



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 26 1981

WMHT: 3001.3 & 3109

MEMORANDUM FOR: Those on Attached List

FROM: John T. Greeves, Chief
Design Section
High-Level Waste Technical
Development Branch
Division of Waste Management

SUBJECT: MEETING WITH DOE ON QUALITY ASSURANCE FOR A HIGH-LEVEL
WASTE REPOSITORY

Attached for your information is a meeting report which summarizes the major points of discussion and agreements for the subject meeting.

John T. Greeves
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Division of Waste Management

Enclosure:
As stated

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WMHT: 3001.1 & 3109

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ORIGINAL SIGNED BY

Jay Rhoderick
High-Level Waste Technical
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Division of Waste Management

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DATE	10/21/81	10/21/81	9/21/81				

BACKGROUND

This meeting was requested by the NRC staff in a letter from Hubert Miller to Colin Heath dated July 20, 1981. Quality Assurance (QA) is an important issue in licensing a high-level waste repository. The procedural rule (10 CFR 60) requires DOE to submit a QA program plan with the Site Characterization Report (SCR). The SCR is intended to address QA aspects of data collection. DOE is developing a Licensing Topical Report (LTR) on QA which is scheduled to be issued to the NRC in March, 1982. The NRC plans to develop a Branch Technical Position in late FY 82 on QA for Site Characterization. An informational meeting to discuss both agencies QA developments was considered to be beneficial to both DOE and NRC.

MEETING REPORT

Date of Meeting: September 9, 1981

Place of Meeting: 5th Floor Conference Room, Willste Building
Silver Spring, Maryland

Purpose of Meeting: Discussion between DOE and NRC on Quality Assurance (QA)
for High-Level Waste Repositories

ATTENDEES

ORGANIZATION

John Greeves	NRC/WM
Jim Conway	NRC/QAB
Paul Prestholt	NRC/WM
Tom Scarbrough	NRC/RES
Kien Chang	NRC/WM
Carl Newton	DOE/HQ
John Rowen	DOE/HQ
Donald Vieth	DOE/HQ/Technology Team
Merrit Langston	DOE/HQ/QA and Standards Div./NE
F. R. Cook	NRC/WM
M. F. Nicol	Rockwell/BWIP
E. N. Hurd	NQAPO/Richland
Tom Longo	DOE/HQ
Matt Golis	Batelle/ONWI (QA Manager)
Lloyd Lanham	Los Alamos/USGS (QA Manager)
Peter Bussolini	Los Alamos/USGS
Gary Dixon	USGS/Denver
Jay Rhoderick	NRC/WM

SUMMARY OF MEETING

The following summarizes the major points of discussion and agreement reached in the meeting:

1. The NRC outlined existing regulations (10 CFR Parts 50 Appendix B and 60) and Regulatory Guides (eg 1.28, 1.30, 1.38, 1.94, 1.116) applicable to QA for a high-level waste repository, and identified areas (i.e., technical position on QA for site characterization and waste package) that would be addressed in future NRC documents.
2. DOE outlined its quality assurance line of authority from DOE Headquarters down to its contractors. DOE also identified specific areas where QA requirements in site characterization, record storage, and research and development areas needed to be better defined.
3. DOE's immediate concern was application of QA to geologic investigations during site characterization. DOE stated their view that most of 10 CFR 50 Appendix B was not directly applicable because design, fabrication, and construction of the repository (aspects covered by 10 CFR 50 Appendix B) was not involved in this phase. NRC responded that Appendix B to Part 50 includes generic aspects of QA such as document control, control of special processes, inspection, quality assurance records, audits, etc. which will be applicable to site characterization. Therefore, Appendix B can be used to guide site characterization activities. The NRC also emphasized that 10CFR60 procedural rule does consider conceptual design as a part of site characterization and therefore, the QA aspects of document control, control of design guidelines, inspection, audits, etc. for conceptual design will be a part of site characterization QA.

