

APPENDIX V  
INSTRUMENT MECHANIC TRAINEE  
TRAINING PLAN

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**1. PURPOSE:**

This program provides entry level training and work experience for future journeyman instrument mechanics associated with TVAs power generating plants. While in training, trainees will be known as an instrument mechanic trainees (IMT) with a period designation. Training is divided between work experience, on-the-job training (OJT), self-study, computer based training (CBT), and related classroom training (**see attachment A**). At the completion of this program, TVA and the IBEW will recognize the individual as a journeyman instrument mechanic with skills as delineated in the appropriate job description. Training administration of this appendix is governed by the joint administrative process established in the Joint Training Plan. Personnel training in nuclear power plants will require additional training established by INPO (reference Joint Training Plan; footnote 2).

**2. TIME PERIODS:**

Period I	Period II	Period III	Period IV	Total:
1/2 year	1 year	1 year	1 year	3-1/2 years

**Note: Trainees will hire in and will top out three and one half years from that date (see exceptions, remedial).**

**3. ENTRY LEVEL REQUIREMENTS:**

A. Degree requirements are any one of the following:

1. Associate of Applied Science in Electronics Engineering Technology
2. Associate of Applied Science in Electrical/Electronics Engineering Technology

B. Equivalency requirements are any one of the following:<sup>1</sup>

1. Forty-three (43) semester credit hours or more of course work from a regionally accredited college or university toward an electrical or electronics degree that includes:
  - Six (6) semester credit hours of college level algebra, trigonometry, geometry, or calculus, and Twelve (12) semester credit hours of college level electrical/electronics theory (AC/DC fundamentals, solid state electronics, and digital).
2. A four year non-technical degree from a regionally accredited college or university provided it includes:
  - Six (6) semester credit hours of college level algebra, trigonometry, geometry or calculus, and Twelve (12) semester credit hours of college level electrical/electronics theory (AC/DC fundamentals, solid state electronics and digital) or physics that includes electrical theory.

1. The position holder is to be responsible for the strategic input to the training program. The holder is to be organized in their

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3. Two (2) or more years of documented work experience and training in electrical/instrument maintenance received while a member of the armed forces including and providing:
  - Technical electrical/instrument maintenance education in formal military schools totaling greater than 480 hours duration<sup>2</sup>, and
  - Technical electrical/instrument maintenance experience totaling greater than six months wherein the individual is permitted to work independently, and
  - Two (2) credits of high school algebra, trigonometry, geometry, or calculus; or, Six (6) semester credit hours of college level algebra, trigonometry, geometry, or calculus.
  
4. Two (2) or more years of documented industrial work experience and training in electrical/instrument or electronics maintenance received while a member of industry including and providing:
  - Technical electrical/instrument or electronics maintenance education in formal industrial schools totaling greater than 480 hours duration, and
  - Technical electrical/instrument or electronics maintenance experience totaling greater than six months wherein the individual is permitted to work independently, and
  - Two (2) credits of high school algebra, trigonometry, geometry, or calculus; or, Six (6) semester credit hours of college level algebra, trigonometry, geometry, or calculus.

**4. REMEDATION:**

- A minimum of 80% on exams will be considered passing.

**4.1 General:**

- 4.1.1 The remediation system documents decisions through a series of notifications termed "notices" (**verbal**), "advisories" and "bulletins" (**see attachment B page 1 and 2 respectively**).
- 4.1.2 Only one 80-hour remedial will be granted to overcome a given deficiency.
- 4.1.3 A maximum of two remedials will be granted per period.

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<sup>2</sup> Military and industrial experience and training must relate to the knowledge, skills, and abilities associated with electric power generation work as evidenced by proper authority such as the Department of Labor job and training codes.

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4.2 Pre-remedial:

- 4.2.1 The instructor issues a "notice" to a trainee who fails an examination on a classroom or self-study module for the first time. A "notice" may include additional assignments. Reexamination is required within  $\approx$  40 hours. A "notice" is not a formal remedial.
- 4.2.2 The Local Joint Training Subcommittee (LJTS) issues an "advisory" on a trainee whose training record indicates unsatisfactory progress or whose professional attitude and/or behaviors are unsatisfactory. An "advisory" may include additional assignments to improve knowledge and skills. The "advisory" may suggest ways to achieve professional attitude and behaviors. An "advisory" is not a formal remedial.

