

BRIEFING TO THE NWTRB

ON

THE WASTE CONFIDENCE PROCEEDING

OCTOBER 10, 1990

WASTE CONFIDENCE PROCEEDING

- o A GENERIC ENVIRONMENTAL FINDING**
- o RESULTED FROM REACTOR LICENSING LITIGATION**
- o ORIGINAL PROCEEDING 1979-1984**
 - 1984 DECISION**
 - PLEDGE TO REVIEW EVERY 5 YRS**
- o 1989 REVIEW**

NOVEMBER 1976 NRDC PETITION

- o FOR RULEMAKING ON WHETHER RADIOACTIVE WASTES FROM NUCLEAR REACTORS CAN BE SAFELY DISPOSED OF; AND**
- o THAT NRC NOT GRANT OPERATING LICENSES OR AMENDMENTS UNTIL ABOVE FINDING OF SAFETY CAN BE MADE.**
 - TWO NUCLEAR UTILITY COMPANIES REQUEST LICENSE AMENDMENTS TO EXPAND SPENT FUEL STORAGE CAPACITY (NOVEMBER 1976)**

- o **U.S. CIRCUIT COURT OF APPEALS DID NOT VACATE LICENSE AMENDMENTS, BUT DID REMAND TO NRC THE FOLLOWING ISSUE IN MAY 1979;**

"WHETHER THERE IS REASONABLE ASSURANCE THAT AN OFF-SITE STORAGE SOLUTION WILL BE AVAILABLE BY THE YEARS 2007-2009, THE EXPIRATION OF THE PLANTS' OPERATING LICENSES, AND IF NOT, WHETHER THERE IS REASONABLE ASSURANCE THAT FUEL CAN BE SAFELY STORED AT REACTOR SITES BEYOND THOSE DATES."

PURPOSE OF 1979 WASTE CONFIDENCE PROCEEDING:

"SOLELY TO ASSESS GENERICALLY THE DEGREE OF ASSURANCE NOW AVAILABLE THAT RADIOACTIVE WASTE CAN BE SAFELY DISPOSED OF, TO DETERMINE WHEN SUCH DISPOSAL OR OFF-SITE STORAGE WILL BE AVAILABLE, AND TO DETERMINE WHETHER RADIOACTIVE WASTES CAN BE SAFELY STORED ON-SITE PAST THE EXPIRATION OF EXISTING LICENSES UNTIL OFF-SITE DISPOSAL OR STORAGE IS AVAILABLE."

1984 WASTE CONFIDENCE FINDINGS

- 1. DISPOSAL IN A REPOSITORY IS FEASIBLE**
- 2. AT LEAST ONE REPOSITORY WILL BE AVAILABLE BY 2007-2009; SUFFICIENT REPOSITORY CAPACITY WILL BE AVAILABLE WITHIN 30 YRS TO DISPOSE OF ALL SPENT FUEL AND HLW GENERATED**
- 3. SPENT FUEL AND HLW WILL BE SAFELY MANAGED**

1984 WASTE CONFIDENCE FINDINGS (CONT'D)

- 4. SPENT FUEL CAN BE SAFELY STORED FOR AT LEAST 30 YEARS**

- 5. SUFFICIENT ON-SITE OR OFF-SITE STORAGE CAPACITY WILL BE MADE AVAILABLE, IF NEEDED.**

WASTE CONFIDENCE RULEMAKINGS

- o 10 CFR 50.54 PROVIDES THAT LICENSEES SUBMIT PLANS FOR SPENT FUEL MANAGEMENT AT-REACTOR NO LATER THAN 5 YRS PRIOR TO OPERATING LICENSE (OL) EXPIRATION**
- o 10 CFR 51.23 PROVIDES THAT NO DISCUSSION OF ANY ENVIRONMENTAL IMPACT OF SPENT FUEL STORAGE FOLLOWING OL EXPIRATION IS REQUIRED IN CONNECTION WITH A LICENSE OR LICENSE AMENDMENT FOR A REACTOR OR AN ISFSI**

REVIEW OF ISSUES CONSIDERED IN 1984 DECISION

- 1. FINDING TECHNICALLY ACCEPTABLE SITES IN A
TIMELY FASHION**
- 2. TIMELY DEVELOPMENT OF WASTE PACKAGES AND
ENGINEERED BARRIERS**
- 3. INSTITUTIONAL UNCERTAINTIES IN REPOSITORY
PROGRAM**
- 4. CONTINUITY OF WASTE PROGRAM MANAGEMENT**
- 5. CONTINUED PROGRAM FUNDING**
- 6. DOE SCHEDULE FOR REPOSITORY DEVELOPMENT**

**ORIGINAL AND RECOMMENDED 1989
FINDING 1**

**"THE COMMISSION FINDS REASONABLE ASSURANCE
THAT SAFE DISPOSAL OF HIGH-LEVEL RADIOACTIVE
WASTE AND SPENT FUEL IN A MINED GEOLOGIC
REPOSITORY IS TECHNICALLY FEASIBLE."**

BASIS FOR REAFFIRMING ORIGINAL FINDING 1

- o WASTE PACKAGE**
- o WASTE FORM/REPROCESSING**
- o BACKFILL**
- o SEALANTS**
- o CONCLUSIONS**

- ON BASIS OF RESEARCH TO DEVELOP WASTE FORM, WASTE PACKAGE, BACKFILL, AND SEALS, NRC STAFF HAS NO BASIS FOR DECREASED CONFIDENCE IN TECHNICAL FEASIBILITY OF GEOLOGIC DISPOSAL.

