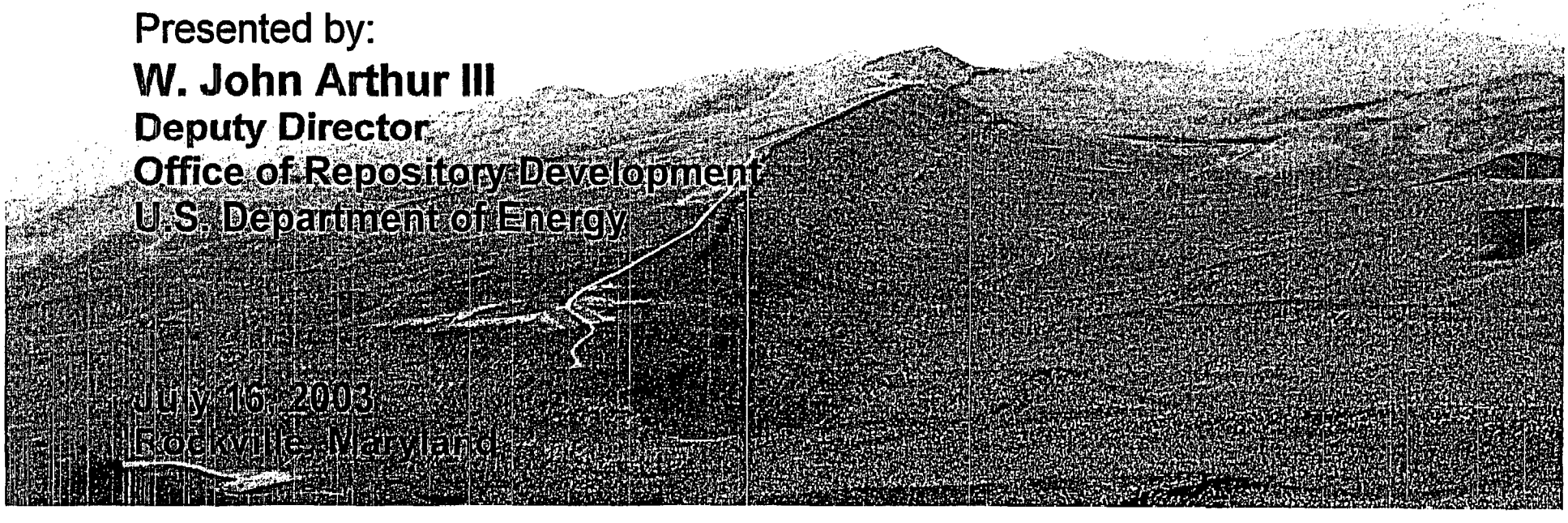
U.S. Department of Energy
Office of Civilian Radioactive Waste Management

YUCCA MOUNTAIN PROJECT

Project Update - Exhibits

Presented to:
DOE/NRC Quarterly Management Meeting

Presented by:
W. John Arthur III
Deputy Director
Office of Repository Development
U.S. Department of Energy



July 16, 2003
Rockville, Maryland

Yucca Mountain Performance Indicators

Exhibit 1

Category	Primary	Secondary						Focus Area	
Work Execution	Licensing (Y)	License Application Chapters (Y)	NRC Interactions (G)	License Support Network (R)					
	Engineering Design (R)	Surface Facilities (R)	Subsurface Facilities (Y)	Engineered Barriers (G)				Site Development Plan (G)	
	Safety Analysis (R)	TSPA (R)	Performance Confirmation (G)	Yucca Mountain Site Description (G)	Key Technical Issues (KTIs) (Y)	Preclosure Safety Assessment (R)			
		AMRs (R)	Technical Data Management (Y)	Models (R)	Software (R)	Postclosure Safety & Test Coordination (Y)			
	Site Operations (Y)	Site Engineering (G)	Site Construction (G)	Site Maintenance (G)	Operations (G)	BechtelNevada Support (W)			
Management	Project Support (Y)	Project Controls (G)	Safeguards & Security (G)	Information Management (R)	Procurement & Contract Management (Y)	Emergency Management (W)			
		Project Management (Y)	Systems Engineering (Y)	Compliance Management (Y)	Project Monitoring (W)	Human Resources (W)	Training (R)		
	Safety and Health (G)	ISM (W)	Occupational Injuries/ Illnesses (W)	Safety & Health Assessment (W)	Noncompliance Issues (W)				
	Quality Assurance (R)	Quality Assurance Program (G)	Audits (G)	Surveillances (W)	CAR/DR (R)	NOR/TER (G)		Rolling Quality Focus Initiatives (G)	
	Project Culture (R)	Safety Conscious Work Environment (R)	Accountability & Responsibility (R)	Line Accountability for Deficiency Closure (W)	Procedure Compliance (R)	Self-Identification of Issues (W)	Employee Concerns (G)	Management Improvement Initiatives Effectiveness (Y)	
	Environmental/ Agreements (G)	State Environmental Permits (G)	National Nuclear Safety Agency Agreements (G)	Land Access Agreements (G)	State Water Permits (R)	Property Management (G)	Cultural Resources (G)	Land Withdrawal (W)	
	ORD Action Items/ Commitments (R)	ORD Action Tracking (W)	Commitment Management (W)	S3 Expectations/ Guidance (W)					
	Institutional (G)	Stakeholder Relations (G)							

As of June 26, 2003

YUCCA MOUNTAIN PROJECT

Management Improvement Initiatives
Open Action Status*
Exhibit 2

Item Number	Description	Responsible Manager	Original Scheduled Date	Expected Completion Date
	R2A2			
	Program Procedures			
Table 3 Item 3	DOE will issue new or revised procedures in compliance with OCRWM requirements using a phased approach.	Van Der Puy	11/02 (start date)	11/30/03
Table 3 Item 4	DOE personnel that will use the new or revised procedures will be trained prior to implementing the procedures.	Van Der Puy	11/02 (start date)	11/30/03
Table 3 Item 3B	BSC will issue new or revised procedures in compliance with OCRWM requirements using a phased approach.	Sorensen	11/02 (start date)	11/15/03
Table 3 Item 4B	BSC personnel that will use the new or revised procedures will be trained prior to implementing the procedures.	Sorensen	11/02 (start date)	11/30/03
	Corrective Action Program			
Table 4 Item 3	BSC will implement a single OCRWM Corrective Action Program consistent with nuclear industry practices, including tracking, trending, reporting and closure verification processes.	Brown	2/03 (end date)	9/30/03
Table 4 Item 4	BSC will define and implement a self-assessment program, a lessons learned program, and a method to identify and correct adverse conditions.	Brown	3/03 (end date)	9/30/03
	Safety Conscious Work Environment			
Table 5 Item 10	An external SCWE expert group will evaluate YMP-wide SCWE.	Chu	7/03 (end date)	10/31/03

*** As of July 8, 2003**

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

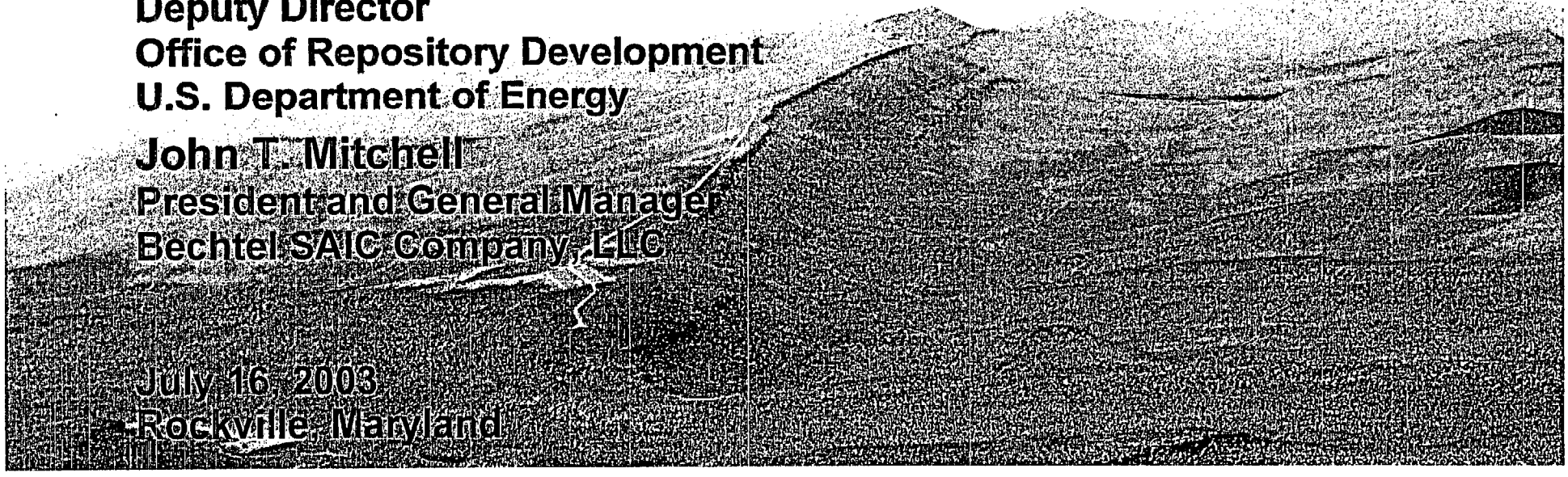
YUCCA MOUNTAIN PROJECT

Program Improvements, Metrics, and Effectiveness - Exhibits

Presented to:
DOE/NRC Quarterly Management Meeting

Presented by:
W. John Arthur III
Deputy Director
Office of Repository Development
U.S. Department of Energy