4. The majority of the information from site characterization will be gathered by geologists. DOE stated that most geologists are not usually involved in QA activities and have not been associated with a formal QA program. DOE has been attempting to orient geologists towards using QA procedures. The NRC stated that other organizations (e.g. Dames and Moore) had applied QA procedures to geologic investigations and that it was possible and necessary for DOE to develop a QA program which includes geologic investigations.
5. DOE expressed concern that for interpretation of data by geologists and other earth scientists it would be difficult for DOE to apply QA since the interpretations would be a judgemental factor. The NRC stated that the QA activities would cover these areas by developing a program that included these points: (1) technically competent personnel selected and planned the testing program, (2) the activity was accomplished by qualified personnel according to the test procedure, (3) that the activity and the results were accurately recorded, (4) that the data was reviewed by an independent peer review comprised of technically qualified personnel not directly involved in the content of work, and (5) all of the above activities are adequately documented, stored, and retrievable. It was agreed that this type of process could be conducted under a competent QA program.
6. The NRC requested that DOE submit the QA programs of each organization involved in NWTS. In addition, it was requested by NRC of DOE that a synopsis of the status of implementation in the field of the QA programs be given to the NRC. DOE indicated QA program plans could only be released after review by DOE headquarters. The NRC will receive the BWIP QA program in the near future.

7. DOE requested more guidance on QA for geologic investigations for site characterization. NRC is developing a branch Technical Position on QA for site characterization. DOE requested information on the ASTM Geotechnical Studies (FIN B-7115) being sponsored by the NRC. The NRC is sending DOE a copy of the Statement of Work.
8. DOE inquired as to when the Office of Inspection and Enforcement (I&E) would become involved in repository development. NRC (Waste Management) informed DOE that I&E will become involved at construction authorization or at an earlier date if specifically requested by the Division of Waste Management.
9. DOE issued a timetable for submitted QA reports to NRC (Attachment 1).
10. Four areas were identified where DOE would need to develop more QA procedures. They are a) site characterization, b) waste package design, c) repository design, and d) performance assessment codes and models.

