Argo program IDG SOLO Engineering Table **SOLO V0.2** **Last updated December 18th, 2013 Adapted from SBE Rev 1.1 20 November, 2000** **John Gilson**	
	Standard dive "F" message
Char	**Contents**
1	ID: engineering message identifier 'F'
2-4	P1: Pressure counts before the start of ascent
5-8	T1: Temperature counts at same time as P1
9-12	S1: Salinity counts at same time as P1
13-36	P,T,S pairs 5 seconds and 10 seconds after P1.
39-41	ATE: Air pressure inside float at the end of the previous cycles surface interval (mmHG)
42-44	ATS: Air pressure inside float at the start of the current cycles surface interval (mmHG)
45-47	PFS: Pressure counts at start of the SOLO fall time ARGO TECHNICAL NAME: PRES_DescentToParkMinPressure_dbar
48-50	PFE: Pressure counts at the end of the SOLO fall time
51-53	PRE: Pressure counts at the end of the SOLO rise time.
54-56	TSK *2: seconds that piston ran during first settling (SEEK) cycle. ARGO TECHNICAL NAME: TIME_PistonRanDuringFirstSeek_seconds
57-59	PSK: (signed) dbar change in 1st settling cycle (SEEK) ARGO TECHNICAL NAME: PRESSURE_ChangeInFirstSeek_dbar
60-62	TIP *2 : seconds to run piston UP to get to SEEK depth. ARGO TECHNICAL NAME:TIME_PistonRanDuring DescentFrom100db_seconds
63	BST 4-bit status of miscellaneous operations
	Other Technical information found in other SOLO messages
Msg/Char	**Contents**
0 / 2-4	Pavg1: Average pressure counts over first half of drift – Trajectory Information
0 / 5-6	Tavg2: 8 LSB of Average temperature over second half of drift – Trajectory Information
0 / 7-8	Vcpu: CPU battery voltage counts (V), on surface at start of Xmit after data processed ARGO TECHNICAL NAME: VOLTAGE_BatteryCPUStartXmit_volts
1 / 2-4	Tavg1: Average temperature counts over first half of drift – Trajectory Information
1 / 5-6	Pavg2: 8 LSB of average pressure over second half of drift – Trajectory Information
1 / 7-8	Vpmp: Pump battery counts at surface (V) VOLTAGE_BatterySurfaceNoLoad_volts
2 / 2-4	Sprss: Average surface pressure at the surface from last cycle ARGO TECHNICAL NAME: PRES_SurfaceOffsetNotTruncated_dbar
2 / 5-8	Savg1: Average salinity counts over first half of drift – Trajectory Information
3 / 2	Err: 4-bit error code. signifying a spurious interrupt, stack overflow or spurious reset.
3 / 3-4	Imin: Minimum depth bin with valid data according to the float In TS02: If the first bin is filled, Imin=1; ARGO TECHNICAL NAME: NUMBER_MinimumDepthBinWithValidData_COUNT
3 / 5-6	Bmax: Maximum depth bin with valid data according to the float

	In TS02: The number of good bins are stored in Bmax; Thus Bmax=Bmax+(Imin+1) ARGO TECHNICAL NAME: NUMBER_MaximumDepthBinWithValidData_COUNT
4 / 7-8	DS : signed 8 LSB of Savg2 -Savg1 – Trajectory Information

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.

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

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)