

Least Squares

LEAST SQUARES DEFINITIONS

Databases

C:\Program Files (x86)\QPS\USWind

0411 - 1 - MainGeoSurvey - 0001	7/24/2015	19:59:43
0412 - 2 - MainGeoSurvey - 0001	7/24/2015	20:04:36
0413 - 3 - MainGeoSurvey - 0001	7/24/2015	20:09:14
0414 - 4 - MainGeoSurvey - 0001	7/24/2015	20:14:00
0415 - 5 - MainGeoSurvey - 0001	7/24/2015	20:18:22
0416 - 6 - MainGeoSurvey - 0001	7/24/2015	20:22:26
0417 - 7 - MainGeoSurvey - 0001	7/24/2015	20:27:23
0418 - 8 - MainGeoSurvey - 0001	7/24/2015	20:31:46

Properties

USBL System	USBL	Vessel Object	Shearwater
Reference Point	USBL	Gyro System	Wavemaster Gyro
Transducer Node	USBL	VRU System	Wavemaster PRH
Transponder Node	SSS CoG	Echosounder	Manual
Computation	Wavemaster		

Statistics

Number of USBL Observations	793	100 %
Number of Used Observations	793	100 %
Number of Disabled Observations	0	0 %

LEAST SQUARES SETTINGS

USBL Observations

Alignment Corrections	No Corrections
Reference Point	Actual USBL Transducer
Sound Velocity	Calibrated Sound Velocity
Computation Parameters	Scale, Angles, 3D Transponder Position
Standard Deviations	Scaled Calibration Standard Deviations

LEAST SQUARES RESULTS

Computation Results

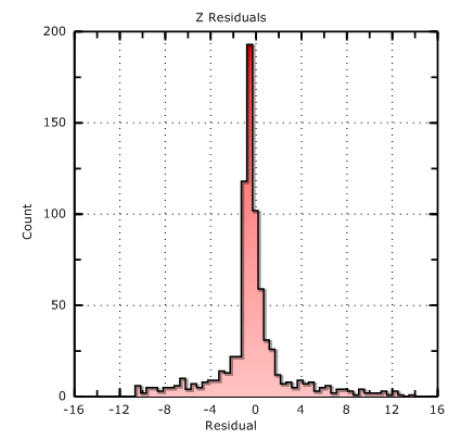
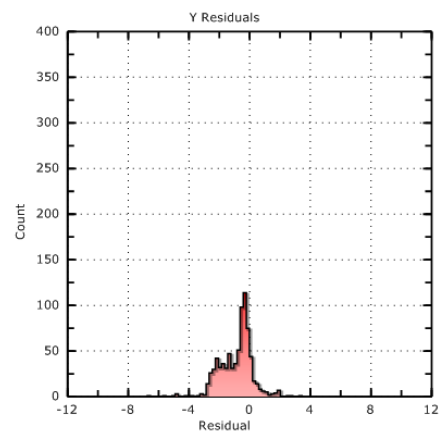
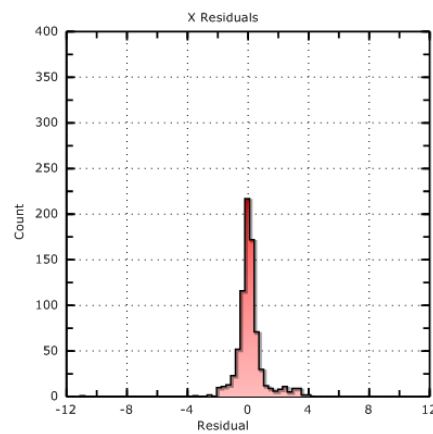
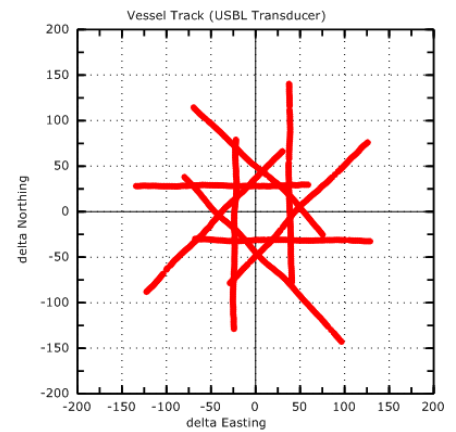
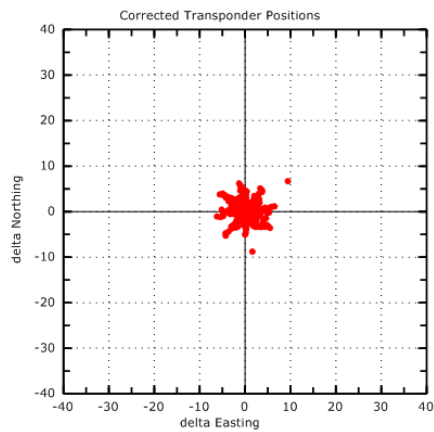
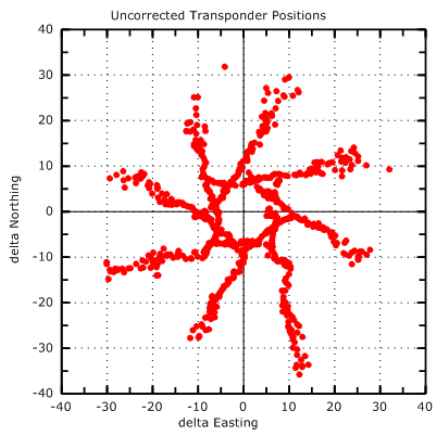
Parameter	Value	SD
Scale Factor	1.02661	0.02017
Roll Angle	-6.102 °	4.187 °
Pitch Angle	-26.868 °	1.276 °
Heading Angle	7.404 °	2.581 °

