Argo program IDG SOLOII Engineering Table Manual/Decoder Version 0.2 Last updated Dec 18th, 2013 Adapted from SOLO2_Xformat_v0.2_26Oct10 John Gilson Applicable ROMS: 01Oct10

	ID=0xe0, Engineering message in first diagnostic dive at start of mission				
Byte	Contents				
0	ID/Mission phase = 0xe0				
1-2	Number of bytes= $76 = 0x4C$				
3-4	empty				
5-6	empty				
7-8	empty				
9-10	empty				
11-12	empty				
13-14	DP->Vcpu: CPU battery voltage counts (0.01V), on surface at start of Xmit after data processed ARGO TECHNICAL NAME: VOLTAGE_BatteryCPUStartXmit_volts				
15-16	DP->Vpmp: Pump battery counts at surface (0.01V) ARGO TECHNICAL NAME: VOLTAGE_BatterySurfaceNoLoad_volts				
17-18	DP->Vple: Pump battery counts at end of last pump on ascent (0.01V) ARGO TECHNICAL NAME: VOLTAGE_BatteryPumpLastValueAsAscends_volts				
19-20	Btvac: Built-in-Test vacuum at startup (0.01 inHg)				
21-22	DP->Air[1]: Pressure case vacuum before filling bladder on surface (0.01 inHg) ARGO TECHNICAL NAME: PRESSURE_InternalVacuumAtStartSurface_inHg				
23-24	DP->Air[2]: Pressure case vacuum after filing bladder on surface (0.01 inHg) ARGO TECHNICAL NAME: PRESSURE_InternalVacuumOilBladderFull_inHg				
25-26	DP->ISRID: i.d. of last interrupt				
27-28	DP->HPavgl: Average pump motor current taken at start of ascent (LSB=1ma) ARGO TECHNICAL NAME: CURRENT_BatteryAvgPumpOnStartAscent_mA				
29-30	DP->HPmaxl: Maximum pump motor current taken at start of ascent (LSB=1ma) ARGO TECHNICAL NAME: CURRENT_BatteryMaxPumpOnStartAscent_mA				
31-32	Total seconds pumping to get to the surface				
33-34	seconds pumped at the surface				
35-36	DP->P[5]: Surface pressure counts at end of ascent (LSB = 0.04 dbar)				
37-38	SPRX: Surface pressure before resetoffset (pertains to previous dive) (dbar) ARGO TECHNICAL NAME: PRES_SurfaceOffsetBeforeReset_dbar orReset_4mBarResolution_dbar				
39-40	SPRXL: Surface pressure after resetoffset (pertains to previous dive (dbar) ARGO TECHNICAL NAME: PRES_SurfaceOffsetAfterReset_dbar orReset_4mBarResolution_dbar				
41-42	diagP[0]: Pressure when "in water" sensed by float after deployment Argo MEASUREMENT_CODE=199				
43-44	diagT[0]: Temperature when "in water" sensed by float after deployment Argo MEASUREMENT_CODE=199				
45-46	diagS[0]: Salinity when "in water" sensed by float after deployment Argo MEASUREMENT_CODE=199				

47-48	Snnscan: # scans recorded by SBD (1 Hz): // -1 (0xFFFF) indicates unable to get scan count from SBE // -2 (0xFFFE) indicates SBE never started so SBE didn't reset scan count before returning an old value ARGO TECHNICAL NAME: TIME_ToAscend_seconds				
49-50	Compacted Sbntry, Sbstrt, Sbstop status (see misspec.h) ((DP->SBntry&0xF) ((DP->SBstrt&0x3)<<2) DP->SBstop&0x3))				
51-52	diagP[1]: Shallowest CTD Pressure reading upon ascent Argo MEASUREMENT_CODE=599				
53-54	diagT[1]: Shallowest CTD Temperature reading upon ascent Argo MEASUREMENT_CODE=599				
55-56	diagS[1]: Shallowest CTD Salinity reading upon ascent Argo MEASUREMENT_CODE=599				
57-58	Btvac: Built-in-Test vacuum at startup (0.01 inHg)				
59-60	BTavgl Built-in-Test motor current OUT at startup (LSB = 1ma)				
61-62	BTVple: Built-in-Test pump battery at startup (0.01V)				
63-64	BTVcpu: Built-in-Test CPU battery at startup (0.01V)				
65-66	Exception Flags (see 0xe2 message below)				
67	Vent (air bubble) data: # 0.1 seconds vent motor ran				
68	Vent (air bubble) data: LLD status before and after vent ran				
69-74	empty				
75	; terminator				

