

**THE NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING**



**FEBRUARY 2023**

**OCCUPATIONAL STANDARDS**

**OCCUPATION: AVIONICS MAINTENANCE ENGINEER**

**LEVEL: NTA LEVEL 8**

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## **ABBREVIATIONS**

<b>AC</b>	Alternating Current
<b>ADC</b>	Air Data Computer
<b>ADF</b>	Automatic Direction Finder
<b>AFCS</b>	Automatic Flight Control System
<b>AMM</b>	Aircraft Maintenance Manual
<b>AMO</b>	Approved Maintenance Organization
<b>AoA</b>	Angle of Attack
<b>APU</b>	Auxiliary Power Unit
<b>ASI</b>	Airspeed Indicator
<b>ATC</b>	Air Traffic Control
<b>ATO</b>	Approved Training Organization
<b>CBET</b>	Competency Based Education and Training
<b>CSDU</b>	Constant Speed Drive Unit
<b>CVR</b>	Cockpit Voice Recorder
<b>DC</b>	Direct Current
<b>DME</b>	Distance Measuring Equipment
<b>EADI</b>	Electronic Altitude Direction Indicator
<b>ECAM</b>	Electronic Centralized Aircraft Monitor
<b>EEC</b>	Engine Electronic Control
<b>EGT</b>	Exhaust Gas Temperature
<b>EHSI</b>	Electronic Horizontal Situation Indicator

<b>EICAS</b>	Engine Indicating and Crew Alerting System
<b>ELT</b>	Emergency Locator Transmitter
<b>EPR</b>	Engine Pressure Ratio
<b>FDR</b>	Flight Data Recorder
<b>FMC</b>	Flight Management Computer
<b>FMS</b>	Flight Management System
<b>GPS</b>	Global Positioning System
<b>GPU</b>	Ground Power Unit
<b>GPWS</b>	Ground Proximity Warning System
<b>HF</b>	High Frequency
<b>MCDU</b>	Multipurpose Control and Display Unit
<b>NACTVET</b>	National Council for Technical and Vocational Education and Training
<b>NOS</b>	National Occupational Standards
<b>OS</b>	Occupational Standards
<b>PFD</b>	Primary Flight Display
<b>SELCAL</b>	Selective Calling
<b>TAT</b>	Total Air Temperature
<b>TCAA</b>	Tanzania Civil Aviation Authority
<b>TCAS</b>	Traffic Collision Avoidance System
<b>TRU</b>	Transformer Rectifier Unit
<b>TET</b>	Technical Education and Training
<b>TVET</b>	Technical and Vocational Education and Training

**VHF**                    Very High Frequency

**VOR**                    VHF Omni-directional Range

## GLOSSARY OF TERMS

<b>Circumstantial Knowledge:</b>	Detailed knowledge, which allows the decision-making in regard to different circumstances and cross cutting issues.
<b>Competence:</b>	The competence to use knowledge, understanding, practical, and thinking skills to perform effectively to the workplace standards required in employment.
<b>Competency:</b>	A description of the ability one possesses when able to perform a given occupational task effectively and efficiently.
<b>Competency-based Education:</b>	An instructional programme that derives its content from validated tasks and bases assessment on the learner's performance.
<b>Curriculum:</b>	A description or composite of statements about "what is to be learned" by the trainee/student in a particular instructional programme; a product that states the "intended learning outcomes".
<b>Educational/Training Programme:</b>	The complete curriculum and instruction (what and how) that is designed to prepare a person for employment in a job or other particular performance situation.
<b>Occupation:</b>	A specific position requiring the performance of specific tasks - essentially the same tasks are performed by all employees having the same title. (Example: baker)
<b>Occupational Analysis:</b>	A process used to identify the tasks that are important to employees in any given occupation.
<b>Occupational Area:</b>	This is a broad grouping of related jobs. (Example: catering service).
<b>Occupational Standards:</b>	Specific requirements of competences for personnel in a particular occupational area, including knowledge and relevant attitudes. They also act as performance tools of assessment of the prescribed outcomes.
<b>Occupational/Job Analysis:</b>	A process used to identify the tasks that are important to employees in any given occupation.
<b>Performance Criteria:</b>	Indicate expected end results or outcomes in the form of evaluative statements.
<b>Skills:</b>	The ability to perform occupational tasks with a high degree of proficiency within a given occupation. Skill is conceived of as a composite of three completely interdependent components: cognitive, affective, and psychomotor.

<b>Standards:</b>	A set of statements, which, if proved true under working conditions, means that an individual is meeting an expected level and type of performance.
<b>Task Analysis:</b>	The process of analyzing each task to determine the steps, circumstantial knowledge, attitudes, performance criteria, tools and materials needed, as well as safety concerns required for the employees performing it.
<b>Task:</b>	A work activity that has a definite beginning and ending, is observable or measurable, consists of two or more definite steps, and leads to products, service, or decisions.
<b>Underpinning Knowledge:</b>	Crucial knowledge that an individual must acquire in order to demonstrate competences that are associated in performing a given task.
<b>Verification Process:</b>	The process of having experts review and confirm the importance of the task (competency) statements identified through occupational analysis. Other questions, such as the degree of task learning difficulty are also frequently asked. This process is also sometimes referred to as validation.
<b>Occupational Competence:</b>	The application of knowledge and skills that consistently meet the standards required by the working conditions.

## 1. INTRODUCTION

Technical Education and Training (TET) is one of the most important education sub-sectors in Tanzania, responsible for developing a skilled workforce to support the country's industrialization economic agenda. Tanzania's *Development Vision 2025* intends to raise the country's economy to a middle-income status, with a high level of human development. This requires a skilled workforce that is aligned with the needs of the public and private sectors of the economy. The National Council for Technical and Vocational Education and Training (NACTVET) has begun the job of drafting Occupational Standards (OS) that will eventually be adopted as National Occupational Standards (NOS) for use in the delivery of TET that meets the needs of the labour market and the country's economic agenda.

Occupational Standards (OS) are performance criteria that are matched with labour market demands. Each of them describes the functions, performance standards, and understanding or knowledge underpinning a given occupation. They combine skills, knowledge, and attitudes to describe best practice. They are useful tools for establishing job roles, personnel recruitment, supervision, and appraisal, as well as TET Standards. They are also helpful for benchmarking and harmonizing job qualifications on a national and international level. Standards, in general, provide a solid framework for high-quality TET that is labour market-relevant, current, and consistent in application across all public and private institutions.

However, it must be noted that Occupational Standards are different from Training /Education Standards. Occupational standards are defined in terms of activities performed by a person in a selected occupation (e.g., an electrical engineer designs electrical circuits, performs troubleshooting in electrical circuits, etc.), and are usually defined by Employers following procedures as agreed upon by all the stakeholders. On the other hand, Training and Education Standards are developed from the activities defined in the occupational standards, and they specify learning objectives to ensure that the necessary skills and knowledge are developed by a person to enable him/her to function at an agreed level in an occupation. Training and Education Standards are used to define curricula in training institutions. It is critical, however, to establish a direct link between the occupational standards and the training standards for both of them to respond collaboratively to the demands of the labour market.



For the purpose of TET delivery, Tanzania has adopted the Competence Based Education and Training (CBET) approach. The CBET approach focuses on providing learners with the skills and knowledge required to meet the occupational standards. Occupational standards are thus the starting point for developing competency-based training (CBET) programmes. Therefore, it is quite pertinent for TET institutions to use the relevant occupational standards as a benchmark for formulating their curricula.

Occupational Standards are developed based on a given occupation's current and future demands. As a result, they serve as a means of bridging the gap between the worlds of employment and technical education and training.

The document explains how the occupational standards were developed, as well as the scope, the occupational profile in the form of DACUM charts, and the Occupational Standards.

## **2. OCCUPATIONAL STANDARD DEVELOPMENT PROCESS**

The process of developing these Occupational Standards involved both local and international expertise. The process began with an examination of major documents that guide Tanzanian skills development including the *10-year National Skills Development Strategy (2016-2026)*. NACTVET labour market reports were also used in the literature review to determine the skills demand in the Tanzanian labour market as a whole.

After the literature review, a team of experts in consultation with practitioners developed draft occupational standards. The draft document was used to develop an occupational profile for each occupation (DACUM Chart), which is attached as an **Appendix** to every Occupational Standard.

The occupational standards were validated during the stakeholders' forum held on 22nd and 23rd February 2024 at Morogoro. The information from the stakeholders' forum provides insight from the workplace, professional bodies, regulatory bodies and sector ministries regarding trends and changes in the profession, including how well graduates are prepared for working in the occupation.

## **3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR AVIONICS MAINTENANCE ENGINEERS**

These standards cover a broad range of duties and tasks that can be performed by an Avionics Maintenance Engineer. However, the occupational standards are not meant to replace individual job

descriptions. Instead, they are to be used for guidance in defining skill levels and knowledge for the technician in specific settings or positions. The Avionics Maintenance Engineer may perform tasks in a number of key areas of the Occupational Standards, but not necessarily in all areas. For example, in large operations, other individuals may be employed or designated to perform specific tasks.

Avionics Maintenance Engineers work within Approved Maintenance Organisation (AMO) to maintain, repair and manage aircraft operating in the aviation transportation industry. The aviation transportation involves cargo and passenger aircraft; collectively referred to as commercial aircraft. Commercial aircraft are operated by well-trained and qualified personnel to transport goods and people between different locations worldwide. There is a wide range of aircraft types, varying in size, model and operating specifications. Avionics Maintenance Engineers play an important role in ensuring compliance with the airworthiness requirements stipulated by the Tanzania Civil Aviation Authority (TCAA). Generally, the Avionics Maintenance Engineer performs the following responsibilities:

- a) Analysis and isolation of faults in aircraft power generation, distribution and conversion systems
- b) Analysis and isolation of faults in aircraft lighting system maintenance
- c) Analysis and isolation of faults in aircraft instrument system maintenance
- d) Analysis and isolation of faults in aircraft radio communication and navigation systems
- e) Analysis and isolation of faults in aircraft electrical control and operating systems
- f) Analysis and isolation of faults in the aircraft radar systems
- g) Analysis and isolation of faults in the aircraft AFCS
- h) Aeronautical maintenance engineering management
- i) Fault diagnosis and system reliability analysis

The Occupational Standards have been clustered into NTA qualification levels i.e. NTA level 7 and 8.

#### **4.0. VALIDITY PERIOD**

Due to the rapid development of technology, the validity period of occupational standards is 3-5 years. The review will proceed in the same manner as the one before it, with new occupational standards being developed based on current trends of the labour market.

#### **5.0. OCCUPATIONAL STANDARDS**

**5.1 OCCUPATIONAL STANDARDS FOR AVIONICS MAINTENANCE ENGINEER -  
NTA 8**

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CONDUCT ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT RADAR SYSTEMS	<b>DUTY NO.</b>	801
<b>TASK TITLE</b>	PERFORM MANAGEMENT OF AIRCRAFT RADAR SYSTEM MAINTENANCE	<b>TASK NO.</b>	8011
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to manage relevant personnel, promote work progress, coordinate and communicate with relevant departments and ensure quality control and implementation in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Maintenance management offices;</li> <li>2. Maintenance documents;</li> <li>3. Tools and equipment;</li> <li>4. Aviation materials and consumables;</li> <li>5. Transportation equipment.</li> <li>6. Safety gear</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select the appropriate tools, equipment and safety devices;</li> <li>2. Assign suitable responsibilities and duties to relevant personnel;</li> <li>3. Develop the maintenance plans for aircraft radar systems;</li> <li>4. Organize the implementation of aircraft radar system maintenance;</li> <li>5. Communicate with and coordinate interactions between relevant departments;</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Develop maintenance plans;</li> <li>1.2 Organize the implementation of the maintenance plans;</li> <li>1.3 Implement maintenance management.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p>	

<ul style="list-style-type: none"> <li>6. Promote the conduct and implementation of work;</li> <li>7. Supervise the schedule and quality of work;</li> <li>8. Evaluate results;</li> <li>9. Hold and organise relevant meetings;</li> <li>10. Establish an effective incentive mechanism;</li> <li>11. Control maintenance costs;</li> <li>12. Enhance team cohesion.</li> <li>13. Observe health, occupational and environmental safety rules and regulations.</li> </ul>	<ul style="list-style-type: none"> <li>2.1 Electronic principles and signal processing technologies;</li> <li>2.2 Preventative maintenance theories.</li> </ul> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ul style="list-style-type: none"> <li>3.1 Effective management skills of radar maintenance teams;</li> <li>3.2 Maintenance management methods.</li> </ul> <p><b>4.0 Essential Skills</b></p> <ul style="list-style-type: none"> <li>4.1 Teamwork skills;</li> <li>4.2 Communication skills;</li> <li>4.3 Customer service competence;</li> <li>4.4 Report writing competence;</li> <li>4.5 Computer application competence.</li> </ul>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Relevant personnel are managed, work progress is promoted, relevant departments are coordinated and communicated with, and quality control and implementation is ensured <i>in</i> accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ul style="list-style-type: none"> <li>1. Project management;</li> <li>2. Aviation safety;</li> <li>3. Data analysis and recording;</li> <li>4. Personnel management and training;</li> <li>5. Environmental regulations.</li> </ul>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CONDUCT ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT RADAR SYSTEMS	<b>DUTY NO.</b>	801
<b>TASK TITLE</b>	CARRY OUT TESTING OF THE AIRCRAFT MAIN RADAR SYSTEMS	<b>TASK NO.</b>	8012
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to test aircraft main radar systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Meteorological radar test equipment;</li> <li>3. Multimeters;</li> <li>4. Oscilloscopes;</li> <li>5. Radio altimeters;</li> <li>6. Toolboxes.</li> <li>7. Safety gear</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Locking wires;</li> <li>2. Straps and cleaners.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. View task cards and maintenance instructions;</li> <li>2. Review all applicable airworthiness directives and service bulletins;</li> <li>3. Execute all applicable airworthiness directives and service bulletin instructions;</li> <li>4. Select appropriate tools, equipment and safety devices for the task;</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Perform the tests of meteorological radar systems;</li> <li>1.2 Perform the tests of radio altimeter systems;</li> <li>1.3 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p>	

