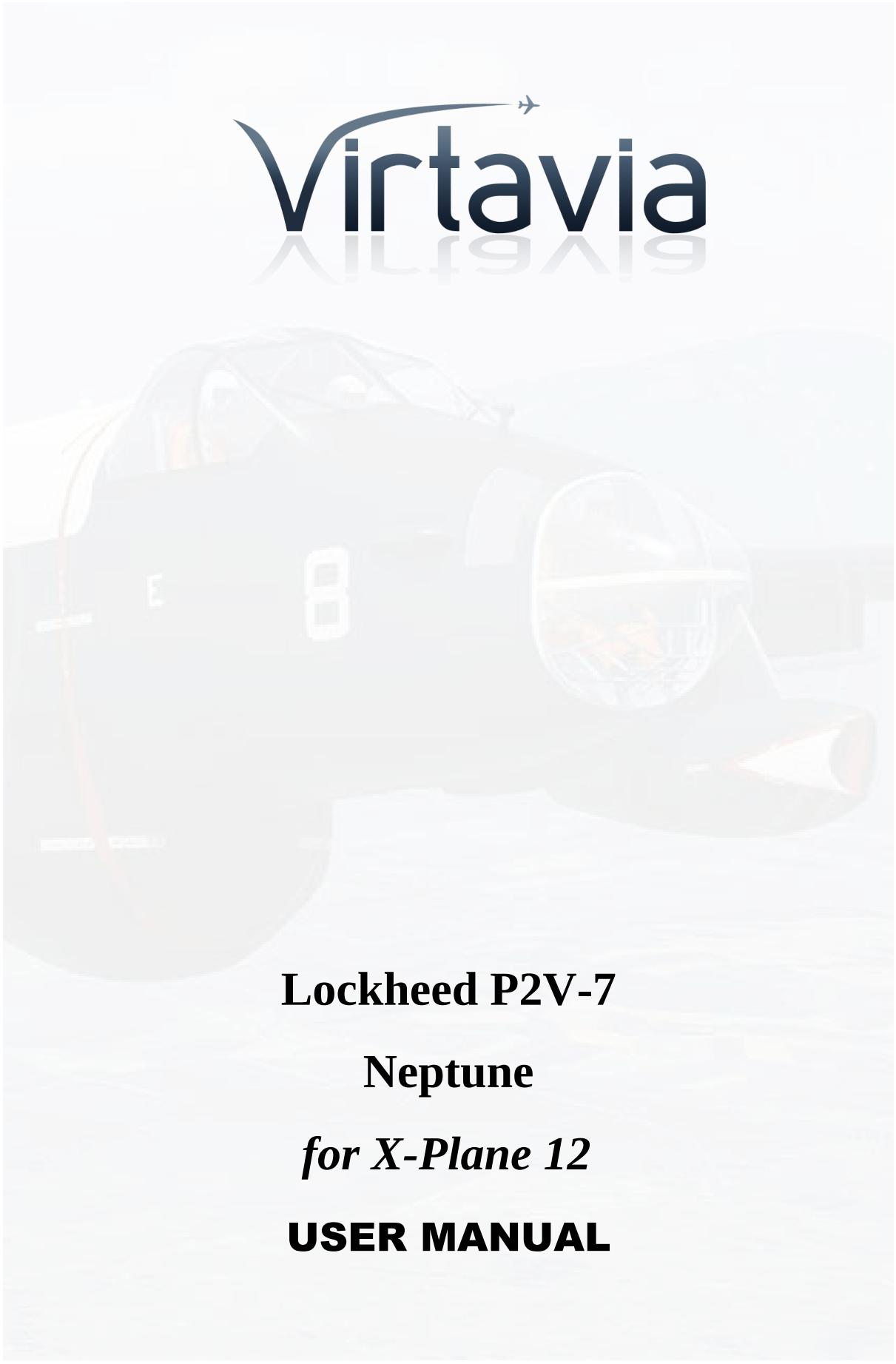


Lockheed P2V-7

Neptune

for X-Plane 12

USER MANUAL

Introduction

Lockheed's P-2V Neptune was a Cold War maritime patrol aircraft that was involved in many surveillance operations during the 1950s and 1960s. The details of these exploits are still not entirely public. These missions could be extremely dangerous, the Soviet Air Force being given tacit approval to shoot down the Neptunes on sight without paying too much heed to whether or not the plane was actually in international air space. The most famous Neptune was a P2V-1, the "Truculent Turtle", which flew non-stop without refueling from Perth, Australia, to Columbus, Ohio, a distance of 11,235 miles. This type, P2V-7, was first flown in 1954. In 1962 it was re-designated as the SP-2H, OP-2E, or AP-2H. The Neptune served until the mid 1970's, when it was replaced by the P-3 Orion.

The XP12 Neptune now supports droppable torpedoes and launchable rockets (unfortunately the torpedo has to act as a bomb due to lack of support in X-Plane). New engine sounds are also a feature of this new version.



Neptune Variants Included in this Package:

VP-18, Roosevelt Roads NAS, Ceiba, Puerto Rico, 1962



This model depicts the Neptune shown in the well-known photo of this VP-18 aircraft flying past a Soviet cargo/spy ship, likely on its way to Cuba in 1962. Patrol Squadron 18 (VP-18), nicknamed the 'Flying Phantoms', was a U.S. Navy maritime patrol squadron that operated from 1946 to 1968. The squadron primarily conducted anti-submarine warfare and surveillance missions in the Atlantic and Caribbean regions, operating out of NAS Jacksonville, NAS Norfolk, and NAS Roosevelt Roads in Puerto Rico.



VP-1, Cam Ranh Bay, Vietnam, 1968



The aircraft deployed by VP-1 (Patrol Squadron 1) at Cam Ranh Bay during the Vietnam War was actually the SP-2H Neptune (originally designated P2V-7 before the 1962 redesignation), not the PV2-7.

The SP-2H served in Operation Market Time, conducting patrols off the coast of South Vietnam to detect and destroy Viet Cong trawlers smuggling munitions. VP-1 detachments used the aircraft to expose and destroy smugglers, such as driving a Viet Cong trawler ashore by dropping flares, and vectoring Swift boats and Coast Guard cutters to suspicious contacts. Crews operated under frequent Viet Cong ground fire from beaches, jungles, and junks while maintaining radio contact with surface units. VP-1 maintained a forward detachment at Cam Ranh Bay during its third Vietnam deployment (starting in the mid-to-late 1960s), flying these missions before transitioning to the P-3B Orion in October 1969.

Minden Air Corporation 'Tanker 55', Fox Field, CA, 2012



This Lockheed P-2V-7 Neptune operated as 'Tanker 55' by Minden Air Corp as a forest fire supression aircraft. N355MA was a veteran aircraft originally delivered to the US Navy in 1957. While Minden Air Corp was headquartered in Gardnerville, Nevada, and operated out of Minden-Tahoe Airport, 'Tanker 55' is specifically documented at Fox Field in Lancaster, California.

The aircraft was heavily damaged on June 3, 2012, when it landed at Minden-Tahoe Airport with its left main landing gear failing to extend, resulting in a "successful belly landing" that rendered the plane economically unreparable and led to the airframe eventually being scrapped. This incident, along with a similar failure on Tanker 48, significantly impacted Minden Air’s operations, contributing to the demise of their transition to jet tankers and the eventual retirement of their P2V fleet.

