

LSS ADVISORY REVIEW PANEL

MEETING AGENDA

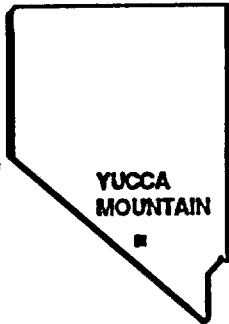
2:00 P.M. SEPTEMBER 9, 1994

- Opening Remarks (John Hoyle, NRC, Panel Chairman)
- Status Report of LSS Administrator (Moe Levin, NRC)
- Status Report of DOE (Claudia Newbury, DOE)
- Discussion of Formation of Technical Subgroup (Panel Members)
- Topical Guidelines Update (Chip Cameron, NRC)
- Future Agenda Discussion

11/9  
next meeting  
12/13 December  
Next mtg - 11/18

U.S. DEPARTMENT OF ENERGY

**W  
A  
R  
M**



**YUCCA MOUNTAIN**

**SITE CHARACTERIZATION**

**PROJECT**

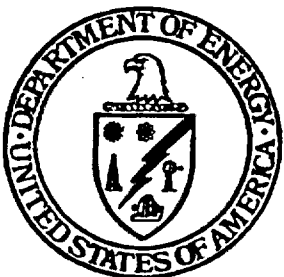
# **RECENT DOE ACTIVITIES RELATED TO LSS DEVELOPMENT**

*PRESENTED TO*

**LICENSING SUPPORT SYSTEM ADVISORY REVIEW PANEL**

*PRESENTED BY*

**CLAUDIA NEWBURY**  
ACTING TEAM LEADER, TECHNICAL SYNTHESIS



**SEPTEMBER 9, 1994**

# Outline

- Operation of the LSS *thinking about it*
- OCRWM Organizational Changes
- ✓ Proposed Program Approach
- LSS Working Group

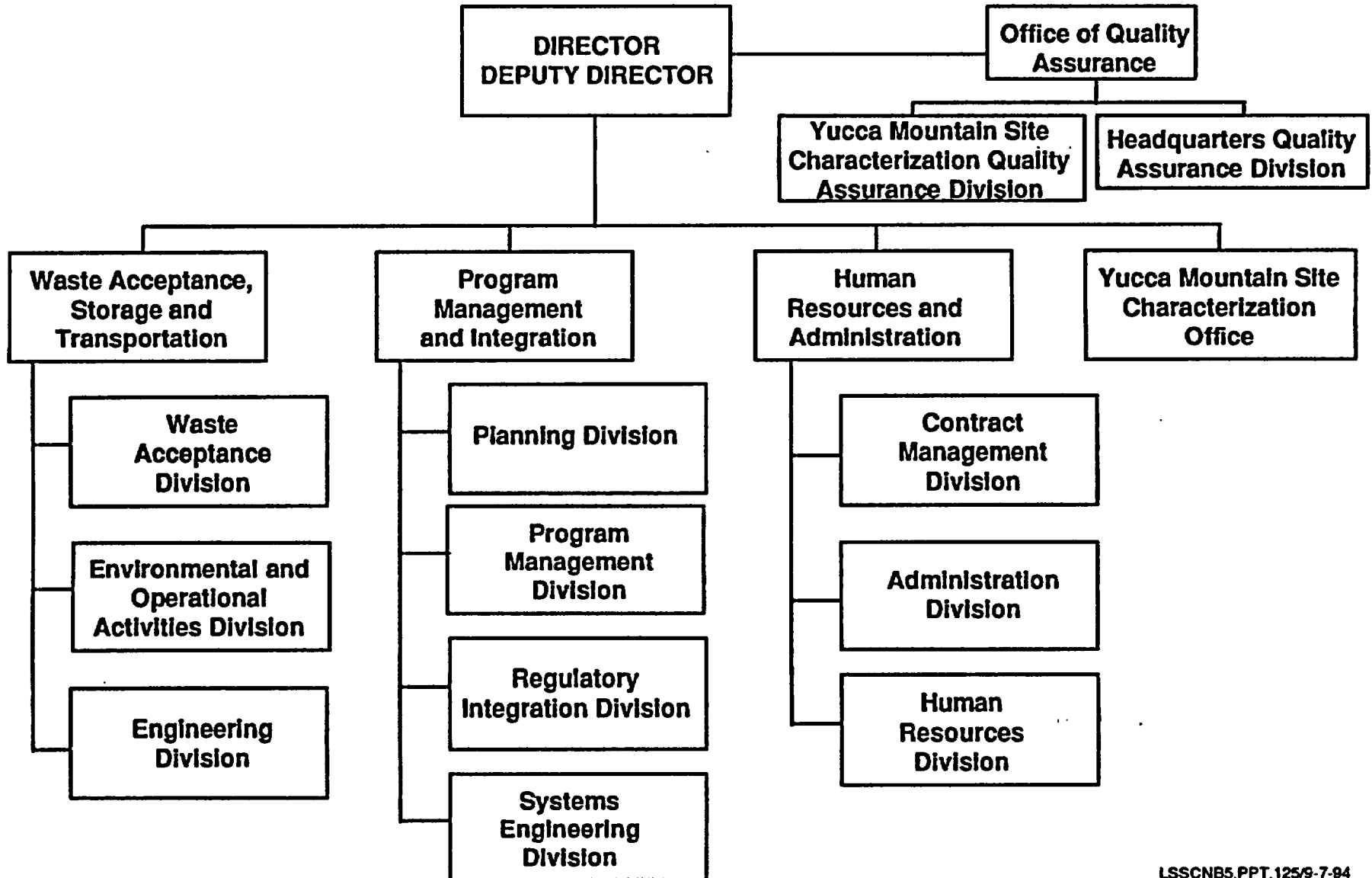
# Operation of the LSS

- **OCRWM is currently evaluating options for funding LSS operation**
- **Results of evaluation will be presented at next LSSARP meeting**

