Straight Talk about

CPCP

for Falcon 50/50EX Aircraft

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Editor's Notes

In October 2004, Dassault Aviation introduced a Corrosion Prevention and Control Program (CPCP) to ensure structural integrity and guarantee the airworthiness of Falcon 50 model aircraft that are approaching 30 years of age.

Since this was first announced, many questions have been raised. Keeping up with all of the questions and possible pitfalls is quite tricky, and can be very time-consuming. That is why we have compiled this Straight Talk About CPCP for the Falcon 50 and 50EX operator.

Duncan Aviation's mission is to be your source for aviation answers and solutions. This booklet gives you access to basic CPCP information designed to provide easy-to-understand information and answer your most basic questions.

Since this information is changing rapidly and there will continue to be questions about CPCP for several years, we are monitoring the market and updating this booklet online on a regular basis. To see the latest information, go to www.DuncanAviation.aero/straighttalk.

Straight Talk about CPCP

CPCP: The Facts

CPCP: The Facts

What is the CPCP?

The **C**orrosion **P**rotection and **C**ontrol **P**rogram is a systematic approach for controlling corrosion in the airplane's primary structure. The objective of a CPCP is to limit the material loss due to corrosion to a level necessary to maintain airworthiness.

The CPCP is part of a Service Life Extension program for the Falcon 50 and 50EX aircraft. The other part of this Service Life Extension program is the Supplemental Structural Inspection Program (SSIP), which extends the life of the aircraft past 20,000 flights/30,000 flight hours. The CPCP supplements the SSIP but is independent of the SSIP.

CPCP: The Facts

What brought about the need for the CPCP?

In April 1988, Aloha Airlines Flight 243 experienced an in-flight decompression attributed to fuselage structural failure. The National Transportation Safety Board (NTSB) determined the cause of this accident was the disbonding and subsequent fatigue damage of a lap joint. During the investigation, the NTSB found that line maintenance personnel accepted the classic signs of on going corrosion damage as normal operating conditions. A program to control and prevent corrosion of the entire aircraft was not evident. The corrective action of corrosion findings was often deferred with no record of the basis for deferral. The NTSB recommended that the FAA develop a model for a comprehensive CPCP that would be included in each operator's approved maintenance program. FAA Order 8300-12 was developed to provide guidance for operators to develop a CPCP.

CPCP: The Facts

Is the CPCP new to business jets?

The majority of experience with the CPCP has been in the airline industry here in the United States and has spread to other air carriers throughout the world. It has been incorporated into all aircraft, including air carrier and business jets, which have developed their maintenance programs using the MSG-3 method.

Those operators who have Falcon 20 model aircraft are familiar with the Major Corrosion Inspection (MCI), which is performed at the first 24 years of the aircraft's life and repeated every 12 years. The MCI was Dassault Aviation's answer for the CPCP requirement for the Falcon 20.

Doesn't the present inspection program look for corrosion?

The present Chapter 5 inspection program requires the inspection of the entire structure for corrosion but the CPCP puts more emphasis on the primary structure or Principal Structure Elements (PSE). A PSE is defined as an element that contributes significantly to carrying flight, ground and pressurization loads and whose failure could result in catastrophic failure of the airplane. Examples of a PSE are:

- an element (wing, fuselage pressure vessel, landing gear, engine mount, flight control, etc.)
- a structural detail (skin cut-out, frame splice joint, doubler installation, etc.)

A list of the PSEs can be found in the Falcon 50/50EX Structural Repair Manual 1 (SRM) in Chapter 51-00-01.

Structural inspection operations for the detection of corrosion defects are identified as CPCP in the current Chapter 5-10 and 5-20. New operations, which will be required when the aircraft reaches 30 years of service life, are identified as CPCP in Chapter 5-40: Airworthiness Limitations.

The main purpose of the CPCP is to detect corrosion in the primary structure and correct the problem before serious damage has taken place. The objective is to limit the loss of material before having to perform costly repairs to the aircraft. Ultimately, this will lead to improved safety, reduced downtime, reduced operating costs, and provide the owner with a sellable asset when the aircraft is sold.

Are there different degrees of corrosion?

The CPCP classifies corrosion defects as Level 1, 2 or 3. The levels are defined below.

• *Level 1 Corrosion*

(1) Corrosion, occurring between successive corrosion inspection tasks, that is local and can be reworked or blended out within the allowable limit;

or

(2) Operator experience has demonstrated only light corrosion between each successive corrosion inspection task and, the latest corrosion inspection task results in rework or blend out that exceeds the allowable limit.

