

FSX Helicopter Auto Pilot (HAP) Gauge – Training Mission 4

Lesson 4 - IFR flight and ILS landing.

Preparation:

For the 4th lesson, we are heading back to Maxwell Airforce Base and make an ILS-guided landing.

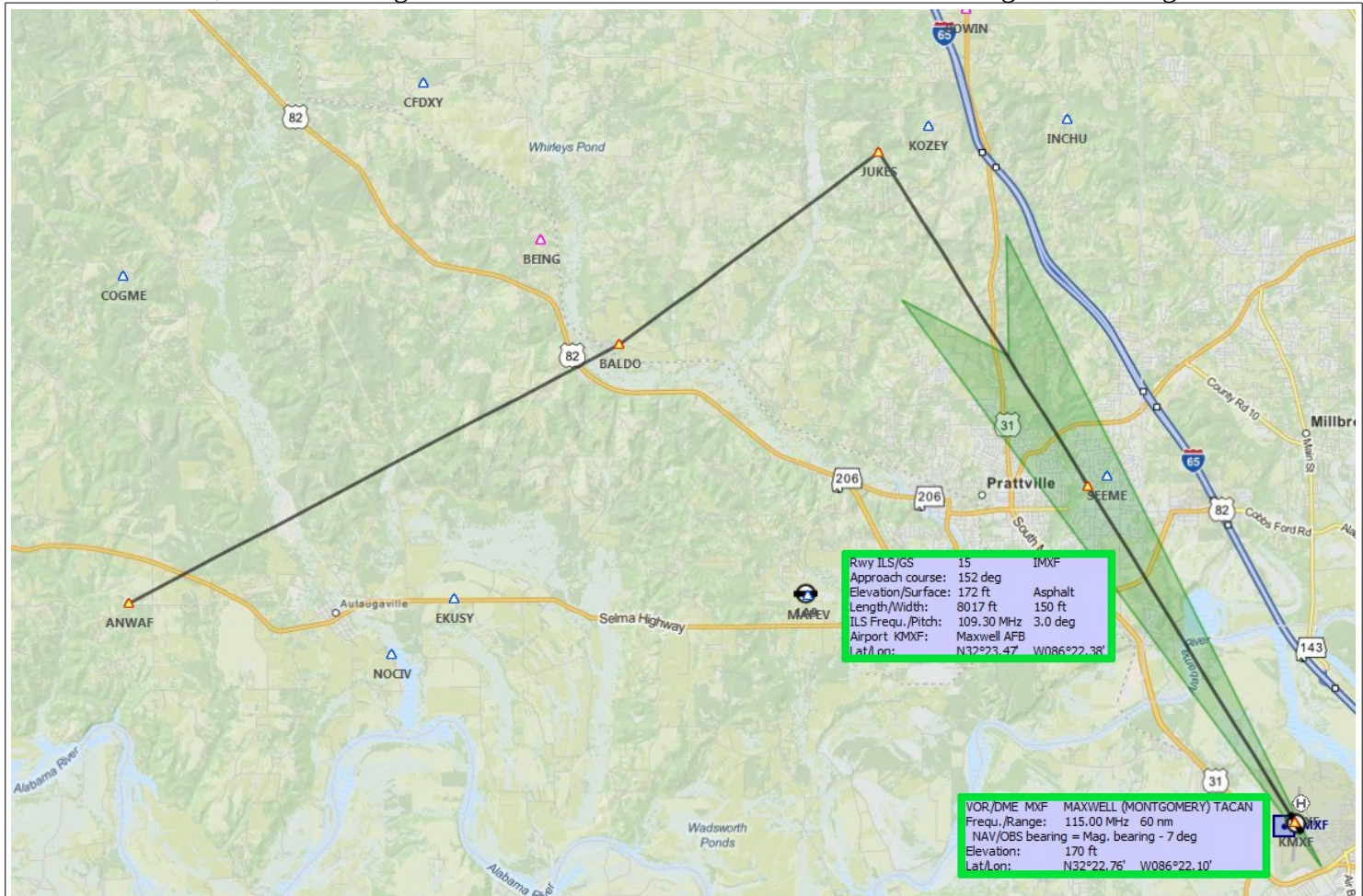


Fig.1 - IFR flight, ILS landings flightplan for trainings-mission 4

Short mission overview:

