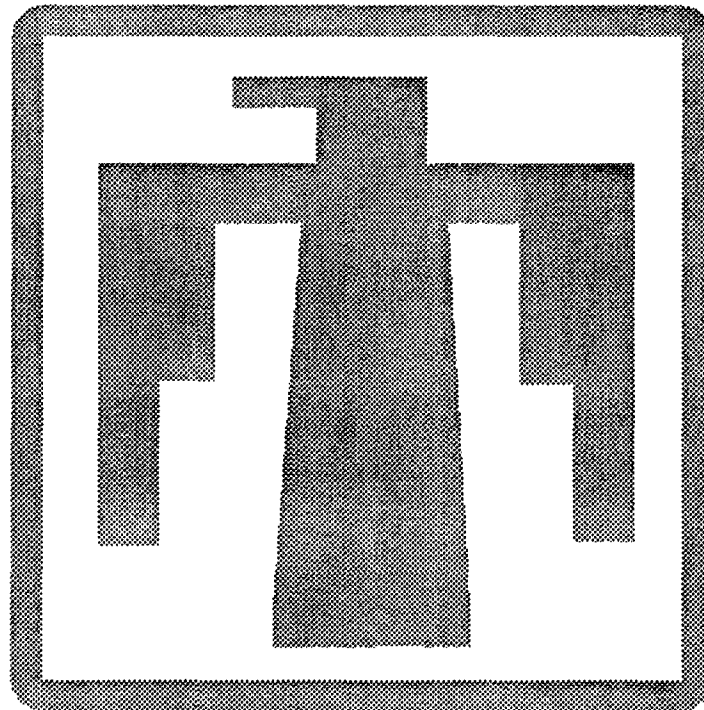


IMPLEMENTATION OF QUALITY ASSURANCE AT SANDIA NATIONAL LABORATORIES



**THOMAS E. BLEJWAS, ACTING MANAGER
NUCLEAR WASTE REPOSITORY TECHNOLOGY DEPARTMENT**

BACKGROUND

- NATURE
- PHILOSOPHY
- HISTORY

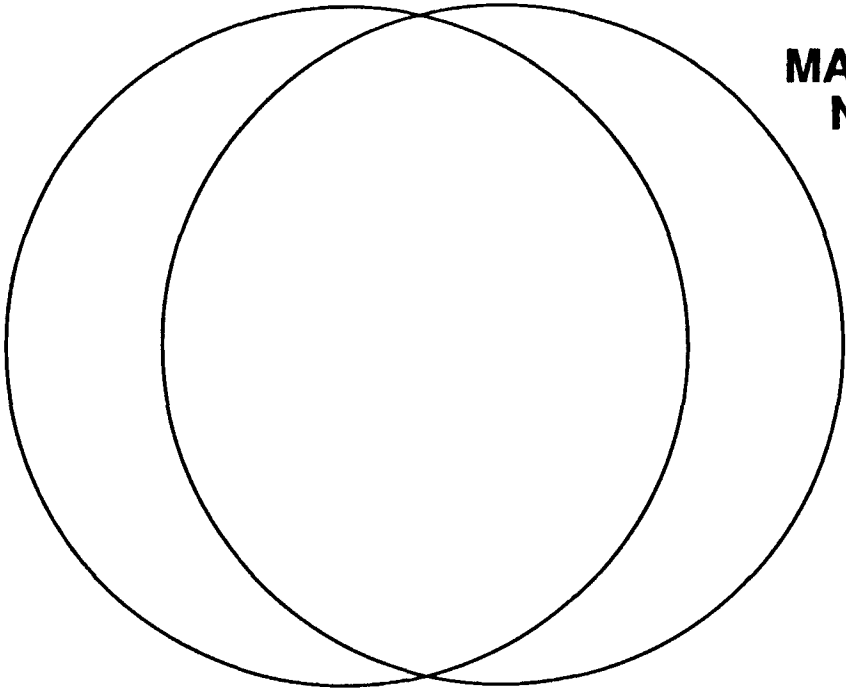


