Navigation Log Guide

Step-by-Step to a Perfectly Completed Navigation Log

G-Simulations Kneeboard v2.1

Table of Contents

1. Introduction

What is a Navigation Log?

A Navigation Log (also known as a flight log or navlog) is an essential document for every flight. It serves as a central collection point for all flight planning information and is used as a reference and for documentation during the flight.

Before the Flight

Route planning, calculation of times, fuel, and headings. Gathering weather information and frequencies.

During the Flight

Reference for waypoints, frequencies, and planned values. Documentation of actual times and consumption.

After the Flight

Analysis of deviations between plan and reality. Documentation for future flights on the same route.

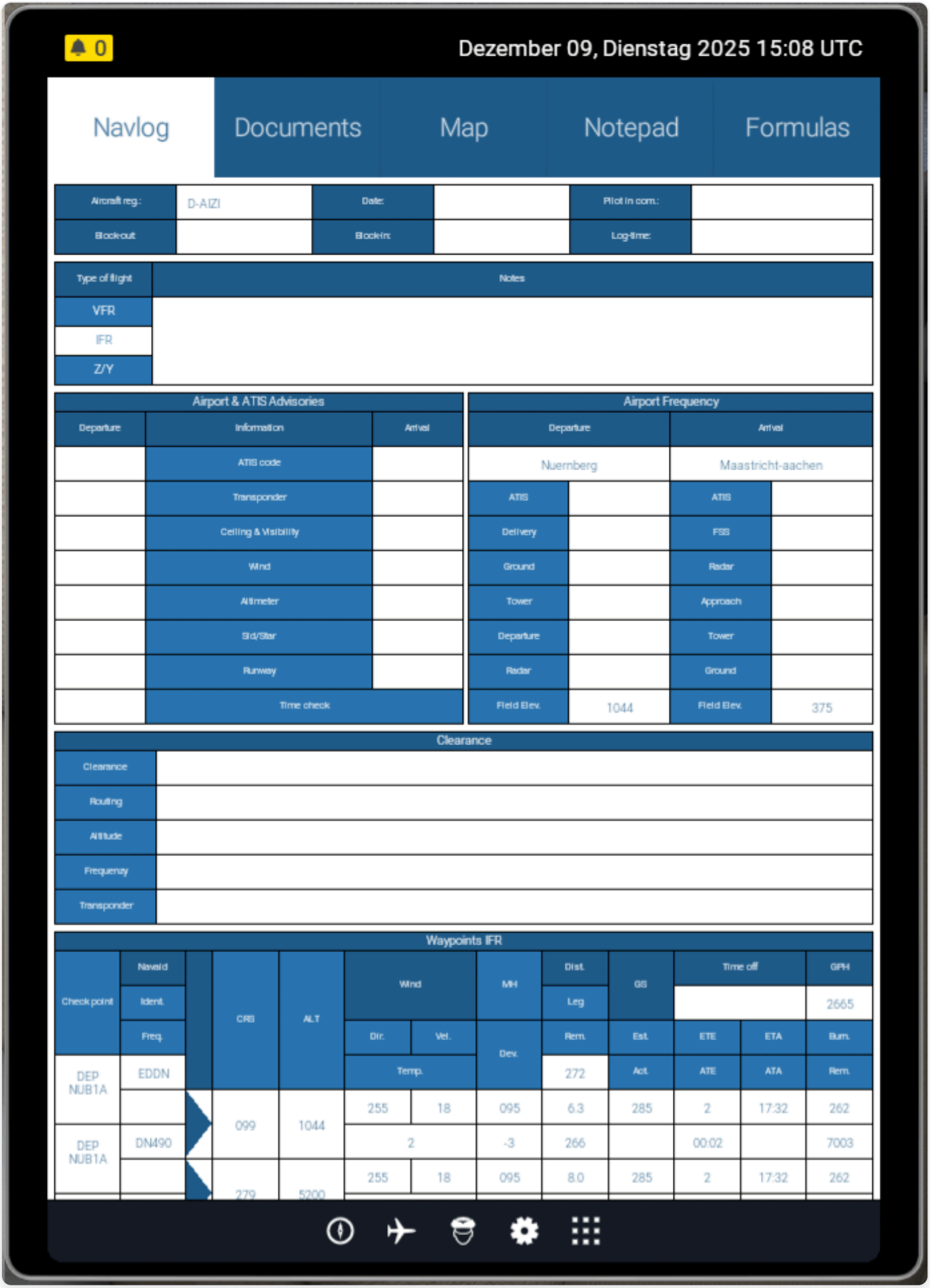
Why is a Navigation Log Important?

