This program can understand a number of N2K messages. What follows is an explanation of the messages
that it understands. First is a list of completely understood messages, as far as I can tell.
What follows is a list of messages that contain fields that have unknown content or size, or even
completely unknown fields. If you happen to know more, please tell me!

_____ Complete PGNs _____

PGN: 59392 - ISO Acknowledgement

  Field #1: Control
                Bits: 8
                Type: Lookup table
                Signed: false
                Lookup: 0=ACK
                Lookup: 1=NAK
                Lookup: 2=Access Denied
                Lookup: 3=Address Busy
  Field #2: Group Function
                Bits: 8
                Signed: false
  Field #3: Reserved - Reserved
                Bits: 24
                Signed: true
  Field #4: PGN - Parameter Group Number of requested information
                Bits: 24
                Type: Integer
                Signed: false

PGN: 59904 - ISO Request

  Field #1: PGN
                Bits: 24
                Type: Integer
                Signed: false

PGN: 126992 - System Time

  Field #1: SID
                Bits: 8
                Signed: false
  Field #2: Source
                Bits: 4
                Type: Lookup table
                Signed: false
                Lookup: 0=GPS
                Lookup: 1=GLONASS
                Lookup: 2=Radio Station

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                        Lookup: 3=Local Cesium clock
                        Lookup: 4=Local Rubidium clock
                        Lookup: 5=Local Crystal clock
      Field #3: Reserved - Reserved
                        Bits: 4
                        Type: Binary data
                        Signed: false
      Field #4: Date - Days since January 1, 1970
                        Bits: 16
                        Type: Date
                        Signed: false
      Field #5: Time
                        Bits: 32
                        Type: Time
                        Signed: false


PGN: 127250 - Vessel Heading

      Field #1: SID
                        Bits: 8
                        Signed: false
      Field #2: Heading
                        Bits: 16
                        Units: Radians
                        Type: Angle
                        Resolution: 0.001
                        Signed: false
      Field #3: Deviation
                        Bits: 16
                        Units: Radians
                        Type: Angle
                        Resolution: 0.001
                        Signed: true
      Field #4: Variation
                        Bits: 16
                        Units: Radians
                        Type: Angle
                        Resolution: 0.001
                        Signed: true
      Field #5: Reference
                        Bits: 2
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=True
                        Lookup: 1=Magnetic


PGN: 127251 - Rate of Turn

      Field #1: SID
                        Bits: 8
```

```
                     Signed: false
   Field #2: Rate
                     Bits: 32
                     Units: deg/s
                     Resolution: 5.72958e-07
                     Signed: true


PGN: 127257 - Attitude

   Field #1: SID
                     Bits: 8
                     Signed: false
   Field #2: Yaw
                     Bits: 16
                     Units: Radians
                     Type: Angle
                     Resolution: 0.001
                     Signed: true
   Field #3: Pitch
                     Bits: 16
                     Units: Radians
                     Type: Angle
                     Resolution: 0.001
                     Signed: true
   Field #4: Roll
                     Bits: 16
                     Units: Radians
                     Type: Angle
                     Resolution: 0.001
                     Signed: true


PGN: 127258 - Magnetic Variation

   Field #1: SID
                     Bits: 8
                     Signed: false
   Field #2: Source
                     Bits: 4
                     Type: Lookup table
                     Signed: false
                     Lookup: 0=Manual
                     Lookup: 1=Automatic Chart
                     Lookup: 2=Automatic Table
                     Lookup: 3=Automatic Calculation
                     Lookup: 4=WMM 2000
                     Lookup: 5=WMM 2005
                     Lookup: 6=WMM 2010
                     Lookup: 7=WMM 2015
                     Lookup: 8=WMM 2020
   Field #3: Reserved - Reserved
```

```
                    Bits: 4
                    Type: Binary data
                    Signed: false
   Field #4: Age of service - Days since January 1, 1970
                    Bits: 16
                    Type: Date
                    Signed: false
   Field #5: Variation
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: true


PGN: 127488 - Engine Parameters, Rapid Update

   Field #1: Engine Instance
                    Bits: 8
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Single Engine or Dual Engine Port
                    Lookup: 1=Dual Engine Starboard
   Field #2: Engine Speed
                    Bits: 16
                    Units: rpm
                    Type: Integer
                    Signed: false
   Field #3: Engine Boost Pressure
                    Bits: 16
                    Units: hPa
                    Signed: false
   Field #4: Engine Tilt/Trim
                    Bits: 8
                    Units:
                    Signed: true


PGN: 127489 - Engine Parameters, Dynamic

   Field #1: Engine Instance
                    Bits: 8
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Single Engine or Dual Engine Port
                    Lookup: 1=Dual Engine Starboard
   Field #2: Oil pressure - hPa
                    Bits: 16
                    Signed: false
   Field #3: Oil temperature
                    Bits: 16
                    Units: K
```

```
                    Type: Temperature
                    Signed: false
   Field #4: Temperature
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false
   Field #5: Alternator Potential
                    Bits: 16
                    Units: V
                    Resolution: 0.01
                    Signed: false
   Field #6: Fuel Rate
                    Bits: 16
                    Units: L/h
                    Resolution: 0.1
                    Signed: true
   Field #7: Total Engine hours
                    Bits: 32
                    Units: s
                    Signed: false
   Field #8: Coolant Pressure
                    Bits: 16
                    Units: hPa
                    Signed: false
   Field #9: Fuel Pressure
                    Bits: 16
                    Signed: false
   Field #10: Reserved
                    Bits: 8
                    Signed: false
   Field #11: Discrete Status 1
                    Bits: 16
                    Type: Integer
                    Signed: false
   Field #12: Discrete Status 2
                    Bits: 16
                    Type: Integer
                    Signed: false
   Field #13: Percent Engine Load
                    Bits: 8
                    Units: %
                    Type: Integer
                    Signed: true
   Field #14: Percent Engine Torque
                    Bits: 8
                    Units: %
                    Type: Integer
                    Signed: true


   PGN: 127493 - Transmission Parameters, Dynamic
```

```
    Field #1: Engine Instance
                    Bits: 8
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Single Engine or Dual Engine Port
                    Lookup: 1=Dual Engine Starboard
    Field #2: Transmission Gear
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Forward
                    Lookup: 1=Neutral
                    Lookup: 2=Reverse
                    Lookup: 3=Unknown
    Field #3: Reserved
                    Bits: 6
                    Signed: false
    Field #4: Oil pressure
                    Bits: 16
                    Signed: false
    Field #5: Oil temperature
                    Bits: 16
                    Type: Temperature
                    Signed: false
    Field #6: Discrete Status 1
                    Bits: 8
                    Type: Integer
                    Signed: false


  PGN: 127496 - Trip Parameters, Vessel

    Field #1: Time to Empty
                    Bits: 32
                    Units: s
                    Resolution: 0.001
                    Signed: false
    Field #2: Distance to Empty
                    Bits: 32
                    Units: m
                    Resolution: 0.01
                    Signed: false
    Field #3: Estimated Fuel Remaining
                    Bits: 16
                    Units: L
                    Signed: false
    Field #4: Trip Run Time
                    Bits: 32
                    Units: s
                    Resolution: 0.001
                    Signed: false
```

```
PGN: 127497 - Trip Parameters, Engine

  Field #1: Engine Instance
                Bits: 8
                Type: Lookup table
                Signed: false
                Lookup: 0=Single Engine or Dual Engine Port
                Lookup: 1=Dual Engine Starboard
  Field #2: Trip Fuel Used
                Bits: 16
                Units: L
                Signed: false
  Field #3: Fuel Rate, Average
                Bits: 16
                Units: L/h
                Resolution: 0.1
                Signed: true
  Field #4: Fuel Rate, Economy
                Bits: 16
                Units: L/h
                Resolution: 0.1
                Signed: true
  Field #5: Instantaneous Fuel Economy
                Bits: 16
                Units: L/h
                Resolution: 0.1
                Signed: true


PGN: 127498 - Engine Parameters, Static

  Field #1: Engine Instance
                Bits: 8
                Type: Lookup table
                Signed: false
                Lookup: 0=Single Engine or Dual Engine Port
                Lookup: 1=Dual Engine Starboard
  Field #2: Rated Engine Speed
                Bits: 16
                Signed: false
  Field #3: VIN
                Bits: 8
                Signed: false
  Field #4: Software ID
                Bits: 16
                Signed: false


PGN: 127503 - AC Input Status
```

The last 10 fields repeat until the data is exhausted.

Field #1: AC Instance
          Bits: 8
          Signed: false
Field #2: Number of Lines
          Bits: 8
          Signed: false
Field #3: Line
          Bits: 2
          Type: Lookup table
          Signed: false
          Lookup: 0=Line 1
          Lookup: 1=Line 2
          Lookup: 2=Line 3
          Lookup: 3=Reserved
Field #4: Acceptability
          Bits: 2
          Type: Lookup table
          Signed: false
          Lookup: 0=Bad Level
          Lookup: 1=Bad Frequency
          Lookup: 2=Being Qualified
          Lookup: 3=Good
Field #5: Reserved
          Bits: 4
          Signed: false
Field #6: Voltage
          Bits: 16
          Units: V
          Resolution: 0.01
          Signed: false
Field #7: Current
          Bits: 16
          Units: A
          Resolution: 0.1
          Signed: false
Field #8: Frequency
          Bits: 16
          Units: Hz
          Resolution: 0.01
          Signed: false
Field #9: Breaker Size
          Bits: 16
          Units: A
          Resolution: 0.1
          Signed: false
Field #10: Real Power
          Bits: 32
          Units: W
          Type: Integer
          Signed: false

```
    Field #11: Reactive Power
                  Bits: 32
                  Units: VAR
                  Type: Integer
                  Signed: false
    Field #12: Power Factor
                  Bits: 8
                  Units: Cos Phi
                  Resolution: 0.01
                  Signed: false


PGN: 127504 - AC Output Status

    The last 10 fields repeat until the data is exhausted.

    Field #1: AC Instance
                  Bits: 8
                  Signed: false
    Field #2: Number of Lines
                  Bits: 8
                  Signed: false
    Field #3: Line
                  Bits: 2
                  Type: Lookup table
                  Signed: false
                  Lookup: 0=Line 1
                  Lookup: 1=Line 2
                  Lookup: 2=Line 3
    Field #4: Waveform
                  Bits: 3
                  Type: Lookup table
                  Signed: false
                  Lookup: 0=Sine Wave
                  Lookup: 1=Modified Sine Wave
                  Lookup: 6=Error
                  Lookup: 7=Data Not Available
    Field #5: Reserved
                  Bits: 3
                  Signed: false
    Field #6: Voltage
                  Bits: 16
                  Units: V
                  Resolution: 0.01
                  Signed: false
    Field #7: Current
                  Bits: 16
                  Units: A
                  Resolution: 0.1
                  Signed: false
    Field #8: Frequency
                  Bits: 16
```

```
                        Units: Hz
                        Resolution: 0.01
                        Signed: false
    Field #9: Breaker Size
                        Bits: 16
                        Units: A
                        Resolution: 0.1
                        Signed: false
    Field #10: Real Power
                        Bits: 32
                        Units: W
                        Type: Integer
                        Signed: false
    Field #11: Reactive Power
                        Bits: 32
                        Units: VAR
                        Type: Integer
                        Signed: false
    Field #12: Power Factor
                        Bits: 8
                        Units: Cos Phi
                        Resolution: 0.01
                        Signed: false


PGN: 127505 - Fluid Level

    Field #1: Instance
                        Bits: 4
                        Signed: false
    Field #2: Type
                        Bits: 4
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=Fuel
                        Lookup: 1=Water
                        Lookup: 2=Gray water
                        Lookup: 3=Live well
                        Lookup: 4=Oil
                        Lookup: 5=Black water
    Field #3: Level
                        Bits: 16
                        Units: %
                        Resolution: 0.004
                        Signed: false
    Field #4: Capacity
                        Bits: 32
                        Units: L
                        Resolution: 0.1
                        Signed: false
```

```
PGN: 127508 - Battery Status

  Field #1: Battery Instance
                Bits: 8
                Signed: false
  Field #2: Voltage
                Bits: 16
                Units: V
                Resolution: 0.01
                Signed: false
  Field #3: Current
                Bits: 16
                Units: A
                Resolution: 0.1
                Signed: true
  Field #4: Temperature
                Bits: 16
                Units: K
                Type: Temperature
                Signed: false
  Field #5: SID
                Bits: 8
                Signed: false


PGN: 128259 - Speed

  Field #1: SID
                Bits: 8
                Signed: false
  Field #2: Speed Water Referenced
                Bits: 16
                Units: m/s
                Resolution: 0.01
                Signed: false
  Field #3: Speed Ground Referenced
                Bits: 16
                Units: m/s
                Resolution: 0.01
                Signed: false
  Field #4: Speed Water Referenced Type
                Bits: 4
                Type: Lookup table
                Signed: false


PGN: 128267 - Water Depth

  Field #1: SID
                Bits: 8
                Signed: false
  Field #2: Depth - Depth below transducer
```

```
                          Bits: 32
                          Units: m
                          Resolution: 0.01
                          Signed: false
  Field #3: Offset - Distance between transducer and surface (positive) or
keel (negative)
                          Bits: 16
                          Units: m
                          Resolution: 0.001
                          Signed: true


PGN: 128275 - Distance Log

  Field #1: Date - Days since January 1, 1970
                          Bits: 16
                          Type: Date
                          Signed: false
  Field #2: Time - Seconds since midnight, range allows for leap seconds
                          Bits: 32
                          Type: Time
                          Signed: false
  Field #3: Log - Total cumulative distance
                          Bits: 32
                          Units: m
                          Signed: false
  Field #4: Trip Log - Distance since last reset
                          Bits: 32
                          Units: m
                          Signed: false


PGN: 128520 - Tracked Target Data

  Field #1: SID
                          Bits: 8
                          Signed: false
  Field #2: Target ID # - Number of route, waypoint, event, mark, etc.
                          Bits: 8
                          Signed: false
  Field #3: Track Status
                          Bits: 2
                          Type: Lookup table
                          Signed: false
                          Lookup: 0=Cancelled
                          Lookup: 1=Acquiring
                          Lookup: 2=Tracking
                          Lookup: 3=Lost
  Field #4: Reported Target
                          Bits: 1
                          Type: Lookup table
                          Signed: false
```

```
                         Lookup: 0=No
                         Lookup: 1=Yes
      Field #5: Target Acquisition
                         Bits: 1
                         Type: Lookup table
                         Signed: false
                         Lookup: 0=Manual
                         Lookup: 1=Automatic
      Field #6: Bearing Reference
                         Bits: 2
                         Type: Lookup table
                         Signed: false
                         Lookup: 0=True
                         Lookup: 1=Magnetic
      Field #7: Reserved
                         Bits: 2
                         Signed: false
      Field #8: Bearing
                         Bits: 16
                         Units: Radians
                         Type: Angle
                         Resolution: 0.001
                         Signed: false
      Field #9: Distance
                         Bits: 32
                         Units: m
                         Resolution: 0.001
                         Signed: false
      Field #10: Course
                         Bits: 16
                         Units: Radians
                         Type: Angle
                         Resolution: 0.001
                         Signed: false
      Field #11: Speed
                         Bits: 16
                         Units: m/s
                         Resolution: 0.01
                         Signed: false
      Field #12: CPA
                         Bits: 32
                         Units: m
                         Resolution: 0.01
                         Signed: false
      Field #13: TCPA - negative = time elapsed since event, positive = time
to go
                         Bits: 32
                         Units: s
                         Resolution: 0.001
                         Signed: false
      Field #14: UTC of Fix
                         Bits: 32
```

```
                    Type: Time
                    Signed: false
  Field #15: Name
                    Bits: 2040
                    Type: ASCII text
                    Signed: false


PGN: 129025 - Position, Rapid Update

  Field #1: Latitude
                    Bits: 32
                    Type: Latitude
                    Signed: false
  Field #2: Longitude
                    Bits: 32
                    Type: Longitude
                    Signed: false


PGN: 129026 - COG & SOG, Rapid Update

  Field #1: SID
                    Bits: 8
                    Signed: false
  Field #2: COG Reference
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=True
                    Lookup: 1=Magnetic
  Field #3: Reserved - Reserved
                    Bits: 6
                    Type: Binary data
                    Signed: false
  Field #4: COG
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
  Field #5: SOG
                    Bits: 16
                    Units: m/s
                    Resolution: 0.01
                    Signed: false
  Field #6: Reserved - Reserved
                    Bits: 16
                    Type: Binary data
                    Signed: false
```

```
PGN: 129029 - GNSS Position Data

     The last 3 fields repeat until the data is exhausted.

