CURRENT PLANNING : WORK CONTINUING

9801210005 — PART 2

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Key VA Issue
Resolution Plan

1. **Issue #13:** Repository Seals Requirements and Concepts February 3, 1997 Rev. #01A

2. **Assigned to:** **M&O Responsible Individual:** Richard Memory **Phone:** 5-3938
DOE Contact: Paul Harrington **Phone:** 4-5415

M&O Manager

Richard D Memory
M&O Responsible Individual

3. **Issue Description:**
Establish requirements for permanent sealing of boreholes, ramps, and shafts. The challenge of this is issue is to identify the proper requirements for the repository seals. The objective of sealing these openings is to prevent the creation of preferential pathways allowing significant amounts of surface or ground water from reaching emplaced waste, and to prevent significant amounts of gaseous radionuclides from escaping through these artificially created preferential pathways to the accessible environment. The seals need not provide any greater performance than would have been provided by the mountain had the boreholes, ramps, and shafts not been created.

4. **Describe the current status and the significance of the issue:**
Sealing of abandoned boreholes and shafts is required by state of Nevada laws. The federal regulations (10 CFR 60 with further guidance in NUREG-1373) requires that sealing be done so that the ability to isolate radioactive wastes will not be degraded. A significant amount of effort was done on this problem in the 1984 to 1991 time frame to evaluate the technical aspects of sealing and sealing material performance. The results of these studies indicate that available technology exists to seal boreholes and a variety of materials can be used. The sealing methodology and evaluation of performance will be an important issue in License Application and it needs to be incorporated into the designs. Interfaces: Resolution of this issue will require interfacing with the Performance Assessment and scientific programs organizations.

5. **Indicate its importance and what effects it will have on a VA:**
The VA design will need to incorporate a sealing plan as part of the overall design of the subsurface system and the license application plan. In order to develop this sealing plan requirements on which to base this design must be developed.

6. **Describe how the issue ties to the TSPA, MGDS cost estimate, and LA planning:**
The presence and type of seals must be considered in the TSPA work. The MGDS cost estimate will need this information since the costs will depend on whether or not a fairly costly sealing methodology is needed or whether much less costly methodologies would be adequate. In addition to the above, it will be necessary to define what set of testing is needed to support the sealing methods in LA and this will need to be incorporated in the LA planning.

7. **Describe the strategy and criteria for achieving a degree of closure sufficient for VA:**
A study is underway to evaluate the issues related to seals and to develop recommendations for sealing requirements. This study will first examine performance issues to determine what performance the seals must achieve. The latest site information will be used in this evaluation. Secondly the study will examine whether or not the sealing methodology recommended meets the expectations in the regulatory guidance. Seals should not need to be any more sophisticated than what is necessary to achieve the desired performance, including longevity. If the recommended

methodology is not in keeping with the regulatory expectations then it may be necessary to conduct discussions with the NRC. Additionally, there will likely need to be some testing prior to LA and some testing during performance confirmation. Closure of this issue sufficient for VA will be the identification of what the seals need to do (considering technical and regulatory concerns) and recommendations produced in the study (completion April 30, 1997) for requirements as to what to seal, how to seal, and when to seal. Based on the requirements established, design will produce sealing designs which will be completed in February 1988 to support VA. Any testing recommendations to support LA will be incorporated in test plans.

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8. **Describe the steps in a process that the project will use to bring closure on this issue:**

No.	Title	Description	Summary Account #
1	Identify sealing options	Using previous studies and current information, the options for sealing boreholes, shafts, and ramps will be identified.	97 Seals Study SE506705
2	Establish evaluation criteria	The evaluation criteria that will be used to evaluate the various sealing options will be established.	97 Seals study SE506715
3	Conduct performance analysis	Performance assessments will be done to evaluate the need for seals and the performance that those seals must have.	97 Seals Study SLSE5061
4	Evaluate sealing requirements options	Utilize the performance assessments and the criteria established to identify the sealing performance that must be achieved.	97 Seals Study SE506720
5	Develop recommendation for sealing	The study will develop a recommendation for requirements to seal the boreholes, shafts, and ramps.	97 Seals Study SE506M3
6	Establish requirements	Establish requirements in the Controlled Design Assumptions Document.	Requirements SE530800
7	Produce VA sealing design	Preliminary designs will be developed for VA for sealing the boreholes, shafts, and ramps which meet the criteria established.	Seals/decom-missioning RP47954

9. **Provide a rough schedule of when this issue will be resolved for VA:**

			FY97												FY98											
No	POC (Name/Phone)	Date	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1	J. Fernandez	11/15/96-12/30/96																								
2	S. Saterlie	12/31/96-2/13/97																								
3	J. Fernandez	12/21/96-3/30/97																								
4	S. Saterlie	2/14/96-4/30/97																								
5	S. Saterlie	4/1/97-5/30/97																								
6	B. Thom	6/1/97-9/30/97																								
7	K. Bhattacharyya	10/1/97-2/27/98																								

CONTINUING PLANNING

10. **Describe a process that will be used to measure performance towards closure:**
Performance will be measured by tracking to the schedule identified in item #9 above. As each of the activities is completed the issue will be progressing toward closure sufficient for VA.

11. **Describe how status will be reported during the process of closing this issue:**
Status will be reported monthly and as each activity is scheduled for completion. A deliverable document will be produced documenting the outcome of the system study in May 1997, the CDA will be updated in September 1997, and designs will be included in the VA design in 1998.

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WBS 1.2.2 Waste Package Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCE	TSPA-VA	LA PLAN	ESTIMATE OF COST
1.2.2.1	TR21FA5	WP21702	12-Sep-97	Statement that the EBS/WP Phase I design work is done	WP21704	Ltr				
1.2.2.2	TR22FA1	WP22FA1	30-Sep-97	Initial engineering file for Waste Package and EBS		IOC				
				Final engineering file for Waste Package and EBS		IOC				
	TR22FA5	WP22FA5	30-Dec-97	WP Heat Evaluation Large Scale Thermal Analysis		Anal	X			
				Engineering sketches for WP heat evaluation large scale thermal analysis		IOC	X			
				Design input sheets for WP heat evaluation large scale thermal analysis		IOC	X			
	TR22FB2	WP220724	31-Mar-97	Documentation of available data and models for cladding degredation		IOC		X		
		WP220728	31-Jul-97	Statement of design basis cladding		IOC		X		
	TR22FB3	WP220733	17-Mar-97	Revised WP Off-Normal and Accident Scenario Report		Tech Doc	X	X		
		WP220731	01-Apr-97	Estimate of frequency of MGDS DBEs		Ltr Rept	X	X		
		WP220735	01-Jul-97	Identification of which WPs need DBE design analysis		Ltr Rept	X			
		WP220737	30-Sep-97	Definition of WP DBE parameters evaluation		Ltr Rept	X	X		
	TR22FB4	WP220756	01-Apr-97	Documentation of candidate materials and reference materials for EBS		IOC	X	X		X
		WP220752	15-Aug-97	EBS/WP Materials Selection Analysis	WP220754	Anal	X	X		X
	TR22FB5	WP220764	29-Jul-96	Description of effects of near field environment on degredation of EBS		IOC		X		
	TR22FB6	WP220701	30-Sep-97	WBS 1.2.2 WPD writeups for PR #16		IOC				
				WBS 1.2.2 WPD writeups for PR #17		IOC				
		WP220711	30-Sep-97	Comments on issues raised during reviews of PR #15		IOC				
				Comments on issues raised during reviews of PR #16		IOC				
1.2.2.3.3	TR233FB1	WP233703	13-Dec-96	Parts List for 21 PWR UCF Disposal Container	WP233735	Ltr	X			
				Parts List for 12 PWR UCF Disposal Container	WP233735	Ltr	X			
				Parts List for 44 BWR UCF Disposal Container	WP233735	Ltr	X			

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1.2.2.3.3 Cont'd	TR233FB3 Cont'd	WP233703 Cont'd		Parts List for 4 Pack DHLW Disposal Container	WP233735	Ltr	X			
				Parts List for 5 Pack DHLW Disposal Container	WP233735	Ltr	X			
		WP233738	20-Sep-97	Sketch for closure weld mockup		IOC	X			
		WP233730	30-Jun-97	21 PWR UCF disposal container overall drawing		Dwg	X	X		X
				21 PWR UCF disposal container outer barrier drawing		Dwg	X	X		X
				21 PWR UCF disposal container inner barrier drawing		Dwg	X	X		X
				21 PWR UCF disposal container internals drawing		Dwg	X	X		X
				12 PWR UCF disposal container overall drawing		Dwg	X	X		X
				12 PWR UCF disposal container outer barrier drawing		Dwg	X	X		X
				12 PWR UCF disposal container inner barrier drawing		Dwg	X	X		X
				12 PWR UCF disposal container internals drawing		Dwg	X	X		X
				44 BWR UCF disposal container overall drawing		Dwg	X	X		X
				44 BWR UCF disposal container outer barrier drawing		Dwg	X	X		X
				44 BWR UCF disposal container inner barrier drawing		Dwg	X	X		X
				44 BWR UCF disposal container internals drawing		Dwg	X	X		X
				4 Pack DHLW disposal container overall drawing		Dwg	X	X		X
				4 Pack DHLW disposal container outer barrier drawing		Dwg	X	X		X
				4 Pack DHLW disposal container inner barrier drawing		Dwg	X	X		X
				4 Pack DHLW disposal container internals drawing		Dwg	X	X		X
				5 Pack DHLW disposal container overall drawing		Dwg	X	X		X
				5 Pack DHLW disposal container outer barrier drawing		Dwg	X	X		X
				5 Pack DHLW disposal container inner barrier drawing		Dwg	X	X		X

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1.2.2.3.3 Cont'd	TR233FB3 Cont'd	WP233730 Cont'd		5 Pack DHLW disposal container internals drawing		Dwg	X	X		X
	TR233FB2	WP233745	28-Feb-97	Identification of prior analyses/configurations needing refinement/update		Ltr Rept	X	X		
		WP233746	06-Jun-97	Internal WP Criticality 3rd Probabilistic Analysis		Anal	X	X		
		WP233753	16-Sep-97	WP Probabilistic Criticality Analysis	WP233755	Anal	X	X		
		WP233752	06-Jun-97	External Criticality 2nd Probabilistic Analysis		Anal	X	X		
	TR233FB3	WP233756	31-Mar-97	Draft design sections for the non-fuel components waste container SDD		IOC	X			
				Draft design sections for the waste package supports SDD		IOC	X			
				Draft design sections for the UCF waste container SDD		IOC	X			
		WP233758	30-Sep-97	Final design sections for the non-fuel components waste container SDD		IOC	X			
				Final design sections for the UCF waste container SDD		IOC	X			
				Final design sections for the waste package supports SDD		IOC	X			
	TR233FB5	WP233712	30-Sep-97	Study of benefits of additional barriers and material selection recommendations		Ltr Rept	X			X
		WP233714	30-Sep-97	Engineering sketch package for additional barriers evaluations		IOC	X			X
	TR233FB6	WP233702	28-Mar-97	WP Support and Pier Static Analysis		Anal	X	X		
				WP Support and Pier Seismic/Vibration Loading Analysis		Anal	X	X		
				WP Support and Pier 21 PWR Drop Onto Support Analysis		Anal	X	X		
				Design Input sheets for WP support and pier design analyses		IOC	X			
				EBS Temperature Distributions Thermal Analysis		Anal	X	X		
				EBS Emplacement Scale Thermal Update Analysis		Anal	X	X		
				Design Input sheets for EBS thermal analyses analyses		IOC	X			
				Primary PWR Waste Package Thermal Analysis		Anal	X	X		
				Primary BWR Waste Package Thermal Analysis		Anal	X	X		

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1.2.2.3.3 Cont'd	TR233FB6 Cont'd	WP233710	30-Sep-97	Engineering sketches for WP support and pier design analyses		IOC	X			X
				Engineering sketches for EBS thermal analyses		IOC	X			X
	TR233FB7	WP233A29	01-Jul-97	Secondary PWR Waste Package Thermal Analysis		Anal	X	X		
				Multiple WP Emplacement Scale Thermal Analysis		Anal	X	X		
		WP233A30	30-Sep-97	UCF WP Static Loads, Thermal Expansion Loads, and Internal Pressure Analysis		Anal	X	X		
				UCF Waste Package 2-meter Drop Analysis		Anal	X	X		
				WP Handling/Lifting Analysis		Anal	X	X		
				UCF WP Slap Down Related Events Analysis		Anal	X	X		
				UCF WP 21 PWR Response to Slap Down Analysis		Anal	X	X		
				Statement of WP residual stresses for welding		Ltr Rept	X	X		
				UCF WP Basket Assembly Analysis		Anal	X	X		
				Missile from Failure of Pressurized Component DBE Analysis		Anal	X	X		
		WP233A32	09-Apr-97	WP Design Basis Fuel Analysis		Anal	X	X		
				Waste Package Design Basis Fuel Analyses		Anal	X	X		
				UCF WP Criticality Analysis		Anal	X	X		
				UCF WP PWR, BWR and DHLW Source Term Analysis		Anal	X	X		
				WP Radiolysis /Shielding Analysis		Anal	X	X		
		WP23A34	09-Apr-97	Design input sheets for UCF WP slap down evaluations		IOC	X			
				Design Input sheets for primary and secondary WP thermal analyses analyses		IOC	X			
				Design input sheets for WP DBE static evaluations		IOC	X			
				Design input sheets for UCF WP static evaluations		IOC	X			
				Design input sheets for UCF WP drop evaluations		IOC	X			

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1.2.2.3.3 Cont'd	TR233FB7 Cont'd	WP23A34 Cont'd		Design input sheets for UCF WP miscellaneous components evaluations		IOC	X			
		WP233A36	30-Sep-97	Engineering sketches for primary and secondary WP thermal analyses		IOC	X			
				Engineering sketches for UCF WP drop evaluations		IOC	X			
				Engineering sketches for UCF WP miscellaneous component evaluations		IOC	X			
				Engineering sketches for UCF WP slap down evaluations		IOC	X			
				Engineering sketches for UCF WP static evaluations		IOC	X			
				Engineering sketches for WP DBE evaluations		IOC	X			
	TR233FB8	WP233782	13-Dec-96	List of available computer codes acquired		IOC	X			
		WP233766	12-Mar-97	Consequence model algorithms & codes		Ltr Rept	X	X		
		WP233764	14-May-97	Criticality consequence model		Ltr Rept	X	X		
	TR233FB9	WP233784	04-Sep-97	Disposal Criticality Technical Report, Rev. 1	WP150A3	Tech Doc	X	X	X	
	TR233FBC	WP233790	19-Dec-96	Algorithms and codes for identifying critical configurations		Ltr Rept	X	X		
		WP233792	01-May-97	Probabilistic criticality methodology		Ltr Rept	X	X		
	TR233FBE	WP233A02	28-Mar-97	PWR CRC Reactivity Analysis		Anal	X	X		
				BWR CRC Isotopic Analysis		Anal	X	X		
				PWR Isotopic Concentration Analysis		Anal	X	X		
				BWR CRC Reactivity Analysis		Anal	X	X		
				BWR Isotopic Concentration Analysis		Anal	X	X		
				PWR CRC Isotopic Analysis		Anal	X	X		
		WP233A06	28-Mar-97	Results of benchmark critical evaluations		Tech Doc	X	X		
				Benchmark Critical Analysis		Anal	X	X		
		WP233A18	13-Dec-97	Summary of BWR CRC data		Tech Doc	X	X		

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1.2.2.3.3 Cont'd	TR233FBE Cont'd	WP233A18 Cont'd		Summary of PWR CRC data		Tech Doc	X	X		
1.2.2.3.4	TR234FB1	WP234702	30-Sep-97	Cost estimates for disposal containers		IOC				X
				Cost estimates for pedestal and supports		IOC				X
				Cost estimate for closure weld equipment		IOC				X
	TR234FB2	WP234708	18-Dec-96	Closure weld Technical Guidelines Document		Tech Doc	X			
				TDPP for closure weld TGD		IOC	X			
		WP234715	24-Mar-97	Closure weld mockup for NDE testing		Hardware	X			
		WP234720	29-Aug-97	WP Closure Methods Report	WP234721	Tech Doc	X			
				TDPP for WP Closure Methods Report		IOC	X			
		WP234722	30-Dec-96	Weld equipment envelope		IOC	X			
		WP234724	30-Sep-97	Weld equipment envelope update		IOC	X			
	TR234FB3	WP234727	13-Dec-96	TDPP for NDE Technical Guidelines Document		IOC	X			
				NDE Technical Guidelines Document		Tech Doc	X			X
		WP234734	15-Sep-97	TDPP for WP NDE Methods Report		IOC	X			
				WP NDE Methods Report	WP234736	Tech Doc	X			X
	TR234FB4	WP234738	30-Sep-97	Package of 5 fabrication sketches		IOC	X			X
		WP234740	29-Aug-97	Fabrication Report		Ltr Rept	X			X
1.2.2.4.1	TR241FB2	WP035A3	08-Apr-97	Waste Forms Characteristics Report	WP035A3	Tech Doc	X	X		
		WP35A05	22-Jan-97	WFCR Rev 1 Draft to Performance. Assess.		Draft Rpt.		X		
		WP35A07	26-Feb-97	Draft WFCR Rev 1 to YMSCO for Review		Draft Rpt.		X		
	TR241FB4	WP08522	15-Nov-96	TGA Oxidation Data to Oxidation Models		IOC		X		
		WP08523	02-Dec-96	Input to Models, GENISIS		IOC		X		

OUR CONTRACT WORK

WBS 1.2.2 Waste Package Products (Rev 0, 12/18/96)

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1.2.2.4.1 Cont'd	TR241FB4 Cont'd	WP08524	02-Dec-96	TGA Oxidation Test Data to GENISIS		IOC		X		
		WP08525A	12-Dec-96	Oxidation Test WFCR Rev 1 Chapter		IOC		X		
		WP08527	12-Jun-97	TGA Oxidation Test Data to Oxidation Mod		IOC		X		
	TR241FB5	WP085301	15-Nov-96	SF Diss Flow Thru Data to Models		IOC		X		
		WP085302	02-Dec-96	SF Diss Flow Thru Test Data to GENISIS		IOC		X		
		WP085305	25-Jun-97	SF Diss Flow Thru Test Data to Models		IOC		X		
		WP85303A	20-Dec-96	SF Diss Flow Thru Test Chap to WFCR-R1		IOC		X		
	TR241FB8	WP0862A	13-Jun-97	Spent Fuel ATM Procurement Report	WP0862A	Ltr Report		X		
	TR241FB9	WP122401	12-Dec-96	Waste Form Model Chap to WFCR-R1		IOC		X		
		WP122403	25-Jun-97	Response Models Results to PA		IOC		X		
	TR241FBA	WP122201	15-Nov-96	Unsaturated SF Drip Data to Models		IOC		X		
		WP122202	13-Dec-96	Unsaturated SF Drip Test Data to GENISIS		IOC		X		
		WP122205	25-Jun-97	Unsaturated SF Drip Test Data to Models		IOC		X		
	TR241FBB	WP122101	15-Nov-96	Dry Bath Oxidation. Data to SF Oxidation Model		IOC		X		
		WP122102	16-Dec-96	Dry Bath Oxidation Data to GENISIS		IOC		X		
		WP122105	25-Jun-97	Dry Bath Oxidation Data to Oxidation Mod		IOC		X		
	TR241GB2	WP110A05	29-Jul-98	Provide WFCR Rev 2 Draft to Performance. Assess.		IOC		X		
		WP110A07	22-Sep-98	WFCR Rev 2 to YMSCO for Review		IOC		X		
		WP110A3	27-Oct-98	Waste Form Char. Report. Rev 2		IOC		X		
	TR241GB3	WP08567	23-Dec-97	Activity Plan		Tech. Doc.		X		
		WP08572A	21-May-98	SF C-14 Release Data to GENISIS		IOC		X		
		WP08574	31-Jul-98	SF C-14 Release Test Data Report/WFCR2		IOC		X		

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1.2.2.4.1 Cont'd	TR241GB4	WP08529	29-May-98	TGA Oxidation Data to Oxidation Models		IOC		X		
		WP08534	30-Jun-98	TGA Oxidation Chapter to WFCR Rev 2		IOC		X		
	TR241GB5	WP085307	11-Jun-98	SF Diss Flow Thru Data to Models		IOC		X		
		WP085309	14-Jul-98	SF Diss Flow Thru Chapter to WFCR Rev 2		IOC		X		
		WP085311	11-Jun-98	SF Diss Flow Thru Test Data to Models		IOC		X		
	TR241GB6	WP08552	30-Sep-98	SF Hardware Release Test Report		Tech Doc		X		
	TR241GB8	WP08616	30-Jun-98	Letter Report to YMSCO	WP08616	Ltr report		X		
	TR241GB9	WP122406	31-Aug-98	Response Model to PA & WFCR-Rev 2		IOC		X		
	TR241GBA	WP122207	11-Jun-98	Unsaturated SF Drip Data to Models		IOC		X		
		WP122209	14-Jul-98	Drip Test Chapter to WFCR Rev 2		IOC		X		
		WP122211	14-Oct-98	Unsaturated SF Drip test Data to Models		IOC		X		
	TR241GBB	WP122107	11-Jun-98	Dry Bath Data to Oxidation Models		IOC		X		
		WP122109	14-Jul-98	Dry Bath Oxidation Chap to WFCR Rev 2		IOC		X		
		WP122111	30-Sep-98	Dry Bath Data to Oxidation Models		IOC		X		
	TR241GBC	WP241800	30-Jan-98	Activity Plan		Tech Doc		X		
1.2.2.4.2	TR242FB1	WP085600	31-Jan-97	Activity Plan		Tech Doc		X		
	TR242FB2	WP122301	15-Nov-96	HLWG Drip Data to Models		IOC		X		
		WP122302	02-Dec-96	Unsaturated HLWG Drip Test Data to GENISIS		IOC		X		
		WP122307	12-Jun-97	HLWG Drip Test Data to Models		IOC		X		
	TR242FB3	WP085101	12-Dec-96	HWG Dissolution Rate Model Chap to WFCR-R1		IOC		X		
		WP085103	13-Jun-97	HWG Dissolution Rate Model Results to PA		IOC		X		
	TR242GB1	WP085620	30-Jun-98	HLWG Flow Thru Test Chap to WFCR Rev 2		IOC		X		

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1.2.2.4.2 Cont'd	TR242GB1 Cont'd	WP085625	29-Jan-99	HLWG Flow Thru Test Data to Models		IOC		X		
		WP085630	30-Nov-98	Data to Model		IOC		X		
		WP085631	29-Dec-98	Data to GENESIS		IOC		X		
	TR242GB2	WP122309	09-Apr-98	HLWG Drip Test Chapter to WFCR Rev 2		IOC		X		
		WP122311	10-Jul-98	HLWG Drip Test Data to Models		IOC		X		
	TR242GB3	WP085105	29-Jun-98	HWG Dissolution Rate Model Results/WFCR-R2		IOC		X		
		WP085106	29-Jun-98	HWG Dissolution Rate Model Results to PA		IOC		X		
1.2.2.5.1	TR251FB1	WP26708	16-Jan-97	Statement of initiation of Abiotic & Biotic MIC tests	WP26708	Ltr report		X		
		WP26709	31-Jul-97	MIC Data Input Update to PA		IOC		X		
		WP26713	16-Jan-97	MIC Data Input to PA		IOC		X		
	TR251FB4	WP26305	29-Aug-97	Critical Pot. Measurement Update Data to PA		IOC		X		
		WP26309	15-Jan-97	Critical. Pot. Measurements Data to PA(1)		IOC		X		
	TR251FB5	WP26505	15-Jan-97	Thermogravimetric Anal. Data to PA		IOC		X		
		WP26506	30-Sep-97	Thermogravimetric Anal Update to PA		IOC		X		
	TR251FB7	WP26203	14-Jan-97	Critical Potential Test Data to PA		IOC		X		
		WP26204	31-Jul-97	Diff Area Ratios Test Update Data to PA		IOC		X		
	TR251FB9	WP015A3	28-Feb-97	Engineered Materials Characterization Report	WP015A3	Tech Doc		X		
		WP15A05	15-Jan-97	EMCR Rev 1 Draft to Performance. Assess.		IOC		X		
		WP15A10	01-Apr-97	EMCR Rev. 1		Draft Rpt		X		
	TR251FBA	WP26402	10-Feb-97	Statement of initiation of controlled electrochemical potential tests	WP24602	Ltr Report		X		
		WP26403	30-Jun-97	Potential Control Data Update to PA		IOC		X		
		WP26404	16-Jan-97	Potential Control Data to PA		IOC		X		

WBS 1.2.2 Waste Package Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCE	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.2.5.1 Cont'd	TR251FBB	WP60801	11-Aug-97	Startup 3B Tanks	WP60801	Ltr Report		X		
		WP60801A	30-Jul-97	Statement of initiation of LT galvanic corrosion testing	WP60801A	Ltr Report		X		
	TR251FBC	WP60703A	16-Jan-97	Letter Rep Initiation of Crack Growth Rate Testing	WP60703A	LTR		X		
		WP60705B	30-Jun-97	Data to PA		IOC		X		
	TR251FBE	WP60504	18-Jul-97	Crevice Corrosion Data to PA		IOC		X		
		WP60508	30-Sep-97	Prelim SCC/HE Model Info to EMCR-R2		IOC		X		
		WP60509	30-Sep-97	SCC/HE/Prelim. Galvanic. Corrosion. Model Data to PA		IOC		X		
	TR251FBG	WP60103	31-Mar-97	1st Tanks 1st Specimen Results to PA		IOC		X		
		WP60107	30-May-97	1st Specimen (1st Tanks) Report to EMCR-R2		IOC		X		
		WP60116	08-Jul-97	Startup 2A Tanks	WP60116	LTR		X		
		WP60118	08-Jul-97	Startup 2B Tanks	WP60118	LTR		X		
	TR251FBH	WP61607	13-Jan-97	Initiation of Rel Humidity Chamber Corrosion Tests	WP61607	LTR		X		
		WP61613	30-Jul-97	1st Batch Report to PA		IOC		X		
	TR251FBK	WP26904	31-Jul-97	Data input to PA		IOC		X		
	TR251GB2	WP20A01	30-Oct-98	EMCR Rev 2 Prelim Draft		IOC		X		
		WP20A04	02-Dec-98	EMCR Rev 2 Draft to Performance. Assess.		IOC		X		
		WP27005	31-Aug-98	Input to EMCR-R2		IOC		X		
	TR251GB4	WP26303	31-Jul-98	Critical. Pot. Measurements Report. to EMCR-R2		IOC		X		
	TR251GB5	WP26511	30-Sep-98	Input to EMCR Rev. 2		IOC		X		
	TR251GB6	WP25810	30-Sep-98	Input to EMCR-R2 2		IOC		X		
	TR251GB7	WP25206	30-Sep-98	Input EMCR-R2		IOC		X		
		WP26209	29-Sep-98	Data to Model Activity		IOC		X		

WBS 1.2.2 Waste Package Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCE	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.2.5.1 Cont'd	TR251GB8	WP25860	30-Sep-98	Results to EMCR Rev 2		IOC		X		
	TR251GBA	WP60908	31-Jul-98	Electrochemical Potential Report to EMCR-R2		IOC		X		
	TR251GBB	WP60810	05-Dec-97	3rd Tank/1st Batch Report to EMCR-R2		IOC		X		
	TR251GBC	WP60707	31-Aug-88	Self Loaded SCC Growth Report to EMCR-R2		IOC		X		
	TR251GBD	WP26826	30-Sep-98	Input to EMCR-R2		IOC		X		
		WP26829	04-Dec-97	Data to Performance Assessment		IOC		X		
		WP26831	30-Mar-98	Planning Input to Longer Term Testing		IOC		X		
		WP26833	30-Sep-98	Additional. Input to Near Field environment		IOC		X		
	TR251GBE	WP60503	20-Jul-98	Preliminary Crevice Corrosion Update to EMCR-R2		IOC		X		
		WP60516	27-Jul-98	Preliminary Galvanic Corrosion Info to EMCR-R2		IOC		X		
		WP60518	27-Jul-98	Preliminary Galvanic Corrosion Info to PA		IOC		X		
		WP60524	30-Sep-98	MIC Model Info to EMCR-R2		IOC		X		
		WP60526	30-Sep-98	MIC Model Info to PA		IOC		X		
		WP60532	31-Aug-98	Phase Stability Model Update to EMCR-R2		IOC		X		
		WP60534	31-Aug-98	Phase Stability Model Update to PA		IOC		X		
		WP60538	30-Sep-98	Pitting Corrosion Model Update to EMCR-R3		IOC		X		
		WP60539	30-Sep-98	Pitting Corrosion Model Update to PA		IOC		X		
		WP60543	31-Aug-98	Oxidation/General Corrosion Update to EMCR-R2		IOC		X		
		WP60544	31-Aug-98	Oxidation/General Corrosion Model Update to PA		IOC		X		
	TR251GBG	WP60109	28-Sep-98	1st Tanks 2nd specimen Results to PA		IOC		X		
		WP60111	30-Jun-98	Analytical/Biological Feedback to NFE		IOC		X		
		WP60113	02-Dec-98	2nd Specimen (1st Tanks) Report to EMCR-R2		IOC		X		

WBS 1.2.2 Waste Package Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCE	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.2.5.1 Cont'd	TR251GBG Cont'd	WP60126	22-May-98	Analytical/Biological Samples to NFE		IOC		X		
		WP60130	22-Jul-98	1st Batch (2nd Tanks) Report to EMCR-R2		IOC		X		
	TR251GBH	WP61609	03-Aug-98	2nd Batch Report for EMCR-R2		IOC		X		
	TR251GBK	WP26906	31-Aug-98	Input to EMCR-R2		IOC		X		
		WP26909	31-Aug-98	Input Conditions-Long Term Aging Tests		IOC		X		
	TR251FB1	WP61004	31-Jul-97	Prelim. Basket Material Performance. Model to PA & Design.		IOC		X		
1.2.2.5.2	TR252FB2	WP27210	15-Jan-97	ST Basket Materials Test Data to PA		IOC		X		
		WP27211	31-Jul-97	ST Basket Materials Test Data Update to PA		IOC		X		
	TR252GB1	WP61003	31-Jul-98	Input to EMCR-R2		IOC		X		
	TR252GB2	WP27209	30-Sep-98	Input to EMCR-R2		IOC		X		
1.2.2.5.5	TR255FB1	WP60404	30-Jun-97	Data Input to PA		IOC		X		
	TR255FB2	WP26809	29-Aug-97	Feedback to Near-Field Environment		IOC		X		
		WP26815	29-Aug-97	Data to Performance Assessment		IOC		X		
	TR255GB1	WP60408	30-Sep-98	Input to EMCR-R2		IOC		X		
	TR255GB2	WP26807	30-Sep-98	Input to EMCR-R2		IOC		X		
		WP26811	31-Dec-97	Planning Input to Longer Term Testing		IOC		X		
1.2.2.5.6	TR256FB1	WP60413	30-Jun-97	Data Input to PA		IOC		X		
	TR256FB2	WP60301	30-Jun-97	Into LA, Design		IOC		X		
		WP60315A	13-Jun-97	Ceramic Feasibility/Mech. Tests & Evaluation	WP60315A	Ltr. Rpt.		X		
	TR256GB1	WP60417	30-Apr-98	Inputs to PA, Design		IOC		X		
		WP60420	30-Sep-98	Input to EMCR-R2		IOC		X		
	TR256GB2	WP60320A	31-Jul-98	Input to EMCR Rev 2		IOC		X		

APPENDIX D

REPOSITORY SURFACE AND SUBSURFACE PRODUCTS

The data contained in this appendix reflects the status of the Yucca Mountain Site Characterization Project as of 12/16/96. Because of the evolving conditions of the Yucca Mountain Site Characterization Project, data in this appendix is changed or updated as necessary. However, this VA Design and Review Plan will not be revised or reissued as a result of data updates. For a current status of the data in this appendix and/or a copy of the current version, contact D. Stahl. For suggested changes to the contents, contact A. Segrest.

REPOSITORY SURFACE AND SUBSURFACE PRODUCTS

A list of products to be developed by the Repository Surface and Subsurface Products organization is provided. The planning and summary account number, summary account number, work breakdown structure, and activity number are provided for each product. If the product is part of a deliverable, the deliverable number is provided. The product type and the estimated end date are also provided. If the product is directly related to any of the four VA components, that information is also provided.

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.2	TR42FA6	RP100702	31-Dec-96	VA Design & Review Plan	RP120MG1	Tech Doc	X	X		X
			30-Sep-97	Draft LA Design & Review Plan	RP120MG2	Tech Doc			X	
	TR42FB3	RP2402D1	05-Nov-97	Design Guide Plan		Plan				
		RP2402D2	29-May-97	Source Terms Design Guide	RP120MBH	Guides	X			
		RP2402D4	30-Sep-97	Remote Operations Design Guide	RP120MBH	Guides	X			
	TR42FB4	RP2405B1	31-Mar-97	Input to WAST, Quantity, Mix/Thruput SE200A		Input	X			
		RP2405B2	31-Mar-97	Input to Support Retrieval Strategy. SE502		Input	X			
		RP2405B3	07-Apr-97	Input to Seals Closure, SE506		Input	X			
		RP2405B4	30-Sep-97	Input to S&S Requirements, SE730		Input	X			
		RP2405B5	30-Sep-97	Input to Waste Package Size, SE460		Input	X			
		RP2405B6	30-Sep-97	Input to Waste Generated (Disp.),SE436		Input	X			
		RP2405B7	25-Jul-97	Input to Test & Evaluation Plan, SE 504		Input	X			
		RP2405B8	30-Sep-97	Input to Perform. Confirmation, SE050B		Input	X			
	TR42FB5	RP120700	15-Jul-97	Radiation Design Guide	RP120M3H	DG	X			
		RP120710	30-Sep-97	Drift Design Guide.	RP120M3H	DG	X			
		RP120715	30-Sep-97	Ground Control SDD		Tech Doc	X			
				EBS SDD		Tech Doc	X			
				SS HVAC SDD		Tech Doc	X			
				WP Handling SDD		Tech Doc	X			
				PC Monitoring SDD		Tech Doc	X			
				Seal System SDD		Tech Doc	X			
				SS Repository Area SDD		Tech Doc	X			

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.2 Cont'd	TR42FB5 Cont'd	RP120715 Cont'd		Subsurface Accesses SDD		Tech Doc	X			
				Retrieval System SDD		Tech Doc	X			
				Backfill Emplacement SDD		Tech Doc	X			
				SS Electrical Power Distribution SDD		Tech Doc	X			
				SS Fire Suppression SDD		Tech Doc	X			
				SS Radiation Monitoring SDD		Tech Doc	X			
				Excavation/Muck Handling SDD		Tech Doc	X			
1.2.4.6	TR46FB2	RP2403A1	14-Jun-97	Space Allocation Analysis Input		Space	X			
		RP2403A2	29-Jan-97	System Configuration Analysis/ Model	RP243AMA	Anal	X			
		RP2403A2	29-Jan-97	Qualification of Witness		V&V	X			
		RP2403A3	30-May-97	Waste Handling Overview	RP243AMB	Dwg	X			X
				Carrier Unloading & Cask Preparation	RP243AMB	Dwg	X			X
				DPC Removal and Opening	RP243AMB	Dwg	X			X
				Spent Fuel Assembly Handling	RP243AMB	Dwg	X			X
				Waste Canister Handling	RP243AMB	Dwg	X			X
				Unloaded Cask Prep & Carrier Loading	RP243AMB	Dwg	X			X
				DC Welding and Transfer	RP243AMB	Dwg	X			X
				Equipment Drawings (4)			X			
		RP2403A3	15-May-97	Horizontalizer			X			
				DPC Delidding System			X			
				Fuel Transfer System			X			
				Fuel Staging Rack			X			

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.6 Cont'd	TR246FB2 Cont'd	RP2403A3 Cont'd		Space Allocation Analysis Input		Input	X			
		RP2403A3	30-May-97	Recovery Operations		Anal	X			
				Fuel Transfer System		Anal	X			
				DPC Transfer & Opening		Anal	X			
		RP2403A4	30-May-97	Cask Handling Operations	RP243AMB	Dwg	X			X
				Cask Decontamination	RP243AMB		X			X
				Pool Purification	RP243AMB	Dwg	X			X
				Cask Cleaning	RP243AMB	Dwg	X			X
				Space Allocation Analysis Input		Anal	X			
		RP2403A5	01-Jul-97	Liquid LLW Processing (11 Sheets)	RP243AMC	Dwg	X			X
				Liquid and Solid LLW Material Balance	RP243AMC	Dwg	X			X
				DPC Processing (2 sheets)	RP243AMC	Dwg	X			
				Solid LLW Processing (8 sheets)	RP243AMC	Dwg	X			X
				Space Allocation Analysis Input		Dwg	X			X
				Secondary Waste Generation Analysis		Anal	X			
				LLW Treatment Systems			X			
				DPC Disposition System		Anal	X			
		RP2403A6	11-Jul-97	Functional Relationship Diagram		Anal	X			
				WHO EL. 100+0		Drft GAs	X			
				WHO EL. 116+0		Drft GAs	X			
				WHO EL. 130 +0		Drft GAs	X			
				WHO EL. 143 + 0		Drft GAs	X			

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.6 Cont'd	TR246FB2 Cont'd	RP2403A6 Cont'd		WHO EL. 160 + 0		Drft GAs	X			
				WHO EL. 100 + 0		Drft GAs	X			
				WHO EL. 115 +0		Drft GAs	X			
				WHO (2 sheets)		Drft GAs	X			
				WTO		Drft GAs	X			
				WHO		Drft GAs	X			
				WTO		Drft GAs	X			
				WHO		Drft GAs	X			
				WTO		Drft GAs	X			
		RP2403A7	30-Sep-97	WHO		Anal	X			
				WTO		Anal	X			
				WHO (2 sheets)		Dwg	X			
				WTO		Dwg	X			
				WHO (2 sheets)		Dwg	X			
				WTO		Dwg	X			
		RP2403A8	30-Sep-97	Composite Key	'RP243AMD	Dwg	X			X
				Carrier Bay/HVAC Equipment Room	'RP243AMD	Dwg	X			X
				Primary Confinement Supply Air	'RP243AMD	Dwg	X			X
				Secondary & Tertiary Confinement Supply Air	'RP243AMD	Dwg	X			X
				Primary Confinement Areas	'RP243AMD	Dwg	X			X
				Secondary & Tertiary Area (EL. 100+0)	'RP243AMD	Dwg	X			X
				Secondary & Tertiary Area (EL. 116+0)	'RP243AMD	Dwg	X			X

9. **Provide a rough schedule of when this issue will be resolved for VA:**

			FY97												FY98											
No	POC (Name/Phone)	Date	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1	R. Saunders/5-4380	10/01/97 - 01/31/98																								
2	P. Gehner/4-7503	11/08/96 - 01/10/97																								
3	F. Bierich/5-9686	10/01/96 - 07/14/97																								
4	R. Saunders/4-1865	10/15/96 - 02/11/97																								
5	F. Bierich/5-9686	10/01/96 - 06/13/97																								
6	R. Saunders/4-1865	10/01/96 - 04/30/97																								
7	R. Saunders/4-1865	11/01/96 - 02/28/97																								
8	R. Nolting/4-1833	10/01/96 - 07/31/97																								
9	D. McAffee/5-9656	05/01/97 - 09/30/97																								
10	M. Haas/5-9631	10/01/96 - 09/30/97																								
11	F. Bierich/5-9686	10/01/97 - 02/27/98																								
12	F. Bierich/5-9686	12/15/97 - 09/30/98																								
13	F. Bierich/5-9686	12/01/97 - 05/29/98																								

10. **Describe a process that will be used to measure performance towards closure:**
Performance will be measured in accordance with the process documented in the VA Monitoring Plan.

11. **Describe how status will be reported during the process of closing this issue:**
Status will be reported in accordance with the process documented in the VA Monitoring Plan.

CURRENT PLANNING -
K CONTINUING

Key VA Issue
Resolution Plan

1. **Issue #7:** Confirmation of High Volume and Long Period Waste Handling Capability and DBE Consequence (wet vs dry) — March 11, 1997 — Rev. #01A

2. **Assigned to:** **M&O Responsible Individual:** Steven Meyers **Phone:** 5-4392
DOE Contact: Bernie Verna **Phone:** 4-1374

M&O Manager

Steven J Meyers 3-12-97
M&O Responsible Individual

3. **Issue Description:**
The repository will annually package about 11,000 commercial spent nuclear fuel assemblies into about 420 large disposal containers. Fuel handling operations at commercial reactors are conducted wet, using pools and readily accessible equipment. It is expected that for the repository the disposal containers will not be loaded in a pool because the presence of water negatively impacts the design of the waste packages. As a result, the waste handling operations are expected to be performed dry in remotely operated hot cells. The technical challenge is designing reliable systems to remotely handle large containers (e.g., 60 tons), and large numbers of spent fuel assemblies.

CURRENT PLANNING - NOT FOR CONTRACT

4. **Describe the current status and the significance of the issue:**
The ACD included dry handling systems to transfer spent fuel assemblies from shipping casks to disposal containers. In this design, 98% of the assemblies remained within MPCs. The VA design will be based on transferring 100% fuel as individual uncanistered assemblies. This will require significantly more transfer operations and higher secondary waste generation rates than in the ACD. Design analyses have not been prepared to establish the type of handling system (i.e., wet or dry) or number of operating lines/stations; demonstrate that the dry design will be reliable, available, and maintainable; or determine the quantity of low-level waste generated from equipment/cell decontamination operations.

5. **Indicate its importance and what effects it will have on a VA:**
Resolution of this issue could significantly impact the size, configuration and operations of the waste handling and secondary waste treatment facilities. VA effects are described in Paragraph 6.

6. **Describe how the issue ties to the TSPA, MGDS cost estimate, and LA planning:**
TSPA is not impacted by this issue. The MGDS cost estimate may be significantly impacted by this issue as the waste handling and secondary waste treatment facilities are cost drivers. LA planning is impacted because the schedule may need to accommodate a dry handling prototype program. This program would be executed during detail design and would be required to lower program risk. The key products required to resolve this issue are design analyses (see Paragraph 7) and drawings (flow, equipment and general arrangement).

7. **Describe the strategy and criteria for achieving a degree of closure sufficient for VA:**
Design analyses will be performed in to establish a defendable basis for the waste handling and secondary waste treatment operations design. A key analysis in early FY97 will select the type of waste handling systems, establish the number operating lines, and size of the in-process staging areas. This analysis will be based on the Revision 4 of the CDA, which assumes: the repository must be capable of emplacing 70,000 MTHM of waste over 24 years starting in 2010, 100% of the

commercial SNF will at times be received as uncanistered fuel or in canisters that are not suitable for disposal, at other times a significant portion of the commercial SNF may be received in disposable canisters, other wastes (will be received in disposable canisters. Other key assumptions used for this analysis include: waste will be received in approximately the same order it is emplaced, empty DPCs will be packaged and shipped off-site for disposal/recycle, and uniformity of waste shipments will be similar to what is found with commercial transportation networks. A waste mix and throughput study will be conducted in mid FY97 by systems to confirm or update the assumptions related to waste receipt form and schedule. The impact of this study on the waste handling facility design will be assessed and if necessary updated. Other key analyses will address failed equipment recovery strategies, waste handling systems design, space allocation, and secondary waste generation and treatment.

This issue will be closed when general arrangements that describe the selected concept are issued.

CURRENT PLANNING
WORK CONTINUING

8. **Describe the steps in a process that the project will use to bring closure on this issue:**

No.	Title	Description	Summary Account #
1	Finalize Waste Handling Concept (RP2403A2)	Establish the basic concept for the waste handling operations including technology selections, the number of operating trains and capacity of in-process staging areas. Analysis deliverable is due January 30, 1997.	TR46FB2
2	Size Waste Handling Equipment/Areas (RP2403A3)	Prepare flow diagrams, selected equipment drawings, preliminary equipment layout drawings, supporting design analyses, and design description for the waste handling systems. Flow diagram deliverable is due May 30, 1977.	TR46FB2
3	Size Waste Treatment Equipment/Areas (RP2403A5)	Determine the quantity of secondary waste generated, and adjust/add features to minimize waste and the spread of contamination. Flow diagram deliverable with waste rates is due June 30, 1997.	TR46FB2
4	Develop Initial Integrated Facility Layout (RP2403A6)	Develop a preliminary general layout of the Waste Handling Building based on the space requirements and design concept.	TR46FB2
5	Complete Throughput Study (SE200M3)	Confirm or update the Revision 4 of the CDAs related to waste receipt form and schedule.	TR15FB2
6	Provide RAM Support to SRA/Design (SE724700)	Provide Reliability, Availability, and Maintainability (RAM) data and review input.	TR18FA1
7	Prepare Space Summaries and General Arrangements (RP2403A9)	Update the general arrangements, to incorporate revised support area room sizes, structural member sizes, HVAC space requirement, and the results of a RAMI review. GA deliverable is due September 30, 1997.	TR45FB2
8	Complete Design Descriptions (RP2403AA)	Prepare input to SDDs and a letter report that outlines the requirements for prototype testing.	TR46FB2
9	Prepare/Update Configuration Analyses (RP7402A1)	Prepare additional analyses to resolve lower tier issues that are required for LA and will provide additional credibility for VA.	TR46GB3
10	Provide RAM Support to SRA/Design (SE724A)	Provide additional RAMI data and review input.	TR18GA1

9. **Provide a rough schedule of when this issue will be resolved for VA:**

			FY97												FY98											
No	POC (Name/Phone)	Date	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1	Meyers/5-4392	10/12/96 - 01/30/97																								
2	Meyers/5-4392	11/18-96 - 04/11/97																								
3	Meyers/5-4392	04/14/97 - 06/13/97																								
4	Meyers/5-4392	06/16/97 - 07/11/97																								
5	Lev/5-4029	10/01/96 - 04/11/97																								
6	Robertson/4-7611	10/01/96 - 09/30/97																								
7	Meyers/5-4392	08/01/97 - 09/30/97																								
8	Meyers/5-4392	04/14/97 - 09/30/97																								
9	Meyers/5-4392	10/01/97 - 03/31/98																								
10	Robertson/4-7611	10/01/97 - 07/26/99																								

ORIGINAL

10. **Describe a process that will be used to measure performance towards closure:**
Performance will be measured in accordance with the process documented in the VA Monitoring Plan.

11. **Describe how status will be reported during the process of closing this issue:**
Status will be reported in accordance with the process documented in the VA Monitoring Plan.

CURRENT PLANNING -
WORK CONTINUING

CURRENT PLANNING - WORK CONTINUING

Key VA Issue
Resolution Plan

1. **Issue #8:** Disposal of Site Generated Waste November 6, 1996 Rev. #01A

2. **Assigned to:** **M&O Responsible Individual:** Richard Memory **Phone:** 4-7247
DOE Contact: Bernie Verna **Phone:** 4-1374

M&O Manager M&O Responsible Individual

3. **Issue Description:**
This issue deals with the types and quantities of waste expected to be generated during construction and operation of the repository as well as with the disposal location (on-site vs. off-site) of this waste. A feasible plan for disposing of the site-generated waste should be in place by the time of the VA.

4. **Describe the current status and the significance of the issue:**
A draft of REV 03 of the Civilian Radioactive Waste Management System Requirements Document, paragraph 3.2.2 D states that "site generated hazardous, low-level radioactive and mixed waste shall be transported to government-approved off-set facilities for disposal." However, at this time, the off-site location for the site generated waste has not been identified. This issue requires identification of feasible off-site disposal locations for this waste or identification of feasible on-site disposal options. Depending on the quantity of waste generated this issue could have significant impacts on cost, schedule, and/or repository licensing strategy. The resolution of this issue will require working with the licensing, PA, and environmental, safety, and health organizations. The resolution of this issue will support both VA and LA.

WORK CONTINUING

5. **Indicate its importance and what effects it will have on a VA:**
This issue is directly related to the cost, license application plan, and design portions of the VA. This is a question that must have a clear plan for resolution by the VA in order to provide closure to this unanswered question.

6. **Describe how the issue ties to the TSPA, MGDS cost estimate, and LA planning:**
The amount of waste generated and the disposal location both have the potential to significantly impact the MGDS cost. Cost may be impacted by waste packaging requirements as well as disposal and/or transportation requirements. If the waste is disposed of on-site, then a new section of the LA plan may be required to address LLW disposal regulations.

7. **Describe the strategy and criteria for achieving a degree of closure sufficient for VA:**
Identify the types and quantify the amounts of wastes that will potentially be generated at the repository for several different waste stream scenarios, identify options for disposal of site-generated waste for each of the scenarios, and evaluating these scenarios in terms of licensing requirements, costs, local government review requirements, schedule, etc. Criteria for resolution closure sufficient for VA will identify viable options for the disposal of the site-generated waste and produce a plan for implementation of those options. This will be completed by October 1997.

8. **Describe the steps in a process that the project will use to bring closure on this issue:**

No.	Title	Description	Summary Account #
1	Identify and quantify the types of wastes generated	Using the range of potential waste streams, including anticipated DPCs, identify the types of wastes generated, the quantities and its sources.	Waste Gen Study 97
2	Identify the Options available for disposal	Determine where the waste may be disposed, i.e. on-site, at the NTS, another DOE facility, or a commercial (non DOE) facility. Assess the likelihood of the availability of the off-site disposal options.	Waste Gen Study
3	Identify the regulatory issues associated with each waste type and disposal option	NRC regulates the disposal of LLW on-site per 10CFR60.135(d). DOE regulates the disposal LLW generated at DOE sites. The states are involved in the regulation of mixed and hazardous waste disposal. Document the roles and responsibilities of the potential regulators associated with each disposal option	Waste Gen Study
4	Assess Performance Assessment impacts	Given the potential interaction between the organics in the LLW, mixed, and hazardous wastes and the additional sources of RNs or chemical pollutants determine the feasibility and complexity of developing reasonable assurance arguments for each of the disposal options.	Waste Gen Study
5	Consider Impacts on the Repository EIS	Determine the impacts, in terms of cost, schedule, and content, on the repository EIS.	Waste Gen Study
6	Assess the costs of the disposal options	Determine costs to the repository and to society associated with each of the disposal options.	Waste Gen Study
7	Develop a recommendation	Utilize the information generated to recommend a viable approach for disposal of site generated wastes.	Waste Gen Study
8	Develop a plan for implementation	Develop a plan which demonstrate the feasibility of the option(s) recommended.	Waste Gen Plan 98

9. **Provide a rough schedule of when this issue will be resolved for VA:**

			FY97												FY98											
No	POC (Name/Phone)	Date	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1	Kal Bhattacharryya	04/15/97 - 05/15/97																								
2	R. Memory	04/15/97 - 05/30/97																								
3	Ken Ashe	06/01/97 - 06/30/97																								
4	Bob Andrews	05/01/97 - 06/30/97																								
5	Ed Mc Cann (Environmental)	07/01/97 - 07/30/97																								
6	Kal Bhattacharryya	06/01/97 - 07/30/97																								
7	R. Memory	08/01/97 - 09/30/97																								
8	R. Memory	10/01/97 - 11/30/97																								

PLANNING

10. **Describe a process that will be used to measure performance towards closure:**
Performance will be measured by tracking to the schedule identified in item #9 above. As each of the activities is completed the issue will be progressing toward closure sufficient for VA.

11. **Describe how status will be reported during the process of closing this issue.**
Status will be reported monthly and as each activity is scheduled for completion. A deliverable document will be produced documenting the outcome of this issue resolution activity at the end of FY97.

CURRENT PLANNING -
WORK CONTINUING

Key VA Issue
Resolution Plan

1. **Issue #9:** Strategy for Mapping Repository Subsurface December 18, 1996 Rev. #01A

2. **Assigned to:** **M&O Responsible Individual:** Richard Memory **Phone:** 4-7247
DOE Contact: William Boyle **Phone:** 4-5506

M&O Manager

M&O Responsible Individual

3. **Issue Description:**
The extent of geologic mapping of emplacement drift wall surfaces required for performance confirmation activities or for other reasons could significantly impact the design and emplacement method of the emplacement drift ground support system. At this time the amount of drift wall mapping required to satisfy scientific needs, repository construction needs, and regulatory needs has not been determined.

4. **Describe the current status and the significance of the issue:**
The Performance Confirmation Concepts Study made recommendations for the type of parameters that need to be collected during emplacement drift construction and that must be acquired through subsurface geologic mapping. The study recommended a requirement that states "Any ground support system (i.e., shotcrete or concrete) that covers the emplacement drift rock wall surface shall not be installed until after any necessary rock mapping is complete." The amount of mapping that is necessary has yet to be specified. A currently favored method for providing ground support is with the use of a reinforced precast concrete lining. This lining is most economically emplaced immediately after the drift is excavated, allowing no time for geologically mapping the drift walls. If a large portion of the drift walls must be mapped then the advantages of this type of ground support system is reduced and the overall cost of the ground support system could be significantly increased. Interfaces: Resolution of the mapping issue will require interfacing with the scientific programs, licensing, and Performance Assessment organizations.

5. **Indicate its importance and what effects it will have on a VA:**
The amount of mapping that is necessary prior to emplacement of the ground support system could affect the ground control system selected, its cost, its installation, and overall effectiveness. This unresolved issue could have significant impact on the VA MGDS cost estimate and as well as on the VA LA plan.

6. **Describe how the issue ties to the TSPA, MGDS cost estimate, and LA planning:**
This issue ties directly to cost and LA planning, however, it is not expected to affect the post closure performance of the repository.

7. **Describe the strategy and criteria for achieving a degree of closure sufficient for VA:**
The strategy for achieving closure of this issue will be to identify the parameters and features that require observation through geologic mapping. In addition, the exact use to be made of this information will be identified in order to facilitate determination of the incremental value of mapping anywhere from a few drift walls, several drift walls, most of the drift walls, to all of the emplacement drift walls. Finally, a licensing analysis will be conducted in order to identify the anticipated regulatory based mapping requirements. The technical and programmatic requirements will then be considered in the development of a mapping implementation strategy. Closure of the issue deemed sufficient for VA will be the identification of the minimum amount of mapping required to support engineering, scientific, and licensing needs.

CURRENT PLANNING -
RK CONTINUING

8. **Describe the steps in a process that the project will use to bring closure on this issue:**

No.	Title	Description	Summary Account #
1	Identify Data Needs To Be Acquired by Mapping (SE050710)	Identify those parameters or features which are needed that can be acquired through mapping. Requests for data needs from the following affected organizations will be solicited: Repository Subsurface Design, Site Evaluation, Performance Assessment, and Regulatory and Licensing.	TR15FB1, TR39BFA1D, TR523FA1, TR541FA2
2	Perform a Regulatory and Licensing Analysis to Develop Mapping Design Inputs	An regulatory and licensing analysis will be performed and documented to establish a regulatory and licensing position on mapping requirements as input to a broader analysis considering design, site evaluations, and model verification and performance confirmation.	TR523FA1
3	Establish Current Level of Significance or Confidence in Data Needs (SE050705)	Documentation will be identified or referenced which provide the existing information on the parameters or features to be acquire by mapping. Summaries this information on the parameters and features will be established. An assessment of the significance or level of confidence in the data will be developed.	TR15FB1, TR39BFA1D, TR523FA1, TR541FA2
4	Identify Assumptions and/or Establish Expected Values for Data Needed (SE050705)	Current assumptions or predicted distributions (e.g., expected values and uncertainties) used in design, process modeling, or performance assessments related to the parameters and features will be documented.	TR15FB1, TR39BFA1D, TR523FA1, TR541FA2
5	Establish Confidence Level Needed for Data (SE050710)	A level of confidence in the assumptions or predicted parameter distributions will be established based on sensitivity of the parameters to design or performance.	TR15FB1, TR39BFA1D, TR523FA1, TR541FA2
6	Develop Minimum Mapping Requirements (SE050710)	Establish the minimum mapping requirements based on the current information, assumptions, predictions, and confidence level needed. Consideration of the regulatory and licensing input will be assess to determine the driving requirements.	TR15FB1
7	Develop Mapping Strategy (SE050710)	Develop a strategy for mapping to meet the minimum mapping requirements.	TR15FB1, TR39BFA1D, TR47FB3, TR523FA1, TR541FA2
8	Document Analysis (SE050710)	Document the results.	TR15FB1

9. **Provide a rough schedule of when this issue will be resolved for VA:**

			FY97												FY98											
No	POC (Name/Phone)	Date	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1	Brent Thomson/4-7708	03/01/97 - 03/14/97																								
2	Ken Ashe/5-5563	03/01/97 - 03/14/97																								
3	Brent Thomson/4-7708	03/07/97 - 03/31/97																								
4	Brent Thomson/4-7708	03/15/97 - 04/07/97																								
5	Brent Thomson/4-7708	03/15/97 - 04/07/97																								
6	Brent Thomson/4-7708	04/07/97 - 04/21/97																								
7	Brent Thomson/4-7708	04/07/97 - 04/21/97																								
8	Brent Thomson/4-7708	04/15/97 - 04/30/97																								

ORIGINAL

10. **Describe a process that will be used to measure performance towards closure:**
Performance will be measured by tracking to the schedule identified in item #9 above. As each of the activities is completed the issue will be progressing toward closure sufficient for VA.

11. **Describe how status will be reported during the process of closing this issue:**
Status will be reported monthly and as each activity is scheduled for completion. The results of the analysis will be captured in a deliverable document will be produced documenting the outcome of this issue resolution activity at the end of FY97.

CURRENT PLANNING -
WORK CONTINUING

CURRENT PLANNING - WORK CONTINUING

Key VA Issue
Resolution Plan

1. **Issue #10:** Post Closure Performance Standard November 21, 1996 Rev. #01A

2. **Assigned to:** **M&O Responsible Individual:** Hemi Kalia **Phone:** 5-4734
DOE Contact: Abe VanLuik **Phone:** 4-1424

M&O Manager M&O Responsible Individual

3. **Issue Description:**
Final post closure standards are not available to the Yucca Mountain project. The VA design is based on interim DOE post closure guidance. The DOE guidance may or may not be consistent with the standards to be issued in the future by the EPA. Because of this the VA design and the TSPA are being developed at risk.

4. **Describe the current status and the significance of the issue:**
For the VA design, the Yucca Mountain Project (YMP) is using the Department of Energy (DOE) recommended interim guidance for the postclosure standards. No NRC approved guidelines are available to the DOE. The DOE guidance is a 10,000 year peak dose standard measured against a critical group living 20 to 30 km down gradient from the Yucca Mountain. The guidance also requires that the engineered measures that have the potential of significantly reducing the peak dose, and could be implemented at reasonable cost, be evaluated for possible inclusion in the reference design. Therefore, the VA design is required to carry options for some segments of the design. The VA design should interface with the Performance Assessment organizations, Regulatory and Licensing and Systems engineering.

WORK CONTINUING

5. **Indicate its importance and what effects it will have on a VA:**
Because of the lack of final post closure standards, the MGDS design, by necessity, will be based on the DOE Interim guidance. Furthermore the VA design will be required to carry alternate design options for segments of the design most vulnerable to the post closure standards. Any significant change in standards such as from dose to risk base or from 10,000 years to whenever peak occurs or change in location of the focus group from 20-30 km to 5 km such as at the WIPP site could have a significant impact on the VA design.

6. **Describe how the issue ties to the TSPA, MGDS cost estimate, and LA planning:**
The TSPA must evaluate the VA design and its performance consistent with the EPA issued post closure standards. However, since the formal published standards are not available, the TSPA will be based on the interim DOE guidance. Significant deviation from this guidance could result in major impact on the costs. It should have no impact on the LA design. It is assumed that the postclosure standards will have been published by the time the LA design is started.

Depending on when the postclosure standards are published by the accepted by the EPA and adapted by the NRC and they differ from the DOE guidance the impact on the VA may or may not be significant. The overall VA schedule may or may not be impacted. It will depend on the published standards. The MGDS cost estimates will be at risk. The measures required to satisfy the standards may impact the construction schedule for the repository and the emplacement duration thus impacting the overall MGDS costs.

The lack of standards may not impact the LA planning. It is expected that the standards will be published within FY 97. However, should the standard not be released before the LA design is initiated could have some impact on the LA planning.

7. **Describe the strategy and criteria for achieving a degree of closure sufficient for VA:**
Strategy: (1) DOE will continue discussions with the EPA and the NRC to ascertain the most likely date for the release of the post closure standards. These discussions will include the DOE interim guidance that the Project is currently using to get some response as to the acceptability of these standards; (2) the VA design and the PA will be kept apprised of any further developments as the DOE interactions with the EPA and the NRC on the standards, especially if they appear to be substantially different from the interim DOE guidance; (3) the DOE will incorporate into the CDA, as additional consideration, risk base standards and 5 km down stream focused group requirement for the purposes of evaluating their impact on the VA design; (4) to mitigate the impact of any deviation from the DOE guidance, the VA the design will include alternate design concepts for most impacted segments of the design.

Criteria for Closure. 1. Release of post closure standards by the EPA and acceptance of these standards by the NRC will close this issue. 2. In the interim include in the CDA as additional design requirements to consider risk based standard whenever peak occurs and focus group at 5 km down stream from the repository.

CURRENT PLANNING -
WORK CONTINUING

APPENDIX C

WASTE PACKAGE DEVELOPMENT AND MATERIALS PRODUCTS

The data contained in this appendix reflects the status of the Yucca Mountain Site Characterization Project as of 12/16/96. Because of the evolving conditions of the Yucca Mountain Site Characterization Project, data in this appendix is changed or updated as necessary. However, this VA Design and Review Plan will not be revised or reissued as a result of data updates. For a current status of the data in this appendix and/or a copy of the current version, contact C. Chagnon. For suggested changes to the contents, contact A. Segrest.

WASTE PACKAGE DEVELOPMENT AND MATERIALS PRODUCTS

A list of products to be developed by the Waste Package Development and Materials Products organization is provided. The planning and summary account number, summary account number, work breakdown structure, and activity number are provided for each product. If the product is part of a deliverable, the deliverable number is provided. The product type and the estimated end date are also provided. If the product is directly related to any of the four VA components, that information is also provided.

