

TENNESSEE VALLEY AUTHORITY

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NOV 15 1988

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of )  
Tennessee Valley Authority )

Docket Nos. 50-390  
50-391

WATTS BAR NUCLEAR PLANT (WBN) - VERTICAL SLICE REVIEW (VSR) PLAN

S. D. Richardson's letter to S. A. White dated August 31, 1988, provided the results of the NRC staff's review of the WBN VSR plan. The letter stated that the NRC staff has reviewed the proposed plan and considers the proposed methodology for VSR to be reasonable. In addition, the letter provided 16 comments on the VSR plan.


The purpose of this letter is to respond to those comments. The responses are numbered in enclosure 1 to correspond with the comments in your letter. The responses related to the VSR scope have been reviewed and concurred to by Sargent & Lundy.

A summary of the commitments contained in this submittal is provided in enclosure 2.

We believe that these responses address your comments related to the VSR plan. If there are any questions, please call John F. Cox, Watts Bar Program Team licensing member, at 615-365-3307.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

  
R. Gridley, Manager  
Nuclear Licensing and  
Regulatory Affairs

Enclosures

cc: See page 2

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U.S. Nuclear Regulatory Commission

**NOV 15 1988**

cc (Enclosures):

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## ENCLOSURE 1

### COMMENT 1

The staff understands that as proposed by TVA, the elements and/or attributes associated with five well-defined corrective action programs (CAPs) will be excluded from the VSR. These programs are Hanger and Analysis Update, Concrete Quality, Equipment Qualification, Control Room Design Review, and Welding. The VSR team should consider these areas to make a determination if portions of these programs should be included in the VSR program for completeness of the review. The NRC staff has not reviewed any of these five areas either programmatically or technically. Exclusion of the elements and/or attributes associated with these programs places an additional burden on the VSR team for one to assume that the exclusion does not invalidate the intent of the VSR program.

### Response

The Vertical Slice Review Team (VSRT) has concluded that the exclusion of the five identified programs will not invalidate the intent of the VSR program because the design interfaces with the exclusion programs are being reviewed, where applicable, by the VSRT. In addition, the five exclusion programs are well defined and will be reviewed by the Watts Bar Program Team (WBPT) to ensure conformance with licensing requirements. The Nuclear Regulatory Commission (NRC), in its letter dated June 27, 1988, from S. D. Richardson to S. A. White, has agreed that sufficient basis exists for exclusion of the five identified programs.

### COMMENT 2

Page II-3 - If design and construction activities are not homogeneous (i.e., similar activities performed by different contractors to different acceptance standards) then the VSR should be expanded horizontally to sample non-homogeneous activities.

### Response

It is recognized that the design and construction activities in the plant may not be homogeneous. The VSRT has selected elements based on the application of industry experience and engineering judgement. The selection process was biased toward those areas of the selected systems which have greater potential for discrepancies and those areas which are more critical to the proper performance of plant safety functions. These elements are then reviewed for acceptance by using the TVA licensing requirements and other documents imposing safety-related requirements, such as design criteria. Therefore, the design and construction activities are reviewed, based on a uniform acceptance standard, and no horizontal expansion is considered necessary.

COMMENT 3

Page II-8 - The design process review should include an evaluation of Field Change Requests (FCRs) and Nonconformance Reports (NCRs) for appropriate disposition, especially important are those NCRs that have been dispositioned "Use-As-Is."

Response

A review of the design change process is included in the VSR. In the review of both design and construction activities, engineering change notices (ECNs), FCRs, and NCRs related to the systems and components reviewed by the VSRT are included in the review process. In addition, a select list of NCRs dispositioned as "use as-is" is also included in the review. Typical VSR checklists, which demonstrate that this type of review is performed, are MEV-1401 on containment isolation valves, MEV-1201 on small bore piping, and MEV-501 on ducts and plenums. These and other VSR checklists are available for NRC's review at WBN.

COMMENT 4

Page II-9 - Sargent & Lundy intends to review TVA performed design reviews for technical adequacy. The Sargent & Lundy review should also evaluate the adequacy of TVA's plant-specific corrective actions.

