📜 NMEA sentence: $GLGSA,A,3,74,75,,,,,,,,,,,2.1,1.2,1.7\*29

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSA,A,3,13,30,,,,,,,,,,,2.1,1.2,1.7\*24

📜 NMEA sentence: $GBGSA,A,3,07,13,21,22,24,26,,,,,,,2.1,1.2,1.7\*22

⚠️ No valid position data parsed

📡 Raw Emlid data: $GPGSV,1,1,02,05,79,154,42,12,79,233,44,,,,,,,,\*79

📜 NMEA sentence: $GLGSV,1,1,02,74,36,194,44,75,53,272,42,,,,,,,,\*68

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSV,1,1,02,13,32,266,35,30,70,167,44,,,,,,,,\*69

📜 NMEA sentence: $GBGSV,2,1,06,07,49,091,41,13,81,070,36,21,41,152,48,22,39,080,41\*6B

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,2,06,24,45,244,46,26,26,185,47,,,,,,,,\*65

📜 NMEA sentence: $GNVTG,348.14,T,,M,0.06,N,0.11,K,A\*2F

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGST,064500.60,1127.000,,,,0.630,0.370,1.100\*52

📜 NMEA sentence: $GNZDA,064500.60,14,05,2025,00,00\*7C

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNEBP,,,,,,M\*13

📜 NMEA sentence: $GNGGA,064500.80,1829.4064129,N,07352.0717687,E,1,13,1.2,610.230,M,-72.108,M,0.0,\*70

✅ Parsed GPGGA: {'latitude': 18.490106881666666, 'longitude': 12.867862811666667, 'altitude': 610.23, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490106881666666, 'longitude': 12.867862811666667, 'altitude': 610.23, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.33, Northing=2045739.30

⚠️ Coordinate mismatch: Lat diff=0.00098661, Lon diff=72.99641160

📍 UTM: [274876.33, 2045739.30] (Zone 45N)

📍 Lat/Lon: [18.490107°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.33, Y=2045739.30

🌍 Corresponding Lat/Lon: 18.490107, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=13, HDOP=1.20

📡 Raw Emlid data: $GNGGA,064501.00,1829.4064128,N,07352.0717686,E,1,13,1.2,610.225,M,-72.108,M,0.0,\*7D

📜 NMEA sentence: $GNGGA,064501.20,1829.4064173,N,07352.0717691,E,1,13,1.2,610.221,M,-72.108,M,0.0,\*73

✅ Parsed GPGGA: {'latitude': 18.490106955, 'longitude': 12.867862818333332, 'altitude': 610.221, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490106955, 'longitude': 12.867862818333332, 'altitude': 610.221, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.33, Northing=2045739.31

⚠️ Coordinate mismatch: Lat diff=0.00098654, Lon diff=72.99641159

📍 UTM: [274876.33, 2045739.31] (Zone 45N)

📍 Lat/Lon: [18.490107°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.33, Y=2045739.31

🌍 Corresponding Lat/Lon: 18.490107, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=13, HDOP=1.20

📡 Raw Emlid data: $GNGGA,064501.40,1829.4064213,N,07352.0717655,E,1,13,1.2,610.206,M,-72.108,M,0.0,\*7D

📜 NMEA sentence: $GNRMC,064501.60,A,1829.4064179,N,07352.0717664,E,0.08,348.14,140525,,,A\*48

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGGA,064501.60,1829.4064179,N,07352.0717664,E,1,13,1.2,610.218,M,-72.108,M,0.0,\*7D

📜 NMEA sentence: $GPGSA,A,3,05,12,,,,,,,,,,,2.1,1.2,1.7\*32

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSA,A,3,74,75,,,,,,,,,,,2.1,1.2,1.7\*29

📜 NMEA sentence: $GAGSA,A,3,13,30,,,,,,,,,,,2.1,1.2,1.7\*24

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSA,A,3,07,13,21,22,24,26,,,,,,,2.1,1.2,1.7\*22

📜 NMEA sentence: $GPGSV,1,1,02,05,79,154,43,12,79,233,44,,,,,,,,\*78

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSV,1,1,02,74,36,194,44,75,53,272,42,,,,,,,,\*68

📜 NMEA sentence: $GAGSV,1,1,02,13,32,266,35,30,70,167,44,,,,,,,,\*69

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,1,06,07,49,091,41,13,81,070,36,21,41,152,48,22,39,080,41\*6B

📜 NMEA sentence: $GBGSV,2,2,06,24,45,244,47,26,26,185,47,,,,,,,,\*64

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNVTG,348.14,T,,M,0.08,N,0.14,K,A\*24

📜 NMEA sentence: $GNGST,064501.60,1127.000,,,,0.630,0.370,1.100\*53

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNZDA,064501.60,14,05,2025,00,00\*7D

📜 NMEA sentence: $GNEBP,,,,,,M\*13

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGGA,064501.80,1829.4064220,N,07352.0717612,E,1,13,1.2,610.205,M,-72.108,M,0.0,\*71

📜 NMEA sentence: $GNGGA,064502.00,1829.4064239,N,07352.0717573,E,1,13,1.2,610.197,M,-72.108,M,0.0,\*7E

✅ Parsed GPGGA: {'latitude': 18.490107065, 'longitude': 12.867862621666667, 'altitude': 610.197, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490107065, 'longitude': 12.867862621666667, 'altitude': 610.197, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.31, Northing=2045739.32

⚠️ Coordinate mismatch: Lat diff=0.00098643, Lon diff=72.99641179

📍 UTM: [274876.31, 2045739.32] (Zone 45N)

📍 Lat/Lon: [18.490107°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.31, Y=2045739.32

🌍 Corresponding Lat/Lon: 18.490107, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=13, HDOP=1.20

📡 Raw Emlid data: $GNGGA,064502.20,1829.4064292,N,07352.0717563,E,1,13,1.2,610.183,M,-72.108,M,0.0,\*79

📜 NMEA sentence: $GNGGA,064502.40,1829.4064120,N,07352.0717630,E,1,14,1.0,610.217,M,-72.108,M,0.0,\*7B

✅ Parsed GPGGA: {'latitude': 18.490106866666668, 'longitude': 12.867862716666666, 'altitude': 610.217, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490106866666668, 'longitude': 12.867862716666666, 'altitude': 610.217, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.32, Northing=2045739.30

⚠️ Coordinate mismatch: Lat diff=0.00098663, Lon diff=72.99641169

📍 UTM: [274876.32, 2045739.30] (Zone 45N)

📍 Lat/Lon: [18.490107°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.32, Y=2045739.30

🌍 Corresponding Lat/Lon: 18.490107, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GNRMC,064502.60,A,1829.4063975,N,07352.0717645,E,0.04,348.14,140525,,,A\*47

📜 NMEA sentence: $GNGGA,064502.60,1829.4063975,N,07352.0717645,E,1,14,1.0,610.241,M,-72.108,M,0.0,\*77

✅ Parsed GPGGA: {'latitude': 18.490106625, 'longitude': 12.867862741666666, 'altitude': 610.241, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490106625, 'longitude': 12.867862741666666, 'altitude': 610.241, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.32, Northing=2045739.27

⚠️ Coordinate mismatch: Lat diff=0.00098687, Lon diff=72.99641167

📍 UTM: [274876.32, 2045739.27] (Zone 45N)

📍 Lat/Lon: [18.490107°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.32, Y=2045739.27

🌍 Corresponding Lat/Lon: 18.490107, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GPGSA,A,3,05,12,25,,,,,,,,,,2.0,1.0,1.7\*36

📜 NMEA sentence: $GLGSA,A,3,74,75,,,,,,,,,,,2.0,1.0,1.7\*2A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSA,A,3,13,30,,,,,,,,,,,2.0,1.0,1.7\*27