• *Level 2 Corrosion*

Corrosion occurring between any two successive corrosion inspection tasks, that requires a single rework or blend out which exceeds the allowable limit. The detection of Level 2 corrosion requires repair, reinforcement, or complete or partial replacement of the applicable structure.

• *Level 3 Corrosion*

Corrosion occurring during the first or subsequent accomplishment of a corrosion inspection task that the operator determines to be an urgent airworthiness concern.

The CPCP requires the operator to maintain the aircraft to Level 1 Corrosion or better.

How can I prepare for the CPCP?

The mandate for the CPCP came in the form of EASA AD 2004-10117. An FAA AD is in the "draft" state. There have been several changes to the Chapter 5-10, 5-20, and 5-40 to improve the program. Because of these changes, the EASA AD is in the revision state also. When both ADs are complete, they will provide the final guidance material for the development and implementation of the CPCP.

While waiting for the instructions provided in the ADs to be finalized, you can review the existing structural inspection operations identified as CPCP as noted in the current Chapter 5-10 and 5-20. In addition to these procedures, three new structural inspection operations identified as CPCP in Chapter 5-40, will be required when the aircraft reaches 30 years of service life and repeated every 6 or 12 years.

You should take the opportunity to review service bulletin F50-460: Requirements for Application of the Corrosion Prevention and Control Program (CPCP) to Maintain Airworthiness Beyond the Aircraft's 30 Year Service Life. This service bulletin is in the "revision" state. The present version of service bulletin F50-460 lists several additional service bulletins and instructs the operator to verify if these bulletins have previously been installed on the aircraft. Before you decide to order the many additional service bulletin kits for your aircraft, it is recommended you consult with your service provider for the latest revision to service bulletin F50-460.

How do I determine if my aircraft is "Standard" or "Non-Standard?"

Both service bulletin F50-460 and Chapter 5-40 offer explanations of a "Standard" and "Non-Standard" aircraft, but each one is different. The most accurate definition is listed in the present revision of Chapter 5-40. Dassault looks at both the structural configuration and aircraft utilization for these definitions.

A "Standard" aircraft is defined as:

- *Structural configuration*
  - PSE condition:
    - Any design approved by Dassault Aviation
      - Corresponds to Dassault Aviation original type design
      - Can be supplemented by any optional or recommended Dassault Aviation service bulletin
    - Applicable mandatory service bulletins are incorporated
- *Standard flight operations*
  - Typical public or private transport

They define a "Non-Standard" aircraft as:

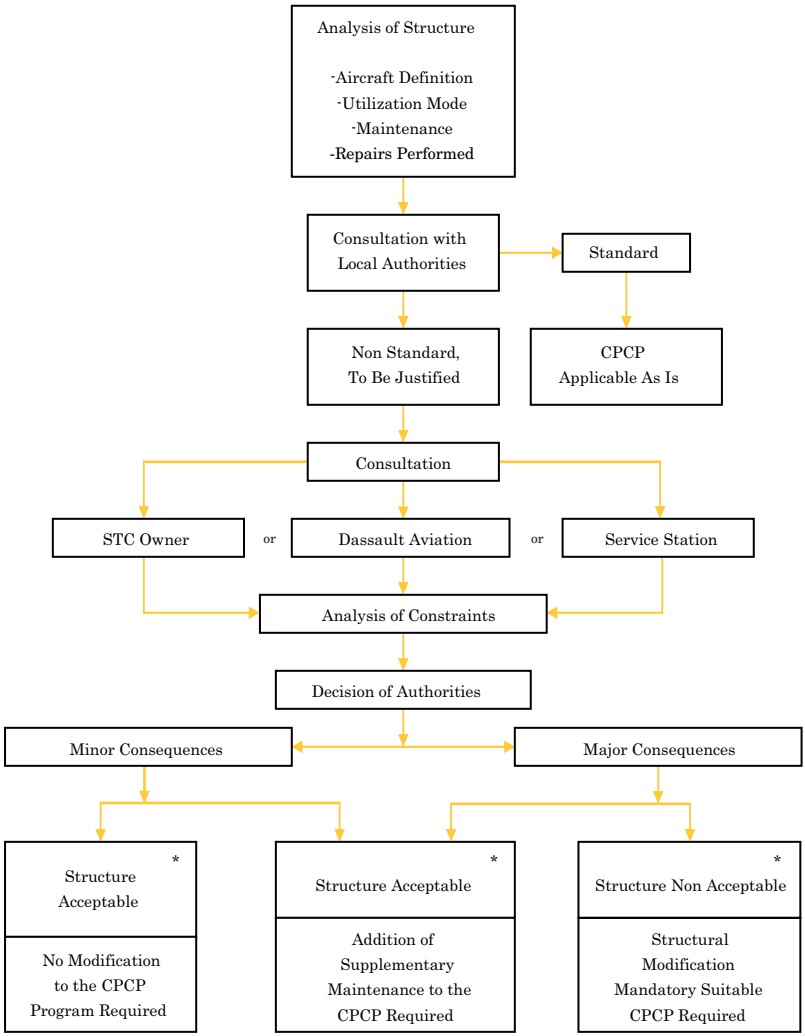
- *Structural configuration*
  - PSE has been modified by an STC or repaired by a definition which is not approved by Dassault Aviation
- *Non-typical flight operations*
  - Low altitude search and rescue flights, scientific research, flight training
  - Target towing and transport of under-wing stores
  - Cargo transport
  - Other types of operation other than normal passenger transport