<p>5. Implement the following component-level tests:</p> <ul style="list-style-type: none"> <li>a. Meteorological radar receivers/transmitters;</li> <li>b. Radar antenna housing;</li> <li>c. Meteorological radar antennae/scanners;</li> <li>d. Meteorological radar indicators/displays;</li> <li>e. Waveguide;</li> <li>f. Doppler transmitters/receivers;</li> <li>g. Doppler antennae;</li> <li>h. Doppler indicators/displays;</li> <li>i. Doppler switches;</li> <li>j. Radio transmitters/receivers;</li> <li>k. Radio transmitting antennae;</li> <li>l. Radio altimeter indicators/displays.</li> </ul> <p>6. Implement the following system-level tests:</p> <ul style="list-style-type: none"> <li>a. Meteorological radar systems;</li> <li>b. Doppler systems;</li> <li>c. Radio altimeter systems.</li> </ul> <p>7. Perform final tests and sign task cards;</p> <p>8. Clean the workplace, tools and equipment;</p> <p>9. Arrange and store the tools and equipment;</p> <p>10. Submit test reports;</p> <p>11. Submit task cards to the certification engineer for certification and aircraft delivery for use;</p> <p>12. Restore aircraft main radar systems to normal.</p> <p>13. Observe health, occupational and environmental safety rules and regulations.</p>	<p>The person performing this task must be able to explain the following principles:</p> <ul style="list-style-type: none"> <li>2.1 Working principles of meteorological radar systems;</li> <li>2.2 Working principles of the Doppler systems;</li> <li>2.3 Working principles of radio altimeter systems;</li> <li>2.4 Tanzania civil aviation regulations.</li> </ul> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ul style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 The basic composition of meteorological radar systems;</li> <li>3.4 The basic composition of the Doppler systems;</li> <li>3.5 The basic composition of radio altimeter systems.</li> </ul> <p><b>4.0 Essential Skills</b></p> <ul style="list-style-type: none"> <li>4.1 Data analysis competence;</li> <li>4.2 Engineering technical report writing competence;</li> <li>4.3 Computer skills;</li> <li>4.4 Competence of using tools and equipment;</li> <li>4.5 Problem-solving competence;</li> <li>4.6 Stress management;</li> <li>4.7 Teamwork;</li> <li>4.8 Communication skills;</li> <li>4.9 Safety responsibility consciousness.</li> </ul>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Aircraft main radar systems are tested <i>in</i> accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ul style="list-style-type: none"> <li>1. Project management;</li> <li>2. Aviation safety;</li> </ul>

	<ol style="list-style-type: none"> <li>3. Data analysis and recording;</li> <li>4. Personnel management and training;</li> <li>5. Environmental regulations.</li> </ol>
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<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CONDUCT ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT RADAR SYSTEMS	<b>DUTY NO.</b>	801
<b>TASK TITLE</b>	CONDUCT FAULT ANALYSIS AND ISOLATION OF AIRCRAFT MAIN RADAR SYSTEMS	<b>TASK NO.</b>	8013
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct fault analysis and isolation of the aircraft main radar systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Meteorological radar testers;</li> <li>3. Radio altimeter testers;</li> <li>4. External power supplies;</li> <li>5. Computers;</li> <li>6. Multimeters;</li> <li>7. Oscilloscopes;</li> <li>8. Toolboxes.</li> <li>9. Safety gear</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Electrical jointing.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Review aircraft status reports;</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p>	



<ol style="list-style-type: none"> <li>2. Analyze and isolate faults according to the corresponding test reports and troubleshooting manuals;</li> <li>3. Select appropriate tools, equipment and safety devices for the task;</li> <li>4. Pay attention to health and safety when performing the task;</li> <li>5. Perform component-level fault analysis of the following: <ol style="list-style-type: none"> <li>a. Meteorological radar receivers/transmitters;</li> <li>b. Radar antenna housing;</li> <li>c. Meteorological radar antennae/scanners;</li> <li>d. Meteorological radar indicators/displays;</li> <li>e. Waveguide;</li> <li>f. Doppler transmitters/receivers;</li> <li>g. Doppler antennae;</li> <li>h. Doppler indicators/displays;</li> <li>i. Doppler switches;</li> <li>j. Radio transmitters/receivers;</li> <li>k. Radio transmitting antennae;</li> <li>l. Radio altimeter indicators/displays.</li> </ol> </li> <li>6. Perform system-level fault analysis of the following: <ol style="list-style-type: none"> <li>a. Meteorological radar systems;</li> <li>b. Doppler systems;</li> <li>c. Radio altimeter systems.</li> </ol> </li> <li>7. Isolate possible faults in: <ol style="list-style-type: none"> <li>a. Meteorological radar receivers/transmitters;</li> <li>b. Radar antenna housing;</li> <li>c. Meteorological radar antennae/scanners;</li> <li>d. Meteorological radar indicators/displays;</li> <li>e. Waveguide;</li> <li>f. Doppler transmitters/receivers;</li> <li>g. Doppler antennae;</li> <li>h. Doppler indicators/displays;</li> <li>i. Doppler switches;</li> <li>j. Radio transmitters/receivers;</li> </ol> </li> </ol>	<p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Analyze the possible fault causes of meteorological radars;</li> <li>1.2 Isolate the faults of meteorological radar systems;</li> <li>1.3 Analyze the possible fault causes of radio altimeter systems;</li> <li>1.4 Isolate faults of radio altimeters;</li> <li>1.5 Analyze the possible fault causes of the Doppler systems;</li> <li>1.6 Isolate faults of the Doppler systems;</li> <li>1.7 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Working principles of meteorological radar systems;</li> <li>2.2 Working principles of the Doppler systems;</li> <li>2.3 Working principles of radio altimeter systems;</li> <li>2.4 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 The basic composition of meteorological radar systems;</li> <li>3.4 The basic composition of the Doppler systems;</li> <li>3.5 The basic composition of radio altimeter systems;</li> <li>3.6 The overhaul methods of the circuits;</li> <li>3.7 The methods of disassembling and assembling components.</li> </ol> <p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Fault analysis, prejudgment and prediction competence;</li> </ol>
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<ul style="list-style-type: none"> <li>k. Radio transmitting antennae;</li> <li>l. Radio altimeter indicators/displays.</li> <li>8. Perform final inspections and sign corresponding task cards;</li> <li>9. Clean the workplace, tools and equipment;</li> <li>10. Arrange and store the tools and equipment;</li> <li>11. Submit task cards to the certification engineer for certification and aircraft delivery for use;</li> <li>12. Restore the aircraft to its normal state.</li> <li>13. Observe health, occupational and environmental safety rules and regulations.</li> </ul>	<ul style="list-style-type: none"> <li>4.2 Engineering technical report writing competence;</li> <li>4.3 Computer skills;</li> <li>4.4 Competence of using tools and equipment;</li> <li>4.5 Problem-solving competence;</li> <li>4.6 Stress management;</li> <li>4.7 Teamwork;</li> <li>4.8 Communication skills;</li> <li>4.9 Safety responsibility consciousness.</li> </ul>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Faults in aircraft main radar systems are analysed and isolated in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ul style="list-style-type: none"> <li>1. Project management;</li> <li>2. Aviation safety;</li> <li>3. Data analysis and recording;</li> <li>4. Personnel management and training;</li> <li>5. Environmental regulations.</li> </ul>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CONDUCT ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT RADAR SYSTEMS	<b>DUTY NO.</b>	801
<b>TASK TITLE</b>	IMPLEMENT TESTING OF THE AIRCRAFT SECONDARY RADAR SYSTEMS	<b>TASK NO.</b>	8014
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to test aircraft secondary radar systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Computers with accessories;</li> <li>3. Electronics Technician's tool kit;</li> <li>4. Multimeters;</li> <li>5. Heat guns;</li> <li>6. Anti-static wrist straps;</li> <li>7. Soldering guns;</li> <li>8. Crimping tools and connector pick-up and delivery tools;</li> <li>9. ATC transponder test devices;</li> <li>10. TCAS test devices;</li> <li>11. DME test devices</li> <li>12. Safety gear</li> <li>13. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves;</li> <li>7. Sealants;</li> <li>8. Solvent.</li> </ol>		

## EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	UNDERPINNING KNOWLEDGE
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Verify task cards and maintenance instructions;</li> <li>4. Review all applicable airworthiness directives and service bulletins;</li> <li>5. Execute all applicable airworthiness directives and service bulletin instructions;</li> <li>6. Perform the following tests of secondary radar systems:               <ol style="list-style-type: none"> <li>a. Interrogators of distance measurement equipment;</li> <li>b. Control panels of distance measurement equipment;</li> <li>c. Indicators of distance measurement equipment;</li> <li>d. Antennae of distance measurement equipment;</li> <li>e. Air traffic control transponders;</li> <li>f. ATC control panels;</li> <li>g. Air traffic control antennae;</li> <li>h. TCAS computers;</li> <li>i. TCAS control panels;</li> <li>j. Displays/Indicators of air traffic warning and collision avoidance systems;</li> <li>k. TCAS antennae;</li> <li>l. Computers with ground proximity warning systems-GPWS;</li> <li>m. GPWS alarm indicators/displays.</li> </ol> </li> <li>7. Implement the following system-level tests:               <ol style="list-style-type: none"> <li>a. DME systems;</li> </ol> </li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Perform DME system tests;</li> <li>1.2 Perform ATC system tests;</li> <li>1.3 Perform TCAS system tests;</li> <li>1.4 Perform GPWS system tests;</li> <li>1.5 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Working principles of DME systems;</li> <li>2.2 Working principle of ATC systems;</li> <li>2.3 Working principles of TCAS systems;</li> <li>2.4 Working principles of GPWS systems;</li> <li>2.5 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Basic composition of DME systems;</li> <li>3.4 Basic composition of ATC systems;</li> <li>3.5 Basic composition of TCAS systems;</li> <li>3.6 Basic composition of GPWS systems.</li> </ol> <p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Data analysis competence;</li> <li>4.2 Engineering technical report writing competence;</li> <li>4.3 Computer skills;</li> <li>4.4 Competence of using tools and equipment;</li> <li>4.5 Problem-solving competence;</li> <li>4.6 Stress management;</li> </ol>

<ul style="list-style-type: none"> <li>b. ATC systems;</li> <li>c. TCAS systems;</li> <li>d. GPWS systems.</li> </ul> <ul style="list-style-type: none"> <li>8. Perform final tests and sign task cards;</li> <li>9. Submit task cards to the certification engineer for certification and aircraft delivery for use;</li> <li>10. Restore the aircraft to its normal state</li> <li>11. Clean tools, equipment and the workplace;</li> <li>10. Store tools, equipment and safety gear;</li> <li>11. Submit test reports;</li> <li>12. Observe health, occupational and environmental safety rules and regulations.</li> </ul>	<ul style="list-style-type: none"> <li>4.7 Teamwork;</li> <li>4.8 Communication skills;</li> <li>4.9 Safety responsibility consciousness.</li> </ul>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Aircraft secondary radar systems are tested in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ul style="list-style-type: none"> <li>1. Project management;</li> <li>2. Aviation safety;</li> <li>3. Data analysis and recording;</li> <li>4. Personnel management and training;</li> <li>5. Environmental regulations.</li> </ul>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CONDUCT ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT RADAR SYSTEMS	<b>DUTY NO.</b>	<b>801</b>
<b>TASK TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT SECONDARY RADAR SYSTEMS	<b>TASK NO.</b>	<b>8015</b>
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct fault analysis and isolation of the aircraft secondary radar systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Computers with accessories;</li> <li>3. Electronics technician's tool kit;</li> <li>4. Multimeters;</li> <li>5. Oscilloscopes;</li> <li>6. Heat guns;</li> <li>7. Anti-static wrist straps;</li> <li>8. Soldering guns;</li> <li>9. Crimping tools and connector pick-up and delivery tools;</li> <li>10. ATC transponder test devices;</li> <li>11. TCAS test devices;</li> <li>12. DME test devices;</li> <li>13. Safety gear;</li> <li>14. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves;</li> </ol>		

	7. Sealants; 8. Solvent.
<b>EVIDENCE REQUIREMENT</b>	
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Review aircraft status reports;</li> <li>4. Determine the faults according to the corresponding test reports and troubleshooting manuals;</li> <li>5. Perform component-level fault analysis of the following: <ol style="list-style-type: none"> <li>a. Interrogators of distance measurement equipment;</li> <li>b. Control panels of distance measurement equipment;</li> <li>c. Indicators of distance measurement equipment;</li> <li>d. Antennae of distance measurement equipment;</li> <li>e. Air traffic control transponders;</li> <li>f. ATC control panels;</li> <li>g. Air traffic control antennae;</li> <li>h. TCAS computers;</li> <li>i. TCAS control panels;</li> <li>j. Displays/Indicators of air traffic warning and collision avoidance systems;</li> <li>k. TCAS antennae;</li> <li>l. Computers with ground proximity warning systems-GPWS;</li> <li>m. GPWS alarm indicators/displays.</li> </ol> </li> <li>6. Perform system-level fault analysis of the following: <ol style="list-style-type: none"> <li>a. DME systems;</li> <li>b. ATC systems;</li> <li>c. TCAS systems;</li> <li>d. GPWS systems.</li> </ol> </li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Analyze the possible fault causes of the DME systems;</li> <li>1.2 Isolate DME system faults;</li> <li>1.3 Analyze the possible fault causes of the ATC systems;</li> <li>1.4 Isolate ATC system faults;</li> <li>1.5 Analyze the possible fault causes of the TCAS systems;</li> <li>1.6 Isolated TCAS system faults;</li> <li>1.7 Analyze the possible fault causes of the GPWS systems;</li> <li>1.8 Isolate GPWS system faults;</li> <li>1.9 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Working principles of DME systems;</li> <li>2.2 Working principle of ATC systems;</li> <li>2.3 Working principles of TCAS systems;</li> <li>2.4 Working principles of GPWS systems;</li> <li>2.5 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Basic composition of DME systems;</li> <li>3.4 Basic composition of ATC systems;</li> </ol>

