summarizing information in SSPA Vol 1, sec 14.3.3.4 and Vol II, sec 3.3.1.2.1 and noting that TSPA-LA will use data from Desert Rock.
IA.2.10.03	KIA02010 Document the ICNs to the Igneous Consequences AMR and the Dike Propagation AMR regarding the calculation of the number of waste packages hit by the intrusion. Include in these or other documents (1) the intermediate results of releases from Zone 1 and 2, separately, and (2) the evaluation of thermal and mechanical effects, as well as shock, in assessing the degree of waste package damage in Zone 1 and 2. (Intrusive AC-1 to 4) DOE agreed and will provide ICN 1 of the following AMRs: Igneous Consequence Modeling for TSPA-SR [ANL-WIS-MD-000017], Dike Propagation Near Drifts [ANL-WIS-MD-000015], Characterize Framework for Igneous Activity at Yucca Mountain, Nevada [ANL-MGR-GS-000001], and the calculation Number of Waste Packages Hit by Igneous Intrusion [CAL-WIS-PA-000001]. This will be available to the NRC in January 2001. DOE will provide the results showing the relative contributions of releases from Zones 1 and 2 in a calculation document. This will be available to the NRC in FY2002. (Intrusive AC-1 to 4) DOE will provide the evaluation of thermal mechanical effects on waste package damage in Zones 1 and 2 in ICN 1 of the Dike Propagation Near Drifts AMR [ANL-WIS-MD-000015]. This will be available to the NRC in January 2001	31-Jan-01	14-Jun-02	1-Jul-02	4	DOE believes this agreement item should be resolved because magma drift interactions are being addressed as part of Agreement Item IA.2.18. Zone 1 and Zone 2 releases are discussed in the SSPA Vol. I and Vol. II. This documentation will not be carried forward to the LA because incremental doses from the Zones are not licensing criteria. The thermal effects on waste package damage are being addressed as part of Agreement Item IA.2.19. Letter report documenting this will be submitted to the NRC as basis for closure of this Agreement Item.
IA.2.10.04	KIA02010 Document the ICNs to the Igneous Consequences AMR and the Dike Propagation AMR regarding the calculation of the number of waste packages hit by the intrusion. Include in these or other documents (1) the intermediate results of releases from Zone 1 and 2, separately, and (2) the evaluation of thermal and mechanical effects, as well as shock, in assessing the degree of waste package damage in Zone 1 and 2. (Intrusive AC-1 to 4) DOE agreed and will provide ICN 1 of the following AMRs: Igneous Consequence Modeling for TSPA-SR [ANL-WIS-MD-000017], Dike Propagation Near Drifts [ANL-WIS-MD-000015], Characterize Framework for Igneous Activity at Yucca Mountain, Nevada [ANL-MGR-GS-000001], and the calculation Number of Waste Packages Hit by Igneous Intrusion [CAL-WIS-PA-000001]. This will be available to the NRC in January 2001. DOE will provide the results showing the relative contributions of releases from Zones 1 and 2 in a calculation document. This will be available to the NRC in FY2002. (Intrusive AC-1 to 4) DOE will provide the evaluation of thermal mechanical effects on waste package damage in Zones 1 and 2 in ICN 1 of the Dike Propagation Near Drifts AMR [ANL-WIS-MD-000015]. This will be available to the NRC in January 2001.	FY 2002	30-Aug-02	16-Sep-02	4	DOE believes this agreement item should be resolved because magma drift interactions are being addressed as part of Agreement Item IA.2.18. Zone 1 and Zone 2 releases are discussed in the SSPA Vol. I and Vol. II. This documentation will not be carried forward to the LA because incremental doses from the Zones are not licensing criteria. The thermal effects on waste package damage are being addressed as part of Agreement Item IA.2.19. Letter report documenting this will be submitted to the NRC as basis for closure of this Agreement Item.

