U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

# PRESENTATION TO THE NUCLEAR WASTE TECHNICAL REVIEW BOARD

## SUBJECT: PERFORMANCE ASSESSMENT INTEGRATION WITH SITE CHARACTERIZATION & DESIGN


**PRESENTER:** DR. ALBIN BRANDSTETTER

**PRESENTER'S TITLE AND ORGANIZATION:** SENIOR HYDROLOGIST
SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
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ARLINGTON, VIRGINIA
MAY 20-21, 1991

# PRESENTATION TOPICS

- PLANNING AND CONTROL SYSTEM AND LONG-RANGE PLANNING
- INTEGRATION OF PA WITH SITE CHARACTERIZATION AND DESIGN
- FY–1991 AND FY–1992 PERFORMANCE ASSESSMENT ACTIVITIES

# PROJECT PLANNING AND CONTROL

- OCRWM AND YMPO DEFINE TOP LEVEL GOALS, OBJECTIVES, BUDGETS, AND SCHEDULES
- CONTRACTORS DEFINE SPECIFIC ACTIVITIES, PLANNED BUDGETS AND SCHEDULES
- ITERATIONS BETWEEN OCRWM, YMPO AND CONTRACTORS TO REACH CONCENSUS

# PLANNING AND CONTROL OBJECTIVES

- PRIORITIZE ACTIVITIES
- ACCOMPLISH TECHNICAL INTEGRATION
- ELIMINATE SCHEDULE CONFLICTS
- MONITOR, EVALUATE AND CONTROL TECHNICAL PROGRESS
- MONITOR, EVALUATE AND CONTROL COST AND SCHEDULE PERFORMANCE

# PLANNING AND CONTROL SYSTEM (PACS)

- COMPUTER–BASED INFORMATION SYSTEM
- DEFINES RESPONSIBILITIES, WORK SCOPE, DELIVERABLES, SCHEDULES, AND BUDGETS
- TRACKS TECHNICAL, COST AND SCHEDULE PERFORMANCE FOR CURRENT YEAR
- DEFINES LONG-RANGE PLAN (CURRENTLY TO 2001)
- FLEXIBLE TO ALLOW CHANGES REQUIRED BY CHANGING PROJECT NEEDS AND BUDGETS
- ELIMINATES NEED FOR UPDATING PERFORMANCE ASSESSMENT IMPLEMENTATION PLAN (PAIP)

# PRINCIPAL PACS PRODUCTS

- SUMMARY ACCOUNTS
- PLANNING AND SCHEDULING (P&S) ACCOUNTS
- PROJECT MASTER SCHEDULE (PMS)
  - 28 ACTIVITIES/MILESTONES
- PROJECT SUMMARY SCHEDULE (PSS)
  - ABOUT 400 ACTIVITIES/MILESTONES
- LONG-RANGE PLAN/INTEGRATED PROJECT SCHEDULE (LRP/IPS)
  - ABOUT 6000 ACTIVITIES/MILESTONES

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
PACS SUMMARY ACCOUNT PLANNING SHEETS
REPORT NUMBER - SAS01



| | | | | | |
|---|---|---|---|---|---|
| SUMMARY ACCOUNT NUMBER | - 0S141D13 | SUM. ACCOUNT MANAGER | - DUNN | ORIGINAL DUR | - 229 |
| SUMMARY ACCOUNT TITLE | - TOTAL SYSTEM ANALYZER | | | STATUS | - |
| B & R NUMBER | - | TYPE OF EFFORT | - DISCRETE | SCH START DATE | - 01-oct-90 |
| P & S ACCOUNT NUMBER | - 0S141 | P & S ACCOUNT MANAGER | - DUNN | SCH FINISH DATE | - 29-aug-91 |
| P & S ACCOUNT TITLE | - Total System Performance Assessment | | | PLN START DATE | - |
| WBS NUMBER | - 1.2.1.4.1 | WBS MANAGER | - DYER | PLN FINISH DATE | - |
| WBS TITLE | - TOTAL SYSTEM PERFORMANCE ASSESSMENT | | | CONTRACTOR | - SNL |

SCOPE OF WORK/DESCRIPTION

This account will provide a conceptual model for a total-system analyzer. It will combine a latin hypercube sampling technique and the TOSPAC to produce a CCDF of resulting radionuclide releases.

RESOURCE DISTRIBUTION
BUDGETED COST OF WORK SCHEDULED

| FY91 | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LBR HRS | | | | | | | | | | | | | |
| LABOR | | | | | | | | | | | | | |
| SUBS | | | | | | | | | | | | | |
| PM&E | | | | | | | | | | | | | |
| TRAVEL | | | | | | | | | | | | | |
| OTHER | | | | | | | | | | | | | |
| BCWS | | | | | | | | | | | | | |

FISCAL YEAR DISTRIBUTION

| | PFY | FY91 | FY92 | FY93 | FY94 | FY95 | FY96 | FY97 | FY98 | FY99 | FY00 | TO COMP | COMPLETION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LBR HRS | | | | | | | | | | | | | |
| LABOR | | | | | | | | | | | | | |
| SUBS | | | | | | | | | | | | | |
| PM&E | | | | | | | | | | | | | |
| TRAVEL | | | | | | | | | | | | | |
| OTHER | | | | | | | | | | | | | |
| BCWS | | | | | | | | | | | | | |

