NWPO

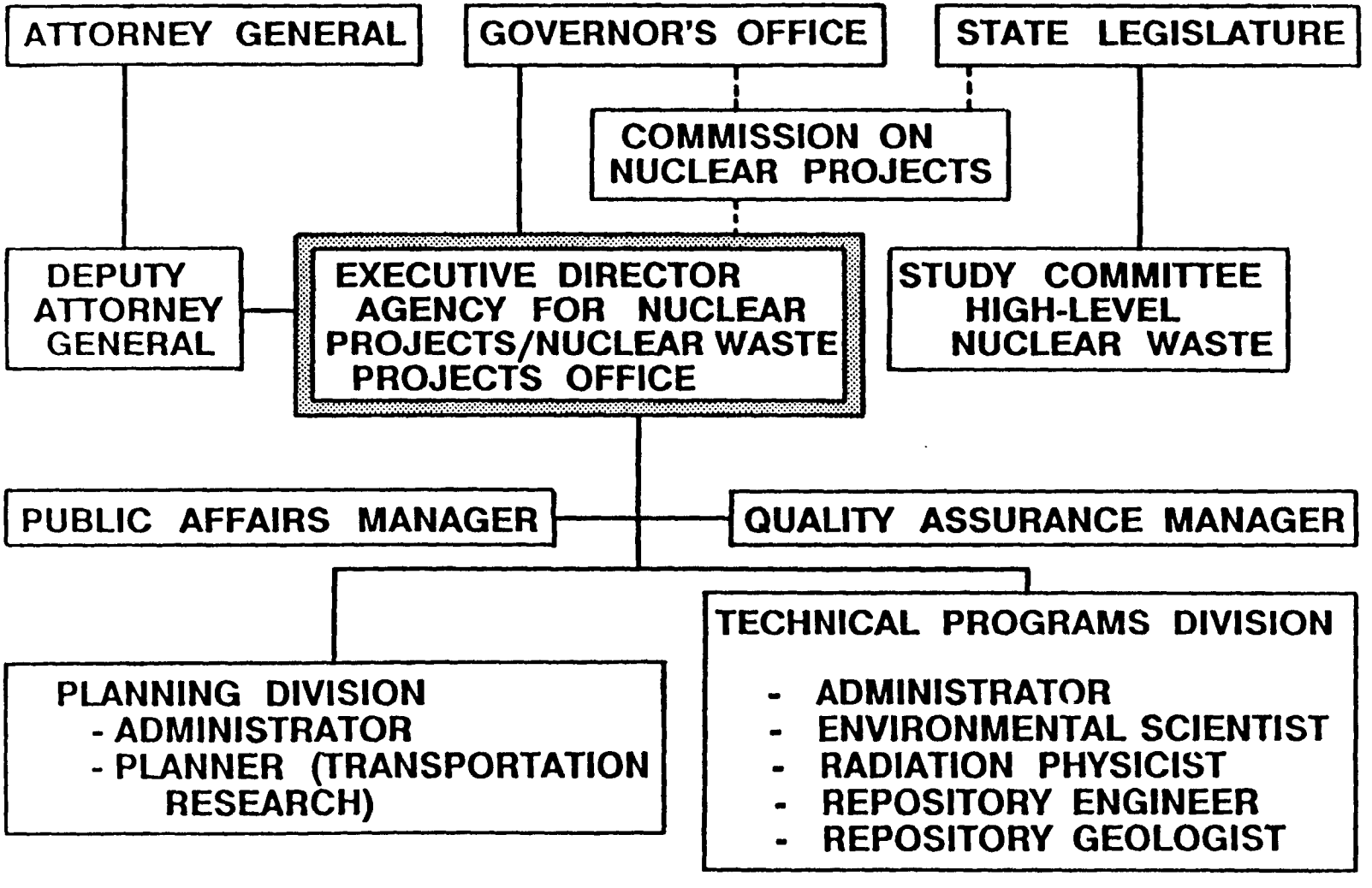
STATE OF NEVADA

Presentation To

NUCLEAR WASTE TECHNICAL REVIEW BOARD

SUBJECT:	INTRODUCTION
DATE:	JUNE 26, 1989
PRESENTER:	ROBERT R. LOUX
TITLE:	EXECUTIVE DIRECTOR
ORGANIZATION:	NEVADA AGENCY FOR NUCLEAR PROJECTS CARSON CITY, NEVADA
TELEPHONE:	(702) 885-3744

STATE OF NEVADA AGENCY FOR NUCLEAR PROJECTS ORGANIZATIONAL CHART



- AGENCY FOR NUCLEAR PROJECTS RESPONSIBLE FOR OVERSIGHT OF DOE'S HIGH-LEVEL RADIOACTIVE WASTE REPOSITORY PROGRAM.