📜 NMEA sentence: $GBGSA,A,3,07,13,21,22,24,26,,,,,,,2.0,1.0,1.7\*21

⚠️ No valid position data parsed

📡 Raw Emlid data: $GPGSV,1,1,03,05,79,154,43,12,79,233,44,25,49,305,35,,,,\*43

📜 NMEA sentence: $GLGSV,1,1,02,74,36,194,44,75,53,272,42,,,,,,,,\*68

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSV,1,1,02,13,32,266,36,30,70,167,44,,,,,,,,\*6A

📜 NMEA sentence: $GBGSV,2,1,06,07,49,091,41,13,81,070,35,21,41,152,48,22,39,080,40\*69

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,2,06,24,45,244,47,26,26,185,47,,,,,,,,\*64

📜 NMEA sentence: $GNVTG,348.14,T,,M,0.04,N,0.07,K,A\*2A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGST,064502.60,1089.000,,,,0.620,0.370,1.100\*54

📜 NMEA sentence: $GNZDA,064502.60,14,05,2025,00,00\*7E

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNEBP,,,,,,M\*13

📜 NMEA sentence: $GNGGA,064502.80,1829.4063820,N,07352.0717696,E,1,14,1.0,610.267,M,-72.108,M,0.0,\*72

✅ Parsed GPGGA: {'latitude': 18.490106366666666, 'longitude': 12.867862826666666, 'altitude': 610.267, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490106366666666, 'longitude': 12.867862826666666, 'altitude': 610.267, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.33, Northing=2045739.24

⚠️ Coordinate mismatch: Lat diff=0.00098713, Lon diff=72.99641158

📍 UTM: [274876.33, 2045739.24] (Zone 45N)

📍 Lat/Lon: [18.490106°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.33, Y=2045739.24

🌍 Corresponding Lat/Lon: 18.490106, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GNGGA,064503.00,1829.4063674,N,07352.0717738,E,1,14,1.0,610.289,M,-72.108,M,0.0,\*71

📜 NMEA sentence: $GNGGA,064503.20,1829.4063502,N,07352.0717783,E,1,14,1.0,610.320,M,-72.108,M,0.0,\*73

✅ Parsed GPGGA: {'latitude': 18.490105836666668, 'longitude': 12.867862971666668, 'altitude': 610.32, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490105836666668, 'longitude': 12.867862971666668, 'altitude': 610.32, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.35, Northing=2045739.19

⚠️ Coordinate mismatch: Lat diff=0.00098766, Lon diff=72.99641144

📍 UTM: [274876.35, 2045739.19] (Zone 45N)

📍 Lat/Lon: [18.490106°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.35, Y=2045739.19

🌍 Corresponding Lat/Lon: 18.490106, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GNGGA,064503.40,1829.4063341,N,07352.0717808,E,1,14,1.0,610.351,M,-72.108,M,0.0,\*7E

📜 NMEA sentence: $GNRMC,064503.60,A,1829.4063203,N,07352.0717854,E,0.04,348.14,140525,,,A\*42

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGGA,064503.60,1829.4063203,N,07352.0717854,E,1,14,1.0,610.377,M,-72.108,M,0.0,\*76

📜 NMEA sentence: $GPGSA,A,3,05,12,25,,,,,,,,,,2.0,1.0,1.7\*36

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSA,A,3,74,75,,,,,,,,,,,2.0,1.0,1.7\*2A

📜 NMEA sentence: $GAGSA,A,3,13,30,,,,,,,,,,,2.0,1.0,1.7\*27

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSA,A,3,07,13,21,22,24,26,,,,,,,2.0,1.0,1.7\*21

📜 NMEA sentence: $GPGSV,1,1,03,05,79,154,42,12,79,233,44,25,49,305,35,,,,\*42

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSV,1,1,02,74,36,194,44,75,53,272,41,,,,,,,,\*6B

📜 NMEA sentence: $GAGSV,1,1,02,13,32,266,36,30,70,167,44,,,,,,,,\*6A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,1,06,07,49,091,40,13,81,070,35,21,41,152,48,22,39,080,40\*68

📜 NMEA sentence: $GBGSV,2,2,06,24,45,244,48,26,26,185,47,,,,,,,,\*6B

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNVTG,348.14,T,,M,0.04,N,0.07,K,A\*2A

📜 NMEA sentence: $GNGST,064503.60,1089.000,,,,0.610,0.360,1.100\*57

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNZDA,064503.60,14,05,2025,00,00\*7F

📜 NMEA sentence: $GNEBP,,,,,,M\*13

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGGA,064503.80,1829.4063041,N,07352.0717897,E,1,14,1.0,610.412,M,-72.108,M,0.0,\*77

📜 NMEA sentence: $GNGGA,064504.00,1829.4062902,N,07352.0717931,E,1,14,1.0,610.433,M,-72.108,M,0.0,\*79

✅ Parsed GPGGA: {'latitude': 18.490104836666667, 'longitude': 12.867863218333333, 'altitude': 610.433, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490104836666667, 'longitude': 12.867863218333333, 'altitude': 610.433, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.37, Northing=2045739.07

⚠️ Coordinate mismatch: Lat diff=0.00098866, Lon diff=72.99641119

📍 UTM: [274876.37, 2045739.07] (Zone 45N)

📍 Lat/Lon: [18.490105°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.37, Y=2045739.07

🌍 Corresponding Lat/Lon: 18.490105, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GNGGA,064504.20,1829.4062743,N,07352.0717976,E,1,14,1.0,610.462,M,-72.108,M,0.0,\*77

📜 NMEA sentence: $GNGGA,064504.40,1829.4062714,N,07352.0717981,E,1,13,1.2,610.462,M,-72.108,M,0.0,\*7E

✅ Parsed GPGGA: {'latitude': 18.490104523333333, 'longitude': 12.867863301666667, 'altitude': 610.462, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490104523333333, 'longitude': 12.867863301666667, 'altitude': 610.462, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.38, Northing=2045739.04

⚠️ Coordinate mismatch: Lat diff=0.00098897, Lon diff=72.99641111

📍 UTM: [274876.38, 2045739.04] (Zone 45N)

📍 Lat/Lon: [18.490105°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.38, Y=2045739.04

🌍 Corresponding Lat/Lon: 18.490105, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=13, HDOP=1.20

📡 Raw Emlid data: $GNRMC,064504.60,A,1829.4062673,N,07352.0717985,E,0.04,348.14,140525,,,A\*4A

📜 NMEA sentence: $GNGGA,064504.60,1829.4062673,N,07352.0717985,E,1,13,1.2,610.466,M,-72.108,M,0.0,\*7C

✅ Parsed GPGGA: {'latitude': 18.490104455, 'longitude': 12.867863308333334, 'altitude': 610.466, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490104455, 'longitude': 12.867863308333334, 'altitude': 610.466, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.38, Northing=2045739.03

⚠️ Coordinate mismatch: Lat diff=0.00098904, Lon diff=72.99641110

📍 UTM: [274876.38, 2045739.03] (Zone 45N)

📍 Lat/Lon: [18.490104°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.38, Y=2045739.03

🌍 Corresponding Lat/Lon: 18.490104, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=13, HDOP=1.20

📡 Raw Emlid data: $GPGSA,A,3,05,12,,,,,,,,,,,2.1,1.2,1.7\*32

📜 NMEA sentence: $GLGSA,A,3,74,75,,,,,,,,,,,2.1,1.2,1.7\*29

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSA,A,3,13,30,,,,,,,,,,,2.1,1.2,1.7\*24

📜 NMEA sentence: $GBGSA,A,3,07,13,21,22,24,26,,,,,,,2.1,1.2,1.7\*22

⚠️ No valid position data parsed

📡 Raw Emlid data: $GPGSV,1,1,02,05,79,154,42,12,79,233,44,,,,,,,,\*79

📜 NMEA sentence: $GLGSV,1,1,02,74,36,194,44,75,53,272,41,,,,,,,,\*6B

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSV,1,1,02,13,32,266,36,30,70,167,44,,,,,,,,\*6A

