Science Applications International Corporation
Marine Systems Operations
Newport, RI

Installation Instructions and Checklist
ISS-2000 ISSC Acquisition Computer & Helm Display

NOAA Ship Hi'ialakai

March 2005

An Employee-Owned Company

Changes in this document shall be recorded in the following table in accordance with SAIC Quality System Procedure, QSP 4.2.3, Control of Documents.

Revisions				
Rev	**Date**	**Pages Affected**	**Approved by**	**Remarks**
A	28 Mar 05	ALL	JEK	Initial Release
B	08 Apr 05	ALL	JEK	Added doc no., updated IP's, added post software installation setup, system as built

Section 1.0 Pre-Installation Information

Preparation for components to be installed:

	Component	Sizes (inches)	Weight (lbs.)	Power (Typical)	Notes
1.	ISSC Computer	19.0 x 22.0 x 7.0	65	120 VAC 550 Watts	19" rackmount, 4U (Rack CFE)
2.	ISSC LCD Display #1	16.7 x 13.7 x 2.6	10	120 VAC 45 Watts	100mm VESA (Mount CFE), AC power cords are IEC320 directly into the LCD display. No AC/DC adapter required.
3.	ISSC LCD Display #2	16.7 x 13.7 x 2.6	10	120 VAC 45 Watts	100mm VESA (Mount CFE), AC power cords are IEC320 directly into the LCD display. No AC/DC adapter required.
4.	Serial Com. Ports	19.0 x 5.4 x 3.0	8	N/A	19" rackmount, 2U Aft rail (Rack CFE)
5.	Keyboard	17.8 x 7.3 x 1.3	3	N/A	PS/2 Mini-DIN 6
6	Pointing Device	3.0 x 4.0 x 1.0	1	N/A	PS/2 Mini-DIN 6
7.	Helm Computer	5.8 x 9.8 x 2.8	7	120 VAC 40 Watts	Custom mounting bracket (Mount CFE). Unit provided with AC/DC power adapter. Direct DC input 12 VDC at 4 AMP (MAX) on DC coaxial power jack.
8.	Helm Display	15.1 x 2.2 x 11.1	20	120 VAC 100 Watts	100mm VESA (Mount CFE). Unit provided with AC/DC power adapter. Direct DC input 12 VDC at 7 AMP (MAX) on DC coaxial power jack.
9.	Helm Keyboard	12.4 x 5.7 x 1.3	6	N/A	PS/2 Mini-DIN 6
10.	Helm Pointing Device	3.0 x 4.0 x 1.0	1	N/A	USB Type A

Customer Provided Cables:

Item	Component	Component	Cable Type	Specification	Notes
1.	ISSC Computer	POS/MV	Serial RS-232	50-02542-D001	
2.	ISSC Computer	POS/MV	50 Ohm Coax	50-02542-D002	From 3-way split
3.	ISSC Computer	MB Switch	Category 6	50-02542-E00X	VLAN #1
4.	ISSC Computer	MB Switch	Category 6	50-02542-E00X	VLAN #2
5.	ISSC Computer	MB Switch	Category 6	50-02542-E00X	VLAN #3
6	ISSC Computer	MB Switch	Category 6	50-02542-E00X	VLAN #4
7	ISSC Computer	MB Switch	Category 6	50-02542-E00X	NAS/Post-P.
7.	MB Switch	Helm Computer	Category 6	50-02542-E00X	VLAN #4

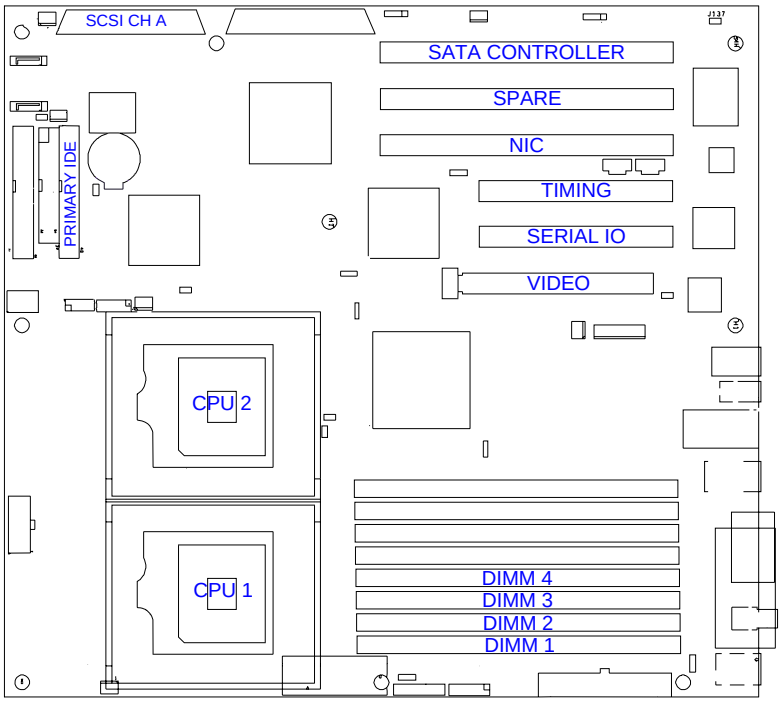
Section 2.0 Assembly Instructions (Completed by SAIC before shipping)

Assemble components:

1. Install motherboard into chassis.

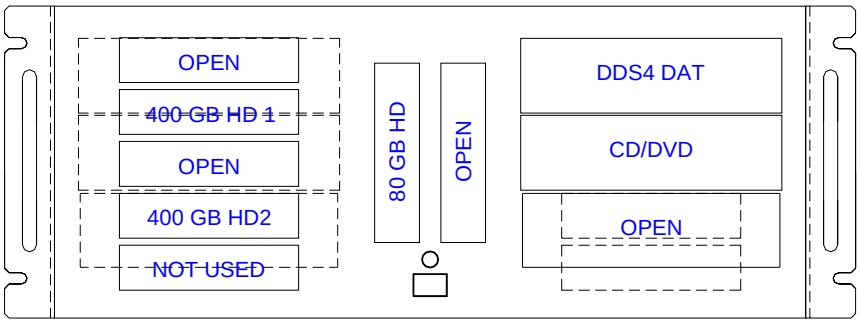
2. Install (2) CPU's using thermal compound and heatsink/fan hardware provided.

3. Install expansion cards and memory as shown:



4. Connect power supply, hard drive activity LED's, power on/off switch, and front USB connect (P24)

5. Mount hard drives, CDROM and DAT drive in bays as shown:



6. Connect the 80 GB OS drive to SATA1, the 400 GB HD1 to the SATA2 and the 400 GB HD2 the SATA3. Connect power to each.

7. Connect CD/DVD to the primary master IDE using the cable provide with the motherboard. Connect power.

8. Connect the DDS4 DAT to SCSI channel A using the cable provided. Connect power.

Jumper settings:

1. J3 TPM (Trusted Platform Module) Disabled.

2. J9 & J137 LAN Enabled.

3. J102 PS/2 Wakeup Disabled (3-4)

BIOS Settings:

Record BIOS version and Build Date.