	ID=0xE2, Engineering message in normal dive cycle				
Byte	Contents				
0	ID/Mission phase = 0xe2				
1-2	Number of bytes= 88 = 0x58				
3-4	#packets in previous surface session				
5-6	#tries to connect in previous surface session				
7-8	parse_X_reply status in previous surface session				
9-10	ATSBD return status in previous surface session				
11-12	EP->sattime: seconds taken in previous surface session to send all SBD messages				
13-14	DP->Vcpu: CPU battery voltage counts (0.01V), on surface at start of Xmit after data processed ARGO TECHNICAL NAME: VOLTAGE_BatteryCPUStartXmit_volts				
15-16	DP->Vpmp: Pump battery counts at surface (0.01V) ARGO TECHNICAL NAME: VOLTAGE_BatterySurfaceNoLoad_volts				
17-18	DP->Vple: Pump battery counts at end of last pump on ascent (0.01V) ARGO TECHNICAL NAME: VOLTAGE_BatteryPumpLastValueAsAscends_volts				
19-20	DP->Air[0]: Pressure case vacuum during sinking at 50db (0.01 inHg) ARGO TECHNICAL NAME: PRESSURE_InternalVacuumDuringDescent50dbar_inHg				
21-22	DP->Air[1]: Pressure case vacuum before filling bladder on surface (0.01 inHg) ARGO TECHNICAL NAME: PRESSURE_InternalVacuumAtStartSurface_inHg				
23-24	DP->Air[2]: Pressure case vacuum after filing bladder on surface (0.01 inHg) ARGO TECHNICAL NAME: PRESSURE_InternalVacuumOilBladderFull_inHg				
25-26	DP->ISRID: i.d. of last interupt				
27-28	DP->HPavgl: Average pump motor current taken at start of ascent (LSB=1ma) ARGO TECHNICAL NAME: CURRENT_BatteryAvgPumpOnStartAscent_mA				
29-30	DP->HPmaxl: Maximum pump motor current taken at start of ascent (LSB=1ma) ARGO TECHNICAL NAME: CURRENT_BatteryMaxPumpOnStartAscent_mA				
31-32	Total seconds pumping to get to the surface				
33-34	seconds pumped at the surface				
35-36	SPRX: Surface pressure before resetoffset (pertains to previous dive) (dbar) ARGO TECHNICAL NAME: PRES_SurfaceOffsetBeforeReset_dbar orReset_4mBarResolution_dbar				
37-38	SPRXL: Surface pressure after resetoffset (pertains to previous dive (dbar) ARGO TECHNICAL NAME: PRES_SurfaceOffsetAfterReset_dbar orReset_4mBarResolution_dbar				
39-40	diagP[0]: Pressure at the start of ascent Argo MEASUREMENT_CODE=499				
41-42	diagT[0]: Temperature at diagP[0] Argo MEASUREMENT_CODE=499				
43-44	diagS[0]: Salinity at diagP[0] Argo MEASUREMENT_CODE=499				
45-46	Snnscan: # scans recorded by SBD (1 Hz): // -1 (0xFFFF) indicates unable to get scan count from SBE // -2 (0xFFFE) indicates SBE never started so SBE didn't reset scan count before returning an old value ARGO TECHNICAL NAME: TIME_ToAscend_seconds				
47-48	Compacted Sbntry, Sbstrt, Sbstop status (see misspec.h) ((DP->SBntry&0xF) ((DP->SBstrt&0x3)<<2) DP->SBstop&0x3))				