  Field #1: SID
               Bits: 8
               Signed: false
  Field #2: Date - Days since January 1, 1970
               Bits: 16
               Type: Date
               Signed: false
  Field #3: Time - Seconds since midnight, range allows for leap seconds,
resolution 100 microseconds
               Bits: 32
               Type: Time
               Signed: false
  Field #4: Latitude
               Bits: 64
               Type: Latitude
               Signed: false
  Field #5: Longitude - s
               Bits: 64
               Type: Longitude
               Signed: false
  Field #6: Altitude
               Bits: 64
               Units: m
               Resolution: 1e-06
               Signed: true
  Field #7: GNSS type
               Bits: 4
               Type: Lookup table
               Signed: false
               Lookup: 0=GPS
               Lookup: 1=GLONASS
               Lookup: 2=GPS+GLONASS
               Lookup: 3=GPS+SBAS/WAAS
               Lookup: 4=GPS+SBAS/WAAS+GLONASS
               Lookup: 5=Chayka
               Lookup: 6=integrated
               Lookup: 7=surveyed
               Lookup: 8=Galileo
  Field #8: Method
               Bits: 4
               Type: Lookup table
               Signed: false
               Lookup: 0=no GNSS
               Lookup: 1=GNSS fix
               Lookup: 2=DGNSS fix
               Lookup: 3=Precise GNSS
               Lookup: 4=RTK Fixed Integer
               Lookup: 5=RTK float
```

```
                    Lookup: 6=Estimated (DR) mode
                    Lookup: 7=Manual Input
                    Lookup: 8=Simulate mode
Field #9: Integrity
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=No integrity checking
                    Lookup: 1=Safe
                    Lookup: 2=Caution
Field #10: Reserved - Reserved
                    Bits: 6
                    Type: Binary data
                    Signed: false
Field #11: Number of SVs - Number of satellites used in solution
                    Bits: 8
                    Signed: false
Field #12: HDOP - Horizontal dilution of precision
                    Bits: 16
                    Resolution: 0.01
                    Signed: false
Field #13: PDOP - Probable dilution of precision
                    Bits: 16
                    Resolution: 0.01
                    Signed: false
Field #14: Geoidal Separation - Geoidal Separation
                    Bits: 16
                    Units: m
                    Resolution: 0.01
                    Signed: false
Field #15: Reference Stations - Number of reference stations
                    Bits: 8
                    Signed: false
Field #16: Reference Station Type
                    Bits: 4
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=GPS
                    Lookup: 1=GLONASS
                    Lookup: 2=GPS+GLONASS
                    Lookup: 3=GPS+SBAS/WAAS
                    Lookup: 4=GPS+SBAS/WAAS+GLONASS
                    Lookup: 5=Chayka
                    Lookup: 6=integrated
                    Lookup: 7=surveyed
                    Lookup: 8=Galileo
Field #17: Reference Station ID
                    Bits: 12
                    Units:
                    Signed: false
Field #18: Age of DGNSS Corrections
                    Bits: 16
```

```
                        Units: s
                        Resolution: 0.01
                        Signed: false


PGN: 129033 - Time & Date

   Field #1: Date - Days since January 1, 1970
                        Bits: 16
                        Type: Date
                        Signed: false
   Field #2: Time - Seconds since midnight, range allows for leap seconds,
resolution 100 microseconds
                        Bits: 32
                        Type: Time
                        Signed: false
   Field #3: Local Offset - Minutes
                        Bits: 16
                        Units: minutes
                        Type: Integer
                        Signed: true


PGN: 129038 - AIS Class A Position Report

   Field #1: Message ID
                        Bits: 6
                        Signed: false
   Field #2: Repeat Indicator
                        Bits: 2
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=Initial
                        Lookup: 1=First retransmission
                        Lookup: 2=Second retransmission
                        Lookup: 3=Final retransmission
   Field #3: User ID
                        Bits: 32
                        Units: MMSI
                        Type: Integer
                        Signed: false
   Field #4: Longitude
                        Bits: 32
                        Type: Longitude
                        Signed: false
   Field #5: Latitude
                        Bits: 32
                        Type: Latitude
                        Signed: false
   Field #6: Position Accuracy
                        Bits: 1
                        Type: Lookup table
```

```
                     Signed: false
                     Lookup: 0=Low
                     Lookup: 1=High
    Field #7: RAIM
                     Bits: 1
                     Type: Lookup table
                     Signed: false
                     Lookup: 0=not in use
                     Lookup: 1=in use
    Field #8: Time Stamp - 0-59 = UTC second when the report was generated
                     Bits: 6
                     Type: Lookup table
                     Signed: false
                     Lookup: 60=Not available
                     Lookup: 61=Manual input mode
                     Lookup: 62=Dead reckoning mode
                     Lookup: 63=Positioning system is inoperative
    Field #9: COG
                     Bits: 16
                     Units: Radians
                     Type: Angle
                     Resolution: 0.001
                     Signed: false
    Field #10: SOG
                     Bits: 16
                     Units: m/s
                     Resolution: 0.01
                     Signed: false
    Field #11: Communication State - Information used by the TDMA slot
allocation algorithm and synchronization information
                     Bits: 19
                     Type: Integer
                     Signed: false
    Field #12: AIS Transceiver information
                     Bits: 5
                     Type: Lookup table
                     Signed: false
                     Lookup: 0=Channel A VDL reception
                     Lookup: 1=Channel B VDL reception
                     Lookup: 2=Channel A VDL transmission
                     Lookup: 3=Channel B VDL transmission
                     Lookup: 4=Own information not broadcast
                     Lookup: 5=Reserved
    Field #13: True Heading
                     Bits: 16
                     Units: Radians
                     Type: Angle
                     Resolution: 0.001
                     Signed: true
    Field #14: Rate of Turn
                     Bits: 16
                     Units: Radians
```

```
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
  Field #15: Navigational Status
                    Bits: 8
                    Signed: false
  Field #16: Reserved for Regional Applications
                    Bits: 8
                    Signed: false
  Field #17: Spare
                    Bits: 8
                    Signed: false


PGN: 129039 - AIS Class B Position Report

  Field #1: Message ID
                    Bits: 6
                    Signed: false
  Field #2: Repeat Indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
                    Lookup: 1=First retransmission
                    Lookup: 2=Second retransmission
                    Lookup: 3=Final retransmission
  Field #3: User ID
                    Bits: 32
                    Units: MMSI
                    Type: Integer
                    Signed: false
  Field #4: Longitude
                    Bits: 32
                    Type: Longitude
                    Signed: false
  Field #5: Latitude
                    Bits: 32
                    Type: Latitude
                    Signed: false
  Field #6: Position Accuracy
                    Bits: 1
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Low
                    Lookup: 1=High
  Field #7: RAIM
                    Bits: 1
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=not in use
                    Lookup: 1=in use
```

```
    Field #8: Time Stamp - 0-59 = UTC second when the report was generated
                    Bits: 6
                    Type: Lookup table
                    Signed: false
                    Lookup: 60=Not available
                    Lookup: 61=Manual input mode
                    Lookup: 62=Dead reckoning mode
                    Lookup: 63=Positioning system is inoperative
    Field #9: COG
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
    Field #10: SOG
                    Bits: 16
                    Units: m/s
                    Resolution: 0.01
                    Signed: false
    Field #11: Communication State - Information used by the TDMA slot
allocation algorithm and synchronization information
                    Bits: 19
                    Type: Integer
                    Signed: false
    Field #12: AIS Transceiver information
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Channel A VDL reception
                    Lookup: 1=Channel B VDL reception
                    Lookup: 2=Channel A VDL transmission
                    Lookup: 3=Channel B VDL transmission
                    Lookup: 4=Own information not broadcast
                    Lookup: 5=Reserved
    Field #13: True Heading
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: true
    Field #14: Regional Application
                    Bits: 8
                    Signed: false
    Field #15: Regional Application
                    Bits: 2
                    Signed: false
    Field #16: Unit type
                    Bits: 1
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=SOTDMA
                    Lookup: 1=CS
```

```
    Field #17: Integrated Display - Whether the unit can show messages 12 and
14
                    Bits: 1
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=No
                    Lookup: 1=Yes
  Field #18: DSC
                    Bits: 1
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=No
                    Lookup: 1=Yes
  Field #19: Band
                    Bits: 1
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=top 525 kHz of marine band
                    Lookup: 1=entire marine band
  Field #20: Can handle Msg 22 - Whether device supports message 22
                    Bits: 1
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=No
                    Lookup: 1=Yes
  Field #21: AIS mode
                    Bits: 1
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Autonomous
                    Lookup: 1=Assigned
  Field #22: AIS communication state
                    Bits: 1
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=SOTDMA
                    Lookup: 1=ITDMA


PGN: 129040 - AIS Class B Extended Position Report

  Field #1: Message ID
                    Bits: 6
                    Signed: false
  Field #2: Repeat Indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
                    Lookup: 1=First retransmission
                    Lookup: 2=Second retransmission
                    Lookup: 3=Final retransmission
```

```
Field #3: User ID
            Bits: 32
            Units: MMSI
            Type: Integer
            Signed: false
Field #4: Longitude
            Bits: 32
            Type: Longitude
            Signed: false
Field #5: Latitude
            Bits: 32
            Type: Latitude
            Signed: false
Field #6: Position Accuracy
            Bits: 1
            Type: Lookup table
            Signed: false
            Lookup: 0=Low
            Lookup: 1=High
Field #7: AIS RAIM flag
            Bits: 1
            Type: Lookup table
            Signed: false
            Lookup: 0=not in use
            Lookup: 1=in use
Field #8: Time Stamp - 0-59 = UTC second when the report was generated
            Bits: 6
            Type: Lookup table
            Signed: false
            Lookup: 60=Not available
            Lookup: 61=Manual input mode
            Lookup: 62=Dead reckoning mode
            Lookup: 63=Positioning system is inoperative
Field #9: COG
            Bits: 16
            Units: Radians
            Type: Angle
            Resolution: 0.001
            Signed: false
Field #10: SOG
            Bits: 16
            Units: m/s
            Resolution: 0.01
            Signed: false
Field #11: Regional Application
            Bits: 8
            Signed: false
Field #12: Regional Application
            Bits: 4
            Signed: false
Field #13: Reserved - reserved
            Bits: 4
```

```
                    Type: Binary data
                    Signed: false
     Field #14: Type of ship
                    Bits: 8
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=unavailable
                    Lookup: 20=Wing In Ground
                    Lookup: 29=Wing In Ground (no other information)
                    Lookup: 30=Fishing
                    Lookup: 31=Towing
                    Lookup: 32=Towing exceeds 200m or wider than 25m
                    Lookup: 33=Engaged in dredging or underwater operations
                    Lookup: 34=Engaged in diving operations
                    Lookup: 35=Engaged in military operations
                    Lookup: 36=Sailing
                    Lookup: 37=Pleasure
                    Lookup: 40=High speed craft
                    Lookup: 71=High speed craft carrying dangerous goods
                    Lookup: 72=High speed craft hazard cat B
                    Lookup: 73=High speed craft hazard cat C
                    Lookup: 74=High speed craft hazard cat D
                    Lookup: 79=High speed craft (no additional information)
                    Lookup: 50=Pilot vessel
                    Lookup: 51=SAR
                    Lookup: 52=Tug
                    Lookup: 53=Port tender
                    Lookup: 54=Anti-pollution
                    Lookup: 55=Law enforcement
                    Lookup: 56=Spare
                    Lookup: 57=Spare #2
                    Lookup: 58=Medical
                    Lookup: 59=RR Resolution No.18
                    Lookup: 60=Passenger ship
                    Lookup: 69=Passenger ship (no additional information)
                    Lookup: 70=Cargo ship
                    Lookup: 71=Cargo ship carrying dangerous goods
                    Lookup: 72=Cargo ship hazard cat B
                    Lookup: 73=Cargo ship hazard cat C
                    Lookup: 74=Cargo ship hazard cat D
                    Lookup: 79=Cargo ship (no additional information)
                    Lookup: 80=Tanker
                    Lookup: 81=Tanker carrying dangerous goods
                    Lookup: 82=Tanker hazard cat B
                    Lookup: 83=Tanker hazard cat C
                    Lookup: 84=Tanker hazard cat D
                    Lookup: 89=Tanker (no additional information)
                    Lookup: 90=Other
                    Lookup: 91=Other carrying dangerous goods
                    Lookup: 92=Other hazard cat B
                    Lookup: 93=Other hazard cat C
                    Lookup: 94=Other hazard cat D
```

```
                    Lookup: 99=Other (no additional information)
Field #15: True Heading
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: true
Field #16: Reserved
                    Bits: 4
                    Type: Binary data
                    Signed: false
Field #17: GNSS type
                    Bits: 4
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=GPS
                    Lookup: 1=GLONASS
                    Lookup: 2=GPS+GLONASS
                    Lookup: 3=GPS+SBAS/WAAS
                    Lookup: 4=GPS+SBAS/WAAS+GLONASS
                    Lookup: 5=Chayka
                    Lookup: 6=integrated
                    Lookup: 7=surveyed
                    Lookup: 8=Galileo
Field #18: Length
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
Field #19: Beam
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
Field #20: Position reference from Starboard
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
Field #21: Position reference from Bow
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
Field #22: Name - 0=unavailable
                    Bits: 160
                    Type: ASCII text
                    Signed: false
Field #23: DTE
                    Bits: 1
                    Type: Lookup table
                    Signed: false
```

```
                    Lookup: 0=Available
                    Lookup: 1=Not available
  Field #24: AIS mode
                    Bits: 1
                    Signed: false
  Field #25: Reserved
                    Bits: 4
                    Type: Binary data
                    Signed: false
  Field #26: AIS Transceiver information
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Channel A VDL reception
                    Lookup: 1=Channel B VDL reception
                    Lookup: 2=Channel A VDL transmission
                    Lookup: 3=Channel B VDL transmission
                    Lookup: 4=Own information not broadcast
                    Lookup: 5=Reserved


PGN: 129045 - User Datum

  Field #1: Delta X - Delta shift in X axis from WGS 84
                    Bits: 32
                    Units: m
                    Resolution: 0.01
                    Signed: true
  Field #2: Delta Y - Delta shift in Y axis from WGS 84
                    Bits: 32
                    Units: m
                    Resolution: 0.01
                    Signed: true
  Field #3: Delta Z - Delta shift in Z axis from WGS 84
                    Bits: 32
                    Units: m
                    Resolution: 0.01
                    Signed: true
  Field #4: Rotation in X - Rotational shift in X axis from WGS 84. Rotations
presented use the geodetic sign convention.  When looking along the
positive axis towards the origin, counter-clockwise rotations are positive.
                    Bits: 32
                    Type: IEEE Float
                    Signed: true
  Field #5: Rotation in Y - Rotational shift in Y axis from WGS 84. Rotations
presented use the geodetic sign convention.  When looking along the
positive axis towards the origin, counter-clockwise rotations are positive.
                    Bits: 32
                    Type: IEEE Float
                    Signed: true
  Field #6: Rotation in Z - Rotational shift in Z axis from WGS 84. Rotations
presented use the geodetic sign convention.  When looking along the
```

positive axis towards the origin, counter-clockwise rotations are positive.
```
                  Bits: 32
                  Type: IEEE Float
                  Signed: true
  Field #7: Scale - Scale factor expressed in parts-per-million
                  Bits: 32
                  Units: ppm
                  Type: IEEE Float
                  Signed: true
  Field #8: Ellipsoid Semi-major Axis - Semi-major axis (a) of the User Datum
ellipsoid
                  Bits: 32
                  Units: m
                  Resolution: 0.01
                  Signed: true
  Field #9: Ellipsoid Flattening Inverse - Flattening (1/f) of the User
Datum ellipsoid
                  Bits: 32
                  Type: IEEE Float
                  Signed: true
  Field #10: Datum Name - 4 character code from IHO Publication
S-60,Appendices B and C. First three chars are datum ID as per IHO tables.
Fourth char is local datum subdivision code.
                  Bits: 32
                  Type: ASCII text
                  Signed: false


