

Before the start of a deployment, an initial configuration file ('.cf0') is created by 'make_config0.exe' using the EEPROM download file for the initial settings. This file is then transferred to the UNIX ground station, where a copy is updated throughout the deployment with the current configuration (file extension = '.cfg').

List of line types (defined by the initial characters in the line):

comment line.

MD <E_Name> <Description> : MD = mission description line
 E_Name = 8-char experiment name.
 Description = unique description for this Spray.

The MD line is used to describe the Spray when the user goes to queue a shore command. This helps ensure that the user is sending the command to the correct serial number.

V : Vehicle Information

VN <s/n> <nsensor> <CTD_Type> <EEPROM_Ver>
 <s/n> is the Spray serial number.
 <nsensor> # of sensors returned, normally 4 (P, T, C, O).
 <CTD_Type> =1 for PME conductivity cell (obsolete 2004).
 =2 for SBE CTD
 <EEPROM_Ver>= YYMM = Year and Month of EEPROM code version,
 i.e, 0608, 0610, 0612.

VO <string>: <string> = FLUOR for fluorometer, OBS for optical backscatter.

VA <ptt_id> = Argos PTT ID.

C : sensor calibration coefficients; one line for each sensor (Oct2006 added Doppler).

C<s><n><f> <arg>
 <s> = sensor tag character = P, T, S, O, D (D=Doppler)
 <n> = sensor ID code, range = 1..f (0 is reserved for GPS).
 This is sent by the Spray, with 1=P, 2=T, 3=S, 4=O, 5=D;
 it allows matching the ID code to the sensor character.
 <f> = calibration format type:
 if f=2, it is a linear fit, and <arg> = offset, gain. $y = \text{offset} + x * \text{gain}$.
 if f=4, then it is Optical with 4 variables: voff, vgain, hgain, scigain
 $\text{volts} = \text{voff} + x * \text{vgain}$
 $\text{sci_units} = \text{volts} * \text{scigain}$ (either FTU or micro-gram per liter).
 hgain = hardware gain for Seapoint optical sensors.

CD58 b1 b2 : Doppler Backscatter information.

b1, b2 = first and last bins used for backscatter averaging.

For Oct2006 Spray #05 the M,V, C lines in the .cf0 file are:

```
# 0005 Spray Initial configuration 13Oct2006 2117 UTC Dive# 0
MD Line80 Oct2006 CalCOFI Line 80 deployed from Santa Barbara
#----start calibration coefficients -----
VN 5 4 2 0610
VO FLUOR
VA 17046 Argos ID
CP12 -10 0.04
CT22 -5 0.001
CS32 -1 0.001
CO44 0 0.001 10 3.00
CD58 2 3
#----end calibration coefficients -----
```

W : Waypoint and Route information lines

WR <nr> <now> <end> <dir> <date> <UTC> <dive#>
<nr> = number of points in the route,
<now> = present route entry that the Spray is heading for.
<end> = action to take at the end of the route.
<dir> = direction through the route (1=forward, -1=reverse).
<date> <UTC> <dive#> = date/time/dive # of the last update.

Wr <ir> <iw> <det> <rad> <app> <date> <UTC> <dive#>
<ir> = route entry index.
<iw> = waypoint index that this route entry points to.
<det> = Arrival-Detect mode (0=range only,1=range+finish line,2=finish only).
<rad> = Watch-circle radius [km].
<app> = Approach angle (degrees, TRUE); defines the finish line.
<date> <UTC> <dive#> = date/time/dive # of the last update.

WW <iw> <lat> <lon> <date> <UTC> <dive#>
<iw> = waypoint index.
<lat> = Latitude (decimal degrees).
<lon> = Longitude (decimal degrees).
<date> <UTC> <dive#> = date/time/dive # of the last update.