📜 NMEA sentence: $GBGSV,2,1,06,07,49,091,40,13,81,070,35,21,41,152,48,22,39,080,40\*68

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,2,06,24,45,244,47,26,26,185,47,,,,,,,,\*64

📜 NMEA sentence: $GNVTG,348.14,T,,M,0.04,N,0.07,K,A\*2A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGST,064504.60,1127.000,,,,0.610,0.360,1.000\*54

📜 NMEA sentence: $GNZDA,064504.60,14,05,2025,00,00\*78

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNEBP,,,,,,M\*13

📜 NMEA sentence: $GNGGA,064504.80,1829.4062701,N,07352.0717955,E,1,13,1.2,610.454,M,-72.108,M,0.0,\*7A

✅ Parsed GPGGA: {'latitude': 18.490104501666668, 'longitude': 12.867863258333333, 'altitude': 610.454, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490104501666668, 'longitude': 12.867863258333333, 'altitude': 610.454, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.38, Northing=2045739.04

⚠️ Coordinate mismatch: Lat diff=0.00098899, Lon diff=72.99641115

📍 UTM: [274876.38, 2045739.04] (Zone 45N)

📍 Lat/Lon: [18.490105°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.38, Y=2045739.04

🌍 Corresponding Lat/Lon: 18.490105, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=13, HDOP=1.20

📡 Raw Emlid data: $GNGGA,064505.00,1829.4062693,N,07352.0717943,E,1,13,1.2,610.460,M,-72.108,M,0.0,\*79

📜 NMEA sentence: $GNGGA,064505.20,1829.4062695,N,07352.0717915,E,1,13,1.2,610.454,M,-72.108,M,0.0,\*79

✅ Parsed GPGGA: {'latitude': 18.490104491666667, 'longitude': 12.867863191666668, 'altitude': 610.454, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490104491666667, 'longitude': 12.867863191666668, 'altitude': 610.454, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.37, Northing=2045739.04

⚠️ Coordinate mismatch: Lat diff=0.00098900, Lon diff=72.99641122

📍 UTM: [274876.37, 2045739.04] (Zone 45N)

📍 Lat/Lon: [18.490105°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.37, Y=2045739.04

🌍 Corresponding Lat/Lon: 18.490104, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=13, HDOP=1.20

📡 Raw Emlid data: $GNGGA,064505.40,1829.4062762,N,07352.0717881,E,1,13,1.2,610.430,M,-72.108,M,0.0,\*78

📜 NMEA sentence: $GNRMC,064505.60,A,1829.4062694,N,07352.0717840,E,0.04,348.14,140525,,,A\*4A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGGA,064505.60,1829.4062694,N,07352.0717840,E,1,14,1.0,610.437,M,-72.108,M,0.0,\*7D

📜 NMEA sentence: $GPGSA,A,3,05,12,20,,,,,,,,,,2.0,1.0,1.7\*33

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSA,A,3,74,75,,,,,,,,,,,2.0,1.0,1.7\*2A

📜 NMEA sentence: $GAGSA,A,3,13,30,,,,,,,,,,,2.0,1.0,1.7\*27

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSA,A,3,07,13,21,22,24,26,,,,,,,2.0,1.0,1.7\*21

📜 NMEA sentence: $GPGSV,1,1,03,05,79,154,42,12,79,233,42,20,55,039,35,,,,\*40

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSV,1,1,02,74,36,194,42,75,53,272,41,,,,,,,,\*6D

📜 NMEA sentence: $GAGSV,1,1,02,13,32,266,36,30,70,167,44,,,,,,,,\*6A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,1,06,07,49,091,40,13,81,070,35,21,41,152,46,22,39,080,40\*66

📜 NMEA sentence: $GBGSV,2,2,06,24,45,244,47,26,26,185,45,,,,,,,,\*66

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNVTG,348.14,T,,M,0.04,N,0.07,K,A\*2A

📜 NMEA sentence: $GNGST,064505.60,1089.000,,,,0.610,0.360,1.000\*50

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNZDA,064505.60,14,05,2025,00,00\*79

📜 NMEA sentence: $GNEBP,,,,,,M\*13

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGGA,064505.80,1829.4062578,N,07352.0717814,E,1,14,1.0,610.462,M,-72.108,M,0.0,\*73

📜 NMEA sentence: $GNGGA,064506.00,1829.4062491,N,07352.0717796,E,1,14,1.0,610.461,M,-72.108,M,0.0,\*78

✅ Parsed GPGGA: {'latitude': 18.490104151666667, 'longitude': 12.867862993333333, 'altitude': 610.461, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490104151666667, 'longitude': 12.867862993333333, 'altitude': 610.461, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.35, Northing=2045739.00

⚠️ Coordinate mismatch: Lat diff=0.00098934, Lon diff=72.99641142

📍 UTM: [274876.35, 2045739.00] (Zone 45N)

📍 Lat/Lon: [18.490104°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.35, Y=2045739.00

🌍 Corresponding Lat/Lon: 18.490104, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GNGGA,064506.20,1829.4062415,N,07352.0717766,E,1,14,1.0,610.465,M,-72.108,M,0.0,\*7D

📜 NMEA sentence: $GNGGA,064506.40,1829.4062312,N,07352.0717748,E,1,14,1.0,610.477,M,-72.108,M,0.0,\*74

✅ Parsed GPGGA: {'latitude': 18.490103853333334, 'longitude': 12.867862913333333, 'altitude': 610.477, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103853333334, 'longitude': 12.867862913333333, 'altitude': 610.477, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.34, Northing=2045738.97

⚠️ Coordinate mismatch: Lat diff=0.00098964, Lon diff=72.99641150

📍 UTM: [274876.34, 2045738.97] (Zone 45N)

📍 Lat/Lon: [18.490104°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.34, Y=2045738.97

🌍 Corresponding Lat/Lon: 18.490104, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GNRMC,064506.60,A,1829.4062233,N,07352.0717721,E,0.04,348.14,140525,,,A\*48

📜 NMEA sentence: $GNGGA,064506.60,1829.4062233,N,07352.0717721,E,1,14,1.0,610.492,M,-72.108,M,0.0,\*70

✅ Parsed GPGGA: {'latitude': 18.490103721666667, 'longitude': 12.867862868333333, 'altitude': 610.492, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103721666667, 'longitude': 12.867862868333333, 'altitude': 610.492, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.33, Northing=2045738.95

⚠️ Coordinate mismatch: Lat diff=0.00098977, Lon diff=72.99641154

📍 UTM: [274876.33, 2045738.95] (Zone 45N)

📍 Lat/Lon: [18.490104°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.33, Y=2045738.95

🌍 Corresponding Lat/Lon: 18.490104, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GPGSA,A,3,05,12,20,,,,,,,,,,2.0,1.0,1.7\*33

📜 NMEA sentence: $GLGSA,A,3,74,75,,,,,,,,,,,2.0,1.0,1.7\*2A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSA,A,3,13,30,,,,,,,,,,,2.0,1.0,1.7\*27

📜 NMEA sentence: $GBGSA,A,3,07,13,21,22,24,26,,,,,,,2.0,1.0,1.7\*21

⚠️ No valid position data parsed

📡 Raw Emlid data: $GPGSV,1,1,03,05,79,154,41,12,79,233,41,20,55,039,35,,,,\*40

📜 NMEA sentence: $GLGSV,1,1,02,74,36,194,42,75,53,272,41,,,,,,,,\*6D

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSV,1,1,02,13,32,266,35,30,70,167,43,,,,,,,,\*6E

📜 NMEA sentence: $GBGSV,2,1,06,07,49,091,40,13,81,070,35,21,41,152,46,22,39,080,40\*66