PHOTOS SHOWING THE DIVERSITY OF OUR WORK



PHILOSOPHY

**QUALITY
ASSURANCE**



**MANAGEMENT AND
NORMAL GOOD
PRACTICES**

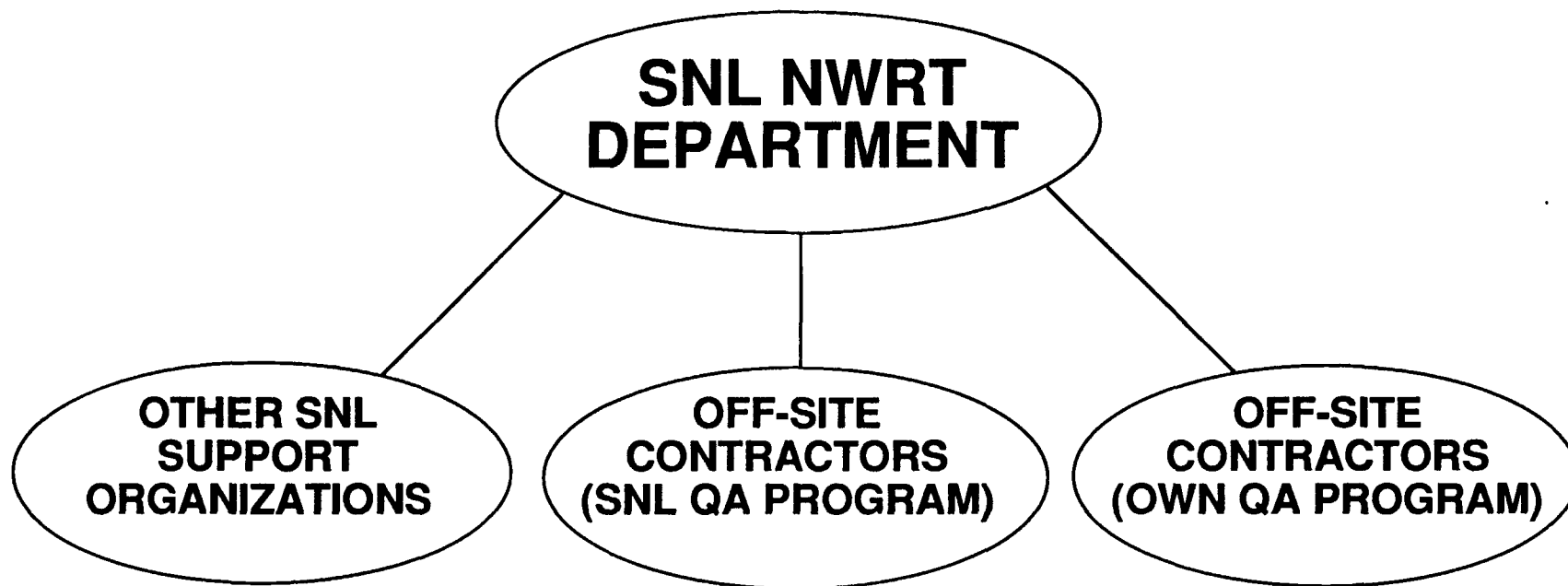


HISTORY

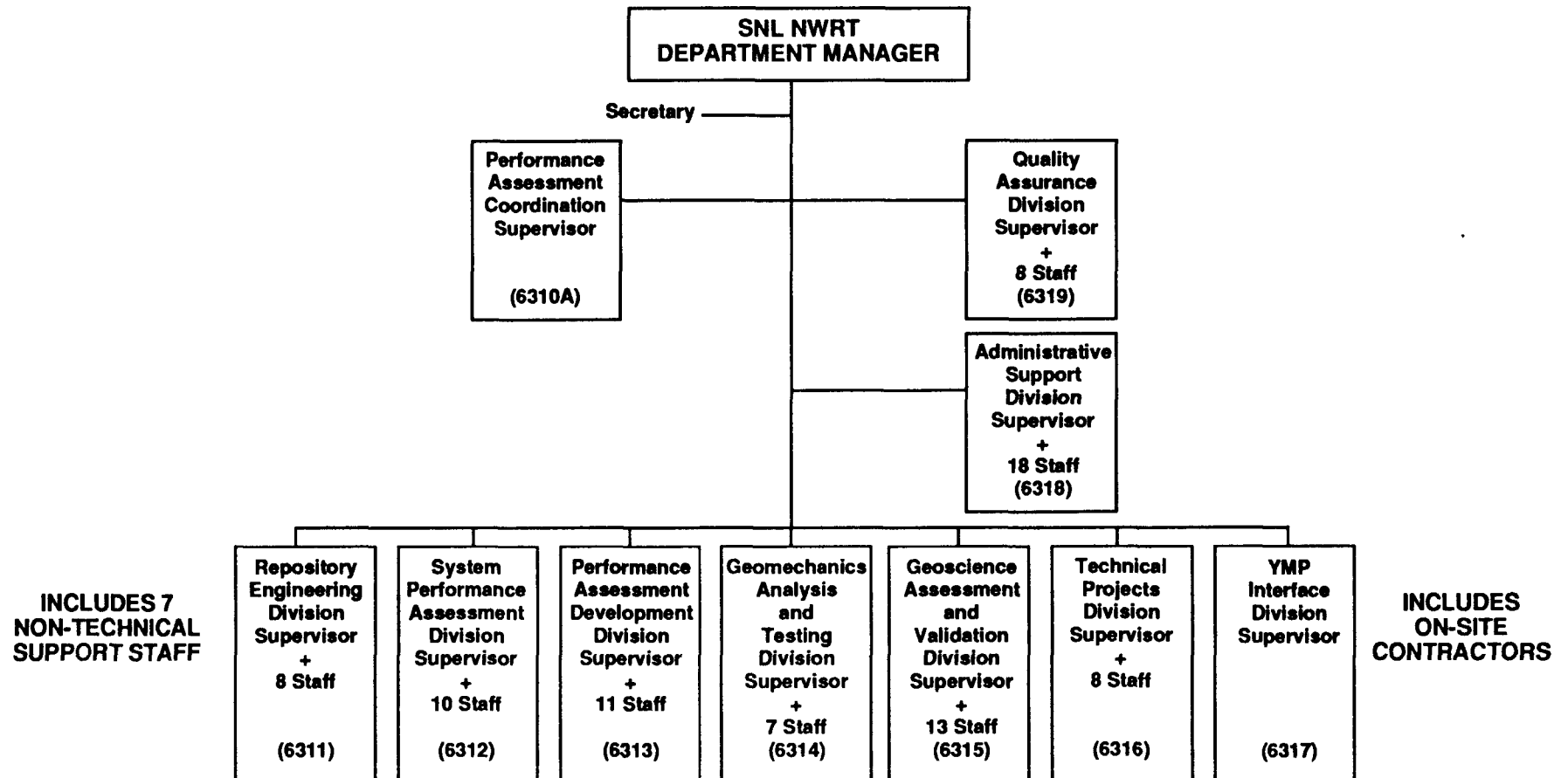
- **EARLY LEADERSHIP**
- **CHANGING ENVIRONMENT**
- **GROWING EFFORT**