1. Load Default Values:
    Exit / Get Default Values

2. Set Time and Date to GMT:
    Main BIOS / System Time
    Main BIOS / System Date

3. Disable floppy drive:
    Setup / Legacy Diskette A: [Disabled]

4. Disable On-board SATA:
    Advanced Submenu ATA Controller / S-ATA Interface: [Disabled]

5. Disable Unused Audio and 1394:
    Advanced Submenu Integrated Audio: [Disabled]
    Advanced Submenu Integrated 1394: [Disabled]

6. Advanced PCI Configuration:
    PCI/PNP IRQ Exclusion:
        IRQ 5 Reserved
        IRQ 11 Reserved

Load OS and Device Drivers:

1. Load Windows 2000 Professional from CD on to the 80 GB system drive. During initial install select F6 and load 3ware SATA controller drivers. All hard disks to be configured as separate drives.
   - SATA Hard Drive Controller, 3ware Escalade, Version 1.15.0.14, SN F17701A4310329

2. Load chipset drivers provide with motherboard.

3. Load the drivers for the video, network, timing and serial cards.
   - Video, NVIDIA GeForce 6600 GT, Version 6.6.3.1, 8/25/2004, Serial No. 374, SN FLH155391
   - Network, Adaptec ANA64044LV, Version 5.20.0.24, 11/15/2001, SN 4C31AF0B459
   - Timing, Bc635PCI, Firmware 2.3, 2/10/2003; Driver 3.50, PN BC12083-1000 Rev G, 10409570 Assem RevE
   - Serial Adapter, Digi AccelePort 16p, Version 5.0.315.0, PN 5000704-01A, SN (S) V44658441

4. Configure network IP as shown:

Network / VLAN	IP Address	Host Name
POS/MV	192.168.1.1	issc-posmv
	192.168.1.2	posmv
EM3002D	192.168.2.1	issc-em3002d
	192.168.2.2	em3002d
EM300	192.168.3.1	issc-em300
	192.168.3.2	em300
Helm Display	192.168.4.1	issc-helm
	192.168.4.2	helm
Ship's Network	128.171.159.241	

5. Load Exceed and Exceed XDK software from CDROM.

6. Load ISS-2000 software from CDROM.

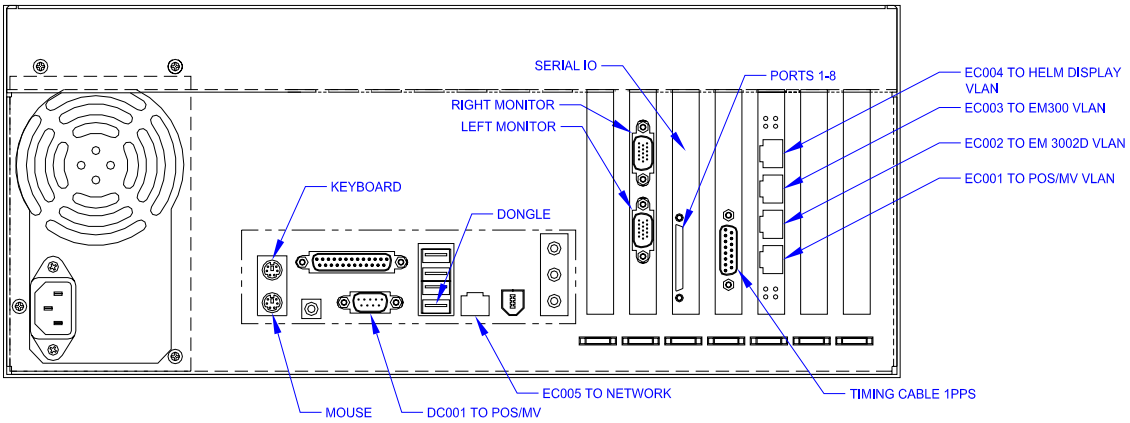
Complete Pre-Installation Checklist:

Acquisition (ISSC)	ITEM	STATUS (P/F)	WHO	NOTES
Installed Hardware	DVD/CD Burner			
	DDS4 Tape Drive			
	Timing Card Bc635PCI			
	Serial Adapter AccelePort xp			
	NIC 4 Port			
	ISS-2000 Dongle (USB)			SN 006010
Installed Software	Windows 2000 sp4			
	Adobe Acrobat v5			
	ISS-2000 version 3.8			

Acquisition (ISSC)	ITEM	STATUS (P/F)	WHO	NOTES
	Cygwin v1.5.8-1			
	Exceed 9.0 & Patches			
	Exceed XDK 9.0			
	DVD/CD Burner Software (Roxio v.6)			
	Updated Digi Driver v5.0.315.0.			
	AccelePort Xp firmware rev. C			
Checklist	DVD Read 16x			Note: one burner but test both types of media
	DVD Write DVD+R 12x DVD-R 8x DVD+RW 4x DVD-RW 4x			
	CD Read 48x			
	CD Write CD-R 48x CD-RW 24x			
	DDS4 Read \dev\st0			
	DDS4 Write			
	Insure that Enable Low Latency is checked			In Device Manager, right mouse button on MultiPort Adapter (top item above port listings)
	Ping network port 1			Reference IP addresses in table above.
	Ping network port 2			
	Ping network port 3			
	Ping network port 4			
	Ping network port 5			
	time zone to GMT/ disable daylight savings update			
	Setup username and password			Administrator **********
	Record ISS-2000 serial number			SN 006010

Section 3.0 Pre-Operation Checklists

Connect cable to cable as shown:



Complete Pre-Operation checklist:

Acquisition (ISSC)	ITEM	STATUS (P/F)	WHO	NOTES
Cables Connected	50-02542-D001			Reference Drawing Number 01-02542-001
	50-02542-D002			
	50-02542-E001			
	50-02542-E002			
	50-02542-E003			
	50-02542-E004			
	50-02542-E005			
	50-02542-E006			
	ISS-2000 Dongle S/N			
	AC Power			
	LCD Monitors 1 & 2			
	Keyboard			
	Mouse			
Installed Software	ISS-2000 v 3.8			
Host Table	Check entries against table in Section 2			
Checklist	Insure that Enable Low Latency is checked			
	Ping Helm Computer			ping helm
	Ping POS/MV			ping posmv
	Ping EM 300			ping em300
	Ping EM 3002D			ping em3002d
	Ping NAS			ping
	time zone to GMT/ disable daylight savings update			
	Set username and password			
	Record ISS-2000 serial number			
	Verify time monitor			Reference time = System time

Acquisition (ISSC)	ITEM	STATUS (P/F)	WHO	NOTES
				Sync: < 5 ms Flywheel: No

Section 4.0 Post ISS-2000 Software Setup

Variable and Parameters

Define the following *Environmental Variables* under *Control Panel*; double click on the *System* icon. This opens the *System Properties* window. Select *Environmental Variables* … and open the *Environmental Variables* window.
O_SPROOT e:\surveys
O_SUROOT e:\support
OLOGDISK e:;f:

Change communication port assignment in c:\boottime.cfg file from COM2 to COM1 using a text editor. (Propagation Delay of 2.0 is correct for the OEM-2 receiver in the POS/MV)

TimeMonitor:Prog. Cntrl:Port!N!TAIM_S!ComPortName!ComPorts!COM1!L!NA!NA!Y!Y!Y

If they do not exist, create follow directories on the drives:
c:\temp
e:\datasets
e:\datasets\<project name>
e:\surveys
e:\support
f:\datasets\<project name>

The following is a list of the user names and passwords for the system.