- Take off from waypoint ANWAF into HOVER_MODE.
- Set heading to BALDO waypoint.
- *Make transition from HOVER_MODE to FLIGHT_MODE.*
- Perform a climb to cruise altitude (2500ft) (no IAS lock)!
- Fly to BALDO waypoint on HDG with help of the GPS.
- Fly to JUKES waypoint on HDG with help of the GPS.
- Set KMXF, Runway 15 ILS localizer Frequency in Nav1 Radio.
- Set KMXF, Runway 15 ILS localizer Course on the OBS.
- Turn right heading KMXF.
- Intercept the Localizer (LOC) → [LOC] from Blue to Green.
- Intercept the Glide-slope (G/S) → [G/S] from Blue to Green.
- Descent down the Glide-slope.
- *Make transition from FLIGHT_MODE back to LevelHeight-mode.*
- *Make transition from LevelHeight-mode to HOVER_MODE.*
- Land on KMXF's runway 15.
- Shutdown the HAP-gauge and start the HAP-gauge back up again.
- *Make transition into HOVER_MODE.*
- Hover (back) to the helipad.
- Land the helicopter on the helipad.

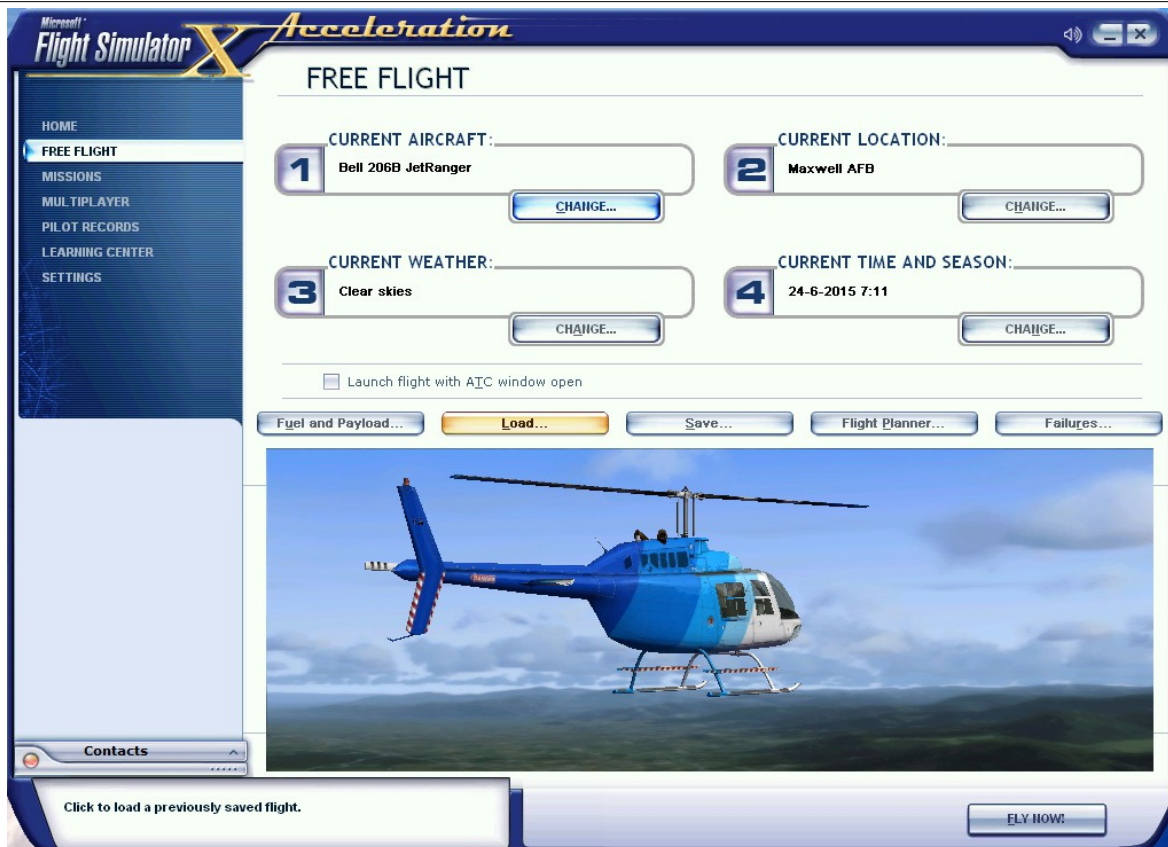


Fig. 2 – Start up Flightsimulator and load the previously saved flight(situation).

