

BRIEFING FOR COMMISSIONER CURTISS
ON THE HIGH-LEVEL WASTE PROGRAM

NOVEMBER 15, 1988

9401070208 931116
PDR COMMS NRCC
CORRESPONDENCE PDR



Vol. 20

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OVERVIEW

NRC HLW MANAGEMENT PROGRAM ACTIVITIES

ORGANIZATION CHART

- ° NRC
- ° DOE

REPOSITORY PROGRAM MILESTONES

- ° NWPA TIMELINE
- ° PHASES OF REPOSITORY PROGRAM

NRC REPOSITORY PROGRAM IMPLEMENTATION

MAJOR NEAR-TERM REPOSITORY PROGRAM ACTIVITIES

MONITORED RETRIEVABLE STORAGE/SPENT FUEL STORAGE

RESEARCH

NEAR-TERM TOPICS FOR COMMISSION ACTION

NRC HIGH-LEVEL WASTE MANAGEMENT PROGRAM
ACTIVITIES

NMSS

- REGULATORY REQUIREMENTS & TECHNICAL GUIDANCE
- TECHNICAL ASSESSMENT CAPABILITY
- QUALITY ASSURANCE
- SITE CHARACTERIZATION REVIEWS
- SPENT FUEL STORAGE AND MRS LICENSING
- TRANSPORTATION CASK CERTIFICATION

RES

- RESEARCH
- RULEMAKING

OGC

- REGULATORY REQUIREMENTS & RULEMAKING - LSS

ACNW

- REVIEW PROGRAM, ADVISE STAFF & COMMISSION

GPA

- INTERACT WITH STATES

LSS ADMINISTRATOR

- OPERATE AND MAINTAIN LSS
- ADVISE DOE ON LSS DESIGN

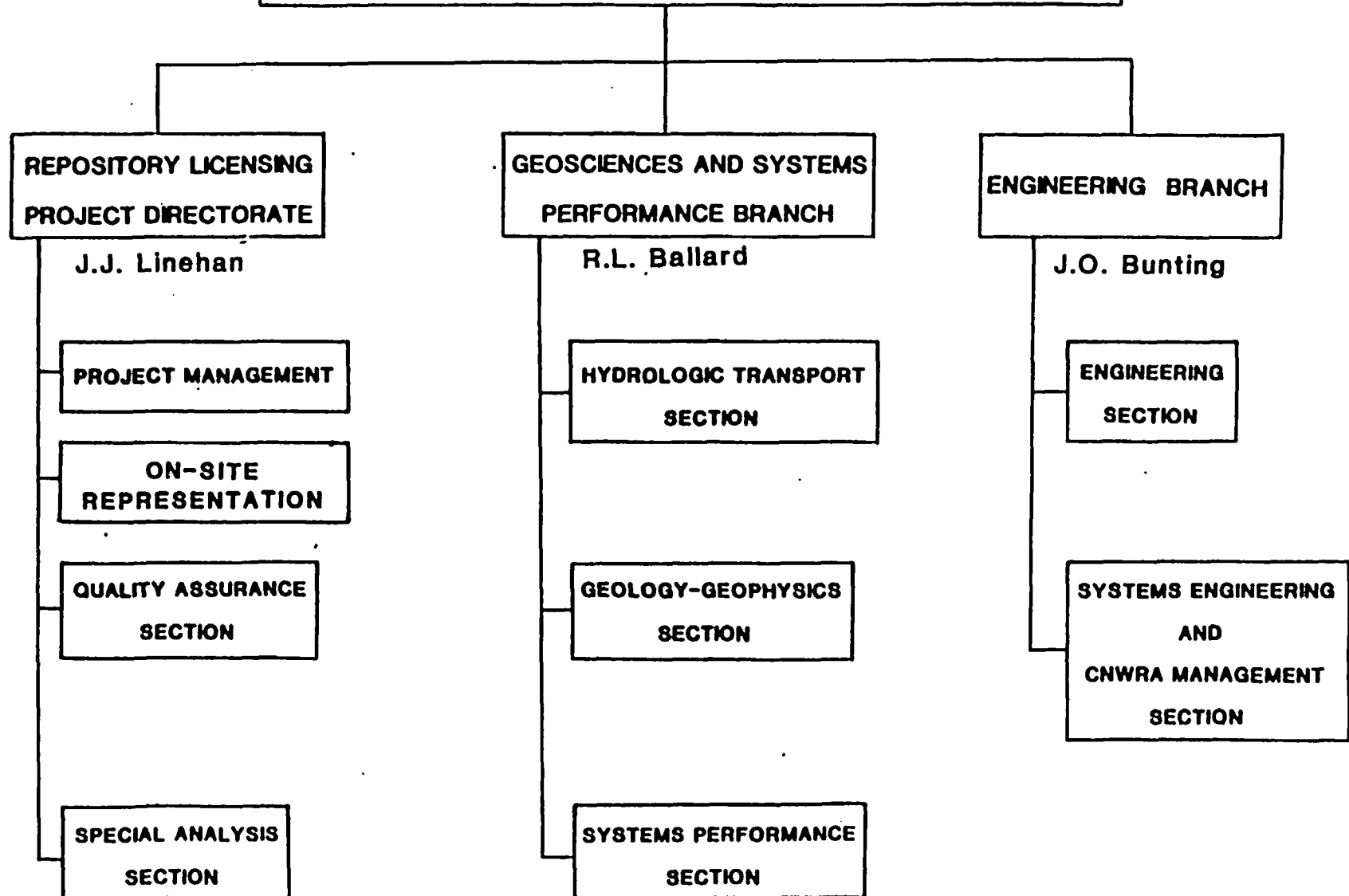
NRC HIGH-LEVEL WASTE MANAGEMENT PROGRAM
RESOURCE SUMMARY

	<u>FY 1988</u>		<u>FY 1989</u>		<u>FY 1990</u>	
	<u>\$K</u>	<u>FTE</u>	<u>\$K</u>	<u>FTE</u>	<u>\$K</u>	<u>FTE</u>
NMSS	8,023	76	7,685	76	8,950	77
RES	3,725	15	3,900	14	5,000	14
OTHER	150	15	150	15	150	15
TOTAL	<u>11,898</u>	<u>106</u>	<u>11,735</u>	<u>105</u>	<u>14,100</u>	<u>106</u>