John T. Mitchell
President and General Manager
Bechtel SAIC Company, LLC



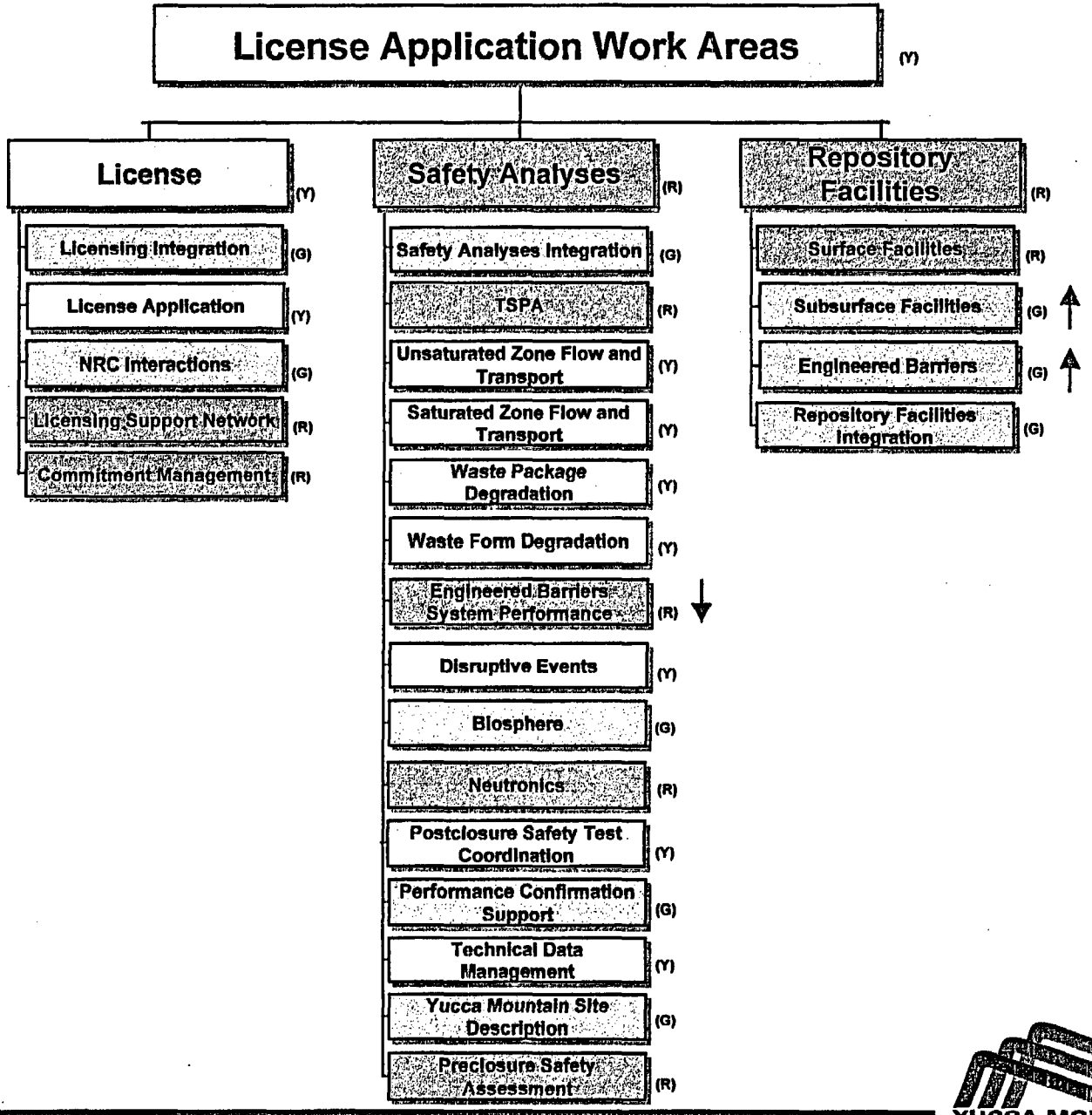
July 16, 2003
Rockville, Maryland

May 29 DOE Letter to the Nuclear Regulatory Commission

Exhibit 1

- Recognized need to change focus and improve processes
- Cited recent DOE actions to establish conditions in which objectives can be achieved
- Described actions being taken and made commitments in 5 areas to ensure License Application (LA) and program behavior meet NRC expectations:
  - License application
  - Procedural compliance
  - Corrective action program
  - Safety-conscious work environment
  - Accountability

Performance Status - License Application Work - Exhibit 2



Decrease in performance

Better performance from

YUCCA MOUNTAIN PROJECT

Management Assessment of Progress Towards LA - As of June 26, 2003

Exhibit 3

COMPONENT	% COMPLETE	WEIGHT
KTI Agreement Closure	42*	10
LA Document	5	20
Preclosure Safety Assessment	14	10
TSPA-LA	35	30
Design	25	30
TOTAL % COMPLETE	**25**	**100**

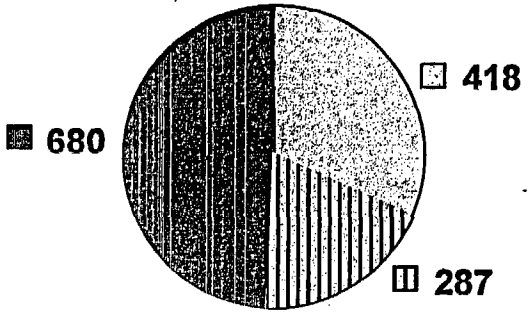
*** Based on assumption that at least 65% of 293 (190) agreements will be considered complete by NRC before LA submittal**

All agreements will be addressed with NRC by LA submittal
NRC has identified 41 high risk-significance agreements (4 complete) and 92 medium risk-significance agreements (20 complete)

Status of License Application Data, Codes, and Models[1]

Exhibit 4

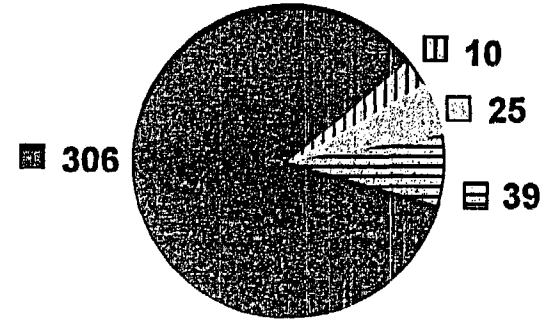
Data (Estimate)



Total Dataset: 1,385
- Qualified: 680 (49%)
- Submitted for TBV: 418 (30%)
- Under development: 287 (21%)*

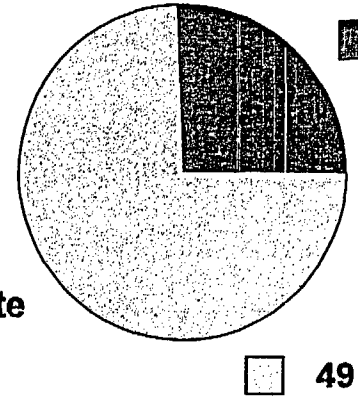
*Estimated number of additional DTNs that will be identified as AMRs approach completion

Codes (Estimate)



Total Codes: 380
- Qualified & completed IV&V: 39 (10%)
- Submitted for IV&V: 10 (3%)
- Qualified, need re-testing (Legacy software): 306 (80%) estimated
- Under development = 25 (7%)

Models[2]



- Incomplete
- Complete

[1] Does not address ongoing resolution of conditions adverse to quality

[2] Model Reports may contain multiple models

Total Model Reports Directly Supporting LA = 65
Total Model Reports Completed = 16 (25%)