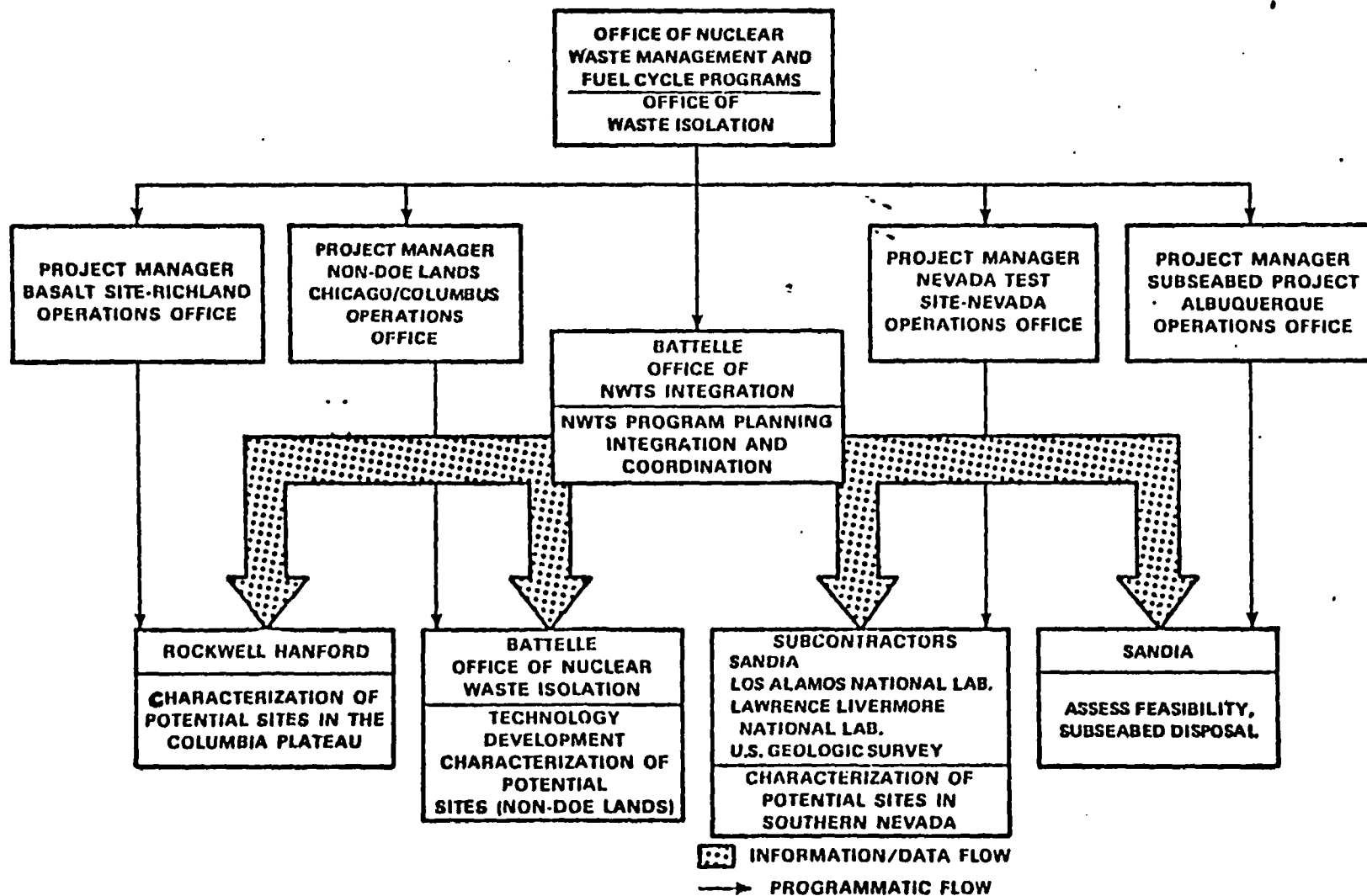
TIMETABLE FOR SUBMITTAL OF QA-RELATED REPORTS TO NRC

- IN APPROXIMATE AND PLANNED CHRONOLOGICAL ORDER, WE HAVE THE FOLLOWING:
 - NWS DOCUMENTS, VIZ., NWS-10 (OVERALL PROGRAM GUIDANCE AND SUPPLEMENTAL GUIDANCE SUCH AS FOR SITE CHARACTERIZATION, SOFTWARE, R&D)
 - LTR ON PREAPPLICATION QA (~ 3/82) PLUS Q LIST AS AN APPENDIX TO LTR
 - SITE CHARACTERIZATION REPORTS
 - BWIP ~ 9/82
 - NTS ~ 6/83
 - SALT SITE ~ 9/83
 - QA REQUIREMENTS FOR REPOSITORY ~ EARLY 1984
 - QA REQUIREMENTS FOR WASTE PACKAGES ~ EARLY 1985
 - QA REQUIREMENTS FOR TEF ~ LATE 1985
 - PSAR AND LICENSE APPLICATION ~ LATE 1988