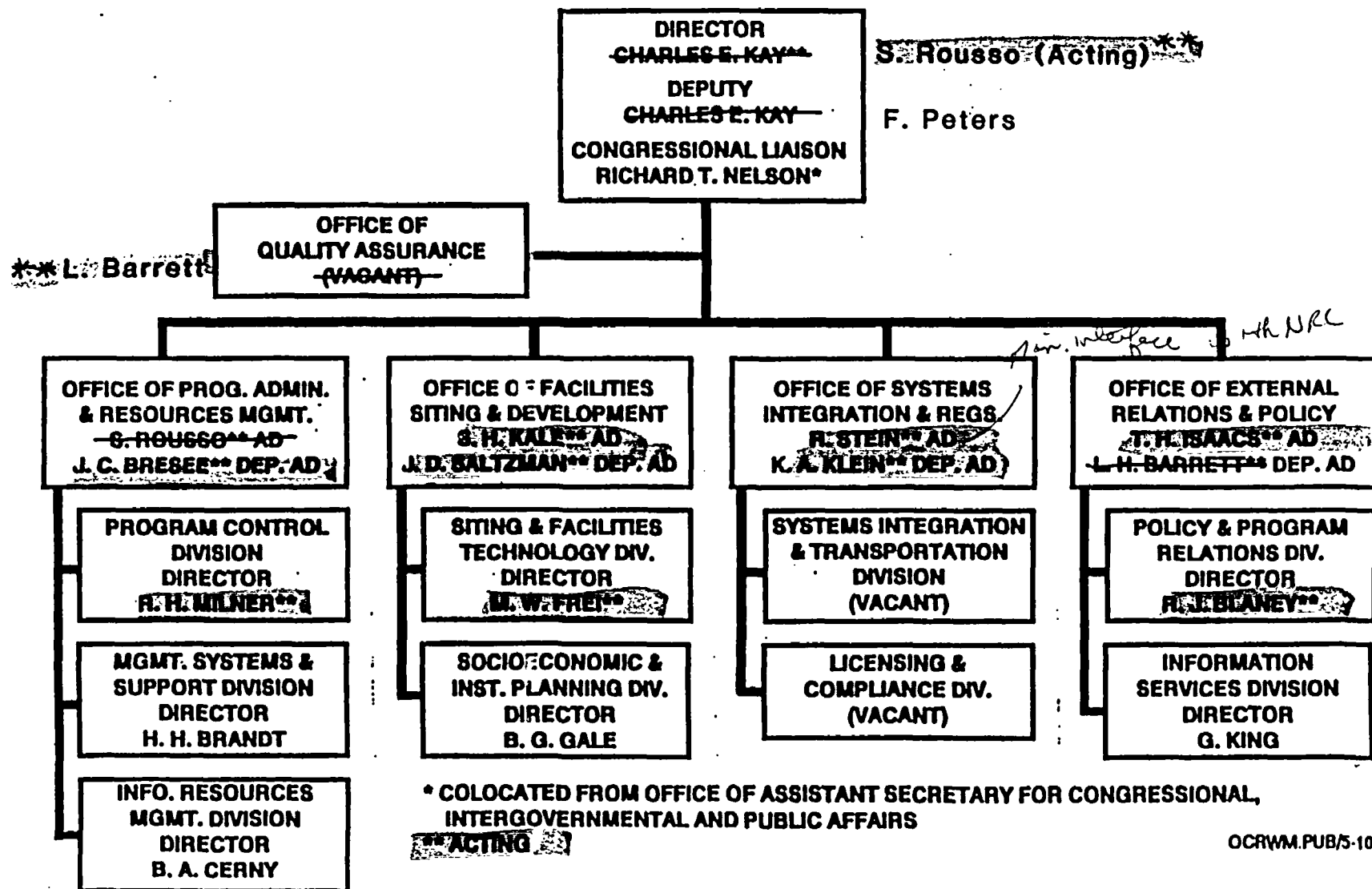
DIVISION OF HIGH-LEVEL WASTE MANAGEMENT

DIRECTOR R.E. Browning

DEPUTY DIRECTOR B.J. Youngblood



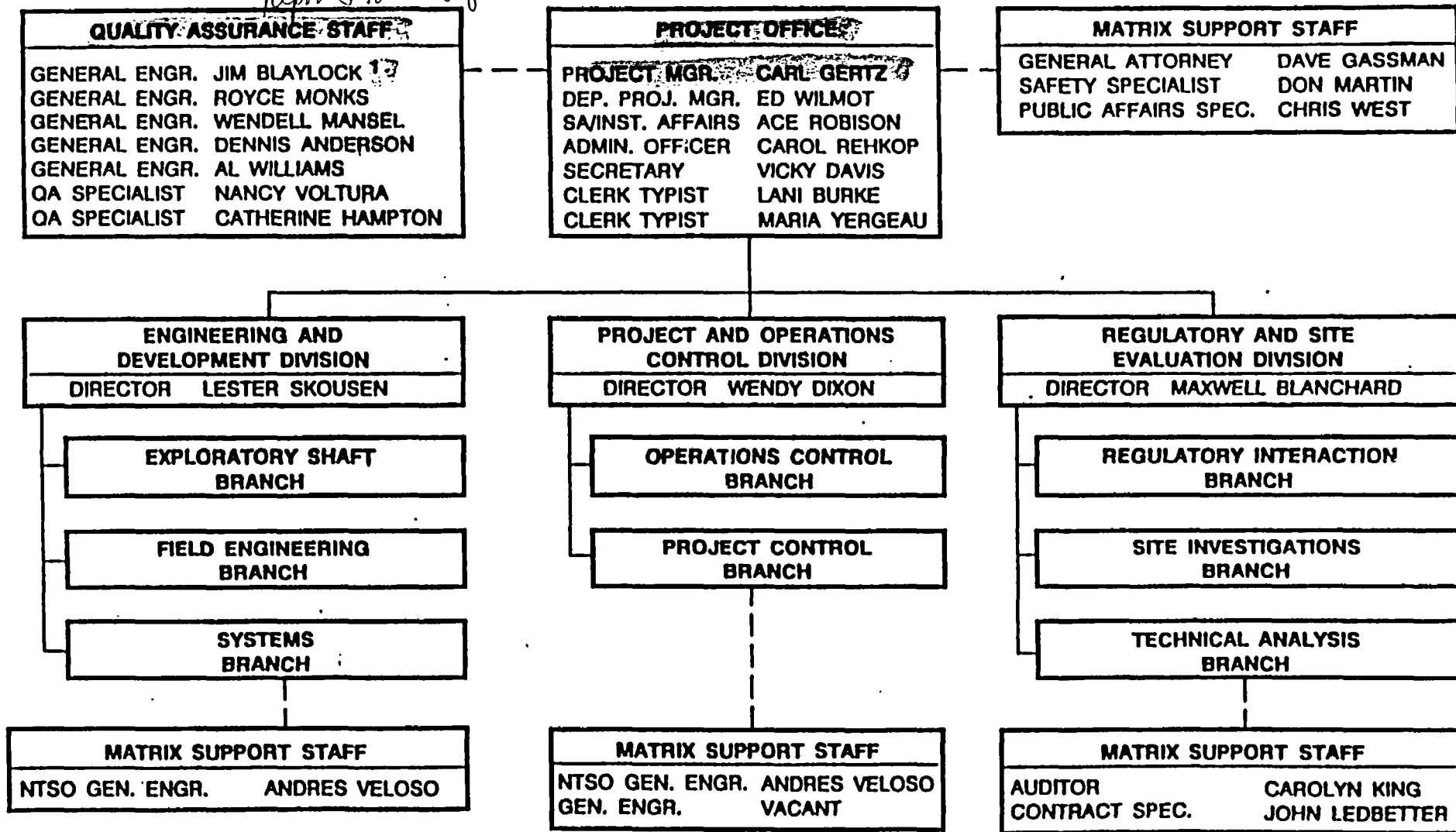
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT



YUCCA MOUNTAIN PROJECT ORGANIZATION

Doyle - Site Manager

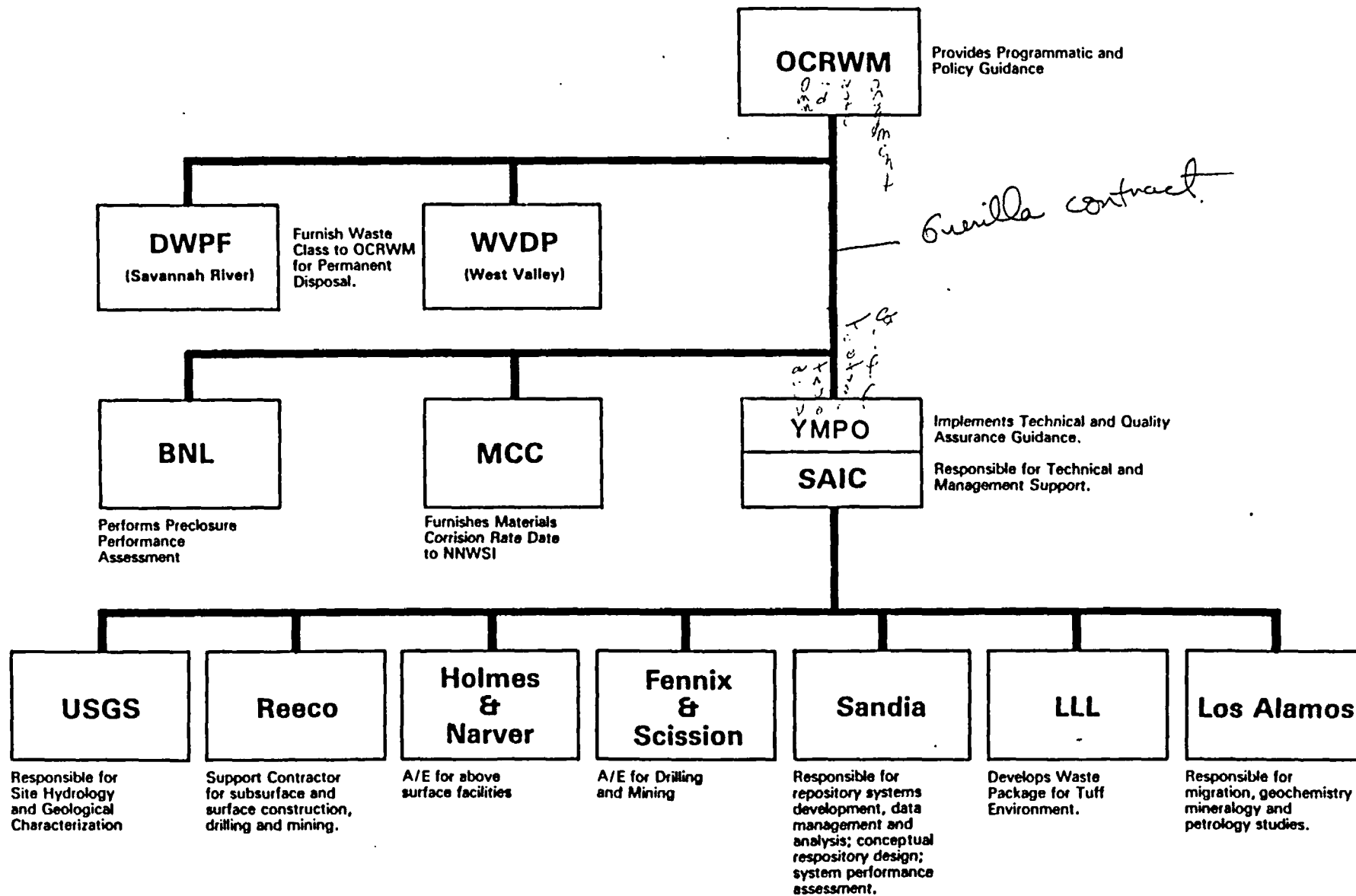
Reports to Project Site



(1) REPORTS TO MANAGER FOR QA/QC INTERACTIONS

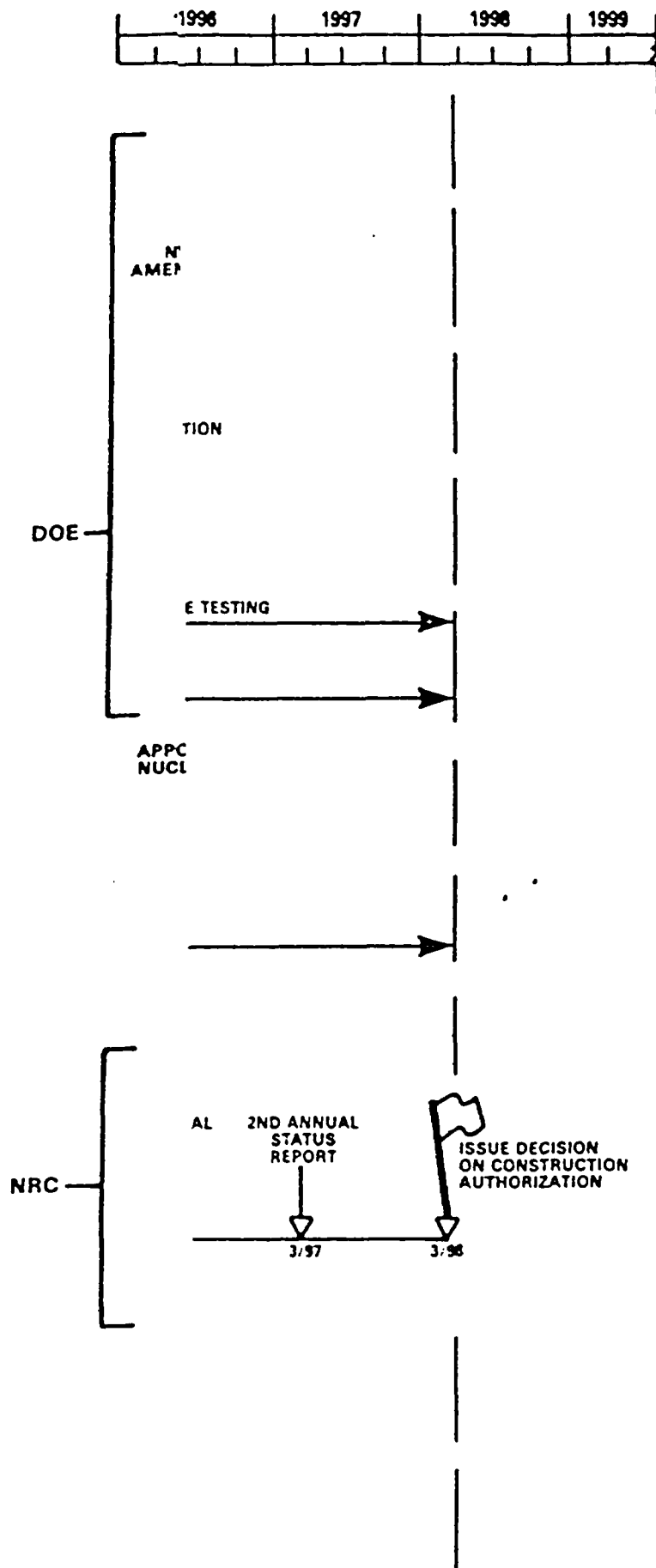
— DIRECT REPORTING
 - - - MATRIX REPORTING