Milestone FY02 - KTI Agreement Items

KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
IA.2.10.05	KIA02010 Document the ICNs to the Igneous Consequences AMR and the Dike Propagation AMR regarding the calculation of the number of waste packages hit by the intrusion. Include in these or other documents (1) the intermediate results of releases from Zone 1 and 2, separately, and (2) the evaluation of thermal and mechanical effects, as well as shock, in assessing the degree of waste package damage in Zone 1 and 2. (Intrusive AC-1 to 4) DOE agreed and will provide ICN 1 of the following AMRs: Igneous Consequence Modeling for TSPA-SR [ANL-WIS-MD-000017], Dike Propagation Near Drifts [ANL-WIS-MD-000015], Characterize Framework for Igneous Activity at Yucca Mountain, Nevada [ANL-MGR-GS-000001], and the calculation Number of Waste Packages Hit by Igneous Intrusion [CAL-WIS-PA-000001]. This will be available to the NRC in January 2001. DOE will provide the results showing the relative contributions of releases from Zones 1 and 2 in a calculation document. This will be available to the NRC in FY2002. (Intrusive AC-1 to 4) DOE will provide the evaluation of thermal mechanical effects on waste package damage in Zones 1 and 2 in ICN 1 of the Dike Propagation Near Drifts AMR [ANL-WIS-MD-000015]. This will be available to the NRC in January 2001	31-Jan-01	14-Jun-02	1-Jul-02	4	DOE believes this agreement item should be resolved because magma drift interactions are being addressed as part of Agreement Item IA.2.18. Zone 1 and Zone 2 releases are discussed in the SSPA Vol. I and Vol. II. This documentation will not be carried forward to the LA because incremental doses from the Zones are not licensing criteria. The thermal effects on waste package damage are being addressed as part of Agreement Item IA.2.19. Letter report documenting this will be submitted to the NRC as basis for closure of this Agreement Item.
IA.2.12	KIA02012 - Provide clarifying information on how PM10 measurements have been extrapolated to TSP Concentrations. This should include consideration of the difference in behavior between PM10 and TSP particulates under both static and disturbed conditions. DOE will provide clarifying information on how PM10 measurements have been extrapolated to TSP concentrations. This will include consideration of the difference in behavior between PM10 and TSP particulates under both static and disturbed conditions in a subsequent revision to the AMR Input Parameter Values for External and Inhalation Radiation Exposure Analysis (ANL-MGR-MD-000001) or equivalent document. This will be available to the NRC in FY02.	FY 2002	15-May-02	30-May-02	4	DOE believes this agreement item should be resolved because methodology has changed. Information will be provided to NRC in a letter report to address the change in approach using the TSP parameter values PM10 values for calculation of BDCFs. Conservatism to be addressed.
IA.2.13	KIA02013 - Provide the justification that sampling of range of transition period BDCFs is necessarily conservative in evaluating long-term remobilization processes. DOE will provide the justification that sampling of range of transition period BDCFs is necessarily conservative in evaluating long-term remobilization processes in a subsequent revision to the AMR Input Parameter Values for External and Inhalation Radiation Exposure Analysis (ANL-MGR-MD-000001) or equivalent document. This will be available to the NRC in FY02.	FY 2002	NA	NA	4	Integrated Biosphere TSPA & IA issue. Remobilization processes will be completely addressed in response to IA.2.17. This Agreement Item will be consolidated with IA.2.17. at the 4/15-16/02 NRC/DOE meeting. IA.2.17 may need to be re-worded.

Milestone FY02 - KTI Agreement Items

KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
IA.2.16	KIA02016 - Document that neglecting the effects of climate change on disruptive event BDCFs is conservative. DOE will document that neglecting the effects of climate change on disruptive event BDCFs is conservative in a subsequent revision to the AMRs Input Parameter Values for External and Inhalation Radiation Exposure Analysis (ANL-MGR-MD-000001) and Disruptive Event Biosphere Dose Conversion Factor Analysis (ANL-MGR-MD-000003) or equivalent document. This will be available to the NRC in FY02.	FY 2002	15-Jun-02	30-Jun-02	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text. Letter to explain that info is already included in document and explain the technical basis for climate change impact on BDCFs used for TSAP-SR and the approach for LA, as appropriate.
PRE.03.01.01	PRE.03.01 - Provide a plan for identification and estimation of aircraft hazards for the license application. This plan should be consistent with the guidelines in NUREG-0800 and other applicable DOE standards, as appropriate, to a nuclear waste repository. Provide a map delineating the vicinity to be considered in the detailed analysis, taking into consideration available information for civilian and military aircraft, including information from federal and local agencies concerning how such activities may reasonably change. Participate in an Appendix 7 meeting to discuss the aircraft hazards plan, initial data collection and analysis, development of the vicinity map, and the appropriate level of detail for analyses to be presented in the license application assessment. DOE agrees with the request and will provide the plan and map in June 2002. DOE agrees to participate in an Appendix 7 meeting which will be scheduled after the plan and map are provided.	30-Jun-02	15-Jun-02	30-Jun-02	1	Scope of information to be provided to NRC as stated in Agreement text.
PRE.03.01.02	PRE.03.01 - Provide a plan for identification and estimation of aircraft hazards for the license application. This plan should be consistent with the guidelines in NUREG-0800 and other applicable DOE standards, as appropriate, to a nuclear waste repository. Provide a map delineating the vicinity to be considered in the detailed analysis, taking into consideration available information for civilian and military aircraft, including information from federal and local agencies concerning how such activities may reasonably change. Participate in an Appendix 7 meeting to discuss the aircraft hazards plan, initial data collection and analysis, development of the vicinity map, and the appropriate level of detail for analyses to be presented in the license application assessment. DOE agrees with the request and will provide the plan and map in June 2002. DOE agrees to participate in an Appendix 7 meeting which will be scheduled after the plan and map is provided.	30-Jun-02	1-Jul-02	15-Jul-02	1	Scope of information to be provided to NRC as stated in Agreement text.
PRE.06.01	PRE.06.01 - Provide the update to Quality Assurance Procedure QAP 2-3. DOE agreed to provide the procedure. The procedure will be available in February 2002.	28-Feb-02	15-Mar-02	30-Mar-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Procedure number is changed.