Here are some sample lines:

```
# Route: Nroute, Now, End, Dir, Date, Time, Dive#
WR 6 1 2 1 18Oct2006 2202 0
# Route List: ir, iw, detect, circle, approach date time dive#
Wr 1 2 0 1 0 18Oct2006 2202 0
Wr 2 3 1 0 0 18Oct2006 2202 0
Wr 3 4 1 0 0 18Oct2006 2202 0
Wr 4 5 1 0 0 18Oct2006 2202 0
Wr 5 6 1 0 0 18Oct2006 2202 0
Wr 6 7 1 0 0 18Oct2006 2202 0
# Waypt List: Index, Lat, Lon, Date, Time, Dive#
WW 0 33.458 -117.790 18Oct2006 2202 0
WW 1 33.440 -117.726 18Oct2006 2202 0
WW 2 33.435 -117.753 18Oct2006 2202 0
WW 3 33.470 -117.782 18Oct2006 2202 0
WW 4 33.485 -117.768 18Oct2006 2202 0
WW 5 33.257 -118.260 18Oct2006 2202 0
WW 6 33.100 -118.660 18Oct2006 2202 0
WW 7 31.085 -122.662 18Oct2006 2202 0
```

R : Variables that can be changed by remote shore commands.

S : Set parameters (cannot be changed remotely).

Both **R** and **S** lines have the same format.

R<g> <value> <addr>:<Label_1> <Label_2> <date> <UTC> <dive#>
<g> sub-group character: 'N'=navigation, 'M' = mission, etc.
Can be used to group similar parameters.
<value> The parameter value (always an integer type).
<addr> Eeprom address. This is what Spray returns when it does an eeprom dump.
<Label_1> Parameter name (6 characters).
This short name is also in the Spray code.
<Label_2> Longer name (17 characters); is a more intuitive description.
<date> <UTC> <dive#> = date/time/dive # of the last update.

When Spray sends an eeprom dump, it sends the <addr>,<value> pairings. The '.cfg' file is first read, creating a linked list of <addr> to <Label_1>. The <value>, <date>, <time>, and <dive#> are updated, and then the new '.cfg' file is written.

The file 'master_0610.txt' is used by 'make_config0.exe' to link the <Label_1> to <Label_2>, allowing more descriptive information to be included in the '.cfg'. The 'master_0610.txt' also provides the database link between shore commands and the affected variable, thus allowing easy parsing of shore commands. See the 'master' file for its own description of its format.

Sample **R** and **S** lines follow (from Spray13 Oct2006 deployment):

```
# Re-Settable Parameters from Shore Commands
# Value Addr:Label_1 Label_2 Date Time Dive_#
RV 1 66:UseOpt Use_Optical 18Oct2006 2202 0
RV 1 53:UseAlt Use_Altimeter 18Oct2006 2202 0
RV 25 75:AltZ1 Alt_1st_use_Z 18Oct2006 2202 0
RV 15 67:Alt_Z Alt_Min_2_Bot 18Oct2006 2202 0
# Route Parameters
RR 6 34:Nroute Num_Route 18Oct2006 2202 0
RR 1 -1:Rnow Route_Now 18Oct2006 2202 0
RR 2 35:R_end End_Route 18Oct2006 2202 0
RR 1 -1:Rdir Route_Dir 18Oct2006 2202 0
# Navigation Parameters
RN 1 36:UseSet Use_Set 18Oct2006 2202 0
RN 0 -1:___ Steer_Current 18Oct2006 2202 0
RN 0 -1:___ Set_Ndives 18Oct2006 2202 0
RN -1 -1:___ Set_Min_Correct 18Oct2006 2202 0
RN 1 -1:___ Set_Max_Correct 18Oct2006 2202 0
RN -1 -1:___ Manual_Course 18Oct2006 2202 0
RN 0 -1:___ Manual_Ndives 18Oct2006 2202 0
RN -15 37:MagVar Mag_Var 18Oct2006 2202 0
RN 1 81:UseMC User_Mag_Cal 18Oct2006 2202 0
RN -24 78:Moff_X Mag_Off_X 18Oct2006 2202 0
RN -43 79:Moff_Y Mag_Off_Y 18Oct2006 2202 0
RN -20 80:Moff_Z Mag_Off_Z 18Oct2006 2202 0
RN 0 74:Str_Pt Steering_Pt 18Oct2006 2202 0
RN 0 -1:___ Steer_Ndives 18Oct2006 2202 0
# Mission Parameters
RM 999 39:Ndives Num_Dives 18Oct2006 2202 0
RM 0 16:Dive# Present_Dive# 18Oct2006 2202 0
RM 17 46:G_Ang Pitch_Angle 18Oct2006 2202 0
RM 100 42:Zmax Max_Depth 18Oct2006 2202 0
RM 20 41:Tglide Descent_Time 18Oct2006 2202 0
RM 3 40:N_Avg N_Avg 18Oct2006 2202 0
RM 80 43:Zmax0 Dive0_Zmax 18Oct2006 2202 0
# Exception Parameters
RE 0 -1:___ RESET_SPRAY 18Oct2006 2202 0
RE 0 -1:___ ABORT_SPRAY 18Oct2006 2202 0
RE 0 51:PMP_? Pump_Exception 18Oct2006 2202 0
RE 1 76:SBD_? SBD_Exception 18Oct2006 2202 0
```