PGN: 129284 - Navigation Data

  Field #1: SID
                  Bits: 8
                  Signed: false
  Field #2: Distance to Waypoint
                  Bits: 32
                  Units: m
                  Resolution: 0.01
                  Signed: false
  Field #3: Course/Bearing reference
                  Bits: 2
                  Type: Lookup table
                  Signed: false
                  Lookup: 0=True
                  Lookup: 1=Magnetic
  Field #4: Perpendicular Crossed
                  Bits: 2
                  Type: Lookup table
                  Signed: false
                  Lookup: 0=No
                  Lookup: 1=Yes
  Field #5: Arrival Circle Entered
                  Bits: 2
```

```
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=No
                        Lookup: 1=Yes
    Field #6: Calculation Type
                        Bits: 2
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=Great Circle
                        Lookup: 1=Rhumb Line
    Field #7: ETA Time
                        Bits: 32
                        Type: Time
                        Signed: false
    Field #8: ETA Date
                        Bits: 16
                        Type: Date
                        Signed: false
    Field #9: Bearing, Origin to Destination Waypoint
                        Bits: 16
                        Units: Radians
                        Type: Angle
                        Resolution: 0.001
                        Signed: false
    Field #10: Bearing, Position to Destination Waypoint
                        Bits: 16
                        Units: Radians
                        Type: Angle
                        Resolution: 0.001
                        Signed: false
    Field #11: Origin Waypoint Number
                        Bits: 32
                        Signed: false
    Field #12: Destination Waypoint Number
                        Bits: 32
                        Signed: false
    Field #13: Destination Latitude
                        Bits: 32
                        Type: Latitude
                        Signed: false
    Field #14: Destination Longitude
                        Bits: 32
                        Type: Longitude
                        Signed: false
    Field #15: Waypoint Closing Velocity
                        Bits: 16
                        Units: m/s
                        Resolution: 0.01
                        Signed: true


    PGN: 129291 - Set & Drift, Rapid Update
```

```
   Field #1: SID
                    Bits: 8
                    Signed: false
  Field #2: Set Reference
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=True
                    Lookup: 1=Magnetic
  Field #3: Reserved - Reserved
                    Bits: 6
                    Type: Binary data
                    Signed: false
  Field #4: Set
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
  Field #5: Drift
                    Bits: 16
                    Units: m/s
                    Resolution: 0.01
                    Signed: false


PGN: 129301 - Navigation - Route / Time to+from Mark

  Field #1: SID
                    Bits: 8
                    Signed: false
  Field #2: Time to mark - negative = elapsed since event, positive = time
to go
                    Bits: 32
                    Units: s
                    Resolution: 0.001
                    Signed: true
  Field #3: Mark Type
                    Bits: 4
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Collision
                    Lookup: 1=Turning point
                    Lookup: 2=Reference
                    Lookup: 3=Wheelover
                    Lookup: 4=Waypoint
  Field #4: Reserved - Reserved
                    Bits: 4
                    Type: Binary data
                    Signed: false
  Field #5: Mark ID
```

```
                         Bits: 32
                         Signed: false


PGN: 129539 - GNSS DOPs

   Field #1: SID
                         Bits: 8
                         Signed: false
   Field #2: Desired Mode
                         Bits: 3
                         Type: Lookup table
                         Signed: false
                         Lookup: 0=1D
                         Lookup: 1=2D
                         Lookup: 2=3D
                         Lookup: 3=Auto
                         Lookup: 4=Reserved
                         Lookup: 5=Reserved
                         Lookup: 6=Error
   Field #3: Actual Mode
                         Bits: 3
                         Type: Lookup table
                         Signed: false
                         Lookup: 0=1D
                         Lookup: 1=2D
                         Lookup: 2=3D
                         Lookup: 3=Auto
                         Lookup: 4=Reserved
                         Lookup: 5=Reserved
                         Lookup: 6=Error
   Field #4: Reserved - Reserved
                         Bits: 2
                         Type: Binary data
                         Signed: false
   Field #5: HDOP - Horizontal dilution of precision
                         Bits: 16
                         Resolution: 0.01
                         Signed: false
   Field #6: VDOP - Vertical dilution of precision
                         Bits: 16
                         Resolution: 0.01
                         Signed: false
   Field #7: TDOP - Time dilution of precision
                         Bits: 16
                         Resolution: 0.01
                         Signed: true


PGN: 129540 - GNSS Sats in View

     The last 7 fields repeat until the data is exhausted.
```

```
Field #1: SID
              Bits: 8
              Signed: false
Field #2: Mode
              Bits: 2
              Type: Lookup table
              Signed: false
              Lookup: 3=Range residuals used to calculate position
Field #3: Reserved - Reserved
              Bits: 6
              Type: Binary data
              Signed: false
Field #4: Sats in View
              Bits: 8
              Signed: false
Field #5: PRN
              Bits: 8
              Signed: false
Field #6: Elevation
              Bits: 16
              Units: Radians
              Type: Angle
              Resolution: 0.001
              Signed: true
Field #7: Azimuth
              Bits: 16
              Units: Radians
              Type: Angle
              Resolution: 0.001
              Signed: true
Field #8: SNR
              Bits: 16
              Units: dB
              Resolution: 0.01
              Signed: false
Field #9: Range residuals
              Bits: 32
              Signed: true
Field #10: Status
              Bits: 4
              Type: Lookup table
              Signed: false
              Lookup: 0=Not tracked
              Lookup: 1=Tracked
              Lookup: 2=Used
              Lookup: 3=Not tracked+Diff
              Lookup: 4=Tracked+Diff
              Lookup: 5=Used+Diff
Field #11: Reserved - Reserved
              Bits: 4
              Type: Binary data
```

```
                        Signed: false


PGN: 129794 - AIS Class A Static and Voyage Related Data

   Field #1: Message ID
                   Bits: 6
                   Signed: false
   Field #2: Repeat indicator
                   Bits: 2
                   Type: Lookup table
                   Signed: false
                   Lookup: 0=Initial
                   Lookup: 1=First retransmission
                   Lookup: 2=Second retransmission
                   Lookup: 3=Final retransmission
   Field #3: User ID
                   Bits: 32
                   Units: MMSI
                   Type: Integer
                   Signed: false
   Field #4: IMO number - 0=unavailable
                   Bits: 32
                   Type: Integer
                   Signed: false
   Field #5: Callsign - 0=unavailable
                   Bits: 56
                   Type: ASCII text
                   Signed: false
   Field #6: Name - 0=unavailable
                   Bits: 160
                   Type: ASCII text
                   Signed: false
   Field #7: Type of ship
                   Bits: 8
                   Type: Lookup table
                   Signed: false
                   Lookup: 0=unavailable
                   Lookup: 20=Wing In Ground
                   Lookup: 29=Wing In Ground (no other information)
                   Lookup: 30=Fishing
                   Lookup: 31=Towing
                   Lookup: 32=Towing exceeds 200m or wider than 25m
                   Lookup: 33=Engaged in dredging or underwater operations
                   Lookup: 34=Engaged in diving operations
                   Lookup: 35=Engaged in military operations
                   Lookup: 36=Sailing
                   Lookup: 37=Pleasure
                   Lookup: 40=High speed craft
                   Lookup: 71=High speed craft carrying dangerous goods
                   Lookup: 72=High speed craft hazard cat B
                   Lookup: 73=High speed craft hazard cat C
```

```
                     Lookup: 74=High speed craft hazard cat D
                     Lookup: 79=High speed craft (no additional information)
                     Lookup: 50=Pilot vessel
                     Lookup: 51=SAR
                     Lookup: 52=Tug
                     Lookup: 53=Port tender
                     Lookup: 54=Anti-pollution
                     Lookup: 55=Law enforcement
                     Lookup: 56=Spare
                     Lookup: 57=Spare #2
                     Lookup: 58=Medical
                     Lookup: 59=RR Resolution No.18
                     Lookup: 60=Passenger ship
                     Lookup: 69=Passenger ship (no additional information)
                     Lookup: 70=Cargo ship
                     Lookup: 71=Cargo ship carrying dangerous goods
                     Lookup: 72=Cargo ship hazard cat B
                     Lookup: 73=Cargo ship hazard cat C
                     Lookup: 74=Cargo ship hazard cat D
                     Lookup: 79=Cargo ship (no additional information)
                     Lookup: 80=Tanker
                     Lookup: 81=Tanker carrying dangerous goods
                     Lookup: 82=Tanker hazard cat B
                     Lookup: 83=Tanker hazard cat C
                     Lookup: 84=Tanker hazard cat D
                     Lookup: 89=Tanker (no additional information)
                     Lookup: 90=Other
                     Lookup: 91=Other carrying dangerous goods
                     Lookup: 92=Other hazard cat B
                     Lookup: 93=Other hazard cat C
                     Lookup: 94=Other hazard cat D
                     Lookup: 99=Other (no additional information)
Field #8: Length
                     Bits: 16
                     Units: m
                     Resolution: 0.1
                     Signed: false
Field #9: Beam
                     Bits: 16
                     Units: m
                     Resolution: 0.1
                     Signed: false
Field #10: Position reference from Starboard
                     Bits: 16
                     Units: m
                     Resolution: 0.1
                     Signed: false
Field #11: Position reference from Bow
                     Bits: 16
                     Units: m
                     Resolution: 0.1
                     Signed: false
```

```
Field #12: ETA date
             Bits: 16
             Type: Date
             Signed: false
Field #13: ETA time
             Bits: 32
             Type: Time
             Signed: false
Field #14: Draft
             Bits: 16
             Units: m
             Resolution: 0.01
             Signed: false
Field #15: Destination - 0=unavailable
             Bits: 160
             Type: ASCII text
             Signed: false
Field #16: AIS version indicator
             Bits: 2
             Type: Lookup table
             Signed: false
             Lookup: 0=ITU-R M.1371-1
             Lookup: 1=ITU-R M.1371-3
             Lookup: 2=Future
             Lookup: 3=Future
Field #17: GNSS type
             Bits: 4
             Type: Lookup table
             Signed: false
             Lookup: 0=GPS
             Lookup: 1=GLONASS
             Lookup: 2=GPS+GLONASS
             Lookup: 3=GPS+SBAS/WAAS
             Lookup: 4=GPS+SBAS/WAAS+GLONASS
             Lookup: 5=Chayka
             Lookup: 6=integrated
             Lookup: 7=surveyed
             Lookup: 8=Galileo
Field #18: DTE
             Bits: 1
             Signed: false
Field #19: Reserved - reserved
             Bits: 1
             Type: Binary data
             Signed: false
Field #20: AIS Transceiver information
             Bits: 5
             Type: Lookup table
             Signed: false
             Lookup: 0=Channel A VDL reception
             Lookup: 1=Channel B VDL reception
             Lookup: 2=Channel A VDL transmission
```

```
                    Lookup: 3=Channel B VDL transmission
                    Lookup: 4=Own information not broadcast
                    Lookup: 5=Reserved


PGN: 129795 - AIS Addressed Binary Message

   Field #1: Message ID
                    Bits: 6
                    Signed: false
   Field #2: Repeat Indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
                    Lookup: 1=First retransmission
                    Lookup: 2=Second retransmission
                    Lookup: 3=Final retransmission
   Field #3: Source ID
                    Bits: 32
                    Units: MMSI
                    Type: Integer
                    Signed: false
   Field #4: Reserved - reserved
                    Bits: 1
                    Type: Binary data
                    Signed: false
   Field #5: AIS Transceiver information
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Channel A VDL reception
                    Lookup: 1=Channel B VDL reception
                    Lookup: 2=Channel A VDL transmission
                    Lookup: 3=Channel B VDL transmission
                    Lookup: 4=Own information not broadcast
                    Lookup: 5=Reserved
   Field #6: Sequence Number
                    Bits: 2
                    Signed: false
   Field #7: Destination ID
                    Bits: 32
                    Units: MMSI
                    Type: Integer
                    Signed: false
   Field #8: Reserved - reserved
                    Bits: 6
                    Type: Binary data
                    Signed: false
   Field #9: Retransmit flag
                    Bits: 1
                    Signed: false
```

```
      Field #10: Reserved - reserved
                    Bits: 1
                    Type: Binary data
                    Signed: false
      Field #11: Number of Bits in Binary Data Field
                    Bits: 16
                    Type: Integer
                    Signed: false
      Field #12: Binary Data
                    Bits: 64
                    Type: Binary data
                    Signed: false


   PGN: 129796 - AIS Acknowledge

      Field #1: Message ID
                    Bits: 6
                    Signed: false
      Field #2: Repeat Indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
                    Lookup: 1=First retransmission
                    Lookup: 2=Second retransmission
                    Lookup: 3=Final retransmission
      Field #3: Source ID
                    Bits: 32
                    Units: MMSI
                    Signed: false
      Field #4: Reserved - reserved
                    Bits: 1
                    Type: Binary data
                    Signed: false
      Field #5: AIS Transceiver information
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Channel A VDL reception
                    Lookup: 1=Channel B VDL reception
                    Lookup: 2=Channel A VDL transmission
                    Lookup: 3=Channel B VDL transmission
                    Lookup: 4=Own information not broadcast
                    Lookup: 5=Reserved
      Field #6: Reserved - reserved
                    Bits: 2
                    Type: Binary data
                    Signed: false
      Field #7: Destination ID #1
                    Bits: 32
                    Signed: false
```

```
    Field #8: Sequence Number for ID 1 - reserved
                    Bits: 2
                    Type: Binary data
                    Signed: false
    Field #9: Reserved - reserved
                    Bits: 6
                    Type: Binary data
                    Signed: false
    Field #10: Sequence Number for ID n - reserved
                    Bits: 2
                    Type: Binary data
                    Signed: false


PGN: 129797 - AIS Binary Broadcast Message

    Field #1: Message ID
                    Bits: 6
                    Signed: false
    Field #2: Repeat Indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
                    Lookup: 1=First retransmission
                    Lookup: 2=Second retransmission
                    Lookup: 3=Final retransmission
    Field #3: Source ID
                    Bits: 32
                    Signed: false
    Field #4: Reserved - reserved
                    Bits: 1
                    Type: Binary data
                    Signed: false
    Field #5: AIS Transceiver information
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Channel A VDL reception
                    Lookup: 1=Channel B VDL reception
                    Lookup: 2=Channel A VDL transmission
                    Lookup: 3=Channel B VDL transmission
                    Lookup: 4=Own information not broadcast
                    Lookup: 5=Reserved
    Field #6: Reserved - reserved
                    Bits: 2
                    Type: Binary data
                    Signed: false
    Field #7: Number of Bits in Binary Data Field
                    Bits: 16
                    Signed: false
    Field #8: Binary Data
```

```
                    Bits: 2040
                    Type: Binary data
                    Signed: false


PGN: 129801 - AIS Addressed Safety Related Message

  Field #1: Message ID
                    Bits: 6
                    Signed: false
  Field #2: Repeat Indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
                    Lookup: 1=First retransmission
                    Lookup: 2=Second retransmission
                    Lookup: 3=Final retransmission
  Field #3: Source ID
                    Bits: 32
                    Units: MMSI
                    Signed: false
  Field #4: Reserved - reserved
                    Bits: 1
                    Type: Binary data
                    Signed: false
  Field #5: AIS Transceiver information
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Channel A VDL reception
                    Lookup: 1=Channel B VDL reception
                    Lookup: 2=Channel A VDL transmission
                    Lookup: 3=Channel B VDL transmission
                    Lookup: 4=Own information not broadcast
                    Lookup: 5=Reserved
  Field #6: Sequence Number
                    Bits: 2
                    Signed: false
  Field #7: Destination ID
                    Bits: 32
                    Units: MMSI
                    Signed: false
  Field #8: Reserved - reserved
                    Bits: 6
                    Type: Binary data
                    Signed: false
  Field #9: Retransmit flag
                    Bits: 1
                    Signed: false
  Field #10: Reserved - reserved
                    Bits: 1
```

```
                    Type: Binary data
                    Signed: false
   Field #11: Safety Related Text
                    Bits: 2040
                    Type: ASCII text
                    Signed: false


PGN: 129804 - AIS Assignment Mode Command

    The last 3 fields repeat until the data is exhausted.