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KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
PRE.06.02	PRE.06.02 - Provide the Integrated Safety Analysis Guide. DOE agreed to provide the guide. The guide will be available in February 2002.	28-Feb-02	15-Mar-02	30-Mar-02	1	Scope of information to be provided to NRC as stated in Agreement text.
RDTME.3.14	KRD03014 Provide the results of the ventilation modeling being conducted at the University of Nevada-Reno (Multi-Flux code) and validation testing at the Atlas Facility (validation of the ventilation model based on the ANSYS code), including: 1) the technical bases for the adequacy of discretization used in these models and 2) the technical bases for the applicability of the modeling results to prediction of heat removal from the repository. The DOE will provide the results of the ventilation tests in a update to the Ventilation Model, ANL-EBS-MD-000030, analysis and model report including: 1) the technical bases for the adequacy of discretization used in these models and 2) the technical bases for the applicability of the modeling results to prediction of heat removal from the repository. This is expected to be available to NRC in FY 2002.	FY 2002	15-Aug-02	1-Sep-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Letter report will be provided to NRC.
RT.2.03	KRT0203 Provide a detailed testing plan for alluvial testing (the ATC and Nye County Drilling Program) to reduce uncertainty (for example, the plan should give details about hydraulic and tracer tests at the well 19 complex and it should also identify locations for alluvium complex testing wells and tests and logging to be performed). NRC will review the plan and provide comments, if any, for DOE's consideration. In support and preparation for the October/November 2000 Saturated Zone meeting, DOE provided work plans for the Alluvium Testing Complex and the Nye County Drilling Program (FWP-SBD-99-002, Alluvial Tracer Testing Field Work Package, and FWP-SBD-99-001, Nye County Early Warning Drilling Program, Phase II and Alluvial Testing Complex Drilling). DOE will provide test plans of the style of the Alcove 8 plan as they become available. The plan will be amended to include laboratory testing. In addition, the NRC onsite Representative attends DOE/Nye County planning meetings and is made aware of all plans and updates to plans as they are made. [THIS AGREEMENT IS SIMILAR TO USFIC (SZ) KTI SUBISSUE 5, AGREEMENT #3.]	None specified	29-Mar-02	15-Apr-02	1	Scope of information to be provided to NRC as stated in Agreement text. Testing Plan for Alluvial testing will be complete by mid-March. - Provide a letter report describing the ATC field-testing.
RT.2.04	KRT0204 The NRC needs DOE to document the pre-test predictions for the ATC. DOE will document pretest predictions for the Alluvial Testing Complex in the SZ In Situ Testing AMR available in October 2001.	31-Oct-01	29-Mar-02	15-Apr-02	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text. Test Plan for Alluvial testing will be complete by mid-March. - Narrative with figures, describing pre-test predictions for the ATC, based on the draft In Situ Testing AMR will be included in a letter report.

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KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
RT.2.05	KRT0205 Provide the laboratory testing plan for laboratory radionuclide transport studies. NRC will review the plan and provide comments, if any, for DOE's consideration. In support and preparation for the October/November 2000 Saturated Zone meeting, DOE provided work plans for the Alluvium Testing Complex and the Nye County Drilling Program (FWP-SBD-99-002, Alluvial Tracer Testing Field Work Package, and FWP-SBD-99-001, Nye County Early Warning Drilling Program, Phase II and Alluvial Testing Complex Drilling). DOE will provide test plans of the style of the Alcove 8 plan as they become available. The plan will be amended to include laboratory testing. In addition, the NRC On Site Representative attends DOE/Nye County planning meetings and is made aware of all plans and updates to plans as they are made.	None specified	Information will be provided in FY 2003	Information will be provided in FY2003	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text..
RT.2.09	KRT0209 Provide the hydro-stratigraphic cross-sections that include the Nye County data. DOE will provide the hydrostratigraphic cross sections in an update to the Hydrogeologic Framework Model for The Saturated Zone Site-Scale Flow and Transport Model AMR expected to be available during FY 2002, subject to availability of Nye County data. [THIS AGREEMENT IS SAME AS THAT IN USFIC (SZ) KTI SUBISSUE 5, AGREEMENT #5.]	FY 2002	29-May-02	15-Jun-02	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text. Work complete - cross sections prepared & will be submitted as a standalone letter report.
RT.3.08	KRT0308 Provide justification that microspheres can be used as analogs for colloids (for example, equivalent ranges in size, charge, etc.). DOE will provide documentation in the C-Wells AMR to provide additional justification that microspheres can be used as analogs for colloids. The C-Wells AMR will be available to the NRC in October 2001.	31-Oct-01	8-Apr-02	30-Apr-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Narrative justification for using microspheres as analogs for colloids in the C-wells tests to be taken from the draft In Situ Testing AMR and submitted via letter report to NRC. Same as USFIC.6.0.4.
RT.3.09	KRT0309 Provide the documentation for the C-wells testing. Use the field test data or provide justification that the data from the laboratory tests is consistent with the data from the field tests. DOE will provide the C-Wells test documentation and will either use the test data or provide a justified reconciliation of the lab and field test data in the C-Wells AMR available in October 2001. [THIS AGREEMENT IS SIMILAR TO THAT IN USFIC (SZ) KTI SUBISSUE 6, AGREEMENT #4.]	31-Oct-01	3-Jun-02	15-June-02	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text. Narrative with figures, describing C-wells testing, justifying that data from laboratory testing is consistent with the field test data will be submitted via letter report to NRC.