Response

The term "TVA-performed design reviews" as used on page II-9 of the VSR plan refers to an independent, overall review of system design performed by engineers other than those responsible for original design. Since the two systems reviewed by the VSRT did not have such a review performed by TVA, no specific assessment of TVA-performed design reviews could be performed by the VSRT. For the same reason, no review of the plant-specific corrective actions was performed. It should be noted that an assessment of the normal design process, including the regular checking and review conducted by the original design reviewers, was performed as part of the VSR. Also, the VSRT will review any corrective actions proposed by TVA line organizations to resolve the discrepancy reports written by the VSRT.

COMMENT 5

Page II-9 - The review of selected design documents should include the following attributes: (1) proper application of barriers at safety-related fluid system interface and (2) transmittal and utilization of interdisciplinary information, i.e., adequacy of discipline interfaces.

Response

The VSR includes a review of the application of barriers at safety-related fluid system interfaces, as demonstrated by VSR checklists MEV-801 on instrument lines, MEV-1001 on large bore piping, and MEV-1402 on general application valves. The adequacy of discipline interfaces is covered, for example, in checklists MEV-1401 (containment isolation valves) and EEV-1515



(valve motor operators) for mechanical and electrical interfaces on motor operated valves. Similarly, checklists MEV-1511 (pumps), EEV-405 (motors and generators), and SEV-1702 (equipment foundations and supports) cover the transmittal and utilization of interdisciplinary information on pump, motor, and foundation designs.

COMMENT 6

Page II-10 - In as much as the cut-off date for the vertical slice review documentation was April 22, 1988, some mechanism should have been in place to capture those attributes/elements not included or which were included but were incomplete as of April 22.

Response

April 22, 1988, was identified as the cutoff date for VSR documentation to ensure the objectivity of the VSR review, i.e., that the plant conditions existing at the start of VSR be objectively reviewed without considering any remedial changes that could have been made after the start of VSR. The April 22, 1988 cutoff date ensures that the elements and attributes of the originally completed plant are being reviewed by VSR because the original design and construction of WBN were completed substantially by 1984.

COMMENT 7

Page II-11 - It is stated that the Mechanical Systems review will include "process design." This terminology is very broad and sweeping but obviously implies different things to different people. The design attributes reviewed need to be clearly defined for all design disciplines.

Response

The term "process design" as used on page II-10 of the VSR plan means fluid process design that includes fluid capacities, pressures, temperatures, etc., for piping, valves, and equipment. The detailed attributes for this review are included in the VSR checklists, e.g., MEV-801 (instrument lines), MEV-1001 (large bore piping), and MEV-1402 (general application valves).

COMMENT 8

Page II-11 - The scope of Civil/Structural review is very vague. This review should include a review of the design attributes that are included in safety-related structures, e.g., design of reinforced concrete walls and slabs, design of masonry walls, development of building seismic models and the generation of the amplified response spectra at various building elevations, cable tray and conduit supports, auxiliary steel, etc.

Response

The scope of the civil and structural review includes a review of the design attributes for elements such as reinforced concrete walls and slabs, masonry

walls, building seismic models and generation of the amplified response spectra, cable tray and conduit supports, auxiliary steel, etc., in addition to many other structural items. These items are specifically identified on the VSR checklists used for the review, e.g., SEV-1601 (concrete structures), SEV-1901 (masonry walls), SEV-2199 (seismic analysis), SEV-301 and 302 (cable tray and conduit supports), and SEV-901 (pipe and instrument support and supplementary steel).

COMMENT 9

Page II-11 - The Electrical Systems review should include the DC system as well as the AC system. The design attributes to be reviewed are not specified.

Response

In addition to the AC Shutdown Power System, portions of the electrical DC system are being reviewed in the VSR, as noted in the VSR checklists prepared for the electrical review activities, i.e., checklist number EEV-0409 for vital and backup DC power, EEV-0404 for vital battery charger, and EEV-0401 for vital battery. The design attributes to be reviewed are included in these checklists.

COMMENT 10

Page II-11 - Design for "common requirements" such as seismic II/I, HELB/MELB, internal flooding, etc., should be verified by a field walkdown conducted by the Sargent & Lundy VSR team.

