

CDC 2W151A

Aircraft Armament Systems Journeyman

Change Supplement for Volume: 01, 02, and 03

IMPORTANT: Make the corrections shown in this supplement before beginning your study of the volume it affects. This supplement contains pen-and-ink changes and/or replacement pages.



**Air Force Career Development Academy
The Air University
Air Education and Training Command**

CDC 2W151A-01-1612, Edit code 07

Changes for the Text: 2W151A Volume 1

General–Change Statement: Change all occurrences of “Equipment management system” to “Defense Property Accountability System.”

Pen-and-Ink Changes:

Page	Subject	Line(s)	Correction
1-2	002	8 fr bot	Change: “36-2201” to “36-2651’
1-3	002	9 fr top	Change: “36-2201” to “36-2651’
3-15	017	15 fr top	Change: “AF equipment management program” to “Defense Property Accountability System (DPAS).”
3-15	017	18 fr top	Change: “EMS” to “Equipment Management Section”
3-15	017	23 fr top	Change: “EMS’s” to “Equipment Management Section's”
3-18	020	6 fr top	Delete: “Further guidance on...AFMAN 23–110, Vol. 2, Part 13, <i>Standard Base Supply Customer’s Procedures</i> .”
3-24	017	2 fr top	Change: “of equipment management system” to “of the equipment management section”
4-18	033	16 fr bot	Change: “31–401, <i>Information Security Program Management</i> .” to “16-1404, <i>Air Force Information Security Program</i> .”
4-18	033	12 fr bot	Change: “31–401” to “16-1404”
G-1	Glossary	2 fr bot	Add “CAC Common Access Card” above “CA/CRL”
G-2	Glossary	7 fr top	Add “CRC Complete Round Code” below “CPIN”
G-2	Glossary	12 fr top	Add “DPAS Defense Property Accountability System” below “DLA”
G-4	Glossary	12 fr bot	Add “TICMS Theater Integrated Combat Munitions Systems” above “TMDE”
G-5	Glossary	1 fr top	Add “WSN weapon stock number” below “WS”

Page Changes:

Remove:	Insert:
1- 11 – 1-18	1-11 – 1-18

CDC 2W151A-02-1701, Edit Code 07

Changes for the Text: Volume 2

General–Change Statement: Change all occurrences of “AFI 91-203” to “AFMAN 91-203.”

Pen-and-Ink Changes:

Page	Subject	Line(s)	Correction
1-2	201	19 fr top	Change: “AFI 91–203, <i>Air Force Consolidated Occupational Safety Instruction</i> , part I,” to “AFMAN 91-203, <i>Air Force Occupational Safety, Fire, and Health Standards</i> ”
1-2	201	13 fr bot	Change: “AFI” to “AFMAN”
1-2	201	12 fr bot	Change: “AFI 91–203, chapter 11” to “AFMAN 91-203, chapter 24”
1-2	201	11 fr bot	Change: “AFI 91–203, chapter 12” to “AFMAN 91-203, chapter 11”
1-2	201	10 fr bot	Change: “AFI” to “AFMAN”
1-3	202	20 fr top	Change: “AFI 91–203, chapter 5” to “AFMAN 91-203, chapter 2”
4-8	231	1 fr top	Change: “ <i>Militarization</i> ” to “ <i>Demilitarization</i> ”

Changes for the URE: Volume 2

Pen-and-Ink Changes:

Page	Item Number	LO Number	Correction
1-34	2	201	In the stem of the question, change “AFI 91–203, <i>Air Force Consolidated Occupational Safety Instruction</i> ,” to “AFMAN 91–203, <i>Air Force Occupational Safety, Fire, and Health Standards</i> ,”
3-18	68	221	In the stem of the question, change “DODR 5210.42-Regulation AFMAN 10–3902,” to “Department of Defense Manual (DODM) 5210.42-Regulation, AFMAN 13–501,”

CDC 2W151A-03-1702, Edit Code 07

Changes for Text: Volume 3

Pen-and-Ink Changes:

Page	Subject	Line(s)	Correction
2-9	411	6 fr top	Change: “Air Force Instruction (AFI) 91–203, <i>Air Force Consolidated Occupational Safety Instruction</i> ,” to “Air Force Manual (AFMAN) 91-203, <i>Air Force Occupational Safety, Fire, and Health Standards</i> ,”
G-1	Glos	8 fr top	Delete “AFI Air Force instruction”
G-1	Glos	8 fr top	Add “AFMAN Air Force manual” above “AGM”

Page Changes:

Insert	
2-21 – 2-24	

with the cardinal rule of weapons safety: “Minimum amount of explosives, minimum amount of people, and minimum amount of time.”