Performance Measures
Exhibit 5

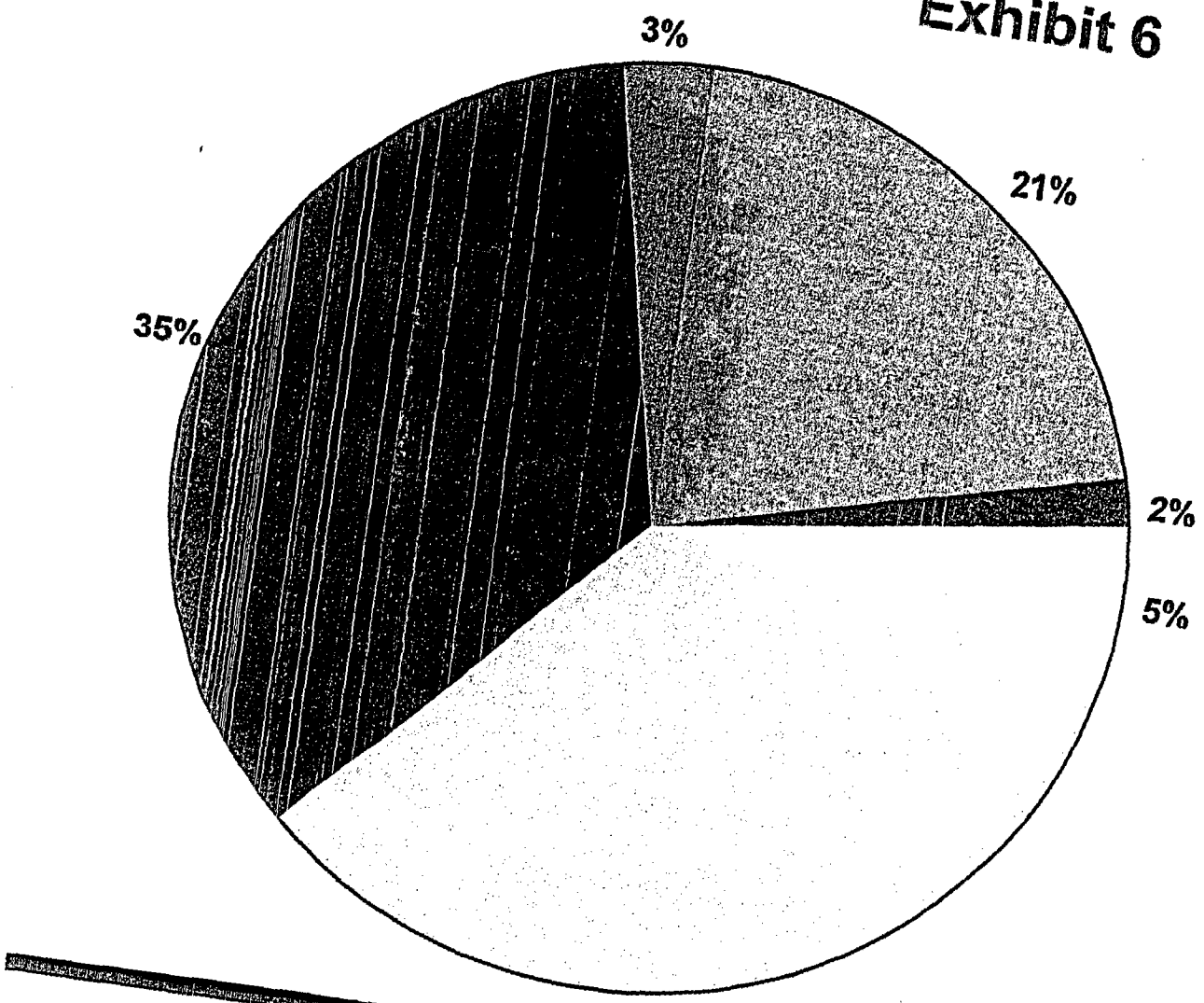
May 1, 2002 – May 8, 2003 Causal Distribution for Conditions Adverse to Quality (CAQ) Results

Major Contributors to CAQ	Major Contributing Factors for Major Contributors	Root Cause for Major Contributing Factors
Management Problem (35%)	Management Methods LTA (62%)	Management policy guidance/expectations not well-defined, understood or enforced (73%)
Human Performance LTA (34%)	Skill Based Error (51%)	Check of work LTA (48%)
Communications LTA (21%)	Written Communication Content LTA (83%)	Ambiguous instructions/requirements (39%)

LTA = Less than adequate

Distribution of Major Contributors to Conditions Adverse to Quality

Exhibit 6



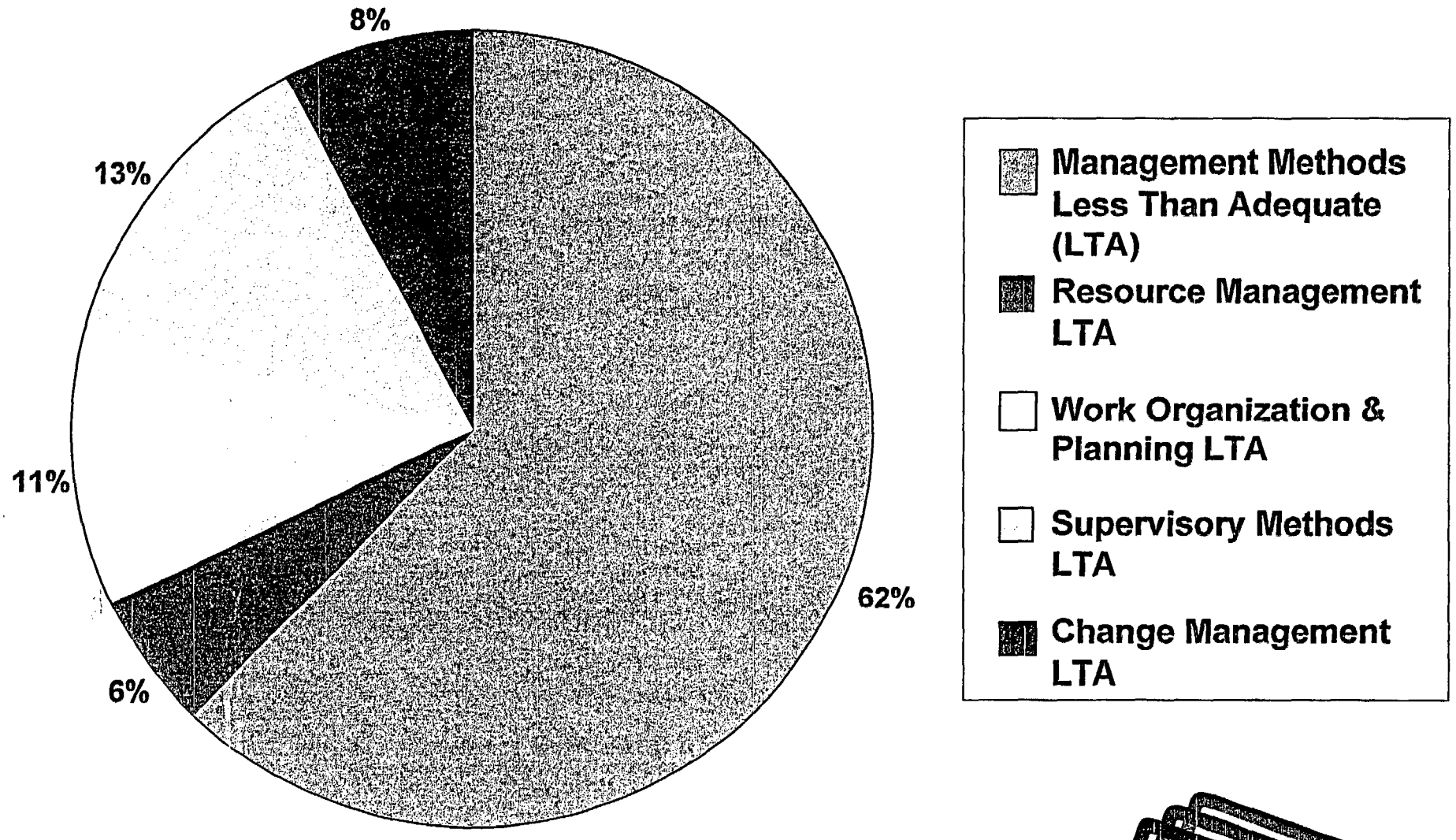
May 1, 2002 to May 8, 2003
(A-Level)