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KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
SDS.3.01.02	KSD0301 The ECRB long-term test and the Alcove 8 Niche 3 test need to be "fractured-informed" (i.e., observation of seepage needs to be related to observed fracture patterns). Provide documentation which discusses this aspect. DOE responded that for the passive test, any observed seepage will be related to full periphery maps and other fracture data in testing documentation. The documentation will be available by any potential LA. For Niche 3, fracture characterization is delivered and a 3-D representation will be included in testing documentation. The documentation will be available August 2001.	prior to LA	Information to be submitted in FY2003	Information to be submitted in FY 2003	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text. Letter report explaining that ECRB mapping has been done. Bulkhead testing in the ECRB is a long-term program. If seepage is found during this bulkhead test, appropriate correlations will be done to tie the seepage to mapped fractures. The current plan is to collect chemical and isotopic data from the bulkhead test. A letter report will be prepared to present existing mapping and seepage observation data for both Alcove 8-Niche 3 and cross drift tests.
SDS.3.03.01	KSD0303 The NRC needs to review the Fracture Geometry Analysis for the Stratigraphic Units of the Repository Host Horizon AMR. The NRC will provide feedback and proposed agreements to DOE, if needed, by December 2000.	None Specified	31-May-02	14-Jun-02	4	. The DOE submitted the AMR, Fracture Geometry Analysis for the Stratigraphic Units of the Repository Host Horizon, to the NRC, and the NRC reviewed the AMR. Based on the submittal and review, DOE believes that the agreement item has been addressed and should be closed. Based on it review, the NRC identified 8 information needs in a letter dated August 3, 2001. DOE has revised its method for rockfall analysis, and is developing a letter report that outlines the revised method and addresses each of the NRC's information needs. That letter is scheduled for submittal to the NRC on June 14, 2002. DOE no longer plans to revise ANL-EBS-GE-000006 (the fracture AMR).
SDS.3.03.02	KSD0303 The NRC needs to review the Fracture Geometry Analysis for the Stratigraphic Units of the Repository Host Horizon AMR. The NRC will provide feedback and proposed agreements to DOE, if needed, by December 2000.	31-Dec-00	31-May-02	14-Jun-02	4	The DOE submitted the AMR, Fracture Geometry Analysis for the Stratigraphic Units of the Repository Host Horizon, to the NRC, and the NRC reviewed the AMR. Based on the submittal and review, DOE believes that the agreement item has been addressed and should be closed. Based on it review, the NRC identified 8 information needs in a letter dated August 3, 2001. DOE has revised its method for rockfall analysis, and is developing a letter report that outlines the revised method and addresses each of the NRC's information needs. That letter is scheduled for submittal to the NRC on June 14, 2002. DOE no longer plans to revise ANL-EBS-GE-000006 (the fracture AMR).

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KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
TEF 2.03.04	KTE0203 Provide the following references: Multi-Scale Thermohydrologic Model AMR, ICN 01; Abstraction of Near Field Environment Drift Thermodynamic and Percolation Flux AMR, ICN 01; Engineered Barrier System Degradation Flow and Transport PMR, Rev. 01; and Near Field Environment PMR, ICN 03.	30-Sep-001	NA	NA	4	Item will be closed by NRC at the 4/15-16/02 NRC/DOE meeting.
TEF 2.06.02	KTE0206 Provide the detailed test plan for Phase III of the ventilation test, and consider NRC comments, if any. The DOE will provide a detailed test plan for the Phase III ventilation test in March 2001. The NRC comments will be provided no later than two weeks after receipt of the test plan, and will be considered by the DOE prior to test initiation.	31-Mar-01	14-Jun-01	28-Jun-01	4	DOE believes this agreement item should be resolved because the tests have been deleted. Letter report will provide information to NRC to describe the basis for deleting the test.
TEF 2.07.02	KTE0207 Provide the Ventilation Model AMR, Rev. 01 and the Pre-Test Predictions for Ventilation Test Calculation, Rev. 00. The DOE will provide the Ventilation Model AMR (ANL-EBS-MD-000030) Rev 01 to the NRC in March 2001. Note that ventilation test data will not be incorporated in the AMR until FY02. Test results will be provided in an update to the Ventilation Model AMR (ANL-EBS-MD-000030) in FY02. The DOE will provide the Pre-test Predictions for Ventilation Tests (CAL-EBS-MD-000013) Rev 00 to the NRC in February 2001.	FY 2002	15-Mar-02	15-Apr-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Letter report will be provided to NRC.
TSPAI 1.01	TSPAI.1.01 - Provide enhanced descriptive treatment for presenting barrier capabilities in their final approach for demonstrating multiple barriers. Provide discussion of the capabilities of individual barriers, in light of existing parameter uncertainty (e.g., in barrier and system characteristics) and model uncertainty. DOE will provide enhanced descriptive treatment for presenting barrier capabilities in the final approach for demonstrating multiple barriers. DOE will also provide discussion of the capabilities of individual barriers, in light of existing parameter uncertainty (e.g., in barrier and system characteristics) and model uncertainty. The information will be documented in TSPA Methods and Assumptions document, expected to be available to NRC in FY 2002, for any potential license application.	FY 2002	23-Sep-02	30-Sep-02	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text. Multiple barrier approach documented in the M&A document. The qualitative description of each barrier documented in the AMR that will be submitted in response to TSPAI 1.02 in FY03.

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KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
TSPAI 2.05	<p>TSPAI.2.05 -It is not clear to the NRC that the current list of FEPs (i.e., the list of FEPs documented in TDR-WIS-MD-000003, 00/01) is sufficiently comprehensive or exhibits the necessary attribute of being auditable (e.g., transparent and traceable). As discussed in the two TSPAI technical exchanges, there are unclear aspects of the approach that DOE plans to use to develop the necessary documentation of those features, events, and processes that they have considered. Accordingly, to provide additional confidence that the DOE will provide NRC with: (1) auditable documentation of what has been considered by the DOE, (2) the technical basis for excluding FEPs, and (3) an indication of the way in which included FEPs have been incorporated in the performance assessment; DOE will provide NRC with a detailed plan (the Enhanced FEP Plan) for comment. In the Enhanced FEP Plan, DOE will address the following items: (1) the approach used to develop a pre-screening set of FEPs (i.e., the documentation of those things that DOE considered and which the DOE would use to provide support or a potential license application, (2) the guidance on the level-of-detail that DOE will use for redefining FEPs during the enhanced FEP process, (3) the form that the pre-screening list of FEPs will take (e.g., list, database, other descriptions), (4) the approach DOE would use for the ongoing evaluation of FEPs (e.g., how to address potentially new FEPs), (5) the approach that DOE would use to evaluate and update the existing scope and description of FEPs, (6) the approach that DOE would use to improve the consistency in the level of detail among FEPs, (7) how the DOE would evaluate the results of its efforts to update the existing scope and definition of FEPs, (8) how the Enhanced FEP process would support assertions that the resulting set of FEPs will be sufficiently comprehensive (e.g., represents a wide range of both beneficial and potential adverse effects on performance) to reflect clearly what DOE has considered, (9) how DOE would indicate their disposition of included FEPs in the performance assessment, (10) the role and definition of the different hierarchical levels used to document the information (e.g., components of FEPs and modeling issues), (11) how the hierarchical levels used to document the information would be used within DOE's enhanced FEP process, (12) how the Enhanced FEP Plan would result in documentation that facilitates auditing (i.e., lead to a process that is transparent and traceable), (13) DOE's plans for using configuration management controls to identify FEP dependencies on ongoing work and design changes. DOE will provide the Enhanced Plan to NRC by March 2002.</p>	01-Mar-02	27-Mar-02	29-Mar-02	2	Scope of information to be provided to NRC sufficient to close agreement. Enhanced FEP Plan will be documented in a letter report.

