CASIUS Calibration Report

Sonardyne
SOUND IN DEPTH

Vessel: **Device No:**   **Date/Time:** Monday, March 07, 2016
                                                                                21:30:55

Settings:

Initial Estimates for BoxIn	
Transceiver depth offset	4.760m
Transceiver depth	4.760m
Antenna starboard offset	-3.410m
Antenna forward offset	-10.140m
Antenna height offset	27.470m

Error Estimates for BoxIn	
DGPS lags USBL	0.00s
Range measurement	0.2m
Range gate	1.0m
DGPS position	2.0m
Beacon position	30.0m
Beacon depth	5.0m
Sound velocity	15.0m/s
Transceiver depth	0.5m
Transceiver offset	1.0m

Transceiver & Beacon	
Transceiver Index	11
Beacon Name	AvT-813
Turn Around Time	320.0ms

Depth Aiding	
Boresight Angle Limit	22.0º
Depth Difference Limit	1.0m

Transceiver Attitude Calculation Inputs	
Angle Gate	2.0º
Known Heading Correction	n/a

Values Used During Data Collection	
Transceiver Pitch Correction	0.00º
Transceiver Roll Correction	0.00º
Transceiver Heading Correction	0.00º
Sound Velocity	1500.9m/s

Results:

Beacon BoxIn	Beacon Eastings	Beacon Northings	Beacon Depth	Sound Velocity	Transceiver Starboard Offset	Transceiver Forward Offset
Before	284636.70m	1435684.70m	1542.00m	1500.88m/s	-2.31m	-5.92m
Calculated	284637.24m	1435683.68m	1541.12m	1498.77m/s	-2.35m	-5.78m
Calculated Accuracy	0.03m	0.03m	0.14m	0.08m/s	0.03m	0.03m

Transceiver Attitude	Pitch Correction	Roll Correction	Heading Correction
Before	0.00º	0.00º	0.00º
Calculated	**0.24º**	**0.05º**	**2.08º**
Calculated Accuracy	0.01º	0.01º	0.02º

Statistics:

	Before CASIUS (distance)	After CASIUS (distance)	Before CASIUS (% depth)	After CASIUS (% depth)
39.4% Beacon Positions (1 sigma)	14.8m	7.9m	0.96	0.51
50.0% Beacon Positions (CEP)	17.8m	9.4m	1.16	0.61
63.2% Beacon Positions (1 Drms)	21.3m	11.2m	1.38	0.73
86.5% Beacon Positions (2 sigma)	27.6m	15.9m	1.79	1.03
98.2% Beacon Positions (2 Drms)	36.0m	23.6m	2.33	1.53

General:

	Beacon BoxIn	Transceiver Attitude
Number of Iterations	3	3
Number of Fixes Used	2401	2401
Number Depth Aided		0
Average weighted residuals	0.005	1.587