	Username	Password
ISSC Acquisition	Administrator	**********
Helm Display	Administrator	**********
VNC Server / Client	helm	**********

Change the following parameters using a text editor. The files are found in the c:\iss2000\prefs folder.

	xnavmgr.prf	xhelm_day.prf	xhelm_night.prf
SHIP_SYMBOL_CODE	55	55	55
SHIP_SYMBOL_COLOR	4	4	07
SHIP_SYMBOL_SIZE	2.85	2.85	2.85
WAYPOINT_SYMBOL_SIZE	1.6	1.6	1.6
DEFAULT_LABEL_SIZE	0.6	0.6	0.6

Change the following parameters in the c:\iss2000\prefs\envmgr.prf using a text editor.

DEPTH=	Depth;Depth;meters;0;10;700;0;5;50;1000;1;2;0
DEPTH_1=	em300;Centerbeam Depth;yellow;Dashed;MBA_F_DSP;CENTERBEAM_DEPTH

DEPTH_2=	em3002;Centerbeam Depth;green;Solid;MBB_F_DSP;CENTERBEAM_DEPTH
SOUND_VELOCITY=	Sound Velocity;Sea Surface Sound Velocity;m/s;0;10;1400;1600;5;5;1000;1;4;1
SOUND_VELOCITY_1=	em300;Surface Sound Velocity;yellow;Solid;MBA_F_DSP;SOUND_VEL
SOUND_VELOCITY_2=	SVPSSV;Cast Derived Surface Sound Velocity;green;Solid;SSV_F_DSP;SOUND_VEL
SOUND_VELOCITY_3=	Delta;SSV Delta From SVP;red;Dashed;SSV_F_DSP;SOUND_VEL

Change the following line in the c:\iss2000\app-def\svpmon using a text editor.

*svpSubDir: cotsdata\\ctd

Network Mapping

Create COTSDATA\data directory for moving SVP into current dataset.
When a Windows host is the file server for the ISS-2000 dataset, the ISS-2000 provides a similarly integrated method for allowing external computer subsystems to log their data in the current ISS-2000 datasets. This shared logging feature may apply for multiple external computers. Presently, this "COTSDATA" logging method is used with the 911plus CTD system. The ISS-2000 software makes use of Windows calls to create the soft links from c:\COTSDATA to the current dataset.

Create COTSDATA on ISSC Host for Export
To provide for the symbolic linking of a COTSDATA directory on the Windows machine to the current dataset, an empty COTSDATA directory must be available under the root (c:\) directory.

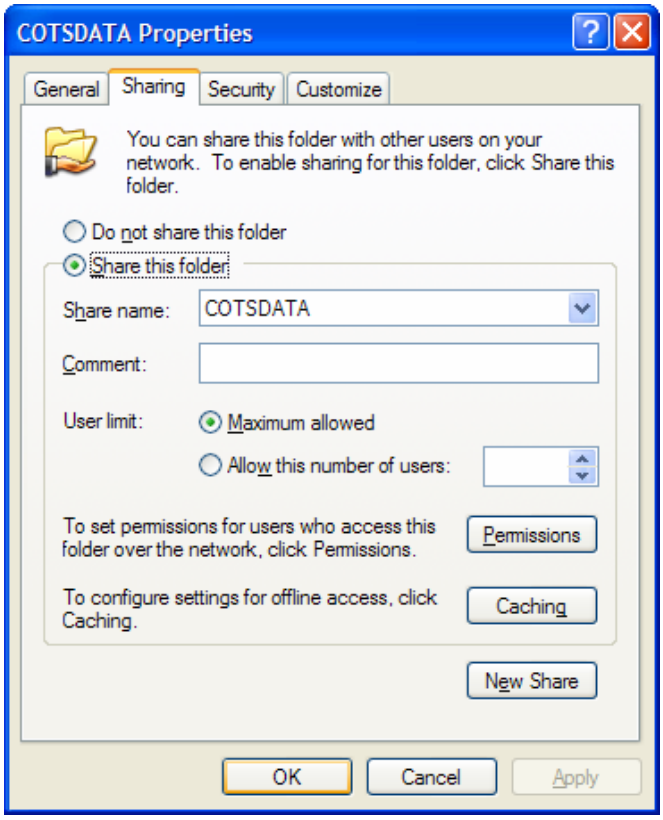
1. Ensure that *System Control* is stopped and shutdown.
2. Open a command window
3. Type: *c:*
4. Type: *cd *
5. Type: *dir*
6. If no COTSDATA directory exists, type

mkdir COTSDATA
mkdir COTSDATA\data

7. Start *System Control / Survey / Start Survey*
8. Start *Logging / Enable Logging*
9. Check that the above mentioned c:\COTSDATA\data directory is changed from a normal directory to a JUNCTION. Type: *dir* in the DOS window display (results below).

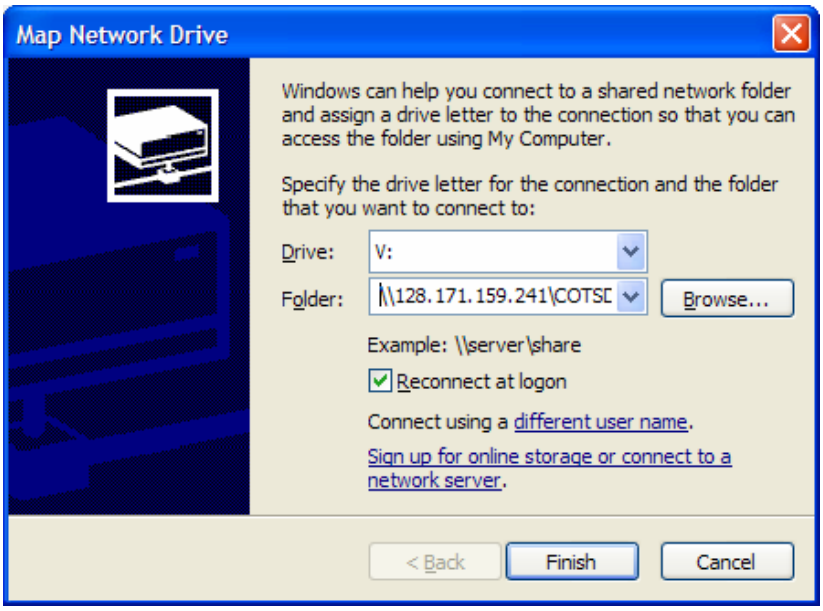
```
Volume in drive C has no label.
Volume Serial Number is 48F6-C8DA

Directory of C:\COTSDATA

06/04/2004  11:26a    <DIR>          .
06/04/2004  11:26a    <DIR>          ..
06/04/2004  09:22a    <JUNCTION>     data
06/04/2004  11:26a                 0 output
               1 File(s)              0 bytes
```

10. Check that the .\datasetname\cotsdata\ctd directory is created underneath the current dataset.
11. Share the COTSDATA directory. In *Windows Exploder* navigate to the COTSDATA directory and right click. Select *Sharing and Security…* and Select *Share this folder*.