Support

Should you experience difficulties or require extra information about the Virtavia P2V-7 Neptune, please e-mail technical support at tech.support@virtavia.com

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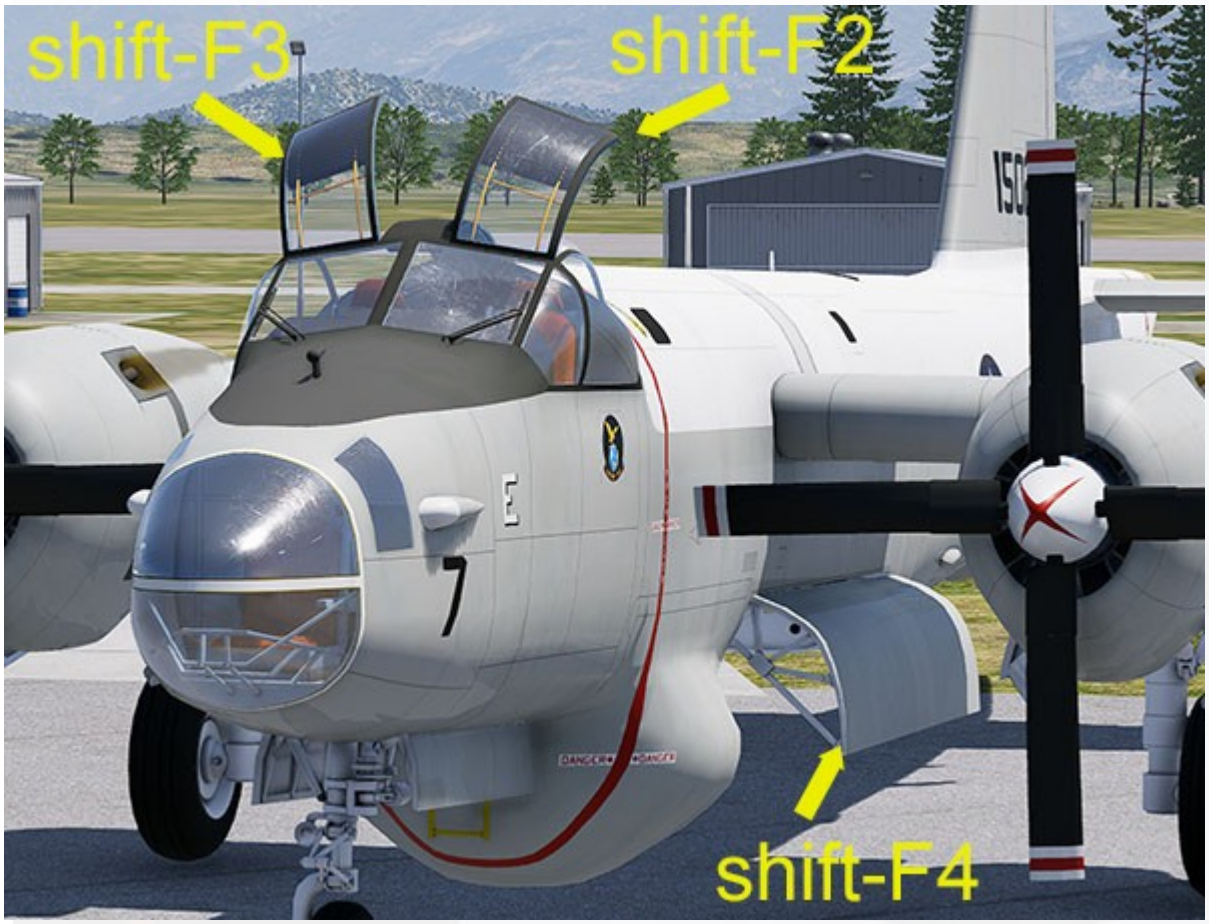
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Exterior Model

About this model

This model is a conversion to XP12 of the Virtavia Neptune, which was originally released for FS9/FSX in 2006, then improved and re-released for FSX Steam and Prepar3D in 2020. This updated XP12 version has droppable torpedos, fireable rockets, '3D' instruments, windshield rain fx, working wipers, windshield de-icing and genuine dissimilar power types (jet/prop), all-new engine sounds plus many small additions and improvements. A civilianized Fire Supression version is also included with droppable fire retardant.

Exterior Animations



The exterior model has all the usual animations such as ailerons, elevators, landing gear and flaps. Additional animations on the exterior model are:

Crew Visibility Toggle

Pressing shift-F1 will toggle the crew figures.

Crew Roof Hatches

Open/close the hatches using shift-F2 and shift-F3.

Bomb Bay Doors

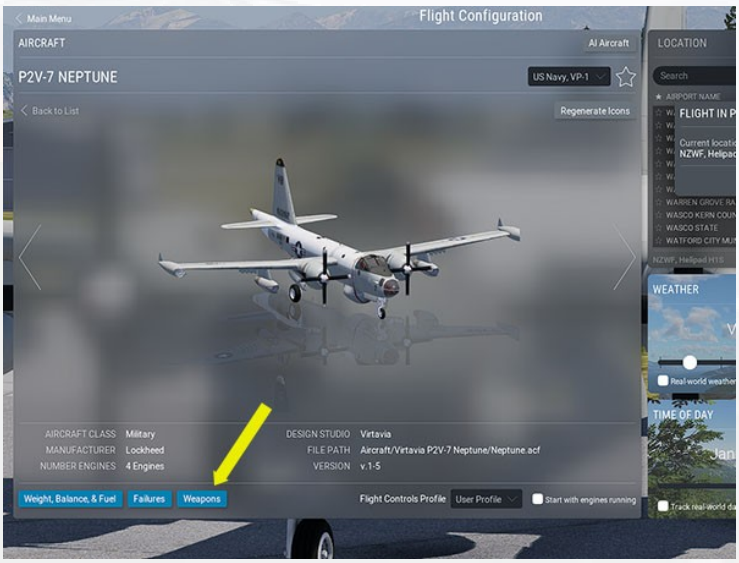
Open/close the doors using shift-F4.

Lighting

The exterior lights are turned on and off using the usual X-Plane key presses (L for landing lights, N for nav lights) or the appropriate switches in the cockpit. There is also a taxi light on the front landing gear, the switch for this is found low down on the pilot's control column, along with the landing light and tail beacon light switches.

Weapons

The US Navy Neptune version includes the ability to add or remove a pair of Mk.46 torpedoes in the bomb bay and some rockets on the wings. These weapons are loaded onto the aircraft by default but can be removed by un-selecting them using the Flight Configuration/Customize/ Weapons screens shown below :