<p>7. Isolate possible faults in:</p> <ol style="list-style-type: none"> <li>a. Interrogators of distance measurement equipment;</li> <li>b. Control panels of distance measurement equipment;</li> <li>c. Indicators of distance measurement equipment;</li> <li>d. Antennae of distance measurement equipment;</li> <li>e. Air traffic control transponders;</li> <li>f. ATC control panels;</li> <li>g. Air traffic control antennae;</li> <li>h. Computers with ground proximity warning systems;</li> <li>i. GPWS alarm indicators/displays;</li> <li>j. TCAS computers;</li> <li>k. TCAS control panels;</li> <li>l. Displays/Indicators of air traffic warning and collision avoidance systems;</li> <li>m. TCAS antennae.</li> </ol> <p>8. Perform final inspections and sign corresponding task cards;</p> <p>9. Submit task cards to the certification engineer for certification and aircraft delivery for use;</p> <p>10. Restore the aircraft to its normal state.</p> <p>11. Clean tools, equipment and the workplace,</p> <p>12. Store tools, equipment and safety gear;</p> <p>13. Observe health, occupational and environmental safety rules and regulations.</p>	<p>3.5 Basic composition of TCAS systems;</p> <p>3.6 Basic composition of GPWS systems;</p> <p>3.7 The overhaul methods of the circuits;</p> <p>3.8 The methods of disassembling and assembling components.</p> <p><b>4.0 Essential Skills</b></p> <p>4.1 Fault analysis, prejudgment and prediction competence;</p> <p>4.2 Engineering technical report writing competence;</p> <p>4.3 Computer skills;</p> <p>4.4 Competence of using tools and equipment;</p> <p>4.5 Problem-solving competence;</p> <p>4.6 Stress management;</p> <p>4.7 Teamwork;</p> <p>4.8 Communication skills;</p> <p>4.9 Safety responsibility consciousness.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Faults in aircraft secondary radar systems are analysed and isolated in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Project management;</li> <li>2. Aviation safety;</li> <li>3. Data analysis and recording;</li> <li>4. Personnel management and training;</li> </ol>



	5. Environmental regulations.
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<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CONDUCT ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT RADAR SYSTEMS	<b>DUTY NO.</b>	<b>801</b>
<b>TASK TITLE</b>	CARRY OUT COMPREHENSIVE FAULT DETECTION AND DIAGNOSIS OF AIRCRAFT RADAR SYSTEMS	<b>TASK NO.</b>	<b>8016</b>
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct comprehensive fault detection and diagnosis of aircraft radar systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Computers with accessories;</li> <li>3. Electronics technician's tool kit;</li> <li>4. Multimeters;</li> <li>5. Oscilloscopes;</li> <li>6. Heat guns;</li> <li>7. Anti-static wrist straps;</li> <li>8. Soldering guns;</li> <li>9. Crimping tools and connector pick-up and delivery tools;</li> <li>10. ATC transponder test devices;</li> <li>11. TCAS test devices;</li> <li>12. DME test devices;</li> <li>13. Safety gear;</li> <li>14. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves;</li> </ol>		

	7. Sealants; 8. Solvent.
<b>EVIDENCE REQUIREMENT</b>	
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Review aircraft status reports;</li> <li>4. Determine faults according to test reports, AMMs, etc.;</li> <li>5. Trace and diagnose faults in the following system components: <ol style="list-style-type: none"> <li>a. Meteorological radar systems;</li> <li>b. Doppler systems;</li> <li>c. Radio altimeter systems;</li> <li>d. DME systems;</li> <li>e. ATC systems;</li> <li>f. TCAS systems;</li> <li>g. GPWS systems.</li> </ol> </li> <li>6. Trace and diagnose faults in the following system circuits: <ol style="list-style-type: none"> <li>a. Meteorological radar systems;</li> <li>b. Doppler systems;</li> <li>c. Radio altimeter systems;</li> <li>d. DME systems;</li> <li>e. ATC systems;</li> <li>f. TCAS systems;</li> <li>g. GPWS systems.</li> </ol> </li> <li>7. Perform final inspections and sign corresponding task cards;</li> <li>8. Submit task cards to the certification engineer for certification and aircraft delivery for use;</li> <li>9. Restore the aircraft to its normal state.</li> <li>10. Clean tools, equipment and the workplace;</li> <li>9. Store tools, equipment and safety gear;</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Perform fault detection and diagnosis of aircraft radar system components;</li> <li>1.2 Perform fault detection and diagnosis of aircraft radar system circuits;</li> <li>1.3 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Working principles of aircraft radar systems;</li> <li>2.2 Working principles of the Doppler systems;</li> <li>2.3 Working principles of radio altimeter systems;</li> <li>2.4 Working principles of DME systems;</li> <li>2.5 Working principle of ATC systems;</li> <li>2.6 Working principles of TCAS systems;</li> <li>2.7 Working principles of GPWS systems;</li> <li>2.8 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Analysis methods of fault trees;</li> <li>3.4 Components of aircraft radar systems;</li> <li>3.5 The overhaul methods of the circuits;</li> <li>3.6 The methods of disassembling and assembling components.</li> </ol> <p><b>4.0 Essential Skills</b></p>

<p>10. Observe health, occupational and environmental safety rules and regulations.</p>	<p>4.1 Fault analysis, prejudgment and prediction competence;  4.2 Engineering technical report writing competence;  4.3 Computer skills;  4.4 Competence of using tools and equipment;  4.5 Problem-solving competence;  4.6 Stress management;  4.7 Teamwork;  4.8 Communication skills;  4.9 Safety responsibility consciousness.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Faults in aircraft radar systems are comprehensively detected and diagnosed in accordance with approved technical specifications and procedures..</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Project management;</li> <li>2. Aviation safety;</li> <li>3. Data analysis and recording;</li> <li>4. Personnel management and training;</li> <li>5. Environmental regulations.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	PERFORM MANAGEMENT OF THE AIRCRAFT AFCS MAINTENANCE	<b>TASK NO.</b>	8021
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to perform management of the aircraft AFCS maintenance in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Maintenance documents;</li> <li>2. Fitter's complete tool kit;</li> <li>3. Electrician's complete tool kit;</li> <li>4. Computer with accessories;</li> <li>3. Aviation materials and consumables;</li> <li>4. Transportation equipment;</li> <li>7. Safety gear;</li> <li>8. Work bench.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Assign responsibilities and duties to maintenance personnel;</li> <li>4. Develop maintenance plan for aircraft AFCS;</li> <li>5. Organize maintenance team;</li> <li>6. Establish interdepartmental communication mechanism;</li> <li>7. Promote workplace communication between maintenance personnel;;</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Develop maintenance plans;</li> <li>1.2 Organize the implementation of the maintenance plans;</li> <li>1.3 Implement maintenance management.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Principles of preventative maintenance;</li> <li>2.2 Principles of troubleshooting and repair;</li> <li>2.3 Principles of technical standards and procedures;</li> </ol>		

<p>8. Supervise the schedule and quality of maintenance work;</p> <p>9. Evaluate results;</p> <p>10. Organize toolbox meetings;</p> <p>11. Establish an effective incentive mechanism;</p> <p>12. Prepare maintenance budget;</p> <p>13. Control movement of tools and equipment;</p> <p>14. Manage parts and material stock levels;</p> <p>15. Enhance team spirit.</p> <p>16. Observe health, occupational and environmental safety rules and regulations.</p>	<p>2.4 Principles of data analysis and monitoring;</p> <p>2.5 Principles of spare parts management.</p> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <p>3.1 Team management theories and communication skills;</p> <p>3.2 Time management and decision making;</p> <p>3.3 Human resources management;</p> <p>3.4 Principle of aeronautical maintenance;</p> <p>3.5 Maintenance plans and scheduled maintenance;</p> <p>3.6 Aviation regulations and standards;</p> <p>3.7 Maintenance technologies and methods.</p> <p><b>4.0 Essential Skills</b></p> <p>4.1 Teamwork skills;</p> <p>4.2 Communication skills;</p> <p>4.3 Customer service competence;</p> <p>4.4 Report writing competence;</p> <p>4.5 Computer application competence.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Management of the aircraft AFCS maintenance is conducted in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Safe disposal of materials;</li> <li>2. Safety operation of equipment and tools;</li> <li>3. Occupational health and safety.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	IMPLEMENT PERFORMANCE TESTS OF THE AIRCRAFT AUTOMATIC PILOTING/FLIGHT GUIDANCE SYSTEMS	<b>TASK NO.</b>	8022
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to perform regular maintenance on the aircraft autopilot guidance computers and controller systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Test equipment of flight control computers;</li> <li>3. Test equipment of flight guidance computers;</li> <li>4. Fitter's complete tool kit;</li> <li>5. Electrician's complete tool kit;</li> <li>6. Multimeters;</li> <li>7. Oscilloscopes;</li> <li>8. Heat guns;</li> <li>9. Anti-static wrist straps;</li> <li>10. Soldering guns;</li> <li>11. Crimping tools and connector pick-up and delivery tools;</li> <li>12. Safety gear;</li> <li>13. Work bench</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves.</li> </ol>		

<b>EVIDENCE REQUIREMENT</b>	
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Verify task cards and maintenance instructions;</li> <li>4. Review all applicable airworthiness directives and service bulletins;</li> <li>5. Execute all applicable airworthiness directives and service bulletin instructions;</li> <li>6. Perform inspections on the following:               <ol style="list-style-type: none"> <li>a. Flight guidance computers;</li> <li>b. DFCS mode control panels/indicators;</li> <li>c. Automatic flight status announcers;</li> <li>d. Flight guidance controller/mode selector switches;</li> <li>e. AFCS interface/interlocking devices;</li> <li>f. Components of autopilot connection and disconnection systems;</li> <li>g. Autopilot switches;</li> <li>h. Tilt thumb and roller controllers.</li> </ol> </li> <li>7. Perform tests on the following:               <ol style="list-style-type: none"> <li>a. Flight guidance /AP computers;</li> <li>b. Automatic driving interface systems;</li> <li>c. Flight guidance controllers;</li> <li>d. Advisory displays;</li> <li>e. Autopilot connection and disconnection systems;</li> <li>f. Tests of bus controllers and bus information transmission.</li> </ol> </li> <li>8. Replace the defective components in the following autopilot flight guidance and controller systems according to airworthiness requirements               <ol style="list-style-type: none"> <li>a. Flight guidance computers;</li> </ol> </li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Inspect, test and replace the flight guidance computer systems;</li> <li>1.2 Inspect and replace DFCS mode control panels/indicators;</li> <li>1.3 Inspect and replace AFCS interface/interlocking devices;</li> <li>1.4 Inspect, test and replace the components of autopilot connection and disconnection systems;</li> <li>1.5 Inspect and replace the autopilot switches;</li> <li>1.6 Inspect and replace the tilt thumb and roller controlling devices;</li> <li>1.7 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Test flows of autopilot/flight guidance systems;</li> <li>2.2 Working principles of autopilot/flight guidance systems;</li> <li>2.3 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Basic composition of autopilot/flight guidance systems;</li> <li>3.4 Test methods of autopilot/flight guidance systems.</li> </ol>



<ul style="list-style-type: none"> <li>b. DFCS mode control panels/indicators;</li> <li>c. Automatic flight status announcers;</li> <li>d. Flight guidance controller/mode selector switches;</li> <li>e. AFCS interface/interlocking devices;</li> <li>f. Autopilot connection and disconnection switches and autopilot switches;</li> <li>g. Tilt thumb and roller controllers.</li> </ul> <p>9. Perform final inspections and sign task cards;</p> <p>10. Submit task cards to the certification engineer for certification and aircraft delivery for use;</p> <p>11. Restore the aircraft to its normal state.</p> <p>12. Clean tools, equipment and the workplace,</p> <p>13. Store tools, equipment and safety gear; and</p> <p>14. Observe health, occupational and environmental safety rules and regulations.</p>	<p><b>4.0 Essential Skills</b></p> <p>4.1 Data analysis competence;</p> <p>4.2 Engineering technical report writing competence;</p> <p>4.3 Computer skills;</p> <p>4.4 Competence of using tools and equipment;</p> <p>4.5 Problem-solving competence;</p> <p>4.6 Stress management;</p> <p>4.7 Teamwork;</p> <p>4.8 Communication skills;</p> <p>4.9 Safety responsibility consciousness.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Performance tests of aircraft autopilot guidance computers and controller systems are conducted in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ul style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational safety and health.</li> </ul>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	CONDUCT FAULT ANALYSIS AND ISOLATION OF AIRCRAFT AUTOMATIC PILOTING/FLIGHT GUIDANCE SYSTEMS	<b>TASK NO.</b>	8023
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct fault analysis and isolation operations of aircraft autopilot guidance computers and controller systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Test equipment of flight control computers;</li> <li>3. Test equipment of flight guidance computers;</li> <li>4. Voltage-stabilized power supplies;</li> <li>5. Electronics technician's complete tool kit;</li> <li>6. Computer with accessories;</li> <li>5. Multimeters;</li> <li>6. Oscilloscopes;</li> <li>7. Heat guns;</li> <li>8. Anti-static wrist straps;</li> <li>9. Soldering guns;</li> <li>10. Crimping tools and connector pick-up and delivery tools;</li> <li>11. Torque wrenches;</li> <li>12. Safety gear;</li> <li>13. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> </ol>		

	<ol style="list-style-type: none"> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves.</li> </ol>
<b>EVIDENCE REQUIREMENT</b>	
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Review aircraft status reports;</li> <li>4. Determine the faults according to the corresponding troubleshooting manuals;</li> <li>5. Perform fault analysis of the following: <ol style="list-style-type: none"> <li>a. Flight guidance /AP computers;</li> <li>b. Automatic driving interface systems;</li> <li>c. Flight guidance controllers;</li> <li>d. Advisory displays;</li> <li>e. Autopilot connection and disconnection systems.</li> </ol> </li> <li>6. Perform the following component inspections: <ol style="list-style-type: none"> <li>a. Flight guidance computers;</li> <li>b. DFCS mode control panels/indicators;</li> <li>c. Automatic flight status announcers;</li> <li>d. Flight guidance controller/mode selector switches;</li> <li>e. AFCS interface/interlocking devices;</li> <li>f. Autopilot connection and disconnection systems.</li> </ol> </li> <li>7. Perform tests on the following items: <ol style="list-style-type: none"> <li>a. Flight guidance /AP computers;</li> <li>b. Automatic driving interface systems;</li> <li>c. Flight guidance controllers;</li> <li>d. Advisory displays;</li> <li>e. Autopilot connection and disconnection systems;</li> <li>f. Tests of bus controllers and bus information transmission.</li> </ol> </li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Inspect and test the autopilot/flight guidance systems;</li> <li>1.2 Analyze possible fault causes of autopilot/flight guidance systems;</li> <li>1.3 Isolate autopilot/flight guidance system components or circuit faults;</li> <li>1.4 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Test flows of autopilot/flight guidance systems;</li> <li>2.2 Working principles of autopilot/flight guidance systems;</li> <li>2.3 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Basic composition of autopilot/flight guidance systems;</li> <li>3.4 Test methods of autopilot/flight guidance systems;</li> <li>3.5 Analysis methods of fault trees;</li> <li>3.6 The overhaul methods of the circuits;</li> <li>3.7 The methods of disassembling and assembling components.</li> </ol>

