## Standard dive “F” message

<table>
<thead>
<tr>
<th>Char</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ID: engineering message identifier ‘F’</td>
</tr>
<tr>
<td>2-4</td>
<td>P1: Pressure counts before the start of ascent</td>
</tr>
<tr>
<td>5-8</td>
<td>T1: Temperature counts at same time as P1</td>
</tr>
<tr>
<td>9-12</td>
<td>S1: Salinity counts at same time as P1</td>
</tr>
<tr>
<td>13-36</td>
<td>P,T,S pairs 5 seconds and 10 seconds after P1.</td>
</tr>
<tr>
<td>39-41</td>
<td>ATE: Air pressure inside float at the end of the previous cycles surface interval (mmHG)</td>
</tr>
<tr>
<td>42-44</td>
<td>ATS: Air pressure inside float at the start of the current cycles surface interval (mmHG)</td>
</tr>
<tr>
<td>45-47</td>
<td>PFS: Pressure counts at start of the SOLO fall time</td>
</tr>
<tr>
<td>48-50</td>
<td>PFE: Pressure counts at the end of the SOLO fall time</td>
</tr>
<tr>
<td>51-53</td>
<td>PRE: Pressure counts at the end of the SOLO rise time.</td>
</tr>
<tr>
<td>54-56</td>
<td>TSK *2: seconds that piston ran during first settling (SEEK) cycle.</td>
</tr>
<tr>
<td>57-59</td>
<td>PSK: (signed) dbar change in 1st settling cycle (SEEK)</td>
</tr>
<tr>
<td>60-62</td>
<td>TIP *2: seconds to run piston UP to get to SEEK depth.</td>
</tr>
<tr>
<td>63</td>
<td>BST 4-bit status of miscellaneous operations</td>
</tr>
</tbody>
</table>

## Other Technical information found in other SOLO messages

<table>
<thead>
<tr>
<th>Msg/Char</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 / 2-4</td>
<td>Pavg1: Average pressure counts over first half of drift – Trajectory Information</td>
</tr>
<tr>
<td>0 / 5-6</td>
<td>Tavg2: 8 LSB of Average temperature over second half of drift – Trajectory Information</td>
</tr>
<tr>
<td>0 / 7-8</td>
<td>Vcpu: CPU battery voltage counts (V), on surface at start of Xmit after data processed</td>
</tr>
<tr>
<td>1 / 2-4</td>
<td>Tavg1: Average temperature counts over first half of drift – Trajectory Information</td>
</tr>
<tr>
<td>1 / 5-6</td>
<td>Pavg2: 8 LSB of average pressure over second half of drift – Trajectory Information</td>
</tr>
<tr>
<td>1 / 7-8</td>
<td>Vpmp: Pump battery counts at surface (V)</td>
</tr>
<tr>
<td>2 / 2-4</td>
<td>Sprss: Average surface pressure at the surface from last cycle</td>
</tr>
<tr>
<td>2 / 5-8</td>
<td>Savg1: Average salinity counts over first half of drift – Trajectory Information</td>
</tr>
<tr>
<td>3 / 2</td>
<td>Err: 4-bit error code. signifying a spurious interrupt, stack overflow or spurious reset.</td>
</tr>
<tr>
<td>3 / 3-4</td>
<td>Imin: Minimum depth bin with valid data according to the float</td>
</tr>
<tr>
<td>3 / 5-6</td>
<td>Bmax: Maximum depth bin with valid data according to the float</td>
</tr>
</tbody>
</table>
**IDG Manual Errors which this document attempts to fix.**

The IDG manual SBE520-522 states P1, T1, and S1 are taken at the start of ascent. This is incorrect. The values are recorded at the end of Park.

The IDG manual SBE520-522 does not indicate that in the determination of T1, S1, T2, S2, T3, and S3 the counts must be divided by 4 before converting to the standard units.

The manual states that Savg2 is computed by adding the MSB from Savg1 and the LSB from Savg2. This is incorrect. Instead in message 4 chars 7-8, DS is stored, which is the signed 8 LSB of Savg2-Savg1. This has been added this to the table above.

**Important Note:** In ROM version SBE520 09Jun00, there was an error in the coding that resulted in Savg1, DS, Pavg1, Pavg2, Tavg1, and Tavg2 not being returned by the float. There was also an error in the coding for Imin. In SBE5.20 09Jun00 Imin=0 if the first bin is filled, thus Imin=Imin+1 should be applied.
Argo program measurement codes (MC)
SOLO floats return the following Measurements and no other. However, enough spots in the Measurements array must be reserved for possible DMQC modification.

<table>
<thead>
<tr>
<th>Code (timing)</th>
<th>SOLO I Variable</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Cy 0</td>
<td>Deployment (Metafile)</td>
<td>Time,position</td>
</tr>
<tr>
<td>150</td>
<td>Cy&gt;0: Eng “F”</td>
<td>PFE: Pressure taken at end of SOLO fall time (Eng “F”, bytes 48-50)</td>
<td>P(0.5db)</td>
</tr>
<tr>
<td>296</td>
<td>Cy&gt;0: Msg 0,1</td>
<td>Drift broken into two averaged halves. Stored in Msg 0,1 Bytes 2-6; Time is fill value.</td>
<td>P(0.5db), T(0.001°C), S(0.001psu)</td>
</tr>
<tr>
<td>300</td>
<td>Cy&gt;0: Eng “F”</td>
<td>P,T,S triplet taken at end of drift (Eng “F”, bytes 3-14)</td>
<td>P(0.5db); P(0.04db), T(0.001°C), S(0.001psu)</td>
</tr>
<tr>
<td>600</td>
<td>Cy&gt;0: Eng “F”</td>
<td>PRE: Pressure taken at end of SOLO rise time (Eng “F”, bytes 51-53)</td>
<td>P(0.5db)</td>
</tr>
<tr>
<td>702, 704</td>
<td>ARGOS messages</td>
<td>Time of first/last ARGOS messages received</td>
<td></td>
</tr>
<tr>
<td>703</td>
<td>ARGOS positions</td>
<td>ARGOS positions received</td>
<td></td>
</tr>
</tbody>
</table>

SOLO floats return the previous Measurements and no other. Enough spots in the Measurements array must be reserved for DMQC modification.

For Cycle 0:
100(fillvalue),200(fillvalue),500(fillvalue),600(fillvalue),700(fillvalue),800(fillvalue)

For Cycle>0:
100(fillvalue),200(fillvalue),150(fillvalue),250(fillvalue),296,296,300(fillvalue),400(fillvalue),500(fillvalue),600(fillvalue),700(fillvalue),800(fillvalue)