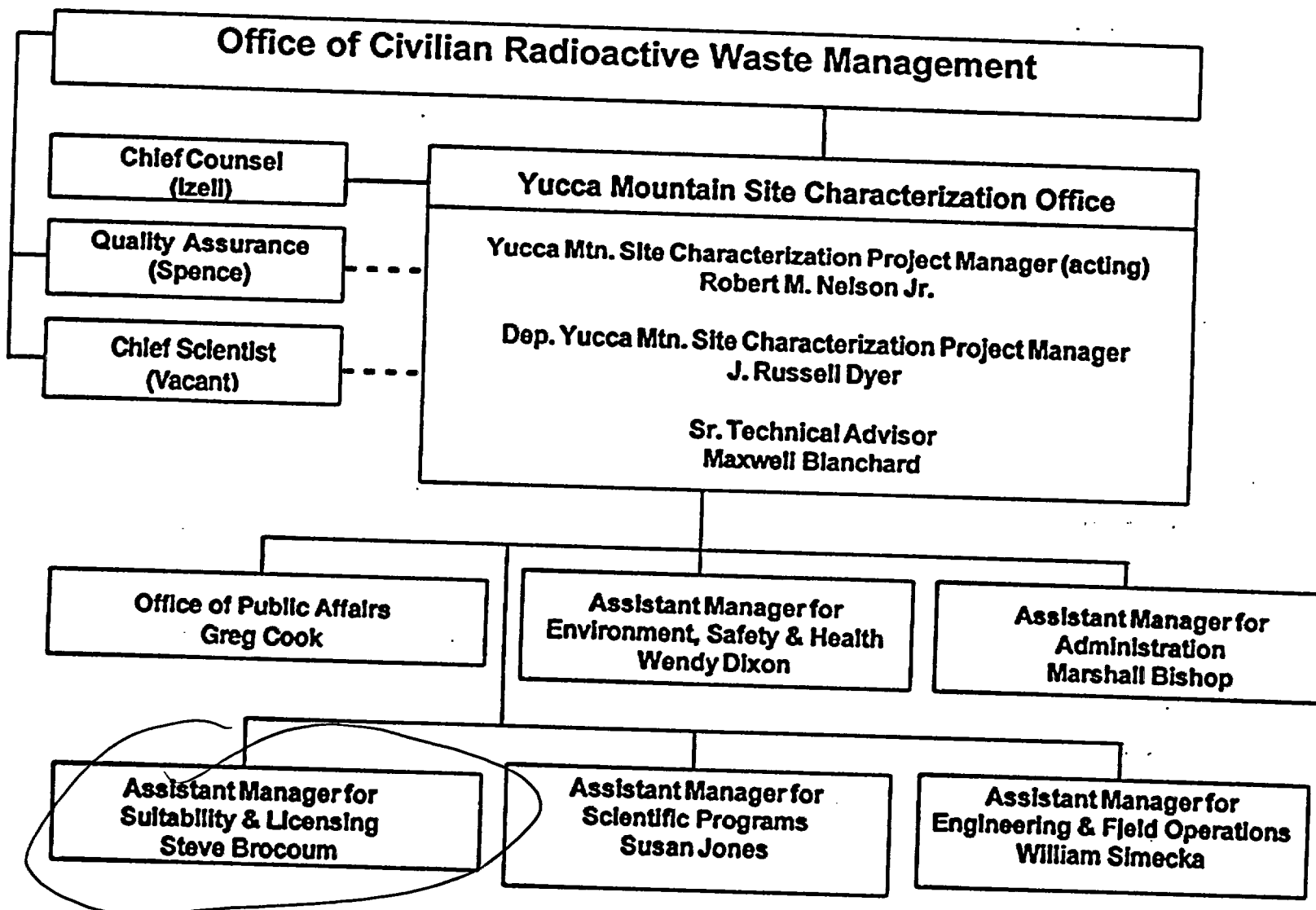
# OCRWM Organizational Changes

- Responsibility for records management and LSS has been transferred from Headquarters to Yucca Mountain Site Characterization Project Office (YMSCO)
- Assistant Manager for Suitability and Licensing is now responsible for LSS Steve B