<p>8. Isolate possible component and circuit faults in the following:</p> <ol style="list-style-type: none"> <li>a. Flight guidance computers;</li> <li>b. DFCS mode control panels/indicators;</li> <li>c. Automatic flight status announcers;</li> <li>d. Flight guidance controller/mode selector switches;</li> <li>e. AFCS interface/interlocking devices;</li> <li>f. Autopilot connection and disconnection systems;</li> <li>g. Autopilot and yaw damper switches;</li> <li>h. Tilt thumb and roller controllers.</li> </ol> <p>9. Perform final inspections and sign corresponding trouble tickets;</p> <p>10. Submit trouble tickets to the certification engineer for certification and aircraft delivery for use;</p> <p>11. Restore the aircraft to its normal state.</p> <p>12. Clean tools, equipment and the workplace;</p> <p>13. Store tools equipment and safety gear; and</p> <p>14. Observe health, occupational and environmental safety rules and regulations.</p>	<p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Fault analysis competence;</li> <li>4.2 Engineering technical report writing competence;</li> <li>4.3 Computer skills;</li> <li>4.4 Competence of using tools and equipment;</li> <li>4.5 Problem-solving competence;</li> <li>4.6 Stress management;</li> <li>4.7 Teamwork;</li> <li>4.8 Communication skills;</li> <li>4.9 Safety responsibility consciousness.</li> </ol>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Faults in aircraft autopilot guidance computers and controller systems are analysed and isolated in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational safety and health.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	CARRY OUT PERFORMANCE TESTS OF THE AIRCRAFT AUTOTHROTTLE SYSTEMS	<b>TASK NO.</b>	8024
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct performance tests of aircraft autothrottle systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Test equipment of autothrottle computers;</li> <li>3. Computer with accessories;</li> <li>4. Electronics technician's complete tool kit;</li> <li>5. Multimeters;</li> <li>6. Oscilloscopes;</li> <li>7. Heat guns;</li> <li>8. Anti-static wrist straps;</li> <li>9. Soldering guns;</li> <li>10. Crimping tools and connector pick-up and delivery tools;</li> <li>11. Safety gear;</li> <li>12. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	

<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Verify task cards and maintenance instructions;</li> <li>4. Review all applicable airworthiness directives and service bulletins;</li> <li>5. Execute all applicable airworthiness directives and service bulletin instructions;</li> <li>6. Perform inspections on the following: <ol style="list-style-type: none"> <li>a. Autothrottle computers;</li> <li>b. Control panels of autothrottle systems;</li> <li>c. Components of autothrottle indicating systems;</li> <li>d. Engine electronic control unit;</li> <li>e. Components of autothrottle connection and disconnection systems;</li> <li>f. Autothrottle servo motors.</li> </ol> </li> <li>7. Perform operational and functional tests on the following items: <ol style="list-style-type: none"> <li>a. Autothrottle computers;</li> <li>b. Control panels of autothrottle systems;</li> <li>c. Autothrottle indicating systems;</li> <li>d. Engine electronic control unit;</li> <li>e. Autothrottle connection and disconnection systems;</li> <li>f. Tests of bus controllers and bus information transmission.</li> </ol> </li> <li>8. Replace the defective autothrottle system components according to airworthiness requirements in the following: <ol style="list-style-type: none"> <li>a. Autothrottle computers;</li> <li>b. Control panels of autothrottle systems;</li> <li>c. Components of autothrottle indicating systems;</li> <li>d. Engine electronic control unit;</li> </ol> </li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Inspect, test and replace the autothrottle computers;</li> <li>1.2 Inspect and replace the control panels of autothrottle systems;</li> <li>1.3 Inspect and replace the autothrottle servo motors;</li> <li>1.4 Inspect, test and replace the engine electronic control unit;</li> <li>1.5 Perform tests of bus controllers and bus information transmission;</li> <li>1.6 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Test flows of autothrottle systems;</li> <li>2.2 Working principles of autothrottle systems;</li> <li>2.3 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Basic composition of autothrottle systems;</li> <li>3.4 Test methods of autothrottle systems.</li> </ol> <p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Data analysis competence;</li> <li>4.2 Engineering technical report writing competence;</li> <li>4.3 Computer skills;</li> <li>4.4 Competence of using tools and equipment;</li> <li>4.5 Problem-solving competence;</li> <li>4.6 Stress management;</li> </ol>
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<p>e. Components of autothrottle connection and disconnection systems;</p> <p>f. Autothrottle servo motors.</p> <p>9. Perform final inspections and sign task cards;</p> <p>10. Submit task cards to the certification engineer for certification and aircraft delivery for use;</p> <p>11. Restore the aircraft to its normal state.</p> <p>12. Clean tools, equipment and the workplace;</p> <p>13. Store tools equipment and safety gear; and</p> <p>14. Observe health, occupational and environmental safety rules and regulations.</p>	<p>4.7 Teamwork;</p> <p>4.8 Communication skills;</p> <p>4.9 Safety responsibility consciousness.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Performance tests of aircraft autothrottle systems are conducted in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational safety and health.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	PERFORM FAULT ANALYSIS AND ISOLATION OF AIRCRAFT AUTOTHROTTLE SYSTEMS	<b>TASK NO.</b>	8025
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct analysis and isolation of faults in aircraft autothrottle systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Test equipment of autothrottle computers;</li> <li>3. Oscilloscopes;</li> <li>4. Voltage-stabilized power supplies;</li> <li>5. Computer with accessories;</li> <li>6. Electronics technician's complete tool kit;</li> <li>7. Multimeters;</li> <li>8. Heat guns;</li> <li>9. Anti-static wrist straps;</li> <li>10. Soldering guns;</li> <li>11. Crimping tools and connector pick-up and delivery tools;</li> <li>12. Safety gear;</li> <li>13. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	



<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Review aircraft status reports;</li> <li>4. Determine the faults according to the corresponding troubleshooting manuals;</li> <li>5. Perform fault analysis of the following:       <ol style="list-style-type: none"> <li>a. Autothrottle computers;</li> <li>b. Control panels of autothrottle systems;</li> <li>c. Autothrottle indicating systems;</li> <li>d. Engine electronic control unit;</li> <li>e. Autothrottle connection and disconnection systems.</li> </ol> </li> <li>6. Perform the following component inspections:       <ol style="list-style-type: none"> <li>a. Autothrottle computers;</li> <li>b. Control panels of autothrottle systems;</li> <li>c. Components of autothrottle indicating systems;</li> <li>d. Engine electronic control unit;</li> <li>e. Components of autothrottle connection and disconnection systems;</li> <li>g. Autothrottle servo motors.</li> </ol> </li> <li>7. Perform operational and functional tests on the following items:       <ol style="list-style-type: none"> <li>a. Autothrottle computers;</li> <li>b. Control panels of autothrottle systems;</li> <li>c. Autothrottle indicating systems;</li> <li>d. Engine electronic control unit;</li> <li>e. Autothrottle connection and disconnection systems;</li> <li>f. Tests of bus controllers and bus information transmission.</li> </ol> </li> <li>8. Isolate possible component and circuit faults in the following:       <ol style="list-style-type: none"> <li>a. Autothrottle computers;</li> <li>b. Control panels of autothrottle systems;</li> </ol> </li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Inspect and test the autothrottle systems;</li> <li>1.2 Analyze the possible fault causes of the autothrottle systems;</li> <li>1.3 Isolate components or circuit faults of autothrottle systems;</li> <li>1.4 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Test flows of autothrottle systems;</li> <li>2.2 Working principles of autothrottle systems;</li> <li>2.3 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Basic composition of autothrottle systems;</li> <li>3.4 Test methods of autothrottle systems;</li> <li>3.5 Analysis methods of fault trees;</li> <li>3.6 Methods of measurement and overhaul of circuits;</li> <li>3.7 The methods of disassembling and assembling components.</li> </ol> <p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Fault analysis competence;</li> <li>4.2 Engineering technical report writing competence;</li> <li>4.3 Computer skills;</li> <li>4.4 Competence of using tools and equipment;</li> <li>4.5 Problem-solving competence;</li> <li>4.6 Stress management;</li> </ol>
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<ul style="list-style-type: none"> <li>c. Components of autothrottle indicating systems;</li> <li>d. Engine electronic control unit;</li> <li>e. Components of autothrottle connection and disconnection systems;</li> <li>h. Autothrottle servo motors.</li> </ul> <p>9. Perform final inspections and sign corresponding trouble tickets;</p> <p>10. Submit appropriate trouble tickets to the certification engineer for certification and aircraft delivery for use;</p> <p>11. Restore the aircraft to its normal state.</p> <p>12. Clean tools, equipment and the workplace;</p> <p>13. Store tools equipment and safety gear; and</p> <p>14. Observe health, occupational and environmental safety rules and regulations.</p>	<p>4.7 Teamwork;</p> <p>4.8 Communication skills;</p> <p>4.9 Safety responsibility consciousness.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Faults in aircraft autothrottle systems are analysed and isolated in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ul style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational safety and health.</li> </ul>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	IMPLEMENT PERFORMANCE TESTS OF THE AIRCRAFT FLIGHT STABILITY AUGMENTATION SYSTEMS	<b>TASK NO.</b>	8026
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct performance tests of aircraft flight stability augmentation systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers. The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Test equipment of yaw damping computers;</li> <li>3. Test equipment of flight stability augmentation computers;</li> <li>4. Computer with accessories;</li> <li>5. Electronics technician's complete tool kit;</li> <li>6. Multimeters;</li> <li>7. Heat guns;</li> <li>8. Anti-static wrist straps;</li> <li>9. Welding guns;</li> <li>10. Crimping tools and connector pick-up and delivery tools;</li> <li>11. Torque wrenches;</li> <li>12. Safety gear;</li> <li>13. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves;</li> <li>7. Air filters.</li> </ol>		

## EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	UNDERPINNING KNOWLEDGE
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Verify task cards and maintenance instructions;</li> <li>4. Review all applicable airworthiness directives and service bulletins;</li> <li>5. Execute all applicable airworthiness directives and service bulletin instructions</li> <li>6. Perform inspections on the following:               <ol style="list-style-type: none"> <li>a. Yaw damping computers/Flight augmentation computers;</li> <li>b. Yaw damping actuators/Rudder trimming actuators;</li> <li>c. Aircraft control panels;</li> <li>d. Yaw damping position sensors;</li> <li>e. Rudder change valves;</li> <li>f. Yaw damping steering gears;</li> <li>g. Rate gyros;</li> <li>h. Yaw damping indicators.</li> </ol> </li> <li>7. Operate and inspect the functions of the following:               <ol style="list-style-type: none"> <li>a. Yaw damping computers/Flight augmentation computers;</li> <li>b. Yaw damping actuators/Rudder trimming actuators;</li> <li>c. Yaw damping position sensors;</li> <li>d. Yaw damping steering gears;</li> <li>e. Rate gyros;</li> <li>f. Tests of bus controllers and bus information transmission.</li> </ol> </li> <li>8. Replace defective components in the flight stability augmentation system according to airworthiness requirements:               <ol style="list-style-type: none"> <li>a. Yaw damping computers/Flight augmentation computers;</li> </ol> </li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Inspect, test and replace the yaw damping computers/flight augmentation computers;</li> <li>1.2 Inspect, test and replace the yaw damping actuators/rudder trimming actuators;</li> <li>1.3 Inspect and replace the yaw damping position sensors;</li> <li>1.4 Inspect, test and replace the yaw damping steering gears;</li> <li>1.5 Inspect, test and replace the rate gyros;</li> <li>1.6 Perform tests of bus controllers and bus information transmission;</li> <li>1.7 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Test flows of flight stability augmentation systems;</li> <li>2.2 Working principles of flight stability augmentation systems;</li> <li>2.3 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Basic composition of flight stability augmentation systems;</li> <li>3.4 Test methods of flight stability augmentation systems.</li> </ol> <p><b>4.0 Essential Skills</b></p>

<ul style="list-style-type: none"> <li>b. Yaw damping actuators/Rudder trimming actuators;</li> <li>c. Yaw damping position sensors;</li> <li>d. Rudder change valves;</li> <li>e. Yaw damping steering gears;</li> <li>f. Rate gyros;</li> <li>g. Yaw damping indicators.</li> </ul> <p>9. Perform final inspections and sign task cards;</p> <p>10. Submit task cards to the certification engineer for certification and aircraft delivery for use;</p> <p>11. Restore the aircraft to its normal state</p> <p>12. Clean tools, equipment and the workplace;</p> <p>11. Store the tools equipment and safety gear; and</p> <p>12. Observe health, occupational and environmental safety rules and regulations.</p>	<ul style="list-style-type: none"> <li>4.1 Data analysis competence;</li> <li>4.2 Engineering technical report writing competence;</li> <li>4.3 Computer skills;</li> <li>4.4 Competence of using tools and equipment;</li> <li>4.5 Problem-solving competence;</li> <li>4.6 Stress management;</li> <li>4.7 Teamwork;</li> <li>4.8 Communication skills;</li> <li>4.9 Safety responsibility consciousness.</li> </ul>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Performance tests of aircraft flight stability augmentation systems are conducted in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ul style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational safety and health.</li> </ul>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	CONDUCT ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>TASK NO.</b>	8027
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct analysis and isolation of faults in the aircraft AFCS in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Test equipment of yaw damping computers;</li> <li>3. Test equipment of flight stability augmentation computers;</li> <li>4. Computer with accessories;</li> <li>5. Electronics technician's complete tool kit;</li> <li>4. Voltage-stabilized power supplies;</li> <li>5. Oscilloscopes;</li> <li>6. Multimeters;</li> <li>7. Heat guns;</li> <li>8. Anti-static wrist straps;</li> <li>9. Soldering guns;</li> <li>10. Crimping tools and connector pick-up and delivery tools;</li> <li>11. Torque wrenches;</li> <li>12. Safety gear;</li> <li>13. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves;</li> </ol>		