The proper configuration of munitions trailers can be found in TO 11-1-38, *Positioning and Tie down Procedures Non-Nuclear Munitions*. This TO provides the proper configuration of munitions on trailers. Line delivery drivers are required to ensure the munitions are configured according to this instruction before towing any trailer. Strict following of this guidance by armament personnel allows the line delivery drivers to spend more time moving munitions instead of securing trailers for transport. Working with the drivers to make them more efficient in their job means faster, more timely delivery of your munitions so that you can do your job with fewer delays—a win-win situation for everyone.

If a munitions item is no longer required for flight-line support, it is returned to the MSA for processing. Usually this involves an inspection by the inspection section or PGM and either storage section if the item is stored in its current configuration or “torn down” to its components for storage.

005a. Munitions management

Because of the special hazards that munitions present, special care must be taken in their management. In this lesson, we’ll cover the Combat Ammunition System (CAS), munitions accountability and reconciliation procedures.

Combat Ammunition System/Theater Integrated Combat Munitions System

Every technician knows there is an obvious need for accurate accounting for munitions. If munitions accountability procedures within your unit are sloppy, there will be a breakdown in the system that will delay or prevent the timely delivery of munitions, which causes a breakdown in operations. The combat ammunition system is the standard accounting method used for tracking ammunition, air munitions, explosives, expendable countermeasures, decoys, and expenditures. This lesson is intended to give you the basic facts and principles of the CAS to prepare you for further training, which will actually teach you how to interact with CAS and its replacement in the future Theater Integrated Combat Munitions System (TICMS).

Definition and objective

CAS is a computer database with which units maintain accountability of munitions assets and provides “real-time visibility” to higher headquarters. The objective of CAS is to improve Air Force combat capabilities and logistics by providing effective munitions management, accountability, and fiscal control at each level of combat execution from the unit through the Joint Chiefs of Staff. CAS provides rapid data communication between the base and higher headquarters. This ensures all levels of management are informed of stockpile, and requirements and readiness capabilities.

Permissions and usability

Users remotely access CAS with Common Access Card (CAC)-enabled networked computer through the portal similar to the Integrated Maintenance Data System (IMDS). Users will have to be granted access by an administrator after they have completed the proper training in order to use CAS. Once granted access users can only access the parts of the system required to perform their duties.

Your accuracy cannot be stressed enough when you use CAS. CAS is a highly visible real-time accounting system, which means any mistake you may make entering your data is real time and can be viewed by everyone in the system. It is vital that only the options provided by CAS are used and not those provided by the browser. If browser tools such as the back button are used, they can result in duplicate entries or other mistakes in accounting that can have far-reaching effects. The table below identifies core terms each user should be familiar with within the CAS.

CAS Core Terms	
Term	Definition
Container	A container is anything that holds or transports munitions or other containers that are holding or transporting munitions. For example, a magazine for chaff or flare is a container. This container is then loaded in an aircraft, which is another container that the magazine container is loaded into. These chains of container-in-container can get quite long when such things as pylons, alternate mission equipment, and dispensers get involved.
Structure	A structure is a facility or location that serves as a holding or staging area for munitions or containers. For example, a trailer (a container) carrying six MK-82s is moved from a holding pad in the munitions storage area (a structure) to your aircraft maintenance unit (AMU) (a structure) for loading on one of your aircraft (a container).
Weapon stock number (WSN)	When dealing with the WSN, it is best to think of it in the same manner as a national stock number (NSN). It is a number made up of three smaller numbers; the Complete Round Code (CRC); the Julian date of the build; and the batch number.
Expenditure	During aircraft operations, either in training or real world environments, munitions are expended to complete the mission. Once the aircraft returns, the expeditor needs to enter into CAS exactly what was used during that mission. This is done by creating an expenditure action. As the expenditure is completed, the WSN will update CAS as to exactly what components were expended in the course of completing the mission. The timely and accurate completion of expenditure actions allows CAS to reflect current stock levels of munitions items at any given location in as close to real-time numbers as is possible.

