Explanation of "Winch Number" -vs- "Winch Designator Number": (Knorr)

- It's important to note the difference between the "Winch #" and the "Winch Designator #", as shown in the table below.

WINCH NAME:	WINCH NUMBER:	WINCH "DESIGNATOR" NUMBER:
Port Hydro	#1	01
UNUSED	#2	02
Stbd Hydro	#3	03
UNUSED	#4	04
Trawl Winch	#5	05
UNUSED	#6	06
UNUSED	#7	07
UNUSED	#8	08

Changing the (old) HP-Vee "Winch Monitor" program (by Barrie Walden) for use with the new 3PS system:

** The winch numbers need to be changed back :)..

The UDP string is now:

```
 2012/08/19,14:54:16.823,01,      -4, ,  -9.6,l,    0.0, ,   0.0
 2012/08/19,14:54:17.823,01,      -4, ,  -9.6,l,    0.0, ,   0.0
 2012/08/19,14:54:18.822,01,      -4, ,  -9.6,l,    0.0, ,   0.0
 2012/08/19,14:54:19.822,01,      -4, ,  -9.6,l,    0.0, ,   0.0
 2012/08/19,14:54:20.822,01,      -4, ,  -9.6,l,    0.0, ,   0.0
 2012/08/19,14:54:21.822,01,      -4, ,  -9.6,l,    0.0, ,   0.0
 2012/08/19,14:54:22.822,01,      -4, ,  -9.6,l,    0.0, ,   0.0
 2012/08/19,14:54:23.822,01,      -4, ,  -9.6,l,    0.0, ,   0.0
 2012/08/19,14:54:24.822,01,      -4, ,  -9.6,l,    0.0, ,   0.0
 2012/08/19,14:54:25.822,01,      -4, ,  -9.6,l,    0.0, ,   0.0
```

WinchMonitor reads the each line in as an array and parses each of the elements. To go from WinchMonitorv74.vee to WinchMonitorv76.vee (v75 was a mess) the array assignments need to be changed.

A[0],A[1],A[2],A[3],A[4],A[5],A[6],A[7]

In v74 A[0] was the winch id, in v76 A[2] is the winch id. Basically everything needs to be moved by two.

A[0] becomes A[2]
A[1] becomes A[3]
A[3] becomes A[5]
A[5] becomes A[7]

The easiest way to make the changes is to use notepad 'Replace', but you need to start by replacing all A[5] with A[7] or you end up with everything being an A[7] or speed :)...

- **Why would you want to?**

1) The (old) HP-Vee "Winch Monitor" already auto-scales the tension data, which is very useful compared to the set (unchangeable) 0 to 20,000 Lbs range of the graph on the new 3PS touchscreen monitors.
2) HP-Vee "Winch Monitor" can still be used as a backup winch logging system, altough it only logs data once per second (1 Hertz) as opposed to the 20 Hertz that is provided by the new 3PS logging system. (This was required by the new "Appendix A" requirements.)
3) No annoying touch-screen & buggy software.

- **How to update the old HP-Vee "Winch Monitor" program:**

1) Ask the Knorr for our "hacked" version 7.4 (winchmonitor74.vee), or locate your own most recent version in the ".vee" format.
The method described below will NOT work for a ".vxe" version, which is a "Secured" (protected) "run-time" version. Look for a *.vee file of you want to use this method...

2) Open the ".vee" file using notepad (or any text editor) and search for the word "Hydrographic". You may find several sections containing the word "Hydrographic", and you'll need to sleuth a bit to find the section that most resembles a list of the winches you actually have in use. **** ATLANTIS:** You guys should be looking for a section that *MIGHT* read something like:

"WRITE CASE asUInt8(a[0]) OF \"\", \"Fwd Hydrographic\", \"Aft Hydrographic\", \"Traction Winch\", \"Trawl Winch\""

**** ATLANTIS:** Your list of winches may look very different from ours on the Knorr, but I'm guessing that the above example MIGHT be what you'll see in Atlantis' Winch Monitor.vee.