7. Air filters.

**EVIDENCE REQUIREMENT**

<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety when performing the task;</li> <li>3. Review aircraft status reports;</li> <li>4. Determine the faults according to the corresponding troubleshooting manuals;</li> <li>5. Perform fault analysis of the following:               <ol style="list-style-type: none"> <li>a. Yaw damping computers/Flight augmentation computers;</li> <li>b. Yaw damping actuators/Rudder trimming actuators;</li> <li>c. Aircraft control panels;</li> <li>d. Yaw damping position sensors;</li> <li>e. Rudder change valves;</li> <li>f. Yaw damping steering gears;</li> <li>g. Rate gyros;</li> <li>h. Yaw damping indicators.</li> </ol> </li> <li>6. Perform the following component inspections:               <ol style="list-style-type: none"> <li>a. Yaw damping computers/Flight augmentation computers;</li> <li>b. Yaw damping actuators/Rudder trimming actuators;</li> <li>c. Yaw damping control panels;</li> <li>d. Yaw damping position sensors;</li> <li>e. Yaw damping steering gears;</li> <li>f. Yaw damping indicators.</li> </ol> </li> <li>7. Operate and inspect the functions of the following:               <ol style="list-style-type: none"> <li>a. Yaw damping computers/Flight augmentation computers;</li> <li>b. Yaw damping actuators/Rudder trimming actuators;</li> <li>c. Yaw damping control panels;</li> <li>d. Yaw damping position sensors;</li> <li>e. Yaw damping steering gears;</li> </ol> </li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Inspect and test the aircraft stability augmentation systems;</li> <li>1.2 Analyze the possible fault causes of aircraft stability augmentation systems;</li> <li>1.3 Isolate components or circuit faults of aircraft stability augmentation systems;</li> <li>1.4 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Test flows of flight stability augmentation systems;</li> <li>2.2 Working principles of aircraft stability augmentation systems;</li> <li>2.3 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Basic composition of flight stability augmentation systems;</li> <li>3.4 Test methods of flight stability augmentation systems;</li> <li>3.5 Analysis methods of fault trees;</li> <li>3.6 Methods of measurement and overhaul of circuits;</li> <li>3.7 The methods of disassembling and assembling components.</li> </ol>

<ul style="list-style-type: none"> <li>f. Rate gyros;</li> <li>g. Yaw damping indicators;</li> <li>h. Tests of bus controllers and bus information transmission.</li> </ul> <p>8. Isolate possible defective component and circuit in the following:</p> <ul style="list-style-type: none"> <li>a. Yaw damping computers/Flight augmentation computers;</li> <li>b. Yaw damping actuators/Rudder trimming actuators;</li> <li>c. Aircraft control panels;</li> <li>d. Yaw damping position sensors;</li> <li>e. Rudder change valves;</li> <li>f. Yaw damping steering gears;</li> <li>g. Rate gyros;</li> <li>h. Yaw damping indicators.</li> </ul> <p>9. Perform final inspections and sign corresponding trouble tickets;</p> <p>10. Submit trouble tickets to the certification engineer for certification and aircraft delivery for use;</p> <p>11. Restore the aircraft to its normal state</p> <p>12. Clean tools equipment and the workplace;</p> <p>13. Store tools, equipment and safety gear.</p> <p>14. Observe health, occupational and environmental safety rules and regulations.</p>	<p><b>4.0 Essential Skills</b></p> <ul style="list-style-type: none"> <li>4.1 Fault analysis competence;</li> <li>4.2 Engineering technical report writing competence;</li> <li>4.3 Computer skills;</li> <li>4.4 Competence of using tools and equipment;</li> <li>4.5 Problem-solving competence;</li> <li>4.6 Stress management;</li> <li>4.7 Teamwork;</li> <li>4.8 Communication skills;</li> <li>4.9 Safety responsibility consciousness.</li> </ul>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Faults in the aircraft's AFCS are analysed and isolated in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ul style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational safety and health.</li> </ul>



<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	CARRY OUT PERFORMANCE TESTS OF THE AIRCRAFT AUTOMATIC TRIMMING SYSTEMS	<b>TASK NO.</b>	8028
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to test the performance of the automatic trimming systems of the aircraft in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment</li> <li>2. Electronics technician's complete tool kit;</li> <li>3. Computers with accessories;</li> <li>4. Oscilloscopes;</li> <li>5. Multimeters;</li> <li>6. Anti-static wrist straps;</li> <li>7. Safety gear;</li> <li>8. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety when performing the task;</li> <li>3. Verify task cards and maintenance instructions;</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Inspect the test flight control computers;</li> <li>1.2 Inspect the control column switch assemblies;</li> <li>1.3 Inspect the flight control panels;</li> </ol>	

<p>4. Review all applicable airworthiness directives and service bulletins;</p> <p>5. Execute all applicable airworthiness directives and service bulletin instructions;</p> <p>6. Perform inspections on the following:</p> <ul style="list-style-type: none"> <li>a. Stabilizer trim warning lights;</li> <li>b. Control column switch assemblies;</li> <li>c. Flight control panels;</li> <li>d. Stabilizer limiting switches;</li> <li>e. Elevator trimmers;</li> <li>f. Electric actuator cylinders for stabilizer trimming;</li> <li>g. Actuator cylinders for Mach trim;</li> <li>h. Integrated flight system accessories and assemblies;</li> <li>i. A/P stabilizer trimming cut-off switches;</li> <li>j. Flight control computers.</li> </ul> <p>7. Perform operation tests on the following:</p> <ul style="list-style-type: none"> <li>a. Self-testing of digital flight control systems;</li> <li>b. Velocity trimming;</li> <li>c. Velocity trimming cut-off electronic switches;</li> <li>d. Velocity trimming detectors;</li> <li>e. Stabilizer trim detectors;</li> <li>f. Assemblies of A/P stabilizer trim cut-off switches;</li> <li>g. Electric actuator cylinders for stabilizer trimming;</li> <li>h. Mach trim;</li> <li>i. Warning signals of Mach trim.</li> </ul> <p>8. Perform final inspections and sign task cards;</p> <p>9. Submit task cards to the certification engineer for certification and aircraft release for use;</p> <p>10. Restore the aircraft to its normal state</p> <p>11. Clean tools, equipment and the workplace;</p> <p>10. Store tools equipment and safety gear.</p>	<p>1.4 Inspect and test the control system components of stabilizer trimming;</p> <p>1.5 Inspect and test the autopilot and stabilizer limiting switches;</p> <p>1.6 Inspect and test the control components of elevator trimmers;</p> <p>1.7 Inspect Integrated flight system accessories and assemblies.</p> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ul style="list-style-type: none"> <li>2.1 Principles of aircraft speed trim control;</li> <li>2.2 Principles of aircraft Mach number trim control;</li> <li>2.3 Principles of aircraft angle of attack trim control;</li> <li>2.4 Control principles of the logic and interface of flight control computers;</li> <li>2.5 Tanzania civil aviation regulations.</li> </ul> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ul style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Basic composition of flight automatic trim systems;</li> <li>3.4 Test methods for flight automatic trim systems.</li> </ul> <p><b>4.0 Essential Skills</b></p> <ul style="list-style-type: none"> <li>4.1 Data analysis competence;</li> <li>4.2 Engineering technical report writing competence;</li> <li>4.3 Computer skills;</li> <li>4.4 Competence of using tools and equipment;</li> <li>4.5 Problem-solving competence;</li> <li>4.6 Stress management;</li> <li>4.7 Teamwork;</li> </ul>
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11. Observe health, occupational and environmental safety rules and regulations.	4.8 Communication skills; 4.9 Safety responsibility consciousness.
<b>DESCRIPTION OF THE END PRODUCT / SERVICE</b>	Performance tests of aircraft automatic trimming systems are conducted in accordance with approved technical specifications and procedures.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Safety operation of equipment and tools; 2. Occupational safety and health.

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	PERFORM FAULT ANALYSIS AND ISOLATION OF AIRCRAFT AUTOMATIC TRIMMING SYSTEMS	<b>TASK NO.</b>	8029
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct fault analysis and isolation of aircraft automatic trimming systems in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Computers with accessories;</li> <li>3. Electronics technician's complete tool kit</li> <li>4. Oscilloscopes;</li> <li>5. Multimeters;</li> <li>6. Heat guns;</li> <li>7. Anti-static wrist straps;</li> <li>8. Soldering guns;</li> <li>9. Crimping tools and connector pick-up and delivery tools;</li> <li>11. Safety gear;</li> <li>12. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	

<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Review aircraft status reports;</li> <li>4. Analyze and isolate faults according to the corresponding test reports and troubleshooting manuals;</li> <li>5. Perform tests on the following items:       <ol style="list-style-type: none"> <li>a. Self-testing of digital flight control systems;</li> <li>b. Velocity trimming;</li> <li>c. Velocity trimming cut-off electronic switches;</li> <li>d. Velocity trimming detectors;</li> <li>e. Stabilizer trim detectors;</li> <li>f. Assemblies of A/P stabilizer trim cut-off switches;</li> <li>g. Electric actuator cylinders for stabilizer trimming;</li> <li>h. Mach trim;</li> <li>i. Warning signals of Mach trim.</li> </ol> </li> <li>6. Perform system-level fault analysis of the following:       <ol style="list-style-type: none"> <li>a. Aircraft speed trim systems;</li> <li>b. Aircraft Mach trim systems;</li> <li>c. Aircraft angle of attack trim systems;</li> <li>d. Aircraft automatic driving trim systems.</li> </ol> </li> <li>7. Isolate possible faults in:       <ol style="list-style-type: none"> <li>a. Stabilizer trim warning lights;</li> <li>b. Control column switch assemblies;</li> <li>c. Stabilizer limiting switches;</li> <li>d. Elevator trimmer control switches;</li> <li>e. Electric actuator cylinders for stabilizer trimming;</li> <li>f. Actuator cylinders for Mach trim;</li> <li>g. Integrated flight system accessories and assemblies;</li> </ol> </li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Inspect and test the aircraft automatic trim systems;</li> <li>1.2 Analyze the possible fault causes of aircraft automatic trim systems;</li> <li>1.3 Isolate components or circuit faults of aircraft automatic trimming systems;</li> <li>1.4 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Test flows of aircraft automatic trim systems;</li> <li>2.2 Working principles of aircraft automatic trim systems;</li> <li>2.3 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Basic composition of flight automatic trim systems;</li> <li>3.4 Test methods for flight automatic trim systems;</li> <li>3.5 Analysis methods of fault trees;</li> <li>3.6 Methods of measurement and overhaul of circuits;</li> <li>3.7 The methods of disassembling and assembling components.</li> </ol> <p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Fault analysis competence;</li> <li>4.2 Engineering technical report writing competence;</li> <li>4.3 Computer skills;</li> <li>4.4 Competence of using tools and equipment;</li> </ol>
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<ul style="list-style-type: none"> <li>h. A/P stabilizer trimming cut-off switches;</li> <li>i. Flight control computers.</li> </ul> <ol style="list-style-type: none"> <li>8. Perform final inspections and sign corresponding task cards;</li> <li>9. Submit task cards to the certification engineer for certification and aircraft release for use;</li> <li>10. Restore the aircraft to its normal state</li> <li>11. Clean tools, equipment and the workplace;</li> <li>12. Store tools equipment and safety gear;</li> </ol> <p>Observe health, occupational and environmental safety rules and regulations.</p>	<ol style="list-style-type: none"> <li>4.5 Problem-solving competence;</li> <li>4.6 Stress management;</li> <li>4.7 Teamwork;</li> <li>4.8 Communication skills;</li> <li>4.9 Safety responsibility consciousness.</li> </ol>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Faults in aircraft automatic trimming systems are analysed and isolated in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational health and safety.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	IMPLEMENT ANALYSIS OF THE LAWS OF AIRCRAFT AUTOMATIC PILOTING	<b>TASK NO.</b>	80210
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to analyse the laws of aircraft automatic piloting in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Computers with accessories.</li> <li>3. Safety gear.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Analyze the control laws of course selection in rolling channels;</li> <li>2. Analyze the control laws of attitude keeping in rolling channels;</li> <li>3. Analyze the control laws of the steering wheel control in rolling channels;</li> <li>4. Analyze the control laws of course keeping in rolling channels;</li> <li>5. Analyze the control laws when VOR/LOC intercept mode is in the A/P and F/D rolling channels;</li> <li>6. Analyze the control laws when the flight guidance instrument is in the lifting speed keeping mode in A/P pitch channels;</li> <li>7. Analyze the control laws of pitching attitude keeping in pitching channels;</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Analyze the control laws of working modes of rolling channels;</li> <li>1.2 Analyze the control laws of working modes of pitching channels.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Principles of selecting the working modes of rolling channels;</li> <li>2.2 Principles of selecting the working modes of pitch channels.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p>		

<p>8. Analyze the control laws when the A/P and F/D pitch channels are both in the lifting speed keeping mode;</p> <p>9. Analyze the control laws of pitching altitude keeping in pitching channels;</p> <p>10. Analyze the control laws of the height selection mode of A/P-F/D pitching channels;</p> <p>11. Analyze the control laws when the A/P-F/D pitch channels indicates the airspeed keeping mode;</p> <p>12. Analyze the control laws of the Mach number keeping mode in A/P-F/D pitching channels.</p> <p>13. Observe health, occupational and environmental safety rules and regulations.</p>	<p>3.1 Basic composition of automatic control systems;</p> <p>3.2 Selection methods of the patterns of the mode control panels;</p> <p>3.3 Analysis methods of the laws of automatic driving control.</p> <p><b>4.0 Essential Skills</b></p> <p>4.1 Fault analysis competence;</p> <p>4.2 Engineering technical report writing competence;</p> <p>4.3 Computer skills;</p> <p>4.4 Competence of using tools and equipment;</p> <p>4.5 Problem-solving competence;</p> <p>4.6 Stress management;</p> <p>4.7 Teamwork;</p> <p>4.8 Communication skills;</p> <p>4.9 Safety responsibility consciousness.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Aircraft automatic driving control laws are analysed in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational health and safety.</li> </ol>