CURRENT PLANNING
NOT CONTINUING

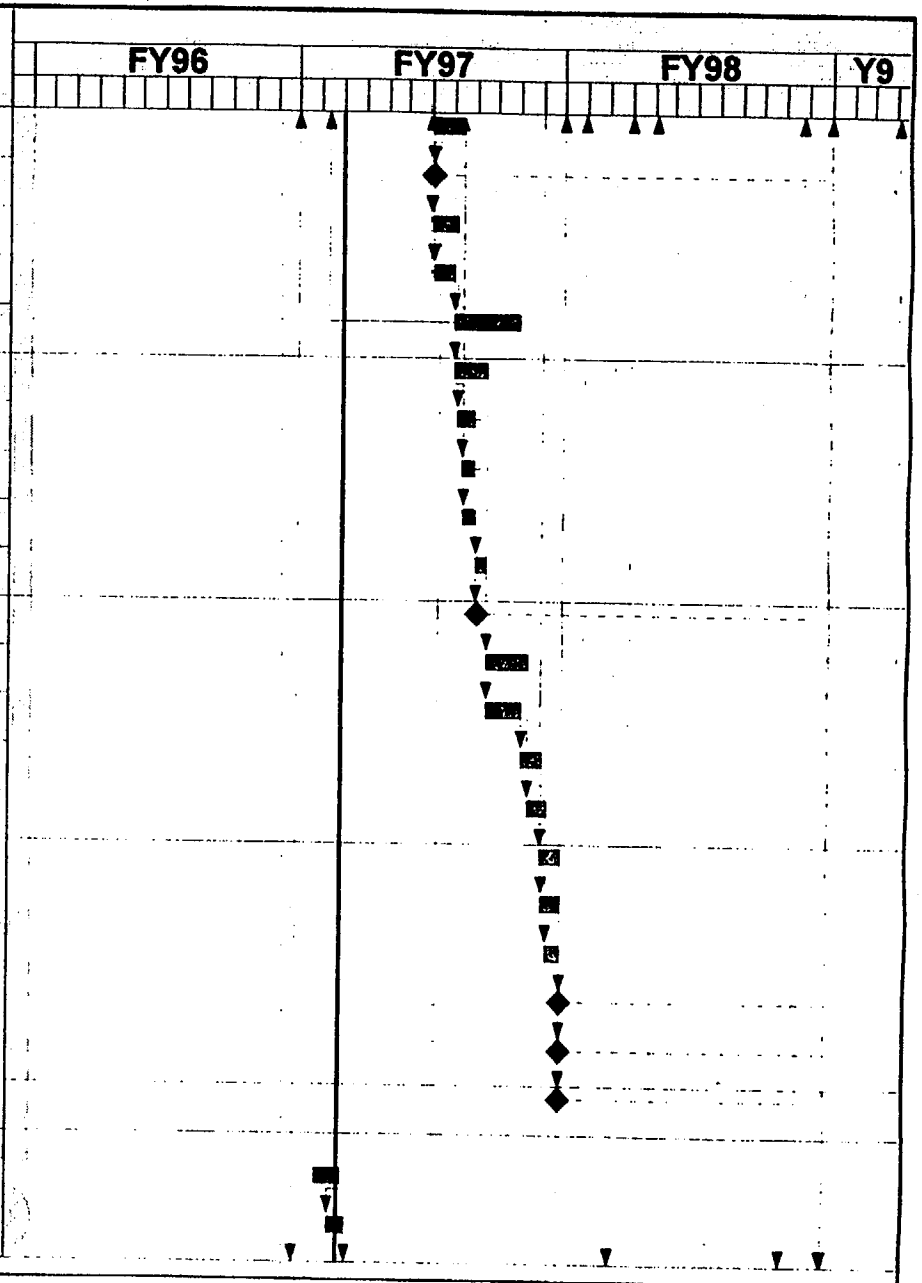
WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.6 Cont'd	TR246FB2 Cont'd	RP2403A8 Cont'd		Secondary & Tertiary Area (EL. 130+0)	'RP243AMD	Dwg	X			X
				Secondary & Tertiary Area (EL. 143+0)	'RP243AMD	Dwg	X			X
				HVAC Equipment Room	'RP243AMD	Dwg	X			X
				Primary Confinement Exhaust Air	'RP243AMD	Dwg	X			X
				Secondary & Tertiary Exhaust Air	'RP243AMD	Dwg	X			X
				HVAC Exhaust Stacks	'RP243AMD	Dwg	X			X
				Neutral Areas	'RP243AMD	Dwg	X			X
				Plan at EL. 100+0		Dwg	X			
				Plan at EL. 116+0		Dwg	X			
				Plan at EL. 130+0		Dwg	X			
				Plan at EL. 143+0		Dwg	X			
				Plan at EL. 160+0		Dwg	X			
				WHO		Anal	X			X
				WTO		Anal	X			X
				WHO		Anal	X			X
				WTO		Anal	X			X
		RP2403A9	11-Jul-97	Space Allocation Analysis		Anal	X			X
				WHO EL. 116+0	RP243AME	Final GAs	X			X
				WHO EL. 130+0	RP243AME	Final GAs	X			X
				WHO EL. 143+0	RP243AME	Final GAs	X			X
				WHO EL. 160+0	RP243AME	Final GAs	X			X
				WTO EL. 100+0	RP243AME	Final GAs	X			X

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.6 Cont'd	TR246FB2 Cont'd	RP2403A9 Cont'd		WTO EL. 115+0	RP243AME	Final GAs	X			X
				WHO (2 sheets)	RP243AME	Final GAs	X			X
				WTO	RP243AME	Final GAs	X			X
				WHO	RP243AME	Final GAs	X			X
				WTO	RP243AME	Final GAs	X			X
				WHO	RP243AME	Final GAs	X			X
				WTO	RP243AME	Final GAs	X			X
		RP2403AA	30-Sep-97	Waste Handling Prototype Study		Ltr	X			X
				Carrier Staging Shed		Input	X			
				Carrier Staging Shed Material Handling		Input	X			
				Waste Handling Facility		Input	X			
				Waste Handling Facility Ventilation		Input	X			
				Cask/Canister Handling		Input	X			
				Uncanistered Waste Transfer		Input	X			
				Canistered Waste Transfer		Input	X			
				Disposal Container Handling		Input	X			
				Waste Package Remediation		Input	X			
				Cask Maintenance Facility		Input	X			
				Cask Handling, Maintenance and Certification		Input	X			
				Cask Maintenance Facility Ventilation		Input	X			
				Radiological Waste Treatment Facility		Input	X			
				Site Generated Radiological Waste Handling		Input	X			

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE436700	Conduct Research & TDPP	33	01APR97*	15MAY97	
SE440M3	Waste Isolation Req'mt Study Report	0		01APR97*	M3
SE506725	Prepare Report & QAP-3-5 Review	25	01APR97*	05MAY97	
SE460700	Conduct Research & Develop Plan	22	02APR97*	01MAY97	
SE050715	Update ConOps Desc.& Devel.Input to PISA-Ch11	64	01MAY97	31JUL97	
SE460705	Develop WP Size Alternatives	31	02MAY97	16JUN97	
SE506730	Incorp Comments & Issue Report	18	06MAY97	30MAY97	
SE460710	Establish Selection Criteria	13	13MAY97*	30MAY97	
SE436705	Identify Disposal Options	10	16MAY97	30MAY97	
SE436710	Formulate Selection Criteria	11	02JUN97	16JUN97	
SE506M3	Seals Study Report	0		03JUN97	M3
SE436715	Evaluate Disposal/Packaging Options	42	17JUN97	14AUG97	
SE460715	Evaluate WP Size Alternatives	34	17JUN97	04AUG97	
SE460720	Prepare Study Report & Review	20	05AUG97	02SEP97	
SE436720	Prepare Report & M&O Review	16	15AUG97	08SEP97	
SE050725	Incorp Comments & Issue Report	21	02SEP97	30SEP97	
SE460725	Incorp. Comments & Issue Report	20	03SEP97	30SEP97	
SE436725	Incorp. Comments & Issue Report	16	09SEP97	30SEP97	
SE050BM3	Performance Confirmation Report	0		30SEP97	M3
SE436M3	Waste Generated Study Report	0		30SEP97	M3
SE460M3	Waste Package Size Study Report	0		30SEP97	M3
TR15FB2: Waste Qty, Mix, Throughput Study					
SE200705	Formulate Selection Criteria	11	01NOV96A	06DEC96	
SE200710	Identify Waste Receipt Schedules	8	19NOV96A	12DEC96	



Project Start 01OCT95
Project Finish 01OCT02
Data Date 02DEC96
Plot Date 18DEC96

Early
Progress Bar
Critical Activity

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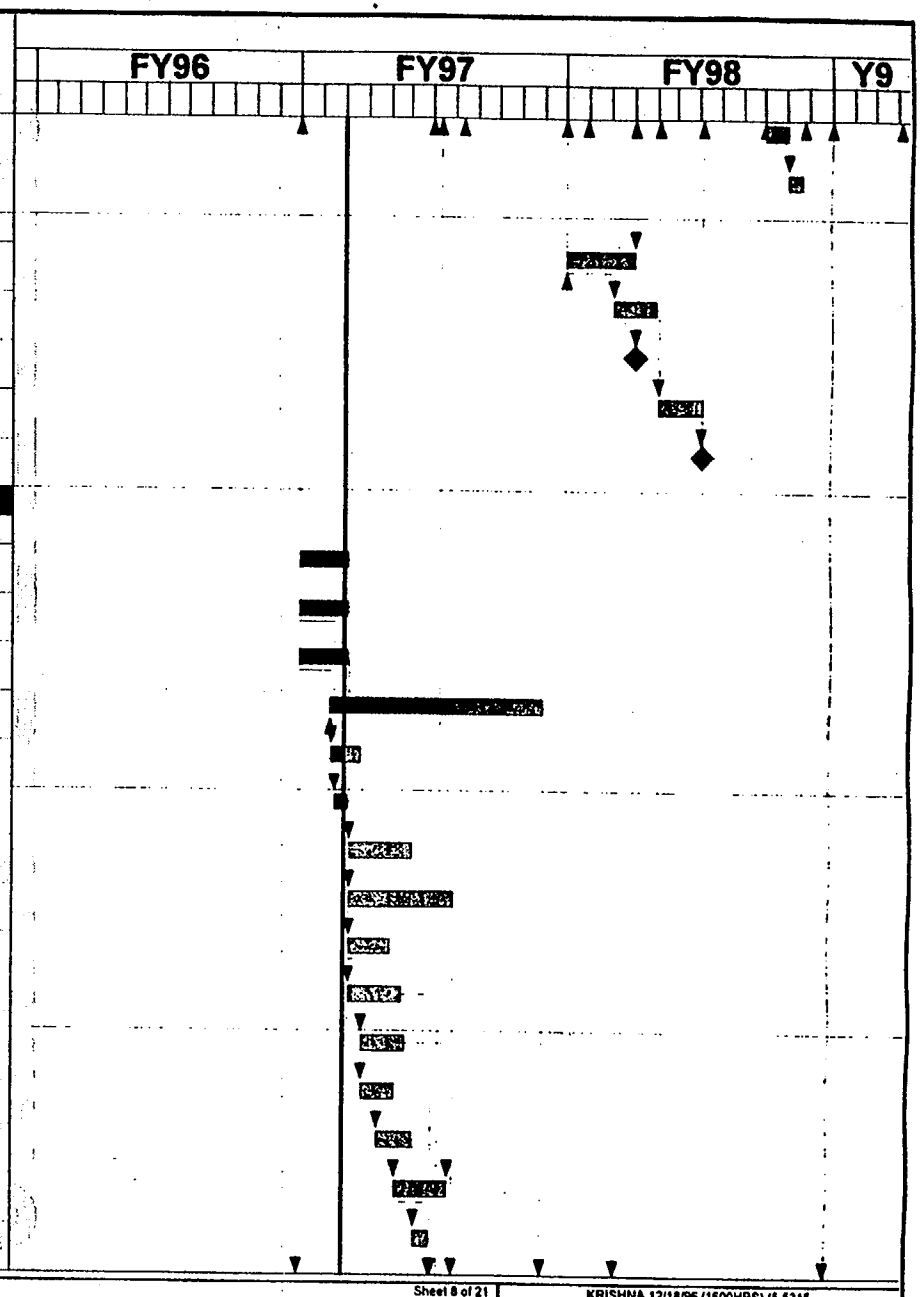
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE708855	Support DOE Review/Comment Resolution	22	01JUL98	31JUL98	
SE708860	Support PISA Completion	15	03AUG98	21AUG98	
TR142GB1: Support PISA Chapter 11 Development					
SE306830	Prepare First Draft	61	01OCT97*	31DEC97	
SE306835	Coordinate First Draft Review	41	03DEC97*	30JAN98	
SE306AM4	Deliver First Draft	0		31DEC97	M4
SE306840	Prepare Final Draft	44	02FEB98	03APR98	
SE306AM3	Complete PISA Ch.11 - Conduct of Operations	0		03APR98	P3
TR15FB1: System Studies Support to SRA/Design					
SE050700	Conduct Research & Development Plan	23	01OCT96A	06DEC96	
SE440700	Conduct Research	32	01OCT96A	06DEC96	
SE506700	Conduct Research	31	01OCT96A	06DEC96	
SE050720	Complete Initial Performance Confirmation Plan	107	11NOV96A	29AUG97	
SE506705	Identify Sealing Options for Nevada Req'mts	29	15NOV96A	24DEC96	
SE440705	Dev. Apprch/Quantifying Thresh.Add'g Eng'rg Perf	13	18NOV96A	06DEC96	
SE050705	Estab.Draft Ref.Perform.Confirm.Baseline	60	09DEC96	05MAR97	
SE050710	Supplement Perform.Confirm.Requirements	100	09DEC96	30APR97	
SE440710	ID Eng'rd Components Contrib./Perform & Ass.Cost	39	09DEC96	03FEB97	
SE440715	Compare Contributions Against Threshold.	49	09DEC96	18FEB97	
SE506710	Identify Sealing Options for 10CFR60 Req'mts	41	26DEC96	24FEB97	
SE506715	Formulate Selection Criteria	32	26DEC96	10FEB97	
SE440720	Prepare Report Documenting Results	35	17JAN97*	07MAR97	
SE506720	Evaluate Sealing Requirements Options	53	11FEB97	25APR97	
SE440725	Initiate QAP-3-5 Review & Deliver Report	16	10MAR97	31MAR97	



Project Start	01OCT95
Project Finish	01OCT02
Data Date	02DEC96
Plot Date	18DEC96

Early
Progress Bar
Critical Activity

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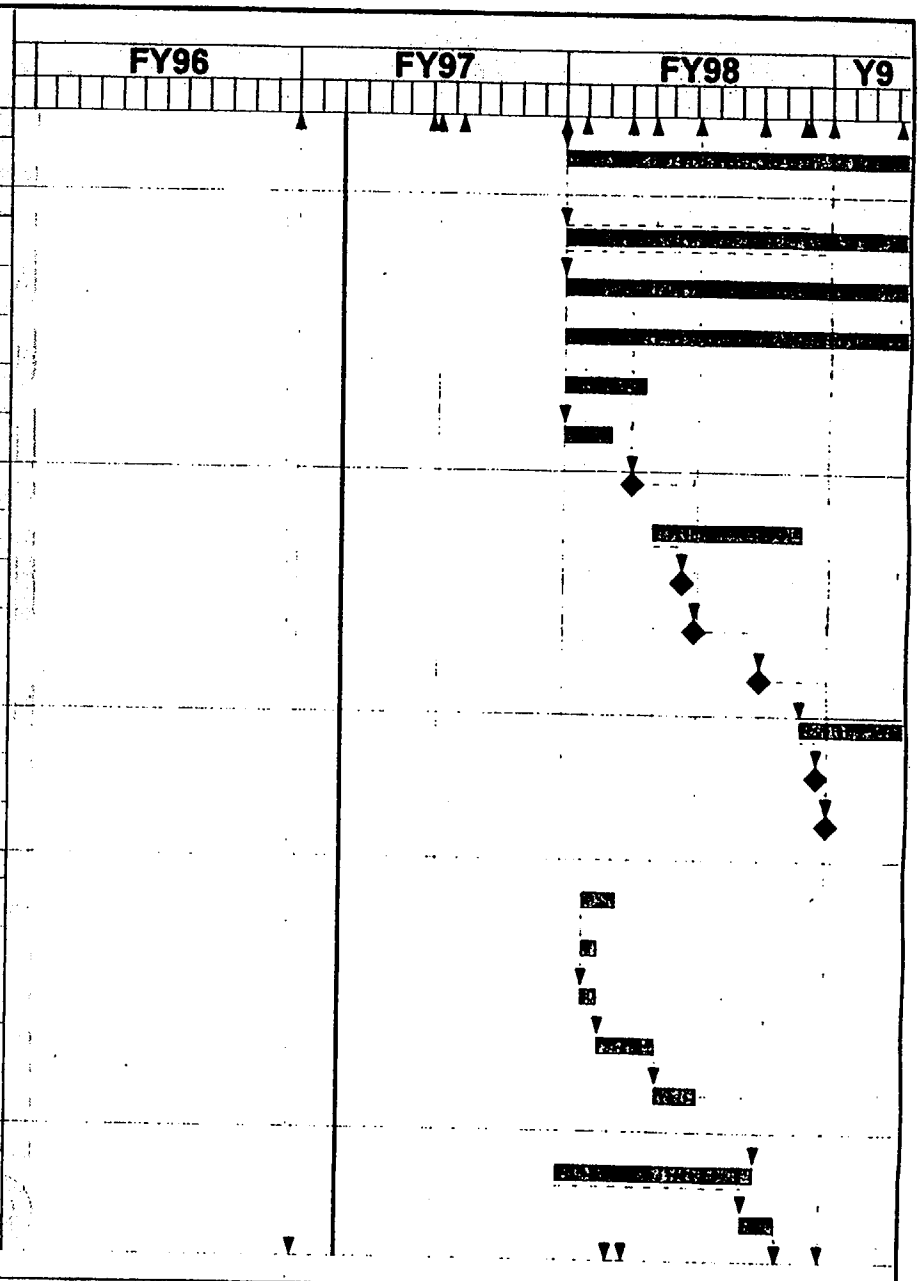
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

Sheet 8 of 21

KRISHNA 12/18/96 (1600HRS) (5-5315

Date | Revision | Checked/Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
TR142GA1: Technical Bases Management					
SE142800	Technical Bases Management	455	01OCT97	26JUL99	
TR142GA2: Systems Integration					
SE446800	Integrate SDD Development	455	01OCT97	26JUL99	
SE704800	Provide Technical Document Review Support	455	01OCT97	26JUL99	
SE706800	Support Ad-Hoc Regulatory Interactions	455	01OCT97*	26JUL99*	
SE706835	Support VA Design Summary Statement	74	01OCT97*	20JAN98	
SE706840	Support MGDS VA Review	44	01OCT97	05DEC97	
SE446AM4	CDA Issues Status Report	0		02JAN98*	M4
SE706810	Support PR 18	143	02FEB98*	24AUG98	
SEPR18M4	Systems Input to PR18	0		13MAR98*	M4
SE446BM4	CDA Issues Status Report	0		31MAR98*	M4
SE446CM4	CDA Issues Status Report	0		30JUN98*	M4
SE706820	Support PR 19	137	25AUG98*	15MAR99	
SEPR19M4	Systems Input to PR 19	0		15SEP98*	M4
SE446DM4	CDA Issues Status Report	0		30SEP98*	M4
TR142GA3:Support PISA Chapter 1 Development					
SE708800	Review PISA Plan	30	31OCT97*	16DEC97	
SE708810	Support TOC Development	15	31OCT97*	21NOV97	
SE708815	Support AO Development	15	31OCT97*	21NOV97	
SE708820	Support Text Development	55	24NOV97	12FEB98	
SE708825	Support Chapter 1 Review	40	13FEB98	10APR98	
TR142GA4:Support PISA Development					
SE708840	Support PISA Chapter Integration	187	01OCT97*	30JUN98	
SE708845	Participate in Integrated M&O Review	34	15JUN98*	31JUL98	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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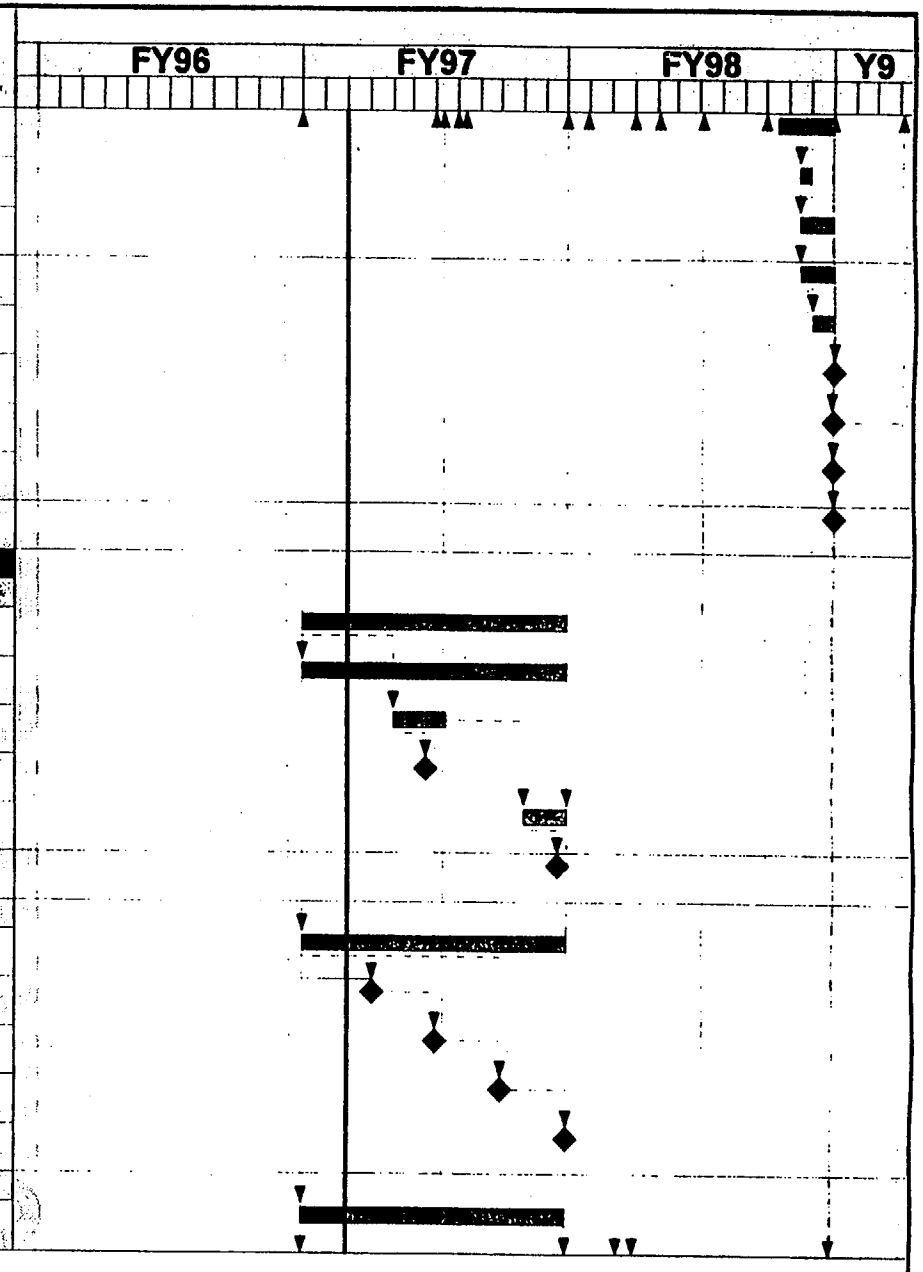
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE450815	Prepare Final & Issue	54	16JUL98	30SEP98	
SE419720	QAP-3-5 Review	11	17AUG98	31AUG98	
SE527830	Issue First Draft	32	17AUG98	30SEP98	
SE540815	Prepare & Issue Final Plan	32	17AUG98	30SEP98	
SE419740	Prepare Final Report	21	01SEP98	30SEP98	
SE419M3	Final VA T&EP	0		30SEP98	P3
SE450M3	Revised Risk Management Plan Complete	0		30SEP98	P3
SE527M4	Technical Performance Measures Plan	0		30SEP98	M4
SE540M3	Compliance Plan Complete	0		30SEP98	P3
TR142FA1: Systems Integration					
SE704700	Provide Technical Document Review Support	251	01OCT96A	30SEP97	
SE706710	Support Ad-Hoc Regulatory	251	01OCT96A	30SEP97	
SE706700	Support PR 16	51	03FEB97*	15APR97	
SEPR16M4	Systems Input to PR 16	0		17MAR97*	M4
SE706705	Support PR 17	42	01AUG97*	30SEP97	
SEPR17M4	Systems Input to PR 17	0		15SEP97*	M4
TR142FA2: Support SDD Development					
SE446700	Integrate SDD Development	251	01OCT96A	30SEP97	
SE446M4	CDA Status Report	0		02JAN97*	M4
SE446M5	CDA Status Report	0		31MAR97*	M4
SE446M6	CDA Status Report	0		30JUN97*	M4
SE446M7	CDA Status Report	0		30SEP97	M4
TR142FA3: Technical Bases Management					
SE142700	Technical Bases Management	251	01OCT96A	30SEP97	



Project Start 01OCT95
Project Finish 01OCT02
Data Date 02DEC96
Plot Date 18DEC96

Early
Progress Bar
Critical Activity

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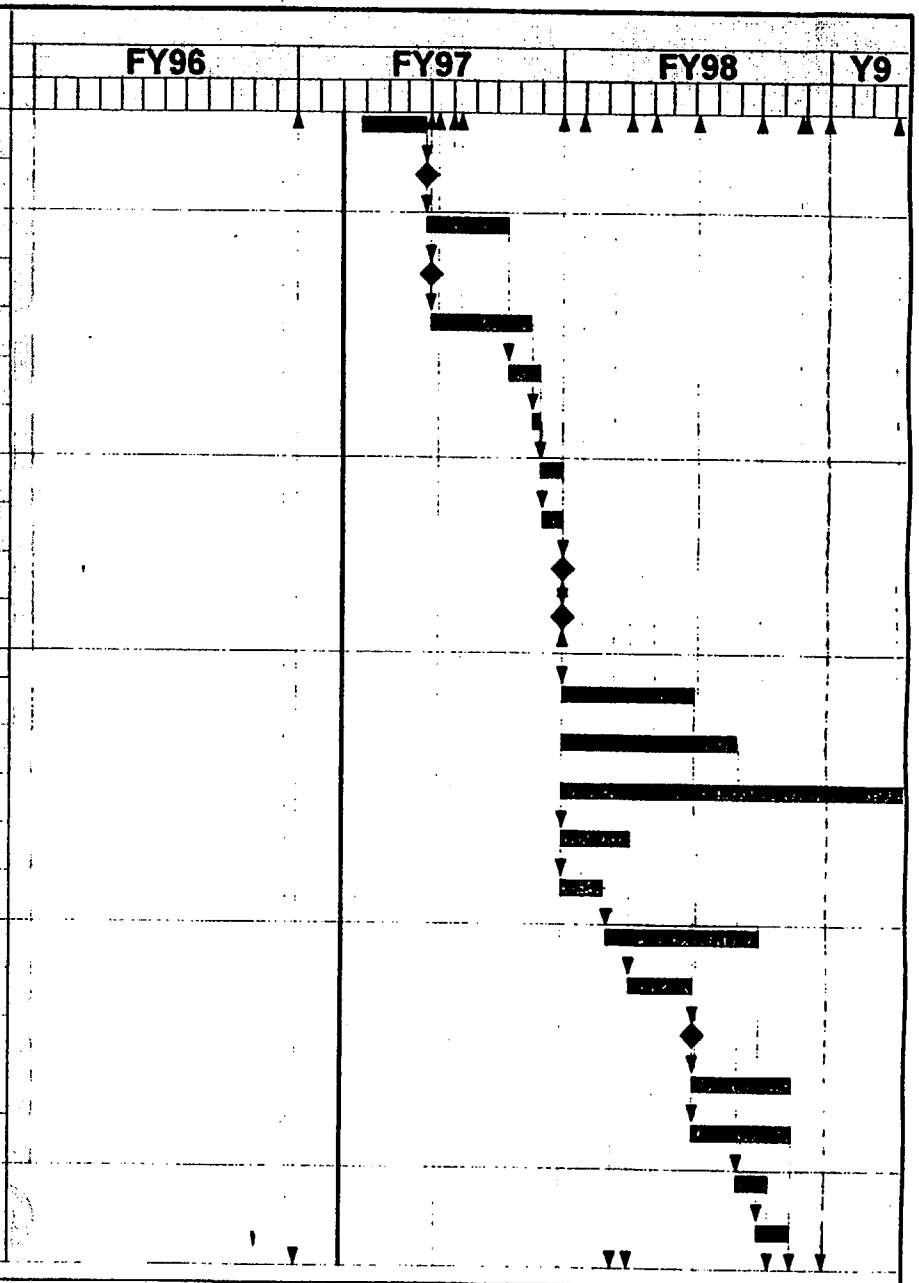
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date | Revision | Checked | Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE448705	Evaluate Precedent Documentation	62	26DEC96	25MAR97	
SE448706	Status Briefing	0		25MAR97	M4
SE448710	Prepare Draft Plan	119	26MAR97	16JUL97	
SE418701	Status Briefing	0		31MAR97	M4
SE418710	Develop Draft Plan	97	01APR97	15AUG97	
SE448715	Conduct QAP-3-5 Review	31	17JUL97	28AUG97	
SE418720	QAP-3-5 Review	10	18AUG97	29AUG97	
SE448720	Prepare Final Plan	22	29AUG97	30SEP97	
SE418740	Prepare Final Report	21	02SEP97	30SEP97	
SE418M3	VA T&EP	0		30SEP97	M3
SE448M3	Draft Compliance Plan Complete	0		30SEP97	M3
TR13GB1: Program & Project Management Controls					
SE419700	Perform TRA	123	01OCT97	31MAR98	
SE450800	Prepare Draft	165	01OCT97*	29MAY98	
SE527	Develop Technical Performance Measures	367	01OCT97*	22MAR99	
SE527800	Establish Parameter Selection Criteria	61	01OCT97*	31DEC97	
SE540800	Evaluate Previous Compliance Plan	39	01OCT97	26NOV97	
SE540805	Prepare Draft Plan	148	01DEC97	30JUN98	
SE527810	Select Parameters	62	02JAN98	31MAR98	
SE419AM4	Status Briefing	0		31MAR98	M4
SE419710	Develop Draft Plan	96	01APR98	14AUG98	
SE527820	Develop Planned Profiles	96	01APR98	14AUG98	
SE450810	QAP-3-5 Review	32	01JUN98	15JUL98	
SE540810	Conduct QAP-3-5 Review	32	01JUL98	14AUG98	



Project Start 01OCT95
Project Finish 01OCT02
Data Date 02DEC96
Plot Date 18DEC96

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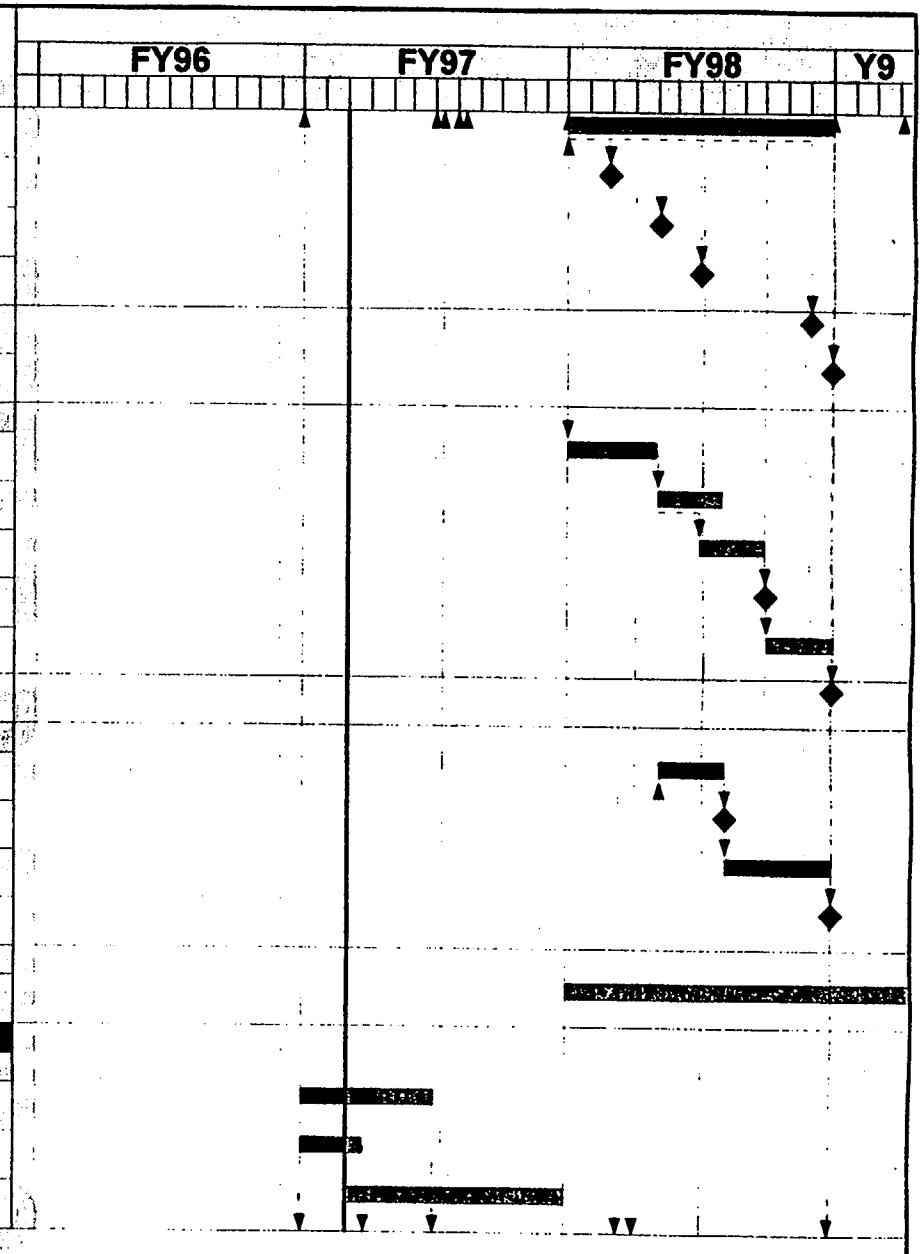
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE580800	Maint.Controlled Dsgn.Assump.Document	251	01OCT97	30SEP98	
SE530M3	Requirement Documentation Revision	0		26NOV97*	P3
SE580AM4	Controlled Dsgn.Assump.Doc.Status Rpt.	0		02FEB98*	M4
SE530AM4	Requirements Document Status Report	0		31MAR98*	M4
SE580BM4	Controlled Dsgn.Assump.Doc.Status Rpt.	0		31AUG98*	M4
SE530BM4	Requirements Document Status Report	0		30SEP98*	M4
TR12GB3: Additional Underground Excavation Desig					
SE800A80	Support ESF Operations	82	01OCT97*	30JAN98	
SE806800	Update Concept of Ops. for Operations of ESF	63	02FEB98	30APR98	
SE806805	Update Con.Ops./Turnover of ESF/Constru.to Oper.	64	01APR98*	30JUN98	
SE806AM4	ESF ConOps Status Report	0		30JUN98*	
SE806810	Update ConOps/Turnover Perm.ESF to Repos.	64	01JUL98	30SEP98	
SE806BM4	ESF ConOps Status Report	0		30SEP98	
TR12GB4: ESF Operations Support					
SE804900	Update ESFDR for Add'l Under'grd Excav.	63	04FEB98*	04MAY98	
SE804AM3	Add U'ground Exc. Revision of ESFDR	0		04MAY98	P3
SE804910	Update ESFDR for Mgmt Turnover/NLP-3-26 Impacts	104	05MAY98	30SEP98	
SE804BM3	ESF Transition Update of ESFDR	0		30SEP98	P3
YP1XPP033: PPkg - SE125A - MGDS Design SRA - Ph					
SE580	Maintain MGDS Dsgn Assumpt.Document	455	01OCT97*	26JUL99	
TR13FB1: Program & Project Management Controls					
SE418700	Perform TRA	123	01OCT96A	31MAR97	
SE448700	Evaluate Existing Project Documentation	39	01OCT96A	24DEC96	
SE449700	Support TMIP Development	251	02DEC96*	30SEP97	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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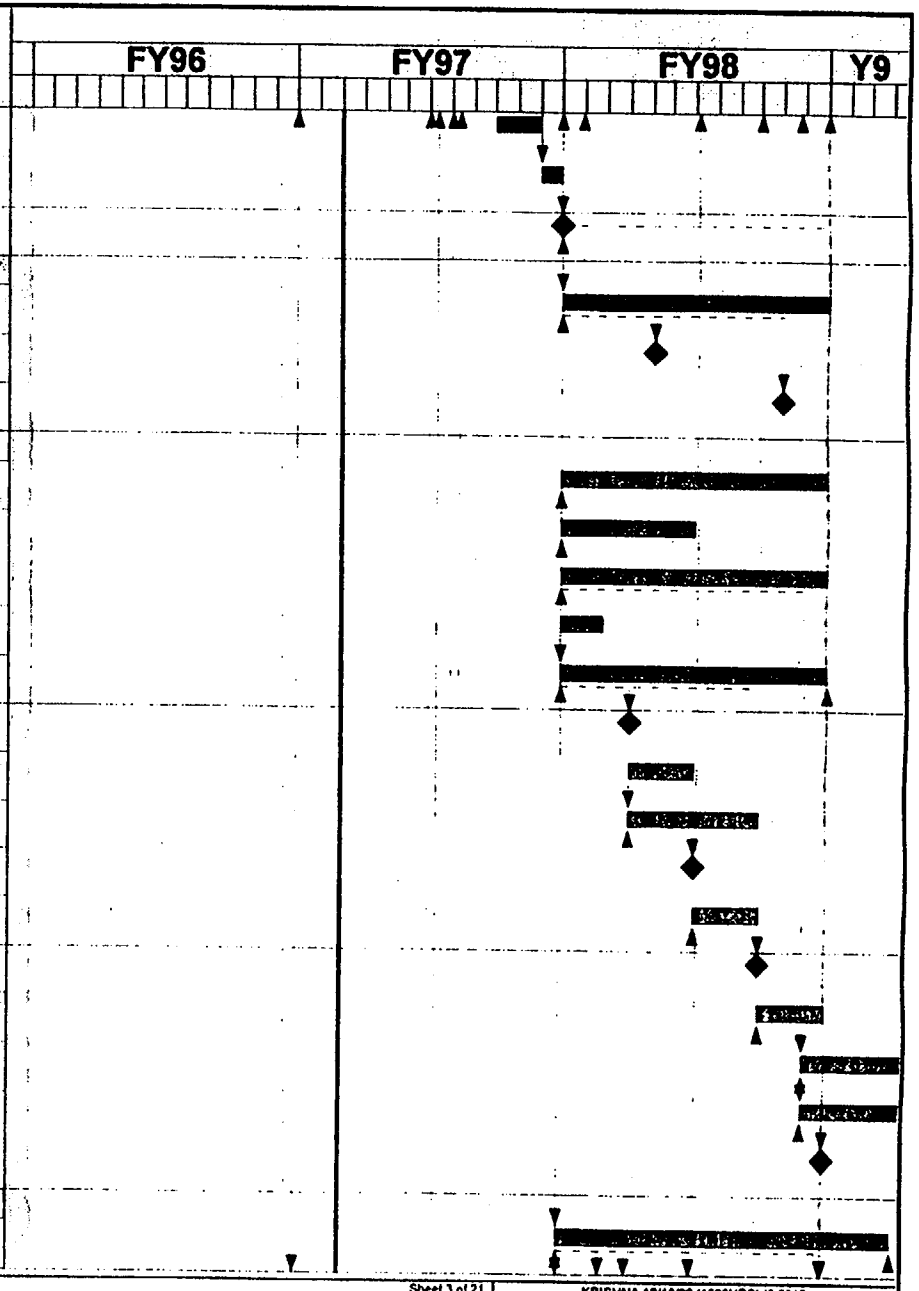
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE400715	Update Con-Ops	43	01JUL97	29AUG97	
SE400720	Review & Comment Resolution	21	02SEP97	30SEP97	
SE400BM3	MGDS Con Ops - Rev 1	0		30SEP97	M3
TR12GA1:MGDS Concept of Operations					
SE400800	Maintain MGDS Con Ops	251	01OCT97	30SEP98	
SE400AM4	MGDS ConOps Status Report	0		02FEB98*	M4
SE400BM4	MGDS ConOps Status Report	0		31JUL98*	M4
TR12GB1: Develop System Description Documents					
SE520800	Maintain/Update Sum.& Crit.Sections (Bin3 SDD's)	251	01OCT97*	30SEP98	
SE520810	Support for Design Sections (Bin 3 SDDs)	123	01OCT97	31MAR98	
SE521800	Maintain/Update Sum.& Crit.Sections (Bin2 SDD's)	251	01OCT97	30SEP98	
SE522820	Complete FY97 4th Quarter SDDs (Bin 1 SDDs)	39	01OCT97*	26NOV97	
SE523800	General SDD Support Tasks	251	01OCT97*	30SEP98	
SE522AM4	SDD Status Report	0		31DEC97*	M4
SE520805	Requirements Analysis (Bin 3 SDDs)	62	02JAN98*	31MAR98	
SE521810	Support for Design Sections (Bin 2 SDDs)	126	02JAN98*	30JUN98	
SE522BM4	SDD Status Report	0		31MAR98*	M4
SE521805	Requirements Analysis (Bin 2 SDDs)	64	01APR98*	30JUN98	
SE522CM4	SDD Status Report	0		30JUN98*	M4
SE522810	Requirements Analysis (Bin 1 SDDs)	64	01JUL98*	30SEP98	
SE522805	Maintain/Update Sum.& Crit.Sections (Bin1 SDD's)	251	01SEP98	31AUG99	
SE522815	Support for Design Sections (Bin 1 SDDs)	128	01SEP98	09MAR99	
SE522DM4	SDD Status Report	0		30SEP98	M4
TR12GB2: Requirements Documents					
SE530800	Maintain Top Level Requirements Documents	313	01OCT97	04JAN99	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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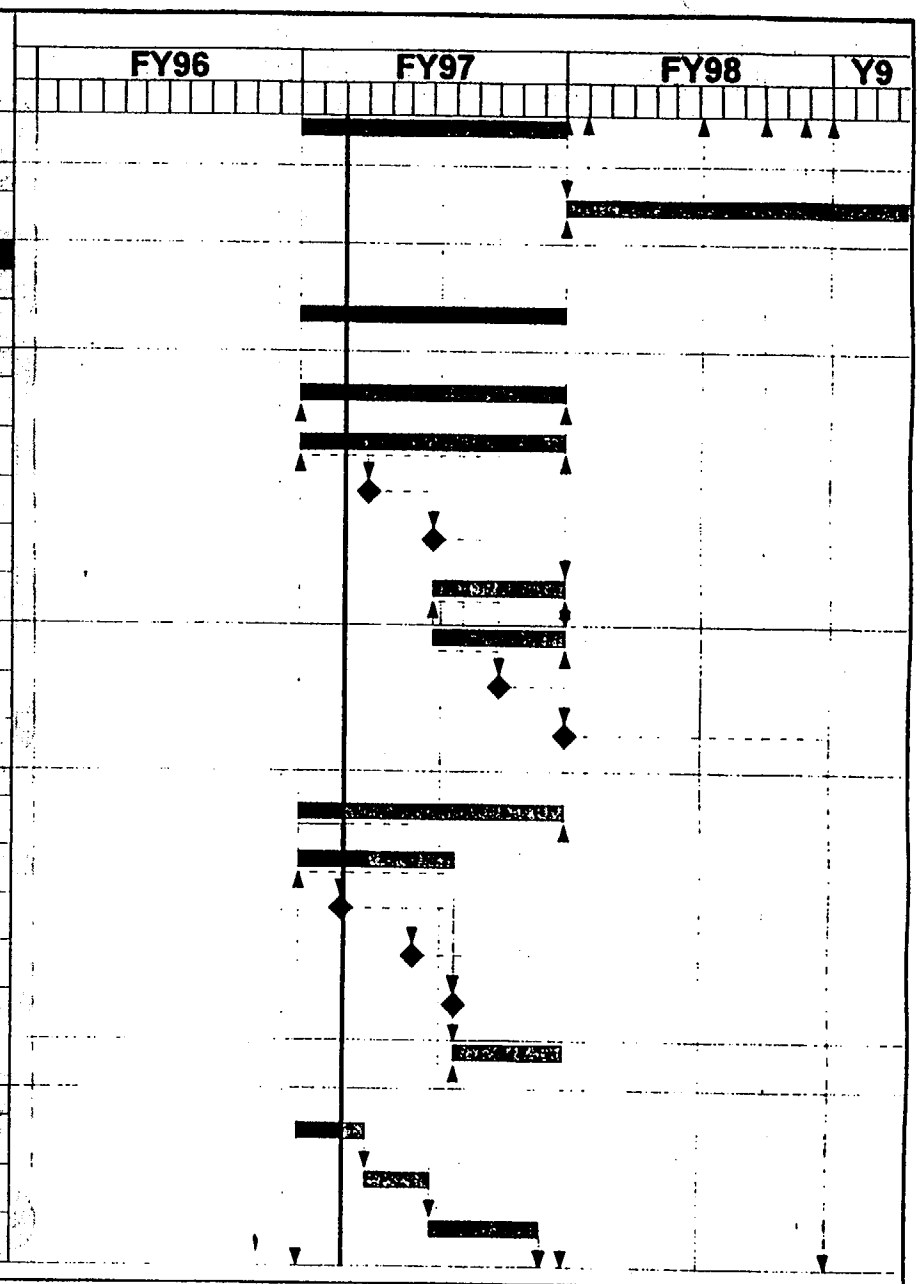
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE452	Provide Management Support	251	01OCT96A	30SEP97	
TR11GA1: Systems Engineering Management					
SE568	Provide Management Support	455	01OCT97	26JUL99	
TR12FA1: ESF Operations Support					
SE800700	Support ESF Operations	251	01OCT96A	30SEP97	
TR12FB1: Develop System Description Documents					
SE405700	FA/DCA	251	01OCT96A	30SEP97	
SE405705	Develope Bin 3 SDD's	251	01OCT96A	30SEP97	
SE405AM4	SDD Status Report	0		31DEC96*	M4
SE405BM4	SDD Status Report	0		31MAR97*	M4
SE410700	Develop Bin 2 SDD	128	01APR97	30SEP97	
SE415700	Develop Bin 1 SDD's	128	01APR97*	30SEP97	
SE405CM4	SDD Status Report	0		30JUN97*	M4
SE405M4	SDD Status Report	0		30SEP97	M4
TR12FB2: Requirements Documentation/Verification					
SE422700	Maintain Top Level Requirements	251	01OCT96A	30SEP97	
SE422705	Update CDA	123	01OCT96A	30APR97	
SE422BM4	Briefing on CDA Status	0		27NOV96*	M4
SE422M3	MGDS Requirements Document	0		03MAR97*	M3
SE422CM4	Briefing on CDA Status	0		30APR97*	M4
SE422710	Update CDA	106	01MAY97	30SEP97	
TR12FB3: MGDS Concept of Operations					
SE400700	Evaluate Technical Baseline	61	01OCT96A	31DEC96	
SE400705	Update ConOps	62	02JAN97	31MAR97	
SE400710	Evaluate ConOps	107	01APR97	29AUG97	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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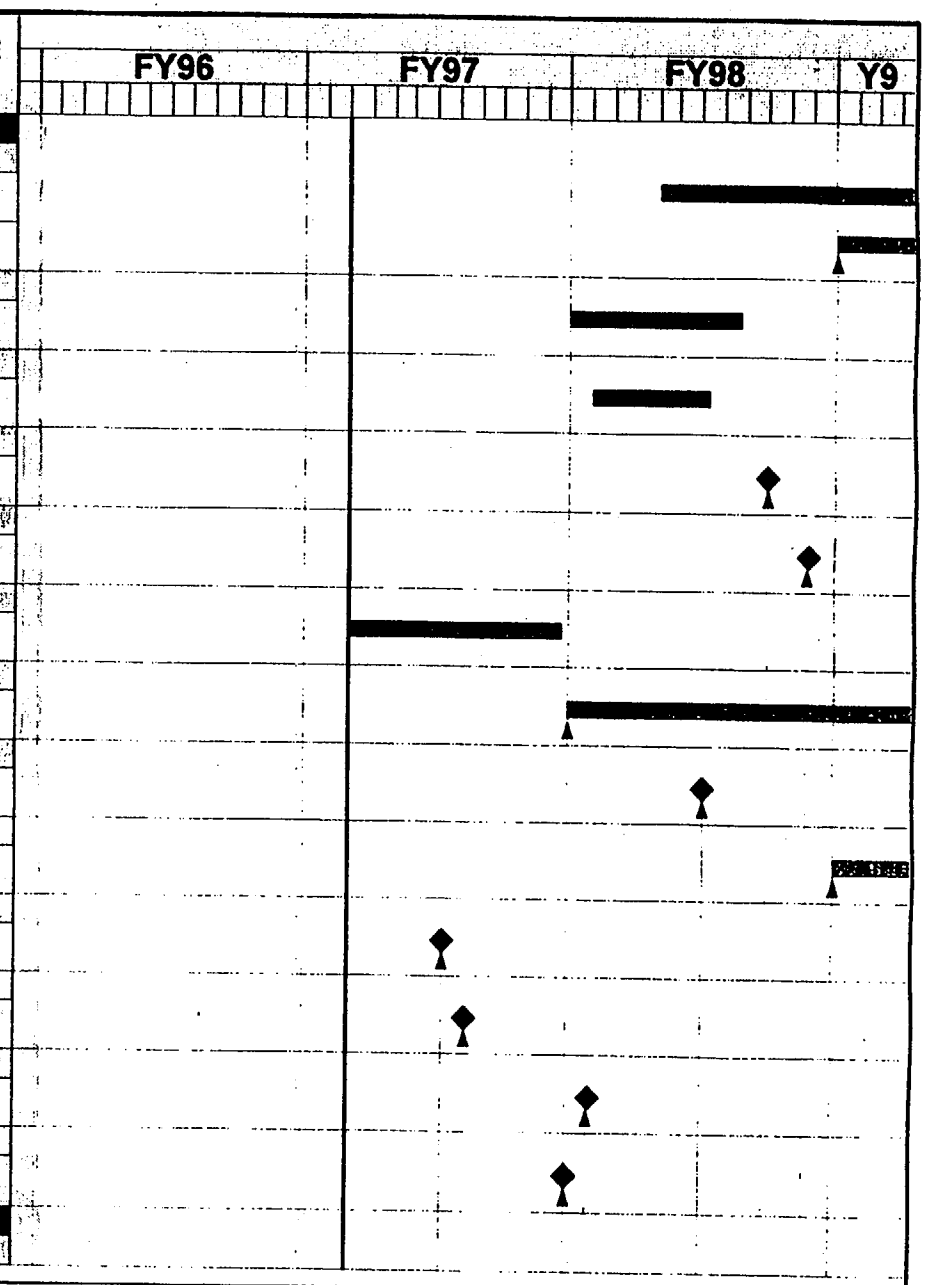
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
YP1XPP006: PPkg - IN06X - ESF Construction Suppo					
SE806	Update ESF Con-Ops	251	02FEB98*	01FEB99	
SE824	DIE FY'99	251	01OCT98*	30SEP99	
YP1XPP007: PPkg - LA200 - Prepare Project Integr					
SE708A	Provide PISA Development Support	161	01OCT97	22MAY98	
YP1XPP008: PPkg - LA355 - Write PISA Ch. 1, Intr					
SE708	Provide PISA Development Support - Chapter 1	110	31OCT97	10APR98	
YP1XPP011: PPkg - MG010M2 - PISA Chapters 2,3,4,					
MG010M2	PISA Chapters 2,3,4,5,6,9,11 Design/Ops/Site	0		30JUN98*	X2
YP1XPP032: PPkg - SE124M2 - Submit MGDS Cost Est					
SE124M2	Submit MGDS Cost Estimate to OCRWM	0		25AUG98*	M2
YP1XPP033: PPkg - SE125A - MGDS Design SRA - Ph					
SE310B	DBA/DBE Definition & Analysis - Ph 2	204	02DEC96*	19SEP97	
YP1XPP034: PPkg - SE126 - MGDS Design SRA - 3					
SE800A	Support ESF Operations	855	01OCT97	01MAR01	
YP1XPP037: PPkg - SE306M2 - Complete Chapter 11					
SE306M2	Complete Chapter 11 PISA	0		03APR98	M2
YP1XPP040: PPkg - SE322 - Classification Analysi					
SE322A	Classification Analysis/Q-List Update - 2	204	01OCT98	26JUL99	
YP1XPP043: PPkg - SEGHIM2 - Complete Waste Qty,					
SEGHIM2	Complete Waste Qty, Mix, and Throughput Study	0		11APR97*	M2
YP1XPP047: PPkg - SERSTM2 - Complete Retrievabil					
SERSTM2	Complete Retrievability Study - VA	0		12MAY97*	M2
YP1XPP049: PPkg - SEUVWM2 - Complete Safeguards					
SEUVWM2	Complete Safeguards & Security Reqmns Study	0		29OCT97*	X2
YP1XPP051: PPkg - SEXYZM2 - Complete Regional Tr					
SEXYZM2	Complete Regional Transportation Data Collection	0		30SEP97*	X2
TR11FA1: Systems Engineering Management					



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

Sheet 1 of 21

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

SYSTEMS ENGINEERING SCHEDULE

The Systems Engineering (WBS 1.2.1) schedule for FY 97/98 is provided. This schedule reflects the current status of the FY 98 planning activity. All of the Systems Engineering activities are tied to the VA milestone.

CURRENT PLANNING - NOT COMMITMENT

APPENDIX I

SYSTEMS ENGINEERING SCHEDULE

The data contained in this appendix reflects the status of the Yucca Mountain Site Characterization Project as of 12/16/96. Because of the evolving conditions of the Yucca Mountain Site Characterization Project, data in this appendix is changed or updated as necessary. However, this VA Design and Review Plan will not be revised or reissued as a result of data updates. For a current status of the data in this appendix and/or a copy of the current version, contact F. VanDerLaan. For suggested changes to the contents, contact R. Wagner.

5.0 SCHEDULE

The MGDS VA Review will be held July 31, 1998. The key Engineering milestones that lead to this date are:

- MGDS VA Cost Estimate - June 1998
- Phase I Design Review - September 1997
- Engineering Chapters of the Project Integrated Safety Assessment complete - June 30, 1998
- VA Design Summary - June 30, 1998

6.0 VA DESIGN REVIEW CHECKLIST

The intent of the VA Design Review Checklist is to provide a methodical listing of items to be evaluated against expectations at the conclusion of the design effort intended to support the VA milestone. Currently, this point is expected to occur during the initial stages of the Phase II Design, but prior to the VA milestone itself. The checklist includes a list of engineering products and their expected level of completion, a list of critical interfaces, expected progress on issue resolution, expected progress on selected topics and/or items requiring decisions, and an assessment of cost and schedule variances.

MGDS VA REVIEW
Preliminary
E&I Section

1.0 PROPOSED CONCEPT

The proposed concept for the MGDS VA Review will be focused on the YMP. The lead for this review will be the Regulatory group. The review will cover the four VA products; VA MGDS Cost Estimate, TSPA-VA, VA Design, and the LA Plan, and will concentrate on the progress that has been made in the four product areas.

The review will be presented to the Director of the OCRWM with presentations provided by both YMSCO and M&O Management leads. The target audience will be the OCRWM and M&O Management.

This MGDS VA Review covers the documentation, support and presentations that will be provided by E&I on the MGDS VA Design and Cost Estimate.

2.0 QUALITY ASSURANCE

Based on an evaluation in accordance with QAP-2-0, *Conduct of Activities*, the MGDS VA Review was determined to be a non-QA review.

3.0 PRESENTATION OF E&I VA PRODUCTS

3.1 VA MGDS Cost Estimate

Details describing cost estimate are to be provided at a later date.

3.2 VA Design

The MGDS Design to support the VA milestone will focus on Systems, Structures and Components which are important to radiological safety, and have no licensing precedence with the NRC.

The Design Products listed in Appendices C, D and E of the VA Design and Review Plan will define the MGDS VA design and will be described in the Engineering chapters of the Project Integrated Safety Assessment. The Design Products include:

- Chapter 3 - Design of Systems, Structures and Components
- Chapter 4 - Repository Design
- Chapter 5 - Waste Package Design
- Chapter 6 - Engineered Barrier System Design
- Chapter 11 - Conduct of Operations

The Project Integrated Safety Assessment chapters will be summarized into a VA Design Summary, which will be similar to the Director's Summary.

The presentation of the MGDS Design for VA will be based on the VA Design Summary and will describe how the system design balances the overall facility. The presentation will also describe what potential solutions have been developed to resolve unprecedented regulatory designs with specific emphasis on the key design issues that have been identified as important to the VA milestone.

The format and flow of the Design Summary will include the concept of operations for the repository from receipt of waste through emplacement and repository closure or, if necessary, waste retrieval. The focus of the descriptions will be based on repository operations, surface, subsurface, waste package design, and waste form testing. Critical design features will be described as well as the binning methodology related to their selection. The rationale for selection of the reference design will be summarized. Reference to the Project Integrated Safety Assessment design chapters will be made to identify supporting design documentation. The additional work to be performed in each area to support the LA will be summarized. The document will make liberal use of graphics and illustrations to describe, explain, and emphasize focus areas.

4.0 REVIEW LOGISTICS

A pre-review package consisting of the Design Summary and the Engineering chapters of the Project Integrated Safety Assessment will be provided to a selected audience after June 30, 1998.

Comments generated from the MGDS VA Review will be applied toward the next phase of LA design.

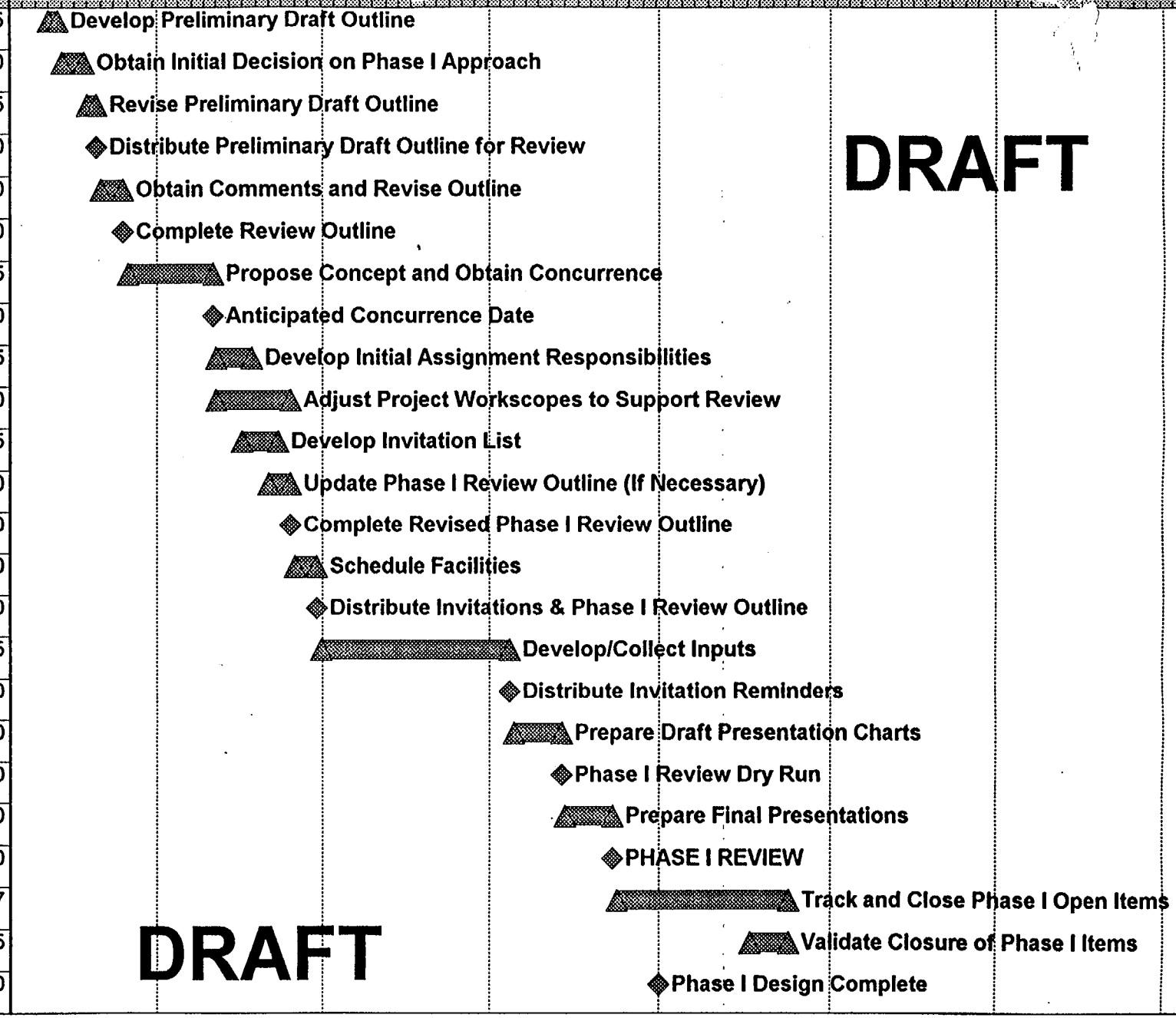
The MGDS Cost Estimate will have been published in March of 1998, and updated before its submittal as a VA product. Any comments generated against the MGDS Cost Estimate will be included in the next cost estimate cycle.

APPENDIX H

MGDS VA REVIEW
Preliminary

The data contained in this appendix reflects the status of the Yucca Mountain Site Characterization Project as of 12/16/96. Because of the evolving conditions of the Yucca Mountain Site Characterization Project, data in this appendix is changed or updated as necessary. However, this VA Design and Review Plan will not be revised or reissued as a result of data updates. For a current status of the data in this appendix and/or a copy of the current version, contact J. Clouet. For suggested changes to the contents, contact R. Snell.

ID	Sta	Finish	duration
005	04NOV9	08NOV9	5
006	11NOV9	22NOV9	10
007	25NOV9	29NOV9	5
010		29NOV9	0
015	02DEC9	13DEC9	10
020		13DEC9	0
022	16DEC9	31JAN97	35
023		31JAN97	0
021	03FEB97	21FEB97	15
031	03FEB97	14MAR9	30
026	17FEB97	07MAR9	15
028	03MAR9	14MAR9	10
035		14MAR9	0
036	17MAR9	28MAR9	10
040		28MAR9	0
045	31MAR9	11JUL97	75
047		11JUL97	0
046	14JUL97	08AUG9	20
052		08AUG9	0
065	11AUG9	05SEP97	20
080		05SEP97	0
085	08SEP97	09DEC9	67
090	19NOV9	09DEC9	15
095		30SEP97	0



Project Start	14OCT96
Project Finish	09DEC97
Data Date	14OCT96
Plot Date	16DEC96

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Early Bar
Progress Bar
Critical Activity

PH-1

Sheet 1 of 1

SCHEDULE FOR EARLY PHASE I REVIEW

December 16, 1996

4.3 Issue Resolution Progress Listing _____

This listing contains the expected level of completion toward resolution of the 13 critical engineering issues important to the VA.

4.4 Selected Topics & Decisions Listing _____

This listing contains selected topics or decisions important to the VA not already covered in the Product, Interface, or Issue Resolution Listings.

4.5 Assessment of Cost and Schedule Variances _____

This listing contains the activities which should be completed by the end of Phase I and an assessment and explanation of variances.

PHASE I DESIGN REVIEW

1.0 PROPOSED CONCEPT

The proposed concept for the Phase I Design Review includes an engineering emphasis and provides an update to the progress of engineering since the June Review. An engineering review is performed to assess the state of the design relative to the planned progress at the time of the VA milestone. Interfaces with engineering are also emphasized since the Phase I Design completion is marked by the final data deliveries between design and its interfacing organizations. This will help ensure that each organization has what it needs from engineering, and that engineering has what it needs from other organizations to adequately support the VA milestone. The review identifies any items still to be provided and the plan for providing those items in time to support the VA milestone. The target audience includes the YMSCO, Project Management Organization, and M&O Management.

2.0 PRESENTATION SUMMARIES

2.1 Engineering

Engineering presentations will be provided to summarize the engineering completed to date along with a comparison against what is needed to support the VA milestone.

2.2 MGDS Cost Estimate

All information needed from engineering to prepare the MGDS cost estimate will be identified and any information not yet received will be emphasized for increased focus prior to the final cost estimate preparation. Coordination with the TSLCC will be summarized.

2.3 Scientific Programs

Presentations focused on model updates and documentation to support engineering needs will be provided. Open issues will be identified for increased focus to ensure necessary information is available to support VA milestone.

2.4 Performance Assessment

Presentations by PA to show readiness to proceed with the TSPA-VA will be provided. A summary of all data received and any data still missing and needed from engineering will be provided. Preclosure Safety work will be summarized to show progress to date relative to that needed for the VA milestone.

2.5 Licensing

A briefing of the LA Plan will be given to provide the picture of post-VA emphasis required from engineering. The Compliance Plan and the License Application Design and Review Plan and their incorporation into and/or relationship to the LA Plan will be summarized. A status of the Project Integrated Safety Assessment preparation will be provided.

2.6 NEPA/EIS

Although not slated to support the VA milestone, necessary progress toward the EIS requires engineering data deliveries during the Phase I Design time frame. The Phase I Review provides a convenient opportunity to review the timeliness and adequacy of these data deliveries. Progress on engineering support to the EIS will be statused. Data deliveries provided to date will be summarized including Engineering Files. Progress on the Description of Planned Actions and Alternatives will be summarized. Any additional data needs will be identified for increased focus in the FY 98 to FY 99 time frame.

3.0 TIMING

The Phase I Design Review is tentatively scheduled for early September, 1997. The planning activities for this review are provided in the schedule at the end of this appendix. The review verifies the completion of the Phase I work scope and the necessary data deliveries required through the end of Phase I Design. Any residual Phase I issues and the remaining work scope necessary to support the VA milestone will be identified and finalized for emphasis during the initial portion of the Phase II Design.

4.0 DESIGN REVIEW CHECKLIST

The intent of the Phase I Design Review Checklist is to provide a methodical listing of items to be evaluated against expectations at the conclusion of the Phase I Design. The checklist includes listing of engineering products and their expected level of completion (Appendices C, D &E), a listing of critical interfaces (Appendix L), expected progress on issue resolution (Appendix B), expected progress on selected topics and/or items needing decisions (to be identified as part of activities 028 and 035 of the attached schedule), and an assessment of cost and schedule variances as identified in the most recent PACS report.

4.1 Product Listings _____

Each design area has developed a product listing with an expectation of the level of completion for each item at the time of Phase I Design completion.

____ Repository Sub-surface Product Listing

____ Repository Surface Product Listing

____ Waste Package Development Product Listing

____ Waste Package Materials Product Listing

____ Systems Engineering Product Listing

4.2 Critical Interface Listing _____

APPENDIX G

PHASE I DESIGN REVIEW

The data contained in this appendix reflects the status of the Yucca Mountain Site Characterization Project as of 12/16/96. Because of the evolving conditions of the Yucca Mountain Site Characterization Project, data in this appendix is changed or updated as necessary. However, this VA Design and Review Plan will not be revised or reissued as a result of data updates. For a current status of the data in this appendix and/or a copy of the current version, contact J. Clouet. For suggested changes to the contents, contact R. Snell.

JUNE DESIGN REVIEW

DRAFT AGENDA

8:00 am	Introduction and VA Description
8:10 am	Meeting Logistics and Comment Process
8:15 am	Requirements
8:55 am	Concept of Operations
9:35 am	Waste Package (Development & Materials)
10:20 am	Break
10:30 am	Surface Facilities
11:10 am	Subsurface Design
12:35 pm	Lunch (Catered)
1:10 pm	Major Technical Issues, Resolution Plans, and Status
2:10 pm	Performance Assessment Interactions
2:50 pm	Break
3:00 pm	Cost Estimate Plans
3:30 pm	LA Plans
4:00 pm	Open Discussion
5:00 pm	Adjourn

4.2 MGDS Design Drivers And Requirements

The key requirements and design drivers will be identified and explained in terms of their significant implications to MGDS cost, schedule, or performance. Examples may include the required repository capacity, the form and rate of the waste received at the repository, the repository performance requirements in terms of pre- and post-closure, and the governing regulatory requirements for the MGDS. Major assumptions necessary to move the design forward will be identified. Engineering studies, design basis events evaluations, safety analyses, and functional/requirements analyses and their role in establishing requirements will be summarized as appropriate.

4.3. MGDS Concept of Operations

The operational concept for the MGDS will be summarized to explain the disposal process from waste receipt through emplacement, closure, and decommissioning. Key VA issues related to operations will be highlighted. The purpose of this presentation is to set the stage for the remaining presentations for each design area and for the major VA issues.

4.4 MGDS Design Overview

An overview of each design area will be provided, including the Yucca Mountain Site arrangement and layout, the general arrangement of the surface facilities, the general arrangement of the subsurface facilities and layout, the subsurface development plans, and the repository's relationship/ interface with the Exploratory Studies Facility. An overview of waste package designs and the general emplacement arrangement of waste packages in the emplacement drifts will be provided. Waste Package materials testing will be summarized. Other significant features in the Engineered Barrier System and how these elements work together to support the waste containment and isolation strategy will be explained. The features of design and the key analytical methodologies will be summarized. Major contingency design alternatives will be identified.

5.0 MAJOR TECHNICAL ISSUES, DATA AND METHODS FOR RESOLUTION, RESOLUTION STATUS

The major technical issues important to the success of the VA milestone will be identified along with the resolution plan for each issue. Current status will be provided. The expected contribution of scientific and test data toward issue resolution will be identified. Performance assessment model development and their use in issue resolution will be explained. Design option and operational concept evaluations under consideration and the timing of expected decision/resolution points will be identified.

6.0 ENGINEERING AND PERFORMANCE ASSESSMENT INTERACTIONS

The iterative interactions between the design development activities with the performance assessment models will be explained. Tight coupling and integration between the design and TSPA which will support the VA milestone will be stressed. Sensitivities of the models to design parameters will be identified to show areas in the design with significant pre- and post-closure performance contributions. Interactions between the design and process models & abstractions will

be identified to illustrate the way in which performance assessment predictions influence the design process to converge on performance-sensitive design parameters. Dependencies between the design and the near-field models will be explained.

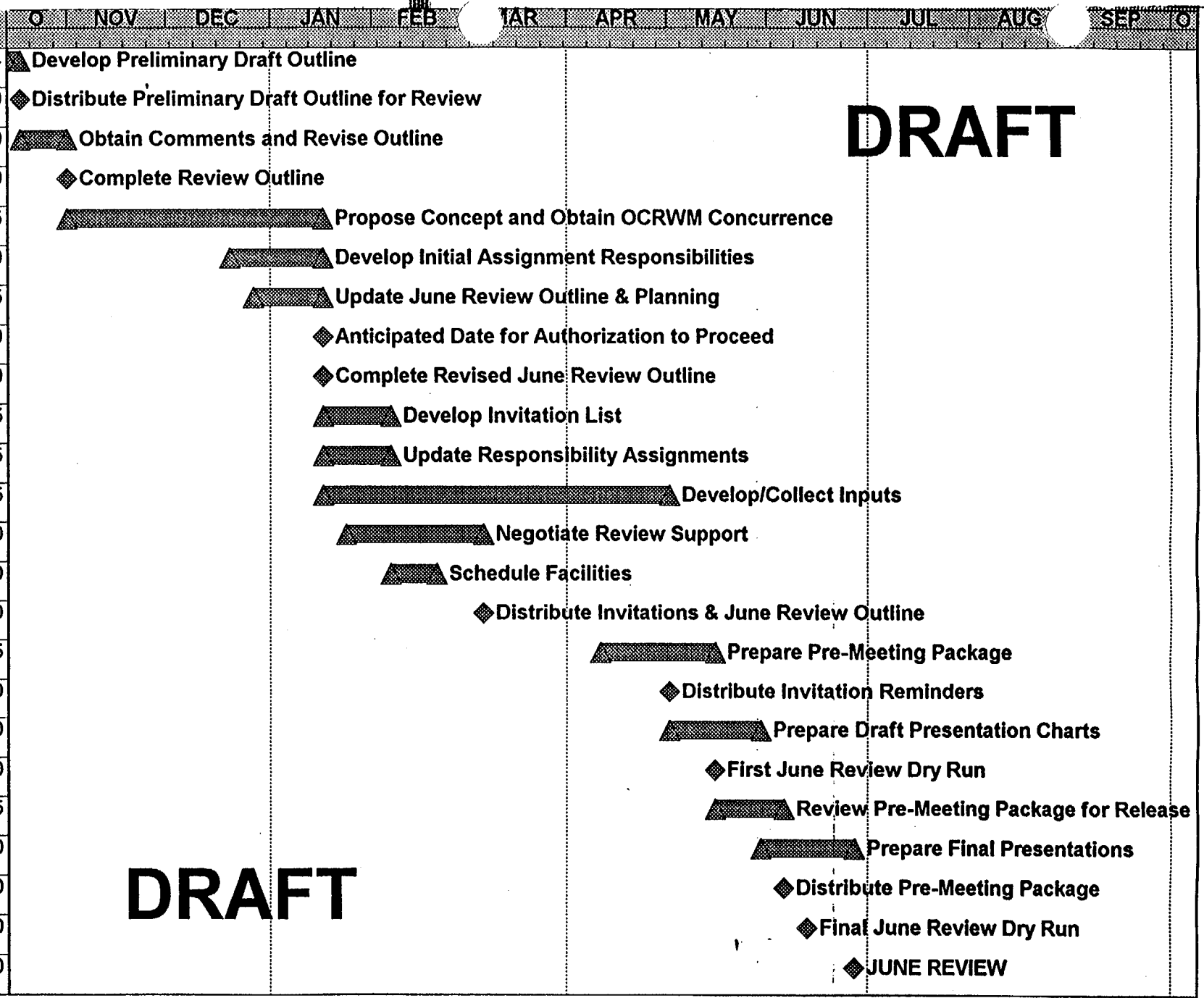
7.0 PLANS FOR PREPARING A COST ESTIMATE

The plan, strategy, and assumptions for the preparation of an MGDS cost estimate will be identified. Included will be a discussion of the E&I activities to provide information on the cost to complete the MGDS design, to construct the MGDS, to operate the MGDS, and to close, decommission, or, if necessary, to retrieve from the MGDS. Current assumptions and their relationship to cost estimating assumptions (such as those provided in the ACD) or to revised versions of the TSLCC will be explained. The basis and format which will underpin the capital cost estimates will be identified.

8.0 MGDS PLANS TO SUPPORT LA

The strategy and schedule for developing the design sufficient for licensing will be explained. The general level of design detail necessary to docket an LA will be provided, along with representative examples. Design activities required to support the LA for which progress is needed at the time of the VA milestone will be identified along with an indication of the post-VA activities necessary to support a docketable LA. E&I will support YMP cost estimating activities for the design to be included in an LA in March 2002.

Start	Fini	duration
14OCT9	17OCT9	4
	17OCT9	0
18OCT9	31OCT9	10
	31OCT9	0
01NOV9	16JAN97	55
20DEC9	16JAN97	20
27DEC9	16JAN97	15
	16JAN97	0
	16JAN97	0
17JAN97	06FEB97	15
17JAN97	06FEB97	15
17JAN97	01MAY9	75
24JAN97	06MAR9	30
07FEB97	20FEB97	10
	06MAR9	0
11APR97	15MAY9	25
	01MAY9	0
02MAY9	29MAY9	20
	15MAY9	0
16MAY9	05JUN97	15
30MAY9	26JUN97	20
	05JUN97	0
	12JUN97	0
	26JUN97	0



Project Start	14OCT96
Project Finish	26JUN97
Data Date	14OCT96
Plot Date	22NOV96

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Early Bar
Progress Bar
Critical Activity

JUNE

Sheet 1 of 1

SCHEDULE FOR JUNE REVIEW - REV H

November 18, 1996

JUNE DESIGN REVIEW

1.0 PURPOSE

The purpose of this June 1997, review is to assess the overall engineering approach to the VA milestone and obtain high-level management concurrence. Key interfaces such as the relationship between Design Engineering and Performance Assessment will be described. The preparation of an MGDS Cost Estimate and an LA Plan will also be described. Finally, the design status as it currently exists will be reviewed to facilitate an overall understanding of the system and to encourage high-level course correction where needed. This will be a non-Q review.

A draft schedule to prepare for and execute the review is attached.

2.0 REVIEW AUDIENCE

The target audience for the June Design Review is OCRWM (YMSCO and WM&I), Project Management Organization, and M&O Management, as well as M&O Teammate Corporate Executives. TRB and NRC representation is also suggested. The June Design Review will also be shared with the Repository and other consultant boards.