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TSPAI 2.06	TSPAI.2.06 - Provide justification for the approach to: (1) the level of detail used to define FEPs; (2) the degree of consistency among FEPs; and (3) comprehensiveness of the set of FEPs initially considered (i.e., before screening). DOE proposes to meet with NRC periodically to provide assessments of the DOE's progress, once it has initiated the Enhanced FEP process, and on changes to the approach documented in the Enhanced FEP Plan. During these progress meetings DOE agrees to provide a justification for their approach to: (1) the level of detail used to define FEPs; (2) the degree of consistency among FEPs; and (3) comprehensiveness of the pre-screening set of FEPs.		22-Mar-02	29-Mar-02	2	Recommend closing agreement based on periodic progress reports to be agenda items for Quarterly QA/Management/KTI Status meetings.
TSPAI 3.02	TSPAI.3.02 - Provide the technical basis for resampling the general corrosion rates and the quantification of the impact of resampling of general corrosion rates in revised documentation (ENG1.1.1). DOE will provide the technical basis for resampling the general corrosion rates and the quantification of the impact of resampling of general corrosion rates in an update to the WAPDEG Analysis of Waste Package and Drip Shield Degradation AMR (ANL-EBS-PA-000001). This AMR is expected to be available to NRC in FY 2003.	FY 2003	7-Apr-02	21-Apr-02	4	Information will be provided to NRC to demonstrate that the Agreement Item has been overtaken by events.
TSPAI 3.03	TSPAI.3.03 - Provide the technical basis for crack arrest and plugging of crack openings (including the impact of oxide wedging and stress redistribution) in assessing the impact of SCC of the drip shield and waste package in revised documentation (ENG1.1.2 and ENG1.4.1). DOE will provide the technical basis for crack arrest and plugging of crack openings (including the impact of oxide wedging and stress redistribution) in assessing the stress corrosion cracking of the drip shield and waste package in an update to the Stress Corrosion Cracking of the Drip Shield, Waste Package Outer Barrier, and the Stainless Steel Structural Material AMR (ANL-EBS-MD-000005) in accordance with the scope and schedule for existing agreement item CLST.1.12.	Prior to LA	15-Jun-02	30-Jun-02	3A	TSPA sensitivity studies indicate that subject of Agreement has little or no effect on overall repository performance. Risk information will be provided to NRC as alternate basis for closure of Agreement Item. Analysis will demonstrate that cracks do not start.
TSPAI 3.15	TSPAI.3.15 - Define a reference EQ3/6 database for the Yucca Mountain Project. DOE will provide documentation of all deviations from the reference database and justification for those deviations used by different geochemical modeling activities (ENG4.1.2). DOE will define a reference EQ3/6 database for the Yucca Mountain Project. DOE will provide documentation of all the deviations from the reference database and justification for those deviations used by different geochemical modeling activities. The database will be available in FY 2003.	FY 2003	15-Aug-02	1-Sep-02	1	Scope of information to be provided to NRC as stated in Agreement text.