4.3 Remedial:

- 4.3.1 The LJTS issues a "bulletin" of remedial on a trainee who fails a comprehensive examination, or fails a reexamination on a classroom or self-study module. Reexamination is required within  $\approx$ 80 hours.
- 4.3.2 The LJTS issues a "bulletin" of remedial on a trainee who does not meet promotion requirements at the end of the period.
- 4.3.3 The LJTS issues a "bulletin" of unsatisfactory progress on a trainee who continually fails to satisfy expectations for professional attitude and/or behaviors. The "bulletin" will describe steps necessary to resolve problems and satisfy expectations.

**Note: Remedial time does not count toward promotion. Remedial will last for a duration of 80 hours for each incident.**

4.4 Removal:

- 4.4.1 The LJTS recommends and the Joint Training Subcommittee (JTS) approves a "bulletin" for the removal from the training program of a trainee unable to promote within the allotted time and remedial provisions. This committee may consider mitigating circumstances.
- 4.4.2 The LJTS recommends and JTS approves a "bulletin" for the removal from the training program of a trainee who exhibits un-resolvable problems with professional attitude and/or behaviors. This committee may consider mitigating circumstances.

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5. TASK QUALIFICATION:

Trainees are required to demonstrate proficiency in various skills and tasks from the attached list (**see attachment C**). Structured on-the-job training and evaluation is the method by which proficiency is established. Task qualification includes learning by the individual, evaluation by a qualified person (a person who has completed formal OJT training class), acceptance by the LJTS, and documentation by management. OJT is evaluated as either "proficient" or "not proficient" with "proficient" required for qualification. Trainees may attempt task qualification more than once. Documented task qualification must be obtained before advancement. When a trainee receives a "proficient" on a task qualification, that person can then perform the particular task independently.

6. SELF-STUDY:

Trainees will be given training assignments to be completed outside the classroom. Many may be assigned outside of working hours. Self-study assignments may be for a variety of reasons including a fixed part of the program, to overcome an evaluated weakness, equipment location exercises to reinforce plant understanding, workbook exercises to complement classroom materials, remedial exercises to overcome weaknesses identified during progress review, or supporting materials to supplement task qualification. Self-study materials shall be approved by the LJTS. Trainees will not necessarily receive the same self-study assignments. Completion of self-study modules are evaluated by the instructor. Satisfactory completion of self-study assignments must be accomplished before advancement. TVA supplied Computer-Based training modules can also be utilized in the training program to support classroom training, on-the-job training, and station systems training. CBT modules utilized can be stand alone or used with existing training materials as determined the LJTS. CBT modules will be followed with hands on evaluation and/or examinations, to ensure trainee comprehension. Time will be given and computers furnished as necessary to complete the assigned CBT lessons.

7. WORK EXPERIENCE:

Trainees gain experience by spending time in activities associated with becoming an instrument mechanic journeyman. Trainees are rotated among various activities and to various locations under the direction of the LJTS. A precise accounting of hours is not required. The LJTS is empowered to generate a list or schedule of training as long as the work experience time and rotation pattern supports the objectives and features of the program including classroom, task qualification, and oral comprehensive examinations. Lessons (**see attachment D**) will be assigned to trainees and will be completed by the end of the designated period. Lessons at individual plants will be assigned by the LJTS.

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**8. COMPREHENSIVE EXAMINATIONS:**

Comprehensive periodic and formal oral exams are an element of this program. Comprehensive written exams are required to measure understanding of various classroom topics. Oral exams are administered(see attachment E) under the direction of the LJTS and will be conducted at a frequency of at least once each period or more frequent at the discretion of the LJTS. Each trainee must perform satisfactorily in an oral examination on systems and topics pertinent to their training. During the exam, the trainee is expected to demonstrate a thorough knowledge and understanding of the material. Oral exam material addresses the trainee's experience and training to date. Expectations and questions will be provided to the trainee in advance.

