

FUGRO SURVEY AS

REPORT ON GYRO CALIBRATION, DGPS AND TAIL BUOY VERIFICATION FOR MV PACIFIC TITAN AT SEMAYANG WHARF BALIKPAPAN, INDONESIA

Survey Period: August 2007

Report Number: K1483 Rev 0

Client Reference:

0	Final	Anto Sinaga	Arief Faisal	Pim Peerebom	15 August 2007
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REPORT AMENDMENT SHEET

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1. ABSTRACT

Fugro Survey Pte Ltd through its subsidiary in Indonesia, PT Fugro Indonesia was contracted by Fugro Survey AS to carry out the following services for their survey vessel MV Pacific Titan at Semayang Wharf, Balikpapan, Indonesia on 07 up to 08th August 2007.

- DGPS System Verification
- Gyro Calibration
- Tail Buoys Verification

All co-ordinates quoted within this report are in metres and referred to WGS 1984 Spheroid and Datum

1.1 Summary of Results

The results are summarized and tabulated as follows:

a) DGPS System Verification

	Easti	ing (m)	Northing (m)		
System	C - O Std Dev.		C - O	Std Dev.	
Port GPS Antenna	-1.4	0.4	1.6	0.2	
Stbd GPS Antenna (Primary)	-1.4	0.4	1.6	0.1	

b) Gyro Calibration

		Gyro 1	HS 50	Gyro 2 AD 100		
Cal. #	Heading	C - O Std Dev.		C - O	Std Dev.	
August 7	15.3	1.1	0.8	2.2	0.2	
August 8	191.9	1.6	0.8	2.2	0.6	
Mean		1.35	0.8	2.2	0.4	

c) Tail Buoys System Verification

	Deg	rees °	Distance (m)		
System	Mean	Std Dev.	Mean	Std Dev.	
Pod1260	3.19	1.76	-0.55	2.10	
Pod1314	1.49	1.08	2.05	1.05	
Pod1411	1.45	4.32	-1.96	0.98	
Pod1503	-3.68	3.34	0.73	1.22	
Pod1511	-0.56	4.07	1.91	2.85	
Pod1518	0.82	0.33	0.32	0.38	
Pod1575	1.33	1.69	1.14	0.71	
Pod2041	-0.11	2.28	2.00	1.89	



2. PROJECT DETAILS

Client	: Fugro Survey AS
Contractor	: FUGRO SURVEY Pte. Ltd.
Project	: Gyro Calibration, DGPS System and Tail Buoys Verification
Vessel / Barge	: MV Pacific Titan
Location	: Semayang Wharf, Balikpapan, Indonesia
Equipment	: Total Station – Sokkia SET4B
Personnel	: Anto Sinaga (Surveyor) Bambang Setiawan (Surveyor)
Date	: 07th – 08 th August 2007



3. SURVEY PROCEDURES

3.1 Survey Stations

There are 2 reference survey station (2 numbers with WGS 1984 coordinates system) at Semayang Wharf Balikpapan, Indonesia. They are FUGRO 3 and FUGRO 4 (Refer to Appendix A). This point must be transferred due to far away from vessel. We make 2 help point near the vessel (P2 and P4) so that we could be shot prism on the vessel easily. P4 was used as instrument set-up location and P2 as the backsight (prism target). Details position of reference point and help point above as follows:

		Coordinates						
No.	Point_Name	Geodetic	Coordinates	Grid Coordinates				
		Latitude Longitude		Easting (m)	Northing (m)			
1	FUGRO 3	01°16'14.2952 S	116°48'24.2996 E	478501.312	9859555.337			
2	FUGRO 4	01°16'13.6253 S	116°48'24.9706 E	478522.046	9859575.907			
3	P2	01°16'21.3263 S	116°48'19.9359 E	478366.480	9859339.450			
4	P4	01°16'23.5496 S	116°48'19.7757 E	478361.536	9859271.189			

3.2 Position of Target Prism

On board the barge, four prisms were installed with masking tape, one at port GPS Antenna, one at starboard GPS Antenna (DGPS system and tailbuoys verification), and two at along starboard side of the vessel (Gyro calibration). The starboard GPS antenna was used as primary GPS antenna.

3.3 Calibration Procedures

The DGPS verification checks and gyro calibrations were conducted in difference time. The Total Station was set up at P4 and referenced to P2 as backsight (Refer to Appendix C). Range and bearing measurements were observed to the prisms installed on board the barge, same survey procedure was used for both gyro calibration and DGPS verification checks. At the same times, DGPS antenna positions and the gyro readings were logged by vessel chief navigator.



4. GEODETIC PARAMETERS

The survey work was defined and computed in the following Geodetic and Projection system:

Global Positioning System Geode	etic Parameters
Spheroid:	World Geodetic System 1984
Datum:	World Geodetic System 1984
Semi major axis:	a = 6 378 137.000 m
Inverse Flattening:	¹ / _f = 298.257 223 563
Project Projection Parameters	
Grid Projection:	Universal Transverse Mercator
UTM Zone:	50 S
Central Meridian:	117°00'00" E
Latitude of Origin:	0°00'00" N
False Easting:	500 000 m
False Northing:	0 m
Scale factor on Central Meridian:	0.9996
Units:	metre



5. COMPUTATIONS

The positions of prism target were computed from the total station range and bearing measurements in relation to the coordinates of the reference points (P4). These computed positions were then used as a basis for comparison with the observed readings from vessel DGPS system and gyros.