   Field #1: Message ID
                    Bits: 6
                    Signed: false
   Field #2: Repeat Indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
                    Lookup: 1=First retransmission
                    Lookup: 2=Second retransmission
                    Lookup: 3=Final retransmission
   Field #3: Source ID
                    Bits: 32
                    Units: MMSI
                    Type: Integer
                    Signed: false
   Field #4: Reserved - reserved
                    Bits: 1
                    Type: Binary data
                    Signed: false
   Field #5: AIS Transceiver information
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Channel A VDL reception
                    Lookup: 1=Channel B VDL reception
                    Lookup: 2=Channel A VDL transmission
                    Lookup: 3=Channel B VDL transmission
                    Lookup: 4=Own information not broadcast
                    Lookup: 5=Reserved
   Field #6: Reserved - reserved
                    Bits: 2
                    Type: Binary data
                    Signed: false
   Field #7: Destination ID
                    Bits: 32
                    Units: MMSI
                    Type: Integer
                    Signed: false
   Field #8: Offset
```

```
                    Bits: 16
                    Type: Integer
                    Signed: false
  Field #9: Increment
                    Bits: 16
                    Type: Integer
                    Signed: false


PGN: 130306 - Wind Data

  Field #1: SID
                    Bits: 8
                    Signed: false
  Field #2: Wind Speed
                    Bits: 16
                    Units: m/s
                    Resolution: 0.01
                    Signed: false
  Field #3: Wind Angle
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
  Field #4: Reference
                    Bits: 3
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=True (referenced to North)
                    Lookup: 1=Magnetic
                    Lookup: 2=Apparent
                    Lookup: 3=True (boat referenced)


PGN: 130310 - Environmental Parameters

  Field #1: SID
                    Bits: 8
                    Signed: false
  Field #2: Water Temperature
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false
  Field #3: Outside Ambient Air Temperature
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false
  Field #4: Atmospheric Pressure
                    Bits: 16
```

```
                    Units: hPa
                    Signed: false


PGN: 130311 - Environmental Parameters

  Field #1: SID
                    Bits: 8
                    Signed: false
  Field #2: Temperature Instance
                    Bits: 6
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Sea
                    Lookup: 1=Outside
                    Lookup: 2=Inside
                    Lookup: 3=Engine room
                    Lookup: 4=Main Cabin
  Field #3: Humidity Instance
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Inside
                    Lookup: 1=Outside
  Field #4: Temperature
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false
  Field #5: Humidity
                    Bits: 16
                    Units: %
                    Resolution: 0.004
                    Signed: true
  Field #6: Atmospheric Pressure
                    Bits: 16
                    Units: hPa
                    Signed: false


PGN: 130320 - Tide Station Data

  Field #1: Mode
                    Bits: 4
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Autonomous
                    Lookup: 1=Differential enhanced
                    Lookup: 2=Estimated
                    Lookup: 3=Simulator
                    Lookup: 4=Manual
  Field #2: Tide Tendency
```

```
                        Bits: 2
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=Falling
                        Lookup: 1=Rising
    Field #3: Reserved
                        Bits: 2
                        Type: Integer
                        Signed: false
    Field #4: Measurement Date - Days since January 1, 1970
                        Bits: 16
                        Type: Date
                        Signed: false
    Field #5: Measurement Time
                        Bits: 32
                        Type: Time
                        Signed: false
    Field #6: Station Latitude
                        Bits: 32
                        Type: Latitude
                        Signed: false
    Field #7: Station Longitude
                        Bits: 32
                        Type: Longitude
                        Signed: false
    Field #8: Tide Level - Relative to MLLW
                        Bits: 16
                        Units: m
                        Resolution: 0.001
                        Signed: true
    Field #9: Tide Level standard deviation
                        Bits: 16
                        Units: m
                        Resolution: 0.01
                        Signed: false
    Field #10: Station ID
                        Bits: 16
                        Type: String with start/stop byte
                        Signed: false
    Field #11: Station Name
                        Bits: 16
                        Type: String with start/stop byte
                        Signed: false


 PGN: 130321 - Salinity Station Data

    Field #1: Mode
                        Bits: 4
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=Autonomous
```

```
                    Lookup: 1=Differential enhanced
                    Lookup: 2=Estimated
                    Lookup: 3=Simulator
                    Lookup: 4=Manual
   Field #2: Reserved
                    Bits: 4
                    Type: Integer
                    Signed: false
   Field #3: Measurement Date - Days since January 1, 1970
                    Bits: 16
                    Type: Date
                    Signed: false
   Field #4: Measurement Time
                    Bits: 32
                    Type: Time
                    Signed: false
   Field #5: Station Latitude
                    Bits: 32
                    Type: Latitude
                    Signed: false
   Field #6: Station Longitude
                    Bits: 32
                    Type: Longitude
                    Signed: false
   Field #7: Salinity - The average Salinity of ocean water is about 35 grams
of salts per kilogram of sea water (g/kg), usually written as 35 ppt which
is read as 35 parts per thousand.
                    Bits: 32
                    Units: ppt
                    Type: IEEE Float
                    Signed: true
   Field #8: Water Temperature
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false
   Field #9: Station ID
                    Bits: 16
                    Type: String with start/stop byte
                    Signed: false
   Field #10: Station Name
                    Bits: 16
                    Type: String with start/stop byte
                    Signed: false


PGN: 130576 - Small Craft Status

   Field #1: Port trim tab
                    Bits: 8
                    Signed: true
   Field #2: Starboard trim tab
```

```
                    Bits: 8
                    Signed: true


PGN: 130577 - Direction Data

   Field #1: Data Mode
                    Bits: 4
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Autonomous
                    Lookup: 1=Differential enhanced
                    Lookup: 2=Estimated
                    Lookup: 3=Simulator
                    Lookup: 4=Manual
   Field #2: COG Reference
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=True
                    Lookup: 1=Magnetic
   Field #3: Reserved - Reserved
                    Bits: 2
                    Type: Binary data
                    Signed: false
   Field #4: SID
                    Bits: 8
                    Signed: false
   Field #5: COG
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
   Field #6: SOG
                    Bits: 16
                    Units: m/s
                    Resolution: 0.01
                    Signed: false
   Field #7: Heading
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
   Field #8: Speed through Water
                    Bits: 16
                    Units: m/s
                    Resolution: 0.01
                    Signed: false
   Field #9: Set
                    Bits: 16
```

```
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
    Field #10: Drift
                    Bits: 16
                    Units: m/s
                    Resolution: 0.01
                    Signed: false


PGN: 130578 - Vessel Speed Components

    Field #1: Longitudinal Speed, Water-referenced
                    Bits: 16
                    Units: m/s
                    Resolution: 0.001
                    Signed: true
    Field #2: Transverse Speed, Water-referenced
                    Bits: 16
                    Units: m/s
                    Resolution: 0.001
                    Signed: true
    Field #3: Longitudinal Speed, Ground-referenced
                    Bits: 16
                    Units: m/s
                    Resolution: 0.001
                    Signed: true
    Field #4: Transverse Speed, Ground-referenced
                    Bits: 16
                    Units: m/s
                    Resolution: 0.001
                    Signed: true
    Field #5: Stern Speed, Water-referenced
                    Bits: 16
                    Units: m/s
                    Resolution: 0.001
                    Signed: true
    Field #6: Stern Speed, Ground-referenced
                    Bits: 16
                    Units: m/s
                    Resolution: 0.001
                    Signed: true


_____ Incomplete PGNs _____

PGN:  60928 - ISO Address Claim

    Field #1: Unique Number - ISO Identity Number
                    Bits: 21
                    Type: Binary data
```

```
                          Signed: false
   Field #2: Manufacturer Code
                          Bits: 11
                          Type: Manufacturer code
                          Signed: false
   Field #3: Device Instance Lower - ISO ECU Instance
                          Bits: 4
                          Signed: false
   Field #4: Device Instance Upper - ISO Function Instance
                          Bits: 4
                          Signed: false
   Field #5: Device Function - ISO Function
                          Bits: 8
                          Signed: false
   Field #6: Reserved
                          Bits: 1
                          Type: Binary data
                          Signed: false
   Field #7: Device Class
                          Bits: 7
                          Type: Lookup table
                          Signed: false
                          Lookup: 0=Reserved for 2000 Use
                          Lookup: 10=System tools
                          Lookup: 20=Safety systems
                          Lookup: 25=Internetwork device
                          Lookup: 30=Power management and lighting systems
                          Lookup: 40=Steering systems
                          Lookup: 50=Propulsion systems
                          Lookup: 60=Navigation systems
                          Lookup: 70=Communication systems
                          Lookup: 80=Instrumentation/general systems
                          Lookup: 90=Environmental (HVAC) systems
                          Lookup: 100=Deck
                          Lookup:  cargo and fishing equipment systems
   Field #8: System Instance - ISO Device Class Instance
                          Bits: 4
                          Signed: false
   Field #9: Industry Group
                          Bits: 5
                          Signed: false
   Field #10: Reserved - ISO Self Configurable
                          Bits: 3
                          Signed: false


PGN:  61184 - ISO: Manu. Proprietary single-frame addressed



PGN:  65240 - ISO Commanded Address
```

```
    Field #1: Unique Number - ISO Identity Number
                Bits: 21
                Type: Binary data
                Signed: false
    Field #2: Manufacturer Code
                Bits: 11
                Signed: false
    Field #3: Device Instance Lower - ISO ECU Instance
                Bits: 4
                Signed: false
    Field #4: Device Instance Upper - ISO Function Instance
                Bits: 4
                Signed: false
    Field #5: Device Function - ISO Function
                Bits: 8
                Signed: false
    Field #6: Reserved
                Bits: 1
                Signed: false
    Field #7: Device Class
                Bits: 7
                Type: Lookup table
                Signed: false
                Lookup: 0=Reserved for 2000 Use
                Lookup: 10=System tools
                Lookup: 20=Safety systems
                Lookup: 25=Internetwork device
                Lookup: 30=Power management and lighting systems
                Lookup: 40=Steering systems
                Lookup: 50=Propulsion systems
                Lookup: 60=Navigation systems
                Lookup: 70=Communication systems
                Lookup: 80=Instrumentation/general systems
                Lookup: 90=Environmental (HVAC) systems
                Lookup: 100=Deck
                Lookup:  cargo and fishing equipment systems
    Field #8: System Instance - ISO Device Class Instance
                Bits: 4
                Signed: false
    Field #9: Industry Group
                Bits: 5
                Signed: false
    Field #10: Reserved - ISO Self Configurable
                Bits: 3
                Signed: false
    Field #11: New Source Address
                Bits: 8
                Signed: false


PGN:  65280 - ISO: Manu. Proprietary single-frame non-addressed
```

```
PGN:   65285 - Lowrance: Temperature

   Field #1: Manufacturer Code
                Bits: 11
                Type: Manufacturer code
                Signed: false
   Field #2: Industry Code
                Bits: 5
                Signed: false
   Field #3: Temperature Instance
                Bits: 4
                Signed: false
   Field #4: Temperature Source
                Bits: 4
                Signed: false
   Field #5: Actual Temperature
                Bits: 16
                Units: K
                Type: Temperature
                Signed: false


PGN:   65410 - Airmar: Device Information

   Field #1: Manufacturer Code
                Bits: 11
                Type: Manufacturer code
                Signed: false
   Field #2: Industry Code
                Bits: 5
                Signed: false
   Field #3: SID
                Bits: 8
                Signed: false
   Field #4: Internal Device Temperature
                Bits: 16
                Units: K
                Type: Temperature
                Signed: false
   Field #5: Supply Voltage
                Bits: 16
                Units: V
                Resolution: 0.01
                Signed: false


PGN: 126208 - NMEA - Command/Request/Acknowledge group function

     The last 2 fields repeat until the data is exhausted.
```

```
Field #1: Function Code
            Bits: 8
            Type: Lookup table
            Signed: false
            Lookup: 0=Request
            Lookup: 1=Command
            Lookup: 2=Acknowledge
Field #2: PGN - Commanded or requested PGN
            Bits: 24
            Type: Integer
            Signed: false
Field #3: Priority - 8 = leave priority unchanged
            Bits: 4
            Signed: false
Field #4: Unused
            Bits: 4
            Signed: false
Field #5: # of Commanded Parameters - How many parameter pairs will follow
            Bits: 8
            Signed: false
Field #6: Parameter Index - First parameter index
            Bits: 8
            Type: Integer
            Signed: false
Field #7: Parameter Value - First parameter new value
            Bits: 16
            Type: Integer
            Signed: false


PGN: 126270 - Maretron: Slave Response

Field #1: Manufacturer Code
            Bits: 11
            Type: Manufacturer code
            Signed: false
Field #2: Industry Code
            Bits: 5
            Type: Lookup table
            Signed: false
            Lookup: 19=Marine
Field #3: Product code - 0x1b2=SSC200
            Bits: 16
            Signed: false
Field #4: Software code
            Bits: 16
            Signed: false
Field #5: Command - 0x50=Deviation calibration result
            Bits: 8
            Signed: false
Field #6: Status
            Bits: 8
```

```
                    Signed: false


PGN: 126464 - PGN List (Transmit and Receive)

    The last 1 fields repeat until the data is exhausted.

  Field #1: Function Code - Transmit or receive PGN Group Function Code
                Bits: 8
                Type: Lookup table
                Signed: false
                Lookup: 0=Transmit PGN list
                Lookup: 1=Receive PGN list
  Field #2: PGN
                Bits: 24
                Type: Integer
                Signed: false


PGN: 126720 - Manufacturer Propietary: Addressable Multi-Frame

  Field #1: Manufacturer Code
                Bits: 11
                Type: Manufacturer code
                Signed: false
  Field #2: Industry Code
                Bits: 5
                Type: Lookup table
                Signed: false
                Lookup: 19=Marine


PGN: 126996 - Product Information

  Field #1: NMEA 2000 Version
                Bits: 16
                Signed: false
  Field #2: NMEA Manufacturer's Product Code
                Bits: 16
                Signed: false
  Field #3: Manufacturer's Model ID
                Bits: 256
                Type: ASCII text
                Signed: false
  Field #4: Manufacturer's Software Version Code
                Bits: 320
                Type: ASCII text
                Signed: false
  Field #5: Manufacturer's Model Version
                Bits: 192
                Type: ASCII text
                Signed: false
```

```
   Field #6: Manufacturer's Model Serial Code
                 Bits: 256
                 Type: ASCII text
                 Signed: false
   Field #7: NMEA 2000 Certification Level
                 Bits: 8
                 Signed: false
   Field #8: Load Equivalency
                 Bits: 8
                 Signed: false


PGN: 126998 - Configuration Information

   Field #1: Station ID
                 Bits: 16
                 Signed: false
   Field #2: Station Name
                 Bits: 16
                 Signed: false
   Field #3: A
                 Bits: 16
                 Signed: false
   Field #4: Manufacturer
                 Bits: 288
                 Type: ASCII text
                 Signed: false
   Field #5: Installation Description #1
                 Bits: 16
                 Signed: false
   Field #6: Installation Description #2
                 Bits: 16
                 Signed: false


PGN: 127237 - Heading/Track control

   Field #1: Rudder Limit Exceeded
                 Bits: 1
                 Signed: false
   Field #2: Off-Heading Limit Exceeded
                 Bits: 1
                 Signed: false
   Field #3: Off-Track Limit Exceeded
                 Bits: 1
                 Signed: false
   Field #4: Override
                 Bits: 1
                 Signed: false
   Field #5: Steering Mode
                 Bits: 4
                 Signed: false
```

```
Field #6: Turn Mode
            Bits: 4
            Signed: false
Field #7: Heading Reference
            Bits: 3
            Signed: false
Field #8: Reserved
            Bits: 1
            Signed: false
Field #9: Commanded Rudder Direction
            Bits: 2
            Signed: false
Field #10: Commanded Rudder Angle
            Bits: 16
            Units: Radians
            Type: Angle
            Resolution: 0.001
            Signed: false
Field #11: Heading-To-Steer (Course)
            Bits: 16
            Units: Radians
            Type: Angle
            Resolution: 0.001
            Signed: false
Field #12: Track
            Bits: 16
            Units: Radians
            Type: Angle
            Resolution: 0.001
            Signed: false
Field #13: Rudder Limit
            Bits: 16
            Units: Radians
            Type: Angle
            Resolution: 0.001
            Signed: false
Field #14: Off-Heading Limit
            Bits: 16
            Units: Radians
            Type: Angle
            Resolution: 0.001
            Signed: false
Field #15: Radius of Turn Order
            Bits: 16
            Units: Radians
            Type: Angle
            Resolution: 0.001
            Signed: false
Field #16: Rate of Turn Order
            Bits: 16
            Units: Radians
            Type: Angle
```

```
                    Resolution: 0.001
                    Signed: false
  Field #17: Off-Track Limit
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
  Field #18: Vessel Heading
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false


PGN: 127245 - Rudder

  Field #1: Instance
                    Bits: 8
                    Signed: false
  Field #2: Direction Order
                    Bits: 2
                    Signed: false
  Field #3: Reserved - Reserved
                    Bits: 6
                    Type: Binary data
                    Signed: false
  Field #4: Angle Order
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: true
  Field #5: Position
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: true


PGN: 127501 - Binary Switch Bank Status

    The last 1 fields repeat until the data is exhausted.