- **Safety:** All important information in one place
- **Efficiency:** No searching for frequencies or waypoints during flight
- **Professionalism:** Standard in real aviation
- **Learning:** Better understanding of flight planning
- **VATSIM/IVAO:** Essential for online flights with ATC

Tip: Even if you use an autopilot or GPS, the navigation log helps with understanding the route and serves as a backup in case of system failures.

2. Header Section

The header contains basic information about the flight and aircraft.



The Navigation Log header section

Field	Description	Example
Aircraft reg.	Aircraft registration/identification. Your callsign for VATSIM/IVAO.	N12345, G-ABCD, DLH123
Date	Flight date in DD.MM.YYYY or YYYY-MM-DD format	12/18/2025
Pilot in com.	Name of the Pilot in Command (PIC)	John Smith
Block-out	Planned departure time (UTC) - Time of leaving the gate/parking position	14:30Z
Block-in	Planned/actual arrival time (UTC) - Time of reaching the parking position	15:45Z
Log-time	Total flight time (block-to-block)	1:15

Note on Times: Aviation uses UTC (Coordinated Universal Time) as standard. Remember to convert from your local time zone.

3. Flight Type

Select the flight type by clicking the corresponding button. The active type will be highlighted.

Type	Meaning	When to Use?
VFR	Visual Flight Rules	Flights by visual reference, without instrument clearance. Typical for private pilots and scenic flights.
IFR	Instrument Flight Rules	Flights by instruments with ATC clearance. Standard for airline flights and in poor weather.
Z/Y	Mixed Flight Rules	**Z:** Start as IFR, then change to VFR. **Y:** Start as VFR, then change to IFR.

Notes Field

The large text field next to the flight type selection is for general notes:

- Special route remarks
- Passenger information
- Special requirements
- Reminders

4. Airport & ATIS Advisories

This section contains important information from departure and destination airports that you receive from ATIS (Automatic Terminal Information Service).

Field	Description	Example
ATIS code	Current ATIS letter. Each new ATIS message gets the next letter (Alpha, Bravo, Charlie...)	Information Delta
Transponder	Squawk code received from ATC or self-selected (VFR: usually 1200 in US, 7000 in Europe)	2341, 1200
Ceiling & Visibility	Cloud base (in feet AGL) and visibility (in SM or meters)	BKN025, 10SM
Wind	Wind direction (magnetic, from which it comes) and speed	270/15kt, VRB03
Altimeter	QNH - current air pressure referenced to sea level (hPa or inHg)	29.92", 1013 hPa
SID/STAR	Standard Instrument Departure / Standard Terminal Arrival Route	RNAV1, ILS28R
Runway	Active runway for takeoff/landing	07R, 28L
Time check	Time synchronization with UTC	14:25Z

Tip for VATSIM: Listen to ATIS before contacting Delivery. The controller will ask for the ATIS code ("Information Delta received").