Response

Design for common requirements, which include fire protection and high energy line break (HELB), are being verified by field walkdown conducted by the VSRT, as demonstrated by checklists MEV-2105 (fire protection) and MEV-2106 (HELB). The WBPT is evaluating the addition of the seismic II/I activities to the VSR scope and will advise NRC of its plans within 60 days. The moderate energy line break (MELB) and associated internal flooding have not been included in the VSR because these evaluations for these areas were performed, including a field walkdown, for WBN during 1986-87. The program adequacy for these areas will be reviewed by the WBPT for acceptance.

COMMENT 11

Page II-14 - We agree that certain items embedded in concrete are inaccessible, however, pull tests on anchor bolts can be performed and anchor bolt depth can be measured by ultrasonics. These tests are not difficult to perform and should be included in the Construction Verification Review (CVR).

Response

The WBPT is evaluating the addition of either a pull test on anchor bolts or anchor bolt depth measurements to the VSR and will advise NRC of its plans within 60 days.

COMMENT 12

Page II-14 - The examples of what is anticipated to be reviewed in the CVR inspections are quite general. The purpose of the CVR and the specific attributes reviewed need to be clearly stated.

Response

The areas and the specific attributes to be reviewed under CV are identified in the VSR checklists and associated checklist instructions developed for construction review, e.g., ECV-101 (cables), MCV-1511 (pumps), and SCV-1806 (steel structures).

COMMENT 13

Page II-16 - It is not clear to the staff how the Construction Support Records review will determine to what extent maintenance activities have been done on elements and how the elements have been changed materially as a result of these maintenance activities.

Response

The VSR construction support records review is intended to demonstrate that the records adequately reflect the installed plant hardware. There are several CAPs which will address the effects of maintenance activities on the plant equipment and components. The quality assurance list (Q-List) program will verify the proper use of quality assurance (QA) program application to the maintenance activity on systems and components. The piece parts program will review the adequacy of the parts replaced through maintenance activity on safety-related equipment. The Design Baseline and Verification Program will provide the preoperational test scoping documents which will be used by the Prestart Test Program to determine whether the components and systems can function as designed. This process will detect any adverse effects of maintenance activity on the equipment and components.

COMMENT 14

General - TVA should have a program that determines the adequacy of its as-built reconciliation programs for piping, electrical cable routing and pull lengths, common hazards, (e.g., HELB target evaluation,) etc.

Response

The systematic evaluation being performed under the Watts Bar Program Plan will provide reasonable assurance that WBN design and construction meet licensing requirements; this includes verification of the as-built conditions of the plant. The WBPT is reviewing the adequacy of as-built reconciliation programs, such as the Hanger and Analysis Update Program (HAAUP), which will verify the adequacy of as-built piping and supports. As-built verification of cable routing by the VSRT using signal tracing is being evaluated by the WBPT, and the WBPT will advise NRC of its plans within 60 days. As noted in response to comment 10, field walkdowns will be performed by the VSRT for common hazards, e.g., HELB and fire protection.

COMMENT 15

Section V - Who does the Head, Quality Assurance Division report to as described in the Quality Assurance Program for the VSR?

Response

The head of Sargent & Lundy (S&L) Quality Assurance (QA) Division reports to S&L's director of services for QA activities in accordance with the S&L QA manual, as shown on the attached Figure 01.01-1, "Sargent & Lundy Organization Chart," from S&L Topical Report SL-TR-1A, revision 7.

COMMENT 16

Section V - The Quality Assurance Coordinator reports to the Senior Quality Assurance Coordinator as described in Section 2.2.4. However, the Senior Coordinator does not appear on the organization chart (Exhibit IV-1). Where does the Senior QA Coordinator fit in the organization?