  Field #1: Indicator Bank Instance
                    Bits: 8
                    Signed: false
  Field #2: Indicator
                    Bits: 2
                    Type: Lookup table
```

Signed: false
                    Lookup: 0=Off
                    Lookup: 1=On

PGN: 127502 - Switch Bank Control

     The last 1 fields repeat until the data is exhausted.

  Field #1: Switch Bank Instance
                    Bits: 8
                    Signed: false
  Field #2: Switch
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Off
                    Lookup: 1=On

PGN: 127506 - DC Detailed Status

  Field #1: SID
                    Bits: 8
                    Signed: false
  Field #2: DC Instance
                    Bits: 8
                    Signed: false
  Field #3: DC Type
                    Bits: 8
                    Signed: false
  Field #4: State of Charge
                    Bits: 8
                    Signed: false
  Field #5: State of Health
                    Bits: 8
                    Signed: false
  Field #6: Time Remaining
                    Bits: 16
                    Signed: false
  Field #7: Ripple Voltage
                    Bits: 16
                    Units: V
                    Resolution: 0.01
                    Signed: false

PGN: 127507 - Charger Status

  Field #1: Charger Instance
                    Bits: 8
                    Signed: false

```
   Field #2: Battery Instance
              Bits: 8
              Signed: false
   Field #3: Operating State
              Bits: 8
              Signed: false
   Field #4: Charge Mode
              Bits: 8
              Signed: false
   Field #5: Charger Enable/Disable
              Bits: 2
              Signed: false
   Field #6: Equalization Pending
              Bits: 2
              Signed: false
   Field #7: Reserved
              Bits: 4
              Signed: false
   Field #8: Equalization Time Remaining
              Bits: 16
              Signed: false


PGN: 127509 - Inverter Status

   Field #1: Inverter Instance
              Bits: 8
              Signed: false
   Field #2: AC Instance
              Bits: 8
              Signed: false
   Field #3: DC Instance
              Bits: 8
              Signed: false
   Field #4: Operating State
              Bits: 8
              Signed: false
   Field #5: Inverter Enable/Disable
              Bits: 2
              Signed: false
   Field #6: Reserved
              Bits: 14
              Signed: false


PGN: 127510 - Charger Configuration Status

   Field #1: Charger Instance
              Bits: 8
              Signed: false
   Field #2: Battery Instance
              Bits: 8
```

```
                        Signed: false
   Field #3: Charger Enable/Disable
                  Bits: 2
                  Signed: false
   Field #4: Reserved
                  Bits: 6
                  Signed: false
   Field #5: Charge Current Limit
                  Bits: 16
                  Units: A
                  Resolution: 0.1
                  Signed: false
   Field #6: Charging Algorithm
                  Bits: 8
                  Signed: false
   Field #7: Charger Mode
                  Bits: 8
                  Signed: false
   Field #8: Estimated Temperature - When no sensor present
                  Bits: 16
                  Type: Temperature
                  Signed: false
   Field #9: Equalize One Time Enable/Disable
                  Bits: 4
                  Signed: false
   Field #10: Over Charge Enable/Disable
                  Bits: 4
                  Signed: false
   Field #11: Equalize Time
                  Bits: 16
                  Signed: false


PGN: 127511 - Inverter Configuration Status

   Field #1: Inverter Instance
                  Bits: 8
                  Signed: false
   Field #2: AC Instance
                  Bits: 8
                  Signed: false
   Field #3: DC Instance
                  Bits: 8
                  Signed: false
   Field #4: Inverter Enable/Disable
                  Bits: 2
                  Signed: false
   Field #5: Inverter Mode
                  Bits: 8
                  Signed: false
   Field #6: Load Sense Enable/Disable
                  Bits: 8
```

```
                          Signed: false
   Field #7: Load Sense Power Threshold
                          Bits: 8
                          Signed: false
   Field #8: Load Sense Interval
                          Bits: 8
                          Signed: false


PGN: 127512 - AGS Configuration Status

   Field #1: AGS Instance
                          Bits: 8
                          Signed: false
   Field #2: Generator Instance
                          Bits: 8
                          Signed: false
   Field #3: AGS Mode
                          Bits: 8
                          Signed: false


PGN: 127513 - Battery Configuration Status

   Field #1: Battery Instance
                          Bits: 8
                          Signed: false
   Field #2: Battery Type
                          Bits: 8
                          Signed: false
   Field #3: Supports Equalization
                          Bits: 2
                          Signed: false
   Field #4: Reserved
                          Bits: 6
                          Signed: false
   Field #5: Nominal Voltage
                          Bits: 16
                          Units: V
                          Resolution: 0.01
                          Signed: false
   Field #6: Chemistry
                          Bits: 8
                          Signed: false
   Field #7: Capacity
                          Bits: 16
                          Signed: false
   Field #8: Temperature Coefficient
                          Bits: 16
                          Signed: false
   Field #9: Peukert Exponent
                          Bits: 16
```

```
                        Signed: false
    Field #10: Charge Efficiency Factor
                        Bits: 16
                        Signed: false


PGN: 127514 - AGS Status

    Field #1: AGS Instance
                        Bits: 8
                        Signed: false
    Field #2: Generator Instance
                        Bits: 8
                        Signed: false
    Field #3: AGS Operating State
                        Bits: 8
                        Signed: false
    Field #4: Generator State
                        Bits: 8
                        Signed: false
    Field #5: Generator On Reason
                        Bits: 8
                        Signed: false
    Field #6: Generator Off Reason
                        Bits: 8
                        Signed: false


PGN: 129027 - Position Delta, Rapid Update

    Field #1: SID
                        Bits: 8
                        Signed: false
    Field #2: Time Delta
                        Bits: 16
                        Signed: false
    Field #3: Latitude Delta
                        Bits: 16
                        Signed: true
    Field #4: Longitude Delta
                        Bits: 16
                        Signed: true


PGN: 129028 - Altitude Delta, Rapid Update

    Field #1: SID
                        Bits: 8
                        Signed: false
    Field #2: Time Delta
                        Bits: 16
                        Signed: true
```

```
Field #3: GNSS Quality
             Bits: 2
             Signed: false
Field #4: Direction
             Bits: 2
             Signed: false
Field #5: Reserved - Reserved
             Bits: 4
             Type: Binary data
             Signed: false
Field #6: Course Over Ground
             Bits: 32
             Units: Radians
             Type: Angle
             Resolution: 0.001
             Signed: false
Field #7: Altitude Delta
             Bits: 16
             Signed: true


PGN: 129044 - Datum

Field #1: Local Datum - defined in IHO Publication S-60
             Bits: 8
             Signed: false
Field #2: Delta Latitude
             Bits: 32
             Type: Latitude
             Signed: false
Field #3: Delta Longitude
             Bits: 32
             Type: Longitude
             Signed: false
Field #4: Delta Altitude
             Bits: 64
             Units: m
             Resolution: 1e-06
             Signed: true
Field #5: Reference Datum - defined in IHO Publication S-60
             Bits: 8
             Signed: false


PGN: 129283 - Cross Track Error

Field #1: SID
             Bits: 8
             Signed: false
Field #2: XTE mode
             Bits: 4
             Type: Lookup table
```

```
                        Signed: false
                        Lookup: 0=Autonomous
                        Lookup: 1=Differential enhanced
                        Lookup: 2=Estimated
                        Lookup: 3=Simulator
                        Lookup: 4=Manual
    Field #3: Reserved - reserved
                        Bits: 2
                        Type: Binary data
                        Signed: false
    Field #4: Navigation Terminated
                        Bits: 2
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=No
                        Lookup: 1=Yes
    Field #5: XTE
                        Bits: 32
                        Units: m
                        Resolution: 0.01
                        Signed: true


PGN: 129285 - Navigation - Route/WP Information

     The last 4 fields repeat until the data is exhausted.

  Field #1: Start RPS#
                        Bits: 8
                        Signed: false
  Field #2: nItems
                        Bits: 8
                        Signed: false
  Field #3: Database ID
                        Bits: 8
                        Signed: false
  Field #4: Route ID
                        Bits: 8
                        Signed: false
  Field #5: Navigation direction in route
                        Bits: 2
                        Signed: false
  Field #6: Supplementary Route/WP data available
                        Bits: 2
                        Signed: false
  Field #7: Reserved - Reserved
                        Bits: 4
                        Type: Binary data
                        Signed: false
  Field #8: Route Name
                        Bits: 64
                        Type: ASCII text
```

```
                    Signed: false
   Field #9: Reserved - Reserved
                    Bits: 8
                    Type: Binary data
                    Signed: false
   Field #10: WP ID
                    Bits: 32
                    Signed: false
   Field #11: WP Name
                    Bits: 64
                    Type: ASCII text
                    Signed: false
   Field #12: WP Latitude
                    Bits: 32
                    Type: Latitude
                    Signed: false
   Field #13: WP Longitude
                    Bits: 32
                    Type: Longitude
                    Signed: false


PGN: 129302 - Bearing and Distance between two Marks

   Field #1: SID
                    Bits: 8
                    Signed: false
   Field #2: Bearing Reference
                    Bits: 4
                    Type: Lookup table
                    Signed: false
   Field #3: Calculation Type
                    Bits: 2
                    Type: Lookup table
                    Signed: false
   Field #4: Reserved - Reserved
                    Bits: 2
                    Type: Binary data
                    Signed: false
   Field #5: Bearing, Origin to Destination
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
   Field #6: Distance
                    Bits: 32
                    Units: m
                    Resolution: 0.01
                    Signed: false
   Field #7: Origin Mark Type
                    Bits: 4
```

```
                    Type: Lookup table
                    Signed: false
   Field #8: Destination Mark Type
                    Bits: 4
                    Type: Lookup table
                    Signed: false
   Field #9: Origin Mark ID
                    Bits: 32
                    Signed: false
   Field #10: Destination Mark ID
                    Bits: 32
                    Signed: false


PGN: 129538 - GNSS Control Status

   Field #1: SV Elevation Mask - Will not use SV below this elevation
                    Bits: 16
                    Signed: false
   Field #2: PDOP Mask - Will not report position above this PDOP
                    Bits: 16
                    Resolution: 0.01
                    Signed: false
   Field #3: PDOP Switch - Will report 2D position above this PDOP
                    Bits: 16
                    Resolution: 0.01
                    Signed: false
   Field #4: SNR Mask - Will not use SV below this SNR
                    Bits: 16
                    Resolution: 0.01
                    Signed: false
   Field #5: GNSS Mode (desired)
                    Bits: 3
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=1D
                    Lookup: 1=2D
                    Lookup: 2=3D
                    Lookup: 3=Auto
                    Lookup: 4=Reserved
                    Lookup: 5=Reserved
                    Lookup: 6=Error
   Field #6: DGNSS Mode (desired)
                    Bits: 3
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=no SBAS
                    Lookup: 1=SBAS
                    Lookup: 3=SBAS
   Field #7: Position/Velocity Filter
                    Bits: 2
                    Signed: false
```

```
    Field #8: Max Correction Age
                    Bits: 16
                    Signed: false
    Field #9: Antenna Altitude for 2D Mode
                    Bits: 16
                    Units: m
                    Resolution: 0.01
                    Signed: false
    Field #10: Use Antenna Altitude for 2D Mode
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=use last 3D height
                    Lookup: 1=Use antenna altitude


PGN: 129541 - GPS Almanac Data

    Field #1: PRN
                    Bits: 8
                    Signed: false
    Field #2: GPS Week number
                    Bits: 8
                    Signed: false
    Field #3: SV Health Bits
                    Bits: 8
                    Signed: false
    Field #4: Eccentricity
                    Bits: 8
                    Signed: false
    Field #5: Almanac Reference Time
                    Bits: 8
                    Signed: false
    Field #6: Inclination Angle
                    Bits: 8
                    Signed: false
    Field #7: Right of Right Ascension
                    Bits: 8
                    Signed: false
    Field #8: Root of Semi-major Axis
                    Bits: 8
                    Signed: false
    Field #9: Argument of Perigee
                    Bits: 8
                    Signed: false
    Field #10: Longitude of Ascension Node
                    Bits: 8
                    Signed: false
    Field #11: Mean Anomaly
                    Bits: 8
                    Signed: false
    Field #12: Clock Parameter 1
```

```
                     Bits: 8
                     Signed: false
   Field #13: Clock Parameter 2
                     Bits: 8
                     Signed: false


PGN: 129542 - GNSS Pseudorange Noise Statistics

   Field #1: SID
                     Bits: 8
                     Signed: false
   Field #2: RMS of Position Uncertainty
                     Bits: 16
                     Signed: false
   Field #3: STD of Major axis
                     Bits: 8
                     Signed: false
   Field #4: STD of Minor axis
                     Bits: 8
                     Signed: false
   Field #5: Orientation of Major axis
                     Bits: 8
                     Signed: false
   Field #6: STD of Lat Error
                     Bits: 8
                     Signed: false
   Field #7: STD of Lon Error
                     Bits: 8
                     Signed: false
   Field #8: STD of Alt Error
                     Bits: 8
                     Signed: false


PGN: 129545 - GNSS RAIM Output

   Field #1: SID
                     Bits: 8
                     Signed: false
   Field #2: Integrity flag
                     Bits: 4
                     Signed: false
   Field #3: Reserved - Reserved
                     Bits: 4
                     Type: Binary data
                     Signed: false
   Field #4: Latitude expected error
                     Bits: 8
                     Signed: false
   Field #5: Longitude expected error
                     Bits: 8
```

```
                    Signed: false
   Field #6: Altitude expected error
                    Bits: 8
                    Signed: false
   Field #7: SV ID of most likely failed sat
                    Bits: 8
                    Signed: false
   Field #8: Probability of missed detection
                    Bits: 8
                    Signed: false
   Field #9: Estimate of pseudorange bias
                    Bits: 8
                    Signed: false
   Field #10: Std Deviation of bias
                    Bits: 8
                    Signed: false


PGN: 129546 - GNSS RAIM Settings

   Field #1: Radial Position Error Maximum Threshold
                    Bits: 8
                    Signed: false
   Field #2: Probability of False Alarm
                    Bits: 8
                    Signed: false
   Field #3: Probability of Missed Detection
                    Bits: 8
                    Signed: false
   Field #4: Pseudorange Residual Filtering Time Constant
                    Bits: 8
                    Signed: false


PGN: 129547 - GNSS Pseudorange Error Statistics

   Field #1: SID
                    Bits: 8
                    Signed: false
   Field #2: RMS Std Dev of Range Inputs
                    Bits: 16
                    Signed: false
   Field #3: Std Dev of Major error ellipse
                    Bits: 8
                    Signed: false
   Field #4: Std Dev of Minor error ellipse
                    Bits: 8
                    Signed: false
   Field #5: Orientation of error ellipse
                    Bits: 8
                    Signed: false
   Field #6: Std Dev Lat Error
```

```
                        Bits: 8
                        Signed: false
    Field #7: Std Dev Lon Error
                        Bits: 8
                        Signed: false
    Field #8: Std Dev Alt Error
                        Bits: 8
                        Signed: false


PGN: 129549 - DGNSS Corrections

    Field #1: SID
                        Bits: 8
                        Signed: false
    Field #2: Reference Station ID
                        Bits: 16
                        Signed: false
    Field #3: Reference Station Type
                        Bits: 16
                        Signed: false
    Field #4: Time of corrections
                        Bits: 8
                        Signed: false
    Field #5: Station Health
                        Bits: 8
                        Signed: false
    Field #6: Reserved Bits
                        Bits: 8
                        Signed: false
    Field #7: Satellite ID
                        Bits: 8
                        Signed: false
    Field #8: PRC
                        Bits: 8
                        Signed: false
    Field #9: RRC
                        Bits: 8
                        Signed: false
    Field #10: UDRE
                        Bits: 8
                        Signed: false
    Field #11: IOD
                        Bits: 8
                        Signed: false


PGN: 129550 - GNSS Differential Correction Receiver Interface

    Field #1: Channel
                        Bits: 8
                        Signed: false
```

```
   Field #2: Frequency
                Bits: 8
                Signed: false
   Field #3: Serial Interface Bit Rate
                Bits: 8
                Signed: false
   Field #4: Serial Interface Detection Mode
                Bits: 8
                Signed: false
   Field #5: Differential Source
                Bits: 8
                Signed: false
   Field #6: Differential Operation Mode
                Bits: 8
                Signed: false