- AGENCY ACTIVITIES FUNDED THROUGH DOE GRANTS FROM NWPA NUCLEAR WASTE FUND.

AGENCY GOALS

- TO INSURE THAT PUBLIC HEALTH AND SAFETY AND THE ENVIRONMENT ARE ADEQUATELY PROTECTED.
- TO ASSESS SOCIAL, ECONOMIC AND TRANSPORTATION IMPACTS THAT THE STATE COULD EXPERIENCE.
- TO PROVIDE POLICY GUIDANCE TO THE GOVERNOR AND OTHER STATE LEADERS.

TECHNICAL ACTIVITIES

- DEFINE TECHNICAL ISSUES CRITICAL TO THE HEALTH AND SAFETY OF NEVADANS AND THEIR ENVIRONMENT.
- REVIEW DOE PLANS, STUDIES, AND DOCUMENTS.
- MONITOR DOE FIELD AND LABORATORY ACTIVITIES.
- CONDUCT INDEPENDENT STUDIES RELATED TO ISSUES OF CONCERN.

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STATE OF NEVADA

Presentation To

NUCLEAR WASTE TECHNICAL REVIEW BOARD

SUBJECT: OVERVIEW OF TECHNICAL CONCERNS ABOUT PROPOSED YUCCA MOUNTAIN NUCLEAR WASTE REPOSITORY.

DATE: JUNE 26, 1989

PRESENTER: CARL A. JOHNSON

TITLE: ADMINISTRATOR OF TECHNICAL PROGRAMS

ORGANIZATION: NEVADA AGENCY FOR NUCLEAR PROJECTS
CARSON CITY, NEVADA

TELEPHONE: (702) 885-3744

PURPOSE OF PRESENTATION

DISCUSS NEVADA'S TECHNICAL SITE SUITABILITY CONCERNS RELATED TO THE PROPOSED YUCCA MOUNTAIN REPOSITORY SITE.

OVERVIEW PRESENTATION AGENDA

- GENERAL SITE SUITABILITY CONCERNS
- SITE SUITABILITY TECHNICAL ISSUES

GENERAL SITE SUITABILITY CONCERNS

1. SITE SUITABILITY TECHNICAL ISSUES

- 1987 NWPAA INDENTIFYING THE LOCATION OF YUCCA MOUNTAIN AS THE SINGLE CANDIDATE SITE FOR CHARACTERIZATION DOES NOT ASSURE THE SUITABILITY OF THE SITE.
  - EARLY RESOLUTION OF SITE KEY SUITABILITY ISSUES

2. REGULATORY POLICY ISSUES

- 10 CFR PART 100, APPENDIX A
- DATA SUFFICIENCY
- DETERMINISTIC vs. PROBABALISTIC APPROACHES
- SYSTEM LICENSING
- PHASED LICENSING
- LAND OWNERSHIP AND CONTROL

3. SITE DISTURBANCE ISSUES

- DEVELOPMENT OF SUFFICIENT DATA WITHOUT SACRIFICING SITE INTEGRITY
  - USE OF HIGH RESOLUTION GEOPHYSICS
  - PENETRATION OF CALICO HILLS TUFF
  - CHARACTERIZATION OF FRACTURE SYSTEMS

4. LONG-TERM POST-CLOSURE ISSUES

- DEEP GEOLOGIC REPOSITORY IS A 10,000 YEAR PROJECT
  - PREDICTABILITY
  - LONG-TERM RISKS
  - ENGINEERED BARRIERS
  - AVAILABLE TECHNOLOGY

BASIS OF TECHNICAL CONCERN

10 CFR 60.31(a) PROVIDES THAT THE COMMISSION MAY AUTHORIZE CONSTRUCTION IF IT DETERMINES:

> "That there is reasonable assurance that the types and amounts of radioactive materials described in the application can be received, possessed, and disposed of in a geologic repository operations area of the design proposed [at the site proposed] without unreasonable risk to the health and safety of the public. . . .".