Vessel Track
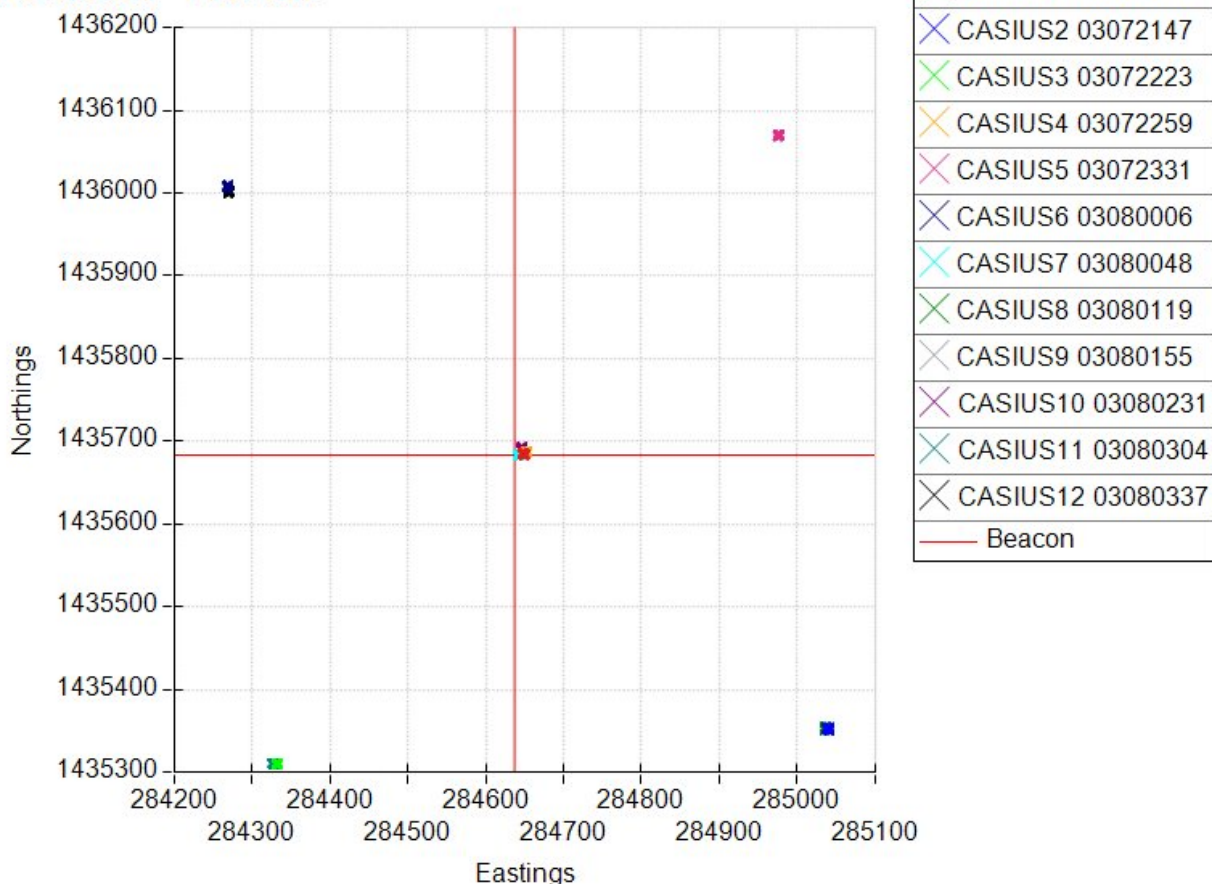
Data used:

Name	Filename	Start	End	#Acoustic	#Position
CASIUS1 03072119	C:\Ranger Files\CASIUS\2016Kurz\CASIUS1 03072119.csv	3/7/2016 21:30:55	3/7/2016 21:47:50	203	1139
CASIUS2 03072147	C:\Ranger Files\CASIUS\2016Kurz\CASIUS2 03072147.csv	3/7/2016 22:06:20	3/7/2016 22:22:56	200	1084
CASIUS3 03072223	C:\Ranger Files\CASIUS\2016Kurz\CASIUS3 03072223.csv	3/7/2016 22:42:26	3/7/2016 22:59:11	201	1084
CASIUS4 03072259	C:\Ranger Files\CASIUS\2016Kurz\CASIUS4 03072259.csv	3/7/2016 23:14:35	3/7/2016 23:31:22	202	1104
CASIUS5 03072331	C:\Ranger Files\CASIUS\2016Kurz\CASIUS5 03072331.csv	3/7/2016 23:49:32	3/8/2016 00:06:13	201	1088
CASIUS6 03080006	C:\Ranger Files\CASIUS\2016Kurz\CASIUS6 03080006.csv	3/8/2016 00:32:10	3/8/2016 00:48:46	200	1057
CASIUS7 03080048	C:\Ranger Files\CASIUS\2016Kurz\CASIUS7 03080048.csv	3/8/2016 01:02:55	3/8/2016 01:19:30	200	1032
CASIUS8 03080119	C:\Ranger Files\CASIUS\2016Kurz\CASIUS8 03080119.csv	3/8/2016 01:38:15	3/8/2016 01:55:04	202	1090
CASIUS9 03080155	C:\Ranger Files\CASIUS\2016Kurz\CASIUS9 03080155.csv	3/8/2016 02:14:55	3/8/2016 02:31:42	202	1101
CASIUS10 03080231	C:\Ranger Files\CASIUS\2016Kurz\CASIUS10 03080231.csv	3/8/2016 02:47:36	3/8/2016 03:04:22	202	1102
CASIUS11 03080304	C:\Ranger Files\CASIUS\2016Kurz\CASIUS11 03080304.csv	3/8/2016 03:20:36	3/8/2016 03:37:13	200	1113
CASIUS12 03080337	C:\Ranger Files\CASIUS\2016Kurz\CASIUS12 03080337.csv	3/8/2016 03:55:08	3/8/2016 04:11:39	199	1074

