

## FUEL TANKS - CLEANING/PAINTING

*EFFECTIVITY: ALL*

### 1. General

- A. This section gives the procedures necessary to apply the antibiological compound to get the antifungus coating protection to the wing integral fuel-tanks, the procedures necessary for decontamination of integral fuel tanks, and procedures for periodical analysis for the presence of microorganisms in the tanks.
- B. The processes written here must be completed with many other procedures. Refer to the instructions given by the manufacturer for: surface preparation and handling, mixture, application, curing time, and other special details related to the properties of the product used.
- C. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	DESCRIPTION	EFFECTIVITY
28-11-00-300-801-A	FUEL-TANK ANTIBIOLOGICAL COATING - ALL APPLICATION PROCEDURES	
28-11-00-300-802-A	DECONTAMINATION OF INTEGRAL FUEL TANKS	ALL
28-11-00-300-803-A	PERIODICAL ANALYSIS FOR PRESENCE OF MICROORGANISMS IN THE TANKS	ALL
28-11-00-300-804-A	APPLY BIOCIDES PRODUCTS	ALL

TASK 28-11-00-300-801-A  
EFFECTIVITY: ALL

## 2. FUEL-TANK ANTIBIOLOGICAL COATING - APPLICATION PROCEDURES

### A. General

- (1) This task is applicable to the LH fuel tank and to the RH fuel tank.
- (2) You must always do this task after the integral-fuel-tank sealing procedure.
- (3) Refer to the List of Products Approved to be Used on the Aircraft ( [AMM MPP 20-30-05/200](#)).

### B. References

REFERENCE	DESIGNATION
<a href="#">AMM MPP 06-44-00/100</a>	- COMPONENT LOCATION
<a href="#">AMM MPP 20-30-05/200</a>	- MAINTENANCE PRACTICES
<a href="#">AMM MPP 28-00-00/200</a>	- MAINTENANCE PRACTICES
<a href="#">AMM TASK 20-40-02-910-801-A/200</a>	STATIC GROUNDING - STANDARD PRACTICES
<a href="#">AMM TASK 28-11-01-000-801-A/400</a>	FUEL-TANK ACCESS PANELS - REMOVAL
<a href="#">AMM TASK 28-11-01-000-802-A/400</a>	FUEL-TANK ACCESS PANELS - REMOVAL
<a href="#">AMM TASK 28-11-01-400-801-A/400</a>	FUEL-TANK ACCESS PANELS - INSTALLATION
<a href="#">AMM TASK 28-11-01-400-802-A/400</a>	FUEL-TANK ACCESS PANELS - INSTALLATION
CPM 51-14-00	-
CPM 51-21-04	-
SRM 51-20-01	-

### C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
531	531AB/531BB/531CB/531DB/531EZ	LH Fuel tank
541	541AB/541BB/541CB/541DB/541EB	LH Fuel tank
551	551AB	LH Fuel tank
631	631AB/631BB/631CB/631DB/631EZ	RH Fuel tank
641	641AB/641BB/641CB/641DB/641EB	RH Fuel tank
651	651AB	RH Fuel tank

### D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Suction Spray Gun "DE VILBISS"	To apply the antibiological compound	
Commercially available	NEO DERM Thickness measurer (Mitutoyo model 179)	To measure the coating thickness	
Commercially available	Oven or heat lamp	To make the curing time shorter	

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<i>ITEM</i>	<i>DESCRIPTION</i>	<i>PURPOSE</i>	<i>QTY</i>
Commercially available	Rubber gloves	Protection for the hands	
Commercially available	Safety goggles	Protection for the eyes	
Commercially available	Respirator mask	Not to breathe compound vapors	
Commercially available	Protection clothes	Protection for the skin	

**E. Auxiliary Items**

<i>ITEM</i>	<i>DESCRIPTION</i>	<i>PURPOSE</i>	<i>QTY</i>
Commercially available	Ladder	To get access to the upperwing skin	1
Commercially available	Soft (cotton), lint-free cloths	To clean the applicable area	AR
Commercially available	Filtering cloths	To filter the mixture compound	AR
Commercially available	Brush	To apply the antibiological compound	1
Commercially available	Ford glass	To measure the mixture viscosity	1
Commercially available	Polyethylene container	To prepare the mixture compound	2
Commercially available	Polyethylene spatula	To prepare the mixture compound	1
Locally available	Source of dry and filtered compressed air	To pressurize the suction spray gun	1

**F. Consumable Materials**

<i>SPECIFICATION (BRAND)</i>	<i>DESCRIPTION</i>	<i>QTY</i>
AMS-C-27725 type II	Antibiological compound (Integral fuel tank coating), base: 825X309, activator: 910-702, and reducer: 020-707 (DeSoto), or other approved compound	AR
TT-N-95, Type I or Type II	Solvent	AR
P-D-680, Type I	Solvent	AR
Commercially available	Sandpaper No. 180 to 320	AR

**G. Expandable Parts**

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	LH/RH Underwing and upperwing areas

I. Preparation

SUBTASK 841-002-A

**WARNING:** • BEFORE YOU HANDLE THE ANTIBIOLOGICAL COMPOUND, REFER TO THE SAFETY INSTRUCTIONS ON THE PRODUCT PACKAGE.

- PERSONS WHO USE THE CLEANING AND PAINTING PRODUCTS MUST USE INDIVIDUAL PROTECTIVE EQUIPMENT (CLOTHING, GOGGLES, GLOVES, AND RESPIRATOR MASK).
- DO NOT BREATHE THE VAPORS FROM THE CLEANING AND PAINTING PRODUCTS. INSTALL A FORCED VENTILATION SYSTEM WHEN YOU DO TASKS IN THE FUEL TANKS.
- IMMEDIATELY CLEAN, WITH A LARGE QUANTITY OF WATER AND SOAP, ALL CLEANING AND PAINTING PRODUCT WHICH TOUCHES YOUR SKIN. IF IT TOUCHES YOUR EYES, CLEAN THEM IMMEDIATELY WITH RUNNING WATER AND GET MEDICAL AID.
- IF THE PRODUCT IS BREATHED AND/OR GOES DOWN THE THROAT, GET MEDICAL AID IMMEDIATELY.
- THE CLEANING AND PAINTING PRODUCTS ARE FLAMMABLE AND VOLATILE. THESE MATERIALS MUST BE KEPT AND/OR APPLIED IN AREAS WITH A GOOD FLOW OF AIR, AWAY FROM HEAT SOURCES, SPARKS AND/OR FLAMES.

**CAUTION:** BEFORE YOU USE IT, MAKE SURE THAT THE SHELF LIFE OF THE ANTIBIOLOGICAL COMPOUND TO BE USED IS NOT EXPIRED AND THAT IT IS CORRECTLY STORED AS SPECIFIED ON THE PRODUCT PACKAGE.

- (1) Keep the aircraft grounded ( [AMM TASK 20-40-02-910-801-A/200](#)).
- (2) Put the ladder in the work area.
- (3) Remove these access panels ( [AMM MPP 06-44-00/100](#)) and ( [AMM TASK 28-11-01-000-801-A/400](#)) or ( [AMM TASK 28-11-01-000-802-A/400](#)), as applicable, to get access to the integral fuel tanks:
  - (a) LH fuel tank:
    - 531AB/531BB/531CB/531DB/531EZ/541AB/541BB/541CB/541DB/541EB/551AB.
  - (b) RH fuel tank:
    - 631AB/631BB/631CB/631DB/631EZ/641AB/641BB/641CB/641DB/641EB/651AB.
- (4) Prepare the coating as follows:

**NOTE:** The processes written here must be completed with many other procedures. Refer to the instructions given by the manufacturer.

- (a) Shake each container separately for 10 to 15 minutes before you mix the components.
- (b) Clean a polyethylene container with solvent, then put the base component in it.
- (c) Add the activator to the base component slowly, at a ratio of 1 part of activator for 4 parts of base component per volume.

**NOTE:**

- Shake the mixture constantly with a polyethylene spatula.
- Always add the activator to the base, and not the base to the activator.

- (d) Add the reducer to the mixture slowly, at the same volume as the base.