<b>OCCUPATION</b>	AVIONICS ENGINEER	MAINTENANCE	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS		<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	DESIGN THE LAWS OF AIRCRAFT AUTOMATIC DRIVING		<b>TASK NO.</b>	80211
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to design the laws of aircraft automatic driving in accordance with approved technical specifications and procedures.			
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Computers with accessories.</li> <li>3. Safety gear</li> </ol>			
<b>EVIDENCE REQUIREMENT</b>				
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>		
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Design the control laws of course selection in rolling channels;</li> <li>2. Design the control laws of altitude keeping in rolling channels;</li> <li>3. Design the control laws of the steering wheel control in rolling channels;</li> <li>4. Design the control laws of course keeping in rolling channels;</li> <li>5. Design the control laws when VOR/LOC intercept mode is in the A/P and F/D rolling channels;</li> <li>6. Design the control laws when the flight guidance instrument is in the lifting speed keeping mode in A/P pitch channels;</li> <li>7. Design the control laws of pitching attitude keeping in pitching channels;</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Design the control laws of working modes of rolling channels;</li> <li>1.2 Design the control laws of working modes of pitching channels.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Principles of selecting the working modes of rolling channels;</li> <li>2.2 Principles of selecting the working modes of pitch channels;</li> <li>2.3 Working principles of automatic control systems.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p>		

<p>8. Design the control laws when the A/P and F/D pitch channels are both in the lifting speed keeping mode;</p> <p>9. Design the control laws of pitching altitude keeping in pitching channels; Design the control laws of the height selection mode of A/P-F/D pitching channels;</p> <p>10. Design the control laws when the A/P-F/D pitch channels indicates the airspeed keeping mode;</p> <p>11. Design the control laws of the Mach number keeping mode in A/P-F/D pitching channels.</p> <p>12. Observe health, occupational and environmental safety rules and regulations.</p>	<p>3.1 Basic composition of automatic control systems;</p> <p>3.2 Selection methods of the patterns of the mode control panels;</p> <p>3.3 Analysis methods of the laws of automatic driving control.</p> <p><b>4.0 Essential Skills</b></p> <p>4.1 Fault analysis competence;</p> <p>4.2 Engineering technical report writing competence;</p> <p>4.3 Computer skills;</p> <p>4.4 Competence of using tools and equipment;</p> <p>4.5 Problem-solving competence;</p> <p>4.6 Stress management;</p> <p>4.7 Teamwork;</p> <p>4.8 Communication skills;</p> <p>4.9 Safety responsibility consciousness.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Aircraft automatic driving control laws are designed in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational health and safety.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANALYSIS AND ISOLATION OF FAULTS IN THE AIRCRAFT AFCS	<b>DUTY NO.</b>	802
<b>TASK TITLE</b>	CARRY OUT INTEGRATED FAULT TRACING AND DIAGNOSIS OF AIRCRAFT AFCS	<b>TASK NO.</b>	80212
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to perform integrated fault tracing and diagnosis in aircraft AFCS in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Personal protective equipment;</li> <li>2. Computers with accessories;</li> <li>3. Electronics technician's complete tool kit;</li> <li>4. Multimeters;</li> <li>5. Oscilloscopes;</li> <li>6. Heat guns;</li> <li>7. Anti-static wrist straps;</li> <li>8. Welding guns;</li> <li>9. Crimping tools and connector pick-up and delivery tools;</li> <li>10. Test devices of flight control computers;</li> <li>11. Test devices of autothrottle computers;</li> <li>12. Test devices of flight augmentation computers;</li> <li>13. Safety gear;</li> <li>14. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Contact cleaners;</li> <li>2. Contact enhancers;</li> <li>3. Electrical jointing;</li> <li>4. Wires;</li> <li>5. Welding materials;</li> <li>6. Heat shrinkable sleeves;</li> <li>7. Sealants and solvents.</li> </ol>		

<b>EVIDENCE REQUIREMENT</b>	
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Review aircraft status reports;</li> <li>4. Determine faults according to test reports, AMMs, etc.;</li> <li>5. Trace and diagnose faults in the following system components:               <ol style="list-style-type: none"> <li>a. Autopilot/Flight guidance systems;</li> <li>b. Autothrottle systems;</li> <li>c. Flight stability augmentation systems;</li> <li>d. Automatic trim systems.</li> </ol> </li> <li>6. Trace and diagnose faults in the following system circuits:               <ol style="list-style-type: none"> <li>a. Autopilot/Flight guidance systems;</li> <li>b. Autothrottle systems;</li> <li>c. Flight stability augmentation systems;</li> <li>d. Automatic trim systems.</li> </ol> </li> <li>7. Perform final inspections and sign corresponding task cards;</li> <li>8. Submit task cards to the certification engineer for certification and aircraft release for use;</li> <li>9. Restore the aircraft to its normal state</li> <li>10. Clean the workplace, tools and equipment;</li> <li>11. Store tools, equipment and safety gear.</li> <li>12. Observe health, occupational and environmental safety rules and regulations.</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Perform the component fault detection and diagnosis of aircraft AFCS;</li> <li>1.2 Perform the circuit fault detection and diagnosis of aircraft AFCS;</li> <li>1.3 Use AMMs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Working principles of aircraft autopilot/flight guidance systems;</li> <li>2.2 Working principles of autothrottle systems;</li> <li>2.3 Working principles of flight stability augmentation systems;</li> <li>2.4 Working principles of automatic trimming systems;</li> <li>2.5 Tanzania civil aviation regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Basic methods of aircraft maintenance;</li> <li>3.2 Human factors in maintenance processes;</li> <li>3.3 Analysis methods of fault trees;</li> <li>3.4 Components of an aircraft AFCS;</li> <li>3.5 The overhaul methods of the circuits;</li> <li>3.6 The methods of disassembling and assembling components.</li> </ol> <p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Fault analysis, prejudgment and prediction competence;</li> </ol>

	<p>4.2 Engineering technical report writing competence;</p> <p>4.3 Computer skills;</p> <p>4.4 Competence of using tools and equipment;</p> <p>4.5 Problem-solving competence;</p> <p>4.6 Stress management;</p> <p>4.7 Teamwork;</p> <p>4.8 Communication skills;</p> <p>4.9 Safety responsibility consciousness.</p>
<b>DESCRIPTION OF THE END PRODUCT / SERVICE</b>	Faults in aircraft AFCS are comprehensively traced and diagnosed in accordance with approved technical specifications and procedures.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational health and safety.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT MANAGEMENT OF AERONAUTICAL MAINTENANCE ENGINEERING	<b>DUTY NO.</b>	803
<b>TASK TITLE</b>	DEVELOP AIRCRAFT MAINTENANCE PLANS	<b>TASK NO.</b>	8031
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to develop aircraft maintenance plans in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Electronic office equipment;</li> <li>2. Maintenance literature.</li> <li>3. Electronics technician's complete tool kit;</li> <li>4. Fitter's complete tool kit;</li> <li>5. Safety gear;</li> <li>6. Work bench.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Review airworthiness maintenance requirements for the latest version of the aircraft;</li> <li>2. Review the regulations of TCAA;</li> <li>3. Comply with the regulations of continuous airworthiness maintenance schemes;</li> <li>4. Plan the maintenance resources;</li> <li>5. Conduct statistics and monitoring of the usage status of aircraft;</li> <li>6. Review the airworthiness standards of the aircraft;</li> <li>7. Review the requirements of airworthiness restriction projects of the aircraft structure;</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Comply with the regulatory requirements of the TCAA;</li> <li>1.2 Comply with the usage limits of the aircraft;</li> <li>1.3 Coordinate resources of all parties and control the maintenance costs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Aviation rules and regulations;</li> <li>2.2 Principles of airworthiness limitation;</li> <li>2.3 Principles of cost control.</li> </ol>		

<ol style="list-style-type: none"> <li>8. Review relevant maintenance requirements from manufacturers of engines, auxiliary power units and replacement parts;</li> <li>9. Establish a maintenance plan;</li> <li>9. Assign responsibilities and duties to maintenance personnel;</li> <li>10. Establish interdepartmental communication channels;</li> <li>11. Promote workplace communication between members of maintenance staff.</li> <li>12. Prepare maintenance budget.</li> <li>13. Observe health, occupational and environmental safety rules and regulations.</li> </ol>	<p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Workflows of maintenance;</li> <li>3.2 Types of the airworthiness restriction projects of the aircraft;</li> <li>3.3 Methods of maintenance cost control;</li> <li>3.4 Usage methods of maintenance manuals.</li> </ol> <p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Technical document reading competence;</li> <li>4.2 Computer application competence;</li> <li>4.3 Report writing competence;</li> <li>4.4 Teamwork skills;</li> <li>4.5 Customer communication service skills;</li> <li>4.6 Competence of using AMMs.</li> </ol>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Development of aircraft maintenance plans is carried out in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Policies and requirements of developing schemes;</li> <li>2. Scopes of maintenance responsibility;</li> <li>3. Occupational safety and health;</li> <li>4. Scheme management procedures.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT MANAGEMENT OF AERONAUTICAL MAINTENANCE ENGINEERING	<b>DUTY NO.</b>	803
<b>TASK TITLE</b>	CONDUCT AERONAUTICAL MAINTENANCE PERSONNEL MANAGEMENT AND EVALUATION	<b>TASK NO.</b>	8032
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct aeronautical maintenance personnel management and evaluation in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Maintenance planning offices;</li> <li>2. Electronic office equipment;</li> <li>3. Technical document of maintenance.</li> <li>4. Safety gear</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Establish airworthiness maintenance requirements for the latest version of the aircraft;</li> <li>2. Consult the latest regulations of the TCAA;</li> <li>3. Comply with the regulations of continuous airworthiness maintenance schemes;</li> <li>4. Review the airworthiness standards of the aircraft;</li> <li>5. Review the requirements of airworthiness restriction projects of the aircraft structure;</li> <li>6. Review relevant maintenance requirements for manufacturers of engines, auxiliary power units and replacement parts;</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Comply with the regulatory requirements of the TCAA;</li> <li>1.2 Comply with the usage limits of the aircraft;</li> <li>1.3 Coordinate resources of all parties and control the maintenance costs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Aviation rules and regulations;</li> <li>2.2 Principles of airworthiness limitation;</li> <li>2.3 Maintenance manuals and procedures.</li> </ol> <p><b>3.0 Theories</b></p>		



<p>7. Assign responsibilities and duties to maintenance personnel;</p> <p>8. Establish interdepartmental communication channels;</p> <p>9. Promote workplace communication between maintenance personnel;</p> <p>10. Conduct on-the-job training for junior staff</p> <p>11. Observe health, occupational and environmental safety rules and regulations.</p>	<p>The person performing this task must be able to explain the following:</p> <p>3.1 Workflows of maintenance;</p> <p>3.2 Types of the airworthiness restriction projects of the aircraft;</p> <p>3.3 Methods of maintenance regulation interpretation;</p> <p>3.4 Methods of maintenance manual interpretation;</p> <p>3.5 Knowledge of maintenance procedures and criterion;</p> <p>3.6 Query methods of maintenance manuals.</p> <p><b>4.0 Essential Skills</b></p> <p>4.1 Technical document reading competence;</p> <p>4.2 Computer application competence;</p> <p>4.3 Report writing competence;</p> <p>4.4 Teamwork skills;</p> <p>4.5 Customer communication service skills;</p> <p>4.6 AMM inquiry skills.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Management and evaluation of aeronautical maintenance personnel are performed in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Policies and requirements of developing schemes;</li> <li>2. Scopes of maintenance responsibility;</li> <li>3. Occupational safety and health;</li> <li>4. Scheme management procedures.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT MANAGEMENT OF AERONAUTICAL MAINTENANCE ENGINEERING	<b>DUTY NO.</b>	803
<b>TASK TITLE</b>	MANAGE AND EVALUATE PLANT FACILITIES/TOOLS AND DEVICES/EQUIPMENT	<b>TASK NO.</b>	8033
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to manage and evaluate plant facilities/tools and devices/equipment in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Maintenance planning offices;</li> <li>2. Electronic office equipment;</li> <li>3. Technical document of maintenance;</li> <li>4. Tools and equipment;</li> <li>5. Aviation materials and consumables;</li> <li>6. Transportation equipment.</li> <li>7. Safety gear</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Review the regulations of TCAA;</li> <li>2. Comply with the regulations of continuous airworthiness maintenance schemes;</li> <li>3. Review plant facility requirements;</li> <li>4. Review the maintenance tools and equipment requirements of the aircraft;</li> <li>5. Review relevant maintenance requirements of aviation equipment;</li> <li>6. Review the above equipment, tools and other documents;</li> <li>7. Assign responsibilities and duties to maintenance personnel;</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Comply with the regulatory requirements of the TCAA;</li> <li>1.2 Comply with the usage limits of the aircraft;</li> <li>1.3 Coordinate resources of all parties and control the maintenance costs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Aviation rules and regulations;</li> <li>2.2 Principles of airworthiness limitation.</li> </ol>		

<p>8. Establish interdepartmental communication channels;</p> <p>9. Promote workplace communication between maintenance personnel;</p> <p>10. Conduct on-the-job training for junior staff;</p> <p>11. Establish tools and equipment database;</p> <p>12. Establish tools and equipment movement management system.</p> <p>13. Observe health, occupational and environmental safety rules and regulations.</p>	<p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <p>3.1 Process flows of maintenance;</p> <p>3.2 Types of the airworthiness restriction projects of the aircraft;</p> <p>3.3 Methods of maintenance regulation interpretation;</p> <p>3.4 Query methods of maintenance manuals.</p> <p><b>4.0 Essential Skills</b></p> <p>4.1 Technical document reading competence;</p> <p>4.2 Computer application competence;</p> <p>4.3 Report writing competence;</p> <p>4.4 Teamwork skills;</p> <p>4.5 Customer communication service skills;</p> <p>4.6 AMM inquiry skills.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Management and evaluation of plant facilities/tools and devices/equipment is carried out in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <p>1. Policies and requirements of developing schemes;</p> <p>2. Scopes of maintenance responsibility;</p> <p>3. Occupational safety and health;</p> <p>4. Scheme management procedures.</p>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT MANAGEMENT OF AERONAUTICAL MAINTENANCE ENGINEERING	<b>DUTY NO.</b>	803
<b>TASK TITLE</b>	IMPLEMENT PREPARATION OF MAINTENANCE SCHEMES	<b>TASK NO.</b>	8034
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to implement preparation of maintenance schemes in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Maintenance planning offices;</li> <li>2. Electronic office equipment;</li> <li>3. Technical document of maintenance.</li> <li>4. Safety gear</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Consult the latest version of the maintenance review reports of the aircraft;</li> <li>2. Review all the applicable airworthiness directives and service announcement of the aircraft;</li> <li>3. Review the requirements of airworthiness restriction projects of the aircraft structure;</li> <li>4. Review relevant maintenance requirements for manufacturers of engines, auxiliary power units and replacement parts;</li> <li>5. Review the historical usage status and projected service characteristics of the aircraft;</li> <li>6. Review the competence of maintenance engineering management of the aircraft operators;</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Review the resources of all parties and develop maintenance schemes.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Aircraft using principles;</li> <li>2.2 Aircraft initial airworthiness criterion;</li> <li>2.3 Aviation rules and regulations.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Preparation methods of maintenance schemes;</li> <li>3.2 Approval processes of maintenance schemes;</li> </ol>	