The details of the results are shown on the following pages:

		D	GPS SYS	TEM VER	RIFICATIO	N			
Vessel		Pacific Tital			Projection		UTM		
Location		Sem ayang Port, Balkp	papan		Spherold WGS 84			84	
Job Number		K-1483			Sem Hma(oraxis (m) 6378137.000				
Date 07 Algist2007				n verse flatte i	lig	298.25	57 223 563		
instrument Sokkia					Origin Latte de		0		
Obse wer		Anto Shaqa/Bambang			Origia Longita	de	117	• Е	
Local Time		+8 hours			Scale Factor		0.9996	5	
instrument Station		P4							
Latitude of Station		1 16 23.5496	" N		Easting :	478361.54	m		
Longitude of Station		116 48 19.757	'е		Northing :	9859271.19	m		
Reference Object		P2			Easting :	478366.48	m		
True Bearing to R.O.		4 8 32,0000	•		Northing :	9859339.45	m		
	LOCAL	GEODIME	TER	CALCULATE	D (SURVEY)	OBSERV	ED (GPS)	c-0	
FIX SGHT	TIME	• •	DISTANCE	EASTING	NORTHING	EASTING	NORTHING	dE (n)	dN(n)
1 GPSAntPortSkie	12:39:42	312 36 55	23.04	478345.75	9859287.97	47 8347 .852 4	9859286.56	-2.1	1.4
2 GPSAntPortSkie	12:43:44	312 36 30	23.04	478345.75	9859287.97	47 8347 .7065	9859286.71	-2.0	1.3
3 GPSAntPortSkie	12:45:29	312 40 25	23.03	478345.78	9859287.98	47 8347 .404 3	9859286.27	-1.6	1.7
4 GPSAitPortSkle	12:48:26	312 43 15	23.06	478345.77	9859288.02	478347.4	9859286.20	-1.6	1.8
5 GPSAntPortSide	12:50:13	312 43 15	23.07	478345.76	9859288.02	478347.49	9859286.00	-1.7	2.0
6 GPSAntPortSkle	12:53:06	312 33 20	23.00	478345.76	9859287.93	478347.61	9859286.00	-1.8	1.9
7 GPSAntPortSkle	12:54:46	312 33 40	23.02	478345.75	9859287.94	478347.37	9859286.22	-1.6	1.7
8 GPSAntPortSkie	12:57:46	312 37 20	23.05	478345.75	9859287.98	478347.62	9859286.22	-1.9	1.8
9 GPSAntPortSkie	12:58:41	312 35 05	23.05	478345.74	9859287.97	478347 D1	9859286.66	-1.3	1.3
10 GPSAntPortSkle	13:00:24	312 31 05	23.00	478345.75	9859287.92	478346.81	9859286.32	-1.1	1.6
11 GPSAntPortSkle	13:04:14	312 37 35	23.04	478345.75	9859287.98	478346.79	9859286.70	-1.0	1.3
12 GPSAntPortSkle	13:05:42	312 30 10	23.01	478345.74	9859287.92	478346.65	9859286.47	-0.9	1.4
13 GPSAntPortSkle	13:08:46	312 30 25	23.04	478345.72	9859287.94	478346.81	9859286.48	-1.1	1.5
14 GPSAntPortSkle	13:10:18	312 33 10	23.04	478345.73	9859287.96	478346.4	9859286.53	-0.7	1.4
15 GPSAutPortSide	13:12:53	312 36 50	23.02	478345.76	9859287.96	478346.55	9859286.65	-0.8	1.3
16 GPSAntPortSkle	13:14:19	312 36 50	23.04	478345.75	9859287.97	478347 D8	9859286.31	-1.3	1.7
17 GPSAntPortSkle	13:16:35	312 43 15	23.07	478345.76	9859288.02	478347.25	9859286.57	-1.5	1.4
18 GPSAntPortSkie	13:17:55	312 42 10	23.09	478345.74	9859288.03	478346.83	9859286.52	-1.1	1.5
19 GPSAntPortSkle	1321:45	1	23.10	478345.77	9859288.07	478347.D1	9859286.66	-1.2	1.4
20 GPSAntPortSkle	1329:23	312 39 10	23.09	478345.73	9859288.02	478347 <u>.</u> 54	9859286.09	-1.8	1.9
						Mean	(C - O) =	- 1.4	1.6
							S. D. =	0.4	0.2



