CASIUS Calibration Report   Sonardyne
SOUND IN DEPTH

Vessel: Ship 1   **Device No:** 1663   **Date/Time:** 06 May 2018 00:54:37

Tcvr=Transceiver 1; Beacon=813 813; GPS=GNSS 1; Heading=PitchRoll 1 [Corrections(P:0,R:0,H:0)];
Attitude=PitchRoll 1 [Corrections(P:0,R:0,H:0)]

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	813 813
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	1504.2m/s

Results:

Beacon BoxIn	Beacon Eastings	Beacon Northings	Beacon Depth	Sound Velocity	Transceiver Starboard Offset	Transceiver Forward Offset
Before	347979.78m	3607905.47m	2434.61m	1504.16m/s	-2.34m	-6.30m
Calculated	347962.23m	3607898.38m	2434.61m	1503.28m/s	-2.41m	-6.29m
Calculated Accuracy	0.02m	0.02m	0.08m	0.03m/s	0.02m	0.01m

Transceiver Attitude	Pitch Correction	Roll Correction	Heading Correction
Before	0.00º	0.00º	0.00º
Calculated	**-0.05º**	**0.04º**	**1.97º**
Calculated Accuracy	0.00º	0.00º	0.01º

Statistics:

	Before CASIUS (distance)	After CASIUS (distance)	Before CASIUS (% depth)	After CASIUS (% depth)
39.4% Beacon Positions (1 sigma)	13.0m	3.0m	0.53	0.12
50.0% Beacon Positions (CEP)	14.7m	3.6m	0.61	0.15
63.2% Beacon Positions (1 Drms)	17.0m	4.5m	0.70	0.18
86.5% Beacon Positions (2 sigma)	19.9m	6.6m	0.82	0.27
98.2% Beacon Positions (2 Drms)	23.6m	10.9m	0.97	0.45

General:

	Beacon BoxIn	Transceiver Attitude
Number of Iterations	3	3
Number of Fixes Used	2051	2051
Number Depth Aided		0
Average weighted residuals	0.001	0.156

Vessel Track
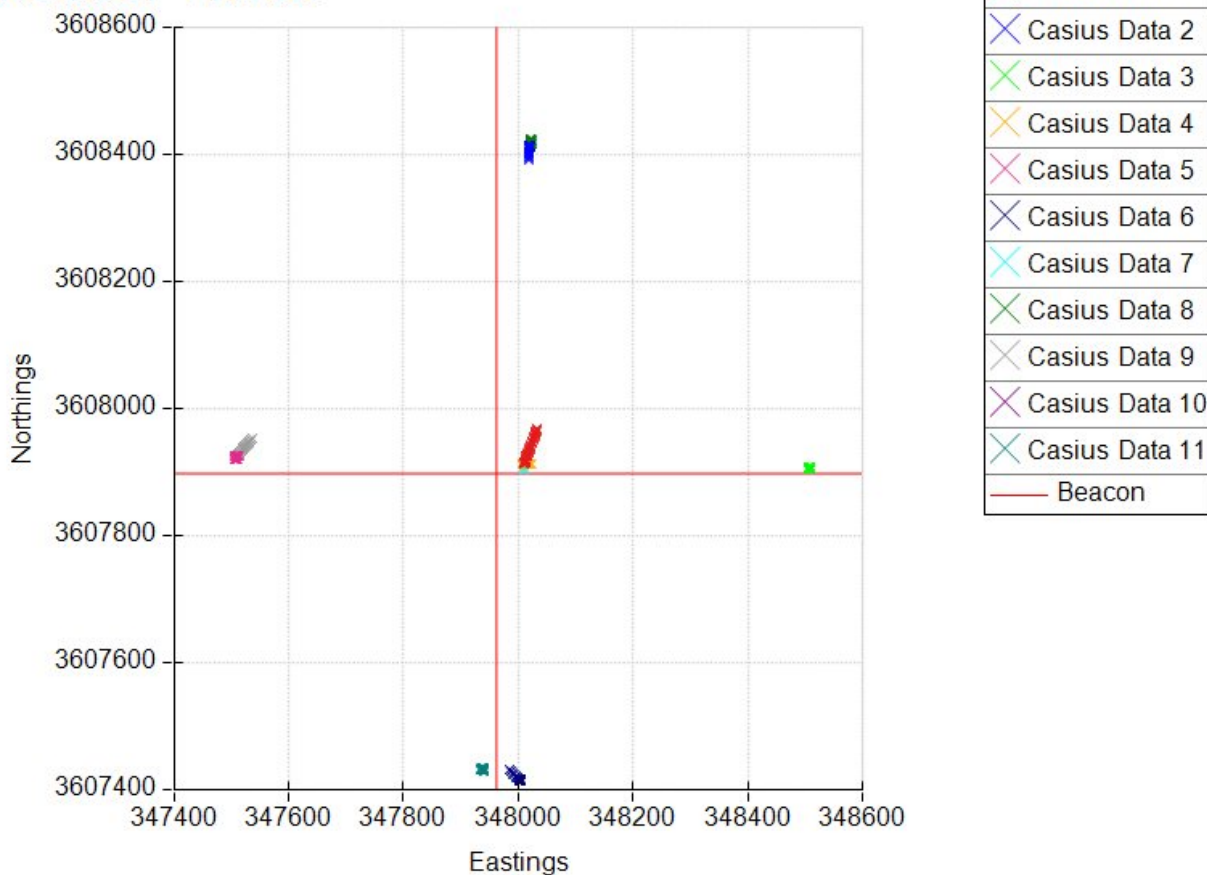
Data used:

| Name	Filename	Start	End	#Acoustic	#Position
Casius Data 1	n/a	06/05/2018 00:54:37	06/05/2018 01:16:36	206	1319
Casius Data 2	n/a	06/05/2018 01:31:33	06/05/2018 01:52:40	200	1267
Casius Data 3	n/a	06/05/2018 02:18:20	06/05/2018 02:39:07	201	1247
Casius Data 4	n/a	06/05/2018 02:58:54	06/05/2018 03:20:47	206	1313
Casius Data 5	n/a	06/05/2018 03:41:10	06/05/2018 04:03:33	218	1343
Casius Data 6	n/a	06/05/2018 04:33:19	06/05/2018 04:55:15	203	1316
Casius Data 7	n/a	06/05/2018 05:09:09	06/05/2018 05:31:13	210	1324
Casius Data 8	n/a	06/05/2018 05:53:44	06/05/2018 06:16:12	204	1348
Casius Data 9	n/a	06/05/2018 06:38:38	06/05/2018 07:00:26	201	1308
Casius Data 10	n/a	06/05/2018 07:28:52	06/05/2018 07:39:47	100	655
Casius Data 11	n/a	06/05/2018 07:59:04	06/05/2018 08:09:35	103	631

2D Scatter - Before CASIUS

Legend:
- Casius Data 1
- Casius Data 2
- Casius Data 3
- Casius Data 4
- Casius Data 5
- Casius Data 6
- Casius Data 7
- Casius Data 8
- Casius Data 9
- Casius Data 10
- Casius Data 11
- ----- 1 Drms
- -- - 2 Drms
- —— Beacon
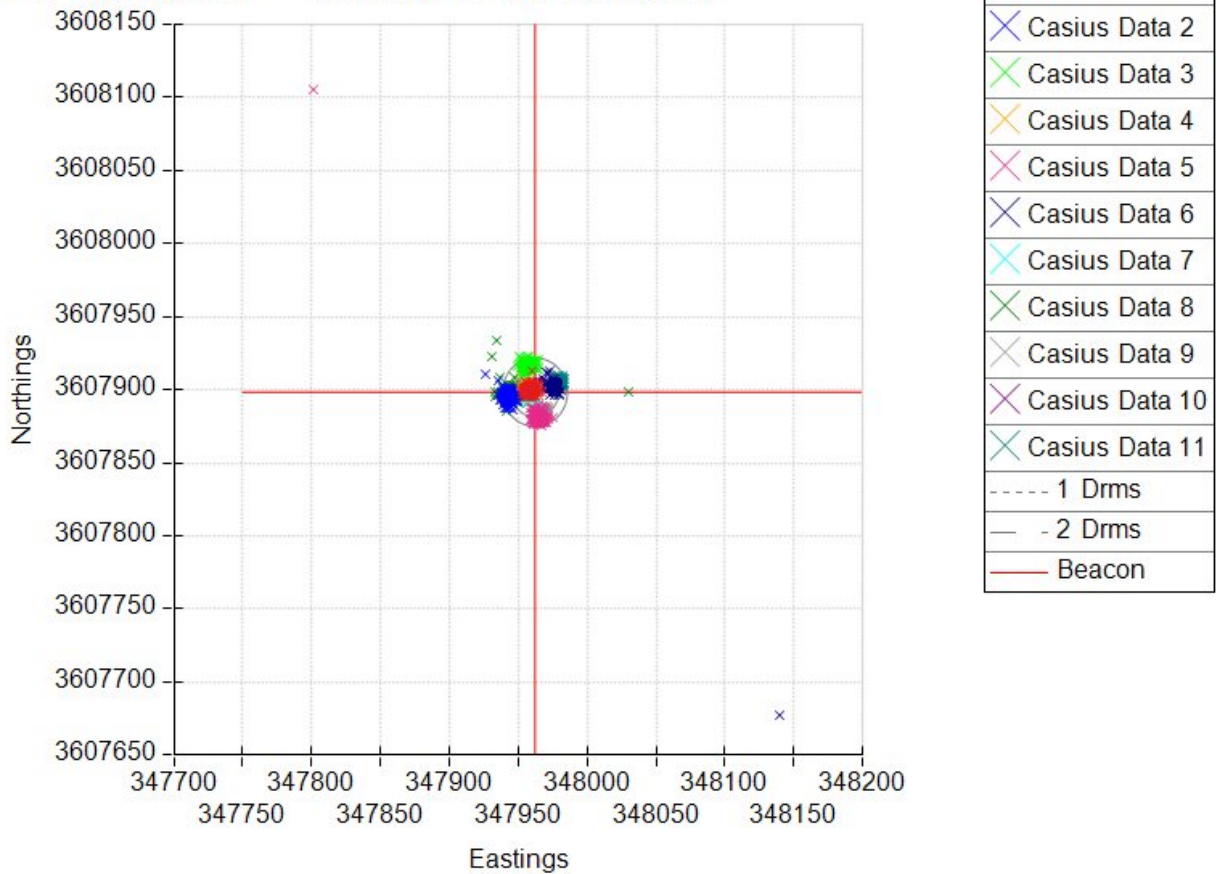
3D Histogram - Before CASIUS