Decoding an ATIS Example

ATIS Los Angeles Information Echo

"Los Angeles International Information Echo, 2123 Zulu. Runway 25L and 25R in use. Wind 260 degrees 12 knots. Visibility 10 miles. Few clouds at 2500 feet, scattered at 4500 feet. Temperature

22 Celsius, dewpoint 15. Altimeter 29.97. Advise on initial contact you have Information Echo."

Entry in Navlog:

- ATIS code: **E (Echo)**
- Wind: **260/12**
- Ceiling & Visibility: **FEW025 SCT045, 10SM**
- Altimeter: **29.97**
- Runway: **25L/25R**
- Time check: **21:23Z**

5. Airport Frequencies

Enter the relevant radio frequencies for departure and destination airports here. You can find these in approach charts, on the Kneeboard map, or online.

Frequency	Function	When to Contact?
ATIS	Automatic Terminal Information Service	Listen before first radio contact
Delivery	Clearance Delivery	To obtain IFR clearance (before Ground)
Ground	Ground Control	For taxi clearance to/from runway
Tower	Tower Control	For takeoff and landing clearance
Departure	Departure Control (Radar)	After takeoff, when Tower hands you off
Approach	Approach Control (Radar)	When approaching destination airport
Radar	Center/En-route Control	During cruise flight
FSS	Flight Service Station	At uncontrolled airports
Field Elev.	Airport elevation above MSL	Important for altimeter setting and approach calculations

Contact Order (IFR):
ATIS (listen) → Delivery → Ground → Tower → Departure → Center/Radar → Approach → Tower → Ground

6. Clearance (CRAFT Method)

The Clearance section is especially important for IFR flights. Here you note the clearance received from Clearance Delivery. The **CRAFT method** helps you capture all important information in a structured way:

C **Clearance**- The actual clearance limit (e.g., "Cleared to destination via...")

R **Route**- The cleared route (SID, Waypoints, Airways)

A **Altitude**- The cleared altitude (Initial altitude, expect FL...)

F **Frequency**- The next frequency after takeoff

T **Transponder**- The assigned squawk code

Clearance Example

Controller: "American 456, cleared to New York Kennedy via RNAV1 departure, direct MERIT, J60 PARCH. Climb and maintain 5000, expect FL350 10 minutes after departure. Departure frequency 124.3. Squawk 4521."

Entry in Navlog:

- **C**learance: Cleared to JFK
- **R**oute: RNAV1, MERIT, J60, PARCH
- **A**ltitude: Initial 5000, expect FL350

- **F**requency: 124.3
- **T**ransponder: 4521

Readback: Always read back the clearance in full. The controller will confirm with "Readback correct" or correct any errors.

7. Waypoints Table

The waypoints table is the heart of the Navigation Log. Here you enter all waypoints with their associated navigation and time data. There are separate tables for VFR, IFR, and Z/Y flights.

VFR Waypoints Table

Column	Meaning	Explanation
Check point	Waypoint name	Name of waypoint or landmark (e.g., town, VOR, intersection)
Navaid Ident./Freq.	Navigation aid	Identifier and frequency of nearest VOR/NDB (e.g., LAX 113.6)
CRS	Course (Magnetic)	Magnetic course to next waypoint
ALT	Altitude	Planned flight altitude for this leg
Wind Dir./Vel.	Wind	Wind direction (from) and speed in knots
CAS	Calibrated Airspeed	Calibrated airspeed (approximately equals IAS)
TAS	True Airspeed	True airspeed (altitude-corrected)
TC	True Course	True course (referenced to true north)
WCA	Wind Correction Angle	Wind correction angle (-L/+R = left/right)
TH	True Heading	True heading = TC + WCA
Var.	Variation	Magnetic variation (-E/+W = East/West)
MH	Magnetic Heading	Magnetic heading = TH + Var
Dev.	Deviation	Compass deviation (aircraft-specific)