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,2,06,24,45,244,47,26,26,185,46,,,,,,,,\*65

📜 NMEA sentence: $GNVTG,348.14,T,,M,0.04,N,0.07,K,A\*2A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGST,064506.60,1054.000,,,,0.600,0.360,1.000\*52

📜 NMEA sentence: $GNZDA,064506.60,14,05,2025,00,00\*7A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNEBP,,,,,,M\*13

📜 NMEA sentence: $GNGGA,064506.80,1829.4062233,N,07352.0717703,E,1,13,1.2,610.491,M,-72.108,M,0.0,\*78

✅ Parsed GPGGA: {'latitude': 18.490103721666667, 'longitude': 12.867862838333334, 'altitude': 610.491, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103721666667, 'longitude': 12.867862838333334, 'altitude': 610.491, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.33, Northing=2045738.95

⚠️ Coordinate mismatch: Lat diff=0.00098977, Lon diff=72.99641157

📍 UTM: [274876.33, 2045738.95] (Zone 45N)

📍 Lat/Lon: [18.490104°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.33, Y=2045738.95

🌍 Corresponding Lat/Lon: 18.490104, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=13, HDOP=1.20

📡 Raw Emlid data: $GNGGA,064507.00,1829.4062230,N,07352.0717700,E,1,13,1.2,610.493,M,-72.108,M,0.0,\*73

📜 NMEA sentence: $GNGGA,064507.20,1829.4062232,N,07352.0717693,E,1,13,1.2,610.491,M,-72.108,M,0.0,\*7A

✅ Parsed GPGGA: {'latitude': 18.49010372, 'longitude': 12.867862821666666, 'altitude': 610.491, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.49010372, 'longitude': 12.867862821666666, 'altitude': 610.491, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.33, Northing=2045738.95

⚠️ Coordinate mismatch: Lat diff=0.00098977, Lon diff=72.99641159

📍 UTM: [274876.33, 2045738.95] (Zone 45N)

📍 Lat/Lon: [18.490104°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.33, Y=2045738.95

🌍 Corresponding Lat/Lon: 18.490104, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=13, HDOP=1.20

📡 Raw Emlid data: $GNGGA,064507.40,1829.4062242,N,07352.0717665,E,1,13,1.2,610.492,M,-72.108,M,0.0,\*71

📜 NMEA sentence: $GNRMC,064507.60,A,1829.4062237,N,07352.0717669,E,0.10,348.14,140525,,,A\*45

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGGA,064507.60,1829.4062237,N,07352.0717669,E,1,13,1.2,610.495,M,-72.108,M,0.0,\*7A

📜 NMEA sentence: $GPGSA,A,3,05,12,,,,,,,,,,,2.1,1.2,1.7\*32

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSA,A,3,74,75,,,,,,,,,,,2.1,1.2,1.7\*29

📜 NMEA sentence: $GAGSA,A,3,13,30,,,,,,,,,,,2.1,1.2,1.7\*24

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSA,A,3,07,13,21,22,24,26,,,,,,,2.1,1.2,1.7\*22

📜 NMEA sentence: $GPGSV,1,1,02,05,79,154,40,12,79,233,40,,,,,,,,\*7F

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSV,1,1,02,74,36,194,41,75,53,272,41,,,,,,,,\*6E

📜 NMEA sentence: $GAGSV,1,1,02,13,32,266,35,30,70,167,43,,,,,,,,\*6E

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,1,06,07,49,091,39,13,81,070,35,21,41,152,46,22,39,080,40\*68

📜 NMEA sentence: $GBGSV,2,2,06,24,45,244,47,26,26,185,45,,,,,,,,\*66

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNVTG,348.14,T,,M,0.10,N,0.18,K,A\*21

📜 NMEA sentence: $GNGST,064507.60,1127.000,,,,0.600,0.350,1.000\*55

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNZDA,064507.60,14,05,2025,00,00\*7B

📜 NMEA sentence: $GNEBP,,,,,,M\*13

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGGA,064507.80,1829.4062272,N,07352.0717654,E,1,13,1.2,610.490,M,-72.108,M,0.0,\*7E

📜 NMEA sentence: $GNGGA,064508.00,1829.4062279,N,07352.0717656,E,1,13,1.2,610.492,M,-72.108,M,0.0,\*72

✅ Parsed GPGGA: {'latitude': 18.490103798333333, 'longitude': 12.86786276, 'altitude': 610.492, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103798333333, 'longitude': 12.86786276, 'altitude': 610.492, 'satellites': 13, 'hdop': 1.2, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.32, Northing=2045738.96

⚠️ Coordinate mismatch: Lat diff=0.00098969, Lon diff=72.99641165

📍 UTM: [274876.32, 2045738.96] (Zone 45N)

📍 Lat/Lon: [18.490104°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.32, Y=2045738.96

🌍 Corresponding Lat/Lon: 18.490104, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=13, HDOP=1.20

📡 Raw Emlid data: $GNGGA,064508.20,1829.4062303,N,07352.0717642,E,1,13,1.2,610.490,M,-72.108,M,0.0,\*7B

📜 NMEA sentence: $GNGGA,064508.40,1829.4062217,N,07352.0717632,E,1,14,1.0,610.508,M,-72.108,M,0.0,\*7B

✅ Parsed GPGGA: {'latitude': 18.490103695, 'longitude': 12.867862720000002, 'altitude': 610.508, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103695, 'longitude': 12.867862720000002, 'altitude': 610.508, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.32, Northing=2045738.95

⚠️ Coordinate mismatch: Lat diff=0.00098980, Lon diff=72.99641169

📍 UTM: [274876.32, 2045738.95] (Zone 45N)

📍 Lat/Lon: [18.490104°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.32, Y=2045738.95

🌍 Corresponding Lat/Lon: 18.490104, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GNRMC,064508.60,A,1829.4062131,N,07352.0717617,E,0.02,348.14,140525,,,A\*45

📜 NMEA sentence: $GNGGA,064508.60,1829.4062131,N,07352.0717617,E,1,14,1.0,610.522,M,-72.108,M,0.0,\*71

✅ Parsed GPGGA: {'latitude': 18.490103551666667, 'longitude': 12.867862695, 'altitude': 610.522, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103551666667, 'longitude': 12.867862695, 'altitude': 610.522, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.32, Northing=2045738.93

⚠️ Coordinate mismatch: Lat diff=0.00098994, Lon diff=72.99641171

📍 UTM: [274876.32, 2045738.93] (Zone 45N)

📍 Lat/Lon: [18.490104°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.32, Y=2045738.93

🌍 Corresponding Lat/Lon: 18.490104, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GPGSA,A,3,05,12,20,,,,,,,,,,2.0,1.0,1.7\*33

📜 NMEA sentence: $GLGSA,A,3,74,75,,,,,,,,,,,2.0,1.0,1.7\*2A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSA,A,3,13,30,,,,,,,,,,,2.0,1.0,1.7\*27

📜 NMEA sentence: $GBGSA,A,3,07,13,21,22,24,26,,,,,,,2.0,1.0,1.7\*21

⚠️ No valid position data parsed

📡 Raw Emlid data: $GPGSV,1,1,03,05,79,154,41,12,79,233,39,20,55,039,35,,,,\*4F

📜 NMEA sentence: $GLGSV,1,1,02,74,36,194,41,75,53,272,41,,,,,,,,\*6E

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSV,1,1,02,13,32,266,36,30,70,167,43,,,,,,,,\*6D

📜 NMEA sentence: $GBGSV,2,1,06,07,49,091,40,13,81,070,36,21,41,152,46,22,39,080,40\*65

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,2,06,24,45,244,47,26,26,185,45,,,,,,,,\*66

📜 NMEA sentence: $GNVTG,348.14,T,,M,0.02,N,0.04,K,A\*2F

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGST,064508.60,1089.000,,,,0.600,0.350,1.000\*5F