**** Note** that the first instance of \"\" has no winch name in the middle: this is because the old 3PS system did NOT use the "Winch Designator # 00". The NEW 3PS system does use designator# 00 (at least for now, until they change that ???).
Because the new system on the Knorr has our "Port Hydrographic" winch using the "winch designator" # 00, we had to insert the name "Port Hydrographic" into the first instance of \"\" , so that it now reads as \"Port Hydrographic\",
Knorr's entire section (like the one above), now reads as follows:

"WRITE CASE asUInt8(a[0]) OF \"Port Hydrographic\", \"Future Winch #2\", \"Stbd Hydrographic\", \"Future Winch #4\", \"Trawl Winch\", \"Long Core Winch\""

**** Note that "Winch Designator # 00" is for Knorr's "Winch #1", which is now our "Port Hydrographic".
Winch Designator # 01 is Winch #2, which is unused, so it's named "Future Winch #2" in our WinchMonitor74.vee file.
"Winch Designator # 02" is for Knorr's "Winch #3", which is now our "Stbd Hydrographic".
"Winch Designator # 03" is for Knorr's "Winch #4", which is now our "Future Winch #4".
"Winch Designator # 04" is for Knorr's "Winch #5", which is now our "Trawl Winch".
"Winch Designator # 05" is for Knorr's "Winch #6", which is now our "Long Core Winch".

**** ATLANTIS:** I envision that you'll need to edit your section to read something like:

"WRITE CASE asUInt8(a[0]) OF \"Fwd Hydrographic\", \"Future Winch #2\", \"Aft Hydrographic\", \"Future Winch #4\", \"Traction Winch\", \"Trawl Winch\""

** This assumes that your new system is also installed with the same *bizarre* winch numbering convention that we got. (Future winches on the Knorr??? Yeah, right!)

3) Once you've renamed your winches properly, you'll probably want to save that "WinchMonitor##.vee" as a new version #, such as "WinchMonitor75.vee".

4) You'll likely also find (at least we did on the Knorr) that the scaling for Tension on one or more of your winches will now be waaaay off when you try using your new WinchMonitor##.vee program.
After Knorr's new 3PS system was installed, and once the winch names were correctly reconfigured in the HP-Vee WinchMonitor74.vee (as described above), the Vee program was displaying tension values 1000x greater than the actual tension. By opening the .vee file with Notepad, and searching for the word "Tension", I (eventually) found the following section:

(name "Trawl & Hydro Tension")
(expr 2 "(A[1]==\"\" ? 0 : 1000*asReal32(A[1]));" ""))

I corrected the 1000-times multiplication of our actual tension values by editing that section to read as:

(name "Trawl & Hydro Tension")
(expr 2 "(A[1]==\"\" ? 0 : 1*asReal32(A[1]));" ""))

If you also have to make such a correction, be sure to also save that change into your new version# of WinchMonitor##.vee.

5) If your new system also necessitates you needing to use a new UDP port # for your winch data broadcast (as ours did), then you'll also want to change the new Winch UDP port # in your

"WinchMonitor.cfg" file. It's probably the 2nd line in that file (when opened with notepad). The 2nd line of our "WinchMonitor.cfg used to read:

Winch_Port = 55140

Now, it reads: Winch_Port = 55007

We have a nifty, tiny little new Linux box called a "Guru Plug". It's about the size of a wall-wart transformer, and it's being used to broadcast the new 3PS USB (serial-ish) winch data output over the UDP Port# 55007. That's the new UDP port that our new version 7.4 of the HP-Vee "Winch Monitor" program is looking at to get the winch data feed. It's also what dri\ves out winch data display on our data display terminals that are scattered about the labs.