PGN: 129551 - GNSS Differential Correction Receiver Signal

   Field #1: SID
                Bits: 8
                Signed: false
   Field #2: Channel
                Bits: 8
                Signed: false
   Field #3: Signal Strength
                Bits: 8
                Signed: false
   Field #4: Signal SNR
                Bits: 8
                Signed: false
   Field #5: Frequency
                Bits: 8
                Signed: false
   Field #6: Station Type
                Bits: 8
                Signed: false
   Field #7: Station ID
                Bits: 8
                Signed: false
   Field #8: Differential Signal Bit Rate
                Bits: 8
                Signed: false
   Field #9: Differential Signal Detection Mode
                Bits: 8
                Signed: false
   Field #10: Used as Correction Source
                Bits: 8
                Signed: false
   Field #11: Reserved - Reserved
                Bits: 8
                Signed: false
```

```
    Field #12: Differential Source
                Bits: 8
                Signed: false
    Field #13: Time since Last Sat Differential Sync
                Bits: 8
                Signed: false
    Field #14: Satellite Service ID No.
                Bits: 8
                Signed: false


PGN: 129556 - GLONASS Almanac Data

    Field #1: PRN
                Bits: 8
                Signed: false
    Field #2: NA
                Bits: 8
                Signed: false
    Field #3: CnA
                Bits: 8
                Signed: false
    Field #4: HnA
                Bits: 8
                Signed: false
    Field #5: (epsilon)nA
                Bits: 8
                Signed: false
    Field #6: (deltaTnA)DOT
                Bits: 8
                Signed: false
    Field #7: (omega)nA
                Bits: 8
                Signed: false
    Field #8: (delta)TnA
                Bits: 8
                Signed: false
    Field #9: tnA
                Bits: 8
                Signed: false
    Field #10: (lambda)nA
                Bits: 8
                Signed: false
    Field #11: (delta)inA
                Bits: 8
                Signed: false
    Field #12: tcA
                Bits: 8
                Signed: false
    Field #13: tnA
                Bits: 8
                Signed: false
```

```
PGN: 129792 - AIS DGNSS Broadcast Binary Message

   Field #1: Message ID
                  Bits: 8
                  Signed: false
   Field #2: Repeat Indicator
                  Bits: 8
                  Signed: false
   Field #3: Source ID
                  Bits: 8
                  Signed: false
   Field #4: NMEA 2000 Reserved
                  Bits: 8
                  Signed: false
   Field #5: AIS Tranceiver Information
                  Bits: 8
                  Signed: false
   Field #6: Spare
                  Bits: 8
                  Signed: false
   Field #7: Longitude
                  Bits: 8
                  Signed: false
   Field #8: Latitude
                  Bits: 8
                  Signed: false
   Field #9: NMEA 2000 Reserved
                  Bits: 8
                  Signed: false
   Field #10: Spare
                  Bits: 8
                  Signed: false
   Field #11: Number of Bits in Binary Data Field
                  Bits: 8
                  Signed: false
   Field #12: Binary Data
                  Bits: 64
                  Type: Binary data
                  Signed: false


PGN: 129793 - AIS UTC and Date Report

   Field #1: Message ID
                  Bits: 6
                  Signed: false
   Field #2: Repeat Indicator
                  Bits: 2
                  Type: Lookup table
                  Signed: false
```

```
                          Lookup: 0=Initial
                          Lookup: 1=First retransmission
                          Lookup: 2=Second retransmission
                          Lookup: 3=Final retransmission
    Field #3: User ID
                          Bits: 32
                          Units: MMSI
                          Type: Integer
                          Signed: false
    Field #4: Longitude
                          Bits: 32
                          Type: Longitude
                          Signed: false
    Field #5: Latitude
                          Bits: 32
                          Type: Latitude
                          Signed: false
    Field #6: Position Accuracy
                          Bits: 1
                          Type: Lookup table
                          Signed: false
                          Lookup: 0=Low
                          Lookup: 1=High
    Field #7: RAIM
                          Bits: 1
                          Type: Lookup table
                          Signed: false
                          Lookup: 0=not in use
                          Lookup: 1=in use
    Field #8: Reserved - NMEA reserved to align next data on byte boundary
                          Bits: 6
                          Type: Binary data
                          Signed: false
    Field #9: Position Time
                          Bits: 32
                          Type: Time
                          Signed: false
    Field #10: Communication State - Information used by the TDMA slot
allocation algorithm and synchronization information
                          Bits: 19
                          Type: Integer
                          Signed: false
    Field #11: AIS Transceiver information
                          Bits: 5
                          Type: Lookup table
                          Signed: false
                          Lookup: 0=Channel A VDL reception
                          Lookup: 1=Channel B VDL reception
                          Lookup: 2=Channel A VDL transmission
                          Lookup: 3=Channel B VDL transmission
                          Lookup: 4=Own information not broadcast
                          Lookup: 5=Reserved
```

```
   Field #12: Position Date
                  Bits: 16
                  Type: Date
                  Signed: true
   Field #13: Reserved - NMEA reserved to align next data on byte boundary
                  Bits: 4
                  Type: Binary data
                  Signed: false
   Field #14: GNSS type
                  Bits: 4
                  Type: Lookup table
                  Signed: false
                  Lookup: 0=undefined
                  Lookup: 1=GPS
                  Lookup: 2=GLONASS
                  Lookup: 3=GPS+GLONASS
                  Lookup: 4=Loran-C
                  Lookup: 5=Chayka
                  Lookup: 6=integrated
                  Lookup: 7=surveyed
                  Lookup: 8=Galileo
   Field #15: Spare
                  Bits: 8
                  Type: Binary data
                  Signed: false


PGN: 129798 - AIS SAR Aircraft Position Report

   Field #1: Message ID
                  Bits: 6
                  Signed: false
   Field #2: Repeat indicator
                  Bits: 2
                  Type: Lookup table
                  Signed: false
                  Lookup: 0=Initial
                  Lookup: 1=First retransmission
                  Lookup: 2=Second retransmission
                  Lookup: 3=Final retransmission
   Field #3: User ID
                  Bits: 32
                  Units: MMSI
                  Type: Integer
                  Signed: false
   Field #4: Longitude
                  Bits: 32
                  Type: Longitude
                  Signed: false
   Field #5: Latitude
                  Bits: 32
                  Type: Latitude
```

```
                         Signed: false
  Field #6: Position Accuracy
                         Bits: 1
                         Type: Lookup table
                         Signed: false
                         Lookup: 0=Low
                         Lookup: 1=High
  Field #7: RAIM
                         Bits: 1
                         Type: Lookup table
                         Signed: false
                         Lookup: 0=not in use
                         Lookup: 1=in use
  Field #8: Time Stamp - 0-59 = UTC second when the report was generated
                         Bits: 6
                         Type: Lookup table
                         Signed: false
                         Lookup: 60=Not available
                         Lookup: 61=Manual input mode
                         Lookup: 62=Dead reckoning mode
                         Lookup: 63=Positioning system is inoperative
  Field #9: COG
                         Bits: 16
                         Units: Radians
                         Type: Angle
                         Resolution: 0.001
                         Signed: false
  Field #10: SOG
                         Bits: 16
                         Units: m/s
                         Resolution: 0.01
                         Signed: false
  Field #11: Communication State - Information used by the TDMA slot
allocation algorithm and synchronization information
                         Bits: 19
                         Type: Integer
                         Signed: false
  Field #12: AIS Transceiver information
                         Bits: 5
                         Type: Lookup table
                         Signed: false
                         Lookup: 0=Channel A VDL reception
                         Lookup: 1=Channel B VDL reception
                         Lookup: 2=Channel A VDL transmission
                         Lookup: 3=Channel B VDL transmission
                         Lookup: 4=Own information not broadcast
                         Lookup: 5=Reserved
  Field #13: Altitude
                         Bits: 64
                         Units: m
                         Resolution: 1e-06
                         Signed: true
```

```
    Field #14: Reserved for Regional Applications
                    Bits: 8
                    Signed: false
    Field #15: DTE
                    Bits: 1
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Available
                    Lookup: 1=Not available
    Field #16: Reserved - reserved
                    Bits: 7
                    Type: Binary data
                    Signed: false


PGN: 129799 - Radio Frequency/Mode/Power

    Field #1: Rx Frequency
                    Bits: 32
                    Units: Hz
                    Resolution: 10
                    Signed: false
    Field #2: Tx Frequency
                    Bits: 32
                    Units: Hz
                    Resolution: 10
                    Signed: false
    Field #3: Radio Channel
                    Bits: 8
                    Signed: false
    Field #4: Tx Power
                    Bits: 8
                    Signed: false
    Field #5: Mode
                    Bits: 8
                    Signed: false
    Field #6: Channel Bandwidth
                    Bits: 8
                    Signed: false


PGN: 129800 - AIS UTC/Date Inquiry

    Field #1: Message ID
                    Bits: 6
                    Signed: false
    Field #2: Repeat Indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
                    Lookup: 1=First retransmission
```

```
                       Lookup: 2=Second retransmission
                       Lookup: 3=Final retransmission
   Field #3: Source ID
                       Bits: 30
                       Signed: false
   Field #4: Reserved - reserved
                       Bits: 2
                       Type: Binary data
                       Signed: false
   Field #5: AIS Transceiver information
                       Bits: 5
                       Type: Lookup table
                       Signed: false
                       Lookup: 0=Channel A VDL reception
                       Lookup: 1=Channel B VDL reception
                       Lookup: 2=Channel A VDL transmission
                       Lookup: 3=Channel B VDL transmission
                       Lookup: 4=Own information not broadcast
                       Lookup: 5=Reserved
   Field #6: Reserved - reserved
                       Bits: 3
                       Type: Binary data
                       Signed: false
   Field #7: Destination ID
                       Bits: 30
                       Signed: false
   Field #8: Reserved - reserved
                       Bits: 2
                       Type: Binary data
                       Signed: false




   PGN: 129802 - AIS Safety Related Broadcast Message

   Field #1: Message ID
                       Bits: 6
                       Signed: false
   Field #2: Repeat Indicator
                       Bits: 2
                       Type: Lookup table
                       Signed: false
                       Lookup: 0=Initial
                       Lookup: 1=First retransmission
                       Lookup: 2=Second retransmission
                       Lookup: 3=Final retransmission
   Field #3: Source ID
                       Bits: 30
                       Type: Integer
                       Signed: false
   Field #4: Reserved - reserved
                       Bits: 2
                       Type: Binary data
```

```
                        Signed: false
   Field #5: AIS Transceiver information
                        Bits: 5
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=Channel A VDL reception
                        Lookup: 1=Channel B VDL reception
                        Lookup: 2=Channel A VDL transmission
                        Lookup: 3=Channel B VDL transmission
                        Lookup: 4=Own information not broadcast
                        Lookup: 5=Reserved
   Field #6: Reserved - reserved
                        Bits: 3
                        Type: Binary data
                        Signed: false
   Field #7: Safety Related Text
                        Bits: 288
                        Type: ASCII text
                        Signed: false


PGN: 129803 - AIS Interrogation

    The last 8 fields repeat until the data is exhausted.

   Field #1: Message ID
                        Bits: 6
                        Signed: false
   Field #2: Repeat Indicator
                        Bits: 2
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=Initial
                        Lookup: 1=First retransmission
                        Lookup: 2=Second retransmission
                        Lookup: 3=Final retransmission
   Field #3: Source ID
                        Bits: 30
                        Type: Integer
                        Signed: false
   Field #4: Reserved - reserved
                        Bits: 2
                        Type: Binary data
                        Signed: false
   Field #5: AIS Transceiver information
                        Bits: 5
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=Channel A VDL reception
                        Lookup: 1=Channel B VDL reception
                        Lookup: 2=Channel A VDL transmission
                        Lookup: 3=Channel B VDL transmission
```

```
                    Lookup: 4=Own information not broadcast
                    Lookup: 5=Reserved
  Field #6: Reserved - reserved
                    Bits: 3
                    Type: Binary data
                    Signed: false
  Field #7: Destination ID
                    Bits: 30
                    Type: Integer
                    Signed: false
  Field #8: Reserved - reserved
                    Bits: 2
                    Type: Binary data
                    Signed: false
  Field #9: Message ID A
                    Bits: 8
                    Type: Integer
                    Signed: false
  Field #10: Slot Offset A
                    Bits: 14
                    Type: Integer
                    Signed: false
  Field #11: Reserved - reserved
                    Bits: 2
                    Type: Binary data
                    Signed: false
  Field #12: Message ID B
                    Bits: 8
                    Type: Integer
                    Signed: false
  Field #13: Slot Offset B
                    Bits: 14
                    Type: Integer
                    Signed: false
  Field #14: Reserved - reserved
                    Bits: 2
                    Type: Binary data
                    Signed: false


PGN: 129805 - AIS Data Link Management Message

    The last 4 fields repeat until the data is exhausted.

  Field #1: Message ID
                    Bits: 6
                    Signed: false
  Field #2: Repeat Indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
```

```
                      Lookup: 1=First retransmission
                      Lookup: 2=Second retransmission
                      Lookup: 3=Final retransmission
    Field #3: Source ID
                      Bits: 30
                      Type: Integer
                      Signed: false
    Field #4: Reserved - reserved
                      Bits: 2
                      Type: Binary data
                      Signed: false
    Field #5: AIS Transceiver information
                      Bits: 5
                      Type: Lookup table
                      Signed: false
                      Lookup: 0=Channel A VDL reception
                      Lookup: 1=Channel B VDL reception
                      Lookup: 2=Channel A VDL transmission
                      Lookup: 3=Channel B VDL transmission
                      Lookup: 4=Own information not broadcast
                      Lookup: 5=Reserved
    Field #6: Reserved - reserved
                      Bits: 3
                      Type: Binary data
                      Signed: false
    Field #7: Offset
                      Bits: 10
                      Type: Integer
                      Signed: false
    Field #8: Number of Slots
                      Bits: 8
                      Type: Integer
                      Signed: false
    Field #9: Timeout
                      Bits: 8
                      Type: Integer
                      Signed: false
    Field #10: Increment
                      Bits: 8
                      Type: Integer
                      Signed: false


  PGN: 129806 - AIS Channel Management

    Field #1: Message ID
                      Bits: 6
                      Signed: false
    Field #2: Repeat Indicator
                      Bits: 2
                      Type: Lookup table
                      Signed: false
```

```
                        Lookup: 0=Initial
                        Lookup: 1=First retransmission
                        Lookup: 2=Second retransmission
                        Lookup: 3=Final retransmission
Field #3: Source ID
                        Bits: 30
                        Type: Integer
                        Signed: false
Field #4: Reserved - reserved
                        Bits: 2
                        Type: Binary data
                        Signed: false
Field #5: AIS Transceiver information
                        Bits: 5
                        Type: Lookup table
                        Signed: false
                        Lookup: 0=Channel A VDL reception
                        Lookup: 1=Channel B VDL reception
                        Lookup: 2=Channel A VDL transmission
                        Lookup: 3=Channel B VDL transmission
                        Lookup: 4=Own information not broadcast
                        Lookup: 5=Reserved
Field #6: Reserved - reserved
                        Bits: 3
                        Type: Binary data
                        Signed: false
Field #7: Channel A
                        Bits: 7
                        Signed: false
Field #8: Channel B
                        Bits: 7
                        Signed: false
Field #9: Reserved - reserved
                        Bits: 2
                        Type: Binary data
                        Signed: false
Field #10: Power - reserved
                        Bits: 8
                        Signed: false
Field #11: Tx/Rx Mode
                        Bits: 8
                        Type: Integer
                        Signed: false
Field #12: North East Longitude Corner 1
                        Bits: 32
                        Type: Longitude
                        Signed: false
Field #13: North East Latitude Corner 1
                        Bits: 32
                        Type: Latitude
                        Signed: false
Field #14: South West Longitude Corner 1
```

```
                  Bits: 32
                  Type: Longitude
                  Signed: false
   Field #15: South West Latitude Corner 2
                  Bits: 32
                  Type: Latitude
                  Signed: false
   Field #16: Reserved - reserved
                  Bits: 6
                  Type: Binary data
                  Signed: false
   Field #17: Addressed or Broadcast Message Indicator
                  Bits: 2
                  Signed: false
   Field #18: Channel A Bandwidth
                  Bits: 7
                  Type: Integer
                  Signed: false
   Field #19: Channel B Bandwidth
                  Bits: 7
                  Type: Integer
                  Signed: false
   Field #20: Reserved - reserved
                  Bits: 2
                  Type: Binary data
                  Signed: false
   Field #21: Transitional Zone Size
                  Bits: 8
                  Signed: false


PGN: 129807 - AIS Class B Group Assignment

   Field #1: Message ID
                  Bits: 6
                  Signed: false
   Field #2: Repeat Indicator
                  Bits: 2
                  Type: Lookup table
                  Signed: false
                  Lookup: 0=Initial
                  Lookup: 1=First retransmission
                  Lookup: 2=Second retransmission
                  Lookup: 3=Final retransmission
   Field #3: Source ID
                  Bits: 30
                  Type: Integer
                  Signed: false
   Field #4: Reserved - reserved
                  Bits: 2
                  Type: Binary data
                  Signed: false
```

```
    Field #5: Tx/Rx Mode
                Bits: 2
                Type: Integer
                Signed: false
  Field #6: Reserved - reserved
                Bits: 6
                Type: Binary data
                Signed: false
  Field #7: North East Longitude Corner 1
                Bits: 32
                Type: Longitude
                Signed: false
  Field #8: North East Latitude Corner 1
                Bits: 32
                Type: Latitude
                Signed: false
  Field #9: South West Longitude Corner 1
                Bits: 32
                Type: Longitude
                Signed: false
  Field #10: South West Latitude Corner 2
                Bits: 32
                Type: Latitude
                Signed: false
  Field #11: Station Type
                Bits: 8
                Signed: false
  Field #12: Reserved - reserved
                Bits: 2
                Type: Binary data
                Signed: false
  Field #13: Ship and Cargo Filter
                Bits: 6
                Signed: false
  Field #14: Reserved - reserved
                Bits: 2
                Type: Binary data
                Signed: false
  Field #15: Reporting Interval
                Bits: 16
                Signed: false
  Field #16: Quiet Time
                Bits: 16
                Signed: false


PGN: 129808 - DSC Call Information

    The last 2 fields repeat until the data is exhausted.