**NOTE:**

- If you apply the coating with a brush, you can use less than 4 parts of reducer per volume.
- Shake the mixture constantly to get the viscosity of 10 to 14 stokes, measured with the Ford cup No. 4, at a temperature of  $25 \pm 1^{\circ}\text{C}$ .
- If necessary, you can increase the volume of the reducer to as high as 50%, to make the coating application better.
- The time for the mixture to fully react is approximately 1 hour.
- Do not mix quantities already prepared with new quantities.
- The pot life at  $25^{\circ}\text{C}$  ( $77^{\circ}\text{F}$ ) and 50% relative humidity is 8 hours. This time is shorter at higher temperature and relative humidity conditions. Mix only the quantities that you will use in this period.

- (5) Filter the mixture before the application through an approved fabric filter.

**NOTE:**

- Do not mix products supplied by different manufacturers, to avoid problems of incompatibility in the liquid and drying phases.
- Prevent the contamination of this product by humidity or alcohol. Keep all containers closed while the components are not used.

J. Application Procedure  
*SUBTASK 370-002-A*

**WARNING:** BEFORE YOU DO THE TASK, OBEY THE SAFETY PRECAUTIONS GIVEN IN [AMM MPP 28-00-00/200](#) TO PREVENT INJURY TO PERSONS AND DAMAGE TO MATERIAL.

**CAUTION:** • DO NOT PUT THE REMAINING CLEANING MATERIAL BACK INTO THE ORIGINAL CONTAINERS TO PREVENT CONTAMINATION.

- DO NOT POUR THE CLEANING PRODUCT DIRECTLY ON THE SURFACE TO BE CLEANED.
- DO NOT PERMIT THE CLEANING PRODUCT TO EVAPORATE BEFORE IT IS DRIED WITH THE CLOTH.
- DO NOT PUT THE CLEANING CLOTH IN THE SOLVENT CONTAINER TO PREVENT THE SOLVENT CONTAMINATION.

(1) Prepare the surface as follows:

- Visually examine all sealant of the interior of the integral fuel tanks. Include in the inspection the sealing of rivets, frames, doublers and nut plates.
- If the sealant condition is not good, remove the sealant (SRM 51-20-01) and examine for corrosion. If necessary, remove the corrosion (CPM 51-14-00) and apply the Alodine coating (CPM 51-21-04).
- Seal again (SRM 51-20-01).
- Visually examine the coating of the interior of the integral fuel tank for scratches, or other type of damage.
- If necessary, sand the damaged area and adjacent area.
- Clean the area with a cloth soaked with solvent.
- If you can see the base metal, apply Alodine again (CPM 51-21-04).

(2) Apply the antibiological compound as follows:

- Immediately before the application of the antibiological coating, clean the area with a clean cloth soaked with solvent and, immediately after, dry with other clean and dry cloth.

**NOTE:** Do the cleaning procedure again as many times as necessary. Clean a small area at a time, not to permit the solvent to evaporate before the area is rubbed dry with a clean cloth.

- With the suction spray gun, apply two cross coatings all over the surface, with an air pressure between 20 and 60 psi and a distance between 25 and 30 cm from the surface. At ambient temperature (25°C) the time interval between the application of the coatings must be 25 minutes, minimum.

**NOTE:** • The processes written here must be completed with many other procedures. Refer to the instructions given by the manufacturer.

- The coating must be applied with the temperature between 13 and 35°C and the relative humidity of 20 to 85%.
- The coating must be applied within 16 hours after the processes of chemical conversion and/or chromic anodizing.

- Unless you are told to do differently, do not paint the holes with close tolerance ( $\leq IT7$ , according to ISO R 286).
  - Use a brush to apply the antibiological compound to the areas where the pressure spray gun cannot get, or where its use and immediate cleaning is not possible.
  - Wing assemblies previously treated with fuel sealant can be force dried in an oven at a work zone temperature of no less than  $43^{\circ}\text{C}$  ( $110^{\circ}\text{F}$ ) for no less than 3 hours.
  - For the minimum curing time of the antibiological compound, refer to the recommendations of the manufacturer of the antibiological compound.
  - If you will apply sealant after the application and cure of the antibiological compound, paint the sealant in contact with fuel with antibiological compound too.
  - According to ASTM D 1005, the thickness of the dry coating must be  $30 \pm 10 \mu\text{m}$ . The application of the two cross coatings mentioned above is enough to ensure that (the film formed by the two cross coatings is between 25 and  $43 \mu\text{m}$ ).
- (c) Clean the suction spray gun with solvent, immediately after the application of the antibiological compound.
- (d) If it is necessary to do the procedure again, sand the area and the adjacent area, clean it with solvent, dry the area with a dry and clean cloth, and apply the antibiological compound.
- (3) NOTE:
- Do the process as many times as necessary to get the specified measure.
  - Before the accelerate curing, let the coating to dry at ambient temperature for 2 hours (flash-off).
  - Temperatures below  $18^{\circ}\text{C}$  are not recommended for curing.
  - The tack-free condition occurs in 2 hours (max.) in normal conditions.

K. Follow-on

*SUBTASK 842-002-A*

- (1) Install these access panels ( [AMM MPP 06-44-00/100](#)) and ( [AMM TASK 28-11-01-400-801-A/400](#)) or ([AMM TASK 28-11-01-400-802-A/400](#)), as applicable:
- (a) LH fuel tank:
- 531AB/531BB/531CB/531DB/531EZ/541AB/541BB/541CB/541DB/541EB/551AB.
- (b) RH fuel tank:

- 631AB/631BB/631CB/631DB/631EZ/641AB/641BB/641CB/641DB/641EB/  
651AB.
- (2) Remove the ladder from the work area.
- (3) Put the aircraft back to its usual configuration ( [AMM TASK 20-40-02-910-801-A/200](#)).

TASK 28-11-00-300-802-A

*EFFECTIVITY: ALL*

### 3. DECONTAMINATION OF INTEGRAL FUEL TANKS

#### A. General

- (1) This task gives the procedures to do the decontamination of the fuel tanks.
- (2) This task is applicable to the LH fuel tank and to the RH fuel tank.
- (3) You must always do this task when you find contamination during an inspection.
- (4) Clean the fuel tank at the earliest opportunity after you confirm the presence of heavy contamination as defined in the ( [AMM TASK 28-11-00-300-803-A/700](#)). The longer the tank structure is exposed to microbiological contamination the greater the risk of corrosion. When you complete the cleaning process, do a detailed inspection of the fuel tanks for the presence of corrosion. If the corrosion is present, do the related repair as given in the Corrosion Prevention Manual (CPM 51-14-00) and apply Alodine (CPM 51-21-04). Apply the topcoating (AMS-C-27725) ( [AMM TASK 28-11-00-300-801-A/700](#)).
- (5) Two methods are recommended to remove the microbiological growth. If the contaminated area is small, wipers dampened with alcohol, a soft fibre brush or fresh water with detergent/ solvent is used to remove the growth. If the contaminated area is large (and manual removal is not practical), hot water pressure washing to remove the growth is used. If pressure water is used, remove all the in-tanks FQIS components, to prevent damage. It is recommended that you remove the fuel scavenge pumps and associated plumbing for bench cleaning. Take care and make sure that the fuel tank sealant is not damaged during the pressure washing operation.  
  
**NOTE:** The use of a detergent is not let with a hot water pressure washer.
- (6) Note that the cleaning procedure does not kill the microbiological contamination. The procedures are used to physically remove the debris left after heavy microbiological contamination, which would otherwise not be killed during a biocide treatment. After the cleaning operation, treat the fuel tanks with a biocide to kill any remaining micro-organisms.
- (7) The fuel tank structure can contain flow holes and drain tubes through the wing stringers. These drain passages let fuel and water to drain to the sump drains found at the lowest area of fuel tank. Keep the holes and tubes clear of unwanted material. If the flow-holes or drain tubes become blocked, the proper drainage of fuel and water will not occur.
- (8) After the decontamination, it is recommended that you keep the microorganism monitoring procedure ( [AMM TASK 28-11-00-300-803-A/700](#)).

