Aircraft Maintenance
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Lecture - 12
Maintenance Schedule

Hello friends. So, 4th week of this course aircraft maintenance. So far, we have studied about the basic rules and regulations, for civil aviation civil aircrafts being operated in the country. We saw some of the aircraft systems, hydraulic system, fuel system landing air system, electrical system.

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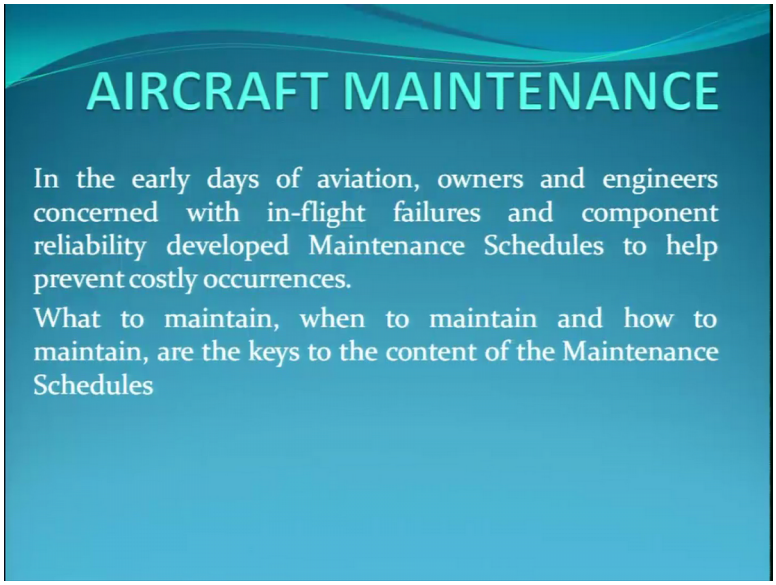

Today we would like to see something on the aircraft actually on the aircraft, the different components on the aircraft engine the different parts in the aircrafts on the wings on the fuselage about the controls. So, what are the inspections to be done on the various parts, how the inspections are divided into various schedules inspection schedules. So, to start with we will see what is all aircraft maintenance is about, and then we will go on the aircraft and do some actual aircraft maintenance.

So, in aircraft maintenance in the early days of aviation, the owners of the aircraft, the engineers working on the aircraft, they were quite concerned with the in-flight failures,

the about the component reliability. So, to address all those issues, to address all those failures, some maintenance schedules were developed.

So, that the costly damaged, costly failures could be prevented. Now the question was what should be maintained, when it should be maintained? And how it should be maintained? So, the maintenance schedules that were developed, the key points to be addressed the key points to be kept into account were, what has to be inspected? When is when it has to be inspected? And how it is to be inspected? These key features were incorporated in the maintenance schedules that were developed.

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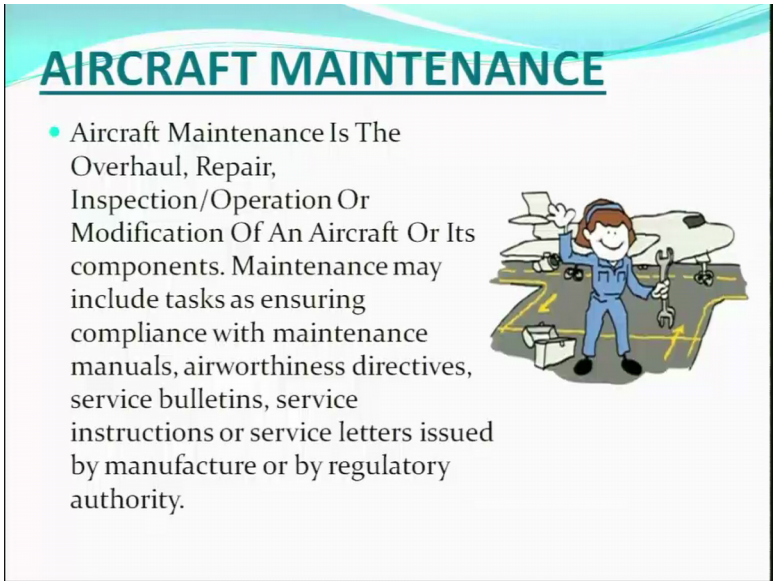

Now, aircraft maintenance, what is the aircraft maintenance? Aircraft maintenance is the overhaul, repair, inspection or operation or modification of an aircraft or it is components, maintenance may include tasks as ensuring compliance, with maintenance manuals airworthiness directives service bulletins, service instructions or service letters issued by the manufacturer or by the regulatory authority.

Now the manufacturer of the aircraft will issue various service instructions in the form of service bulletins, in the form of instructions, in the form of letters, based on the manufacturer's instructions, the maintenance schedules are developed some instructions will be issued, by the regulatory authority in which of the country concerned, where the aircraft is being operated.

Many instructions will be mentioned in the maintenance manual, in the repair manual, in the overhaul manual of the aircraft or the component. So, any maintenance, any repair, any inspection, any overhaul, any modification on the aircraft, is to be carried out as per the instructions of the manufacturer, which is issued in the maintenance manuals, in the form of service bulletins, service instructions, or service letters.

There may be instructions issued by the regulatory authority, these instructions are also to be complied. So, the inspection schedules are developed, keeping into account all the information available in the instructions, issued by the manufacturer and the regulatory authority.

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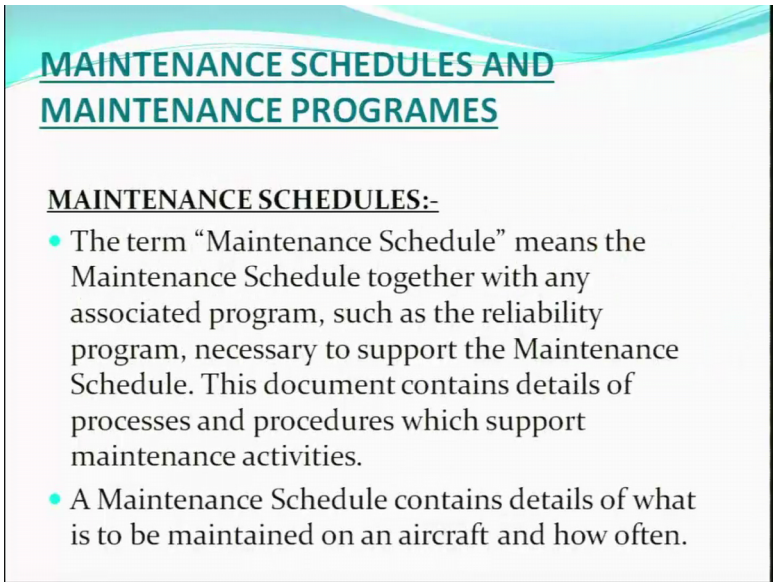

The term maintenance schedule means, the maintenance schedule together with any associated program, such as the reliability program, necessary to support the maintenance schedule, this document contains the details of the processes and procedures, which support maintenance activities. So, the maintenance schedules as we have just seen, that the maintenance schedules are issued on the basis of the instructions by the manufacturer. Now the procedures the processes which are to be carried out are spelled out in the maintenance schedule, the maintenance schedule contains details of, what is to be maintained? On an aircraft and how often?

Now, how often that particular schedule is to be carried out, what is the inspection frequency? And what has to be maintained? The inspection frequency can be in the form

of hours, the hours of aircraft operation, the calendar period, depending on the complexity of the system, depending on the past experience the inspection frequencies are decided. So, the maintenance schedule will clearly mention, what is to be maintained? What has to be inspected? What maintenance is to be carried out? And how often it is to be carried out?

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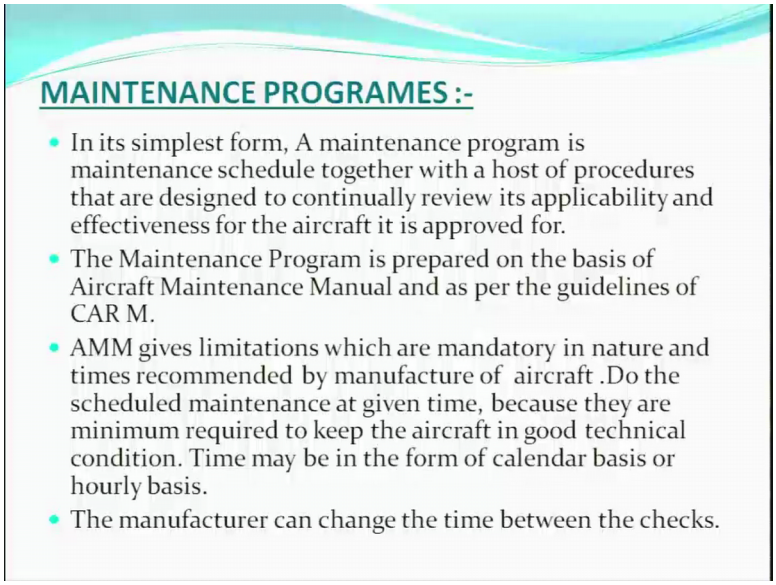

Maintenance programs, in it is simplest form a maintenance program is maintenance schedule together, with the host of procedures that are designed to continually review it is applicability, and effectiveness for the aircraft it is approved for, the maintenance program is prepared on the basis of aircraft maintenance manual, and as per the guidelines of CAR M.

Now, this maintenance program, is prepared as per the guidelines meant issued by the regulatory authority of the country, in our country in India the CAR M is being followed. So, the civilization requirements in CAR M are to be followed, in preparing the maintenance program, plus the guidelines issued by the manufacturers are to be followed, the maintenance program spells out the frequency of the inspections for example, the inspection frequencies may be like a daily inspection, then 50 hours of inspection, then 100 hours of inspection, 200 hours of inspection, 1 year of inspection.

So, different inspections, different schedules, different areas of aircraft to be inspected are spelt out in the different schedules, and this together makes a maintenance program.

Maintenance program also includes, the components that are to be replaced, at various intervals the components that have to be overhauled, which is called the tbo time between overhaul, the tbo status of the aircraft is also prepared in the aircraft maintenance program. Maintenance program will also include the structural inspections, the corrosion prevention inspections, the control inspections, we call them the cp corrosion prevention and control program.

So, all these inspections which are to be carried out at different intervals, they all together are included in the maintenance program. So, the maintenance program, covers the inspection frequencies, the tbo status the frequency at which the parts are to be replaced or overhauled, the supplemental structural inspection document, and the correlation prevention and control program. Aircraft maintenance manual that is AMM gives limitations, which are mandatory in nature and times recommended by the manufacturer of the aircraft.