  Field #1: DSC Format Symbol
                Bits: 8
```

```
                Signed: false
Field #2: DSC Category Symbol
                Bits: 8
                Signed: false
Field #3: DSC Message Address
                Bits: 8
                Signed: false
Field #4: Nature of Distress or 1st Telecommand
                Bits: 8
                Signed: false
Field #5: Subsequent Communication Mode or 2nd Telecommand
                Bits: 8
                Signed: false
Field #6: Proposed Rx Frequency/Channel
                Bits: 8
                Signed: false
Field #7: Proposed Tx Frequency/Channel
                Bits: 8
                Signed: false
Field #8: Telephone Number
                Bits: 8
                Signed: false
Field #9: Latitude of Vessel Reported
                Bits: 32
                Type: Latitude
                Signed: false
Field #10: Longitude of Vessel Reported
                Bits: 32
                Type: Longitude
                Signed: false
Field #11: Time of Position
                Bits: 32
                Type: Time
                Signed: false
Field #12: User ID of Ship In Distress
                Bits: 32
                Units: MMSI
                Type: Integer
                Signed: false
Field #13: DSC EOS Symbol
                Bits: 8
                Signed: false
Field #14: Expansion Enabled
                Bits: 8
                Signed: false
Field #15: Calling Rx Frequency/Channel
                Bits: 8
                Signed: false
Field #16: Calling Tx Frequency/Channel
                Bits: 8
                Signed: false
Field #17: Time of Receipt
```

```
                      Bits: 32
                      Type: Time
                      Signed: false
   Field #18: Date of Receipt
                      Bits: 16
                      Type: Date
                      Signed: false
   Field #19: DSC Equipment Assigned Message ID
                      Bits: 8
                      Signed: false
   Field #20: DSC Expansion Field Symbol
                      Bits: 8
                      Signed: false
   Field #21: DSC Expansion Field Data
                      Bits: 8
                      Signed: false


PGN: 129809 - AIS Class B static data (msg 24 Part A)

   Field #1: Message ID
                      Bits: 6
                      Signed: false
   Field #2: Repeat indicator
                      Bits: 2
                      Type: Lookup table
                      Signed: false
                      Lookup: 0=Initial
                      Lookup: 1=First retransmission
                      Lookup: 2=Second retransmission
                      Lookup: 3=Final retransmission
   Field #3: User ID
                      Bits: 32
                      Units: MMSI
                      Type: Integer
                      Signed: false
   Field #4: Name
                      Bits: 160
                      Type: ASCII text
                      Signed: false


PGN: 129810 - AIS Class B static data (msg 24 Part B)

   Field #1: Message ID
                      Bits: 6
                      Signed: false
   Field #2: Repeat indicator
                      Bits: 2
                      Type: Lookup table
                      Signed: false
                      Lookup: 0=Initial
```

```
                         Lookup: 1=First retransmission
                         Lookup: 2=Second retransmission
                         Lookup: 3=Final retransmission
Field #3: User ID
                         Bits: 32
                         Units: MMSI
                         Type: Integer
                         Signed: false
Field #4: Type of ship
                         Bits: 8
                         Type: Lookup table
                         Signed: false
                         Lookup: 0=unavailable
                         Lookup: 20=Wing In Ground
                         Lookup: 29=Wing In Ground (no other information)
                         Lookup: 30=Fishing
                         Lookup: 31=Towing
                         Lookup: 32=Towing exceeds 200m or wider than 25m
                         Lookup: 33=Engaged in dredging or underwater operations
                         Lookup: 34=Engaged in diving operations
                         Lookup: 35=Engaged in military operations
                         Lookup: 36=Sailing
                         Lookup: 37=Pleasure
                         Lookup: 40=High speed craft
                         Lookup: 71=High speed craft carrying dangerous goods
                         Lookup: 72=High speed craft hazard cat B
                         Lookup: 73=High speed craft hazard cat C
                         Lookup: 74=High speed craft hazard cat D
                         Lookup: 79=High speed craft (no additional information)
                         Lookup: 50=Pilot vessel
                         Lookup: 51=SAR
                         Lookup: 52=Tug
                         Lookup: 53=Port tender
                         Lookup: 54=Anti-pollution
                         Lookup: 55=Law enforcement
                         Lookup: 56=Spare
                         Lookup: 57=Spare #2
                         Lookup: 58=Medical
                         Lookup: 59=RR Resolution No.18
                         Lookup: 60=Passenger ship
                         Lookup: 69=Passenger ship (no additional information)
                         Lookup: 70=Cargo ship
                         Lookup: 71=Cargo ship carrying dangerous goods
                         Lookup: 72=Cargo ship hazard cat B
                         Lookup: 73=Cargo ship hazard cat C
                         Lookup: 74=Cargo ship hazard cat D
                         Lookup: 79=Cargo ship (no additional information)
                         Lookup: 80=Tanker
                         Lookup: 81=Tanker carrying dangerous goods
                         Lookup: 82=Tanker hazard cat B
                         Lookup: 83=Tanker hazard cat C
                         Lookup: 84=Tanker hazard cat D
```

```
                    Lookup: 89=Tanker (no additional information)
                    Lookup: 90=Other
                    Lookup: 91=Other carrying dangerous goods
                    Lookup: 92=Other hazard cat B
                    Lookup: 93=Other hazard cat C
                    Lookup: 94=Other hazard cat D
                    Lookup: 99=Other (no additional information)
    Field #5: Vendor ID
                    Bits: 56
                    Type: ASCII text
                    Signed: false
    Field #6: Callsign - 0=unavailable
                    Bits: 56
                    Type: ASCII text
                    Signed: false
    Field #7: Length
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
    Field #8: Beam
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
    Field #9: Position reference from Starboard
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
    Field #10: Position reference from Bow
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
    Field #11: Mothership User ID - MMSI of mother ship sent by daughter
vessels
                    Bits: 32
                    Units: MMSI
                    Type: Integer
                    Signed: false
    Field #12: Reserved - reserved
                    Bits: 2
                    Type: Integer
                    Signed: false
    Field #13: Spare - 0=unavailable
                    Bits: 6
                    Type: Integer
                    Signed: false


PGN: 130064 - Route and WP Service - Database List
```

```
     The last 9 fields repeat until the data is exhausted.

   Field #1: Start Database ID
                  Bits: 8
                  Signed: false
   Field #2: nItems
                  Bits: 8
                  Signed: false
   Field #3: Number of Databases Available
                  Bits: 8
                  Signed: false
   Field #4: Database ID
                  Bits: 8
                  Signed: false
   Field #5: Database Name
                  Bits: 64
                  Type: ASCII text
                  Signed: false
   Field #6: Database Timestamp
                  Bits: 32
                  Type: Time
                  Signed: false
   Field #7: Database Datestamp
                  Bits: 16
                  Type: Date
                  Signed: false
   Field #8: WP Position Resolution
                  Bits: 6
                  Signed: false
   Field #9: Reserved - reserved
                  Bits: 2
                  Type: Binary data
                  Signed: false
   Field #10: Number of Routes in Database
                  Bits: 16
                  Signed: false
   Field #11: Number of WPs in Database
                  Bits: 16
                  Signed: false
   Field #12: Number of Bytes in Database
                  Bits: 16
                  Signed: false


PGN: 130065 - Route and WP Service - Route List

     The last 6 fields repeat until the data is exhausted.

   Field #1: Start Route ID
                  Bits: 8
                  Signed: false
```

```
    Field #2: nItems
                Bits: 8
                Signed: false
    Field #3: Number of Routes in Database
                Bits: 8
                Signed: false
    Field #4: Database ID
                Bits: 8
                Signed: false
    Field #5: Route ID
                Bits: 8
                Signed: false
    Field #6: Route Name
                Bits: 64
                Type: ASCII text
                Signed: false
    Field #7: Reserved - reserved
                Bits: 4
                Type: Binary data
                Signed: false
    Field #8: WP Identification Method
                Bits: 2
                Signed: false
    Field #9: Route Status
                Bits: 2
                Signed: false


PGN: 130066 - Route and WP Service - Route/WP-List Attributes

    Field #1: Database ID
                Bits: 8
                Signed: false
    Field #2: Route ID
                Bits: 8
                Signed: false
    Field #3: Route/WP-List Name
                Bits: 64
                Type: ASCII text
                Signed: false
    Field #4: Route/WP-List Timestamp
                Bits: 32
                Type: Time
                Signed: false
    Field #5: Route/WP-List Datestamp
                Bits: 16
                Type: Date
                Signed: false
    Field #6: Change at Last Timestamp
                Bits: 8
                Signed: false
    Field #7: Number of WPs in the Route/WP-List
```

```
                     Bits: 16
                     Signed: false
  Field #8: Critical supplementary parameters
                     Bits: 8
                     Signed: false
  Field #9: Navigation Method
                     Bits: 2
                     Signed: false
  Field #10: WP Identification Method
                     Bits: 2
                     Signed: false
  Field #11: Route Status
                     Bits: 2
                     Signed: false
  Field #12: XTE Limit for the Route
                     Bits: 16
                     Signed: false


PGN: 130067 - Route and WP Service - Route - WP Name & Position

    The last 4 fields repeat until the data is exhausted.

  Field #1: Start RPS#
                     Bits: 8
                     Signed: false
  Field #2: nItems
                     Bits: 8
                     Signed: false
  Field #3: Number of WPs in the Route/WP-List
                     Bits: 16
                     Signed: false
  Field #4: Database ID
                     Bits: 8
                     Signed: false
  Field #5: Route ID
                     Bits: 8
                     Signed: false
  Field #6: WP ID
                     Bits: 8
                     Signed: false
  Field #7: WP Name
                     Bits: 64
                     Type: ASCII text
                     Signed: false
  Field #8: WP Latitude
                     Bits: 32
                     Type: Latitude
                     Signed: false
  Field #9: WP Longitude
                     Bits: 32
                     Type: Longitude
```

Signed: false

PGN: 130068 - Route and WP Service - Route - WP Name

     The last 2 fields repeat until the data is exhausted.

   Field #1: Start RPS#
                   Bits: 8
                   Signed: false
   Field #2: nItems
                   Bits: 8
                   Signed: false
   Field #3: Number of WPs in the Route/WP-List
                   Bits: 16
                   Signed: false
   Field #4: Database ID
                   Bits: 8
                   Signed: false
   Field #5: Route ID
                   Bits: 8
                   Signed: false
   Field #6: WP ID
                   Bits: 8
                   Signed: false
   Field #7: WP Name
                   Bits: 64
                   Type: ASCII text
                   Signed: false

PGN: 130069 - Route and WP Service - XTE Limit & Navigation Method

     The last 6 fields repeat until the data is exhausted.

   Field #1: Start RPS#
                   Bits: 8
                   Signed: false
   Field #2: nItems
                   Bits: 8
                   Signed: false
   Field #3: Number of WPs with a specific XTE Limit or Nav. Method
                   Bits: 16
                   Signed: false
   Field #4: Database ID
                   Bits: 8
                   Signed: false
   Field #5: Route ID
                   Bits: 8
                   Signed: false
   Field #6: RPS#
                   Bits: 8

```
                       Signed: false
   Field #7: XTE limit in the leg after WP
                       Bits: 16
                       Signed: false
   Field #8: Nav. Method in the leg after WP
                       Bits: 4
                       Signed: false
   Field #9: Reserved
                       Bits: 4
                       Type: Binary data
                       Signed: false


PGN: 130070 - Route and WP Service - WP Comment

     The last 2 fields repeat until the data is exhausted.

   Field #1: Start ID
                       Bits: 8
                       Signed: false
   Field #2: nItems
                       Bits: 8
                       Signed: false
   Field #3: Number of WPs with Comments
                       Bits: 16
                       Signed: false
   Field #4: Database ID
                       Bits: 8
                       Signed: false
   Field #5: Route ID
                       Bits: 8
                       Signed: false
   Field #6: WP ID / RPS#
                       Bits: 8
                       Signed: false
   Field #7: Comment
                       Bits: 64
                       Type: ASCII text
                       Signed: false


PGN: 130071 - Route and WP Service - Route Comment

     The last 2 fields repeat until the data is exhausted.

   Field #1: Start Route ID
                       Bits: 8
                       Signed: false
   Field #2: nItems
                       Bits: 8
                       Signed: false
   Field #3: Number of Routes with Comments
```

```
                         Bits: 16
                         Signed: false
      Field #4: Database ID
                         Bits: 8
                         Signed: false
      Field #5: Route ID
                         Bits: 8
                         Signed: false
      Field #6: Comment
                         Bits: 64
                         Type: ASCII text
                         Signed: false


PGN: 130072 - Route and WP Service - Database Comment

      The last 2 fields repeat until the data is exhausted.

   Field #1: Start Database ID
                         Bits: 8
                         Signed: false
   Field #2: nItems
                         Bits: 8
                         Signed: false
   Field #3: Number of Databases with Comments
                         Bits: 16
                         Signed: false
   Field #4: Database ID
                         Bits: 8
                         Signed: false
   Field #5: Comment
                         Bits: 64
                         Type: ASCII text
                         Signed: false


PGN: 130073 - Route and WP Service - Radius of Turn

      The last 2 fields repeat until the data is exhausted.

   Field #1: Start RPS#
                         Bits: 8
                         Signed: false
   Field #2: nItems
                         Bits: 8
                         Signed: false
   Field #3: Number of WPs with a specific Radius of Turn
                         Bits: 16
                         Signed: false
   Field #4: Database ID
                         Bits: 8
                         Signed: false
```

```
   Field #5: Route ID
              Bits: 8
              Signed: false
   Field #6: RPS#
              Bits: 8
              Signed: false
   Field #7: Radius of Turn
              Bits: 16
              Signed: false


PGN: 130074 - Route and WP Service - WP List - WP Name & Position

     The last 4 fields repeat until the data is exhausted.