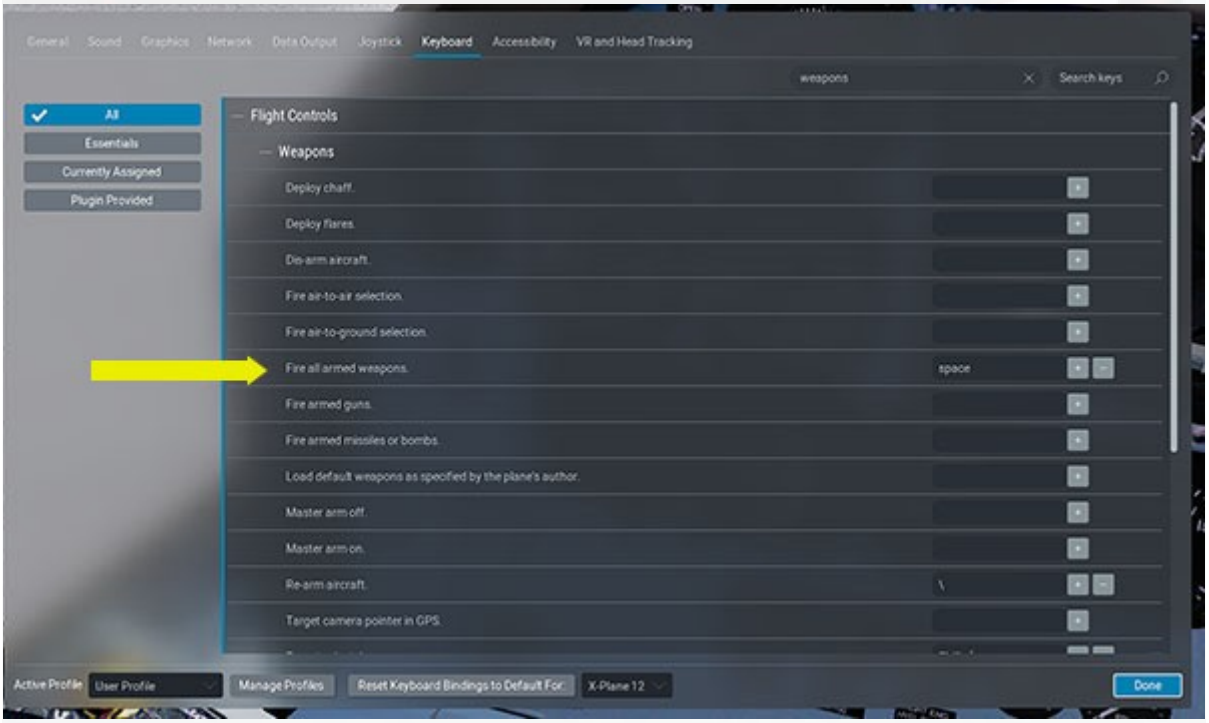


Dropping / Firing Weapons



Firing off the Neptune's weapons is very easy, although it will be necessary to set up a key press or a joystick button as a fire button.

In the X-Plane Settings Window, you can set a key (the spacebar is a good choice as it is easy to locate) or perhaps a button on your controller.



Inside the cockpit, the Master Arm Switch must be in the 'ARMED' position :





Rockets

Set the ARM TORPEDOES switch to SAFE. Now set the ARM ROCKETS switch to ARMED and press the spacebar (or your preferred fire key or button). DO NOT FIRE ON THE GROUND - this will destroy

the aircraft ! A single rocket will leave the each wing alternately on each press of the fire button.

Torpedoes

Open the bomb bay doors using the bomb bay switch on the main panel or shift-F4. Set the ARM ROCKETS switch to SAFE. Now set the ARM TORPEDOES switch to ARMED and press the spacebar (or your preferred fire key or button). DO NOT FIRE ON THE GROUND - this will destroy the aircraft ! A torpedo will leave the bomb bay and fall to the ground, regardless of altitude. Actual torpedo behaviour is not supported by X-Plane, so the weapon is set up as a free-fall bomb and will explode when it impacts the ground.



NOTE - the ARM TORPEDOES switch is a little finicky, it often needs to be clicked 2 times to operate properly, a single click can leave it in a mid-position and a rocket will fire instead of a torpedo. So make sure the switch is in the fully down position at ARMED.

Re-Arming

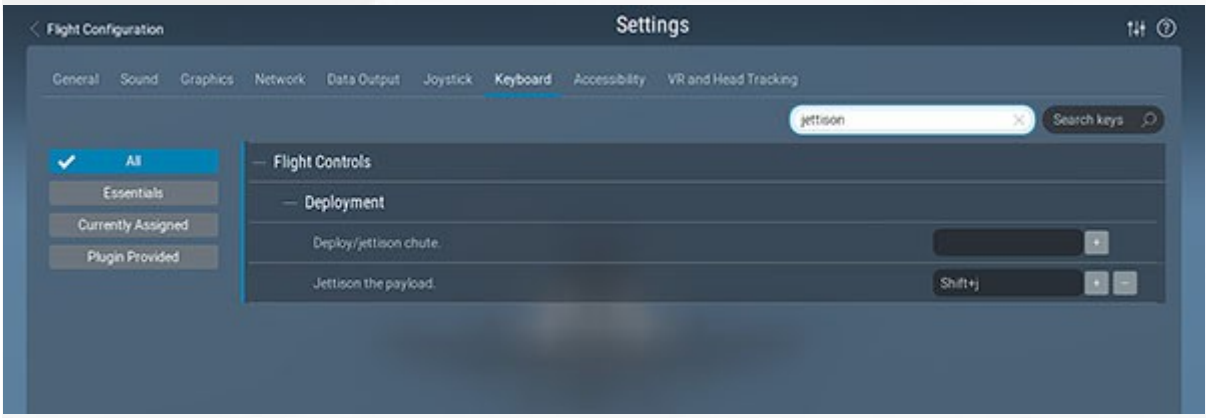
X-Plane has an option to fully re-arm the aircraft with a keystroke or a controller button. This can be set up in the keyboard/controller settings, the backslash key '\' is a good choice.

Fire Bomber

Tanker 55, the civilian 'fire bomber' Neptune in this package has the ability to drop red fire retardant. Although there are no actual aircraft animations for this, a press of a key or button is all it takes to unload 20,000 lbs of the red-dyed liquid from the converted bomb bay.

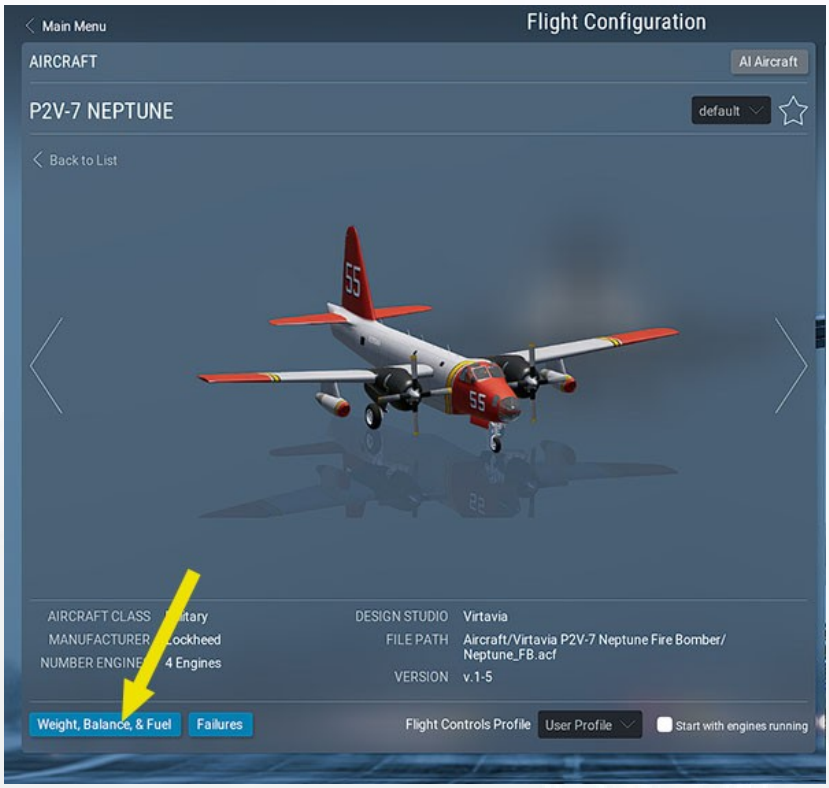


Like with firing weapons, a key press or joystick button will first need to be assigned in the X-Plane Settings. Search for 'Jettison the payload' in Settings/Keyboard, **shift-j** is a good choice but a different keystroke can be assigned if desired, or a joystick or controller button.