**9. PROGRESS REVIEWS:**

The LJTS will review individual training records periodically and prior to promotion. Progress reviews include: (1) successful completion of classroom, laboratory training, and module exam scores, (2) completion of self-study assignments and module exam scores, including CBT assignments, (3) work experience/crew rotation mix, (4) task qualification record, (5) comprehensive examination results, (6) remediation record and (7) evaluation of overall job performance, work attendance, and attitude.

**10. PROMOTION:**

The LJTS will recommend to the Joint Training Subcommittee (JTS) a trainee be promoted based upon satisfactory completion of the following training elements:

- A. Classroom and lab training for the period
- B. Self-study, including CBT assignments, for the period
- C. Task qualification for the period
- D. Comprehensive oral examinations for the end of period
- E. Remedials have been satisfied

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11. APPROVALS:

This appendix to the Joint Training Plan for entry level training of future instrument mechanics is accepted and approved as indicated below by signatures of the members of the Central Committee. This appendix may be reevaluated annually and at the request of either party.

LABOR:

*Robert [Signature]* 5/23/02  
International Brotherhood of Electrical Workers Date

MANAGEMENT:

*Joseph R. Bynum* 5/24/02  
Executive Vice President Date  
Fossil Power Group

TRAINING:

*Michael [Signature]* 5/24/02  
Sr. Manager Date  
COO Technical Training

*[Signature]* 6/11/02  
Executive Vice President Date  
TVAN

HUMAN RESOURCES:

*D.K. [Signature]* 6/11/02  
Sr. Manager Date  
Operations Support

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(Attachment A page 1 of 1)

**RELATED CLASSROOM TRAINING CURRICULUM  
INSTRUMENT MECHANIC APPRENTICE**

<b>RELATED CLASSROOM TRAINING</b>	<b>Approximate Duration</b>
<b>PHASE I</b>	375 hours
• Orientation and Industrial Safety	
• Electronics Review	
• Power Plant Introduction	
• Handtools / Soldering, and Termination / Instrument Shop Test Equipment	
<b>PHASE II</b>	375 hours
• Basic Measuring Principles	
• Advanced Measuring Principles	
• Calibration and Standardization	
<b>PHASE III</b>	375 hours
• Electrical and Mechanical Print Reading	
• Control Loop Concepts	
<b>PHASE IV</b>	375 hours
• Station Instrumentation	
• Station Systems	
<b>Total Hours for all PHASES</b>	<b>1500 hours</b>

Notes:

- Training location to be determined by LJTS based on business needs. Travel will be in accordance with the General Agreement.
- Individuals can be given supporting self-study assignments to be completed on their own time.
- During Phases, the Local Subcommittee may recommend to the Joint Training Subcommittee to delete or add courses based on local station equipment.
- The Four Phases of training will be conducted during the First and Second Period of the Trainees apprenticeship.
- FPG will provide a training handbook with detailed curriculum and TRN-17 will contain TVAN curriculum.

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(Attachment C page 1 of 1)**

**SUGGESTED TASK DUTY AREA LIST TO BE USED  
IN CONJUNCTION WITH ON-THE-JOB TRAINING  
AND TRAINEE LESSONS**

Trainees are expected to demonstrate proficiency in duty areas associated with maintenance on instruments that are capable of measuring temperature, pressure (differential and static), flow, level, air quality, and water chemistry as applicable to their station. Duty areas involve multiple tasks. Once proficiency is established and documented in a given task, trainees may be assigned to perform that task independently.

<b>Trainee Task Duty Areas</b>	<b>Minimum Number of Tasks per Area</b>
• Alarms / Annunciators	1
• Analyzers	2
• Controllers/Control Units*	4
• Converters/Modifiers/Signal Conditioners*	8
• Meters/Indicators*	4
• Recorders*	2
• Soldering	1
• Switches/Relays*	4
• Transmitters/Sensors/Transducers*	6
• Valves / Valve Positioners / Actuators / Regulators*	8
<b>Minimum Total Tasks</b>	<b>40</b>

\*These Duty Areas will have tasks that cover Electrical/Electronic and Pneumatic devices.

- Completion of tasks will be documented and tracked by the LJTS and entered into TVA's electronic records system.
- Tasks will be completed as the trainee progresses through the program in conjunction with applicable classroom training and/or lessons. Task progression will be from simple to complex.