- Communications LTA
- Design/Engineering Problem
- Equipment/Material Problem
- Human Performance LTA
- Management Problem
- Training Deficiency

Contributing Factors - Management Problems

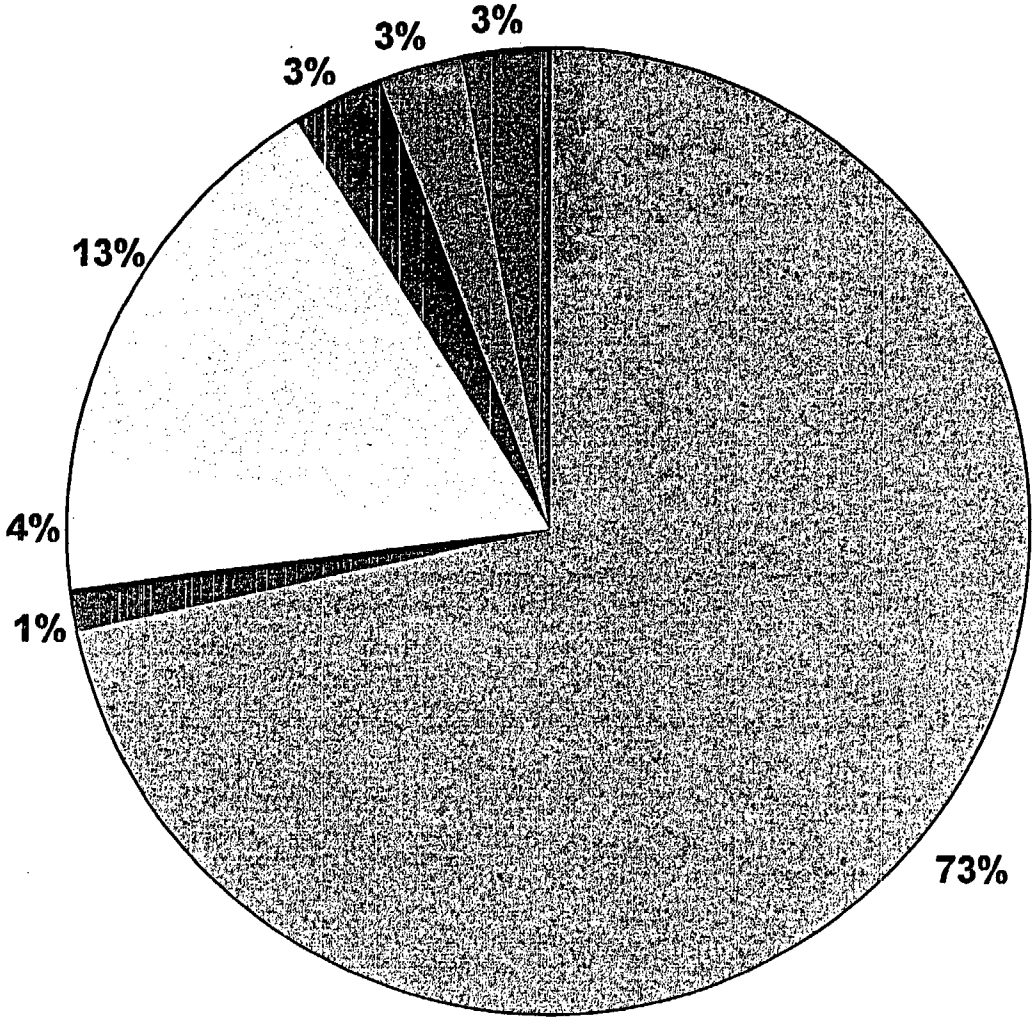
Exhibit 6

(Continued)



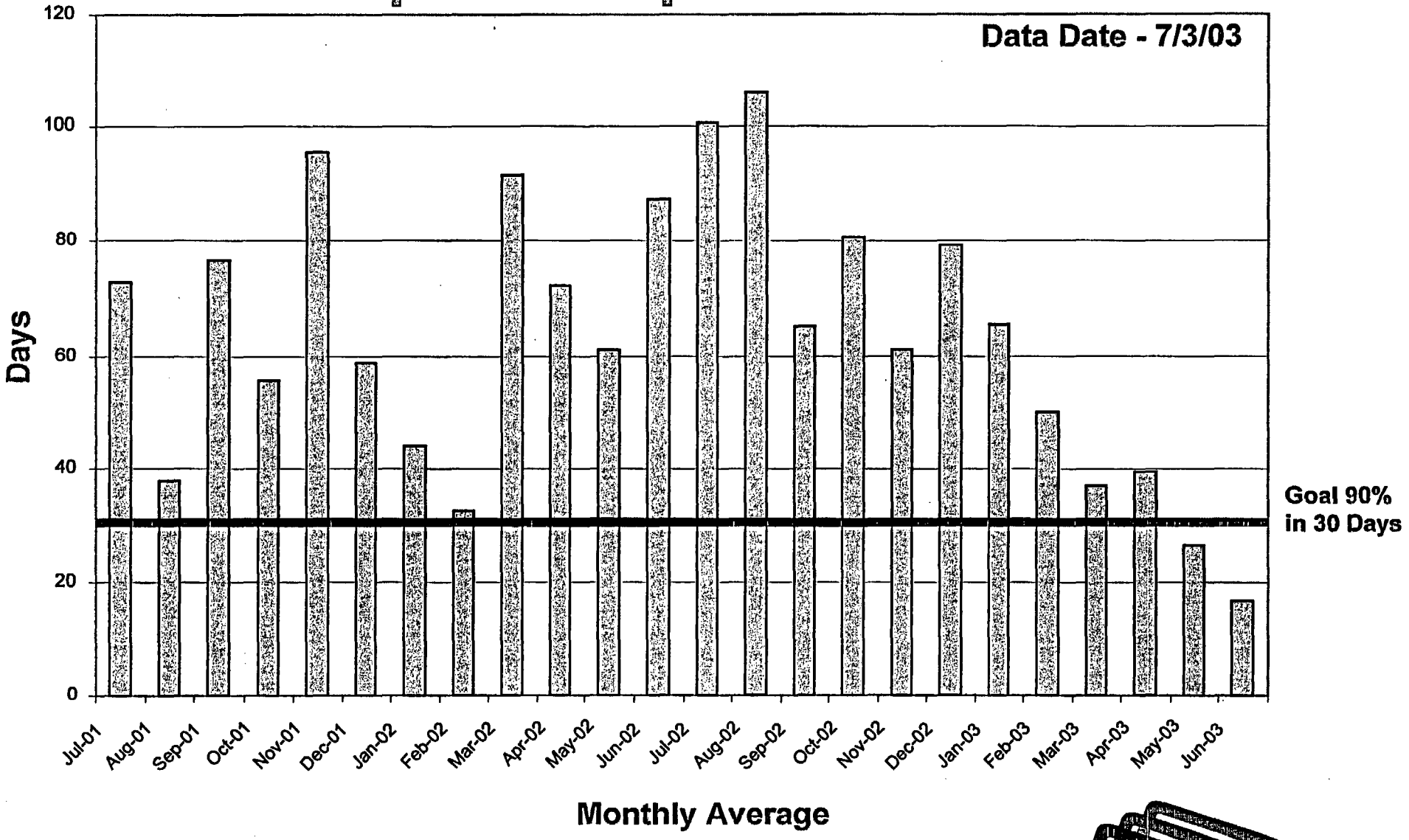
Root Causes - Management Methods Less Than Adequate - Exhibit 6

(Continued)