Column	Meaning	Explanation
CH	Compass Heading	Compass heading = MH + Dev
Dist. Leg	Leg Distance	Distance of this leg in NM
Dist. Rem.	Remaining Distance	Remaining distance to destination in NM
GS	Groundspeed	Speed over ground = TAS +/- wind component
ETE	Estimated Time Enroute	Estimated flight time for this leg
ETA	Estimated Time of Arrival	Estimated arrival time at waypoint
ATE	Actual Time Enroute	Actual flight time (enter during flight)
ATA	Actual Time of Arrival	Actual arrival time (enter during flight)
GPH	Gallons Per Hour	Fuel consumption per hour
Burn.	Fuel Burn	Fuel consumption for this leg
Rem.	Fuel Remaining	Remaining fuel

Calculation Formulas

```
TAS = IAS + (IAS x 0.02 x Altitude in 1000 ft)
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Example: 120 kt IAS at 5000 ft → TAS = 120 + (120 x 0.02 x 5) = 132 kt

```
Groundspeed = TAS +/- Wind Component
```

Headwind reduces GS, tailwind increases GS

```
ETE (min) = Distance (NM) / GS (kt) x 60
```

Example: 50 NM at 120 kt GS → ETE = 50/120 x 60 = 25 min

```
Fuel Burn = GPH x ETE (in hours)
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Example: 8 GPH for 25 min → 8 x (25/60) = 3.3 gallons

> **Tip:** The Kneeboard calculator contains all these formulas and calculates values automatically!

8. Flight Plan

The Flight Plan section contains a summary of the most important flight plan data, as used when filing a flight plan.

Field	Description	Example
Aircraft Identification	Aircraft registration/callsign	N12345, AAL456
Aircraft Type/Equipment	ICAO aircraft type and equipment	C172/G, B738/L
True Airspeed	Cruise speed (TAS) in knots	120, 450
Departure Point	ICAO code of departure airport	KLAX
Departure Est./Act.	Planned and actual departure time (UTC)	14:30Z / 14:35Z
Cruising Altitude	Cruise altitude	5500, FL350
Route of flight	Complete route with waypoints/airways	RNAV1 MERIT J60 PARCH

Equipment Codes:

- **/G** - GPS
- **/L** - ILS, VOR, GPS
- **/S** - Standard (VOR, ILS)
- **/A** - ADF only (NDB)

9. Destination & Alternate

Destination

Field	Description	Example
Destination airport	ICAO code of destination airport	KJFK
ETE Hours/Minutes	Estimated flight time to destination	4:30
Remarks	Special notes about destination	NOTAMs, closed RWYs

Alternate

Field	Description	Example
Alternate airport	ICAO code of alternate airport	KEWR (Newark)
Fuel on board Hours/Min	Fuel on board (endurance)	6:00
Alternate route	Route to alternate airport	Direct KEWR

Important: For IFR flights, an alternate is required when weather at destination is below certain minimums. Always plan enough fuel for the alternate!

10. Weather Log

The Weather Log documents weather conditions for all phases of the flight.

Column	Description
Ceiling/Visibility/Precip.	Cloud base, visibility, and precipitation (Reported = current, Forecast = predicted)
Winds aloft	Upper winds for planned altitude
Icing and freezing level	Icing conditions and freezing level altitude
Turbulence and Cloud tops	Turbulence and cloud top altitudes
Position of fronts	Position of fronts, high and low pressure systems

Enter this information for all flight phases:

- **Departure** - Weather at departure location
- **Enroute** - Weather along the route
- **Arrival** - Weather at destination
- **Alternate** - Weather at alternate airport

11. VFR Example Flight: KLAX → KSAN

Here is a completely filled example for a VFR flight from Los Angeles (KLAX) to San Diego (KSAN).