RE	2	77: Mx_Rst	Max_Num_Resets	18Oct2006	2202	0
RE	-1	68: No_GPS	No_GPS_Heading	18Oct2006	2202	0
RE	0	-1: _____	Route_List	18Oct2006	2202	0
RE	0	-1: _____	Parameter_List	18Oct2006	2202	0
#			Pump Parameters			
RP	600	28: MaxPmp	Max_Pump_Sec	18Oct2006	2202	0
RP	150	201: _____	Buoy_Pump	18Oct2006	2202	0
RP	35	202: _____	Delta_Pump	18Oct2006	2202	0
RP	10	203: _____	Wmin_cm/s	18Oct2006	2202	0
RP	300	64: MaxAmp	Max_Pump_Amps	18Oct2006	2202	0
RP	1	65: AmpAct	Bad_Amp_Action	18Oct2006	2202	0
#			Timing Parameters			
RT	15	44: Xmit0	Min_Xmit_Time	18Oct2006	2202	0
RT	10	45: Tdive	Shallow_Time	18Oct2006	2202	0
RT	15	50: Argos	Argos_Time	18Oct2006	2202	0
RT	15	38: GPS_Tm	GPS_Time	18Oct2006	2202	0
#						
RS	1200	204: _____	Max_SBD_Time	18Oct2006	2202	0
RS	60	205: _____	SBD_Packet_Wait	18Oct2006	2202	0
RS	0	-1: _____	Resend_Dive_Num	18Oct2006	2202	0
#			Doppler Parameters			
RD	500	58: A_Zmax	ADP_Max_Depth	18Oct2006	2202	0
RD	5	59: A_Cell	ADP_Num_Cells	18Oct2006	2202	0
RD	4	60: A_Clen	ADP_Cell_Size	18Oct2006	2202	0
RD	8	61: APulse	ADP_Pulse_Len	18Oct2006	2202	0
RD	-1	62: A_SNR	ADP_Min_SNR	18Oct2006	2202	0
#			Attitude Parameters			
RA	2	73: W0_gps	GPS_WING_ANT_SW	18Oct2006	2202	0
RA	2	72: W0_sbd	SBD_WING_ANT_SW	18Oct2006	2202	0

```

# Fixed Values follow
SV 13 0:SerNo Spray_SN 18Oct2006 2202 0
SV 1697 55:Mis_id Mission_ID 18Oct2006 2202 0
SV 40 23:Pgain Press_Gain 18Oct2006 2202 0
SV -14 24:Bat_0 Bat_Offset 18Oct2006 2202 0
SV 610 25:Bat_g Bat_Gain 18Oct2006 2202 0
SV 2160 26:Vac_0 Vac_Offset 18Oct2006 2202 0
SV 1420 27:Vac_g Vac_GAIN 18Oct2006 2202 0
SV 0 56:Tcm2_r Roll_Offset 18Oct2006 2202 0
SV 0 57:Tcm2_p Pitch_Offset 18Oct2006 2202 0
SV 1 14:Oil_s Oil_Type 18Oct2006 2202 0
SV 1 9:Pi_dir Pitch_Direction 18Oct2006 2202 0