DOE REPOSITORY PROGRAM ORGANIZATION

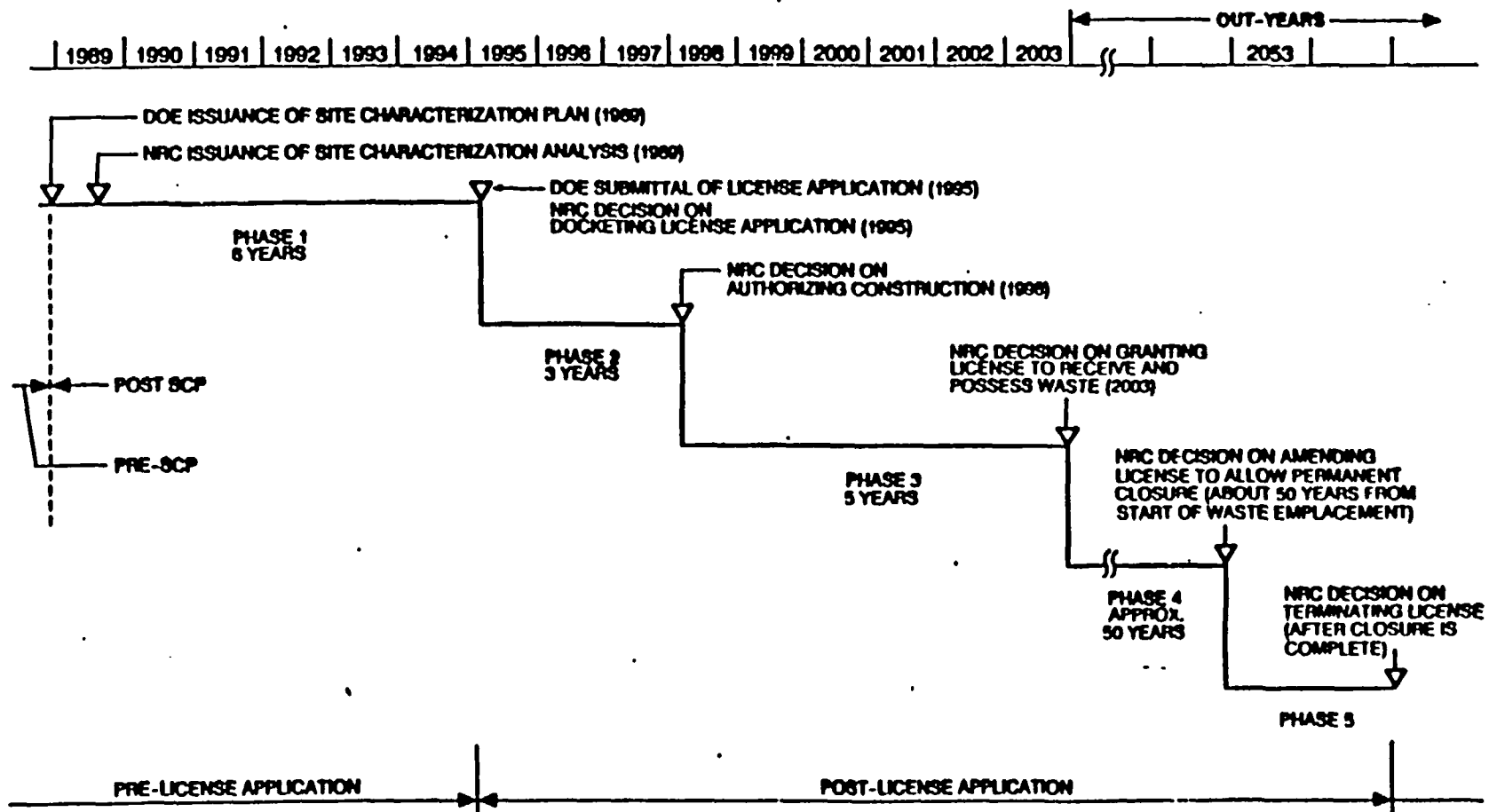


REPOSITORY PROGRAM MILESTONES

- ° NWPA TIMELINE
- ° PHASES OF REPOSITORY PROGRAM
 - FIVE PHASES
 - STAFF FOCUS ON FIRST AND SECOND PHASE



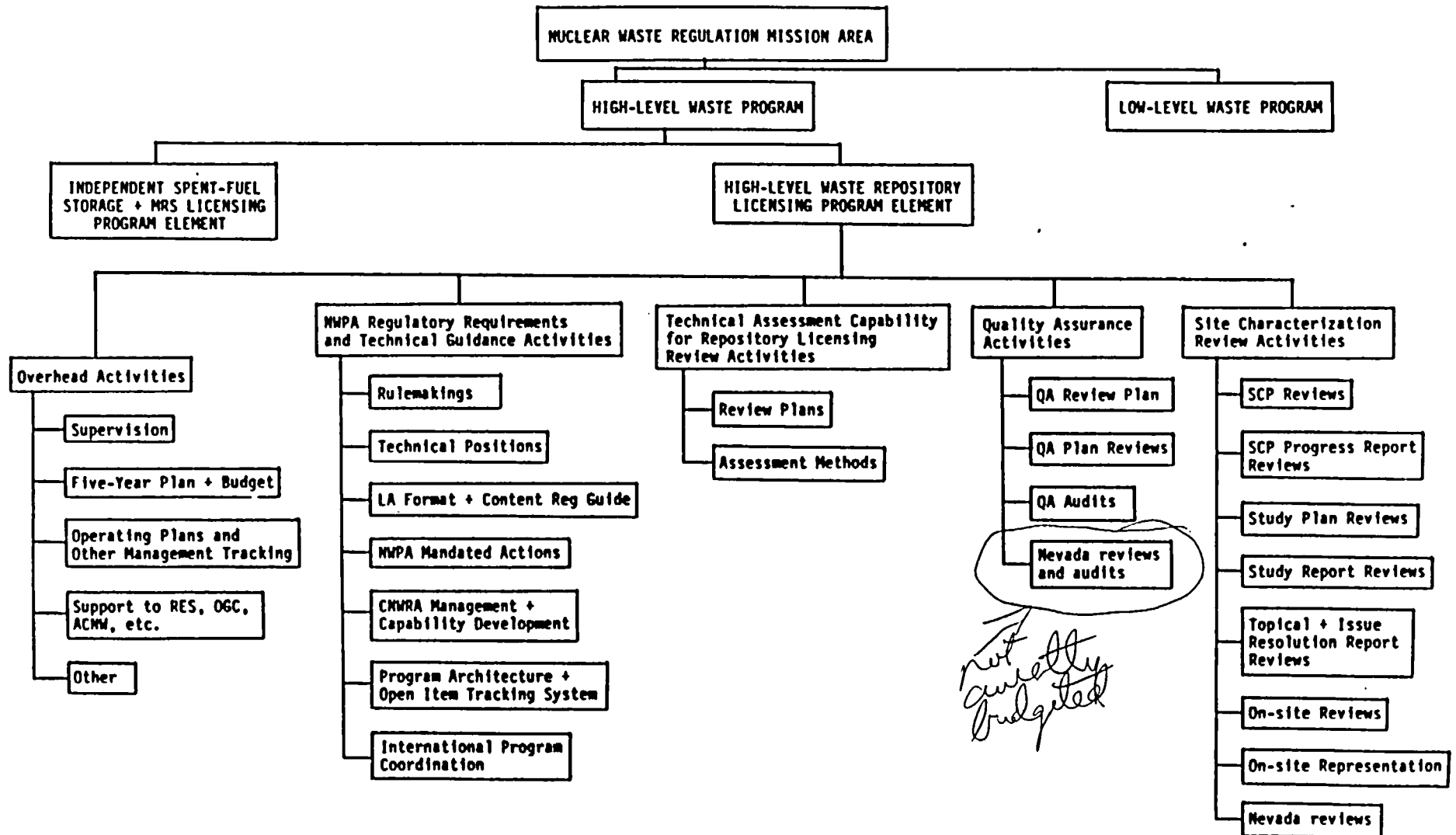
PHASES OF THE REPOSITORY LICENSING PROCESS



NRC REPOSITORY PROGRAM IMPLEMENTATION

- 0 REACTIVE - PRELICENSING REVIEWS/CONSULTATION
 - SITE CHARACTERIZATION REVIEWS
 - QUALITY ASSURANCE OBSERVATIONS/AUDITS
- 0 PROACTIVE - PREPARE TO REVIEW LICENSE APPLICATION/REGULATORY GUIDANCE
 - TECHNICAL POSITIONS - 22 positions to provide guidance to DOE
 - RULEMAKINGS - 3 on going, 9 potential to resolve regulatory uncertainties
 - TECHNICAL ASSESSMENT CAPABILITY DEVELOPMENT