Response

The QA coordinator in the VSRT reports to the project manager for project activities, as shown in the attached Exhibit IV-1. It should be noted that this exhibit, when originally submitted with the VSR plan to NRC, had an error in that it showed the QA coordinator reporting to the project director instead of project manager. Also, D. C. Haan (Internal Review Committee member) and J. P. Wittenauer (Electrical Project Engineer) have replaced R. L. Givan and T. M. McCauley, respectively, due to availability reasons. The exhibit does not show a senior QA coordinator because there is no senior QA coordinator on the project team. The QA coordinator reports to the senior QA coordinator for his non-VSR activities, e.g., administrative and technical direction, and the senior QA coordinator reports to the Head, QA Division, as shown on the attached Figure 01.02-1, "Quality Assurance Division Organization Chart," from S&L Topical Report SL-TR-1A, revision 7.



ENCLOSURE 2

For the Watts Bar Nuclear Plant (WBN), TVA commits to:

1. The Watts Bar Program Team (WBPT) will review the five exclusion programs to ensure conformance with licensing requirements.
2. The Vertical Slice Review Team (VSRT) will review any corrective actions proposed by TVA to resolve the discrepancy reports written by the VSRT.
3. The WBPT is evaluating the addition of seismic II/I activities to the vertical slice review (VSR) scope and will advise NRC of its plan within 60 days.
4. The WBPT will review the program adequacy of the evaluations for moderate energy line break (MELB) and internal flooding.
5. The WBPT is evaluating the addition of either a pull test on anchor bolts or anchor bolt depth measurements to the VSR scope and will advise NRC of its plans within 60 days.
6. The WBPT is reviewing the adequacy of as-built reconciliation programs, such as the Hanger Analysis and Update Program, which will verify the adequacy of as-built piping and supports.
7. As-built verification of cable routing by the VSRT using signal tracing is being evaluated by the WBPT, and the WBPT will advise NRC of its plans within 60 days.

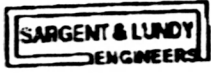
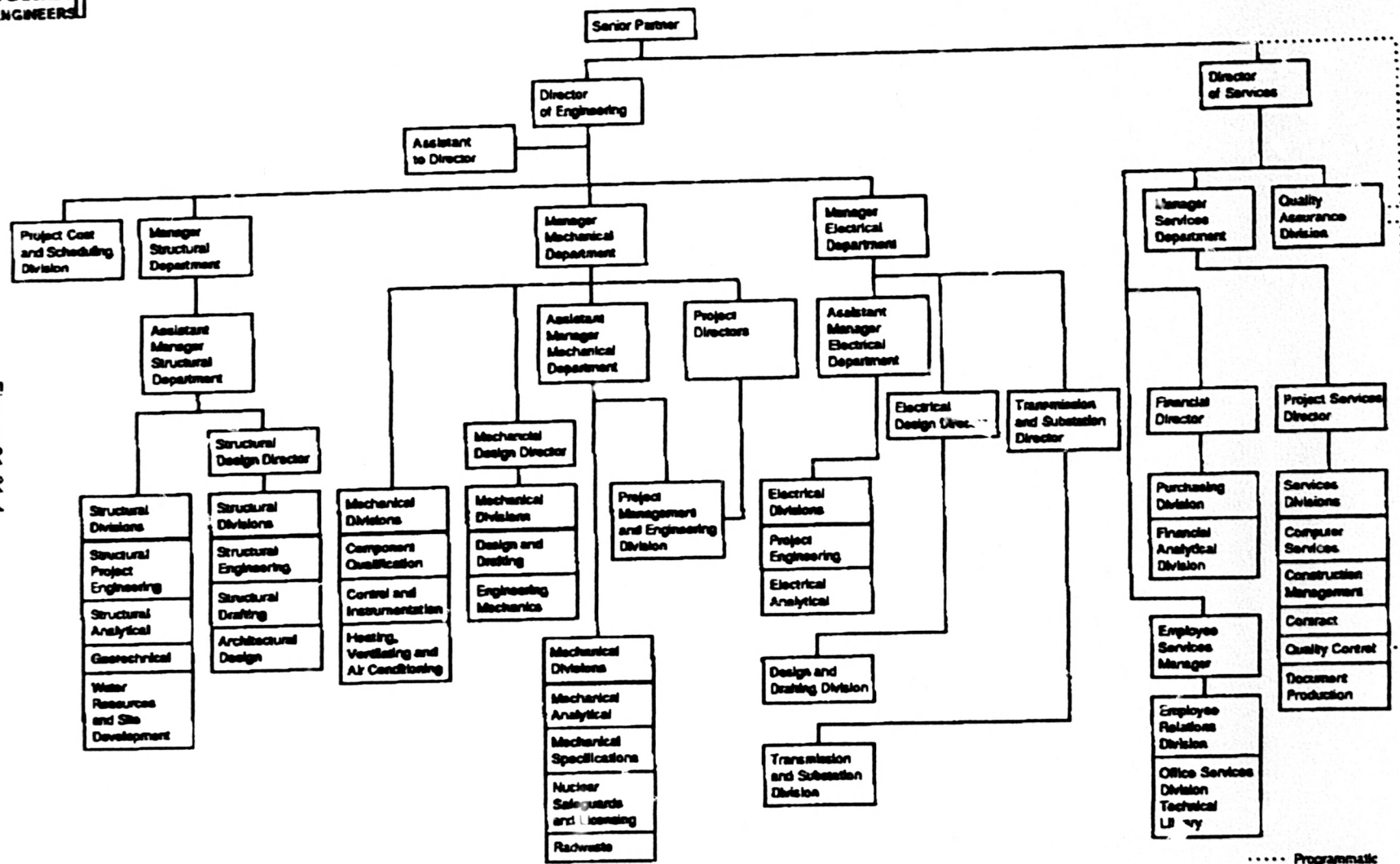