SV 17 70:R_dcdt Roll_dc/dt 18Oct2006 2202 0
SV -10 -1:___ Press_Offset 18Oct2006 2202 0
SV -5 -1:___ Temp_Offset 18Oct2006 2202 0
SV 1 -1:___ Temp_Gain 18Oct2006 2202 0
SV -1 -1:___ Sal_Offset 18Oct2006 2202 0
SV 1 -1:___ Sal_Gain 18Oct2006 2202 0
SV 0 -1:___ Opt_V_Offset 18Oct2006 2202 0
SV 1 -1:___ Opt_V_Gain 18Oct2006 2202 0
SV 10 -1:___ Opt_Set_Gain 18Oct2006 2202 0
SV 1 -1:___ Opt_Type 18Oct2006 2202 0
SV 22741 -1:___ Argos_ID 18Oct2006 2202 0
#
SC 3 -1:___ ATTACK_ANGLE 18Oct2006 2202 0
SC 1 -1:___ SBE 18Oct2006 2202 0
SC 0 -1:___ SBE_1HZ 18Oct2006 2202 0
SC 1 -1:___ ADP 18Oct2006 2202 0
SC 1 -1:___ SBD 18Oct2006 2202 0
SC 1 -1:___ ALT 18Oct2006 2202 0
SC 1 -1:___ Analog_Rev_2.1 18Oct2006 2202 0
SC 8 -1:___ Sec_Per_Sample 18Oct2006 2202 0
SC 30 -1:___ DH_DR 18Oct2006 2202 0
SC 384 -1:___ DH_TAU 18Oct2006 2202 0
SC 64 -1:___ T_ACT 18Oct2006 2202 0
SC 32 -1:___ T_START 18Oct2006 2202 0
# Mission Parameters
SM 15 47:T_Dly Start_Delay 18Oct2006 2202 0
SM 0 63:T_strt Start_Roll_Try 18Oct2006 2202 0
SM 2 69:P_strt Start_Press_Hrs 18Oct2006 2202 0
SM 48 48:SatMax Abort_Sat_Hr 18Oct2006 2202 0
SM 48 49:GpsMax GPS_Fail_Hr 18Oct2006 2202 0
SM 1 52:Nhome HOME_Dives 18Oct2006 2202 0
SM 0 54:OpMode Operation_Mode 18Oct2006 2202 0
# Attitude Parameters
SA 70 10:Ro_10d ROLL10 18Oct2006 2202 0
SA 60 11:Pi_10d PITCH10 18Oct2006 2202 0
SA 1300 1:Ro_min MIN_ROLL_CNTRS 18Oct2006 2202 0
SA 1800 2:Pi_min MIN_PITCH_CNTRS 18Oct2006 2202 0
SA 2700 3:Ro_max MAX_ROLL_CNTRS 18Oct2006 2202 0
SA 3265 4:Pi_max MAX_PITCH_CNTRS 18Oct2006 2202 0
SA 1960 5:Ro_0 ZERO_ROLL 18Oct2006 2202 0
SA 2600 6:Pi_0 LEVEL_FLIGHT 18Oct2006 2202 0
SA 2120 7:Pi_xmt PITCH_XMIT 18Oct2006 2202 0
SA 1420 12:Rport PORT_WING_UP 18Oct2006 2202 0
SA 2575 13:Rstbd STBD_WING_UP 18Oct2006 2202 0

```