SNL ORGANIZATION



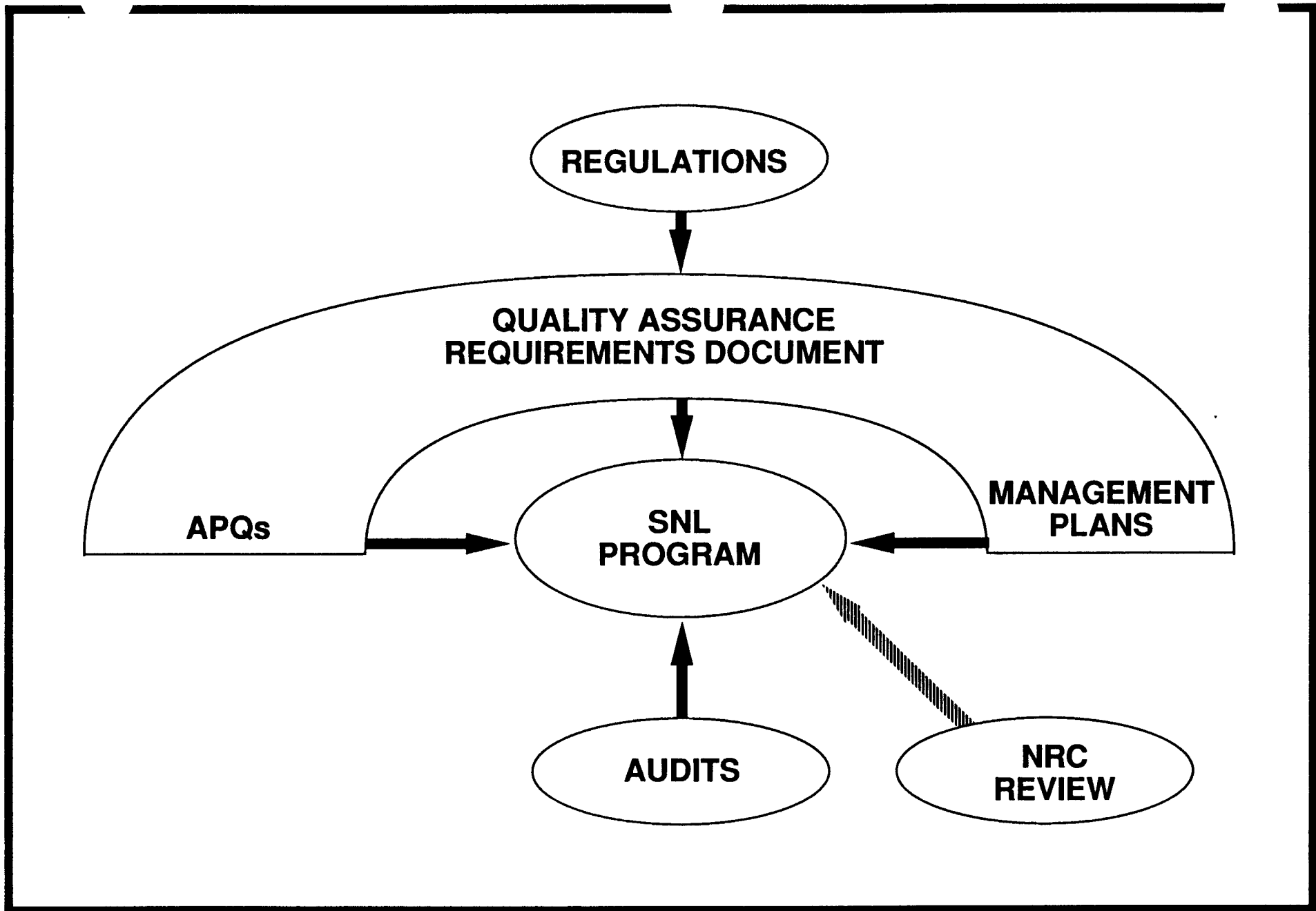
SNL NUCLEAR WASTE REPOSITORY TECHNOLOGY DEPARTMENT