Map the COTSDATA directory from the 911plus computer.

1. From the Windows desktop, right mouse click on the *My Network Places* icon.
2. Select *Map Network Drive…*
3. Select Drive V: (V for Velocity)
4. Enter \\128.171.159.241\COTSDATA\data as the full pathname.



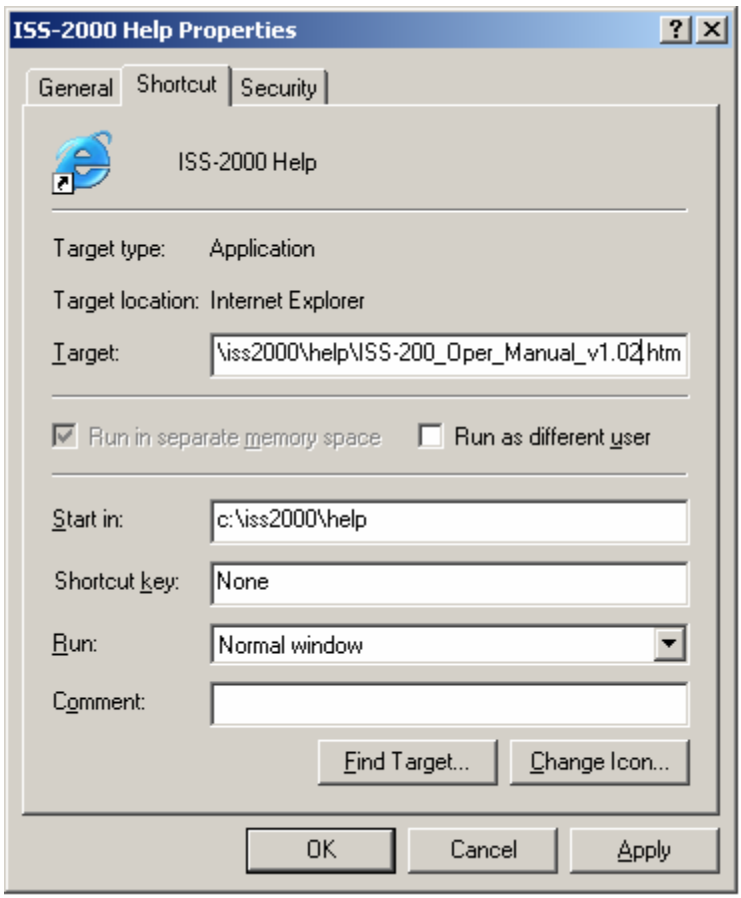
5. Exit the program and refresh the computer's mounted drive if necessary. The \COTSDATA\data directory should be visible as drive V.

Map Auto Archive path.

1. From the Windows desktop, right mouse click on the *My Network Places* icon.
2. Select *Map Network Drive…*
3. Select Drive T:
4. Enter \\hii1\datasets as the full pathname.
5. In *System Control / Configuration / System Parameters* set the OS2 Archive Path to *\\hii1*

Help Setup

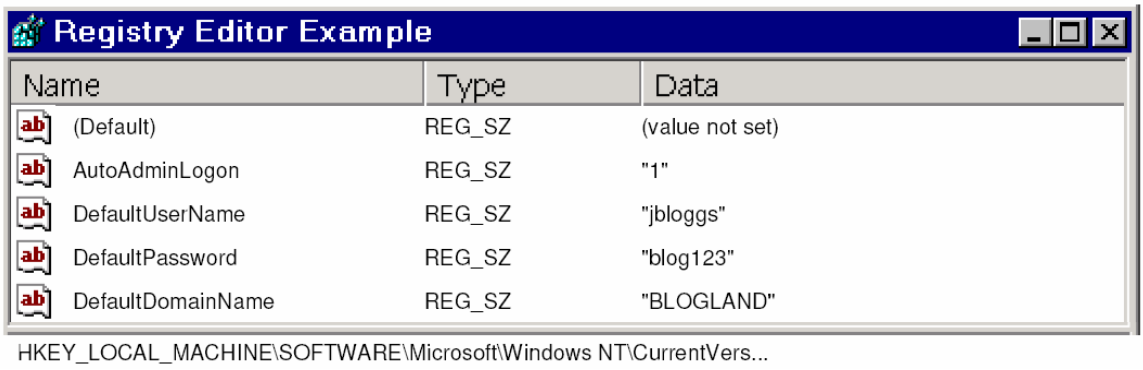
Install Java J2SE Runtime Environment 5.0 from the jre-1_5_0_02-windows-i586-p.exe. Unzip the help files that are copies to the c:\iss\help folder during the CD installation. Right click on the *iss_2000_oper_manual_v1.02.zip* and select *WinZip / Extract to here*. Next, check the short on *Start / Programs / ISS-2000 / ISS-2000 help*. Right click on the ISS-2000 help icon and select *Properties*. This will open the dialog below. In the target window enter the name of the html file (*iss_2000_oper_manual_v1.02.html).*



Registry Changes

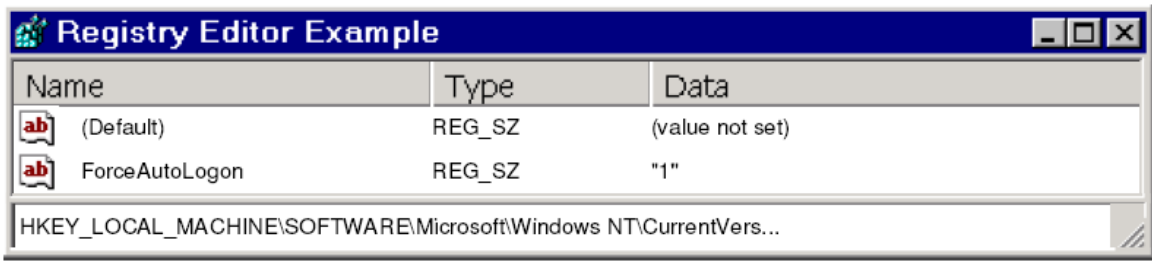
Modify the windows registry to set the helm computer to bypass the Windows logon dialog box. To start the Registry Editor (Regedt32.exe) click *Start /Run / regedt32*. To enable this function you need to add several new values to the key below:

1. Add a new string value named 'DefaultUserName' and set it to the username you wish to automatically logon as.
2. Add a new string value named 'DefaultPassword' and set this to the password for the user entered above.
3. Add a new string value named 'DefaultDomainName' and set this to the domain of the user. Ignore this value if the NT box is not participating in NT Domain security.
4. Add a new string value named 'AutoAdminLogon' and set it to '1' to enable auto logon.