#### B. References

REFERENCE	DESIGNATION
<a href="#">AMM MPP 06-44-00/100</a>	- COMPONENT LOCATION
<a href="#">AMM MPP 28-00-00/200</a>	- MAINTENANCE PRACTICES
<a href="#">AMM MPP 28-11-02/400</a>	- REMOVAL/INSTALLATION
<a href="#">AMM MPP 28-11-04/400</a>	- REMOVAL/INSTALLATION
<a href="#">AMM MPP 28-41-02/400</a>	- REMOVAL/INSTALLATION

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REFERENCE	DESIGNATION
AMM MPP 28-44-01/400	- REMOVAL/INSTALLATION
AMM TASK 20-40-02-910-801-A/200	STATIC GROUNDING - STANDARD PRACTICES
AMM TASK 28-11-00-300-801-A/700	FUEL-TANK ANTIBIOLOGICAL COATING - APPLICATION PROCEDURES
AMM TASK 28-11-00-300-803-A/700	PERIODICAL ANALYSIS FOR PRESENCE OF MICROORGANISMS IN THE TANKS
AMM TASK 28-11-01-000-801-A/400	FUEL-TANK ACCESS PANELS - REMOVAL
AMM TASK 28-11-01-000-802-A/400	FUEL-TANK ACCESS PANELS - REMOVAL
AMM TASK 28-11-01-400-801-A/400	FUEL-TANK ACCESS PANELS - INSTALLATION
AMM TASK 28-11-01-400-802-A/400	FUEL-TANK ACCESS PANELS - INSTALLATION
CPM 51-14-00	-
CPM 51-21-04	-
SRM 51-20-01	-
SRM 51-20-01 / 57-00-01	-
SRM 57-00-01	-

**C. Zones and Accesses**

ZONE	PANEL/DOOR	LOCATION
531	531AB/531BB/531CB/531DB/531EZ	LH Fuel tank
541	541AB/541BB/541CB/541DB/541EB	LH Fuel tank
551	551AB	LH Fuel tank
631	631AB/631BB/631CB/631DB/631EZ	RH Fuel tank
641	641AB/641BB/641CB/641DB/641EB	RH Fuel tank
651	651AB	RH Fuel tank

**D. Tools and Equipment**

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Rubber gloves	Protection for the hands	
Commercially available	Safety goggles	Protection for the eyes	
Commercially available	Full face mask	Not to breathe compound vapors	
Commercially available	Protection clothes	Protection for the skin	
Commercially available	Water - proof and heat protective hood	Protection for the skin	
Commercially available	Protective gear to protect against micro-biological growth	Protection for the skin	

**E. Auxiliary Items**

<i>ITEM</i>	<i>DESCRIPTION</i>	<i>PURPOSE</i>	<i>QTY</i>
Commercially available	Ladder	To get access to the upperwing skin	1
Commercially available	Four-inch nylon brushes cut to about one-half length (for stiffness)	To scrub the tanks	1
Commercially available	Cellulose sponge	To pick up all puddles	AR
Commercially available	Vacuum	To pick up all puddles	AR
Commercially available	Drums	To collect the fuel-water slop	1

**F. Consumable Materials**

<i>SPECIFICATION (BRAND)</i>	<i>DESCRIPTION</i>	<i>QTY</i>
MEP21-018	REMOVEGRAX MLS-12E	AR
AMS 1526B	ARDROX 6333A	AR
TT-I-735	ISOPROPYL ALCOHOL	AR
ASTM D740	SOLVENT METHYL ETHYL KETONE	

**G. Expandable Parts**

Not Applicable

**H. Persons Recommended**

<i>QTY</i>	<i>FUNCTION</i>	<i>PLACE</i>
1	Does the task	LH/RH Underwing and upperwing area

I. Preparation

SUBTASK 841-003-A

- WARNING:**
- BEFORE YOU HANDLE THE METHYL ALCOHOL AND THE DETERGENT, REFER TO THE SAFETY INSTRUCTIONS ON THE PRODUCT PACKAGE AND MSDS (MATERIAL SAFETY DATA SHEET).
  - PERSONS WHO USE THE CLEANING PRODUCTS MUST USE INDIVIDUAL PROTECTIVE EQUIPMENT (CLOTHING, GOGGLES, GLOVES, AND RESPIRATOR MASK).
  - DO NOT BREATHE THE VAPORS FROM THE CLEANING PRODUCTS. INSTALL A FORCED VENTILATION SYSTEM WHEN YOU DO TASKS IN THE FUEL TANKS.
  - IMMEDIATELY CLEAN, WITH A LARGE QUANTITY OF WATER AND SOAP, ALL CLEANING PRODUCT WHICH TOUCHES YOUR SKIN. IF IT TOUCHES YOUR EYES, CLEAN THEM IMMEDIATELY WITH RUNNING WATER AND GET MEDICAL AID.
  - IF THE PRODUCT IS BREATHED AND/OR GOES DOWN THE THROAT, GET MEDICAL AID IMMEDIATELY.
  - THE CLEANING PRODUCTS ARE FLAMMABLE AND VOLATILE. THESE MATERIALS MUST BE KEPT AND/OR APPLIED IN AREAS WITH A GOOD FLOW OF AIR, AWAY FROM HEAT SOURCES, SPARKS AND/OR FLAMES.
  - MAKE SURE THAT THE AIRCRAFT IS IN A SAFE CONDITION BEFORE YOU DO THE MAINTENANCE PROCEDURES. THIS IS TO PREVENT INJURY TO PERSONS AND/OR DAMAGE TO THE EQUIPMENT.
  - MAKE SURE THAT THE AIRCRAFT IS DE-ENERGIZED BEFORE YOU DO THE MAINTENANCE. THIS IS NECESSARY TO PREVENT ELECTRICAL SHOCK OR DAMAGE TO THE EQUIPMENT.

**CAUTION:** BEFORE YOU USE THEM, MAKE SURE THAT THE SHELF LIFE OF THE DETERGENT AND THE METHYL ALCOHOL TO BE USED IS NOT EXPIRED AND THAT THEY ARE CORRECTLY STORED AS SPECIFIED ON THE PRODUCT PACKAGE.

- (1) Do the procedure to make the aircraft safe for maintenance of the fuel system ( [AMM MPP 28-00-00/200](#)).
- (2) Keep the aircraft grounded ( [AMM TASK 20-40-02-910-801-A/200](#)).
- (3) Put the ladder in the work area.
- (4) Remove these access panels ( [AMM MPP 06-44-00/100](#) ) and ( [AMM TASK 28-11-01-000-801-A/400](#) ) or ( [AMM TASK 28-11-01-000-802-A/400](#) ), as applicable, to get access to the integral fuel tank:
  - (a) LH fuel tank:
    - 531AB/531BB/531CB/531DB/531EZ/541AB/541BB/541CB/541DB/541EB/551AB.

(b) RH fuel tank:

- 631AB/631BB/631CB/631DB/631EZ/641AB/641BB/641CB/641DB/641EB/651AB.

(5) To clean small areas, go to [SUBTASK 370-003-A](#).

(6) To clean large areas, go to [SUBTASK 370-017-A](#).

J. Wing Tank Decontamination - Small Areas

*SUBTASK 370-003-A*

**WARNING:** BEFORE YOU DO THE TASK, OBEY THE SAFETY PRECAUTIONS GIVEN IN [AMM MPP 28-00-00/200](#) TO PREVENT INJURY TO PERSONS AND DAMAGE TO MATERIAL.

- MAKE SURE THAT THE AIRCRAFT IS DE-ENERGIZED BEFORE YOU DO THE MAINTENANCE. THIS IS NECESSARY TO PREVENT ELECTRICAL SHOCK OR DAMAGE TO THE EQUIPMENT.
- OBEY THE MANUFACTURER'S INSTRUCTIONS WHEN YOU USE METHYL ALCOHOL OR DETERGENT. THESE PRODUCTS ARE TOXIC AND CAN CAUSE INJURY TO YOU.
- ALWAYS OBEY THE MANUFACTURER'S HEALTH AND SAFETY PRECAUTIONS WHEN YOU USE CLEANING MATERIAL. DO NOT GET THIS MATERIAL ON YOUR SKIN, IN YOUR EYES OR MOUTH. PUT ON APPROVED PROTECTIVE CLOTHING, GOGGLES AND GLOVES. CLEANING MATERIAL IS DANGEROUS AND, IF YOU DO NOT OBEY THESE PRECAUTIONS, INJURY CAN OCCUR.
- WEAR AN APPROVED RESPIRATOR AND PROTECTIVE CLOTHING BEFORE YOU GET INTO A FUEL TANK CONTAMINATED WITH MICROBIOLOGICAL GROWTH. IF YOU BREATHE AIR CONTAMINATED WITH MICROBIOLOGICAL GROWTH RESIDUE OR LET THE MICROBIOLOGICAL GROWTH TOUCH YOUR SKIN, IT IS POSSIBLE THAT HEALTH PROBLEMS CAN OCCUR.