- 0 FULLY STAFF CENTER FOR NUCLEAR WASTE REGULATORY ANALYSIS (CNWRA)

**FIVE-YEAR PLAN
WORK BREAKDOWN STRUCTURE
FOR THE HIGH-LEVEL WASTE REPOSITORY
LICENSING PROGRAM ELEMENT**



← **PROACTIVE** | **REACTIVE** →

MAJOR NEAR-TERM REPOSITORY PROGRAM ACTIVITIES

- ° SITE CHARACTERIZATION PLAN (SCP) REVIEW AND ISSUANCE OF SITE CHARACTERIZATION ANALYSIS (SCA). - *late Dec, early January for submittal of SCP*

- ° EXPLORATORY SHAFT FACILITY

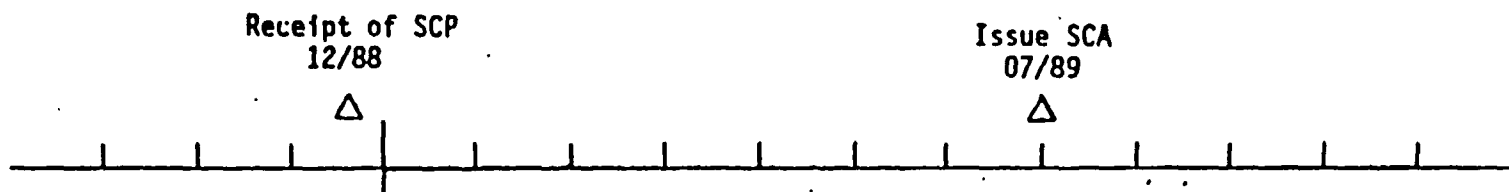
- DESIGN CONTROL PROBLEM

- NRC COMMENTS ON EXPLORATORY SHAFT (10 CFR 60.16)

- ° ACCEPTANCE OF DOE QUALITY ASSURANCE PROGRAM

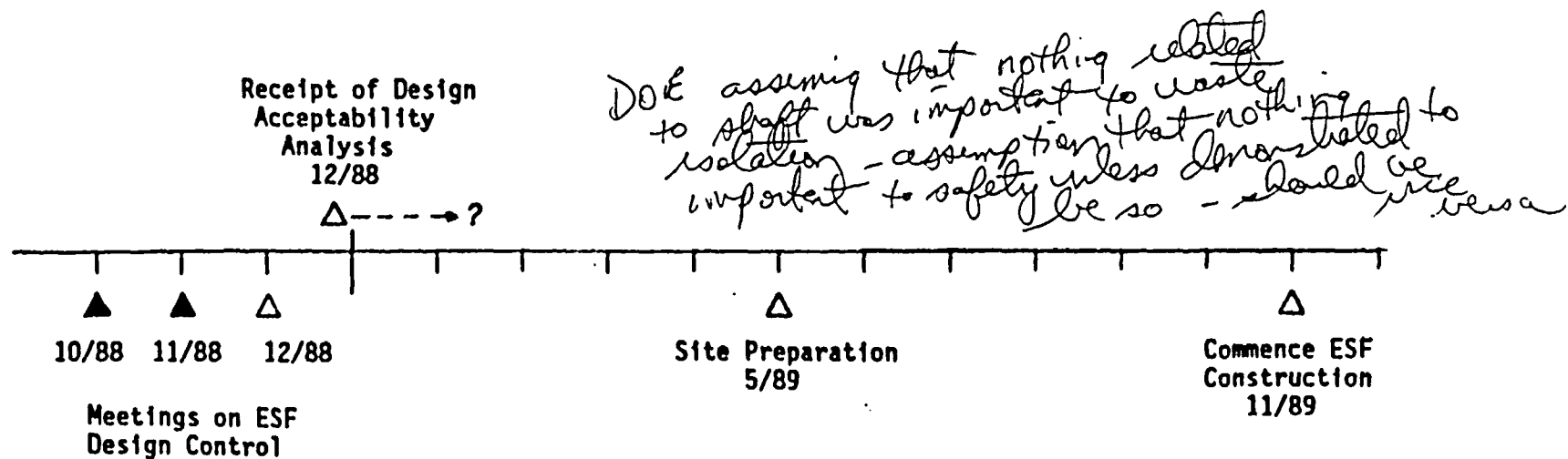
*100 technical issues identified
regarding shaft -
bottom line problem - lack of
design control process*