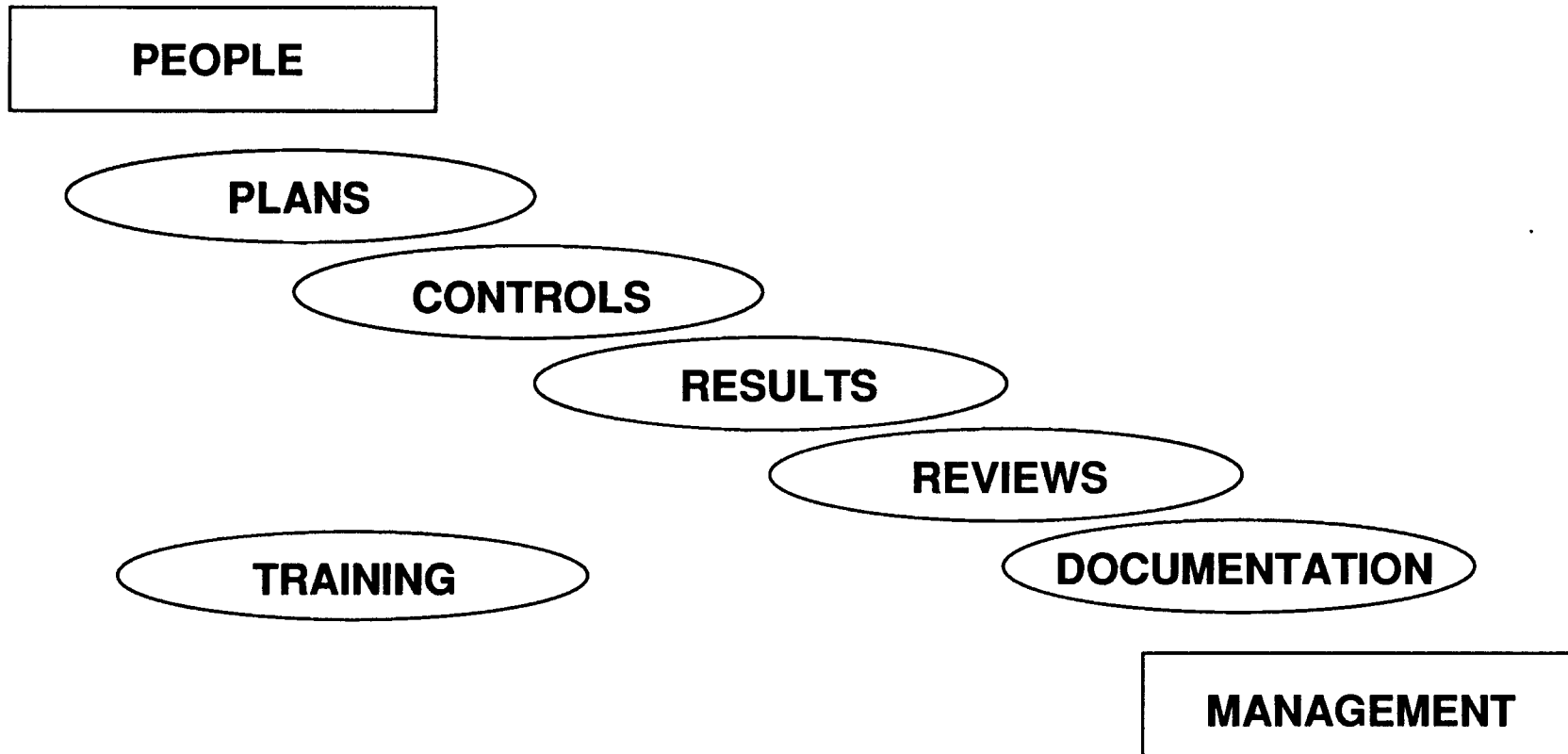
SNL NWRT DEPARTMENT PERSONNEL

MANAGEMENT	(11)
QUALITY ASSURANCE	(8)
SUPPORT (INCLUDING TRAINING)	(25)
TECHNICAL	(50)