APPROVALS

SUMMARY ACCOUNT MANAGER _____ DATE _____

P & S ACCOUNT MANAGER _____ DATE _____

| | | | | | |
|---|---|---|---|---|---|
| SUMMARY ACCOUNT NUMBER | - 0S141PP | SUM. ACCOUNT MANAGER | - DUNN | ORIGINAL DUR | - 2309 |
| SUMMARY ACCOUNT TITLE | - Total System Performance Assessment | | | STATUS | - PLANNED |
| B & R NUMBER | - | TYPE OF EFFORT | - DISCRETE | SCH START DATE | - 01-oct-91 |
| P & S ACCOUNT NUMBER | - 0S141 | P & S ACCOUNT MANAGER | - DUNN | SCH FINISH DATE | - 20-dec-00 |
| P & S ACCOUNT TITLE | - Total System Performance Assessment | | | PLN START DATE | - |
| WBS NUMBER | - 1.2.1.4.1 | WBS MANAGER | - DYER | PLN FINISH DATE | - |
| WBS TITLE | - TOTAL SYSTEM PERFORMANCE ASSESSMENT | | | CONTRACTOR | - SNL |

SCOPE OF WORK/DESCRIPTION

FY92: All work builds to Milestones T523 and P224. Event tree construction is in progress. Preliminary screening of features, events, and processes (FEPs) for applicability to site. Preliminary scenarios for tectonics reported on. Continuation of study of model options appropriate to remaining scenarios. Scenario screening using models developed to date. Scenario data base established. Development of saturated-zone flow and transport model continues. Gas pathways model effort continues. Preliminary determination of state variables and their distribution in study. TSA capabilities improved. Unfinished FY91 activities due to reallocation of time. Response to Project requests. Training and like activities. FY93: Completion of preliminary event trees and FEPs screening. Continuation of model development. Adaptive update of models to surface-based test (SBT) data and other new information as available. Scenario screening with updated models. Preliminary architecture for the total-system simulator (TSS) determination begins. Joint probability distribution functions of state variables study begins. Response to Project requests. Training and like activities. FY94: Activities of FY93 progress and refinement continue. Simplification of models for TSS begins. Development and preliminary application of the TSS continues. Adapt scenarios and models to data as acquired. Complete preliminary disruptive scenarios reports. Response to Project requests. Training and like activities. FY95: Continue adaption of models, scenarios, probabilities, joint probability distributions, etc. to new information. Continue to develop and apply TSS, using it with the adapted scenarios and probability distributions. Continue simplifying models for TSS. Response to Project requests. Training and like activities. FY96: Continue activities of FY95. Begin preliminary analyses for environmental impact statement (EIS) and license application (LA), using TSS and other tools. FY97: Continue activities of FY96. Total-system performance assessment (PA) for draft EIS(DEIS). Response to Project requests. Training and like activities. FY98-01: Total-system PA for DEIS, feeding Milestone R5151. Total-system PA for FEIS, feeding Milestone R5161. Total-system PA for site-suitability report. Total-System PA for LA, feeding Milestone R5181. Support for T523 complete. Support for P224 complete. Response to Project requests. Training and like activities.

RESOURCE DISTRIBUTION

BUDGETED COST OF WORK SCHEDULED

| FY91 | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LBR HRS | | | | | | | | | | | | | |
| LABOR | | | | | | | | | | | | | |
| SUBS | | | | | | | | | | | | | |
| PM&E | | | | | | | | | | | | | |
| TRAVEL | | | | | | | | | | | | | |
| OTHER | | | | | | | | | | | | | |
| BCWS | | | | | | | | | | | | | |

BUDGETED COST OF WORK SCHEDULED

| FY92 | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LBR HRS | | | | | | | | | | | | | |
| LABOR | | | | | | | | | | | | | |
| SUBS | | | | | | | | | | | | | |
| PM&E | | | | | | | | | | | | | |
| TRAVEL | | | | | | | | | | | | | |
| OTHER | | | | | | | | | | | | | |
| BCWS | | | | | | | | | | | | | |

FISCAL YEAR DISTRIBUTION

| | PFY | FY91 | FY92 | FY93 | FY94 | FY95 | FY96 | FY97 | FY98 | FY99 | FY00 | TO COMP | COMPLETION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LBR HRS | | | | | | | | | | | | | |
| LABOR | | | | | | | | | | | | | |
| SUBS | | | | | | | | | | | | | |
| PM&E | | | | | | | | | | | | | |
| TRAVEL | | | | | | | | | | | | | |
| OTHER | | | | | | | | | | | | | |
| BCWS | | | | | | | | | | | | | |

P & S ACCOUNT NUMBER - 0S141
P & S ACCOUNT TITLE - Total System Performance Assessment - SNL
WBS NUMBER - 1.2.1.4.1
WBS TITLE - TOTAL SYSTEM PERFORMANCE ASSESSMENT

P & S ACCOUNT MANAGER - DUNN
WBS MANAGER - DYER

SCH START DATE - 02-oct-89
SCH FINISH DATE - 28-jul-94

SCOPE OF WORK/DESCRIPTION

This task will assess the isolation performance of the entire radioactive-waste disposal system at Yucca Mountain by studying individual systems. This task will also evaluate the sensitivity of the integrated analysis to various parameters that are used.