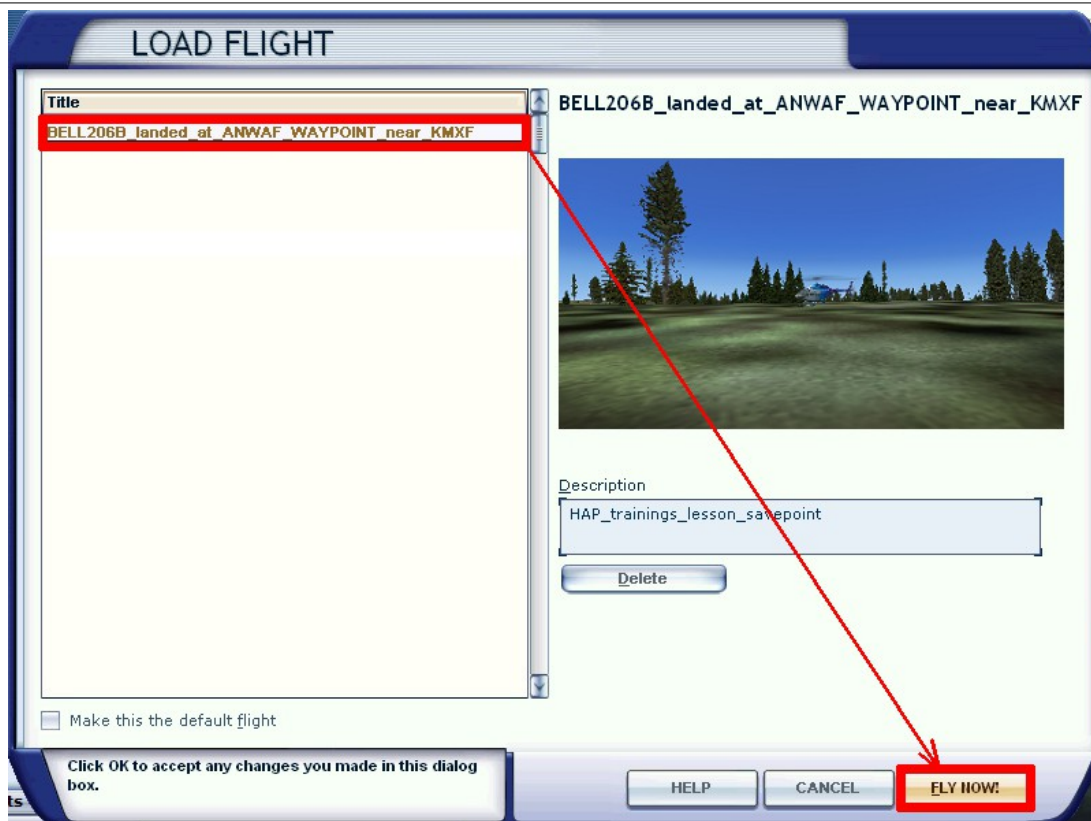


Fig. 3 – Select the previously saved flight and load it into the flight simulator.
- Flightsimulator now shows you the BELL206B cockpit.

Now start-up the “cold-and-dark” helicopter, before we can take off from the ANWAF waypoint.



Fig. 4a – (top-mid) Use the [DCT] function on the GPS to find the heading to BALDO waypoint (065)
 Fig. 4b – (right-low) Start the Hap-gauge, Press [F/TDN] and set [HDG] to 65.



Fig. 5a – (upper-right) Press [F/TDN] again to switch from HOVER_MODE to FLIGHT_MODE.
 Fig. 5b – HOVER_MODE to FLIGHT_MODE switch is complete (TUP), Climbing to cruise altitude.



Fig. 6a – (right) Turn [IAS] off.

Fig. 6b – (mid) Turn [ALT] off.

Fig. 6b – (mid) Turn [V/S] on and set it to 1000 ft/min to climb really fast.



Fig. 7a – (right – bottom) Turn on [ALT.A] and set it to 2500 ft, our cruise altitude for this mission.

Fig. 7b – (right - top) Use the GPS to check the heading to BALDO and correct it when necessary.



Fig. 8a – Once cruise height is reached, press [IAS] to turn forward AirSpeed lock on.
Fig. 8b - Increase the [IAS] value by pressing [CTRL][SHIFT][L] keys on your keyboard.
 Note that the helicopter now starts to “lean forward” to gain more speed.



