

Department of the Army  
Pamphlet 621-105

EDUCATION

**The US Army Air  
Defense School  
Apprenticeship  
Program for the  
Trade of  
Electronic  
Technician  
(Radar)**

Headquarters  
Department of the Army  
Washington, DC  
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# ***SUMMARY of CHANGE***

DA PAM 621-105

The US Army Air Defense School Apprenticeship Program for the Trade of  
Electronic Technician (Radar)

Not applicable

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## EDUCATION

### The US Army Air Defense School Apprenticeship Program for the Trade of Electronic Technician (Radar)

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By Order of the Secretary of the Army:

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*General, United States Army*  
*Chief of Staff*

Official:

ROBERT M. JOYCE  
*Major General, United States Army*  
*The Adjutant General*

**Summary.** Not applicable.

**Applicability.** This pamphlet applies to all elements of the Active Army. This pamphlet does not apply to the Army National Guard and the Army Reserve.

**Proponent and exception authority.** The proponent agency of this pamphlet is The Adjutant General Center.

**Interim changes.** Interim changes are not official unless they are authenticated by The Adjutant General. Users will destroy interim changes on their expiration dates unless sooner superseded or rescinded.

**Suggested Improvements.** Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to the Commandant,

US Army Air Defense School and Fort Bliss, ATTN: ATZC-PAPE, Fort Bliss, TX 79916

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**RESERVED**

## **1. Purpose.**

The purpose of this pamphlet is to announce the US Army Air Defense School Apprenticeship Program for the Trade of Electronic Technician (Radar)(DOT Code 828.281.010).

## **2. Scope and Applicability.**

This pamphlet applies to all elements of the Active Army. This pamphlet does not apply to the Army National Guard and the Army Reserve.

## **3. General.**

Policies and procedures for participation in the program are contained in AR 621-5. This pamphlet is designed to be used in conjunction with that regulation.

## **4. Apprenticeship Program Number and Occupational Skill Code.**

*a.* The following apprenticeship program number and occupational skill code are used to identify the US Army Air Defense School Apprenticeship Program for the Trade of Electronic Technician (Radar).

(1) Apprenticeship Program Number: 99909.

(2) Occupational Skill Code: 01.

*b.* The apprenticeship program number and occupational skill code must be entered on the DA Form 4409-R (Apprenticeship Application) to identify the program for which the soldier is making application.

## **5. Eligibility for Participation in the Program.**

Soldiers holding as primary or secondary one of the MOSs indicated below and serving in that MOS may participate in the program.

*a.* MOS 24C: Improved HAWK Firing Section Mechanic.

*b.* MOS 24E: Improved HAWK Fire Control Mechanic.

*c.* MOS 24G: Improved HAWK Information Coordination Central Mechanic.

*d.* MOS 24P: Defense Acquisition Radar Mechanic.

*e.* MOS 24Q: NIKE Hercules Fire Control Mechanic.

*f.* MOS 24T: Patriot System Operator and Mechanic.

*g.* MOS 25J: Operation Central Repairman.

*h.* MOS 25L: AN/TSQ-73 ADA Command and Control System Operator/Repair.

*i.* MOS 26H: Air Defense Radar Repairer.

## **6. The Electronic Technician (Radar) Apprenticeship Program.**

This is an 8,000-hour program which leads to certification as journeyman in the trade of Electronic Technician (Radar). Participation in the program is voluntary, and no membership in labor unions or professional associations is required. The work process schedule and schedule of related instruction for the trade are provided in Appendices B and C. The purpose of the work process schedule and the schedule of related instruction are as indicated below:

*a.* The work process schedule reflects categories of work experience required by soldier-apprentices to qualify as journeyman and hours of work experience required in each category.

*b.* The schedule of related instruction identifies courses which may be taken by soldier-apprentices to satisfy the 576 hours of related instruction required for completion of the program.

## **7. Enrollment in the Program.**

Soldiers may enroll in the program by contacting their installation Education Services Officers (ESOs) who will explain requirements of the program and assist in the preparation of the Apprenticeship Application Form (DA Form 4409-R).