# OCRWM Organization

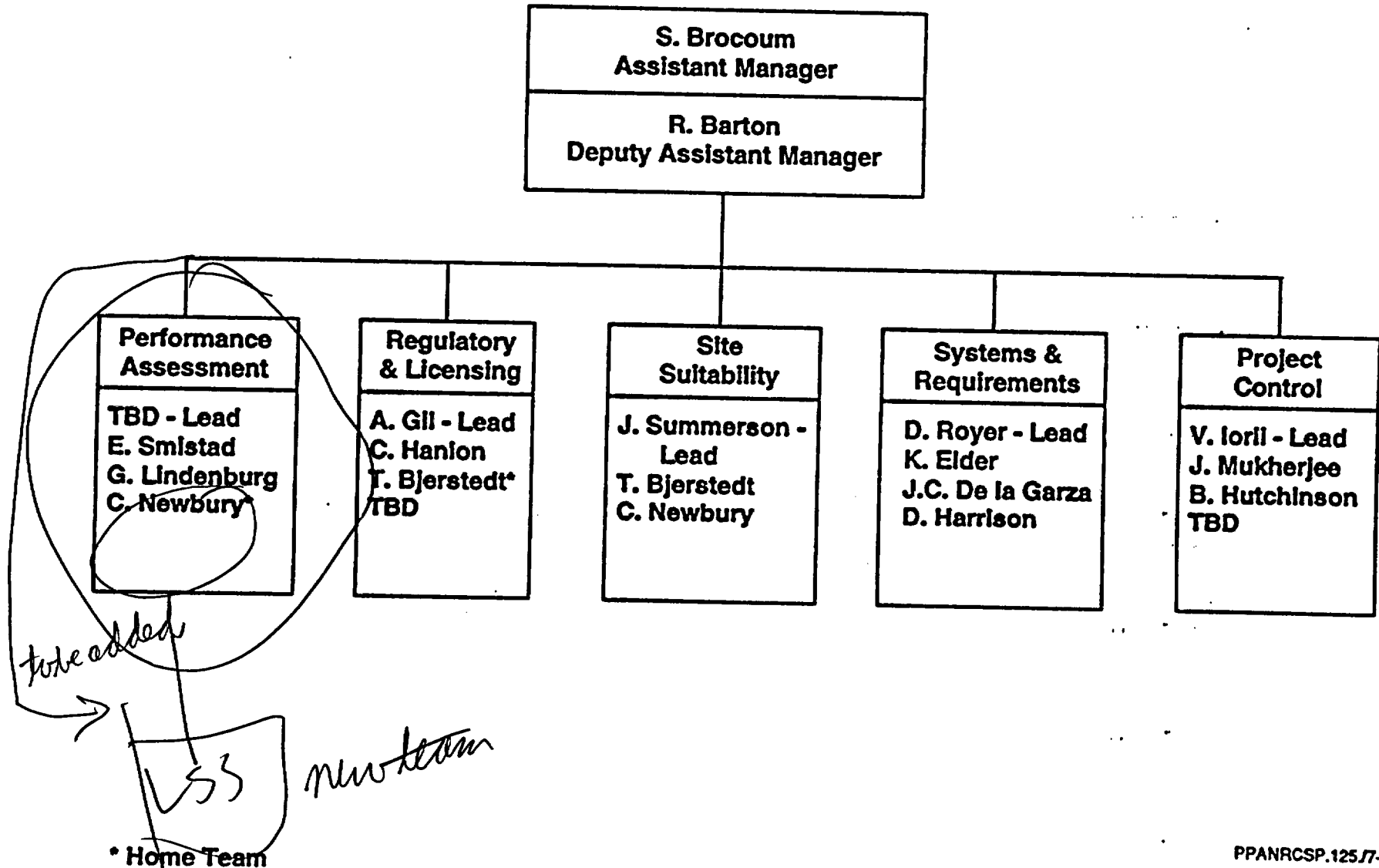


# Reorganized Yucca Mountain Site Characterization



# Assistant Manager for Suitability and Licensing

AMSL





# **Impact of Reorganization on LSS**

- **Assistant Manager for Suitability and Licensing has chartered a working group to assess LSS status and direction**
- **LSS will be funded and managed by the YMSCO**
- **DOE LSSARP representatives report to Assistant Manager for Suitability and Licensing**