CPCP: The Facts

You will need to determine if the aircraft is “Standard” or “Non-Standard” by performing a complete review of all maintenance records including airframe log books, FAA 337 forms, repairs/modifications approved by a DER, or repairs/modifications approved by other airworthiness authorities (for an aircraft which may have been foreign-registered during its service life).

Following the records review, all “Non-Standard” items identified will require Instructions for Continued Airworthiness (ICA) for any modification or repair affecting a PSE. Any items which do not have ICA will require a review by either Dassualt Structural Engineering or a qualified Designated Engineering Representative (DER) to develop the ICA. The ICA will require acceptance by the FAA Aircraft Evaluation Group (AEG) or Flight Standards District Office (FSDO) unless there are airworthiness limitations which will require approval by the Aircraft Certification Office (ACO).

Standard/Non-Standard Process Flow Chart



*The acceptable or non acceptable condition of each of the three cases will be determined by the Airworthiness Authorities.

Information from SBF50-460.

What steps should I follow to apply the CPCP to my aircraft?

The following checklist can be used to develop the CPCP.

___ 1. Review the instructions for the CPCP as outlined in either the EASA AD 2004-10117 or FAA AD (pending), depending on the country of registry.

___ 2. Review the instructions outlined in service bulletin F50-460.

___ 3. Determine if the aircraft configuration is "Standard" or "Non-Standard."

___ 4. Gather all ICA for modifications or repairs to PSEs that are identified as "Non-Standard." Develop ICA for modifications or repairs that are missing.

___ 5. Identify the CPCP operations noted in Chapter 5-10 and 5-20.

___ 6. Identify the CPCP operations noted in Chapter 5-40 (aircraft that are reaching 30 years of service life).

___ 7. Submit this total CPCP data package to the local Airworthiness Authorities for approval.

Where do I find more information to better understand the CPCP?

The following list of reference documents explains the Corrosion Prevention and Control Program for the Falcon 50 and 50EX model aircraft:

1. F50 Chapter 5, section 05-00/00, Recommended Maintenance Schedules, paragraph E Structural Maintenance - Corrosion Prevention and Control Program.

2. F50 Chapter 5, section 05-40/00, Airworthiness Limitations, paragraph 2C Instructions - Corrosion Prevention and Control Program.

3. F50 Chapter 5, sections 05-10/53 Aircraft Maintenance Operations - Fuselage, 05-10/54 Aircraft Maintenance Operations - Nacelles & Pylons, 05-10/55 Aircraft Maintenance Operations - Stabilizers, and 05-10/57 Aircraft Maintenance Operations - Wings.

4. F50 Chapter 5, section 05-20/32 Maintenance of Components – Landing Gear.

5. F50 Chapter 5, section 05-40/53 Airworthiness Limitations - Fuselage and 05-40/57 Airworthiness Limitations - Wings.

6. SB F50-460, Requirements for Application of the Corrosion Prevention and Control Program (CPCP) to Maintain Airworthiness Beyond the Aircraft's 30 Year Service Life.

7. FSN50-50EX-114, Aircraft Service Life Extension.

8. FSA50-50EX-05-00-02, Aircraft Service Life Extension.

9. FSA50-50EX-05-00-03, Chapter 5-40: Clarification of the Definition of a Standard Aircraft.

10. F50 Structural Repair Manual 1 (SRM), List of Principal Structure Elements (PSE).

11. EASA AD 2004-10117, Maintenance – Corrosion Prevention and Control Program, issued by DGAC on behalf of EASA (DGAC No. F-2004-162).