## **8. Apprentice Log Forms.**

Apprentice log forms and instructions on use of forms will be issued to soldiers by installation ESOs at the time of registration in the program. Soldier-apprentices will be required to annotate their work experience on log sheets on a daily basis. Log and instruction sheets will be maintained by soldiers in a three-ring binder. Log entries must be verified by the soldier-apprentice's immediate supervisor on a weekly basis.

## **9. Credit for Previous Experience.**

*a.* Soldier-apprentices who have partially completed an approved Federal or State registered-civilian apprenticeship in the trade of Electronic Technician (Radar) or a related trade will, upon presentation of documentation, be awarded credit for all experience related to categories or work contained in the work process schedule at Appendix B.

*b.* Up to 4,000 hours of credit for previous military work experience may be awarded upon presentation of authenticated documentation of satisfactory performance. Such experience must be directly related to the occupation in

which the apprenticeship is being performed. Statements from previous supervisors or other such documentation which certify category of work, number of hours by category, and quality of performance will be submitted by soldier-apprentices to their installation ESOs for consideration. ESOs will forward these documents to the Commandant, US Army Air Defense School and Fort Bliss, ATTN: ATZC-PAPE, Fort Bliss, TX 79916 for final determination.

**10. Related Instruction Credit for Previous Military and Civilian Education.**

Credit for previous military and civilian education may be awarded to satisfy related instruction requirements by presenting certificates of course completion or other such documentation from official military records or other sources. The installation ESO will determine the amount of credit to be awarded. The ESO will consult appropriate Service schools, as required, to determine the appropriate amount of credit for each course.

**11. Completion of the Program.**

Upon successful completion of the program, a "Certificate of Completion of Apprenticeship" will be awarded by the US Department of Labor. While the award of a Certificate of Completion of Apprenticeship will not guarantee a job, it will certify that Journey Worker status has been attained, and enable completers of the program to be more competitive with civilians in the trade.

**12. Partial Completers.**

Soldiers leaving the service prior to completion of the program will receive documented credit for that portion of the program which they did complete. This documentation may be presented for satisfaction of requirements of civilian apprenticeship programs in the trade of Electronic Technician (Radar) or a related trade. See Appendix D.

## **Appendix A REFERENCES**

### **Section I Required Publications**

This section contains no entries.

### **Section II Related Publications**

This section contains no entries.

### **Section III Prescribed Forms**

This section contains no entries.

### **Section IV Referenced Forms**

This section contains no entries.