The maintenance schedules are to be carried out at the given time, because they are the minimum required to keep the aircraft in good technical condition. Time may be in the form of calendar basis, or hourly basis, the manufacturer can change the time between the checks, as we just discussed that the maintenance manual will mention the limitations, which are mandatory in nature.

So, the schedule the aircraft maintenance has to be carried out at the time at the inspection frequency, at which the manufacturer has advised, but these inspection frequencies and these inspections are the minimum required to keep the aircraft in the good technical condition. Based on the experience, based on the operator's experience, based on the experience of the regulatory authority, certain more instructions may be issued to keep the aircraft in a good condition.

The inspection frequencies can be in the form of calendar basis, or hourly basis or both whichever is earlier, and the manufacturer has the full right to vary the time period between the inspections.

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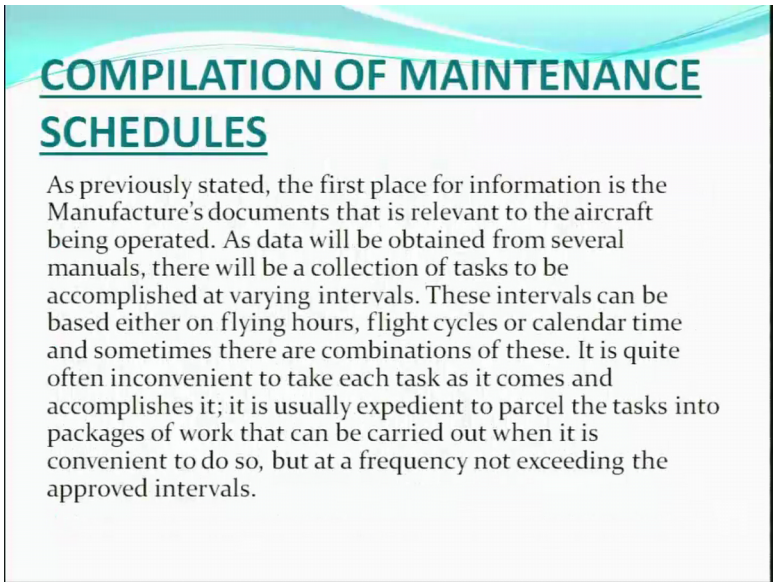

Compilation of maintenance schedules, as previously stated the first place for information is the manufacturers document, that is relevant to the aircraft being operated, as data will be obtained from several manuals there will be a collection of tasks to be accomplished at varying intervals, these intervals can be based either on flying hours, flight cycles, or calendar time, and sometimes there are combinations of these, it is quite often inconvenient to take each task as it comes, and accomplish it is usually expedient to parcel the tasks into packages of work, that can be carried out when it is convenient to do so, but it rough frequency not exceeding the approved intervals.

Now, we have seen that there are maintenance manuals issued by the manufacturers, the service bulletins, the service instructions, the service letters and the instructions issued by the regulatory authority. All these information together is compiled, which becomes a maintenance schedule, the frequency the inspection frequency is kept as per the advice of the manufacturer. And the regulatory authority.

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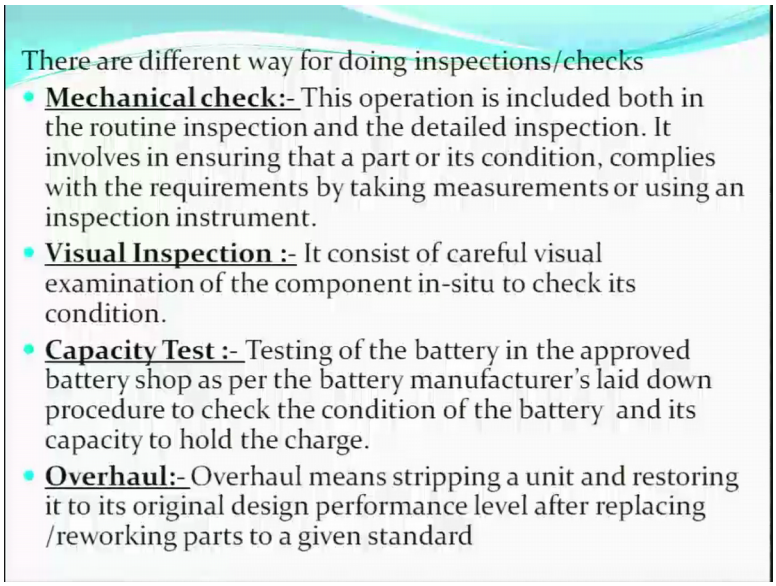

There are different ways of doing the inspections or the checks, one is the mechanical check, this operation is included both in the routine inspection and the detailed inspection. So, mechanical checks are there in the normal checks, normal inspections, routine inspections, as well as in the major inspections or the detailed inspections. It involves in ensuring that a part or it is condition complies with the requirements, by taking measurements or using an inspection instrument.

Now, in the mechanical check you can inspect the part or the component by taking measurements, or by using another instrument particular area or the component or the instrument can be inspected. So, mechanical checks involve ensuring the condition of the part, complying with requirements of the manufacturer by taking measurements, which are as specified in the maintenance manual or by using another inspection instrument, another type of check is the visual inspection, it consists of careful visual examination of the components, in-situ to check it is condition. Now the components can be checked in-situ, by doing a careful visual inspection. So, visual inspection this is a very important inspection.

The first inspection which a person carries out, and in the daily inspection or the preflight inspection, this visual inspection is done is carried out and, a person carrying out the daily inspection has to be very careful, while inspecting all the components. The capacity test testing of the battery in the approved battery shop, as per the battery

manufacturers laid down procedure, to check the condition of the battery and it is capacity to hold the charge, the batteries are capacity tested in the approved battery shop, as per the requirements of the manufacturers, the battery's condition is checked and the battery's capacity is to hold the charge is checked in the battery shop.

Overhaul means, stripping the unit and restoring it to it is original design performance level, after replacing, reworking parts to a given standard. Overhaul is a major maintenance which involves, stripping of a unit and restoring it is to it is original design performance, after replacing or reworking parts to a given standard.

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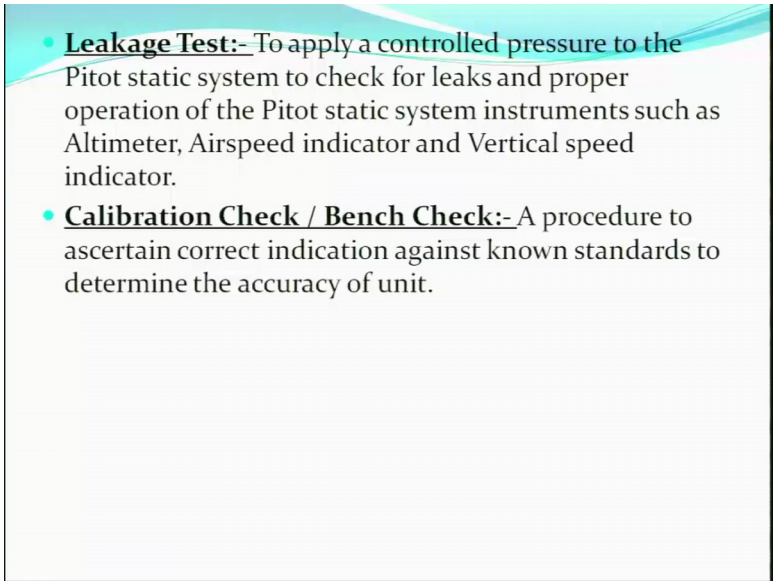

Leakage test, to apply a controlled pressure to the pitot static system, to check for leaks, and proper operation of the pitot static instruments, such as altimeter, airspeed indicator, and vertical speed indicator. So, an example for the leakage test is given, in the flight instruments, altimeters, airspeed indicators vertical speed indicators, the pitot static instruments a leakage test is performed to check, whether the system is holding that pressure whether there is any leakage in the system or not.

So, a controlled pressure is applied to the pitot static system, and proper operation of the instruments is checked, by seeing that there is any leak in the instrument line, in the instrument system or not. Calibration check or the bench check is a procedure to ascertain correct indication, against known standards to determine the accuracy of a unit. So, calibration check or a bench check is a procedure to know, whether the particular

component being checked is accurate when it is checked against the standards against the, known standards by using a master gauge.

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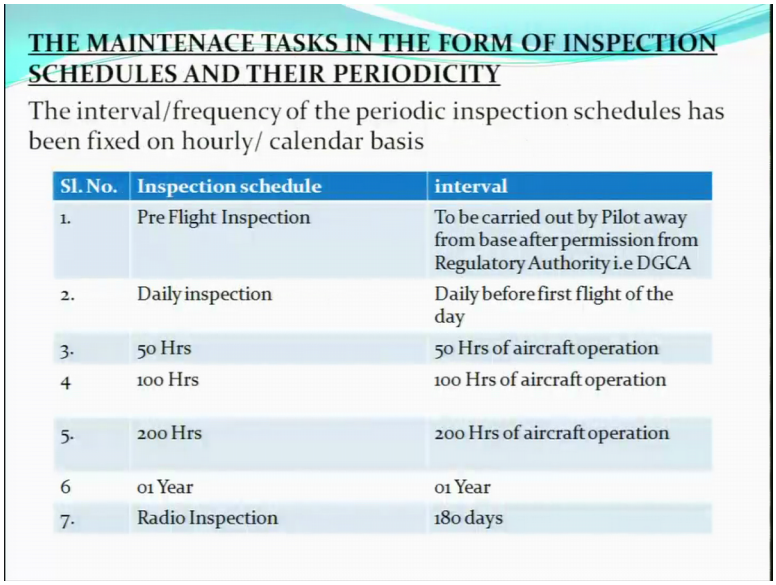

Now, as we just discussed about the maintenance program, the maintenance tasks may be in the form of inspection schedules, and the periodicity. It is given here the maintenance program in the maintenance program, you can see the different schedules and the frequencies, the first is first inspection is the preflight inspection, which is carried out by the pilot then comes, the daily inspection which is to be carried out before the first flight of the day, another inspection 50 hours, that has 50 hours of aircraft operation.

So, after every 50 hours of aircraft operation, this 50 hours inspection schedule will be done. Then comes the 100 hours, after 100 hours of aircraft operation, this 100 hours inspection schedule will be carried out, then comes your 200 hours, then 1-year inspection and we also carry out a radio inspection, or the avionics inspection every 180 days. So, this is the inspection frequency of one of the aircraft, daily inspection, 50 hours, 100 hours, 200 hours, 1 year and radio inspection.