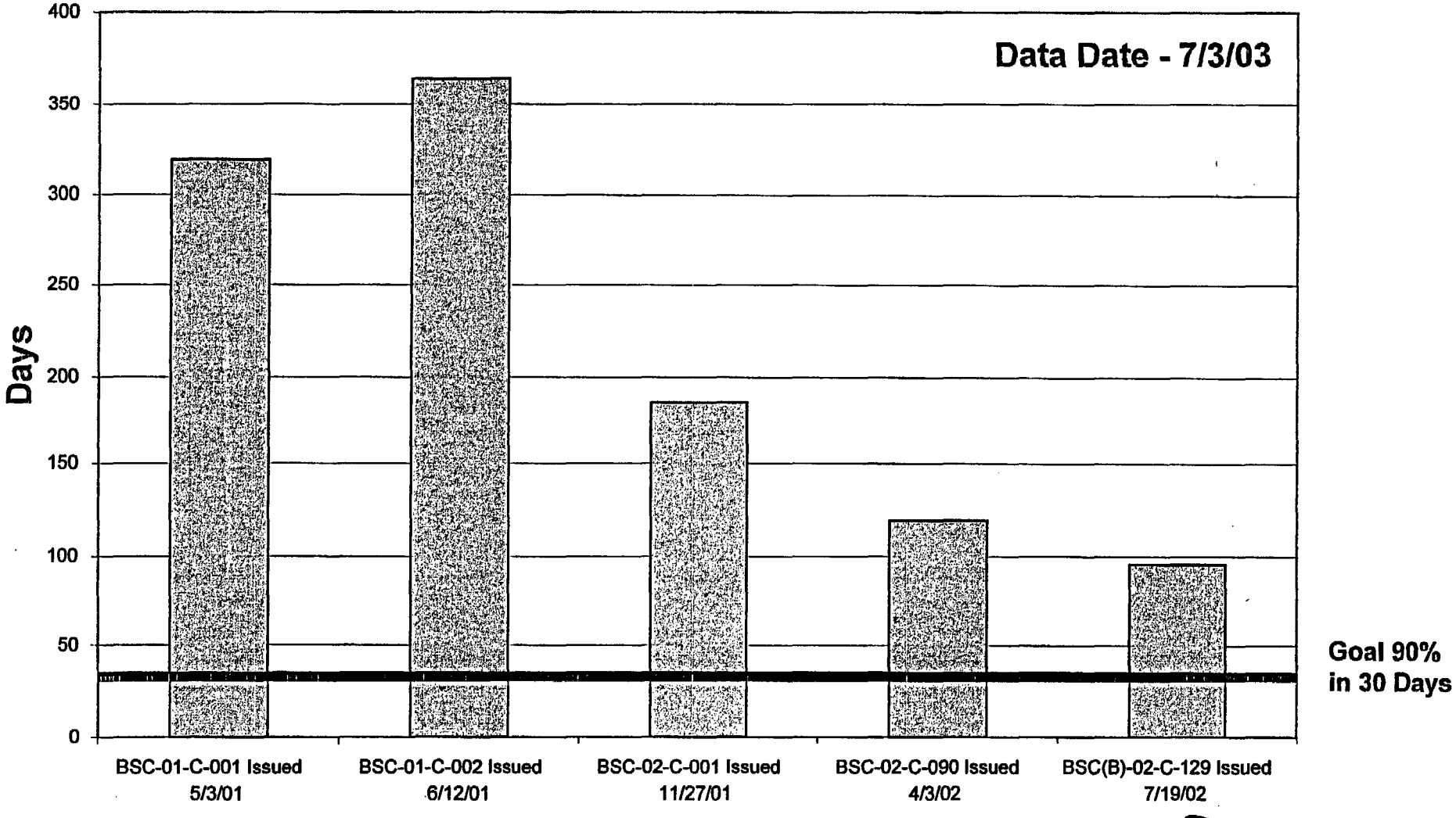
- Management policy guidance/expectations not well-defined, understood or enforced
- Job performance standards not adequately defined
- Personnel exhibited insufficient awareness of impact of actions on safety/reliability
- Management follow-up or monitoring of activities did not identify problems
- Management assessment did not determine cause of previous event or known problem
- Responsibility of personnel not well-defined or personnel not held accountable
- Corrective action for previously identified problem or event was not adequate to prevent recurrence

Days to Obtain Acceptable Deficiency Report Response - Exhibit 7



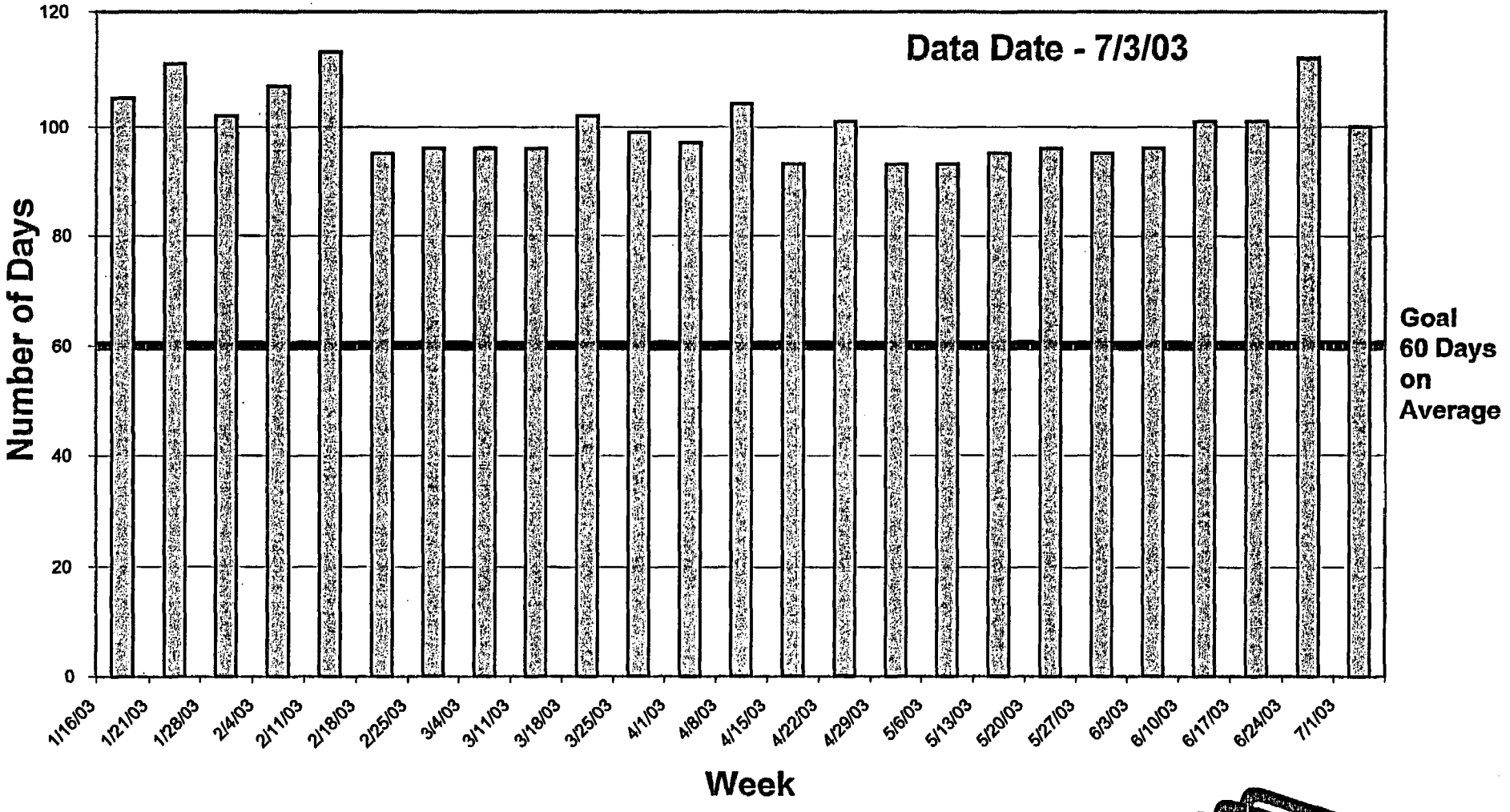
Days to Obtain Acceptable Corrective Action Report Response - Exhibit 7

(Continued)