ORIGINAL FINDING 2

"THE COMMISSION FINDS REASONABLE ASSURANCE THAT ONE OR MORE MINED GEOLOGIC REPOSITORIES FOR COMMERCIAL HIGH-LEVEL RADIOACTIVE WASTE AND SPENT FUEL WILL BE AVAILABLE BY THE YEARS 2007-2009, AND THAT SUFFICIENT REPOSITORY CAPACITY WILL BE AVAILABLE WITHIN 30 YRS BEYOND EXPIRATION OF ANY REACTOR OPERATING LICENSE TO DISPOSE OF EXISTING COMMERCIAL HIGH-LEVEL RADIOACTIVE WASTE AND SPENT FUEL ORIGINATING IN SUCH REACTOR AND GENERATED UP TO THAT TIME."

BASIS FOR ORIGINAL COMMISSION FINDING 2

- 1. 2007-2009 TIMEFRAME FOR REPOSITORY OPERATION
BASED ON COURT REMAND OF ISSUE FROM REACTOR
LICENSING CASES -- NOT A REQUIREMENT FOR SAFETY
OR ENVIRONMENT.**
- 2. 30-YEAR TIMEFRAME FOR AVAILABILITY OF
SUFFICIENT CAPACITY BASED ON:**

**BASIS FOR ORIGINAL COMMISSION FINDING 2
(CONT'D)**

- A. CONSERVATIVE ESTIMATED TIME FOR DISPOSAL OF ALL SPENT FUEL AFTER 2007-2009**
- B. EVALUATION OF TECHNICAL CONSIDERATIONS FOR LONG-TERM STORAGE (E.G., RELIABILITY OF ENGINEERED STRUCTURES)**
- C. EVALUATION OF INSTITUTIONAL CONSIDERATIONS FOR LONG-TERM STORAGE (RELIABILITY OF FINANCING AND MANAGEMENT)**

RECOMMENDED 1989 FINDING 2

THE COMMISSION FINDS REASONABLE ASSURANCE THAT AT LEAST ONE MINED GEOLOGIC REPOSITORY WILL BE AVAILABLE WITHIN THE FIRST QUARTER OF THE 21ST CENTURY, AND THAT SUFFICIENT REPOSITORY CAPACITY WILL BE AVAILABLE WITHIN 30 YRS BEYOND THE LICENSED LIFE FOR OPERATION OF ANY REACTOR TO DISPOSE OF THE COMMERCIAL HIGH-LEVEL RADIOACTIVE WASTE ORIGINATING IN SUCH REACTOR AND GENERATED UP TO THAT TIME.

BASIS FOR RECOMMENDED 1989 FINDING 2

- A. DELAYS IN DOE PROGRAM PRIOR TO NWPAA**
- B. NEED TO ACCOUNT FOR POSSIBILITY THAT YUCCA MOUNTAIN SITE WILL PROVE SUITABLE**
- C. SUSPENSION OF SITE-SPECIFIC ACTIVITIES FOR SECOND REPOSITORY**
- D. DOE ESTIMATE OF TIME REQUIRED FOR SECOND REPOSITORY**
- E. INCREASED CONFIDENCE IN LONG-TERM STORAGE**
- F. REVIEW OF ISSUES CONSIDERED IN 1984 DECISION**

A. DELAYS IN DOE PROGRAM PRIOR TO NWPAA

- 1. 5-YEAR SLIPPAGE IN DATE FOR REPOSITORY AVAILABILITY (FROM 1998 TO 2003) (DOE DRAFT 1987 MISSION PLAN AMENDMENT, JANUARY 1987)**

- 2. SLIPPAGE IN NEAR-TERM MILESTONES FOR EXPLORATORY SHAFT EXCAVATION AND START OF IN-SITU TESTING (DOE DRAFT AND FINAL 1987 MISSION PLAN AMENDMENTS)**

**B. NEED TO ACCOUNT FOR POSSIBILITY THAT
YUCCA MTN SITE WILL PROVE UNSUITABLE**

- o IF YUCCA MTN SITE IS FOUND UNSUITABLE, DOE MUST
SUSPEND CHARACTERIZATION AND REPORT TO CONGRESS**
 - 1987 NWPAA AUTHORIZED DOE TO CHARACTERIZE
ONLY YUCCA MOUNTAIN, NV**
 - SITE CHARACTERIZATION SUSPENDED AT HANFORD,
WA AND DEAF SMITH, TX SITES**
- o NEED TO ACCOUNT FOR POSSIBILITY THAT EPA
STANDARDS FOR HLW DISPOSAL WILL NOT BE TIMELY
OR USABLE FOR EVALUATION OF ANY SITE IN THE
NEAR TERM**