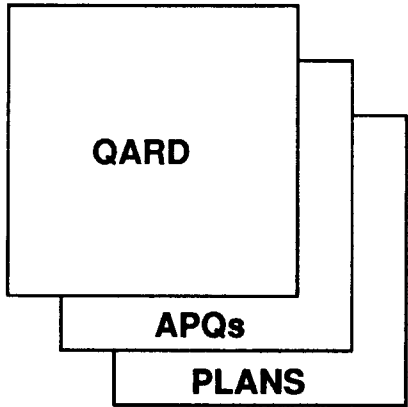




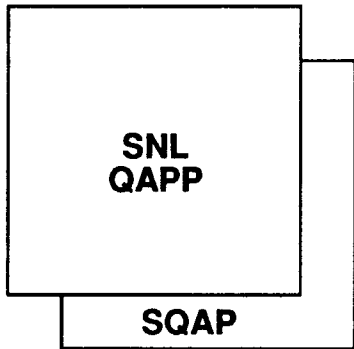
KEY ELEMENTS OF A QA PROGRAM



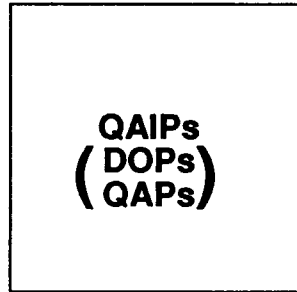
DOCUMENTS



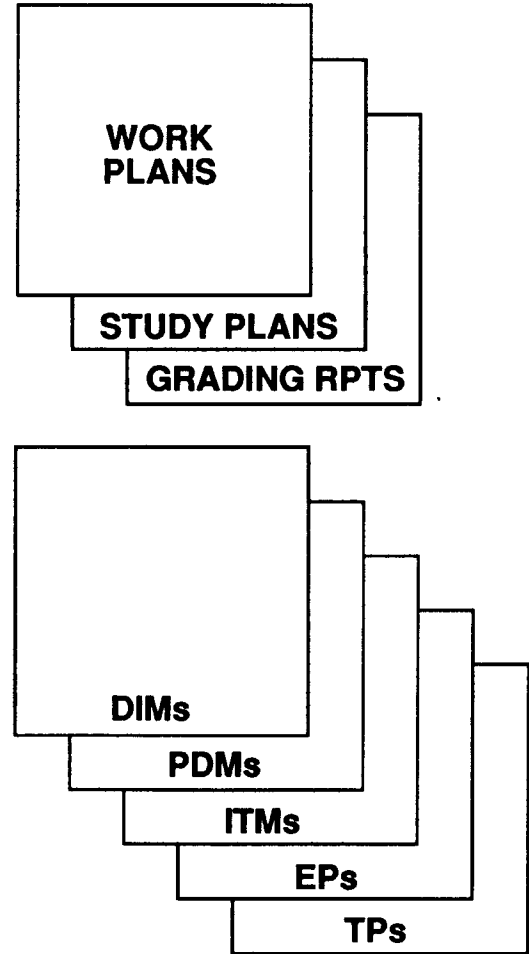
EXTERNAL
REQUIREMENTS



INTERNAL
REQUIREMENTS



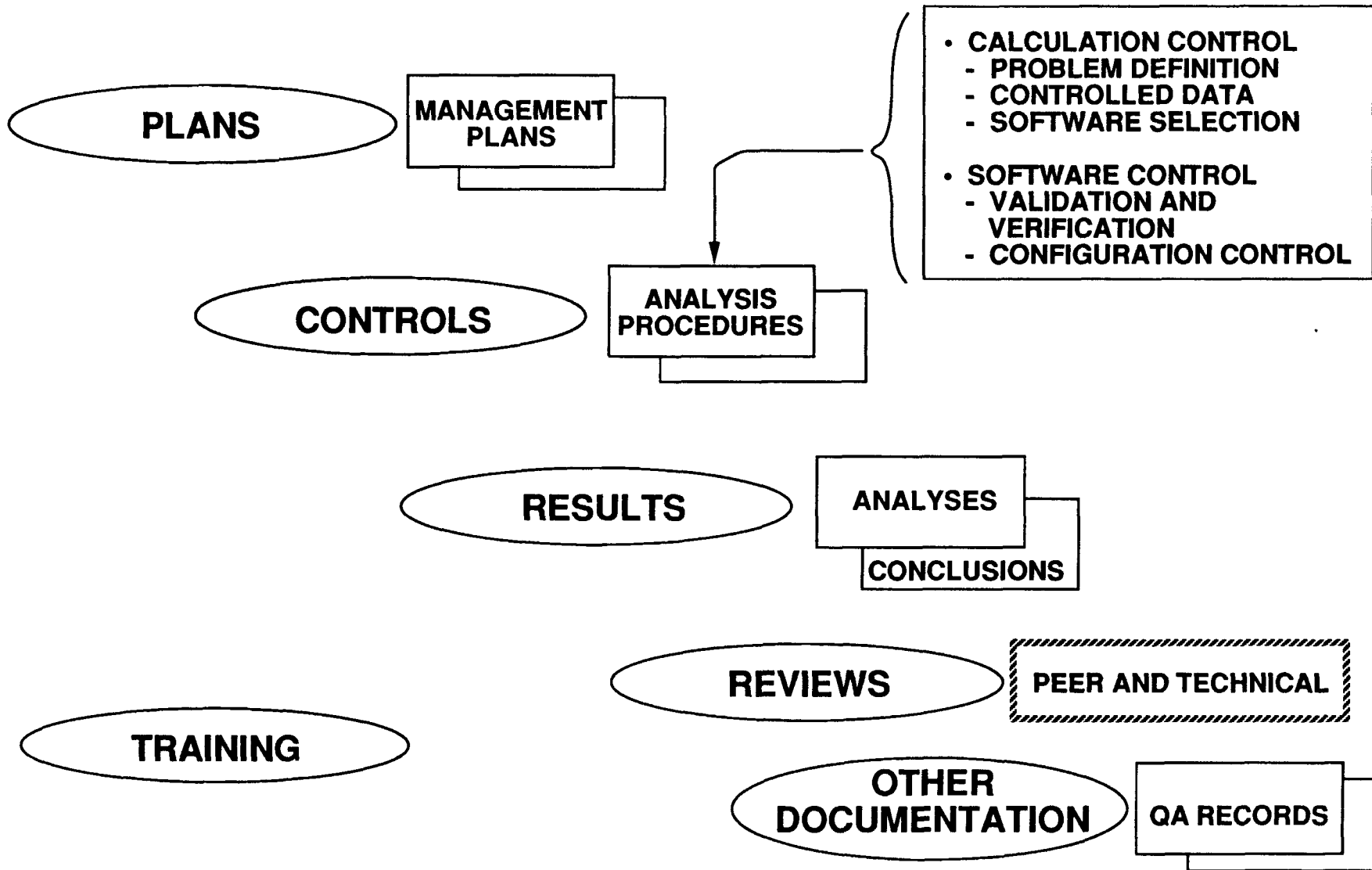
PROCEDURES



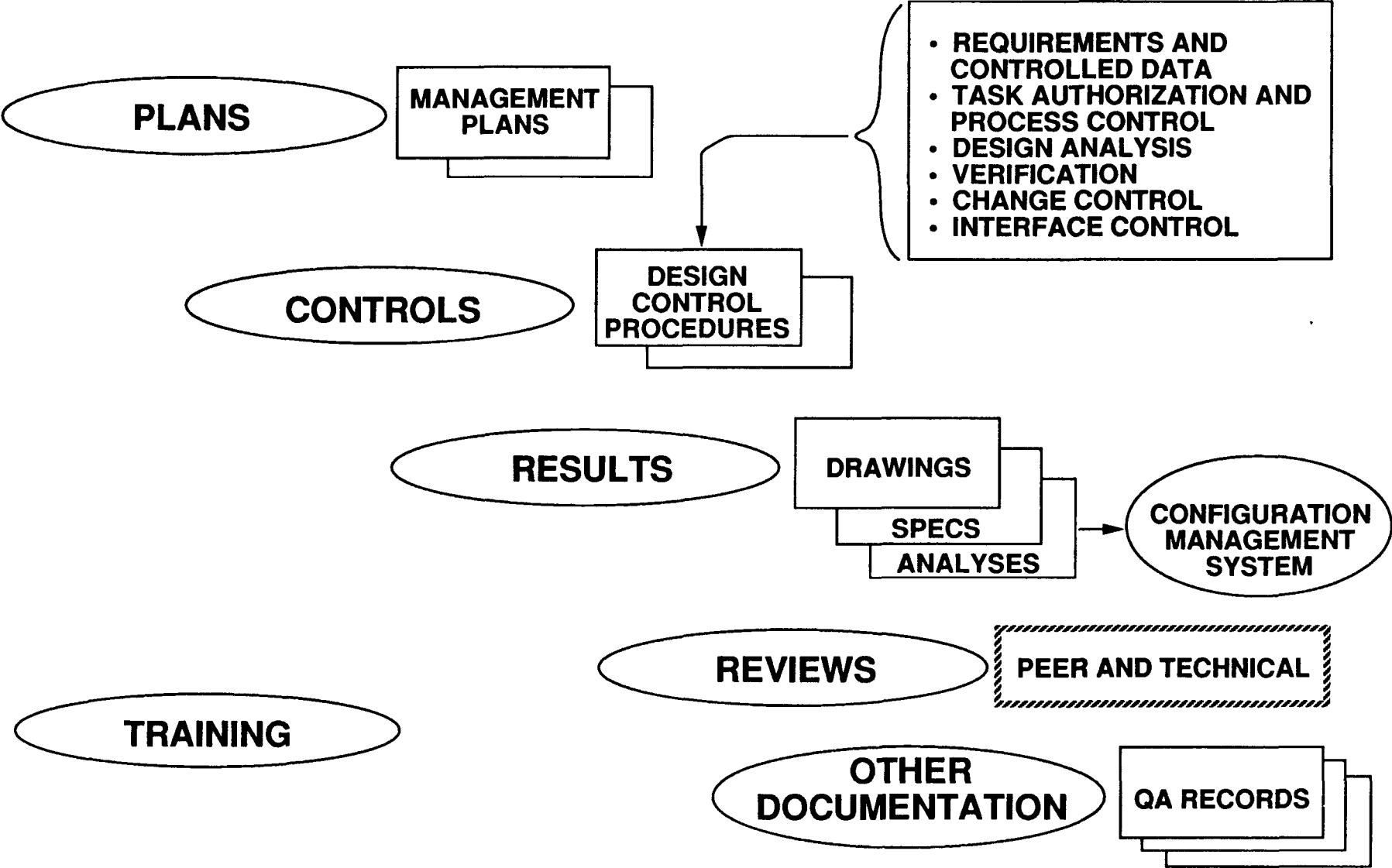
IMPLEMENTING
DOCUMENTS



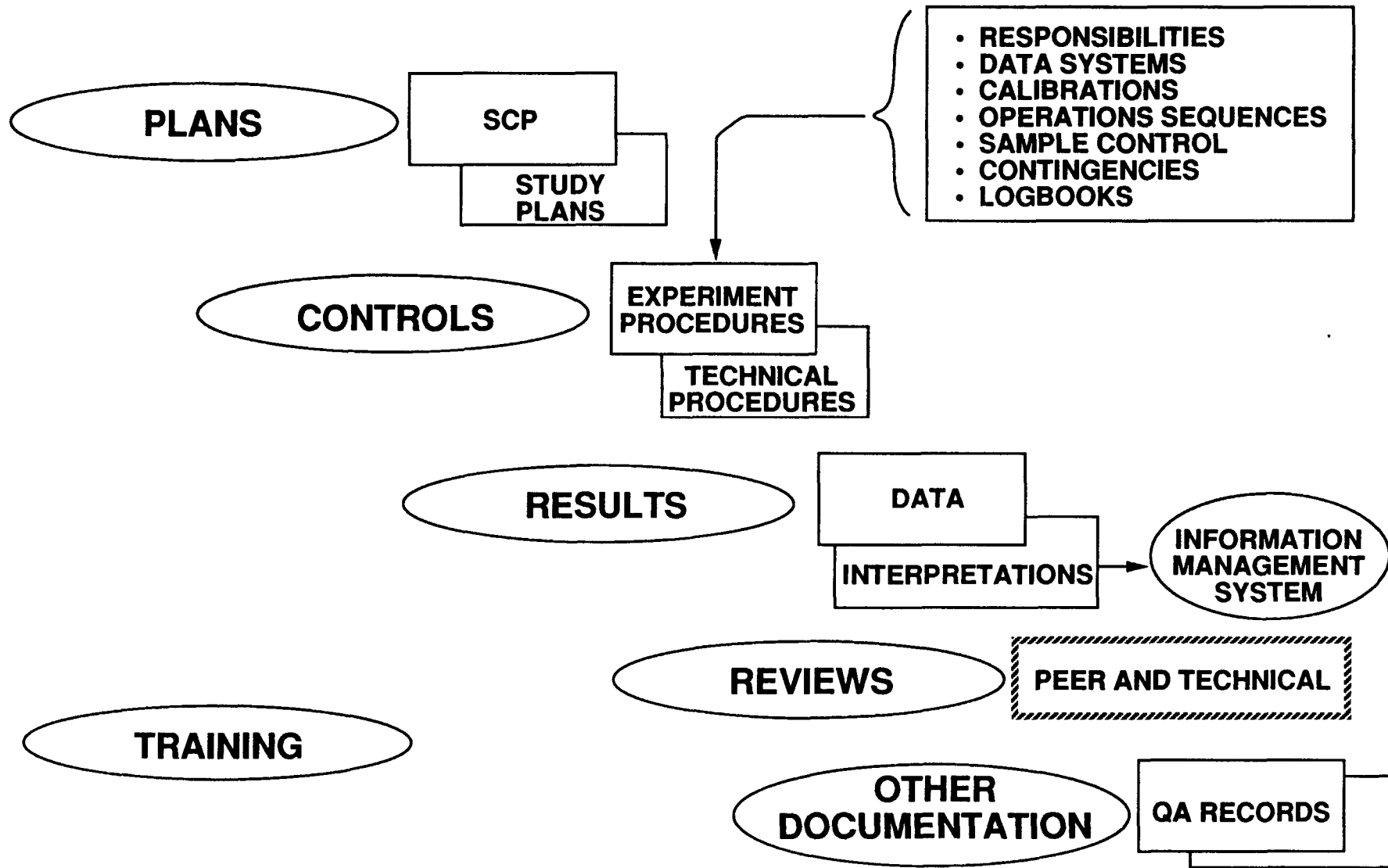
QA FEATURES FOR ANALYSES



QA FEATURES FOR DESIGN



QA FEATURES FOR SITE CHARACTERIZATION



WHAT'S DIFFERENT

- **PROCEDURES**
- **TRAINING**
- **REVIEWS**
- **DOCUMENTATION**



IMPLEMENTATION PROBLEMS (USER'S PERSPECTIVE)

- **PROGRAM TOO PRESCRIPTIVE**
 - **COMPLEX PROCEDURES**
 - **EXCESSIVE TIME AND EFFORT TO IMPLEMENT**
 - **EXCESSIVE TIME AND EFFORT FOR APPROVALS**
 - **LACK OF FLEXIBILITY**

- **OVERLY CONSERVATIVE MANAGEMENT DECISIONS**
 - **DESIRES BECOME "REQUIREMENTS"**
 - **EXCESSIVE ATTENTION TO UNIMPORTANT ACTIVITIES**

- **FEEDBACK NOT A PART OF FLOWDOWN**
 - **CONTROLS INCONSISTENT WITH TECHNICAL WORK**
 - **STAFF VIEWED AS UNCOOPERATIVE AND ARGUMENTATIVE**