Touch-screen displays, on the Bridge, and at the Main Lab CTD station:

- These two panels can "Log" data, but cannot "Zero" the winch payout.
  (Only the Hydro & Trawl Winch Control Booth panels an "Zero the payout, but they cannot log data - they can only display real-time Tension, Payout, and Speed. I seem to remember that they have a "zero the payout" option or button. But it does not work? That's confusing. rsl) Reply: Only the winch control booth panels (Hydro Winch & Trawl Winch booth panels are "MDP" displays) can "zero the payout". The touchscreens on the Bridge & Main Lab cannot. The touchscreens do not have a "Zero Payout" button. They only have a "Zero Tension" button. Weird for the touchscreens to have "Zero Tension" buttons anyway, but it's probably very wise that only the winch operators in the booths can "Zero the Payout", since we really don't want anyone doing that during a cast, other than the winch operators.
- Run by a mini Windoze XP computer on the back of the touch screen.
- I think there is an ethernet port.. put on science network, ipnumber:
  192.168.11.240
- Add a couple of packages:
- ntp
- samba

share:
3psml.science.knorr.whoi.edu
d:\Data\winch is shared to the network
ftp mounts it:
smbmount //192.168.11.240/data /home/data/winch

it needs to be run by hand, the 3psml is asking for a password.. need to figure out how to get rid of this...

- Logfile names. It would help and make more sense if the logfile had the
  name of the winch. Current convention:

Log_4_20120323185432.csv
[winchname]_[winchnumber]_201203231242.csv
Can change the log file name kn or at and then it gives the winch nubmer.. I think..

- It would be nice if winch use was 'just logged'. Have a watchdog program on the XP machine that kept track of the status of each of the defined winches. If the tension goes above 10 lbs start logging, or if the payout speed goes about 5 meters/sec start logging. (5 meters a minute maybe?) rsl ANTON's note on this point: We have tested the "Automatic Logging" mode, which is based only on wire tension (not speed). The "Logging Mode" (0= Disabled, 1= Manual, 2= Automatic) is a system-wide setting. (Individual winches cannot be set for different logging modes.) The system does automatically start a new log file for any winch whose tension goes above the defined "Auto Logging Threshold" for that "Winch and Rope (wire)" configuration. Unfortunately, the logging will continue (forever) unless the "CLOSE FILE" button is clicked after the cast (when the tension is back down below the defined threshold). (One cannot stop for a low tension, since we sometimes see zeros in the tension. Maybe if it sees zero for 1 minute or so. Or below the logging level for one minute.)rsl "Automatic Logging" Mode only "Starts" log files automatically: it does NOT end them when the cast is finished.
See Logging details below:

LOGGING (Only at the touch-screen displays: Bridge & Main Lab):
In the "System Maintenance" tab (Level2), Under "Local Display", "Logging", two items can be changed.

- To change the "**Logging Path**", a mouse is required. (not sure if this is really important, but sometimes a touch screen mouse has different styles fo control, long touch for right, or quick tap to highlight. Might be worth asking 3ps what the mouse commands for the touch screen are.)rsl Log files are presently set to C:\Documents and Settings\My Documents\3PS\Winch Monitor\Log Files\
This can be changed to any valid file path, such as a connected USB hard drive.
- To change the "**Logging Mode**", click on the word "Mode" (in the menu tree).

The virtual keyboard should appear on the screen, allowing you to set the logging mode: **0 is "Disabled": (Don't use!)**

1 is "Manual": When set to "Manual" logging, you need to click the "Start Logging" button. Once logging is started, the label on that button will change to "Stop Logging". While logging in "Manual" mode, each configured winch gets logged to a seperate log file. In the Knorr's present configuration, this means that there will be three files: (Log_0 is for the Port Hydro, Log_2 is for the Stbd Hydro, and Log_4 is for the Trawl Winch.) In "Manual" mode, all 3 files will be created, even though we're only using one of the winches.

2 is "Automatic": When set to "Automatic" logging, the system will monitor the Tension on each winch. When the tension goes above the defined

"Logging Threshold" for any winch, a single log file is automatically started for ONLY that winch (not one file each for all 3 winches).
*** Logging will continue indefinitely, even after cast is over, and the tension has gone back down below the defined "Logging Threshold".
To "Stop" logging, you MUST click on the "CLOSE FILE" button.