2D Scatter - Before CASIUS

Legend:
- CASIUS1 03072119
- CASIUS2 03072147
- CASIUS3 03072223
- CASIUS4 03072259
- CASIUS5 03072331
- CASIUS6 03080006
- CASIUS7 03080048
- CASIUS8 03080119
- CASIUS9 03080155
- CASIUS10 03080231
- CASIUS11 03080304
- CASIUS12 03080337
- ----- 1 Drms
- -- 2 Drms
- —— Beacon
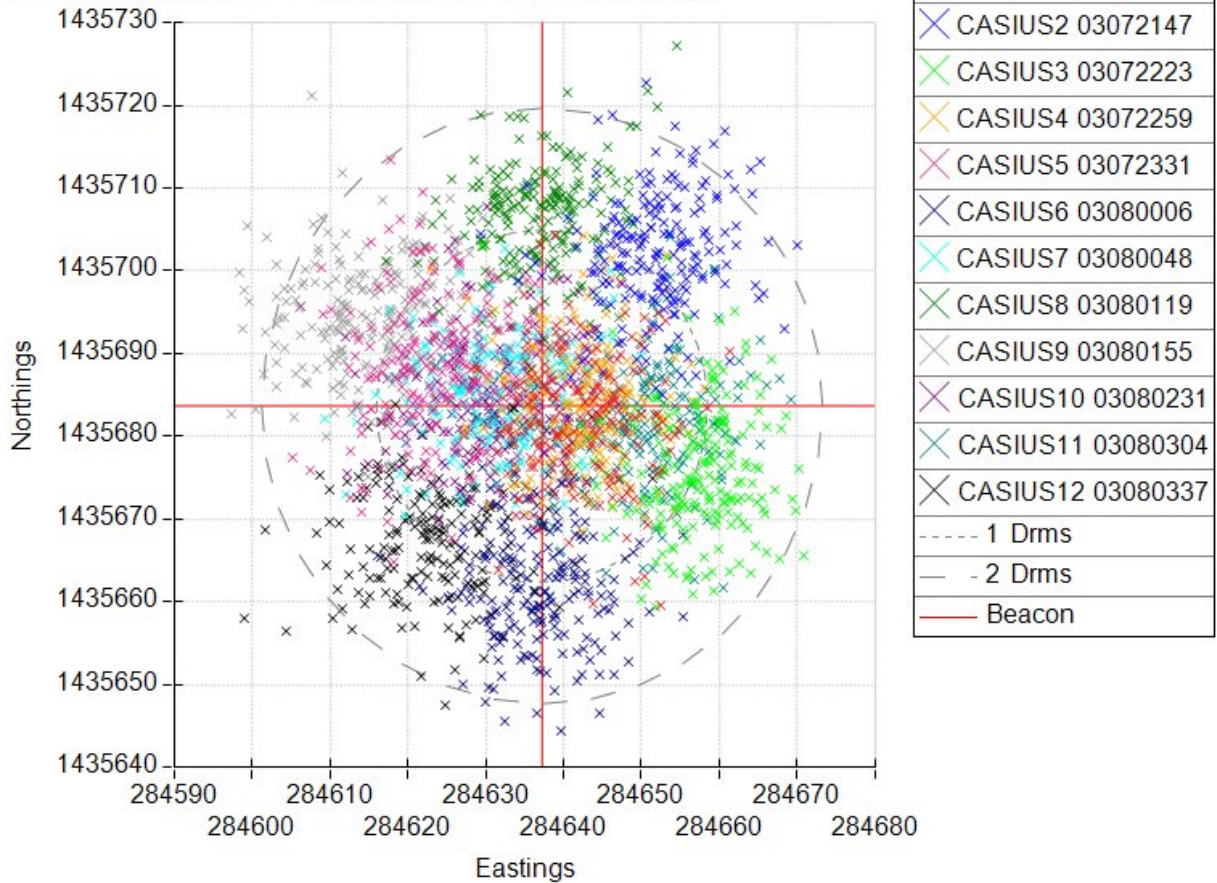
3D Histogram - Before CASIUS