**CAUTION:** DO NOT PUT THE REMAINING CLEANING MATERIAL BACK INTO THE ORIGINAL CONTAINERS TO PREVENT CONTAMINATION.

(1) Detergent Cleaning Method (REMOVEGRAX MLS-12E):

(a) Use the protection items below when you will do the work in the fuel tank:

- Rubber gloves
- Safety goggles
- Respirator mask
- Protection clothes
- Water - proof and heat protective hood
- Protective gear to protect against microbiological growth

- (b) Dilute detergent REMOVEGRAX MLS-12E with fresh water at 43.3 - 49 °C (110 - 120 °F), at the proportion of 1:10.
- (c) Use the water-detergent solution to scrub out the fuel tank surfaces.
- (d) Rinse out the water-detergent solution and loose debris with fresh water at 38 - 43.3 °C (100 - 110 °F).
- (e) Remove the excess water but do not dry the tank yet.
- (f) Use a 1:1 METHYL ETHYL KETONE water solution to flood the tank and rinse it
- (g) Let the water solution stay in the tank for 15 minutes and then drain it out.
- (h) Use the wiper to remove the microbiological growth.
- (i) Put any used wipers in a plastic bag to reduce the METHYL ETHYL KETONE vapour in the tank.
- (j) Pick up all puddles with a Vacuum or with a cellulose sponge.

**CAUTION:** MAKE SURE YOU REMOVE ALL OF THE WASTE PARTICLES CAUSED BY THE FUEL TANK CLEANING. THE UNWANTED MATERIAL CAN CAUSE A BLOCKAGE OF THE EJECTOR AND SCAVENGE PUMPS AND STOP THE OPERATION OF THESE SYSTEMS.

- (k) Make sure the flow hole areas are free of unwanted material.
  - (l) Do an inspection of the fuel components and fuel quantity indicating tank probes and clean them, as applicable.
  - (m) If during the cleaning process you found signs of corrosion, do the repair as given in the Corrosion Prevention Manual (CPM 51-14-00).
  - (n) If during the cleaning process you found signs of damage on the antibiological coating, do the repair as given in the ( [AMM TASK 28-11-00-300-801-A/700](#)).
  - (o) If during the cleaning process you found signs of damage on the sealant, do the repair as given in the structural repair manual (SRM 57-00-01).
  - (p) After you do the cleaning, remove the fuel tank cleaning equipment and material.
- (2) Solvent Cleaning Method (ARDROX 6333A):

**NOTE:** Follow the manufacturer`s data sheet when you use this product.

- (a) Use the protection items below when you will do the work in the fuel tank:
  - Rubber gloves
  - Safety goggles
  - Respirator mask
  - Protection clothes
  - Water - proof and heat protective hood

- Protective gear to protect against microbiological growth
- (b) Dilute solvent ARDROX 6333A with fresh water at 49 - 82 °C (120 - 180 °F), at the proportion of 2 to 10 by volume.
- (c) Use the water-solvent solution to scrub out the fuel tank surfaces.
- (d) Rinse out the water-solvent solution and loose debris with fresh water at 38 - 43.3°C (100 - 110 °F).
- (e) Use the wiper to remove the microbiological growth.
- (f) Put any used wipers in a plastic bag to reduce the (ARDROX 6333A) vapour in the tank.
- (g) Pick up all puddles with a Vacuum or with a cellulose sponge.

**CAUTION:** MAKE SURE YOU REMOVE ALL OF THE WASTE PARTICLES CAUSED BY THE FUEL TANK CLEANING. THE UNWANTED MATERIAL CAN CAUSE A BLOCKAGE OF THE EJECTOR AND SCAVENGE PUMPS AND STOP THE OPERATION OF THESE SYSTEMS.

- (h) Make sure the flow hole areas are free of unwanted material.
  - (i) Do an inspection of the components and fuel quantity indicating tank probes and clean them, as applicable.
  - (j) If during the cleaning process you found signs of corrosion, do the repair as given in the Corrosion Prevention Manual (CPM 51-14-00).
  - (k) If during the cleaning process you found signs of damage on the antibiological coating, do the repair as given in the ( [AMM TASK 28-11-00-300-801-A/700](#)).
  - (l) If during the cleaning process you found signs of damage on the sealant, do the repair as given in the structural repair manual (SRM 57-00-01).
  - (m) After you do the cleaning, remove the fuel tank cleaning equipment and material.
- (3) Isopropyl Alcohol Cleaning Method (alcohol TT-I-735):
- (a) Use the protection items below when you will do the work in the fuel tank:
    - Rubber gloves
    - Safety goggles
    - Respirator mask
    - Protection clothes
    - Water - proof and heat protective hood
    - Protective gear to protect against microbiological growth
  - (b) Prepare the solution at the proportion of 3 parts alcohol TT-I-735 to 1 part of fresh water.

- (c) Use water-alcohol TT-I-735 solution to scrub out the fuel tank surfaces.
- (d) Use a fiber brush to loose the contamination.
- (e) Use the minimum amount of water-alcohol TT-I-735 that is necessary.
- (f) Use the wiper to remove the microbiological growth.
- (g) Put any used wipers in a plastic bag to reduce the alcohol TT-I-735 vapour in the tank.
- (h) Pick up all puddles with a vacuum or with a cellulose sponge.

**CAUTION:** MAKE SURE YOU REMOVE ALL OF THE WASTE PARTICLES CAUSED BY THE FUEL TANK CLEANING. THE UNWANTED MATERIAL CAN CAUSE A BLOCKAGE OF THE EJECTOR AND SCAVENGE PUMPS AND STOP THE OPERATION OF THESE SYSTEMS.

- (i) Make sure the flow hole areas are free of unwanted material.
- (j) Do an inspection of the components and fuel quantity indicating tank probes and clean them, as applicable.
- (k) If during the cleaning process you found signs of corrosion, do the repair as given in the Corrosion Prevention Manual (CPM 51-14-00).
- (l) If during the cleaning process you found signs of damage on the antibiological coating, do the repair as given in the ( [AMM TASK 28-11-00-300-801-A/700](#)).
- (m) If during the cleaning process you found signs of damage on the sealant, do the repair as given in the structural repair manual (SRM 57-00-01).
- (n) After you do the cleaning, remove the fuel tank cleaning equipment and material.
- (o) Go to follow-on [SUBTASK 842-003-A](#).

K. Wing Tank Decontamination - Large Areas

SUBTASK 370-017-A

**WARNING:** BEFORE YOU DO THE TASK, OBEY THE SAFETY PRECAUTIONS GIVEN IN [AMM MPP 28-00-00/200](#) TO PREVENT INJURY TO PERSONS AND DAMAGE TO MATERIAL.

- OBEY THESE PRECAUTIONS WHEN YOU CLEAN THE FUEL TANK WITH HOT WATER PRESSURE WASH. HOT WATER CAN BURN YOU AND HIGH TEMPERATURES IN THE TANK CAN CAUSE HEAT RELATED HEALTH PROBLEMS. USE THE PRESSURE WASH CORRECTLY TO PREVENT DAMAGE TO THE FUEL TANK SEALS. HOT WATER AND HEAT CAN CAUSE INJURIES TO PERSONNEL AND/OR DAMAGE TO THE EQUIPMENT.
- THE FUEL TANK OBSERVER MUST MONITOR THE PERSON IN THE TANK FOR SIGNS OF HEALTH PROBLEMS RELATED TO OVERHEATING.
- OBEY ALL THE APPLICABLE PRECAUTIONS WHEN YOU CLEAN THE FUEL TANK WITH PRESSURIZED HOT WATER. INJURIES FROM THE PRESSURIZED HOT WATER OR DAMAGE TO THE FUEL TANK CAN EASILY OCCUR.
- WEAR AN APPROVED RESPIRATOR AND PROTECTIVE CLOTHING BEFORE YOU GET INTO A FUEL TANK CONTAMINATED WITH MICROBIOLOGICAL GROWTH. IF YOU BREATHE AIR CONTAMINATED WITH MICROBIOLOGICAL GROWTH RESIDUE OR LET THE MICROBIOLOGICAL GROWTH TOUCH YOUR SKIN, IT IS POSSIBLE THAT HEALTH PROBLEMS CAN OCCUR.
- TAKE CARE WITH THE REMAINING FUEL COMPONENTS DURING THE PRESSURE WATER APPLICATION. UNDER PRESSURE WATER CAN DAMAGE THE FUEL COMPONENTS IN CASE OF DIRECT CONTACT WITH THEM.