The overall objecteve of this WBS element is to develop the mathematical models and perform the calculations necessary to compare the postclosure performance of a waste-disposal system at Yucca Mountai with the numerical criteria stated in 10 CFR 60.

The overall objective will be accomplished as follows:

- o Develop methods for conducting the performance assessments required by Yucca Mountain Project (YMP) Issues 1.1, 1.2, and 1.3 (system performance, individual-dose limitations, and groundwater protection).
- o Identify preliminary release-scenario classes that may be significant at the Yucca Mountain site and use them in preliminary assessments of the repository system.
- o Select significant release-scenario classes for use in calculations for the environmental impact statement and licensing-assessment documents.
- o Construct mathematical models of the scenario classes for use in screening those scenario classes against consequences.
- o Identify those scenario classes that involve the "significant events and processes" mentioned in 10 CFR 60.112 and 60.113.
- o Provide simplified, computationally efficient models of the scenario classes for use in the total-system simulator.
- o Provide calculations supporting the resolution of Issues 1.2 and 1.3.
- o For the resolution of Issue 1.1, construct an efficient total-system simulator that is capable of providing sample values for normalized releases arising from realizations of scenarios from the significant scenario classes; use the total-system simulator to construct the empirical complementary cumulative distribution function (CCDF) required by 10 CFR Part 60, 60.112 and 60.115.

MILESTONES

| IDENTIFIER | DESCRIPTION | SCHEDULED DATE | EXPECTED DATE | ACTUAL DATE |
|---|---|---|---|---|

P&S ACCOUNT BUDGET BY ELEMENT OF COST

| SUMMARY ACCOUNT IDENTIFIER | DESCRIPTION | LBR HRS | LABOR | SUBS | PM&E | TRAVEL | OTHER | AT COMPLETION BAC ($) |
|---|---|---|---|---|---|---|---|---|
| 0S141D12 | Model Gas-Phase Releases | | | | | | | |
| 0S141D40 | Models: Gas-Phase Releases | | | | | | | |
| 0S141D | 2nd Letter Rprt on Prelim. Models of Gas Phase Rel | | | | | | | |
| 0S141D11 | Rpt: Issues for PA | | | | | | | |
| 0S141D65 | Disruptive Scenarios (Other Human ) | | | | | | | |
| 0S141D70 | Screening by Possibility and Effe ct | | | | | | | |
| 0S141D08 | LTR Rpt: Prelim Models, Volcanis m & Human Intrus | | | | | | | |

# YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

COPY OF LRP AS OF 06-MAR-91
WBS 1.2.1.4 ACTIVITIES
SELECTION: WBS 1.2.1.4

SORT: es,ef
GROUP: WBS El.