Legend (Fix Density % Fixes in 5.3m Box):
- 20 - 22
- 18 - 20
- 16 - 18
- 14 - 16
- 12 - 14
- 10 - 12
- 8 - 10
- 6 - 8
- 4 - 6
- 2 - 4
- 0 - 2

2D Scatter - After CASIUS

Legend:
- × Casius Data 1
- × Casius Data 2
- × Casius Data 3
- × Casius Data 4
- × Casius Data 5
- × Casius Data 6
- × Casius Data 7
- × Casius Data 8
- × Casius Data 9
- × Casius Data 10
- × Casius Data 11
- ---- 1 Drms
- — - 2 Drms
- —— Beacon
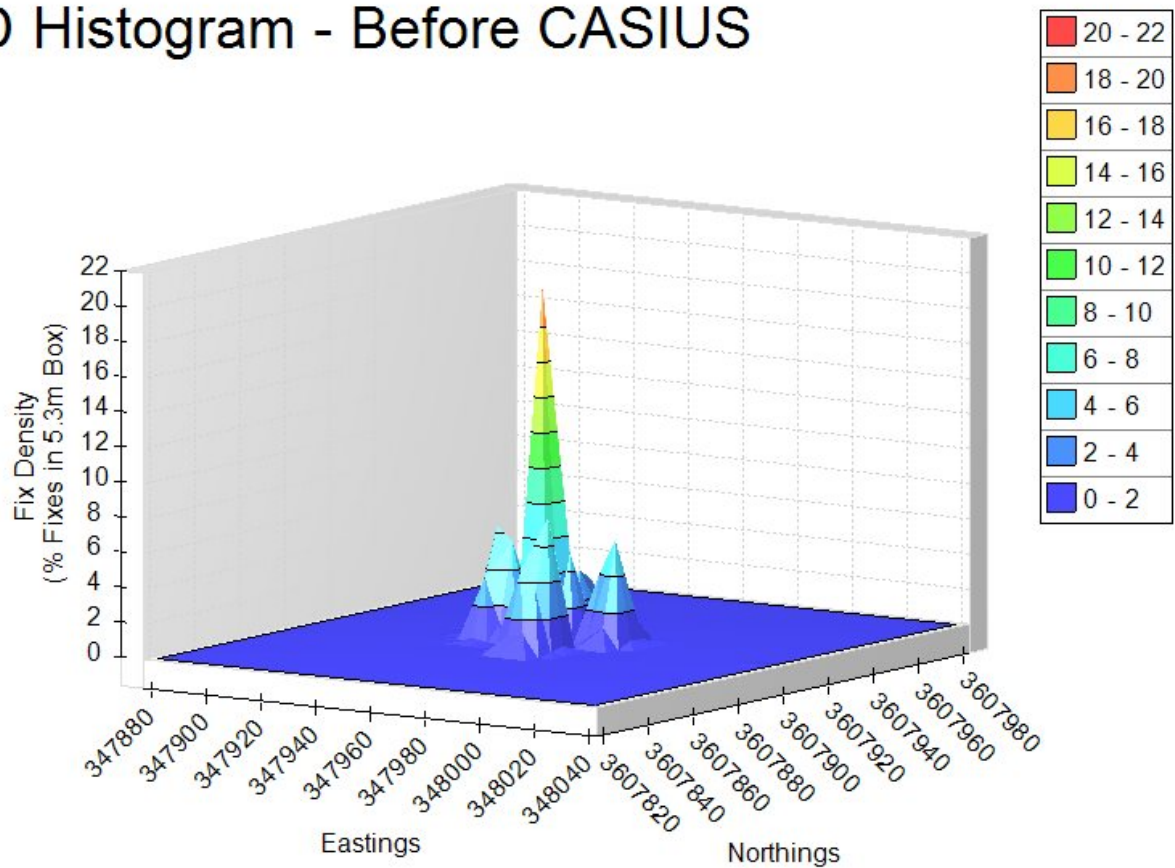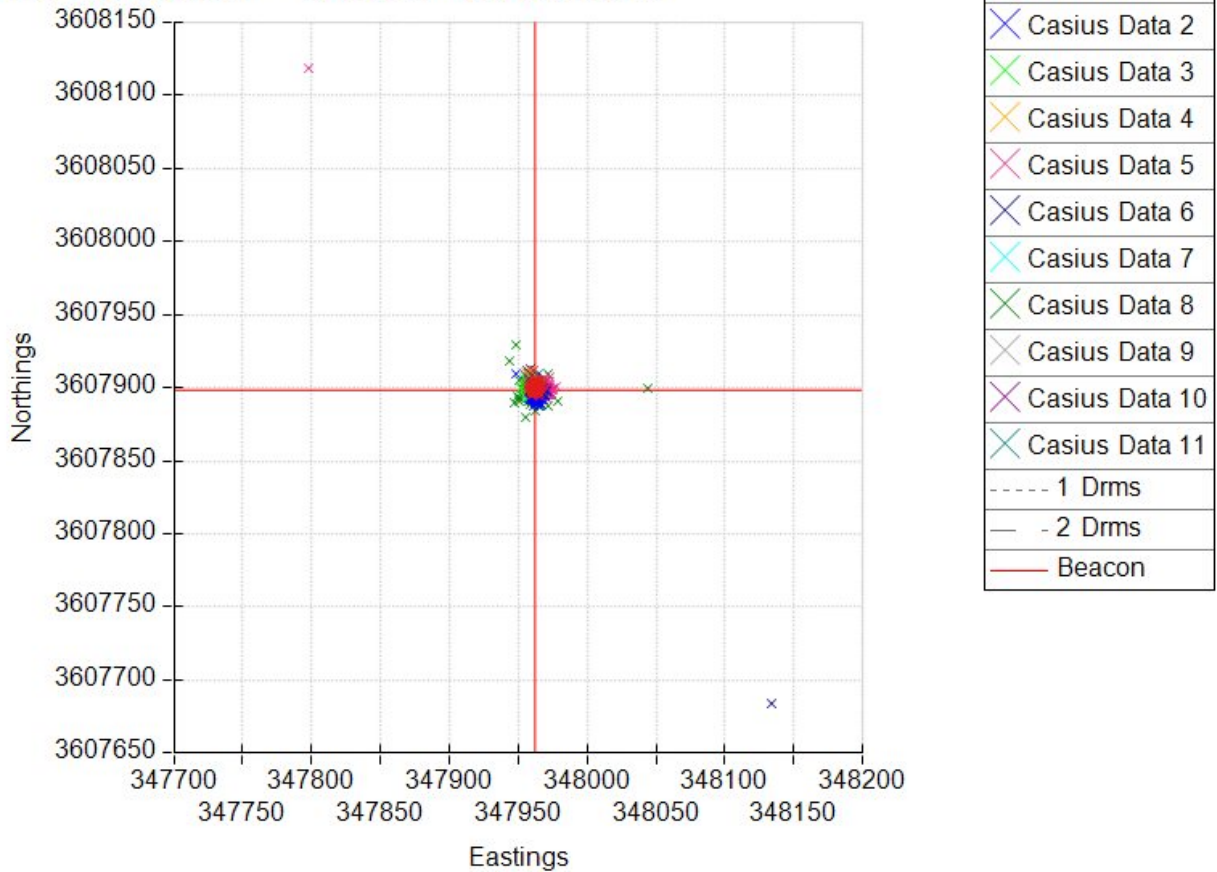
3D Histogram - After CASIUS

Legend:
- 35 - 40
- 30 - 35
- 25 - 30
- 20 - 25
- 15 - 20
- 10 - 15
- 5 - 10
- 0 - 5