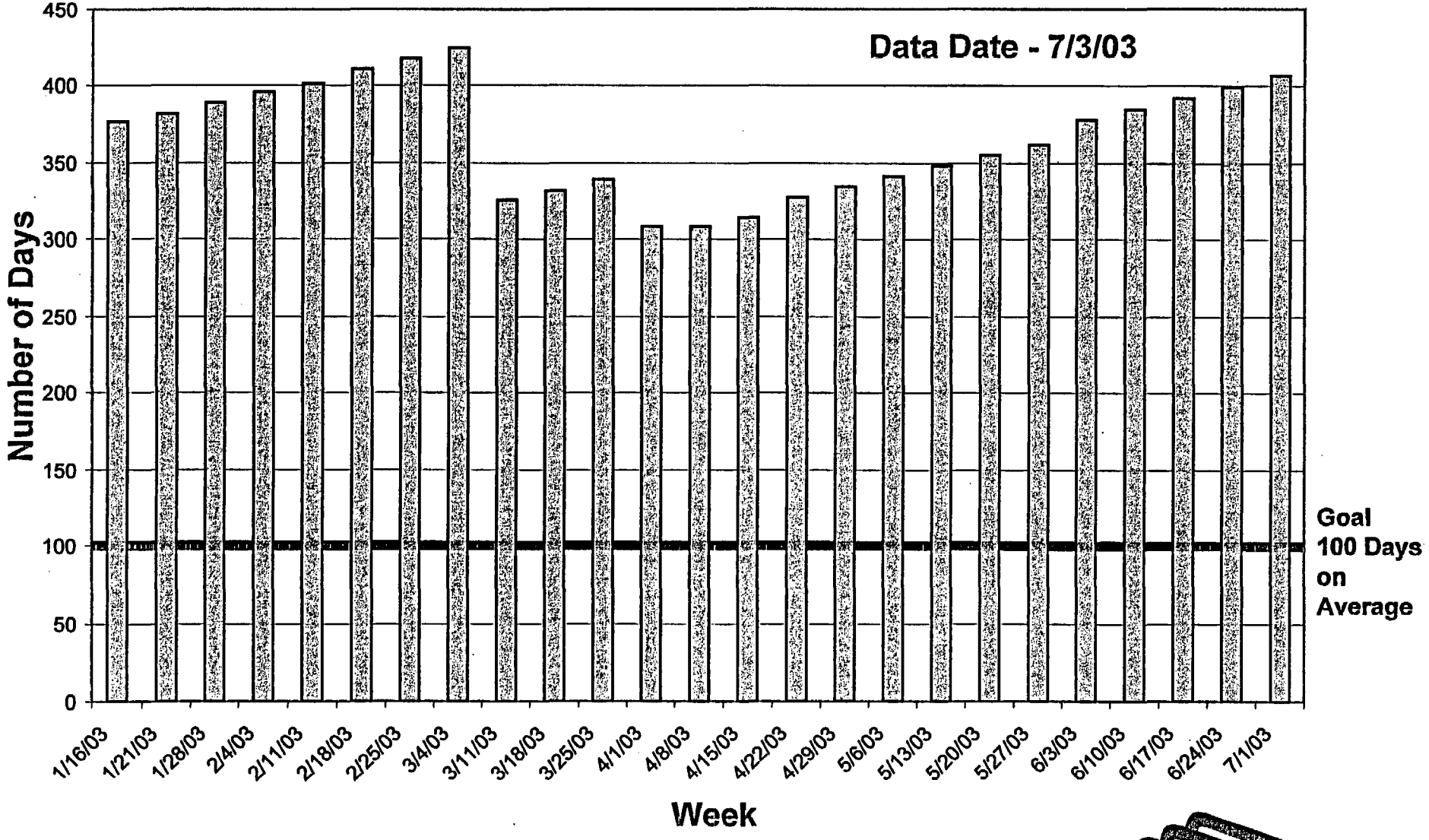


Average Days Open - Deficiency Reports

Exhibit 8



Average Days Open - Corrective Action Reports - Exhibit 9

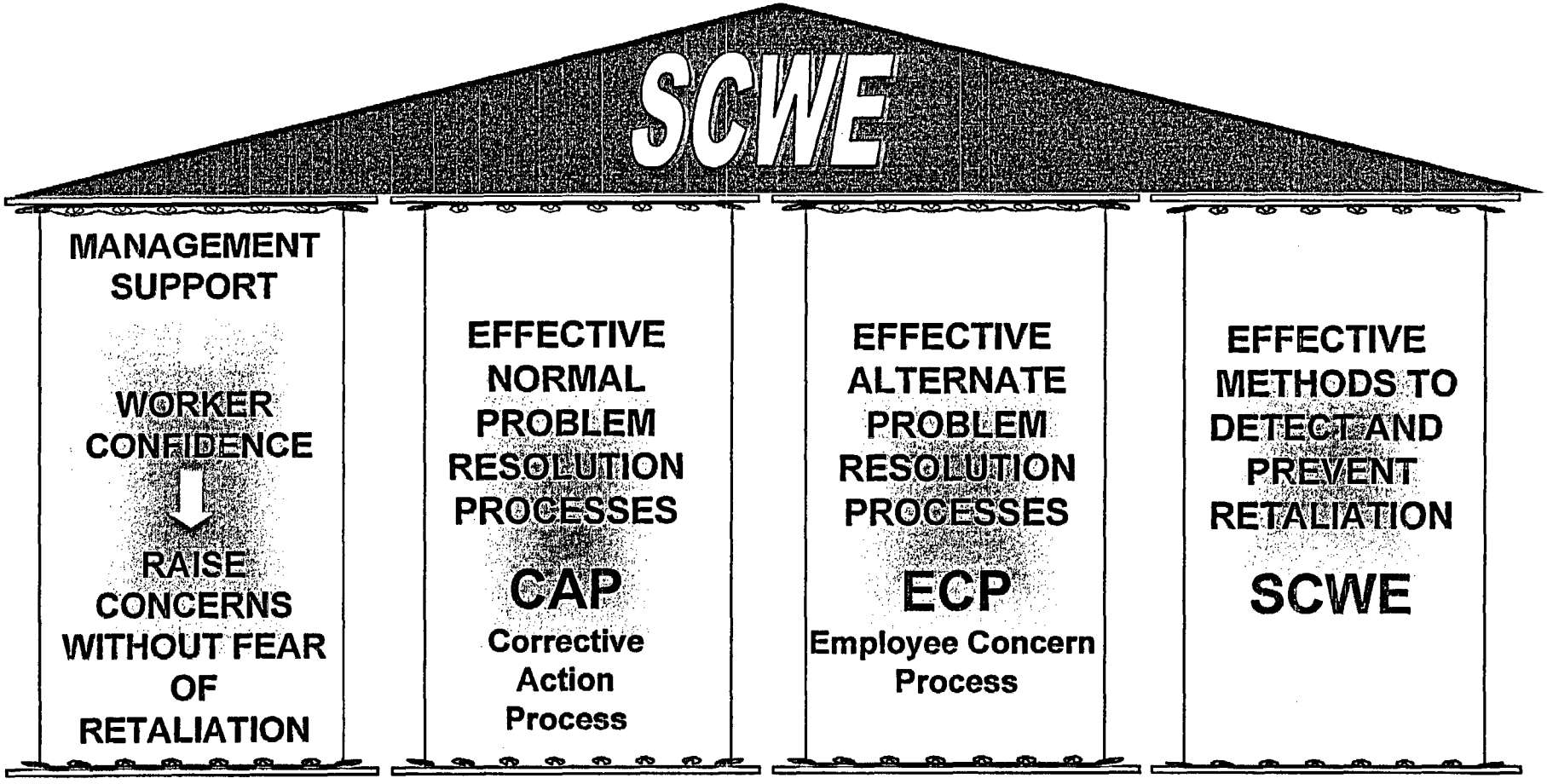


Safety-Conscious Work Environment Summary Survey Results - Exhibit 10

Positive Indicators	Negative Indicators
Employees understand the importance of SCWE (90%)	Employees fear retaliation for raising concerns (55%)
Employees understand that they are responsible for identifying problems and adverse conditions (85%)	Employees don't believe a culture exists that is conducive to raising concerns (55%)
Employees said management's expectations regarding SCWE have been clearly communicated (80%)	Employees don't believe that resolution of safety and quality issues through the CAP is effective (60%)
	Employees said management expectations are not reflected in performance reviews, rewards, or discipline (55%)

Four Pillars Of A Safety Conscious Work Environment

Exhibit 11



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

YUCCA MOUNTAIN PROJECT

DOE's Approach to Resolution of Key Technical Issue Agreements

Presented to:
DOE/NRC Quarterly Management Meeting

Presented by:
Joseph Ziegler, Acting Director
Office of License Application and Strategy
Office of Repository Development
U.S. Department of Energy