Schedule for site characterization plan and exploratory shaft facility



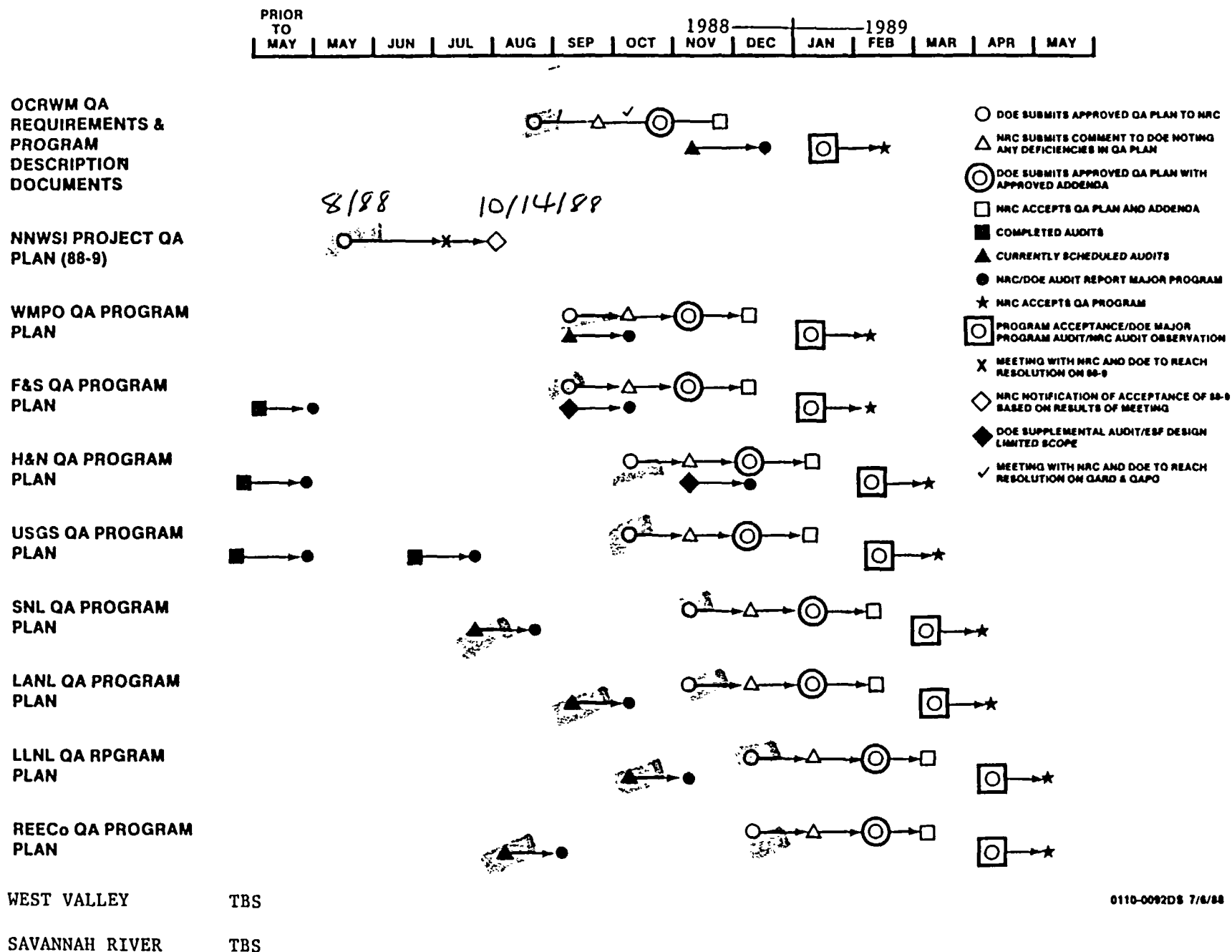
SCP Review Process

1988 * 1989



ESF-Related Activities

SCHEDULE FOR NRC ACCEPTANCE OF DOE QA PROGRAM



RULEMAKINGS

ONGOING

- ° NEGOTIATED RULEMAKING ON SUBMISSION AND MANAGEMENT OF RECORDS AND DOCUMENTS
- ° NEPA REVIEW PROCEDURES FOR GEOLOGIC REPOSITORIES FOR HLW - *Final rule 5/89*
- ° DEFINITION OF HLW - *Part 61 (Greater than class C)*

POTENTIAL FUTURE

- ° GROUNDWATER TRAVEL TIME RULEMAKING
- ° ANTICIPATED/UNANTICIPATED PROCESSES AND EVENTS RULEMAKING
- ° DEFINITION OF "SUBSTANTIALLY COMPLETE CONTAINMENT" RULEMAKING
- ° DISTURBED ZONE RULEMAKING
- ° DESIGN BASIS ACCIDENT DOSE LIMIT RULEMAKING
- ° EMERGENCY PLANNING CRITERIA RULEMAKING
- ° CONFORM PART 60 TO EPA STANDARD
- ° CRITERIA FOR CONTAINMENT OF "GREATER THAN CLASS C" LOW-LEVEL WASTE IF IT GOES INTO REPOSITORY
- ° IMPLEMENTING THE EPA STANDARD
- ° WASTE CONFIDENCE

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSIS (CNWRA)

- ° OCTOBER 1987, THE NRC EXECUTED A CONTRACT WITH SOUTHWEST RESEARCH INSTITUTE IN SAN ANTONIO, TEXAS, WHICH ESTABLISHED THE CENTER FOR NUCLEAR WASTE REGULATORY ANALYSIS (CNWRA), A FEDERALLY-FUNDED RESEARCH AND DEVELOPMENT CENTER.
- ° THREE PURPOSES FOR FFRDC
 - AVOID CONFLICT-OF-INTEREST
 - PROVIDE LONG-TERM CONTINUITY IN TECHNICAL ASSISTANCE AND RESEARCH
 - PROVIDE CENTRAL CONTRACTING CAPABILITY FOR PERFORMING AND INTEGRATING ALL ASPECTS OF HLW LICENSING PROGRAM