Legend (Fix Density):
- 1 - 1.1
- 0.9 - 1
- 0.8 - 0.9
- 0.7 - 0.8
- 0.6 - 0.7
- 0.5 - 0.6
- 0.4 - 0.5
- 0.3 - 0.4
- 0.2 - 0.3
- 0.1 - 0.2
- 0 - 0.1

2D Scatter - After CASIUS

Legend:
- ✕ CASIUS1 03072119
- ✕ CASIUS2 03072147
- ✕ CASIUS3 03072223
- ✕ CASIUS4 03072259
- ✕ CASIUS5 03072331
- ✕ CASIUS6 03080006
- ✕ CASIUS7 03080048
- ✕ CASIUS8 03080119
- ✕ CASIUS9 03080155
- ✕ CASIUS10 03080231
- ✕ CASIUS11 03080304
- ✕ CASIUS12 03080337
- ----- 1 Drms
- — - 2 Drms
- —— Beacon
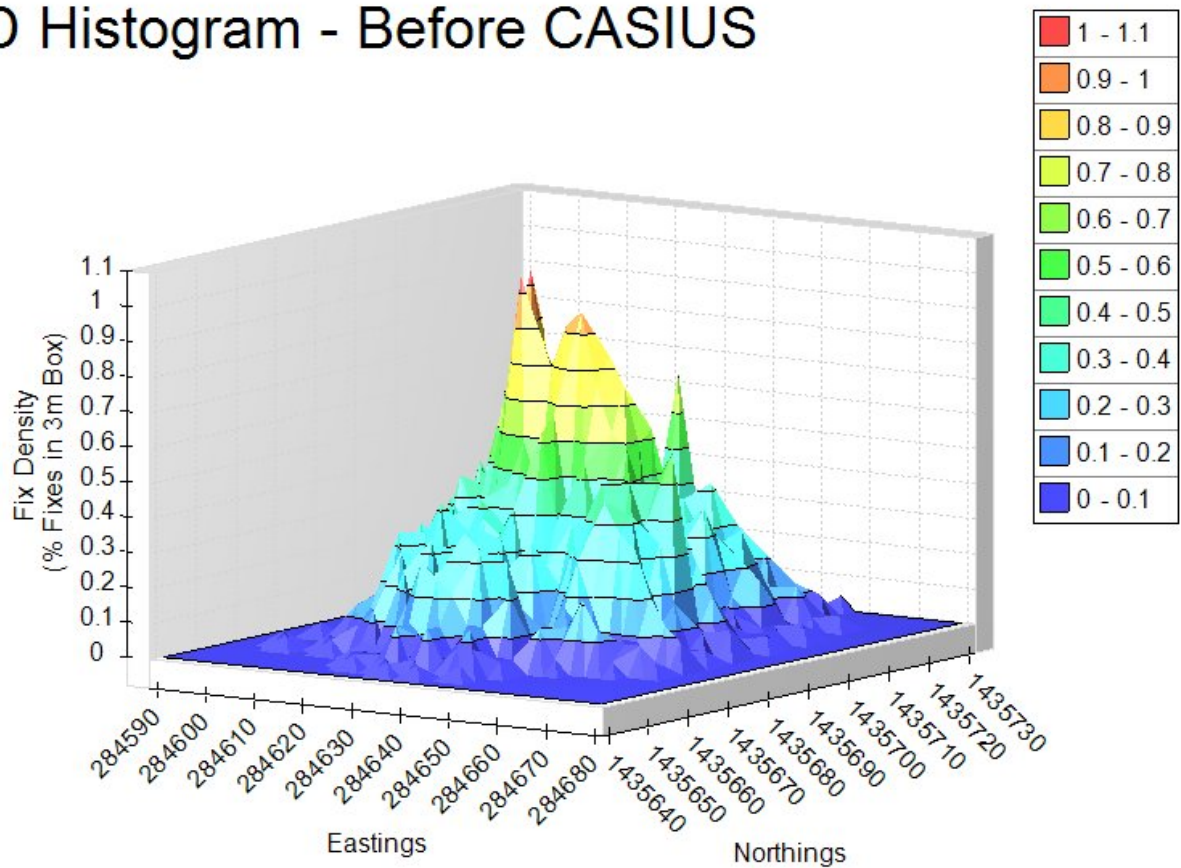
Northings / Eastings
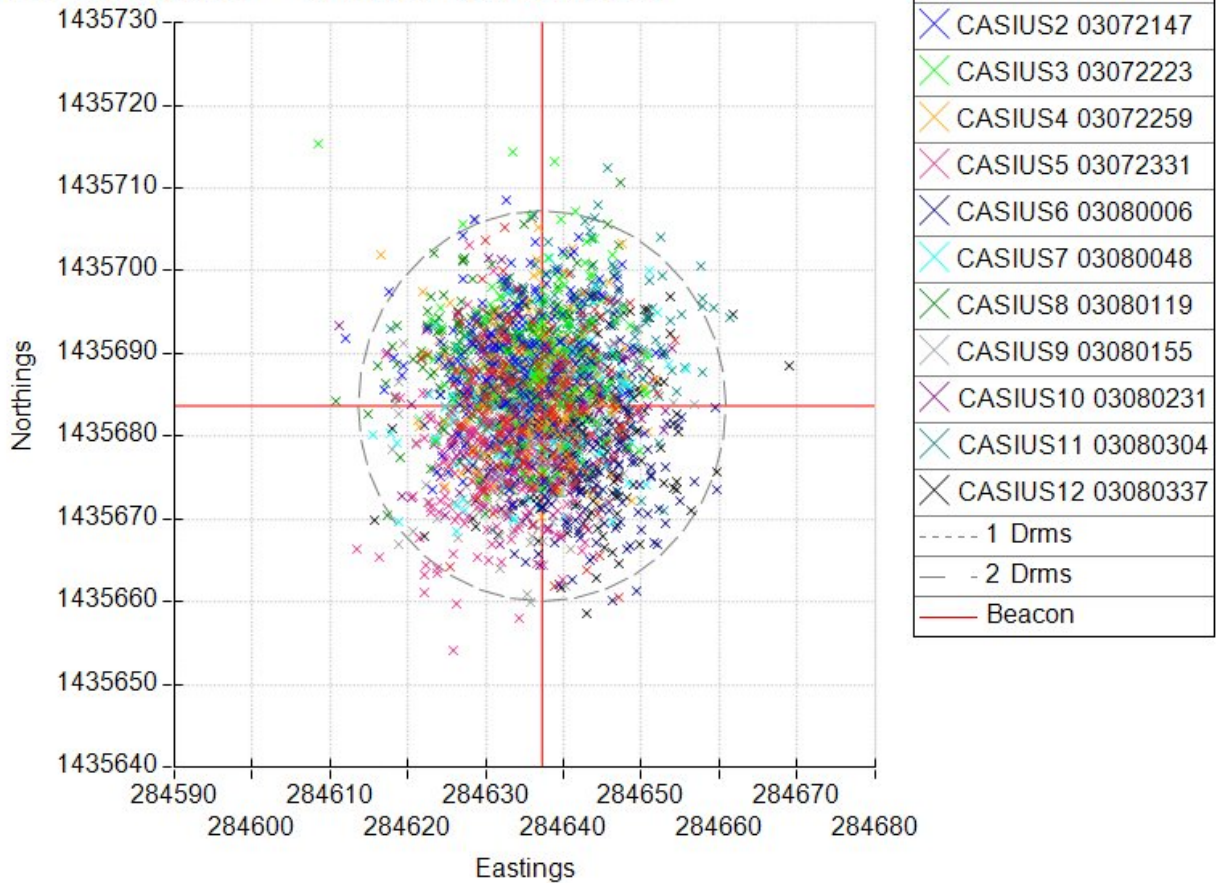
3D Histogram - After CASIUS

Legend:
- 2.5 - 3
- 2 - 2.5
- 1.5 - 2
- 1 - 1.5
- 0.5 - 1
- 0 - 0.5

Fix Density (% Fixes in 3m Box) / Eastings / Northings