- NWS QA PROGRAM -

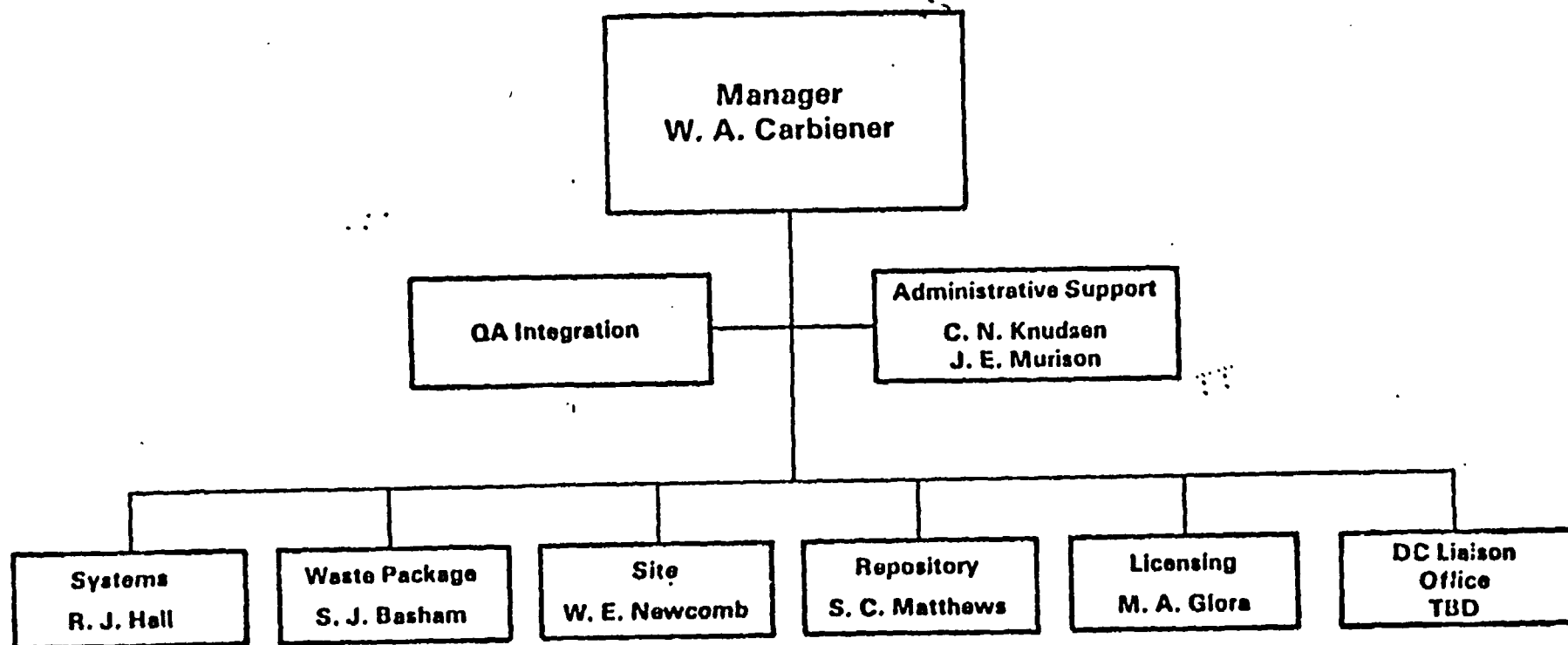
DOE/NRC MEETING SEPTEMBER 9, 1981

D. L. VIETH
T. P. LONGO
M. E. LANGSTON



NWTS PROGRAM MANAGEMENT STRUCTURE

ORGANIZATION OF OFFICE OF NWTS INTEGRATION



- NWTs-QA INTEGRATION AND COORDINATION BEING ACCOMPLISHED BY DOE-HQ AND QA-ICG. QA-ICG WAS ESTABLISHED BECAUSE THERE IS A HIGH DEGREE OF COMMONALITY IN THE PURPOSES, TECHNIQUES, AND METHODOLOGIES OF THE QA PROGRAMS AT EACH OF THE PROJECTS.
- QA-ICG COMPOSED OF SENIOR QA CONTRACTOR REPRESENTATIVES FROM BWIP (M. NICOL), NNWSI (F. MULLER), ONWI (M. GOLIS), SUBSEABED (J. HENDERSON).
- THESE REPRESENTATIVES ARE CHARGED WITH THE RESPONSIBILITY OF IDENTIFYING QA-RELATED PROBLEMS OF THE OVERALL NWTs PROGRAM (E.G., DEVELOPING UNIFORM INTERPRETATION OF NQA-1's 18 CRITERIA) AND DEVELOPING APPLICABLE SOLUTIONS.
- PERMANENT, FULL-TIME CHAIRMAN OF QA-ICG TO BE SELECTED SOON.
- QA-ICG TASKS AND PRIORITIES FOR FY 1982 WILL BE DEFINED AND AGREED UPON BY DOE-HQ.