12. An FAA AD is presently being drafted.

13. FAA Order 8300-12.

Questions and Answers

Questions and Answers

Q: My aircraft is not yet 30 years old. Do I need to be concerned with the CPCP?

A: Even though the title for SB F50-460, "Requirements for Application of the Corrosion Prevention and Control Program to Maintain Airworthiness Beyond the Aircraft's 30 Year Service Life," implies Dassault is waiting until the aircraft's 30th birthday to implement the CPCP, this is not the case. All operators of the Falcon 50 and 50EX model aircraft who are maintaining their aircraft using the Dassault Chapter 5 are already accomplishing CPCP operations. The CPCP requires you to maintain the aircraft to Level 1 Corrosion or better so that when the aircraft reaches the 30-year mark the primary structure is free of corrosion and in sound structural condition. The sooner you identify the "Non-Standard" elements affecting the PSEs and have your CPCP approved by the Airworthiness Authorities, the better off you will be as the aircraft ages.

Q: Do I have to comply with CPCP requirements at a Falcon Authorized Service Center?

A: No. The Authorized Service Centers have the most experience with the Falcon aircraft, but you have your choice of service providers.

Questions and Answers

Q: Does Dassault charge a fee for Service Bulletin F50-460?

A: Currently there is a documentation fee of $20,000, which is used to recover developmental costs for this program.

Q: What is my responsibility?

A: As the aircraft operator, you must accurately determine the aircraft's configuration and, as required, identify "Non-Standard" elements to the PSE and aircraft utilization modes. You will need to provide a list of the "Non-Standard" elements and documentation necessary for justification to your local Airworthiness Authorities for approval of the CPCP.

Q: How do I know if my airplane is "Standard" or "Non-Standard?"

A: You will need a thorough research of the aircraft records to determine which structural configuration and aircraft utilization definition the aircraft meets as defined by Dassault's criteria.

Questions and Answers

Q: After I have completed the records research and identified modifications and repairs, what is my next step?

A: The STCs, modifications, and repairs performed to a PSE that are not approved by Dassault will require review for Instructions for Continued Airworthiness (ICA). There may be instances when there is no ICA furnished for older STCs, modifications or repairs. If or when this happens, the operator can request them from the organization that performed the work. If the organization that performed the work cannot help or is not in business any longer, then the operator will have to consult with Dassault Engineering or a qualified DER to develop the ICA.

Q: How will the engineering staff develop the ICA?

A: The engineering personnel will review these items for similarity with original design of the aircraft and evaluate the differences that are significant for the CPCP such as: type of protection, materials used, material thicknesses, and applicable inspection level/interval to develop the ICA.

Questions and Answers

Q: What pitfalls will "Non-Standard" aircraft have to watch out for and how can they be avoided?

A: The biggest hurdle most operators will have to overcome is reviewing all the records and collecting all the data for the various modifications to the aircraft. The older aircraft will have a considerable amount of records to be reviewed. Many of the older STCs, modifications, and repairs (those accomplished more than 10 to 12 years ago) did not require this data to be developed, so it may not exist.

The newer aircraft, or aircraft with more recent STCs, modifications, or repairs, should have better data with ICA incorporated. It would be beneficial for operators with newer aircraft to organize this data as soon as possible and have the program approved by their Airworthiness Authority. As additional STCs, modifications, or repairs are accomplished on the aircraft, the operator will add these to the existing program.

Q: What is the impact to airplanes that are on the market but that are not yet CPCP compliant?

A: As more people learn about the CPCP, they may view the non-compliant aircraft as a higher risk for possible corrosion. This situation would compare with RVSM compliant/non-compliant aircraft in past years. Aircraft which are already CPCP compliant will most likely be viewed as a better value.

Questions and Answers

Q: Are the SSIP and CPCP the same?

A: No. The Supplemental Structural Inspection Program (SSIP) is applicable to aircraft reaching 20,000 flights or 30,000 flight hours. The SSIP is related to structural fatigue issues or cracks developing in the primary structure. The CPCP is developed to control corrosion in the primary structure. The CPCP supplements the SSIP but is independent of the SSIP.

Q: How will my aircraft be impacted?

A: Each aircraft will be impacted differently because of aircraft customization and depending on when you choose to enter the program. If the aircraft is a newer aircraft (less than 15 years of age for example) when you enter the CPCP, there should be fewer costs since there will be less research time required because of fewer modifications or repairs affecting the primary structure in addition to fewer service bulletins needing to be accomplished.