3.0 REVIEW FORMAT

A pre-review package will be prepared to facilitate background development and to help achieve the meeting goals in a single day. Topics for the package will consist of key summary-level material to help set the stage for the review. Candidates for this material include an update to the Director's Summary, Highlights of the DOE's Waste Containment and Isolation Strategy for the Yucca Mountain Site, and the MGDS Concept of Operations. Other material such as the VA Design and Review Plan and the VA Monitoring Plan which describe the VA activities and the role of the June Design Review en-route to that assessment may be provided.

Presentations similar to those provided during the February 1-2, 1996 Management Reviews for the MGDS ACD will be provided. The goal is to develop a set of presentations which can be used for multiple audiences. The presentations would be delivered by the M&O Engineering and Integration Operations' managers. A draft agenda is attached. An explicit definition for the content of the presentation charts is provided below. Comments will be requested.

4.0 PRESENTATION CONTENT

4.1 VA Description

A brief introductory discussion describing the purpose and scope of the VA activities will be provided along with an overview of how the YMP's engineering efforts support the assessment. In addition, the meeting logistics will be explained, along with the comment process. Comments will be requested on the day of the review, and comment sheets will be provided to facilitate proper documentation.

APPENDIX F

JUNE DESIGN REVIEW

The data contained in this appendix reflects the status of the Yucca Mountain Site Characterization Project as of 12/16/96. Because of the evolving conditions of the Yucca Mountain Site Characterization Project, data in this appendix is changed or updated as necessary. However, this VA Design and Review Plan will not be revised or reissued as a result of data updates. For a current status of the data in this appendix and/or a copy of the current version, contact M. Sellers. For suggested changes to the contents, contact R. Snell.

WBS 1.2.1 Systems Engineering Products (Rev. 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCE	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
	TR1BGB1	SE310800	31-Mar-98	DBE FY98 - 1st Half		Briefing	X		X	X
		SE322800	31-Mar-98	CA/Q-List FY98 - 1st Half		Briefing	X		X	X
		SE310805	30-Sep-98	CA/Q-List FY98 - 2nd Half		Briefing	X		X	X
		SE322805	30-Sep-98	CA/Q-List FY98 - 2nd Half		Briefing	X		X	X

CURRENT PLANNING
NOT FOR CONTROL

WBS 1.2.1 Systems Engineering Products (Rev. 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCE	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.1.2	TR12FB2	SE422M3	03-Mar-97	MGDS-RD Update		Document	X	X	X	X
	TR12GB2	SE530AM4	31-Mar-97	Rqmts. Doc. Status Report		Ltr. Report	X	X	X	X
	TR12FB3	SE400BM3	30-Sep-97	MGDS Conops, Rev. 1		Document	X	X	X	X
	TR12GA1	SE400AM4	02-Feb-98	MGDS Conops Status Report		Ltr. Report	X	X	X	X
	TR12FB2	SE422705	30-Apr-97	CDA Update		Document	X	X		X
		SE422710	30-Sep-97	CDA Update		Document	X	X		X
		SE580AM4	02-Feb-97	CDA Status Report		Ltr. Report	X	X		X
	TR12FB1	SE405AM4	31-Dec-96	SDD Status Report		Ltr. Report	X	X		X
		SE405BM4	31-Mar-97	SDD Status Report		Ltr. Report	X	X		X
		SE405CM4	30-Jun-97	SDD Status Report		Ltr. Report	X	X		X
		SE405M4	30-Sep-97	SDD Status Report		Ltr. Report	X	X		X
	TR12GB1	SE522AM4	31-Dec-97	SDD Status Report		Ltr. Report	X	X		X
		SE522BM4	31-Mar-97	SDD Status Report		Ltr. Report	X	X		X
		SE522CM4	30-Jun-97	SDD Status Report		Ltr. Report	X	X		X
1.2.1.3	TR13FB1	SE418701	31-Mar-97	Test & Evaluation Plan Development Status Update		Briefing	X	X		X
		SE418M3	30-Sep-97	VA Test & Evaluation Plan		Document	X		X	
		SE488706	25-Mar-97	Design Compliance Plan for LA Status Update		Briefing	X	X	X	X
		SE488M3	30-Sep-97	Draft Design Compliance Plan for LA		Document	X		X	X
	TR13GB1	SE419AM4	31-Mar-98	Status of Update to T&EP		Briefing	X		X	X
		SE419M3	30-Sep-98	Final VA T&EP		Document	X		X	X
		SE540M3	30-Sep-98	Design Compliance Plan for LA, Rev. 0		Document	X		X	X
1.2.1.5	TR15FB1	SE050705	05-Mar-97	Establish Draft Performance Confirmation Baseline		IOC	X		X	X
		SE050720	29-Aug-97	Complete Initial Performance Confirmation Plan		IOC	X		X	X

WBS 1.2.1 Systems Engineering Products (Rev. 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCE	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
		SE050BM3	30-Sep-97	Performance Confirmation Plan, Rev. 0		Document	X		X	X
		SE436700	01-Apr-97	Start Waste Generated Study		Briefing	X	X		X
		SE436M3	30-Sep-97	Complete Waste Generated Study		Document	X	X		X
		SE440700	01-Oct-96	Conduct Research for Waste Isolation Requirements Study		Briefing	X	X		X
		SE440M3	01-Apr-97	Complete Waste Isolation Requirements Study		Document	X	X	X	X
		SE460700	01-Apr-97	Start Waste Package Size Study		Briefing	X	X		X
		SE460M3	30-Sep-97	Waste Package Size Study Report		Document	X	X		X
		SE506700	01-Oct-96	Start Seals Study		Briefing	X	X		X
		SE506M3	03-Jun-97	Seals Study Report		Document	X	X	X	X
	TR15FB2	SE200700	01-Oct-97	Start Waste Quantity, Mix, Throughput Study		Briefing	X	X		X
		SE200M3	11-Apr-97	Waste Quantity, Mix, Throughput Study		Document	X	X		X
	TR15FB3	SE502700	01-Oct-96	Start Retrievability Study		Briefing	X		X	X
		SE502M3	06-May-97	Retrievability Study		Document	X		X	X
	TR15FB4	SE456700	01-Oct-96	Start Rail COrridor Evaluation		Briefing	X			X
		SE456M3	30-Apr-97	Rail corridor Evaluation Report		Document	X			X
1.2.1.7	TR17FB1	SE124700	01-Oct-96	Start MGDS Cost Estimate Planning		Briefing	X		X	X
		SE124AM3	30-Sep-97	Draft MGDS Cost Plan		Document	X		X	X
	TR17681	SE124850	20-Aug-98	Final VA Cost Estimate		Document	X		X	X
1.2.1.8	TR18FB2	SE500M3	27-Jun-97	Safe Guards and Security VA Rqmts. Study		Document	X		X	X
1.2.1.11	TR1BFB1	SE310700	31-Mar-97	DBE FY97 - 1st Half		Briefing	X		X	X
		SE320700	31-Mar-97	CA/Q-List FY97		Briefing	X		X	X
		SE310705	30-Sep-97	DBE FY97 - 2nd Half		Briefing	X		X	X
		SE320705	30-Sep-97	CA/Q-List-FY97		Briefing	X		X	X

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.7 Cont'd	TR47FBI Cont'd	RP126730	31-Mar-97	Backfilling Operations (3D)	RP120M3E	Dwg	X	X		X
				Backfilling P&ID	RP120M3E	Dwg	X	X		X
				Waste Package Support System	RP120M3E	Dwg	X	X		X
				Emplacement Drift Invert & Support System (3D)	RP120M3E	Dwg	X	X		X
	TR47FBJ	RP124700	15-Apr-97	Remote Monitoring, Communications, and Control Systems for Performance Confirmation		Anal	X			
		RP124705	02-Apr-97	Performance Confirmation Facilities		Anal	X			
		RP124715	01-Apr-97	Mobile Remote Monitoring System: Physical Layout	RP120M3F	Dwg	X	X		X
				Mobile Remote Monitoring System: Electrical Subsystems	RP120M3F	Dwg	X			X
				Mobile Remote Monitoring System: Control and Instrumentation	RP120M3F	Dwg	X			X
				Performance Confirmation Drift and Access - Sheet 1	RP120M3F	Dwg	X	X		X
				Performance Confirmation Stations Detail	RP120M3F	Dwg	X	X		X
				Performance Confirmation Stations Detail	RP120M3F	Dwg	X	X		X
				Performance Confirmation Drift Ventilation System	RP120M3F	Dwg	X	X		X
				Performance Confirmation Drift Ventilation System	RP120M3F	Dwg	X	X		X
				Performance Confirmation Test Drilling Arrangement - Sheet 1	RP120M3F	Dwg	X	X		X
				Performance Confirmation Test Drilling Arrangement - Sheet 2	RP120M3F	Dwg	X	X		X

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.7 Cont'd	TR47FB9 Cont'd	RP122720	28-Feb-97	Airflow Control Analysis		Anal	X	X		
		RP122705	31-Jan-97	Dust Control Analysis		Anal	X	X		
		RP122730	30-Apr-97	Preliminary Equipment List and Description		Tech Doc	X			X
		RP122745	30-Sep-97	Overall Subsurface Ventilation GA - Pre-emplacement Construction Early Phase	RP120M3D	Dwg	X	X		X
				Overall Subsurface Ventilation GA - Pre-emplacement Construction Mid Phase	RP120M3D	Dwg	X	X		X
				Overall Subsurface Ventilation GA - Pre-emplacement Construction Late Phase	RP120M3D	Dwg	X	X		X
				Overall Subsurface Ventilation GA - Development and Emplacement Early Phase	RP120M3D	Dwg	X			X
				Overall Subsurface Ventilation GA - Development and Emplacement Mid Phase	RP120M3D	Dwg	X	X		X
				Overall Subsurface Ventilation GA - Development and Emplacement Early Final Phase	RP120M3D	Dwg	X	X		X
				Overall Subsurface Ventilation GA - Caretaker Phase	RP120M3D	Dwg	X	X		X
				Exhaust Shaft GA Fans & HEPA Filters Sheet 1	RP120M3D	Dwg	X			X
				Exhaust Shaft GA Fans & HEPA Filters Sheet 2	RP120M3D	Dwg	X			X
				Exhaust Shaft GA Fans & HEPA Filters Sheet 3	RP120M3D	Dwg	X			X
				South Portal Intake Fans and Airlock GA Sheet 1	RP120M3D	Dwg	X			X
				South Portal Intake Fans and Airlock GA Sheet 2	RP120M3D	Dwg	X			X
				South Portal Intake Fans and Airlock GA Sheet 3	RP120M3D	Dwg	X			X
				Emplacement/Development Isolation Airlocks (3D)	RP120M3D	Dwg	X			X
				Emplacement Drift Ventilation Doors (3D)	RP120M3D	Dwg	X			X
	TR47FBA	RP504705	13-Jun-97	Waste Package Retrieval Equipment		Anal	X			
		RP504715	29-Aug-97	WP Retrieval Equipment Description		Tech Doc	X			X
		RP504710	18-Jun-97	Rerailer	RP504M3	Dwg	X			X
				Heavy Duty Forklift		Dwg	X			X

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.7 Cont'd	TR47FBa Cont'd	RP504710 Cont'd		Inclined Plane Hauler	RP504M3	Dwg	X			X
				Inclined Plane Hauler & Shielding	RP504M3	Dwg	X			X
				LHD with Ejector Bucket		Dwg	X			X
				H.D. Forklift for Emplacement Drift		Dwg	X			X
				Covered Shuttle Car & LHD Unit		Dwg	X			X
				Multipurpose Vehicle w/Impact Hammer		Dwg	X			X
				Multipurpose Vehicle w/Bucket		Dwg	X			X
				Multipurpose Vehicle w/Shear	RP504M3	Dwg	X			X
				Hydraulic Shear	RP504M3	Dwg	X			X
				Retrieval Skid Plate	RP504M3	Dwg	X			X
	TR47FBD	RP123762	30-Sep-97	DBE Scenario Analysis		Anal	X			
		RP123768	30-Sep-97	CMF Logic Analysis		Anal	X			
		RP123764	15-Sep-97	SSC Support Document		Tech Doc	X			
		RP123766	30-Apr-97	Computer Code Qualification		Tech Doc	X			
	TR47FBH	RP128715	04-Aug-97	Subsurface Repository Engineering File		Tech Doc	X			
		RP128705	30-Jun-97	General Surface, Subsurface Arrangement - Proposed Action		Dwg	X			
				Subsurface Layout - Proposed Action (High Thermal Load)		Dwg	X			
				Subsurface Layout - Alternative (Medium Thermal Load)		Dwg	X			
				Subsurface Layout - Alternative (Low Thermal Load)		Dwg	X			
	TR47FBI	RP126710	14-Jan-97	Backfill Strategy and Preliminary Design		Anal	X	X		X
		RP126720	28-Feb-97	Waste Package Support System		Anal	X	X		X
		RP126700	31-Jan-97	Emplacement Drift Invert		Anal	X	X		X

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.7 Cont'd	TR47FB5 Cont'd	RP120785 Cont'd		Roadheader Excavation of Emplacement Drift Turnout (3D)		Dwg	X	X		X
				Emplacement Drift TBM and Trailing Gear Configuration (3D)		Dwg	X	X		X
				Emplacement Drift TBM Launch (3D)		Dwg	X	X		X
				Emplacement Drift TBM Recovery (3D)		Dwg	X	X		X
				Equipping of Mains for Emplacement Operations		Dwg	X	X		X
				Emplacement Drift Equipping		Dwg	X	X		X
				Emplacement Drift Ventilation Raises Excavation and Lining Installation		Dwg	X	X		X
				Muck Handling P&ID		Dwg	X	X		X
				Muck Handling Equipment and Operations Details		Dwg	X	X		X
				Emplacement Drift Ground Support Installation (3D)		Dwg	X	X		X
				Ventilation Shafts Excavation Sequence and Lining Installation		Dwg	X	X		X
				Emplacement Area for 70,000 MTU of Waste	RP120M3B	Dwg	X	X		X
				Emplacement Drift and Waste Package Emplacement Arrangement	RP120M3B	Dwg	X	X		X
	TR47FB6	RP502700	14-Jul-97	Emplacement Equipment Design Analysis		Anal	X			
		RP502730	14-Aug-97	Remote Handling and Communications for WP Emplacement Systems		Anal	X			
		RP502705	15-Jul-97	Electrification of SS Railed Vehicles		Anal	X			
		RP502715	30-Sep-97	Emplacement Equipment Description		Tech Doc	X			X
		RP502740	30-Sep-97	RH&C Equipment Description		Tech Doc	X			X
		RP502735	20-Jun-97	Transport Locomotive	RP502M3	Dwg	X			X
				WP Transporter with Unloading System	RP502M3	Dwg	X			X
				Gantry Carrier	RP502M3	Dwg	X			X
				Rail Car	RP502M3	Dwg	X			X

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.7 Cont'd	TR47FB6 Cont'd	RP502735 Cont'd		Emplacement Rail System	RP502M3	Dwg	X			X
				WP Gantry Plan & Elevation	RP502M3	Dwg	X			X
				WP Gantry Vertical Lift Detail	RP502M3	Dwg	X			X
				WP Gantry Traction Motor Detail	RP502M3	Dwg	X			X
				WP Gantry Length Adjustment Method	RP502M3	Dwg	X			X
				Repository Partial Plan - Drift Isolation Doors	RP502M3	Dwg	X			X
				Interface Logic Diagram for Mobile Equipment	RP502M3	Dwg	X			X
				Typical Main Drift Overhead Wire System	RP502M3	Dwg	X			X
				Typical Emplacement Drift Conductor Bar System	RP502M3	Dwg	X			X
				Typical Drift Turnout Conductor Bar System	RP502M3	Dwg	X			X
				Emplacement Transfer/Loading Dock	RP502M3	Dwg	X			X
				SS Layout of the Rail Rectifier Units	RP502M3	Dwg	X			X
				Rail Electrification One-Line Diagram	RP502M3	Dwg	X			X
				Emplacement System: Control Systems	RP502M3	Dwg	X			X
				Overview of Control and Communication Systems for WP Emplacement	RP502M3	Dwg	X			X
				Emplacement System: Communications System	RP502M3	Dwg	X			X
				Emplacement Gantry: Control & Communication Systems	RP502M3	Dwg	X			X
	TR47FB7	RP123750	30-Sep-97	Shielding Analysis		Anal	X			
		RP123758	30-Jun-97	Retrieval OPS Analysis		Anal	X			
		RP123752	30-Sep-97	Computer Code Qualification		Tech Doc	X			
	TR47FB9	RP122725	30-Apr-97	Devel./Emplacement. Ventilation Analysis		Anal	X	X		
		RP122710	28-Feb-97	Emplacement. Exhaust. HEPA Filter Analysis		Anal	X			

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.7 Cont'd	TR47FB3 Cont'd	RP506720 Cont'd		Access Intersections Ground Support - GA	RP120M3C	Dwg	X	X		X
				Access Intersections Ground Support - Sections	RP120M3C	Dwg	X	X		X
				TBM Launch & Recovery Chamber Ground Support - GA	RP120M3C	Dwg	X	X		X
				TBM Launch & Recovery Chamber Ground Support - Sections	RP120M3C	Dwg	X	X		X
				Exhaust Main Ground Support - GA	RP120M3C	Dwg	X	X		X
				Exhaust Main Ground Support - Sections	RP120M3C	Dwg		X		X
				Ventilation Raise Ground Support - GA	RP120M3C	Dwg	X	X		X
				Ventilation Raise Ground Support - Sections	RP120M3C	Dwg	X	X		X
				Emplacement Drift Turnout Ground Support - GA	RP120M3C	Dwg	X	X		X
				Emplacement Drift Turnout Ground Support - Sections	RP120M3C	Dwg	X	X		X
				Shaft Ground Support - GA	RP120M3C	Dwg	X	X		X
				Shaft Ground Support - Sections	RP120M3C	Dwg	X	X		X
	TR47FB5	RP120760	08-May-97	Site Geology and Determination of Available Emplacement Area		Anal	X	X		
		RP120795	11-Feb-97	Subsurface Layout Analysis		Anal	X	X		
		RP120765	29-Aug-97	Subsurface Layout Coordinate Geometry Analysis		Anal	X	X		X
		RP120755	30-Apr-97	Subsurface Construction and Development Methodology Analysis		Anal	X			X
		RP120780	01-Jul-97	Subsurface Construction and Operations Integrated Schedule		Anal	X			X
		RP120789	01-Apr-97	Thermal Load Management Analysis		Anal	X	X		
		RP120775	01-Jul-97	Preliminary List of Construction Equipment		Tech Doc	X			X
		RP120785	30-Sep-97	Site Geology Details Plan & Sections, Sheet 1	RP120M3	Dwg	X	X		X
				Site Geology Details Plan & Sections, Sheet 2	RP120M3	Dwg	X	X		X
				Overall Subsurface Layout GA (3D)	RP120M3	Dwg	X	X		X

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.7 Cont'd	TR47FB5 Cont'd	RP120785 Cont'd		Overall Layout Showing Usable Emplacement Area	RP120M3	Dwg	X	X		X
				Potential Emplacement Expansion Areas	RP120M3	Dwg	X	X		X
				Overall Layout Showing Excavation Method & Drift Sizes	RP120M3	Dwg	X	X		X
				Subsurface Drainage Patterns	RP120M3	Dwg	X	X		X
				Typical Access Ramps and Mains Elevations & Cross Sections - Construction Phase	RP120M3	Dwg	X	X		X
				Typical Access Ramps and Mains Elevations & Cross Sections - Emplacement Mode	RP120M3	Dwg	X	X		X
				Emplacement Side Ventilation Shaft GA	RP120M3	Dwg	X	X		X
				Development Side Ventilation Shaft GA	RP120M3	Dwg	X	X		X
				7.62 m TBM Launch and Recovery Chambers (3D)	RP120M3	Dwg	X	X		X
				Exhaust Main and Ventilation Raise GA (3D)	RP120M3	Dwg	X	X		X
				Emplacement Drift Details - Section and Elevation	RP120M3	Dwg	X	X		X
				Emplacement Drift Turnouts	RP120M3	Dwg	X	X		X
				Shadow Shields Details (3D)	RP120M3	Dwg	X	X		X
				Roadheader Openings - Miscellaneous Sections	RP120M3	Dwg	X	X		X
				Pre-Emplacement Construction Schedule	RP120M3A	Dwg	X	X		X
				Emplacement & Development Schedule	RP120M3A	Dwg	X	X		X
				Subsurface Construction & Development Sequence - Phase 1	RP120M3A	Dwg	X	X		X
				Subsurface Construction & Development Sequence - Phase 2	RP120M3A	Dwg	X	X		X
				Subsurface Construction & Development Sequence - Phase 3	RP120M3A	Dwg	X	X		X
				Emplacement Drift Construction Sequence (3D)	RP120M3A	Dwg	X	X		X
				7.62 m TBM and Trailing Gear Configuration (3D)		Dwg	X	X		X
				7.62 m TBM Launch & Recovery (3D)		Dwg	X	X		X

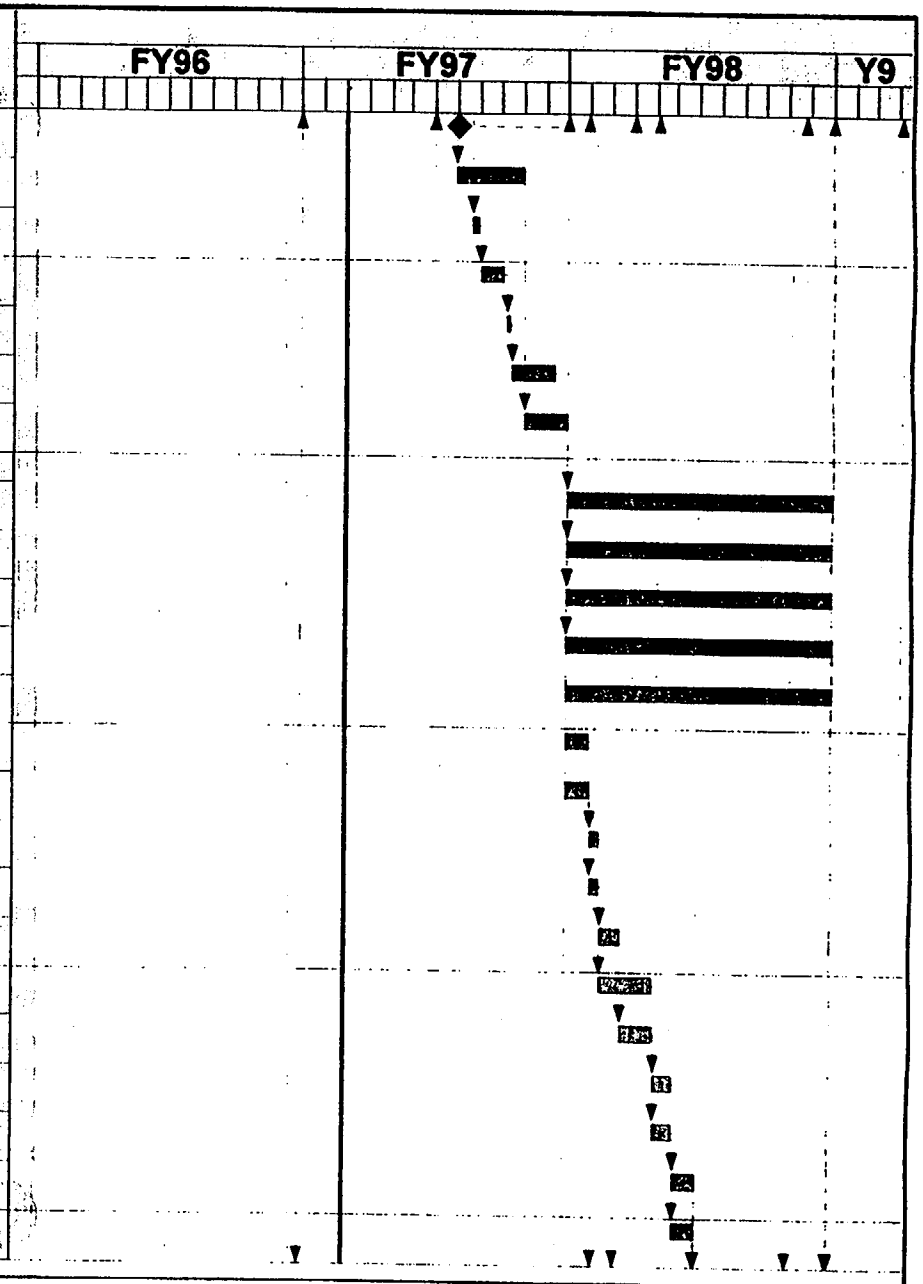
WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.6 Cont'd	TR246FB2 Cont'd	RP2403AA Cont'd		Radiological Waste Treatment Facility Ventilation		Input	X			
	TR46FB3	RP2402A1	30-May-97	Radiological Safety Design Analysis		Anal	X			
				Qualification of Microshield		V&V	X			
				Qualification of Qadcggp 1.2		V&V	X			
				Qualification of MCNP		V&V	X			
				Waste Handling Facility Radiological Monitoring		Input	X			
		RP2402A2	30-Sep-97	Normal & Off-normal Dose Assessment	RP242AM	Anal	X			
	TR46FB4	RP2402C5	30-Jan-97	Operations/Staffing Letter Report	RP242CM	Ltr	X			X
	TR46FB5	RP2403C1	30-Sep-97	Site Grading & Drainage Plan		Dwg	X			X
		RP2403C2	30-Sep-97	MGDS Facility Layout		Input	X			
				Carrier/Cask Transport		Input	X			
		RP2403C3	30-Sep-97	Repository Surface Operations Overview	RP243CM	Dwg	X			X
				North Portal Operations Overview	RP243CM	Dwg	X			X
				North Portal Operations Area Site Map	RP243CM	Dwg	X			X
	TR46FB7	RP2405C1	01-May-97	DBE Screening Analysis II		Anal	X			
				Complete the Surface DBE Pilot Analysis		Comp.-Anal	X			
				Shipping Cask Slapdown in NOB Analysis		Anal	X			
				Spent Fuel Damage During Welding Analysis		Anal	X			
		RP2405C2	01-Jul-97	External Events Analysis		Anal	X			
		RP2405C3	27-Feb-97	Input to Aircraft Crash Credibility Analysis		Input	X			
		RP2405C4		Classification Analysis Support	LOE	LOE	X			
	TR46FB8	RP24071	30-Apr-97	Reference Design Roadmap		Ltr				

WBS 1.2.4 Repository Products (Rev 0, 12/18/96)

P&S ACCOUNT	SUMMARY ACCOUNT	ACTIVITY NUMBER	ACTIVITY END DATE	PRODUCT TITLE	DELIVERABLE NUMBER	PRODUCT TYPE	VA COMPONENT: PRELIMINARY DESIGN CONCEPT	VA COMPONENT: TSPA-VA	VA COMPONENT: LA PLAN	VA COMPONENT: ESTIMATE OF COST
1.2.4.6 Cont'd6	TR46FB8 Cont'd	RP24071 Cont'd		Engineering Files Report Input	RP247M3	Ltr				
		RP24072	30-Sep-97	Operational Staffing Impacts Analysis		Input	X			X
				Operational Wastes/Emissions Impacts Analysis		Input	X			
				HVAC Energy Analysis For Support Structures		Input	X			X
				Electrical Load Estimate		Input	X			X
				Water/Sewage Balance		Input	X			X
				Other Resource Data		Input	X			X
				Off-normal consequences analysis		Input	X			
				Construction Impacts Analysis		Input	X			X
				Engineering Files Report Input Update	RP247M3B	Ltr				
1.2.4.6		RP020700	01APR97	Fifth Rail Corridor Analysis						
		RP020702	05JUN97	Refinement of Rail Corridor Alignments	RP020M3	Dwg	X			X
1.2.4.7	TR47FB1	RP500705	30-Sep-97	Database of Repository Construction Material	RP1206M3	Tech Doc	X	X		X
	TR47FB2	RP510710	31-Jul-97	Near Field Environment of Emplacement. Drifts		Anal	X	X		
	TR47FB3	RP506705	31-Dec-96	Materials for Emplacement. Drift Ground Support		Anal	X	X		X
		RP506710	01-Apr-97	Stability Analysis for Emplacement Drifts		Anal	X	X		
		RP506715	16-Apr-97	Lining Design for Emplacement Drifts		Anal	X	X		X
		RP506720	30-Sep-97	Emplacement Drift Ground Support GA - Isometric	RP120M3C	Dwg	X	X		
				Emplacement Drift Ground Support Plan & Profile	RP120M3C	Dwg	X	X		X
				Emplacement Drift Ground Support Sections	RP120M3C	Dwg	X	X		X
				Emplacement Drift Ground Support Segment Details & Tolerances	RP120M3C	Dwg	X	X		X
				Accesses Ground Support Section Views	RP120M3C	Dwg	X	X		X

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE456M3	Rail Corridor Evaluation Report	0		30APR97*	M3
SE457730	Prep.Intermodal Transfer Station Altern.& Costs	64	30APR97	30JUL97	
SE456730	Identify Single Preferred Alignments	6	22MAY97	30MAY97	
SE456735	Prepare Report	24	02JUN97	03JUL97	
SE456740	Internal Review & Comment Resolution	5	07JUL97	11JUL97	
SE456745	Prepare & Issue Document	44	14JUL97	12SEP97	
SE457735	Prep.Detail HH Cycle Times & Equip'mt Estimate	43	31JUL97	30SEP97	
TR15GB1: System Studies Support to SRA/Design					
SE457750	IEA Support	251	01OCT97	30SEP98	
SE457755	Prepare Rapid Response/Briefing Information	251	01OCT97	30SEP98	
SE457760	Support Devel./Nevada Transp.Policies	251	01OCT97*	30SEP98	
SE457765	Participate in DOE Transportation Meetings	251	01OCT97	30SEP98	
SE508780	System Studies Support to FA/RA	251	01OCT97*	30SEP98	
SE515800	Conduct Research & Develop Plan	22	01OCT97*	31OCT97	
SE516800	Conduct Research & Develop Plan	22	01OCT97*	31OCT97	
SE515804	Identify List-Prohibited or Limited use Mat'ls	9	03NOV97	14NOV97	
SE516802	ID Issues Assoc.With DOE SNF Fuel Types	9	03NOV97	14NOV97	
SE515806	ID Mat'ls That Have Significant Impact if Excl.	19	17NOV97	15DEC97	
SE516804	ID Altern. for Dealing with the Issues	51	17NOV97	30JAN98	
SE515808	ID Altern.Dsgn Concepts/do not Comp.exclud.mat'l	32	16DEC97	30JAN98	
SE515810	Evaluate the Options	19	02FEB98	27FEB98	
SE516806	Evaluate the Alternatives	19	02FEB98	27FEB98	
SE515812	Document Results & Publish Report	23	02MAR98	01APR98	
SE516808	Document & Publish the Results	22	02MAR98	31MAR98	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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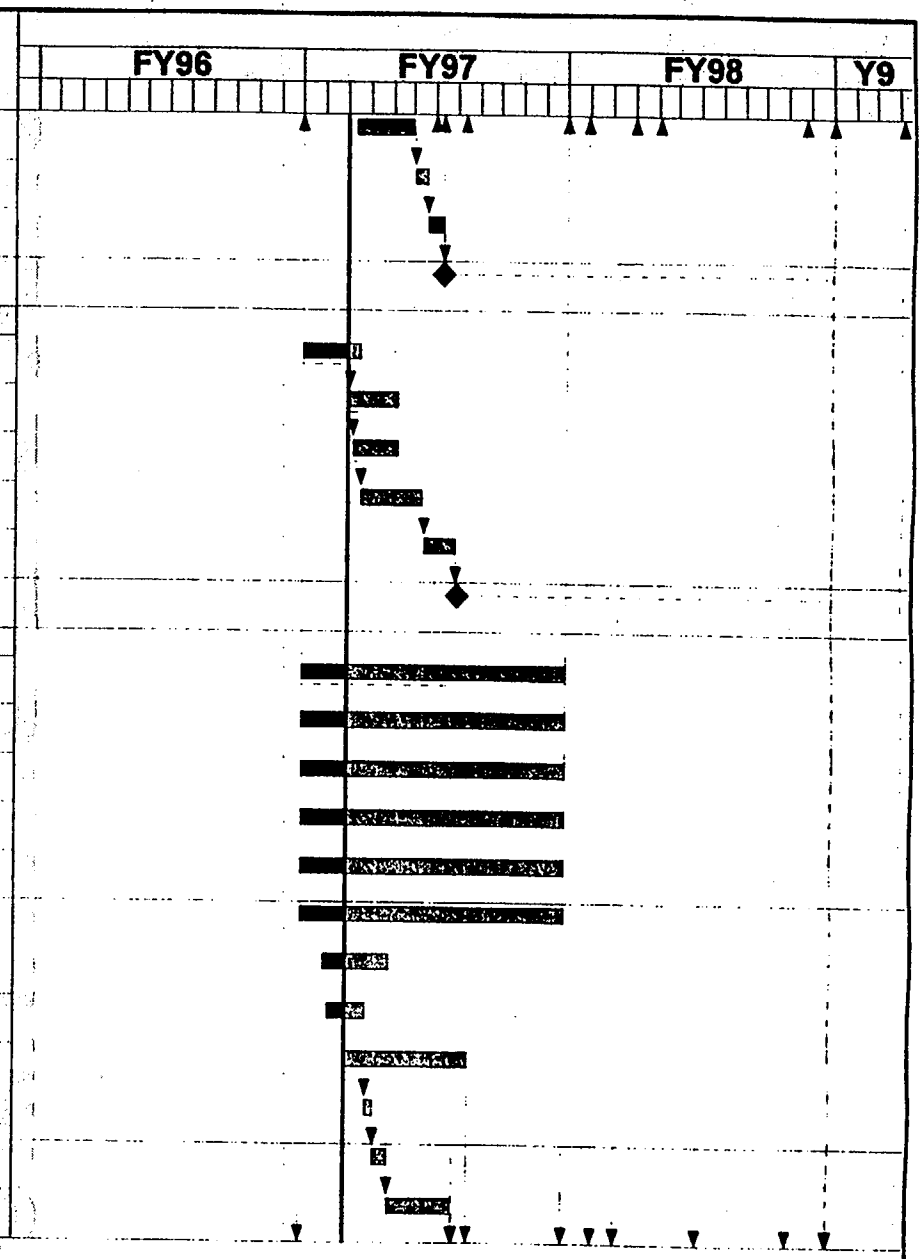
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE200715	Evaluate Waste Receipt Schedules	53	13DEC96	28FEB97	
SE200720	Prepare Report & Initiate QAP-3-5 Review	14	03MAR97	20MAR97	
SE200725	Resolve Comments & Deliver Report	16	21MAR97	11APR97	
SE200M3	Complete Throughput Study	0		11APR97	M3
TR15FB3: Retrievability Study					
SE502700	Conduct Research/Develop TDPP	22	01OCT96A	18DEC96	
SE502705	Identify Alternatives	47	03DEC96*	07FEB97	
SE502710	Develop Scenarios/Eval.Alternatives	43	09DEC96*	07FEB97	
SE502715	Prepare Report	58	20DEC96*	14MAR97	
SE502720	Internal Rev./Revise Rpt & Initiate YAP-5.1Q Rev	31	17MAR97	28APR97	
SE502M3	Retrievability Study - VA Rpt.	0		30APR97	M3
TR15FB4: Transportation Studies					
SE456750	System Support to NEPA Activity	251	01OCT96A	30SEP97	
SE457	Transportation Rapid Response	251	01OCT96A	30SEP97	
SE457700	IEA Support	251	01OCT96A	30SEP97	
SE457705	Prepare Rapid Response/Briefing Information	251	01OCT96A	30SEP97	
SE457710	Support Development of Nevada Transp.Policies	251	01OCT96A	30SEP97	
SE457715	Participate in DOE Transportation Meetings	251	01OCT96A	30SEP97	
SE456702	Prep.Detail Road Upgrade Req'mts Inc. ITF Access	61	01NOV96A	30JAN97	
SE456705	Develop New Rail Corridor	39	08NOV96A	30DEC96	
SE456725	Identify Feasible Rail Alig's- Each Corridor	120	02DEC96	21MAY97	
SE456710	Internal Rev/Comment Resolution	7	31DEC96	09JAN97	
SE456715	Prepare/Issue Corridor Evaluation Report	15	10JAN97	30JAN97	
SE457725	Eval.Impacts-Size/Weight Shipping Containers	62	31JAN97	29APR97	



Project Start	01OCT95
Project Finish	01OCT02
Data Date	02DEC96
Plot Date	18DEC96

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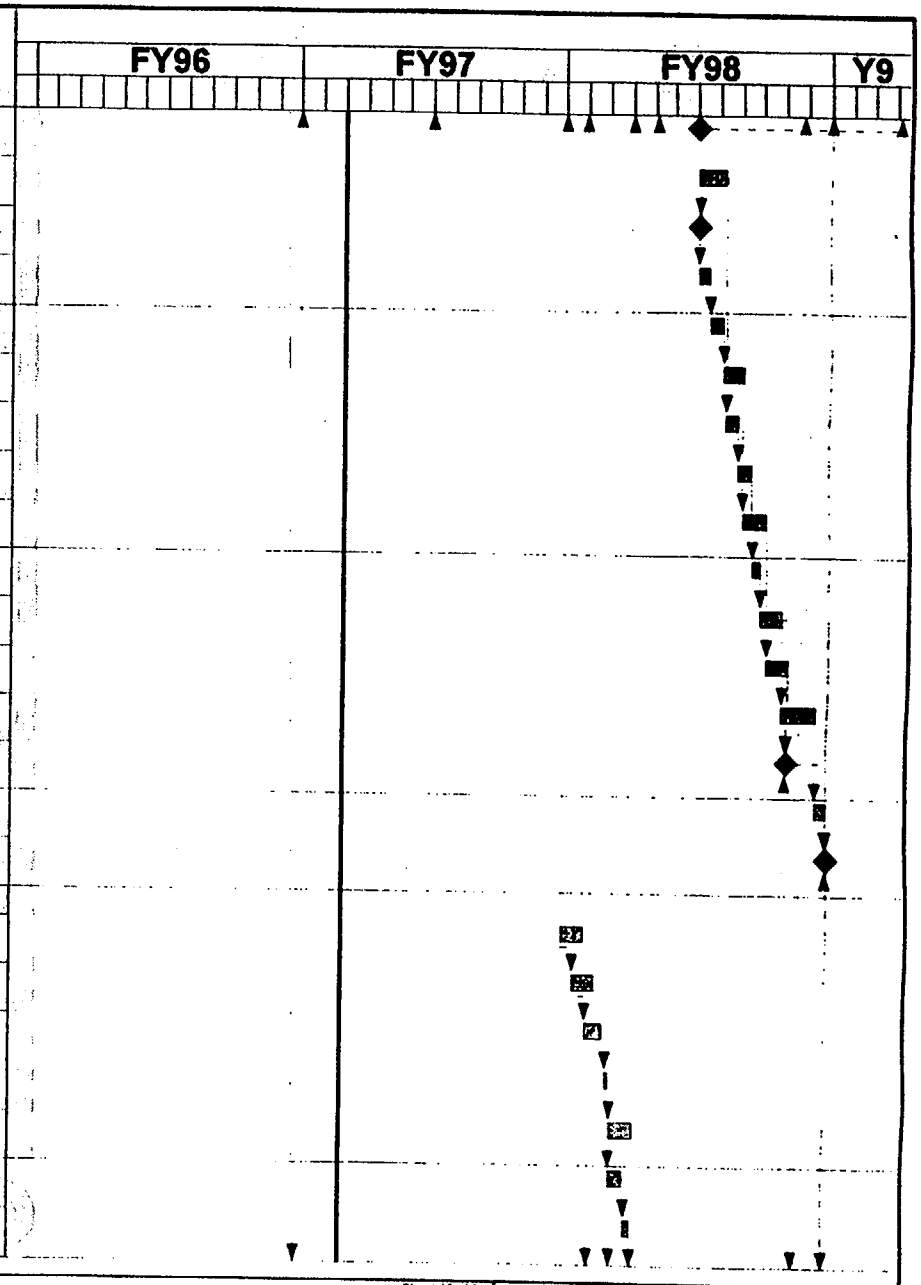
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date | Revision | Checked, Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE516M3	LA Strategy for DOE SNF	0		31MAR98	P3
SE508700	Conduct Research	28	01APR98*	08MAY98	
SE515M3	Prohibited Limited Use Mat'ls Report	0		01APR98	P3
SE517800	Conduct Research & Develop Plan	11	02APR98	16APR98	
SE517802	Identify the Issues	12	17APR98	04MAY98	
SE517804	ID Reasonable Alternative Definitions	20	05MAY98	02JUN98	
SE508705	Identify 10CFR60 Decommissioning Req'mts	13	11MAY98	28MAY98	
SE508710	Identify Decommissioning Alternatives	12	29MAY98	15JUN98	
SE517806	Evalutate the Alternatives	23	03JUN98	06JUL98	
SE508715	Formulate Selection Criteria	9	16JUN98	26JUN98	
SE508720	Evaluate Decommissioning Options	22	29JUN98	29JUL98	
SE517808	Document & Publish the Results	22	07JUL98	05AUG98	
SE508725	Prepare Report & Initiate QAP-3-5 Review	32	30JUL98	14SEP98	
SE517M3	Restricted Area Requirements & Concepts	0		05AUG98	P3
SE508730	Incorp.Changes & Issue Report	12	15SEP98	30SEP98	
SE508M3	Decommissioning Study Report	0		30SEP98	P3
TR15GB2: Additional Underground Excavation Dsgn					
SE830700	Conduct Research & Develop Plan	21	01OCT97*	30OCT97	
SE830705	Identify Objectives of U'ground Exc.Dsgn	21	16OCT97*	14NOV97	
SE830710	Identify U'ground Exc. Dsgn Alternatives	17	03NOV97*	26NOV97	
SE830715	Formulate Selection Criteria	5	01DEC97	05DEC97	
SE830720	Eval.U'ground Exc. Dsgn. Alternatives	23	08DEC97	09JAN98	
SE830725	Prepare Report & Initiate QAP-3-5 Review	14	08DEC97	26DEC97	
SE830730	Compile Data & Issue Report	7	29DEC97	07JAN98	



Project Start	01OCT95
Project Finish	01OCT02
Data Date	02DEC96
Plot Date	18DEC96

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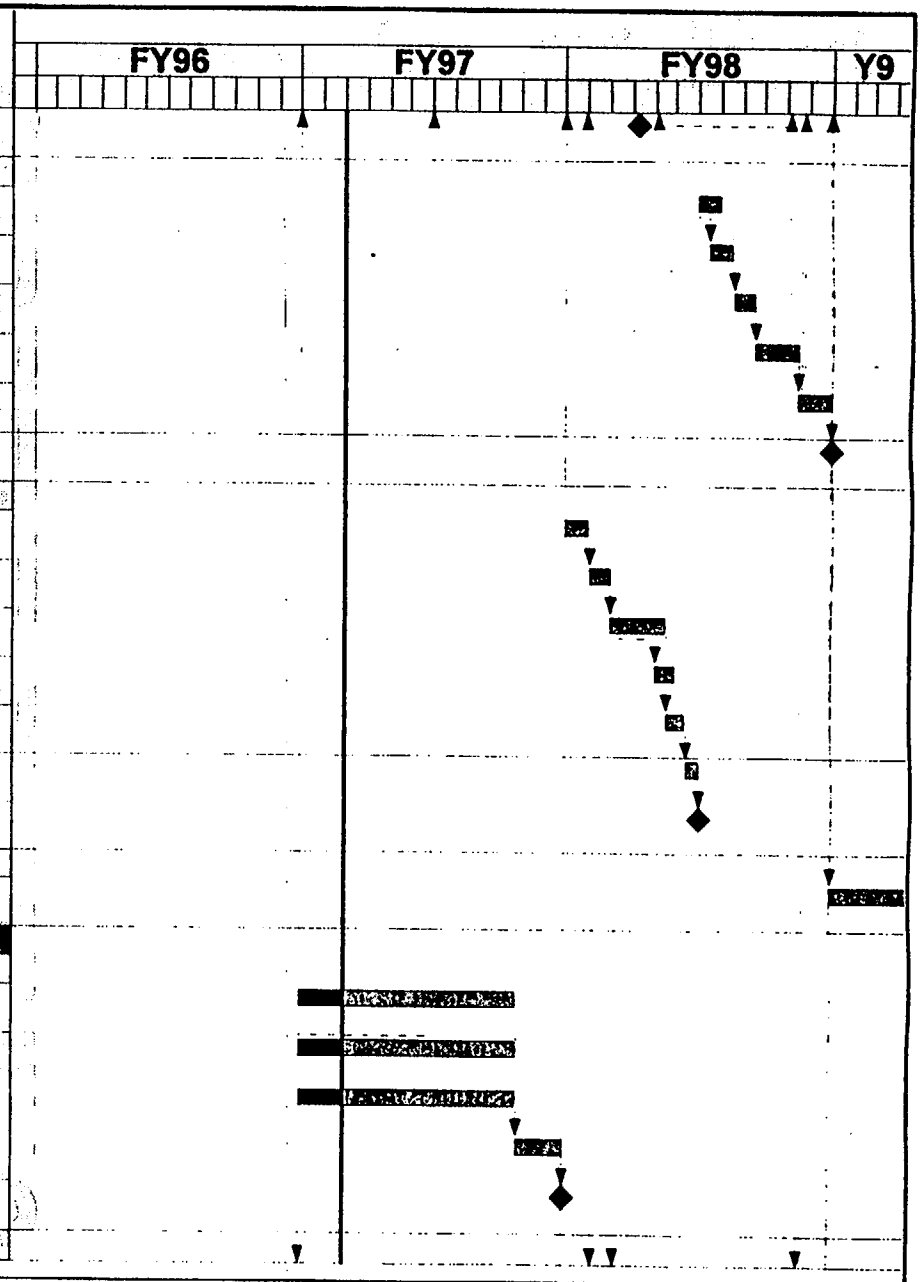
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1500HRS) (5-5315

Date | Revision | Checked | Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE830M3	U'ground Exc. Design Req'mts Study Report	0		07JAN98	P3
TR15GB3: Systems Study Support to FA/RA					
SE900100	Conduct Research & Develop Plan	22	01APR98*	30APR98	
SE900102	Identify the Issues	22	16APR98*	15MAY98	
SE900104	Identify Reasonable Alternative Decisions	20	18MAY98	15JUN98	
SE900106	Evaluate the Alternatives	43	16JUN98	14AUG98	
SE900108	Document & Publish the Results	32	17AUG98	30SEP98	
SE900M3	Thermal Management Technical Analysis	0		01OCT98	P3
TR15GB4: Waste Isolation / EBS Requirments					
SE125A10	Conduct Research & Develop Plan	22	01OCT97*	31OCT97	
SE125A20	Identify Barriers	18	03NOV97	01DEC97	
SE125A30	Conduct Performance Assessments	52	02DEC97	13FEB98	
SE125A40	Evaluate Results	19	02FEB98*	27FEB98	
SE125A50	Prepare Report & Review	19	17FEB98	13MAR98	
SE125A60	Incorporate Comments & Issue Report	13	16MAR98	01APR98	
SE125AM3	Waste Isolation / EBS Requirments Report	0		01APR98	P3
YP1XPP033: PPkg - SE125A - MGDS Design SRA - Ph					
SE514	System Studies Support to FA/RA	205	01OCT98	27JUL99	
TR16FA1: Interface Management					
SE426700	Develop Bin3 Interfaces	187	01OCT96A	25JUL97	
SE426705	Develop Bin2 Interfaces	187	01OCT96A	25JUL97	
SE426710	Evaluate Interfaces	187	01OCT96A	25JUL97	
SE426715	Document Interface Requirements	46	28JUL97	30SEP97	
SE426M3	Interface Management Process Report	0		30SEP97*	M4
TR16GA1: Interface Management					



Project Start 01OCT95
Project Finish 01OCT02
Data Date 02DEC96
Plot Date 18DEC96

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YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

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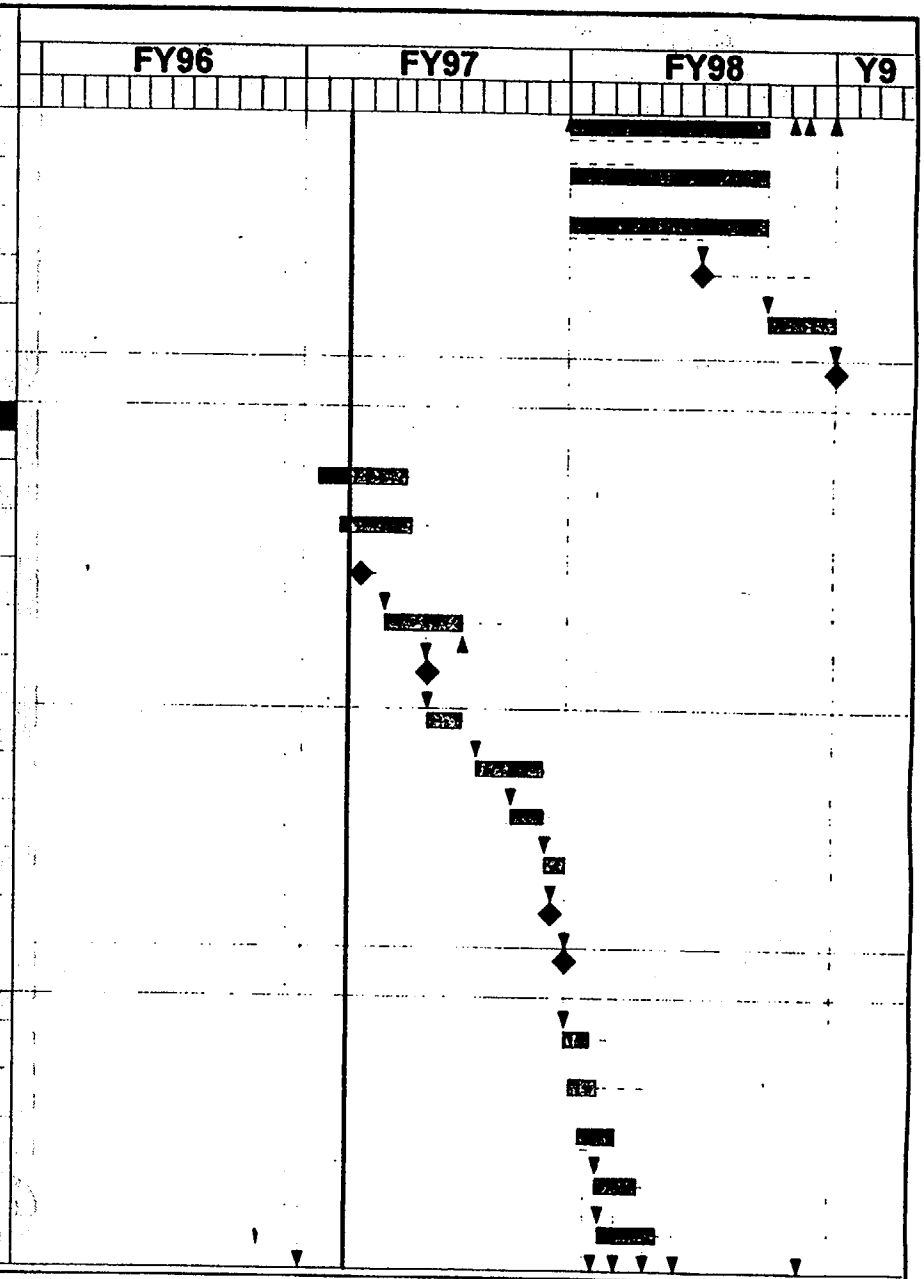
KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE532810	Update Bin 3 SSC Interface Requirements	187	01OCT97*	30JUN98	
SE532815	Update Bin 2 SSC Interface Requirements	187	01OCT97*	30JUN98	
SE532820	Evaluate Interfaces	187	01OCT97*	30JUN98	
SE532AM4	Interface Management Status Report	0		31MAR98*	M4
SE532825	Update Interface Requirements	64	01JUL98	30SEP98	
SE532BM4	Interface Management Status Report	0		30SEP98	M4
TR17FB1: MGDS Cost Analysis					
SE124710	Cost Models Update	95	21OCT96A	19FEB97	
SE124715	Interim MGDS-VA Cost Est. Analysis Update	70	18NOV96A	26FEB97	
SE124M4	PCE Assumptions Approved by RW-1	0		17DEC96*	M4
SE124725	Prelim. Draft MGDS-VA Cost Est. Notebook	78	20JAN97*	08MAY97	
SE124M4A	Update to RW-1	0		19MAR97*	M4
SE124720	Preliminary Draft MGDS-VA Cost Est. Report	36	20MAR97	08MAY97	
SE124735	Final Draft MGDS-VA Cost Est. Report	66	29MAY97*	29AUG97	
SE124740	Final Draft MGDS-VA Cost Est. Notebook	33	16JUL97*	29AUG97	
SE124745	Final MGDS-VA Cost Estimate Report	21	02SEP97*	30SEP97	
SE124M4B	Final MGDS-VA Cost Est. Comments Received	0		09SEP97*	M4
SE124AM3	Submit Cost Estimate	0		30SEP97	M3
TR17GB1: MGDS Cost Analysis					
SE124800	Develop VA Case Assumptions	23	01OCT97*	03NOV97	
SE124805	Develop 98 TSLCC Assumptions	28	06OCT97*	14NOV97	
SE124810	Cost Models (VA & TSLCC) Update	33	20OCT97*	08DEC97	
SE124815	Prepare Draft TSLCC & VA Estimates	37	14NOV97*	09JAN98	
SE124825	Draft TSLCC Documentation for ICE	55	17NOV97*	05FEB98	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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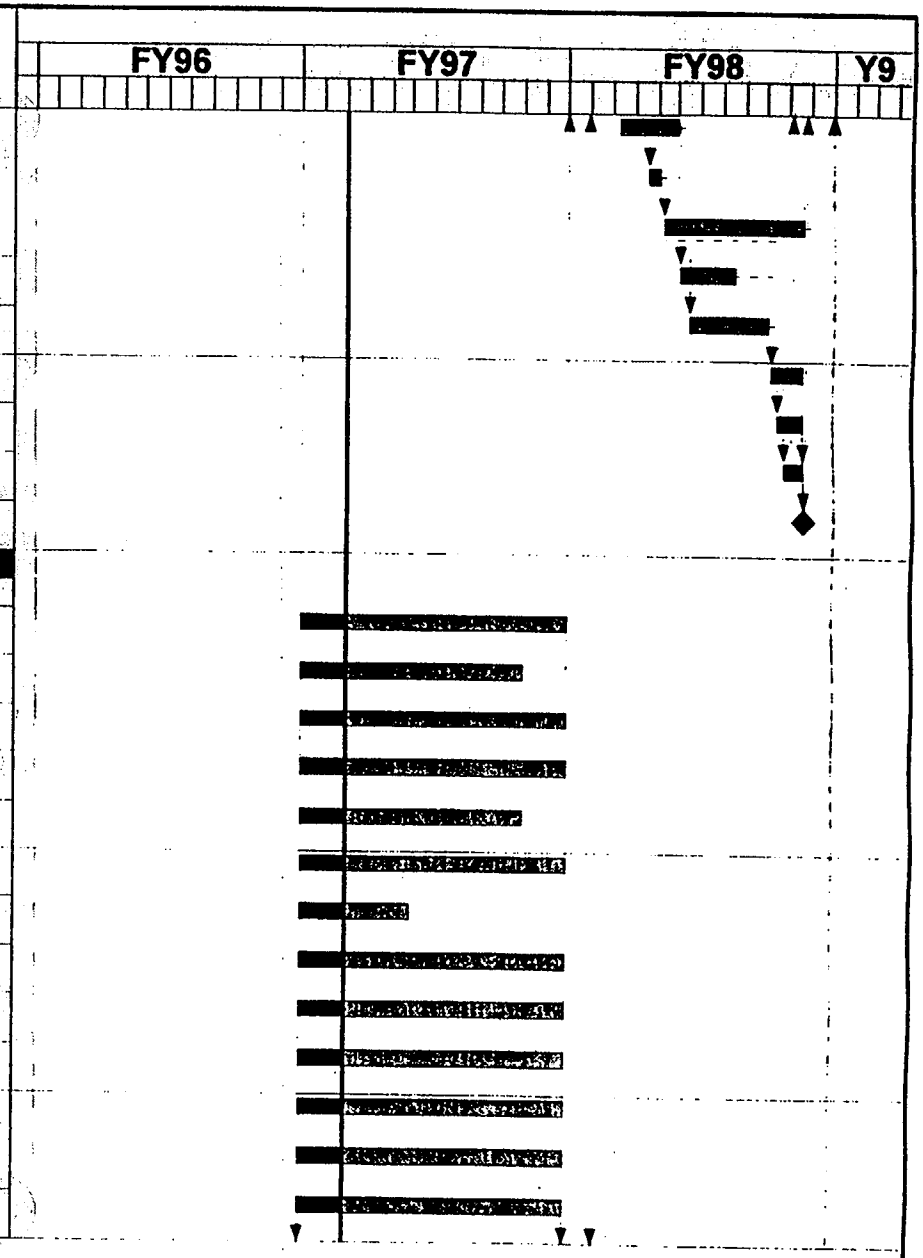
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE124830	Update VA Estimates	55	09DEC97*	26FEB98	
SE124820	Draft TSLCC Report for ICE	12	19JAN98*	03FEB98	
SE124855	Prepare Final Cost Documentation	135	09FEB98*	19AUG98	
SE124835	Support Ice Review	55	02MAR98*	15MAY98	
SE124840	Prepare Final VA Estimate	77	16MAR98*	01JUL98	
SE124845	Update TSLCC per ICE Inputs	34	06JUL98*	20AUG98	
SE124860	Support YMSCO Review	27	15JUL98*	20AUG98	
SE124850	Prepare Final VA Cost Report	20	24JUL98*	20AUG98	
SE124M3	Issue MGDS Cost Analysis to YMSCO for Review	0		20AUG98	P3
TR18FA1: Specialty Engineering Support to MGDS D					
SE720700	Provide SA Supt-Nuclear Facility Design	251	01OCT96A	30SEP97	
SE720705	Provide SA Supt-Site Util.Sys.Dsgn	208	01OCT96A	30JUL97	
SE720710	Provide SA-Underground HVAC Sys.Req'ts	251	01OCT96A	30SEP97	
SE720715	Provide SA-SubSurf.WP Handling Dsgn	251	01OCT96A	30SEP97	
SE720730	Provide SA Supt.-Devel.of Retrieval Dsgn	208	01OCT96A	30JUL97	
SE720735	SA Supt-Devel/Dsgn Guide-Radiation Shield-Drifts	251	01OCT96A	30SEP97	
SE720740	Prov.Dsgn Safety Input/Review Empl.Strategies-RP	102	01OCT96A	28FEB97	
SE720750	Provide SA-MGDS Concept of Operations	251	01OCT96A	30SEP97	
SE720752	Provide SA-Bin3 Sys.Description Documents	251	01OCT96A	30SEP97	
SE720754	Provide SA To Bin 3 SRA Design-Phase 1	251	01OCT96A	30SEP97	
SE720758	Provide SA-Bin2 System Description Doc's	251	01OCT96A	30SEP97	
SE720760	Rvw VA Test and Evaluation Plan	251	01OCT96A	30SEP97	
SE720762	Provide Analysis Rqmts. to MGDS DRD & CRWMS RD	251	01OCT96A	30SEP97	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	16DEC96	

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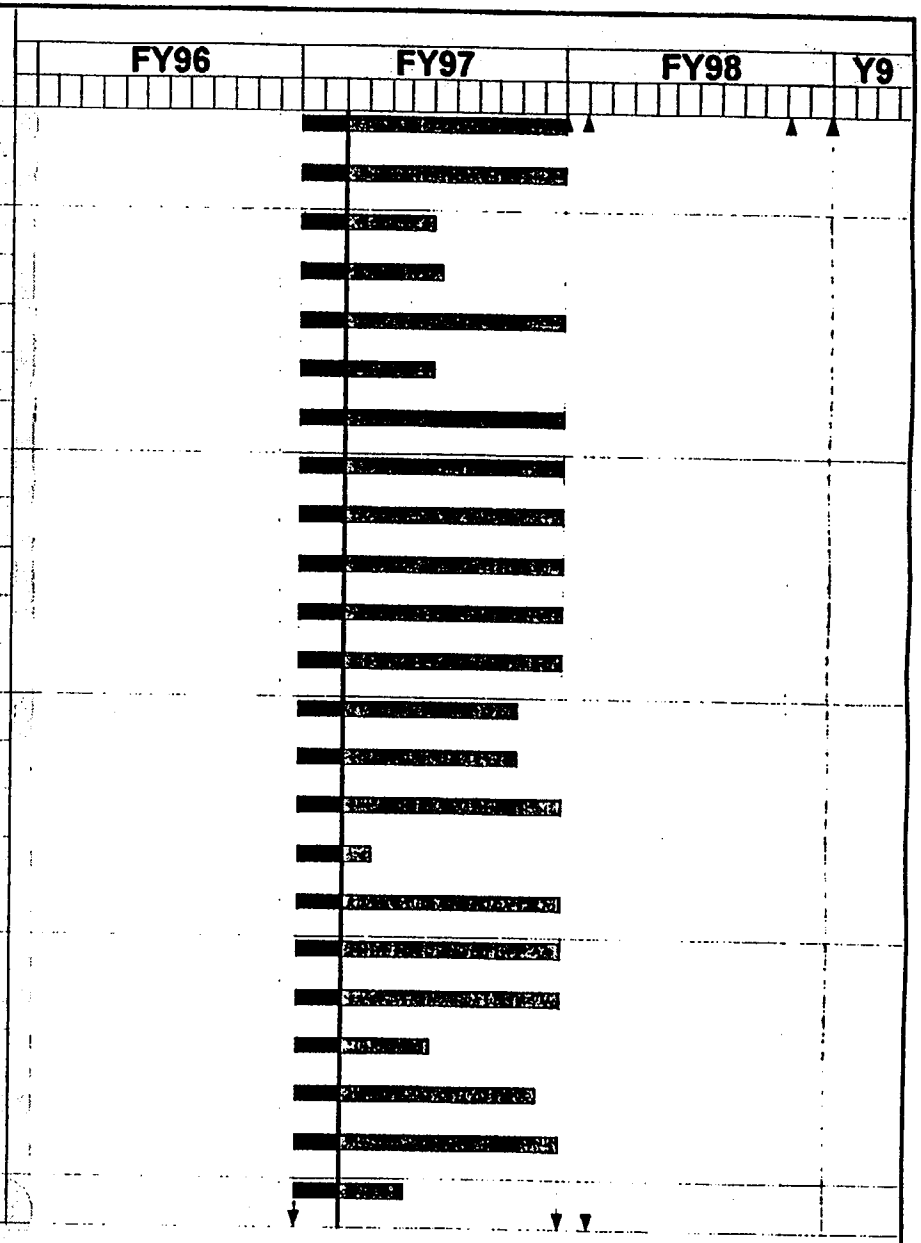
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE720764	Provide Safety Anal.Input to Bin 2 SRA/Dsgn Ph-1	251	01OCT96A	30SEP97	
SE720766	Provide Inputs on the Applic. of Safety Analysis	251	01OCT96A	30SEP97	
SE720770	Provide Safety Anal. Inputs to Waste Quant.& Mix	124	01OCT96A	01APR97	
SE720772	Provide SA Inputs to Retrievability ConOps	133	01OCT96A	14APR97	
SE720774	Provide Safety Anal. Sppt. to Document Rvws	251	01OCT96A	30SEP97	
SE720776	Provide SA Suppt/Waste Isolation Req'mts Study	124	01OCT96A	01APR97	
SE720788	Provide Safety Anal. Sppt to Perf.Confirm.Study	251	01OCT96A	30SEP97	
SE720790	Provide Safety Anal. Sppt. to DBE Def. & Anal.	251	01OCT96A	30SEP97	
SE720795	Rvw In'face Drwg Pkgs for Incl.Saffy Anal. Rqm't	251	01OCT96A	30SEP97	
SE720796	Provide SA Inputs tp Prelim. EBS Sys. Des. Doc.	251	01OCT96A	30SEP97	
SE720798	Review/Chk Probabilistic Anal.-WP Dsgns	251	01OCT96A	30SEP97	
SE722700	Provide Human Factors Engr (HFE) Sppt for MGDS	251	01OCT96A	30SEP97	
SE722706	Prelim. HFE Dsgn Ops & Maintainability/Utilities	208	01OCT96A	30JUL97	
SE722710	Prelim.HFE Dsgn Inputs Surface Nuclear Facility	209	01OCT96A	31JUL97	
SE722712	Prelim. HFE Anal.Determ. Impact-Dsgn Changes	251	01OCT96A	30SEP97	
SE722714	Provide HFE Inputs the Oper. Philosophy Covering	67	01OCT96A	09JAN97	
SE722716	Prepare HFE Dsgn Guide/Inputs	251	01OCT96A	30SEP97	
SE722718	Prov.HFE Inputs to Dsgn/Major Sys.& Comp.Dscrip.	251	01OCT96A	30SEP97	
SE722724	Provide HFE Inputs WP Implacement Concept	251	01OCT96A	30SEP97	
SE722726	Provide HFE Inputs/Rvw of Perf. Confirmation	124	01OCT96A	01APR97	
SE722728	Provide HFE Inputs to Off-Normal Retrieval CoO	230	01OCT96A	29AUG97	
SE722730	Prepare Dsgn Guide/Inputs for HFE Criteria	251	01OCT96A	30SEP97	
SE722732	Provide HFE Inputs to the Dev. Pot. Emplacement	102	01OCT96A	28FEB97	



Project Start	01OCT95
Project Finish	01OCT02
Data Date	02DEC96
Plot Date	18DEC96

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YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

Sheet 16 of 21

KRISHNA 12/18/96 (1600HRS) (5-5315

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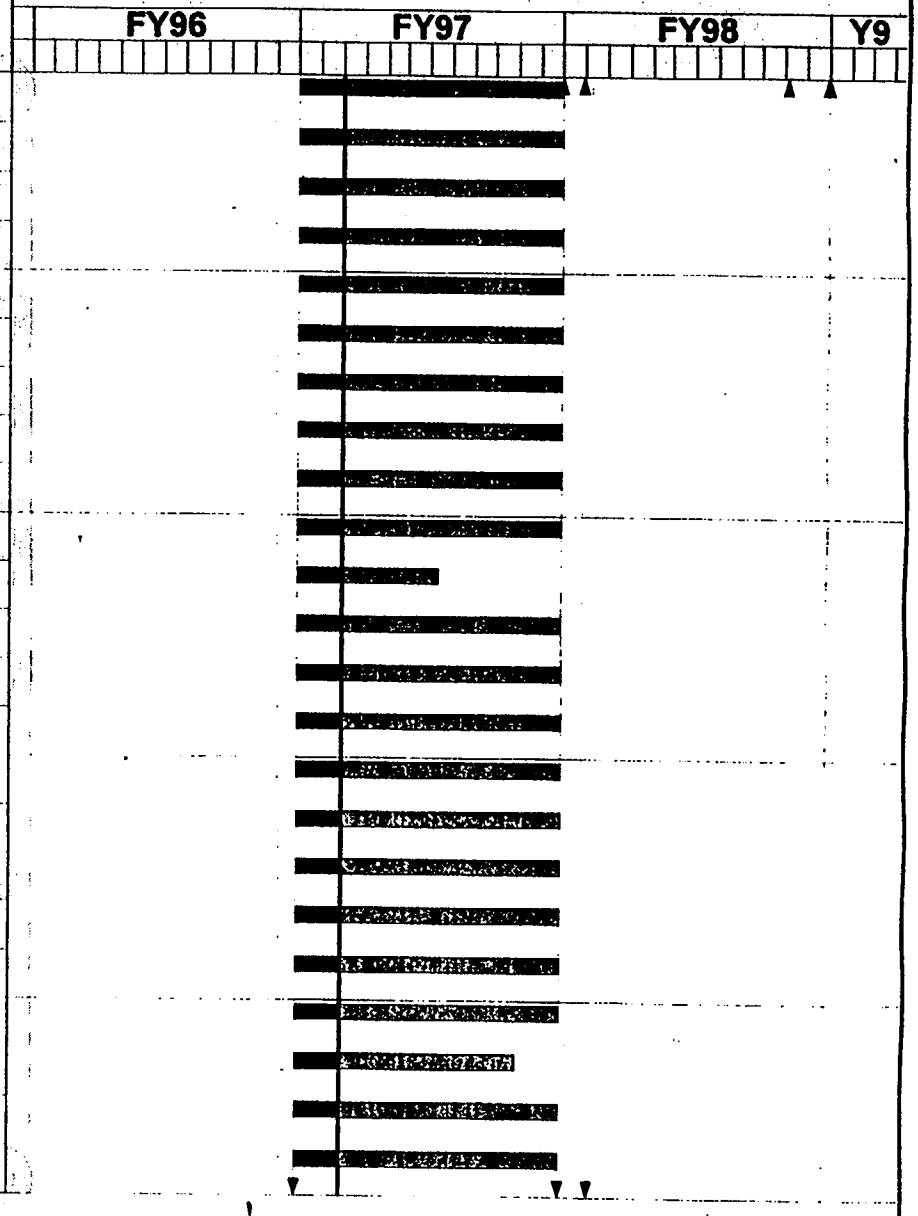
Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE722734	Provide HFE Inputs to MGDS CoO	251	01OCT96A	30SEP97	
SE722736	Provide HFE Inputs to Bin 3 System Desc. Doc.	251	01OCT96A	30SEP97	
SE722738	Provide HFE Inputs SRA Dsgn-Bin 3 Ph-1	251	01OCT96A	30SEP97	
SE722742	Provide HFE Inputs to the Bin 2 Sys. Descr. Doc.	251	01OCT96A	30SEP97	
SE722744	Provide HFE Inputs SRA Dsgn-Bin 2 Ph-1	251	01OCT96A	30SEP97	
SE722748	Rvw VA Test & Eval. Plan	251	01OCT96A	30SEP97	
SE722750	Provide New/Updated/Mod. HFE Rqmts.	251	01OCT96A	30SEP97	
SE722752	Provide HFE Inputs for SSC Interfaces	251	01OCT96A	30SEP97	
SE722754	Provide Inputs on Applic. of HFE Reg. Guidelines	251	01OCT96A	30SEP97	
SE722758	Prov. HFE Inputs/Rvw MGDS Dsgn Assump. Doc	251	01OCT96A	30SEP97	
SE722760	Provide HFE Inputs to Retrievability CoO	133	01OCT96A	14APR97	
SE722762	Provide HFE Sppt. to Document Reviews	251	01OCT96A	30SEP97	
SE722764	Provide HFE Inputs to Progress and Adhoc Rpts	251	01OCT96A	30SEP97	
SE722766	Provide HFE Inputs to Safety Anal. Act. & Rpts.	251	01OCT96A	30SEP97	
SE722778	Rvw Interface Drwg Pkgs for HFE Rqmts	251	01OCT96A	30SEP97	
SE722780	Participate in Mockup Test to Eval. Welding Proc	251	01OCT96A	30SEP97	
SE722782	Dev/Eval. Proced. for Testing & Exam Closure Wel	251	01OCT96A	30SEP97	
SE722784	Provide HFE Inputs to Prelim. EBS Sys. Desc.	251	01OCT96A	30SEP97	
SE724700	RAM Sppt. to SRA/Dsgn	251	01OCT96A	30SEP97	
SE724702	Provide RAM Sppt. to Updating/Integration	251	01OCT96A	30SEP97	
SE724704	Provide RAM Sppt. to Site-Utilities Sys. Dsn	208	01OCT96A	30JUL97	
SE724708	Provide RAM Sppt. to Subsurface WP Handling Dsgn	251	01OCT96A	30SEP97	
SE724714	Provide RAM Analysis Inputs to MGDS CoO	251	01OCT96A	30SEP97	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	16DEC96	

