

AVIT-245 Project 2



**Preflight Inspection and Maintenance Program for
the Phantom 4 pro v2 sUAS based on the concept of
Reliability Centered Maintenance**

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Goal

Develop a preflight flight inspect for the Phantom 4 pro v2 sUAS based on the knowledge developed in AVIT-245.

Then Develop a maintenance program for the Phantom 4 pro v2 sUAS based on inspections items, time frames and life limits.

The concept of Reliability Centered Maintenance should be employed and the program should include hard time, on-condition and condition monitoring items.

Introduction:

Small Unmanned Aircraft Systems (sUAS) have become a vital tool in various industries, including agriculture, photography, and surveillance. The Phantom 4 Pro V2 is a popular commercial sUAS known for its advanced features and capabilities. However, like any aircraft, regular maintenance and preflight inspections are essential to ensure safe and efficient operations.

In this project, first is a preflight flight inspection checklist for the Phantom 4 Pro V2 based on knowledge acquired in AVIT-245. This checklist includes all necessary items to be inspected before each flight to ensure the sUAS is in proper working condition and free from any potential issues that could jeopardize flight safety.

Following the preflight inspection checklist, is a comprehensive maintenance program for the Phantom 4 Pro V2 based on the principles of Reliability Centered Maintenance. This maintenance program outlines inspection items, time frames for inspections, and life limits for various components of the UAS. It also incorporates a mixture of hard time, on-condition, and condition monitoring items to ensure the sUAS remains in optimal condition throughout its operational life.

By implementing a rigorous preflight inspection checklist and a proactive maintenance program, operators of the Phantom 4 Pro V2 can significantly reduce the risk of in-flight incidents and maximize the reliability and efficiency of their sUAS operations.

Preflight Flight Inspection for the Phantom 4 Pro V2.0 sUAS

1. Visual inspection of the aircraft body, propellers, and landing gear.
2. Check for any visible damage, cracks, or deformation.
3. Check the propellers for secure attachment and any signs of wear or damage.
4. Ensure that the propellers are properly tightened and free of any nicks or cracks.
5. Ensure that the battery is fully charged and securely inserted into the drone.
6. Verify that the battery terminals are clean and free of corrosion.
7. 4. Check the camera and gimbal for any obstructions or damage.
8. Ensure that the camera lens is clean and the gimbal is moving smoothly.
9. Verify that all sensors are clean and free of debris.
10. Clean any sensors that are obstructed or dirty.
11. Confirm that the remote controller is functioning properly and connected to the drone.
12. Verify that the remote controller batteries are fresh and that the connection between the remote controller and the drone is stable.

Maintenance Program for the Phantom 4 Pro V2.0 sUAS

Hard Time Items:

Motors: Replace every 200 hours of flight time.

Propellers: Replace every 100 flights.

On-Condition Items:

Battery: Check the battery health after every 10 flights.

Replace the battery if it shows signs of wear or damage, or if it no longer holds a charge.

Camera and gimbal: Perform camera calibration after every firmware update.

Inspect the gimbal for any signs of wear or damage after every 25 flights.

Sensors: Test sensors for accuracy before every flight.

Condition Monitoring Items:

Monitor Airdata flight logs for any abnormal behavior.

Pay attention to any unusual vibrations, noises, or other anomalies.

Monitor temperature of motors after each flight using Airdata.

Excessive heat can indicate a problem with the motor or bearings.

Monitor battery charging cycles and health with Airdata.

Keep track of how many times the battery has been charged and discharged using Airdata.

Replace the battery if it shows signs of decreased performance or if it no longer holds a charge.

This maintenance program is based on the concept of Reliability Centered Maintenance (RCM), which focuses on preventing failures by identifying and addressing potential problems before they occur.

Following this program, will help to ensure the safety and reliability of the Phantom 4 Pro V2.0 sUAS.

Reliability Centered Maintenance (RCM) Program for DJI Phantom 4 Pro V2.0

Hard Time Items:

- Change propellers every 100 flights
- Factory Replace motors every 200 hours of flight time
- Perform full system inspection every 25 flights using DJI Assistant program

On-Condition Items:

- Check battery health after every 10 flights
- Perform camera calibration after every firmware update
- Test sensors for accuracy before every flight

Condition Monitoring Items:

- Monitor Airdata flight logs for any abnormal behavior
- Monitor temperature of motors after each flight using Airdata
- Monitor battery charging cycles and health using Airdata