Weapon stock number description

The first five numbers of the WSN is the CRC. The CRC designates a complete munitions item in the system. While as a weapons troop, you may think of a MK-82 as a single piece of hardware; however, it is actually a conglomeration of individual parts. CAS is constructed to account for all of the parts individually. To CAS, a MK-82 is not a bomb; it is a warhead, fuse(s), arming wire, ferrules, adapter boosters, arming loops, beryllium clips, and tail kit all at the same time. Just as if a recipe provides a cook all of the ingredients and their specific amounts to make a cake, a CRC provides ammo with a list of the components and their amounts for a particular munitions item. Using the CRC allows you to tell the system that you loaded or expended all of the components simultaneously by using a single small number to cover all components instead of a long list of individual items.

The next five numbers are the Julian date that the build was entered into CAS. This signifies the date when these complete munitions items entered the inventory as completely assembled entities as opposed to piles of individual parts.

The last three numbers are the batch code. The batch is the CAS version of a lot number. During the bomb build where ammo personnel are actually assembling weapons, they construct the munitions according to the CRC. While they are constructing the weapon, some of the components will have individual lot numbers assigned to them that need to be entered into the system to account for them properly. All items in a particular build that contain identical lot number components are issued the same batch number. If any of the individual component lot numbers change during a build, then a different batch number is assigned because the lot number of individual components has changed.

Once the weapon is completed, it is assigned a WSN by CAS that contains all of the accounting information required for issue of munitions items to the units that will actually use them. A few helpful operational features that CAS provides us are listed in the table below.

CAS Operational Features	
Feature	Description
Inquiries	CAS helps us to find and view information on your computer screen quickly. There are many different reasons to inquire about something in CAS. The most common reason to locate a specific item in CAS is to find out where the item is physically stored. You can inquire just about anything you want to, from CRC, war reserve materiel, mobility, custody account, or even transportation information.
Reports scheduler	There are a number of reports that must be run to effectively manage our stockpile. But, before we can print or view a report, it must be scheduled first. This allows CAS to look into its database and compile the required information so it can be viewed later.
Reports print	Once you have scheduled a report through the reports scheduler option, you can now view and print the information. After you select the reports print option, you can choose any number of reports to view, save to disk/file, or even print. You can choose to look at only the reports that you have scheduled or all reports scheduled by everyone.
Help screens	If you ever encounter a problem or even a task that you are not quite sure what to do, CAS has built in HELP SCREENS. There are help screens for every possible situation and CAS will even give input options and sometimes even definitions for specific codes. If you are curious about what a particular program in CAS can do, all you have to do is click the help button and you will receive a detailed explanation.

No matter what section you are working, there will someday come a time when you will have to access CAS. Whether you use it to update a movement, process expenditures, inquire about the location of certain munition items, or even just gathering information for those that are directly interfacing with the system. You can have the peace of mind to know that CAS is a user-friendly system. Your familiarity and ability to update and locate information in CAS will make you a valuable member of your organization.

Munitions accountability and reconciliation procedures

CAS is a powerful tool in the tracking and accounting of munitions; however, it does not replace the physical process of physically accounting for munitions. Once users request CAS to generate a report listing the day's expenditures and munitions left on hand, an ammo representative will still perform a line inventory. This line inventory is done to assess the numbers and types of munitions left in the possession of the unit. As long as this physical verification is found to be accurate, the ordering and acquisition processes can take place to get you what you need from ammo for the next missions. If this step is not successfully completed, then research will have to be performed in conjunction with ammo personnel. This research is accomplished to determine which assets are not properly accounted for and what corrective actions need to be taken to re-establish proper accountability. Obviously, research and reconciliation of faulty accounts takes time that is why your part in the process is critical. You must make sure munitions expenditures are correctly recorded and reported in a timely manner. This is a very critical process because it affects your wartime and contingency planning. Improper or untimely reporting of expenditures will negatively impact your day-to-day and contingency mission.