# **YMSCO LSS Contacts**

## **Assistant Manager for Suitability and Licensing**

***Steve Brocoum***

## **LSSARP Representatives**

***Claudia Newbury***

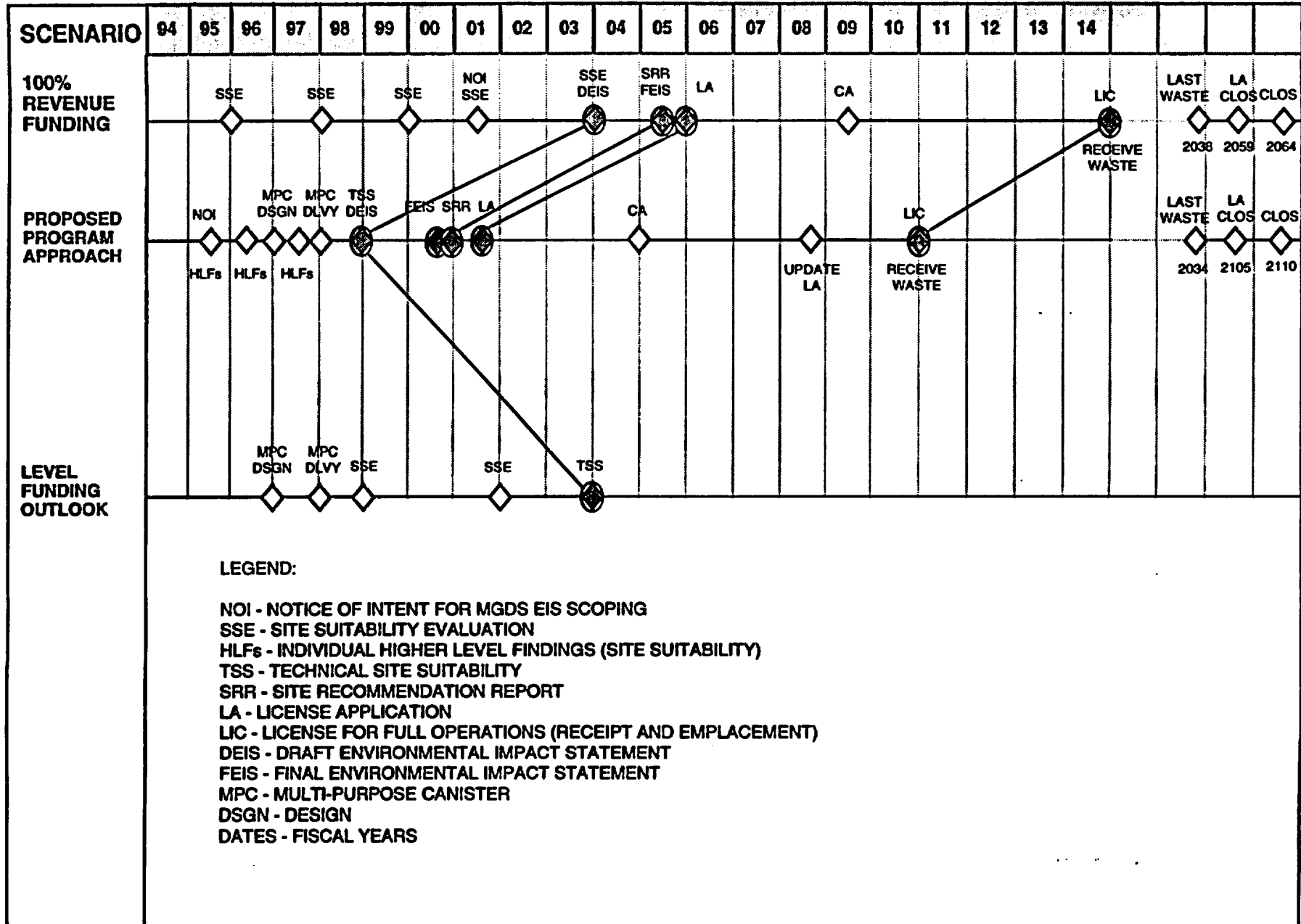
***John Gandi***

# **Proposed Program Approach Overview**

# Alternative Program Strategies

- **Two alternatives were evaluated:**
  - **A program restructured for management efficiency operating within existing legislative and regulatory framework (assumes availability of increased funding)**
  - **A resource-constrained program operating within existing legislative and regulatory framework (assumes level funding outlook)**
- **DOE is moving forward with further evaluation of restructured program within existing legislative and regulatory framework (Proposed Program Approach)**

# Comparative Schedules



# Planning Assumptions

- **No changes to legislative and regulatory framework - make use of inherent flexibility**
- **Increased funding in FY95 and assured funding in out-years**
- **Waste acceptance and near-term storage issues addressed by delivery of MPCs to utilities starting in 1998**
- **Restructure site characterization program based on available information to focus on most significant issues for suitability and licensing**
- **Retrievability maintained for up to 100 years**

## **Basis for Proposed Program Approach**

- **Responds to Congressional expectations to show demonstrable progress at reduced cost**
- **Consistent with original intent of NWPA and 10 CFR 60 regarding sequencing of DOE and NRC decisions**
- **Reflects some of the recommendations of the NAS Report, "Rethinking High Level Waste"**
- **Responds to suggestions from NWTRB and others regarding the need for effective management of a well focused technical program**

# **Summary of Proposed Top-Level Strategy for Repository**

- **Make formal suitability findings in a stepwise manner**
- **Initiate the NEPA process as soon as possible**
- **Provide sufficient information in LA to support NRC's reasonable assurance finding**
  - **Ensure safety of repository operations**
  - **High confidence in waste package containment for at least 1,000 years**
  - **Bounding/conservative analyses relevant to radionuclide releases and total system performance for 10,000 years**
  - **Testing programs to focus on supporting design (construction, operations, waste package performance) and bounding/conservative analyses**
  - **Additional information to confirm basis for assessment of long-term performance provided under post-LA performance confirmation program**
- **Involve stakeholders and public prior to making key decisions**



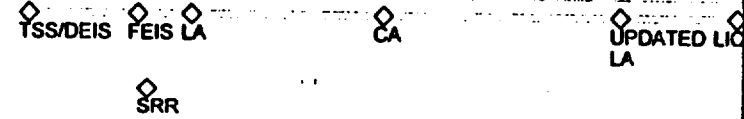
# **Proposed Program Approach Impact on LSS**

- **Impacts the LSS implementation schedule - must be operational well before license application is submitted, if site is suitable**
- **LSS design and implementation will be pursued aggressively**

**Backup**

KEY MILESTONES

Project Summary Milestones



SITE SUITABILITY

Site Suitability Process



NEPA

Repository



Rail Spur

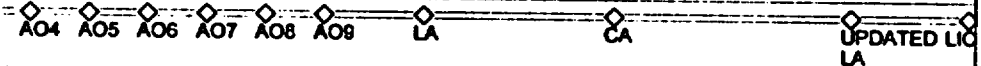


LICENSING

Issue Resolution

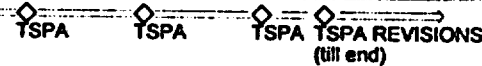


LA Annotated Outline

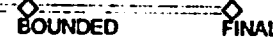


PERFORMANCE ASSESSMENT

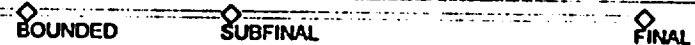
Total System PA



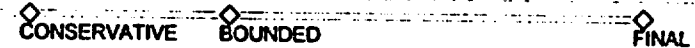
WP Subsystem PA



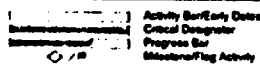
GWTT Subsystem PA



EBS Subsystem PA



Pilot Date 18MAY94  
 Data Date 1OCT93  
 Project Start 1OCT93  
 Project Finish 2OCT10