		DG	PS SYSTE	M VERIF	ICATION				
Vessel		Pachic Tilan			Projection		UTM		
Location		Sem ayang Porl, Balk	papan		Spheroid		WGS	84	
Job Number		K-1 483			Sem ⊦ma≬or ao	ds(m)	6378	1 37 .000	
Dale		07 Augus I 2007			inverse statien	ing	298.2	57223563	
ins humen i		Sokkia			Origin Lai kate		0	•	
Observer		Anio Sinag a/Bamban;	,		Origin Long Na	de	117	• E	
Local Time		+8 hours			Scale Factor		0.999	6	
hsirumeni Sialon		P4							
La llude of Sialion		1 16 23.5496	1 a 👘		Easing :	478361.54	m		
Longilude of Sia ion		1 16 48 19.7757	'E		Northing :	9859271.19	m		
Reference Object		P2			Easing :	478366.48	m		
True Bearing to R.O.		+ s'32.0000	•		Northing :	9859339.45	m		
	LOCAL	GEODME	TER.	CALCULATE	(SURVEY)	0 BSERV	ED (GPS)	C - 0	
FIX SIGH	г тме	• • •	DISTANCE	EASTING	NO RTHING	EASTING	NO RTH ING	dE(m)	d H (m)
1 GPSAniSkarb	oaard Sade 12:41:18	315 39 10	21.40	478347.72	9859287.53	478349.582	9859286.08	-1.9	1.5
2 GPS AniSkarb	oaard Sade 12:44:20	315 36 25	21.39	478347.72	9859287.51	478349.7107	9859285.93	-2.0	1.6
3 GPS Ani Skarb	oard Side 12:46:28	315 41 35	21.39	478347.74	9859287.54	478349.4619	9859285.99	-1.7	1.5
4 GPSAniSkarb	oaard Sade 12:49:18	315 41 20	21.42	478347.72	9859287.56	478349.3552	9859285.64	-1.6	1.9
5 GPSAniSkarb	oaard Sade 12:51:23	315 39 05	21.41	478347.71	9859287.54	478349.0936	9859285.95	-1.4	1.6
6 GPS AniSkarb	oaard Sade 12:54:01	315 31 30	21.36	478347.71	9859287 .47	478349.0406	9859285.82	-1.3	1.7
7 GPS AniSkarb	oaard Sade 12:55:41	315 34 55	21.39	478347.71	9859287.51	478349.4324	9859285.60	-1.7	1.9
8 GPSAniSkarb	oaard Sade 12:57:36	315 34 10	21.40	478347.70	9859287.51	478349.4951	9859285.76	-1.8	1.8
9 GPSAniSkarb	oaard Sade 12:59:36	315 36 10	21.40	478347.71	9859287.52	478348.9724	9859285.90	-1.3	1.6
10 GPS AniSkarb	ovaard Salde 13:01:10	315 32 00	21.35	478347.72	9859287.47	478348.940	9859285.91	-1.2	1.6
11 GPSAniSkarb	oard Skie 13:04:59	315 34 35	21.37	478347.72	9859287.49	478348.669	9859286.07	-0.9	1.4
12 GPS Ani Slarb	oard Skie 13:06:25	315 34 40	21.35	478347.73	9859287.48	478348.8211	9859285.96	-1.1	1.5
13 GPSAniSkarb	oaard Sade 13:09:37	315 33 35		478347.70	9859287.51	478348.4258	9859285.91	-0.7	1.6
14 GPS Ani Slarb	oard Skie 13:11:05	315 29 10	21.38	478347.69	9859287.48	478348.7058	9859285.93	-1.0	1.5
15 GPSAniSkarb	oaard Sade 13:13:37	315 34 40	21.40	478347.70	9859287.51	478348.7534	9859285.88	-1.1	1.6
16 GPSAniSkarb	oaard Sade 13:15:37	315 41 15		478347.74	9859287.53	478349.0136	9859285.96	-1.3	1.6
17 GPS Ani Slarb	oard Skie 13:17:12	315 41 15	21.44	478347.71	9859287.57	478348.9817	9859286.11	-1.3	1.5
18 GPS Ani Skarb	oard Skie 13:20:34	315 45 40	21.46	478347.71	9859287.61	478348.9642	9859285.94	-1.3	1.7
19 GPS Ani Slarb	oard Skie 13:22:21	315 47 25	21.47	478347.72	9859287 .62	478348.9984	9859286.07	-1.3	1.5
20 GPSAniSkarb	oaard Sate 13:30:45	315 45 00	21.47	478347.70	9859287 .61	478349,8654	9859285.62	-2.2	2.0
						Mean	(C · O) =	-1.4	1.6
							S.D. =	0.4	0.1



vessel		Pacific Titan		Projection	(/CALIBRATI	UTM		
ocation		Semayang Port, Balikpa	ipan	Spheroid		WGS84		
bb Num		K-1483		Semi-major a	xis (m)	6378137.000)	
Date		07 August 2007		hverse flatter	1 1	298 2572235		
nstrume	nt	Sokkia		Origin Latitud	*	0 •		
Observer	r	Bambang/Anto		Origin Longitu		117 °E		
Local Tin		+8 hours		Scale Factor		0.9996		
	nt Station	P4					Vessel	Gγro
atitude	of Station	1 ° 16 ' 23,5496 "	N	Easting :	478361.5360 m			- <u>(</u>
Longitud	e of Station	116 ° 48 ' 19.7757 "	E	Northing :	9859271.189D m		AD1	00
Re ferenc	e Object	P2		Easting :	478366.4800 m		1	
True Bea	aring to R.O.	4 ° 8' 32,0000 "		Northing :	9859339.4500 m			
			Azimuth Ot	oservation	Observed	Vessel I	Heading	
		Local	Horizontal	Vertical	Horiz ontal	(Deg	rees)	(Deg)
Obs	Sight	Time	• • •	ddd mmss	DISTANCE	CALC	GYRO	C-0
	R.O.		4 8 32					
1	Bow	13:35:41	302 23 30	90.0000	14.69	14.9	13.1	1.8
	Stern		228 54 20	90.0000	22.12		10.1	1.0
2	Bow	01:36:56 PM	302 25 45	90.0000	14.70	15D	13.1	1.9
4	Stern		228 58 25	90.0000	22.12	1010	13.1	1.8
3	Bow	01:40:04 PM	302 19 50	90.0000	14.70	15D	13.1	1.9
Ň	Stern		228 54 15	90.0000	22.13	101	10.1	1.0
4	Bow	01:41:04 PM	302 14 10	90.0000	14.68	15D	13.1	1.9
4	Stern		228 59 00	90.0000	22.13	1010	13.1	1.8
5	Bow	01:43:30 PM	302 17 25	90.0000	14.72	15,1	13.1	2.0
9	Stern		229 01 55	90.0000	22.12	15.1	13.1	2.0
6	Bow	01:45:33 PM	302 16 55	90.0000	14.71	15.1	13.1	2.0
	Stern		228 51 25	90.0000	22.14	10.1	13.1	2.0
7	Bow	01:46:42 PM	302 17 15	90.0000	14.72	15.1	13.1	2.0
ſ	Stern		228 58 25	90.0000	22.11	15.1	13.1	2.0
8	Bow	01:47:55 PM	302 20 25	90.0000	14.72	15.2	13.1	2.1
Ů	Stern		228 48 45	90.0000	22.15	102	10.1	2.1
9	Bow	01:50:04 PM	302 34 05	90.0000	14.70	15.2	13.1	2.1
a	Stern		228 52 05	90.0000	22.16	152	13.1	2.1
10	Bow	01:51:15 PM	302 10 05	90.0000	14.72	15.3	13.1	2.2
10	Stern		228 57 15	90.0000	22.11	10.5	13.1	2.2
11	Bow	01:53:16 PM	302 17 05	90.0000	14.72	15.3	13.1	2.2
	Stern		229 03 15	90.0000	22.14	15.5	13.1	2.2
12	Bow	01:54:22 PM	302 26 15	90.0000	14.71	15.3	13.1	2.2
12	Stern		229 00 00	90.0000	22.07	10.0	10.1	2.2
13	Bow	01:55:39 PM	302 27 05	90.0000	14.72	15.4	13.1	2.3
13	Stern		229 05 20	90.0000	22.10	10.4	13.1	2.3
14	Bow	01:57:05 PM	302 24 40	90.0000	14.74	15,4	13.1	2.3
	Stern		229 06 45	90.0000	22.10	10,4	13.1	2.3
15	Bow	01:58:22 PM	302 22 15	90.0000	14.75	15.4	13.1	2.3
10	Stern		229 03 20	90.0000	22.12	10.4	13.1	2.3
16	Bow	01:59:22 PM	302 24 45	90.0000	14.75	15.5	13.1	2.4
10	Stern		229 08 00	90.0000	22.10		10.1	2.4
17	Bow	02:00:38 PM	302 22 25	90.0000	14.75	15.5	13.1	2.4
	Stern		229 02 35	90.0000	22.12		10.1	2.4
18	Bow	02:02:00 PM	302 17 50	90.0000	14.75	15.6	13.1	2.5
10	Stern		228 58 25	90.0000	22.14	15.0	13.1	2.0
19	Bow	02:03:18 PM	302 18 35	90.0000	14.74	15.6	13.1	2.5
18	Stern		229 05 00	90.0000	22.10	15.0	13.1	2.0
20	Bow	02:06:05 PM	302 20 20	90.0000	14.75	15.6	13.1	2.5
20	Stern		229 04 05	90.0000	22.10		13.1	2.0
						Mean (C-O) =	2.2