Munitions accountability results

If at the end of the recon process you are in possession of excess munitions, they must be turned in for storage. Generally, all munitions turn-ins must be accomplished prior to any deliveries, so it is critical that this be done in an expedient manner. The number one avoidable reason for delay in munitions picked up is improperly configured munitions trailers. It is therefore imperative that munitions trailers be configured properly for transport. TO 11-1-38, *Positioning and Tie-Down Procedure, Nonnuclear*

Munitions, provides the guidelines to proper munitions trailer configuration. Knowing and following the procedures in TO 11-1-38 will allow for the most expeditious pick-up of munitions.

Munitions requisition process

Any munitions required for continuing operations will be requested after successful completion of reconciliation of munitions expenditures. Orders are placed through munitions control. Munitions control de-conflicts the delivery request times of all supported units and establishes a delivery time with the expeditor. On some occasions, the expeditor and munitions control may have a different opinion on when an item is needed. Munitions control personnel are not experts on what it takes to get combat aircraft prepared for flight; they do however, have access to a much larger picture of munitions movements at the base level than the weapons expeditor. Diplomacy and flexibility are the preferred methods of resolving these conflicts; yet, in the end, munitions is a support agency for flightline operations. Expeditors can make use of an enormous amount of leverage to achieve their goals. This is not to say that arm-twisting to get your way is always appropriate; if used too often, it will lead to reduced cooperation and substandard support in the future.

006. Relationship to Air Force commands and missions

Now you have seen the 2W1X1 duties and should realize how each level differs. Let's look at the various duties you will most likely perform in the different MAJCOMs.

MAJCOMs with the same types of aircraft

Air Combat Command (ACC), Pacific Air Forces (PACAF), AETC, Air National Guard (ANG), United States Air Force Reserve (USAFR) and United States Armed Forces in Europe (USAFE) use the same types of aircraft, and although their missions are different, the duties of 2W1s generally fall into three major categories: (1) weapons loading element, (2) weapons maintenance element, and (3) aircraft armament flight.

Weapons loading element

The weapons loading element is responsible for the loading and unloading of munitions on fighter, bomber, and attack aircraft in support of daily flying and contingencies missions. Personnel in this element also remove and install armament-related suspension equipment on assigned aircraft to support configuration requirements for daily flying and contingencies missions.

Weapons maintenance element

The weapons maintenance element installs and removes all armament-related equipment to facilitate other maintenance (FOM) or for repair action. In addition, this element performs aircraft troubleshooting and repair actions, performs aircraft armament systems functional checks, and on-equipment inspections on in-use equipment. Generally, these activities are described as "on-equipment" maintenance. This refers to maintenance done on the end-item, and in this case the end-item is the aircraft itself.

Aircraft armament flight

This flight normally performs off-equipment maintenance for assigned fighter, bomber, and attack aircraft armament system including guns, pylons, racks, launchers, and adapters. This maintenance includes performing scheduled inspections, modifications, and troubleshooting of this equipment.

Air Force Special Operations Command

Weapons personnel are assigned to the Weapons Flight/Section in Air Force Special Operations Command (AFSOC) as armament technicians servicing primarily search-and-rescue helicopters or aircraft and the AC-130 gunships. This section performs on- and off-equipment maintenance on alternate mission equipment (AME) and normally installed equipment (NIE) including weapons release systems, guns, racks, launchers, and adapters. Armament personnel also install and remove guns, load and unload ammunitions, troubleshoot malfunctions, and reconfigure aircraft.