**APPENDIX V  
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(Attachment D page 1 of 2)**

**INSTRUMENT MECHANIC TRAINEE LESSONS**

<b>Lesson Subject Areas</b>	<b>Minimum Number of Lessons per Area</b>
• Station General Information	5
• Station Instrumentation and Controls	25
• Station Systems	25
• Station Practices	5
<b>Minimum Total Lessons</b>	<b>60</b>

Notes:

- The specific content of each lesson will be determined the LJTS and will be relevant to the periodic Oral Exams.
- The total number of lessons and the number in each area will be determine by the LJTS.
- The lessons will be graded and returned to the trainee in timely manner for studying purposes, to prepare for upcoming oral exams.
- The "Lesson Template" in this attachment, or similar form, will be used for creating and grading lessons.

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**INSTRUMENT MECHANIC TRAINEE LESSONS**

**Lesson Cover Sheet Template**

RELATED TRAINING INSTRUMENT MECHANIC TRAINEE TRADE SCIENCE AND THEORY		NAME _____ TITLE _____ LOCATION _____ DATE _____										
LESSON NO. _____												
LESSONS GRADED BY:	LESSON EVALUATION											
	EXCELLENT	SAT	UNSAT									
SUBJECT:  PURPOSE:  PROCEDURE: STUDY THE ABOVE SUBJECT IN THE REFERENCE LISTED BELOW, AS WELL AS IN ANY OTHER AVAILABLE PUBLICATIONS. UPON COMPLETION OF THE NECESSARY READING, THE ANSWERS TO THE FOLLOWING QUESTIONS ARE TO BE CONCISELY WRITTE, OR THE PROBLEMS SOLVED SHOWING ALL WORK ON ANOTHER SHEET OF PAPER AND ATTACHED TO THIS ASSIGNMENT SHEET. THE COMPLETED LESSON IS TO BE TURNED IN TO YOUR TRAINING REPRESENTATIVE FOR GRADING AND NECESSARY ACTION.  REFERENCES:  QUESTIONS OR PROBLEMS:												
			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">GRADE</th> </tr> <tr> <th style="width: 33%;">E</th> <th style="width: 33%;">S</th> <th style="width: 33%;">U</th> </tr> </thead> <tbody> <tr> <td style="height: 100px;"></td> <td></td> <td></td> </tr> </tbody> </table>	GRADE			E	S	U			
GRADE												
E	S	U										
TIME USED ON COMPLETION OF LESSON: _____ HOURS.			_____ SIGNATURE OF TRAINEE									

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**(Attachment E page 1 of 2)**

**ORAL EXAM GRADING AND CONTENT**

- Oral Exams Grading

Oral examinations are graded as Excellent (E), High Satisfactory (Sat 1), Satisfactory (Sat 2), Low Satisfactory (Sat 3), or Unsatisfactory (U). The final grade for the oral examination should be the consensus grade of the management and union representatives.

- Oral Exam Content

- Classroom Completion Oral Exam

This oral exam will cover knowledge gained during the classroom portion of the training program.

- Periodic Oral Exams

These oral exams will cover knowledge and skills gained through that period including completion of OJT qualification standards, self-study lessons, and other training activities as appropriate. These exams will cover the final top out oral questions which will provide the trainee ample opportunity to succeed on the final top out oral exam.

- Final Top Out Oral Exam

This oral exam will cover knowledge and skill gained during the entire training program and will be administered prior to trainee's top-out date.

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**TRAINEE ORAL EXAM COVER SHEET**

NAME:

SSN:

Exam Description:

**It is necessary that the examinee receive a satisfactory evaluation to pass this exam.**

<b>Evaluation Grades</b>	<b>Date:</b>	<b>TIME:</b>	
		From:	To:
EXCELLENT (E)	<b>Notes:</b>		
HIGH SATISFACTORY (S1)			
SATISFACTORY (S2)			
LOW SATISFACTORY (S3)			
UNSATISFACTORY (U)			
<b>FINAL GRADE CONSENSUS =</b>			

This examination was administered by the following:

NAME	REPRESENTING
NAME	REPRESENTING
NAME	REPRESENTING
NAME	REPRESENTING
NAME	REPRESENTING

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