July 16, 2003
Rockville, Maryland

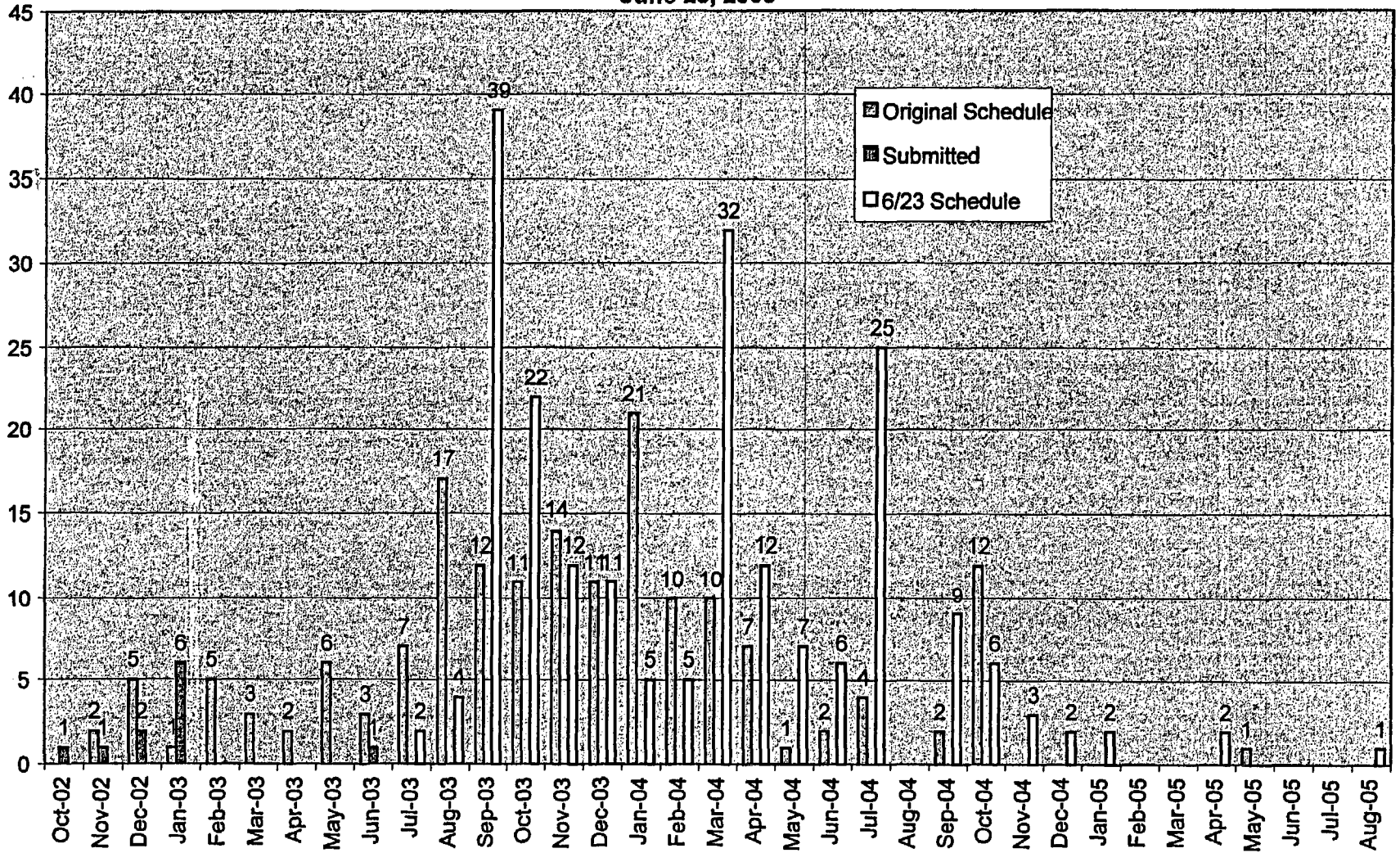
Lessons Learned

- **Better understanding of information needed as a result of communications with NRC staff**
  - Developing responses to original Key Technical Issue (KTI) Agreements
  - Receipt of Additional Information Needs from NRC staff
  - Clarification of NRC staff expectations
  - Discussions at technical exchanges
- **Revisions to resolution strategy were needed**
  - Program replanning due to Continuing Resolution
  - Behind schedule in delivery of KTI Agreement responses
  - Availability of Yucca Mountain Review Plan (YMRP) (Draft Final)
- **Previous approach focused primarily on responses to individual KTI Agreements**
  - Not as effective as an integrated approach

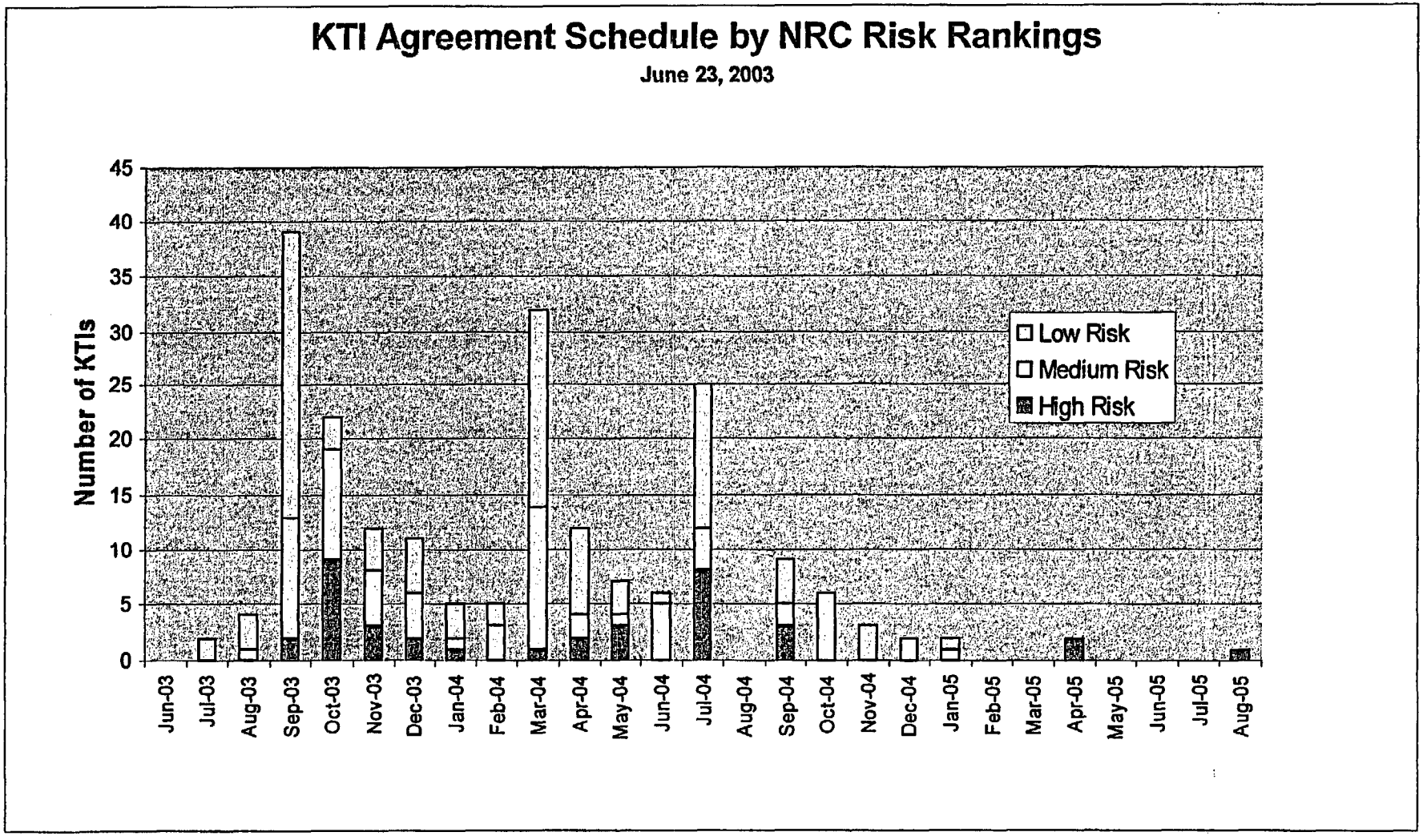
Approach

- DOE still plans to address each KTI Agreement
  - An integrated approach will be used to address groups of KTI Agreements within the context of their relationship to the repository system
  - Some KTI Agreements will be handled individually
  - Goal is effective resolution of KTI Agreements
  - Revised schedule for responses has been provided to NRC
- Coordination with NRC staff
  - Regulatory interactions will be held to assist NRC's review
  - Current schedule of interactions will be updated as needed to reflect this approach