**CAUTION:** DO NOT SPRAY WATER DIRECTLY ON THE FUEL TANK SEALANT. UNDER PRESSURE WATER CAN LIFT THE TANK SEALANT AND CREATE LEAKS.

(1) Pressure Cleaning Method:

- (a) You can use the following pressure wash procedure to remove the microbiological growth from areas of the fuel tanks that are not accessible for removal by hand.

- NOTE:**
- It is preferred that you remove the micro-organisms with your hands. However, some parts of the fuel tanks are difficult to get access.
  - If you use a pressure washer, you must remove all of the in-tank FQIS components and take care not to damage the fuel tank sealant. After you complete the procedure, make sure that all contamination was removed and the tank is completely dry.
  - The use of a detergent is not let with a hot water pressure washer.

- (b) Use the protection items below when you will do the work in the fuel tank:
- Rubber gloves
  - Safety goggles
  - Respirator mask
  - Protection clothes
  - Water - proof and heat protective hood
  - Protective gear to protect against microbiological growth
- (c) Remove the drains ( [AMM MPP 28-11-02/400](#)) from all tanks that you will clean.
- (d) Remove the FQIS components ( [AMM MPP 28-41-02/400](#)) / ( [AMM MPP 28-44-01/400](#)) from the area that you will apply the pressure water, as necessary.
- (e) Remove the Flap valves ( [AMM MPP 28-11-04/400](#)), as necessary.
- (f) Use the pressure washer to clean the fuel tank as follows:
- 1 Water pressure at the tank surface must not exceed 100 psi (690 kPa).
  - 2 Hot water at the tank must not exceed 160 ° F (71 °c).
  - 3 Start at the outboard end of the tank.
  - 4 Hold the nozzle at a distance between 15-25 cm (6 to 10 inches) and at an angle of 45° to the tank surface per second.

NOTE:

- Many fast passes are better than one slow pass.
- Do not point the spray to the feathered edge of the seal compound.
- Sealant will be damaged if exposed to heat or pressure for long periods of time.

- 5 Point the nozzle to direction of the access opening and the drain valve opening.
- 6 Continue to clean in the direction of the drain valve opening and the access opening.
- 7 Only use sufficient spray to remove the microbiological growth.

CAUTION: MAKE SURE YOU REMOVE ALL OF THE WASTE PARTICLES CAUSED BY THE FUEL TANK CLEANING. THE UNWANTED MATERIAL CAN CAUSE A BLOCKAGE OF THE EJECTOR AND SCAVENGE PUMPS AND STOP THE OPERATION OF THESE SYSTEMS.

- 8 Move the loose microbiological growth and any unwanted material to the inboard end of the tank and out of the openings.

- 9 Repeat these steps to pressure wash the remaining tanks as necessary.
- 10 Remove the water from the fuel tank.
- 11 Continue to have a good flow of air until the tank is dry.
- 12 Use an air-powered vacuum cleaner to remove the water and microbiological debris.
- 13 Clean any water that remains with a lint-free cloth wiper.
- 14 Do an inspection of the scavenge system and fuel quantity indicating tank probes and clean them, as applicable.
- 15 If during the cleaning process you found signs of corrosion, do the repair as given in the Corrosion Prevention Manual (CPM 51-14-00).
- 16 If during the cleaning process you found signs of damage on the antibiological coating, do the repair as given in the ( [AMM TASK 28-11-00-300-801-A/700](#)).
- 17 If during the cleaning process you found signs of damage on the sealant, do the repair as given in the structural repair manual (SRM 57-00-01).
- 18 Install the drains that you removed ( [AMM MPP 28-11-02/400](#)).
- 19 Install all FQIS components ( [AMM MPP 28-41-02/400](#) ) / ( [AMM MPP 28-44-01/400](#) ) to the fuel tanks, as necessary.
- 20 Install the Flap valves ( [AMM MPP 28-11-04/400](#) ), as necessary.
- 21 After you do the cleaning, remove the fuel tank cleaning equipment and material.

L. Follow-on

*SUBTASK 842-003-A*

CAUTION: AFTER DECONTAMINATION WITH WATER AND ALCOHOL, WAIT SUFFICIENT TIME FOR THE FUEL TANK TO DRY. FUEL QUANTITY INDICATION FLUCTUATION MAY OCCUR IF THE TANK IS NOT COMPLETELY DRY.

- (1) Make sure that the tanks are dry. If applicable, pick up the residual puddles with a vacuum or with a cellulose sponge.
- (2) Examine the tank carefully for the presence of sealant and topcoat degraded such as degradation and loss of adhesion.
- (3) If the sealant condition is not good, remove the sealant (SRM 51-20-01) and examine for corrosion. If necessary, remove the corrosion (CPM 51-14-00) and apply Alodine (CPM 51-21-04). Apply the topcoating (AMS-C-27725) ( [AMM TASK 28-11-00-300-801-A/700](#) ).
- (4) Seal again, as applicable (SRM 51-20-01 / 57-00-01).

- 
- (5) Install the access panels ( [AMM MPP 06-44-00/100](#)) and ( [AMM TASK 28-11-01-400-801-A/400](#)) or ([AMM TASK 28-11-01-400-802-A/400](#)), as applicable:
- (a) LH fuel tank:
- 531AB/531BB/531CB/531DB/531EZ/541AB/541BB/541CB/541DB/541EB/551AB.
- (b) RH fuel tank:
- 631AB/631BB/631CB/631DB/631EZ/641AB/641BB/641CB/641DB/641EB/651AB.
- (6) Remove the ladder from the work area.
- (7) Put the aircraft back to its usual configuration ( [AMM TASK 20-40-02-910-801-A/200](#)).

TASK 28-11-00-300-803-A

EFFECTIVITY: ALL

#### 4. PERIODICAL ANALYSIS FOR PRESENCE OF MICROORGANISMS IN THE TANKS

##### A. General

- (1) This task gives the procedure to do a microorganisms check in the fuel tanks.
- (2) Do the analysis for presence of microorganisms in the fuel tanks under these conditions:
  - (a) If you find sediments or sludge during consecutive drainages ( [AMM TASK 12-11-03-600-801-A/300](#)).
  - (b) If you find water in solution in the fuel during consecutive drainages ( [AMM TASK 12-11-03-600-801-A/300](#)).

NOTE: Carefully examine the system filter for sludge or sediments.

- (3) You can use the monitor test kit indicated below, or similar:

- monitor test kit (MicrobMonitor 2)
- monitor test kit (FUELSTAT Resinae)
- monitor test kit (FUELSTAT Resinae Plus)

##### B. References

REFERENCE	DESIGNATION
<a href="#">AMM MPP 28-00-00/200</a>	- MAINTENANCE PRACTICES
<a href="#">AMM MPP 49-32-14/400</a>	- REMOVAL/INSTALLATION
<a href="#">AMM MPP 73-11-01/400</a>	- REMOVAL/INSTALLATION
<a href="#">AMM TASK 12-11-03-600-801-A/300</a>	FUEL TANK DRAINING - SERVICING
<a href="#">AMM TASK 20-00-00-910-801-A/200</a>	AIRCRAFT SAFE PROCEDURES FOR MAINTENANCE SERVICES - MAINTENANCE PRACTICES
<a href="#">AMM TASK 28-11-00-300-802-A/700</a>	DECONTAMINATION OF INTEGRAL FUEL TANKS
<a href="#">AMM TASK 28-11-00-300-804-A/700</a>	APPLY BIOCIDES PRODUCTS
CPM 51-14-00	-

##### C. Zones and Accesses

Not Applicable

##### D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Monitor Test Kit (FUELSTAT™ Resinae)	To make analyses to know if there are microorganisms in the fuel tanks	
Commercially available	Monitor Test Kit (Microb Monitor 2)	To make analyses to know if there are microorganisms in the fuel tanks	
Commercially available	Monitor Test Kit (FUELSTAT Resinae Plus)	To make analyses to know if there are microorganisms in the fuel tanks	

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Container	To collect fuel sample	1

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Bottom of the inboard tanks

I. Preparation

SUBTASK 841-004-A

**WARNING: MAKE SURE THAT THE AIRCRAFT IS IN A SAFE CONDITION BEFORE YOU DO THE MAINTENANCE PROCEDURES. THIS IS TO PREVENT INJURY TO PERSONS AND/OR DAMAGE TO THE EQUIPMENT.**

**CAUTION: WHILE YOU COLLECT SAMPLES, IT IS VERY IMPORTANT TO OBEY THE BEST CLEANLINESS PRECAUTIONS.**

- (1) Do the procedure to make the aircraft safe for maintenance ( [AMM TASK 20-00-00-910-801-A/200](#)).
- (2) Do the procedure to make the aircraft safe for maintenance of the fuel system ( [AMM MPP 28-00-00/200](#)).
- (3) Collect fuel samples from the tanks in correct containers ( [AMM TASK 12-11-03-600-801-A/300](#)).