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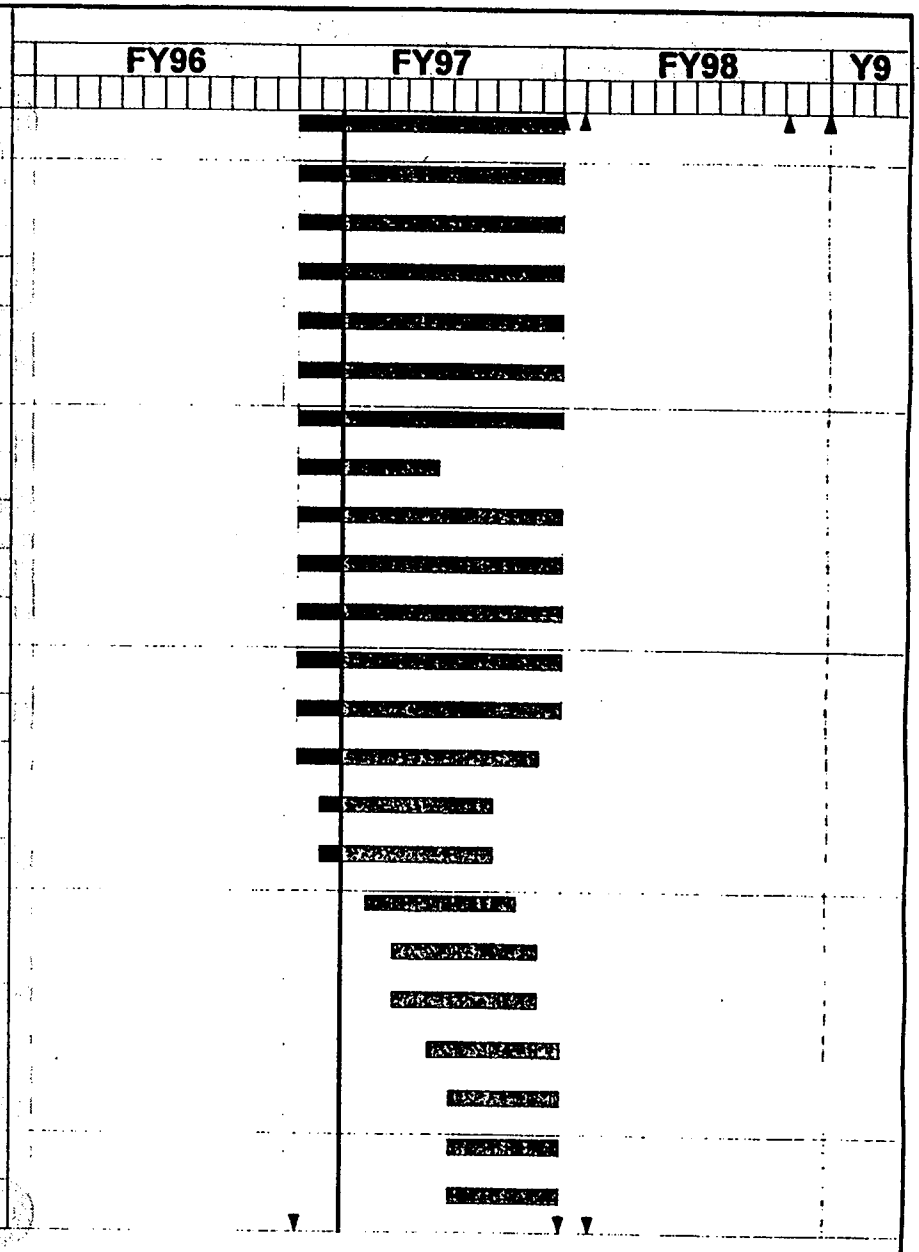
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/16/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE724716	Provide RAM Anal. Inputs Bin 3 Sys. Des. Doc's	251	01OCT96A	30SEP97	
SE724718	Prov.RAM Anal.Inputs SRA Dsgn P-1/Bin 3	251	01OCT96A	30SEP97	
SE724722	Prov. RAM Anal. Inputs Bin 2 Sys.Desc.Doc (SDD)	251	01OCT96A	30SEP97	
SE724724	Prov.RAM Anal.Inputs SRA/Dsgn P-1 for Bin 2	251	01OCT96A	30SEP97	
SE724728	Rvw the VA Test & Eval. Plan to Ensure RAM	251	01OCT96A	30SEP97	
SE724730	Provide New/Update/Mod. RAM	251	01OCT96A	30SEP97	
SE724732	Provide Inputs on Applic. of RAM Analysis	251	01OCT96A	30SEP97	
SE724734	Provide RAM Analysis Inputs to Retriev. CoO	133	01OCT96A	14APR97	
SE724736	Provide RAM Analysis Sppt. to Doc. Rvws	251	01OCT96A	30SEP97	
SE724738	Provide RAM Analysis Inputs to Progress & Adhoc	251	01OCT96A	30SEP97	
SE724742	Rvw Interface Drwg Pkgs for Inclusion RAM Anal.	251	01OCT96A	30SEP97	
SE724744	Provide RAM Anal. Inputs to Prelim. EBS Sys.	251	01OCT96A	30SEP97	
SE724746	Prov.RAM Supt.U'ground HVAC Sys.Req'mts	251	01OCT96A	30SEP97	
SE724750	Prov.RAM Supt. Devel. Retrieval Dsgn.	230	01OCT96A	29AUG97	
SE722720	Provide HFE Dsgn Inputs/Subsurf. Facility Arrang	187	01NOV96A	27JUN97	
SE722722	Prov.Prelim.HFE Inputs/Specs,Emerg.Warn.System	187	01NOV96A	27JUN97	
SE722704	Prelim. HFE Dsgn to Include Site & Facil. Access	147	03JAN97*	31JUL97	
SE720720	Provide SA Supt.-Prelim.Sealing/Closure Dsgn	141	11FEB97*	29AUG97	
SE724748	Prov.RAM Supt. Prelim.Sealing/Closure Dsgn	141	11FEB97*	29AUG97	
SE722756	Provide Inputs Concerning HFE Dsgn Features	128	01APR97*	30SEP97	
SE720756	Provide SA-Desc. of Ops.& Maint.Desc.-Bin 3	107	30APR97*	30SEP97	
SE720765	Prov.SA to Desc.Of Ops & Maint. Cond/Bin 2	107	30APR97*	30SEP97	
SE722740	Provide HFE Inputs Desc.Oper. & Maint./Bin3	107	30APR97*	30SEP97	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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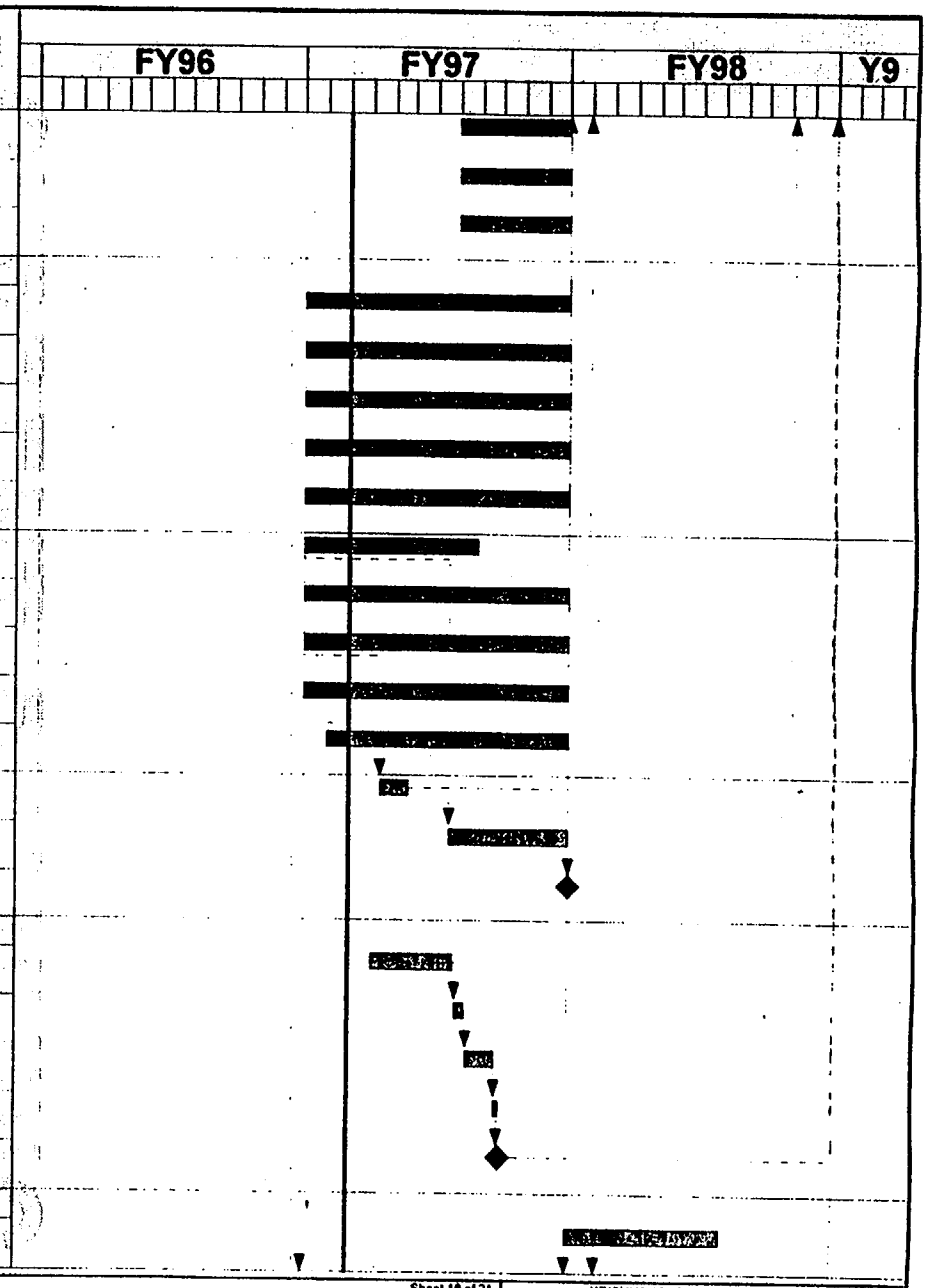
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE722746	Provide HFE Inputs Desc. Oper. & Maint./Bin 2	107	30APR97*	30SEP97	
SE724720	Prov.RAM Anal.Inputs Bin 3 Desc. Oper. & Maint.	107	30APR97*	30SEP97	
SE724726	Prov.RAM Anal.Inputs Bin 2 Desc. Oper. & Maint.	107	30APR97*	30SEP97	
TR18FB1: Support ESF					
SE814702	Provide SA Inputs/Rvw ESF ConOps Update	251	01OCT96A	30SEP97	
SE814704	Provide Safety Anal. Inputs/Rvw to ESFDR	251	01OCT96A	30SEP97	
SE814706	Provide Safety Anal. ESF Facilities/Part. CCB	251	01OCT96A	30SEP97	
SE814766	Provide Dsgn Safety Inputs/ESF Subsurf.Facil.	251	01OCT96A	30SEP97	
SE814776	Prov. Dsgn Safety Inputs/ESF Surface Facilities	251	01OCT96A	30SEP97	
SE814781	Eval. Data/DS Heating Phase Single Heater Test	163	01OCT96A	27MAY97	
SE814787	Rvw Asbuilt Inputs ESF, O&M Baseline & ESFDR Rqm	251	01OCT96A	30SEP97	
SE814793	Provide Dsgn Saftey Rqmts Inputs Emerg. Ops Ctr	251	01OCT96A	30SEP97	
SE814798	Provide Dsgn Safety Into the Dev. of EOC	251	01OCT96A	30SEP97	
SE814700	Update SSA's to As-Builts as Required	229	01NOV96A	30SEP97	
SE814792	Prov. Dsgn Safety Inputs toTitle IIDsgn ESF SGDF	28	13JAN97*	20FEB97	
SE814784	Prov.Dsgn Safety/Single Heater Test Status Rpt	115	18APR97*	30SEP97	
SE814M3	Deliver Safty Analysis Activity Report (SAAR)	0		30SEP97	M3
TR18FB2: Perform MGDS Safeguards & Security Land					
SE500700	Perform Safeguards & Sec. Land Withdrawal Study	81	02JAN97*	25APR97	
SE500705	Write Draft Report	10	28APR97	09MAY97	
SE500710	Internal & External Review	29	12MAY97	20JUN97	
SE500715	Prepare Final Report	5	23JUN97	27JUN97	
SE500M3	Safeguards & Security Land Withdrawal Study Rpt.	0		27JUN97	M3
TR18GA1: Specialty Engineering Support to MGDS					
SE720791	Provide Specialty Engineering Support to PISA	146	01OCT97*	01MAY98	



Project Start	01OCT95
Project Finish	01OCT02
Data Date	02DEC96
Plot Date	18DEC96

Early
Progress Bar
Critical Activity

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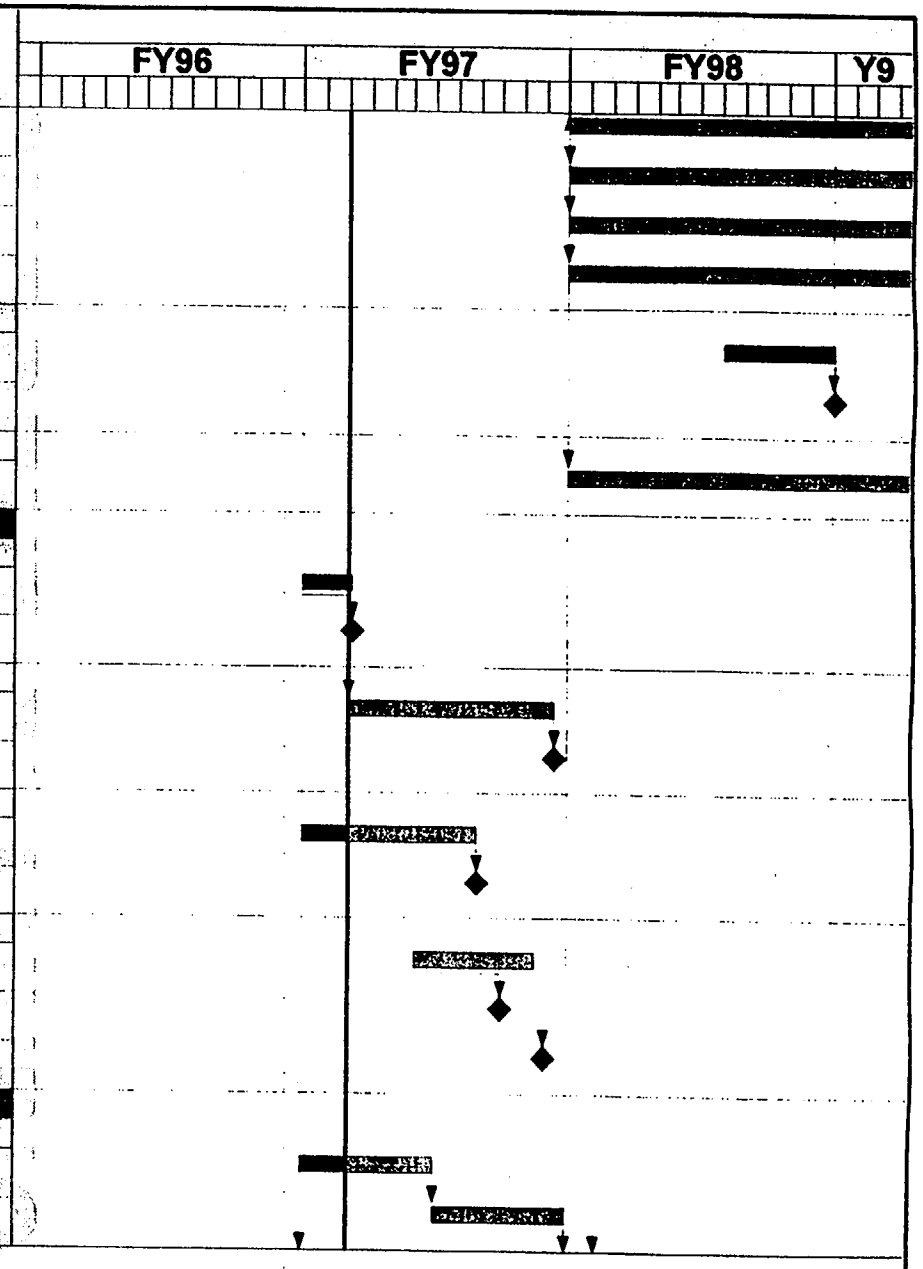
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
SE720A	Provide System Safety Support to SRA/Design	455	01OCT97	26JUL99	
SE722A	Provide HFE Support to SRA/Design	455	01OCT97	26JUL99	
SE724A	Provide RAM Support to SRA/Design	455	01OCT97	26JUL99	
SE726A	Provide ILS Support to SRA/Design	455	01OCT97	26JUL99	
TR18GA2: Specialty Engineering Support to ESF					
SE812	Update Maindrift SSA to Add'l U-Grnd Excavation	106	01MAY98*	30SEP98	
SE812M4	Briefing Maindrift SSA	0		30SEP98	M4
TR18GA3:Safeguards & Security					
SE730A	Provide Safeguards, Security to SRA/Design	455	01OCT97	26JUL99	
TR1AFA1: Degraded Mode Criticality					
SE1A700	Degraded Mode Criticality	32	01OCT96A	06DEC96	
SE1A0M3	Degraded Mode Crit.Analysis of Immob.Plut.	0		06DEC96	M3
TR1AFA2: External Criticality					
SE1A705	External Criticality	198	02DEC96*	11SEP97	
SE1A2M3	Rpt. External Criticality of Plutonium	0		11SEP97	M3
TR1AFA3: Plan/Stragery for Inclu of Plut Wst int					
SE1A710	Plan/Strategy -Inclusion of Plut.Waste in FWMS	145	01OCT96A	27MAY97	
SE1A3M3	Approach to Incorp.Plut.Waste into FWMS	0		27MAY97	M3
TR1AFA4: Plan Implementation					
SE1A715	Plan Implementation	118	03MAR97*	15AUG97	
SE1A4M3	Data Needs Document	0		30JUN97*	M3
SE1A5M3	Draft MOA	0		29AUG97*	M3
TR1BFB1: DBE Definition & Analysis					
SE310700	DBE FY'97 (1ST HALF)	123	01OCT96A	31MAR97	
SE310705	DBE FY'97 (2ND HALF)	128	01APR97	30SEP97	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	16DEC96	

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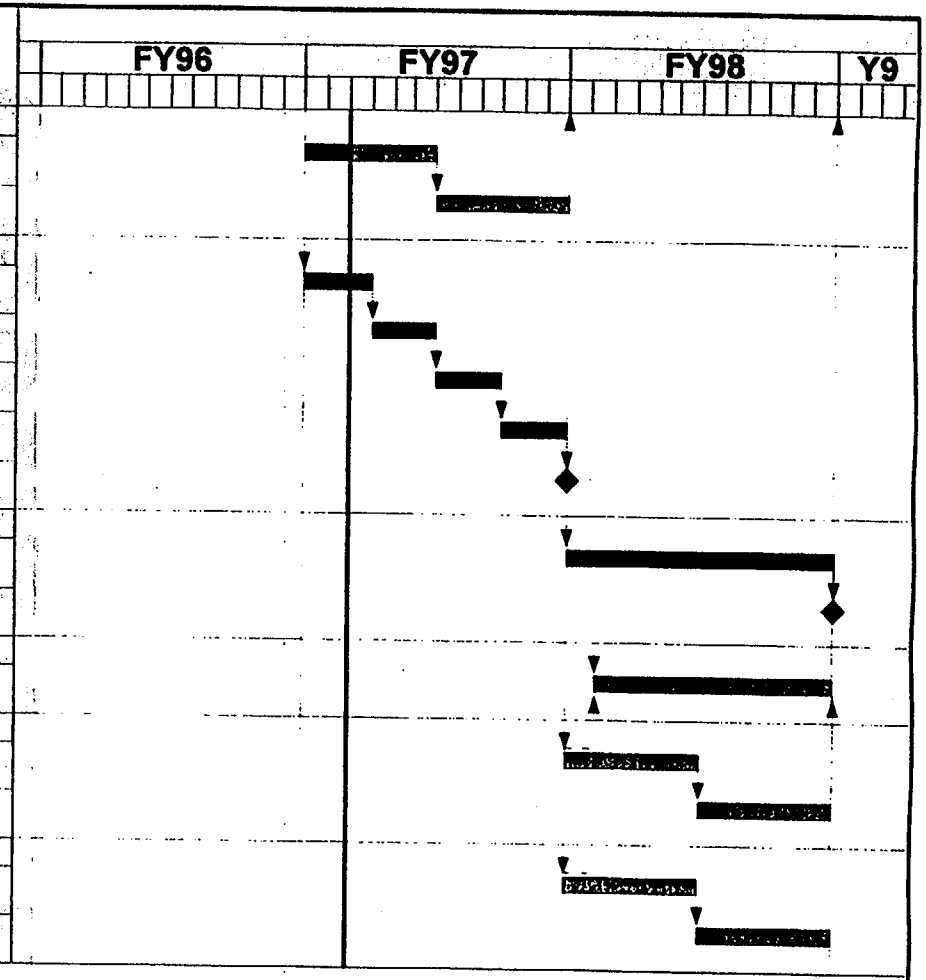
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/16/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
TR1BFB2: Classification Analysis/Q-List Update					
SE320700	CA/Q-List FY'97 (1st Half)	123	01OCT96A	31MAR97	
SE320705	CA/Q-List FY'97 (2nd Half)	128	01APR97	30SEP97	
TR1BFB3: DIE Analyses					
SE820700	DIE FY'97 (1ST QTR)	61	01OCT96A	31DEC96	
SE820705	DIE FY'97 (2ND QTR)	62	02JAN97	31MAR97	
SE820710	DIE FY'97 (3RD QTR)	64	01APR97	30JUN97	
SE820715	DIE FY'97 (4TH QTR)	64	01JUL97	30SEP97	
SE820M3	DIE FY'97 REPORT	0		30SEP97	M3
TR1BGA1: DIE Analyses					
SE822800	DIE FY'98	251	01OCT97*	30SEP98	
SE822M4	DIE FY'98 Briefing	0		30SEP98	M4
TR1BGA2: PISA Chapter 7					
SE5603	Support Chapter 7 PISA Development	224	10NOV97*	30SEP98	
TR1BGB1: Classification Analysis/Q-List Update					
SE322800	CA/Q-List FY'98 (1st Half)	123	01OCT97	31MAR98	
SE322805	CA/Q-List FY'98 (2nd Half)	128	01APR98	30SEP98	
TR1BGB2: DBE Definition & Analysis					
SE310800	DBE FY'98 (1ST HALF)	123	01OCT97	31MAR98	
SE310805	DBE FY'98 (2ND HALF)	128	01APR98	30SEP98	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.1 - SYSTEMS ENGINEERING
LONG RANGE PLAN (FY96-FY98)

Date	Revision	Checked	Approved
	KRISHNA 12/18/96 (1600HRS) (5-5315		

APPENDIX J

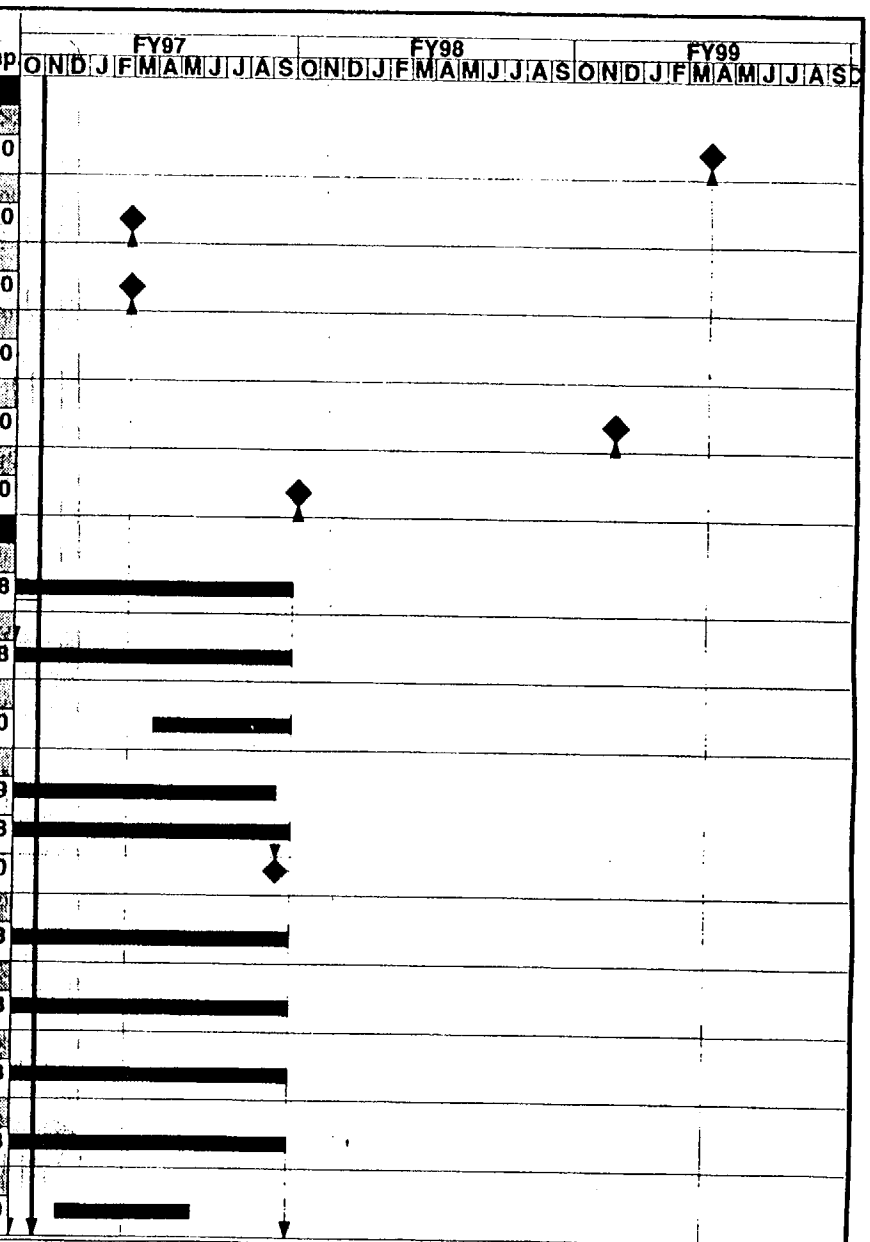
WASTE PACKAGE DEVELOPMENT AND MATERIALS SCHEDULE

The data contained in this appendix reflects the status of the Yucca Mountain Site Characterization Project as of 12/16/96. Because of the evolving conditions of the Yucca Mountain Site Characterization Project, data in this appendix is changed or updated as necessary. However, this VA Design and Review Plan will not be revised or reissued as a result of data updates. For a current status of the data in this appendix and/or a copy of the current version, contact C. Chagnon. For suggested changes to the contents, contact A. Segrest.

WASTE PACKAGE DEVELOPMENT AND MATERIALS SCHEDULE

The Waste Package Development and Materials (WBS 1.2.2) schedule for FY 97/98 is provided. This schedule reflects the current status of the FY 98 planning activity. All of the Waste Package Development and Materials activities are tied to the VA milestone, except those that exclusively support the EIS/NEPA development.

Activity ID	Activity description	Early start	Early finish	% Comp
1.2.2- Waste Package				
YP2XPP017: PPkg - WP0020M2B - Complete EMCR Rev				
WP0020M2B	Complete Engr. Matls. Char. Rpt. Rev 2		01APR99*	0
YP2XPP021: PPkg - WP0035M2B - Complete WFCR Rev				
WP0035M2B	Complete Waste Form Char. Rpt. Rev 1		26FEB97*	0
YP2XPP023: PPkg - WP015M2B - Complete EMCR Rev 1				
WP015M2B	Complete EMCR Rev 1		26FEB97*	0
YP2XPP028: PPkg - WP080M2 - Complete Disposal Cr				
WP080M2	Complete Disposal Criticality Technical Report		14AUG96	100
YP2XPP032: PPkg - WP110M2B - Complete WFCR Rev 2				
WP110M2B	Complete Waste Form Char. Rpt. Rev 2		30NOV98	0
YP2XPP036: PPkg - WP150M2 - Update Disposal Crit				
WP150M2	Update Disposal Criticality Topical Report		08OCT97*	0
1.2.2.1- Waste Package Coordination and Planning				
TR21FA2: Management & Integration Outside EBS -				
WP21FA2	Management & Integration Outside EBS - Ph I	01OCT96A	30SEP97	8
TR21FA3: OPI/EDC/PCG - Ph I				
WP21FA3	OPI/EDC/PCG - Ph I	01OCT96A	30SEP97	8
TR21FA4: MGDS Waste Package Dsgn Review Phase I				
WP21FA4	MGDS Phase I Dsgn Review - Waste Package	02APR97*	30SEP97	0
TR21FA5: WPD Management & Integration Phase I				
WP21702	Dev WP Design Completion Letter Report	01OCT96A	11SEP97	9
WP21FA5	WPD Management & Integration	01OCT96A	30SEP97	8
WP21704	Submit EBS/WP Ph-1 Dsgn. Comp. Letter Rpt		12SEP97*	0
TR21FA6: LLNL M&I Phase I				
WP21FA6	LLNL M&I Phase I	01OCT96A	30SEP97	8
TR21FA7: Support LLNL Lab Leads				
WP21FA7	Support LLNL Lab Leads	01OCT96A	30SEP97	8
TR21FA8: PR Preparation - LLNL				
WP21FA8	PR Preparation - LLNL	01OCT96A	30SEP97	8
TR21FA9: Annual/Long Range Planning - LLNL				
WP21FA9	Annual/Long Range Planning -LLNL	01OCT96A	30SEP97	8
TR21FAA: Waste Package Consulting Board				
WP21FAA	Waste Package Consulting Board	02DEC96*	29MAY97	0



Project Start 01OCT96
Project Finish 03SEP02
Data Date 01NOV98
Plot Date 05DEC98

Early
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Critical Activity

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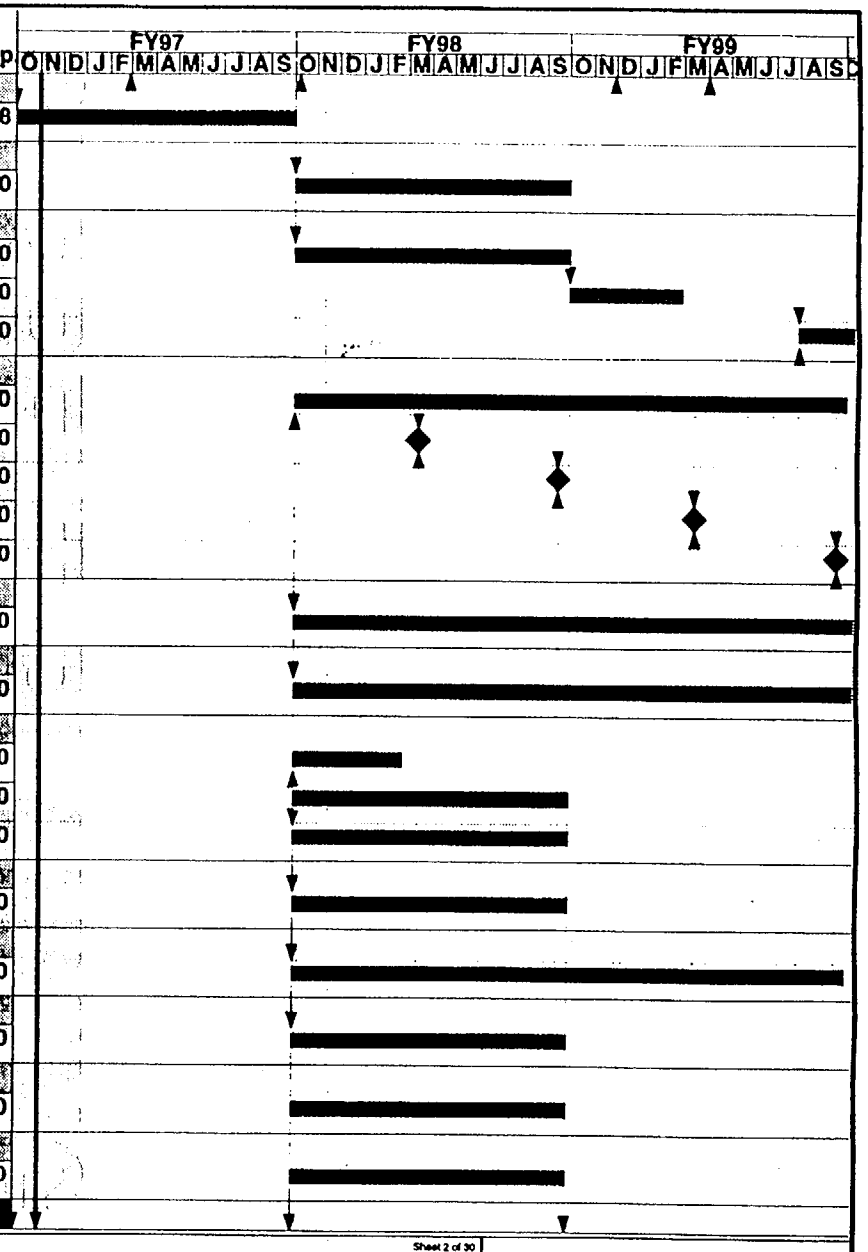
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
TR21FB1: WPD Long Range & Annual Planning				
WP21FB1	Annual/Long Range Planning -WPD	01OCT96A	30SEP97	8
TR21GA1: WPM M&I Phase II				
WP21GA1	WPM Management & Integraton, Ph II	01OCT97*	30SEP98	0
TR21GA2: WPD Management & Integration Phase II				
WP0712	Management & Integration Support, Ph II	01OCT97*	30SEP98	0
WP0813	WPD Management & Integration	01OCT98*	26FEB99	0
WP2751	Support Development of LA	30JUL99*	28JUL00	0
TR21GA3: WPD Progress Reports, Ph II				
WP0701	Prepare Progress Reports, Ph II	01OCT97*	30SEP99	0
WPPR18M3	WPMWPD Input to Progress Report 18		13MAR98	0
WPPR19M3	WPMWPD Input to Progress Report 19		15SEP98*	0
WPPR20M3	WPM/WPD Input to Progress Report 20		15MAR99	0
WPPR21M3	WPMWPD Input to Progress Report 21		17SEP99*	0
TR21GA4: M&I Outside EBS, Ph II				
WP0825	Management & Integration Outside EBS	01OCT97	01MAR02	0
TR21GA5: OPI/EDC/PCG - Phase II				
WP0830	OPI/EDC/PCG, Ph II	01OCT97	01MAR02	0
TR21GA6: MGDS Waste Package Dsgn Rev, Ph II				
WP210809	WPD/WPM Input to VA Design Summary Prep	01OCT97*	20FEB98	0
WP210811	WPD/WPM Input to MGDS VA Review	01OCT97*	30SEP98	0
WP21GA6	MGDS Ph-II Design Review - WP	01OCT97*	30SEP98	0
TR21GA7: LLNL Lab Leads Support, Ph II				
WP21GA7	LLNL Lab Leads Support	01OCT97	30SEP98	0
TR21GA8: WPM Progress Reports, Ph II				
WP21GA8	WPM Progress Reports, Ph II	01OCT97	30SEP99	0
TR21GA9: WPM Annual/Long-Range Planning Ph II				
WP21GA9	WPM Annual/Long-Range Planning	01OCT97	30SEP98	0
TR21GAA: Waste Package Consulting Board, Ph II				
WP21GAA	Waste Package Consulting Board, Ph II	01OCT97*	30SEP98	0
TR21GAB: WPD Long Range & Annual Planning Ph II				
WP21GB1	WPD Long Range & Annual Planning	01OCT97*	30SEP98	0
1.2.2 2- Waste Package Requirements				



Project Start	01OCT96	Early
Project Finish	03SEP02	Progress Bar
Data Date	01NOV96	Critical Activity
Plot Date	05DEC96	

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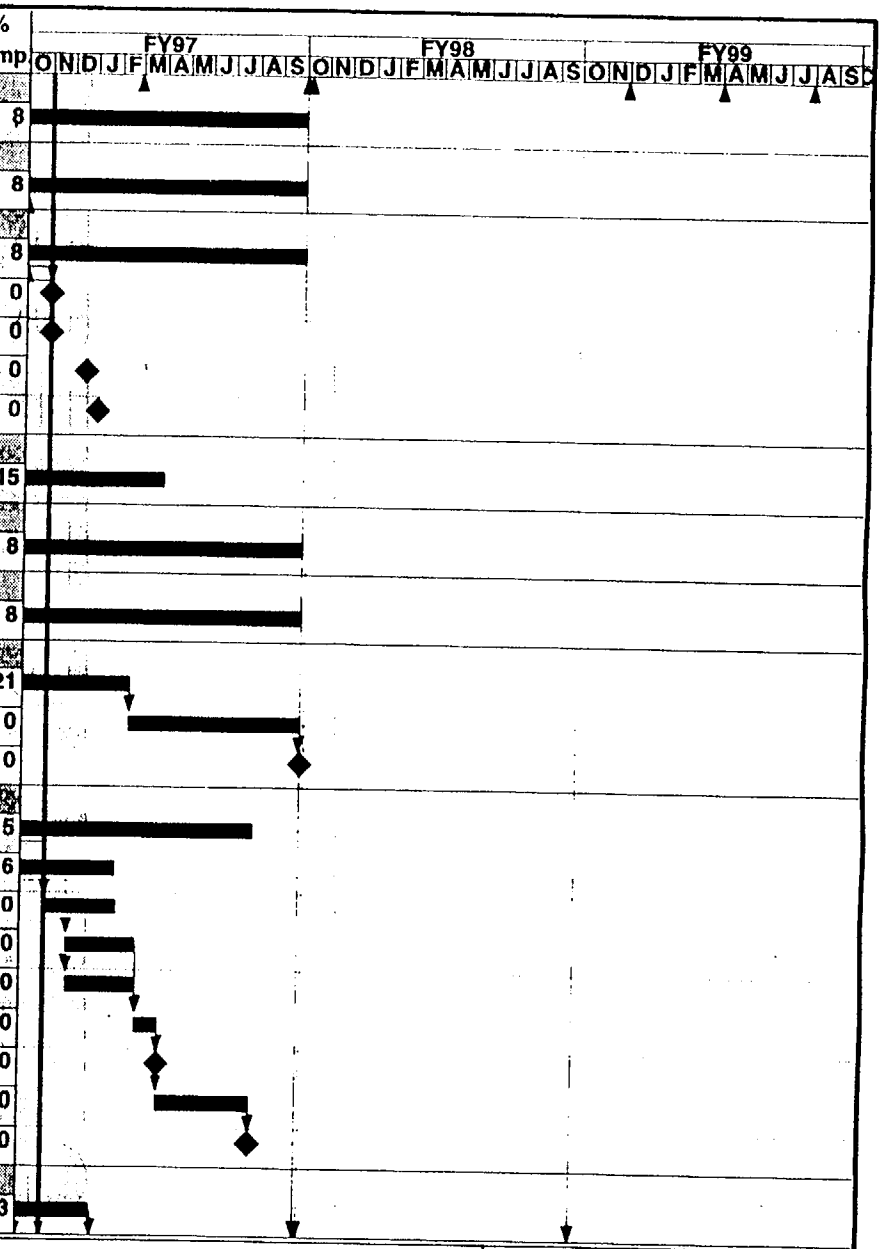
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
TR22FA1: Integrate Environ Assess. Performance (				
WP22FA1	Integrate Environ Asses. Performance (NEPA)	01OCT96A	30SEP97	8
TR22FA2: Integrate Dev of Licensing & Reg Docume				
WP22FA2	Integrate Dev of Licensing & Reg Documents	01OCT96A	30SEP97	8
TR22FA3: Integrate Performance Assessment TSPA-V				
WP22FA3	Integrate Performance Assessment TSPA-VA	01OCT96A	30SEP97	8
WP0509L4	Provide EBS Input to TSPA-VA	01NOV96*		0
WP220703	Receive List of PA Data Needs fro TSPA-VA	01NOV96*		0
WP0600	Receive PA Data Needs for TSPA - VA	19DEC96*		0
WP0850	Receive PA Data Needs for TSPA - VA	03JAN97*		0
TR22FA4: Integrate Funct Analyses & Reqts				
WP22FA4	Integrate Funct Analysis & Reqts	01OCT96A	31MAR97	15
TR22FA5: Integrate Systems Studies				
WP22FA5	Integrate Systems Studies	01OCT96A	30SEP97	8
TR22FA9: MGDS Project Engineering Waste Package				
WP22FA9	MGDS Project Engineering Waste Package - Ph I	01OCT96A	30SEP97	8
TR22FAA: Champion Radionuclide Transport Evaluat				
WP220708	Assess Work Being Perfrmd in Radionuclide	01OCT96A	18FEB97	21
WP220710	Prepare Summary of Work Being Performed	19FEB97*	30SEP97	0
WP220714	Submit IOC to PA		30SEP97	0
TR22FB2: Develop Cladding Degradation Model for				
WP220715	Review & Compile Literature	01OCT96A	31JUL97	5
WP220716	Survey technical personnel from manufacturers	01OCT96A	31JAN97	6
WP220718	Prepare summary of avail models for	01NOV96*	03FEB97	0
WP220720	Select DBF cladding and est fraction that is ab	02DEC96*	28FEB97	0
WP220722	Sel or development of models for significant cla	02DEC96*	28FEB97	0
WP220724	Prepare IOC to PA	03MAR97	31MAR97	0
WP220726	Submit IOC to PA		31MAR97	0
WP220728	Prepare QA documentation of DBF clad and	01APR97*	31JUL97	0
WP220730	Submit DBF clad & models		31JUL97	0
TR22FB3: Define EBS DBEs				
WP220729	Def EB Seg/WP DBEs & Part in MGDS DBE Task	01OCT96A	03JAN97	33



Project Start	01OCT96
Project Finish	03SEP02
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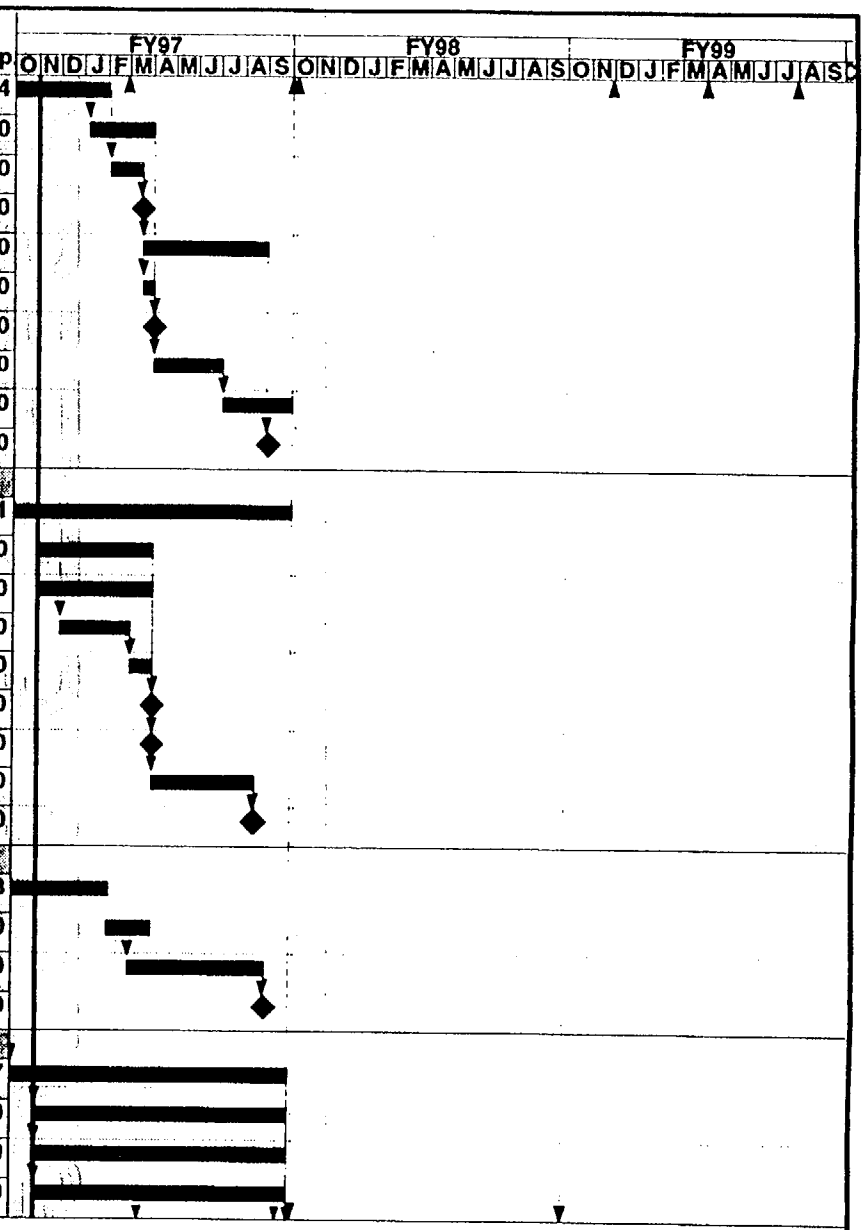
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP220732	Update WP Off-Normal & Acc. Scenario Rep.	01OCT96A	31JAN97	34
WP220731	Est Freq of MGDS DBES	06JAN97	01APR97	0
WP220733	Review WP Off-Normal & Acc. Scenario Rep.	03FEB97*	17MAR97	0
WP220734	Submit WP DBE document		17MAR97	0
WP220736	Assemble/Dev input for MGDS DBE and Q-List	18MAR97*	29AUG97	0
WP220740	Dev IOC to WP desgn indicat WP DBEs reqrng	18MAR97*	31MAR97	0
WP220742	Submit IOC to WP design		31MAR97	0
WP220735	Document WP DBEs Requiring Design Analysis	02APR97	01JUL97	0
WP220737	Define DBE Prameters	02JUL97	30SEP97	0
WP220738	Submit input to MGDS DBE and Q-List class.		29AUG97	0
TR22FB4: Complete Phase I of EB Segment Material				
WP220748	Collect information on materials performance.	01OCT96A	30SEP97	1
WP220744	Dev select crit for dist between levels of perf	01NOV96*	01APR97	0
WP220746	Select candidate matls for WP Support & Invert	01NOV96*	01APR97	0
WP220750	Select ref matls from the candidate materials.	02DEC96*	03MAR97	0
WP220756	Prep TSPA-VA input IOC for PA documenting	04MAR97*	01APR97	0
WP0509L3	Provide EBS input to TSPA-VA		01APR97*	0
WP220758	Submit IOC to PA		01APR97	0
WP220752	Prepare QA documentation of matls select	02APR97*	15AUG97	0
WP220754	Submit EBS/WP Materials Selection Analysis		15AUG97	0
TR22FB5: Determine Near Field Environment Impact				
WP220760	Collect models for waste package material degrad	01OCT96A	05FEB97	8
WP220762	Collect design information.	03FEB97*	01APR97	0
WP220764	Application on data to predicting performance.	03MAR97*	29AUG97	0
WP220765	Submit IOC to PA Desc NFE degrad effects on		29AUG97	0
TR22FB6: Prepare Progress Reports - WPD				
WP220701	Prepare Progress Reports	01OCT96A	30SEP97	7
WP220705	Provide Input & Forecast to Prog Reports	01NOV96	30SEP97	0
WP220709	Support Interactive Review	01NOV96	30SEP97	0
WP220711	Support Issue Resolution	01NOV96	30SEP97	0



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YUCCA MOUNTAIN PROJECT PLAN
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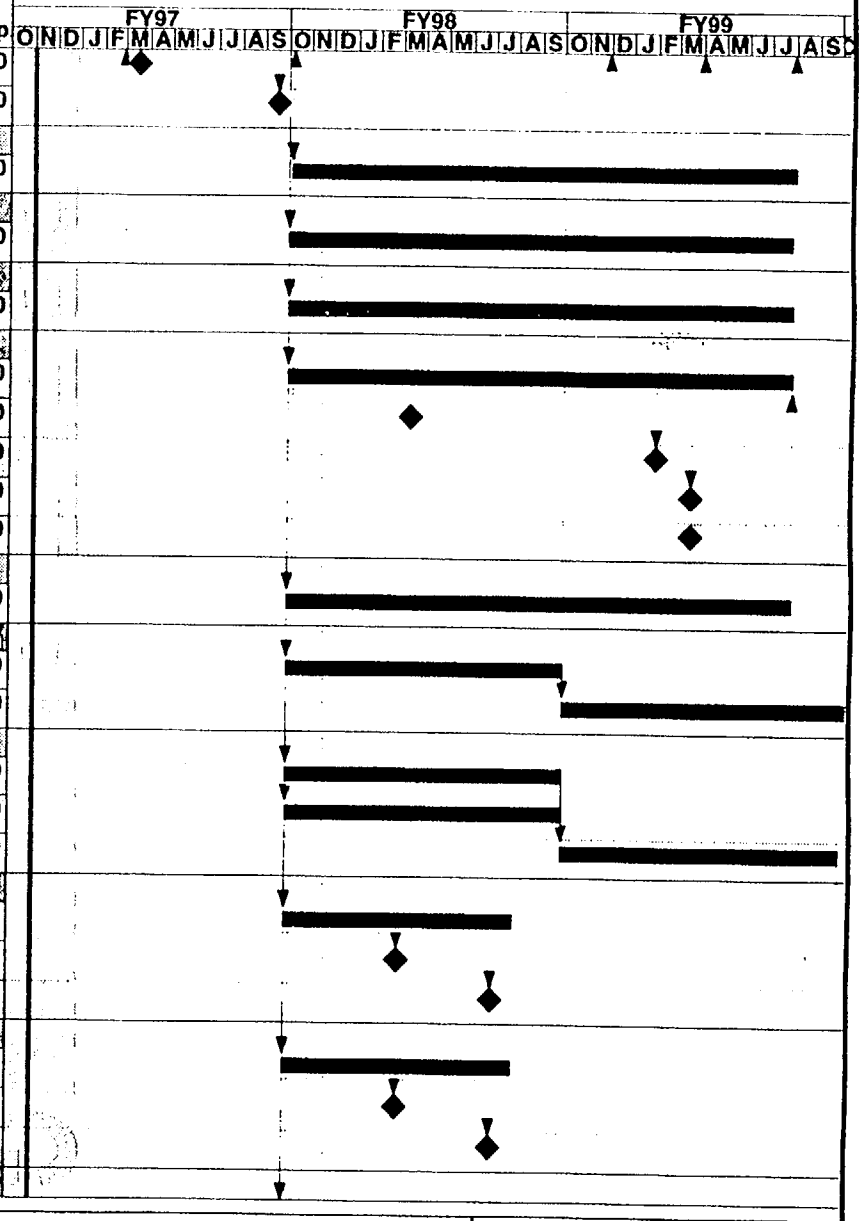
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WPPR16M3	WPM/WPD Input to progress Report 16		17MAR97	0
WPPR17M3	WPMWPD Input to Progress Report 17		15SEP97*	0
TR22GA3: Systems Studies Ph II				
WP0509E	Integrate Systems Studies	06OCT97*	30JUL99	0
TR22GA4: Design Criteria & Requirements Ph II				
WP0509F	Design, Criteria & Requirements, Ph II	01OCT97	27JUL99	0
TR22GA5: Environ Assesment Performance				
WP0509H	Integrate Environ Assessment Performance	01OCT97	27JUL99	0
TR22GA6: Performance Assessment TSPA-LA				
WP0509I	Integrate Performance Assessment TSPA-LA	01OCT97	27JUL99	0
WP0600A	Receive PA Data Needs for TSPA - LA	12MAR98		0
WP0509IA	Provide EBS Input to TSPA-LA		29JAN99*	0
WP0509IB	Receive Dsgn Assess.Feedback from PA		17MAR99	0
WP0509D	Receive PA Data Needs for TSPA-LA	18MAR99*		0
TR22GA7: Regulatory & Licensing Ph II				
WP0509K	Integrate Dev of Licensing & Reg Documents	01OCT97*	27JUL99	0
TR22GA9: MGDS Project Engineering Waste Package				
WP22GA9	MGDS Project Engineering Ph-II - Waste Package	01OCT97*	30SEP98	0
WP0920	MGDS Project Engineering -WP, LA	01OCT98	29SEP00	0
TR22GAA: Radionuclide Transport Evaln, Ph II				
WP220812	Eval Data & Dev Recommendations	01OCT97*	30SEP98	0
WP22GB6	Champion Radionuclide Transp.Eval.-Ph II	01OCT97*	30SEP98	0
WP220807	Coord Quarterly Workshops	01OCT98*	30SEP99	0
TR22GB1: WPD Input to PISA Chap 5 & 6				
WP050A9M	Prepare WPD Input to PISA Chap 5&6	01OCT97*	29JUL98	0
WP050A9D	Issue Draft WPD Input to PISA Chap 5&6		27FEB98*	0
WP050A9E	Issue Final WPD Input to PISA Chap 5&6		30JUN98*	0
TR22GB2: WPM Input to PISA Chap 5 & 6				
WP0802	Prepare WPM Input to PISA Chapter 5 & 6	01OCT97*	29JUL98	0
WP0802A	Issue Draft WPM Input to PISA Chapter 5 & 6		27FEB98*	0
WP0802B	Issue Final WPM Input to PISA Chapter 5 & 6		30JUN98*	0
TR22GB4: EB Segment Materials Selection Ph II				



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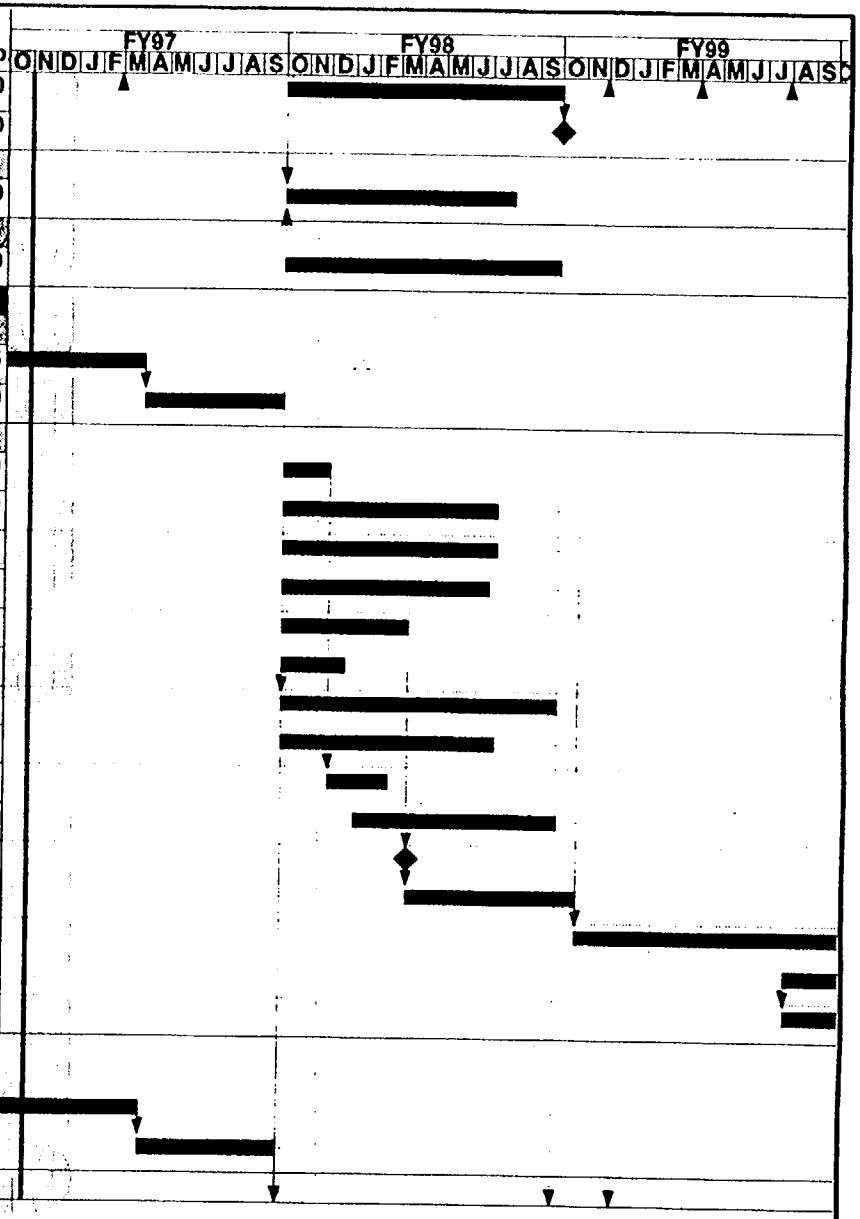
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP0807	Document & Update EB Segment Matls Selection	01OCT97*	30SEP98	0
WP220805	Revised WP/EB Seg Matls Selection Analysis Ph II		30SEP98	0
TR22GB5: Cladding Degradation Model for TSPA LA				
WP0808	Develop Cladding Degrad.Model for TSPA-VA	01OCT97*	30JUL98	0
TR22GB7: Near Field Environment Impacts, Ph II				
WP227	Near Field Environment Impacts, Phase II	01OCT97*	30SEP98	0
1.2.2.3.1- Multi-Purpose Canister				
TR231FA1: Complete Phase I of CF Disposal Contai				
WP231720	Dev Compare & Contrast Table for UCF Evals	01OCT96A	31MAR97	15
WP231722	Dev Tbl Comparing M&O 93 MPC Design	01APR97*	30SEP97	0
TR231GB1: CF Disposal Container Ph II				
WP231800	Prepare List of Eng'g Eval's/Analyses	01OCT97*	02DEC97	0
WP231802	Perform Thermal evaluations	01OCT97*	10JUL98	0
WP231804	Perform Structural evaluations	01OCT97*	10JUL98	0
WP231806	Perf.Criticality Determination, Evaluation	01OCT97*	01JUL98	0
WP231808	Evaluate 2 Std. Canisters	01OCT97*	16MAR98	0
WP231809	Group Canister Types & Select 1	01OCT97*	22DEC97	0
WP231817	Support Standard Canister Comm Dev Effort	01OCT97*	30SEP98	0
WP231818	Perform Shielding Analyses	01OCT97*	08JUL98	0
WP231814	Prepare Technical Input Sheets	03DEC97*	19FEB98	0
WP231812	Assess vendor(s) CF des acceptability to MGDS	05JAN98*	30SEP98	0
WP231811	Sub Des Basis Canister Sel Letter Report		16MAR98	0
WP231810	Prepare engineering sketches	17MAR98	27OCT98	0
WP0501	Complete Dev of CF Disposal Container Design	28OCT98*	27OCT99	0
WP231801	Consolidate CF Des Input Fm SDDs (LOE)	02AUG99*	31JUL00	0
WP2752	Document Development of CF Disposal Container	02AUG99*	04FEB00	0
1.2.2.3.2- High-Level Waste Glass Canister				
TR232FA1: Complete Phase I of HLW Disposal Conta				
WP232718	Compare & Cont HLW DC to VA Evals of UCF DC	01OCT96A	31MAR97	15
WP232720	Revw ACD Design Evals & Report	01APR97*	30SEP97	0
TR232GB1: HLW Disposal Container Ph II				



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Data Date 01NOV96
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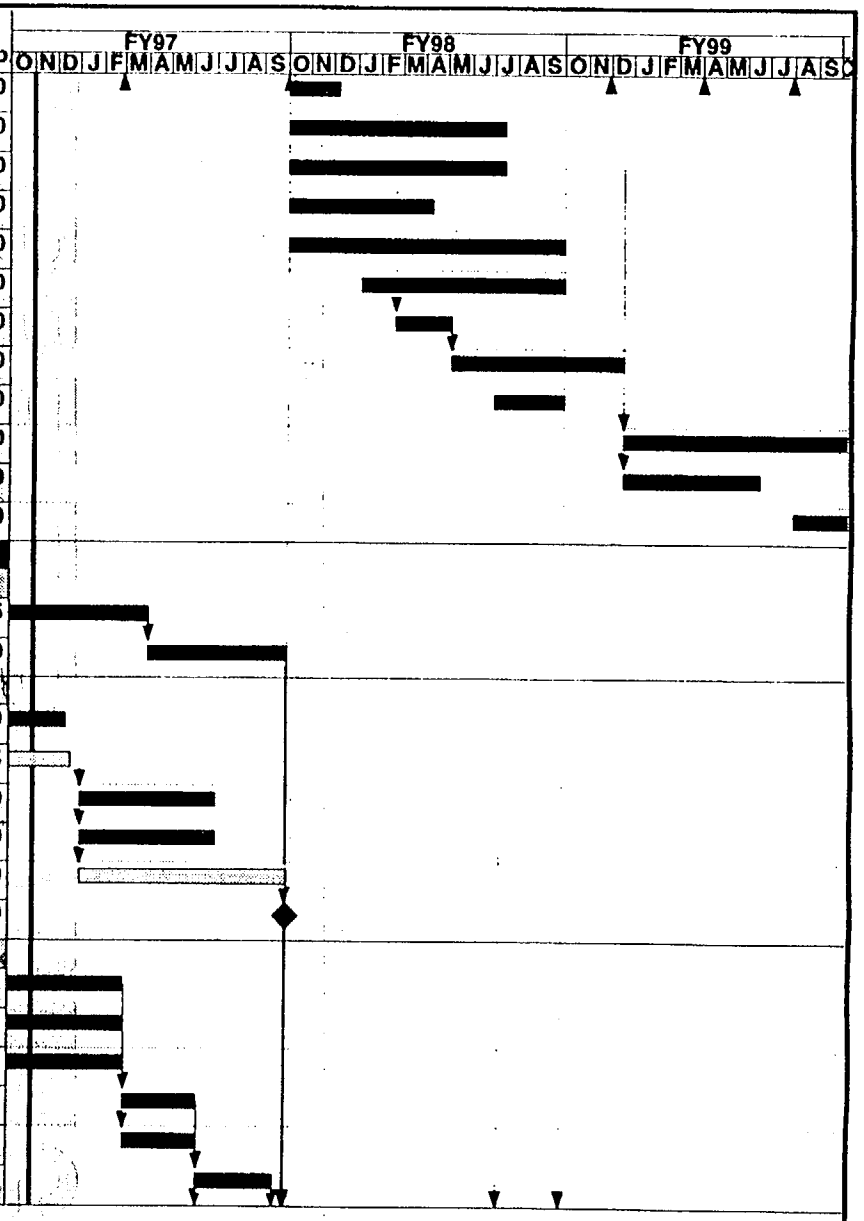
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP232800	Prepare List of Eng'g Eval's/Analyses	01OCT97*	05DEC97	0
WP232802	Thermal evaluations	01OCT97*	13JUL98	0
WP232804	Structural evaluations	01OCT97*	13JUL98	0
WP232806	Disposal Criticality Determination	01OCT97*	09APR98	0
WP232816	Update val ver & maintain analytical codes (LOE)	01OCT97*	30SEP98	0
WP232812	Assess vendor(s) HLW DC Des acceptability to	05JAN98*	30SEP98	0
WP232808	Prepare technical input sheets	20FEB98*	04MAY98	0
WP232810	Prepare engineering sketches	05MAY98*	17DEC98	0
WP232814	Develop and coordinate the MGDS/EBS inputs	01JUL98*	30SEP98	0
WP0503	Complete Dev of HLW Disposal Container Design	18DEC98*	17DEC99	0
WP2754	Document Development of HLW Disposal	18DEC98*	17JUN99	0
WP232801	Consolidate HLW DC Des Input Fm SDDs (LOE)	02AUG99*	31JUL00	0
1.2.2.3.3- Uncanistered Spent Fuel				
TR233FA1: Evaluate DOE-Owned SNF, Phase I				
WP233722	Participate in the DOE Canister Working Group	01OCT96A	31MAR97	15
WP233724	Coordinate DOE/EMs SNF canisterization and	01APR97*	30SEP97	0
TR233FB1: Complete Ph I-EB Segment Parts List &				
WP233703	Prepare initial indentured parts list	01OCT96A	13DEC96	69
WP233728	Coord dev of drawing input sheets	01OCT96A	19DEC96	34
WP233730	Dev prel tech drwgs for UCF DC compnts	02JAN97*	30JUN97	0
WP233732	Develop tech drwgs for other EBS compnts	02JAN97*	30JUN97	0
WP233738	Dev WPD Program Drawings	02JAN97*	30SEP97	0
WP233735	Sub EBS/WP Parts List		30SEP97	0
TR233FB2: Perform Probabilistic Eval. of WP Desi				
WP233744	Perform 3rd WP Prob. Crit. Analyses	01OCT96A	28FEB97	2
WP233745	Identify Prior Analyses for Update	01OCT96A	28FEB97	2
WP233750	Perform 2nd WP Prob. Ext. Crit. Eval.	01OCT96A	03MAR97	2
WP233746	Revw 3rd WP Prob. Crit. Analyses	03MAR97*	06JUN97	0
WP233752	Revw 2nd WP Prob. Ext. Crit. Eval.	04MAR97*	06JUN97	0
WP233747	Prep Final draft 3rd WP Prob Crit Analyses	09JUN97*	16SEP97	0