SITE SUITABILITY

TECHNICAL ISSUES

1. UNDERSTANDING THE TECTONIC SETTING OF SOUTHERN NEVADA AND ITS IMPLICATIONS FOR YUCCA MOUNTAIN SITE SUITABILITY

   - GEOLOGIC PROCESSES
   - DEEP GEOLOGIC STRUCTURES
   - EARTHQUAKE vs. FAULT RELATIONSHIPS
   - EFFECT OF NUCLEAR TESTING
   - STRESS REGIME
   - TECTONIC AFFECT ON HYDROLOGY

2. ACTIVE FAULTING AT YUCCA MOUNTAIN

- ACTIVE FAULTS IDENTIFIED
- STYLES OF FAULTING
- RECURRENCE RATES
- EARTHQUAKE vs FAULT RELATIONSHIPS
- RELATION TO HYDROLOGIC REGIME

3. CHARACTERISTICS OF THE VADOSE (UNSATURATED) ZONE

- MATRIX vs FRACTURE FLOW
  - ROCK PORES PARTIALLY FILLED
  - TUFFS HIGHLY FRACTURED
  - EVIDENCE OF FRACTURE FLOW
  - RAPID FLOW RATES
  - FRACTURE CHANGES WITH TIME
- GASEOUS PHASE MOVEMENT

4. REGIONAL GROUNDWATER FLOW

- RELATIONSHIP OF YUCCA MOUNTAIN AQUIFIER TO REGIONAL FLOW SYSTEM
- RAPID FLOW
- FUTURE WATER SUPPLY

5. UNCERTAINTY IN MODELING AND PERFORMANCE ASSESSMENT

- LACK OF ACCEPTED MODELS
- LACK OF EXPERIENCE IN MODELING PERFORMANCE FOR 10,000 YEARS
- REPRESENTATIVENESS OF DATA
- COMPLEXITY OF NATURAL SYSTEMS
  - DYNAMIC NATURAL SYSTEMS
  - COUPLED PROCESSES

6. GEOCHEMISTRY

- RETARDATION
  - ABILITY OF SORPTIVE MINERALS TO RETARD RADIONUCLIDES
  - REDUCTION IN SORPTIVE CAPACITY WITH INCREASED TEMPERATURES
  - LIMITED SORPTIVE MINERALS ALONG FRACTURES

- DISTURBED ZONE
  - ALTERATION OF VADOSE WATER CHEMISTRY
  - ALTERATION OF HOST ROCK

7. VOLCANISM

- YOUNG VOLCANIC EVENTS
- RECURRENCE RATES
- VOLCANISM vs. HYDROLOGY RELATIONSHIPS
- STRUCTURAL CONTROL

8. CLIMATE CHANGE

- EFFECT ON HYDROLOGIC SYSTEM
- PREDICTABILITY
- "PAST MAY NOT BE KEY TO FUTURE"
  - GREENHOUSE EFFECT
  - RATES OF CHANGE

9. NATURAL RESOURCE POTENTIAL

- MINERAL RESOURCES
- OIL AND GAS RESOURCES
- GEOTHERMAL RESOURCES
- WATER RESOURCES

TECHNICAL PRESENTATIONS

TECTONICS	DR. MICHAEL ELLIS DR. RICHARD SCHWEICKERT
FAULTING	JOHN BELL
HYDROLOGY	
UNSATURATED ZONE	DR. MARTIN MIFFLIN
SATURATED ZONE	DR. JOHN FORDHAM
HYDROLOGIC MODELING	SCOTT TYLER
PERFORMANCE ASSESSMENT	LINDA LEHMAN
GEOCHEMISTRY	DR. MAURICE MORGENSTEIN DR. DONALD SHETTEL
VOLCANISM	DR. EUGENE SMITH
CLIMATE CHANGE	DR. MARTIN MIFFLIN
MINERAL RESOURCES	DR. LAWRENCE LARSON