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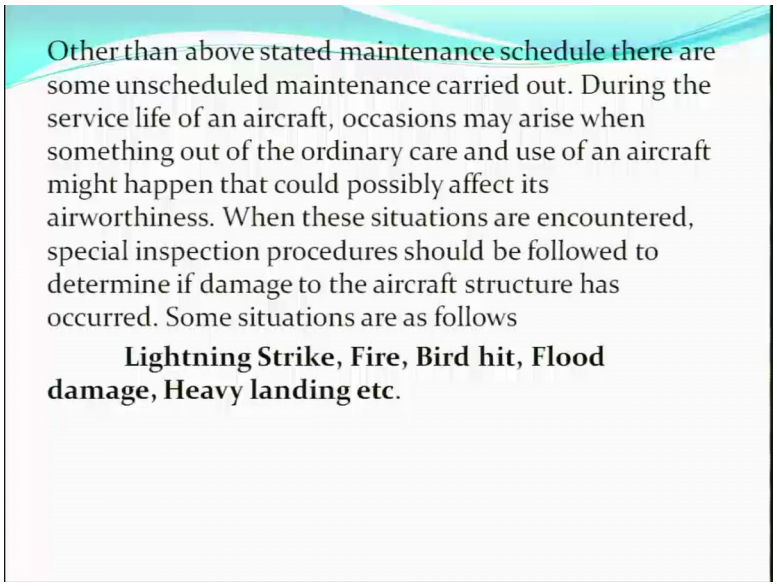

Other than the above stated maintenance schedules, there are some unscheduled maintenance which is required to be carried out, during the service life of an aircraft occasions may arise, when something out of the ordinary care, and use of an aircraft might happen that could possibly affect it is airworthiness.

When these situations are encountered, special inspection procedures should be followed, to determine if damage to the aircraft structure has occurred, some situations are as follows lightning strike, firebird, head flood damage, heavy landings etc. So, apart from the regular maintenance schedules as mentioned above, and the mandatory replacements, which are carried out as per the tbo program, the time between overhauls. We may encounter such situations where we are required to carry out certain inspections, certain repairs, these occasions may be when your aircraft passes through a lightning strike, suppose a lightning strike, aircraft suffers a fire there is a bird hit, there is a flood damaged, or your aircraft makes a heavy landing.

So, all during all these occasions on all these incidents, there are special inspections again suggested by the manufacturer, approved by the regulatory authority, and in the event of any of these incidents, we need to perform those special inspections.

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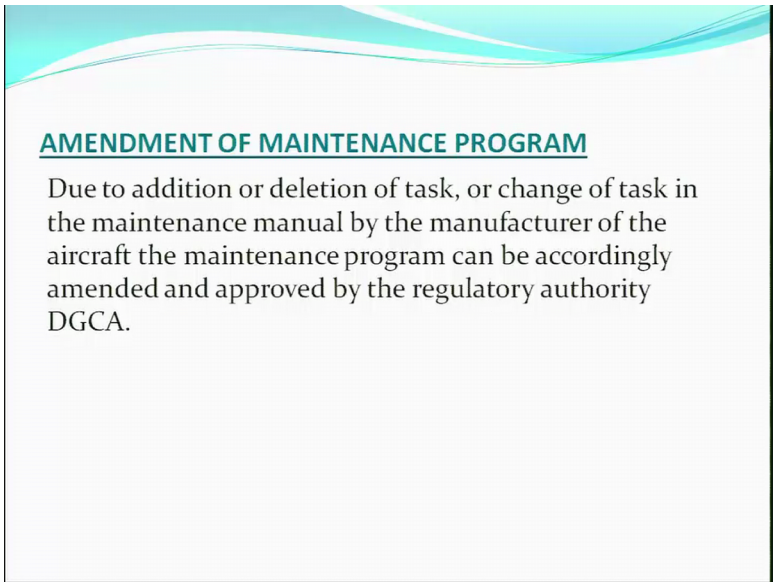

Now, amendment to the maintenance program, from time to time we may be required to carry out and carry out an amendment in the maintenance program, an amendment in the schedule, this amendment is carried out on the basis of the changes in the, manufacturers guidelines in the maintenance manuals, in the service bulletins, service instructions, service letters, or by the regulatory authority. So, any if there is any change, in the instructions issued by the manufacturer or the regulatory authority, we are supposed to carry out an amendment in the schedules and in the maintenance program.

So, due to addition or deletion of tasks or change of task, and the maintenance manuals by the manufacturer of the aircraft, the maintenance program can be accordingly amended, and approved by the regulatory authority that is DGCA.

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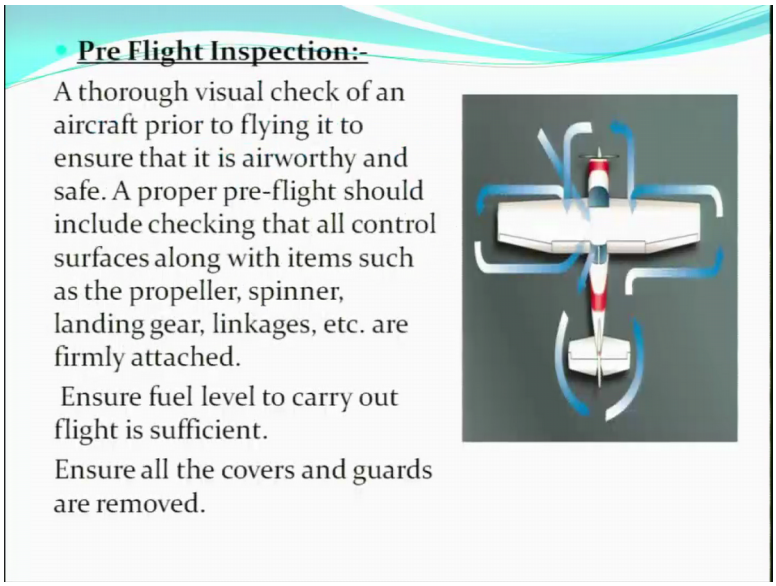

Now coming to the preflight inspection, we have just seen generally the preflight inspection is carried out by the pilot, but we will just see what is a preflight inspection. It is basically a go around inspection, a thorough visual check of an aircraft prior to flying it to ensure that it is, air worthy and safe.

So, it is a thorough visual check to ensure that your aircraft is airworthy, and safe a proper preflight should include, checking that all control surfaces along with items, such as the propeller, spinner, landing gear, linkages etcetera are firmly attached. So, in the preflight generally, the pilot is inspecting, that your control surfaces, the spinners, the propeller, landing gears, linkages, all everything is firmly attached, the fuel level is sufficient to carry out the flight, and all the covers and the guards are removed prior to the flight.

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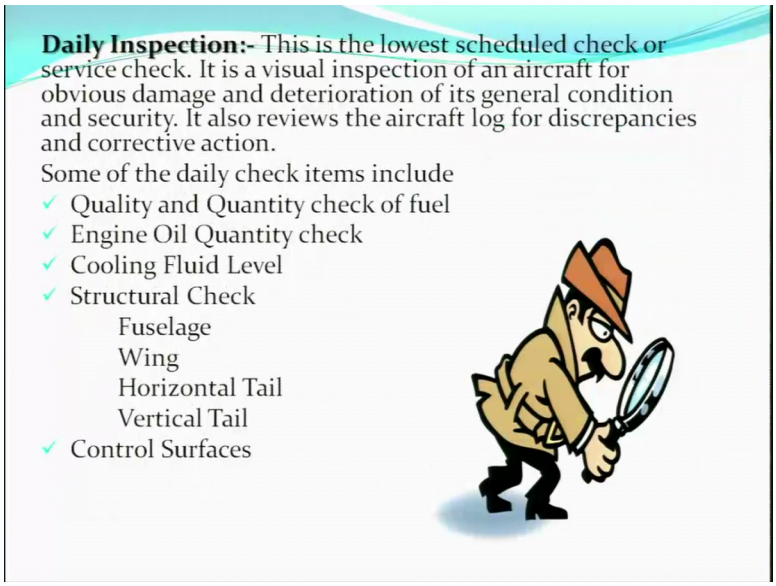

Next inspection is the daily inspection, this is the lowest schedule, or the service it is a visual inspection of an aircraft, for obvious damage and deterioration of it is general condition and security. So, daily inspection is mainly a visual inspection, of any damage or deterioration of any component. It also removes the aircraft log for discrepancies and corrective action, apart from the visual inspection, the aircraft records the are also inspected in case, if the there is a problem in an aircraft if the pilot has reported any problem in the aircraft, and has mentioned in the aircraft log, then that record has to be checked, that problem has to be rectified, the aircraft has to be made serviceable, before the flight.

Some of the daily check items include, quality and quantity check of the fuel. So, in as part of the daily inspection, we check we take the fuel sample, we drain the fuel sample from the fuel tanks, from the gas collector filter, and check whether the fuel is free of water content, whether there is no sediment, we also check whether the quantity of the fuel in the fuel tanks is sufficient to carry out the flight. Then we check the engine oil quantity, the oil quantity should be within the specified limits, the cooling fluid level the in case if the fluid cooling fluid level is used, then we also need to check whether your cooling fluid level is as required, the structural checks as part of the daily inspection we do some visual checks, on the fuselage, on the wing, the horizontal tail, the vertical tail, all visual inspections are to be done, on the aircraft, further the control surfaces are checked for free movement.

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The engine and engine compartment is checked, the propellers and spinner is checked, the main landing gear, the nose landing gear, and the wheel assemblies are checked, in the cockpit we check the instruments, the movement of controls, the radio equipment's, seats and seat rails, are the rails on which the seats move, and the safety equipment's. So, all these things are checked during the daily inspection, all of them are the visual checks.