Correction for Gyrocompass = 2.2 °



/essel .ocation				Projection		UTM		
ພະບອດທີ່ໄ		Pacific Titan Semayang Port, Balikpa	070	Spheroid		WGS84		
ob Num	h	K-1483	pan	Semi-major a	via (m)	6378137DDD		
oo Num Date	Der			hverse flatter				
	-+	07 August 2007 Solikia		-	·	298.2572235 0 °	10.3	
nstrumei				Origin Latitud		-		
)bserver		Bambang/Anto		Origin Longit.	ide	117 °E		
local Tin		+8 hours		Scale Factor		0.9996		
	nt Station	P4					Vessel	Буго
	of Station	1 ° 16 ' 23.5496 "		Easting :	478361.536D m			
×	e of Station	116 ° 48 ' 19.7757 "	E	Northing :	9859271.189D m		HS	50
	e Object	P2		Easting :	478366.4800 m			
frue Bea	iring to R.O.	4 ° 8' 32,0000 "		Northing :	9859339.4500 m	1		
			Azimuth Ob		Observed	Vessel H		
		Local	Horizontal	Vertical	Horiz ontal	(De gi		(Deg)
Obs	Sight	Time	• • •	dddimmes	DISTANCE	CALC	GYRO	C-0
	R.O.		4 8 32					
1	Bow	01:35:41 PM	302 23 30	90.0000	14.69	14,9	13.6	1.3
	Stern		228 54 20	90.0000	22.12			
2	Bow	01:36:56 PM	302 25 45	90.0000	14.70		13,9	1.0
-	Stern		228 58 25	90.0000	22.12	101	10.0	1.0
3	Bow	01:40:04 PM	302 19 50	90.0000	14.70	15.0	14.3	0.7
, in the second	Stern		228 54 15	90.0000	22.13	100	14.0	0.1
4	Bow	01:41:04 PM	302 14 10	90.0000	14.68	15.D	13.4	1.7
4	Stern		228 59 00	90.0000	22.13	1910	13.9	1.0
5	Bow	01:43:30 PM	302 17 25	90.0000	14.72	45.4	142	0.9
9	Stern		229 01 55	90.0000	22.12	15.1	142	0.9
	Bow	01:45:33 PM	302 16 55	90.0000	14.71			
6	Stern		228 51 25	90.0000	22.14	15.1	14.9	0.2
_	Bow	01:46:42 PM	302 17 15	90.0000	14.72			
7	Stern	01.40.42110	228 58 25	90.0000	22.11	15.1	15.5	-0.3
	Bow	01:47:55 PM	302 20 25	90.0000	14.72			
8	Stern	01.41.00110	228 48 45	90.0000	22.15	15.2	14.1	1.1
	Bow	01:50:04 PM	302 34 05	90.0000	14.70			
9	Stem	D1.50D4110	228 52 05	90.0000	22.16	15.2	13,9	1.3
	Bow	01:51:15 PM	302 10 05	90.0000	14.72			
10	Stern	D1.01.10 FW	228 57 15	90.0000	22.11	15.3	15.5	-02
	Bow	01:53:16 PM	302 17 05	90.0000	14.72			
11		D1.03.10 FIM				15.3	14.1	1.2
	Stem	04-5400 844	229:03:15	90.0000	22.14	_		
12	Bow	01:54:22 PM	302 26 15	90.0000	14.71	15.3	13.8	1.5
	Stern	04 FF 00 Ph 4	229 00 00	90.0000	22.07			
13	Bow	01:55:39 PM	302 27 05	90.0000	14.72	15.4	14.9	0.4
	Stern		229 05 20	90.0000	22.10			
14	Bow	01:57:05 PM	302 24 40	90.0000	14.74	15.4	14.1	1.3
	Stern		229 06 45	90.0000	22.10			
15	Bow	01:58:22 PM	302 22 15	90.0000	14.75	15.4	13.9	1.6
	Stern		229 03 20	90.0000	22.12			
16	Bow	01:59:22 PM	302 24 45	90.0000	14.75		14.7	0.8
	Stern		229 08 00	90.0000	22.10			
17	Bow	02:00:38 PM	302 22 25	90.0000	14.75	15.5	14.0	1.5
	Stern		229 02 35	90.0000	22.12			
10	Bow	02:02:00 PM	302 17 50	90.0000	14.75	15.6	12.2	24
18	Stern		228 58 25	90.0000	22.14	15.6	13.2	2.4
10	Bow	02:03:18 PM	302 18 35	90.0000	14.74	45.0		
19	Stern		229 05 00	90.0000	22.10	15.6	14.1	1.5
~	Bow	02:06:05 PM	302 20 20	90.0000	14.75	1		
20	Stern	52.55 DO 1 W	229 04 05	90.0000	22.10	15.6	13.1	2.5
						Moan ($c \rightarrow -$	4.4
						mean (C-O) =	1.1