Registry Settings:
System Key :
[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\Winlogon]
Value Name: AutoAdminLogon
Data Type: REG_SZ (String Value)
Value Data: (0=disable, 1=enable)

5. For Windows 2000 the additional ForceAutoLogon setting must be enabled. Open your registry and find the key below. Create a new string value called "ForceAutoLogon" and set it equal to "1" to force automatic logons.



Registry Settings:
System Key :
[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\Winlogon]
Value Name: ForceAutoLogon
Data Type: REG_SZ (String Value)
Value Data: (0=disable, 1=enable)

To disable a serial device that may be detected as a serial mouse (Reference Microsoft article 283063) - make the following change to the Windows Registry (To start the Registry Editor (Regedt32.exe) click *Start /Run / regedt32*):

1. Find the following System Key (the Hi'ialakai ISSC has a ACPI Hal);

[HKEY_LOCAL_MACHINE\System\CurrentControlSet\Enum\ACPI\Port1\Device Parameters]

2. On the Edit menu, click Add Value, and then add the following registry value:
Value Name: SkipEnumerations

Data Type: REG_DWORD
Radix: Hexadecimal
Value: 0 through FFFFFFFE

Section 5.0 KMI EM300 and EM3002D Integration Setup

1 SETUP OF EM300 SIS SYSTEM AND EM3002D SIS SYSTEM ONBOARD NOAA SHIP HI'IALAKAI

1.0 Modifications made on EM300 via Windows XP[1]

1.1. Renamed, and reassigned IP for data distribution

2 ***ORIGINAL EM300 NETWORK CONNECTIONS***

1394 Connection (Configured for DHCP, but not used)
em300 (Configured with fixed IP/subnet of: 157.237.2.30/255.255.0.0)
helm (Configured with fixed IP/subnet of: 192.235.1.6/255.255.0.0)

Updated EM300 Network Connections

helm network interface name changed to: *em300_data_distribution*
em300_data_distribution network interface IP changed to: 192.168.3.2
em300_data_distribution network interface subnet changed to: 255.255.255.0

1.2. Created new directory c:\Program Files\Kongsberg Maritime\DataDistrib
1.3. copied DataDistrib.exe (v1.1.0.14) into newly created DataDistrib directory
1.4. configured DataDistrib with three entries for datagram routing, as shown in figure 1.
1.4.1 source port: 16103, destination: 192.168.3.1:3000 for em300 data transfer to ISSC
1.4.2 source port: 3001, destination: 157.237.14.60:2012 for ISSC parameter request to em300
1.4.3 source port: 3002, destination: 157.237.14.60:2012 for ISSC SVP download to em300
1.5. created program shortcut in the startup folder for DataDistrib.exe
1.6. Installed Ethereal (version 0.10.10)
1.7. Installed WinPcap (version 3.0), this is needed by Ethereal

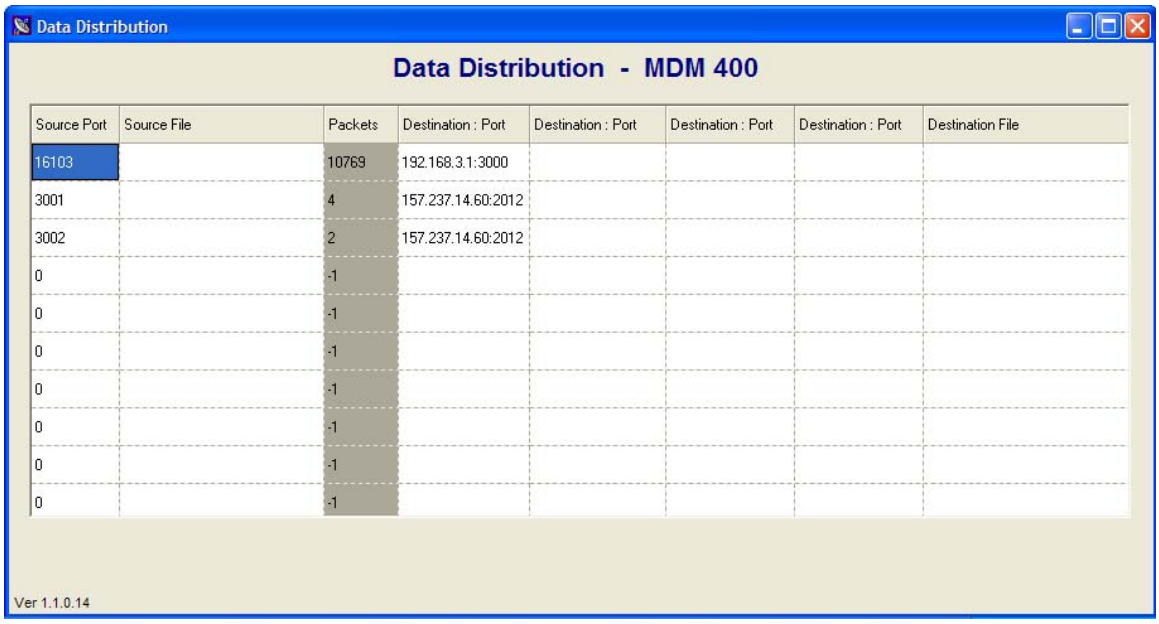


Figure 1. Configuration of EM300 DataDistribution Program for communications with ISS-2000.

2.0 Modifications made to EM300 PU communications output setup

2.1 Selected Installation -> PU Communications Setup -> Output Setup

2.2 Selected UDP Host Port *Host UDP4*

2.3 Confirmed that the Port address was set to 16103

2.4 Enabled the following datagram outputs

- Depth
- Raw Range and Beam Angle
- Seabed Image
- Position
- Attitude
- Clock
- Sound Speed Profile
- Runtime Parameters
- Installation Parameters