Fig. 9a – (top) - Above BALDO, use the GPS [DCT] function to find heading to JUKES (059).
Fig. 9b – (bottom) - Set [HDG] to 59.

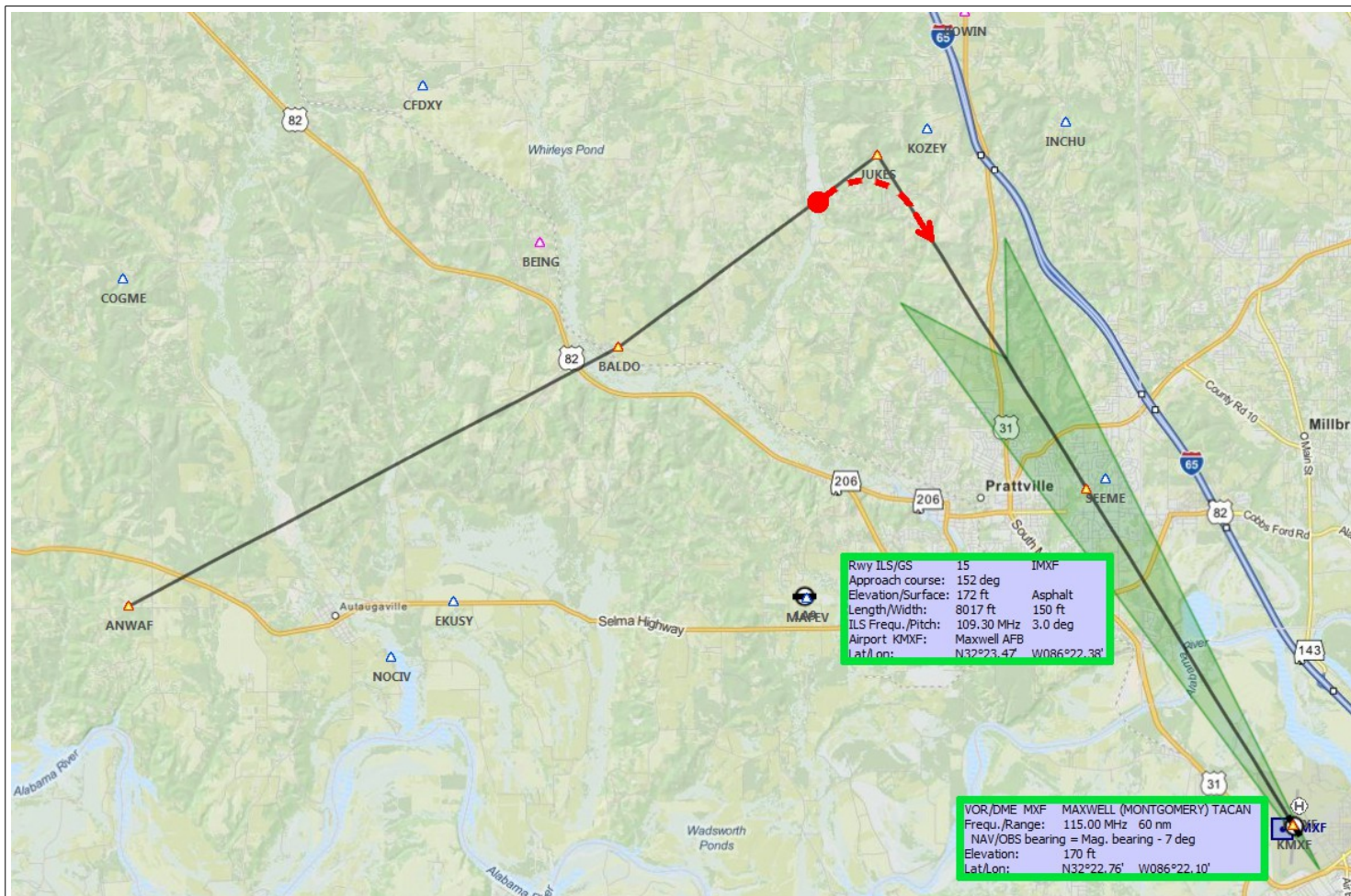


Fig. 10 – Towards JUKES, you need to setup the ILS instruments for a correct landing.



Fig. 11a - (top-right) - Set Nav1 Radio to the KMXF, runway 15 ILS frequency (109.30) and make it active.
Fig. 11b- (mid-left) - Set the Course on the HSI to the KMXF, runway 15 ILS course (152).