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KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
TSPA I 3.19.01	TSPA I.3.19 - DOE will provide justification for the use of its evapotranspiration model, and defend the use of the analog site temperature data (UZ1.3.1). DOE will provide justification for the use of the evapotranspiration model, and justify the use of the analog site temperature data. The justification will be documented in an update to the Simulation of Net Infiltration for Modern and Potential Future Climates AMR (ANL-NBS-HS-000032) and the Future Climate Analysis AMR (ANL-NBS-GS-000008). The AMRs are expected to be available to NRC in FY 2003.	FY 2003	15-May-02	3-Jun-02	3A	TSPA sensitivity studies indicate that uncertainties in the evapotranspiration model have little or no effect on overall repository performance. Risk information will be provided to NRC as alternate basis for closure of Agreement Item. Sensitivity analyses by TSPA to be delivered to Licensing 5/1/02.
TSPA I 3.19.02	TSPA I.3.19 - DOE will provide justification for the use of its evapotranspiration model, and defend the use of the analog site temperature data (UZ1.3.1). DOE will provide justification for the use of the evapotranspiration model, and justify the use of the analog site temperature data. The justification will be documented in an update to the Simulation of Net Infiltration for Modern and Potential Future Climates AMR (ANL-NBS-HS-000032) and the Future Climate Analysis AMR (ANL-NBS-GS-000008). The AMRs are expected to be available to NRC in FY 2003.	FY 2003	15-May-02	3-Jun-02	3A	TSPA sensitivity studies indicate that uncertainties in the evapotranspiration model have little or no effect on overall repository performance. Risk information will be provided to NRC as alternate basis for closure of Agreement Item. Sensitivity analyses by TSPA to be delivered to Licensing 5/1/02.
TSPA I 3.22	TSPA I.3.22 - Provide an assessment or discussion of the uncertainty involved with using a hydrologic property set obtained by calibrating a model on current climate conditions and using that model to forecast flow for future climate conditions (UZ2.3.1). DOE will provide an assessment or discussion of the uncertainty involved with using a hydrologic property set obtained by calibrating a model on current climate conditions and using that model to forecast flow for future climate conditions. This assessment will be documented in the UZ Flow Models and Submodels AMR (MDL-NBS-HS-000006) expected to be available to NRC in FY 2003.	FY 2003	15-Aug-02	29-Aug-02	3A	TSPA sensitivity studies indicate that uncertainties in the hydrologic property set due to climate have little or no effect on overall repository performance. Risk information will be provided to NRC as alternate basis for closure of Agreement Item. Using data/information available from e.g., the Alcove 8 - Niche 3 test, a letter report will be prepared to demonstrate that climate conditions do not have significant impact on the hydrologic properties for determining the steady state flow fields.
TSPA I 3.37	TSPA I.3.37 - Provide a quantitative analysis that the sampling method including the correlations to NP used by the TSPA code to abstract the GENII-S process model code adequately represent the uncertainty and variability and correlations for the biosphere process model (DOSE3.4.1). DOE will provide a quantitative analysis that the sampling method including the correlations between BDCFs utilized by the TSPA code to abstract the GENII-S process model data adequately represent the uncertainty and variability and correlations for the biosphere process model. This will be documented in Nominal Performance Biosphere Dose Conversion Factor Analysis AMR (ANL-MGR-MD-000009), Disruptive Event Biosphere Dose Conversion Factor Analysis (ANL-MGR-MD-000003) or other document expected to be available to NRC in FY 2003. Results of these analyses will be documented in the TSPA for any potential license application expected to be available to NRC in FY 2003.	FY 2003	17-Aug-02	31-Aug-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Information will be submitted to NRC via letter report which will discuss the technical basis for correlation between BDCF abstraction and TSPA and show that the approach is conservative when used to estimate mean dose from a set of TSPA realizations.

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KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
TSPAI 3.38	TSPAI.3.38 - DOE will develop guidance in the model abstraction process that can be adhered to by all model developers so that (1) the abstraction process, (2) the selection of conservatism in components, and (3) representation of uncertainty are systematic across the TSPA model. DOE will evaluate and define approaches to deal with: (1) evaluating non-linear models as to what their most conservative settings may be if conservatism is being used to address uncertainty, and (2) trying to utilize human intuition in a complex system. In addition, DOE will consider adding these items to the internal/external reviewer's checklists to ensure proper implementation of the improved methodology (TSPA0002). DOE will develop written guidance in the model abstraction process for model developers so that (1) the abstraction process, (2) the selection of conservatism in components, and (3) representation of uncertainty, are systematic across the TSPA model. These guidelines will address: (1) evaluation of non-linear models when conservatism is being utilized to address uncertainty, and (2) utilization of decisions based on technical judgement in a complex system. These guidelines will be developed, implemented, and be make available to the NRC in FY 2002.	FY 2002	15-Apr-02	19-Apr-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Information will be submitted to NRC via letter report in lieu of the M&A document.
TSPAI 3.39	TSPAI.3.39 - In future performance assessments, DOE should document the simplifications used for abstractions per TSPAI.3.38 activities. Justification will be provided to show that the simplifications appropriately represent the necessary processes and appropriately propagate process model uncertainties. Comparisons of output from process models to performance assessment abstractions will be provided, with the level of detail in the comparisons commensurate with any reduction in propagated uncertainty and the risk significance of the model (TSPA0003). DOE will document the simplifications utilized for abstractions per TSPAI.3.38 activities for all future performance assessments. Justification will be provided to show that the simplifications appropriately represent the necessary processes and appropriately propagate process model uncertainties. Comparisons of output from process models to performance assessment abstractions will be provided, with the level of detail in the comparisons commensurate with any reduction in propagated uncertainty and the risk significance of the model. The documentation will be provided in abstraction AMRs in FY 2003.	FY 2003	15-Apr-02	19-Apr-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Information will be submitted to NRC via letter report in lieu of the M&A document.