📜 NMEA sentence: $GNZDA,064508.60,14,05,2025,00,00\*74

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNEBP,,,,,,M\*13

📜 NMEA sentence: $GNGGA,064508.80,1829.4062067,N,07352.0717586,E,1,14,1.0,610.531,M,-72.108,M,0.0,\*74

✅ Parsed GPGGA: {'latitude': 18.490103445, 'longitude': 12.867862643333334, 'altitude': 610.531, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103445, 'longitude': 12.867862643333334, 'altitude': 610.531, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.31, Northing=2045738.92

⚠️ Coordinate mismatch: Lat diff=0.00099005, Lon diff=72.99641177

📍 UTM: [274876.31, 2045738.92] (Zone 45N)

📍 Lat/Lon: [18.490103°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.31, Y=2045738.92

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GNGGA,064509.00,1829.4062012,N,07352.0717552,E,1,14,1.0,610.546,M,-72.108,M,0.0,\*76

📜 NMEA sentence: $GNGGA,064509.20,1829.4061942,N,07352.0717538,E,1,14,1.0,610.553,M,-72.108,M,0.0,\*73

✅ Parsed GPGGA: {'latitude': 18.490103236666666, 'longitude': 12.867862563333333, 'altitude': 610.553, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103236666666, 'longitude': 12.867862563333333, 'altitude': 610.553, 'satellites': 14, 'hdop': 1.0, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.30, Northing=2045738.90

⚠️ Coordinate mismatch: Lat diff=0.00099026, Lon diff=72.99641185

📍 UTM: [274876.30, 2045738.90] (Zone 45N)

📍 Lat/Lon: [18.490103°N, 84.867863°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

🚜 Rover position updated: UTM X=274876.30, Y=2045738.90

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=14, HDOP=1.00

📡 Raw Emlid data: $GNGGA,064509.40,1829.4061890,N,07352.0717527,E,1,12,1.2,610.566,M,-72.108,M,0.0,\*77

⚠️ Connection failed (Attempt 5/5): could not open port 'COM12': PermissionError(13, 'Access is denied.', None, 5)

❌ Failed to connect after 5 attempts

⚠️ Emlid not found — falling back to simulation

📍 UTM: [715980.29, 3167204.82] (Zone 45N)

🧪 GPS simulation started (no hardware connected)

📍 Lat/Lon: [28.613900°N, 89.209000°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

2025-05-14 12:15:09,679,rover\_failsafe,WARNING,GNSS Failsafe triggered: GPS corrections stale (>1000ms old sustained for >5000ms)

⚠️ Failsafe triggered: GPS corrections stale (>1000ms old sustained for >5000ms)

2025-05-14 12:15:09,679,rover\_failsafe,INFO,Failsafe monitoring started

🛑 COMMAND: Stop

2025-05-14 12:15:09,685,rover\_failsafe,INFO,Starting recovery for: GPS corrections stale (>1000ms old sustained for >5000ms)

📜 NMEA sentence: $GNRMC,064509.60,A,1829.4061943,N,07352.0717543,E,0.12,348.14,140525,,,A\*49

⚠️ No valid position data parsed

🔄 Attempting recovery from GPS corrections stale (>1000ms old sustained for >5000ms)

📋 CSV-based Navigation Plan:

Total waypoints: 63

Estimated rows: 5

2025-05-14 12:15:09,691,rover\_failsafe,INFO,Attempting to reconnect to NTRIP server

📡 Raw Emlid data: $GNGGA,064509.60,1829.4061943,N,07352.0717543,E,1,11,1.4,610.568,M,-72.108,M,0.0,\*73

2025-05-14 12:15:09,693,rover\_failsafe,INFO,Simulation mode: Waiting for NTRIP reconnection

UTM Offsets: (380000.00, 2044880.00)

Row 1: X-position 0.00m, Direction ↓ DOWN

Row 2: X-position 100.00m, Direction ↓ DOWN

Row 3: X-position 0.00m, Direction ↓ DOWN

📜 NMEA sentence: $GPGSA,A,3,05,,,,,,,,,,,,2.6,1.4,2.2\*36

⚠️ No valid position data parsed

Row 4: X-position 100.00m, Direction ↓ DOWN

Row 5: X-position 0.00m, Direction ↓ DOWN

📏 Dynamic farm boundaries: X [-3.00, 103.00], Y [-3.00, 23.00]

📡 Raw Emlid data: $GLGSA,A,3,74,75,,,,,,,,,,,2.6,1.4,2.2\*2E

🎲 Randomly placing rover inside farm at: (0.839, 12.628)

📜 NMEA sentence: $GAGSA,A,3,30,,,,,,,,,,,,2.6,1.4,2.2\*21

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSA,A,3,07,13,21,22,24,26,,,,,,,2.6,1.4,2.2\*25

📜 NMEA sentence: $GPGSV,1,1,01,05,79,154,38,,,,,,,,,,,,\*48

⚠️ No valid position data parsed

❌ NTRIP error: HTTPConnectionPool(host='your.ntrip.server.url', port=2101): Max retries exceeded with url: /MOUNTPOINT (Caused by NameResolutionError("<urllib3.connection.HTTPConnection object at 0x00000193E2224BC0>: Failed to resolve 'your.ntrip.server.url' ([Errno 11001] getaddrinfo failed)"))

📡 Raw Emlid data: $GLGSV,1,1,02,74,36,194,38,75,53,272,40,,,,,,,,\*61

📜 NMEA sentence: $GAGSV,1,1,01,30,70,167,43,,,,,,,,,,,,\*5A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,1,06,07,49,091,38,13,81,070,35,21,41,152,44,22,39,080,40\*6B

📜 NMEA sentence: $GBGSV,2,2,06,24,45,244,46,26,26,185,42,,,,,,,,\*60

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNVTG,348.14,T,,M,0.12,N,0.22,K,A\*2A

📜 NMEA sentence: $GNGST,064509.60,1170.000,,,,0.590,0.350,1.000\*53

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNZDA,064509.60,14,05,2025,00,00\*75

📜 NMEA sentence: $GNEBP,,,,,,M\*13

⚠️ No valid position data parsed

❌ Error converting UTM to lat/lon: easting out of range (must be between 100,000 m and 999,999 m)

⚠️ Error converting UTM to Lat/Lon: Invalid lat/lon values: None, None

📡 Raw Emlid data: $GNGGA,064509.80,1829.4062008,N,07352.0717568,E,1,11,1.4,610.555,M,-72.108,M,0.0,\*7F

❌ Error converting UTM to lat/lon: easting out of range (must be between 100,000 m and 999,999 m)

⚠️ Error converting UTM to Lat/Lon: Invalid lat/lon values: None, None

📜 NMEA sentence: $GNGGA,064510.00,1829.4061961,N,07352.0717617,E,1,11,1.4,610.565,M,-72.108,M,0.0,\*72

✅ Parsed GPGGA: {'latitude': 18.490103268333332, 'longitude': 12.867862695, 'altitude': 610.565, 'satellites': 11, 'hdop': 1.4, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103268333332, 'longitude': 12.867862695, 'altitude': 610.565, 'satellites': 11, 'hdop': 1.4, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.32, Northing=2045738.90

⚠️ Coordinate mismatch: Lat diff=0.00099022, Lon diff=72.99641171

🚜 Rover position updated: UTM X=274876.32, Y=2045738.90

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=11, HDOP=1.40

❌ Error converting UTM to lat/lon: easting out of range (must be between 100,000 m and 999,999 m)

⚠️ Error converting UTM to Lat/Lon: Invalid lat/lon values: None, None

❌ Error converting UTM to lat/lon: easting out of range (must be between 100,000 m and 999,999 m)