Project Start 01OCT96
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YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
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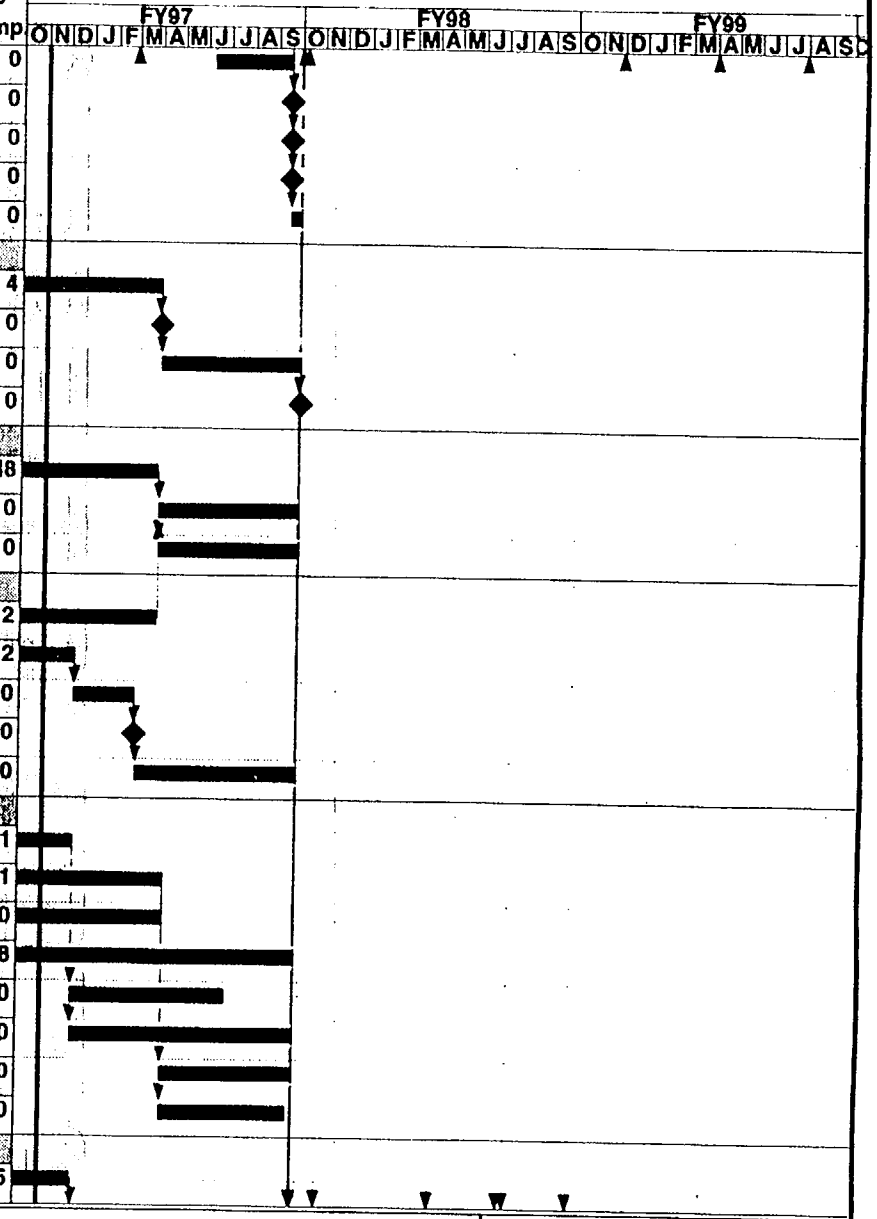
Activity ID	Activity description	Early start	Early finish	% Comp
WP233753	Prep Final WP Prob Ext Crit Eval	09JUN97*	16SEP97	0
WP233748	Complete 3rd WP Prob. Crit. Analyses		16SEP97	0
WP233754	Complete 2nd WP Prob. Ext. Crit. Eval.		16SEP97	0
WP233755	Sub Probabilistic Criticality Analysis		16SEP97	0
WP233757	Support Review of EBS/WP/Ext Prob Analysis	17SEP97*	30SEP97	0
TR233FB3: Develop EBS System Design Desc. - Ph I				
WP233756	Prep draft dsgn sects for UCF, etc	01OCT96A	31MAR97	4
WP233760	Issue Draft Design Section Writeups		31MAR97	0
WP233758	Review draft & prep final design sections	01APR97*	30SEP97	0
WP233759	Issue Final Design Section Writeups		30SEP97	0
TR233FB5: Additional Barrier Designs - Ph1				
WP233700	Prepare List of Eng'g Eval's/Analyses	01OCT96A	28MAR97	48
WP233712	Evaluate EB Seg Barrier Options	31MAR97	30SEP97	0
WP233714	Prepare engineering sketches	31MAR97	30SEP97	0
TR233FB6: Waste Package Supports/Invert, Ph 1				
WP233702	Evaluate the wp support design	01OCT96A	28MAR97	2
WP23370A	Prepare List of Eng'g Eval's/Analyses	01OCT96A	11DEC96	2
WP233706	Develop the QAP-3-10 drawing input sheets	12DEC96*	28FEB97	0
WP233708	Complete QAP-3-10 drawing input sheets		28FEB97	0
WP233710	Prepare engineering sketches	03MAR97	30SEP97	0
TR233FB7: Phase I UCF Disposal Container Design				
WP233A2A	Prepare List of Eng'g Eval's/Analyses	01OCT96A	12DEC96	11
WP233A32	Perform & Doc Criticality & Ionizing Radn Effect	01OCT96A	09APR97	11
WP233A34	Dev technical input sheets	01OCT96A	09APR97	10
WP233A42	Update val ver & maint analytical cmptrs & codes	01OCT96A	30SEP97	8
WP233A29	Perform Thermal evaluations	13DEC96*	01JUL97	0
WP233A30	Structural evaluations	13DEC96*	30SEP97	0
WP233A36	Prepare engineering sketches	10APR97*	30SEP97	0
WP233A46	Track Various Waste Streams	10APR97*	23SEP97	0
TR233FB8: Develop Disp. Crit. Anal. Consequence				
WP233762	Acquire Avail. Computer Codes	01OCT96A	13DEC96	5



Project Start 01OCT96
Project Finish 03SEP02
Data Date 01NOV96
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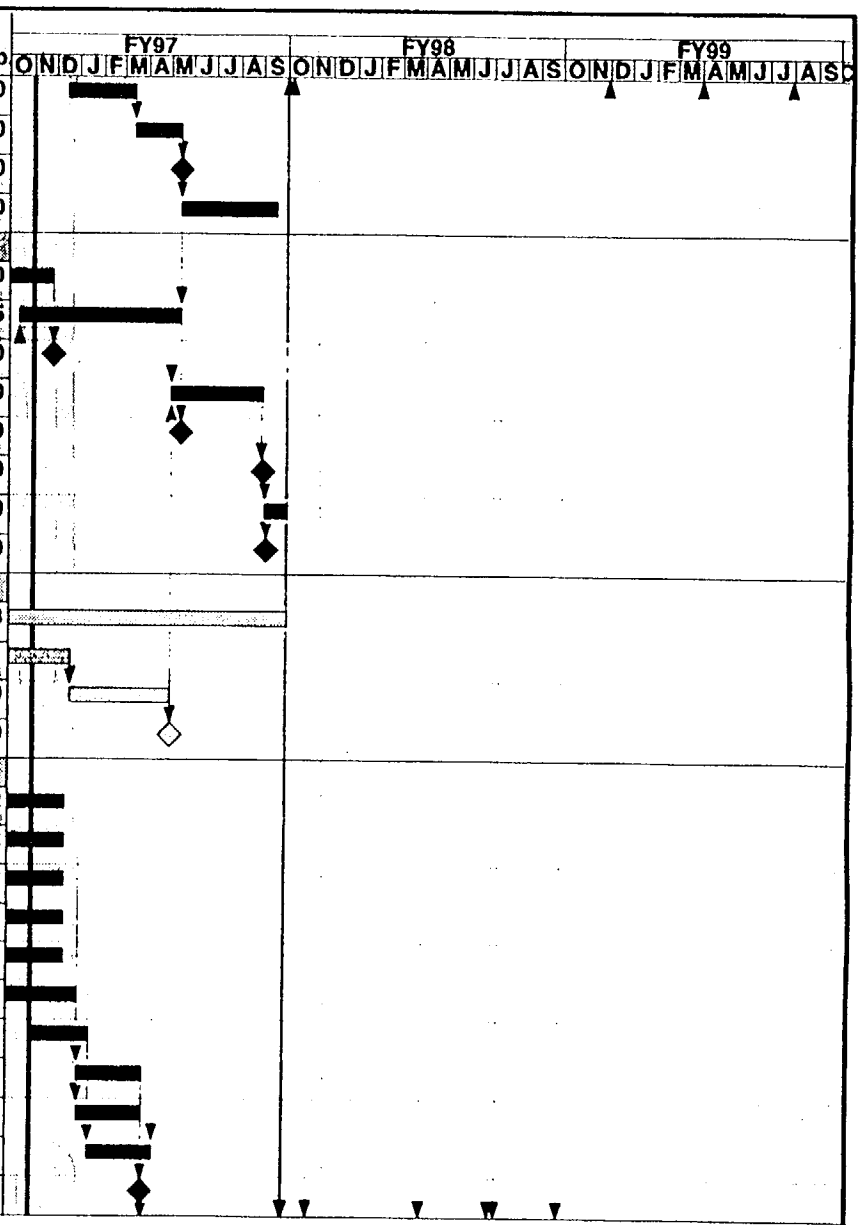
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP233766	Dev Necessary Computer Codes	16DEC96*	12MAR97	0
WP233764	Construct Methodology	13MAR97*	14MAY97	0
WP233772	Submit supporting info for Draft Tehnical Report		14MAY97	0
WP233773	Support Review & Revision	15MAY97	15SEP97	0
TR233FB9: Revised Disp. Crit. Tech. Rep. - Rev 0				
WP233776	Revise Technical Report TDPP	01OCT96A	27NOV96	20
WP233781	Write Disp Crit Technical Report, Rev 01	14OCT96A	14MAY97	5
WP233778	Submit Rev 01 of the Technical Reports TDPP		27NOV96	0
WP233784	Review & Revise Initial Draft	02MAY97*	29AUG97	0
WP233782	Sub initial release of Disp Crit Tech Rep Rev 01		14MAY97	0
WP233786	Submit input to TSPA 97's evaluations of critica		29AUG97	0
WP233787	Support Review of Disp Crit Tech Rep Rev 01	02SEP97	30SEP97	0
WP150A3	Issue Disp Criticality Technical Report Rev 01		04SEP97*	0
TR233FBC: Develop Prob. Design Methods for Perfl				
WP233789	Supp licen on promoting reg chngs concerning	01OCT96A	30SEP97	8
WP233790	Develop Computer codes for gen scenarios	01OCT96A	19DEC96	11
WP233792	Dev comprehensive methodology for prob crit	20DEC96*	01MAY97	0
WP233796	Prov input to Disposal Criticality Tech Rep		01MAY97	0
TR233FBE: Aquir/Anal. Data for Disp. Crit Anal.				
WP233798	An Site Char Matl Perf & WF Perf	01OCT96A	13DEC96	2
WP233A04	Acquire benchmark critical data from available r	01OCT96A	13DEC96	2
WP233A09	An benchmark critical data	01OCT96A	13DEC96	2
WP233A10	Define Specific CRC data	01OCT96A	13DEC96	2
WP233A18	Acquire CRC Data - BWR & PWR Fuel	01OCT96A	13DEC96	2
WP233A19	Compile Data Acquired	01OCT96A	30DEC96	2
WP233A16	Prep & Issue QAP-3-12 Design Input Requests	01NOV96*	16JAN97	0
WP233A02	Analyze the CRC data	03JAN97*	28MAR97	0
WP233A06	Analyze the benchmark critical data.	03JAN97*	28MAR97	0
WP233A20	Analyze site charctzn, matl perf & WF perf data	17JAN97*	11APR97	0
WP233A22	Submit desgn anlys/tech reports summarizing		28MAR97	0



Project Start	01OCT96	Early
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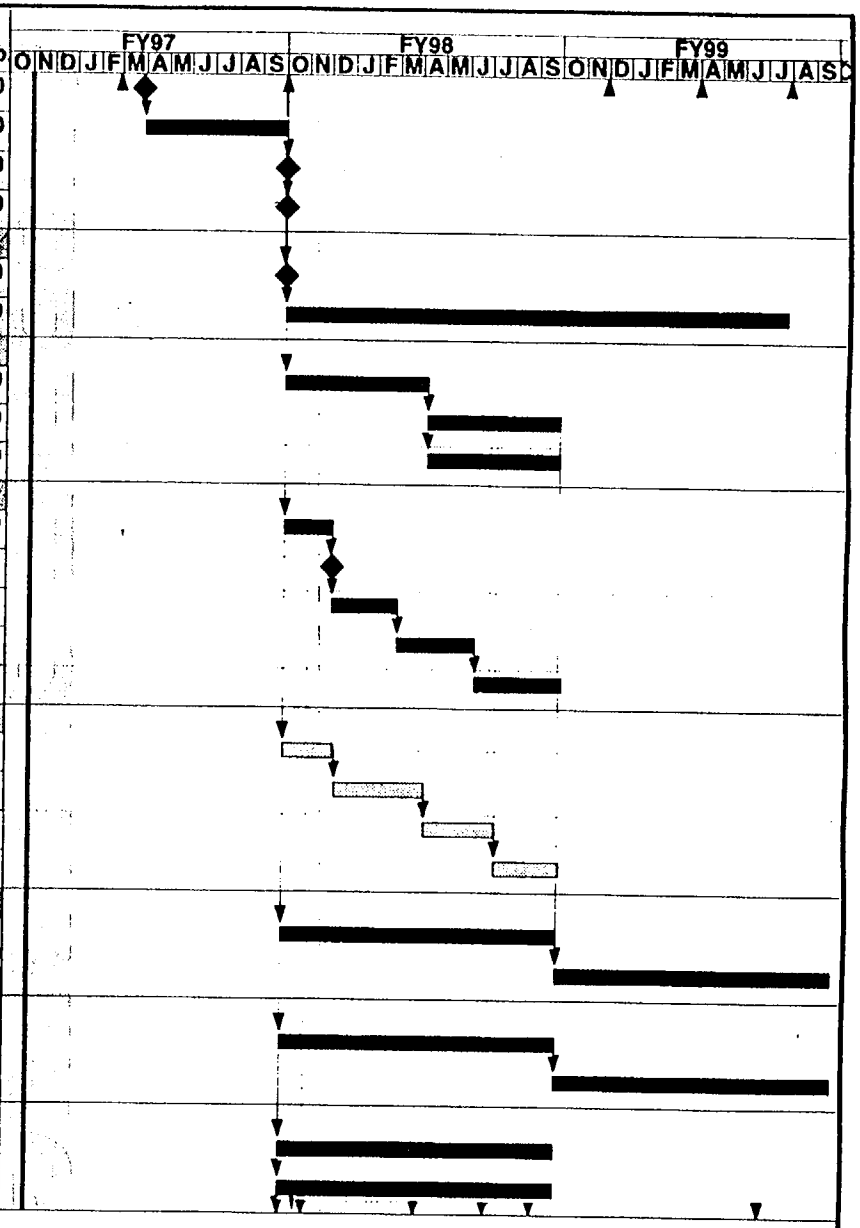
Activity ID	Activity description	Early start	Early finish	% Comp
WP233A24	Support configuration model		28MAR97	0
WP233A12	Analyze irradiated fuel assembly isotopic data	31MAR97	30SEP97	0
WP233A26	Provide supporting info for Disp Crit Tech Rep		30SEP97	0
WP233A28	Provide Support to the consequence model		30SEP97	0
TR233GA1: DOE-Owned SNF Design Ph II				
WP233827	Provide design data input to Waste Package		30SEP97	0
WP0504B	Comp.DOE High Level Waste Evaluation	01OCT97*	27JUL99	0
TR233GB1: WP Supports/Invert Ph II				
WP233801	Conduct engineering evalns	01OCT97*	09APR98	0
WP0504	Complete Dev of EBS Invert	10APR98	30SEP98	0
WP2760	Document Dev. of EBS Invert	10APR98	30SEP98	0
TR233GB2: Additional Barriers Design Ph II				
WP233842	Develop the QAP-3-10 drawing input sheets	01OCT97*	03DEC97	0
WP233844	Complete QAP-3-10 drawing input sheets		03DEC97	0
WP233840	Cond engineering evalns & revw long term perf	04DEC97*	02MAR98	0
WP0504A	Comp.Devel/EBS Backfill,Drip Shield & Add.Barr..	03MAR98*	11JUN98	0
WP2762	Doc.Dev. of EBS Backfill,Drip Shield,& Add Barr.	12JUN98*	05OCT98	0
TR233GB4: EBS Parts List, Dwgs & Specs Ph II				
WP0505	Develop EB Segment Parts List, Dwgs & Specs	01OCT97*	05DEC97	0
WP233856	Complete EB Segment Parts List, Dwgs & Specs	08DEC97	06APR98	0
WP233734	Develop procurement/fabrication drawings, parts	07APR98*	09JUL98	0
WP233848	Develop interface drawings	10JUL98*	01OCT98	0
TR233GB5: EBS DBE Evals Ph II				
WP0509G	Define DBEs & DBAs	01OCT97*	30SEP98	0
WP233868	Define EBS-DBE's-DBA's, Phase III	01OCT98	29SEP99	0
TR233GB6: EBS System Design Descriptions Ph II				
WP0509J	Develop EBS System Design Description	01OCT97*	30SEP98	0
WP233905	Finalize EBS System Design Description	01OCT98*	30SEP99	0
TR233GB7: EBS Design Prob Evals Ph II				
WP0509N	Analyse EBS Performance - Ph II	01OCT97*	30SEP98	0
WP0509P	Perform Probabilistic Eval.of EBS Designs	01OCT97*	30SEP98	0



Project Start 01OCT95
Project Finish 03SEP02
Data Date 01NOV96
Plot Date 05DEC96

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YUCCA MOUNTAIN PROJECT PLAN
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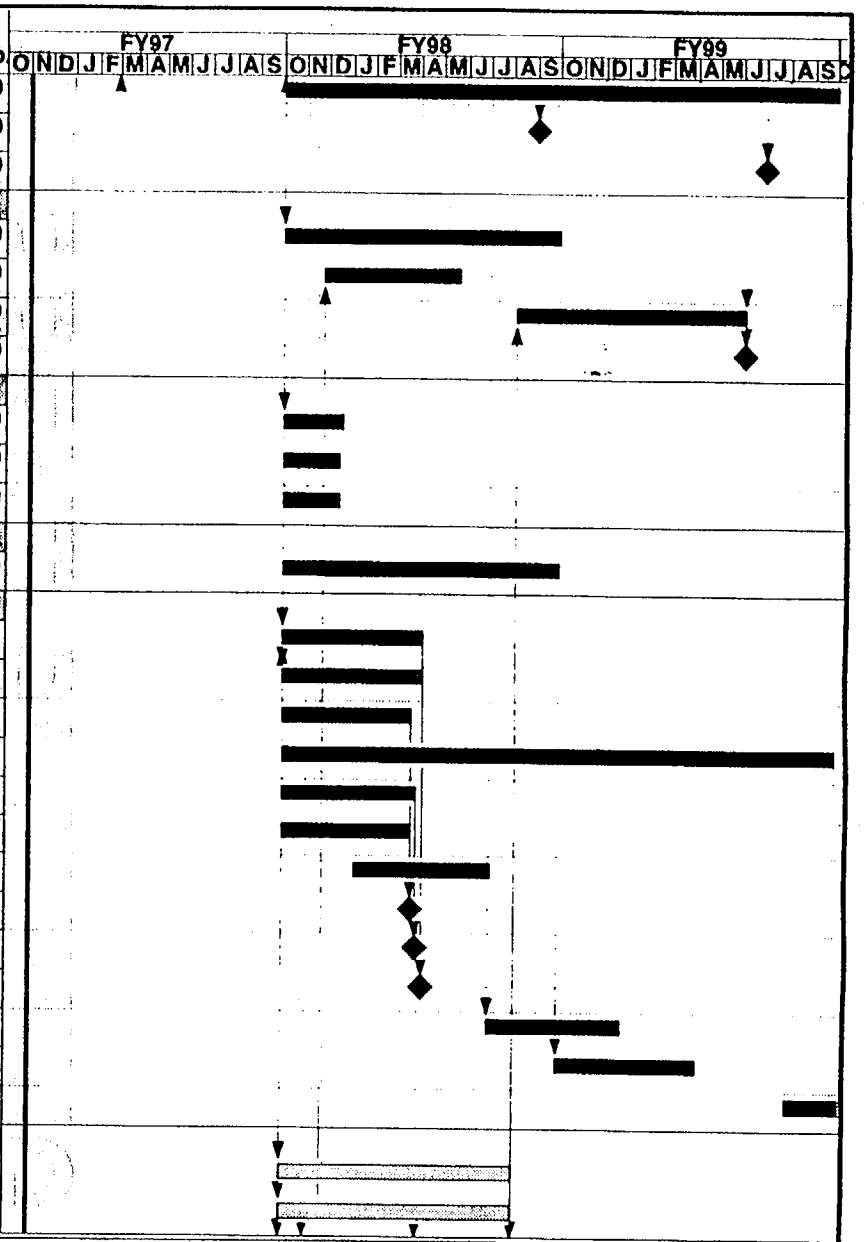
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP233873	Perform Probabilistic Eval. for Licensing Proc.	01OCT97*	30SEP99	0
WP0509P1	Probabilistic Eval. Anal.of EBS Designs		31AUG98	0
WP0509P2	Final Prob. Eval. Anal. for Licensing Process		30JUN99*	0
TR233GB8: Disposal Criticality Topical Rp				
WP100C	Disposal Criticality Integration	01OCT97*	30SEP98	0
WP233910	Respond to formal NRC comments	25NOV97*	21MAY98	0
WP233850	Update Disposal Criticality Topical Report	04AUG98*	04JUN99	0
WP233952	Submit Update Disp Criticality Topical Report		04JUN99	0
TR233GB9: Disp. Crit Analytical Methods				
WP233854	Aquir/Anal.Data-Disp.Crit.Anal.Method '98	01OCT97*	19DEC97	0
WP233A08	Acquire chemical assay data	01OCT97*	15DEC97	0
WP233A14	Acquire site charactn data, Matl & WF Perf.	01OCT97*	15DEC97	0
TR233GBA: EBS Tech. Specs				
WP233GBA	Develop EBS Technical Specs	01OCT97*	30SEP98	0
TR233GBB: UCF Disposal Container Design Ph II				
WP233818	Det acceptable isotopics generation system	01OCT97*	03APR98	0
WP233819	Complete Dev of UCF Disp Cont	01OCT97	03APR98	0
WP233820	Determine method for combining criticality condi	01OCT97*	20MAR98	0
WP233821	WP/EB Segment Design Integration Ph II	01OCT97*	30SEP99	0
WP233822	Establish range of applicability for consequenc	01OCT97*	27MAR98	0
WP233A44	Establish Design Basis SNF	01OCT97*	20MAR98	0
WP233A38	Assess vendor(s) UCF des acceptability to MGDS	05JAN98*	02JUL98	0
WP233826	Provide supporting inform for the Top Rep		20MAR98	0
WP233828	Prov supporting inform for License App		27MAR98	0
WP233824	Submit neutronics consequence model		03APR98	0
WP233A40	Update Thermal Conductivity Methodology	01JUL98*	23DEC98	0
WP2753	Doc. Devel'mt of UCF Disposal Container Design	01OCT98*	02APR99	0
WP233802	Consolidate UCF Des Input fm SDDs (LOE)	02AUG99*	31JUL00	0
TR233GBC: Prob. Design Methods for Topical Rep				
WP233830	Develop a statistical analysis of potential redu	01OCT97	03AUG98	0
WP233832	Refine the criticality methodology to incorporat	01OCT97	03AUG98	0



Project Start 01OCT96
Project Finish 03SEP02
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YUCCA MOUNTAIN PROJECT PLAN
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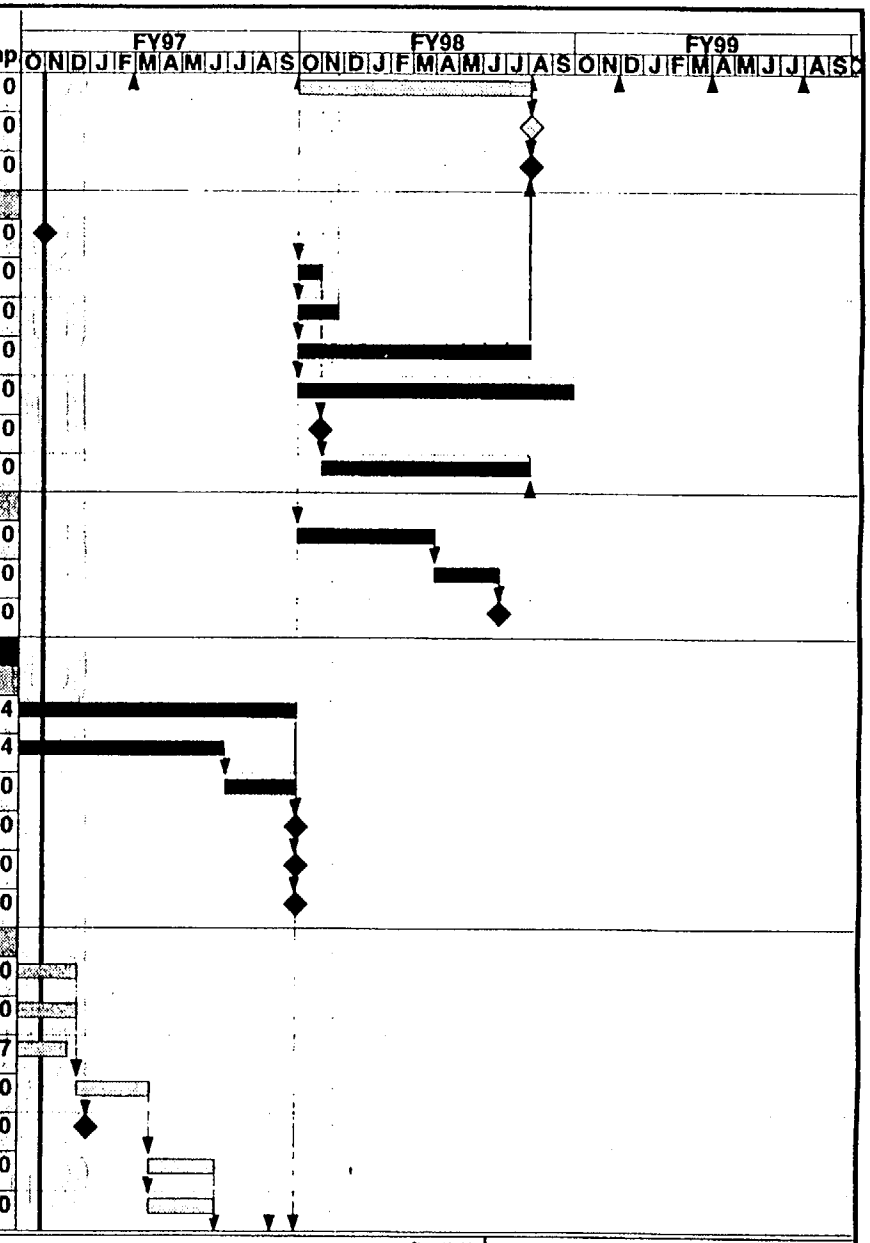
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP233834	Suprt licg prmtng reg chngs (Risk bsed Stndrds)	01OCT97	03AUG98	0
WP233836	Provide input to TSPA		03AUG98	0
WP233838	Prov input to the Disposal Criticality Top Rep		03AUG98	0
TR233GBD: Disposal Criticality Top Report				
WP100A3	Sub Disp Criticality An Methdlgy Top Report		31OCT96	0
WP233804	Dev Topical Report TDPP	01OCT97*	31OCT97	0
WP233808	Issue Topical Report for formal NRC review	01OCT97*	24NOV97	0
WP233860	Develop Disposal Criticality Top.Report	01OCT97*	03AUG98	0
WP233920	Apply & Update Disposal Crit Anal Methodology	01OCT97*	30SEP98	0
WP233812	Complete Rev 00 of the Topical Report TDPP		31OCT97	0
WP233806	Dev. Topical Report	03NOV97*	03AUG98	0
TR233GBE: Disp. Crit. Anal. Consequence Md				
WP233870	Comp.Disp.Critical Analysis Consequence Mdl.	01OCT97*	31MAR98	0
WP233872	Establish range of applicability for consequence	01APR98*	24JUN98	0
WP233874	Submit neutronics consequence model		24JUN98*	0
1.2.2.3.4- Engineering Development				
TR234FB1: Complete Phase I EB Segment Cost Estim				
WP234702	Prep & provide cost estimates	01OCT96A	30SEP97	4
WP234704	Obtain vendor verification of material prices	01OCT96A	27JUN97	4
WP234705	Prepare input to TSLCC	01JUL97*	30SEP97	0
WP234706	Sub IOC transmitting input to TSLCC		30SEP97	0
WP234707	Sub IOC transmitting cost of pedestal & supports		30SEP97	0
WP234709	Sub IOC transmitting unit cost of closure weld		30SEP97	0
TR234FB2: Complete Phase I Disposal Container Cl				
WP234708	Dev TGD & Test Plan for full circ weld mockup	01OCT96A	18DEC96	10
WP234714	Provide weld mockups for corrosion testing	01OCT96A	18DEC96	10
WP234718	Provide weld samples for thermal stability testg	01OCT96A	04DEC96	7
WP234715	Constuct full circular weld mockup	19DEC96	24MAR97	0
WP234722	Sub updated weld equip envelope to subsurf		30DEC96*	0
WP234710	Analyze stress concentrations	25MAR97*	18JUN97	0
WP234713	Perform Tests IAW TGD & TP	25MAR97*	18JUN97	0



Project Start 01OCT95
Project Finish 03SEP02
Data Date 01NOV96
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YUCCA MOUNTAIN PROJECT PLAN
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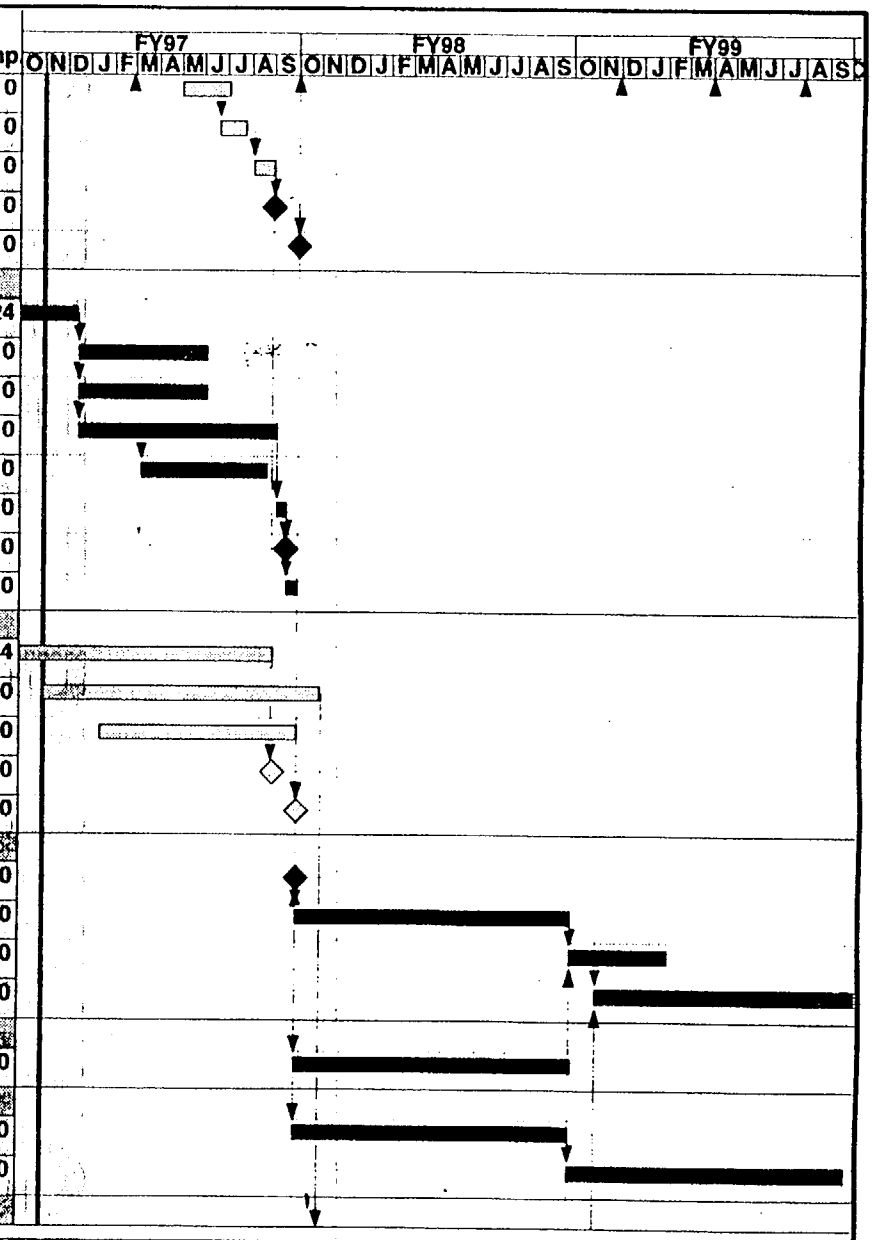
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP234719	Dev WP Clos Methds Report	01MAY97*	01JUL97	0
WP234711	Provide stress concentrations for design work	19JUN97*	22JUL97	0
WP234720	Review WP Closure Methods Report	04AUG97	29AUG97	0
WP234721	Sub WP Closure Methods Report		29AUG97	0
WP234724	Submt updated weld equip envelope to surf		30SEP97*	0
TR234FB3: Compl. Ph.I Development of Non-Destruc				
WP234727	Develop TGD/TP	01OCT96A	13DEC96	24
WP234726	Develop NDE method for WP closure weld	16DEC96*	03JUN97	0
WP234730	Perform 100% Mapping	16DEC96*	03JUN97	0
WP234732	Det need for in-process inspection	16DEC96*	03SEP97	0
WP234728	Use circular mockup to demonstrate closure weld	10MAR97*	22AUG97	0
WP234734	Develop NDE Report	04SEP97	15SEP97	0
WP234736	Sub WP NDE Methods Report		15SEP97	0
WP234737	Supp Review of NDE Report	16SEP97	30SEP97	0
TR234FB4: Phase I Disposal Container Fabrication				
WP234740	Document recommended fabrication methods	01OCT96A	29AUG97	34
WP234746	Prep Raw Manuf & Mati Cost Est	01NOV96*	31OCT97	0
WP234738	Docmnt 30% completion w/ fabrication sketches	15JAN97*	30SEP97	0
WP234742	Submit report detailing recommended fabrication		29AUG97	0
WP234744	Develop fabrication drawings		30SEP97	0
TR234GB1: Disp Container Fabricn Methds Ph II				
WP234804	Disposal Container Fabrication Summary Report		30SEP97	0
WP0509	Develop Disp Container Fabrication, Ph II	01OCT97*	30SEP98	0
WP234802	Dev Disp Container Fabrication Summary Report	01OCT98*	05FEB99	0
WP234942	Comp. Devel'mt of Disposal Container Fabrication	03NOV98*	02NOV99	0
TR234GB2: Disp Container Closure Methds Ph II				
WP0509A	Dev Disposal Container Closure Method, Ph II	01OCT97*	02OCT98	0
TR234GB3: Non-Destructive Exam Methds Ph II				
WP0509B	Develop Non-destructive Examination Mthds, Ph	01OCT97*	30SEP98	0
WP234944	Document Non-destructive Examination Mthds	01OCT98*	30SEP99	0
TR234GB4: EB Segment Cost Estimates Ph II				



Project Start	01OCT95	Early
Project Finish	03SEP02	Progress Bar
Data Date	01NOV96	Critical Activity
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YUCCA MOUNTAIN PROJECT PLAN
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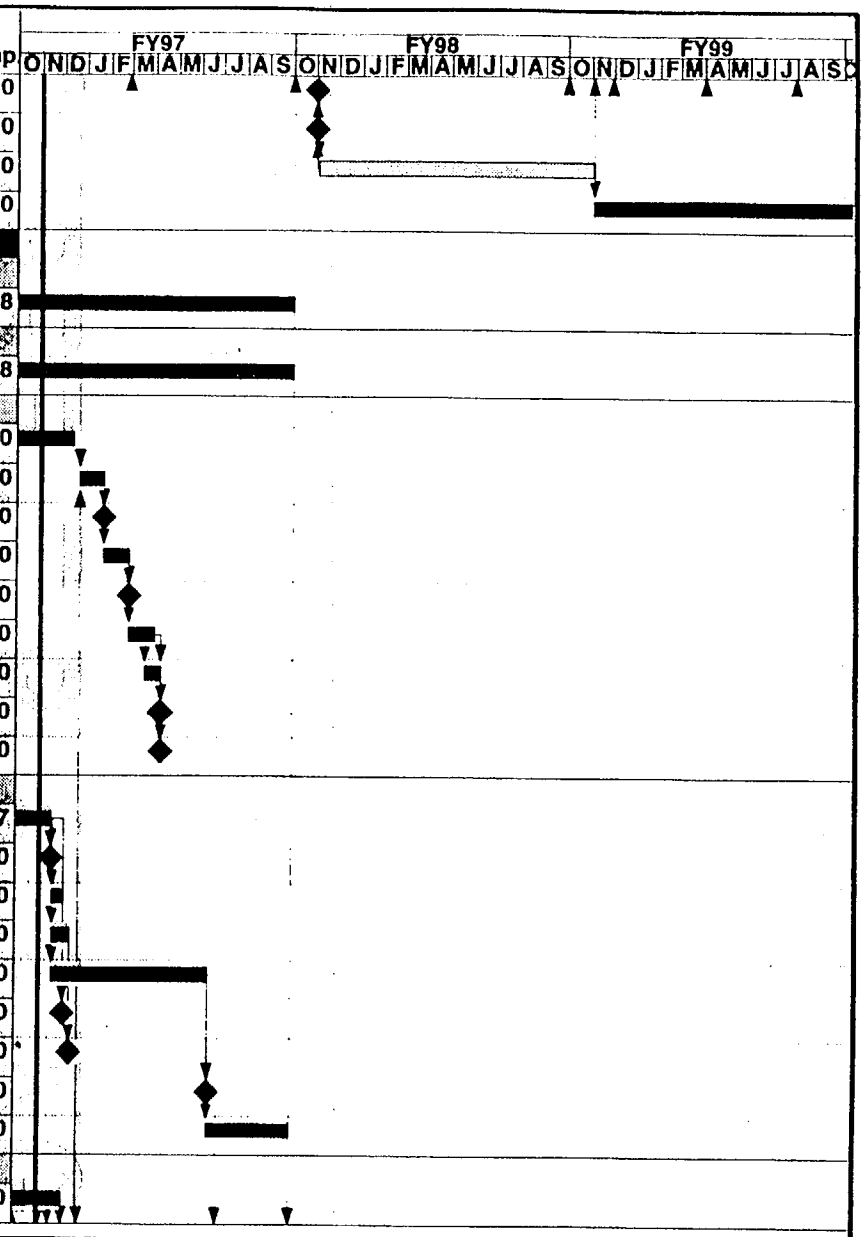
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP234808	Provide Initial Cost Est Input for TSLCC		31OCT97	0
WP234814	Provide Final Cost Est Input for TSLCC		31OCT97	0
WP0509C	Prepare EB Segment Cost Estimates	03NOV97*	02NOV98	0
WP234946	Update EB Segment Cost Estimates	03NOV98*	02NOV99	0
1.2.2.4.1- Spent Fuel				
TR241FA1: Waste Form Model Abstractions				
WP241100	Waste Form Model Abstractions	01OCT96A	30SEP97	8
TR241FA2: Waste Form Support to Systems				
WP241200	Waste Form Inputs to Systems	01OCT96A	30SEP97	8
TR241FB2: Prepare & Review WFCR Rev 1				
WP35A01	Prep WFCR Rev 1 Prelim Draft	01OCT96A	13DEC96	20
WP35A03	Review/Finalize WFCR Rev 1 Draft	23DEC96	22JAN97	0
WP35A05	Provide WFCR Rev 1 Draft to Perf. Assess.		22JAN97	0
WP35A06	Finalize WFCR Rev 1	23JAN97	26FEB97	0
WP35A07	Submit Draft WFCR Rev 1 to YMSCO for Review		26FEB97	0
WP35A08	YMSCO Review of WFCR Rev 1	27FEB97	31MAR97	0
WP35A09	Incorp YMSCO WFCR Rev 1 Review Comments	20MAR97	09APR97	0
WP0035A3	Issue Waste Form Char. Rpt. Rev.I		09APR97	0
WP35A10	Complete Rev.1 WFCR		09APR97	0
TR241FB4: Measure Oxidation Using TGA Techniques				
WP08520	Generate TGA Oxidation Test Data	01OCT96A	15NOV96	67
WP08522	Provide TGA Oxidation Data to Oxidation Models		15NOV96	0
WP08523	Provide Input to Models, GENISIS	18NOV96*	02DEC96	0
WP08525	Develop TGA Oxidation Test WFCR Rev 1 Chapter	18NOV96	12DEC96	0
WP08526	Continue TGA Oxidation Test Data Generation	18NOV96	12JUN97	0
WP08524	Provide TGA Oxidation Test Data to GENISIS		02DEC96	0
WP08525A	Provide Oxidation Test WFCR Rev 1 Chapter		12DEC96	0
WP08527	Provide TGA Oxidation Test Data to Oxidation		12JUN97	0
WP08528	Continue TGA Oxidation Test Data Generation	13JUN97	30SEP97	0
TR241FB5: Measure Dissolution in Flow-Through Te				
WP085300	Generate SF Diss Flow Thru Test Data	01OCT96A	02DEC96	50



Project Start	01OCT96	Early
Project Finish	03SEP02	Progress Bar
Data Date	01NOV96	Critical Activity
Plot Date	05DEC96	

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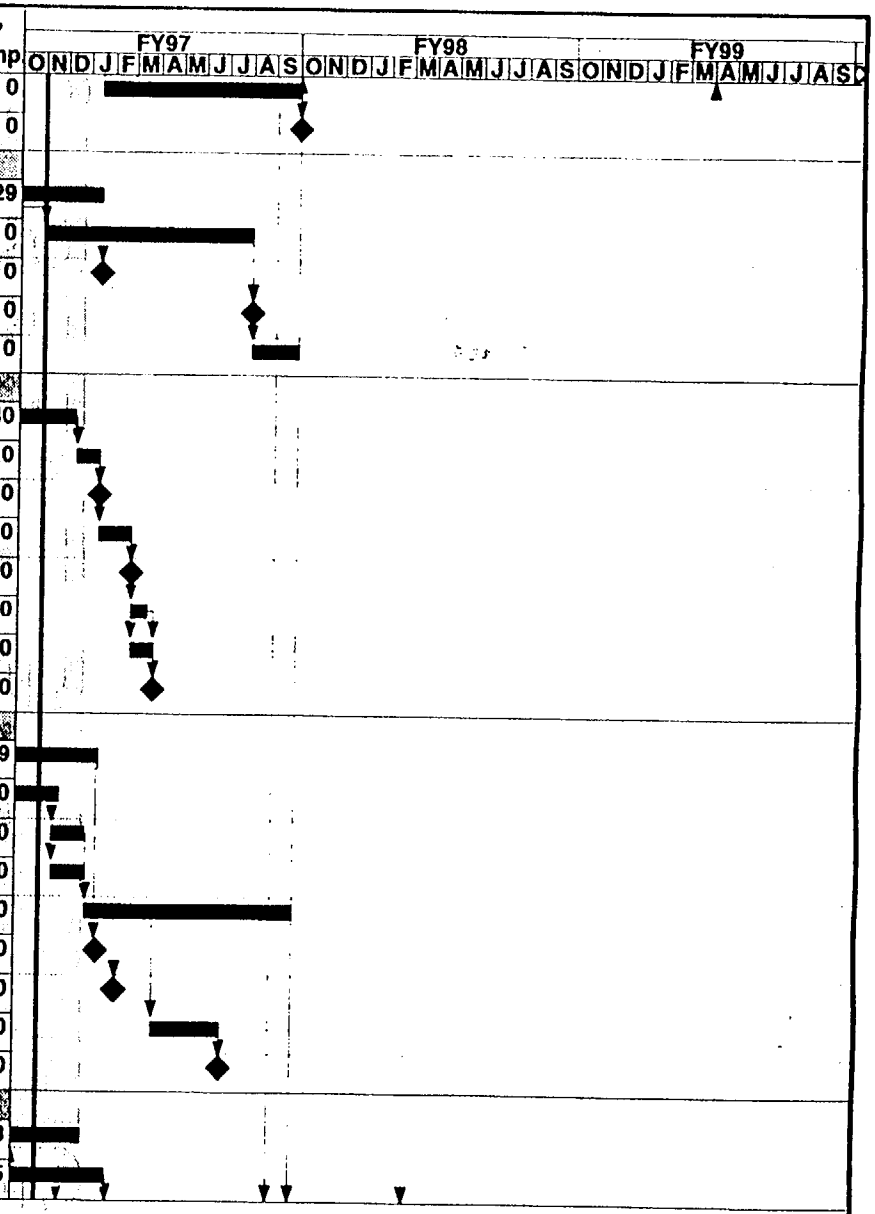
Activity ID	Activity description	Early start	Early finish	% Comp
WP26502	Provide Feedback-LT Tests/Controlled Humidities	16JAN97	30SEP97	0
WP26506	Provide Thermogravimetric Anal Update to PA		30SEP97	0
TR251FB7: Electrochem. Basis for Galvanic Tests				
WP26201	Conduct test over range of pH/temp/solution	01OCT96A	15JAN97	29
WP26202	Conduct Diff Area Ratio Tests/Design cells	01NOV96	31JUL97	0
WP26203	Critical Potential Test Data to PA		15JAN97*	0
WP26204	Diff Area Ratios Test Update Data to PA		31JUL97*	0
WP26208	Continue ST Galvanic Tests	01AUG97	30SEP97	0
TR251FB9: Prepare & Review EMCR Rev 1				
WP15A01	Prep EMCR Rev 1 Prelim Draft	01OCT96A	13DEC96	40
WP15A03	Review/Finalize EMCR Rev 1 Draft	16DEC96	15JAN97	0
WP15A05	Provide EMCR Rev 1 Draft to Perf. Assess.		15JAN97	0
WP15A06	Finalize EMCR Rev 1	16JAN97	26FEB97	0
WP015A3	Submit Draft EMCR Rev.1 to YMSCO for Review		26FEB97	0
WP15A08	YMSCO Review of EMCR Rev 1	27FEB97	19MAR97	0
WP15A09	Incorp YMSCO EMCR Rev 1 Review Comments	27FEB97	28MAR97	0
WP15A10	Issue EMCR Rev.1		28MAR97	0
TR251FBA: Electrochemical Potential Testing				
WP26401	Develop Potential Control LT Test Conditions	01OCT96A	16JAN97	29
WP60901	Prepare QA Planning Documents	01OCT96A	27NOV96	50
WP60902	Design LT Electrochemical Potential Test Matrix	18NOV96	31DEC96	0
WP60903	Procure Electrochemical Potential Test	18NOV96	31DEC96	0
WP60904	Conduct Tests by applied E, alloy, pH, T, Enviro	02JAN97	30SEP97	0
WP26404	Provide Potential Control Data to PA		16JAN97	0
WP26402	Ltr Rep Init of LT Cntrlled Electrochem Pot Tsts		10FEB97*	0
WP60905	Characterize Specimens (Ist Batch)	01APR97*	30JUN97	0
WP26403	Provide Potential Control Data Update to PA		30JUN97	0
TR251FBB: Long Term Galvanic Protection Tests				
WP60801	Design/Procure Galvanic Test Specimens	01OCT96A	31DEC96	33
WP60802	Fabricate Tanks for 3rd Increment	01OCT96A	31JAN97	25



Project Start 01OCT96
Project Finish 03SEP02
Data Date 01NOV96
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YUCCA MOUNTAIN PROJECT PLAN
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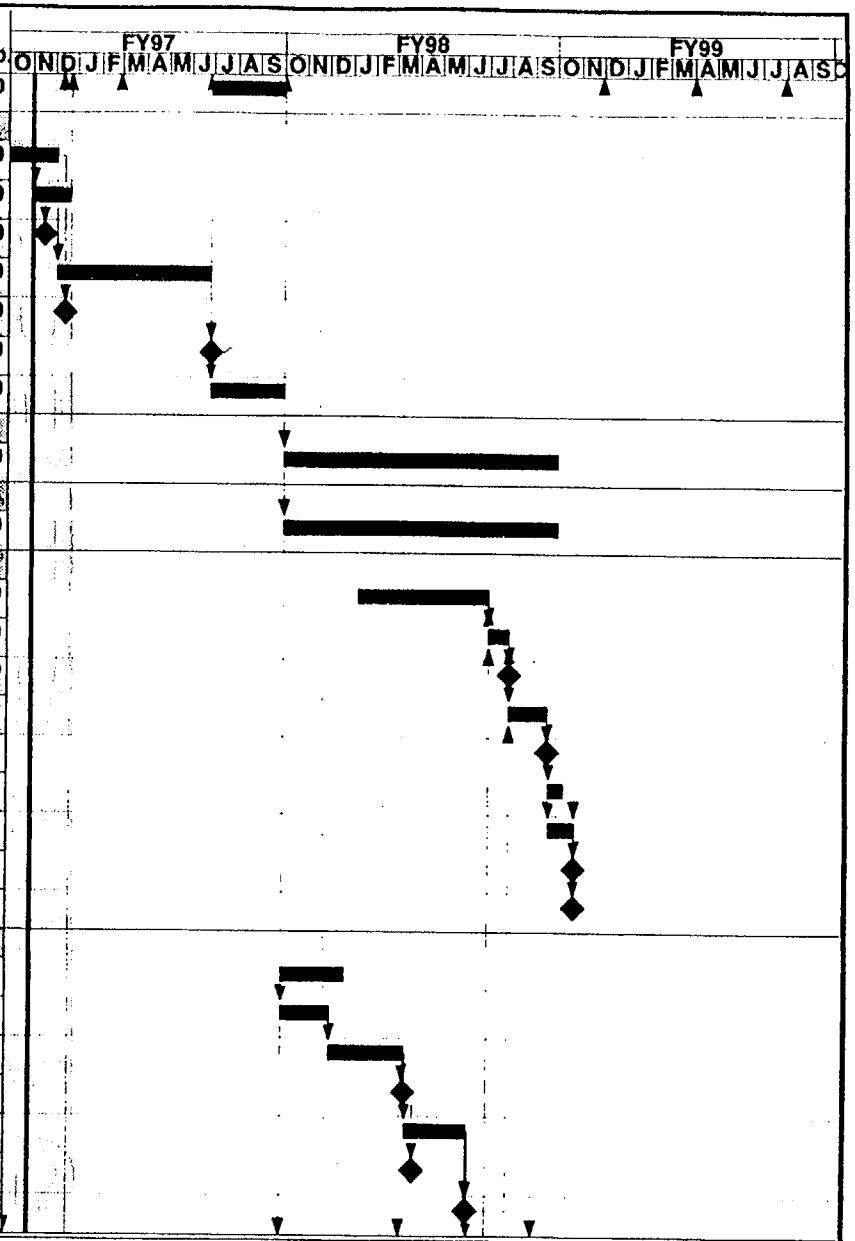
Activity ID	Activity description	Early start	Early finish	% Comp
WP122206	Continue Unsat SF Drip Test Data Generation	26JUN97	30SEP97	0
TR241FBB: Low Temperature Dry Bath Oxidation Tes				
WP122100	Generate Dry Bath Oxidation Data	01OCT96A	02DEC96	50
WP122103	Develop Dry Bath Oxidation Chap forWFCR-R1	04NOV96*	20DEC96	0
WP122101	Provide Dry Bath Oxid.Data to SF Oxidation		15NOV96	0
WP122104	Continue Dry Bath Oxidation Data Generation	03DEC96	25JUN97	0
WP122102	Provide Dry Bath Oxidation Data to GENISIS		13DEC96	0
WP122105	Provide Dry Bath Oxidation Data to Oxidation		25JUN97	0
WP122106	Continue Dry Bath Oxidation Data Generation	26JUN97	30SEP97	0
TR241GA1: Waste Form Model Abstractions				
WP241150	Waste Form Model Abstractions	01OCT97	30SEP98	0
TR241GA2: Waste Form Support to System Studies				
WP241250	Waste Form Inputs to System	01OCT97	30SEP98	0
TR241GB2: Prepare & Review the WFCR Rev. 2				
WP110A01	Prep WFCR Rev 2 Prelim Draft	09JAN98*	30JUN98	0
WP110A03	Review/Finalize WFCR Rev 2 Draft	01JUL98	29JUL98	0
WP110A05	Provide WFCR Rev 2 Draft to Perf. Assess.		29JUL98	0
WP110A06	Finalize WFCR Rev 2	30JUL98	18SEP98	0
WP110A07	Submit WFCR Rev 2 to YMSCO for Review		18SEP98	0
WP110A08	YMSCO Review of WFCR Rev 2	21SEP98	09OCT98	0
WP110A09	Incorp YMSCO WFCR Rev 2 Review Comments	21SEP98	23OCT98	0
WP110A10	YMSCO WFCR-R2 Review Comments Resolved		23OCT98	0
WP110A3	Submit Waste Form Char. Rpt. Rev 2		23OCT98	0
TR241GB3: C-14 Release Tests				
WP08567	Prepare Activity Plan	01OCT97*	23DEC97	0
WP08569	Set Up Equipment	01OCT97	04DEC97	0
WP08571	SF C-14 Release Measure Test (Ph I)	05DEC97	13MAR98	0
WP08572	Issue SF C-14 Release Test Data Report		13MAR98	0
WP08573	SF C-14 Release Measure Test (Ph II)	16MAR98	05JUN98	0
WP08572A	Provide SF C-14 Release Data to GENISIS		27MAR98	0
WP08574	Issue SF C-14 Release Test Data Report/WFCR2		05JUN98	0



Project Start 01OCT96
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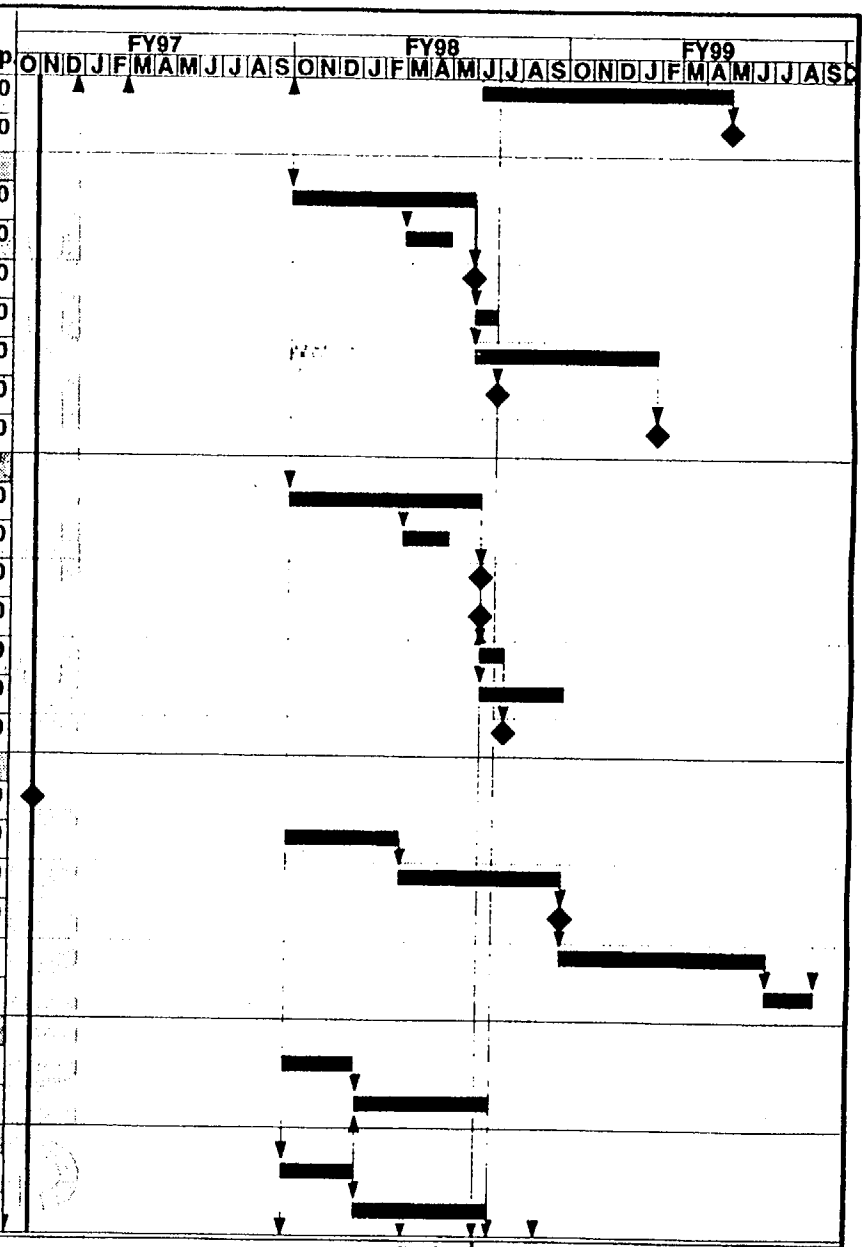
Activity ID	Activity description	Early start	Early finish	% Comp
WP08575	SF C-14 Release Measure Test (Ph III)	08JUN98	05MAY99	0
WP08576	Submit SF C-14 Release Final Report & Data		05MAY99	0
TR241GB4: Measure SF Oxidation Using TGA Tech.				
WP08528A	Continue TGA Oxidation Test Data Generation	01OCT97	29MAY98	0
WP08530	Analyze Samples	02MAR98	30APR98	0
WP08529	Provide TGA Oxidation Data to Oxidation Models		29MAY98	0
WP08532	Develop TGA Oxidation Chapter for WFCR Rev 2	01JUN98	30JUN98	0
WP08536	Continue TGA Oxidation Test Data Generation	01JUN98	29JAN99	0
WP08534	Provide TGA Oxidation Chapter to WFCR Rev 2		30JUN98	0
WP08538	Provide TGA Oxidation Test Data to Oxida.		29JAN99	0
TR241GB5: Measure SF Flow Thru Dissolution				
WP085320	Continue SF Diss.Flow Thru Test Data Generation	01OCT97	11JUN98	0
WP085322	Analyze Samples	02MAR98	30APR98	0
WP085307	Provide SF Diss Flow Thru Data to Models		11JUN98	0
WP085311	Provide SF Diss Flow Thru Test Data to Models		11JUN98	0
WP085308	Develop SF Diss Flow Thru Chapter for WFCR	12JUN98	14JUL98	0
WP085310	Continue SF Diss Flow Thru Test Data Generation	12JUN98	30SEP98	0
WP085309	Provide SF Diss Flow Thru Chapter to WFCR Rev		14JUL98	0
TR241GB6: Measure Releases from SNF Hardware				
WP08554	Issue SF Hardware Rel.Test Rpt/WFCR2/GENISIS		31OCT96	0
WP08551A	Prepare Activity Plan	01OCT97*	27FEB98	0
WP08551	SF Hardware Release Measure Test (Ph I)	02MAR98	30SEP98	0
WP08552	Issue SF Hardware Release Test Report		30SEP98	0
WP08553	SF Hardware Release Measure Test (Ph II)	01OCT98	30JUN99	0
WP08553A	Prepare Hardware Release Rate Report	01JUL99	31AUG99	0
TR241GB7: Procure Approved Test Materials (MCC)				
WP08608	Select & Procure ATM	01OCT97*	31DEC97	0
WP08610	Characterize Received ATM Samples Ph-II	05JAN98	30JUN98	0
TR241GB8: Support ATM Procurement				
WP08612	Support ATM Procurement Ph-II	01OCT97	02JAN98	0
WP08614	Follow Characterization Effort	05JAN98	30JUN98	0



Project Start 01OCT96
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YUCCA MOUNTAIN PROJECT PLAN
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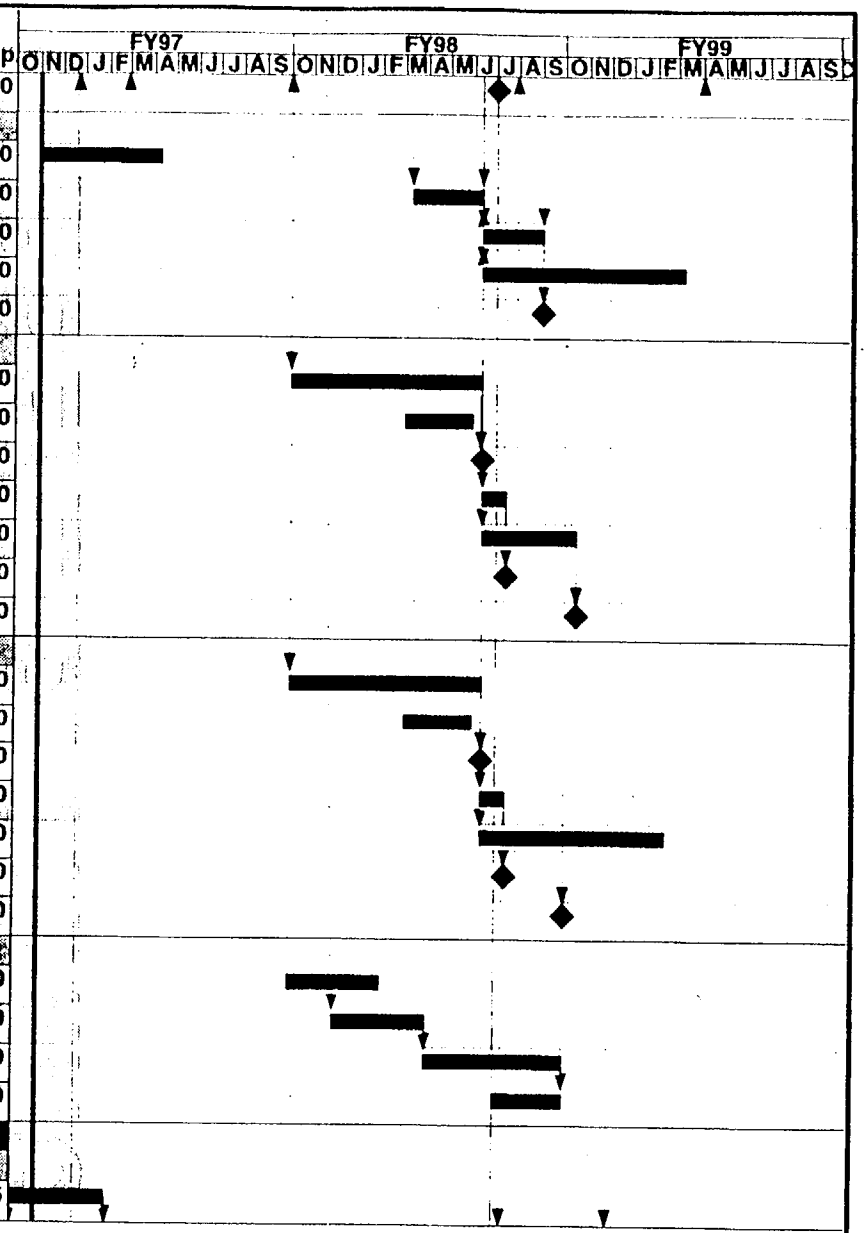
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP08616	Provide Letter Report to YMSCO		30JUN98	0
TR241GB9: Develop Waste Form Process Model				
WP122407	Enhance Response Model (Excluding	01NOV96	09APR97	0
WP122404	Improve Response Model(Including Dissolution)	10MAR98	11JUN98	0
WP122405	Prepare Response Model Chap to WFCR-R2	12JUN98	31AUG98	0
WP122420	Improve Response Model Continued	12JUN98	08MAR99	0
WP122406	Provide Response Model to PA & WFCR-Rev 2		31AUG98	0
TR241GBA: Unsat. SF Drip Condition Testing				
WP122220	Continue Unsat.SF Drip Test Data Generation	01OCT97*	11JUN98	0
WP122222	Analyze Samples	02MAR98	29MAY98	0
WP122207	Provide Unsat SF Drip Data to Models		11JUN98	0
WP122208	Develop Drip Test Chapter for WFCR Rev 2	12JUN98	14JUL98	0
WP122210	Continue Unsat SF Drip Test Data Generation	12JUN98	14OCT98	0
WP122209	Provide Drip Test Chapter to WFCR Rev 2		14JUL98	0
WP122211	Provide Unsat SF Drip Test Data to Models		14OCT98	0
TR241GBB: Dry Bath SF Oxidation Testing				
WP122120	Continue Dry Bath Oxidation Data Generation	01OCT97	11JUN98	0
WP122122	Analyze Samples	02MAR98	29MAY98	0
WP122107	Provide Dry Bath Data to Oxidation Models		11JUN98	0
WP122108	Develop Dry Bath Oxidation Chap for WFCR-R2	12JUN98	14JUL98	0
WP122110	Continue Dry Bath Oxidation Data Generation	12JUN98	11FEB99	0
WP122109	Provide Dry Bath Oxidation Chap to WFCR-R2		14JUL98	0
WP122111	Provide Dry Bath Data to Oxidation Models		30SEP98*	0
TR241GBC: Cladding Degradation Testing				
WP241800	Prepare Activity Plan	01OCT97*	30JAN98	0
WP241802	Set Up Equipment	01DEC97*	31MAR98	0
WP241804	Conduct Phase I tests	01APR98	30SEP98	0
WP241806	Analyze Samples	01JUL98	30SEP98	0
1.2.2.4.2- Borosilicate Glass				
TR242FB1: HLWG Degradation Parameter Tests				
WP085600	Prepare Activity Plan	01OCT96A	31JAN97	25



Project Start 01OCT96
Project Finish 03SEP02
Data Date 01NOV96
Plot Date 05DEC96

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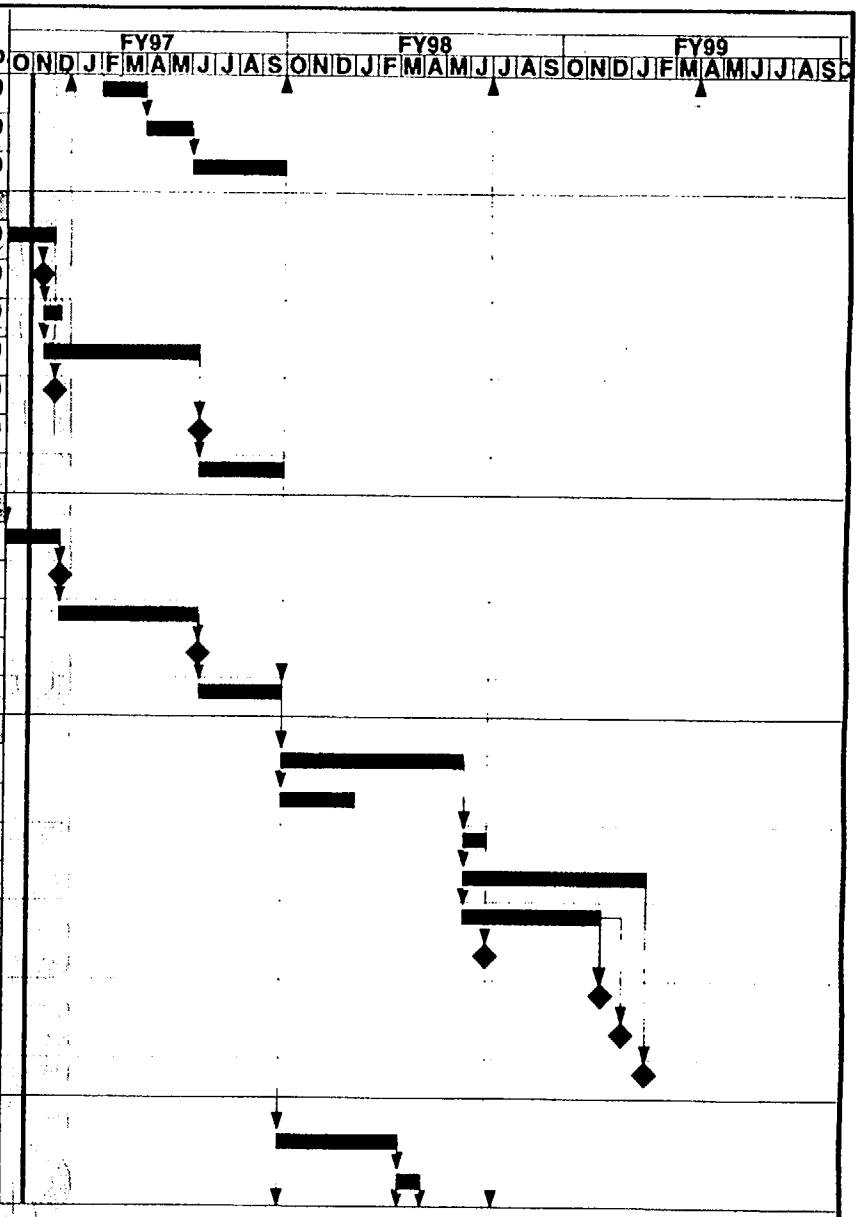
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP085602	Resolve Activity Plan Comments/Finalize	03FEB97	01APR97	0
WP085604	Procure Samples & Initiate Test	02APR97	30MAY97	0
WP085606	Collect Data	02JUN97	30SEP97	0
TR242FB2: HLW Glass Unsaturated Drip Tests				
WP122300	Generate HLWG Drip Test Data	01OCT96A	02DEC96	50
WP122301	Provide HLWG Drip Data to Models		15NOV96	0
WP122303	Develop HLWG Drip Test Chap for WFCR-R1	18NOV96	12DEC96	0
WP122304	Continue HLWG Drip Test Data Generation	18NOV96	12JUN97	0
WP122302	Provide Unsat HLWG Drip Test Data to GENISIS		02DEC96	0
WP122307	Provide HLWG Drip Test Data to Models		12JUN97	0
WP122306	Continue HLWG Drip Test Data Generation	13JUN97*	30SEP97	0
TR242FB3: HLW Glass Modeling				
WP085100	Develop HW Glass Dissolution Rate Prelim Model	01OCT96A	12DEC96	40
WP085101	Provide HWG Dissolution Rate Mdl Chap to		12DEC96	0
WP085102	Enhance HW Glass Dissolution Rate Model	13DEC96	13JUN97	0
WP085103	Provide HWG Dissolution Rate Mdl Results to PA		13JUN97	0
WP085104	Improve HW Glass Dissolution Rate Model	16JUN97	30SEP97	0
TR242GB1: HLWG Degradation Parameter Tests				
WP085610	Continue to Collect Data	01OCT97	29MAY98	0
WP085612	Analyze Samples	01OCT97	06JAN98	0
WP085618	Develop HLWG Flow Thru Test Chap for WFCR	01JUN98	30JUN98	0
WP085623	Continue HLWG Flow Thru Test Data Generation	01JUN98	29JAN99	0
WP085629	Collect Data Phase II	01JUN98	30NOV98	0
WP085620	Provide HLWG Flow Thru Test Chap to WFCR Rev		30JUN98	0
WP085630	Provide Data to Model		30NOV98	0
WP085631	Provide Data to GENESIS		29DEC98	0
WP085625	Provide HLWG Flow Thru Test Data to Models		29JAN99	0
TR242GB2: Glass Degradation Unsat. Drip Tests				
WP122320	Continue HLWG Drip Test Data Generation	01OCT97	10MAR98	0
WP122308	Develop HLWG Drip Test Chapter for WFCR Rev 2	11MAR98	09APR98	0