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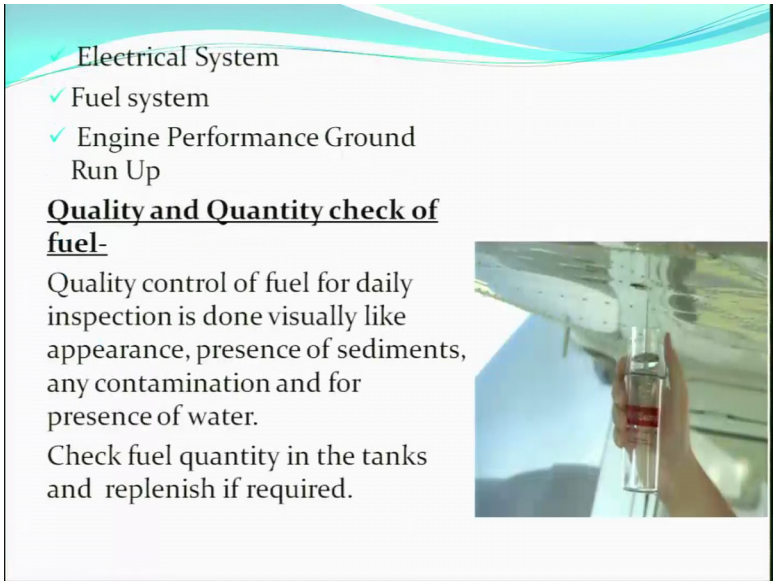

Further electrical system, fuel system is checked, after doing all the visual inspections, we carry out a engine ground run up, to care to check the performance of the engine.

Now the quality and quantity of fuel, the quality control of the fuel for daily inspection is done visually, like appearance presence of sediments, any contamination, and for presence of water. So, in the figure you can see a fuel sample is being taken from the drain points in the wing. So, in this sample the presence of sediments, any contamination is checked, the presence of water is checked, with the help of a water finding paste, the water finding paste is applied, and in case if the water finding paste becomes pinkish in color; that means, your fuel sample has got water in it.

Check fuel quantity in the tanks and replenish if required, in case your fuel quantity is less, then you have to replenish your fuel tanks. So, you need to check whether you have sufficient fuel quantity, for the intended flight.

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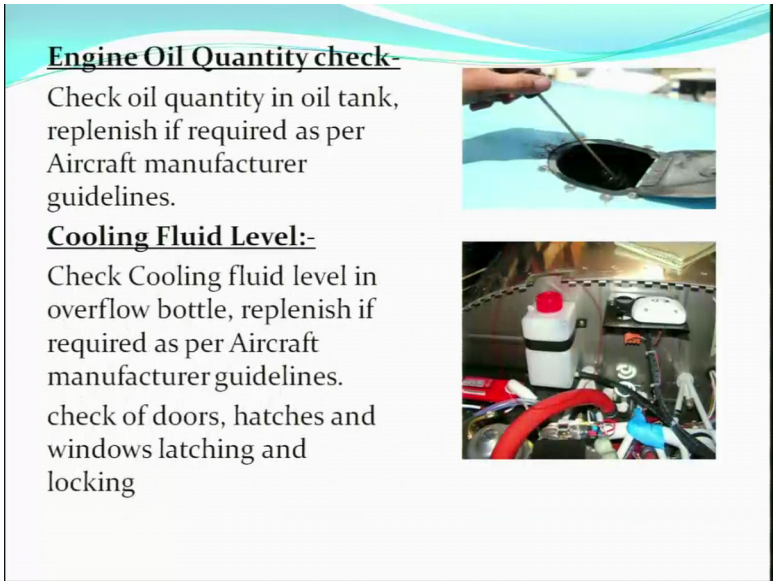

Engine oil quantity check. In the figure you can see there is a dipstick, the oil quantity is checked with the help of this dipstick, the oil check oil quantity in the oil tank, and replenish if required as per the manufacturers guidelines. The cooling fluid level in the bottom figure you can see there is a bottle the circled diagram, this is the bottle where the cooling fluid is filled. So, you have to check the cooling fluid level in the overflow bottle, replenish if required as per the manufacturers guidelines, check all the doors hatches and window latching and locking.

So, apart from the fuel check, the oil check, the fluid check, we also need to check the doors the latches, the windows and the locking mechanisms, in the aircraft.

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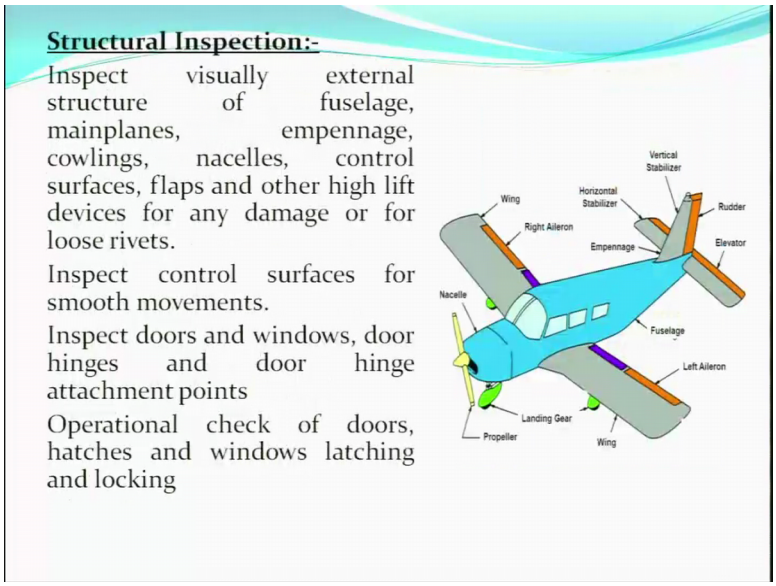

Now, what are the structural inspections inspect visually external structure of fuselage, mainplanes, empennage, cowlings, nacelles, control surfaces, flaps and other high lift devices, for any damage or for loose limits. So, the entire surface the entire external structure, on the fuselage, the mainplanes, empennage, cowlings, nacelles, control surfaces, flaps and other high lift devices, they need to be checked for any damaged, loose rivets on the sketch inspect control surfaces, for smooth movements. Now the control surfaces need to be checked, whether the surfaces are moving freely, the surface movement is smooth there is no binding.

Inspect doors and windows door, hinges and door hinge attachment points. So, the doors and windows, their hinges, the hinge attachment points, the locking mechanisms, everything needs to be checked operationally, check of doors hatches, and window latching, and lockings, again the doors and windows lacking latching, and locking needs to be checked.

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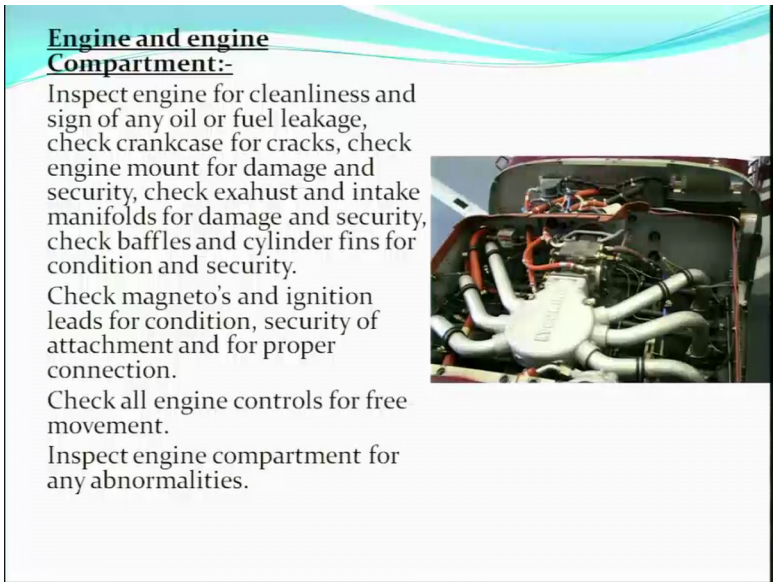

In the engine compartment, inspect engine propping cleanliness, and signs of any oil or fuel leakage. Check crankcase for cracks check engine mount for damage, and security check exhaust, and intake manifolds for damage, and security check baffles, and cylinder flames, for condition and security.

So, in the engine compartment the general cleanliness has to be checked, you need to check for any leakage of oil or fuel, whether there are any cracks in the crankcase, we need to check the engine mounts for any damage, the engine mounts have to be secured, we need to check the exhaust manifold and the intake manifolds, for any damage and security.

The baffles and the cylinder cooling fins, are also to be checked for condition and security. The magnetos which are part of the ignition system of the engine, the magnetos and the ignition leads, are to be checked for condition the security of attachment, and for proper connection. All the engine controls need to be checked for free movement, and apart from all these inspections, we need to check whether the engine compartment has any other abnormality or not.

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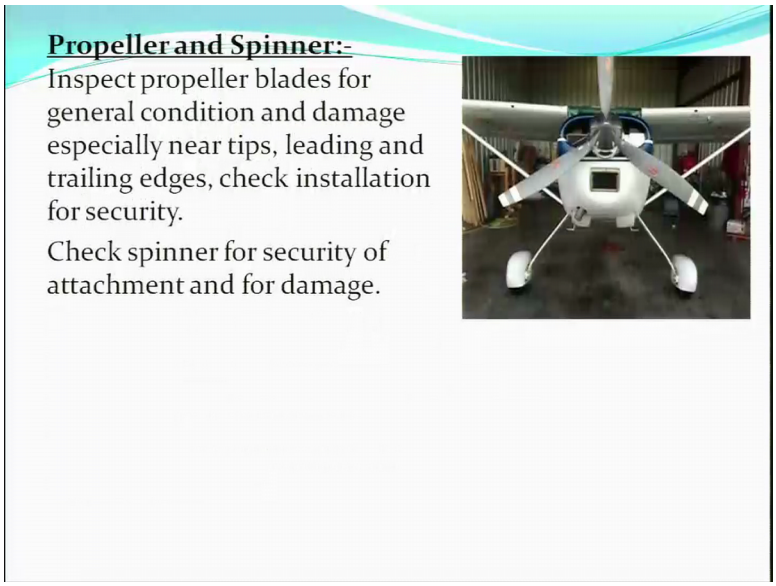

Then the propeller and the spinner, inspect the propeller blades for general condition and damage, especially near the tips leading and trailing edges, check installation for security.

Now, in the propeller and the spinner, we need to check the blades for general condition, any damage on the blades, major thrusts of inspection should be near the tips, and the propeller blades, the trailing edges of the blades, the these leading edges may get damaged because of the pebbles on the runway. So, we need to be extra careful about the edges on the propeller blades.

Then the installation of the propeller, the install the mounting bolts of the propellers needs to be checked for security. Further the spinner is to be inspected for security of attachment, and any damage. In the figure you can see the propeller, and the spinner, the spinner is to be inspected for any damage and security of attachment, the propeller blades are inspected on the tips the leading and trailing edges for any damage, and the propeller mounting are checked for security.