MONITORED RETRIEVABLE STORAGE (MRS)

- 0 FINAL AMENDMENTS TO 10 CFR PART 72 PUBLISHED IN AUGUST 1988 PROVIDE EXPLICITLY FOR LICENSING OF MRS (RULE ALSO COVERS LICENSING OF SPENT FUEL STORAGE OUTSIDE OF REACTOR BASINS)
- 0 UPON REQUEST, NRC STAFF HAS TWICE BRIEFED MRS REVIEW COMMISSION
 - JULY 1988 BRIEFING COVERED NRC ROLE ON MRS, COMMENTS ON DOE PROPOSAL, NRC REGULATORY FRAMEWORK FOR MRS AND THE STATUS OF SPENT FUEL STORAGE AT REACTORS
 - SEPTEMBER 1988 BRIEFING COVERED THE REGULATORY PROCESS FOR CERTIFICATION OF SHIPPING CASKS UNDER 10 CFR PART 71; THE LICENSING PROCESS FOR DRY STORAGE OF SPENT FUEL AT REACTOR SITES UNDER 10 CFR PART 72; AND THE LICENSING PROCESS FOR RERACKING OF POOLS AND ROD CONSOLIDATION UNDER 10 CFR PART 50
- 0 NRC STAFF MAINTAINS CONTACT WITH DOE STAFF TO KEEP ABREAST OF MRS MATTERS

SPENT FUEL STORAGE

0 REACTOR STATUS

- NEARLY ALL HAVE RERACKED AT LEAST ONCE PROVIDING MOST WITH STORAGE CAPACITY TO MID-1990'S OR BEYOND
- ALTERNATIVES FOR ADDITIONAL STORAGE:

ROD CONSOLIDATION
DRY STORAGE MODULES
TRANSSHIPMENT

0 DOE PROJECTIONS

- TOTAL SPENT FUEL DISCHARGED, YEAR 2003 -- 54,000 METRIC TONS
- MAX. REACTOR POOL STORAGE (WITH RERACKING) -- 43,000 METRIC TONS
- ADDITIONAL STORAGE CAPACITY REQUIRED -- 11,000 METRIC TONS

DRY SPENT FUEL STORAGE

0 DRY STORAGE LICENSES ISSUED

- VEPCO SURRY, JULY 1986--METAL CASK STORAGE
- CP&L ROBINSON 2, AUGUST 1986--STEEL CANISTER/CONCRETE MODULE

0 PENDING AND EXPECTED APPLICATIONS

- DUKE POWER OCONEE (PENDING)
- CP&L ROBINSON 2 AND BRUNSWICK (1989); BG&E CALVERT CLIFFS (1989); PALISADES (1989?)

0 DRY STORAGE MODULE DESIGN TOPICAL REPORTS APPROVED

- 3 METAL CASK DESIGNS, 1 STEEL CANISTER/CONCRETE MODULE, 1 MODULAR VAULT DESIGN

0 STANDARDIZATION/COMPATIBILITY ISSUE

- COMMISSION BRIEFED 10/19/88; STAFF ADVISED TO CONTINUE WORKING WITH DOE AND INDUSTRY TO ACHIEVE STANDARDIZATION AND COMPATIBILITY TO GREATEST EXTENT POSSIBLE

0 PROPOSED REVISION OF 10 CFR PART 72

- DUE TO COMMISSION 1/79
- PROVIDES FOR CERTIFICATION OF DRY STORAGE CASK DESIGNS AND GENERAL LICENSE FOR REACTOR OPERATORS TO USE CERTIFIED CASKS

HIGH LEVEL WASTE RESEARCH

OBJECTIVE

- o PROVIDE TECHNICAL BASIS FOR INDEPENDENT ASSESSMENT USED TO LICENSE DOE HLW REPOSITORY

BASIS FOR PROGRAM

- o LEGISLATIVE MANDATE: NWPA (1982), NWPAA (1987)
- o NEW TECHNOLOGY - NO OPERATIONAL EXPERIENCE

FOCUS

- o PERFORMANCE ASSESSMENT FOR YUCCA MOUNTAIN HYDROGEOLOGY (UNSATURATED, FRACTURED TUFF SETTING)
- o CONFIRMING MATERIALS AND ENGINEERED SYSTEMS PERFORMANCE
- o PROPOSED REVISIONS TO HLW REGS (10 CFR 60)

HIGH-LEVEL WASTE PROGRAM ACTIVITIES

o MATERIALS AND ENGINEERING

- WASTE PACKAGE CORROSION
- SEALING OF BOREHOLES/SHAFTS
- SEISMIC EFFECTS/ROCK MECHANICS

o HYDROLOGY AND GEOCHEMISTRY

- GROUND-WATER FLOW AND TRANSPORT THRU UNSATURATED FRACTURED MEDIA
- NEAR-FIELD GEOCHEMISTRY
- RADIONUCLIDE SORPTION/TRANSPORT

o COMPLIANCE ASSESSMENT AND MODELING

- INDEPENDENT PERFORMANCE ASSESSMENT METHODOLOGY
- VALIDATION: FIELD AND NATURAL ANALOG STUDIES

o SUPPORT OF RULEMAKING

NEAR-TERM TOPICS FOR COMMISSION ACTION

- ° DECISION ON LSS ADMINISTRATOR/LOCATION (7/89)
- ° SITE CHARACTERIZATION ANALYSIS/EXPLORATORY SHAFT
- ° FINAL MISSION PLAN AMENDMENT (EARLY CY89)
- ° PROJECT DECISION SCHEDULE
- ° WASTE CONFIDENCE

BACKUP SLIDES

EPA STANDARDS

- ° IN 1987, THE PART OF THE EPA STANDARDS DEALING WITH POST-CLOSURE REPOSITORY PERFORMANCE WAS FOUND INADEQUATE BY A FEDERAL COURT. EPA PROJECTS REISSUANCE OF THOSE STANDARDS IN A YEAR OR TWO.
- ° EPA IS PREPARING TO REISSUE ALL STANDARDS PROMULGATED UNDER THE CLEAN AIR ACT AUTHORITY. THIS WOULD INCLUDE THE PART OF THE HLW STANDARDS APPLICABLE FOR OPERATIONS AND STORAGE OF HLW AT A REPOSITORY OR MRS FACILITY.
- ° UNTIL THESE RULEMAKINGS HAVE BEEN COMPLETED, THERE IS EFFECTIVELY NO OVERALL SAFETY STANDARD TO GUIDE DOE'S REPOSITORY DEVELOPMENT.
- ° THE NRC STAFF BELIEVES THAT DOE CAN PROCEED WITH SITE CHARACTERIZATION WITHOUT FINAL EPA STANDARDS IN PLACE, BUT INITIATION OF REPOSITORY CONSTRUCTION MIGHT BE DELAYED IF THERE ARE SIGNIFICANT DELAYS IN REISSUING THE STANDARDS.