Project Start 01OCT96
Project Finish 03SEP02
Data Date 01NOV96
Plot Date 05DEC96

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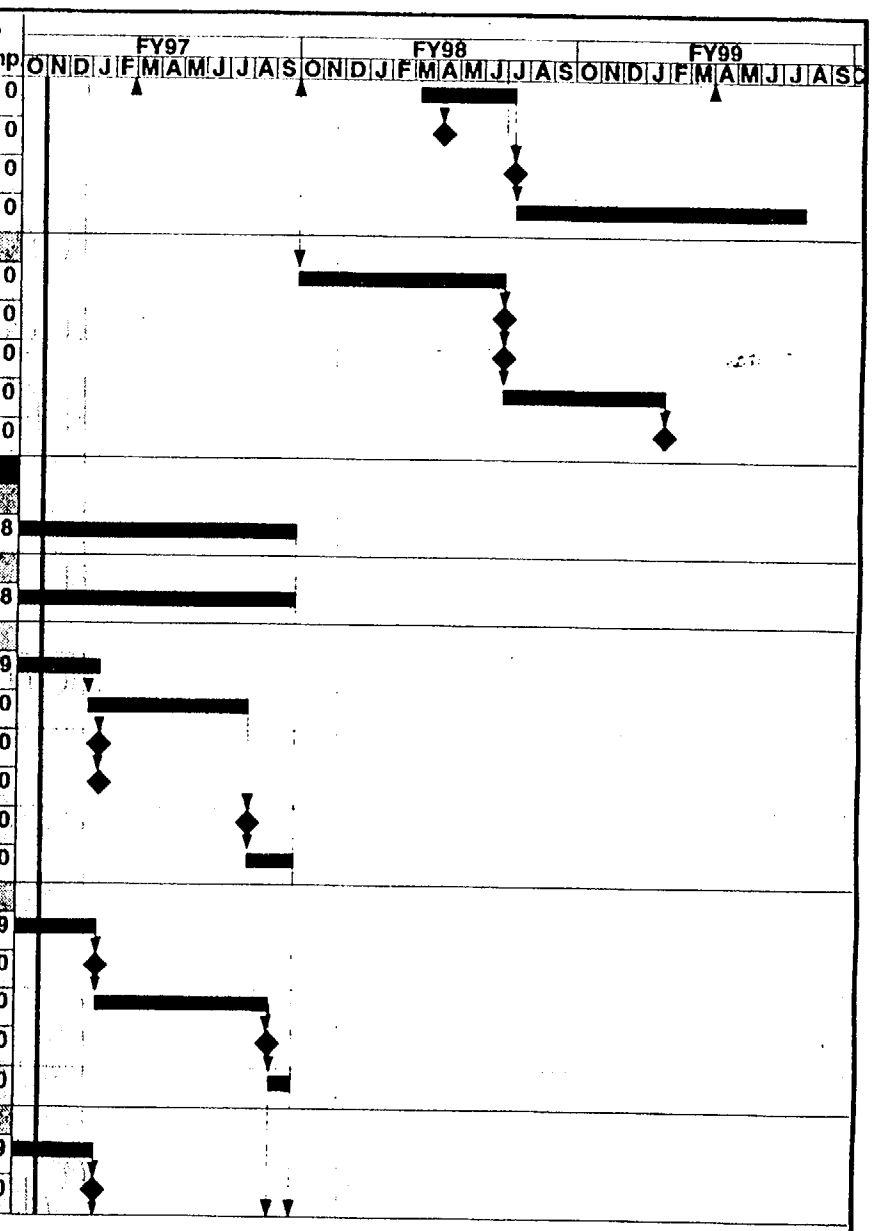
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP122310	Continue HLWG Drip Test Test Data Generation	11MAR98	10JUL98	0
WP122309	Provide HLWG Drip Test Chapter to WFCR Rev 2		09APR98	0
WP122311	Provide HLWG Drip Test Data to Models		10JUL98	0
WP122314	Continue HLWG Drip Test	13JUL98	30JUL99	0
TR242GB3: Glass Process Models				
WP085120	Improve HW Glass Dissolution Rate Model	01OCT97	29JUN98	0
WP085105	Provide HWG Dissolution Rate Mdl		29JUN98	0
WP085106	Provide HWG Dissolution Rate Mdl Results to PA		29JUN98	0
WP085107	Enhance HW Glass Dissolution Rate Model	30JUN98	29JAN99	0
WP085108	Provide HWG Dissolution Rate Model Results to		29JAN99	0
1.2 2 5 1· Metallic Barriers				
TR251FA1: EBS Input to System Studies				
WP251700	EBS Impact To Systems	01OCT96A	30SEP97	8
TR251FA2: EBS Model Abstractions				
WP251750	EBS Model Abstractions	01OCT96A	30SEP97	8
TR251FB1: Measure MIC				
WP26702	Continue Microbial Culture & Analyses	01OCT96A	16JAN97	29
WP26703	Perform parallel abiotic & biotic (MIC) tests	02JAN97*	31JUL97	0
WP26708	Iss Ltr Rep -Init of Abiotic & Biotic MIC Tests		16JAN97*	0
WP26713	Provide MIC Data Input to PA		16JAN97*	0
WP26709	Provide MIC Data Input Update to PA		31JUL97*	0
WP26710	Continue MIC Tests	01AUG97	30SEP97	0
TR251FB4: Measure Critical Potential				
WP26301	Continue Critical Potential Measurements	01OCT96A	15JAN97	29
WP26309	Provide Crit. Pot. Measurements Data to PA (1)		15JAN97*	0
WP26306	Continue Critical Potential Measurements	16JAN97	29AUG97	0
WP26305	Provide Crit. Pot. Measurement Update Data to PA		29AUG97	0
WP26307	Continue Critical Potential Measurements	02SEP97	30SEP97	0
TR251FB5: Thermogravimetric Analysis Studies				
WP26501	Continue Critical Relative Humidity Tests	01OCT96A	15JAN97	29
WP26505	Provide Thermogravimetric Anal. Data to PA		15JAN97*	0



Project Start 01OCT96
Project Finish 03SEP02
Data Date 01NOV96
Plot Date 05DEC96

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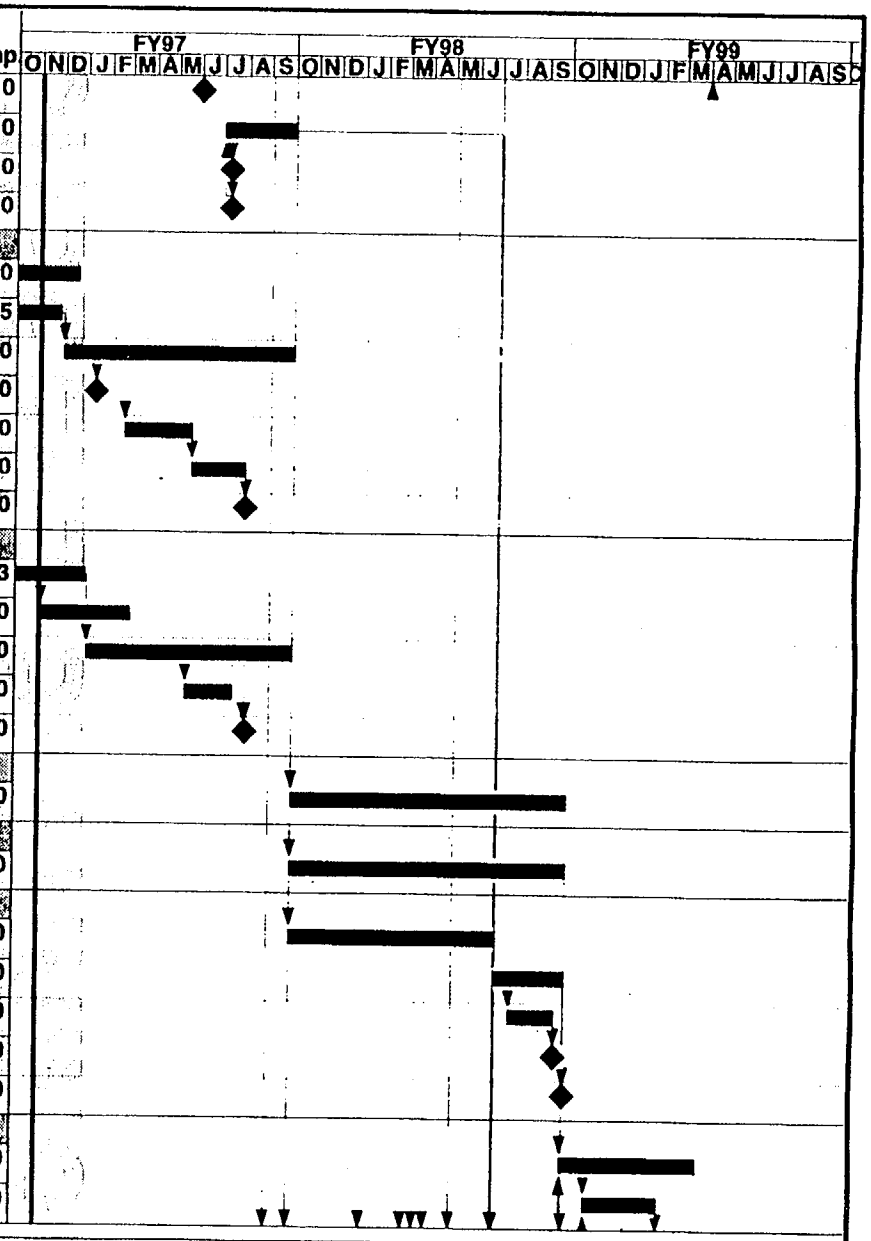
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP60107	Provide Ist Specimen (Ist Tanks) Rpt to EMCR-R2		30MAY97	0
WP60117	Expose Specimens in 2nd Increment Tanks	01JUL97	30SEP97	0
WP60116	Letter Rpt.to YMSCO-Startup 2A Tanks		08JUL97*	0
WP60118	Startup 2B Tanks		08JUL97*	0
TR251FBH: Relative Humidity Chamber Tests				
WP61601	Prepare QA Planning Document	01OCT96A	20DEC96	50
WP61602	Install Specimens for Oxidation/Corrosion Test	01OCT96A	27NOV96	25
WP61603	Expose Oxidation/Corrosion Test Specimen	02DEC96*	30SEP97	0
WP61607	Ltr Rep Init of Rel Humidity Chamber Corr Tests		13JAN97*	0
WP61605	Withdraw/Charac. Ist Specimen Batch	20FEB97*	20MAY97	0
WP61606	Prepare Ist Batch Report for PA	21MAY97	30JUL97	0
WP61613	Provide Ist Batch Report to PA		30JUL97	0
TR251FBK: Determine Material Thermal Stability				
WP26900	Prep QA Planning Documents	01OCT96A	31DEC96	33
WP26901	Acquire Specimens & Equipment	04NOV96	28FEB97	0
WP26902	Perform Accelerated Aging Studies	02JAN97	30SEP97	0
WP26902A	Analyze Data	15MAY97*	15JUL97	0
WP26904	Provide Data Input to PA		31JUL97*	0
TR251GA1: EBS Input to System Studies				
WP251800	EBS Impact to Systems	01OCT97	30SEP98	0
TR251GA2: EBS Model ABstractions				
WP251850	EBS Model Abstractions	01OCT97	30SEP98	0
TR251GB1: MIC Tests				
WP26712	Continue MIC Tests	01OCT97	30JUN98	0
WP26706	Plan Input Conditions for Long Term MIC Tests	01JUL98*	30SEP98	0
WP26704	Prepare MIC Input for EMCR-R2	20JUL98*	18SEP98	0
WP26705	Provide MIC Input to EMCR-R2		18SEP98	0
WP26707	Complete Input Conditions for Long Term MIC		30SEP98	0
TR251GB2: Prepare & Review EMCR Rev 02				
WP20A00	Assemble Data/Process Models for EMCR-R2	29SEP98*	25MAR99	0
WP20A01	Prep EMCR Rev 2 Prelim Draft	30OCT98	02FEB99	0



Project Start 01OCT96
Project Finish 03SEP02
Data Date 01NOV96
Plot Date 06DEC96

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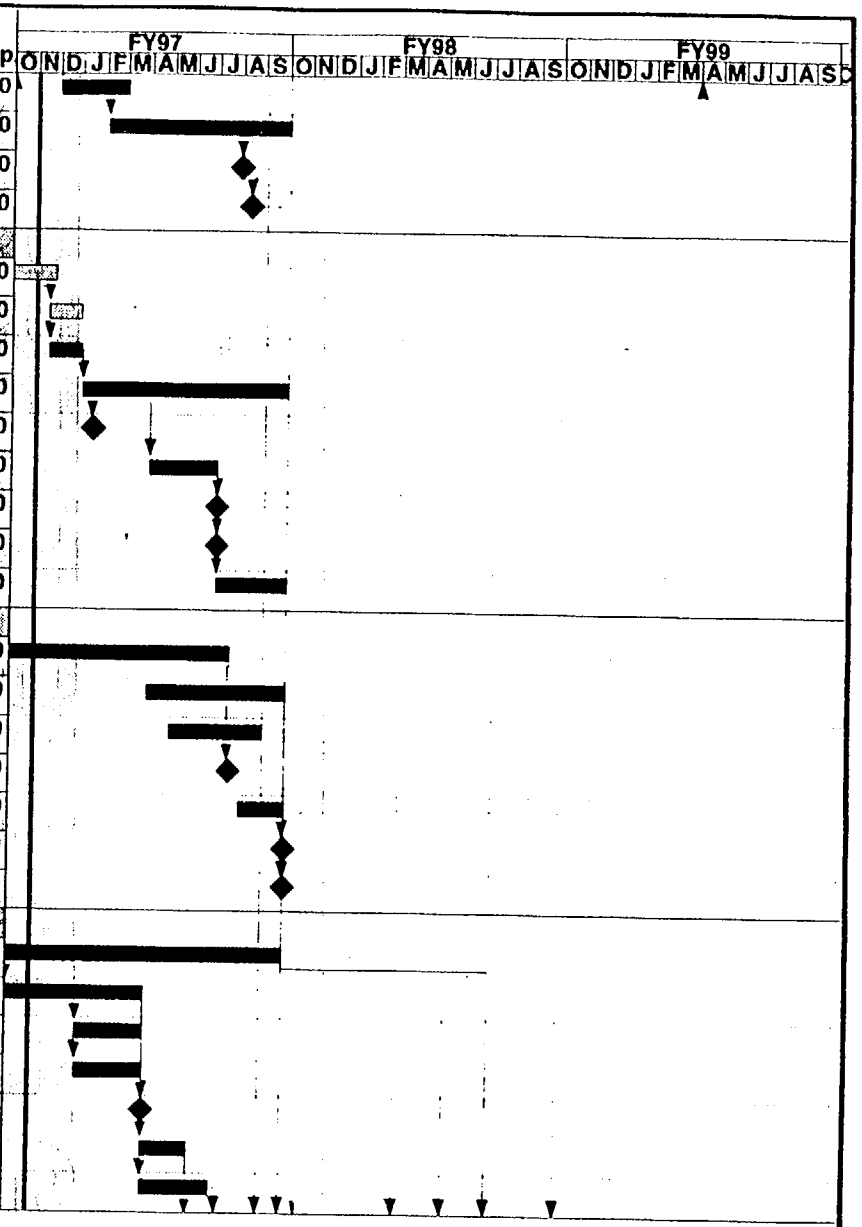
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP60803	Install Tanks for 3rd Increment	02DEC96*	28FEB97	0
WP60805	Expose Specimens in 3rd Increment Tanks	03FEB97	30SEP97	0
WP60801A	Ltr Rep - Init of LT Galv Corr Testing		30JUL97*	0
WP60121	Startup 3B Tanks		11AUG97	0
TR251FBC: Self-Loaded Crack Growth Tests				
WP60701	Prepare QA Planning Documents	01OCT96A	27NOV96	90
WP60702	Design Self Loaded SCC Growth Test Matrix	18NOV96	31DEC96	0
WP60703	Procure Self Loaded SCC Growth Test	18NOV96	31DEC96	0
WP60704	Conduct Tests by applied K, alloy, pH, T, Enviro	02JAN97	30SEP97	0
WP60703A	Ltr Rep Initiation of Crack Growth Rate Testing		16JAN97*	0
WP60705	Characterize Specimens (Ist Batch)	01APR97	30JUN97	0
WP60705A	1st Batch Analyses		30JUN97	0
WP60705B	Provide Data to PA		30JUN97	0
WP60708	Characterize Specimens (2nd Batch)	01JUL97	30SEP97	0
TR251FBE: Develop Material Degradation Process M				
WP60501	Develop Preliminary Crevice Corrosion Model	01OCT96A	18JUL97	10
WP60506	Develop Preliminary SCC/HE Model	01APR97*	30SEP97	0
WP60510	Develop Preliminary Galvanic Corrosion Model	01MAY97*	29AUG97	0
WP60504	Provide Crevice Corrosion Data to PA		18JUL97	0
WP60507	Prepare Modeling Update Info for EMCR-R2	04AUG97*	30SEP97	0
WP60508	Provide Prelim SCC/HE Model Info to EMCR-R2		30SEP97	0
WP60509	Provide SCC/HE/Prelim.Galv.Corr.Model Data to		30SEP97	0
TR251FBG: Testing of Metal Barriers				
WP60100	LT Comp Corrosion Specimen Exposure (1st	01OCT96A	30SEP97	8
WP60114	Fabricate Tanks for 2nd Increment	01OCT96A	31MAR97	13
WP60102	Withdraw/Charac. 1st Specimen Batch (1st Tanks)	02JAN97	31MAR97	0
WP60104	Obtain Analytical/Biological Samples	02JAN97	31MAR97	0
WP60103	Provide Ist Tanks Ist Specimen Results to PA		31MAR97	0
WP60106	Prep Ist Specimens Ist Tanks Rpt for EMCR-R2	01APR97	30MAY97	0
WP60115	Install Tanks for 2nd Increment	01APR97	30JUN97	0



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Project Finish	03SEP02	Progress Bar
Data Date	01NOV96	Critical Activity
Plot Date	05DEC96	

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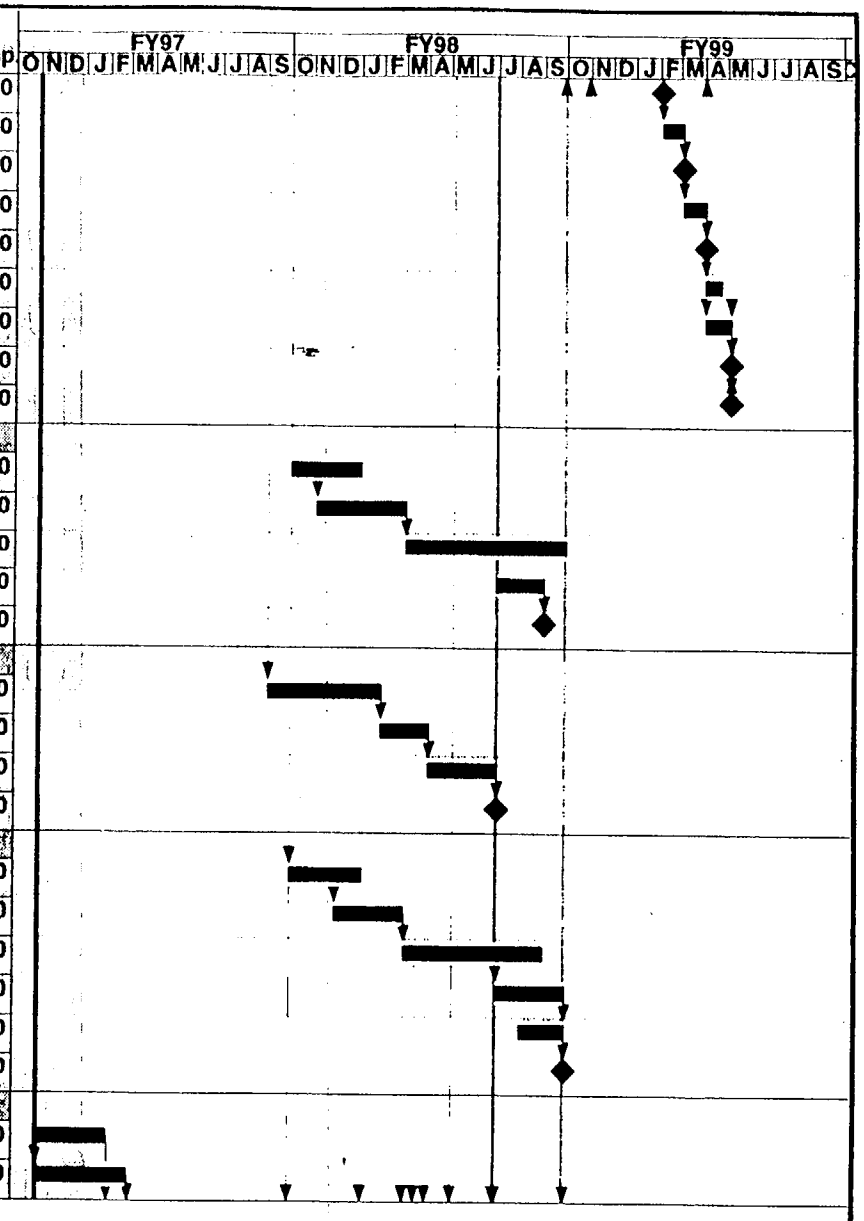
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP20A02	Begin LLNL EMCR Rev 2 Prel Draft Review	03FEB99		0
WP20A03	Review/Finalize EMCR Rev 2 Draft	03FEB99	03MAR99	0
WP20A04	Provide EMCR Rev 2 Draft to Perf. Assess.		03MAR99	0
WP20A06	Finalize EMCR Rev 2	04MAR99	01APR99	0
WP20A07	Submit EMCR Rev 2 to YMSCO for Review		01APR99	0
WP20A08	YMSCO Review of EMCR Rev 2	02APR99	22APR99	0
WP20A09	Incorp YMSCO EMCR Rev 2 Review Comments	02APR99	05MAY99	0
WP2013	Submit Engr'd. Mat'ls. Char. Rpt. Rev 2		05MAY99	0
WP20A10	YMSCO EMCR-R2 Review Comments Resolved		05MAY99	0
TR251GB3: Measure Environmentally Assist. Cracki				
WP27001	Prepare QA Planning Documents	01OCT97*	31DEC97	0
WP27002	Acquire Specimens & Equipment	04NOV97	02MAR98	0
WP27003	Conduct SCC/HE Tests	03MAR98	30SEP98	0
WP27004	Prepare Input for EMCR-R2	01JUL98*	31AUG98	0
WP27005	Provide Input to EMCR-R2		31AUG98	0
TR251GB4: Critical Potential Measurements				
WP26300	Complete Critical Potential Measurements	02SEP97	28JAN98	0
WP26300A	Analyze Data	29JAN98	01APR98	0
WP26302	Prep Critical Pot. Measurement	02APR98*	01JUL98	0
WP26303	Provide Crit. Pot. Measurments Rpt to EMCR-R2		01JUL98	0
TR251GB5: Electrolyte Drip Tests on Heated Tubla				
WP26503	Prepare Activity Plan	01OCT97	02JAN98	0
WP26504	Procure/Set-Up Equipment	01DEC97*	27FEB98	0
WP26507	Initiate Ph I Tests	02MAR98	31AUG98	0
WP26509	Characterize Samples	01JUL98*	30SEP98	0
WP26510	Prepare Input to EMCR Rev.2	03AUG98	30SEP98	0
WP26511	Provide Input to EMCR Rev.2		30SEP98	0
TR251GB6: Develop Advanced Techniques				
WP25800	Prepare QA Planning Documents	01NOV96	31JAN97	0
WP25802	Acquire Specimens & Equipment	01NOV96	28FEB97	0



Project Start	01OCT95	Early
Project Finish	03SEP02	Progress Bar
Data Date	01NOV96	Critical Activity
Plot Date	05DEC96	

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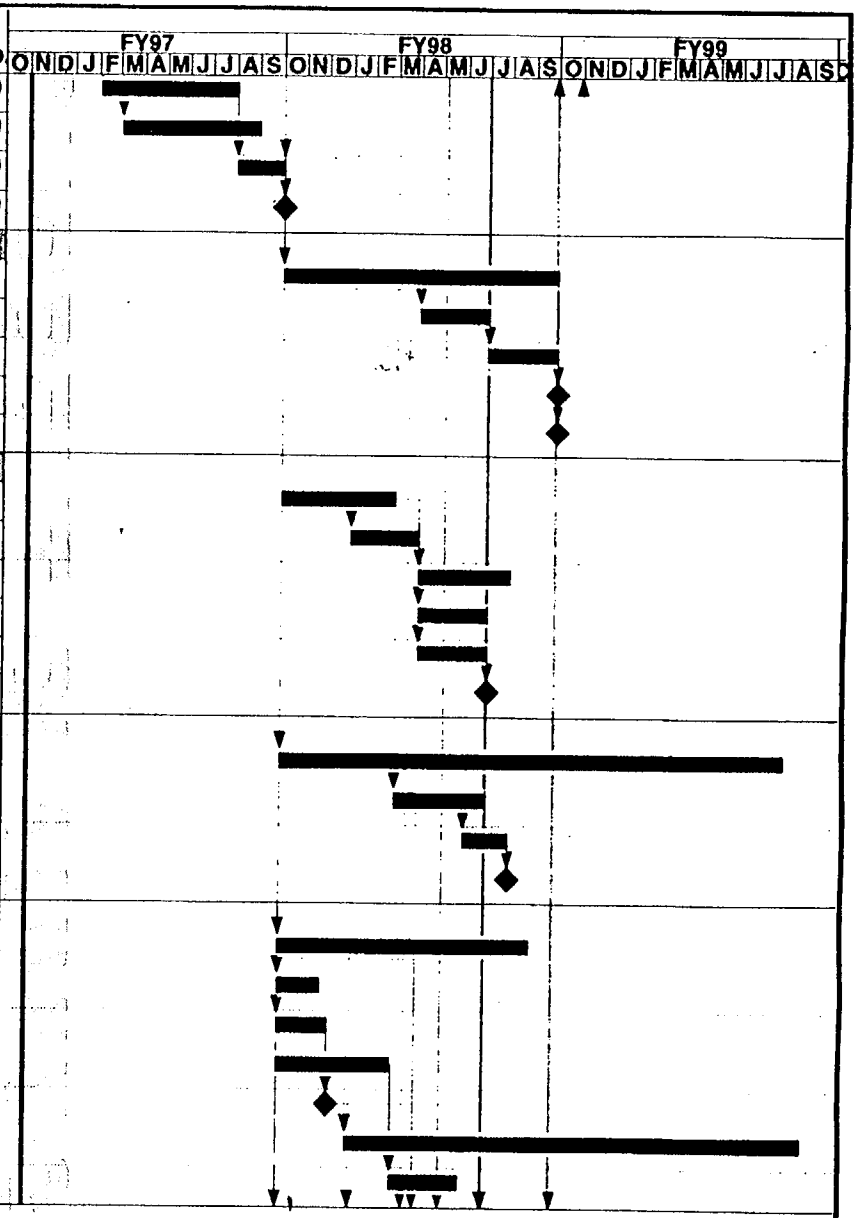
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP25804	Evaluate Sensors	03FEB97	31JUL97	0
WP25806	Eval.Other Microanalytical Techniques	03MAR97	29AUG97	0
WP25808	Prepare Input to EMCR - Rev 2	01AUG97	30SEP97	0
WP25810	Provide Input to EMCR - Rev 2		30SEP97	0
TR251GB7: Electrochem Basis for Galvanic Effects				
WP26210	Continue ST Galvanic Tests	01OCT97	29SEP98	0
WP26211	Analyze Specimens	01APR98*	30JUN98	0
WP26205	Prepare Input for EMCR-R2	01JUL98*	30SEP98	0
WP26209	Provide Data To Model Activity		29SEP98	0
WP26206	Provide Input to EMCR-R2		30SEP98	0
TR251GB8: Thermogravimetric Analysis Studies				
WP25850	Perform TGA Studies	01OCT97*	27FEB98	0
WP25852	Characterize Samples	02JAN98*	31MAR98	0
WP25854	Complete TGA Studies	01APR98	31JUL98	0
WP25856	Analyze Samples	01APR98	01JUL98	0
WP25858	Prepare Results to EMCR Rev 2	01APR98	30JUN98	0
WP25860	Provide Results to EMCR Rev 2		30JUN98	0
TR251GBA: LT Electrochemical Potential Tests				
WP60910	Continue Conduct Test/Applied E,Alloy,PH,T,Evn.	01OCT97	29JUL99	0
WP60906	Characterize Specimens (2nd Batch)	02MAR98*	30JUN98	0
WP60907	Prepare Report for EMCR-R2	01JUN98*	31JUL98	0
WP60908	Provide Electrochem Potential Report to		31JUL98	0
TR251GBB: Long Term Galvanic Protection Test				
WP60805A	Expose Specimens in 3rd Increment Tanks	01OCT97	28AUG98	0
WP60807	Obtain Analytical/Biological Samples (3rd Tank)	01OCT97	26NOV97	0
WP60809	Prepare 1st Batch/3rd Tank Report for EMCR-R2	01OCT97	05DEC97	0
WP60820	Fabricate Tanks for 4th Increment	01OCT97*	27FEB98	0
WP60810	Provide 3rd Tank/1st Batch Report to EMCR-R2		05DEC97	0
WP60824	Expose Specimens in 4th Increment Tanks	02JAN98*	26AUG99	0
WP60822	Install Tanks for 4th Increment	02MAR98	29MAY98	0



Project Start 01OCT96
Project Finish 03SEP02
Data Date 01NOV96
Plot Date 05DEC96

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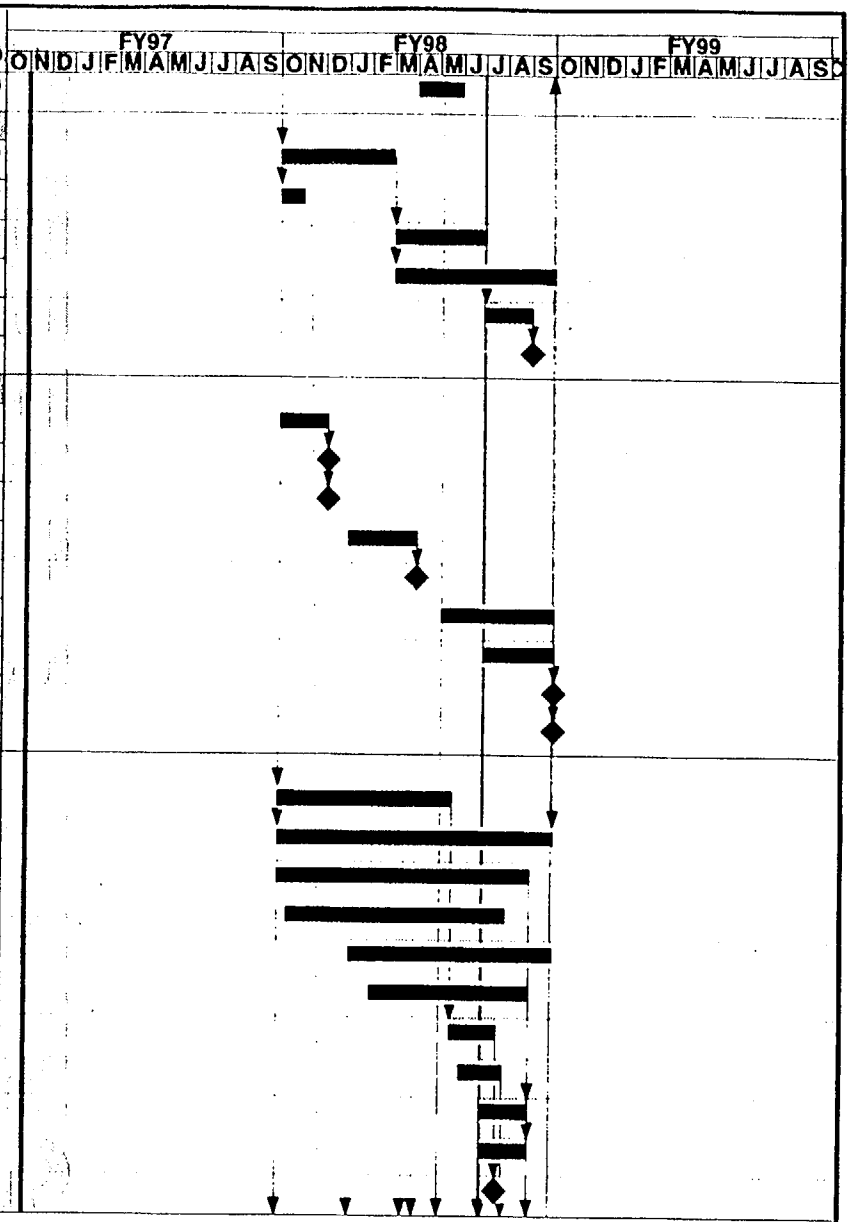
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP60806	Withdraw/Charac. Ist Batch (3rd Tanks)	01APR98*	29MAY98	0
TR251GBC: Self Loaded SCC Growth Test				
WP60704A	Conduct Tests by Applied K, Alloy,Ph,T,Envn.	01OCT97	27FEB98	0
WP60709	Characterize Specimens (2nd Batch)	01OCT97	31OCT97	0
WP60704B	Characterize Specimens	02MAR98	30JUN98	0
WP60704C	Continue SCC Tests	02MAR98	30SEP98	0
WP60706	Prepare Report for EMCR-R2	01JUL98*	31AUG98	0
WP60707	Provide Self Loaded SCC Growth Report to		31AUG98	0
TR251GBD: Provide Feed-Back to Near-Term Environ				
WP26827	Prepare Feedback for Near Field Environment	01OCT97*	04DEC97	0
WP26828	Provide Feedback to Near-Field Environment		04DEC97	0
WP26829	Provide Data to Performance Assessment		04DEC97	0
WP26830	Prepare Input for Planning Longer Term Test	02JAN98*	30MAR98	0
WP26831	Provide Planning Input to Longer Term Testing		30MAR98	0
WP26825	Prepare Input for EMCR-R2	04MAY98*	30SEP98	0
WP26832	Prepare Add'l. Feedback to Near Field Environ.	01JUL98*	30SEP98	0
WP26826	Provide Input to EMCR-R2		30SEP98	0
WP26833	Provide Add'l. Input to Near Field Environment		30SEP98	0
TR251GBE: Develop Material Degration Proc. Model				
WP60505	Devel.Enhanced Crevice Corrosion Model	01OCT97*	19MAY98	0
WP60536	Advance Pitting Corrosion Model	01OCT97*	30SEP98	0
WP60541	Advanced Oxidation/General Corrosion Model	01OCT97*	31AUG98	0
WP60513	Enhance Galvanic Corrosion Model	14OCT97*	31JUL98	0
WP60520	Enhance Preliminary MIC Model	05JAN98*	30SEP98	0
WP60528	Develop Preliminary Phase Stability Model	02FEB98*	31AUG98	0
WP60502	Prepare Modeling Update Info for EMCR-R2	20MAY98*	20JUL98	0
WP60514	Prepare Modeling Update Info for EMCR-R2	01JUN98*	27JUL98	0
WP60530	Prepare Phase Stability Model Update for	01JUL98*	31AUG98	0
WP60542	Prep Oxidation/Gen Corrosion Update for	01JUL98*	31AUG98	0
WP60503	Provide Prel Crevice Corrosion Update to		20JUL98	0



Project Start	01OCT95	Early
Project Finish	03SEP02	Progress Bar
Data Date	01NOV96	Critical Activity
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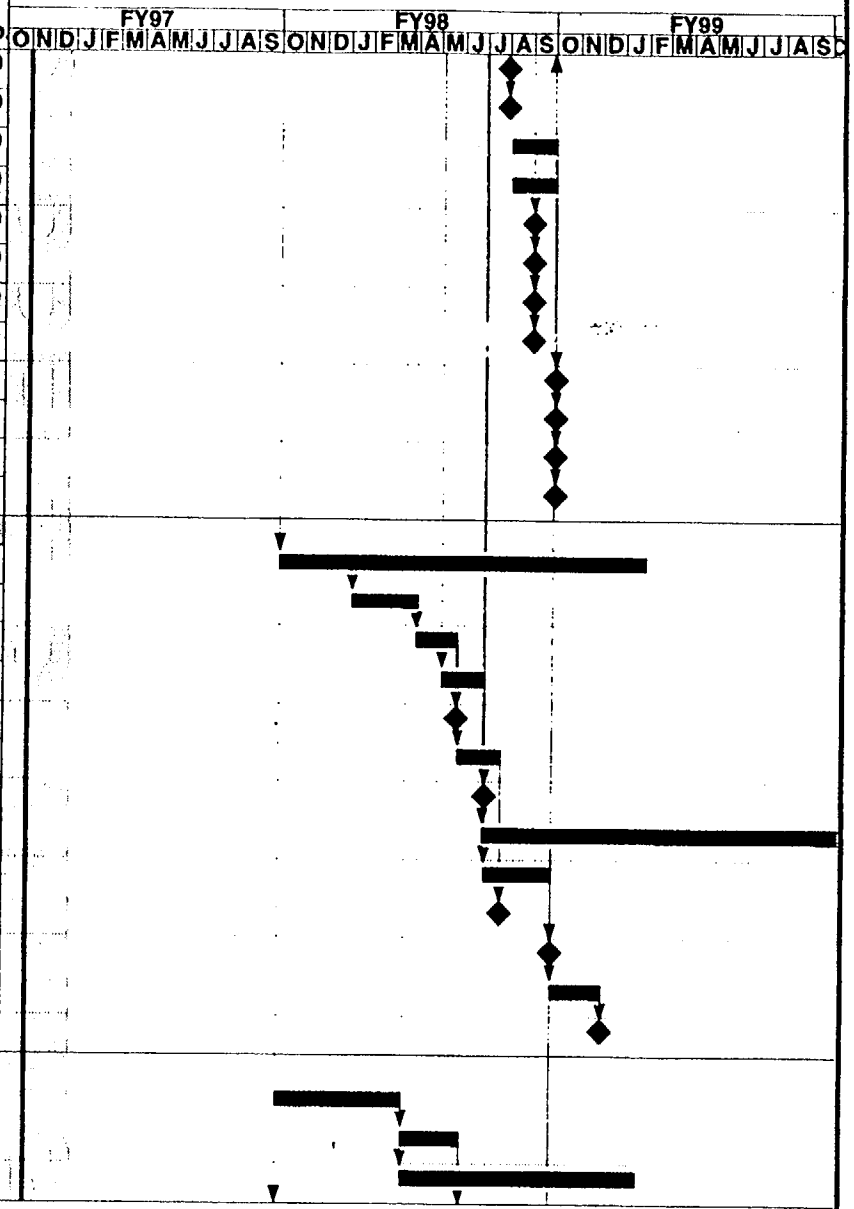
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP60516	Provide Prel Galvanic Corrosion Info to EMCR-R2		27JUL98	0
WP60518	Provide Prel Galvanic Corrosion Info to PA		27JUL98	0
WP60522	Prepare Modeling Update Info for EMCR-R2	03AUG98*	30SEP98	0
WP60537	Prep Pitting Corrosion Model Update for	03AUG98*	30SEP98	0
WP60532	Provide Phase Stability Model Update to		31AUG98	0
WP60534	Provide Phase Stability Model Update to PA		31AUG98	0
WP60543	Prov Oxidation/Gen Corrosion Update to		31AUG98	0
WP60544	Provide Oxidation/Gen Corrosion Mdl Update to		31AUG98	0
WP60524	Provide MIC Model Info to EMCR-R2		30SEP98	0
WP60526	Provide MIC Model Info to PA		30SEP98	0
WP60538	Provide Pitting Corrosion Mdl Update to		30SEP98	0
WP60539	Provide Pitting Corrosion Model Update to PA		30SEP98	0
TR251GBG: Long Term Corrosion Test				
WP60101	LT Comp Corrosion Specimen Exposure(1st	01OCT97	29JAN99	0
WP60122	Withdraw/Charac. ist Batch (2nd Tanks)	06JAN98*	01APR98	0
WP60124	Obtain Analytical/Biological Samples (2nd Tank)	31MAR98*	22MAY98	0
WP60110	Obtain Analytical/Biological Samples	05MAY98	30JUN98	0
WP60126	Provide Analytical/Biological Samples to NFE		22MAY98	0
WP60128	Prepare Ist Batch (2nd Tanks) Rpt for EMCR-R2	26MAY98	22JUL98	0
WP60111	Provide Analytical/Biological Feedback to NFE		30JUN98	0
WP60120	Expose Specimens in 2nd Increment Tanks	30JUN98	25OCT99	0
WP60108	Withdraw/Charac. 2nd Specimen Batch (1st	01JUL98	28SEP98	0
WP60130	Provide Ist Batch (2nd Tanks) Report to EMCR-R2		22JUL98	0
WP60109	Provide Ist Tanks 2nd Specimen Results to PA		28SEP98	0
WP60112	Prep 2nd Specimens Ist Tanks Rpt for EMCR-R2	29SEP98	02DEC98	0
WP60113	Provide 2nd Specimen (Ist Tanks) Rpt to		02DEC98	0
TR251GBH: Oxid/Corr Test-Controlled Rel Humid				
WP61604	Expose Oxidation/Corrosion Test Specimen	01OCT97*	16MAR98	0
WP61608	Withdraw/Charac. 2nd Specimen Batch	17MAR98	01JUN98	0
WP61608A	Continue Oxidation/Corrosion Tets	17MAR98	20JAN99	0



Project Start 01OCT96
Project Finish 03SEP02
Data Date 01NOV96
Plot Date 05DEC96

Early
Progress Bar
Critical Activity

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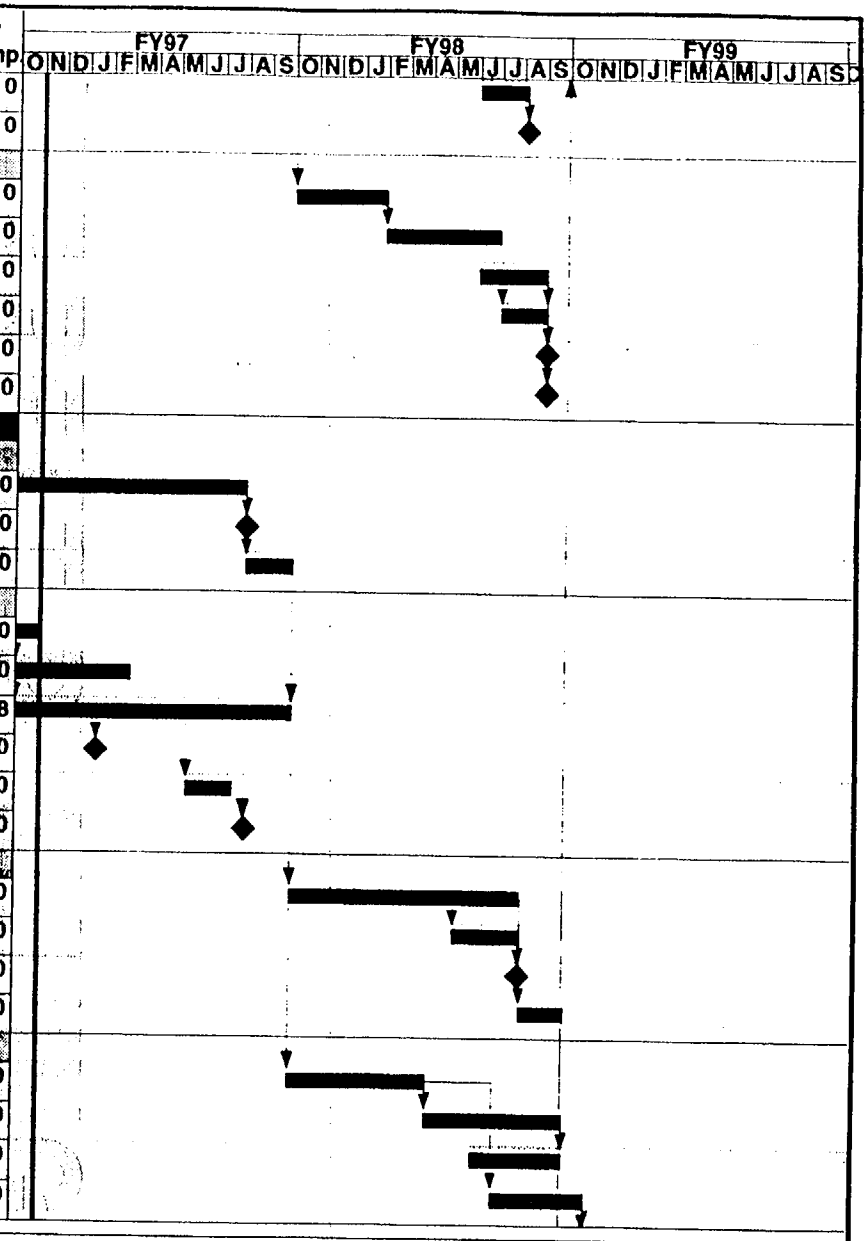
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP61609	Prepare 2nd Batch Report for EMCR-R2	02JUN98	03AUG98	0
WP61610	Provide 2nd Batch Report for EMCR-R2		03AUG98	0
TR251GBK: Phase Stability/Microstructural Eval.				
WP26903	Perform Accelerated Aging Studies	01OCT97	29JAN98	0
WP26903A	Analyze Specimens	30JAN98	29JUN98	0
WP26907	Plan Input Conditions for Long term Ageing Tests	01JUN98*	31AUG98	0
WP26905	Prepare Input for EMCR-R2	01JUL98*	31AUG98	0
WP26906	Provide Input to EMCR-R2		31AUG98	0
WP26909	Provide Input Conditions-Long Term Ageing		31AUG98	0
1 2 2 5 2- Basket				
TR252FB1: Model Basket Materials				
WP61001	Develop Prelim Basket Mat'l Performance Model	01OCT96A	31JUL97	10
WP61004	Prov.Prelim.Basket Mat'l Perf. Model to PA & Dsg		31JUL97*	0
WP61006	Continue Dev.Basket Mat'l Model	01AUG97	30SEP97	0
TR252FB2: Testing of Basket Materials				
WP27201	Complete QA Planning Documents	01OCT96A	31OCT96A	100
WP27202	Compl Specimen Prep/microstructural	01OCT96A	28FEB97	20
WP27203	Continue Electrochem Investigations	01OCT96A	30SEP97	8
WP27210	Provide ST Basket Mat'ls Test Data to PA		15JAN97*	0
WP27212	Analyze Specimens	15MAY97*	15JUL97	0
WP27211	Provide ST Basket Mat'ls Test Data Update to PA		31JUL97*	0
TR252GB1: Model Basket Mat'ls Performance				
WP61007	Develop Basket Mat'l Model	01OCT97	31JUL98	0
WP61002	Prepare Input for EMCR-R2	04MAY98*	31JUL98	0
WP61003	Provide Input to EMCR-R2		31JUL98	0
WP61008	Continue Dev.Basket Mat'l Model	03AUG98	30SEP98	0
TR252GB2: Test Basket Materials				
WP27204	Perform Long Term Testing	01OCT97	31MAR98	0
WP27206	Continue Long Term Testing	01APR98	30SEP98	0
WP27208	Prepare Input for EMCR-R2	01JUN98*	30SEP98	0
WP27205	Analyze Specimens	29JUN98	29OCT98	0



Project Start	01OCT95		Early
Project Finish	03SEP02		Progress Bar
Data Date	01NOV98		Critical Activity
Plot Date	05DEC98		

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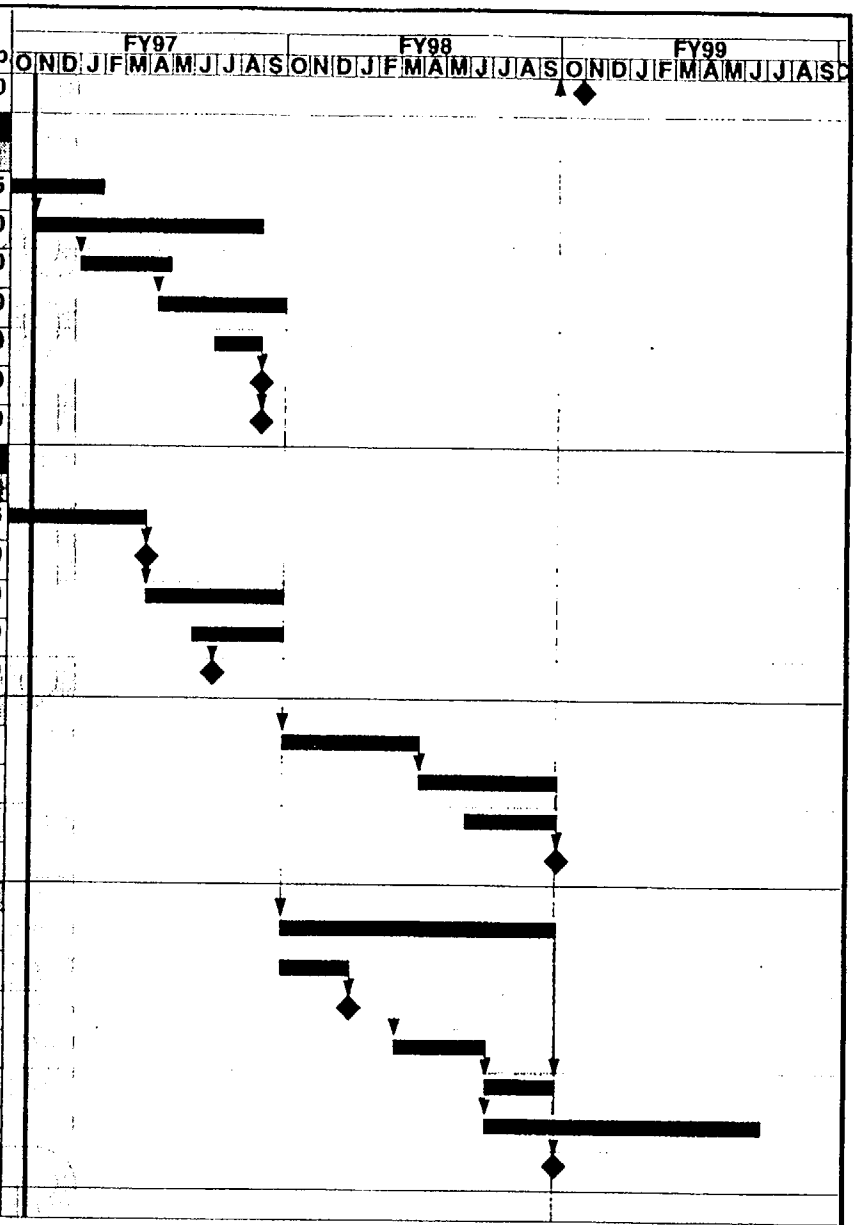
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Activity ID	Activity description	Early start	Early finish	% Comp
WP27209	Provide Input to EMCR-R2		29OCT98	0
1.2.2.5.4- Packing				
TR255FB2: Test Other EB Segment Materials				
WP26801	Prepare SIP/Other Planning Documents	01OCT96A	31JAN97	25
WP26803	Isolate & Culture Microbes	04NOV96	29AUG97	0
WP26802	Procure Specimens & Test Equipment	03JAN97	01MAY97	0
WP26804	Perf Therm/Chem Degrad Test on Conc./Other	14APR97*	30SEP97	0
WP26808	Prepare Feedback for Near Field Environment	01JUL97*	29AUG97	0
WP26809	Provide Feedback to Near-Field Environment		29AUG97	0
WP26815	Provide Data to Performance Assessment		29AUG97	0
1.2.2.5.5- Backfill Invert				
TR255FB1: Develop EB Segment Material Models				
WP60404A	Dev. Prelim.Model for Corrosion Products	01OCT96A	31MAR97	16
WP60404B	Provide Corrosion Prod.Models to site		31MAR97	0
WP60401	Dev Prelim Model-Perf. of Concrete in Repository	01APR97	30SEP97	0
WP60403	Extend Model Development to Other EBS Mat'ls	02JUN97*	30SEP97	0
WP60404	Provide Data Input to PA		30JUN97*	0
TR255GB1: Model EBS Matls Performance				
WP60402	Continue to Advance Model Development	01OCT97	31MAR98	0
WP60405	Extend Model Development to Other EBS Mat'ls	01APR98	30SEP98	0
WP60406	Prepare Input for EMCR-R2	01JUN98*	30SEP98	0
WP60408	Provide Input to EMCR-R2		30SEP98	0
TR255GB2: Test EBS Materials				
WP26805	Perf.Ther/Chem Degrad.Test on Conc/Other Mat'l	01OCT97	30SEP98	0
WP26810	Prepare Input for Planning Longer Term Test	01OCT97*	31DEC97	0
WP26811	Provide Planning Input to Longer Term Testing		31DEC97	0
WP26812	Assess Microbial Impacts	02MAR98*	30JUN98	0
WP26806	Prepare Input for EMCR-R2	01JUL98*	30SEP98	0
WP26813	Initiate Long Term Tests	01JUL98	30JUN99	0
WP26807	Provide Input to EMCR-R2		30SEP98	0
1.2.2.5.6- Non-Metallic Barriers				



Project Start	01OCT95	Early
Project Finish	03SEP02	Progress Bar
Data Date	01NOV96	Critical Activity
Plot Date	05DEC96	

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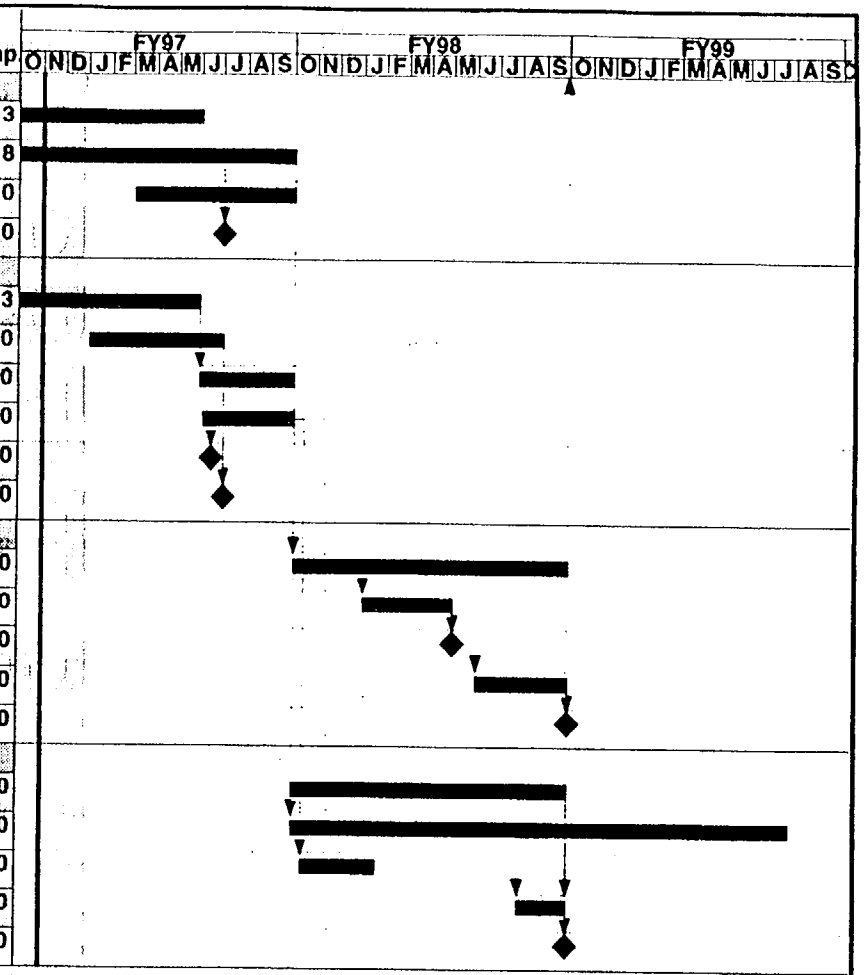
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

Sheet 29 of 30

Activity ID	Activity description	Early start	Early finish	% Comp
TR256FB1: Develop Ceramic Material Models				
WP60410	Devel. Mechanical Perf. Model	01OCT96A	30MAY97	13
WP60411	Dev Prelim Model-Perf. of Ceramic in Repository	01OCT96A	30SEP97	8
WP60412	Devel. Chemical Perf. Model	03MAR97*	30SEP97	0
WP60413	Provide Data Input to PA		30JUN97*	0
TR256FB2: Perform Ceramic Material Tests				
WP60315	Perform Mechanical Tests	01OCT96A	29MAY97	13
WP60300	Evaluate Coating Permeability	02JAN97*	30JUN97	0
WP60316	Perform Corrosion Tests	30MAY97	30SEP97	0
WP60314	Prepare Specimens for Corr. Testing	02JUN97*	30SEP97	0
WP60315A	Letter Rpt.Ceramic Feasibility/Mech.Tests & Eval		13JUN97*	0
WP60301	Provide Into LA, Design		30JUN97	0
TR256GB1: Model Ceramic Mat'ls Performance				
WP60416	Continue to Advance Model Development	01OCT97	30SEP98	0
WP60416A	Prepare Interim Report	02JAN98*	30APR98	0
WP60417	Provide Inputs to PA, Design		30APR98*	0
WP60418	Prepare Input for EMCR-R2	01JUN98*	30SEP98	0
WP60420	Provide Input to EMCR-R2		30SEP98	0
TR256GB2: Test Ceramics Materials				
WP60312	Conduct Mechanical Degradation Tests	01OCT97*	30SEP98	0
WP60316A	Perform Corrosion Tests	01OCT97	23JUL99	0
WP60318	Mech. Test of Corroded Specimens	15OCT97	19JAN98	0
WP60320	Prepare Input to EMCR - Rev 2	30JUL98	30SEP98	0
WP60320A	Provide Imput to EMCR Rev.2		30SEP98	0



Project Start	01OCT95	Early
Project Finish	03SEP02	Progress Bar
Data Date	01NOV96	Critical Activity
Plot Date	05DEC96	

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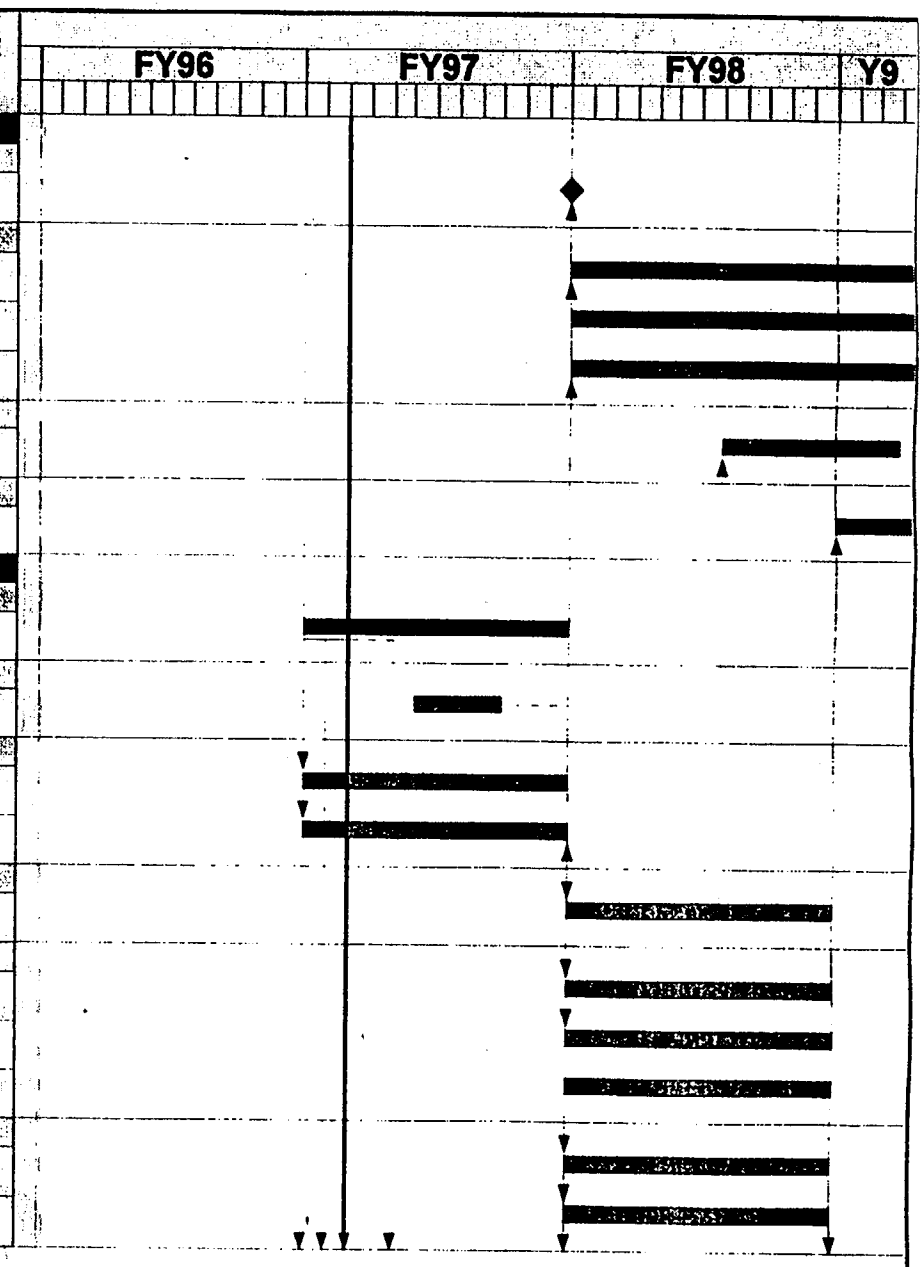
YUCCA MOUNTAIN PROJECT PLAN
FY98 SCHEDULE WPD & WPM
1.2.2 WASTE PACKAGE

REPOSITORY SURFACE AND SUBSURFACE SCHEDULE

The Repository Surface and Subsurface (WBS 1.2.4) schedule for FY 97/98 is provided. This schedule reflects the current status of the FY 98 planning activity. All of the Repository Surface and Subsurface activities are tied to the VA milestone, except those that exclusively support the EIS/NEPA development and Nevada Transportation.