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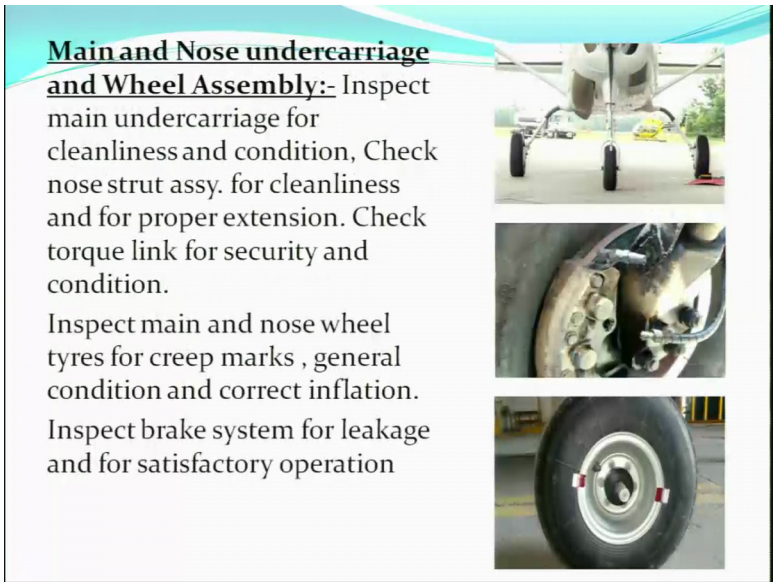

Coming to the landing gear the main and nose landing gear, and the wheel assemblies. Inspect main undercarriages for clean cleanliness and condition. We need to check whether your landing gears are clean, they are in a good condition, check the noses strut assembly for cleanliness and for proper extension, the noses strut is to be checked for proper cleanliness, and for the proper extension.

Check torque links for security and condition, the torque links and the nose landing gear, are to be checked for security and condition. Inspect main and nose wheel tyres for creep marks, in the figure you can see, this is the these are the creep marks you need to check, whether the creep marks are aligned, we need to check the general condition of the tyres and the correct inflation.

Inspect brake system for leakage and for satisfactory operation, the brake systems are to be checked for any leakage and for satisfactory operation.

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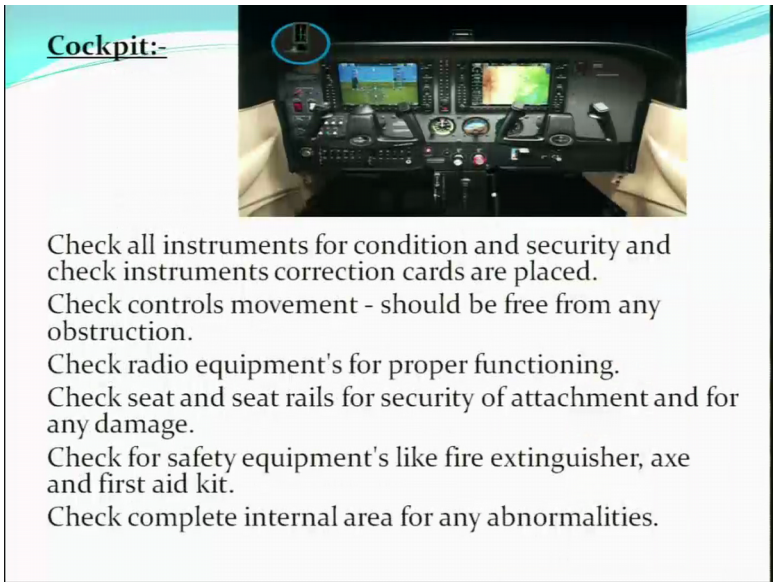

In the cockpit we check all the instruments for condition and security, and all the correction cards are placed or not check control movement they should be free from any obstruction, we operate the controls, we check the aileron movement, we check the elevator movement, we check the rudder movement, all the controls should be free from any obstruction. We also operate the engine controls, and check whether they are free, check radio equipment's for proper functioning, check seats and seat rails for security of attachment and any damage, check for safety equipment's like fire extinguishers, crash axe, and first aid kit, and check complete internal area for any abnormalities.

So, apart from everything else we also need to check the complete internal area, to see if there is any other abnormality. In the cockpit we have seen the instruments, we have seen the correction cards, we have seen the controls movement, we check the radio equipment, the seats, and the safety equipment's.

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Coming to electrical system, inspect electrical equipment's for security, check landing navigation and general lightings for correct functioning, we also check the different lights, the landing lights, the navigation lights, and the general lights for proper operation, for proper functioning, check battery for condition security, and sign for acid spillage, we also check the batteries for condition, security and any spillage of the electrolyte.

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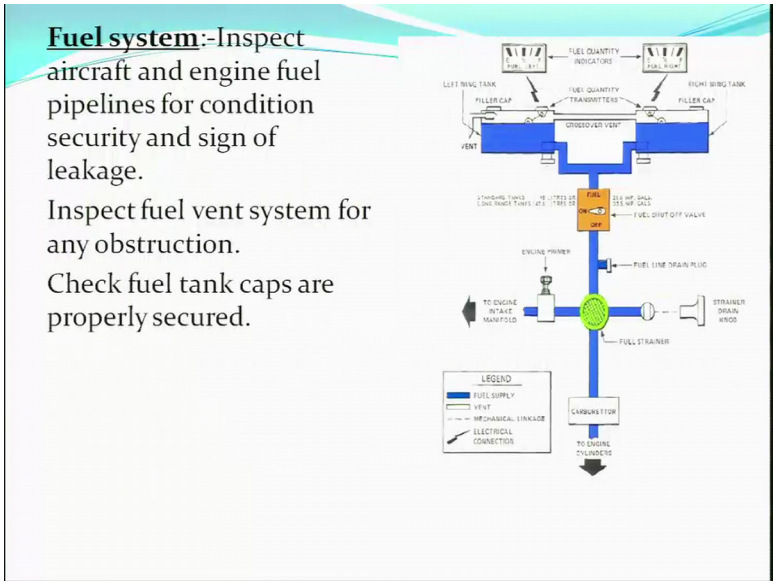

In the fuel system, we inspect the aircraft and engine fuel pipelines, for condition security, and signs of leakage

So, all the fuel lines are checked for security, and any leakage the fuel range system is inspected for any obstruction, and the fuel tanks are inspected to see if they are properly secured. So, in the diagram you can see the fuel system, the fuel caps the fuel caps are there on the wing tanks, we need to check the fuel caps, whether they are properly secured you need to check all the things whether the lines, are properly are firmly in place, and there is no leakage in the lines, the all the drain points, we need to check whether the drain points are clear, the vent lines all the vent lines are clear there are no obstructions.

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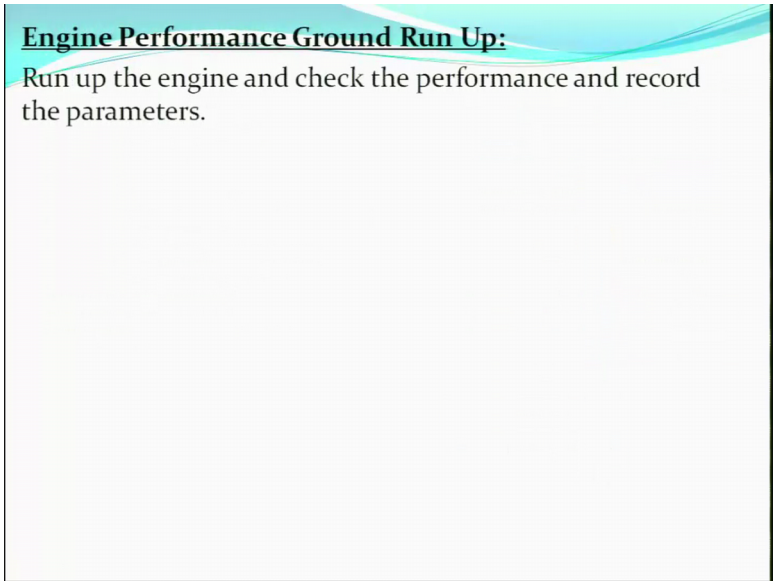

After doing all this proper engine, run up is carried out and the performance of the engine checked, and the parameters recorded.

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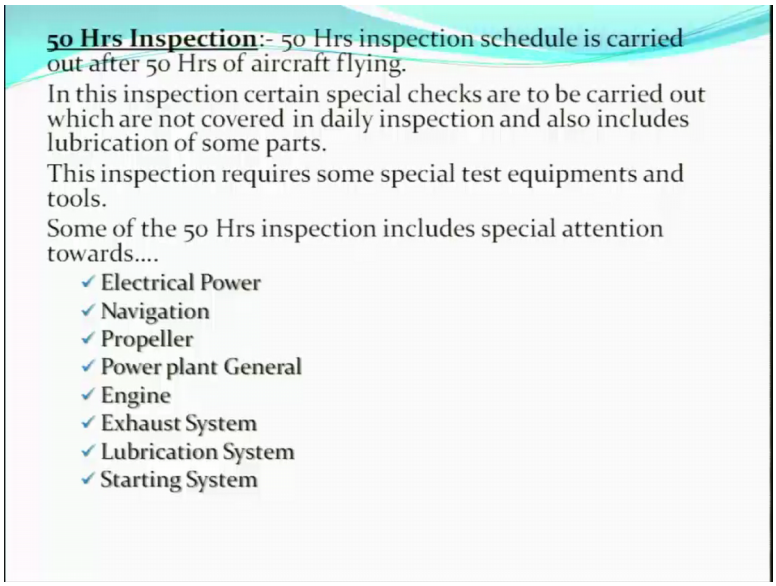

Next inspection is the 50 hours inspection, this is carried out after every 50 hours of aircraft flying operation. This inspection carry involves certain special checks, which are to be carried out, and are not covered in daily inspections, this also includes lubrication of some parts. This inspection requires some special test equipment's and tools, some of the salient features, some of the areas where we need to inspect in this inspection schedule, are electrical system, navigation, propeller, general power plant engine, exhaust system, lubrication system, starting system. So, these are the different areas, where we inspect in this schedule.