Air Force Materiel Command

Air Force Materiel Command (AFMC) provides a very important function for all AF commands in the form of *depot maintenance*. These depots are primarily repair centers for specific weapons systems. It would be extremely expensive for the Air Force to provide every field unit with all of the equipment and facilities needed to repair and overhaul all of the components that make up a complete weapons system. Therefore, the depot system has been set up and certain components are designated for depot repair only. Personnel assigned to these depots perform necessary maintenance, overhaul, and return the components to the supply system for reissue to field units. Within this command, you may also have the interesting job of participating in the test and evaluation of new and prototype weapons and weapons systems. Your duties will include munitions loading for test and evaluation of the munitions, suspension equipment, and weapons system. You will be involved with both in-shop and on-equipment maintenance of the weapons system and with gun system maintenance.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

003. Background and breakdown

1. What type of information is found in AFI 36-2101?
2. What career field locally disposes of unserviceable excess ammunition?
3. What career field stores and handles nuclear weapons and components?

004. Air Force specialty code skill levels

1. What code identifies the aircraft you are trained to work on?
2. Identify the skill level or levels that each of these duties belong.
 - (a) Boresights and performs after-firing inspection of aircraft guns and examines aircraft guns for defects.
 - (b) Operates handling and loading equipment, and mates munitions with aircraft release, launch, and suspension systems.
 - (c) Determines probable effect of modifications on future maintenance and operational problems.
 - (d) Establishes and evaluates performance and training standards, maintenance controls, and procedures.

005. Munitions enterprise: conventional

1. What documents are used by the unit to determine their munitions forecast?
2. What does the complete rounds code identify?
3. Why is it of critical importance that both the flight line and ammo agree that the munitions have been properly accounted for at the end of the recon process?
4. What publication has the information on the proper configuration of munitions trailers?

005a. Munitions management

1. How is CAS accessed?
2. How is a container defined in CAS?
3. What is represented by the last three numbers of the WSN?
4. What action must you perform before you are able to print a report in CAS?
5. What is the number one avoidable reason for delays in munitions pick-up?
6. Who is the focal point for the daily reconciliation of munitions expenditures?

006. Relationship to Air Force commands and missions

1. Match each major command in column B with its function in column A. Items in column B may be used once, more than once, or not at all.

<i>Column A</i>	<i>Column B</i>
____ (1) Loading munitions on fighter aircraft.	a. ACC.
____ (2) Loading munitions on bomber aircraft.	b. AETC.
____ (3) Installing ammunition on search-and-rescue helicopters.	c. AFMC.
____ (4) Loading missiles on fighter aircraft for test and evaluation	d. AFRES.

missions.
 ____ (5) Performing depot-level maintenance of weapons system components.

- e. AFSOC.
- f. ANG.
- g. PACAF.
- h. USAFE.

Answers to Self-Test Questions

001

1. A 1-level is unskilled and limited to the rank of Airman; a 3-level is apprentice; a 5-level is a journeyman. There are no grade restrictions applicable to these levels of your AFSC. A 7-level is a technician with the grade spread of staff sergeant through master sergeant; the 9-level is a superintendent with a grade spread of senior master sergeant through chief master sergeant.
2. Performance and knowledge.

002

1. It is located in the TBA and is accessed online through the AF Portal.
2. Two main parts. Part 1 provides information necessary for overall management of the 2W1 specialty. Part 2 contains a comprehensive list of training courses and STSs that support the 2W1 career field.
3. There are no provisions made for creating paper copies.
4. The program provides feedback on the efficiency and effectiveness of the training courses and how well the course graduates satisfy field performance requirements.
5. Internal information is obtained from the students enrolled in a course. External information is obtained from student graduates and others involved in training programs.

003

1. The occupational structure of the AF enlisted force.
2. 2W0X1.
3. 2W2X1.

004

1. The SEI.
2. (a) 2W151.
 (b) 2W131.
 (c) 2W171.
 (d) 2W191.

005

1. The OPLAN and the UCML/TTML.
2. This number identifies all the components used in the construction of a complete munition for field delivery.
3. If either too many or too few munitions are on hand according to the recon paperwork, then research must take place to determine where the discrepancies occurred. This research process can be very time-consuming for both units resulting in delays for any movement of munitions between the units.
4. TO 11-1-38.