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
YP4XPP008: PPkg - MG120M2 - Complete MGDS Design					
MG120M2	Complete MGDS Design - Phase I	0		30SEP97*	M2
YP4XPP021: PPkg - RP070A - Surface Design - Phas					
RP7401	Management and Integration - Ph.II	455	01OCT97	26JUL99	
RP7402E	NOB-Utility Systems Design - Ph.II	455	01OCT97*	26JUL99	
RP7403E	Nevada Transportation - Ph II	455	01OCT97	26JUL99	
YP4XPP032: PPkg - XRP2055 - Update Sub Surface F					
RP17030	Prep. Subsurface Supt. Facility Gen. Arrangement	168	30APR98*	31DEC98	
YP4XPP033: PPkg - XRP2215 - Prepare Thermal Mgmt					
RP17200	Prepare Thermal Mgmt Technical Report	123	02OCT98*	01APR99	
TR41FA1: Repository Management and Integration					
RP129750	Repository Management & Integration	251	01OCT96A	30SEP97	
TR41FA2: Repository Design Consulting Board					
RPO4X710	Repository Tunneling Consultant Board	85	03MAR97*	30JUN97	
TR41FA4: Repository Management Support Activitie					
RP100710	Senior Management Support	251	01OCT96A	30SEP97	
RPO4X700	Product Integrity - OPI / PCG / EDC	251	01OCT96A	30SEP97	
TR41GA1: Repository Management and Integration					
RP192752	Repository Management & Integration	251	01OCT97	30SEP98	
TR41GA2: Repository Support Activities					
RP04X702	Product Integrity - OPI / PCG / EDC	251	01OCT97	30SEP98	
RP100712	Senior Management Support	251	01OCT97	30SEP98	
RP193754	Repository Support Activities	251	01OCT97*	30SEP98	
YP4XPP001: PPkg - IN04X - Repository Base Suppor					
RP10010A	Provide Management Support	251	01OCT97	30SEP98	
RPNO4X0A	OPI/PCG/EDC	251	01OCT97	30SEP98	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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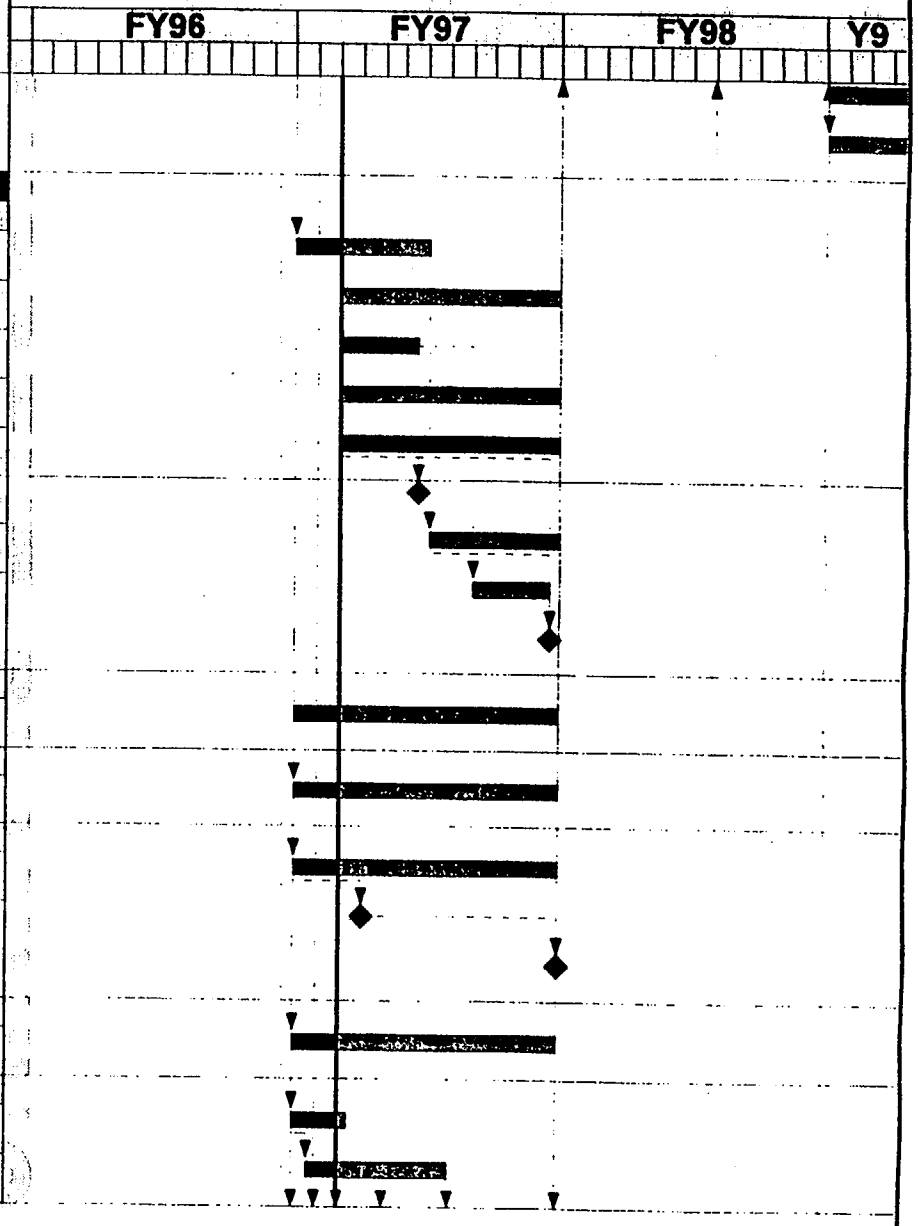
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP10010B	Provide Management Support	251	01OCT98	30SEP99	
RPNO4X0B	OPI/PCG/EDC	251	01OCT98	30SEP99	
TR42FA1: Subsurface Interface Activities					
RP121753	Assess CONOP Resulting from FY1966 Work	124	01OCT96A	01APR97	
RP124750	Support of SRA	211	02DEC96*	30SEP97	
RP124765	Progress Report Input PR #16	73	02DEC96*	17MAR97	
RP124770	Support of QA Procedures	211	02DEC96*	30SEP97	
RP124775	Systems Engineering Studies Support	211	02DEC96*	30SEP97	
RPPR16M3	Submit Repository Input to PR16	0		17MAR97*	M4
RP121757	Develop / Revise CONOP Descriptions	127	02APR97	30SEP97	
RP124767	Progress Report Input PR #17	74	02JUN97*	15SEP97	
RPPR17M3	Submit Repository Input to PR17	0		15SEP97*	M4
TR42FA3: Support SRA - RSD Ph I					
RP2405A1	Support SRA (LOE)	251	01OCT96A	30SEP97	
TR42FA4: Interface Activities - RSD Ph I					
RP24061	Interface Activities (LOE)	251	01OCT96A	30SEP97	
TR42FA6: MGDS Project Engineering - Repository P					
RP100702	Project Engineering-Ph 1	251	01OCT96A	30SEP97	
RP120MG1	VA Design & Review Plan	0		31DEC96*	M3
RP120MG2	Draft LA Design & Review Plan	0		30SEP97	M3
TR42FA7: Product Production Support					
RP420600	Product Production Support/Product Checking	251	01OCT96A	30SEP97	
TR42FB3: Prepare Design Guides - RSD Ph I					
RP2402D1	Develop Design Guide Plan	32	01OCT96A	13DEC96	
RP2402D2	Prepare Source Terms Design Guides	133	21OCT96A	02MAY97	



Project Start	01OCT95
Project Finish	01OCT02
Data Date	02DEC96
Plot Date	18DEC96

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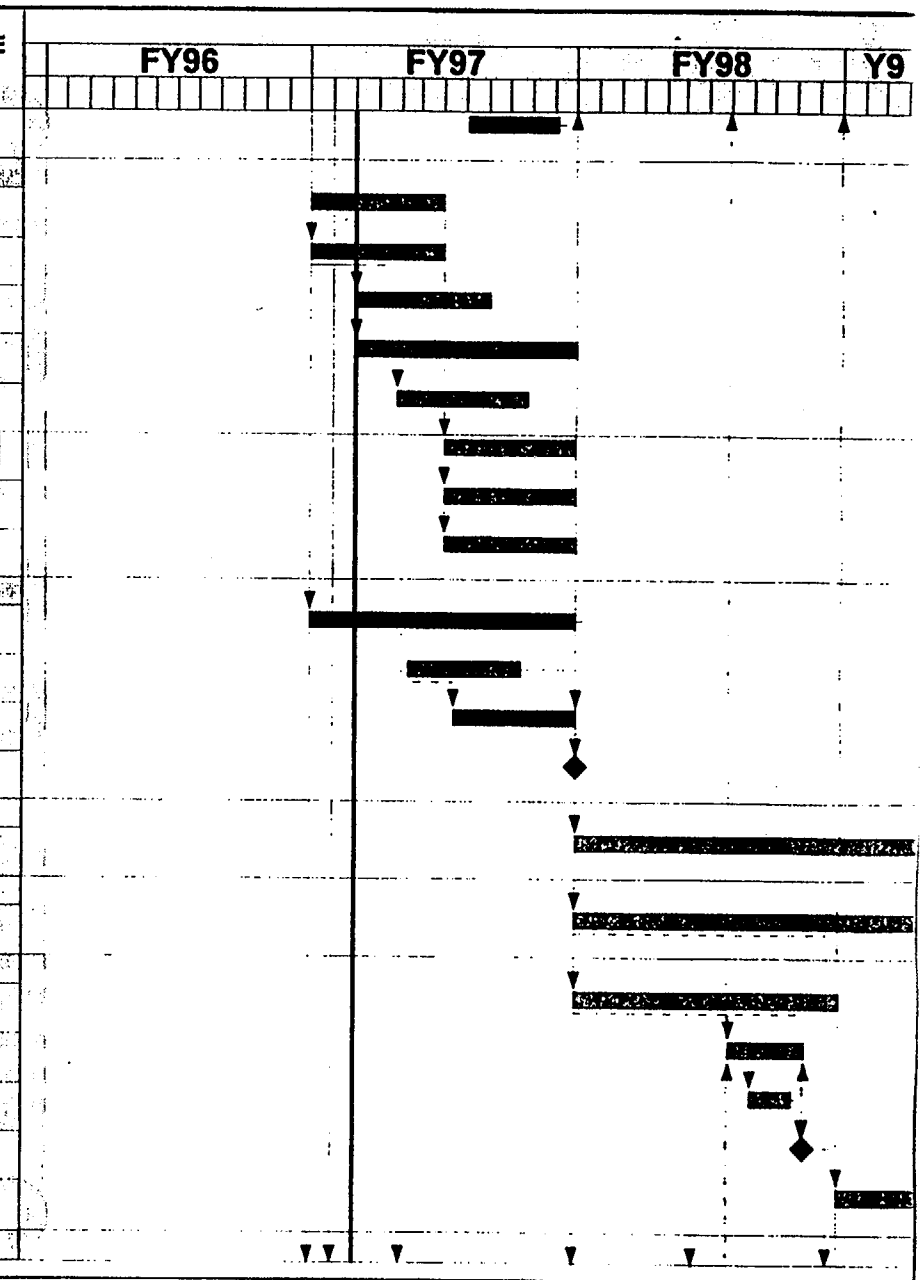
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP2402D4	Prepare Remote Operations Design Guides	86	05MAY97	04SEP97	
TR42FB4: Support Systems Studies - RSD Ph I					
RP2405B1	Waste, Quantity, Mix & Throughput, SE200A	123	01OCT96A	31MAR97	
RP2405B2	Retrievability Study, SE502	123	01OCT96A	31MAR97	
RP2405B3	Seals Study, SE506	128	02DEC96	03JUN97	
RP2405B8	Performance Confirmation, SE050B	251	02DEC96	30SEP97	
RP2405B7	Test Evaluation Plan, SE504	127	27JAN97*	25JUL97	
RP2405B4	Safeguards,Security to SRA/Design, SE500	128	01APR97	30SEP97	
RP2405B5	Waste Package Size Study, SE460	128	01APR97	30SEP97	
RP2405B6	Waste Generated (Disposal) Study, SE436	128	01APR97	30SEP97	
TR42FB5: Subsurface Design Documentation					
RP120715	SDD Development	251	01OCT96A	30SEP97	
RP120700	Develop Radiation Shielding Design Guide	108	11FEB97*	15JUL97	
RP120710	Drift Design (Ref:SNL-Dec1991) Review & Update	118	15APR97*	30SEP97	
RP120M3H	Design Guides	0		30SEP97	M3
TR42GA1: Support SRA - RSD Ph II					
RP7405A1	Support SRA (LOE)	459	01OCT97*	30JUL99	
TR42GA2: Interface Activities - RSD Ph II					
RP74061	Interface Activities (LOE)	455	01OCT97*	26JUL99	
TR42GA3: MGDS Project Engineering - Repository P					
RP1000A	MGDS Project Engineering - Repository Ph-II	251	01OCT97	30SEP98	
RP1000A1	Prepare VA Design Summary Statement	74	01MAY98*	14AUG98	
RP1000A3	Coordinate E&I Support to MGDS VA Review	44	01JUN98*	31JUL98	
RP1000A2	VA Design Summary Statement	0		14AUG98	P3
RP1000B	MGDS Project Engineering - Repository	251	01OCT98	30SEP99	
TR42GA4: Subsurface Interface Activities					



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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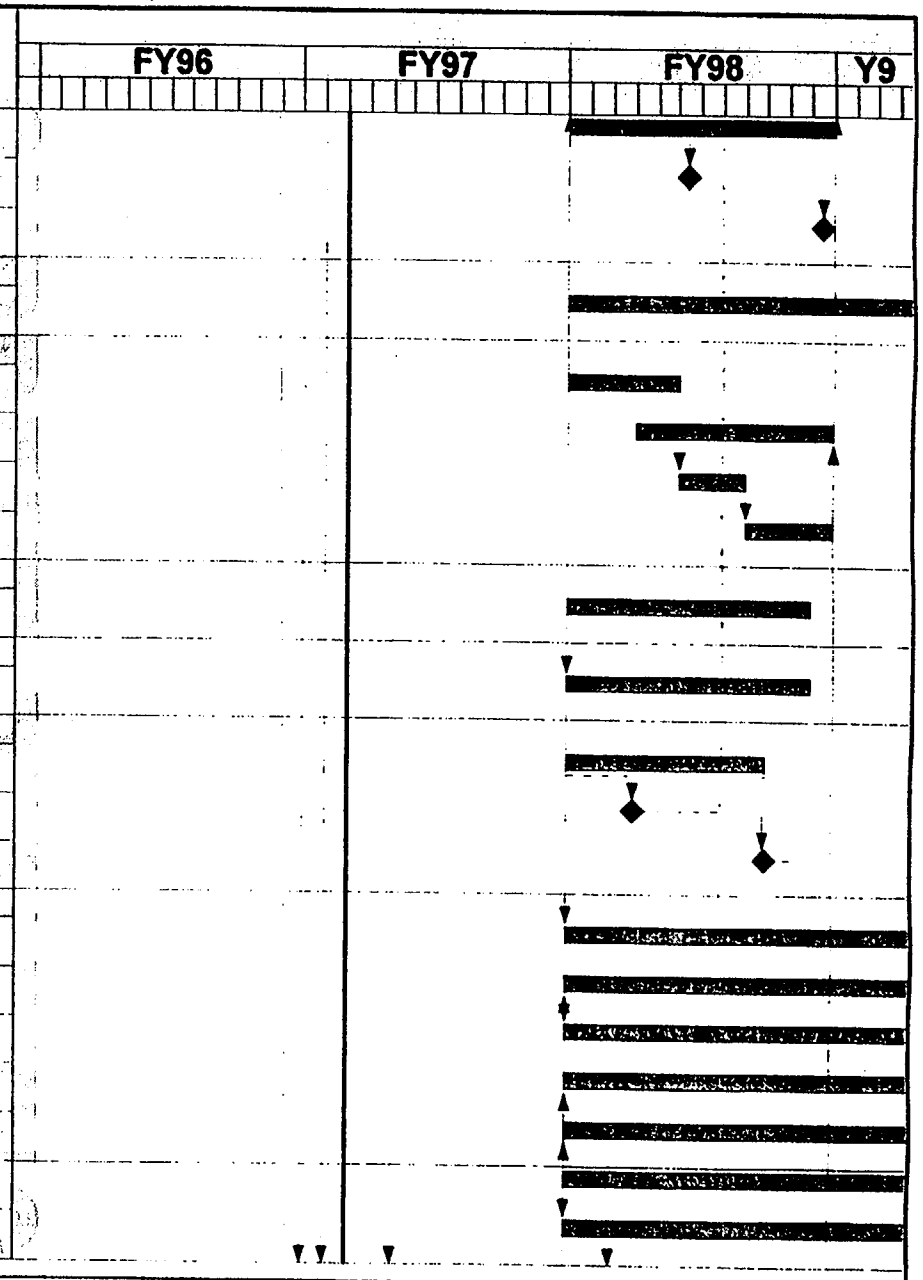
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP74051	Subsurface Interface Activities	251	01OCT97*	30SEP98	
RPPR18M3	Submit Repository Input to PR 18	0		13MAR98*	M4
RPPR19M3	Submit Repository Input to PR19	0		15SEP98*	M4
TR42GA7: Product Production Support					
RP7303F1	Product Production Support	896	01OCT97*	27APR01	
TR42GB2: Subsurface Design Documentation					
RP74064	Prep.Repos.Text & Info.to PISA Chpts 2-11	102	01OCT97*	02MAR98	
RP74062	SDD Development	190	02JAN98	30SEP98	
RP74066	Coord.& Cond.Rev's of Relative PISA Chpts	64	03MAR98	01JUN98	
RP74068	Support Prep. of Plan for Development	85	02JUN98	30SEP98	
TR42GB3: Support Systems Studies - RSD Ph II					
RP7405B1	Decomissioning, SE508	230	01OCT97*	31AUG98	
TR42GB4: Prepare Design Guides - RSD Ph II					
RP7403F1	Prepare Design Guides	230	01OCT97*	31AUG98	
YP4XPP003: PPkg - MG010 - Write Design/Operation					
RPG1402B	Write PISA	186	01OCT97*	29JUN98	
RPG10M3A	Submit Initial Draft Repository PISA Chapters	0		30DEC97*	P3
RPG10M3	Submit Final Repository PISA Chapters	0		29JUN98	P3
YP4XPP024: PPkg - RP170A - Subsurface Design - P					
RP17000	Support SRA - Phase II	455	01OCT97*	26JUL99	
RP17005	Update Subsurface Layout	374	01OCT97*	31MAR99	
RP17017	Design Guide Development - Phase II	455	01OCT97*	26JUL99	
RP17022	Support DBA/Q-List Development	455	01OCT97*	26JUL99	
RP17065	Cost Update	455	01OCT97	26JUL99	
RP17075	Develop Tech. Spec's - Phase II	455	01OCT97*	26JUL99	
RP17098	M & I - SubSurface	455	01OCT97*	26JUL99	



Project Start	01OCT95
Project Finish	01OCT02
Data Date	02DEC96
Plot Date	18DEC96

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YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

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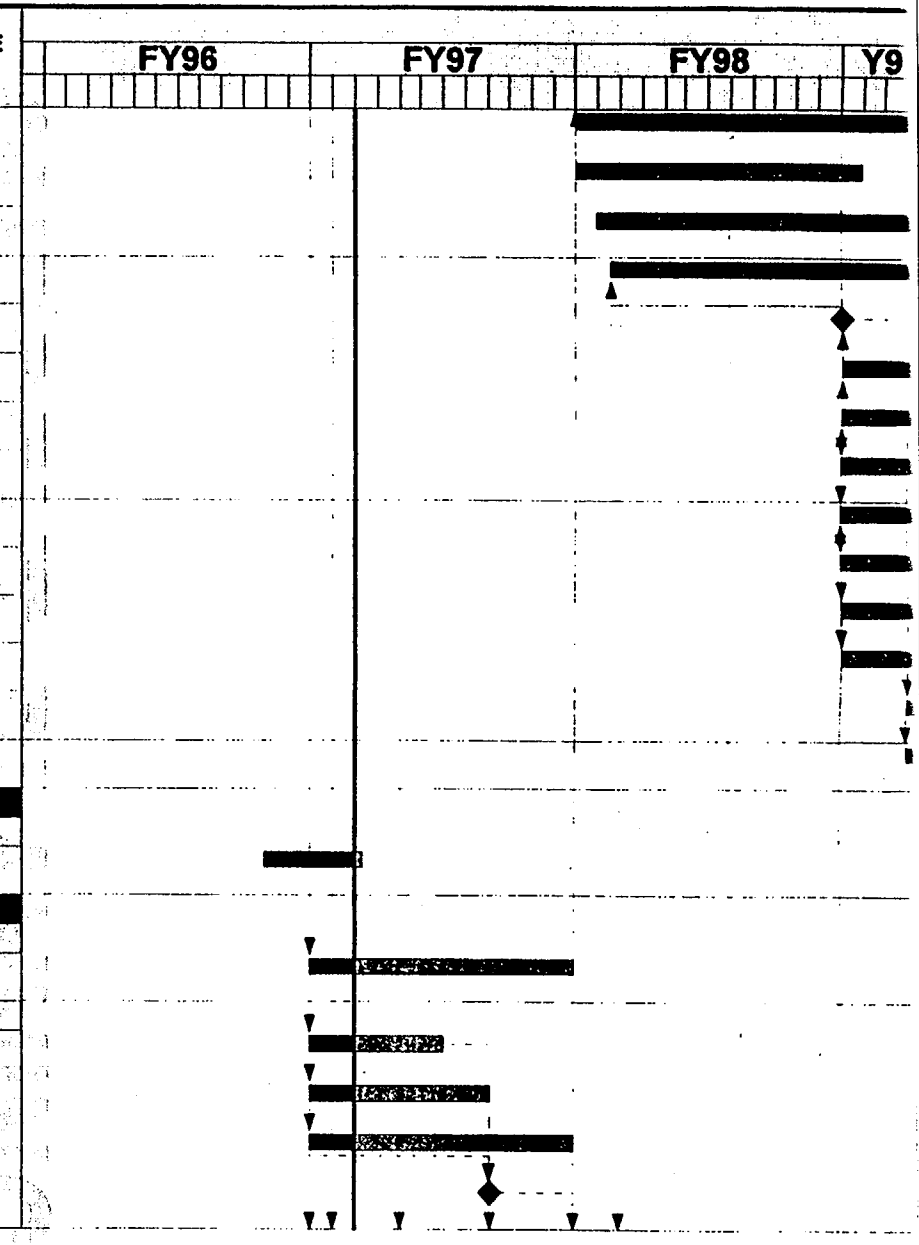
KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP17099	Refine Underground Facility Portion of EB Seg.	455	01OCT97*	26JUL99	
RP17205	Seals/Decommisioning	272	01OCT97*	30OCT98	
RP17003	Interface Acitivities	397	29OCT97	28MAY99	
RP17010	Refine Ground Support Systems	374	17NOV97*	13MAY99	
RP1701M3	Receive PA Input	0		30SEP98*	M4
RP17001	Refine Concept of operations	455	01OCT98	25JUL00	
RP17020	Radiological Safety	896	01OCT98	29APR02	
RP17035	Refine Emergency Systems Designs	146	01OCT98*	03MAY99	
RP17040	Refine Subsurface Waste Handling System Design	156	01OCT98	17MAY99	
RP17045	Update Materials Identification and Characterist	111	01OCT98*	15MAR99	
RP17055	Update Utilities Systems Design	251	01OCT98*	30SEP99	
RP17070	SDD Development - Phase II	455	01OCT98	25JUL00	
RP17015	Refine Retrieval System and Strategy	190	31DEC98*	29SEP99	
RP17025	Finalize HVAC System Configurations	190	31DEC98*	29SEP99	
TR448EB065: Cost Estimating					
TR448604	Prepare TSLCC Data for Report	22	30JUL96A	11DEC96	
TR46EA1: Cost Estimating - RSD Ph I					
RP020720	Cost Estimating - RSD Ph 1	251	01OCT96A	30SEP97	
TR46FB1: Nevada Transportation					
RP020700	Addition of a Fifth Rail Corridor	124	01OCT96A	01APR97	
RP020702	Refine Rail Corridor Alignments	170	01OCT96A	05JUN97	
RP020706	Rapid Response Support	251	01OCT96A	30SEP97	
RP020M3	Nevada Transportation Status Letter	0		05JUN97	M3



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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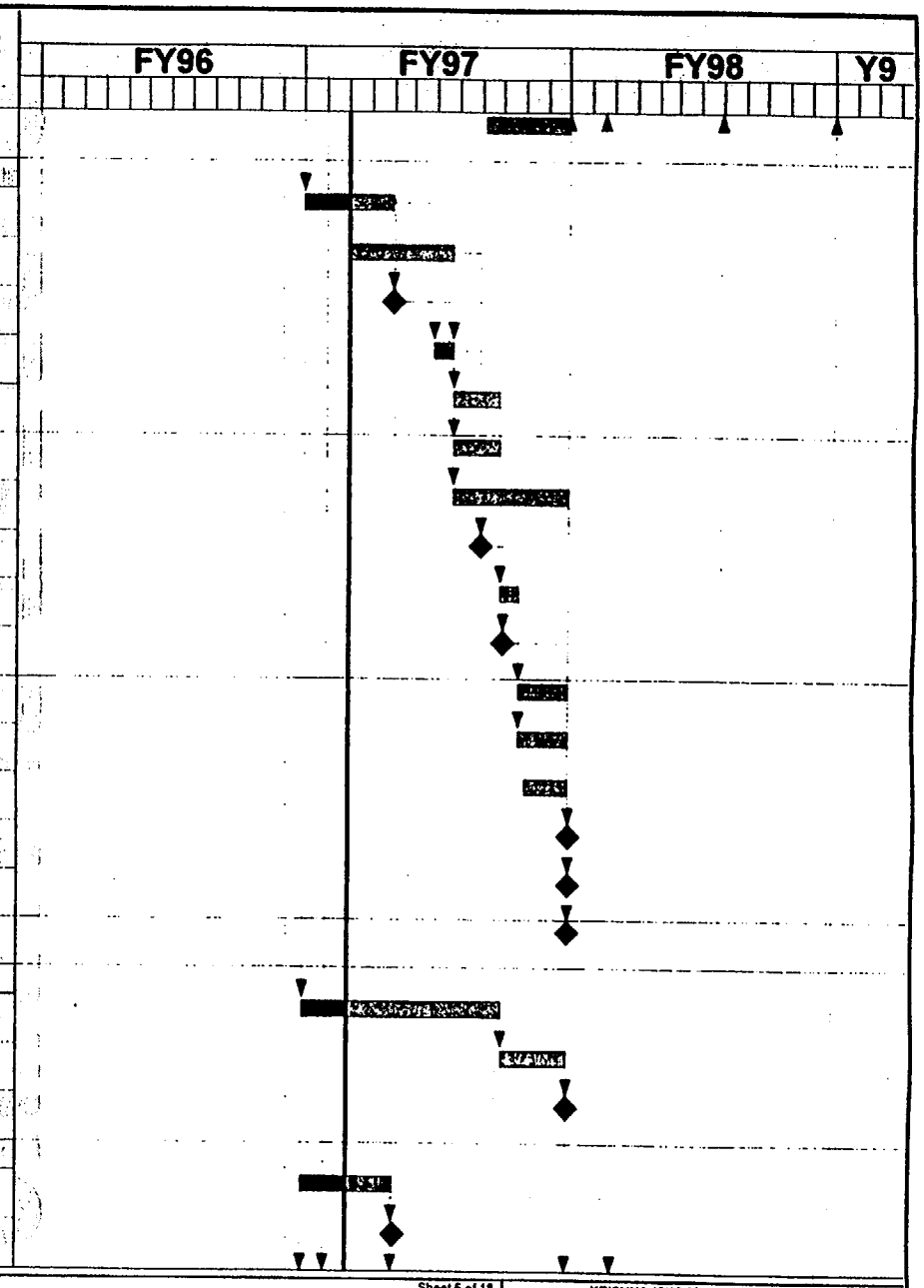
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP020704	Support Alternative Selection	81	06JUN97	30SEP97	
TR46FB2: Update/Integrate Nuclear Fac Design - R					
RP2403A2	Finalize Waste Handling Concept	82	01OCT96A	30JAN97	
RP2403A3	Size Waste Handling Equipment/Areas	100	02DEC96*	23APR97	
RP243AMA	Waste Handling Systems Config.	0		30JAN97	M3
RP2403A4	Size Cask Maintenance Areas	20	27MAR97	23APR97	
RP2403A1	Size Common Support Areas	44	24APR97	25JUN97	
RP2403A5	Size Waste Treatment Equipment/Areas	44	24APR97	25JUN97	
RP2403AA	Complete Design Descriptions	111	24APR97	30SEP97	
RP243AMB	Waste Handling & Cask Maint.	0		30MAY97*	M3
RP2403A6	Develop Initial Integrated Facility Layout	19	26JUN97	23JUL97	
RP243AMC	Secondary Waste Treatment Flow	0		30JUN97*	M3
RP2403A7	Prepare Structural Design	48	24JUL97	30SEP97	
RP2403A8	Prepare HVAC design	48	24JUL97	30SEP97	
RP2403A9	Prepare Space Summary and GAs	42	01AUG97*	30SEP97	
RP243AMD	HVAC Flow Diagrams	0		30SEP97	M3
RP243AME	Nuclear Facilities General Arrangement	0		30SEP97	M3
RP244M3	Provide Design Data to PA - Ph.I	0		30SEP97	M4
TR46FB3: Radiological Safety - RSD Ph I					
RP2402A1	Radiological Safety Design Analysis	187	01OCT96A	30JUN97	
RP2402A2	Waste Handling Operations Dose Assessment	64	01JUL97	30SEP97	
RP242AM	Waste Handling Operations Dose	0		30SEP97	M3
TR46FB4: Operations/Staffing Analysis - RSD Ph I					
RP2402C4	Develop Staffing Estimate	84	01OCT96A	03FEB97	
RP242CM	Operations Staffing Letter Report	0		03FEB97	M3



Project Start 01OCT95
Project Finish 01OCT02
Data Date 02DEC96
Plot Date 18DEC96

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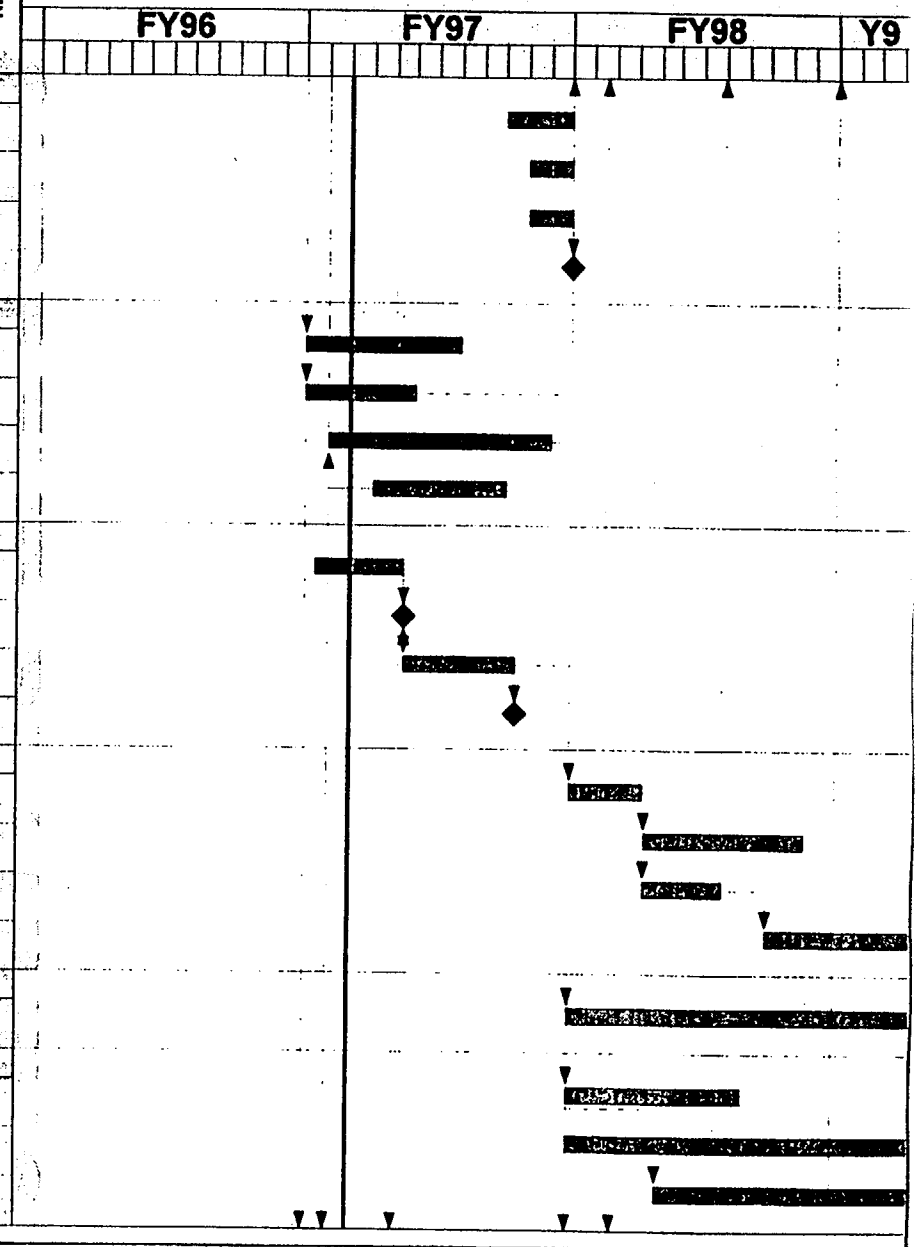
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date | Revision | Checked | Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
TR46FB5: Site Preparation - RSD Ph I					
RP2403C1	Prepare Site Grading & Drainage Plans	64	01JUL97*	30SEP97	
RP2403C2	Prepare Site Operations Description	42	01AUG97*	30SEP97	
RP2403C3	Update Site Layouts	42	01AUG97*	30SEP97	
RP243CM	Repository Surface Site Layout Dwgs	0		30SEP97	M3
TR46FB7: Support DBE/Q-List Development - RSD Ph					
RP2405C1	Internal Events Analysis	146	01OCT96A	01MAY97	
RP2405C3	Aircraft /Missle Crash/Bombing Events Analysis	102	01OCT96A	28FEB97	
RP2405C4	Classification Analysis Support	190	01NOV96A	03SEP97	
RP2405C2	External Events Analysis	127	02JAN97*	01JUL97	
TR46FB8: Develop Alternatives Data for NEPA - RS					
RP24071	Assemble Engineering Files	84	14OCT96A	12FEB97	
RP247M3	Engineering File for NEPA	0		12FEB97	M3
RP24072	Prepare NEPA Data for Alternatives	106	13FEB97	15JUL97	
RP247M3B	Update Engineering File for NEPA	0		15JUL97	M3
TR46GA2: Cost Estimating - RSD Ph II					
RP74041	Prepare Input to '97 TSLCC	67	01OCT97	09JAN98	
RP74042	Support TSLCC Preparation & Reviews	156	12JAN98	20AUG98	
RP74043	Refine Cost Estimates	78	12JAN98	30APR98	
RP74044	Prepare Licensing, Design & Construction Schedul	272	01JUL98*	30JUL99	
TR46GA3: Support NEPA Process - RSD Ph II					
RP74071	Support NEPA Process (LOE)	459	01OCT97*	30JUL99	
TR46GB2: Support DBE/Q-List Development-RSD Ph I					
RP7405C1	Prepare DBE Analysis	165	01OCT97*	29MAY98	
RP7405C3	Support Classification Analyses Preparation	459	01OCT97*	30JUL99	
RP7405C2	Maintain DBE Analysis	376	02FEB98*	29JUL99	



Project Start	01OCT95
Project Finish	01OCT02
Data Date	02DEC96
Plot Date	18DEC96

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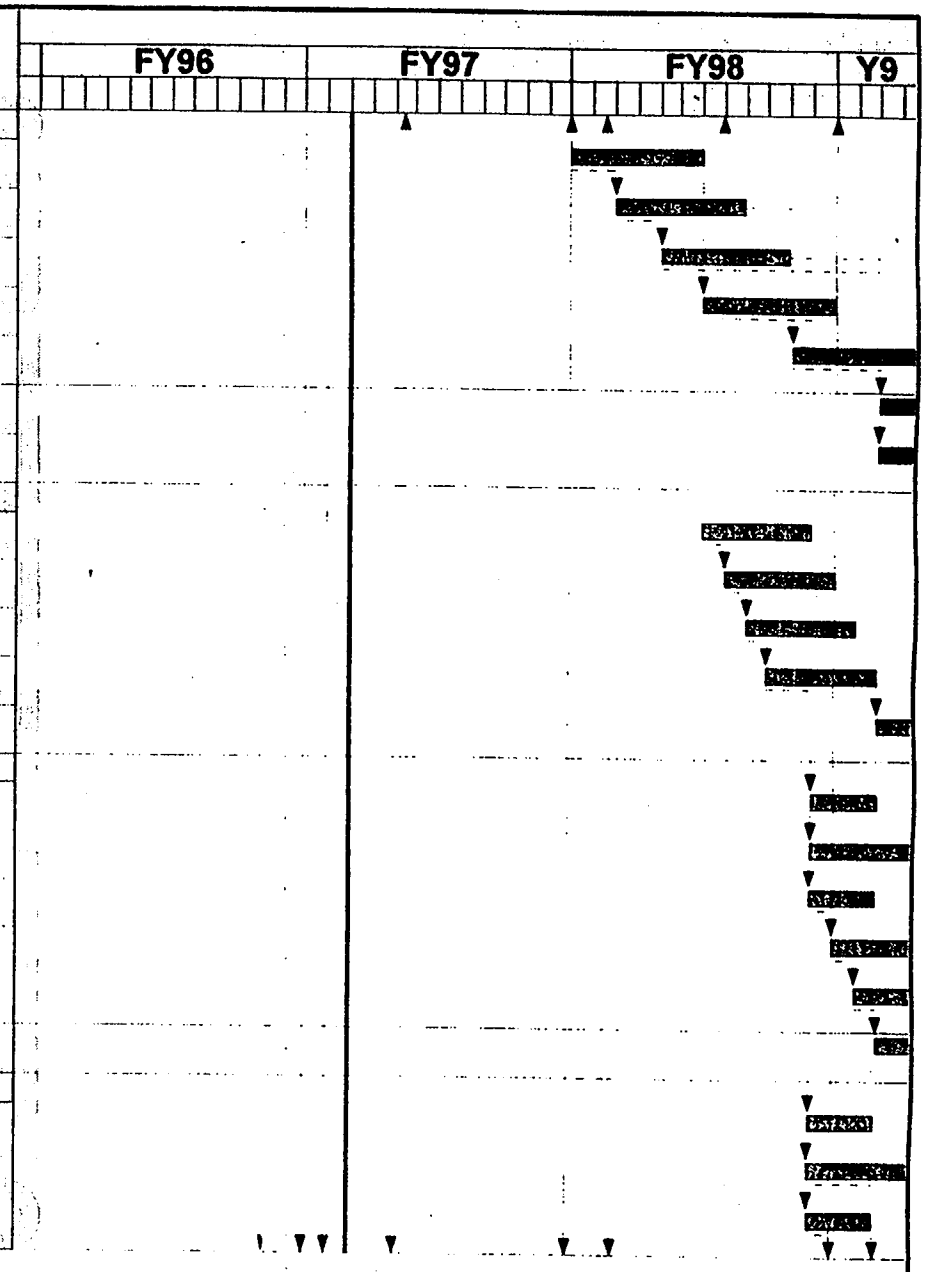
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked, Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
TR46GB3: NOB - Waste Handling Systems Design - R					
RP7402A1	Prepare/Update Configuration Analyses	123	01OCT97*	31MAR98	
RP7402A2	Prepare Flow Diagrams and Descriptions	126	01DEC97*	29MAY98	
RP7402A3	Prepare/Update Component Sizing Analyses	127	02FEB98*	31JUL98	
RP7402A4	Establish Space and Interface System Requirement	128	01APR98	30SEP98	
RP7402A5	Prepare Control Logic Diagrams and Descriptions	123	03AUG98	29JAN99	
RP7402A6	Prepare Outline Specifications and Equipment Dra	126	01DEC98*	28MAY99	
RP7402A7	Complete SDD Input	169	01DEC98	30JUL99	
TR46GB5: NOB - Waste Treatment Systems Design -					
RP7402C1	Prepare/Update Configuration Analyses	107	01APR98*	31AUG98	
RP7402C2	Prepare Flow Diagrams and Descriptions	106	01MAY98*	30SEP98	
RP7402C3	Prepare/Update Component Sizing Analyses	107	01JUN98*	30OCT98	
RP7402C4	Establish Space and Interface System Requirement	103	01JUL98*	30NOV98	
RP7402C5	Prepare Control Logic Diagrams and Descriptions	84	01DEC98	31MAR99	
TR46GB6: NOB - Support Systems Design - RSD Ph I					
RP7402D1	Update the General Arrangements	60	01SEP98*	30NOV98	
RP7402D2	Update the Support Area Designs	102	01SEP98	29JAN99	
RP7402D3	Prepare/Update Configuration Analyses	60	01SEP98	30NOV98	
RP7402D4	Prepare Flow/1-Line Diagrams and Descriptions	311	01OCT98*	30DEC99	
RP7402D5	Prepare/Update Component Sizing Analyses	60	02NOV98*	29JAN99	
RP7402D6	Establish Space and Interface System Requirement	61	01DEC98*	26FEB99	
TR46GB7: NOB - Structure/Piping Design - RSD Ph					
RP7402E1	Update the General Arrangements	60	01SEP98*	30NOV98	
RP7402E2	Update the Support Area Designs	102	01SEP98	29JAN99	
RP7402E3	Prepare/Update Configuration Analyses	60	01SEP98	30NOV98	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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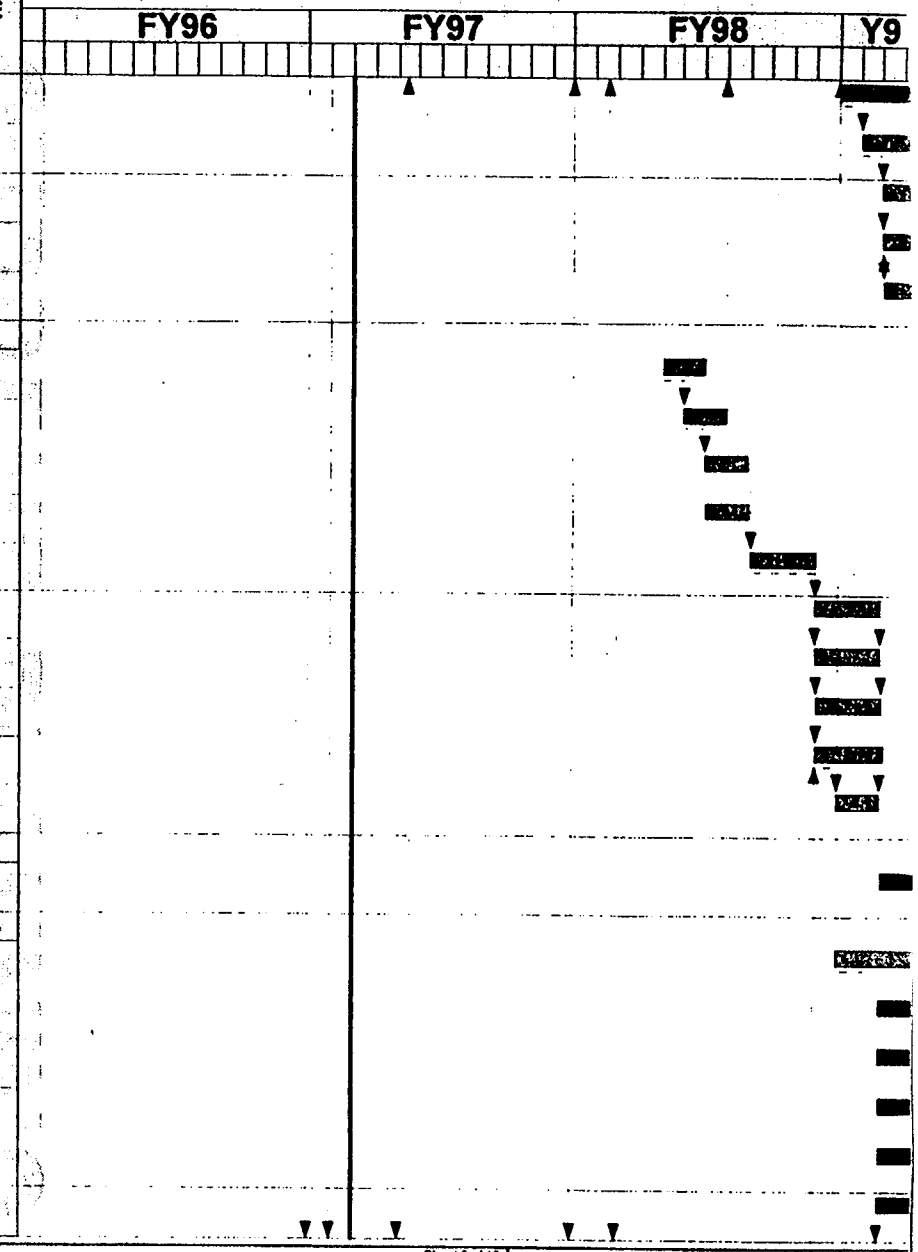
Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP7402E4	Prepare Flow/1-Line Diagrams and Descriptions	311	01OCT98*	30DEC99	
RP7402E5	Prepare/Update Component Sizing Analyses	60	02NOV98*	29JAN99	
RP7402E6	Establish Space and Interface System Requirement	61	01DEC98*	26FEB99	
RP7402E9	Finalize General Arrangements	84	01DEC98*	31MAR99	
RP7402EA	Prepare Control Logic Descriptions	65	01DEC98	04MAR99	
TR46GB8: Carrier Staging Shed Design - RSD Ph II					
RP7403A1	Prepare/Update Configuration Analysis	41	02FEB98*	31MAR98	
RP7403A2	Prepare Flow Diagrams and Descriptions	44	02MAR98*	30APR98	
RP7403A3	Prepare/Update Component Sizing Analyses	42	01APR98*	29MAY98	
RP7403A4	Establish Space and Interface System Requirement	42	01APR98*	29MAY98	
RP7403A5	Prepare Control Logic Diagrams and Descriptions	65	01JUN98	31AUG98	
RP7403A6	Prepare Outline Specifications and Equipment Dra	60	01SEP98	30NOV98	
RP7403A7	Prepare Piping Transpositions	60	01SEP98	30NOV98	
RP7403A8	Prepare Structural Design Analyses	60	01SEP98	30NOV98	
RP7403A9	Prepare General Arrangements	63	01SEP98*	03DEC98	
RP7403AA	Complete SDD Input	39	01OCT98*	30NOV98	
TR46GB9: Site Preparation - RSD Ph II					
RP743CA1	Prepare/Update Site Grading & Drainage Plans	169	01DEC98*	30JUL99	
TR46GBA: Site-Wide Systems Designs - RSD Ph II					
RP743CBA	Maintenance & Supply Systems	169	01OCT98	04JUN99	
RP743CB1	Site Electrical Power System	169	01DEC98*	30JUL99	
RP743CB2	Site Water System	169	01DEC98*	30JUL99	
RP743CB3	Site Communication Systems	169	01DEC98*	30JUL99	
RP743CB4	Site Compressed Air System	169	01DEC98*	30JUL99	
RP743CB5	Security and Safeguards System	169	01DEC98*	30JUL99	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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YUCCA MOUNTAIN PROJECT PLAN
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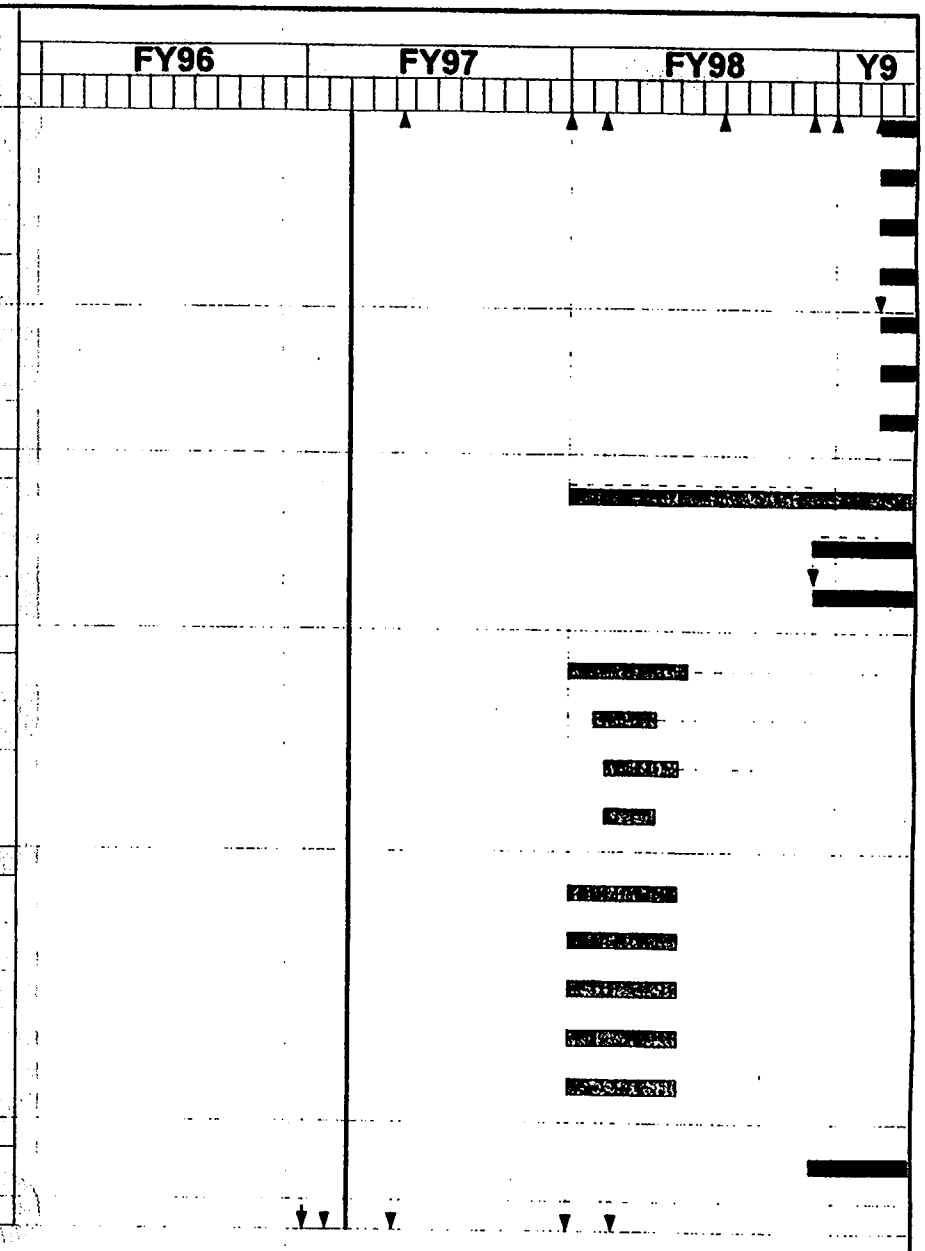
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP743CB6	Emergency Response System	169	01DEC98*	30JUL99	
RP743CB7	Health Safety System	169	01DEC98*	30JUL99	
RP743CB8	Surface Environmental Monitoring System	169	01DEC98*	30JUL99	
RP743CB9	Central Command and Control Operations System	169	01DEC98*	30JUL99	
RP743CBB	Administration System	169	01DEC98*	30JUL99	
RP743CBC	General Site Transportation System	169	01DEC98*	30JUL99	
RP743CBD	Site Gen Hazardous & Non Hazard Waste Disposal	169	01DEC98*	30JUL99	
TR46GBC: Radiological Safety - RSD Ph II					
RP7403D1	Prepare/Update Radiological Safety Design Analys	373	01OCT97*	30MAR99	
RP7403D2	Prepare/Update Operations Dose Assessment	229	01SEP98*	30JUL99	
RP7403D3	Prepare ALARA Analyses	229	01SEP98	30JUL99	
TR46GBD: VA Nuclear Facil Sys Des - RSD Ph II					
RP742VD1	Prepare Analyses	111	01OCT97*	13MAR98	
RP742VD3	Establish Space and Interface System Requirement	60	03NOV97*	30JAN98	
RP742VD2	Prepare Flow/1-Line Diagrams & Descriptions	70	17NOV97*	27FEB98	
RP742VD4	Complete SDD Inputs	47	17NOV97*	26JAN98	
TR46GBE: VA Site Wide Sys & Stur Des - RSD Ph II					
RP743VC1	Utility System Design	101	01OCT97*	27FEB98	
RP743VC2	Safety & Security Systems Design	101	01OCT97*	27FEB98	
RP743VC3	Management & Admin Systems Design	101	01OCT97*	27FEB98	
RP743VC4	Transportation Systems Design	101	01OCT97*	27FEB98	
RP743VC5	Site Generated Harazdous/non Harazd waste Syst	101	01OCT97*	27FEB98	
TR46GBF: Prepare Technical Reports - RSD Ph II					
RP84091	Prepare Uncanistered Fuel Handling Technical Rep	229	01SEP98*	30JUL99	
TR46GBG: Technical Specifications Site Systems -					



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	16DEC96	

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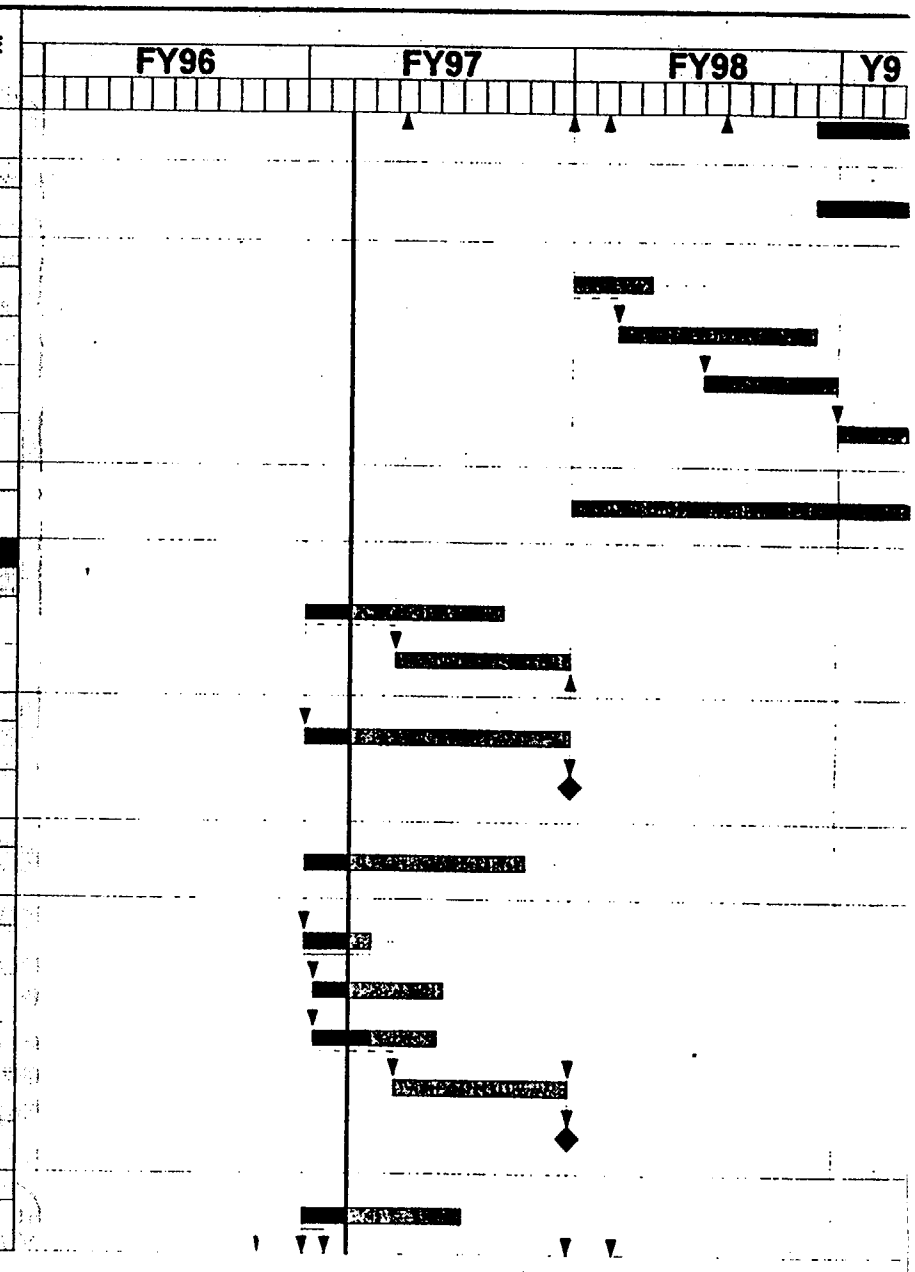
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/16/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP10251	Prepare Technical Specifications for Site System	229	01SEP98*	30JUL99	
TR46GBH: Technical Specifications Nuclear Sys -					
RP10252	Prepare Technical Specifications for Nuclear Sys	229	01SEP98*	30JUL99	
TR46GBK:Off-Site Utilities					
RP46802	Preliminary Load List (Technical Paper)	71	01OCT97*	15JAN98	
RP46800	Electrical Services Analysis	191	01DEC97*	31AUG98	
RP46804	Develop Drawings	128	01APR98*	30SEP98	
RP73031	Off-Site Utilities	645	01OCT98*	27APR01	
TR46GBL :Nevada Transportation Phase II					
RP7403F	Nevada Transportation - Ph II	896	01OCT97*	27APR01	
TR47FAF: Cost Estimating					
RP127705	Prepare Cost Est - Subs Dsn,Constr & Ops (TSLCC)	187	01OCT96A	30JUN97	
RP127700	Prepare Cost Estim for Comparative Dsn Analysis	168	03FEB97*	30SEP97	
TR47FB1: Identify Materials of Construction					
RP500705	Develop Materials of Construction Data Base	251	01OCT96A	30SEP97	
RP1206M3	Deliver Engineering data to PA	0		30SEP97	M4
TR47FB2: Near Field Environment					
RP510710	Near Field Design Analysis	209	01OCT96A	31JUL97	
TR47FB3: Drift Stability Design					
RP506705	Identify Ground Support Materials	61	01OCT96A	31DEC96	
RP506710	Perform Analysis	124	14OCT96A	10APR97	
RP506715	Develop Ground Support Designs	96	14OCT96A	01APR97	
RP506720	Preparation of Drawings	168	03FEB97*	30SEP97	
RP120M3C	Emplacement Drift Stability	0		30SEP97	M3
TR47FB5: Subsurface Development Design					
RP120760	Site Geology & Available Empl. Area	151	01OCT96A	08MAY97	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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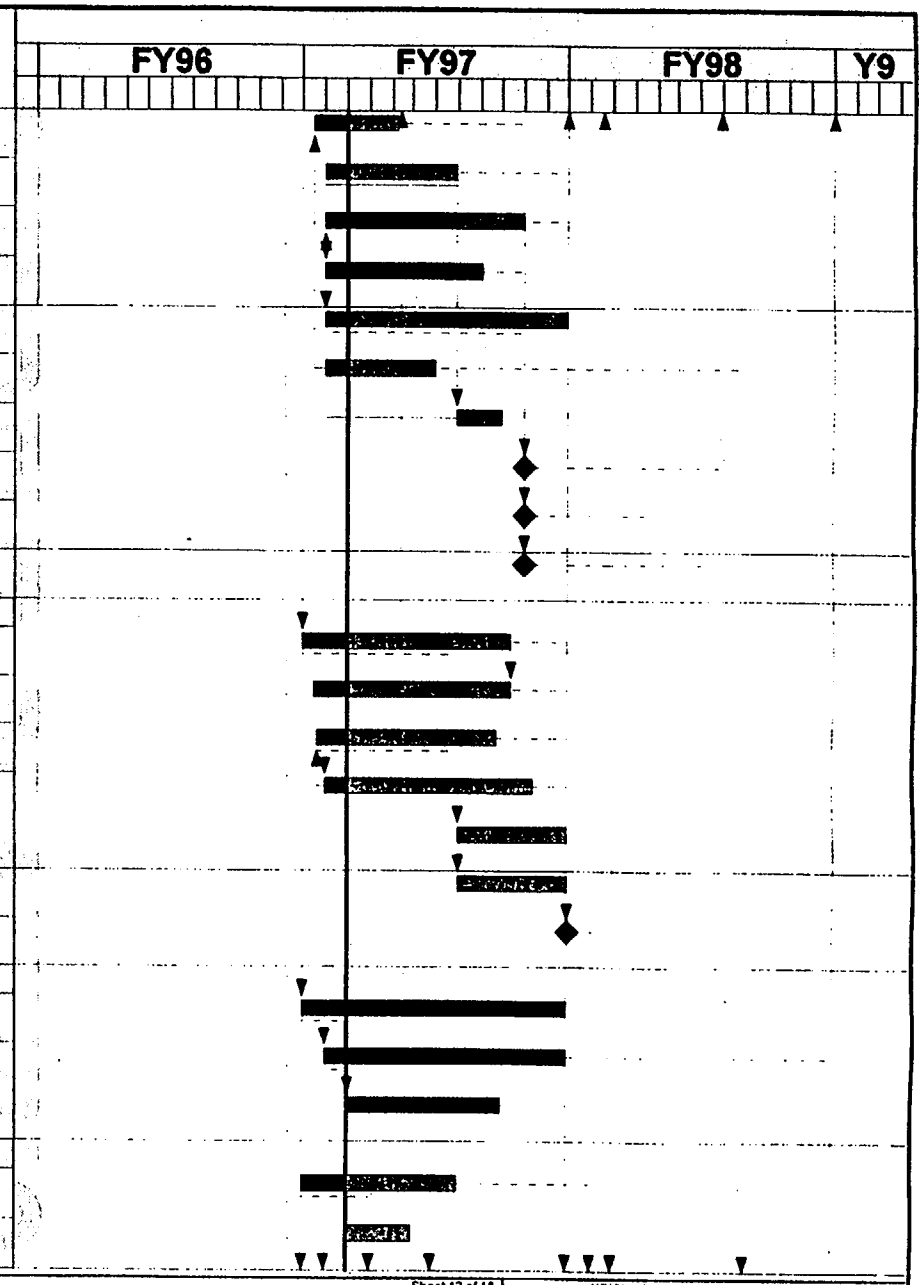
KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP120795	Subsurface Layout Analysis	80	15OCT96A	07FEB97	
RP120755	Subsurf Constr. & Develop Methods	123	01NOV96A	29APR97	
RP120765	SS Layout Coordinate Geometry Analysis	85	01NOV96A	01AUG97	
RP120780	Develop Operations & Constr Schedules	43	01NOV96A	03JUN97	
RP120785	Prepare Drawings	229	01NOV96A	30SEP97	
RP120789	Thermal Load Management Analysis	102	01NOV96A	31MAR97	
RP120775	Define Prelim Constr Equipment List	43	30APR97	30JUN97	
RP120M3	SubSurface Development Design	0		31JUL97*	M3
RP120M3A	Excavation/Emplacement Method & Schedule	0		31JUL97*	M3
RP120M3B	Thermal Load Management	0		01AUG97	M3
TR47FB6: Emplacement System Design					
RP502700	Equipment Design Analysis	196	01OCT96A	14JUL97	
RP502705	Electrification of SS Railed Behicles	187	15OCT96A	14JUL97	
RP502735	Prepare Emplacement System Drawings	168	21OCT96A	24JUN97	
RP502730	RH & C Design Analysis	197	01NOV96A	13AUG97	
RP502715	Equipment Description Document	106	01MAY97*	30SEP97	
RP502740	RH & C Description Document	106	01MAY97*	30SEP97	
RP502M3	Waste Package Handling Equipment	0		30SEP97	M3
TR47FB7: Radiological Design					
RP123752	Computer Code Qualification	251	01OCT96A	30SEP97	
RP123750	Radiation Shielding Analysis	251	01NOV96A	30SEP97	
RP123758	Retrieval Radiation Analysis	147	02DEC96*	30JUN97	
TR47FB9: Subsurface HVAC					
RP122725	Develop/Empl.Vent. Analysis	145	01OCT96A	30APR97	
RP122705	Dust Control Analysis	61	02DEC96*	27FEB97	



Project Start 01OCT95
Project Finish 01OCT02
Data Date 02DEC96
Plot Date 18DEC96

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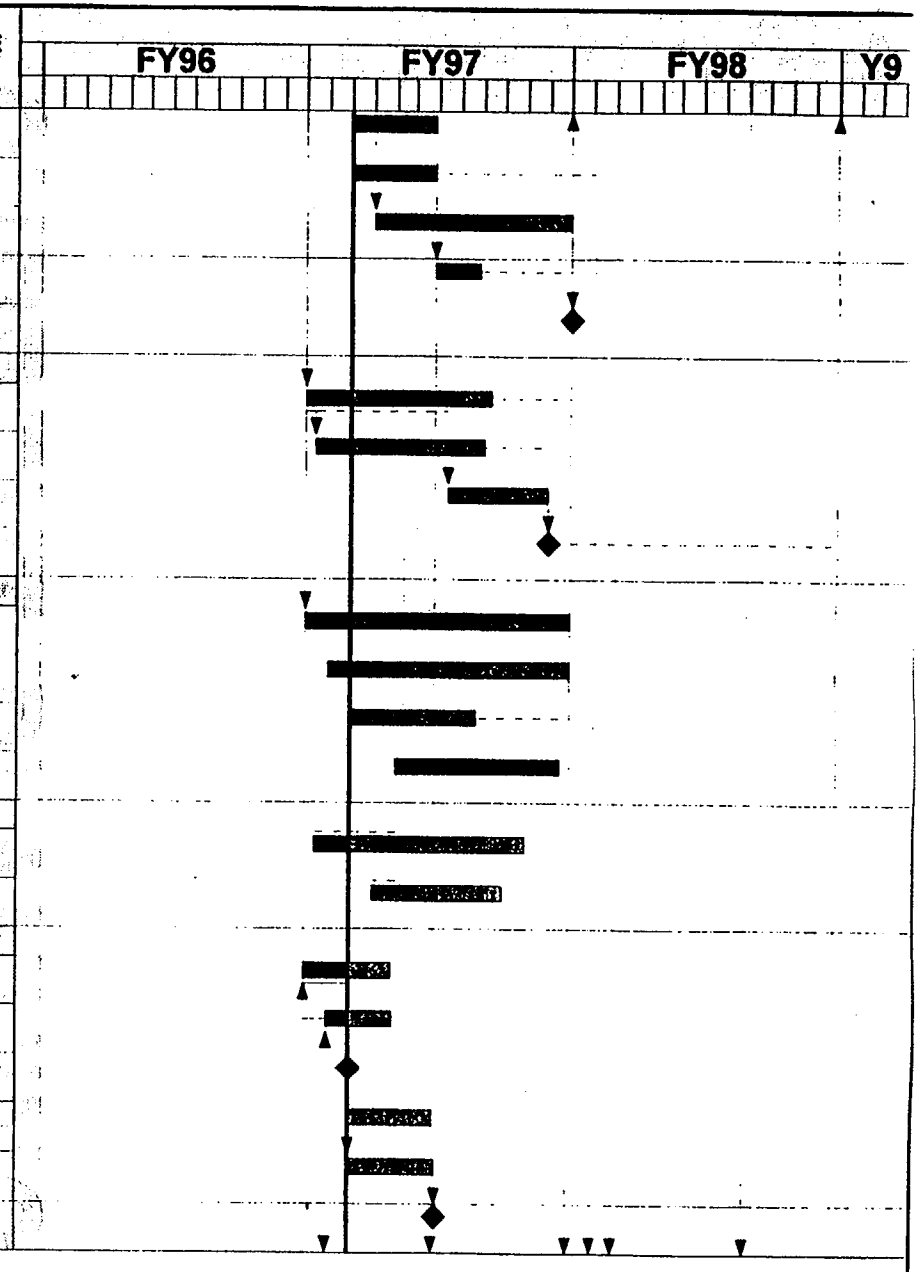
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP122710	Assess Need - Emplacement Side HEPA Filters	80	02DEC96*	26MAR97	
RP122720	Airflow Control Analysis	80	02DEC96*	26MAR97	
RP122745	Prepare Drawings	190	02JAN97*	30SEP97	
RP122730	Develop Prelim List - Prim & Aux Vent. Equipt.	43	27MAR97*	27MAY97	
RP120M3D	Sub Surface HVAC	0		30SEP97	M3
TR47FBA: Retrieval Design					
RP504705	Design Analysis	176	01OCT96A	13JUN97	
RP504710	Equipment / Component Drawings	169	14OCT96A	04JUN97	
RP504715	Equipment Description Document	97	15APR97*	29AUG97	
RP504M3	Retrieval Design & Operation	0		29AUG97	M3
TR47FBD: DBE/Q-List Support					
RP123762	DBE / Scenario Analysis	251	01OCT96A	30SEP97	
RP123768	Evaluate Common Mode Failure / Logic Diagrams	229	01NOV96A	30SEP97	
RP123766	Code Qualification for DBE / PRA	122	02DEC96	23MAY97	
RP123764	Support the Classification Analysis of SSCs	157	03FEB97*	15SEP97	
TR47FBH: NEPA/Environmental Support					
RP128715	Prepare Engineering Files	201	14OCT96A	30JUL97	
RP128705	Prepare Drawings	126	02JAN97*	30JUN97	
TR47FBI: Subsurface EB Segment Design					
RP126710	Define Backfill Strategy - Develop Prelim Design	80	01OCT96A	28JAN97	
RP126700	Emplacement Drift Invert	61	01NOV96A	30JAN97	
RP12065A	Receive PA Input	0	02DEC96*		M4
RP126720	Prepare Prelim Design - WP Support System	80	02DEC96*	26MAR97	
RP126730	Prepare Drawings	83	02DEC96*	31MAR97	
RP120M3E	Subsurface EBS Design	0		31MAR97	M3



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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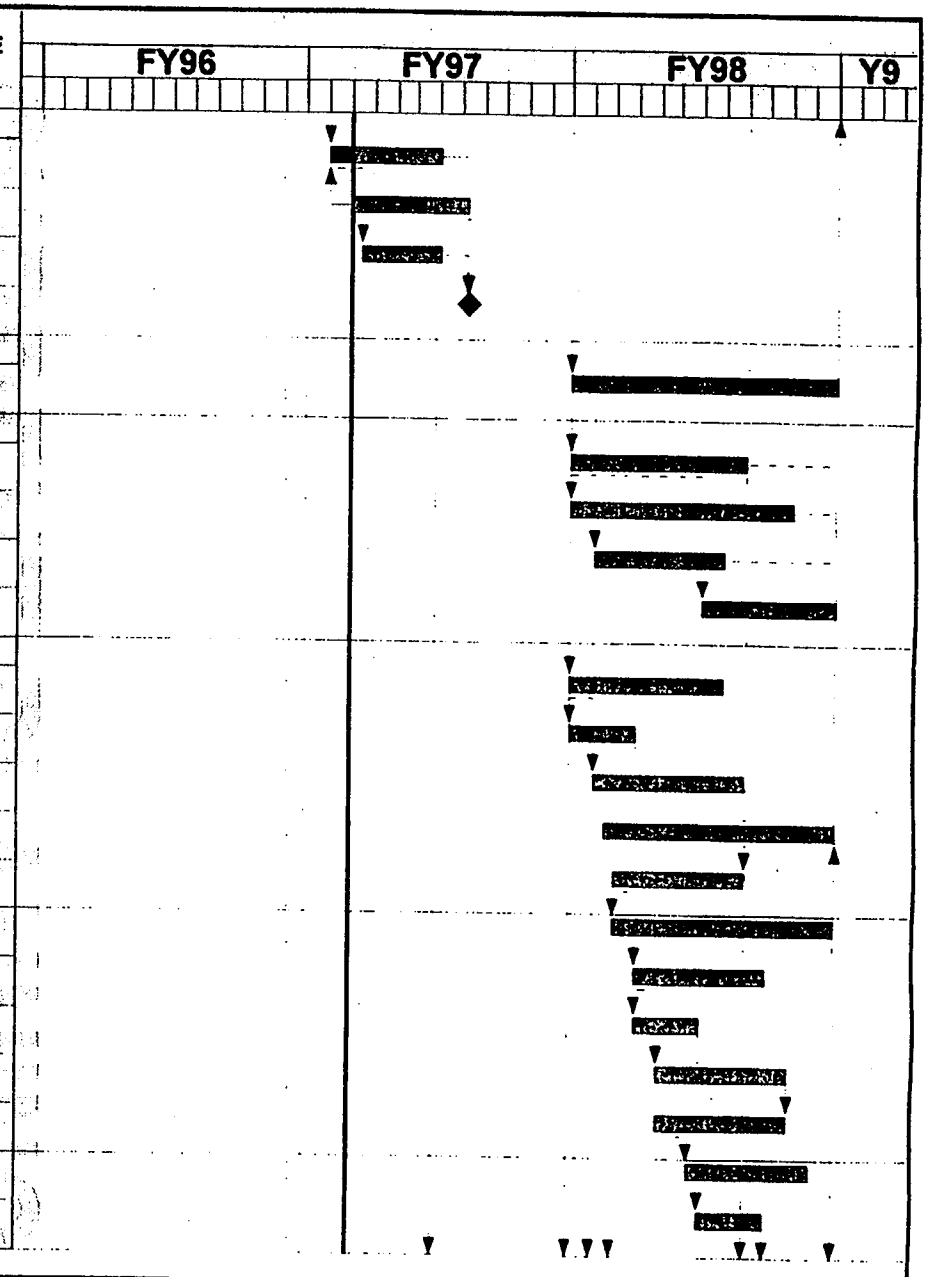
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
TR47FBJ: Performance Confirmation Design					
RP124705	PC Facilities	103	01NOV96A	01APR97	
RP124700	Remote MCC for PC	112	02DEC96*	09MAY97	
RP124715	Prepare PC Drawings	74	16DEC96*	01APR97	
RP120M3F	Performance Confirmation Design	0		09MAY97	M3
TR47GAF: Cost Estimating					
RP8405	Cost Estimating	251	01OCT97*	30SEP98	
TR47GB4: Radiological Safety					
RP17080	Radiation Safety/Shielding Dsgn Anal.Norm.Ops	166	01OCT97	01JUN98	
RP17082	Off-Normal Radiation Safety Evaluation	210	01OCT97	03AUG98	
RP17088	Technical Specifications Development	124	03NOV97*	01MAY98	
RP17084	Radiation Anal./Monitors,Cntrls, Sys, & Comp.	128	01APR98*	30SEP98	
TR47GB6: Emplacement System Design					
RP47600	General Equipment Analysis	145	01OCT97*	30APR98	
RP47620	Perform Analysis 1	61	01OCT97*	31DEC97	
RP47602	WP Transporter Analysis	143	03NOV97*	29MAY98	
RP47628	Develop RH&C Drawings	220	17NOV97*	30SEP98	
RP47604	Gantry Structural Analysis	126	01DEC97*	29MAY98	
RP47614	Develop WP Transporter Drawings	212	01DEC97*	30SEP98	
RP47606	Gantry Carrier Analysis	126	02JAN98*	30JUN98	
RP47622	Perform Analysis 2	62	02JAN98	31MAR98	
RP47608	Isolation Door Analysis	127	02FEB98*	31JUL98	
RP47610	Shadow Shield Analysis	127	02FEB98	31JUL98	
RP47612	Loading Dock Analysis	119	16MAR98*	31AUG98	
RP47624	Perform Analysis 3	64	01APR98	30JUN98	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	16DEC96	