Flight Details

- **Route:** KLAX - Torrance - Dana Point - KSAN
- **Distance:** approx. 110 NM
- **Aircraft:** Cessna 172 (N12345)
- **Cruise Altitude:** 4500 ft
- **TAS:** 110 kt

Header

Aircraft reg.	N12345
Date	12/18/2025
Pilot in com.	John Smith
Block-out	18:00Z
Block-in	19:15Z
Log-time	1:15

ATIS & Frequencies - Departure (KLAX)

ATIS	133.8
Ground	121.75
Tower	133.9

Field Elev.	126 ft
ATIS code	Hotel
Wind	250/10
Visibility	10+ SM
Altimeter	29.97
Runway	25R

Waypoints

Check Point	CRS	ALT	Dist	GS	ETE	Fuel
KLAX (Departure)	-	-	-	-	-	40 gal
Torrance	160°	2500	15 NM	105 kt	9 min	38.5 gal
Dana Point	145°	4500	40 NM	108 kt	22 min	34.5 gal
KSAN (Arrival)	155°	4500→2000	55 NM	112 kt	29 min	29.5 gal
Totals	-	-	**110 NM**	-	**60 min**	**10.5 gal**

Result: Planned flight time 60 minutes, fuel burn approx. 10.5 gallons. With 40 gallons on board, approx. 29.5 gallons remain - sufficient reserve for over 2.5 hours additional flight time.

12. IFR Example Flight: KLAX → KLAS

A complete IFR example from Los Angeles (KLAX) to Las Vegas (KLAS).

Flight Details

- **Route:** KLAX ORCKA1 ORCKA J146 CIVET SHEAD3
- **Distance:** approx. 230 NM
- **Aircraft:** Boeing 737-800 (SWA123)
- **Cruise Altitude:** FL280
- **TAS:** 450 kt

Header

Aircraft reg.	SWA123
Date	12/18/2025
Pilot in com.	Capt. Johnson
Block-out	16:00Z
Block-in	17:00Z
Log-time	1:00

Clearance (CRAFT)

Clearance	Cleared to Las Vegas McCarran
Routing	ORCKA1 departure, ORCKA, J146, CIVET, SHEAD3 arrival
Altitude	Initial 5000, expect FL280

Frequency	Departure 124.3
Transponder	5234

Frequencies - Departure (KLAX)

ATIS	133.8
Delivery	133.65
Ground	121.75
Tower	133.9
Departure	124.3
Field Elev.	126 ft

Frequencies - Arrival (KLAS)

ATIS	132.4
Approach	125.9
Tower	119.9
Ground	121.9
Field Elev.	2181 ft

Waypoints (IFR)

Fix	Airway	CRS	ALT	Dist	ETE
KLAX	ORCKA1	-	-	-	-
Total				**230 NM**	**37 min**

Fix	Airway	CRS	ALT	Dist	ETE
ORCKA	J146	045°	FL280	65 NM	9 min
CIVET	SHEAD3	055°	FL280	95 NM	13 min
KLAS	-	048°	FL280→8000	70 NM	15 min
Total				**230 NM**	**37 min**

Flight Plan

Aircraft ID	SWA123
Type/Equipment	B738/L
TAS	450 kt
Departure	KLAX
Cruise Alt	FL280
Route	ORCKA1 ORCKA J146 CIVET SHEAD3

Destination & Alternate

Destination	KLAS
ETE	0:37 (+ taxi)
Alternate	KPHX (Phoenix)
Fuel on board	3:00

Result: Pure flight time approx. 37 minutes at FL280. With taxi, takeoff, and landing approx. 1:00 block-to-block. Fuel for 3:00 - sufficient reserve including alternate.

Summary

A well-completed Navigation Log is the key to safe and efficient flights. Here are the key points:

Before the Flight

- Fill in all fields as far as possible
- Research frequencies
- Obtain weather
- Perform calculations

During the Flight

- Enter ATIS information
- Note clearance (CRAFT)
- Document actual times
- Note deviations

After the Flight

- Complete the log
- Analyze deviations
- Save for future flights

Pro Tip: Use the Simbrief integration of the Kneeboard Server to automatically import flight plans. Waypoints and calculations are then automatically transferred!

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