⚠️ Error converting UTM to Lat/Lon: Invalid lat/lon values: None, None

📡 Raw Emlid data: $GNGGA,064510.20,1829.4061940,N,07352.0717647,E,1,11,1.4,610.559,M,-72.108,M,0.0,\*79

📍 UTM: [380000.84, 2044892.63] (Zone 45N)

📍 Lat/Lon: [18.491053°N, 85.863336°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

⚠️ Path deviation: 737.00 cm (exceeds 5 cm RTK fixed tolerance)

📜 NMEA sentence: $GNGGA,064510.40,1829.4061910,N,07352.0717735,E,1,10,1.4,610.558,M,-72.108,M,0.0,\*7E

✅ Parsed GPGGA: {'latitude': 18.490103183333332, 'longitude': 12.867862891666666, 'altitude': 610.558, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103183333332, 'longitude': 12.867862891666666, 'altitude': 610.558, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.34, Northing=2045738.89

⚠️ Coordinate mismatch: Lat diff=0.00099031, Lon diff=72.99641152

🚜 Rover position updated: UTM X=274876.34, Y=2045738.89

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=10, HDOP=1.40

📡 Raw Emlid data: $GNRMC,064510.60,A,1829.4061906,N,07352.0717750,E,0.08,348.14,140525,,,A\*4B

📜 NMEA sentence: $GNGGA,064510.60,1829.4061906,N,07352.0717750,E,1,10,1.4,610.556,M,-72.108,M,0.0,\*76

🚜 TASK 1: Determining farm navigation plan with zigzag pattern...

✅ Parsed GPGGA: {'latitude': 18.49010317666667, 'longitude': 12.867862916666667, 'altitude': 610.556, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.49010317666667, 'longitude': 12.867862916666667, 'altitude': 610.556, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.34, Northing=2045738.89

⚠️ Coordinate mismatch: Lat diff=0.00099032, Lon diff=72.99641149

🚜 Rover position updated: UTM X=274876.34, Y=2045738.89

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=10, HDOP=1.40

📡 Raw Emlid data: $GPGSA,A,3,05,,,,,,,,,,,,2.6,1.4,2.3\*37

📜 NMEA sentence: $GLGSA,A,3,74,75,,,,,,,,,,,2.6,1.4,2.3\*2F

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSA,A,3,30,,,,,,,,,,,,2.6,1.4,2.3\*20

📜 NMEA sentence: $GBGSA,A,3,07,21,22,24,26,,,,,,,,2.6,1.4,2.3\*26

⚠️ No valid position data parsed

📡 Raw Emlid data: $GPGSV,1,1,01,05,79,154,37,,,,,,,,,,,,\*47

📜 NMEA sentence: $GLGSV,1,1,02,74,36,194,38,75,53,272,37,,,,,,,,\*61

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSV,1,1,01,30,70,167,42,,,,,,,,,,,,\*5B

📜 NMEA sentence: $GBGSV,2,1,05,07,49,091,37,21,41,152,44,22,39,080,40,24,45,244,44\*68

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,2,05,26,26,185,41,,,,,,,,,,,,\*57

📜 NMEA sentence: $GNVTG,348.14,T,,M,0.08,N,0.14,K,A\*24

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGST,064510.60,1272.000,,,,0.600,0.350,1.000\*50

📜 NMEA sentence: $GNZDA,064510.60,14,05,2025,00,00\*7D

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNEBP,,,,,,M\*13

📜 NMEA sentence: $GNGGA,064510.80,1829.4061944,N,07352.0717735,E,1,10,1.4,610.551,M,-72.108,M,0.0,\*7A

✅ Parsed GPGGA: {'latitude': 18.49010324, 'longitude': 12.867862891666666, 'altitude': 610.551, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.49010324, 'longitude': 12.867862891666666, 'altitude': 610.551, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.34, Northing=2045738.90

⚠️ Coordinate mismatch: Lat diff=0.00099025, Lon diff=72.99641152

🚜 Rover position updated: UTM X=274876.34, Y=2045738.90

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=10, HDOP=1.40

📡 Raw Emlid data: $GNGGA,064511.00,1829.4061946,N,07352.0717724,E,1,10,1.4,610.563,M,-72.108,M,0.0,\*70

📜 NMEA sentence: $GNGGA,064511.20,1829.4061934,N,07352.0717734,E,1,10,1.4,610.551,M,-72.108,M,0.0,\*77

✅ Parsed GPGGA: {'latitude': 18.490103223333332, 'longitude': 12.86786289, 'altitude': 610.551, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103223333332, 'longitude': 12.86786289, 'altitude': 610.551, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.34, Northing=2045738.90

⚠️ Coordinate mismatch: Lat diff=0.00099027, Lon diff=72.99641152

🚜 Rover position updated: UTM X=274876.34, Y=2045738.90

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=10, HDOP=1.40

🚜 TASK 1: Navigating directly to path start point...

🎯 Path start point: (0.000, 20.000)

📏 Distance to path start: 7.418m

🗺️ Navigating directly to starting point...

🚗 Navigating to point (0.000, 20.000)...

🔄 TURN: From 0.0° to 96.5°, Direction: turn\_left, Angle: 96.5°

↩️ COMMAND: Turn left 96.5°

📡 Raw Emlid data: $GNGGA,064511.40,1829.4061928,N,07352.0717733,E,1,11,1.4,610.560,M,-72.108,M,0.0,\*78

📜 NMEA sentence: $GNRMC,064511.60,A,1829.4061933,N,07352.0717752,E,0.08,348.14,140525,,,A\*4E

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGGA,064511.60,1829.4061933,N,07352.0717752,E,1,10,1.4,610.549,M,-72.108,M,0.0,\*7D

📜 NMEA sentence: $GPGSA,A,3,05,,,,,,,,,,,,2.6,1.4,2.3\*37

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSA,A,3,74,75,,,,,,,,,,,2.6,1.4,2.3\*2F

📜 NMEA sentence: $GAGSA,A,3,30,,,,,,,,,,,,2.6,1.4,2.3\*20

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSA,A,3,07,21,22,24,26,,,,,,,,2.6,1.4,2.3\*26

📜 NMEA sentence: $GPGSV,1,1,01,05,79,154,37,,,,,,,,,,,,\*47

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSV,1,1,02,74,36,194,38,75,53,272,38,,,,,,,,\*6E

📜 NMEA sentence: $GAGSV,1,1,01,30,70,167,42,,,,,,,,,,,,\*5B

2025-05-14 12:15:11,698,rover\_failsafe,INFO,Recovery successful for: GPS corrections stale (>1000ms old sustained for >5000ms)

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,1,05,07,49,091,37,21,41,152,44,22,39,080,40,24,45,244,45\*69

📜 NMEA sentence: $GBGSV,2,2,05,26,26,185,41,,,,,,,,,,,,\*57

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNVTG,348.14,T,,M,0.08,N,0.14,K,A\*24

📜 NMEA sentence: $GNGST,064511.60,1272.000,,,,0.600,0.350,1.000\*51

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNZDA,064511.60,14,05,2025,00,00\*7C

📜 NMEA sentence: $GNEBP,,,,,,M\*13

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGGA,064511.80,1829.4061928,N,07352.0717759,E,1,10,1.4,610.546,M,-72.108,M,0.0,\*7D

2025-05-14 12:15:11,879,rover\_failsafe,WARNING,GNSS Failsafe triggered: GPS data stale (>300ms without NMEA fix)

⚠️ Failsafe triggered: GPS data stale (>300ms without NMEA fix)

🛑 COMMAND: Stop

2025-05-14 12:15:11,890,rover\_failsafe,INFO,Starting recovery for: GPS data stale (>300ms without NMEA fix)

🔄 Attempting recovery from GPS data stale (>300ms without NMEA fix)

2025-05-14 12:15:11,906,rover\_failsafe,INFO,Attempting to reconnect to GNSS receiver