**Appendix B**  
**WORK PROCESS SCHEDULE FOR THE TRADE OF ELECTRONIC TECHNICIAN**  
**(RADAR)(DOT CODE 828.281.010)**

**Table B-1**  
**WORK PROCESS SCHEDULE FOR THE TRADE OF ELECTRONIC TECHNICIAN**

		<i>Hours</i>
A.	Basic Electronic Skills . . . . .	750
	1. Identifies basic electronic components and their values through knowledge of color codes, symbols and trade names.	
	2. Calculates circuit values using Ohm's Law and standard electronic formulae for series-parallel circuits.	
	3. Identifies major components of radar systems and associated computer and data transmission systems through the use of block diagrams, schematics and technical manuals.	
B.	System Familiarization . . . . .	1,000
	Develops skill in the operation of pulse and continuous wave radars and their associated power sources, computers, data transmission and display systems.	
	Performs checks and evaluation of the following:	
	Power supplies.	
	Orientation and alignment of equipment.	
	Transmitters and receivers.	
	Antenna positioning, range, parallax and presentation systems.	
	Plotting and recording systems.	
	Associated equipment such as computers, control consoles, target identification and electronic countermeasure equipment.	
C.	Preventive Maintenance . . . . .	1,250
	Checks all data presentation systems for indications of drift, malfunction or failure to meet tolerances.	
	Records periodic system evaluation and compares observed reading with standards and/or past system performance.	
	Cleans, tightens, lubricates and adjusts components.	
	Substitutes parts and components, as necessary, to assure continued satisfactory performance.	
	Checks orientation, alignments, level and parallax.	
D.	Troubleshooting . . . . .	2,000
	1. Employs circuit diagrams, blueprints, log, sheet, block diagrams and technical literature in trouble shooting.	
	2. Sectionalizes, localizes, and isolates malfunctions to individual chassis or associated components.	
	3. Employs voltmeter, ammeter, AF and RF signal generator, vacuum tube and transistor checkers, oscilloscope and other test equipment in locating malfunctions.	
	4. Uses dials and radar displays in locating malfunctions.	
	5. Determines cause of malfunctions and maintenance required.	
E.	Repair, Adjust, Replace . . . . .	1,500
	1. Aligns and adjusts malfunctioning components using common or specialized hand tools.	
	2. Replaces faulty vacuum tubes, transistors, resistors, capacitors and other components.	
	3. Locates and repairs shorts and opens.	
	4. Cleans components of dust, rust and other foreign matter.	
	5. Cuts, strips, tins, and solders wires.	
	6. Performs equipment modifications.	
	7. Adjusts frequency and power output.	
F.	Shop Practices . . . . .	400
	1. Organizes facilities, equipment and supplies in shop, van or maintenance area for efficient use of work surfaces, power supplies, test equipment.	
	2. Maintains tools, test equipment and components by cleaning, lubricating, testing, calibrating and adjusting as necessary.	
G.	Equipment Maintenance and supply Records . . . . .	300
	1. Establishes schedule of periodic radar and equipment checks.	
	2. Inventories spare parts, components, tools and expendable supplies.	
	3. Requisitions spare parts, components, tools and expendable supplies.	
	4. Maintains records of equipment performance and malfunctions	
	5. Maintains records of inspection and test results.	
	6. Maintains reference library of applicable manuals, catalogs and log books.	
H.	Safety . . . . .	200

**Table B-1**  
**WORK PROCESS SCHEDULE FOR THE TRADE OF ELECTRONIC TECHNICIAN—Continued**

		<i>Hours</i>
	1. Applies safety precautions when working with high voltages, radiation emitting equipment and heavy or bulky components. 2. Assures operation of microswitches, circuit breakers and other safety equipment. 3. Employs "buddy" system when working with high voltages. 4. Maintains proficiency in first aid, particularly as applied to treatment of electrical shock and prevention of radiation exposure.	
I.	Technical Assistance .....	300
	1. Provides technical knowledge and assistance to command and operating personnel in the following areas: Displacement and transportation of equipment. Site selection and installation of equipment. Orientation and alignment of equipment. Training of subordinate maintenance personnel. 2. Trains operating personnel in preventive maintenance changes due to equipment modifications. 3. prepares for technical inspections and operational and readiness tests.	
J.	Test Equipment .....	300
	1. Selects appropriate test equipment for use in tests and adjustments. 2. Effectively employs ammeter, voltmeter ohmmeter, power factor indicator, AF and RF signal generator, Vacuum tube and transistor checker and other test equipment integral to the system. 3. Employs special care and precautions in protecting test equipment and personnel.	
TOTAL		8,000

This paragraph contains no entries.

**Appendix C**  
**SCHEDULE OF RELATED INSTRUCTION FOR TRADE OF ELECTRONIC TECHNICIAN**  
**(RADAR)(DOT CODE 828.281.010)**

A total of 576 hours of related instruction is required to complete this program. Completion of any one or combination of the below listed courses which equals 576 hours of related instruction or more may be taken to satisfy this requirement. Credit for courses not listed below may be awarded upon presentation of authenticated documentation. Documentation and synopsis for courses not listed below will be forwarded by ESOs to the US Army Air Defense School and Fort Bliss, ATTN: ATZC-PAPE, Fort Bliss, TX 79916 for final determination.