49-50	DP->P[0]: Pressure counts before begin of descent to park (LSB = 0.04 dbar)				
51-52	DP->P[1]: Pressure counts at end of descent to park (LSB = 0.04 dbar)				
53-54	DP->P[2]: Pressure counts at beginning of drift (park) (LSB = 0.04 dbar)				
55-56	DP->P[3]: Pressure counts at end of drift (park) (LSB = 0.04 dbar)				
57-58	DP->P[5]: Surface pressure counts at end of ascent (LSB = 0.04 dbar)				
59-60	DP->PAVG[0]: Average pressure over first half of drift Argo MEASUREMENT_CODE=296				
61-62	DP->TAVG[0]: Average temperature over first half of drift Argo MEASUREMENT_CODE=296				
63-64	DP->SAVG[0]: Average salinity over first half of drift Argo MEASUREMENT_CODE=296				
65-66	DP->PAVG[1]: Average pressure over second half of drift Argo MEASUREMENT_CODE=296				
67-68	DP->TAVG[1]: Average temperature over second half of drift Argo MEASUREMENT_CODE=296				
69-70	DP->SAVG[1]: Average salinity over second half of drift Argo MEASUREMENT_CODE=296				
71-72	DP-> fall_time = seconds from open air valve (surface) to end of sink ~ 100dbar				
73-74	DP-> fall_rate = avg mm/sec while sinking during fall_time to ~100dbar				
75-76	DP->SeekT= tenths of pumping in first seek of drift ARGO TECHNICAL NAME: TIME_PistonRanDuringFirstSeek_seconds				
77-78	DP->SeekP = change of depth (signed 0.1dbar) in first seek ARGO TECHNICAL NAME: PRESSURE_ChangeInFirstSeek_dbar SEEKP is incorrectly stored: This value times 25/4 gives approximate. Or use P[2]-P[1];				
79-80	Exception flags (can be added to) 0x0001 Valve failed to open 0x0002 Valve failed to close 0x0004 Questionable pressure 0x0008 Antenna was toggled 0x0010 Antenna switch failure (no satellites even after toggling) 0x0020 GPS communication error (can talk to GPS unit) 0x0080 Float took too long to leave the surface (toggled valve) 0x1000 Valve failure during sinking phase 0x2000 Valve failure during ascend phase of mission				
81	Vent (air bubble) data: # 0.1 seconds vent motor ran				
82	Vent (air bubble) data: LLD status before and after vent ran				
83-84	SBE P offset (times 800): Cumulative auto-pressure offset correction ARGO TECHNICAL NAME: PRES_SensorAutoAdjustment_dbar				
85-86	Number of Packets sent this cycle				
87	; terminator				

	ID=0xe3, Engineering message following mission abort					
Byte	Contents					
0	ID/Mission phase = 0xe3					
1-2	Number of bytes= 30 = 0x1e					
3-4	#packets in previous surface session					
5-6	#tries to connect in previous surface session					
7-8	parse_X_reply status in previous surface session					
9-10	ATSBD return status in last surface session					
11-12	seconds taken in sending last SBD message					
13-14	current CPU battery voltage Counts (0.01V)					
15-16	current pump battery counts (0.01V)					
17-18	DP->Air[1]: pressure case vacuum at beginning of abort (0.01inHg)					
19-20	DP->Air[0]: pressure case vacuum at end of last xmit (previous cycle) (0.01inHg)					
23-24	DP->ISRID: i.d. of last interrupt					
25-26	 AbrtCd = code for what caused abort mission 0 = no error 1 = current time is later than RTCabort 2 = unable to WakeOST 3 = unable to Send dive number to SOLOII (LodiveNo) 4 = Iridium ground station commanded to go to abort 5 = Final dive was completed. Mission is done. 6 = Diagnostic dive ailed to get GPS fix, pressure never > dbarGo, or unable to send message to Iridiur 7 = pressure sensor failure 					
29	; terminator					