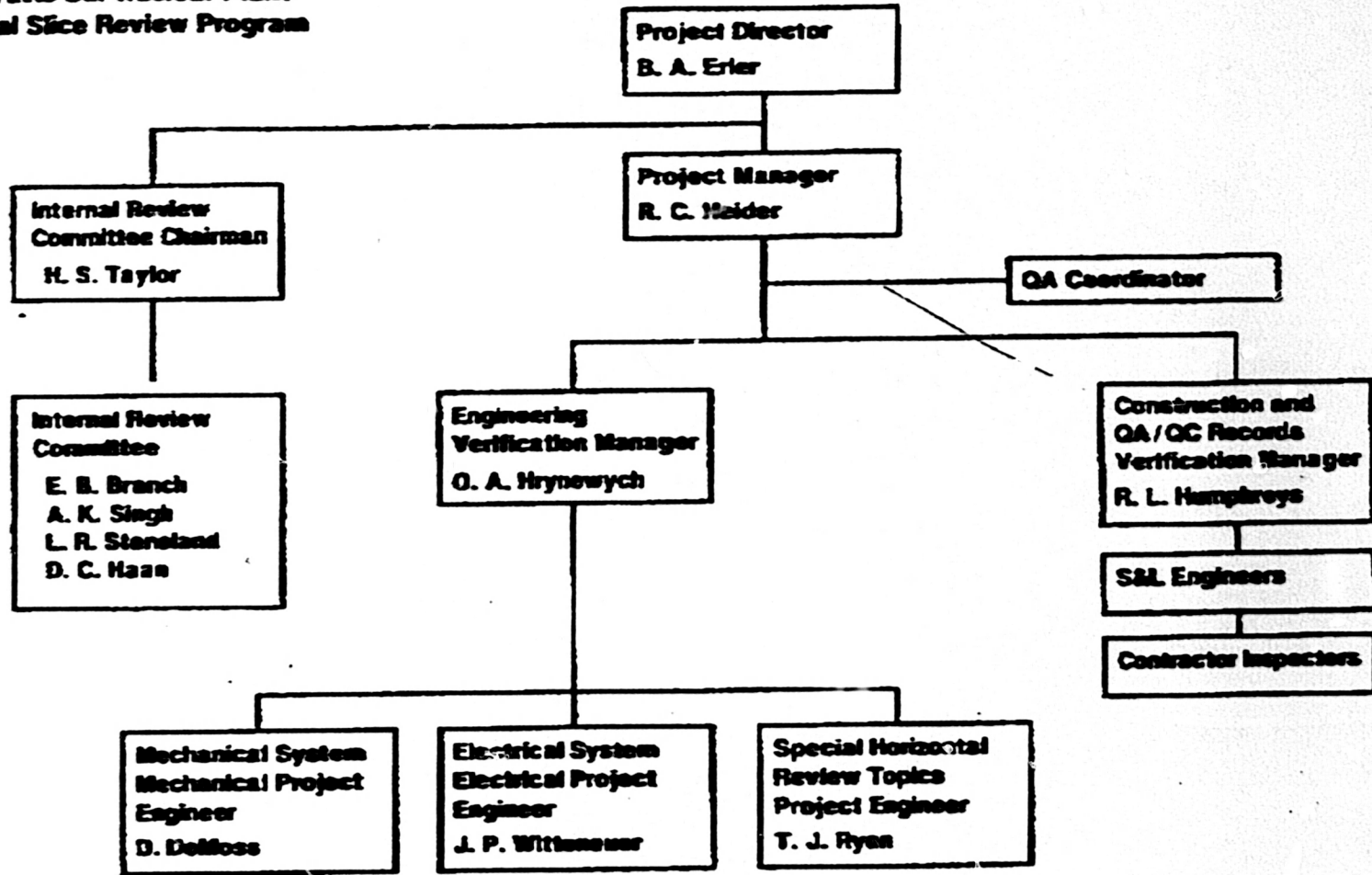
Figure 01.01-1  
Sargent & Lundy Organization Chart  
01-2