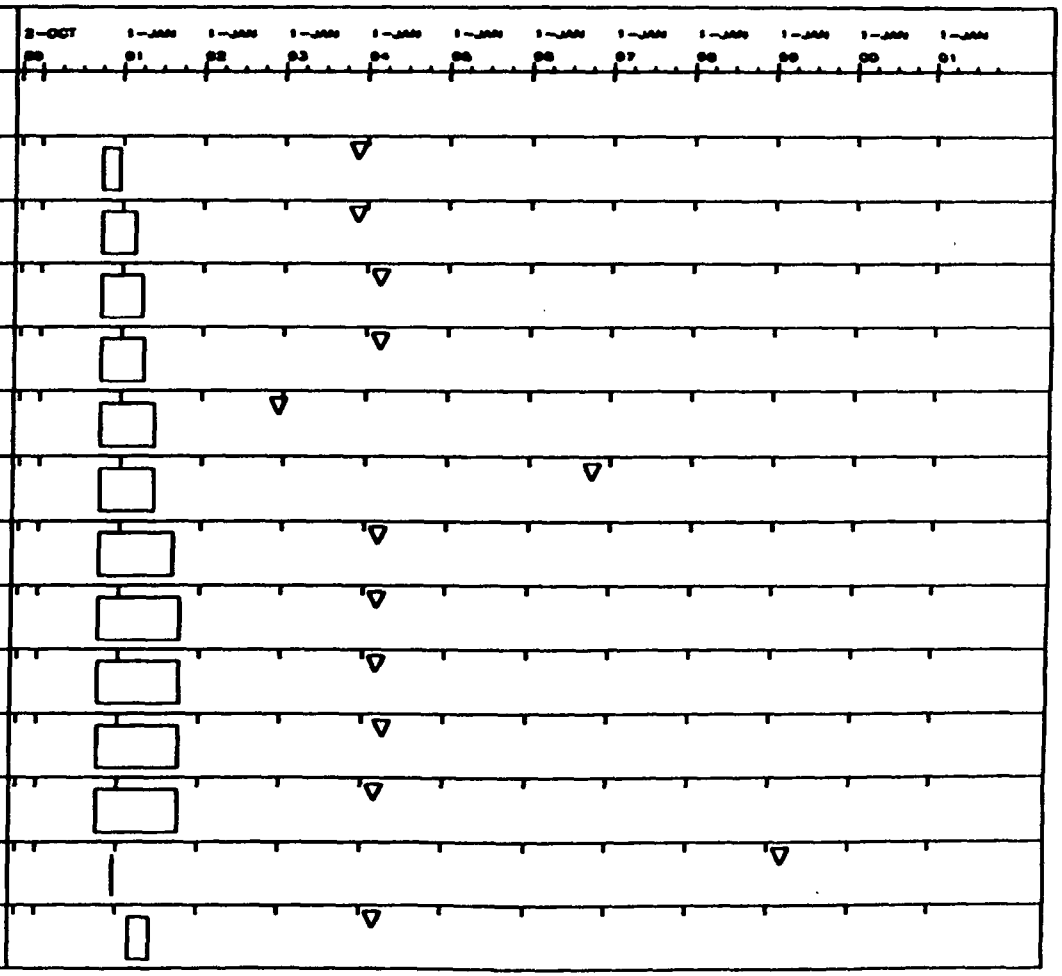
Activity Bar Legend

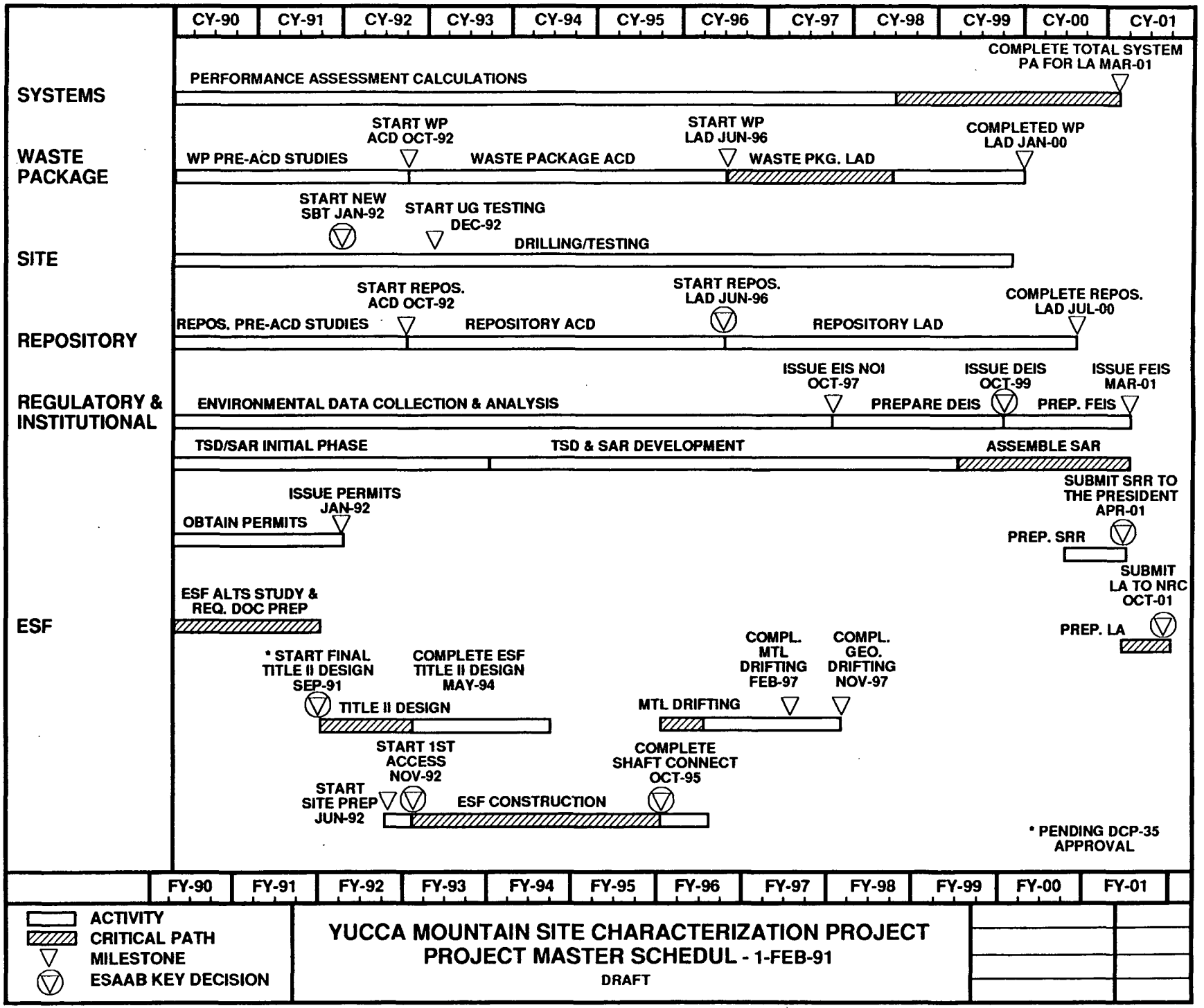
Current Network: lrpa
Milestone 1
Progress
Critical

Notes:

Current Status Date 1-OCT-89

| Activity | Dur | Start | Finish | Part. | Description |
|---|---|---|---|---|---|
| 141 | | | | | TOTAL SYSTEM PERFORMANCE ASSESSMENT |
| 141D03 | 54 | 1-OCT-90 | 17-DEC-90 | OS | RPT: SOURCE TERM MODEL FOR USE IN TOTAL SYS STDY |
| 141D01 | 100 | 1-OCT-90 | 27-FEB-91 | OS | PERF PRELIM ASSESSMENT OF TOTAL SYS PERFORMANCE |
| 141D05 | 125 | 1-OCT-90 | 3-APR-91 | OS | PREP DESCRIPTION PRELIM NOMINAL CASE SCENARIOS |
| 141D08 | 130 | 1-OCT-90 | 10-APR-91 | OS | LTR RPT: PRELIM MODELS, VOLCANISM & HUMAN INTRUS |
| 141D04 | 165 | 1-OCT-90 | 30-MAY-91 | OS | SITE SUITABILITY SUPPORT |
| 141D11 | 165 | 1-OCT-90 | 30-MAY-91 | OS | RPT: ISSUES FOR PA |
| 141D13 | 229 | 1-OCT-90 | 29-AUG-91 | OS | TOTAL SYSTEM ANALYZER |
| 141D12 | 250 | 1-OCT-90 | 30-SEP-91 | OS | MODEL GAS-PHASE RELEASES |
| 141D14 | 250 | 1-OCT-90 | 30-SEP-91 | OS | LTR RPT: PRELIM SYS MODELS, WATER PATH RELEASE |
| 141D18 | 250 | 1-OCT-90 | 30-SEP-91 | OS | LTR RPT: DISRUPTIVE SCENARIO (TECTONICS) |
| 141D91 | 250 | 1-OCT-90 | 30-SEP-91 | OS | DEV METHOD/MODELS FOR MATH COMPARISONS - FY91 |
| M191 | 0 | 18-DEC-90 | 17-DEC-90 | OS | SOURCE-TERM MODEL F/TOTAL SYS STUDY RPT COMP |
| 141D02 | 67 | 28-FEB-91 | 3-JUN-91 | OS | SAND RPT: PRELIM ASSESS OF TOTAL SYS PERFORMANCE |