Aircraft that are older (approaching the 30-year service life) when the operator enters the CPCP will have additional costs and downtime to complete the additional operations required at 30 years of service life (chapter 5-40), accomplishment of the additional service bulletins listed in SB F50-460, and the additional operations needed that are identified during the records research for ICA of all "Non-Standard" modifications or repairs.

Questions and Answers

Q: Where do I go for engineering support?

A: You have two choices for engineering support. You can contact Dassault's Structural Engineering team or use a qualified DER.

Q: What happens with the information that is documented?

A: You should keep this information available for review by your local Airworthiness Authority to ensure the program is maintaining corrosion to Level 1 or better. It should become part of the permanent maintenance records of the aircraft to be available for the service providers who will be inspecting the aircraft to verify where corrosion has been found and treated previously.

Key Terms

Key Terms

ACO – Aircraft Certifications Office. An FAA Field Office that serves a specific geographical area regarding issues of aircraft certification.

ATF – Airworthiness Assurance Task Force. A task force formed by the FAA in 1988 to study aging aircraft and their structural integrity. This is the task force that made recommendations for the development of CPCPs.

CPCP – Corrosion Prevention Control Program. An inspection program designed to ensure structural integrity and guarantee airworthiness of certain model aircraft.

DER – Designated Engineering Representative. An individual with an engineering degree or equivalent who has the technical knowledge and experience that allows him or her to be given the DER title by the FAA. DERs can be Company DERs or Consultant DERs. Company DERs work as DERs for their company and may only approve, or recommend for approval, technical data to the FAA for their company. Consultant DERs are appointed to act as independent DERs when approving, or recommending for approval, technical data to the FAA. The FAA provides a list of Consultant DERs by state and discipline at www.faa.gov.

DGAC – Direction Generale de l'Aviation Civile. Like the FAA for the U.S., this is the governmental agency of France that oversees civil aviation safety.

EASA – European Aviation Safety Agency. The agency of the European Union that oversees regulatory and executive tasks in civil aircraft safety.

Key Terms

FAA AEG – Aircraft Evaluation Group. This FAA group coordinates and assists with certification and continued airworthiness programs through certification engineers and FAA test pilots.

FSDO – Flight Standards District Office. A regional FAA office that works with civil aviation issues and concerns.

ICA – Instructions for Continued Airworthiness. A 16-item checklist that complies with the FAA Handbook of Airworthiness as required by Title 14 of the Code of Federal Regulations (14 CFR).

MCI – Major Corrosion Inspection. A major inspection for Falcon 20 aircraft that is performed at the first 24 years of the aircraft's life and repeated every 12 years. It was Dassault's answer for the CPCP requirement for the Falcon 20.

MSG-3 – Maintenance Steering Group. A system that has been in place for years studying the effects of corrosion on the structural integrity of aircraft. Condition monitoring was introduced in the initial maintenance steering group document (MSG-1) and was applied to the Boeing 747. The MSG system has continued to evolve. The 1993 revision 2 of the MSG-3 recommendations provides guidelines for the development of a Corrosion Prevention and Control Program (CPCP).

NDT – Non Destructive Testing. An inspection of aircraft parts, units, components, etc., that is done without altering or destroying their physical or material properties. It is often used to determine serviceability for another inspection period.

Key Terms

NTSB – National Transportation Safety Board. An independent agency charged by the U.S. Congress to investigate every civil aviation accident that occurs in the United States.

PSE – Principal Structural Elements. Elements that contribute significantly to carrying flight, ground and pressurization loads and whose failure could result in catastrophic failure of an aircraft. Examples include wings, landing gear, frame splice joints, etc.

SRM – Structural Repair Manual. A manual produced by an aircraft manufacturer and defining acceptable repair practices and limitations. The Falcon 50/50EX SRM-2 is considered to be "approved data" and removes the need for separate design approval for repairs that are carried out in accordance with the SRM guidelines.

SSIP – Supplemental Structural Inspection Program. The SSIP is a program that extends the life of a Falcon 50 or 50EX aircraft past 20,000 flights or 30,000 flight hours. It relates to structural fatigue issues or cracks developing in the primary structure. It is supplemented by Dassault's CPCP program, but is independent of it.

STC – Supplemental Type Certificate. A certificate authorizing an alteration to an airframe, engine or component which has been granted an Approved Type Certificate.

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