

Nav Log Steps Example SEE-HMT Cessna 734NK

Wind at all altitudes for simplicity 270°@10kts

Standard temperature

Taxi fuel from POH 1.5gal rounded to 2

Cruise power 2,500RPM

1. Plot courses on Sectional then terminal charts.
2. Decide cruise altitude (terrain and hemispheric rule) 6,500.'
3. Calculate time and distance to TOC and mark on both Sectional & Terminal Charts
 - 2,000' abeam on downwind at 0 start distance
 - Use POH Time/Fuel/Distance to Climb Chart 2,000' to 6,500' as follows:
 - Distance: 3-14=11nm to TOC Time: 3-11=8 min + 3 min to reach abeam point=11 min to TOC
4. Calculate leg time to first waypoint (VPSLJ)
 - Distance to VPSLJ=5nm
 - Use POH Time/Fuel/Distance to Climb Chart
 - Distance 0-5=4min to reach VPSLJ
5. Calculate altitude at VPSLJ.
 - Use POH Time/Fuel/Distance to Climb Chart at 2,000'=3nm
 - At 8nm (5nm distance to VPSLJ) altitude is 4,000' so 2,000' gained by VPSLJ
 - Therefore, altitude at VPSLJ=4,000'
6. Calculate leg time from TOC to El Cap waypoint
 - Use POH Cruise Chart to determine TAS of 115 kts at 2,500 RPM at standard temperature.
 - Use E6B to calculate 3nm@115kts=1.5min rounded up to 2min.
7. Calculate the TOD waypoint and mark on both Sectional and Terminal charts
 - 6,500' to 2,500' pattern altitude at HMT
 - 4,000' to lose
 - Formula to calculate TOD to HMT: Altitude (in thousands) to lose x 4. 4X4=16nm.
Constant for this formula: 500fpm
Formula at different groundspeeds:

90kts: altitude to loseX3
120kts: altitude to loseX4
150kts: altitude to loseX5
180 kts: altitude to loseX6

Explanation of the formula Altitude to lose (in thousands) X4 in this example.
At 500fpm, each 1,000' will take 2 minutes. At 120kts in 2 minutes distance covered is 4 miles
Each of the other speeds above work similarly mathematically.
8. Calculate TAS and groundspeed for climbs to VPSLG and to TOC
 - Calculate climb TAS as follows:
 - Average altitude (approx. 4,000') and average temperature at 4,000' at standard (7°C)
 - Using E6B move 7° opposite 4,000' in Pressure Altitude window.
 - Then find CAS of 73kts (V_Y) opposite TAS=77kts
 - Then calculate groundspeed from TAS using the opposite side of the E6B using wind speed and direction of 270° @10kts)=83kts
9. Calculate all cruise groundspeeds using winds at top of page and wind side of E6B as follows:
 - 1st cruise leg TOC-El Cap (048° true course=groundspeed 118kts)

- 2nd cruise leg El Cap-Pauma Valley airport CL33 (330° true course=groundspeed 107kts)
- 3rd cruise leg Pauma Valley airport CL33-HMT (357° true course=groundspeed 100kts)

10. Calculate time and fuel for all cruise legs (see completed nav log for all legs) using E6B and cruise fuel flow from AirPlains Supplement Cruise Fuel Chart for the 180HP engine at www.takeflightsandiego.com/resources
Fuel flow at standard temperature, 2,500RPM at 6,000' is 9gph rounded up.

11. Using wind side of E6B calculate WCA TH VAR MH DEV CH and MC

- MC is true course minus magnetic variation (11°). Also known as GPS DTK

12. Total the Distance, Time, and Fuel columns

All of the following needed for creating this nav log can be found at www.takeflightsandiego.com/resources

You will also find a fully completed Nav Log to compare your results next to the Nav Log blank form.

Nav Log Blank Form

Compass card for 734NK

Air Plains Supplement for 734NK

1977 POH for 734NK (C-172N)

Alternatively, you will find all of the above in one downloadable file at www.takeflightsandiego.com/resources titled "Navigation Lesson & Attachments"

Other Tools Needed:

E6B or flight computer

Plotter (recommend rotating wheel type)