Correction for Gyrocompass = 1.1 °



Sertion Serrigraph Port, Ballkpapn (× 1483) Spheroid Semi-major axis (m) W05 84 6378170.00 W05 84 6378170.00 strumert strumert Sokkia Ongin Lattude 0* strumert strume	/essel		Pacific Titan		Projection	CALIBRAT	UTM		
b Number K: 143 semi-regional formation (m) 6 378137.000 semi-regional formation (m) 7 8 semi-regional					· ·				
net 00 August 2007 Inverse fattening 228 25722363 strument Solkkia 0rigin Lastude 0° strument strument Solkkia 0° strument				ipan	1 ·				
strument Solkia Origin Latitude 0 * bserver Bambang/Arto Origin Latitude 117 * E strument Station P4 1 * 10 * 23.5406 * N Easting : 478.361.5300 m Massel Factor 0.9906 strument Station 11 * 10 * 32.5406 * N Easting : 478.361.5300 m Massel Factor 0.9906 strument Station 11 * 10 * 32.5406 * N Easting : 478.361.5300 m Massel Factor 0.965.333.4500 m AD100 use Bearing to R.O. 4 * 8 .* 32.0000 * Actimity : 965.933.4500 m Massel Factor 0.965.933.4500 m Massel Factor 0bs Sight Time * '' Actimity : 965.933.4500 m Massel Factor 0.965.933.4500 m <td></td> <td>nber</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		nber							
basever call Time strument Station pridue of Station in 10 * 48 · 10 / 23 5400 ° N Origin Longlude Statie Factor 11 * * E 0 9906 result of Station in 10 * 48 · 10 / 23 5400 ° N Easting : 2 / 478 361 5300 m Addition 10 * 48 · 10 / 775 ° E Nothing : 9 / 983 94600 m Addition 10 * 48 · 10 / 775 ° E the Bearing to R0. P2 Easting : 1 / 80 / 10 / 155 PM Addition 10 / 80 / 10 / 156 PM Addition 10 / 15			¥		-	*		503	
shall Time + 8 boxes Scale Factor 0.9996 strument Station 1 * 16 * 23.5496 * N Basting : 479.361.5360 m ADIO ADIO orgetude of Station 11 * 16 * 23.5496 * N Basting : 479.361.5360 m ADIO ADIO use Bearing to R.0. 4 * 8 * 32.000 * Northing : 9659339.4500 m Messel Heading (Des revel 0bs Sight Time * · · · 2ddmmes DISTAYCE CALC					- v		-		
strummer Station P4 Vessel Cyro nitude of Station 1* 16 · 23 5406 ° N Basting : 473 301 530 m AD100 e ference Object P2 Easting : 473 301 530 m AD100 AD100 e searing to R0. 4 * 8 · 32 2000 ° Nothing : 9859271 1890 m Vessel Heading 400 mms Obs Sight Local Horizontal Ventral Observed Vessel Heading (0egres) (0egres) R.0. 4 * 8 · 32 2000 ° Nothing : 980 2000 35.89 191.8 189.7 2.1 2 Bow 10.0156 PM 347 40 40 90.0000 35.89 191.8 189.7 2.1 3 Bow 10.00634 PM 347 33 25 90.0000 55.00 191.4 189.7 2.1 4 Bow 10.10837 PM 346 12 0 90.0000 55.71 192.3 189.7 2.6 5 Stem 10.10837 PM 346 12 0 90.0000 55.71 192.4 189.7 2.7 <t< td=""><td></td><td></td><td>•</td><td></td><td></td><td>ide</td><td></td><td></td><td></td></t<>			•			ide			
Bow 10.0103 (P) 10.100 (P) AB 100 AD 100 0bs Sight P2 Easting : 4783614530 m AD 100 0bs Sight P2 Easting : 4783614530 m AD 100 0bs Sight Time * Mathing : 9859339.400 m Vessel Heading (Degrees) (Cegrees) (Cegrees) <t< td=""><td></td><td></td><td></td><td></td><td>Scale Factor</td><td></td><td>0,9996</td><td></td><td></td></t<>					Scale Factor		0,9996		
AD100 AD100 Reference Object P2 Easting : 9859271.1880 m AD100 Reference Object P2 Easting : 478306.4800 m Centre AD100 Use Bearing to R.O. 4 * 8 's 2.000 ° Nothing : 985939.4600 m Centre Centre </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Vesse</td> <td>буго</td>								Vesse	буго
Ekrence Object P2 Easting : 478 366 4800 m Nothing : 478 366 4800 m 985 339 4000 m Use Bearing to R.O. 4 * 8 * 32.000 ° Acimuth Observation Horizontal Vertical V					*				
ue Bearing to R.0. 4 * 8 * 32 0000 " Nothing: 9859239 4600 m Vessel Heading (Description of the control of t	- ×			E					00
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Ubs Local Time Horizontal with a signal Vertical didumes Horizontal DISTANCE CALC GYR0 Cdc Cd R, 0. 4 8 32 00.000 35.69 191.8 189.7 2.1 Bow 10.0156 PM 347 40 00.0000 35.69 191.8 189.7 2.1 Bow 10.0634 PM 347 33 25 90.0000 35.73 191.7 189.7 2.6 3 Bow 10.0634 PM 347 33 25 90.0000 35.70 191.4 189.7 2.6 4 Bow 10.0634 PM 347 33 25 90.0000 35.70 191.4 189.7 4.6 5 Bow 10.11.03 PM 348 19 50 90.0000 35.71 192.3 189.7 2.7 6 Bow 10.16.10 PM 348 19 50 90.0000 35.71 192.4 189.7 2.7 7 Bow 10.16.10 PM 348 19 50 90.0000 35.75 191.4 189.7 2.7	True Bea	aring to R.O.	4 ° 8' 32,0000 "						
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Oos Sign Inne 4 8 Output			Local		Vertical				(Deg)
