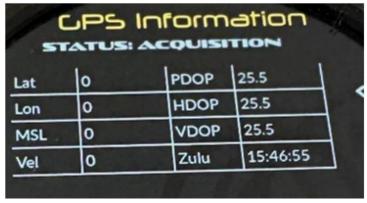# Aerospace Village Badge
## Henry/Lillian

https://www.aerospacevillage.org/dc32-badge

Screenshot of 2.0 Winglet GPS Information



## GPS Information
### STATUS: ACQUISITION

| Lat | 0 | PDOP | 25.5 |
|-----|---|------|------|
| Lon | 0 | HDOP | 25.5 |
| MSL | 0 | VDOP | 25.5 |
| Vel | 0 | Zulu | 15:46:55 |

### SATELLITES TRACKED: 0

| SV ID | Elev | Azim | CN0 |
|-------|------|------|-----|
| 6 | 0 | 0 | 0 |
| 10 | 5 | 216 | 0 |
| 13 | 20 | 87 | 0 |
| 15 | 35 | 124 | 21 |
| 16 | 9 | 322 | 0 |



## GPS Information
### STATUS: ACQUISITION

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Screenshot of 2.0 Winglet GPS Information

Lat: Latitude

Lon:Longitide

MSL:Mean Altitude above Sea Level

Vel:Velocity

PDOP:Position Dilution of Precision

HDOP:Horizontal Dilution of Precision

VDOP:Vertical Dilution of Precision

Zulu: Time or UTC time

Screenshot of 2.0 Winglet GPS Information

**SVID:**Space Vehicle ID Elev:Elevation  Azim:Azimuth CNO:Carrier -To-Noise

With the GPS chip that we have on the ADS-B Badge, it presents NMEA messages to the user. These messages contain info on the user Position, Altitude above the geoid model, and the current time. Velocity is estimated against the previous position every second. The Dilution of Precision is presented for Position, Horizontal, and Vertical metrics. DoP is a way of determining how good the position fix is. The Satellite Tracking chart lists SVID, 1-99 for GPS and 100-199 for Beidou. Elevation and Azimuth is calculated based on their reported positions and shows where satellites are estimated to be from the receiver position. The CNO, or Carrier-to-Noise density ratio, is shown for individual satellite signals. CNO is independent of front end bandwidth for receivers and is a good way of comparing performance to other receivers. By. "Zap", Lillian

**NMEA**-0183 message structure relies on comma delimiters and avoids unnecessary spaces, particularly when dealing with omitted or unavailable data fields. When parsing these messages, focusing on the position of commas is essential for accurately extracting the required information.
**Lat**: Latidude Latitude is a geographic coordinate that specifies a location's distance north or south of the Earth's equator.
**Lon**:Longitude measured in degrees, minutes, and seconds, is a geographical coordinate that specifies the east-west position of a point on Earth's surface.
**DOP** :Dilution of Precision DOP is a general term referring to the multiplicative effect of satellite geometry on positioning accuracy.
**PDOP**:Position Dilution of Precision is a metric used in satellite navigation (like GPS) to assess the quality of the satellite geometry and its impact on positioning accuracy.
**SVID**:Space Vehicle ID

**Elev:**Elevation holds a variety of meanings depending on the context, but it most commonly refers to height above a reference point, particularly sea level.

**Azim:**Azimuth is a directional measurement, typically expressed in degrees, representing the horizontal angle between a reference direction (usually north) and an observed object.

**CNO:**Carrier -To-Noise is a crucial metric that indicates the strength of the received signal relative to the background noise. It essentially measures how much stronger the satellite's signal is compared to the noise in the receiver's bandwidth.

**Velocity**: the speed and direction at which a satellite moves around a celestial body,like earth.

**Mean Sea level (MSL):** An aircraft's altitude above the average level of the world's ocean. In other words , MSL tells you how high you are relative to sea level. (AGL tells you how high you are relative to the ground directly below.

Resources AI Chat GPT definitions.