<p>7. Review the policies and requirements of the TCAA on maintenance schemes;</p> <p>8. Organize the preparation, adjustment and optimization of maintenance schemes.</p> <p>9. Observe health, occupational and environmental safety rules and regulations.</p>	<p>3.3 Airworthiness management and airworthiness limitation types;</p> <p>3.4 Using methods of aircraft maintenance documents;</p> <p>3.5 Human factors in aeronautical maintenance.</p> <p><b>4.0 Essential Skills</b></p> <p>4.1 Technical document reading competence;</p> <p>4.2 Computer application competence;</p> <p>4.3 Report writing competence;</p> <p>4.4 Teamwork skills;</p> <p>4.5 Customer communication service skills.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Maintenance schemes for various aircraft are prepared in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Policies and requirements of developing schemes;</li> <li>2. Scopes of maintenance responsibility;</li> <li>3. Occupational safety and health;</li> <li>4. Scheme management procedures.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT MANAGEMENT OF AERONAUTICAL MAINTENANCE ENGINEERING	<b>DUTY NO.</b>	803
<b>TASK TITLE</b>	PERFORM RELIABILITY MANAGEMENT AND SCHEME DEVELOPMENT	<b>TASK NO.</b>	8035
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to perform reliability management and scheme development in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Maintenance planning offices;</li> <li>2. Electronic office equipment;</li> <li>3. Technical document of maintenance.</li> <li>4. Safety gear</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Review the relevant policies and requirements of the related authorities;</li> <li>2. Establish aircraft reliability management mechanisms, including: <ol style="list-style-type: none"> <li>a. Collect system data;</li> <li>b. Analyze system data;</li> <li>c. Conduct systematic corrective measures;</li> <li>d. Conduct performance standard statistics;</li> <li>e. Display and report data;</li> <li>f. Adjust maintenance interval.</li> </ol> </li> <li>3. Develop and manage reliability schemes.</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Analyze and adjust resource data;</li> <li>1.2 Investigate and review related engineering of aircraft and reliability.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Environmental impact on the aircraft operation;</li> <li>2.2 Integration of system data;</li> <li>2.3 Reliability level analysis, investigation and correction.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p>		

<p>4. Observe health, occupational and environmental safety rules and regulations.</p>	<p>3.1 Data acquisition methods;  3.2 Data statistic and analysis methods;  3.3 Engineering investigation methods;  3.4 Airworthiness limitation types.</p> <p><b>4.0 Essential Skills</b></p> <p>4.1 Technical document reading competence;  4.2 Computer application competence;  4.3 Report writing competence;  4.4 Teamwork skills;  4.5 Customer communication service skills.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>RELIABILITY MANAGEMENT AND SCHEME DEVELOPMENT are conducted in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Policies and requirements of developing schemes;</li> <li>2. Scopes of maintenance responsibility;</li> <li>3. Occupational safety and health;</li> <li>4. Scheme management procedures.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT MANAGEMENT OF AERONAUTICAL MAINTENANCE ENGINEERING	<b>DUTY NO.</b>	803
<b>TASK TITLE</b>	CONDUCT QUALITY CONTROL AND EVALUATION OF AERONAUTICAL MAINTENANCE	<b>TASK NO.</b>	8036
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct quality control and evaluation of aeronautical maintenance in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Maintenance planning offices;</li> <li>2. Electronic office equipment;</li> <li>3. Technical document of maintenance.</li> <li>4. Safety gear</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Review airworthiness requirements of maintenance for the latest version of the aircraft;</li> <li>2. Review the regulations of TCAA;</li> <li>3. Review the airworthiness standards of the aircraft;</li> <li>4. Review maintenance quality;</li> <li>5. Investigate maintenance quality;</li> <li>6. Manage maintenance safety;</li> <li>7. Assign suitable responsibilities and duties to relevant personnel;</li> <li>8. Develop evaluation schemes of maintenance quality;</li> <li>9. Organize the supervision and implementation of maintenance quality;</li> <li>10. Organize relevant meetings to evaluate the report results.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Develop, evaluate, supervise, and review the maintenance quality;</li> <li>1.2 Manage maintenance teams.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Management of maintenance teams;</li> <li>2.2 Control of maintenance safety.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Workflows of managers;</li> </ol>	



<p>11. Observe health, occupational and environmental safety rules and regulations.</p>	<p>3.2 Aircraft airworthiness criterion; 3.3 Procedures and methods of maintenance standards.</p> <p><b>4.0 Essential Skills</b></p> <p>4.1 Technical document reading competence; 4.2 Computer application competence; 4.3 Report writing competence; 4.4 Teamwork skills; 4.5 Supervisory skills.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>QUALITY CONTROL AND EVALUATION OF AERONAUTICAL MAINTENANCE are conducted in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Policies and requirements of developing schemes;</li> <li>2. Scopes of maintenance responsibility;</li> <li>3. Occupational safety and health;</li> <li>4. Scheme management procedures.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT MANAGEMENT OF AERONAUTICAL MAINTENANCE ENGINEERING	<b>DUTY NO.</b>	803
<b>TASK TITLE</b>	CARRY OUT AERONAUTICAL MAINTENANCE COST CONTROL	<b>TASK NO.</b>	8037
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to carry out aeronautical maintenance cost control in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Maintenance planning offices;</li> <li>2. Electronic office equipment;</li> <li>3. Technical document of maintenance;</li> <li>4. Tools and equipment;</li> <li>5. Aviation materials and consumables;</li> <li>6. Transportation equipment.</li> <li>7. Safety gear</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Review the regulations of TCAA;</li> <li>2. Comply with the regulations of continuous airworthiness maintenance schemes;</li> <li>3. Review the planned maintenance resources;</li> <li>4. Conduct statistics and monitoring of the usage status of aircraft;</li> <li>5. Review the requirements of airworthiness restriction projects of the aircraft structure;</li> <li>6. Review relevant maintenance requirements for companies of engines, auxiliary power units and parts manufacturing;</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Comply with the regulatory requirements of the TCAA;</li> <li>1.2 Comply with the usage limits of the aircraft;</li> <li>1.3 Coordinate resources of all parties and control the maintenance costs.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Aviation rules and regulations;</li> <li>2.2 Aircraft initial airworthiness criterion;</li> <li>2.3 Aviation rules and regulations.</li> </ol>	

<p>7. Review the status of equipment, devices, tools and documents;</p> <p>8. Assign suitable responsibilities and duties to relevant personnel;</p> <p>9. Communicate with and coordinate interactions between relevant departments to promote the development and implementation of work.</p> <p>10. Observe health, occupational and environmental safety rules and regulations.</p>	<p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <p>3.1 Workflows of maintenance;</p> <p>3.2 Types of the airworthiness restriction projects of the aircraft;</p> <p>3.3 Methods of maintenance regulation interpretation;</p> <p>3.4 Methods of maintenance manual interpretation;</p> <p>3.5 Principles of maintenance cost control.</p> <p><b>4.0 Essential Skills</b></p> <p>4.1 Technical document reading competence;</p> <p>4.2 Computer application competence;</p> <p>4.3 Report writing competence;</p> <p>4.4 Teamwork skills;</p> <p>4.5 Customer communication service skills;</p> <p>4.6 AMM inquiry skills.</p>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>AERONAUTICAL MAINTENANCE COST CONTROL is conducted in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Policies and requirements of developing schemes;</li> <li>2. Scopes of maintenance responsibility;</li> <li>3. Occupational safety and health;</li> <li>4. Scheme management procedures.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CONDUCT FAULT DIAGNOSIS AND SYSTEM RELIABILITY ANALYSIS	<b>DUTY NO.</b>	804
<b>TASK TITLE</b>	CONDUCT FAULT DIAGNOSIS AND MAINTENANCE OF ELECTRONIC COMPONENTS	<b>TASK NO.</b>	8041
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct fault diagnosis and maintenance of aircraft electronic components in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <p><b>Equipment and tools:</b></p> <ol style="list-style-type: none"> <li>1. Special test benches and test tools of integrated circuit;</li> <li>2. Personal protective equipment;</li> <li>3. Computers with accessories</li> <li>4. Electronics technician's complete tool kit;</li> <li>4. Digital multimeters;</li> <li>5. Oscilloscopes;</li> <li>6. Heat guns;</li> <li>7. Anti-static wrist straps;</li> <li>8. Soldering guns;</li> <li>9. Crimping tools and connector pick-up and delivery tools;</li> <li>10. Safety gear;</li> <li>11. Work bench.</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Resistors, capacitors and other electronic components;</li> <li>2. Contact cleaners;</li> <li>3. Contact enhancers;</li> <li>4. Electrical jointing;</li> <li>5. Wires;</li> <li>6. Welding materials;</li> <li>7. Heat shrinkable sleeves;</li> <li>8. Sealants and solvents.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			

<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>
<p>The person performing this task must be able to do the following:</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Assign responsibilities and duties to maintenance personnel;</li> <li>4. Develop fault diagnosis and maintenance plans for aircraft electronic components;</li> <li>5. Organize the implementation of fault diagnosis and isolation maintenance of aircraft electronic components;</li> <li>6. Organize team members to prepare for production;</li> <li>7. Promote the conduct and implementation of work;</li> <li>8. Evaluate results;</li> <li>9. Establish an effective incentive mechanism;</li> <li>10. Prepare maintenance budget;</li> <li>11. Control maintenance costs;</li> <li>12. Conduct fault diagnosis and maintenance of the following aircraft electronic components:               <ol style="list-style-type: none"> <li>a. Connectors switch capacitors and other electronic components;</li> <li>b. Integrated circuit modules.</li> </ol> </li> <li>13. Isolate faults according to detected states;</li> <li>14. Check for normality after fault isolation;</li> <li>15. Analyze the principles of faults;</li> <li>16. Query the connection schematic diagrams of aircraft electronic circuits;</li> <li>17. Analyze aircraft electronic components that may have faults;</li> <li>18. Replace faulty electronic components or assemblies;</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Perform fault detection of aircraft electronic components;</li> <li>1.2 Specify the fault maintenance plans of aircraft electronic components.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Measurement principles of component performance indicators;</li> <li>2.2 Working principles of control components.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 Identification mode of electronic components;</li> <li>3.2 Measurement methods for electronic components.</li> </ol> <p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Computer skills;</li> <li>4.2 Critical thinking;</li> <li>4.3 Problem-solving competence;</li> <li>4.4 Stress management;</li> <li>4.5 Teamwork;</li> <li>4.6 Communication skills;</li> <li>4.7 Safety responsibility consciousness.</li> </ol>

<p>19. Perform relevant functional tests.</p> <p>20. Observe health, occupational and environmental safety rules and regulations.</p>	
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Fault diagnosis and maintenance of electronic components are conducted in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational safety and health.</li> </ol>

<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CONDUCT FAULT DIAGNOSIS AND SYSTEM RELIABILITY ANALYSIS	<b>DUTY NO.</b>	804
<b>TASK TITLE</b>	PERFORM INTEGRATED FAULT TRACING AND DIAGNOSIS OF AIRBORNE ELECTRONIC CIRCUITS	<b>TASK NO.</b>	8042
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to perform integrated fault tracing and diagnosis of airborne electronic circuits in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Maintenance documents;</li> <li>2. Electronics technician's complete tool kit</li> <li>3. Computer with accessories;</li> <li>4. Aviation materials and consumables;</li> <li>5. Transportation equipment;</li> <li>6. Safety gear;</li> <li>7. Work bench</li> <li>8. Multimeters</li> <li>9. Oscilloscope</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select the tools, equipment and safety gear;</li> <li>2. Observe health and safety regulations;</li> <li>3. Assign responsibilities and duties to maintenance personnel;</li> <li>4. Develop maintenance plans for integrated faults of aircraft electronic circuits;</li> <li>5. Organize the implementation of integrated fault analysis and the implementation of isolation maintenance of aircraft electronic circuits;</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Detect the faults of electronic circuits;</li> <li>1.2 Query the connection schematic diagrams of aircraft electronic circuits;</li> <li>1.3 Analyze the possible locations of the fault points on the aircraft electronic circuits.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p>	

<ol style="list-style-type: none"> <li>6. Organize team members to prepare for production;</li> <li>7. Promote the conduct and implementation of work;</li> <li>8. Establish an effective incentive mechanism;</li> <li>9. Control maintenance costs;</li> <li>10. Design the fault state classifier methods for fault diagnosis of analog circuits, including but not limited to the following detection methods: <ol style="list-style-type: none"> <li>a. Dictionary methods of electronic circuit faults;</li> <li>b. Electronic circuits based on neural networks.</li> </ol> </li> <li>11. Isolate faults according to detected states;</li> <li>12. Check for normality after fault isolation;</li> <li>13. Analyze the principles of faults;</li> <li>14. Query the connection schematic diagrams of aircraft electronic circuits;</li> <li>15. Analyze the possible locations of the fault points on the aircraft electronic circuits;</li> <li>16. Conduct circuit measurement;</li> <li>17. Follow safety precautions for circuit construction.</li> <li>18. Observe health, occupational and environmental safety rules and regulations.</li> </ol>	<ol style="list-style-type: none"> <li>2.1 Working principles of aircraft electronic circuits;</li> <li>2.2 Using principles of manuals.</li> </ol> <p><b>3.0 Theories</b></p> <p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 The fault diagnosis methods of aircraft electrical circuits;</li> <li>3.2 The methods of electronic circuit measurement.</li> </ol> <p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Computer skills;</li> <li>4.2 Critical thinking;</li> <li>4.3 Problem-solving competence;</li> <li>4.4 Stress management;</li> <li>4.5 Teamwork;</li> <li>4.6 Communication skills;</li> <li>4.7 Safety responsibility consciousness.</li> </ol>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Fault diagnosis and maintenance of airborne electronic circuits are conducted in accordance with approved technical specifications and procedures.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Occupational safety and health.</li> </ol>