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5 Stem 366 28 90.0000 66.01 192.3 189.7 2.6 6 Bow 10:1402 PM 348 19 60 90.0000 35.71 192.4 189.7 2.7 7 Bow 10:16:10 PM 348 21 35 90.0000 56.05 192.4 189.7 2.7 8 Bow 10:18:51 PM 348 21 35 90.0000 56.02 192.4 189.7 2.7 8 Bow 10:18:51 PM 348 21 35 90.0000 56.02 191.4 189.7 1.7 9 Bow 10:22:36 PM 347 45 35 90.0000 56.02 191.4 189.7 1.7 10 Bow 10:22:36 PM 347 44 36 90.0000 35.70 191.6 189.7 1.6 11 Bow 10:27:49 PM 347 44 05 90.0000 35.70 191.6 189.7 <t< td=""><td>4</td><td>Stern</td><td></td><td>355 28 00</td><td>90.0000</td><td>54,95</td><td> 193.7</td><td>189.7</td><td>4.0</td></t<>	4	Stern		355 28 00	90.0000	54,95	193.7	189.7	4.0
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r Stem 365 30 20 90.0000 55.02 192.4 169.7 2.7 8 Bow 10:18:51 PM 348 21 35 90.0000 35.69 191.4 189.8 1.6 9 Bow 10:20:49 PM 367 65 10 90.0000 35.75 191.4 189.8 1.6 10 Bow 10:22:36 PM 347 45 35 90.0000 35.72 191.7 189.7 1.7 10 Bow 10:25:53 PM 347 45 35 90.0000 35.70 191.6 189.7 1.6 11 Bow 10:25:53 PM 347 41 10 90.0000 35.70 191.6 189.7 1.6 12 Bow 10:27:49 PM 347 41 10 90.0000 35.70 191.6 189.7 1.6 13 Stem 364 53 30 90.0000 55.01 192.0 189.7 2.3 14 Bow 10:31:55 PM 347 43 05 90.0000 55.05 192.1 189.7 2.3 15<	_		10-16-10 PM					<u> </u>	
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12 Bow 10:27:49 PM 347 41 10 90.0000 357.0 191.6 189.7 1.9 13 Bow 10:29:40 PM 347 40 40 90.0000 35.71 191.6 189.7 1.9 13 Bow 10:29:40 PM 347 40 40 90.0000 35.71 192.0 189.7 2.3 14 Bow 10:31:55 PM 347 41 50 90.0000 35.70 192.1 189.7 2.4 15 Bow 10:33:30 PM 347 51 15 90.0000 35.70 192.1 189.7 2.4 16 Bow 10:35:17 PM 347 50 50 90.0000 35.70 191.8 189.7 2.4 17 Bow 10:37:20 PM 347 50 50 90.0000 35.70 192.0 189.7 1.6 18 Bow 10:37:20 PM 347 53 35 90.0000 35.70	11		10.20.03 FIM		••••••••••		191.6	189.7	1.9
12 Stem 354 45 45 90.0000 55.00 191.6 189.7 1.8 13 Bow 10:29:40 PM 347 40 40 90.0000 357.1 192.0 189.7 2.3 14 Bow 10:31:55 PM 347 40 40 90.0000 35.70 192.0 189.7 2.3 14 Bow 10:31:55 PM 347 43 05 90.0000 35.70 192.1 189.7 2.4 15 Bow 10:33:30 PM 347 51 15 90.0000 35.70 192.1 189.7 2.4 16 Bow 10:35:17 PM 347 50 50 90.0000 35.70 192.0 189.7 2.3 17 Bow 10:37:20 PM 347 50 50 90.0000 35.70 192.0 189.7 1.8 18 Bow 10:37:20 PM 347 53 35 90.0000 35.70 191.6 189.7			10.07.40 814						
13 Bow 10:29:40 PM 347 40 40 90.0000 357.1 192.0 189.7 2.3 14 Bow 10:31:55 PM 347 43 05 90.0000 54.98 192.0 189.7 2.3 14 Bow 10:31:55 PM 347 43 05 90.0000 35.70 192.1 189.7 2.4 15 Bow 10:33:30 PM 347 51 15 90.0000 35.70 192.1 189.7 2.4 16 Bow 10:35:17 PM 347 50 50 90.0000 35.70 191.8 189.7 2.3 17 Bow 10:37:20 PM 347 53 35 90.0000 35.70 191.6 189.7 1.8 18 Bow 10:37:20 PM 347 53 35 90.0000 35.70 191.6 189.7 1.8 18 Bow 10:39:21 PM 347 43 90.0000 35.68 191.6 <td>12</td> <td></td> <td>10:27 99 PM</td> <td></td> <td></td> <td></td> <td> 191.6</td> <td>189.7</td> <td>1.9</td>	12		10:27 99 PM				191.6	189.7	1.9
13 Stem 354 53 30 90.0000 54.98 192.0 189.7 2.3 14 Bow 10:31.55 PM 347 43 0.5 90.0000 35.70 192.1 189.7 2.4 16 Bow 10:33.30 PM 347 51 15 90.0000 35.70 192.1 189.7 2.4 16 Bow 10:33.30 PM 347 51 15 90.0000 35.70 191.8 189.7 2.4 16 Bow 10:35:17 PM 347 50 50 90.0000 35.70 191.8 189.7 2.3 17 Bow 10:37.20 PM 347 53 35 90.0000 35.70 191.5 189.7 1.8 18 Bow 10:37.20 PM 347 53 35 90.0000 35.70 191.5 189.7 1.8 18 Bow 10:39.21 PM 347 41 10 90.0000 35.68 191.6			40.00.40 844				_		
14 Bow 10:31:55 PM 347 43 05 90.0000 357.0 192.1 189.7 2.4 15 Bow 10:33:30 PM 347 51 15 90.0000 55.05 192.1 189.7 2.4 16 Bow 10:33:30 PM 347 51 15 90.0000 35.70 191.8 189.7 2.1 16 Bow 10:35:17 PM 347 50 50 90.0000 35.70 192.0 189.7 2.3 17 Bow 10:37:20 PM 347 53 35 90.0000 35.70 191.5 189.7 1.8 18 Bow 10:37:20 PM 347 53 35 90.0000 35.70 191.5 189.7 1.8 18 Bow 10:39:21 PM 347 41 10 90.0000 35.68 191.6 189.7 1.6 19 Bow 10:41:05 PM 347 35 10 90.0000 35.69	13		10:29:40 PM				192.0	189.7	2.3
14 Stem 355 00 15 90.0000 55.05 192.1 189.7 2.4 15 Bow 10:33.30 PM 347 51 15 90.0000 357.0 191.8 189.7 2.4 16 Bow 10:35:17 PM 347 50 50 90.0000 357.0 191.8 189.7 2.1 16 Bow 10:35:17 PM 347 50 50 90.0000 357.0 192.0 189.7 2.3 17 Bow 10:37 20 PM 347 53 35 90.0000 357.0 191.5 189.7 1.8 18 Bow 10:39 21 PM 347 41 10 90.0000 55.03 191.6 189.7 1.6 18 Bow 10:39 21 PM 347 41 10 90.0000 55.03 191.6 189.7 1.6 19 Bow 10:41 05 PM 347 42 90.0000 55.01 191.1 189.7 1.4 20 Bow 10:41 05 PM 347 32							_	<u> </u>	