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TSPAI 3.40	TSPAI.3.40 - DOE will implement effective controls to ensure that the abstractions defined in the AMR's are consistently propagated into the TSPA, or ensure that the TSPA documentation describes any differences. Specific examples of needed revisions (if still applicable) include: (1) the implementation of flux splitting in the TSPA model, (2) the propagation of thermohydrology uncertainty/variability into the WAPDEG corrosion model calculations, and (3) the implementation of the in-package chemistry abstraction. DOE will implement program improvements to ensure that the abstractions defined in the AMRs are consistently propagated into the TSPA, or ensure that the TSPA documentation describes any differences. Program improvements may include, for example, upgrades to work plans, procedural upgrades, preparation of desktop guides, worker training, increased review and oversight. The program improvements will be implemented and be made available to the NRC during FY 2002.	FY 2002	15-Apr-02	19-Apr-02	1	Scope of information to be provided to NRC as stated in Agreement text. Information will be submitted to NRC via letter report.
TSPAI 3.41	TSPAI.3.41 - To provide support for the mathematical representation of data uncertainty in the TSPA, the DOE will provide technical basis for the data distributions used in the TSPA. An example of how this may be accomplished is the representation on a figure or chart of the data plotted as an empirical distribution and the probability distribution assigned to fit these data. DOE will provide the technical basis for the data distributions utilized in the TSPA to provide support for the mathematical representation of data uncertainty in the TSPA. The documentation of the technical basis will be incorporated in documentation associated with TSPA for any potential license application. The documentation is expected to be available to NRC in FY 2003.	FY 2003	15-Apr-02	19-Apr-02	2	Scope of information to be provided to NRC as stated in Agreement text. Information will be submitted to NRC via letter report in lieu of the M&A document.
TSPAI 4.01.01	TSPAI.4.01 - DOE will document the methodology that will be used to incorporate alternative conceptual models into the performance assessment. The methodology will ensure that the representation of alternative conceptual models in the TSPA does not result in an underestimation of risk. DOE will document the guidance given to process-level experts for the treatment of alternative models. The implementation of the methodology will be sufficient to allow a clear understanding of the potential effect of alternative conceptual models and their associated uncertainties on the performance assessment. The methodology will be documented in the TSPA-LA methods and assumptions document in FY02. The results will be documented in the appropriate AMRs or the TSPA for any potential license application in FY 2003.	FY 2003	15-Apr-02	19-Apr-02	2	Scope of information to be provided to NRC as stated in Agreement text. Information will be submitted to NRC via letter report in lieu of the M&A document.

Milestone FY02 - KTI Agreement Items

KTI ID	Agreement Statement	Original Agreement Date	Date to OLRC	Estimated Date to NRC	Bin	Bin Bases
TSPAI 4.01.02	TSPAI.4.01 - DOE will document the methodology that will be used to incorporate alternative conceptual models into the performance assessment. The methodology will ensure that the representation of alternative conceptual models in the TSPA does not result in an underestimation of risk. DOE will document the guidance given to process-level experts for the treatment of alternative models. The implementation of the methodology will be sufficient to allow a clear understanding of the potential effect of alternative conceptual models and their associated uncertainties on the performance assessment. The methodology will be documented in the TSPA-LA methods and assumptions document in FY02. The results will be documented in the appropriate AMRs or the TSPA for any potential license application in FY 2003.	FY2003	15-Apr-02	19-Apr-02	2	Scope of information to be provided to NRC as stated in Agreement text. Information will be submitted to NRC via letter report in lieu of the M&A document.
TSPAI 4.05	TSPAI.4.05 - DOE will document the process used to develop confidence in the TSPA models (e.g., steps similar to those described in NUREG-1636). The detailed process is currently documented in the model development procedures that are being evaluated for process improvement in response to the model validation corrective action report CAR-BSC-01-C-001. The upgraded model validation procedures will be available for NRC review in FY 2002.	FY 2002	15-Apr-02	19-Apr-02	1	Scope of information to be provided to NRC as stated in Agreement text. Related to CAR BSC-01C001
USFIC.3.01	KSZ0301 Provide the documentation sources and schedule for the Monte Carlo method for analyzing infiltration. DOE will provide the schedule and identify documents expected to contain the results of the Monte Carlo analyses in February 2002.	28-Feb-02	11-May-02	17-May-02	3A	TSPA sensitivity studies indicate that infiltration has little or no effect on overall repository performance. Risk information will be provided to NRC as alternate basis for closure of Agreement Item. The range of the sensitivity studies includes net infiltration as large as that at the glacial maximum to ensure an adequate range is considered in evaluating the effect of the infiltration model.
USFIC.3.02	KSZ0302 Provide justification for the parameters in Table 4-1 of the Analysis of Infiltration Uncertainty AMR (for example, bedrock permeability in the infiltration model needs to be reconciled with Alcove 1 results/observations). Also, provide documentation (source, locations, tests, test results) for the Alcove 1 and Pagany Wash tests. DOE will provide justification and documentation in a Monte Carlo analysis document. The information will be available in February 2002.	28-Feb-02	11-May-02	17-May-02	3A	TSPA sensitivity studies indicate that infiltration has little or no effect on overall repository performance. Risk information will be provided to NRC as alternate basis for closure of Agreement Item. The range of the sensitivity studies includes net infiltration as large as that at the glacial maximum to ensure an adequate range is considered in evaluating the effect of the infiltration model.