005a

1. Remotely, using any CAC-enabled networked computer through the portal.
2. A container is anything that holds or transports munitions or other containers that are holding or transporting munitions.
3. The batch code.
4. The report must be scheduled first.
5. Misconfigured trailers.
6. Munitions control.

006

1. (1) a, b, d, f, g, h.
- (2) b, d, f, g, h.
- (3) e.
- (4) c.
- (5) c.

Complete the unit review exercises before going to the next unit.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

1. (001) The title associated with a 2W131 is an aircraft armament
 - a. helper.
 - b. mechanic.
 - c. apprentice.
 - d. journeyman.
2. (001) What grade restrictions apply to the 3- and 5-skill levels?
 - a. None.
 - b. AB through A1C.
 - c. AB through SRA.
 - d. AMN through SRA.
3. (001) What are the grade restrictions that apply to the 7-skill level?
 - a. SRA through SSgt.
 - b. SSgt through TSgt.
 - c. SSgt through MSgt.
 - d. SSgt through SMSgt.
4. (002) Which major command (MAJCOM) representatives meet periodically with the Air Force career field manager to develop a list of the basic skills required to perform the duties of a 2W1?
 - a. Functional managers.
 - b. Wing weapons managers.
 - c. Career development course authors.
 - d. Weapons system career field managers.
5. (002) What is the primary document used to identify life cycle education and training requirements?
 - a. Task analysis.
 - b. Core task analysis.
 - c. Career field task audit.
 - d. Career field education and training plan.
6. (002) What is used as a paper back up to the training business area (TBA)?
 - a. There are no paper forms of TBA.
 - b. Air Force IMT Form 623a.
 - c. Memorandums for record.
 - d. Air Force Form 797.
7. (002) The Air Force Training Evaluation Program evaluates training received by graduates of
 - a. formal courses.
 - b. informal courses.
 - c. on-the-job training.
 - d. formal courses and on-the-job training.

8. (002) Which Air Force program provides feedback on the efficiency and effectiveness of the training courses?
 - a. Training Evaluation Program.
 - b. Test and Evaluation Program.
 - c. Training Efficacy and Modernization Program.
 - d. Training Course Evaluation and Standards Program.
9. (002) Where is internal information obtained from for the Air Force Training Evaluation Program?
 - a. Supervisors who are assigned graduates.
 - b. Flight chiefs who are assigned graduates.
 - c. Trainees while they are enrolled in a course.
 - d. Instructors while they are teaching a course.
10. (003) What is the basic grouping of positions requiring similar skills and qualifications?
 - a. Air Force duty classification.
 - b. Air Force specialty code (AFSC).
 - c. Classification codes for enlisted personnel specialties.
 - d. Classification of force education and training plan (CFETP).
11. (003) What may be added to Air Force specialties to identify a specialization in a specific type of equipment or functions?
 - a. Air Force specialty code suffix.
 - b. Numerical Air Force specialty codes.
 - c. Alphabetical Air Force specialty codes.
 - d. Alphabetical special experience identifiers.
12. (004) When is a special experience identifier (SEI) removed from your Air Force specialty code (AFSC)?
 - a. After completing on-the-job training.
 - b. After completing 5-level upgrade training.
 - c. After completing 7-level upgrade training.
 - d. They are retained throughout the duration of your career.
13. (004) Which skill level of technician is expected to anticipate all the needs of a section and take steps to provide for them?
 - a. 2W131.
 - b. 2W151.
 - c. 2W171.
 - d. 2W191.
14. (004) Which of the following is considered a duty of a 2W171 *only*?
 - a. Examine system components for visual defects and proper installation.
 - b. Modify munitions launch, release, suspension, and monitor systems to improve efficiency.
 - c. Perform serviceability tests on aircraft guns, gun systems, and munitions associated suspension equipment.
 - d. Disassemble, repair, or replace mechanical, electrical, electronic, and pneudraulic mechanisms of launch and release systems, and aircraft gun systems.