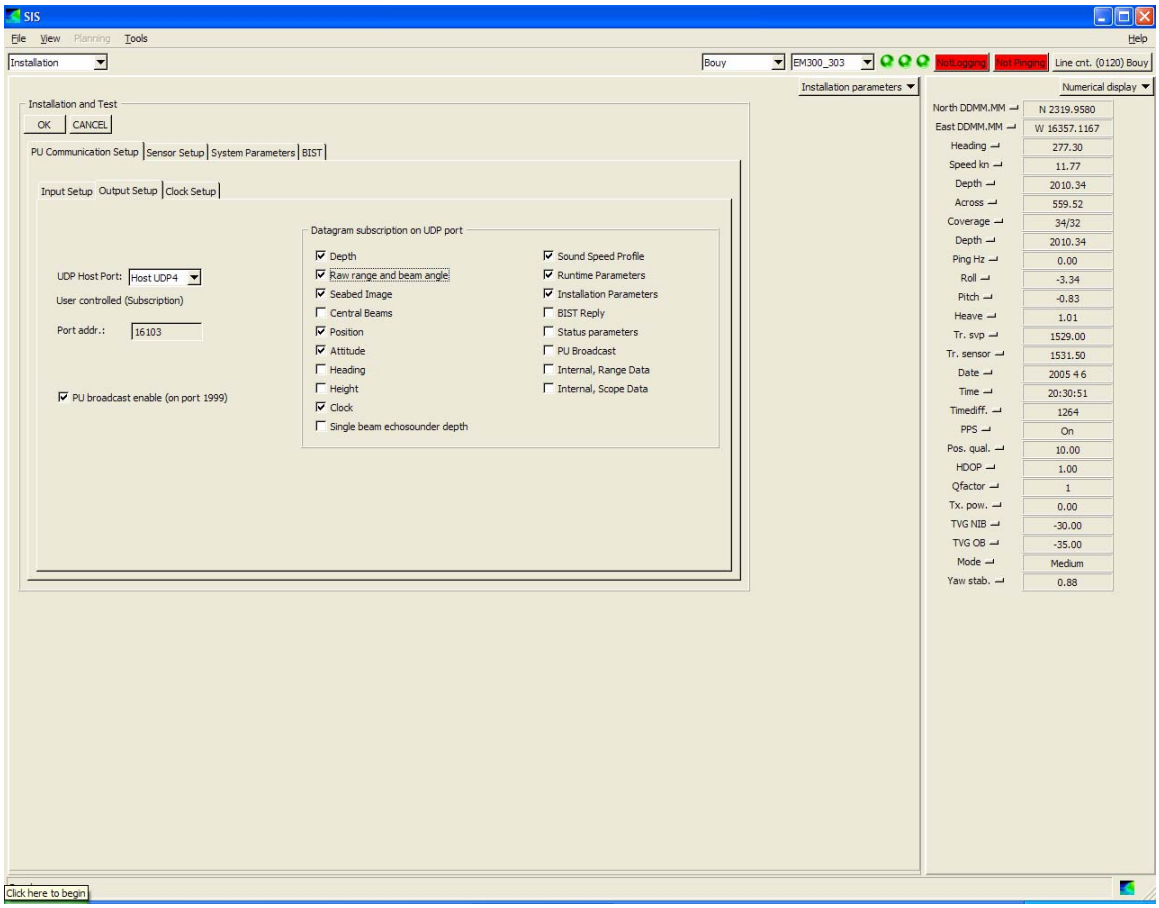


Figure 2. Configuration of em300 transceiver outputs to Host UDP4 (on SIS)

3.0 Modifications made on EM3002 via Windows XP[2]

3.1. Renamed, and reassigned IP for data distribution

3 ORIGINAL EM3002 NETWORK CONNECTIONS

1394 Connection (Configured for DHCP, but not used)
em3002 (Configured with fixed IP/subnet of: 157.237.2.30/255.255.0.0)
helm (Configured with fixed IP/subnet of: 192.235.1.6/255.255.0.0)

Updated EM300 Network Connections

helm network interface name changed to: *em3002_data_distribution*
em3002_data_distribution network interface IP changed to: 192.168.2.2
em3002_data_distribution network interface subnet changed to: 255.255.255.0

3.2. Created new directory c:\Program Files\Kongsberg Maritime\DataDistrib

3.3. copied DataDistrib.exe (v1.1.0.14) into newly created DataDistrib directory

3.4. configured DataDistrib with three entries for datagram routing, as shown in figure 3.

3.4.1 source port: 16103, destination: 192.168.2.1:3020 for em3002 data transfer to ISSC

3.4.2 source port: 3021, destination: 157.237.2.61:2012 for ISSC parameter request to em3002

3.4.3 source port: 3022, destination: 157.237.2.61:2012 for ISSC SVP download to em3002

3.5. created program shortcut in the startup folder for DataDistrib.exe

3.6. Installed Ethereal (version 0.10.10)

3.7. Installed WinPcap (version 3.0), this is needed by Ethereal

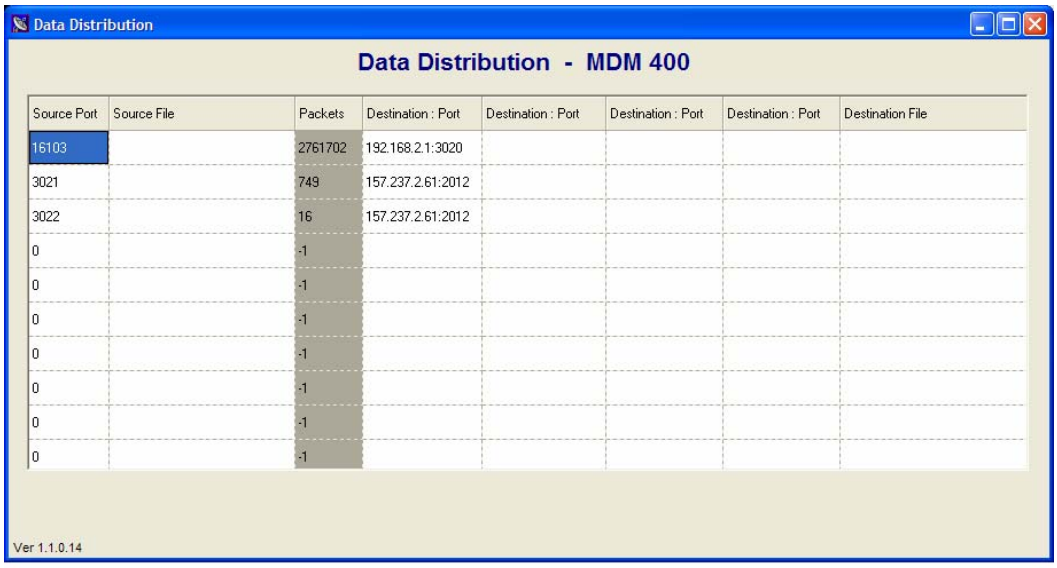


Figure 3. Configuration of EM3002D DataDistribution Program for communications with ISS-2000.