**Table C-1**  
**SCHEDULE OF RELATED INSTRUCTION FOR TRADE OF ELECTRONIC TECHNICIAN**

Course Number	Course Title	School	Resident	Non-resident	Credit Hours
A. 121-24C10	Improved HAWK Firing Section Maintenance Course	USAADS	X		805
B. 121-24E10	Improved HAWK Firing Section Maintenance Course	USAADS	X		860
C. 104-24G10	Improved HAWK Information Coordination Maintenance Course	USAADS	X		895
D. 104-24P10	Air Defense Acquisition Radar Maintenance Course	USAADS	X		1395
E. 121-24Q10	Improved NIKE Hercules Fire Control System Maintenance Course	USAADS	X		1345
F. 632-24T10	Patriot Operator and System Mechanic	USAADS	X		1045
G. 150-25J10	Operations Central Repair Course	USAADS	X		984
H. 150-25K10	AN/TSQ-73 System Maintenance Course	USAADS	X		1818
I. 150-25L10	AN/TSQ-73 System Operator/Repairer, Entry Level	USAADS	X		760
J. 104-26H10	Air Defense Radar Repair Course	USAADS	X		1194
K. AD 360	Improved HAWK Fire Control Mechanic	USAADS		X	24
L. AD 361	Integrated System Checks for Improved HAWK Fire Control Mechanic	USAADS		X	12
M. AD 370	Improved HAWK Information and coordination Central Mechanic	USAADS		X	26
N. MM 701	Transistors and Semiconductors	USAMMCS		X	28
O. MM 704	Basic Electricity	USAMMCS		X	29
P. MM 705	Basic Electronics—Part I	USAMMCS		X	19
Q. MM 706	Basic Electronics—Part II	USAMMCS		X	26
R. MM 707	Computer Fundamentals Course	USAMMCS		X	26
S. MM 708	Transistors	USAMMCS		X	23
T. MM 711	Pulse Radar Maintenance Fundamentals	USAMMCS		X	20
U. SS 301	Electrical Fundamentals—DC	USASIGS	X		12
V. SS 302	Magnetism and Electromagnetism	USASIGS	X		10
W. SS 303	Electrical Fundamentals—AC	USASIGS	X		9
X. SS 304	Electrical Networks	USASIGS	X		11
Y. SS 308	Introduction to Electricity	USASIGS	X		4
Z. SS 309	Introduction to Electronics	USASIGS	X		10
AA. SS 311	Electron Tubes	USASIGS	X		10
BB. SS 312	Electron Tube Applications	USASIGS	X		12
CC. SS 313	Semiconductor Devices	USASIGS	X		7
DD. SS 314	Semiconductor Applications	USASIGS	X		10
EE. SS 315	Power Transmitters	USASIGS	X		8
FF. SS 320	Principles of Radar	USASIGS	X		9
GG. SS 371	Timing Circuits	USASIGS	X		5
HH. SS 372	Radar Indicators	USASIGS	X		13
II. SS 373	Radar Transmitters	USASIGS	X		10
JJ. SS 374	Radar Receivers	USASIGS	X		10
KK. SS 375	Servo Systems and Data Transmission	USASIGS	X		17
LL. SS 376	Radar Systems	USASIGS	X		13
MM. SS 650	Safety and Preventive Maintenance	USASIGS	X		2
NN. SS 651	Shop Practices and Safety	USASIGS	X		2
OO. SS 660	Maintenance Concepts and Supply Procedures	USASIGS	X		7

This paragraph contains no entries.

**Appendix D  
EXAMPLE OF A PARTIAL COMPLETION LETTER**

(Enter Office Symbol)

(Enter Date)

TO WHOM IT MAY CONCERN:

This is to certify that \_\_\_\_\_ was enrolled in the Army  
(Name)

Apprenticeship Program for \_\_\_\_\_  
(Name of Occupational Skill Area)

\_\_\_\_\_ During this period \_\_\_\_\_ to \_\_\_\_\_. During that period  
(Registration Number) (Date) (Date)

he successfully completed the following hours:

<i>Work Process</i>	<i>Hours</i>
A	_____
B	_____
_____	_____
_____	_____

Army Apprentice Programs are registered with the US Department of Labor and the fact that this individual did participate can be verified with the Bureau of Apprenticeship and Training, Patrick Henry Building, Washington, DC 20213, or by contacting Headquarters, TRADOC, ATTN: ATPL-AGE, Fort Monroe, VA, 23651.

Sincerely,

ESO's SIGNATURE BLOCK

**Figure D. EXAMPLE OF A PARTIAL COMPLETION LETTER**

This paragraph contains no entries.

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