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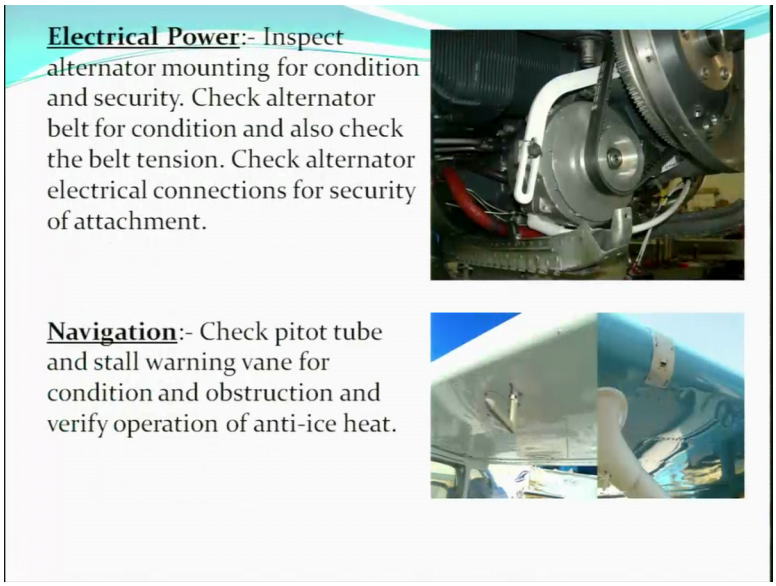

Coming to the electrical system in the figure you can see, there is a this is an alternator alternator is mounted, which is belt driven, this is the belt we inspect the alternator mounting for condition and security, we will check whether this alternator mounting is proper it is securely attached, check alternator belt for condition, we will check this belt for proper condition, and also check the belt tension, there is a proper belt tension prescribed by the manufacturer in the maintenance manual, that belt tension has to be checked.

There is a proper procedure spelt out in the maintenance manual to check the belt tension, the belt tension is checked accordingly, and in case if the belt tension is not within the limits as specified, the belt tension has to be adjusted, then check alternator electrical connections for security of attachment. Apart from checking the belt tension, the security of alternator, we also need to check that, the electrical connections on the alternator are firmly in place and are secured properly

Then coming to navigation, we have to check the pitot tube, stall warning vane for condition and obstruction, and verify operation of anti-ice heat, pitot tube, the stall warning vane has to be checked. This is the pitot tube basically and this is for flight instruments, with the help of this pitot tube and there is a static hole, with the help of this pitot and the static pressure, we operate 3 instruments, altimeter, airspeed indicator and vertical speed indicator. So, we need to check the pitot tube, for condition, for any obstruction, for proper mounting. Further we also need to check whether the anti-ice system, the anti-ice heat system is operating properly or not, this is the stall warning vane, on the leading edge of the wing, this stall warning vane is also to be checked for proper operation.

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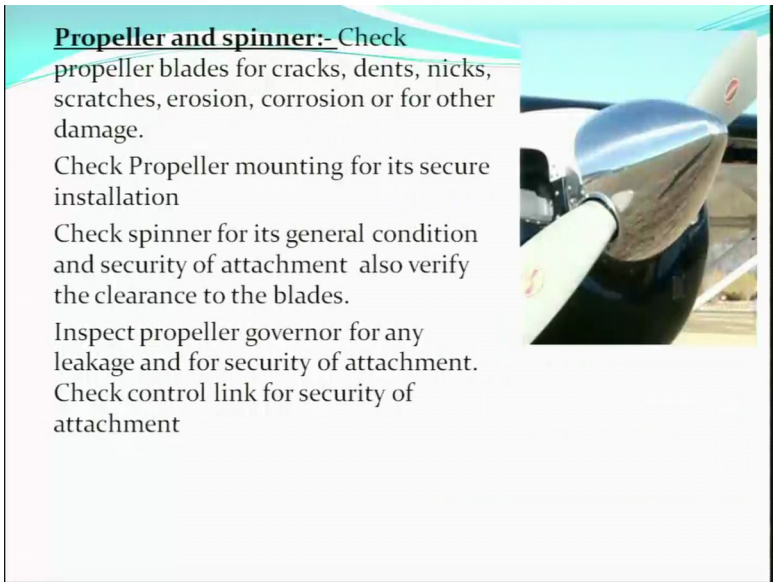

Now, the propeller end spinner, this is your spinner these are your propeller blades, check propeller blades for cracks, dents, nicks, scratches, erosion, corrosion, or for other damage. Check propeller mounting for it is secure installation, check spinner for it is general condition and security of attachment, also verify the clearance to the blades. So, and the clearance of the blades to the spinner. So, this is the clearance between the blades and the spinner this also needs to be verified. There is a limit prescribed by the manufacturer, this limit is to be checked, the clearance limit is to be checked and verified. Inspect propeller governor for any leakage and for security of attachment, the propeller governor has to be inspected for any leakage and for of attachment, check control link for security of attachment, the control link is also to be checked for security of attachment.

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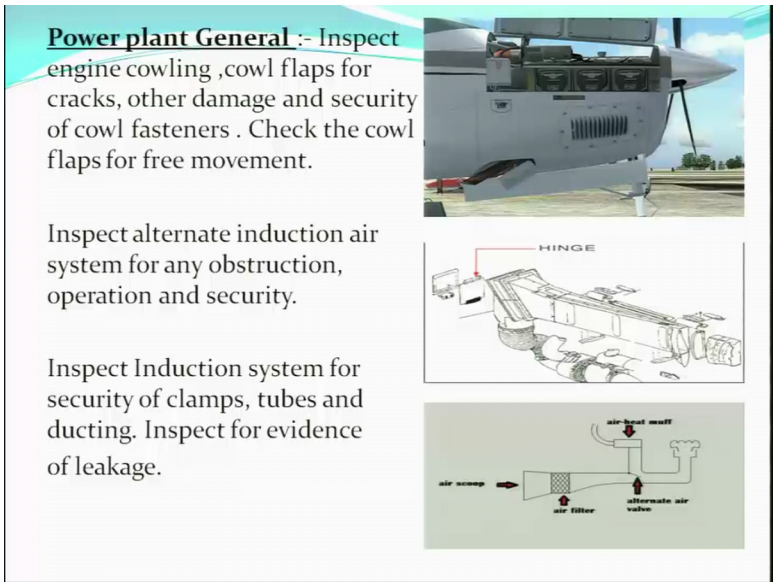

Coming to power plant general, inspect the engine cowlings, cowl flaps for cracks, other damage and security of cowl fasteners. So, this is your engine cowling, these are your cowl flaps. So, we need to check the cowl flaps, the cowlings, for cracks any damage, and security of cowl fasteners, check the cowl flaps for free movement, the movement of these cowl flaps is also to be checked for free, the movement should be free these cowl flaps should be able to operate freely. Inspect alternate induction air system for any obstruction, operation and security. The induction system also has an alternate induction air system in it, where in case your induction air filter gets locked, blocked, then the air bypasses the filter and passes through this alternate induction air system, and goes into the engine.

So, we need to check the alternate induction air system, for any obstruction, operation and security. Inspect induction system for security of clamps pubes and ducting inspect for evidence of leakage. So, the induction system has to be checked for security of clamps, tubes and ducting and there should not be any evidence of leakage.

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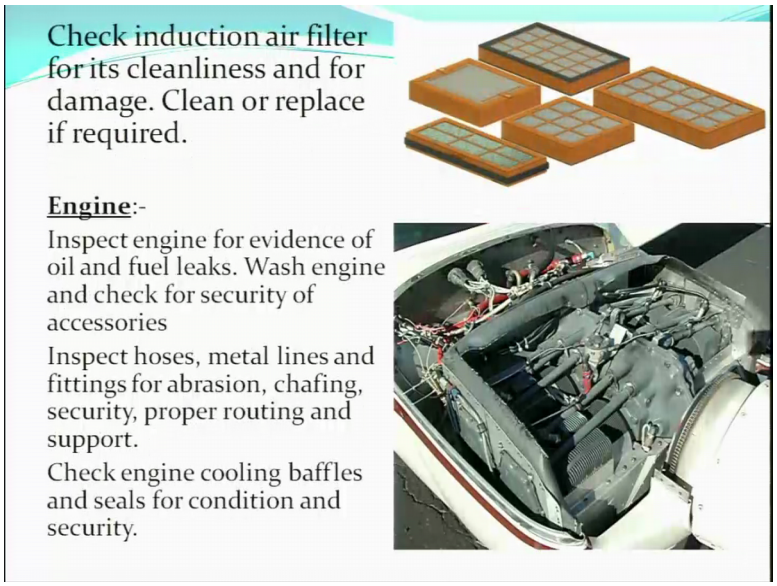

Check induction air filters for it is cleanliness, and for damage, clean or replace if required. The induction air filter is to be inspected for cleanliness and damage, and we need to clean or replace as required. So, in the 50 hours inspection, we are also cleaning the induction air filter, we may be required to replace it also. So, it is part of the 50 hours inspection.

Coming to engine, inspect engine for evidence of oil and fuel leaks. The very first thing to be inspected, your engine compartment should be free of oil leaks, fuel leaks, wash engine and check for security of accessories, after that we need to wash the engine, and check the accessories are securely attached, inspect hoses, metal lines and fittings for abrasion, chafing, security, proper routing and support.

All the hoses you can see this is the engine here, all the orange, orange colored hoses, these are the hoses, all the hoses needs to be inspected. All the metal lines you can see here, these are the metal lines, the fuel lines, all the metal lines they need to be inspected for abrasion, chafing security, proper routing, and support, check engine cooling baffles and seals for condition and security, these are your cooling baffles, these are the engine baffles, these baffles need to be inspected for seals for condition and security.

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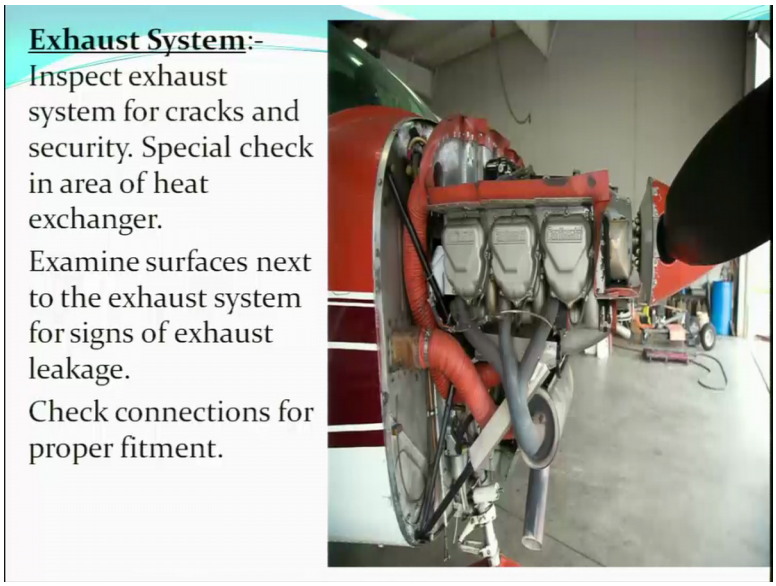

Coming to the exhaust system, inspect exhaust system for cracks and security, here is your exhaust system you can see in the figure, this is your exhaust system, these are the exhaust exhaust coming from each cylinder, this is your exhaust system. This exhaust system is to be inspected for any cracks and security, special check should be made in the area of the heat exchangers. So, special checks are to be carried out, examine surfaces next to the exhaust system, for signs of exhaust leakage, the adjustment areas in the exhaust system, also needs to be inspected for any signs of exhaust leakage, check connections for proper fitment. So, all the connections needs to be inspected for proper fitment.

