Statoil Tide Gage 2009 (TG09) Data Format

Sample Data File

May 2009 Data Test Files: TG09 was at the bottom of a 10m deep tank for 2+ days. 2 full days (midnight to midnight) offloaded. Here is a very simple procedure to get the pressure data suitable for MatLab:

DeepTankTest_9_10May2009.dat data as acoustically uploaded. Format is described below. This is very clean because the partial days before and after are not included. During the survey, we will want the current partial day which likely means a short hour at the end. If necessary, clean up file using a text editor. You need clean comma delimited lines which can be imported into Excel.

Import into Excel. To convert the date/time number, divide by 86400 and add 25569. Use Excel date/time format for each cell. As a separate file, delete the first 4 columns (time, x tilt, y tilt, temperature. You should be left with 60 columns of however many hours. In this case, there are 48 hours. Pressure time runs left to right (60 samples), top to bottom (1 hour each line).
DeepTankTest_9_10May2009.csv Above saved as an Excel.csv file

Read this file into MatLab, transpose & reshape as 1x48.

(A better way to do this will be with a perl or similar program. It is on the list.)

Data File Format

Files are stored on the TG09 CF memory card in a subdirectory named DATA.
Files are daily named ddd.yy where ddd is the julian day & yy is the 2 digit year so the day file for 5/29/2007 is 149.07
If needed, you can just read the CF card using an USB memory card reader. Just do not write, save, format or anything using WinDoz. Use only PicoDOS for any CF card housekeeping.

Each full day file will have 24 ASCII lines

Each ASCII line represents 1 hour of comma delimited data:

Timestamp, X_Tilt, Y_Tilt, T_Tilt, 60Pc<cr><lf>

Timestamp=10char=10bytes		UNIX integer seconds since 1/1/1970 (Timestamp/86400 + 25569 for Excel format)
X_Tilt=5bytes	+xx.x	Tilt sensor- Geomechanics (tilt convention follows manual)
Y_Tilt=5bytes	+xx.x	+X down = positive degrees, +Y down = positive degrees
T_Tilt=5bytes	+xx.x	temperature from tilt sensor inside TG09 p-case
Pc=8-10bytes	pppp.ppppp	temperature corrected absolute pressure in psia

.ppppp will always have 5 decimal places. The pppp. just scales with the actual pressure. 14 at the surface, 1000 at the max depth for the 1000 psia pressure transducer although it is limited to 9999 at the max pressure for the 10,000 psia at 6790m.

Timing:
1. Top of each hour: Timestamp, TiltX, TiltY, TiltT,
2. 64 seconds later: Pc
3. 58.5 seconds 59 times : Pc
4. Cycle repeats top of next hour

With the comma delimiters, it is easily read in Excel or MatLab. HyperTerm as configured on the Gravity Group PC_H laptop will not add any extra <cr> or <lf> characters but that is something to watch.

Upload speed:
LinkQuest claims 6600 bps throughput with the UWM2000 modem.
The best to date observed is 4000 bps (off Scripps pier testing May 2009)
Under adverse conditions, it will drop to 1200 bps or slower.

631 bytes/hour x 24 hours = 15,144 bytes/day at 999.99999 psi max pressure for the 31K 1000 psia transducer
1 day @ 1200 bps = 126 seconds or a couple minutes. More or less. 3 days: 6 minutes 20 seconds
1 day @ 4000 bps = 38 seconds. 3 days = 114 seconds

Until we can establish how well things work or don't work onsite, best to only upload 2-3 days at a time.

Paros 1000 psia Model 3100 pressure transducer with intelligence card

Setup Parameters (April 2009, Don't modify!!)

1. PI = 58500 integration time in milliseconds
2. OI = 0 Simultaneous integration of temperature and pressure
3. PS = 1 temperature measurement interval (each pressure reading uses new temp reading)
4. FM = 1 :The Paros is set in 'Fetch' mode where it is continuously calculating temperature compensated pressure. The unit responds to the P3 command immediately with the most recent reading.
5. Calibration coefficients are set for Serial #103559
6. Units in psia

Max pressure format is 9999.99999 psia

Paros Sampling

We are using the new Paros firmware where the pressure and temperature measurements are simultaneous. This means every pressure sample is always temperature corrected at the same time.

TG09 program code is completely dependent on the Paros being initialized correctly. See the Paros User's Manual.

Set PI=58500 milliseconds, OI=0, PS=1, UN=1 psia, FM=1
Also verify Paros serial # & calibration coefficients all agree

April 2009: We are currently using the settings for the 1000 psia Paros Serial # 103559 which is installed.

This uses the Paros P3 cmd = fetch measurement in psia
Paros has already been initialized w/ separate cable.

Paros intelligence card begins calculating at program start.
P3 command is sent after menu timeout (5 seconds) + sleep period (59 seconds) = 64 seconds
and 59 more times at 59 second intervals for a total of
60 readings and duration of ~3545 seconds for each hour.
After this period, the program shuts down for approximately
55 seconds until the top of the next hour.

This allows a very comfortable margin for each hour.
Changing the top of hour timeout to 2 seconds & PI to 59 or 59.5 seconds will give a 58 second or 28 second margin.