Yucca Mountain Site Characterization Project  
 Proposed Program Approach  
 Master Schedule

Project Schedule			
Date	Revision	Checked	Approved

SUMMARY ACTIVITY

FY94 FY95 FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03 FY04 FY05 FY06 FY07 FY08 FY09 FY10

**SITE INVESTIGATIONS**

3-D Geologic Description

◇ SUBFINAL      ◇ FINAL      ◇ UPDATED

Climate Description

◇ CONSERVATIVE      ◇ BOUNDED      ◇ SUBFINAL

Postclosure Tectonics Description

◇ BOUNDED      ◇ >BOUNDED      ◇ SUBFINAL

UZ/SZ Geochemistry Description

◇ BOUNDED      ◇ >BOUNDED      ◇ SUBFINAL

UZ Hydrologic Description

◇ BOUNDED      ◇ >BOUNDED      ◇ SUBFINAL

SZ Hydrologic Description

◇ BOUNDED      ◇ >BOUNDED      ◇ SUBFINAL

Thermal Effects Description

◇ BOUNDED      ◇ SUBFINAL      ◇ FINAL

**ESF CONSTRUCTION**

7.8 Kilometer Loop

◇ COMPLETE ACCESSES TO GDF      ◇ COMPLETE 7.8K LOOP

Calico Hills

◇ EVAL OPTS CH ACCESS(SL DRU/EXC)      ◇ IMPLEMENT CH DECISION (SL DRU/EXC)

**REPOSITORY / WASTE PACKAGE**

Repository

◇ ACD      ◇ TITLE I      ◇ TITLE II      ◇ CONSTRUCTION

Waste Package

◇ ACD      ◇ TITLE I      ◇ TITLE II      ◇ TITLE III /PROTOTYPE      ◇ START OPERATIONS      ◇ FABRICATION

**RAIL SPUR**

Rail Spur

◇ ROUTE ANALYSIS/CD      ◇ START TITLE I      ◇ TITLE I      ◇ TITLE II      ◇ CONST

Plot Date 15MAY84  
Data Date 10CT83  
Project Start 10CT83  
Project Finish 20OCT10

Activity Bar/Early Dates  
Critical Date/Order  
Progress Bar  
Milestone/Flag Activity

Yucca Mountain Site Characterization Project  
Proposed Program Approach  
Master Schedule

Sheet 2 of 2

Project Schedule			
Date	Revision	Checked	Approved

# Differences Between Current Program and Proposed Program Approach for Repository

<u>Key Elements</u>	<u>Current Program</u>	<u>Proposed Program Approach</u>
<b>Site suitability evaluation</b>	<ul style="list-style-type: none"> <li>• Interim evaluations</li> <li>• Design basis-Title I</li> </ul>	<ul style="list-style-type: none"> <li>• Individual interim findings</li> <li>• Design basis - ACD</li> <li>• Technical site suitability determination by Secretary - 1998</li> </ul>
<b>EIS</b>	<ul style="list-style-type: none"> <li>• Draft 2003</li> <li>• Final 2005</li> <li>• Final supports site recommendation</li> <li>• Final accompanies LA</li> <li>• Design basis-Title I</li> </ul>	<ul style="list-style-type: none"> <li>• Draft 1998</li> <li>• Final 2000</li> <li>• Same</li> <li>• Same</li> <li>• Design basis - ACD</li> </ul>
<b>Site Recommendation</b>	<ul style="list-style-type: none"> <li>• 2005</li> <li>• Design Basis-Title I</li> </ul>	<ul style="list-style-type: none"> <li>• 2000</li> <li>• Same</li> </ul>

# Differences Between Current Program and Proposed Program Approach for Repository

(Continued)

<u>Key Elements</u>	<u>Current Program</u>	<u>Proposed Program Approach</u>
<b>Licensing</b>	<ul style="list-style-type: none"><li>• 2005 LA</li><li>• Design basis-Title II for items important to safety and waste isolation</li></ul>	<ul style="list-style-type: none"><li>• 2001 LA <del>1998</del></li><li>• Design basis - Title I for repository, Title II for waste package</li></ul>
<b>Technical and Scientific Studies</b>	<ul style="list-style-type: none"><li>• Full scope of studies proposed in SCP, with appropriate modifications, to reflect priorities and budget</li></ul>	<ul style="list-style-type: none"><li>• Narrow the focus to technical issues most important to suitability and licensing</li><li>• Make effective use of required performance confirmation program</li></ul>

# Differences Between Current Program and Proposed Program Approach for Repository

(Continued)

<u>Key Elements</u>	<u>Current Program</u>	<u>Proposed Program Approach</u>
<b>Retrievability</b>	<ul style="list-style-type: none"><li>• 50 years after start of emplacement operations</li></ul>	<ul style="list-style-type: none"><li>• 100 years after start of emplacement operations or when results from performance confirmation provide adequate confidence to proceed with closure application</li></ul>