4.0 Modifications made on EM3002D to SIS configuration

4.1 Selected Installation -> PU Communications Setup -> Output Setup

4.2 Selected UDP Host Port *Host UDP4*

4.3 Confirmed that the Port address was set to 16103
4.4 Enabled the following datagram outputs
- Depth
- Raw Range and Beam Angle
- Seabed Image
- Position
- Attitude
- Clock
- Sound Speed Profile
- Runtime Parameters
- Installation Parameters

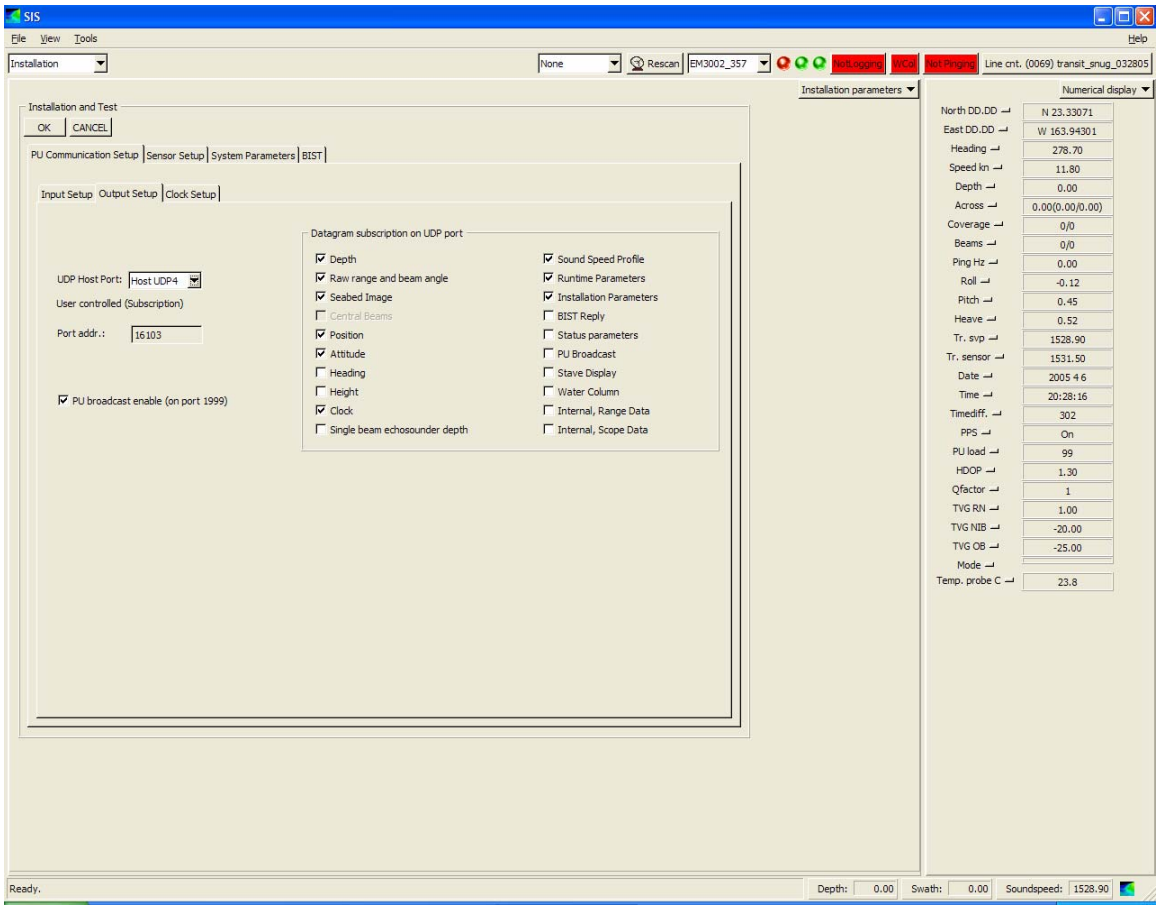


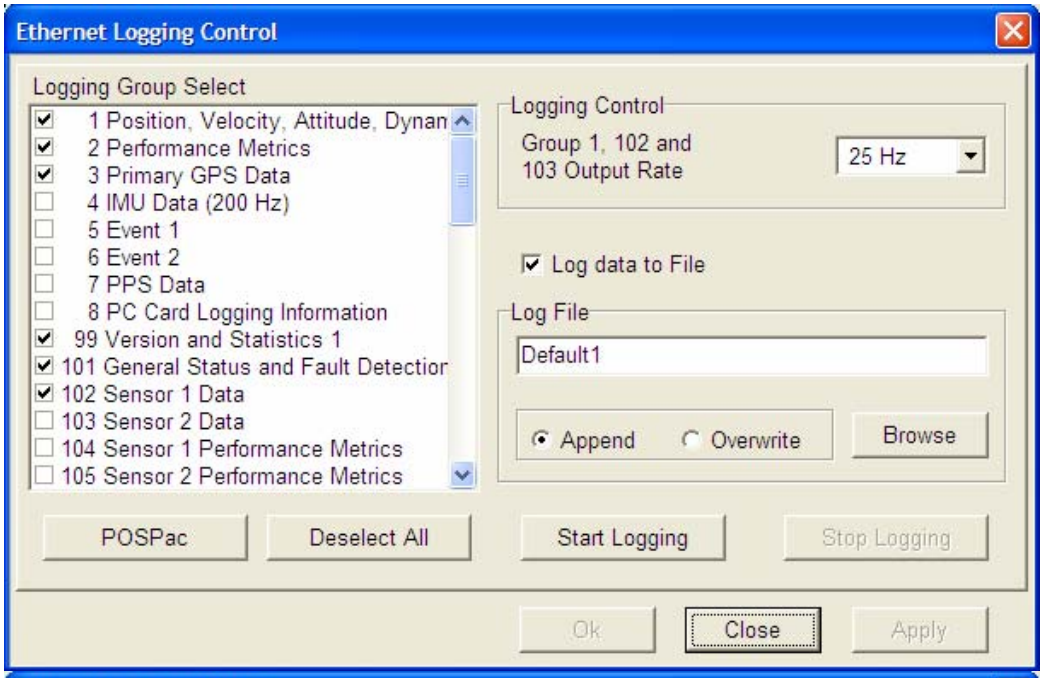
Figure 4. Configuration of EM3002D PU outputs to Host UDP4 (on SIS).

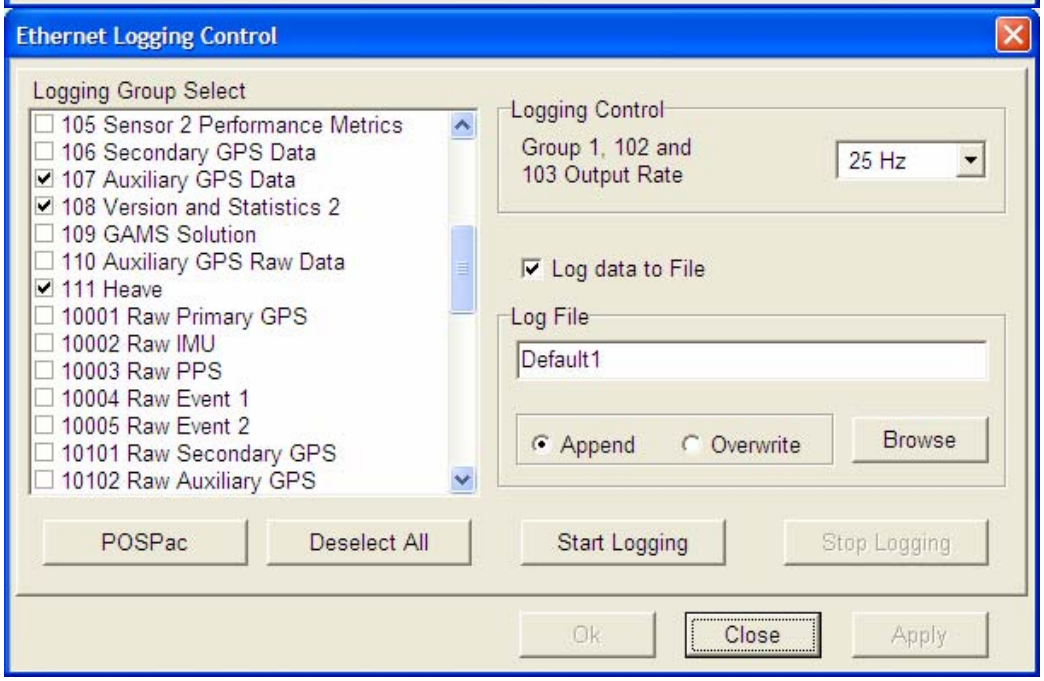
Notes:

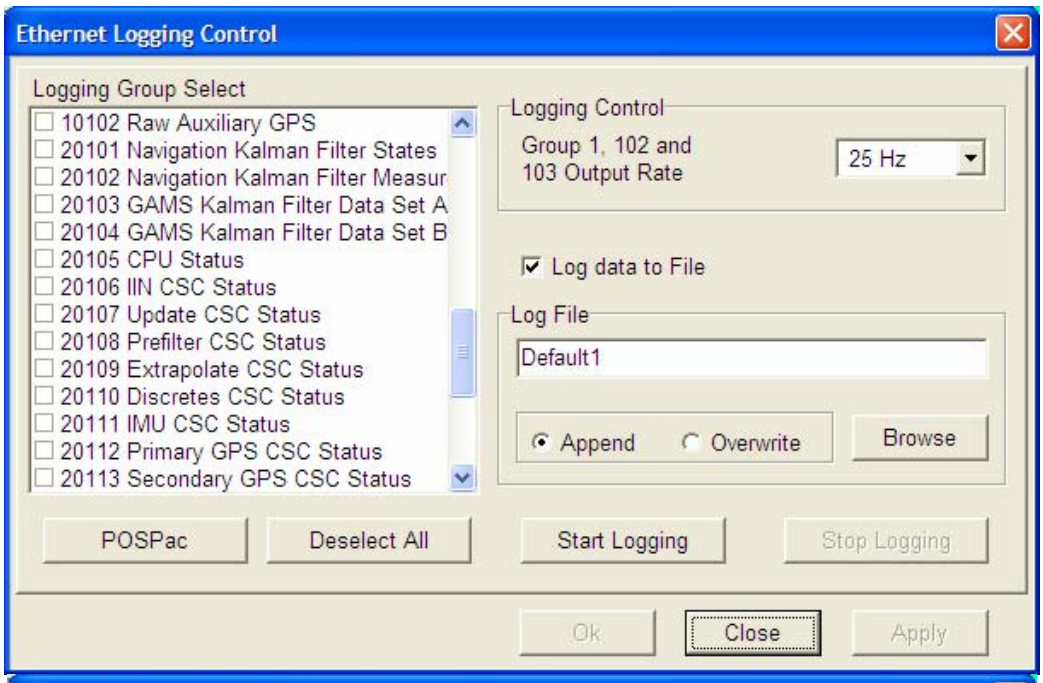
1) EM300 SIS computer has two user login accounts, both named user1. These two accounts have two different bitmap pictures at the login screen, and have different user environments. The user1 account displayed on the top of the list was configured to startup DataDistrib. The second user1 account was not configured to startup DataDistrib, and does not have an icon for SIS on the desktop.
2) EM3002 SIS computer has just one user login account named user1. This account was used to make the sighted configuration changes.

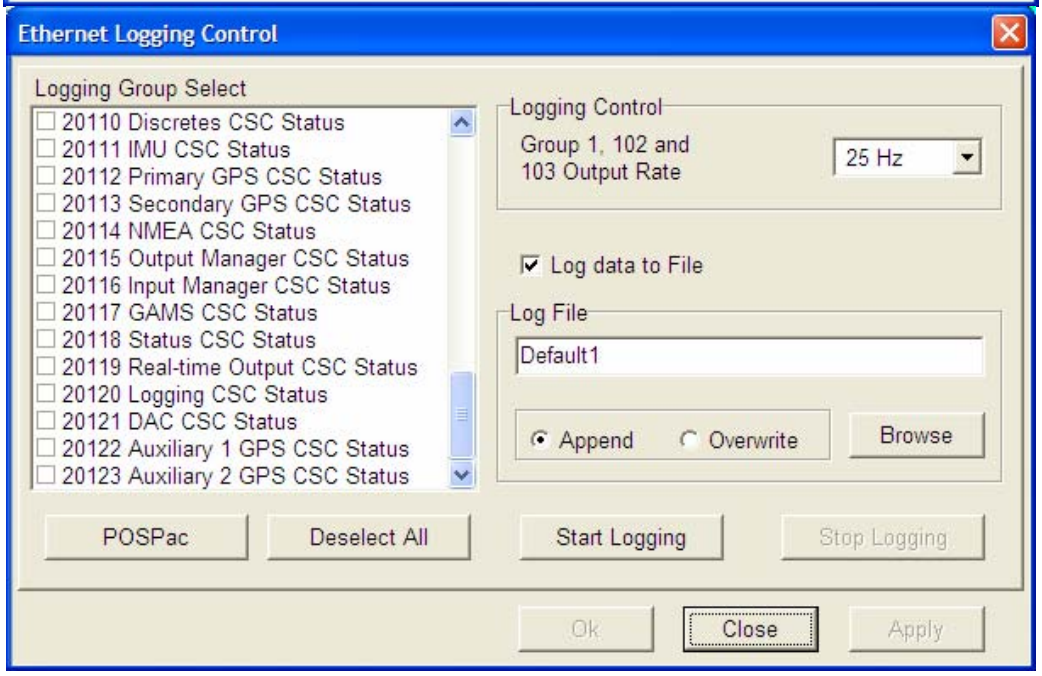
Section 6.0 Applanix POS/MV Setup

The following four screen grabs show the POS/MV Ethernet configuration. The Group 111 has the delayed heave output if installed.









Section 7.0 Applying SVP's

1. Go to the SIS window on each sonar and view the current SVP in the *Sound Velocity Profile* window. You may zoom in on the display by windows the top of the profile using the cursor.

2. Disable logging on both the EM300 and EM3002D by clicking on the *Pinging* button. It displays a red background when pinging is off. Note, pinging must be off on the SIS on both the EM300 and the EM3002D

3. Confirm logging is enabled on the ISSC. If not, start logging on System Control / Logging / *Enable logging.* Note, logging must be *Enabled* on the ISSC.

4. On *Multibeam Manager*, select *Display / SVP* and on *SVP Monitor*. Select the SVP needed and then *Apply / OK.*

5. Watch the Sound Velocity Profile graph display on the SIS systems. Observe the SVP change (application of the SVP may take up to 10 seconds before updating on the screen). If the SVP displays do not update, re-apply again on the ISSC.

6. After the profiles update on the Sound Velocity Profiles on the SIS view the Message Manager on the ISSC for the following confirmation messages.