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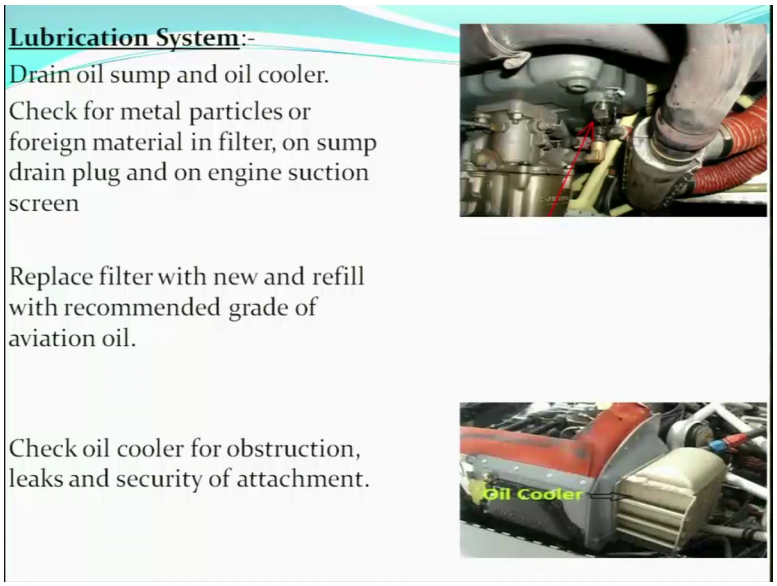

Then comes your lubrication system, drain the oil sump and oil cooler, in most of the piston engine aircrafts, the engine manufacturer calls for replacement of the engine oil at every 50 hours of operation, or for calendar months, whichever is earlier. So, as part of the 50-year schedule, in case your aircraft has flown 50 hours, we need to replace the engine oil. So, in order to replace the engine oil with a new oil, we will drain the oil some this is the drainage point, you can see here this is the drainage point, this is wire lock, we will cut the wire lock from here and open this drainage point. When this drainage point is opened, the oil will drain from this point and the oil will be depleted from the oil tank. So, we drain the oil sump and the oil cooler.

Check for metal particles or foreign material in the filter, when we are replacing the oil, we also need to replace the oil filter, the oil filter the old oil filter will be removed, a new one will be installed. The old oil filter is to be cut open, and the paper element in the oil filter needs to be opened up and checked for any foreign material, for any metal particle on the filter.

Apart from the filter we also need to check the sump drain plug, and the engine suction screen. After replacing the filter with a new filter, we refill the oil system with a put the recommended grade of aviation oil. Check oil cooler for obstructions, leaks and security of attachment. In the figure you can see this is your oil cooler this oil cooler is to be checked for obstructions, leaks and security of attachment.

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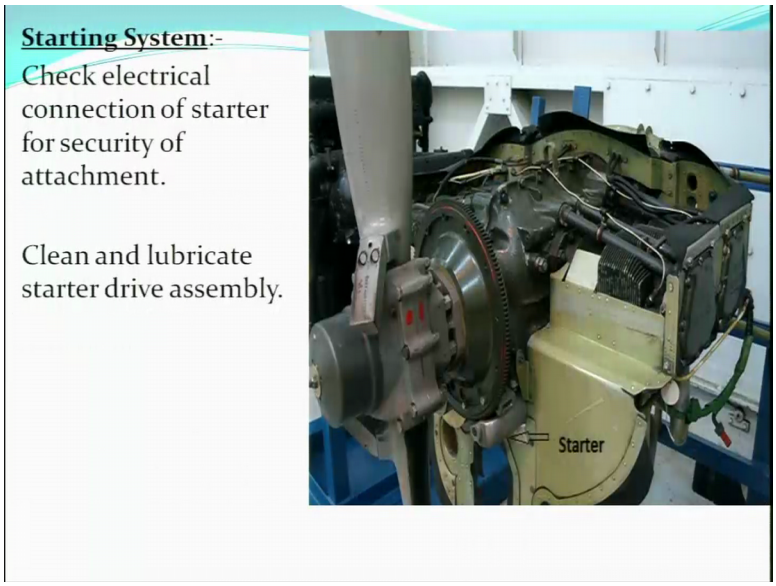

Next comes your starting system, here in the figure you can see this is your starter, check electrical connections of starter for security of attachment. So, we need first of all we will check whether the starter is securely attached, then we check the electrical connections in the secure in the starter are in place whether they are properly connected, we also clean and lubricate the starter drive assembly, there is a starter drive assembly here, we will clean it and lubricate it, by the lubricant as is specified by the manufacturer in the maintenance manual.

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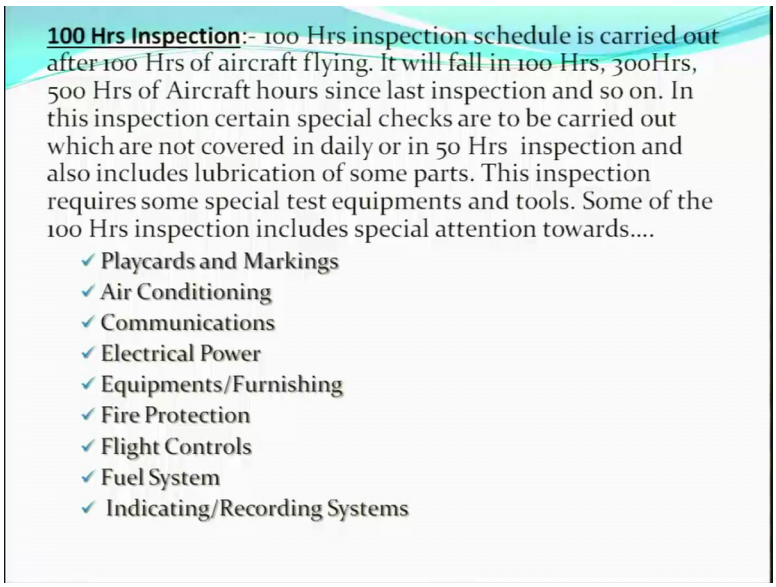

This was all about the 50 hours inspection. So, we have seen the daily inspection, the 50 hours inspection. Now we come to 100 hours inspection.

100 hours inspection schedule is carried out after 100 hours of aircraft flying, it will fall in 100 hours 300 hours or 500 hours of aircraft hours since last inspection and so on. In this inspection certain special checks are to be carried out, which are not covered in daily or in 50 hours inspection, and this also includes lubrication of some parts. This inspection requires some special test equipment's and tools, some of the 100 hours inspection includes special attention towards playcards, and markings very important thing, the there are various playcards and markings all over the aircraft. So, we need to check whether all the playcards and markings are there, on the aircraft as is specified by the manufacturer.

Then the air conditioning part has to be inspected, the communications part, electrical power, equipment's, furnishings fire protection, flight controls, fuel system indicating recording systems.

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Landing gears, lights, vacuum system, doors, fuselage, stabilizers, windows, wings, propellers, power plant engine, engine fuel and control ignition system, engine controls, starting system. All these parts you can see the complete aircraft is inspected during the 100 hours. 100 hours inspection is considered to be a major inspection, we just carried

out at 100 hours or 1 year whichever is earlier. So, we ensure that the complete aircraft is covered in 100 hours of inspection.

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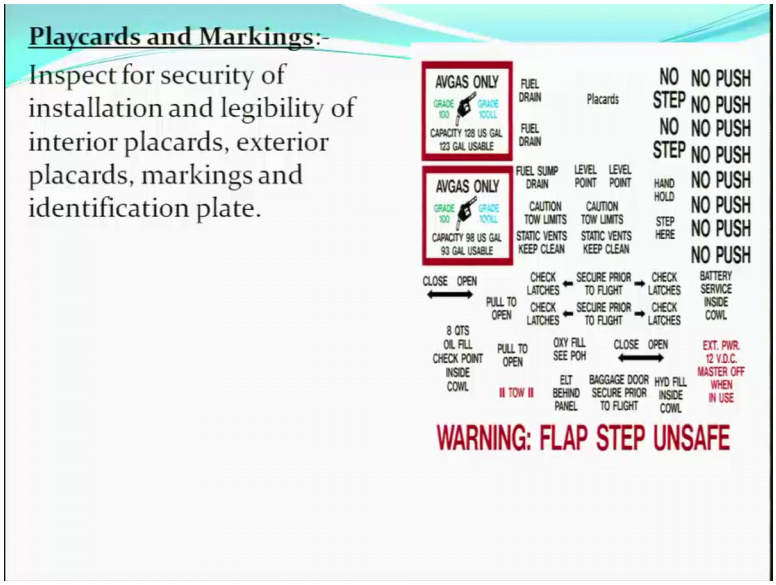

Now, coming to playcards and markings, in the figures you can see there are various playcards various markings shown here. So, at different areas these markings are playcarded. So, we need to inspect whether all the playcards all the markings are there, inspect for security of installation and legibility of interior playcards, exterior playcards markings and identification plates.