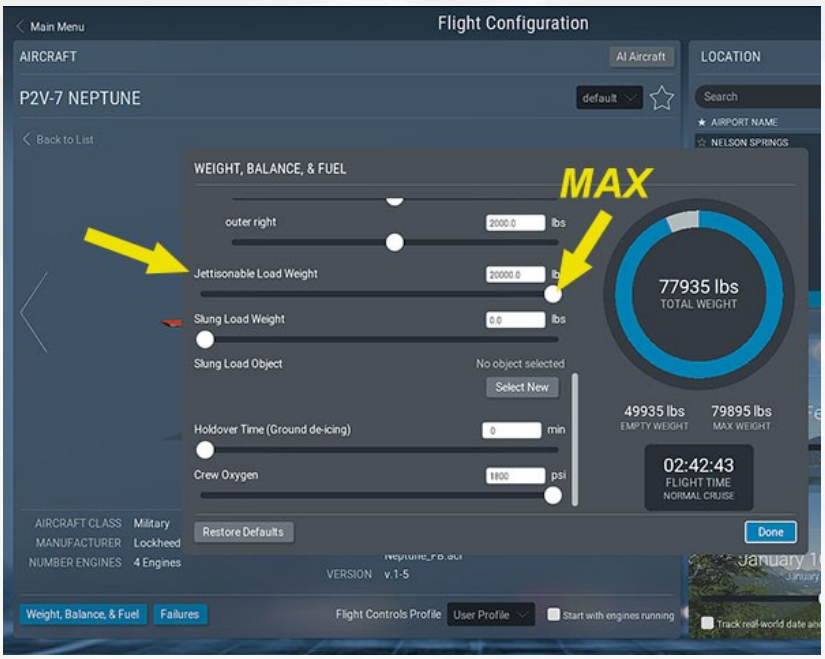


The fire retardant is not loaded by default so there is another setting which needs to adjusted :

Go to the Neptune Fire Bomber's Customise/Weight, Balance & Fuel option.



Now scroll down to reveal the 'Jettisonable Load Weight' slider and set this fully to the right to maximize the payload in the bomb bay tank :



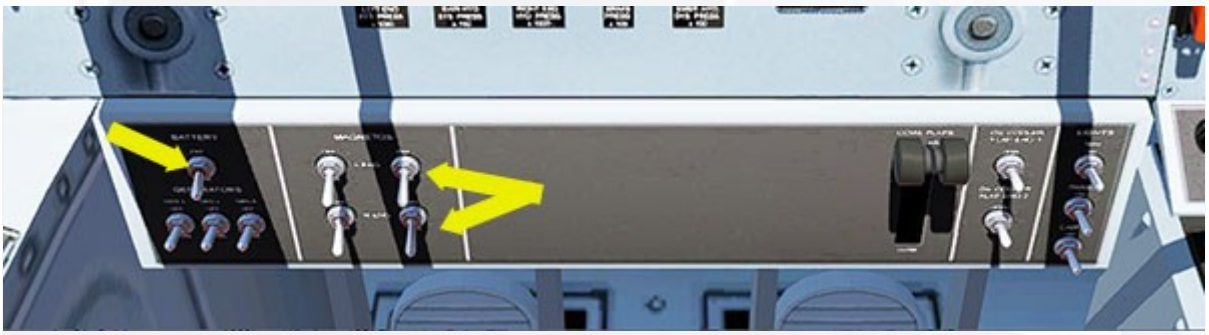
Now just click 'Done' and start the flight.

Quick Start

Starting from cold – Assuming the aircraft was left in the fully shut down state and all switches and levers are in their usual OFF position, then follow the quick start procedure below or alternatively follow the provided checklist at the end of this manual. This quick procedure ignores cowl flaps, oil cooler flaps, fuel levels and other checks which would be carried out in the full realistic procedure.

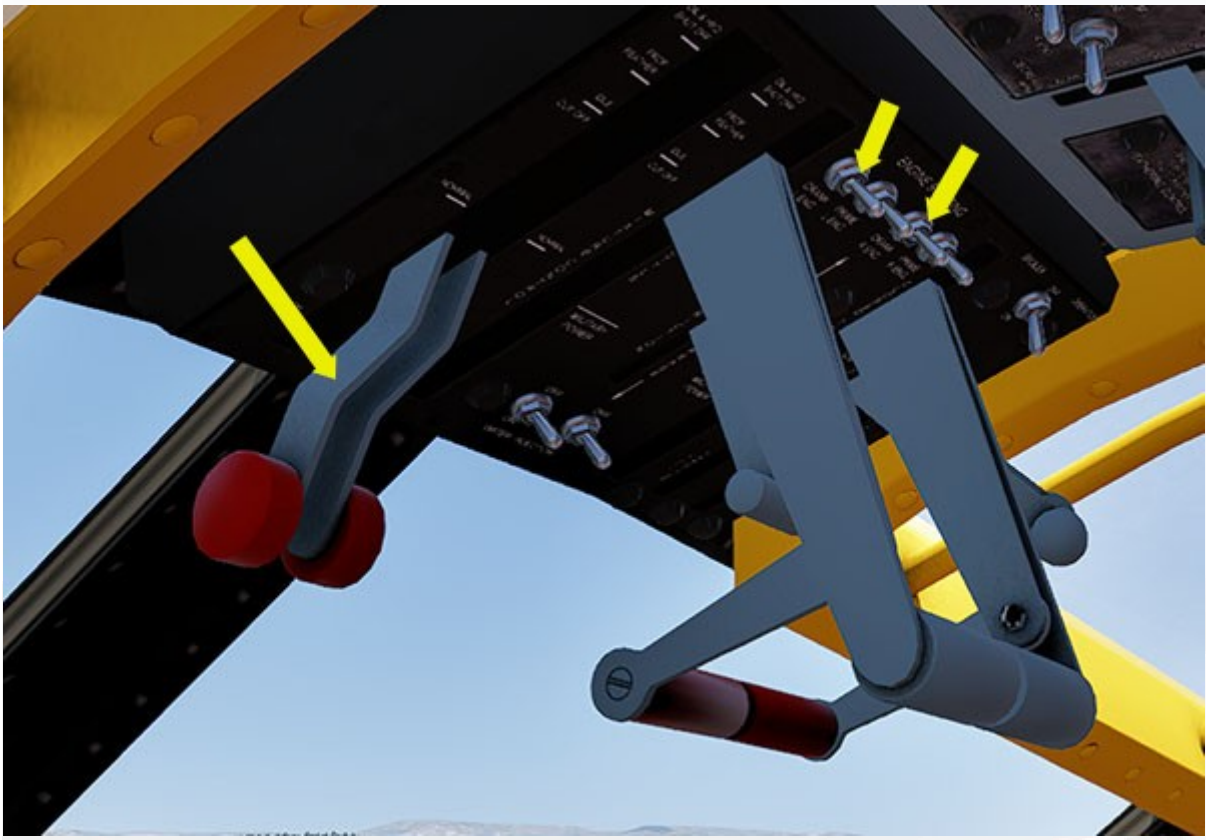
Starting the Props

Turn the Master Battery ON. Turn the Magneto switches for both engines ON. Turn the three Generator switches ON.