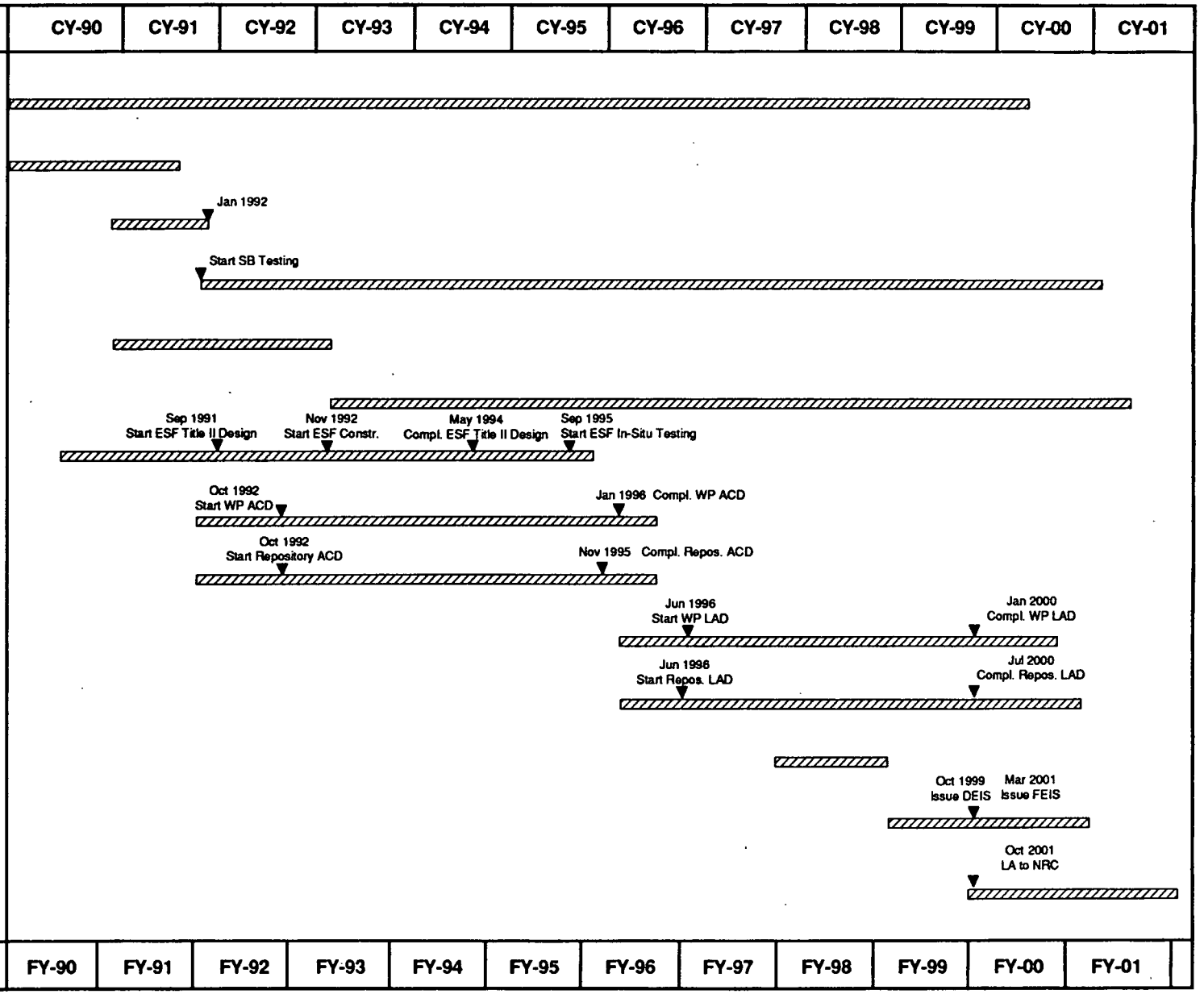



CY-90
CY-91
CY-92
CY-93
CY-94
CY-95
CY-96
CY-97
CY-98
CY-99
CY-00
CY-01
SYSTEMS
PERFORMANCE ASSESSMENT CALCULATIONS
COMPLETE TOTAL SYSTEM PA FOR LA MAR-01
WASTE PACKAGE
WP PRE-ACD STUDIES
START WP ACD OCT-92
WASTE PACKAGE ACD
START WP LAD JUN-96
WASTE PKG. LAD
COMPLETED WP LAD JAN-00
SITE
START NEW SBT JAN-92
START UG TESTING DEC-92
DRILLING/TESTING
REPOSITORY
REPOS. PRE-ACD STUDIES
START REPOS. ACD OCT-92
REPOSITORY ACD
START REPOS. LAD JUN-96
REPOSITORY LAD
COMPLETE REPOS. LAD JUL-00
REGULATORY & INSTITUTIONAL
ENVIRONMENTAL DATA COLLECTION & ANALYSIS
ISSUE EIS NOI OCT-97
PREPARE DEIS
ISSUE DEIS OCT-99
PREP. FEIS
ISSUE FEIS MAR-01
TSD/SAR INITIAL PHASE
TSD & SAR DEVELOPMENT
ASSEMBLE SAR
OBTAIN PERMITS
ISSUE PERMITS JAN-92
PREP. SRR
SUBMIT SRR TO THE PRESIDENT APR-01
PREP. LA
SUBMIT LA TO NRC OCT-01
ESF
ESF ALTS STUDY & REQ. DOC PREP
* START FINAL TITLE II DESIGN SEP-91
COMPLETE ESF TITLE II DESIGN MAY-94
TITLE II DESIGN
MTL DRIFTING
COMPL. MTL DRIFTING FEB-97
COMPL. GEO. DRIFTING NOV-97
START SITE PREP JUN-92
START 1ST ACCESS NOV-92
ESF CONSTRUCTION
COMPLETE SHAFT CONNECT OCT-95
* PENDING DCP-35 APPROVAL
FY-90
FY-91
FY-92
FY-93
FY-94
FY-95
FY-96
FY-97
FY-98
FY-99
FY-00
FY-01
ACTIVITY
CRITICAL PATH
MILESTONE
ESAAB KEY DECISION
YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
PROJECT MASTER SCHEDUL - 1-FEB-91
DRAFT

5-20-91

# INTEGRATED SCHEDULE OF PERFORMANCE ASSESSMENT ACTIVITIES

| START | END | ACTIVITY |
|---|---|---|
| | Mar 2000 | Develop, Verif, & Validation |
| May 1989 | May 1991 | PA calc. exercise (PACE) |
| Oct 1990 | Sept 1991 | Early Test Prioritization |
| Oct 1991 | Dec 2000 | Site Charac. Support |
| Oct 1990 | Dec 1992 | Early Site-Suitability Eval. |
| Jan 1993 | Apr 2001 | Site Suitability Eval. |
| Apr 1990 | Sep 1995 | ESF Evaluations |
| Oct 1991 | May 1996 | Waste Package ACD Eval. |
| Oct 1991 | May 1996 | Repository ACD Eval. |
| Jan 1996 | Jun 2000 | Waste Package LAD Eval. |
| Jan 1996 | Sep 2000 | Repository LAD Eval. |
| Oct 1997 | Sep 1998 | DEIS Scoping Analyses |
| Oct 1998 | Mar 2001 | DEIS/FEIS Analyses |
| Oct 1999 | Oct 2001 | SAR Analyses/License Application Support |

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# MAJOR ITERATIVE PERFORMANCE ASSESSMENT ACTIVITIES

| CY | ACTIVITY |
|---|---|
| 1989-1991 | PERFORMANCE ASSESSMENT CALCULATIONAL EXERCISE (PACE) |
| 1990–1995 | ESF DESIGN AND TESTING EVALUATIONS |
| 1991–2000 | SITE CHARACTERIZATION SUPPORT |
| 1990–2001 | SITE SUITABILITY EVALUATIONS |
| 1991–1996 | WASTE PACKAGE AND REPOSITORY ACD EVALUATIONS |
| 1996–2000 | WASTE PACKAGE AND REPOSITORY LAD EVALUATIONS |
| 1997–1998 | DEIS SCOPING ANALYSES |
| 1998–2001 | DEIS/FEIS ANALYSES |
| 1999–2001 | SAR ANALYSES/LICENSE APPLICATION SUPPORT |