Fig. 12 – Set [HDG] to 152 and turn right heading KMXF to intercept the ILS Localizer.



Fig. 13a – (top-right) Use GPS [DCT] function to check the heading to KMXF Airbase.

Fig. 13b – (top-left) You can now see KMXF's runway 15 straight ahead on the horizon. (yellow circle)



Fig. 14 – Press [APP] to tell the HAP gauge to “Capture-the-Localizer”.

Note that the helicopter starts to tilt to the left (or right) and seeks to get to the center-line of the ILS-runway.



Fig. 15 – Overview of the ILS-Localizer seek process, from outside the helicopter cockpit.



Fig. 16a – Established on the (center-line of the) ILS-Localizer, ready to capture the ILS-Glide-Slope.

Fig. 16b – Press the [G/S] to activate the Glide-slope capturing process.

This enables the HAP-gauge to “Capture the Glide-slope” and guide the helicopter gently down to the runway. Notice that G/S is Blue, indicating that the Glide-slope has not yet been captured!



Fig. 17a – Glide-Slope captured!... [G/S] has turned Green to confirm this.

Fig. 17b – Decrease the [IAS] value by pressing [CTRL][SHIFT][L] keys on your keyboard.

The HAP-gauge now reduces the forward speed and gently descends the helicopter to the runway. Note that [ALT] was automatically switched off!.



Fig. 18 – LEVELHEIGHT_MODE engaged on ALT < 262 ft and IAS < 40 Kts.
The helicopter now automatically hovers along the center-line of the runway.



Fig. 19 – Press [F/TDN] to tell the HAP-gauge you want to land on KMXF's runway 15.
The helicopter is now slowed down to hover with IAS=0.



Fig. 20 – Set [HHT] = 0 to land on the runway.



Fig. 21 – Press [STAB] to turn off the HAP-gauge.

We are now standing in the middle of KMXF's runway 15.

Let's get back to the helipad, before it get messy from other airplanes landing on top of us... shall we?