The switches for the nav, panel and cabin lighting are on the right side in the above image. These can also be set but are not necessary for this quick start procedure.

On the overhead panel, move both the Mixture levers (the red knobs) fully forwards. The reciprocating engines are now ready to start. Use the two starter switches to fire up the Wright R-3350-32W Duplex-Cyclones.



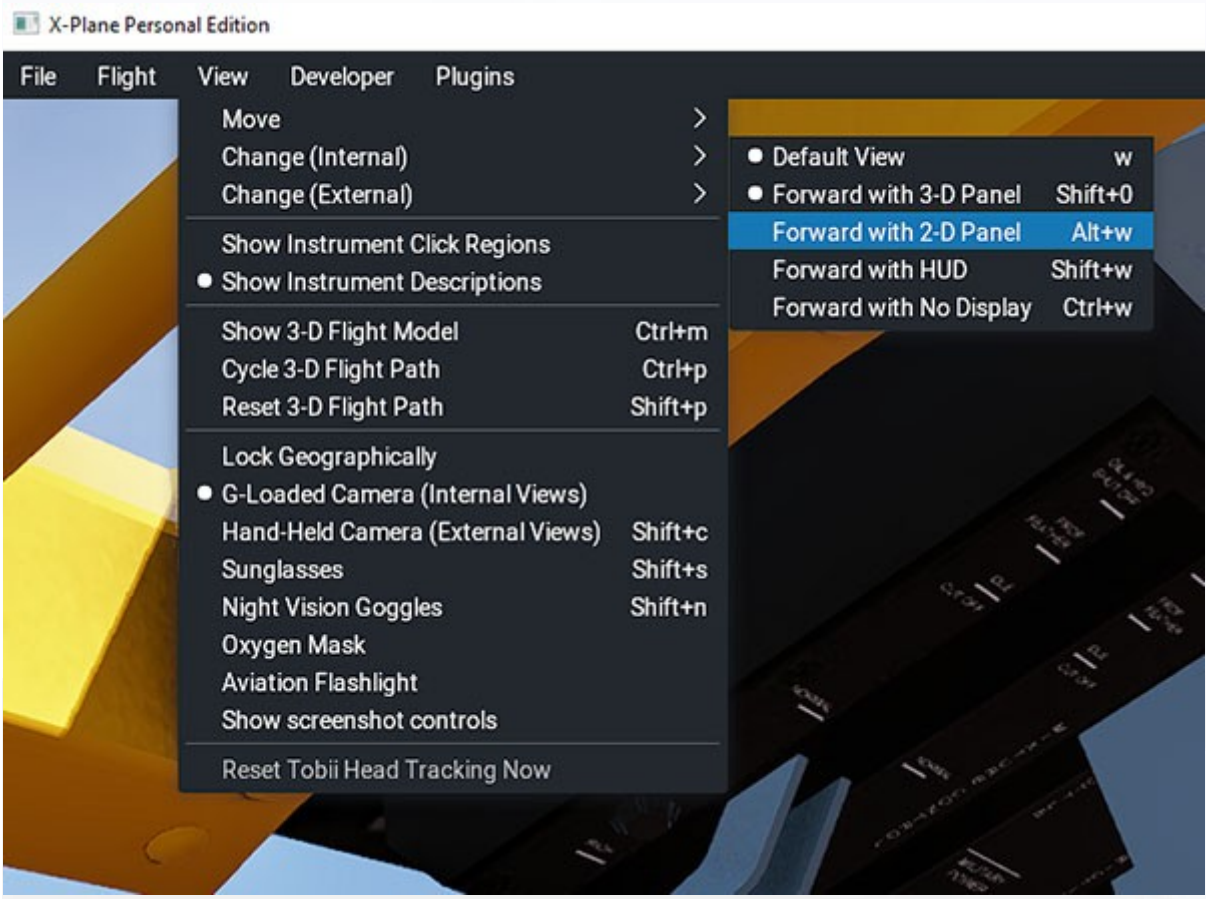
There is a primer switch next to each starter switch, these are operable but are not needed to get the engines running. There is also no need to set the propeller pitch, these are constant speed props and X-Plane sets the pitch automatically. The lever will be seen to move on its own when different power settings are applied in flight.

NOTE: It has not been possible yet to make the prop reverse levers work. Once this problem is resolved, an update will be issued.

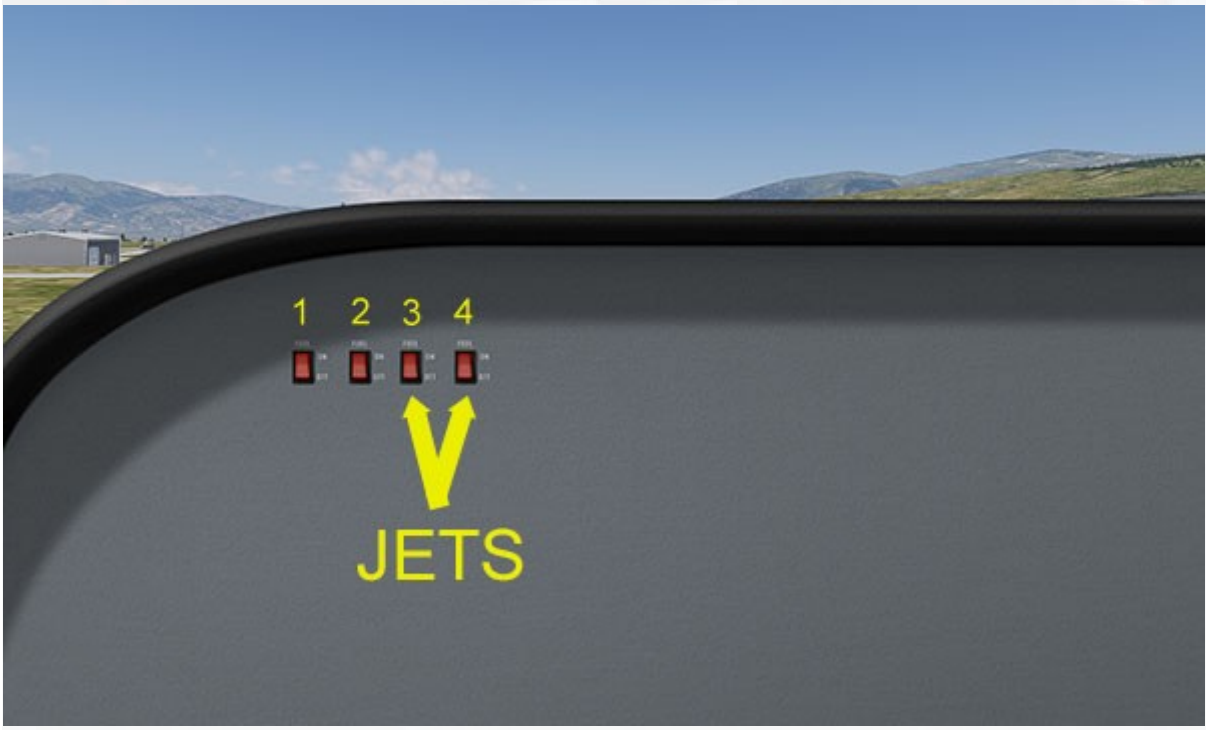
Starting the Jets

Set the Master Battery switch to ON (in case you are starting jets first and this hasn't been done yet). Now the fuel has be turned on. Unfortunately, X-Plane does not provide a fuel valve lever or switch to control fuel to the jets so this has to be done using a 2D switch on the 2D panel (see images below).