15. (005) The actual number and types of munitions the Air Force is going to procure and provide to a unit to conduct their training is the unit's
- a. expenditures.
 - b. allocation.
 - c. allotment.
 - d. schedule.
16. (005) Which element in the munitions storage area is responsible for the coordination of all movements of munitions both within and outside the munitions storage area?
- a. Munitions control.
 - b. Accountability.
 - c. Line delivery.
 - d. Storage.
17. (005) Which publication lists the characteristics, parameters, limits of operation, and general operation procedures of an airframe?
- a. -1 Flight Manual.
 - b. -06 Work Unit Code Manual.
 - c. -6 Inspection and Maintenance.
 - d. 33-1-2, Nonnuclear Loading Procedures.
18. (006) In which command does 2W1 personnel service search and rescue helicopters?
- a. Air Force Space Command (AFSC).
 - b. Air Force Material Command (AFMC).
 - c. Air Force Reserve Command (AFRES).
 - d. Air Force Special Operations Command (AFSOC).

Please read the unit menu for unit 2 and continue ➔

Student Notes

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

34. (408) You must visually inspect equipment before testing and following repair actions to
 - a. document actions taken.
 - b. check for obvious defects.
 - c. establish a maintenance record.
 - d. ensure the job was completed on time.
35. (408) Which technical order contains inspection and repair information that applies across all aircraft wiring systems?
 - a. 1-1A-14.
 - b. 14-1A-1.
 - c. 1-11A-14.
 - d. 11-1A-14.
36. (408) What do you use to clean electrical equipment?
 - a. Any dry chemical cleaner.
 - b. Fast-dry alcohol solution.
 - c. Only approved cleaning solvents.
 - d. Only approved dry chemical cleaners.
37. (408) When do you use compressed air for cleaning electrical equipment?
 - a. Only as a last resort.
 - b. After using dry cleaners.
 - c. Only when oil is applied.
 - d. After using chemical cleaners.
38. (409) What is chafing?
 - a. Electrical movement.
 - b. Movement of components.
 - c. Constant friction (rubbing) between electrons and the insulation sleeve.
 - d. Constant friction (rubbing) between wiring harnesses and the structure to which they are attached.
39. (409) What is the *most* obvious indication of chaffing?
 - a. Electrical malfunctions.
 - b. Mechanical malfunctions.
 - c. Exterior damage to cables.
 - d. Cannot duplicate malfunctions.
40. (409) To prevent chafing, the slack in a wiring harness between two support points normally should *not* exceed
 - a. ¼ inch.
 - b. ⅜ inch.
 - c. ½ inch.
 - d. ⅝ inch.

41. (409) Which condition is a cause of chafing?
- a. Insulated clamps.
 - b. Loose-fitting clamps.
 - c. Tight-fitting connectors.
 - d. Loose-fitting connectors.
42. (409) Which method is *not* an acceptable way to prevent possible chaffing problems?
- a. Routing coaxial cables in the most direct way possible.
 - b. Routing wires or bundles parallel to the ribs of the aircraft.
 - c. Routing wires and bundles at right angles to the ribs of the aircraft.
 - d. Routing wires and bundles back on themselves and placing the fold inside a bundle.
43. (409) When installing aircraft wiring, you must ensure wires or wire bundles do *not* come within
- a. ½ inch of the edge of a hole when routed without a grommet and/or clamp installed.
 - b. 1 inch of the edge of a hole when routed through a bulkhead opening and when a suitable grommet and clamp is installed.
 - c. ½ inch of the edge of a hole when routed through a bulkhead opening and when a suitable grommet and clamp is installed.
 - d. ¼ inch of the edge of a hole when routed through a bulkhead opening and when a suitable grommet and clamp is installed.
44. (410) The dielectric of a coaxial cable is *normally* made of what type of material?
- a. Rayon.
 - b. Copper.
 - c. Polyethylene.
 - d. Dacron.
45. (410) Which standard defines implementation requirements for the Aircraft/Store Electrical (and fiber optic) Interconnection System (AEIS) in aircraft and stores?
- a. MIL-STD-1760.
 - b. MIL-STD-1670.
 - c. MIL-STD-1060.
 - d. MIL-STD-760.
46. (410) When working with coaxial cable, you must *never* step on it, set anything heavy on it, or bend it sharply because doing so will
- a. begin a weak point for future chaffing to occur.
 - b. cause a weak point for future corrosion to occur.
 - c. cause a weak point for radio frequency intrusion.
 - d. flatten the cable and change its electrical characteristics.
47. (410) When installing a connector on coaxial cable, you *must* use care in starting the braid clamp nut into a plug or jack body to prevent
- a. cross-threading.
 - b. damage to the center pin.
 - c. damage to the center socket.
 - d. damage to the cable dielectric.
48. (411) Who should do electrical repairs?
- a. Anyone.
 - b. Degreed personnel only.
 - c. Qualified personnel only.
 - d. Certified mechanical experts.