J. Wing Tank - Microorganisms Check

SUBTASK 370-004-A

- (1) Do the procedure given in the manual of the monitor test kit (FUELSTAT™ Resinae, Microb Monitor 2, FUELSTAT Resinae Plus or similar), to test the fuel sampled from the tanks.
- (2) Analyze the result got with the monitor test kit according to the flowchart shown in [Figure 701](#):
  - (a) If you find no or negligible contamination, no maintenance action is required.  
**NOTE:** Continue to monitor the fuel tanks per the scheduled inspection interval.
  - (b) If you find moderate or heavy contamination:

- 1 Within 10 days (after receipt of test results) get a new fuel sample and repeat the microbial detection test with the same test method to confirm the level of microbial contamination.

- (c) If the retest confirms no or negligible contamination, no maintenance action is required.

NOTE: Continue to monitor the fuel tanks per the scheduled inspection interval.

- (d) If the retest confirms moderate contamination:

- 1 Apply biocide products to the fuel tanks ( [AMM TASK 28-11-00-300-804-A/700](#)).
- 2 Within 10-75 hours of operation, replace the engine fuel filters ([AMM MPP 73-11-01/400](#)).
- 3 Within 10-75 hours of operation, replace the APU fuel filters ([AMM MPP 49-32-14/400](#)).
- 4 Within 10 days, but after at least five flights, do the check again for signs of microbiological contamination.

NOTE: It is recommended to repeat the test after all biocide-treated fuel has been burned.

- (e) If the retest confirms heavy contamination:

- 1 Manually remove the heavy contamination from the fuel tanks ( [AMM TASK 28-11-00-300-802-A/700](#) ).
  - a Do an inspection on the wing fuel tanks for structural corrosion. If necessary remove the corrosion in accordance with CPM 51-14-00 (part I).
  - b Do an inspection on the scavenge system and fuel quantity indicating tank probes and clean them, as applicable.
- 2 Apply biocide products to the fuel tanks ( [AMM TASK 28-11-00-300-804-A/700](#) ).
- 3 Within 10-75 hours of operation, replace the engine fuel filters ([AMM MPP 73-11-01/400](#)).
- 4 Within 10-75 hours of operation, replace the APU fuel filters ([AMM MPP 49-32-14/400](#)).
- 5 Within 10 days, but after at least five flights, do the check again for signs of microbiological contamination.

NOTE: It is recommended to repeat the test after all biocide-treated fuel has been burned.

K. Follow-on

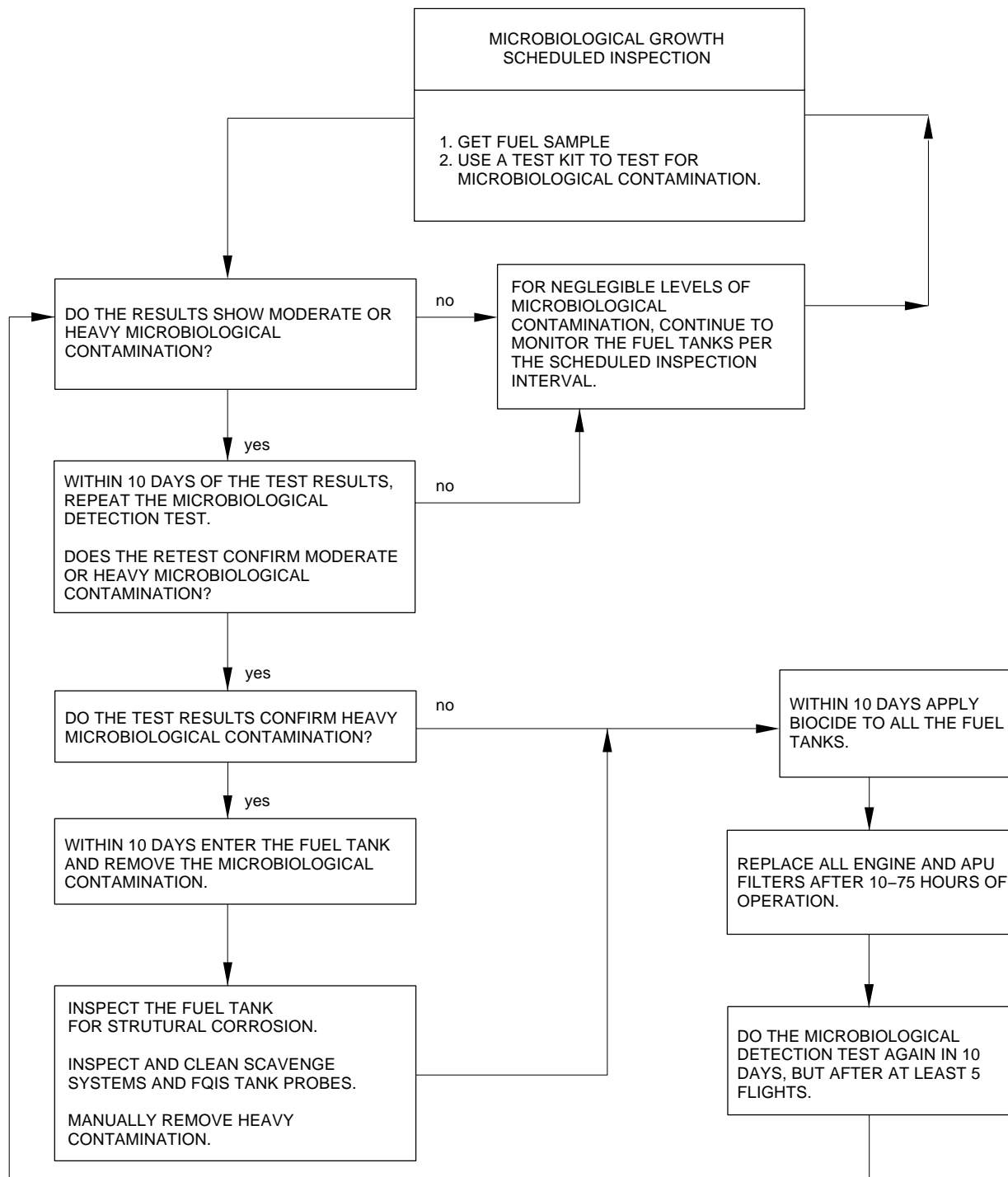
*SUBTASK 842-004-A*

- (1) Put the aircraft back in its initial configuration.

**EFFECTIVITY: ALL**

**Microorganisms in the Fuel Tanks - Inspection**

Figure 701



NOTE: BASED ON THE IATA GUIDANCE MATERIAL ON MICROBIOLOGICAL CONTAMINATION IN AIRCRAFT FUEL TANKS.

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TASK 28-11-00-300-804-A

*EFFECTIVITY: ALL*

**5. APPLY BIOCIDES PRODUCTS**

**A. General**

- (1) This task is applicable to the LH fuel tank and to the RH fuel tank.
- (2) Always do this task to keep the fuel free from fungus or when the analysis for presence of microorganisms shows fuel contamination.
- (3) Contamination in fuel tanks and structural corrosion can result from the presence of microorganisms, which live and multiply at the interface of fuel and water.
- (4) The collector tank drain-valves are located in zones 155, 156, 531, 631 and 192.
- (5) List of the biocides approved by Embraer:
  - BIOBOR JF
  - KATHON FP 1.5
- (6) There are two methods to add the biocide treatment to the fuel tanks:
  - Biocide metered injection cart (Preferred method)
  - Overwing fuel port
- (7) If the metered injection cart is not available, then do the overwing fill port procedure.