**Civilian Radioactive Waste  
Management System**

Management & Operating  
Contractor



**TRW Environmental Safety  
Systems Inc.**

*COTR ≠ relevancy "stop work"*

# **OVERVIEW OF LSS WORKING GROUP ACTIVITIES**

## **Presentation to the Licensing Support System, Advisory Review Panel**

**K. Michael Cline  
September 9, 1994**

**B&W Fuel Company  
Duke Engineering & Services, Inc.  
Fluor Daniel, Inc.**

**INTERA Inc.  
JK Research Associates, Inc.  
E. R. Johnson Associates, Inc.**

**Logicon RDA  
Morrison Knudsen Corporation  
Woodward-Clyde Federal Services**



# DESCRIPTION OF SCENARIOS

- **SCENARIO 1: Current OCRWM records management system**
  - *NOT* compliant with Subpart J
- **SCENARIOS 2-7: features common to all:**
  - Compliant with Subpart J compliant
  - Use scanned images for records storage and to produce OCR'd full text for documents
  - Have on-line searchable headers to support retrieval of documents
  - Have on-line searchable full text to support retrieval of documents
  - Provide for transmittal of hard copy image by mail or fax per LSS user request
- **SCENARIOS 2-7: Differences:**
  - Image available *only* ~~by mail or fax (Scenarios 2, 3, 4, 7)~~
  - On-line transmission of electronic images (Scenarios 5, 6)
  - Human-corrected OCR'd full-text (Scenarios, 2, 3, 5) versus machine-corrected (Scenarios 4, 6, 7)

# RESPONSIBILITY

With the responsibility of the LSS within DOE transferring to the Yucca Mountain Site Characterization Office (YMSCO), it has elected to undertake a re-evaluation of the LSS concept considering:

- An improved understanding of Program and LSS ARP needs
- New milestones and constraints imposed by the Proposed Program Approach (PPA)
- Advancements in system components

## WORKING GROUP

- **YMSCO directed the OCRWM M&O to establish a working group, under the oversight of the Assistant Manager of Suitability and Licensing, to undertake an evaluation with the objectives of:**
  - **Re-evaluating all key elements of the LSS as it currently is envisioned.**
  - **Modifying or developing a strategy that:**
    - **is consistent with the PPA**
    - **optimizes new technologies**
    - **minimizes cost**

# **WORKING GROUP**

(cont'd)

- **The Working Group is made up of interdisciplinary team of senior professionals from Washington, DC and Las Vegas.**
- **The Working Group has been tasked to:**
  - **Conduct a comprehensive review of the LSS concept that addresses:**
    - **Development history**
    - **Statutory and derived requirements**
    - **Identification and evaluation of viable options**
    - **Analysis of capture and dissemination page volumes**
    - **System capabilities and options**
    - **Cost drivers and development/implementation costs**

# WORKING GROUP

(cont'd)

- **Products of the Working Group will be :**
  - **Evaluation of the requirements, and an understanding of the derived requirements with respect to their applicability under the PPA.**
  - **Development of milestone schedule for LSS Development and Implementation.**
  - **Enhancement of the cost model and comparison to the cost analyses.**
  - **Development and evaluation of viable options utilizing a set of evaluation criteria.**
  - **Selection of a proposed preferred option.**
  - **Final report with recommendations for implementation of the LSS**

# WORKING GROUP SCHEDULE

- **Initiation of Working Group - May 1994**
- **Status briefing to DOE - June 23, 1994.**
- **Draft Requirements Analysis available for review - June 30, 1994.**
- **Status briefing to DOE - July 14, 1994.**
- **Cost estimate for planning purposes - July 30, 1994**
- **Briefing to DOE on LSS strategy - August 24, 1994**
- **Summary Briefing to DOE on Working Group Conclusions and Recommendations - September 23, 1994**
- **Draft report to DOE - September 30, 1994**
- **Prepare DOE briefing to LSS ARP - October 1994**

# WORKING GROUP STATUS

- **Completed Requirements Review**
- **Developed detailed option descriptions and is in process of selecting proposed preferred option**
- **Developed developed better understanding of the LSS functionality considering statutory and derived requirements**
- **Continue to refine cost-model for evaluating LSS cost through 2004**
- **Established milestones for LSS development and implementation**
- **Developed proposed recommendations for DOE to present to the LSS ARP and for continued work toward development of the LSS**

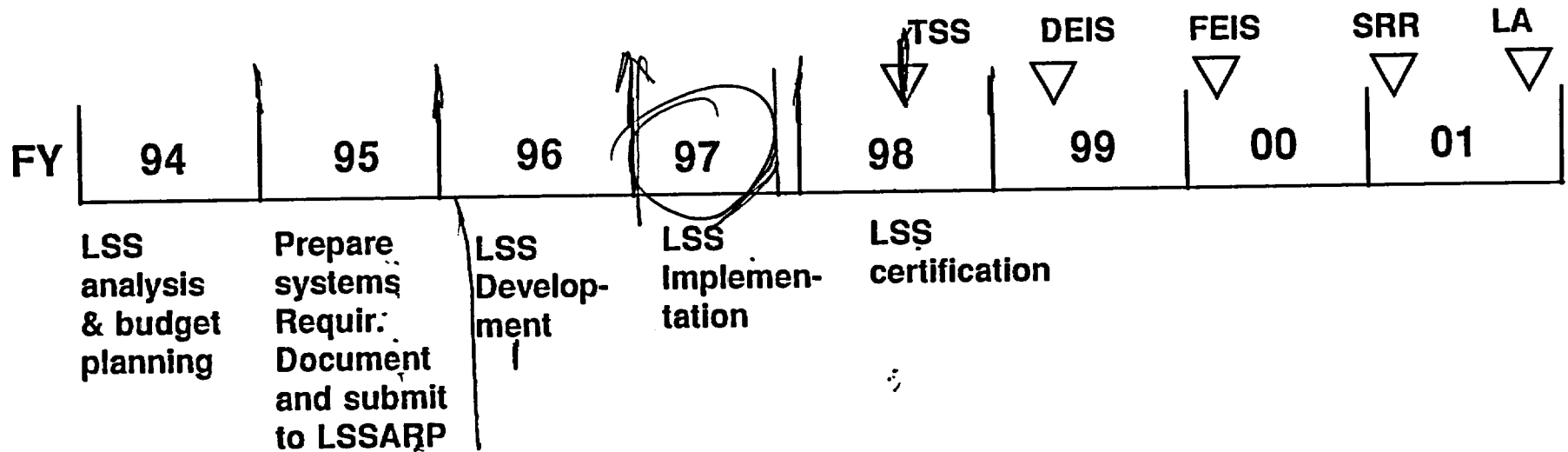
# PRELIMINARY OBSERVATIONS OF WORKING GROUP