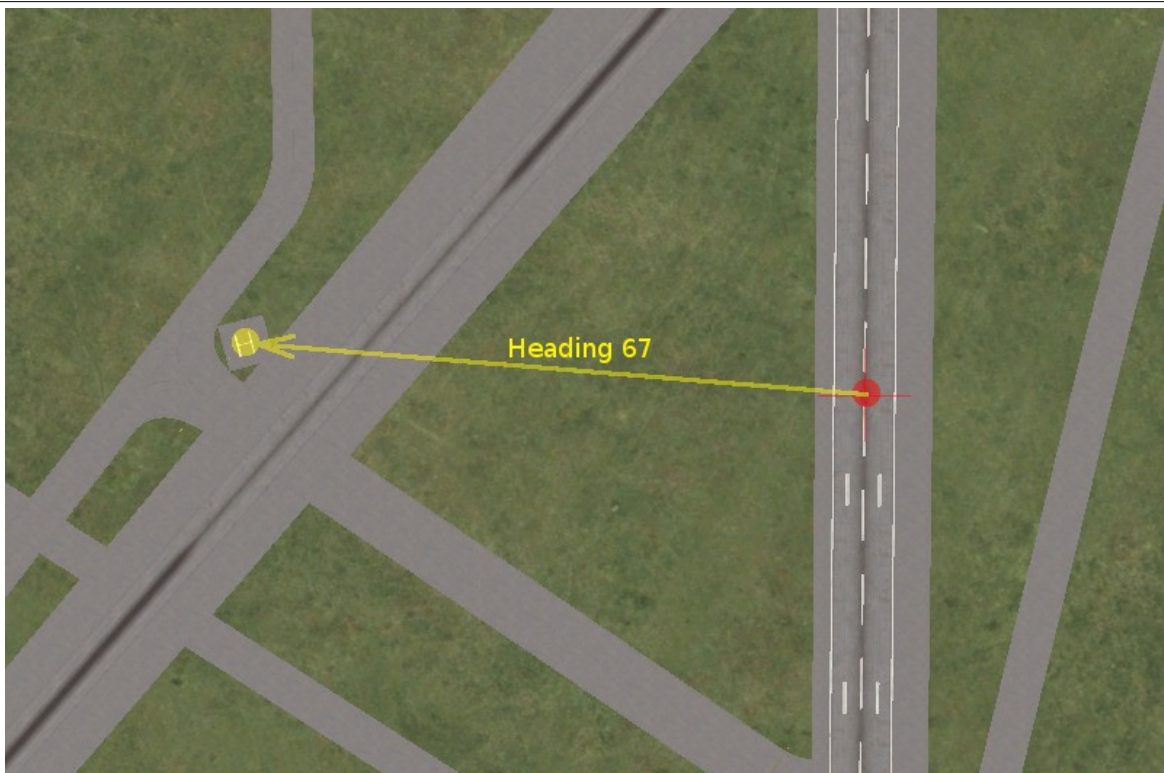
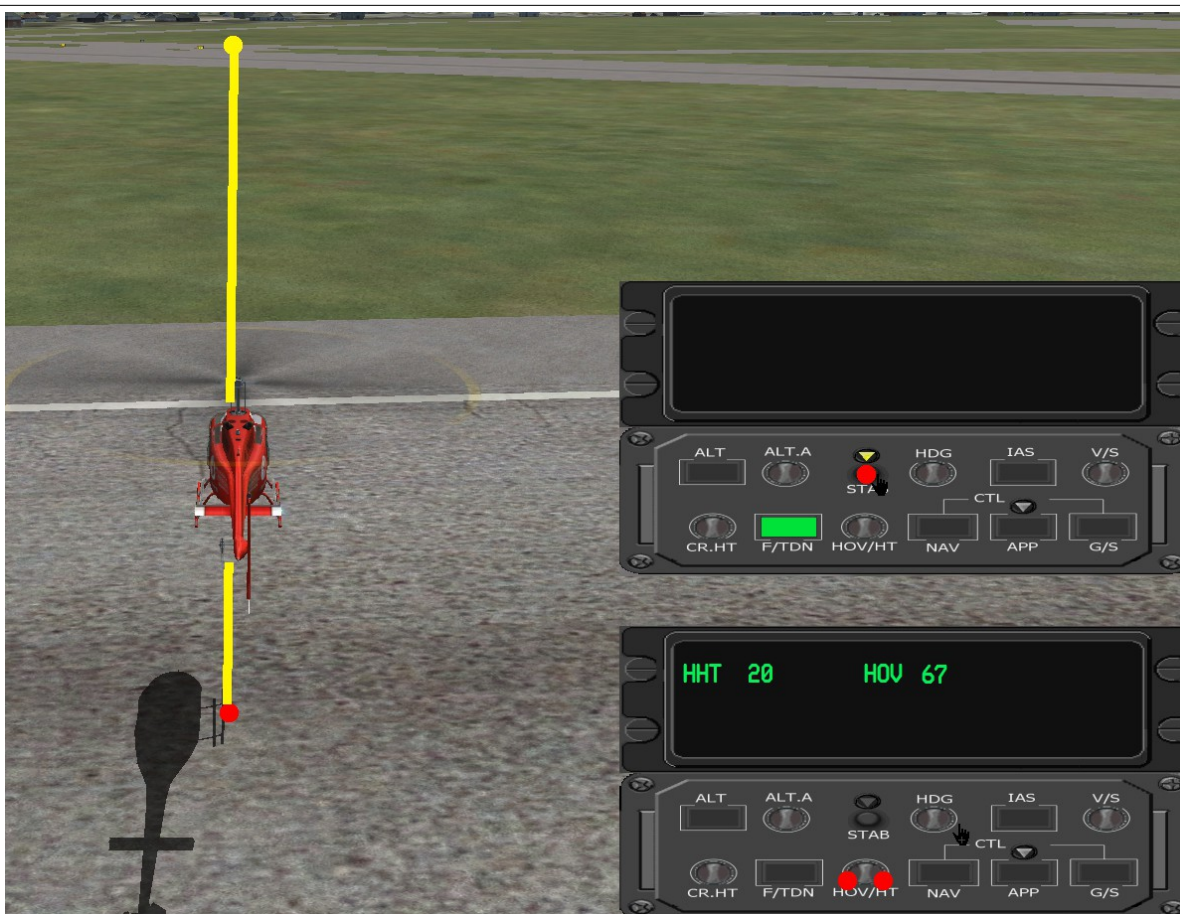


Fig. 22 – The heading to KMXF's helipad is ~067



**Fig. 23a – Press [STAB] to turn on the HAP-gauge again.
 Fig. 23b – Press [F/TDN] to switch to HOVER_MODE.
 Fig. 23c – Set [HDG] to 67 for the direction to the helipad.**



Fig. 24A - Hovering (back) to the Helipad.