Access the 2D panel using the View menu or press **alt-w** :



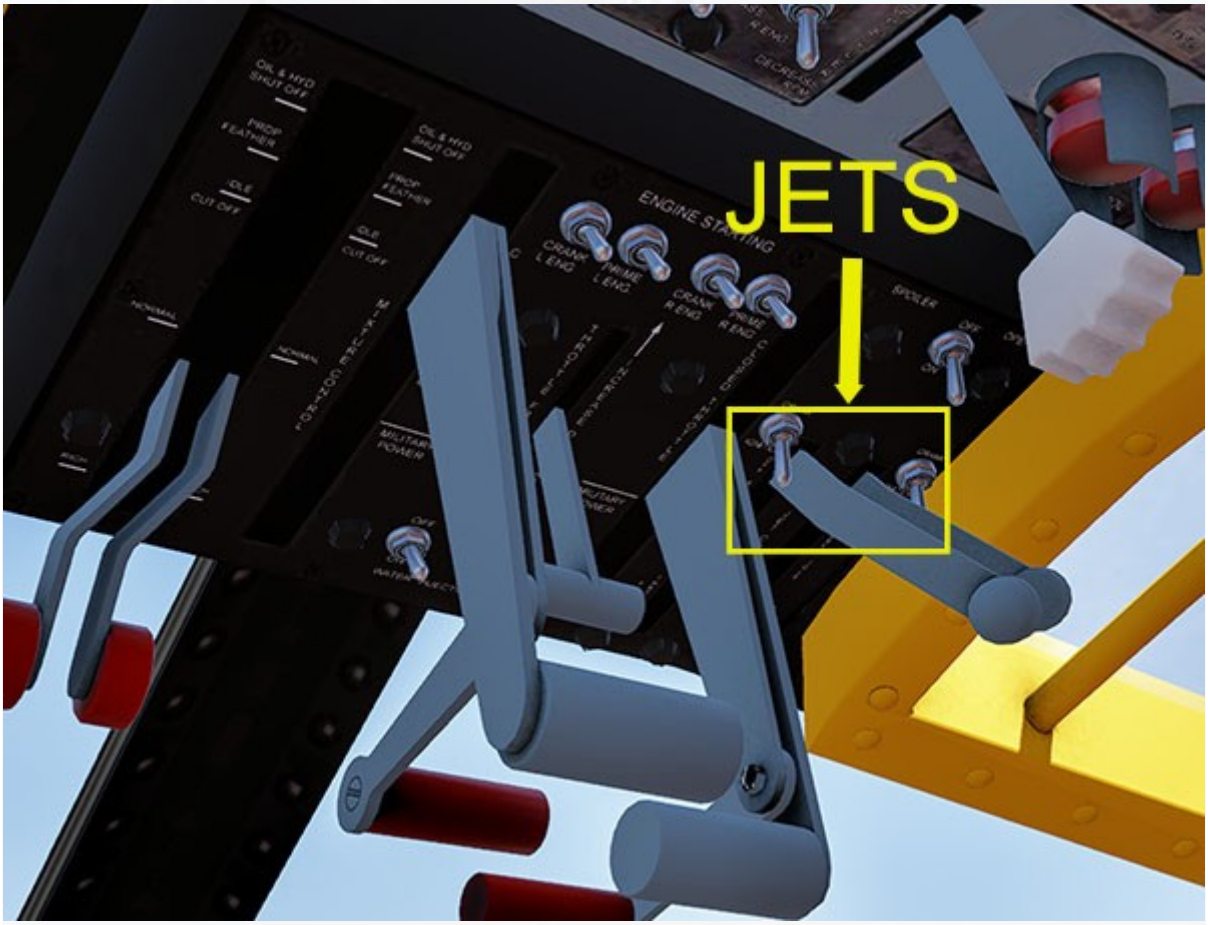
The 2D panel will be displayed :



Set the rightmost two switches (3 & 4) to ON. Now return to the 3D cockpit view using the drop-down menu or by pressing **shift-0**.

Switches 1 & 2 can be used but these just advance the Mixture Levers to FULL, which can be done easily in the cockpit.

Now the jet starter switches can be used: These are on the overhead panel, it might be necessary to move the right main engine throttle lever forward a little to gain access to the jet engine starters. Alternatively, use the keyboard arrow keys to slide over the right side. Click and HOLD the jet starter switch for a count to 5 and the engines will continue to spool up.



All engines are now running and the flight can commence. NOTE : fuel consumption with the jets running is MUCH higher. It is advisable to turn them off when in cruise or when descending.

Take-Off - it is possible to take off without using the jet engines, however the following procedures will assume that the jets are going to be used.

The Neptune's jets make the take-off run unsurprisingly quite short. The amount of payload has little effect on take-off with this aircraft, getting airborne is quite easy. One notch of flaps is sufficient, although take-off is possible without flaps. X-Plane adds a little nose-up pitch automatically, so this does not need to be set.

Pressing the toe brake will release the parking brake. Now advance the throttles to full power. Raise the gear as soon as the wheels are off the ground. Retract flaps at 150 knots and climb out. Throttles can be backed off at 200-250 knots. Adjust pitch trim as required.

Autopilot

The autopilot in X-Plane is rather weak (at least with the Neptune) in that it does not have the very positive AP action found in FSX and MSFS. It requires the aircraft to be trimmed to level flight and the desired heading already achieved. The autopilot should be turned ON using the power switch on the left side of the pilot's panel.



Setting the altitude

This has to be done using the 2D panel, access this using **alt-w**.



There are displays on the 2D panel for setting both ALT and HDG. The HDG value can also be set using the rotary knob on the RMI. The 2D panel can be closed using **shift-0**.

Now ALT hold and HDG hold can be turned on.

ALT hold is quite stable as long as the aircraft was flying level to start with. Large changes in the selected altitude will cause the autopilot to overshoot the new level, once reached, then struggle to re-acquire the setting. The HDG hold works but there will be a gradual 'wander' left to right, although the set heading will be approximately maintained.

Approach & Landing –

Approach : The aircraft has no speedbrakes so merely throttling back will allow frontal drag to slow the aircraft down. Reduce speed until 170 knots is reached and you can enter the pattern.

Final : Slow to 150 knots, extend flaps one notch and lower the undercarriage. At 130 knots extend the flaps one more notch. Maintain a steady rate of descent of around 300 ft/min is achieved and speed is 120 knots.

Landing : When the runway threshold is visible, hold speed at 120 kts and extend flaps to maximum. Once over the runway at 10-20 ft, cut throttles and pull the control yoke back to bleed off speed to 110 knots and touch down at 100-110 knots. Attempt to alight on all the mainwheels only.

Cockpit

The Neptune's cockpit is open and comfortable. The instruments are all the conventional analog type, typical of the era. Most instruments are self-explanatory and the smaller dials,switches and other controls are clearly labelled so no further description is provided. Many of the smaller components are depicted, but not operational.

Pilot's panel :



1. **Autopilot Control and Bomb Bay Doors Switches**. The Autopilot power switch has a corresponding red status indicator lamp, as does the Bomb Bay Doors switch. For operation of the Autopilot, please refer to the Autopilot Section earlier in this manual.