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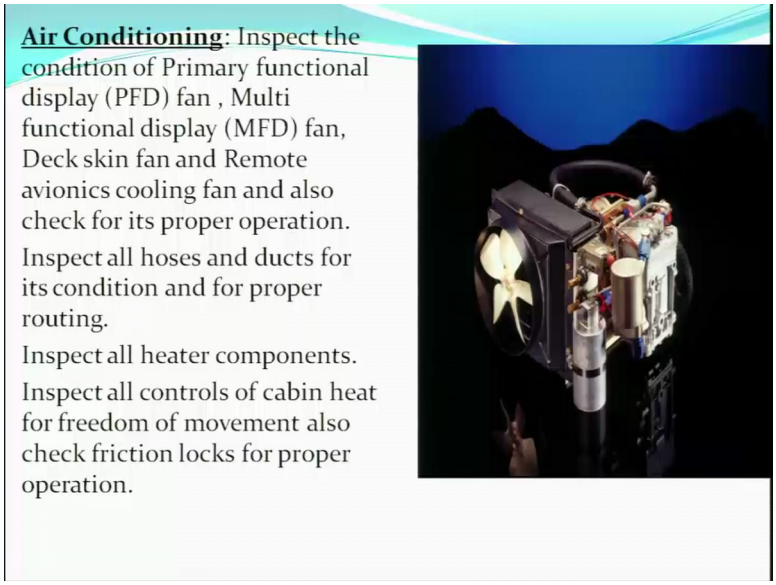

Air conditioning inspect the condition of primary functional display, PFD fan, MFD fan, deck skin fan, and remote avionics, cooling fan, and also check for it is proper operation. So, depending on the aircraft to aircraft in some of the aircrafts we have the PFD fan MFD fan, the deck skin fan, remote avionics cooling fan, all these fans different tracks for proper operation.

Inspect all hoses and ducts for it is condition, and for proper routing. All the hoses the ducts involved in the air conditioning system, are checked for proper routing. Inspect all heater components, inspect all controls of cabin heat for freedom of movements, and also check friction blocks for proper operation. So, all the controls for cable heat are checked for free movement, and the friction locks are checked for proper operation.

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In the communication, we need to inspect and clean push to talk switch, this is this is the switch which is pushed while we talk, and the pilot communicates with the control tower, he use this push to talk switch, and this is inspected and cleaned during the 100 hours inspection.

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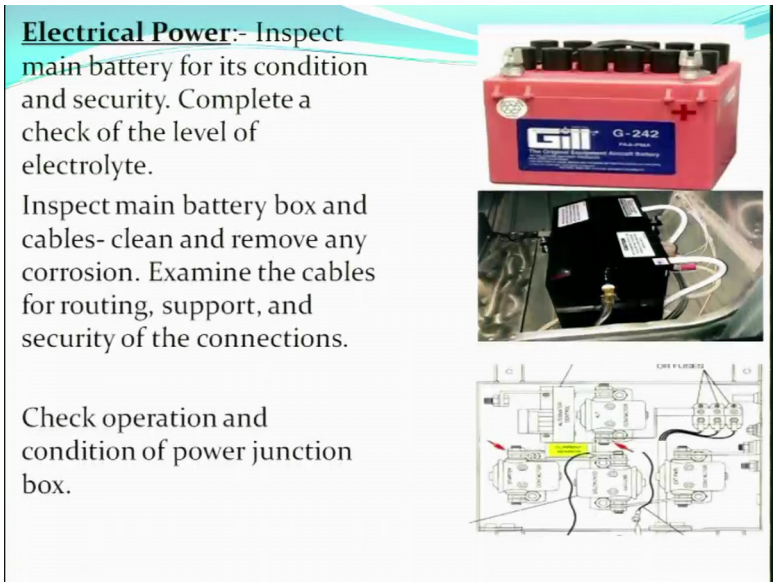

Electrical battery for it is condition and security, you can see this is the battery, we check the battery condition whether it is securely attached, complete a check of the level of electrolyte. Within the battery we also check the level of the electrolyte, inspect main battery box and cables, we will check the battery box and the cables, clean and remove any corrosion. In case if there is any corrosion, the battery has to be removed, the battery compartment, the battery box has to be cleaned properly. Examine the cables for routing, support and security of the attachments. The cables are to be examined for routing the support, and the security of corrections.

Apart from the battery and the battery box, there connections we check the operation and condition of the power junction box, there is a test specified in the maintenance manual, which is to be carried out for the power junction box, in the figure you can see this is the power junction box different types of relays, are there battery relays, starter relays, different relays are there. So, all the checks for this complete unit is specified in the maintenance manual. So, that check is also required to be carried out, as part of the electrical system check.

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Then your equipment's and furnishings, inspect seats, seat tracks, rails stops restraint system for serviceability, security of installation, condition and for any damage.

So, whether in the cabin you can see these seats, the these are the seat rails, on which the seats are moving, these are the seat rails, we need to check the seats, we need to check these tracks or the rails, their stops and the restraint system. We need to check these belts for security, installation, condition, and for any damage.

Apart from this we check the emergency locator transmitter the e l t for security of attachment, and check operation by verifying transmitter output, check cumulative time and useful life of batteries. So, as part of the 100 hours schedule, we will also check the battery thee l t is securely attached. We will check the transmitter output. We will also check the cumulative time and the useful life of the e l t batteries.

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There is a portable fire extinguisher installed within the aircraft cable. So, we will inspect the portable hand fire extinguisher for proper operating pressure. Proper operating pressure which will be visible in the screen in this dial, you can see if the needle is within the green range; that means, your cylinder has a proper operating pressure, we will check the general condition the security of installation of the fire extinguisher, and the servicing date the next servicing due date, in the fire extinguisher. These are the different inspections on the fire extinguisher.

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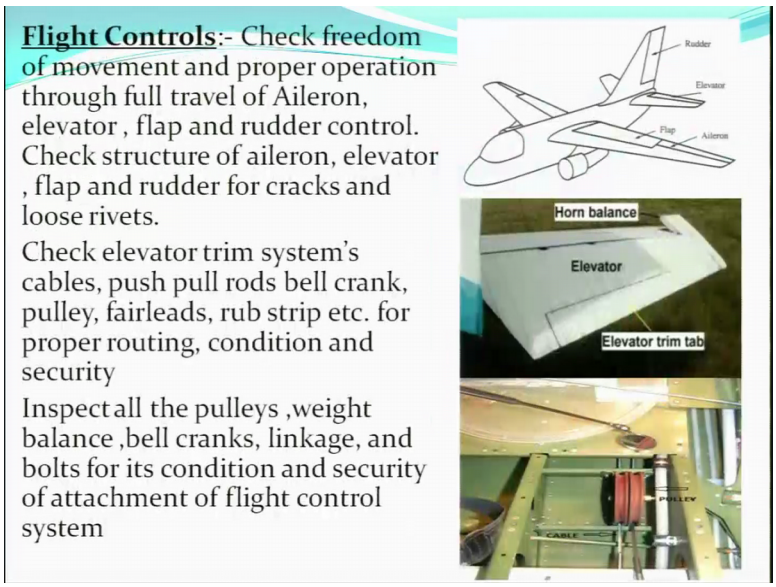

After this we come to the flight controls, check freedom of movement and proper operation through full travel of aileron, elevator, flap, and rudder control. So, all the flight controls ailerons, elevators, flaps, rudders, they need to be checked for proper operation through their full travel.

Check structure of aileron, elevator, flap and rudder for cracks, and loose rivets. The entire structure the aileron, elevator, flap, rudder, their surfaces everything needs to be checked for cracks, and loose rivets. Check elevator trim systems, cables, push pull rods, bulk crank, pulley, spare leads, rubs, rips whips etc, for proper routing condition and security.

Now the trim tabs the trim system everything needs to be checked, for the condition the cables to be checked for proper routing, security the different bell cranks, the pulleys everything needs to be checked, in the complete system inspect all the puliies, weight balanced belt ranks, linkage and bolts for it is condition, and security of attachments of flight control system. So, we have seen in the flight control system, we are checking the entire surface, for any cracks to lose rivets, we are checking the complete routing of the cables, whether the cables are in the proper condition, the pulleys the balance weights, the bell cranks, fairleads everything is properly placed is firmly attached, and there is no abnormality in the entire system.

So, whether the complete flight control system, involving aileron system, elevator system, rudder system, flap system. Everything is checked during the 100 hours inspection structural checks on the surfaces, the internal checks, the cables, the cable tensions, the control surface travels and the routing. The pulleys, the fair leads, everything is checked in the flight controls in the 100 hours inspection.

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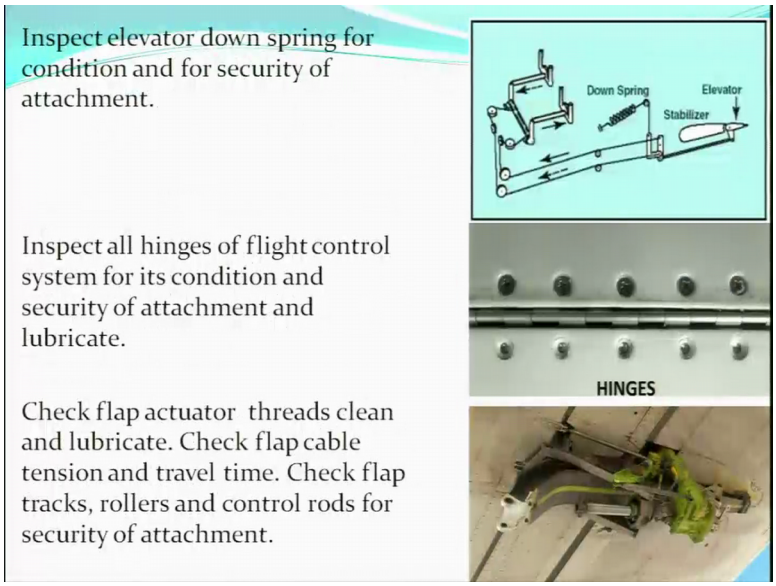

Inspect elevator down spring for condition, and for security of attachment. So, there are the down springs, in the elevators, these down springs are also checked for condition and security of attachment. Inspect all hinges of flight control system for it is condition, and security of attachment and lubricate. So, all the control systems or the control surfaces they have got the hinges, you can see these hinge lines, these hinges are to be checked for condition security of attachment, and are to be lubricated as part of the 100 hours inspection.

Then in the flap system you can see this is the flap system, this is your jack screw. So, flap actuator threads clean and lubricate. So, we need to check the this is the flap actuator, we need to check the threads, we need to check them, clean them and lubricate them. Check flap cable tension and travel time, we will also check the flap cable tension, and the time taken by the flap to travel at different flap settings, that time should be as specified by the manufacturer, as part of the flap inspection, we also check the flap tracks, the rollers, and the control rods for security of attachment.

So, when we will go on the aircraft you will see, the flap tracks, you will see the rollers and the control rods, they are to be inspected for security of attachment for any damage and proper lubrication.