- **Need to revise System Requirements Document**
- **Volume estimates consistent with earlier studies**
- **Cost savings can be achieved by:**
  - **improved technologies-**
  - **disaggregating costs -**
  - **not overdesigning system-**
- **Identified seven scenarios driven by means of text and image dissemination**



100 years  
STDS / STORAGE MEDIA

Development of the LSS is a critical element for meeting the licensing application milestone of 2001.



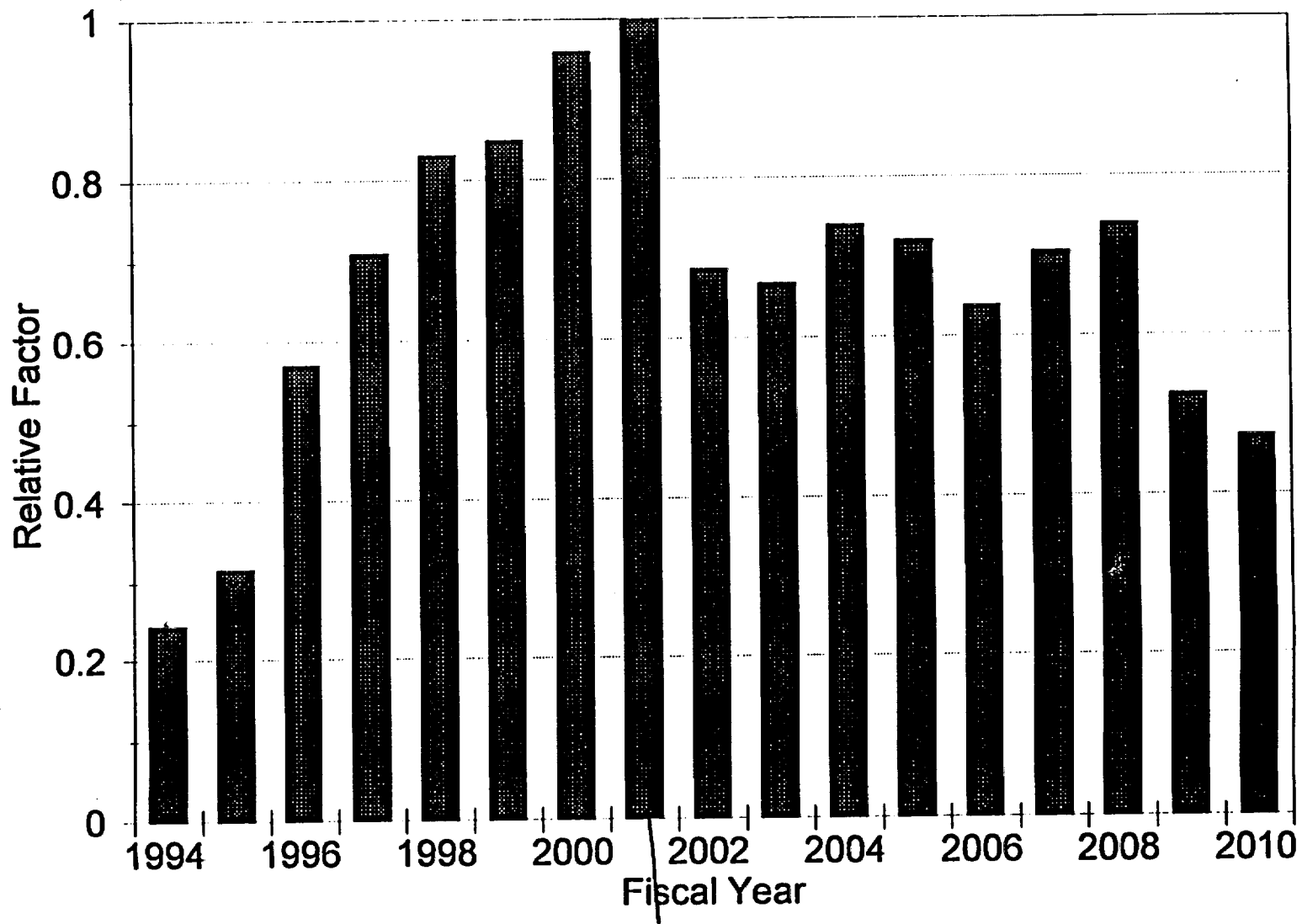
# VOLUME ESTIMATES

- **Objective:**
  - Estimate the total number of pages to reside in the LSS assuming DOE receives a license to receive and possess radioactive waste (FY 2010).
- **Assumptions:**
  - Estimates include contributions from DOE, NRC and Stakeholders
  - Estimates are based in part on historical records system data

# VOLUME ESTIMATES

- **Volume Input and Projections**
  - Senior participant, professionals canvassed to estimate volume input
  - Volume estimated based on annual volume inputs and existing records data
- **Volume is estimated to be less than previous analyses**
- **Considerable uncertainty exists and will continue to exist with the estimates of volume (capture and dissemination)**