- EXAMPLES OF WORK OF QA-ICG ARE THE DEVELOPMENT OF NWTS-QA DOCUMENTS THAT WILL SERVE AS SUPPLEMENTS TO NQA-1-1979, VIZ.,

- SITE CHARACTERIZATION
- SOFTWARE
- RESEARCH AND DEVELOPMENT

PRINCIPLES OF NWTS QA PROGRAM

- DOE POLICY (DOE ORDER 5700.6A, 8/13/81) ADVOCATES NQA-1-1979 AS THE CORNERSTONE OF NWTS-QA PROGRAM AND AS AN ACCEPTABLE WAY OF MEETING 10 CFR 50, APPENDIX B.
- NWTS-QA PROGRAM SUPPORTS TECHNICAL OBJECTIVES AND WE ARE SENSITIVE TO AVAILABLE (BTP BY MALARO, DATED 10/12/77) AND ANTICIPATED GUIDANCE FROM THE NRC (REG. GUIDES, E.G., F. FORSCHER'S ON QA FOR WASTE PACKAGES).
- DOE IS STRIVING TO PROVIDE ACCURATE, AUDITABLE, DEFENSIBLE, AND DOCUMENTED DATA BUT A BLANKET ADOPTION OF ALL OF THE CLASSICAL METHODS OF QA WOULD SEEM TO BE, IN THE CASE OF REPOSITORIES, INFLEXIBLE AND UNTENABLE, E.G., INTERPRETATION OF GEOTECHNICAL DATA; INSTEAD, ELEMENTS OF THE CLASSICAL APPROACH ARE BEING CAREFULLY AND JUDICIOUSLY APPLIED TO THE NWTS PROGRAM.
- THE NEED TO SUPPLEMENT NQA-1-1979 WITH ADDITIONAL OR MODIFIED REQUIREMENTS OR GUIDANCE OR BOTH IS RECOGNIZED AND STEPS ARE BEING TAKEN ACCORDINGLY.
- RESPONSIBILITY FOR A QUALITY PRODUCT RESTS WITH PROJECT MANAGEMENT AND TECHNICAL PERSONNEL.

AREAS OF CONCERN

- SITE CHARACTERIZATION—NEED TO MAKE CONTROLS ALREADY IN PLACE MORE VISIBLE.
- SOFTWARE—DEVELOPMENT VERSUS STANDARDIZATION; PREMATURE IN MANY RESPECTS.
- RECORDS—WHAT TO KEEP, FOR HOW LONG, AND WHERE?
- RESEARCH AND DEVELOPMENT EFFORTS, WHETHER IN LABORATORY OR IN THE FIELD—NOT NORMALLY INCLUDED IN THE MAINSTREAM OF WORK ON OTHER, MORE CONVENTIONAL NUCLEAR FACILITIES.