- **EMPHASIS ON PROCESS NOT PRODUCT**
 - **UNIMPORTANT DETAILS BECOME BIG PROBLEMS**
 - **AUDITORS EXCESSIVELY POWERFUL**

- **MORALE OF STAFF IS LOW**



EXCESSIVE QA DETAILS REDUCED QUALITY

■ QUALITY OF WORK

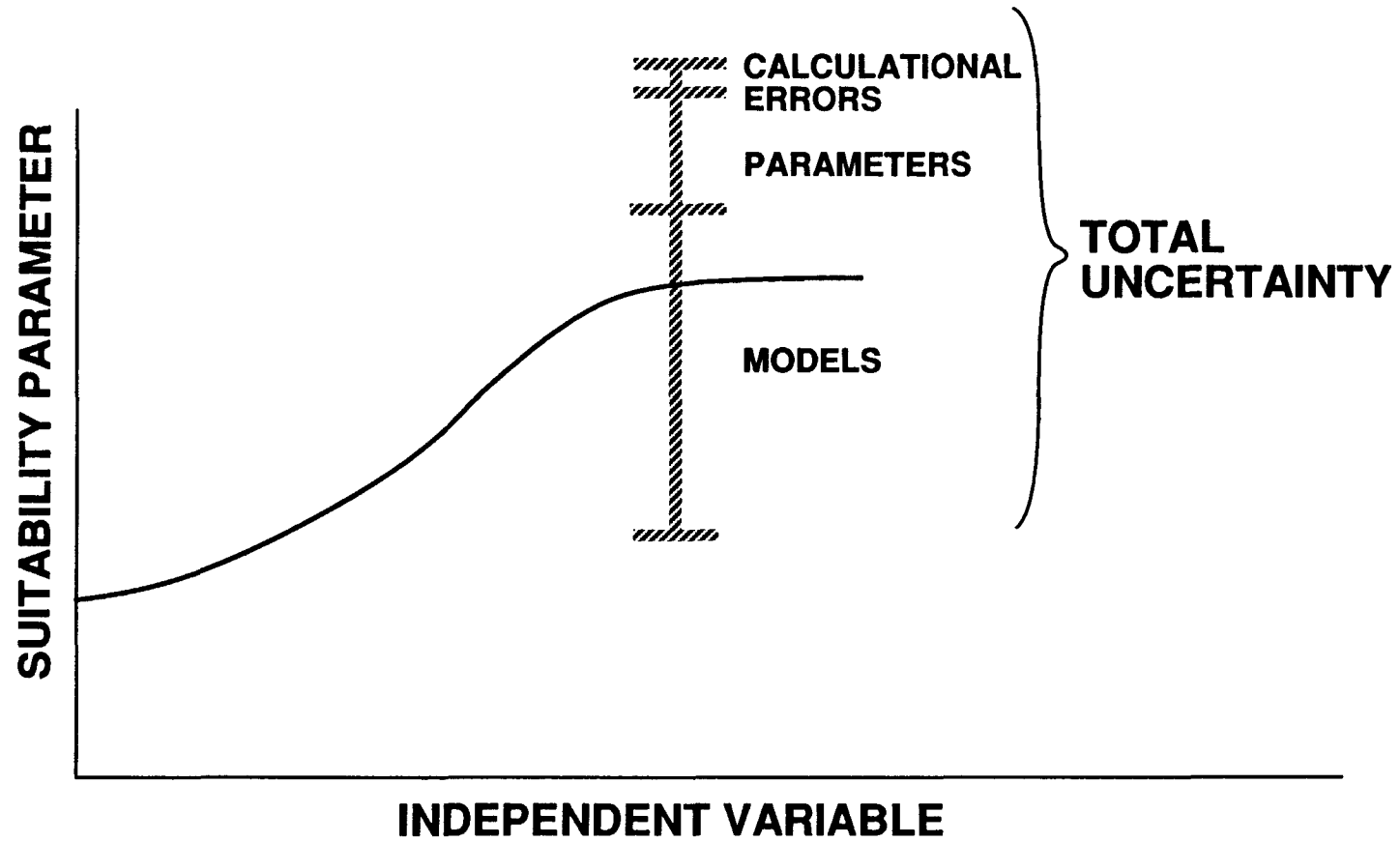
- LESS CARING BY SOME**
- EXCESSIVE TIME ON QA BY OTHERS**
- DECISIONS SOMETIMES BASED ON QA DIFFICULTIES**

■ QUALITY OF STAFF

- HIGH TURNOVER**
- MANY OF BEST STAFF LEAVE FIRST**



STAFF PERSPECTIVE



IMPROVEMENT ACTIVITIES

- **DOE WORKSHOPS ON QA IMPLEMENTATION**
 - AIR CONCERNS
 - RECOMMEND CHANGE

- **MANAGEMENT ASSESSMENTS**
 - EVALUATE PROGRAM EFFECTIVENESS
 - SUGGEST IMPROVEMENTS

- **SNL PROCESS MANAGEMENT TEAM FOR PROCEDURES**
 - PROVIDE VARYING CONTROLS (GRADING)
 - COMBINE AND SIMPLIFY
 - ELIMINATE UNNECESSARY SPECIFICATION
 - REVERSE AUDIT "RATCHETING"
 - CONTINUE TO RELY ON USERS

- **CHANGES IN PHILOSOPHY**



***"WE STILL NEED MORE FREEDOM
FROM CENTRAL AUTHORITIES HERE."***

MIKHAIL BOCHAROV

**MANAGER, BUTOVO BUILDING MATERIALS PLANT
MOSCOW, USSR**

(FROM NEWSWEEK, MARCH 13, 1989)