GAO REPORT ON QUALITY ASSURANCE

CONCLUSIONS:

- ° NRC NOT AGGRESSIVE IN ASSESSING DOE'S PROGRAM AND IDENTIFYING AND RESOLVING ISSUES
- ° NRC STAFF NOT ELEVATING PROBLEMS TO THE ATTENTION OF SENIOR NRC AND DOE MANAGEMENT

QUARTERLY PROGRESS REPORT

NRC STAFF HAS BEEN TRACKING DOE PROGRESS IN 7 AREAS THAT COVER KEY ASPECTS OF THE NRC-DOE PROGRAM:

- ° DOE IMPLEMENTATION OF SCHEDULED AND SYSTEMATIC CONSULTATIONS
- ° DEVELOPMENT OF AN INFORMATION RETRIEVAL SYSTEM
- ° EARLY IMPLEMENTATION OF A QUALITY ASSURANCE PROGRAM
- ° EARLY ESTABLISHMENT OF REPOSITORY DESIGN PARAMETERS
- ° EARLY RESOLUTION OF STATE AND TRIBAL CONCERNS
- ° ADOPTION OF THE POLICY OF CONSERVATISM
- ° EARLY RESOLUTION OF ISSUES THROUGH A PROGRAM OF LICENSING TOPICAL REPORTS AND OTHER MECHANISMS

WASTE CONFIDENCE

- ° IN AUGUST, 1984, NRC ISSUED FIVE FINDINGS RELATED TO THE TECHNICAL FEASIBILITY, SAFETY, AND TIMING OF STORAGE AND DISPOSAL OF HLW AND SPENT FUEL. AMONG OTHER THINGS, THE COMMISSION FOUND THAT AT LEAST ONE REPOSITORY FOR HLW AND SPENT FUEL WOULD BE AVAILABLE BY 2007-2009.
- ° ON THE BASIS OF THE FINDINGS IN THE WASTE CONFIDENCE DECISION, THE COMMISSION SIMULTANEOUSLY PUBLISHED AN AMENDMENT TO PART 50 PROVIDING THAT THE ENVIRONMENTAL AND SAFETY IMPLICATIONS OF EXTENDED ONSITE STORAGE NEED NOT BE CONSIDERED IN COMMISSION PROCEEDINGS RELATED TO ISSUANCE OR AMENDMENTS OF A REACTOR OPERATING LICENSE.
- ° AUGUST 1984 DECISION NOTED THAT THE FINDINGS "WERE IN THE NATURE OF A PREDICTION" AND THAT THE COMMISSION WOULD REVIEW ITS CONCLUSIONS "SHOULD SIGNIFICANT AND PERTINENT UNEXPECTED EVENTS OCCUR" OR AT LEAST EVERY FIVE YEARS UNTIL A REPOSITORY IS AVAILABLE.
- ° IN SEPTEMBER 1988, THE COMMISSION ESTABLISHED A REVIEW GROUP TO REVIEW THE FINDINGS IN THE WASTE CONFIDENCE PROCEEDING. THE REVIEW GROUP IS CHAIRED BY THE OFFICE OF THE GENERAL COUNSEL, AND CONSISTS OF MEMBERS FROM NMSS, NRR, AND RES IN ADDITION TO OGC.
- ° THE FIRST DELIVERABLE TO THE COMMISSION (DUE IN DECEMBER) IS A PAPER DESCRIBING PROCEDURALLY HOW THE REVIEW GROUP INTENDS TO REVIEW THE FINDINGS, AN ESTIMATE OF RESOURCES NEEDED FOR THE REVIEW AND A SCHEDULE FOR MAJOR PRODUCTS DURING THE REVIEW.

MAJOR POINTS IN LETTER TO DOE ON DRAFT 1988 MISSION PLAN AMENDMENT

- ° DOE'S "AGGRESSIVE AND SUCCESS ORIENTED" SCHEDULE COULD LEAVE DOE INSUFFICIENT TIME TO DEVELOP COMPLETE AND HIGH-QUALITY CONSTRUCTION AUTHORIZATION APPLICATION.
- ° DRAFT '88 MISSION PLAN AMENDMENT INDICATES A 6-MONTH DELAY IN THE START OF EXPLORATORY SHAFT CONSTRUCTION AND IN-SITU TESTING. ALL OTHER MILESTONES ARE UNCHANGED. THIS INDICATES THAT THE SCHEDULE FOR NEAR-TERM PROGRAM ACTIVITIES IS BEING COMPRESSED.
- ° DOE NEEDS TO PREPARE FOR CONTINGENCIES, FOR EXAMPLE IN ESTIMATES OF SPENT FUEL DISCHARGES, RECOMMENDATION OF MRS REVIEW COMMISSION, AND POTENTIAL FINDING THAT YUCCA MOUNTAIN IS UNSUITABLE FOR DEVELOPMENT AS A REPOSITORY.

NEAR-TERM CNWRA ACTIVITIES

- o ALMOST ALL TECHNICAL ASSISTANCE WORK WILL BE PHASED INTO CNWRA BY END OF YEAR 2 INSTEAD OF BEGINNING OF YEAR 4
 - IN YEAR TWO, SUBSTANTIAL REQUIREMENT TO SUPPORT NRC STAFF PRODUCTION SCHEDULES
 - DUE TO EXISTING CONTRACTUAL DEMANDS, MOST OF THIS SUPPORT WILL BE PROVIDED AFTER FIRST OF YEAR
- o PROGRAM ARCHITECTURE DEVELOPMENT ACCELERATED
 - AMBITIOUS SCHEDULE ESTABLISHED TO MEET NRC'S NEW DIRECTION
 - MILESTONE 18 PROGRAM ARCHITECTURE PRELIMINARY DESIGN AND SYSTEM (PASS) PROTOTYPE SUCCESSFULLY DEMONSTRATED 4/20/88
 - PROOF-OF-SYSTEM DATA DEMONSTRATION SCHEDULED FOR 12/1/88
 - PORTION OF PROGRAM ARCHITECTURE RELATED TO SITING REPOSITORY TO BE COMPLETED BY END OF DECEMBER 1988
 - BY END OF OCTOBER 1989 OVERALL PROGRAM ARCHITECTURE DEVELOPED TO POINT IT CAN BE BASELINED
 - HIGH LEVEL OF INTERACTION REQUIRED BETWEEN CNWRA AND NRC STAFF IF SCHEDULE IS TO BE MET (CONSIDER EXPANDING NRC TRAVEL BUDGET FOR THIS PURPOSE)