# MAJOR PA ACTIVITIES FOR ESF DESIGN AND TEST PLANNING

## (EXAMPLE OF PA INTEGRATION WITH OTHER ACTIVITIES)

- EVALUATIONS OF ALTERNATIVE ESF DESIGNS
- INPUT TO ESF DESIGN REQUIREMENTS
- EVALUATIONS OF ALTERNATIVE PORTAL AND SHAFT LOCATIONS
- EVALUATIONS OF TEST PLANNING PACKAGES
- EVALUATIONS OF ESF TITLE I DESIGN
- EVALUATIONS OF ESF TITLE II DESIGN
- TOTAL SYSTEM PERFORMANCE ASSESSMENT CONSIDERING ESF AS CONSTRUCTED

# ESF MASTER LOGIC DIAGRAM

## THE MAJOR PA ACTIVITIES FOR THE ESF DESIGN AND TEST PLANNING ARE LINKED WITH OTHER ESF ACTIVITIES IN AN EVENTS LOGIC DIAGRAM

## EXAMPLE: ESF EVENTS LOGIC DIAGRAM

# LONG RANGE PLAN/INTEGRATED PROJECT SCHEDULE

## (ACTIVITY/MILESTONE NETWORKS)

**THE INDIVIDUAL ACTIVITIES AND MILESTONES ARE ALSO LINKED THROUGH ACTIVITY/MILESTONE NETWORKS TO DETERMINE CRITICAL PATHS AND POTENTIAL SCHEDULING PROBLEMS**

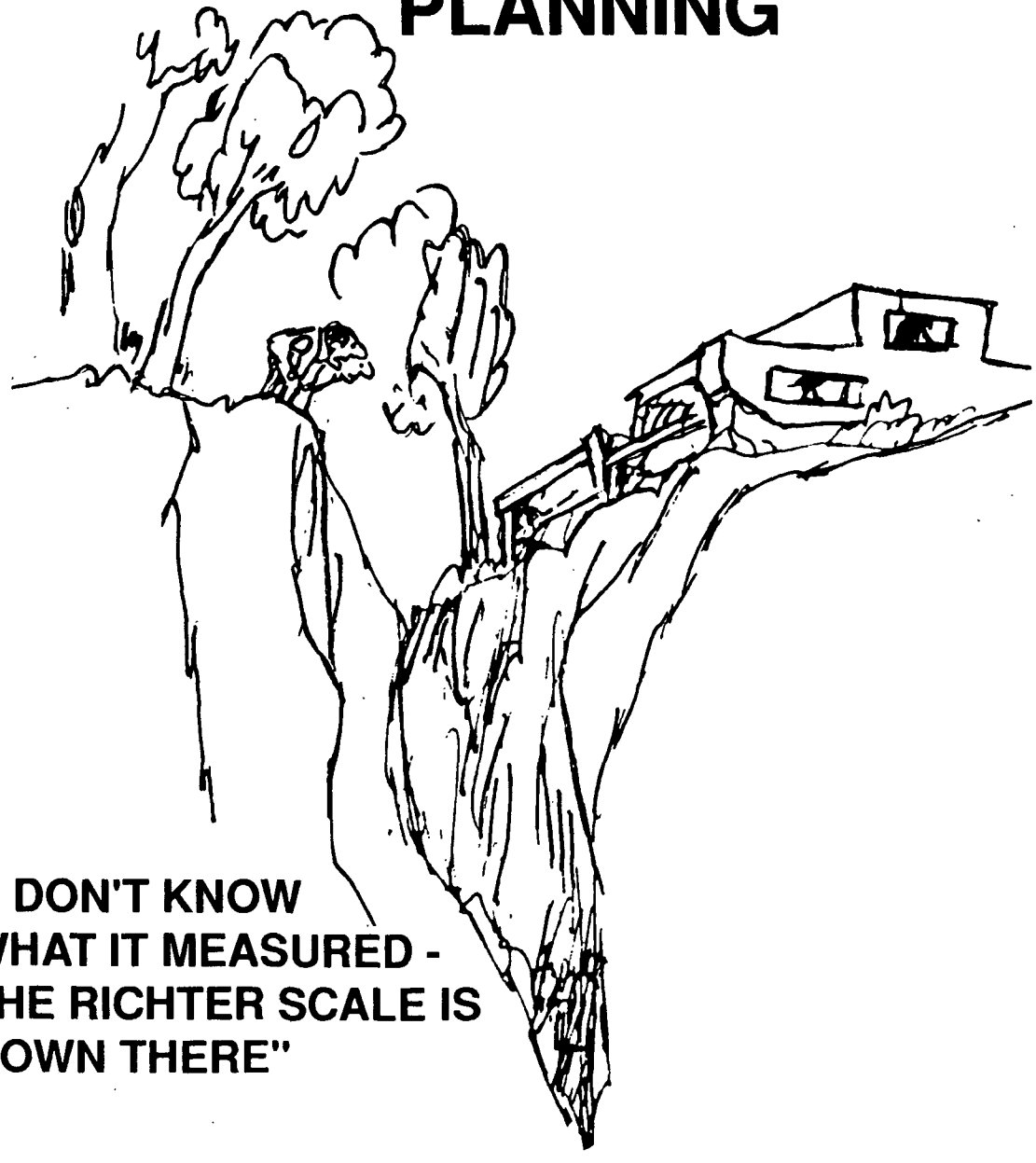
**EXAMPLE:**
**SCHEDULE DIAGRAM FOR PA ACTIVITIES IN SUPPORT OF ESF DESIGN AND TEST PLANNING**