Key Technical Issue Response Schedule



Key Technical Issue Schedule
Nuclear Regulatory Commission Risk Rankings



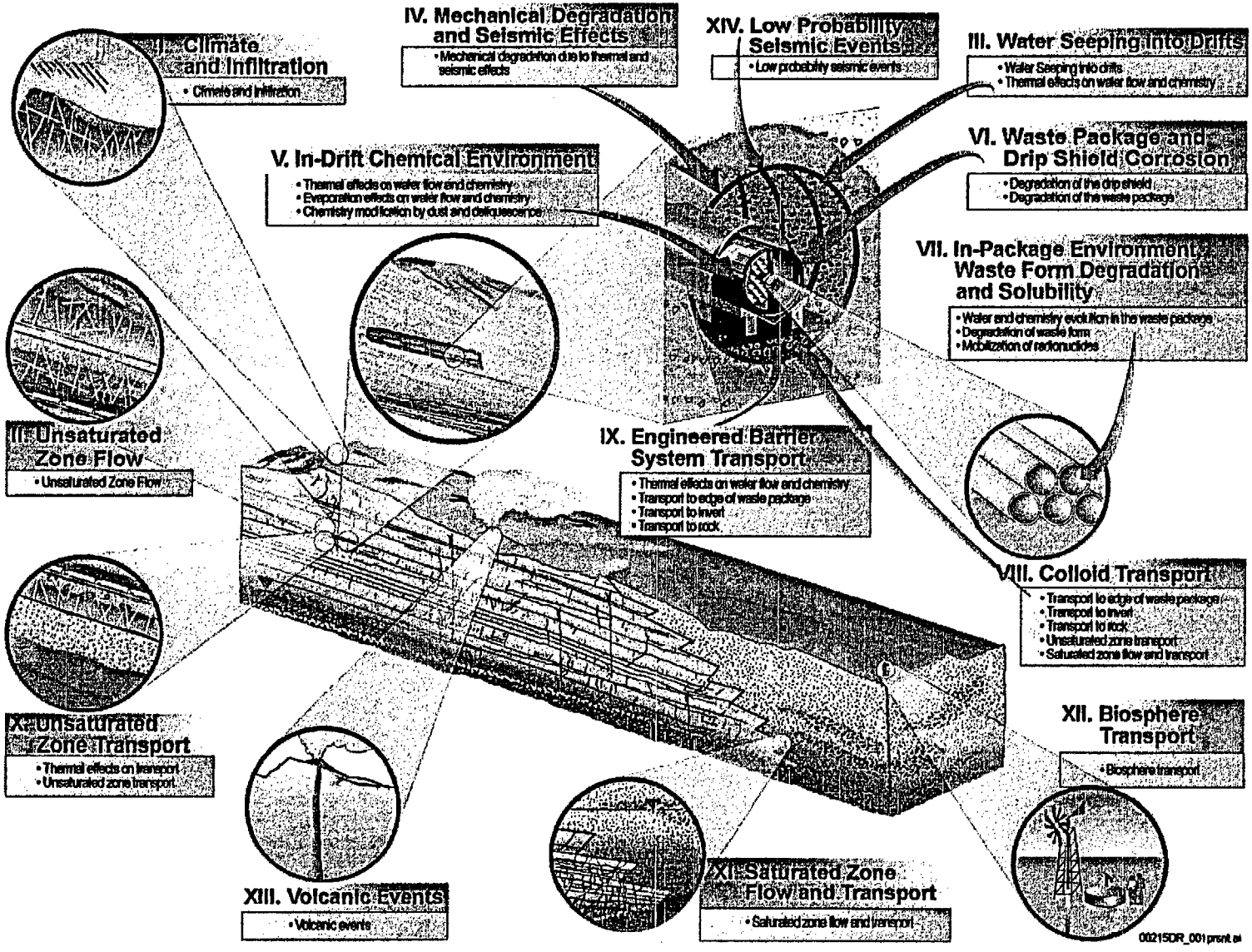
Organization of Work

- Develop the technical basis for licensing describing physical processes and basis for repository performance
- Technical basis are consistent with abstraction groups of the YMRP
- Address KTI Agreements within the context of the technical basis
- Assign dedicated staff whose only priority is development of high quality responses to KTI Agreements

Advantages

- Integration of technical basis helps ensure completeness
- Context of integrated technical basis allows more transparent discussion of bases for information requested
  - Relevance generally is related to process, model, parameter, data or testing uncertainty
- Early communication of licensing technical basis to NRC
  - Expected to facilitate review of the License Application (LA)

Integrated Technical Basis Key Technical Issue Response Groups (and Related Process Model Groups)



Planned Format of Response Groups

- Technical basis descriptions for each of the response groups
- Where possible, individual KTI Agreements are explicitly addressed within the technical basis descriptions
  - Otherwise, individual KTI Agreements are addressed in attachments to appropriate technical basis descriptions
- KTI Agreements scheduled to be available after LA submittal are identified in our FY03-05 Plan

Conclusion

- DOE has recognized and responded to issues that delayed delivery of KTI Agreement responses
- Our current approach provides a more integrated technical product that meets our KTI Agreements within the context of how the Yucca Mountain Repository is expected to perform

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

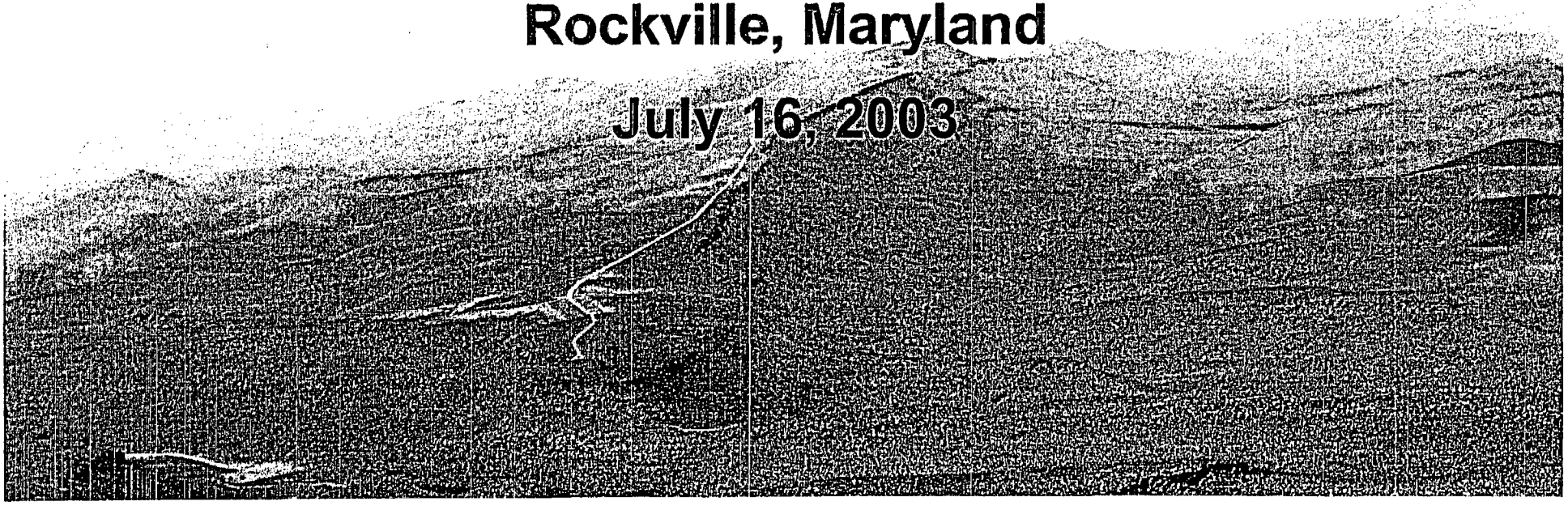
YUCCA MOUNTAIN PROJECT

Enclosure 3

DOE/NRC Quarterly Management Meeting

Rockville, Maryland

July 16, 2003



Enclosure 3

Agenda
DOE/NRC Quarterly Management Meeting
July 16, 2003
10:30 AM – 3:45 PM (ET)
7:30 AM – 12:45 PM (PT)

U. S. Nuclear Regulatory Commission
Two White Flint North, Auditorium
11545 Rockville Pike
Rockville, MD

And via Videoconference to:

BSC	CNWRA
Room 915	Bldg. 189, Conference Room B232
9960 Covington Cross	6220 Culebra Road
Las Vegas, Nevada	San Antonio, TX

INTERESTED PARTIES MAY PARTICIPATE VIA TELECON BY CALLING 1-800-638-8081 or 301-231-5539, Passcode 6481#

10:30 AM	**Opening Remarks**	**All**
10:50 AM	**NRC Program Update**	**NRC**
11:20 AM	**DOE Program/Project Update** • **Program Update** • **Project Update**	**DOE** **Chu** **Arthur/Mitchell**
11:40 AM	**Program Improvement, Metrics, and Effectiveness** • **License Application** • **Procedural Compliance** • **Corrective Action Program** • **Safety Conscious Work Environment** • **Accountability**	**Arthur/Mitchell**
1:30 PM	**Lunch**	**All**
2:15 PM	**Key Technical Issue Agreements**	**Ziegler**
3:00 PM	**Break**	**All**
3:15 PM	**Action Item Status**	**DOE/NRC**
3:30 PM	**Closing Remarks**	**All**
3:45 PM	**Adjourn**	

Enclosure 4