# Relative LSS Volume



2001

# COST ANALYSIS

- **Cost analysis has become more sophisticated as the working group has evolved in its understanding of the LSS.**
  - **The cost elements of the LSS were disaggregated and evaluated to better understand what they represent and what the actual costs of the LSS are.**
  - **It is assumed that the DOE Records Management system will go to electronic imaging for its data base.**

# KEY DOE COST DRIVERS

- **Data Volume, i.e. the number of pages that will be processed through the records system**
- **Human verification of text, and OCR accuracy**
  - **Scenarios defined with and without human verification**
  - **Analysis of sensitivity to OCR accuracy performed.**
- **Dissemination cost (an LSS cost) for varying page volumes**

# COST ANALYSIS

- Disaggregating of costs revealed cost elements not attributable to the LSS development and implementation.
- A more sophisticated cost model better addresses cost sensitivity and the cost profile through 2004.
- Over ~~10~~ year period costs for LSS may be less than 100 million dollars.

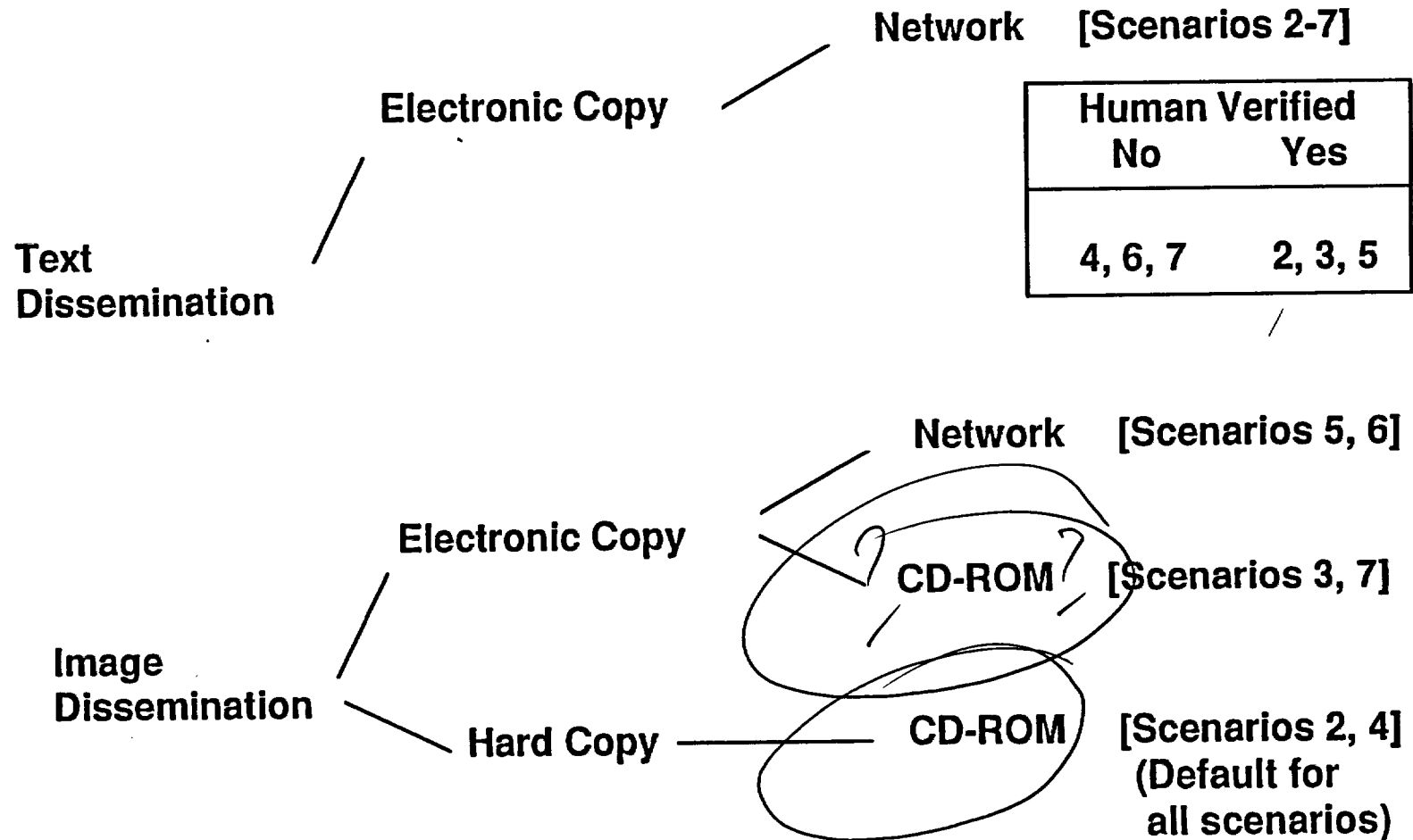
200 million

## PURPOSE OF LSS OPTIONS

- **Seven (7) Options/Scenarios identified to:**
  - **Differentiate among operational concepts**
    - **Text dissemination**
    - **Image dissemination**
    - **Human verification**
  - **Differentiate among attributes**
    - **User friendless**
    - **Response time**
  - **Identify operational cost drivers**
  - **Provide the DOE with various cost options for development**



# LSS SCENARIOS CONSIDERED



## **PRELIMINARY CONCLUSIONS**

- **DOE must proceed with development and implementation of the LSS without further delay.**
- **The DOE must become more proactive with the LSS ARP.**
- **The recommendations of this working group will assure that the LSS is in compliance with all regulatory requirements and in consistent with the philosophy of the PPA in cost and in schedule.**