2025-05-14 12:15:11,906,rover\_failsafe,INFO,Simulation mode: Waiting for GNSS reconnection

2025-05-14 12:15:11,915,rover\_failsafe,INFO,Recovery successful for: GPS data stale (>300ms without NMEA fix)

📜 NMEA sentence: $GNGGA,064512.00,1829.4061940,N,07352.0717773,E,1,10,1.4,610.551,M,-72.108,M,0.0,\*76

✅ Parsed GPGGA: {'latitude': 18.490103233333333, 'longitude': 12.867862955, 'altitude': 610.551, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103233333333, 'longitude': 12.867862955, 'altitude': 610.551, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.34, Northing=2045738.90

⚠️ Coordinate mismatch: Lat diff=0.00099026, Lon diff=72.99641145

🚜 Rover position updated: UTM X=274876.34, Y=2045738.90

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=10, HDOP=1.40

2025-05-14 12:15:12,112,rover\_failsafe,WARNING,GNSS Failsafe triggered: GPS corrections stale (>1000ms old sustained for >5000ms)

⚠️ Failsafe triggered: GPS corrections stale (>1000ms old sustained for >5000ms)

🛑 COMMAND: Stop

2025-05-14 12:15:12,114,rover\_failsafe,INFO,Starting recovery for: GPS corrections stale (>1000ms old sustained for >5000ms)

🔄 Attempting recovery from GPS corrections stale (>1000ms old sustained for >5000ms)

2025-05-14 12:15:12,114,rover\_failsafe,INFO,Attempting to reconnect to NTRIP server

2025-05-14 12:15:12,114,rover\_failsafe,INFO,Simulation mode: Waiting for NTRIP reconnection

⬆️ COMMAND: Move forward 1.60m

📍 UTM: [380000.66, 2044894.22] (Zone 45N)

📍 Lat/Lon: [18.491067°N, 85.863334°E]

📍 Heading: 96.5° (Compass Heading: 353.5° North)

⚠️ Path deviation: 578.00 cm (exceeds 5 cm RTK fixed tolerance)

📡 Raw Emlid data: $GNGGA,064512.20,1829.4061934,N,07352.0717777,E,1,10,1.4,610.555,M,-72.108,M,0.0,\*77

⬆️ COMMAND: Move forward 1.60m

📍 UTM: [380000.48, 2044895.81] (Zone 45N)

📍 Lat/Lon: [18.491081°N, 85.863332°E]

📍 Heading: 96.5° (Compass Heading: 353.5° North)

⚠️ Path deviation: 419.00 cm (exceeds 5 cm RTK fixed tolerance)

⬆️ COMMAND: Move forward 1.60m

📍 UTM: [380000.30, 2044897.40] (Zone 45N)

📍 Lat/Lon: [18.491096°N, 85.863330°E]

📍 Heading: 96.5° (Compass Heading: 353.5° North)

⚠️ Path deviation: 260.00 cm (exceeds 5 cm RTK fixed tolerance)

⬆️ COMMAND: Move forward 1.60m

📍 UTM: [380000.12, 2044898.99] (Zone 45N)

📍 Lat/Lon: [18.491110°N, 85.863328°E]

📍 Heading: 96.5° (Compass Heading: 353.5° North)

⚠️ Path deviation: 101.00 cm (exceeds 5 cm RTK fixed tolerance)

⬆️ COMMAND: Move forward 0.51m

📍 UTM: [380000.06, 2044899.50] (Zone 45N)

📍 Lat/Lon: [18.491115°N, 85.863328°E]

📍 Heading: 96.5° (Compass Heading: 353.5° North)

⚠️ Path deviation: 50.00 cm (exceeds 5 cm RTK fixed tolerance)

✅ Reached target point (0.060, 19.500)

📍 UTM: [380000.00, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863327°E]

📍 Heading: 96.5° (Compass Heading: 353.5° North)

📜 NMEA sentence: $GNGGA,064512.40,1829.4061937,N,07352.0717770,E,1,09,1.4,610.542,M,-72.108,M,0.0,\*7B

✅ Parsed GPGGA: {'latitude': 18.490103228333332, 'longitude': 12.86786295, 'altitude': 610.542, 'satellites': 9, 'hdop': 1.4, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103228333332, 'longitude': 12.86786295, 'altitude': 610.542, 'satellites': 9, 'hdop': 1.4, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.34, Northing=2045738.90

⚠️ Coordinate mismatch: Lat diff=0.00099026, Lon diff=72.99641146

🚜 Rover position updated: UTM X=274876.34, Y=2045738.90

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=9, HDOP=1.40

📡 Raw Emlid data: $GNRMC,064512.60,A,1829.4061974,N,07352.0717783,E,0.10,348.14,140525,,,A\*4B

📜 NMEA sentence: $GNGGA,064512.60,1829.4061974,N,07352.0717783,E,1,10,1.4,610.532,M,-72.108,M,0.0,\*7D

✅ Parsed GPGGA: {'latitude': 18.49010329, 'longitude': 12.867862971666668, 'altitude': 610.532, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.49010329, 'longitude': 12.867862971666668, 'altitude': 610.532, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.34, Northing=2045738.90

⚠️ Coordinate mismatch: Lat diff=0.00099020, Lon diff=72.99641144

🚜 Rover position updated: UTM X=274876.34, Y=2045738.90

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=10, HDOP=1.40

📡 Raw Emlid data: $GPGSA,A,3,05,,,,,,,,,,,,2.6,1.4,2.2\*36

📜 NMEA sentence: $GLGSA,A,3,74,75,,,,,,,,,,,2.6,1.4,2.2\*2E

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSA,A,3,30,,,,,,,,,,,,2.6,1.4,2.2\*21

📜 NMEA sentence: $GBGSA,A,3,07,21,22,24,26,,,,,,,,2.6,1.4,2.2\*27

⚠️ No valid position data parsed

📡 Raw Emlid data: $GPGSV,1,1,01,05,79,154,35,,,,,,,,,,,,\*45

📜 NMEA sentence: $GLGSV,1,1,02,74,36,194,36,75,53,272,36,,,,,,,,\*6E

⚠️ No valid position data parsed

📡 Raw Emlid data: $GAGSV,1,1,01,30,70,167,41,,,,,,,,,,,,\*58

📜 NMEA sentence: $GBGSV,2,1,05,07,49,091,35,21,41,152,42,22,39,080,38,24,45,244,43\*64

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,2,05,26,26,185,40,,,,,,,,,,,,\*56

📜 NMEA sentence: $GNVTG,348.14,T,,M,0.10,N,0.18,K,A\*21

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNGST,064512.60,1272.000,,,,0.600,0.360,1.100\*50

📜 NMEA sentence: $GNZDA,064512.60,14,05,2025,00,00\*7F

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNEBP,,,,,,M\*13

📜 NMEA sentence: $GNGGA,064512.80,1829.4061970,N,07352.0717777,E,1,10,1.4,610.525,M,-72.108,M,0.0,\*7A

✅ Parsed GPGGA: {'latitude': 18.490103283333333, 'longitude': 12.867862961666667, 'altitude': 610.525, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103283333333, 'longitude': 12.867862961666667, 'altitude': 610.525, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.34, Northing=2045738.90

⚠️ Coordinate mismatch: Lat diff=0.00099021, Lon diff=72.99641145

🚜 Rover position updated: UTM X=274876.34, Y=2045738.90

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=10, HDOP=1.40

📡 Raw Emlid data: $GNGGA,064513.00,1829.4061974,N,07352.0717793,E,1,10,1.4,610.521,M,-72.108,M,0.0,\*79

2025-05-14 12:15:13,122,rover\_failsafe,INFO,Recovery successful for: GPS corrections stale (>1000ms old sustained for >5000ms)

📜 NMEA sentence: $GNGGA,064513.20,1829.4061991,N,07352.0717806,E,1,10,1.4,610.516,M,-72.108,M,0.0,\*77

✅ Parsed GPGGA: {'latitude': 18.490103318333333, 'longitude': 12.86786301, 'altitude': 610.516, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

📍 Parsed GPS position: {'latitude': 18.490103318333333, 'longitude': 12.86786301, 'altitude': 610.516, 'satellites': 10, 'hdop': 1.4, 'fix\_quality': 'GPS'}

🌐 UTM coordinates: Easting=274876.35, Northing=2045738.91

⚠️ Coordinate mismatch: Lat diff=0.00099017, Lon diff=72.99641140

🚜 Rover position updated: UTM X=274876.35, Y=2045738.91

🌍 Corresponding Lat/Lon: 18.490103, 12.867863

🔒 Failsafe updated: Fix=GPS, Satellites=10, HDOP=1.40

✅ TASK 1 COMPLETE: Successfully reached path start point

Current position: (0.000, 20.000)

🚜 TASK 2: Aligning rover to path direction...