- Presently, the "Auto Logging Threshold" for both Hydro winches is set to 100 Lbs.
- The "Auto Logging Threshold" for the TRAWL WINCH has been raised to 400 Lbs, because the weight of the wire (hanging from the Stbd crane) while the ship is in motion is nominally ~ 250 Lbs..
- **How to change the tension"Auto Logging Threshold"** for any "winch & rope":

Click on the "Winch Setup" tab, and enter either password (Level1 or Level2).
Open the system tree on the right side of the screen ("File View", not the "Sensor View").
Click on the "+" next to the winch you want to modify, and find the correct "Rope" (wire).
(The PORT Hydro has 3 "Ropes" configured: the CTD 0.322" "EM", the 0.25" Hydro, and the Vectran. The STBD Hydro has only the 0.322" EM, and the TRAWL WINCH has only the 9/16" Trawl Wire configured and selectable.)
Click on the "+" next the the "Rope" you will be using.
Click on the "+" next to the word "Tension".
Click on the "Auto Logging Threshold" twice to open the onscreen keyboard.
Enter the new value (in Lbs.) on the keyboard, and click on the <Enter> key to save.
** Your change will not be complete until you "send" the new Rope Cofiguration to the winch, as follows: Once you have entered the new "Auto Logging Threshold", click on the name of the "Rope" (wire) you just modified. (Example: ROPE #1 = 0.322" EM)
A drop-down menu should appear with the choice "Send To Winch". (Be careful NOT to choose "Delete Rope"!)
Click on the "Send To Winch" choice from the drop-down menu.
Once you've "Sent" the new Rope Configuration to the winch, a new log file for that winch will be started the moment the tension on that winch goes above your newly set "Auto Logging Threshold". (This is only true when the system is set to "Automatic" logging mode; in "Manual" logging mode, the "Auto Logging Thresholds" are ignored.)
You MUST manually click on the "CLOSE FILE" button (after the cast, when the tension is back below the threshold), or the logging will continue indefinitely (forever), until the hard drive is full.

=== Log FILE ===

File Name: Log_4_20120323185432.csv
#5 = TRAWL WINCH Rope Configuration ID, W5R1
(Then, 7 lines of info on Maximum Tension, and the "Alarm Set-Points" for Tension, Payout and Speed),

Then the "DATA COLUMNS HEADER" (Comma-separated-values, as follows):

```
Elapsed   Winch  Tension  Tension  Payout Payout Speed Speed  4-Char.
Time    Desig. Data:   Alarm:   Data:  Alarm: Data: Alarm: Comment
(mSecs):       #:                                          Field:
-------------------------------------------------------------------
  0,     04,     100,    ,        -2.4,    ,        0.0,     ,   0000
 47,     04,     102,    ,        -2.4,    ,        0.0,     ,   0000
109,     04,     100,    ,        -2.4,    ,        0.0,     ,   0000
156,     04,     100,    ,        -2.4,    ,        0.0,     ,   0000
203,     04,     102,    ,        -2.4,    ,        0.0,     ,   0000
< etc., etc.>
```

====

1) The winch being logged (the TRAWL WINCH in the example above) is "Winch #5", which is displayed in the logfile header. The "Winch Designator #" for the TRAWL WINCH is 04, and that is shown in the 2nd column of each CSV entry.

2) The CSV entries are made 20 times-a-second (20 Hz), which conforms to the "Appendix A" requirement that Chris Griner mentioned.

3) Unfortunately, the "timestamp" (1st column) is displayed in milliseconds "since the log file was opened". To me, it seems it would be much more useful if the timestamp listed the entire date & time, similar to what is created in our
"Calliope" .CSV log files.

(Calliope has separate columns for the DATE & TIME, but it only shows the time to the nearest whole second. We would needto show milliseconds in the 3PS Winch log files.)