Bow 10:33:30 PM 347 51 15 90.0000 357.0 191.8 189.7 2.1 16 Bow 10:35:17 PM 347 50 50 90.0000 55.01 191.8 189.7 2.1 16 Bow 10:35:17 PM 347 50 50 90.0000 35.70 192.0 189.7 2.3 17 Bow 10:37:20 PM 347 53 35 90.0000 35.70 191.5 189.7 1.6 18 Bow 10:37:20 PM 347 53 35 90.0000 35.70 191.5 189.7 1.6 18 Bow 10:39:21 PM 347 41 10 90.0000 35.68 191.6 189.7 1.6 19 Bow 10:41:05 PM 347 45 90.0000 35.70 191.1 189.7 1.4 20 Bow 10:41:05 PM 347 21 25 90.0000 35.69 191.8 189.7<	14		10:31:55 PM				192.1	189.7	2.4
16 Stem 354 57 25 90.0000 55.01 191.8 189.7 2.1 16 Bow 10:35:17 PM 347 50 50 90.0000 35.70 192.0 189.7 2.3 17 Bow 10:37:20 PM 347 53 35 90.0000 35.70 192.0 189.7 2.3 17 Bow 10:37:20 PM 347 53 35 90.0000 35.70 191.5 189.7 1.6 18 Bow 10:39:21 PM 347 41 10 90.0000 35.68 191.6 189.7 1.6 18 Bow 10:39:21 PM 347 45 90.0000 35.68 191.6 189.7 1.6 19 Bow 10:41:05 PM 347 35 10 90.0000 35.70 191.1 189.7 1.4 20 Bow 10:42:59 PM 347 25 90.0000 35.69 191.8 189.7 2.1							_	<u> </u>	
16 Bow 10:35:17 PM 347 50 50 90.0000 357.0 192.0 189.7 2.3 17 Bow 10:37 20 PM 347 53 35 90.0000 54.97 192.0 189.7 2.3 17 Bow 10:37 20 PM 347 53 35 90.0000 357.0 191.5 189.7 1.8 18 Bow 10:39 21 PM 347 41 10 90.0000 35.68 191.6 189.7 1.8 18 Bow 10:39 21 PM 347 35 10 90.0000 35.68 191.6 189.7 1.8 19 Bow 10:41 05 PM 347 35 10 90.0000 35.70 191.1 189.7 1.4 20 Bow 10:42 59 PM 347 21 25 90.0000 35.69 191.8 189.7 1.4 20 Bow 10:42 59 PM 347 21 25 90.0000 35.69 191.8 189.7 2.1 20 Bow <t< td=""><td>15</td><td></td><td>10:33:30 PM</td><td></td><td></td><td></td><td> 191.8</td><td>189.7</td><td>2.1</td></t<>	15		10:33:30 PM				191.8	189.7	2.1
10 Stem 355 01 00 90.0000 54.97 192.0 189.7 2.3 17 Bow 10:37 20 PM 347 53 35 90.0000 357.0 191.5 189.7 1.8 18 Bow 10:39 21 PM 347 41 10 90.0000 35.68 191.5 189.7 1.8 18 Bow 10:39 21 PM 347 41 10 90.0000 35.68 191.6 189.7 1.6 18 Bow 10:39 21 PM 347 45 90.0000 35.68 191.6 189.7 1.6 19 Bow 10:41 05 PM 347 35 10 90.0000 35.70 191.1 189.7 1.6 19 Bow 10:42 59 PM 347 35 10 90.0000 35.69 191.1 189.7 1.4 20 Bow 10:42 59 PM 347 21 25 90.0000 35.69 191.8 189.7 2.1 20 Bow 10:42 59 PM 354 40 20 90.0000									
Stem 355 01 00 90.0000 5497 1 17 Bow 10:37 20 PM 347 53 35 90.0000 35.70 191.5 189.7 1.8 18 Bow 10:39 21 PM 347 41 10 90.0000 55.03 191.6 189.7 1.8 19 Bow 10:41 05 PM 347 45 90.0000 55.03 191.6 189.7 1.6 19 Bow 10:41 05 PM 347 35 10 90.0000 35.70 191.1 189.7 1.4 20 Bow 10:42 59 PM 347 21 25 90.0000 35.69 191.8 189.7 1.4 20 Bow 10:42 59 PM 347 21 25 90.0000 35.69 191.8 189.7 2.1 20 Bow 10:42 59 PM 347 21 25 90.0000 35.69 191.8 189.7 2.1 20 Stem 10:42 59 PM 347 21 25 90.0000 55.04 191.8 189.	16	Bow	10:35:17 PM				192.0	189.7	2.3
No. Stem 354 51 50 90.0000 55.03 191.3 189.7 1.6 18 Bow 10:39.21 PM 347 41 10 90.0000 35.68 191.6 189.7 1.6 18 Stem 354 47 45 90.0000 35.68 191.6 189.7 1.6 19 Bow 10:41.05 PM 347 35 10 90.0000 35.70 191.1 189.7 1.4 20 Bow 10:42.59 PM 347 21 25 90.0000 35.69 191.8 189.7 1.4 20 Bow 10:42.59 PM 347 21 25 90.0000 35.69 191.8 189.7 1.4 20 Bow 10:42.59 PM 347 21 25 90.0000 35.69 191.8 189.7 2.1 20 Bow 10:42.59 PM 347 21 25 90.0000 35.69 191.8 189.7 2.1									
Stem 354 51 50 90.0000 55.03	17	Bow	10:37:20 PM					189.7	1.8
16 Stem 354 47 45 90.0000 54.99 191.0 189.7 1.8 19 Bow 10:41.05 PM 347 35 10 90.0000 35.70 191.1 189.7 1.4 20 Bow 10:42.59 PM 347 21 25 90.0000 35.69 191.8 189.7 1.4 20 Stem 354 40 20 90.0000 35.69 191.8 189.7 2.1 Mean (C - O) = 2.2		Stern			90.0000				
16 Stem 354 47 45 90.0000 54.99 191.0 189.7 1.8 19 Bow 10:41.05 PM 347 35 10 90.0000 35.70 191.1 189.7 1.4 20 Bow 10:42.59 PM 347 21 25 90.0000 35.69 191.8 189.7 1.4 20 Stem 354 40 20 90.0000 35.69 191.8 189.7 2.1 Mean (C - O) = 2.2	19	Bow	10:39/21 PM	347 41 10	90.0000	35.68	101.6	100.7	1.0
19 Bow 10:41.05 PM 347 35 10 90.0000 357.0 191.1 189.7 1.4 20 Bow 10:42.59 PM 347 21 25 90.0000 356.9 191.8 189.7 2.1 20 Stem 10:42.59 PM 347 21 25 90.0000 356.9 191.8 189.7 2.1 Mean (C - O) = Z.2 Mean (C - O) = Z.2 Mean (C - O) = Z.2	10	Stern			90.0000	54,99	191.0	108.7	1.9
Image: Non-Stem 354/32/25 90.0000 55.01 Image: Non-Non-Non-Non-Non-Non-Non-Non-Non-Non-	10		10:41:05 PM				101.1	100.7	
20 Bow Stem 10:42:59 PM 347 21 25 354 40 20 90.0000 35.69 55.04 191.8 189.7 2.1 Mean (C - O) = 2.2	19						191.1	189.7	1.4
20 Stem 354 40 20 90.0000 55.04 191.0 169.7 2.1 Mean (C - O) = 2.2			10:42:59 PM				404.0	400.7	
Mean (C - O) = 2.2	20						191.8	189.7	2.1
							Moan ($c \rightarrow -$	22
							wear (