📍 Horizontal movement detected: dx=10.0000, setting heading to 0°

🔄 TURN: From 96.5° to 0.0°, Direction: turn\_right, Angle: 96.5°

↪️ COMMAND: Turn right 96.5°

2025-05-14 12:15:13,322,rover\_failsafe,WARNING,GNSS Failsafe triggered: GPS corrections stale (>1000ms old sustained for >5000ms)

⚠️ Failsafe triggered: GPS corrections stale (>1000ms old sustained for >5000ms)

🛑 COMMAND: Stop

2025-05-14 12:15:13,323,rover\_failsafe,INFO,Starting recovery for: GPS corrections stale (>1000ms old sustained for >5000ms)

🔄 Attempting recovery from GPS corrections stale (>1000ms old sustained for >5000ms)

2025-05-14 12:15:13,323,rover\_failsafe,INFO,Attempting to reconnect to NTRIP server

2025-05-14 12:15:13,323,rover\_failsafe,INFO,Simulation mode: Waiting for NTRIP reconnection

Aligned rover to heading: 0.0°

✅ TASK 2 COMPLETE: Successfully aligned to path direction

🚜 TASK 3: Starting path navigation pattern...

🚜 COMMAND: Navigate zigzag path with 63 points

🌾 Starting in Row 1

🧭 Current direction: ↓ DOWN

➡️ COMMAND: Move from (0.00, 20.00) to (10.00, 20.00)

📍 Horizontal movement detected: dx=10.0000, setting heading to 0°

🎯 Moving to point: (10.00, 20.00) at 1.5 m/s

Distance to target: 10.00m

📍 Horizontal movement detected: dx=10.0000, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380000.08, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863328°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.9200, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380000.16, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863329°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.8400, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380000.24, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863329°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.7600, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380000.32, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863330°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.6800, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380000.40, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863331°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

Distance to target: 9.60m

📍 Horizontal movement detected: dx=9.6000, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380000.45, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863331°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.5500, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380000.50, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863332°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.5000, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380000.57, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863333°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.4300, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380000.65, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863333°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.3500, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380000.73, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863334°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📡 Raw Emlid data: $GNGGA,064513.40,1829.4061979,N,07352.0717816,E,1,11,1.4,610.504,M,-72.108,M,0.0,\*74

Distance to target: 9.27m

📍 Horizontal movement detected: dx=9.2700, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380000.78, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863334°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.2200, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380000.83, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863335°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.1700, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380000.88, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863335°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.1200, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380000.96, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863336°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=9.0400, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380001.01, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863337°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

Distance to target: 8.99m

📍 Horizontal movement detected: dx=8.9900, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.08, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863337°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.9200, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.16, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863338°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.8400, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.23, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863339°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.7700, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.30, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863339°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.7000, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.38, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863340°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

Distance to target: 8.62m

📍 Horizontal movement detected: dx=8.6200, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.45, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863341°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.5500, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.52, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863342°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.4800, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.59, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863342°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.4100, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.67, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863343°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.3300, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.74, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863344°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

Distance to target: 8.26m

📍 Horizontal movement detected: dx=8.2600, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380001.79, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863344°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.2100, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.86, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863345°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.1400, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380001.94, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863345°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=8.0600, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380002.02, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863346°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=7.9800, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380002.10, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863347°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

Distance to target: 7.90m

📍 Horizontal movement detected: dx=7.9000, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380002.18, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863348°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=7.8200, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.08m

📍 UTM: [380002.26, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863349°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=7.7400, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380002.31, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863349°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=7.6900, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380002.36, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863349°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=7.6400, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380002.41, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863350°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

Distance to target: 7.59m

📍 Horizontal movement detected: dx=7.5900, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380002.46, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863350°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📍 Horizontal movement detected: dx=7.5400, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

📜 NMEA sentence: $GNRMC,064513.60,A,1829.4061964,N,07352.0717802,E,0.08,348.14,140525,,,A\*44

⚠️ No valid position data parsed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380002.51, 2044900.00] (Zone 45N)

📡 Raw Emlid data: $GNGGA,064513.60,1829.4061964,N,07352.0717802,E,1,10,1.4,610.506,M,-72.108,M,0.0,\*7C

📍 Lat/Lon: [18.491119°N, 85.863351°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📜 NMEA sentence: $GPGSA,A,3,05,,,,,,,,,,,,2.6,1.4,2.2\*36

⚠️ No valid position data parsed

📡 Raw Emlid data: $GLGSA,A,3,74,75,,,,,,,,,,,2.6,1.4,2.2\*2E

📜 NMEA sentence: $GAGSA,A,3,30,,,,,,,,,,,,2.6,1.4,2.2\*21

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSA,A,3,07,21,22,24,26,,,,,,,,2.6,1.4,2.2\*27

📍 Horizontal movement detected: dx=7.4900, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📜 NMEA sentence: $GPGSV,1,1,01,05,79,154,37,,,,,,,,,,,,\*47

📍 UTM: [380002.56, 2044900.00] (Zone 45N)

⚠️ No valid position data parsed

📍 Lat/Lon: [18.491119°N, 85.863351°E]

📡 Raw Emlid data: $GLGSV,1,1,02,74,36,194,37,75,53,272,37,,,,,,,,\*6E

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📜 NMEA sentence: $GAGSV,1,1,01,30,70,167,43,,,,,,,,,,,,\*5A

⚠️ No valid position data parsed

📡 Raw Emlid data: $GBGSV,2,1,05,07,49,091,37,21,41,152,44,22,39,080,40,24,45,244,45\*69

📍 Horizontal movement detected: dx=7.4400, setting heading to 0°

📜 NMEA sentence: $GBGSV,2,2,05,26,26,185,41,,,,,,,,,,,,\*57

✓ Heading diff 0.0° < 10°, no turn needed

⚠️ No valid position data parsed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380002.61, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863352°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

📡 Raw Emlid data: $GNVTG,348.14,T,,M,0.08,N,0.14,K,A\*24

📜 NMEA sentence: $GNGST,064513.60,1272.000,,,,0.610,0.360,1.100\*50

⚠️ No valid position data parsed

📡 Raw Emlid data: $GNZDA,064513.60,14,05,2025,00,00\*7E

📜 NMEA sentence: $GNEBP,,,,,,M\*13

⚠️ No valid position data parsed

📍 Horizontal movement detected: dx=7.3900, setting heading to 0°

✓ Heading diff 0.0° < 10°, no turn needed

⬆️ COMMAND: Move forward 0.05m

📍 UTM: [380002.66, 2044900.00] (Zone 45N)

📍 Lat/Lon: [18.491119°N, 85.863352°E]

📍 Heading: 0.0° (Compass Heading: 90.0° East)

⚠️ Max attempts reached

⚠️ Failed to reach waypoint 2

⚠️ Failed to navigate path. Simulation halted.

PS F:\GPS>