# PA STAFF INTEGRATION WITH ESF DESIGN AND TEST PLANNING

- ESF TASK FORCE
- ESF DESIGN STATUS MEETINGS
- RSED/ESF TECHNICAL INTEGRATION GROUP
- AD–HOC MEETINGS
- INDIVIDUAL CONTACTS

**RSED** = YMPO **R**EGULATORY AND **S**ITE **E**VALUATION **D**IVISION

# BEFORE PA INVOLVEMENT IN TEST PLANNING



"I DON'T KNOW
WHAT IT MEASURED -
THE RICHTER SCALE IS
DOWN THERE"

# FY–1991 ACTIVITIES – ANALYSES AND EVALUATIONS

- **COMPLETE:**
  - PRELIMINARY TOTAL SYSTEM PERFORMANCE ASSESSMENT
  - DOCUMENTATION OF PACE ANALYSES
  - PERFORMANCE ANALYSES FOR EARLY SITE–SUITABILITY EVALUATIONS
  - GROUND–WATER FLOW CALCULATIONS FOR CALICO HILLS STUDY
  - DOCUMENTATION OF BOROSILICATE GLASS WASTE FORM PERFORMANCE
- **CONTINUE:**
  - ANALYSES IN SUPPORT OF ESF DESIGN AND TEST PLANNING
  - REPOSITORY DESIGN ALTERNATIVE SCOPING STUDIES
  - IMPLEMENTATION OF QA PROGRAM AND PROCEDURES
- **INITIATE:**
  - EVALUATION OF WASTES FROM TRANSMUTATION/PERMUTATION

PACE = PERFORMANCE ASSESSMENT CALCULATIONAL EXERCISE

# FY–91 ACTIVITIES – RESEARCH AND DEVELOPMENT

- **COMPLETE:**
  - DOCUMENTATION OF MODELS AND CODES
  - REPORT ON MODEL VALIDATION APPROACH
  - PLAN FOR FIELD VALIDATION OF FLOW AND TRANSPORT MODELS
- **CONTINUE:**
  - MODEL DEVELOPMENT, CODE VERIFICATION, AND DOCUMENTATION
  - LABORATORY EXPERIMENTS OF UNSATURATED FRACTURE FLOW AND TRANSPORT
  - PARTICIPATION IN INTRAVAL AND PSACOIN
  - SUPPORT OF NATURAL ANALOGUE STUDIES
  - IMPLEMENTATION OF QA PROGRAM AND PROCEDURES
- **INITIATE:**
  - DEVELOPMENT OF NEAR–FIELD WASTE PACKAGE PERFORMANCE MODEL

**INTRAVAL** = **IN**TERNATIONAL **TRA**NSPORT CODE **VAL**IDATION
**PSACOIN** = **P**ROBABILISTIC **S**YSTEMS **A**SSESSMENT **CO**DE **IN**TERCOMPARISON

# PLANNED FY–1992 ACTIVITIES

- **CONTINUE:**
  - ANALYSES FOR SITE SUITABILITY EVALUATIONS
  - REVIEW AND EVALUATION OF TEST PLANNING PACKAGES
  - DEMONSTRATION OF TOTAL–SYSTEM PA CAPABILITY
  - QA SOFTWARE CONFIGURATION MANAGEMENT
- **CONTINUE AT REDUCED EFFORT:**
  - MODEL DEVELOPMENT, CODE VERIFICATION, AND DOCUMENTATION
  - SCENARIO EVENT TREE AND MODEL DEVELOPMENT
  - LABORATORY EXPERIMENTS FOR FLOW AND TRANSPORT MODEL VALIDATION
  - PARTICIPATION IN INTERNATIONAL ACTIVITIES
- **INITIATE:**
  - ANALYSES IN SUPPORT OF ESF TITLE II DESIGN
  - INPUT TO DESIGN REQUIREMENTS FOR WASTE PACKAGE AND REPOSITORY ACD

**ESF** = EXPLORATORY STUDIES FACILITY
**ACD** = ADVANCED CONCEPTUAL DESIGN

# SUMMARY

- PLANS FOR PA ACTIVITIES ARE IN PLACE THROUGH FY 2001
- THESE PLANS ARE INTEGRATED WITH OTHER PROJECT ACTIVITIES
- THEY INCLUDE ITERATIVE PERFORMANCE ASSESSMENTS IN SUPPORT OF
  - SITE CHARACTERIZATION
  - SITE SUITABILITY EVALUATION
  - ESF DESIGN AND TESTING
  - WASTE PACKAGE AND REPOSITORY DESIGN
  - ENVIRONMENTAL IMPACT STATEMENT
  - SAFETY ANALYSIS REPORT FOR LICENSE APPLICATION