..... Programmatic Director of QA Activities

**TVA Watts Bar Nuclear Plant  
Vertical Slice Review Program**

**Exhibit IV-1**



### Quality Assurance Division

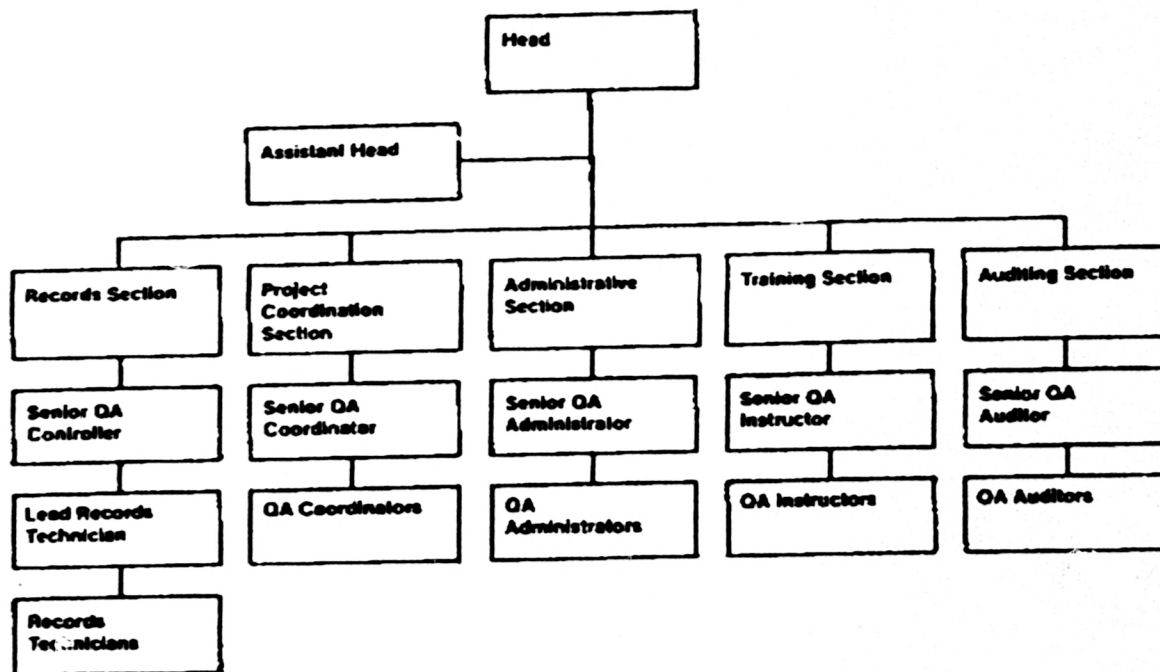


Figure 01.02-1  
Quality Assurance Division  
01-7