2. **Radio Compass Indicator**. The background compass degrees disc is fixed in this instrument. The thinner needle points to the currently tuned NAV1 station. The larger needle is an ADF indicator and is presently not supported.

3. **Radio Magentic Indicator (RMI)**. The background compass degrees disc rotates to indicate the direction the aircraft is pointing in this instrument. The thinner needle points to the currently tuned NAV1

station. The larger needle is an ADF indicator and is presently not supported.

4. **Distance Measuring Equipment (DME) Indicator**. The numerical display shows the distance in Nautical Miles to the currently tuned NAV1 station.

5. **Course Indicator**. The vertical bar (the locator or LOC) tracks the lateral position of the currently tuned NAV1 station relative to the nose of the aircraft. The horizontal bar (GS) tracks the vertical position of the runway glideslope indicator, if one is available. If there is no glideslope signal, the bar remains in the central position. The numerical display (CRS) shows the course set by the rotary knob on the gauge frame. This is used to set a desired radial to a VOR or a runway heading.

6. **Weapons Control Switches**. Please refer to the Weapons section earlier in this manual.

7. **G2 Compass Indicator**. A straightforward magnetic indicator compass, the smaller center disc indicates the cardinal, non-magnetic heading.

Copilot's panel :



1. **Jet Engine Gauges**. Indicators for RPM, Oil Temperature, EGT, Fuel Pressure and Oil Pressure for the Westinghouse J34-WE-34 turbojets.

2. **Fuel Indicators**. These gauges indicate the weight in pounds of the fuel remaining in the tanks. The outermost gauges show the tanks in the outer wing panels, the next ones show the center section tanks (inboard of the engines) and the middle gauge is used for the auxiliary tanks which could optionally carried in the bomb bay (not supported in this model). The Neptune of course has the familiar 400 gal. wingtip tanks, there are however no indicators for the fuel remaining in these.

3. **Searchlight Position Indicator**. Included for authenticity, not operational.

4. **DC Generator Amperage Indicators**. The three DC generators are numbered 1, 2 (both on left engine) and 4 (right engine). Generator number 3 is for AC and is also on the right engine, it has no indicator on the main panel. The red indicator lamps show the corresponding generator is OFF. The generators are controlled by the three toggle switches on the pilot's and copilot's lower panels.

Center Pedestal :



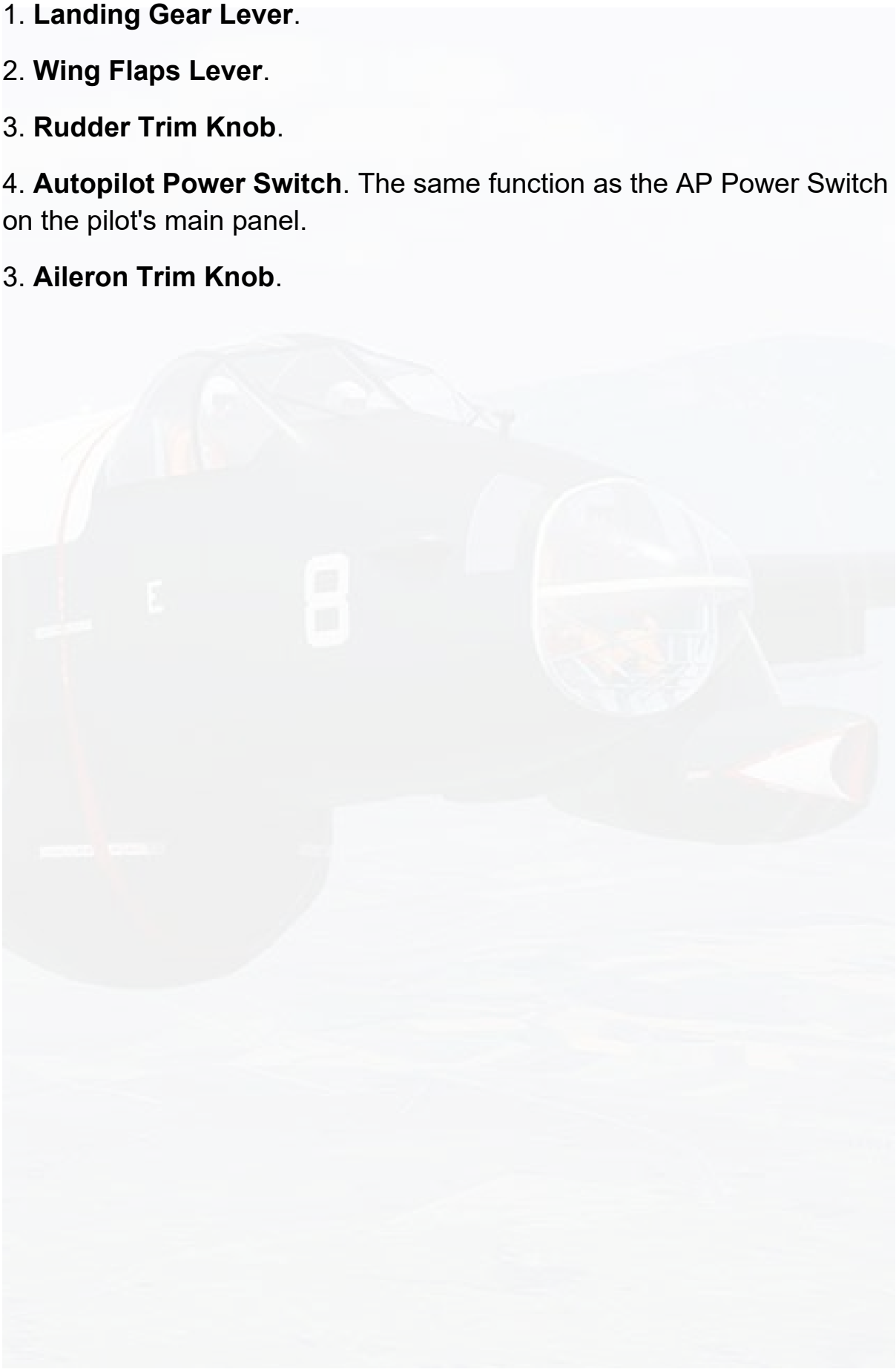
1. **Landing Gear Lever**.

2. **Wing Flaps Lever**.