**B. References**

<i>REFERENCE</i>	<i>DESIGNATION</i>
AMM MPP 06-44-00/100	- COMPONENT LOCATION
AMM MPP 12-11-03/300	- SERVICING
AMM MPP 28-00-00/200	- MAINTENANCE PRACTICES
AMM MPP 49-32-14/400	- REMOVAL/INSTALLATION
AMM MPP 73-11-01/400	- REMOVAL/INSTALLATION
AMM SDS 28-23-00/1	
AMM TASK 12-11-01-600-801-A/300	FUEL-TANK PRESSURE REFUELING - SERVICING
AMM TASK 12-11-01-600-802-A/300	FUEL-TANK PRESSURE DEFUELING - SERVICING
AMM TASK 12-11-02-600-802-A/300	FUEL TANK GRAVITY DEFUELING - SERVICING
AMM TASK 20-00-00-910-801-A/200	AIRCRAFT SAFE PROCEDURES FOR MAINTENANCE SERVICES - MAINTENANCE PRACTICES
AMM TASK 20-40-02-910-801-A/200	STATIC GROUNDING - STANDARD PRACTICES
AMM TASK 28-10-00-910-801-A/200	WING-TO-WING FUEL TRANSFER
AMM TASK 28-11-00-300-803-A/700	PERIODICAL ANALYSIS FOR PRESENCE OF MICROORGANISMS IN THE TANKS

C. Zones and Accesses

<i>ZONE</i>	<i>PANEL/DOOR</i>	<i>LOCATION</i>
191	191BR	Wing-to-fuselage fairing
541	541FT	LH filler cap
641	641FT	RH filler cap

D. Tools and Equipment

<i>ITEM</i>	<i>DESCRIPTION</i>	<i>PURPOSE</i>	<i>QTY</i>
Commercially available	Rubber gloves	Protection for the hands	
Commercially available	Safety goggles	Protection for the eyes	
Commercially available	Respirator mask	Not to breathe compound vapors	
Commercially available	Protection clothes	Protection for the skin	
Commercially available	Biocide metering injection equipment, Hammonds Fuel Additives	To add the correct concentration of biocide product during refueling (optional)	
Commercially available	Biocide metering injection equipment, Flightline Fuel Add. Inc.	To add the correct concentration of biocide product during refueling (optional)	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

<i>SPECIFICATION (BRAND)</i>	<i>DESCRIPTION</i>	<i>QTY</i>
Biobor JF (MIL-S-53021)	Biocide product	AR
Kathon FP 1.5 (MEP 13-078)	Biocide product	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

<i>QTY</i>	<i>FUNCTION</i>	<i>PLACE</i>
1	Does the task	Wing top surface

I. Preparation

SUBTASK 841-005-A

**WARNING:** • **BEFORE YOU HANDLE THE BIOCIDES, REFER TO THE SAFETY INSTRUCTIONS CONTAINED ON THE PRODUCT PACKAGE.**

- **PERSONNEL USING THE CLEANING AND PAINTING PRODUCTS MUST USE THE INDIVIDUAL PROTECTIVE EQUIPMENT (CLOTHING, GOGGLES, GLOVES, AND RESPIRATOR MASK).**
- **DO NOT BREATHE THE VAPORS FROM THE CLEANING AND PAINTING PRODUCTS.**
- **IF THE PRODUCT TOUCHES YOUR EYES, CLEAN THEM IMMEDIATELY WITH RUNNING WATER AND GET MEDICAL AID.**
- **IF ANY CLEANING OR PAINTING PRODUCT IS BREATHED AND/OR GOES DOWN THE YOUR THROAT, GET MEDICAL AID IMMEDIATELY.**
- **MAKE SURE THAT THE AIRCRAFT IS IN A SAFE CONDITION BEFORE YOU DO THE MAINTENANCE PROCEDURES. THIS IS TO PREVENT INJURY TO PERSONS AND/OR DAMAGE TO THE EQUIPMENT.**
- **NEVER ADD BIOCIDES TO AN EMPTY TANK.**

(1) Obey these biocide additive precautions:

- (a) Obey all requirements specified by the manufacturer related to the use of the biocide.
- (b) Do not exceed the maximum allowable concentration of biocide (parts per million) in a fuel tank.
- (c) If the concentration exceeds the limit, then add more untreated fuel to dilute the biocide concentration.
- (d) If you spill biocide, immediately contain the spill area use a cotton wiper and water to clean the area.
- (e) Make sure the remaining fuel in the fuel tank is at least 1/3 of the total capacity for metered injection method.
- (f) Make sure the remaining fuel in the fuel tank is at least 50% of the total capacity for overwing fuel port method.

(2) Do the procedure to make the aircraft safe for maintenance ( [AMM TASK 20-00-00-910-801-A/200](#)).

(3) Do the procedure to make the aircraft safe for maintenance of the fuel system ( [AMM MPP 28-00-00/200](#)).

(4) Keep the aircraft grounded ( [AMM TASK 20-40-02-910-801-A/200](#)).

- (5) Prior to refueling the aircraft it is necessary to calculate the concentration at which biocide must be mixed with fuel such that the final concentration of biocide is within the fuel tank to be treated.

Table 701 - Biocide Concentration

Biocide	Concentration
Biobor JF	270 ppm by weight
Kathon FP 1.5	100 ppm by volume

Table 702 - Formula

Biobor JF	Kathon FP 1.5
$C(uf) = 270 (FOB + UPLIFT) / UPLIFT$	$C(uf) = 100 (FOB + UPLIFT) / UPLIFT$
C (uf) = Concentration for the fuel to be uplift	
FOB = Fuel quantity already on board when uplift fuel is being added	
UPLIFT = Fuel quantity with biocide to be added	

- NOTE:**
- You must consult the manufacturer's data sheet to calculate the correct concentration of biocide.
  - The concentration of Kathon in the refuel quantity must not be more than 400 ppm by volume. If the result of the calculation is more than 400 ppm, you must defuel the aircraft and refuel the aircraft with the correct concentration of fuel and Kathon (100 ppm by volume).
  - The concentration of Biobor JF in the refuel quantity must not be more than 1000 ppm by weight. If the result of the calculation is more than 1000 ppm, you must defuel the aircraft and refuel the aircraft with the correct concentration of fuel and Biobor JF (270 ppm by weight).

- (6) For metered injection method, go to [SUBTASK 613-004-A](#).

- (7) For overwing fuel port method, go to [SUBTASK 613-005-A](#)

#### J. Biocide Treatment of Fuel Tanks - Metered Injection Cart

##### *SUBTASK 613-004-A*

**WARNING: NEVER ADD BIOCIDES TO AN EMPTY TANK.**

- CAUTION:**
- JET ENGINE FUEL, BY ITS NATURE, ALWAYS CONTAINS SOME WATER. MAKE SURE THAT FUEL HAS BEEN PROPERLY MAINTAINED AND FILTERED, TO REMOVE WATER AND DEBRIS. IN THE PRESENCE OF EXCESS WATER, EITHER THROUGH DIRECT DILUTION OF BIOCIDES WITH WATER OR BY ADDING BIOCIDES TO "WET" FUEL, I.E., FUEL FROM A SUMP AREA, FORMATION OF SOLIDS MAY OCCUR.
  - BEFORE YOU USE IT, MAKE SURE THAT THE SHELF LIFE OF THE BIOCIDES PRODUCT TO BE USED IS NOT EXPIRED AND THAT IT IS CORRECTLY STORED AS SPECIFIED ON THE PRODUCT PACKAGE.

- (1) Drain water from the fuel tank ( [AMM MPP 12-11-03/300](#)).

NOTE: It is important to drain the water from the fuel tanks. If there is water in the tanks, the formation of solids will occur when you add biocide.

- (2) Check on the repeater the fuel quantity in the tank ([AMM SDS 28-23-00/1](#)).
- (3) Refuel ( [AMM TASK 12-11-01-600-801-A/300](#)) or defuel the tanks ( [AMM TASK 12-11-01-600-802-A/300](#)) or ( [AMM TASK 12-11-02-600-802-A/300](#)), as applicable, so as the remaining fuel is at least 1/3 of the total capacity.

NOTE: If the remaining fuel is less than 1/3 of the total capacity , add untreated fuel until the total fuel is 1/3 of the total capacity.

- (4) There are two types metered-injection carts:
  - Adjustable metered injection cart
  - Non-adjustable metered injection cart
- (5) Refer to the biocide data sheet and metered-injection cart manual to adjust the applicable proportion of biocide product to be added in the aircraft fuel tanks.