**C. SUSPENSION OF SITE-SPECIFIC ACTIVITIES
FOR SECOND REPOSITORY**

- 1. NWPAA REQUIRED SUSPENSION OF SECOND REPOSITORY,
BUT DID NOT REMOVE 70,000 MTHM LIMIT ON FIRST**
- 2. DOE REQUIRED TO REPORT TO CONGRESS WITH
RECOMMENDATIONS ON SECOND REPOSITORY NO SOONER
THAN 2007, NO LATER THAN 2010**

**D. DOE ESTIMATE OF TIME REQUIRED
FOR SECOND REPOSITORY**

- 1. 25-YEARS FOR SECOND REPOSITORY OPERATION, STARTING
WITH SITE SCREENING (DOE DRAFT 1987 MISSION PLAN
AMENDMENT)**

- 2. BASIS FOR FINDING ON TIMING**
 - A. DOE FINDS YUCCA MTN UNSUITABLE IN THE YEAR 2000**

 - B. DOE REQUIRES 25-YRS TO PROGRESS FROM SITE
SCREENING TO REPOSITORY OPERATION**

E. INCREASED CONFIDENCE IN LONG-TERM STORAGE

NEED: WITH POSSIBLE REACTOR LICENSE RENEWALS UP TO 30 YRS, CONSERVATIVE SCENARIO FOR EARLIEST SPENT FUEL GENERATED AT ANY REACTOR COULD BE A REQUIREMENT FOR STORAGE UP TO 100 YRS. (40-YR INITIAL OPERATING LICENSE, PLUS 30-YR RENEWAL, PLUS 30-YRS WAITING FOR AVAILABILITY OF SUFFICIENT REPOSITORY CAPACITY FOR DISPOSAL OF ALL SPENT FUEL.)

E. INCREASED CONFIDENCE IN LONG-TERM STORAGE (CONT'D)

1. TECHNICAL CONSIDERATIONS

- o NO FAILURE MODES OF SIGNIFICANT CONCERN FOR STORAGE POOLS OR DRY CASKS**
- o IF REPOSITORY AVAILABLE BY 2025, 100-YR STORAGE WILL NOT BE REQUIRED FOR ANY REACTORS**

2. INSTITUTIONAL CONSIDERATIONS

ORIGINAL AND RECOMMENDED 1989 FINDING 3

"THE COMMISSION FINDS REASONABLE ASSURANCE THAT HIGH-LEVEL RADIOACTIVE WASTE AND SPENT FUEL WILL BE MANAGED IN A SAFE MANNER UNTIL SUFFICIENT REPOSITORY CAPACITY IS AVAILABLE TO ASSURE THE SAFE DISPOSAL OF ALL HIGH-LEVEL RADIOACTIVE WASTE AND SPENT FUEL."

ORIGINAL FINDING 4

"THE COMMISSION FINDS REASONABLE ASSURANCE THAT, IF NECESSARY, SPENT FUEL GENERATED IN ANY REACTOR CAN BE STORED SAFELY AND WITHOUT SIGNIFICANT ENVIRONMENTAL IMPACTS FOR AT LEAST 30 YEARS BEYOND THE EXPIRATION OF THAT REACTOR'S OPERATING LICENSE AT THAT REACTOR'S SPENT FUEL STORAGE BASIN, OR AT EITHER ON-SITE OR OFF-SITE INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS."

RECOMMENDED 1989 FINDING 4

THE COMMISSION FINDS REASONABLE ASSURANCE THAT, IF NECESSARY, SPENT FUEL GENERATED IN ANY REACTOR CAN BE STORED SAFELY AND WITHOUT SIGNIFICANT ENVIRONMENTAL IMPACT FOR AT LEAST 30 YRS BEYOND THE LICENSED LIFE FOR OPERATION OF THAT REACTOR AT ITS SPENT FUEL STORAGE BASIN, OR AT EITHER ON-SITE OR OFF-SITE INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS. IF A REACTOR'S OPERATING LICENSE WERE RENEWED FOR 30 YRS, THIS WOULD EXTEND THE EXPECTED DURATION OF SAFE AND ENVIRONMENTALLY ACCEPTABLE STORAGE TO AT LEAST 100 YEARS.

ORIGINAL AND RECOMMENDED 1989 FINDING 5

**"THE COMMISSION FINDS REASONABLE ASSURANCE THAT
SAFE ON-SITE SPENT FUEL STORAGE OR OFF-SITE
SPENT FUEL STORAGE WILL BE MADE AVAILABLE IF
SUCH STORAGE CAPACITY IS NEEDED."**