TIMETABLE FOR SUBMITTAL OF QA-RELATED REPORTS TO NRC

- IN APPROXIMATE AND PLANNED CHRONOLOGICAL ORDER, WE HAVE THE FOLLOWING:
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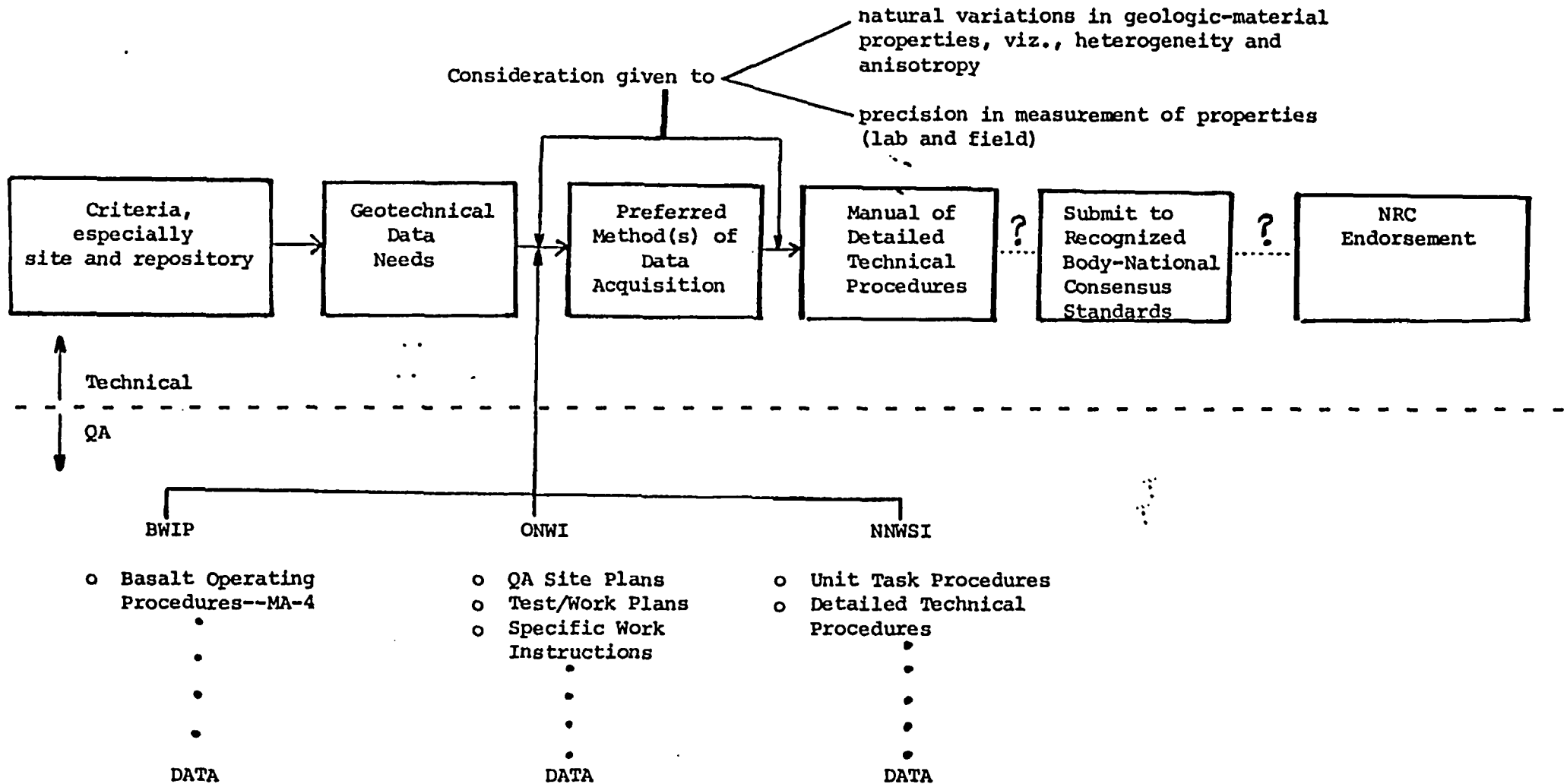
QA ISSUES GERMANE TO WASTE ISOLATION
VIA MINED GEOLOGIC REPOSITORIES