NOTE: • Make sure that the aircraft integral tanks are 1/3 full before their replenishment starts. This will ensure a faster and more complete dispersion of the biocide.

- (6) Use the adjustable metered injection cart as follows:
  - (a) This type of metered injection cart is equipped with an adjustable concentration setting. You can adjust the concentration setting and use this method to add biocide to the fuel tanks during the refuelling operation. Refer to the Biocide Metering Injection Equipment manufacturer's manual to its correct installation.
  - (b) Complete the tank with the blended fuel using the metering injection equipment in accordance with the equipment manual. Refer to ( [AMM TASK 12-11-01-600-801-A/300](#)).
- (7) Use the non-Adjustable Metered Injection as follows:
  - (a) This type of metered injection cart is not field adjustable, the cart must be calibrated. Refer to the metered injection cart manual to recalibrate the cart.
  - (b) Recalibration of the cart is necessary to account for the typical remaining fuel in aircraft fuel tanks. To achieve the desired 270ppm concentration for Biobor JF or 100ppm concentration for Kathon FP 1.5 and account for the remaining fuel, the factory adjustment for the cart must be changed.
  - (c) Complete the tank with the blended fuel using the metering injection equipment in accordance with the equipment manual. Refer to ( [AMM TASK 12-11-01-600-801-A/300](#)).
- (8) Allow biocide loaded fuel to soak in tanks for a minimum of:
  - Biobor JF: 36 - 72 hours
  - Kathon FP 1.5: 12 - 24 hours

- (9) During the soak time, do not move the aircraft or operate the fuel pumps and APU.
- (10) After soaking, the biocide treated fuel is burned through the engines.

**CAUTION:** DO NOT RELEASE THE AIRCRAFT FOR FLIGHT BEFORE YOU DRAIN THE FUEL TANKS, BECAUSE THE BIOCIDIC ACTION WILL MAKE SLUDGE DECANT AND SEDIMENT. IF YOU DO NOT DRAIN THE FUEL TANKS, THE SLUDGE CAN CLOG THE FUEL FILTER.

- (11) Before you release the aircraft for flight, drain at least 10 (ten) - Liters of fuel from each fuel tank ( [AMM MPP 12-11-03/300](#)).

**NOTE:** Drain several times until the fuel in the container is clear and shows no signs of water/sludges.

- (12) Within 10-75 hours of operation, replace the engine fuel filters ( [AMM MPP 73-11-01/400](#) ) and the APU fuel filters ( [AMM MPP 49-32-14/400](#) ).

**NOTE:** • If one engine filter shows any levels of particulates, replace the other filters before the next flight.

- (13) Within 10 days, but after at least five flights, do the check again for signs of microbiological contamination ( [AMM TASK 28-11-00-300-803-A/700](#) ).

- (14) Go to job follow-on [SUBTASK 842-005-A](#)

K. Biocide Treatment of Fuel Tanks - Over Wing fuel port

*SUBTASK 613-005-A*

**WARNING: NEVER ADD BIOCIDIC TO AN EMPTY TANK.**

**CAUTION:** • JET ENGINE FUEL, BY ITS NATURE, ALWAYS CONTAINS SOME WATER. MAKE SURE THAT FUEL HAS BEEN PROPERLY MAINTAINED AND FILTERED, TO REMOVE WATER AND DEBRIS. IN THE PRESENCE OF EXCESS WATER, EITHER THROUGH DIRECT DILUTION OF BIOCIDIC WITH WATER OR BY ADDING BIOCIDIC TO "WET" FUEL, I.E., FUEL FROM A SUMP AREA, FORMATION OF SOLIDS MAY OCCUR.

- BEFORE YOU USE IT, MAKE SURE THAT THE SHELF LIFE OF THE BIOCIDIC PRODUCT TO BE USED IS NOT EXPIRED AND THAT IT IS CORRECTLY STORED AS SPECIFIED ON THE PRODUCT PACKAGE.

- (1) Drain water from the fuel tank ( [AMM MPP 12-11-03/300](#) ).

**NOTE:** It is important to drain the water from the fuel tanks. If there is water in the tanks, the formation of solids will occur when you add biocide.

- (2) Check on the repeater the fuel quantity in the tank ( [AMM SDS 28-23-00/1](#) ).

- (3) Refuel ( [AMM TASK 12-11-01-600-801-A/300](#) ) or defuel the tanks ( [AMM TASK 12-11-01-600-802-A/300](#) ) or ( [AMM TASK 12-11-02-600-802-A/300](#) ), as applicable, so as to leave them with 50% of their full capacity.

**NOTE:** Leave each fuel tank with 50% of their full capacity to do the fuel transference after biocide over wing application.

- (4) To calculate the amount of Biobor JF biocide to add to each wing tank, do as follows:
- (a) Multiply the amount of fuel in pounds by 0.004 to get the fluid ounces of Biobor JF.
  - (b) Multiply the amount of fuel in kilograms by 0.26 to get milliliters of Biobor JF.

NOTE: You must consult the manufacturer's data sheet to check the correct concentration of biocide.

- (5) To calculate the amount of Kathon FP 1.5 biocide to add to each wing tank, do as follows:
- (a) Multiply the amount of fuel in pounds by 0.000015 to get the gallons of Kathon FP 1.5.
  - (b) Multiply the amount of fuel in kilograms by 0.000125 to get the litres of Kathon FP 1.5.

NOTE: You must consult the manufacturer's data sheet to check the correct concentration of biocide.

- (6) For over wing fuel port application, do as follows:
- (a) Do these steps to make a spill containment barrier around the over wing fill port:
    - 1 Position the plastic sheet around the over wing fill port
    - 2 Use sandbags to hold down the plastic sheet
    - 3 Adjust the plastic sheet to make a spill containment barrier
  - (b) Open the filler caps 541FT for the LH tank or 641FT for the RH tank ( [AMM MPP 06-44-00/100](#)).
  - (c) Put a funnel in the over wing fill port.
  - (d) Put the biocide into the fuel tanks .
  - (e) Remove the funnel from the over wing fill port.
  - (f) Close the filler caps 541FT for the LH tank or 641FT for the RH tank ( [AMM MPP 06-44-00/100](#)).
- (7) Transfer all the fuel from the LH tank into the RH tank ( [AMM TASK 28-10-00-910-801-A/200](#)).
- (8) Transfer all the fuel from the RH tank into the LH tank ( [AMM TASK 28-10-00-910-801-A/200](#)).
- (9) Transfer half the fuel from the LH tank back into the RH tank ( [AMM TASK 28-10-00-910-801-A/200](#)).
- (10) Complete the tank using untreated fuel from the fuel truck ( [AMM TASK 12-11-01-600-801-A/300](#)).
- (11) Allow biocide loaded fuel to soak in tanks for a minimum of:

- Biobor JF: 36 - 72 hours
- Kathon FP 1.5: 12 - 24 hours

(12) During the soak time, do not move the aircraft or operate the fuel pumps and APU.

(13) After soaking, the biocide treated fuel is burned through the engines.

**CAUTION:** DO NOT RELEASE THE AIRCRAFT FOR FLIGHT BEFORE YOU DRAIN THE FUEL TANKS, BECAUSE THE BIOCIDIC ACTION WILL MAKE SLUDGE DECANT AND SEDIMENT. IF YOU DO NOT DRAIN THE FUEL TANKS, THE SLUDGE CAN CLOG THE FUEL FILTER.

(14) Before you release the aircraft for flight, drain at least 10 (ten) - Liters of fuel from each fuel tank ( [AMM MPP 12-11-03/300](#)).

**NOTE:** Drain several times until the fuel in the container is clear and shows no signs of water/sludges.

(15) Within 10-75 hours of operation, replace the engine fuel filters ([AMM MPP 73-11-01/400](#)) and the APU fuel filters ([AMM MPP 49-32-14/400](#)).

**NOTE:** If one engine filter shows any levels of particulates, replace the other filters before the next flight.

(16) Within 10 days, but after at least five flights, do the check again for signs of microbiological contamination ( [AMM TASK 28-11-00-300-803-A/700](#)).

L. Follow-on

*SUBTASK 842-005-A*

(1) Put the aircraft back to its usual configuration ( [AMM TASK 20-40-02-910-801-A/200](#)).