<b>OCCUPATION</b>	AVIONICS MAINTENANCE ENGINEER	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CONDUCT FAULT DIAGNOSIS AND SYSTEM RELIABILITY ANALYSIS	<b>DUTY NO.</b>	804
<b>TASK TITLE</b>	CARRY OUT INTEGRATED FAULT TRACING AND DIAGNOSIS OF AIRBORNE ELECTRICAL CIRCUITS	<b>TASK NO.</b>	8043
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to conduct integrated fault tracing and diagnosis of airborne electrical circuits in accordance with approved technical specifications and procedures.		
<b>RANGE STATEMENT</b>	<p>The task can be performed in an AMO under the supervision of certified senior aircraft maintenance engineers or release engineers.</p> <p>The equipment and tools to be used include:</p> <ol style="list-style-type: none"> <li>1. Maintenance documents</li> <li>2. Computers with accessories;</li> <li>3. Electronics technician's complete tool kit;</li> <li>4. Safety gear;</li> <li>5. Aviation materials and consumables;</li> <li>6. Work bench.</li> </ol>		
<b>EVIDENCE REQUIREMENT</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Select tools, equipment and safety gear;</li> <li>2. Follow health and safety precautions when performing the task;</li> <li>3. Assign responsibilities and duties to maintenance personnel;</li> <li>4. Develop maintenance plans for integrated faults of aircraft electrical circuits;</li> <li>5. Organize the implementation of integrated fault analysis and the implementation of isolation maintenance of aircraft electrical circuits;</li> <li>6. Organize team members for maintenance work;</li> <li>7. Promote the conduct and implementation of work;</li> <li>8. Evaluate results;</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0 Methods</b></p> <p>The person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1 Detect the faults of electrical circuits;</li> <li>1.2 Query the connection schematic diagrams of the aircraft electrical cable;</li> <li>1.3 Analyze the possible locations of the fault points on the aircraft electrical circuits.</li> </ol> <p><b>2.0 Principles</b></p> <p>The person performing this task must be able to explain the following principles:</p> <ol style="list-style-type: none"> <li>2.1 Connection principles of aircraft electrical circuits;</li> <li>2.2 Using principles of manuals.</li> </ol> <p><b>3.0 Theories</b></p>	

<p>9. Establish an effective incentive mechanism;</p> <p>10. Control maintenance costs;</p> <p>11. Conduct comprehensive fault detection of aircraft electrical circuits, including but not limited to the following methods:</p> <ol style="list-style-type: none"> <li>a. Manual inquiry methods;</li> <li>b. Backwards methods for aircraft electrical circuit fault detection;</li> <li>c. Pulse reflection methods for aircraft cable fault location.</li> </ol> <p>12. Isolate faults according to detected states;</p> <p>13. Check for normality after fault isolation;</p> <p>14. Analyze the principles of faults;</p> <p>15. Query the connection schematic diagrams of the aircraft electrical cable;</p> <p>16. Analyze the possible locations of the fault points on the aircraft electrical circuits;</p> <p>17. Observe health, occupational and environmental safety rules and regulations.</p>	<p>The person performing this task must be able to explain the following:</p> <ol style="list-style-type: none"> <li>3.1 The fault diagnosis methods of aircraft electrical circuits;</li> <li>3.2 The methods of electrical circuit measurement;</li> <li>3.3 The layout of aircraft electrical circuits.</li> </ol> <p><b>4.0 Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1 Teamwork skills;</li> <li>4.2 Communication skills;</li> <li>4.3 Fault analysis and isolation competence;</li> <li>4.4 Report writing competence;</li> <li>4.5 Standard circuit construction competence;</li> <li>4.6 Standard mechanical construction competence;</li> <li>4.7 Effective work execution competence.</li> </ol>
<p><b>DESCRIPTION OF THE END PRODUCT / SERVICE</b></p>	<p>Faults in aircraft electrical circuits are comprehensively diagnosed and maintained in accordance with the latest procedures and policy requirements approved by the TCAA or the institution responsible for the aircraft model design, to ensure safe delivery for use.</p>
<p><b>CIRCUMSTANTIAL KNOWLEDGE</b></p>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Safety operation of equipment and tools;</li> <li>2. Circuit inspection and testing;</li> <li>3. Troubleshooting and diagnosis;</li> <li>4. Data recording and analysis;</li> <li>5. Connections and plugging/unplugging;</li> <li>6. Maintenance and replacement;</li> <li>7. Compliance with standards and procedures;</li> <li>8. Occupational safety and health.</li> </ol>

**TABLE 1: DACUM CHARTS FOR AVIONICS MAINTENANCE ENGINEER - NTA 8**

DUTIES	TASKS	ENABLERS
<p>1.0 Conduct analysis and isolation of faults in aircraft radar systems</p>	<p>1.1 Perform management of aircraft radar system maintenance.</p>	<p><b>General skills and knowledge</b></p> <ul style="list-style-type: none"> <li>• Aerophysics</li> <li>• Aviation mathematics</li> <li>• Aerodynamics</li> <li>• Electronic fundamentals</li> <li>• Electrical fundamentals</li> <li>• Digital technologies</li> <li>• Aircraft Maintenance Practices</li> <li>• Standard circuit construction</li> <li>• Use of tools and equipment</li> <li>• Human factors</li> <li>• Civil aviation regulations</li> <li>• Principles of radar</li> <li>• Use of AMMs</li> <li>• Maintenance schemes</li> </ul> <p><b>Tools and equipment</b></p> <ul style="list-style-type: none"> <li>• Personal protective equipment</li> <li>• Toolboxes</li> <li>• Computers</li> <li>• External power supplies</li> <li>• Crimping tools</li> <li>• Multimeters</li> <li>• Oscilloscopes</li> <li>• Heat guns</li> <li>• Anti-static wrist straps</li> <li>• Welding guns</li> <li>• Connector pick-up and delivery tools</li> <li>• Meteorological radar testors</li> <li>• Radio altimeter testers</li> <li>• Transponder testers for air traffic control</li> <li>• Test devices of transponder distance measuring instrument</li> </ul>
	<p>1.2 Carry out test of the aircraft main radar systems.</p>	
	<p>1.3 Conduct fault analysis and isolation of aircraft main radar systems.</p>	
	<p>1.4 Implement testing of the aircraft secondary radar systems.</p>	
	<p>1.5 Perform analysis and isolation of faults in aircraft radar systems.</p>	
	<p>1.6 Carry out Integrated fault tracing and diagnosis of aircraft radar systems.</p>	

DUTIES	TASKS	ENABLERS
		<ul style="list-style-type: none"> <li>• TCAS system tests</li> </ul> <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• Contact cleaners</li> <li>• Locking wires</li> <li>• Lacing</li> <li>• Contact enhancers</li> <li>• Electrical jointing</li> <li>• Wires</li> <li>• Welding materials</li> <li>• Heat shrinkable sleeves</li> <li>• Solvent</li> <li>• Sealant</li> </ul> <p><b>Requirements for employees</b></p> <ul style="list-style-type: none"> <li>• Data analysis competence</li> <li>• Engineering technical report writing competence</li> <li>• Fault analysis and isolation competence</li> <li>• Problem-solving competence</li> <li>• Stress management</li> <li>• Teamwork consciousness</li> <li>• Communication skills</li> <li>• Safety responsibility consciousness</li> </ul>
2.0 Perform analysis and isolation of faults in the aircraft AFCS	<p>2.1 Perform maintenance management of the aircraft AFCS.</p> <p>2.2 Implement performance tests of the aircraft automatic driving/flight guidance systems.</p> <p>2.3 Conduct fault analysis and isolation of aircraft automatic driving/flight guidance systems.</p>	<p><b>General skills and knowledge</b></p> <ul style="list-style-type: none"> <li>• Aerophysics</li> <li>• Aviation mathematics</li> <li>• Electronic fundamentals</li> <li>• Electrical fundamentals</li> <li>• Digital technologies</li> <li>• Aircraft Maintenance Practices</li> <li>• Standard circuit construction</li> <li>• Use of tools and equipment</li> <li>• Human factors</li> </ul>

DUTIES	TASKS	ENABLERS
	2.4 Carry out performance tests of the aircraft autothrottle systems.	<ul style="list-style-type: none"> <li>• Civil aviation regulations</li> <li>• Aircraft AFCS</li> <li>• Use of AMMs</li> </ul>
	2.5 Perform fault analysis and isolation of aircraft autothrottle systems.	<ul style="list-style-type: none"> <li>• Maintenance schemes</li> </ul>
	2.6 Implement performance tests of the aircraft flight stability augmentation systems.	<p><b>Tools and equipment</b></p> <ul style="list-style-type: none"> <li>• Personal protective equipment</li> <li>• Test equipment of aircraft control guidance computers</li> <li>• Test equipment of autothrottle computers</li> </ul>
	2.7 Conduct fault analysis and isolation of aircraft flight stability augmentation systems.	<ul style="list-style-type: none"> <li>• Test equipment of yaw damping computers</li> <li>• Test equipment of aircraft stability augmentation computers</li> </ul>
	2.8 Carry out performance tests of the aircraft automatic trimming systems.	<ul style="list-style-type: none"> <li>• Voltage-stabilized power supplies</li> <li>• Oscilloscopes</li> <li>• Multimeters</li> </ul>
	2.9 Perform fault analysis and isolation of aircraft automatic trimming systems.	<ul style="list-style-type: none"> <li>• Heat guns</li> <li>• Anti-static wrist straps</li> <li>• Welding guns</li> </ul>
	2.10 Implement analysis of the laws of aircraft automatic driving.	<ul style="list-style-type: none"> <li>• Crimping tools and connector pick-up and delivery tools</li> <li>• Torque wrenches</li> </ul>
	2.11 Conduct design of the laws of aircraft automatic driving.	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• Contact cleaners</li> </ul>
	2.12 Carry out integrated fault detection and diagnosis of aircraft AFCS.	<ul style="list-style-type: none"> <li>• Contact enhancers</li> <li>• Electrical jointing</li> <li>• Wires</li> <li>• Welding materials</li> <li>• Heat shrinkable sleeves</li> <li>• Air filters</li> </ul> <p><b>Requirements for employees</b></p> <ul style="list-style-type: none"> <li>• Data analysis competence</li> </ul>

DUTIES	TASKS	ENABLERS
		<ul style="list-style-type: none"> <li>• Engineering technical report writing competence</li> <li>• Fault analysis and isolation competence</li> <li>• Problem-solving competence</li> <li>• Stress management</li> <li>• Teamwork consciousness</li> <li>• Communication skills</li> <li>• Safety responsibility consciousness</li> </ul>
<p>3.0 Carry out Management of Aeronautical Maintenance Engineering</p>	<p>3.1 Develop aircraft maintenance plans and component maintenance plans.</p>	<p><b>General skills and knowledge</b></p> <ul style="list-style-type: none"> <li>• Airworthiness standards of aircraft</li> <li>• Human factors</li> <li>• Civil aviation regulations</li> <li>• Aeronautical maintenance engineering management</li> <li>• Data collection, statistics and analysis</li> <li>• Engineering investigation</li> <li>• Use of AMMs</li> <li>• Maintenance schemes</li> </ul> <p><b>Facilities</b></p> <ul style="list-style-type: none"> <li>• Maintenance plan office</li> <li>• Electronic office equipment</li> <li>• Technical document of maintenance</li> <li>• Tools, aviation materials and consumables</li> <li>• Transportation equipment</li> </ul> <p><b>Requirements for employees</b></p> <ul style="list-style-type: none"> <li>• Technical document reading competence</li> <li>• Computer application competence</li> <li>• Technical reports writing competence</li> <li>• Teamwork consciousness</li> <li>• Communication skills</li> </ul>
	<p>3.2 Conduct aeronautical maintenance personnel management and evaluation.</p>	
	<p>3.3 Manage and evaluate plant facilities/tools and devices/equipment.</p>	
	<p>3.4 Implement preparation of maintenance schemes.</p>	
	<p>3.5 Perform reliability management and scheme development.</p>	
	<p>3.6 Conduct quality control and evaluation of aeronautical maintenance.</p>	
	<p>3.7 Carry out aeronautical maintenance cost control.</p>	

DUTIES	TASKS	ENABLERS
		<ul style="list-style-type: none"> <li>• Safety responsibility consciousness</li> </ul>
<p>4.0 Conduct fault diagnosis and system reliability analysis</p>	<p>4.1 Conduct fault diagnosis and maintenance of electronic components.</p> <hr/> <p>4.2 Perform integrated fault detection and diagnosis of airborne electronic circuits.</p> <hr/> <p>4.3 Carry out integrated fault detection and diagnosis of airborne electrical circuits.</p>	<p><b>General skills and knowledge</b></p> <ul style="list-style-type: none"> <li>• Aerophysics</li> <li>• Electronic fundamentals</li> <li>• Electrical fundamentals</li> <li>• Digital technologies</li> <li>• Fault process modeling and application</li> <li>• Fault isolation and fault diagnosis</li> <li>• Logical diagnosis and application</li> <li>• Use of tools and equipment</li> <li>• Human factors</li> <li>• Civil aviation regulations</li> <li>• Use of AMMs</li> <li>• Aircraft maintenance schemes</li> </ul> <p><b>Tools and equipment</b></p> <ul style="list-style-type: none"> <li>• Digital multimeters</li> <li>• Special test benches and test tools of integrated circuit</li> <li>• Gyro test platforms</li> <li>• Heat guns</li> <li>• Anti-static wrist straps</li> <li>• Welding guns</li> <li>• Crimping tools and connector pick-up and delivery tools</li> </ul> <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• Components such as resistors, capacitors, diodes and triodes</li> <li>• Contact enhancers</li> <li>• Electrical jointing</li> <li>• Wires</li> <li>• Welding materials</li> <li>• Heat shrinkable sleeves</li> <li>• Air filters</li> </ul>

<b>DUTIES</b>	<b>TASKS</b>	<b>ENABLERS</b>
		<p data-bbox="903 219 1302 255"><b>Requirements for employees</b></p> <ul data-bbox="903 268 1430 642" style="list-style-type: none"> <li data-bbox="903 268 1302 304">• Data analysis competence</li> <li data-bbox="903 318 1430 398">• Engineering technical report writing competence</li> <li data-bbox="903 412 1347 448">• Problem-solving competence</li> <li data-bbox="903 461 1219 497">• Stress management</li> <li data-bbox="903 510 1295 546">• Teamwork consciousness</li> <li data-bbox="903 560 1251 595">• Communication skills</li> <li data-bbox="903 609 1430 645">• Safety responsibility consciousness</li> </ul>