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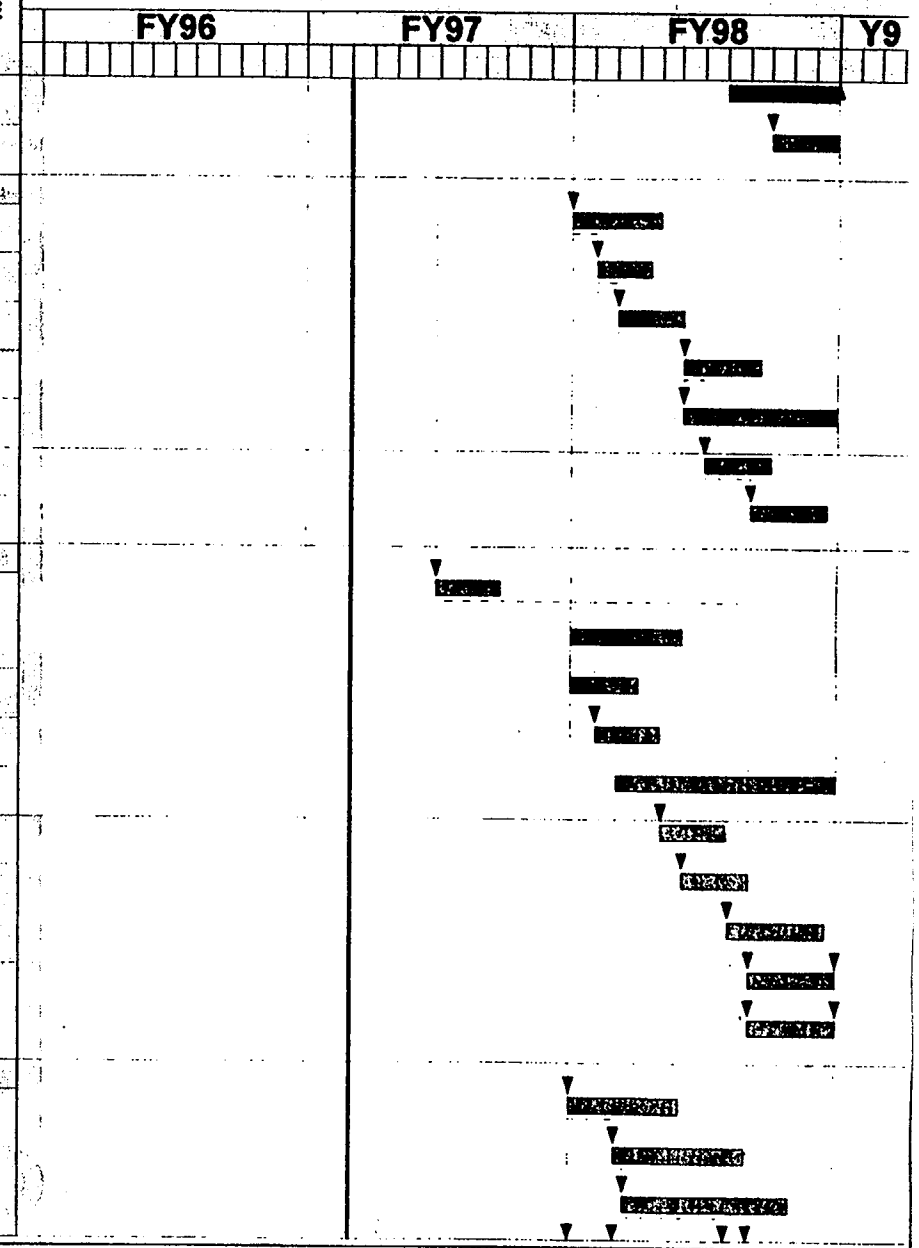
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP47616	Develop Outline Specifications	106	01MAY98	30SEP98	
RP47626	Perform Analysis 4	64	01JUL98	30SEP98	
TR47GB7: Subsurface Utilities					
RP47900	System Evaluation	82	01OCT97*	30JAN98	
RP47902	System Schematics	49	03NOV97*	15JAN98	
RP47904	General Arrangements	63	01DEC97*	02MAR98	
RP47906	Assess Changes to Utility Sys.Requirements	74	03MAR98	15JUN98	
RP47912	Develop Overall Sys.Design Descriptions	149	03MAR98	30SEP98	
RP47908	Devel.System & Major Subsystem P&ID's	64	01APR98*	30JUN98	
RP47910	Develop One-Line Diagrams	75	01JUN98*	15SEP98	
TR47GB8: Subsurface HVAC					
RP47924	HEPA Filter Analysis	63	27MAR97	24JUN97	
RP47928	Backfill & Closure	102	01OCT97*	02MAR98	
RP47934	Design Guide for HVAC Design	61	01OCT97*	31DEC97	
RP47920	Isolation Airlocks	60	03NOV97*	30JAN98	
RP47938	Develop Drawings	212	01DEC97*	30SEP98	
RP47922	Emplac.Drift Vent/Radiation Doors & Regulators	64	02FEB98	01MAY98	
RP47930	Dust Control Monitoring Analysis	64	03MAR98	01JUN98	
RP47926	Ventilation Equipment	94	04MAY98	15SEP98	
RP47932	Emergency Ventilation & Evacuation Plans	85	02JUN98	30SEP98	
RP47936	Develop Outline Specifications	85	02JUN98	30SEP98	
TR47GB9: Retrieval System Design					
RP47500	Retrieval Scenario Analysis	101	01OCT97*	27FEB98	
RP47502	Retrieval Equipment Analysis	126	01DEC97*	29MAY98	
RP47504	Develop Retrieval Drawings	160	15DEC97*	31JUL98	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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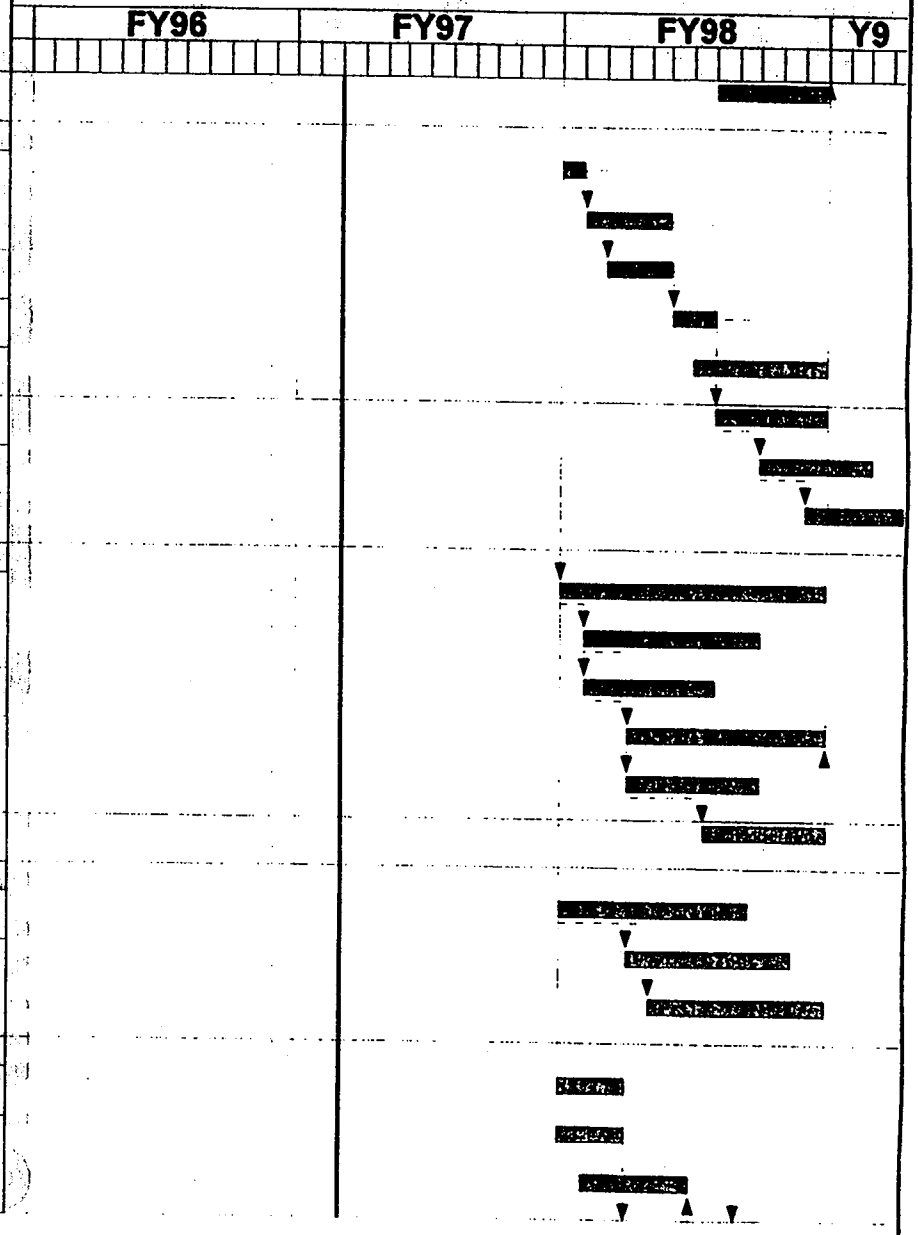
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (S-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP47506	Develop Outline Specifications	106	01MAY98*	30SEP98	
TR47GBA: Seals/Decommisioning					
RP47950	Identify Requirements for Seals	22	01OCT97*	31OCT97	
RP47952	Develop Preliminary Designs	79	03NOV97	27FEB98	
RP47954	Produce Preliminary Drawings for VA	62	01DEC97*	27FEB98	
RP47956	Refine Performance Criteria	44	02MAR98	30APR98	
RP47964	Supt Sys.Engrg./Devel.Reqmts-B'fill,Sealing	128	01APR98*	30SEP98	
RP47958	Reevaluate Seal Designs	106	01MAY98	30SEP98	
RP47960	Refine Proced.Subsurface Closure/Decomm.	104	01JUL98*	01DEC98	
RP47962	Develop Drawings	102	01SEP98*	29JAN99	
TR47GBB: DBE/Q-List Support					
RP123770	Computational Modeling-DBE Consequences	251	01OCT97	30SEP98	
RP123772	DBE Anal.-Equipment Dsgn Anal.Top.Rpt.	166	03NOV97*	01JUL98	
RP123776	Analysis & Writeup in Supt. of PISA	124	03NOV97	01MAY98	
RP123774	Eval.Control & Monit.Sys.-Accident Scenarios	190	02JAN98*	30SEP98	
RP123778	Technical Specifications Development	127	02JAN98*	01JUL98	
RP123780	Develop DBE Design Guide	118	15APR98*	30SEP98	
TR47GBD: Subsurface EB Segment Design					
RP47970	Perform Analysis	176	01OCT97*	15JUN98	
RP47972	Develop Outline Specs	158	02JAN98*	14AUG98	
RP47974	Develop Drawings	169	02FEB98*	30SEP98	
TR47GBE: Ground Control Design					
RP47822	Update Design Inputs	61	01OCT97*	31DEC97	
RP47836	ReEvaluate Approach-Database/Catalog	61	01OCT97*	31DEC97	
RP47824	Update Eval.of Ground Support Materials	101	03NOV97*	31MAR98	



Project Start	01OCT95	Early
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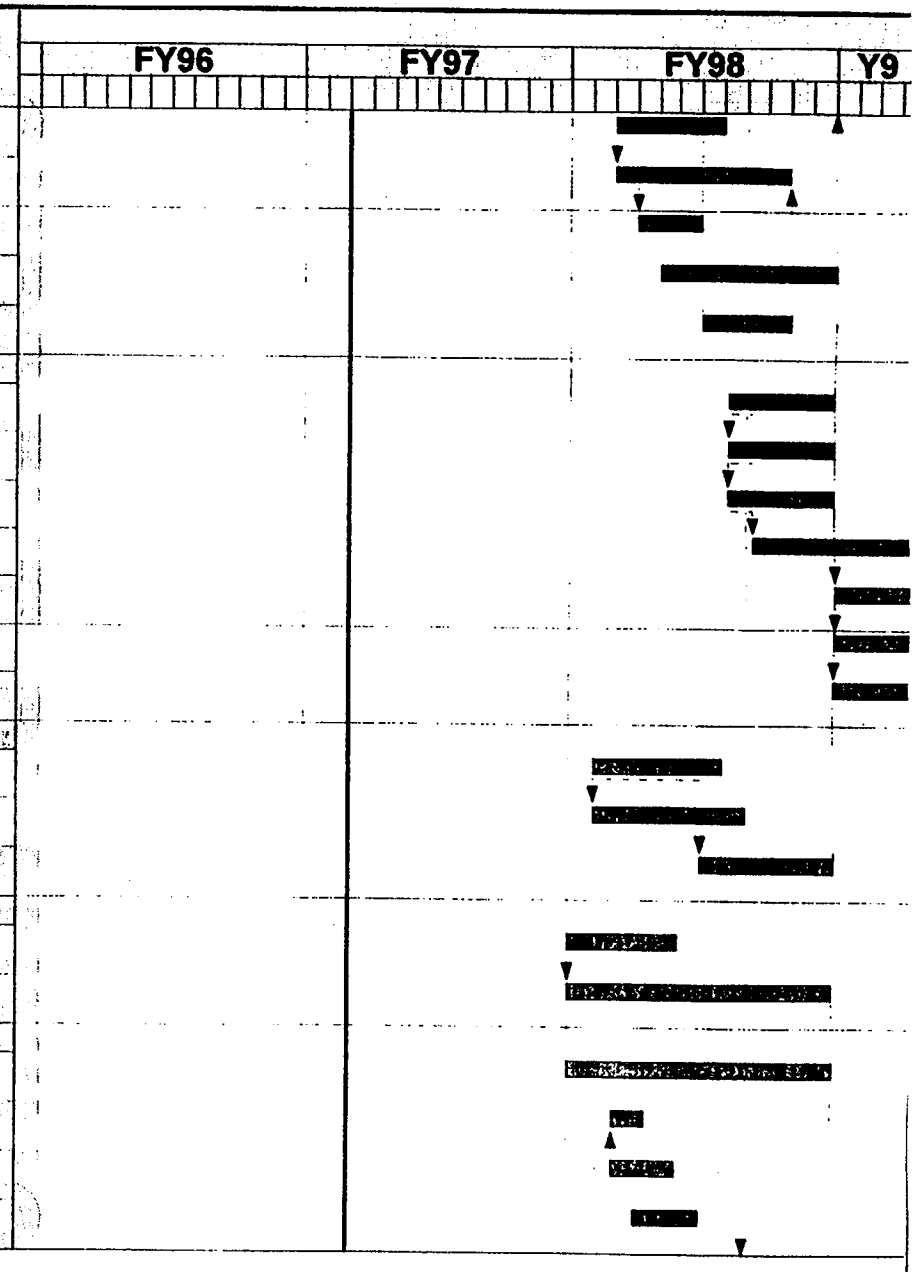
YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
RP47820	Design Guide Development-Seismic	107	01DEC97*	01MAY98	
RP47826	Upgrade Thermal & Thermomechanical Anal.	170	01DEC97	31JUL98	
RP47832	Update List of Materials	62	02JAN98	31MAR98	
RP47830	Prepare Drawings	169	02FEB98*	30SEP98	
RP47834	Update Quantities,Charac,& Est.Service Life Matl	86	01APR98*	31JUL98	
TR47GBF: Excavation/Muck Handling Design					
RP47880	TBM Excavation Analysis	101	08MAY98*	30SEP98	
RP47882	Secondary Excavation Analysis	101	08MAY98	30SEP98	
RP47884	Raise Borer Excavation Analysis	101	08MAY98	30SEP98	
RP47892	Develop Drawings	229	10JUN98*	07MAY99	
RP47886	Secondary Excavation Analysis	129	01OCT98	08APR99	
RP47888	Muck Removal Analysis	129	01OCT98	08APR99	
RP47890	Develop Outline Specifications	150	01OCT98	07MAY99	
TR47GBG: Personnel & Materials Transport					
RP47980	Perform Analyses	124	03NOV97*	01MAY98	
RP47984	Develop Drawings	144	03NOV97	01JUN98	
RP47982	Develop Equipment Description Document	128	01APR98*	30SEP98	
TR47GBH: NEPA/Environmental Support					
RP47870	Prepare New Engineering Files for Review	102	01OCT97*	02MAR98	
RP47872	Rev.& Revise Existing Engineering Files	251	01OCT97	30SEP98	
TR47GBJ: Performance Confirmation Design					
RP47806	Remote Handling & Control	251	01OCT97*	30SEP98	
RP47800	Update PC Parameters	32	01DEC97*	15JAN98	
RP47802	Enhance PC Data Acquisition Strategy	62	01DEC97*	27FEB98	
RP47804	Update PC Provisions into SubSurface Design	63	02JAN98*	01APR98	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	18DEC96	

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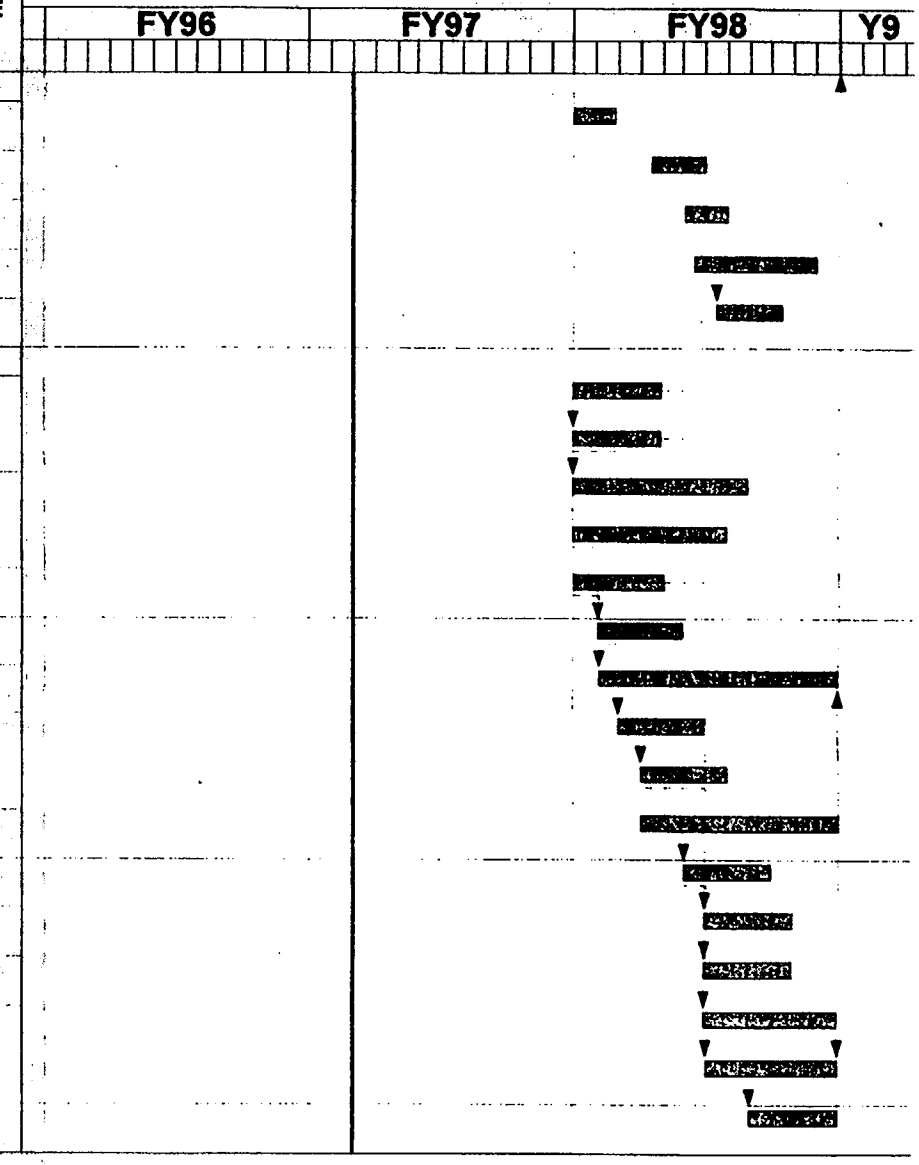
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/18/96 (1600HRS) (5-S315

Date	Revision	Checked	Approved

Activity ID	Activity Description	OD	Early Start	Early Finish	MILE
TR47GBL:Personnel Safety & Warning System Design					
RP47850	Eval.DBE's Devel.-VA Dsgn Activity	39	01OCT97*	26NOV97	
RP47854	Devel.Asses.Plan for Each Event	53	15JAN98*	31MAR98	
RP47856	Develop Recovery Plans	45	02MAR98	01MAY98	
RP47860	Prepare Drawings	120	16MAR98*	01SEP98	
RP47858	Prepare Documentation	64	15APR98*	15JUL98	
TR47GBM:Subsurface Facilities					
RP47404	Drainage System Analysis	82	01OCT97*	30JAN98	
RP47406	Ventilation Openings Design	82	01OCT97	30JAN98	
RP47410	Supplimental Thermal Analyses	165	01OCT97	29MAY98	
RP47418	Shaft Headframes & Hoisting Systems	145	01OCT97*	30APR98	
RP47426	Shaft Design Guide	83	01OCT97*	02FEB98	
RP47420	Subsurface Construction Materials Handling Sys.	79	03NOV97*	27FEB98	
RP47430	Develop Design Drawings	229	04NOV97*	01OCT98	
RP47422	Personnel Support Facilities	84	01DEC97*	31MAR98	
RP47408	Construction & Emplacement Schedules	84	02JAN98*	30APR98	
RP47416	Ventilation Fans,Fan Hsngs,& HEPA Filter Sys.	190	02JAN98*	30SEP98	
RP47402	Coordinate Geometry Calculations	86	02MAR98*	30JUN98	
RP47400	Sursurface Conop Description	86	01APR98*	31JUL98	
RP47414	Waste Emplacement Optimization Analysis	86	01APR98*	31JUL98	
RP47424	Backfill Prep. & Handling Facilities	128	01APR98	30SEP98	
RP47428	Equipment Outline Specifications	128	02APR98*	01OCT98	
RP47412	Draft Thermal Management Plan	86	02JUN98	01OCT98	



Project Start	01OCT95	Early
Project Finish	01OCT02	Progress Bar
Data Date	02DEC96	Critical Activity
Plot Date	16DEC96	

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YUCCA MOUNTAIN PROJECT PLAN
WBS 1.2.4 - REPOSITORY
LONG RANGE PLAN (FY96-FY98)

KRISHNA 12/16/96 (1600HRS) (5-5315

Date	Revision	Checked	Approved

APPENDIX L

E&I INTERFACES

The data contained in this appendix reflects the status of the Yucca Mountain Site Characterization Project as of 3/7/97. Because of the evolving conditions of the Yucca Mountain Site Characterization Project, data in this appendix is changed or updated as necessary. However, this VA Design and Review Plan will not be revised or reissued as a result of data updates. For a current status of the data in this appendix and/or a copy of the current version, contact M. Sellers. For suggested changes to the contents, contact R. Wagner.

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A preliminary checklist of the interfaces between E&I and the YMP and Program areas has been created by reviewing the data in the FY 97/98 planning database. The resulting list of summary accounts that involve interfaces with E&I are provided in the following pages. Headings are provided to identify the area that is interfacing with E&I, and the interface topic that is being addressed. The summary account title and number are provided along with the approximate time of the interface.

E&I DELIVERIES TO PA

KEY 1997 DESIGN DELIVERIES

PERFORMANCE ASSESSMENT

PRECLOSURE

1. Description of Underground Opening Stabilization Techniques

Delivery from Drift Stability Design TR47FB3
Materials: December
Analyses: April
Final Delivery: September

2. Description of Underground HVAC

Delivery from Subsurface HVAC TR47FB9
Analyses & equipment list: April/May
Final Delivery: September

3. Location of Release Sources

Delivery from Subsurface Layout from TR47FB5
Layout Analyses: April

Delivery from Surface DBE work from TR46FB7
Internal Events Analyses: May

Delivery from Subsurface DBE work from TR47FBD
Scenario Analyses: September

Delivery from Site Layout from TR46FB5
Updated Site Layout Drawings: September

Delivery from Nuclear Facilities Design TR46FB2
Initial Layout: July
HVAC Design: September
General Arrangements: September
Provide Data to PA: September

Delivery from Preparation of Design Guides TR42FB3
Source Term Design Guide: April

Delivery from EBS DBEs TR22FB3
EB Seg/WP DBEs: January
WP Off-normal & Accident Scenarios: March

4. Transporter Design and Underground Operations

Delivery from Subsurface Emplacement System Design TR47FB6
Emplacement System Drawings: June
Handling Equipment: September

5. Retrieval Information

Delivery from Subsurface Retrieval Design TR47FBA
Equipment/component drawings: June

Delivery from Retrievability Study TR15FB3
Retrievability Study: May

6. Waste Handling Concepts of Operation

Delivery from Nuclear Facility Design TR46FB2
Waste Handling Concept: January

Delivery from Radiological Safety TR46FB3
Waste Handling Ops Dose Assessments: September

Delivery from Subsurface Development Design TR47FB5
Waste Emplacement Method: July

Delivery from Subsurface Interface Activities TR42FA1
Revise subsurface con-op description: September

Delivery from Subsurface Emplacement System Design TR47FB6
Emplacement System Drawings: June
Handling Equipment: September

Delivery from Con-Ops Account TR12FB3
Updates: March, August, September

Delivery from System Studies TR15FB1
Waste Generated Study: September

7. Waste Receipt Schedule

Delivery from Waste Qty Mix Throughput Study TR15FB2
Report complete: April

Delivery from System Studies TR15FB1
Waste Package Size Study: September

8. Decontamination Waste Streams

Delivery from System Studies TR15FB1
Waste Generated Study: September

Delivery from Nuclear Facility Design TR46FB2
Secondary Waste Treatement Flow: June

9. Hot Cell HVAC

Delivery from Nuclear Facility Design TR46FB2
HVAC Design & Flow Diagrams: September

10. Concepts for Radiation Attenuation

Delivery from Subsurface Design Documentation TR42FB5
Radiation Shielding Design Guide: July

Delivery from Radiological Safety TR46FB3
Radiological Safety Design Analyses: June

Delivery from Radiological Design TR47FB7
Radiation Shielding Analyses: September

POST CLOSURE

Delivery from Requirements Documentation/Verification
CDA Updates: March, September

1. Areal Mass Loading

Delivery from Near Field Environment TR47FB2
Near Field Design Analysis: July

Delivery from Subsurface Development TR47FB5
Thermal Load Management Analysis: April

2. Waste Package Size and Spacing

Delivery from System Studies TR15FB1
Waste Package Size Study: September

Delivery from Subsurface Development TR47FB5
Subsurface Layout Analyses: February
Thermal Load Management Analyses: April

Delivery from EB Segment Parts List TR233FB1
Technical Drawings for CF, UCF, & HLW Disposal Container Components: June

Delivery from UCF Disposal Container Design
Engineering Sketches: September

3. Drift Size and Excavation Method

Delivery from Subsurface Development TR47FB5
Subsurf Construction & Development Methods: April
Excavation Methods: July

Delivery from Drift Stability Design TR47FB3
Ground Support Designs: April

4. Physical and Chemical Characteristics of Inverts/WP Supports

Delivery from Subsurface EB Segment Design TR47FBI
Emplacement Drift Invert: January
WP Support System: February

Delivery from EB Segment Material Design TR22FB4
Performance & Candidate Materials - EBS Input to TSPA: April
EBS/WP Candidate Materials Selection - IOC to PA: April
Materials Selection Analyses: August

Delivery from EB Segment Parts List TR233FB1
Technical Drawings for Drift Invert Components: June

Delivery from WP Support/Invert Design TR233FB6
Invert/support Evaluations: March
Analyses/sketches: September

Delivery from EMCR Preparation TR251FB9
Provide EMCR Rev 1 Draft to PA: January
Issue EMCR Rev. 1: April

5. Chemical Characteristics of Other Emplaced Materials

Delivery from Drift Stability Design TR47FB3
Ground Support Materials: December

Delivery from Materials of Construction TR47FB1
Materials of construction database & Delivery to PA: September

Delivery from Subsurface EB Segment Design TR47FBI
Emplacement Drift Invert: January
WP Support System: February

Delivery from EB Segment Material Design TR22FB4
Performance & Candidate Materials - EBS Input to TSPA: April
EBS/WP Candidate Materials Selection - IOC to PA: April
Materials Selection Analyses: August

Delivery from EB Segment Parts List TR233FB1
Technical Drawings for Drift Invert Components: June

Delivery from WP Support/Invert Design TR233FB6
Invert/support Evaluations: March
Analyses/sketches: September

Delivery from EMCR Preparation TR251FB9
Provide EMCR Rev 1 Draft to PA: January
Issue EMCR Rev. 1: April

Delivery from Basket Material Models TR252FB1
Provide Preliminary Basket Matl Performance Model to PA & Dsgn. July

Delivery from Basket Material Testing TR252FB2
Provide ST Basket Materials Test Data to PA: January
Provide ST Basket Materials Test Data Update to PA: July

Delivery from EB Segment Material Models TR255FB1
Provide Data Input to PA: June

Delivery from EMCR Rev 1TR251FB9
Provide EMCR Rev 1 Draft to PA: January
Issue EMCR Rev. 1: April

6. EBS Enhancement Information, including backfill (if any)

Delivery from Subsurface EB Segment Design TR47FBI
Backfill Strategy - Preliminary Design: January

Delivery from Additional Barrier Design TR233FB5
Engrg Evaluations/Analyses: March
Options and sketches: September

Delivery from EBS Model Abstractions TR251FA2
EBS Model Abstractions: September

Delivery from EMCR Rev 1 TR 251FB9
Provide EMCR Rev 1 Draft to PA: January
Issue EMCR Rev 1: April

7. Ventilation Plans

Delivery from Subsurface HVAC TR47FB9
Analyses & equipment list: April/May
Final Delivery: September

8. Long-term Drift Stability

Delivery from Drift Stability Design TR47FB3
Materials: December
Analyses: April
Final Delivery: September

WP & MATERIALS

WP MILESTONE COLLECTION POINTS

Integrate Performance Assessment TSPA-VA TR22FA3
Provide EBS Input to TSPA-VA: November 96
Integrate with PA: All year - September

1. Thermal Hydrologic and Chemical Characteristics of EBS Materials

Delivery from EBS Model Abstractions TR251FA2
EBS Model Abstractions: September

Delivery from EMCR Rev 1TR251FB9
Provide EMCR Rev 1 Draft to PA: January
Issue EMCR Rev. 1: April

Delivery from Testing of Metal Barriers TR251FBG
Provide 1st Tanks 1st Specimen Results to PA: March

Delivery from Material Thermal Stability TR251FBK
Provide data input to PA: July

Delivery from Basket Material Models TR252FB1
Provide Preliminary Basket Material Performance Model to PA & Design: July

Delivery from Basket Materials Tests TR252FB2
Provide ST Basket Materials Test Data to PA: January
Provide ST Basket Materials Test Data Update to PA: July

Delivery from EB Segment Materials Models TR255FB1
Provide Data Input to PA: June

Delivery from Other EB Segment Materials Tests TR255FB2
Provide Data to PA: August

Delivery from Ceramic Materials Models TR256FB1
Provide Data Input to PA: June

2. Initiation Criteria for Humid Air Corrosion

Delivery from Critical Potential Measurements TR251FB4
Provide Critical Potential Measurements Data to PA: January
Provide Critical Potential Measurements Update Data to PA: August

Delivery from Thermogravimetric Analyses TR251FB5
Provide Thermogravimetric Analysis Data to PA: January
Provide Thermogravimetric Analysis Update to PA: September

Delivery from Relative Humidity Chamber Tests
Provide 1st Batch Report to PA: July

3. Modes of Degradation other than Aqueous or Humid Air

Delivery from Measure MIC TR251FB1
Provide MIC Data Input to PA: January
Provide MIC Data Input Update to PA: July

Delivery from other EB Segment Materials Test TR 255FB2
Provide Data to PA: August

4. Performance Related Basis for Design - Predictive Models and Basis

Delivery from Determination of Near Field Environmental Impact TR22FB5
Submit IOC to PA Describing Degradation Effects on EBS: August

Delivery from Ceramic Material Models TR256FB1
Provide Data Input to PA: June

5. Cathodic Protection Confirmation

6. Technical Basis for Corrosion Degradation Models

Delivery from EMCR Revision 1 TR251FB9 (Collection point for Corrosion Models)
Provide EMCR Rev 1 Draft to PA: January
Issue EMCR Rev 1: April

Delivery from Measure MIC TR251FB1
Provide MIC Data Input to PA: January
Provide MIC Data Input Update to PA: July

Delivery from Critical Potential Measurements TR251FB4
Provide Critical Potential Measurements Data to PA: January
Provide Critical Potential Measurements Update Data to PA: August

Delivery from Thermogravimetric Analyses TR251FB5
Provide Thermogravimetric Analysis Data to PA: January
Provide Thermogravimetric Analysis Update to PA: September

Delivery from Relative Humidity Chamber Tests
Provide 1st Batch Report to PA: July

Delivery from Electrochemical Basis for Galvanic Tests TR251FB7
Critical Potential Test Data to PA: January
Diff Area Ratios Test Update Data to PA: July

Delivery from Electrochemical Potential Testing TR251FBA
Provide Potential Control Data to PA: January
Provide Potential Control Update Data to PA: June

Delivery from Self-Loaded Crack Growth Tests TR251FBC
Provide Data to PA: June

Delivery from Material Degradation Process Models TR251FBE
Provide Crevice Corrosion Data to PA: July
Provide SCC/HE/Prelim. Galv. Corr. Model Data to PA: September

Delivery from Tests of Metal Barriers TR251FBG
Provide 1st Tanks 1st Specimen Results to PA: March

7. Technical Basis for Cladding Degradation Models

Delivery from Cladding Degradation Modeling TR22FB2
Submit IOC to PA: March
Submit DBF Clad & Models: July

Delivery from Cladding Degradation Testing TR241GBC
Perform Degradation Testing: October 97

8. Waste Alteration/Dissolution Rates

Delivery from Waste Form Model Abstractions TR241FA1: September

Delivery from WFCR Preparation TR241FB2 - This is a collection point for Waste Form Models
WFCR Rev 1 Draft to PA: January
WFCR Rev 1 Publication: April

Delivery from Process Model Development TR241FB9
Provide Waste Form Response Model Results to PA: June

Delivery from HLW Glass Modeling TR242FB3
Provide HWG Dissolution Rate Model Results to PA: June

Radionuclide Transport Through Waste Package/EBS

Delivery from Champion Radionuclide Transport Evaluation TR22FAA
Assessment of Work: February
IOC to PA: September

Criticality Evaluations

Delivery from Probablistic Evaluations of WP Design
Criticality Analyses: September

PA DELIVERIES TO E&I

CANDIDATE DELIVERIES FROM PA TO E&I

1. PA Data Needs

Abstraction/Testing of Waste Pkg Degradation TR542FB2
Provide WP w/PA Data Needs: Dec 96

Near Field Environment Models TR543FB2
Provide Facility Design w/Data Needs: Oct 96

2. Support to Systems Engineering

Support to Follow-on Performance Confirmation Study TR541FA2: September 97

Support to Waste Isolation Study TR541FA3: March 97

Support to Requirements Analysis TR541FA4: August 97

Support to Follow-on Performance Confirmation YP5XPP076: September 98

PA Support to Seals Study TR543FA1: April 97

PA Support to DBE's TR543FA2: December 96

PA Support to Classification Analyses TR543FA3: September 97

PA Support to Classification Analyses/Q-List TR543GA1
Initial: December 97
Follow-on: September 98

PA Support to DIE's TR547FA1: September 97

PA Support to DIE's TR547GA1: September 98

3. Key Assumptions

VA Methodology TR541FB2
Identify Key Assumptions: August 97

4. Results Feedback

TSPA-VA Chapter 8 TR541FB3
Present Reference Case Results: January 98
Sensitivity Analysis Results: February 98

Abstraction/Testing of Waste Form Degradation TR542FB1
Cladding Sensitivity: June 97
Waste Form Degradation Sensitivity: September 97

Abstraction/Testing of Waste Package Degradation TR542FB2
Waste Package Degradation Sensitivities: October 97
Cathodic Protection Sensitivities: October 97
Documented Sensitivity Analyses: March 98

Waste Form Mobilization TR542FB3
Colloid Mobilization Sensitivity Analysis: June 97
Waste Form Mobilization Sensitivity Analysis: Oct 97
Radionuclide Solubility Sensitivity Analyses: July 97
Waste Package Scale Thermal-Hydrologic Sensitivity: September 97
Gaseous Radionuclide Mobility Sensitivity Analysis: August 97
EBS Diffusion Sensitivity Analysis: October 97

Preclosure Performance Assessment TR543FB1
Reference Case Results: December 97
Sensitivity/Uncertainty Analyses: February 98

VA Near Field Environmental Models TR543FB2
Provide Sensitivity Analyses to Design: June 98

VA Thermal-Hydrologic Models TR543FB3
Provide Thermal-Hydrologic Sensitivity Analyses to Design: November 97

5. Materials Evaluations

Consequences of Cementitious Materials TR543EB030: December 96

E&I DELIVERIES TO SITE

CANDIDATE DELIVERIES FROM E&I TO SITE

1. E&I Data Needs

Not explicitly identified in current schedule: June 97 and June 98

2. Test Requirements

Performance Confirmation Design TR47GBJ
Update Performance Confirmation Parameters: January 98

Project Management Control Documents TR13FB1
Draft VA Test & Evaluation Plan: August 97
VA Test & Evaluation Plan: September 97

Project Management Control Documents TR13GB1
Final VA Test & Evaluation Plan: September 98

System Studies TR15FB1
Performance Confirmation Report: September 97
Waste Isolation Study: April 97

3. Radiation Transport

Champion Radiation Transport Evaluations TR22FAA
Assessment: September 97

Radionuclide Transport Evaluation TR22GB6: July 99

4. Near Field Feedback

Near Field Environment TR47FB2
Design Analyses: July 97

Test Other EBS Segment Materials TR255FB2
Feedback to Near Field Environment: August 97

Testing Other EBS Materials TR255GB2
Feedback to Near Field Environment: September 98

Near Field Environment Impacts TR22GB7: September 98

Provide Feedback to Near Field Activities TR251GBD
Initial: December 97
Additional: September 98

5. Waste Form Data

WFCR Revision 1 TR241FB2: April 97

WFCR Revision 2 TR241GB2: September 98

6. EB Segment Materials

EB Segment Materials Models TR255FB1
Provide to Site: March 97

System Studies TR15GB1
Materials Study: January 98

Drift Stability Design TR47FB3
Ground Support Materials: December 96

Ground Control Design TR47GBE
Update List of Materials: March 98

SITE DELIVERIES TO E&I

CANDIDATE DELIVERIES FROM SITE TO ENGINEERING

1. Support to System Studies/Reports

Support Systems Engrg OG39FA1D
- Performance Confirmation Follow-on Work: September 97
- Support Perf Confirmation Study: September 97

Suppt Sys Engrg Reports & Studies TR39BFA1D
- Prepare MGDS Cost Est: September 97
- Functional/Reqmnts Analysis - Bin 3: September 97
- Functional/Reqmnts Analysis - Bin 2: September 97
- VA Test & Evaluation Plan: September 97
- Waste Isolation Study: March 97
- Seals Study: May 97
- Performance Confirmation Follow-on: September 97

Support DIE's TR39BFA2D: September 97

Support Systems Engrg TR39BGA1D
- MGDS Cost Estimate: September 98
- PISA Chapter 11 (Conduct of Ops): April 98
- Suppt Funct Analysis/Reqmnts Analysis: September 98
- Finalize Bin 3 Functional Analysis/Reqmnts Analysis: September 98
- Update Bin 2 Functional Analysis/Reqmnts Analysis: September 98
- Develop Technical Performance Measures: September 98
- Support ESF Operations: September 98
- ESF/MGDS Transition Plan: September 98
- E-W Drift Design Reqmnts Study: January 98
- ESF Con-Ops: September 98
- Decommissioning Study: September 98

FY98 DIE Suppt TR39BGA2D: September 98

INO3X Account YP3XPP001
- Systems Engineering Support: September 01
- Systems Functional Analysis/Reqmnts Analysis: September 00
- VA & LA Test & Evaluation Plan: March 02

2. Seismic Design Inputs

Conduct Prob Seismic Hazard 0G32836FB1
Seismic Workshops: December 96
Final Report: August 97
Seismic Design Inputs: January 98

Seismic Design Inputs TR32835FB1: September 97

3. Thermal Test Data/Results

Drift Scale Test Forecast TR3E2FB23: July 97

Drift Scale Test TR3E2GB53 - Heating Phase
Initial Results: July 98

Single Heater Test TR3E2FB2 & TR3E2FB4
Heat-Up Results: July 97
Cool Down Data: February 98

Final Analysis of Single Heater Test Data TR3E2GB1: June 98

Laboratory Thermal Properties TR32711FB1
Thermal Test Report: June 97

Large Block Test Results TR3E1FB2: August 97

Near Field Environment YP3XPP058
Large Block Test Report: April 98

4. Geologic/Stratigraphic Information & Models

3-D Model TR395FB1: February 97

PISA Chapter 2.3 OG39BFB1
Geology/Stratigraphy/Seismology/Structure Description: May 97

Geologic System Description (PISA)TR39BFB1
Draft Description: July 97
Final Description: September 97
Geologic Map OG32212FB2: August 97

3-D Site Model TR395FA1: September 97

Confirmatory Update to 3-D Site Model TR395GA1: August 98

5. Rock Properties/Rock Mechanics

Rock Properties TR32222FB1
Draft Description: April 97
Final Description: September 97

T-M Changes in Rock Mass TR3C3FB8: September 97

6. DBE Inputs

Volcanism Data Base TR32711FB1: September 97

Maximum Flood Information

Adverse Weather Projections

7. Near Field Environment Conditions

Infiltration Model OG33121FB1: March 97

Moisture Monitoring Data in ESF OG33124FBA & TR33124FBA: March 97

Moisture Monitoring Data in ESF OG33124FBD & TR33124FBB: September 97

Chlorine-36 Data TR33122FBA: March 97

Chlorine-36 Data in ESF TR33122FBB
Data: February 97
Interpretation of Results: August 97

Percolation Flux Across Repository OG33124FB8 & TR33124FB8: August 97

Percolation Flux Across Repository TR33124GB8: September 98

NFER, Rev 1, Vol 1 TR3C5FB9: August 97

Chemical Composition of Water Before Contact w/Repository TR3C1FB1: December 96

Post-Emplacement Seepage Into Repository TR3C2FB5: July 97

Near Field/AZ Models TR3C5FB54
Report: November 97

Chemical Composition of Water Contacting Waste Packages & Waste Form TR3C5FBB
1st Batch Results: January 97
2nd Batch Results: May 97
3rd Batch Results: September 97

Near Field Environment Description (PISA) TR39BFB5: June 98

Mechanics of Waste Package Environment TR3C3GB8: September 98

Chemistry/Minerology of Waste Package Environment TR3C5GB5: September 98

Large Block Test Results TR3E1FB2: August 97

Near Field Environment YP3XPP058
Confirmatory Testing for Near Field Environment: November 98
Large Block Test Report: April 98

8. Waste Form-Related Testing/Data: EBS Transport

Neptunium Solubility TR34131FB4: June 97

Sorption & Transport TR34122FB2
Man Made Mat'ls & Rn Transport: September 97

Rn Solubility Studies TR34131FBB
Model & Experiment Data: September 97
Updates: September 98

Concentrations of Rns Leaving EBS TR3A31FB3
Limit Rn Solubility in EBS: December 96
Corrosion Transport Experiments: March 97
Transport Through Cement Materials Experiments: June 97

Models for Waste Package Hydrological TR3C2FB6: July 97

9. Materials-Related Testing/Data

Sorption & Transport TR34122FB2
Man Made Mat'ls & Rn Transport: September 97

Effects of Man-Made Mat'ls TR3C5GBB
Initial: February 98
Update: September 98

SITE DELIVERIES TO LA

E&I TO LICENSING CANDIDATE DELIVERIES
(Non-PISA Deliveries)

1. License Application Plan

Project Management Documents TR13FB1
Draft Compliance Plan: September 97

Project Management Documents TR13GB1
Draft Compliance Plan Update: June 98
Final Compliance Plan: September 98

MGDS Project Engineering TR42FA6
Draft LA Design & Review Plan: September 97

2. Progress Report Support

Systems Integration TR142FA1
PR 16 Input: March 97
PR 17 Input: September 97

Systems Integration TR142GA2
PR 18 Input: March 98
PR 19 Input: September 98
PR 20 Input: March 99

PR Preparation - LLNL TR21FA8: September 97

WPD PR Support TR21GA3: July 01

WPM PR Support TR21GA8: September 98

Subsurface Interface Activities TR42FA1
Input to PR 16: March 97
Input to PR 17: September 97

Subsurface Interface Activities TR42GA4
Input to PR 18: March 98
Input to PR 19: September 98
Input to PR 20: March 99

3. Miscellaneous

System Studies TR15GB1
LA Strategy for DOE SNF: April 98

Integrate Development of Licensing & Regulatory Documents TR22FA2: September 97

Regulatory & Licensing TR22GA7- Phase II
Integrate Regulatory Documents: July 99

E&I DELIVERIES TO PISA

CANDIDATE DELIVERIES FROM E&I TO THE PISA

General Logic Flow for PISA Deliveries:

In general, the logic flow for capturing engineering information in the PISA should begin with the work scope in each applicable engineering area with deliveries to preparation of System Description Document (SDD) sections. The SDD sections should then deliver the appropriate PISA chapter generation. The PISA chapter generation should then deliver the PISA itself in the 1.2.5 area.

1. General PISA Deliveries

SDD's (Deliver to each Design-related PISA Chapter) TR12GB1
Bin 3 SDD's: March 98
Bin 2 SDD's: June 98

Develop SDD's TR12FB1
Bin 1 SDD's: September 97

Systems Integration TR142GA2
Integrate SDD's: September 97

Systems Integration TR142GA2
Integrate SDD's: Oct 97 - July 99

Support PISA Development TR142GA4
Chapter Integration: Apr 98
Reviews & Completion: August 98

Subsurface Design Documents TR42GB2
Text & Info to PISA Chapters (2 - 11): March 98
Reviews: June 98

2. PISA Chapter 1

Support PISA Chapter 1 TR142GA3
Support Development Tasks: April 98

3. PISA Chapter 3

Classification Analyses/Q-List TR1BFB2
CA/Q-List: September 97

Classification Analyses/Q-List TR1BGB1
CA/Q-List: March 98

Support DBE/Q-List TR46GB2
Q-List Analyses: Oct 97 - July 99

DBE/Q-List TR47GBB: Oct 97 - Sept 98

4. PISA Chapter 4

Waste Qty, Mix, & Throughput Study TR15FB2: April 97

System Study Support to SRA/Design TR15GB1
Decommissiongy Study: April 98 - October 98

Support System Studies TR42GB3
Decommisioning: Oct 97 - August 98

Nuclear Facility System Description TR46GBD
Analyses: March 98
Diagrams: Feb 98

Emplacement System TR47GB6
Selected Drwgs: May 98

Subsurface Utilities TR47GB7
Evaluations, General Arrangements, Schematics: March 98

Subsurface HVAC TR47GB8
Airlocks, Closure, HVAC: March 98

Ground Control TR47GBE
Materials: March 98
Design Inputs: December 97

Subsurface Facilities TR47GBM
Drainage: Jan 98
Ventilation Openings: January 98

5. PISA Chapter 5

CF Disposal Design TR231GB1
Design Basis Canister Selection: March 98

System Studies TR15FB1
Waste Package Size Study: September 97

HLS Disposal Container Design TR232GB1
Thermal, Structural, Criticality Evaluations: April 98

EBS Design Probabalistic Evaluations TR233GB7
EBS Performance: Oct 97 - July 99
Probabalistic Evaluations: Oct 97 - July 99

Criticality Analysis Methods TR233GB9: Dec 97

UCF Disposal Container Design TR233GBB
Complete Development: July 98
Design Basis SNF: July 98

Probabalistic Design Methods TR233GBC
Criticality Methodology: August 98

Disposal Criticality Analysis Consequence Model TR233GBE: March 98
Material Test Data (TR251GB1, TR251GB4, TR251GB5, TR251GB7, TR251GBA, TR251GBC): June 98

Material Degradation Models TR251GBE
Crevice Corrosion Model: May 98

Phase Stability TR251GBK
Accelerated Aging Studies: Jan 98

WPD Input to PISA Ch 5 & 6 TR22GB1
Draft: Feb 98
Final: June 98

WPM Input to PISA Ch 5 & 6 TR22GB2
Draft: Feb 98
Final: June 98

.6. PISA Chapter 6

System Studies TR15FB1
Seals Study: May 97

WP Supports/Inverts TR233GB1
Evaluations: April 98

Additional Barriers TR233GB2
Drawing Input Sheets: March 98

Testing of Other EBS Materials TR255GB2
Thermal/Chemical Tests: Oct 97 - Sep 98

Subsurface EBS Design TR47GBD
Analyses: June 98

EBS Parts Lists, Drwgs, & Specs TR233GB4: Oct 97 - July 99

Seals/Decommissioning Drwgs & Designs TR47GBA: Feb 98

Subsurface Facilities TR47GBM
Shaft Design Guide: Feb 98

WPD Input to PISA Ch 5 & 6 TR22GB1
Draft: Feb 98
Final: June 98

WPM Input to PISA Ch 5 & 6 TR22GB2
Draft: Feb 98
Final: June 98

7. PISA Chapter 7

DBE Definition & Analysis TR1BFB1
DBE's: September 97

PISA Chapter 7 TR1BGA2
Chapter Development: September 98

DBE Definition & Analyses TR1BGB2: March 98

EBS DBE Evals TR233GB5
Integrate DBE's: Oct 97 - July 99

DBE/Q-List TR47GBB: Oct 97 - Sep 98

System Studies TR15GB1
LA Strategy for DOE SNF: April 98

DOE-Owned SNF Design TR233GB3
Evaluations: Oct 97 - July 99

Waste Form Data (TR241GB3, TR241GB4, TR241GB5, TR241GB6, TR241GBA, TR241GBB, TR242GB1, TR242GB2): May, June 98

Glass Process Models TR242GB3
Dissolution Rates: June 98

DBE/Q-List TR46GB2
DBE Analyses: May 98

8. PISA Chapter 9

System Studies TR15FB1
Waste Generated Study: September 97

Site-Wide Systems & Structures TR46GBE
Site Generated Waste: Feb 98

9. PISA Chapter 10

DEB Def'n & Analysis TR1BFB1
DBE's: September 97

DBE Def'n & Analysis TR1BGB2: March 98

DBE/Q-List TR46GB2
DBE Analyses: May 98

Rad Safety Design TR46GBC: Oct 97 - July 99

Radiation Safety TR47GB4: Oct 97 - April 01

DBE/Q-List TR47GBB: Oct 97 - September 98

10. PISA Chapter 11

MGDS Con-Ops TR12FB3
MGDS Con-Ops Revision 1: September 97

MGDS Con-Ops TR12GA2
Maintain MGDS Con-Ops: September 98

Support PISA Chapter 11 Development TR142GB1
Complete PISA Chapter 11: April 98

Safeguards & Security TR18FB2: June 97

Subsurface Interface Activities TR42FA1
Revise Con-Ops: September 97

Waste Handling Systems TR46GB3
Update Config Analyses: Mar 98

Personnel Safety & Warning System TR47GBL
Immediate Response Plans: Feb 98

VA Site-Wide Systems & Structures TR46GBE
Safety & Security Systems: February 98

LA DELIVERIES TO E&I

LICENSING TO E&I CANDIDATE DELIVERIES

1. Criticality Topical Report

TR524FA1 Support Draft Criticality Control Topical Report: August 97

TR524FA2 Final Topical Report: September 97

TR524GA4 Final Topical Report: August 98

2. LA Plan Delivery to Guide Future Design

Prepare LA Plan TR524FB5
Submit Final LA Plan: September 97

License Application Plan YP5XPP089
Finalized: August 98

3. RIB & Genesis Data

RIB Maintenance TR533FB1
Waste Package Materials Properties Data in RIB: July 97
Waste Form Characteristics Data in RIB: August 97

Genesis Data Base Maintenance TR536FB1
EBS Phase I Data: September 97
Repository Phase I Data: September 97

MGDS COST ESTIMATES

MGDS COST ESTIMATE CANDIDATE DELIVERIES
(Non-TSLCC)

1. Systems Engineering Cost Estimate Preparation

MGDS Cost Estimate TR17FB1
All Activities (MGDS Cost Estimate)

MGDS Cost Analysis TR17GB1
Cost Models Update: Dec 97
Draft Estimate: Jan 98
Update VA Estimates: Feb 98
Final VA Estimates: Jul 98
Final VA Cost Report & Documentation: August 98

2. Waste Package/Engineered Barrier System Cost Estimate Support

EBS Cost Estimate TR234GB4: September 98

Complete Phase I EBS Cost Estimate TR234FB1
Prepare & Provide Cost Estimates: September 97
Obtain Vendor Verification of Material Prices: June 97
Cost of Pedestals & Supports: September 97
Closure Weld Costs: September 97

3. Repository Cost Estimate Support

Cost Estimating TR46FA1: September 97

Cost Estimating TR46GA2
Refine Cost Estimates: Mar 98 - July 99

Cost Estimating TR47FAF: September 97

Cost Estimating TR47GAF: September 98

4. Non-E&I Cost Estimating Support

Support Systems Engineering Reports & Studies TR39BFA1D
Prepare MGDS Cost Estimate: September 97

Support Systems Engineering TR39BGA1D
MGDS Cost Estimate: September 98

E&I DELIVERIES TO NEPA

CANDIDATE DELIVERIES FROM E&I TO NEPA

1. Transportation Work

Transportation Studies (All Activities) TR15FB4: September 97

System Studies TR15FB1
- Rapid Response: September 98
- NV Transportation Policies: November 98
- DOE Transportation Meetings: November 98

Nevada Transportation (All Activities) TR46FB1: September 97

Nevada Transportation TR46GBL: April 01

2. Safeguards & Security, Land Withdrawal

MGDS Safeguards & Security (Land Withdrawal) TR18FB2: June 97

3. Waste Package Support

Integrate Environmental Assessment Performance TR22FA1: September 97

Environmental Assessment Performance TR22GA5: July 99

4. Repository Support

Develop Alternatives Data for NEPA TR46FB8
- Engineering Files: March 97
- Engineering Files Updates: August 97

Support NEPA Process TR46GA3: July 99

NEPA/Environmental Support TR47FBH
- Drawings: June 97
- Engineering Files: August 97

NEPA/Environmental Support TR47GBH
- New Engineering Files: March 98
- Revised Engineering Files: September 98

E&I PROGRAM INTERFACES

PROGRAM INTERFACES WITH WASTE PACKAGE

1. Data provided by Waste Package Development to Nuclear Regulatory Commission
   Summary Account TR233FB9
   WP150A3 Disposal Criticality Technical Report, Rev. 01 — 04Sep97

   Summary Account TR233GBD
   WP100A3 Disposal Criticality Topical Report — 30Aug98

2. Data received by Waste Package Development from various utilities and labs
   Summary Account TR233FBE
   WP233A04 Acquire benchmark critical data — 29Nov96
   WP233A18 Acquire CRC data - BWR & PWR Fuel — 14Mar97

   Summary Account TR233FBF
   WP233A51 Acquire chemical assay data — 30Jun97

3. Data received by Waste Package Development from various materials suppliers
   Summary Account TR234FB1
   WP234704 Obtain verification of materials prices used in cost estimates — 27Jun97

4. Data provided by Waste Package Materials on waste form materials testing andmodeling to the Nuclear Waste Technical Review Board, the Nuclear Regulatory Commission, the State of Nevada, and other users
   Summary Account TR241FB2
   WP0035A3 Issue Waste Form Characteristics Report Revision 1 — 03Apr97

5. Data provided by Waste Package Materials on engineered materials testing and modeling to the Nuclear Waste Technical Review Board, the Nuclear Regulatory Commission, the State of Nevada, and other users
   Summary Account TR251FB9
   WP15A10 Issue Engineered Materials Characteristics Report Revision 1 — 01Apr97

CURRENT PLANNING
CURRENT PLANNING

E&I PROGRAM INTERFACES

PROGRAM INTERFACES WITH SYSTEMS ENGINEERING

1. Data received by Systems Engineering from DOE/EM, RSA, or WAST/PM&A

Summary Account TR12FB2: Requirements Documentation/Verification

SE422700 Maintain Top Level Requirements	01Oct96, 30Sep97
SE422705 Update CDA	01Oct96, 31Mar97
SE422710 Update CDA	01Apr97, 30Sep97

Inputs from Program Level Requirements if changes occur.
Flow down of requirements from higher level documents controlled by WAST or PM&A.
Newly imposed requirements on MGDS system such as Other Waste Forms, Waste Acceptance modifications, etc.
Modification of Assumptions to accommodate newly imposed constraints (if any) on system.
Potential Originating Organizations: DOE/EM, RSA, or WAST/PM&A
Data Flow: EM or RSA to WAST/PM&A to DOE/YMP to M&O or WAST/PM&A to M&O/WM&I to M&O/MGDS
Feedback to EM or RSA or WAST/PM&A regarding our assumptions might occur through DOE/YMP to WAST/PM&A.

CURRENT PLANNING - MAY CHANGE

Summary Account TR12FB3: MGDS Concept of Operations

SE400705 Update Con-Ops	02Dec96, 31Mar97
SE400715 Update Con-Ops	01Jul97, 29Aug97

Inputs from WAST/PM&A or RSA could impact receipt of waste operations or waste processing operations. EM inputs (if any) could affect waste receipt/waste handling operations, requiring adjustments to Con-Ops Document.
Data Flow: EM or RSA to WAST/PM&A to DOE/YMP to M&O, or WAST/PM&A to M&O/WM&I to M&O/MGDS

Summary Account TR12GA1 MGDS Concept of Operations (Post VA)

SE400800 Maintain MGDS Con-Ops	30Nov98, 29Nov99

See TR12FB3. Sufficient time to better plan interface points and need dates (if any) to support LA Design.

Summary Account TR12FB1 Develop System Description Documents

SE405705 Develop Bin 3 SDD's	01Oct96, 30Sep97
SE410700 Develop Bin 2 SDD's	07Apr97, 30Sep97
SE415700 Develop Bin 1 SDD's	01Apr97, 30Sep97

Inputs (if any) from DOE/EM, WAST/PM&A, or RSA could impact receipt of waste operations, waste processing operations, or waste receipt/waste handling operations, requiring adjustments to requirements sections in SDD documents.
Data Flow: EM or RSA to WAST/PM&A to DOE/YMP to M&O, or WAST/PM&A to M&O/WM&I to M&O/MGDS; Data may flow through MGDS RD to SDDs.

Summary Account TR12GB1 System Description Documents (may not support VA)

SE520805 Requirements Analysis (Bin 3 SDDs) 02Jan98, 31Mar98
SE521805 Requirements Analysis (Bin 2 SDDs) 01Apr98, 30Jun98
SE522810 Requirements Analysis (Bin 1 SDDs) 01Jul98, 30Sep98
See TR12FB1. Sufficient time to better plan interface points and need dates (if any) to support LA Design.

Summary Account TR12GB2 Requirements Documents (probably does not support VA)
SE580800 Maintain CDA Document 01Oct97, 30Sep98
SE530800 Maintain Top Level Requirements Docs 26Nov97, 25Nov98
See TR12FB2.

Summary Account TR13GB1: Program and Project Management & Controls (non-VA)
SE450800 Prepare Draft Risk Management Plan 28Jan98, 21Sep98

Input from EM, RSA, and WAST/PM&A in risk areas associated with inputs which will affect MGDS Design or License Application. Plan will lay out approach for managing risks critical to MGDS success.
Data Flow: EM or RSA to WAST/PM&A to DOE/YMP to M&O, or WAST/PM&A to M&O/WM&I to M&O/MGDS

Summary Account TR15FB1: System Studies Support to SRA/Design
SE460700 Research for Waste Package Size Study 27May97, 25Jun97
Input desired from WAST, DOE/EM, Navy on sizes/shapes of commercial (odd-ball) and other waste forms and any potential impacts to WP Size.

Summary Account TR15FB4: Transportation Studies
SE456750 System Support to NEPA Activity (non-VA) 01Oct96, 30Sep97
Support to Engineering Files and EIS Transportation work. Input from EM, Navy, Other Waste Orgs via DOE/WAST/PM&A or DOE/YMP to M&O. Output goes to Jason via DOE/YMP.

SE457705 Transportation Support (Rapid Response) 01Oct96, 30Sep97
Inputs from RSA via DOE/WAST/PM&A and DOE/YMP necessary to support interface definitions (in 1.2.1.6). Inputs from Transportation portion of WAST with potential impacts to MGDS or Nevada Transportation.

Summary Account TR15GB1: System Studies Support to SRA/Design
SE457755 Transportation Support (Rapid Response) 01Oct97, 30Sep98
See TR15FB4, SE457705.

SE516802 ID Issues for LA Strategy for DOE SNF (non-VA) 03Nov97, 14Nov97
Input/Output with EM, Navy, and other Waste Form orgs.
Data Flow is from EM/Navy/Others to DOE/WAST/PM&A or DOE/YMP to M&O.

Summary Account TR16FA1 Interface Management

SE426700 Develop Bin 3 Interfaces	01Oct96, 30Jun97
SE426705 Develop Bin 2 Interfaces	01Oct96, 30Jun97
SE426710 Evaluate Interfaces	01Oct96, 30Jun97

Inputs desired from DOE/EM, DOE/WAST/PM&A, RSA, and Navy to support the evaluation of parameters at the MGDS to Waste Form or MGDS to Transportation interface.
Outputs to these organizations in the form of interfaces reflective of current MGDS capabilities/envelopes. Waste Acceptance Criteria Document developed based on current MGDS capabilities to be added in FY97 Supplemental Funding (TR16FB1) with a draft on June 30, 97 (Level 4) and a Revision 0 on 9-30-97 (Level 3).
Data flow is via DOE/YMP or M&O/WM&I.

Summary Account TR16GA1 Interface Management

SE532810 Update Bin 3 SSC Interface Requirements	01Oct97, 30Jun97
SE532815 Update Bin 2 SSC Interface Requirements	01Oct97, 30Jun97
SE532820 Evaluate Interfaces	01Oct97, 30Jun97

See TR16FA1. Adjustments to Interfaces probable as a result of negotiations with external organizations (through DOE/YMP) in order to accommodate larger percentage of fuels. Potential impacts to design to be reflected in LA design (not VA). Take credit for capability to handle fuel by showing we have approach at VA, but not yet incorporated into design. A continuation of account TR16FB1 added via FY97 Supplemental funding will also likely be required.

2. Data received by Systems Engineering from M&O/WM&I

Summary Account TR13FB1 Program & Project Management & Controls

SE449700 Support TMIP Development	02Dec96, 30Sep97

Requires participation (input) from M&O/WM&I to develop/update this document. Minimum participation consists of review, comment, and sign-off on final product. External interfaces involving DOE to other agencies will need to be documented in another forum (IMP?).
Feedback could be provided to M&O/WM&I to provide documented management process for interfacing between East and West.

SE418710 Prepare Draft VA T&EP Plan	01Apr97, 01Aug97

Input from Test Evaluation Master Plan (TEMP) which was received from M&O/WM&I.

Summary Account TR13GB1: Program and Project Management & Controls (non-VA)

SE419710 Develop Preliminary Draft LA T&EP	01Apr98, 14Aug98

Input from M&O/WM&I for any changes/update to TEMP. Incorporation of Other Waste Forms, and RSA Interfaces into test requirements (weak relationship).

Summary Account TR15FB1: System Studies Support to SRA/Design

SE436700 Research for Waste Generated Study	01Apr97, 15May97

Input from M&O/WM&I on Waste Stream Characteristics (already received) - may have implications on type, rate, and qty of waste generated.

Summary Account TR15FB2: Waste Qty, Mix, Throughput Study
SE200710 Identify Waste Receipt Schedules 19Nov96, 28Feb97
Inputs received from M&O/WM&I regarding Waste Stream Characteristics (rates and potential surges). Results of study likely to be fed back to M&O/WM&I.

Summary Account TR15GB3 Thermal Management Technical Analysis (non-VA)
SE900102 Identify Issues 16Apr98, 15May98
Input from WAST/PM&I via M&O/WM&I on waste receipt schedules and modifications and storage information. Inputs will need to be considered in the context of thermal management.

Summary Account TR17FB1: MGDS Cost Analysis
SE124720 Preliminary Draft MGDS-VA Cost Est. Rpt. 18Mar97, 06May97
Input from M&O/WM&I regarding anticipated assumptions for TSLCC and MGDS Cost Estimate planned for FY98. Desired input from EM and others (via DOE/WAST/PM&A or DOE/YMP) regarding incorporation of costs associated with other fuels into the baseline & design.

Summary Account TR17GB1: MGDS Cost Analysis (Schedule being revised)
SE124800 Develop VA Case Assumptions 01Oct97, 03Nov97
SE124805 Develop 98 TSLCC Assumptions 06Oct97, 14Nov97
Inputs from M&O/WM&I regarding agreements on assumptions.
Incorporation of Comments June 98, July/Aug 98
Input from M&O/WM&I regarding TSLCC Comments (possibly from ICE). Also provides opportunity to incorporate Design generated adjustments.

Summary Account TR18FB2: Perform MGDS Safeguards & Security Eval
SE500700 Perform Safeguards & Security Eval 02Jan97, 25Apr97
Inputs desired from EM & Navy regarding characteristics of other waste forms which may have Safeguards & Security implications. Inputs regarding Pu desired.
Data Flow via DOE/YMP or DOE/WAST/PM&A through M&O/WM&I

Summary Account TR18GA3: Safeguards and Security
SE730A Provided Safeguards, Security to SRA/Design 01Oct97, 26Jul99
See TR18FB2.

Summary Account TR1BFB1: DBE Definition and Analysis
SE310700 DBE FY'97 (1ST HALF) 01Oct96, 31Mar97
SE310705 DBE FY'97 (2ND HALF) 01Apr97, 30Sep97
Input desired from EM, Navy, and other waste forms to consider in DBE analyses. Inputs concerning Pu desired for evaluation also.
Data Flow via DOE/YMP or DOE/WAST/PM&A through M&O/WM&I.

Summary Account TR1BGB2: DBE Definition and Analysis
SE310800 DBE FY'98 (1ST HALF) 03Nov97, 03Apr98
SE310805 DBE FY'98 (2ND HALF) 01May98, 02Nov98
See TR1BFB1.

3. Data provided by Systems Engineering to WAST/PM&A or WM&I

Summary Account TR15GB3 Thermal Management Technical Analysis (non-VA)
SE125AM3 Thermal Management Technical Analysis 30Sep98
Potential Output to WAST via DOE/YMP regarding thermal management techniques to be employed during waste acceptance or storage. Output could affect RSA or ISF constraints.

Summary Account TR17FB1: MGDS Cost Analysis
SE124AM3 Submit Cost Estimate 30Sep97
Output to M&O/WM&I stating assumptions to be used in MGDS contribution to TSLCC and for MGDS and LA Plan Cost Estimates.

Summary Account TR17GB1: MGDS Cost Analysis (Schedule being revised)
SE124805 Develop 98 TSLCC Assumptions 06Oct97, 14Nov97
Cost Input to TSLCC March 98
Output to M&O/WM&I to support TSLCC
Output to M&O/WM&I reflecting revisions resulting from comment incorporation.

CONTRACT PLANNING
WORK CONTINUING

TECHNICAL PUBLICATIONS MANAGEMENT
REVISED PENDING DELIVERABLE TRANSMITTAL

****

DATE: May 22, 1997 SLM:man:0833A
TO: Stephen J. Brocoum WBS: 1.2.12.1.5
FROM: Sandra L. Moore, Publications Production Supervisor SLM QA: N/A
Technical Publications Management

****

Enclosed is the original YAR and revised text for pending deliverable #RP120MG1R1, WBS #1.2.4.2, Viability Assessment Design and Review Plan, B00000000-01717-4600-00070, Rev 1. ICN 1.

According to YAP-5.1Q, paragraph 5.4.5, b) The Requesting Organization must "Revise a "pending Deliverable" within 30 days and return to Paragraph 5.4.1 b). NOTE: For a "pending deliverable" that has been revised for processing, resubmit the original YAR to TPM."

If you have any questions regarding the information contained herein or concerns about the deliverable coordination process, please contact Mary Ann Nusbaum, TPM Production Coordinator at (702) 295-7173 or me at (702) 295-7162.

Enclosures:

Original YAR #0833A
2. Revised text for deliverable #RP120MG1R1

cc: w/o enclosure:
C. R. Hastings, M&O

TECHNICAL PUBLICATIONS MANAGEMENT
REVISED PENDING DELIVERABLE TRANSMITTAL

****

DATE: August 15, 1997
TO: Stephan J. Brocoum
FROM: Sandra L. Moore, Publications Production Supervisor
Technical Publications Management

SLM:man:0833A
WBS: 1.2.12.1.5
QA: N/A

****

Enclosed is the revised text for pending deliverable #RP120MG1R1, WBS# 1.2.4.2, Viability Assessment Design and Review Plan, B00000000-01717-4600-00070, Rev. 01, ICN 2.

According to YAP-5.1Q, paragraph 5.4.5, b) The Requesting Organization must "Revise a "pending Deliverable" within 30 days and return to Paragraph 5.4.1 b). NOTE: For a "pending deliverable" that has been revised for processing, resubmit the original YAR to TPM."

If you have any questions regarding the information contained herein or concerns about the deliverable coordination process, please contact Mary Ann Nusbaum, TPM Production Coordinator at (702) 295-6992 or me at (702) 295-7162.

Enclosures:

1. Copy of YAR #0833A **(To be used as original YAR if AML does not have the original in their file.)**
2. Revised text for deliverable #RP120MG1R1

cc: w/o enclosure:
C. R. Hasting, M&O

TRW Environmental
'ety Systems Inc.

1180 Town Center Drive
Las Vegas, NV 89134
702.295.5400

WBS: 1.2.2, 1.2.4
QA: N/A

Contract #: DE-AC01-91RW00134
LV.EIO.RDS.05/97-019

May 22, 1997

Dr. Stephan J. Brocoum
Assistant Manager for Licensing
U.S. Department of Energy
Yucca Mountain Site Characterization Office
P.O. Box 30307
North Las Vegas, Nevada 89036-0307

Attention: Technical Publications Management

Dear Dr. Brocoum:

Subject: Resubmittal of Viability Assessment Design and Review Plan
Document Identifier B00000000-01717-4600-00070, Rev. 1, ICN 1
(Deliverable RP120MG1) (WBS 1.2.4.2)

Please find enclosed the Viability Assessment Design and Review Plan, Rev. 1, ICN 1, for Deliverable RP120MG1. This deliverable was originally submitted in December 1996 and resubmitted in March 1997. Acceptance of the resubmittal is pending corrections incorporated in the enclosure.

Should you have any questions, please contact me at (702) 295-5601.

Sincerely,

Richard D. Snell, Manager
Engineering and Integration Operations
Management & Operating Contractor

RDS/CAH/sjt

Enclosure:
Viability Assessment Design
and Review Plan, Rev. 1, ICN 1

cc w/o encl:
S. L. Klapproth, M&O, Las Vegas, Nevada