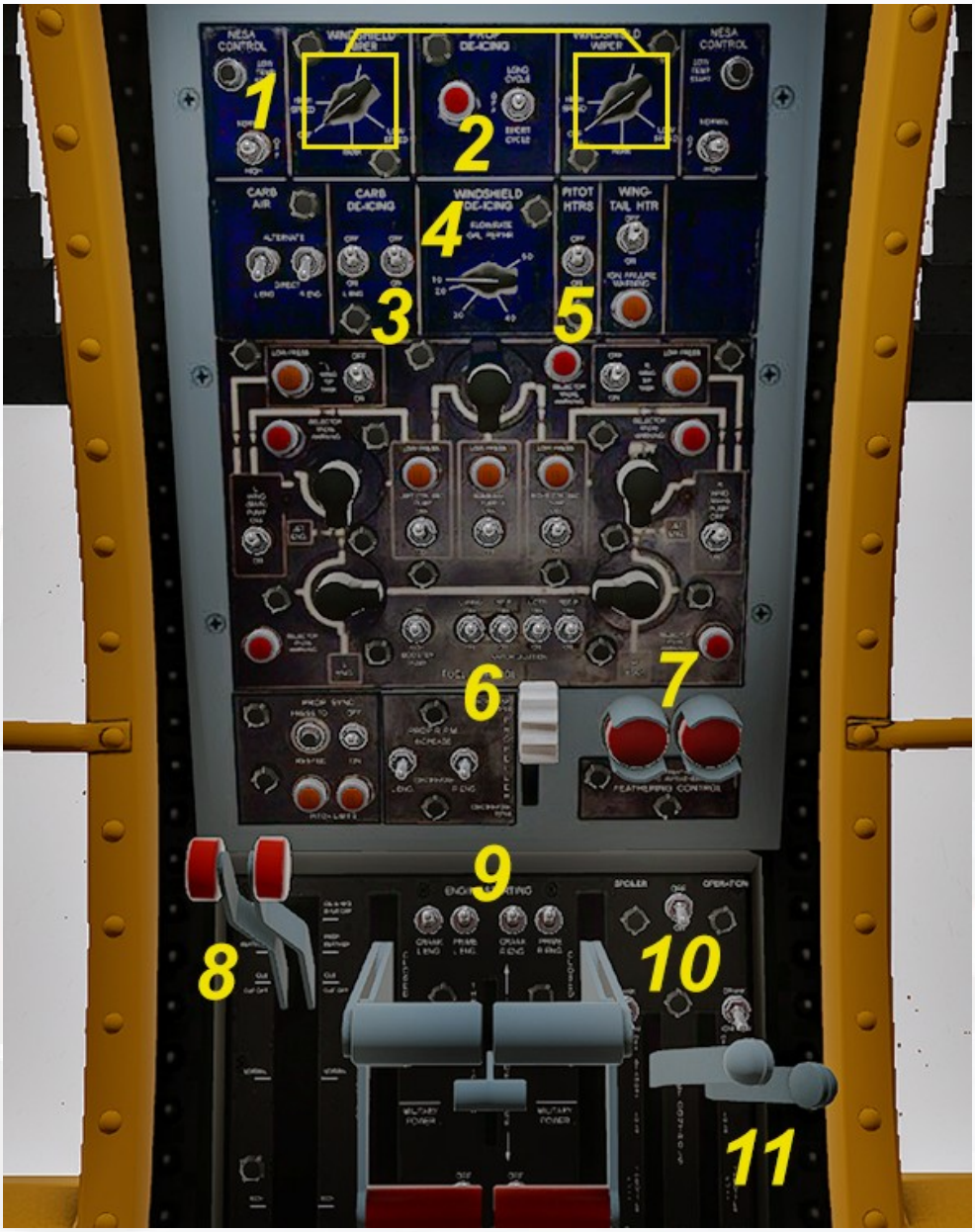
3. **Rudder Trim Knob**.

4. **Autopilot Power Switch**. The same function as the AP Power Switch on the pilot's main panel.

3. **Aileron Trim Knob**.



Overhead panel :



1. **Windshield Wiper Switches**. 3 speeds are available. The switches can not be operated independently. The Fire Bomber has no wipers.

2. **Propeller De-Icing Switch**. A single switch which de-ices the blades on both engines.

3. **Carburetor De-Icing Switches**.

4. **Windshield De-Icing Switch**. The switch controls both windshields. A fully-iced windshield will take 1-2 minutes to clear, it is not instant.

5. **Pitot Heater Switch**.

6. **Propeller Pitch Lever**. The Neptune is set up with constant-speed propellers, so the lever can not be manipulated. It will move automatically according to the level of power input.

7. **Propeller Feathering Switches**. Press to feather, press again to unfeather.

8. **Mixture Control Levers**.

9. **Starter Switches (reciprocating engines)**. Each engine has a pair of toggle switches, one is a primer, the other is the starter.

10. **Starter Switches (turbine engines)**. Each switch should be pressed and HELD for a count to 5, then released. The engine will then continue to spool up.

11. **Turbine Engines Control Levers**. Each engine throttle lever can be used independently. If a physical controller is used, the turbine levers position will automatically be synchronized with the levers for the reciprocating engines.

P2V-7 Neptune Specifications

Specifications (nominal, clean configuration)

- Engine: 2 x Wright R-3350-32W Duplex-Cyclone radials, 2 x Westinghouse J34-WE-34 turbojets
- Power: 3,700 h.p. plus 3,400 lb/f per turbine
- Maximum speed: 315 knots, 584 kmh
- Cruise speed: 207 knots, 333 kmh
- Service ceiling: 22,400 ft, 6,800 m
- Range: 2,157 miles, 3,471 km
- Wingspan: 103 ft 10 in., 31.65 m
- Length: 91 ft 8 in., 27.94 m
- Height: 29 ft 4 in., 8.94 m
- Wing area: 1,000 square feet., 93 m^2,
- Fuel Capacity: 22,646 pounds, 10,272 kg
- Empty Weight: 49,935 pounds, 22,650 kg
- Maximum Weight: 9,895 pounds, 36,240 kg
- Armament: Rockets, free-fall bombs and torpedoes
- Maximum bombload: 8,000 lbs, 3,629 kg

Speed Limitations

- Full Flaps: 130 knots
- Landing Gear Extended: 155 knots
- Never Exceed Speed: 320 knots
- Stall Speed, Flaps Down: 90 knots

PV2-7 Neptune Procedures

Before Engine Start

1. Parking Brake	SET
2. Battery and Generator switches	OFF
3. Cowl Flaps	OPEN
4. Mixture Levers set to	IDLE-CUTOFF
5. Jet Throttles	OFF
6. Jet Fuel Valves	ON (2D panel)
7. Master Armament	SAFE
8. Magneto Switches	OFF
9. Fuel and Oil Quantity	CHECK

Before Taxiing

1. Battery and Generator switches	ON
2. Hydraulic Pressures	NORMAL
3. Wing Flaps	UP
4. Check/Set Flaps	DOWN
5. Altimeter Baro	SET
6. Bomb Bay Doors	CLOSED
7. Beacon Light	ON
8. Taxi Light	AS REQUIRED
9. Landing Gear Lever	DOWN

Before Take-Off

10. Engine run-up	NORMAL
11. Electrical System	CHECK
12. Pitch Trim	SET FOR TAKE-OFF
13. Wing Flaps	SET 10°
14. Roof Hatches	CHECK CLOSED
15. Piston Engines	START
16. Cowl Flaps	CLOSED

After Take- Off

1. Landing Gear	RAISE
2. Landing Flaps	RAISE

Before Landing

1. Master Armament	SAFE
2. Hydraulic Pressure	NORMAL
3. Autopilot	OFF
4. Altimeter Baro	SET
5. Carburetor Anti-Ice	AS REQUIRED
6. Landing Gear	DOWN
7. Landing Lights	ON
8. Wing Flaps AS	REQUIRED

After Landing

1. Cowl Flaps	OPEN
2. Wing Flaps	UP
3. Carb Heat	OFF
4. Oil Cooler Flaps	OPEN
5. De-Icing Panel	ALL SWITCHES OFF
6. Landing Lights	OFF

After Shutdown

1. Magneto Switches	OFF
2. Jet Fuel Valves	OFF (2D panel)
3. Nav, Beacon, Taxi Lights	OFF
4. Cowl Flaps	CLOSED
5. Generator Switches	OFF
6. Master Battery Switch	OFF
7. Exit aircraft.	