   Field #1: Start WP ID
              Bits: 8
              Signed: false
   Field #2: nItems
              Bits: 8
              Signed: false
   Field #3: Number of valid WPs in the WP-List
              Bits: 16
              Signed: false
   Field #4: Database ID
              Bits: 8
              Signed: false
   Field #5: Reserved - reserved
              Bits: 8
              Signed: false
   Field #6: WP ID
              Bits: 8
              Signed: false
   Field #7: WP Name
              Bits: 64
              Type: ASCII text
              Signed: false
   Field #8: WP Latitude
              Bits: 32
              Type: Latitude
              Signed: false
   Field #9: WP Longitude
              Bits: 32
              Type: Longitude
              Signed: false


PGN: 130312 - Temperature

   Field #1: SID
              Bits: 8
              Signed: false
```

```
   Field #2: Temperature Instance
               Bits: 4
               Signed: false
   Field #3: Temperature Source
               Bits: 4
               Signed: false
   Field #4: Actual Temperature
               Bits: 16
               Units: K
               Type: Temperature
               Signed: false
   Field #5: Set Temperature
               Bits: 16
               Units: K
               Type: Temperature
               Signed: false


PGN: 130313 - Humidity

   Field #1: SID
               Bits: 8
               Signed: false
   Field #2: Humidity Instance
               Bits: 4
               Signed: false
   Field #3: Humidity Source
               Bits: 4
               Signed: false
   Field #4: Actual Humidity
               Bits: 16
               Units:
               Signed: false
   Field #5: Set Humidity
               Bits: 16
               Units:
               Signed: false


PGN: 130314 - Actual Pressue

   Field #1: SID
               Bits: 8
               Signed: false
   Field #2: Pressure Instance
               Bits: 4
               Signed: false
   Field #3: Pressure Source
               Bits: 4
               Signed: false
   Field #4: Pressure
               Bits: 16
```

```
                        Units:
                        Signed: false


PGN: 130315 - Set Pressure

  Field #1: Pressure Instance
                        Bits: 4
                        Signed: false
  Field #2: Pressure Source
                        Bits: 4
                        Signed: false
  Field #3: Pressure
                        Bits: 16
                        Units:
                        Signed: false


PGN: 130322 - Current Station Data

  Field #1: Mode
                        Bits: 4
                        Signed: false
  Field #2: Reserved
                        Bits: 4
                        Type: Integer
                        Signed: false
  Field #3: Measurement Date - Days since January 1, 1970
                        Bits: 16
                        Type: Date
                        Signed: false
  Field #4: Measurement Time
                        Bits: 32
                        Type: Time
                        Signed: false
  Field #5: Station Latitude
                        Bits: 32
                        Type: Latitude
                        Signed: false
  Field #6: Station Longitude
                        Bits: 32
                        Type: Longitude
                        Signed: false
  Field #7: Measurement Depth - Depth below transducer
                        Bits: 32
                        Units: m
                        Resolution: 0.01
                        Signed: false
  Field #8: Current speed
                        Bits: 16
                        Units: m/s
                        Resolution: 0.01
```

```
                    Signed: false
   Field #9: Current flow direction
                    Bits: 16
                    Units: Radians
                    Type: Angle
                    Resolution: 0.001
                    Signed: false
   Field #10: Water Temperature
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false
   Field #11: Station ID
                    Bits: 16
                    Type: String with start/stop byte
                    Signed: false
   Field #12: Station Name
                    Bits: 16
                    Type: String with start/stop byte
                    Signed: false


PGN: 130323 - Meteorological Station Data

   Field #1: Mode
                    Bits: 4
                    Signed: false
   Field #2: Reserved
                    Bits: 4
                    Type: Integer
                    Signed: false
   Field #3: Measurement Date - Days since January 1, 1970
                    Bits: 16
                    Type: Date
                    Signed: false
   Field #4: Measurement Time
                    Bits: 32
                    Type: Time
                    Signed: false
   Field #5: Station Latitude
                    Bits: 32
                    Type: Latitude
                    Signed: false
   Field #6: Station Longitude
                    Bits: 32
                    Type: Longitude
                    Signed: false
   Field #7: Wind Speed
                    Bits: 16
                    Units: m/s
                    Resolution: 0.01
                    Signed: false
```

```
Field #8: Wind Direction
             Bits: 16
             Units: Radians
             Type: Angle
             Resolution: 0.001
             Signed: false
Field #9: Wind Reference
             Bits: 3
             Type: Lookup table
             Signed: false
             Lookup: 0=True (referenced to North)
             Lookup: 1=Magnetic
             Lookup: 2=Apparent
             Lookup: 3=True (boat referenced)
Field #10: Reserved - reserved
             Bits: 5
             Units:
             Type: Integer
             Signed: false
Field #11: Wind Gusts
             Bits: 16
             Units: m/s
             Resolution: 0.01
             Signed: false
Field #12: Atmospheric Pressure
             Bits: 16
             Units: hPa
             Signed: false
Field #13: Ambient Temperature
             Bits: 16
             Units: K
             Type: Temperature
             Signed: false
Field #14: Station ID
             Bits: 16
             Type: String with start/stop byte
             Signed: false
Field #15: Station Name
             Bits: 16
             Type: String with start/stop byte
             Signed: false


PGN: 130324 - Moored Buoy Station Data

Field #1: Mode
             Bits: 4
             Signed: false
Field #2: Reserved
             Bits: 4
             Type: Integer
             Signed: false
```

```
Field #3: Measurement Date - Days since January 1, 1970
                Bits: 16
                Type: Date
                Signed: false
Field #4: Measurement Time
                Bits: 32
                Type: Time
                Signed: false
Field #5: Station Latitude
                Bits: 32
                Type: Latitude
                Signed: false
Field #6: Station Longitude
                Bits: 32
                Type: Longitude
                Signed: false
Field #7: Wind Speed
                Bits: 16
                Units: m/s
                Resolution: 0.01
                Signed: false
Field #8: Wind Direction
                Bits: 16
                Units: Radians
                Type: Angle
                Resolution: 0.001
                Signed: false
Field #9: Wind Reference
                Bits: 3
                Type: Lookup table
                Signed: false
                Lookup: 0=True (referenced to North)
                Lookup: 1=Magnetic
                Lookup: 2=Apparent
                Lookup: 3=True (boat referenced)
Field #10: Reserved - reserved
                Bits: 5
                Units:
                Type: Integer
                Signed: false
Field #11: Wind Gusts
                Bits: 16
                Units: m/s
                Resolution: 0.01
                Signed: false
Field #12: Wave Height
                Bits: 16
                Signed: false
Field #13: Dominant Wave Period
                Bits: 16
                Signed: false
Field #14: Atmospheric Pressure
```

```
                            Bits: 16
                            Units: hPa
                            Signed: false
       Field #15: Pressure Tendency Rate
                            Bits: 16
                            Units:
                            Signed: false
       Field #16: Air Temperature
                            Bits: 16
                            Units: K
                            Type: Temperature
                            Signed: false
       Field #17: Water Temperature
                            Bits: 16
                            Units: K
                            Type: Temperature
                            Signed: false
       Field #18: Station ID
                            Bits: 64
                            Type: ASCII text
                            Signed: false


 PGN: 130816 - Simrad: Text Message

    Field #1: Manufacturer Code
                            Bits: 11
                            Type: Manufacturer code
                            Signed: false
    Field #2: Industry Code
                            Bits: 5
                            Type: Lookup table
                            Signed: false
                            Lookup: 19=Marine
    Field #3: Product Code
                            Bits: 16
                            Type: Integer
                            Signed: false
    Field #4: A
                            Bits: 8
                            Signed: false
    Field #5: B
                            Bits: 8
                            Signed: false
    Field #6: C
                            Bits: 8
                            Signed: false
    Field #7: D
                            Bits: 8
                            Signed: false
    Field #8: SID
                            Bits: 8
```

```
                    Signed: false
    Field #9: Prio
                    Bits: 8
                    Signed: false
    Field #10: Text
                    Bits: 256
                    Type: ASCII text
                    Signed: false


  PGN: 130817 - Lowrance: Product Information

    Field #1: Manufacturer Code
                    Bits: 11
                    Type: Manufacturer code
                    Signed: false
    Field #2: Industry Code
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 19=Marine
    Field #3: Product Code
                    Bits: 16
                    Type: Integer
                    Signed: false
    Field #4: Model
                    Bits: 256
                    Type: ASCII text
                    Signed: false
    Field #5: A
                    Bits: 8
                    Signed: false
    Field #6: B
                    Bits: 8
                    Signed: false
    Field #7: C
                    Bits: 8
                    Signed: false
    Field #8: Firmware version
                    Bits: 80
                    Type: ASCII text
                    Signed: false
    Field #9: Firmware date
                    Bits: 256
                    Type: ASCII text
                    Signed: false
    Field #10: Firmware time
                    Bits: 256
                    Type: ASCII text
                    Signed: false
```

```
PGN: 130836 - Simnet: Configure

   Field #1: Manufacturer Code
                  Bits: 11
                  Type: Manufacturer code
                  Signed: false
   Field #2: Industry Code
                  Bits: 5
                  Type: Lookup table
                  Signed: false
                  Lookup: 19=Marine
   Field #3: C
                  Bits: 8
                  Signed: false
   Field #4: Device
                  Bits: 8
                  Type: Integer
                  Signed: false
   Field #5: Instance
                  Bits: 8
                  Signed: false
   Field #6: F
                  Bits: 4
                  Signed: false
   Field #7: Tank type
                  Bits: 4
                  Type: Lookup table
                  Signed: false
                  Lookup: 0=Fuel
                  Lookup: 1=Water
                  Lookup: 2=Gray water
                  Lookup: 3=Live well
                  Lookup: 4=Oil
                  Lookup: 5=Black water
   Field #8: Capacity
                  Bits: 32
                  Resolution: 0.1
                  Signed: false
   Field #9: G
                  Bits: 8
                  Signed: false
   Field #10: H
                  Bits: 16
                  Signed: true
   Field #11: I
                  Bits: 8
                  Signed: true


PGN: 130842 - Simnet: AIS Class B static data (msg 24 Part A)

   Field #1: Manufacturer Code
```

```
                    Bits: 11
                    Type: Manufacturer code
                    Signed: false
    Field #2: Industry Code
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 19=Marine
    Field #3: Message ID
                    Bits: 6
                    Signed: false
    Field #4: Repeat indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
                    Lookup: 1=First retransmission
                    Lookup: 2=Second retransmission
                    Lookup: 3=Final retransmission
    Field #5: D
                    Bits: 8
                    Signed: false
    Field #6: E
                    Bits: 8
                    Signed: false
    Field #7: User ID
                    Bits: 32
                    Units: MMSI
                    Type: Integer
                    Signed: false
    Field #8: Name
                    Bits: 160
                    Type: ASCII text
                    Signed: false


PGN: 130842 - Simnet: AIS Class B static data (msg 24 Part B)

    Field #1: Manufacturer Code
                    Bits: 11
                    Type: Manufacturer code
                    Signed: false
    Field #2: Industry Code
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 19=Marine
    Field #3: Message ID
                    Bits: 6
                    Signed: false
    Field #4: Repeat indicator
                    Bits: 2
```

```
                     Type: Lookup table
                     Signed: false
                     Lookup: 0=Initial
                     Lookup: 1=First retransmission
                     Lookup: 2=Second retransmission
                     Lookup: 3=Final retransmission
Field #5: D
                     Bits: 8
                     Signed: false
Field #6: E
                     Bits: 8
                     Signed: false
Field #7: User ID
                     Bits: 32
                     Units: MMSI
                     Type: Integer
                     Signed: false
Field #8: Type of ship
                     Bits: 8
                     Type: Lookup table
                     Signed: false
                     Lookup: 0=unavailable
                     Lookup: 20=Wing In Ground
                     Lookup: 29=Wing In Ground (no other information)
                     Lookup: 30=Fishing
                     Lookup: 31=Towing
                     Lookup: 32=Towing exceeds 200m or wider than 25m
                     Lookup: 33=Engaged in dredging or underwater operations
                     Lookup: 34=Engaged in diving operations
                     Lookup: 35=Engaged in military operations
                     Lookup: 36=Sailing
                     Lookup: 37=Pleasure
                     Lookup: 40=High speed craft
                     Lookup: 71=High speed craft carrying dangerous goods
                     Lookup: 72=High speed craft hazard cat B
                     Lookup: 73=High speed craft hazard cat C
                     Lookup: 74=High speed craft hazard cat D
                     Lookup: 79=High speed craft (no additional information)
                     Lookup: 50=Pilot vessel
                     Lookup: 51=SAR
                     Lookup: 52=Tug
                     Lookup: 53=Port tender
                     Lookup: 54=Anti-pollution
                     Lookup: 55=Law enforcement
                     Lookup: 56=Spare
                     Lookup: 57=Spare #2
                     Lookup: 58=Medical
                     Lookup: 59=RR Resolution No.18
                     Lookup: 60=Passenger ship
                     Lookup: 69=Passenger ship (no additional information)
                     Lookup: 70=Cargo ship
                     Lookup: 71=Cargo ship carrying dangerous goods
```

```
                    Lookup: 72=Cargo ship hazard cat B
                    Lookup: 73=Cargo ship hazard cat C
                    Lookup: 74=Cargo ship hazard cat D
                    Lookup: 79=Cargo ship (no additional information)
                    Lookup: 80=Tanker
                    Lookup: 81=Tanker carrying dangerous goods
                    Lookup: 82=Tanker hazard cat B
                    Lookup: 83=Tanker hazard cat C
                    Lookup: 84=Tanker hazard cat D
                    Lookup: 89=Tanker (no additional information)
                    Lookup: 90=Other
                    Lookup: 91=Other carrying dangerous goods
                    Lookup: 92=Other hazard cat B
                    Lookup: 93=Other hazard cat C
                    Lookup: 94=Other hazard cat D
                    Lookup: 99=Other (no additional information)
Field #9: Vendor ID
                    Bits: 56
                    Type: ASCII text
                    Signed: false
Field #10: Callsign - 0=unavailable
                    Bits: 56
                    Type: ASCII text
                    Signed: false
Field #11: Length
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
Field #12: Beam
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
Field #13: Position reference from Starboard
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
Field #14: Position reference from Bow
                    Bits: 16
                    Units: m
                    Resolution: 0.1
                    Signed: false
Field #15: Mothership User ID - Id of mother ship sent by daughter vessels
                    Bits: 32
                    Units: MMSI
                    Type: Integer
                    Signed: false
Field #16:
                    Bits: 2
                    Signed: false
```

```
    Field #17: Spare - 0=unavailable
                    Bits: 6
                    Type: Integer
                    Signed: false



PGN: 130845 - Simnet: Command 130845

  Field #1: Manufacturer Code
                    Bits: 11
                    Type: Manufacturer code
                    Signed: false
  Field #2: Industry Code
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 19=Marine
  Field #3: Message ID
                    Bits: 6
                    Signed: false
  Field #4: Repeat indicator
                    Bits: 2
                    Type: Lookup table
                    Signed: false
                    Lookup: 0=Initial
                    Lookup: 1=First retransmission
                    Lookup: 2=Second retransmission
                    Lookup: 3=Final retransmission
  Field #5: D
                    Bits: 8
                    Signed: false
  Field #6: Group
                    Bits: 8
                    Signed: false
  Field #7: F
                    Bits: 8
                    Signed: false
  Field #8: G
                    Bits: 8
                    Signed: false
  Field #9: H
                    Bits: 8
                    Signed: false
  Field #10: I
                    Bits: 8
                    Signed: false
  Field #11: J
                    Bits: 8
                    Signed: false
  Field #12: Backlight
                    Bits: 8
                    Type: Lookup table
```

```
                    Signed: false
                    Lookup: 1=Day Mode
                    Lookup: 4=Night Mode
                    Lookup: 11=Level 1
                    Lookup: 22=Level 2
                    Lookup: 33=Level 3
                    Lookup: 44=Level 4
                    Lookup: 55=Level 5
                    Lookup: 66=Level 6
                    Lookup: 77=Level 7
                    Lookup: 88=Level 8
                    Lookup: 99=Level 9
   Field #13: L
                    Bits: 16
                    Signed: false


PGN: 130880 - Airmar: Additional Weather Data

   Field #1: Manufacturer Code
                    Bits: 11
                    Type: Manufacturer code
                    Signed: false
   Field #2: Industry Code
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 19=Marine
   Field #3: C
                    Bits: 8
                    Signed: false
   Field #4: Apparent Windchill Temperature
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false
   Field #5: True Windchill Temperature
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false
   Field #6: Dewpoint
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false


PGN: 130881 - Airmar: Heater Control

   Field #1: Manufacturer Code
                    Bits: 11
```

```
                    Type: Manufacturer code
                    Signed: false
    Field #2: Industry Code
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 19=Marine
    Field #3: C
                    Bits: 8
                    Signed: false
    Field #4: Plate Temperature
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false
    Field #5: Air Temperature
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false
    Field #6: Dewpoint
                    Bits: 16
                    Units: K
                    Type: Temperature
                    Signed: false


PGN: 130944 - Airmar: POST

    Field #1: Manufacturer Code
                    Bits: 11
                    Type: Manufacturer code
                    Signed: false
    Field #2: Industry Code
                    Bits: 5
                    Type: Lookup table
                    Signed: false
                    Lookup: 19=Marine
```