**Sandia
National
Laboratories**

EXAMPLES



PROCEDURES

■ PROBLEM

- TOO MANY, TOO DETAILED, COMPLEX
- CONFLICTING REQUIREMENTS
- NO TRUE GRADING
- CONSTANTLY CHANGING

■ ROOT CAUSES

- FLOWDOWN
 - DETAILED
 - MULTIPLE SOURCES
 - AUTHORS NOT USERS
 - LITTLE FEEDBACK ACCEPTED
- MANAGEMENT DESIRES AND REQUIREMENTS MIXED
- RATCHETING THROUGH AUDITS AND SURVEILLANCES



PROCEDURES (CONTINUED)

■ IMPROVEMENTS

- **PROCESS MANAGEMENT TEAM**
 - **MANAGEMENT**
 - **QA STAFF**
 - **TECHNICAL STAFF**
- **QA WORKSHOPS**
- **FORMAL APPEAL PROCESS**
- **INFORMAL FEEDBACK**



IMPLEMENTING NUREG-1318

■ Q - LIST

- ITEMS IMPORTANT TO SAFETY
- ITEMS IMPORTANT TO WASTE ISOLATION

■ QUALITY ACTIVITIES LIST (QAL)

- SITE CHARACTERIZATION ACTIVITIES
- PERFORMANCE ASSESSMENTS
- ACTIVITIES WITH ADVERSE IMPACTS ON PERFORMANCE

■ GRADING

- CONTROLS BASED ON IMPORTANCE



IMPLEMENTING NUREG-1318 (CONTINUED)

■ **PROBLEMS**

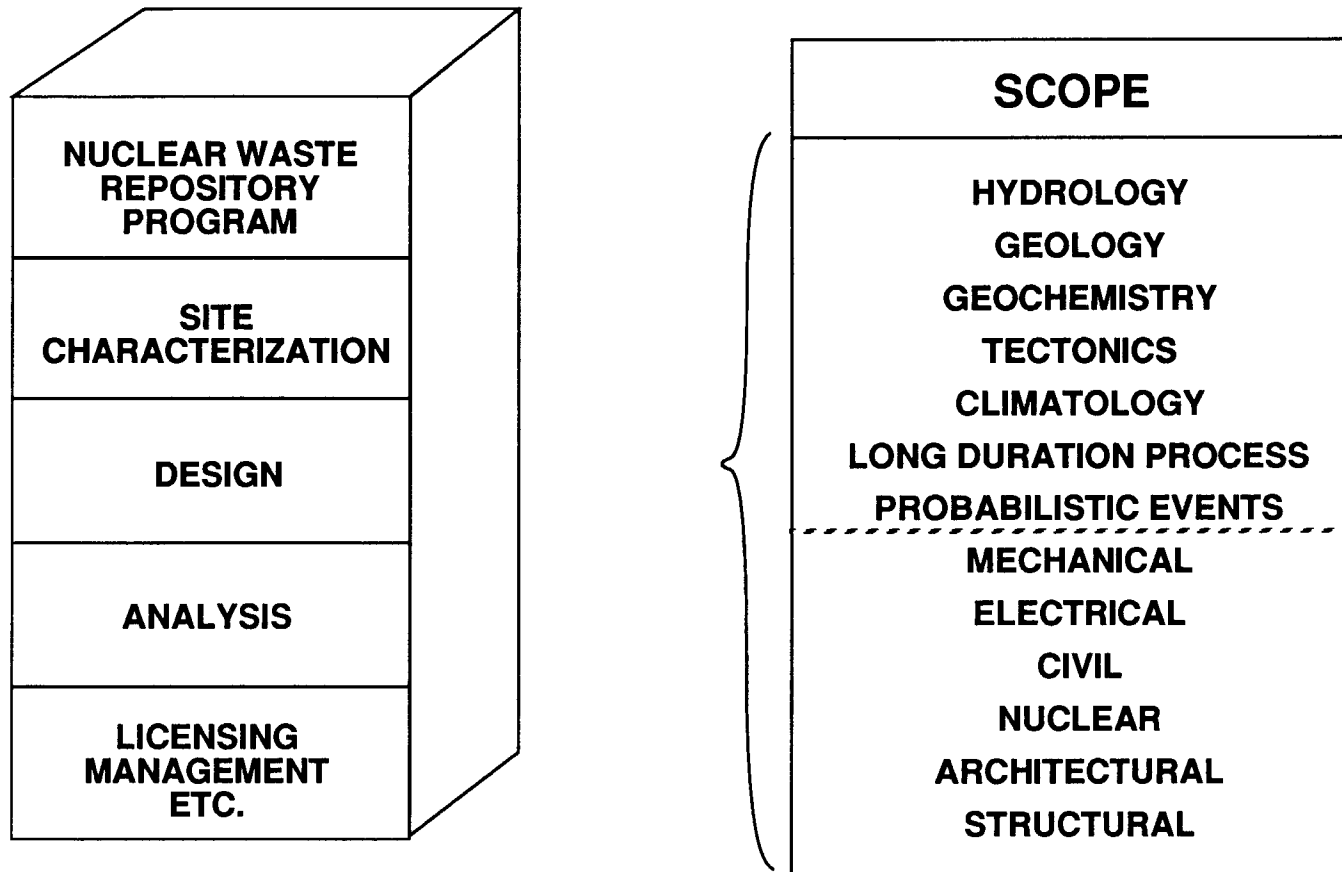
- **QAL PRESENTLY INCLUDES ALMOST ALL PROJECT ACTIVITIES**
- **GRADING ONLY DETERMINES APPLICABLE CRITERIA**
- **SNL PROCEDURES DON'T ALLOW FOR VARYING CONTROLS**

■ **IMPROVEMENTS**

- **PROCESS MANAGEMENT TEAM**
- **QA WORKSHOPS**



A NUCLEAR WASTE REPOSITORY PROGRAM INCLUDES UNDERSTANDING A NATURAL SETTING



CLASSIC CASE IS BUILT ON DEVELOPING "THINGS"