Fig. 24b - Press the [Ctrl][Shift][Up Arrow] keys on your keyboard to hover forward to the helipad.

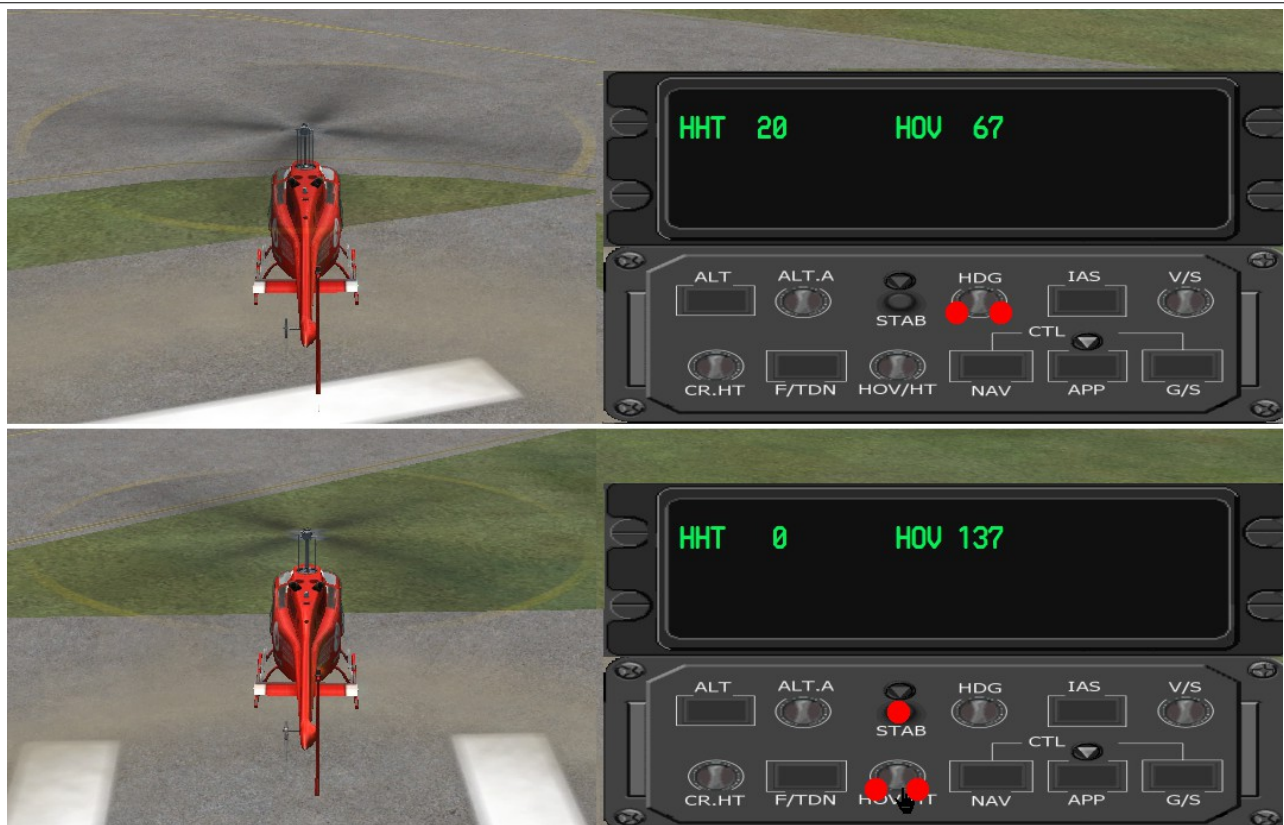


Fig. 25a – Set [HDG] to 137.

Fig. 25b – Set [HHT] to 0.

Fig. 25c – Press [STAB] to shutdown the HAP-gauge.

Now shutdown the helicopter, back to “cold-and-dark state” as described in training mission 1.

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Congratulations, you have just made you first HAP controlled – ILS landing!

In lesson 1,2,3 and 4 we have covered almost every aspect of the HAP-gauge in normal helicopter flight.

In the last lesson (5) we will conclude with the "special stuff" like:

- Taking off manually and engage the HAP-gauge in full flight
- Taking off with help of the HAP-gauge and land manually.
- Transition from full forward flight to hovering in mid-air.
- Transition from mid-air hovering to full forward flight.

End of training mission 4