- SITE CHARACTERIZATION
- WASTE PACKAGE DESIGN
- REPOSITORY DESIGN
- PERFORMANCE ASSESSMENT CODES AND MODELS

SITE CHARACTERIZATION

- RECOGNITION OF THE FACT THAT A SITE IS NOT ENGINEERED BUT RATHER NATURE HAS DONE OUR "DESIGN" FOR US; WE MUST MAKE DO WITH WHAT NATURE HAS PROVIDED, INCLUDING HETEROGENEITY AND ANISOTROPY. IN OTHER WORDS, ROCKS, AND REPOSITORIES BUILT IN THEM WILL NOT BE OPERATING REACTORS WITH EASILY CHARACTERIZED HARDWARE, BUT LIKE ANY OTHER HETEROGENEOUS AND ANISOTROPIC MATERIAL, CAN BE CHARACTERIZED BY DATA.
- BELIEVING THAT A SOUND BASIS FOR A QUALITY ASSURANCE PROGRAM IS A STRONG QUALITY CONTROL PROGRAM, DOE IS DEVELOPING "EARTH-SCIENCE DATA-ACQUISITION GUIDELINES (ESDAG)," WHICH WE EXPECT WILL PROVIDE A BASIS FOR THE GENERATION OF STANDARD RECOMMENDED PRACTICES.
- ESDAG IS TO BE COMPLETED BEFORE THE DELIVERY OF THE FIRST SCR TO THE NRC.
- DOE'S EFFORTS SEEM TO BE CONSISTENT WITH THE GUIDANCE FROM THE NRC TO DATE, VIZ., SUBPART G TO PROPOSED TECHNICAL RULE, PARAGRAPH IN SCR FORMAT AND CONTENT GUIDE, BRANCH TECHNICAL POSITION BY MALARO, AND OTHER CONSENSUS STANDARDS, E.G., ANSI/ASME N45.2.20.

NWTS APPROACH TO QC FOR GEOTECHNICAL DATA



WASTE PACKAGE AND REPOSITORY DESIGN

- AREAS THAT APPEAR TO LEND THEMSELVES TO CONVENTIONAL QA TREATMENT SINCE THEY ARE ENGINEERED BUT MAJOR QUESTIONS REMAIN, E.G., 1000 YEAR PACKAGE.
- DETAILS NOT YET AVAILABLE BUT DOE SEEMS TO BE IN TUNE WITH WHAT F. FORSCHER HAS WRITTEN BASED ON HIS MEMORANDUM TO WICK OF 12/4/80.

PERFORMANCE ASSESSMENT CODES AND MODELS

- SOME EXPERIENCE WITH NUCLEAR FACILITIES BUT EXISTING STANDARDS LACK THE NECESSARY DETAIL SINCE CODES AND MODELS ARE ESSENTIAL TO DECISIONS ABOUT THE ADEQUACY OF A SITE, THE REPOSITORY, AND WASTE PACKAGES.
- GIST OF THE PROBLEM IS KNOWING WHEN TO CUTOFF THE DEVELOPMENTAL STAGE AND IMPOSE STRICT CONTROLS BECAUSE THE CODES ARE CONSTANTLY BEING REVISED.
- DOE'S GUIDANCE SEEMS TO BE CONSISTENT WITH WHAT IS CALLED FOR IN NRC'S DRAFT "TECHNICAL DIRECTIVE ON MODEL AND CODE DOCUMENTATION," WHICH STATES "...DOCUMENTS THE VARIOUS CODE VERSIONS IN USE AND THE STEPS BEING TAKEN TO CONTROL AND MAINTAIN THESE VERSIONS...."
- HAS THE SAME RIGOR ASKED FOR IN THE DRAFT TECHNICAL DIRECTIVE BEEN APPLIED TO THE CODES AND MODELS DEVELOPED FOR THE NRC?
- HAS THE RECENT TRANSMITTAL OF DOE/PNL'S FAR-FIELD MODELS PROVIDED RELEVANT EXPERIENCE?

Addressees - Memorandum dated

Los Alamos
8-843-5061

~~John Greeves, NRC/WM~~
~~Jim Conway, NRC/QAB~~
~~Paul Prestholt, NRC/WM~~
~~Tom Scarbrough, NRE/RES~~
~~Kien Chang, NRC/WM~~
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~~Merrit Langston, DOE/HQ/QA~~
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~~M. F. Nicol, Rockwell, BWIP~~
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