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USFIC.4.07	KUZ0407 Provide documentation of the results obtained from the Natural Analogs modeling study. The study was to apply conceptual models and numerical approaches developed from Yucca Mountain to natural analog sites with observations of seepage into drifts, drift stability, radionuclide transport, geothermal effects, and preservation of artifacts. DOE will provide documentation of the results obtained from the Natural Analogs modeling study. The study was to apply conceptual models and numerical approaches developed from Yucca Mountain to natural analog sites with observations of seepage into drifts, drift stability, radionuclide transport, geothermal effects, and preservation of artifacts. This will be documented in the Natural Analogs for the Unsaturated Zone AMR (ANL-NBS-HS-000007) expected to be available to NRC FY 2002.	FY 2002	1-May-02	15-May-02	2	Scope of information to be provided to NRC sufficient to close agreement. Scope of documentation and method of documentation differ from Agreement text. Technical report (Natural Analogues Synthesis Report) approved by BSC on 2/22/02. Currently in DOE's acceptance review.
USFIC.5.03	KSZ0503 DOE's outline for collecting data in the alluvium appears reasonable but lacks detail. Provide a detailed testing plan for alluvial testing to reduce uncertainty (for example, the plan should give details about hydraulic and tracer tests at the well 19 complex and it should also identify locations for alluvium complex testing wells and tests and logging to be performed). NRC will review the plan and provide comments, if any, for DOE's consideration. In support and preparation for this meeting, DOE provided work plans for the Alluvium Testing Complex and the Nye County Drilling Program (FWP-SBD-99-002, Alluvial Tracer Testing Field Work Package, and FWP-SBD-99-001, Nye County Early Warning Drilling Program, Phase II and Alluvial Testing Complex Drilling). DOE will provide test plans of the style of the Alcove 8 plan as they become available. In addition, the NRC On Site Representative attends DOE/Nye County planning meetings and is made aware of all plans and updates to plans as they are made.	None Specified	29-Mar-02	15-Apr-02	1	Scope of information to be provided to NRC as stated in Agreement text. Testing Plan for Alluvial testing will be complete by mid-March. - Provide a letter report describing the ATC field-testing.
USFIC.5.05	KSZ0505 Provide the hydro-stratigraphic cross-sections that include the Nye County data. DOE will provide the hydrostratigraphic cross sections in an update to the Hydrogeologic Framework Model for the Saturated Zone Site-Scale Flow and Transport Model AMR expected to be available during FY 2002, subject to availability of the Nye County data.	FY 2002	29-May-02	15-Jun-02	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text. Work complete - cross sections prepared & will be submitted as a standalone letter report.
USFIC.5.08.02	KSZ0508 Taking into account the Nye County information, provide the updated potentiometric data and map for the regional aquifer, and an analysis of vertical hydraulic gradients within the site scale model. DOE will provide an updated potentiometric map and supporting data for the uppermost aquifer in an update to the Water-Level Data Analysis for the Saturated Zone Site-Scale Flow and Transport Model AMR expected to be available in October 2001, subject to receipt of data from the Nye County program. Analysis of vertical hydraulic gradients will be addressed in the site-scale model and will be provided in the Calibration of the Site-Scale Saturated Zone Flow Model AMR expected to be available during FY 2002.	31-Oct-01	1-May-02	15-May-02	1	Scope of information to be provided to NRC as stated in Agreement text.. [THIS AGREEMENT IS SAME AS THAT IN RT KTI SUBISSUE 2, AGREEMENT #9.]

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USFIC.5.09.01	KSZ0509 Provide additional information in an updated AMR or other document for both the regional and site scale model (for example, grid construction, horizontal and vertical view of the model grid, boundary conditions, input data sets, model output, and the process of model calibration). The updated USGS Regional Groundwater Flow Model is a USGS Product, not a Yucca Mountain Site Characterization Project product. It is anticipated that this document will be available in September 2001. DOE believes that the requested information is now available in the current version of the Calibration of the Site-Scale Saturated Zone Flow Model AMR and will be carried forward in future AMR revisions.	30-Sep-01	15-Sep-02	30-Sep-02	1	Scope of information to be provided to NRC is contained in the USGS report and meets the intent of the Agreement. USGS report in USGS Director's review. To issue on 9/1/02.
USFIC.5.11	KSZ05011 In order to test an alternative conceptual flow model for Yucca Mountain, run the SZ flow and transport code assuming a north-south barrier along the Solitario Canyon fault whose effect diminishes with depth or provide justification not to. DOE will run the saturated zone flow and transport model assuming the specified barrier and will provide the results in an update to the Calibration of the Site-Scale Saturated Zone Flow Model AMR expected to be available during FY 2002.	FY 2002	30-May-02	15-Jun-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Document in AMR - MDL-NBS-HS-000011, Calibration of the Site-Scale SZ Flow Model. Narrative with figures, describing the N-S barrier analysis. This information to be taken from the draft Calibration of the Site-Scale SZ Flow Model AMR, and cite the SSPA and TUILR. It will be incorporated in a letter report.
USFIC.5.13	KSZ05013 Provide the evaluation of the ongoing fluid inclusion studies (for example, UNLV, State of Nevada, and USGS). DOE's consideration of the fluid inclusion studies will be documented in an update to the Saturated Zone Flow and Transport PMR expected to be available in FY 2002, subject to availability of the studies.	FY 2002	30-Jun-02	15-Jul-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Information will be submitted via letter report.
USFIC.6.01.01	KSZ0601 The DOE will provide the final sensitivity analysis on matrix diffusion (for UZ) in the TSPA-SR, Rev. 0. Due date: December 2000. The saturated zone information will be available in TSPA-SR, Rev.1, expected to be available in June 2001.	31-Dec-00	30-Jun-02	15-Jul-02	2	Scope of information to be provided to NRC sufficient to close agreement. Scope and method of documentation differ from Agreement text. SEE 1/30/02 NRC STATUS AS PARTLY RECEIVED. The information requested will be developed based on TSPA-SR, SSPA, and subsequent sensitivity analyses for the SZ.

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USFIC.6.04	KSZ0604 Provide the documentation for the C-wells testing. Use the field test data or provide justification that the data from the laboratory tests is consistent with the data from the field tests. DOE will provide the C-wells test documentation and will either use the test data or provide a justified reconciliation of the lab and field test data in C-wells document(s) in October 2001.	31-Oct-01	3-Jun-02	15-Jun-02	2	Scope of information to be provided to NRC sufficient to close agreement. Method of documentation differs from Agreement text. Narrative with figures, describing C-wells testing, justifying that data from laboratory testing is consistent with the field test data will be submitted via letter report to NRC. [THIS AGREEMENT IS SIMILAR RT KTI SUBISSUE 3, AGREEMENT #9.]
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