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49. (411) As a *general* rule, when you are working on electrical items, they should have the power
- a. off for testing and on for maintenance.
 - b. on for testing only.
 - c. off.
 - d. on.
50. (411) When performing measurements on energized circuits, meters should
- a. *not* be used.
 - b. be held by a helper.
 - c. *not* be held in your hand.
 - d. be placed on the equipment under test.
51. (411) When voltage is applied to equipment being repaired, personnel must
- a. stay away from the workbench.
 - b. remove all nonessential tools from the workbench.
 - c. keep all tools on hand next to the equipment being repaired.
 - d. remove essential tools from the equipment being repaired.
52. (412) What device is used to cover or protect the exposed-wire access area between the rear of a connector and the end of the bundle braid on cable assemblies or wire bundles?
- a. Protective boot.
 - b. Wire terminal cover.
 - c. Cable environmental cover.
 - d. Cable environmental sealing/isolation assembly.
53. (412) What do you use to make a spot tie on protective boots during installation?
- a. Plastic pull-ties.
 - b. Nylon lacing tape.
 - c. Dacron lacing tape.
 - d. Waxed lacing string.
54. (412) When shrinking a protective boot for wiring, work slowly from the
- a. inside to the outside.
 - b. connector to the braid end.
 - c. braid end to the connector.
 - d. middle of the connector to either end.
55. (412) What is the *only* heat gun presently authorized around fueled aircraft?
- a. Electric motor driven heat guns.
 - b. Soldering gun mounted fan/heat pump.
 - c. Compressed air/nitrogen heat gun kit.
 - d. Positive pressure, fully contained flame units.
56. (412) When using self-bonding silicone tape to repair damaged bundle braid, how much overlap must you maintain during the wrapping procedure?
- a. 25 percent.
 - b. 40 percent.
 - c. 50 percent.
 - d. 75 percent.

57. (412) What do you use to make a spot tie on silicone tape when repairing a wire braid?
- a. Plastic pull-ties.
 - b. Dacron lacing tape.
 - c. Nylon lacing tape.
 - d. Waxed lacing string.
58. (412) The indicating band on the working end of the solderless connector insertion tool determines the
- a. correct gauge wire to use.
 - b. proper size crimp to be made.
 - c. correct depth to insert the tool.
 - d. proper length to strip the insulation off the wire.
59. (412) You must *never* use pin insertion tools with burrs or sharp edges because they
- a. can damage the insulation of the wire attached to the pin you are trying to install.
 - b. present a hazard to the operator possibly causing laceration to the fingers or other parts of the hands.
 - c. can cut through the grommet wire sealing webs and destroy the environmental sealing capabilities of a connector.
 - d. can scrape off the letter or number marking on the back of the connector making it more difficult to ensure correct pin insertion.
60. (412) Similar to contact insertion tools, extraction tools for solderless connectors are
- a. of solid construction.
 - b. for pin contacts only.
 - c. for socket contacts only.
 - d. of different sizes for each contact.
61. (412) You can tell if a solderless connector contact is completely released and pushed out of the connector because the extraction tool will bottom against the
- a. contact face.
 - b. connector rim.
 - c. connector face.
 - d. contact shoulder.

Please read the unit menu for unit 3 and continue ➔

Student Notes

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