Transponder Position

Coordinate	Value	SD
Easting TP	515065.79 m	1.46 m
Northing TP	4236073.33 m	1.46 m
Height TP	-28.66 m	2.77 m

Least Squares

LEAST SQUARES GRAPHS



Mean Position

Coordinate	Value
Easting	515065.79 m
Northing	4236073.33 m
Height	-28.66 m

Calibrated Transponder Position

Spin Check

SPIN CHECK DEFINITIONS

Databases

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Transponder Node	SSS CoG	Echosounder	Manual
Computation	Wavemaster		

Statistics

Number of USBL Observations	793	100 %
Number of Used Observations	793	100 %
Number of Disabled Observations	0	0 %

SPIN CHECK SETTINGS

USBL Observations

Alignment Corrections	No Corrections
Reference Point	Actual USBL Transducer
Sound Velocity	Calibrated Sound Velocity

SPIN CHECK RESULTS

Computation Results

Parameter	Value	SD
Offset X	-1.14 m	5.71 m
Offset Y	-13.28 m	7.65 m
Offset Z	0.01 m	28.46 m

Transponder Position

Coordinate	Value	SD
Easting TP	515065.93 m	6.86 m
Northing TP	4236072.66 m	7.28 m

Z-Check

Z-CHECK DEFINITIONS

Databases

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Computation	Wavemaster		

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Number of USBL Observations	793	100 %
Number of Used Observations	793	100 %
Number of Disabled Observations	0	0 %

Z-CHECK SETTINGS

USBL Observations

Alignment Corrections	USBL Calibration Results
Reference Point	Actual USBL Transducer
Sound Velocity	Calibrated Sound Velocity

Depth Observations

Manual Depth	25.20 m
Transponder Height	0.50 m

Z-CHECK RESULTS

Computation Results

Parameter	Value	SD
Average Offset Z	3.99 m	3.31 m

Sound Velocity

USBL Observations

Sound Velocity	Calibrated Sound Velocity
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USBL Calibration Results

Parameter	Value	Factor
Calibration Results	1524.51 m/s	1.02661
Manually Set Values	N/A	

QINSy Database Settings

Parameter	Value	Factor
System-Used Velocity	1485.00 m/s	1.00000
Calibrated Velocity	1485.00 m/s	1.00000

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0418 - 8 - MainGeoSurvey - 0001

Alignments

USBL Calibration Results

Parameter	Value	SD
Scale Factor	1.02661	0.02017
Roll Angle	-6.102 °	4.187 °
Pitch Angle	-26.868 °	1.276 °
Heading Angle	7.404 °	2.581 °
Offset X	0.00 m	N/A m
Offset Y	0.00 m	N/A m
Offset Z	3.99 m	3.31 m
Easting TP	515065.79 m	1.46 m
Northing TP	4236073.33 m	1.46 m
Height TP	-28.66 m	2.77 m

USBL Transponder Positions

Error Ellipse	95 %	SD
Easting Center	515065.81 m	1.51 m
Northing Center	4236073.35 m	1.44 m
Semi-Major Axis	3.71 m	1.52 m
Semi-Minor Axis	3.51 m	1.43 m
Azimuth Major Axis	74.260 °	

QINSy Database Settings

Parameter	Value	SD
Scale Factor	1.00000	N/A
Roll Angle	0.000 °	0.050 °
Pitch Angle	0.000 °	0.050 °
Heading Angle	0.000 °	0.500 °

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