Correction for Gyrocompass = 2.2 °



<u>local Time</u> Instrument atitude of Congitude o Reference (station f Station Object ng to R.O. Sight R.O. Bow Stern Bow Stern Bow Stern Bow	Pacific Titan Semayang Port, Balikp K-1483 <u>07 August 2007</u> Sokkia Bambang/Anto +8 hours P4 1 ° 16 ° 23.5496 ° 116 ° 48 ° 19.7757 ° P2 <u>4 ° 8 ° 32.0000 °</u> Local Time 10:01:56 PM 10:04:01 PM	' N ' E	Vertical ddd.mmss	ning e	UTM W/GS 84 6378137.000 298.2572236 0 ° 117 °E 0.9996 Vessel H (Deg	563 Vessel HSt	50
ob Numbe bate istrument istrument i strument i atitude of i ongitude o ine Bearin 0bs 1 2 3 4 5 6 9	station f Station Object ng to R.O. Sight R.O. Bow Stern Bow Stern Bow Stern Bow	K-1483 07 August 2007 Sokkia Bambang/Anto + 8 hours P4 1 ° 16 ° 23,5496 ° 116 ° 48 ° 19,7757 ° P2 4 ° 8 ° 32,0000 ° Local Time 10:01,56 PM 10:04,01 PM	' N ' E Horizontal • • " 4 8 32 347 40 40	Semi-major a: hverse flatter Origin Latitud Origin Longitu Scale Factor Easting : Northing : Easting : Northing : bervation Vertical ddd.mmss	hing e ude 478361.5360 m 9859271.1890 m 9859339.4500 m 9859339.4500 m Observed Horizontal	6378137.000 298.2572235 0 ° 117 °E 0.9996	563 Vessel HSt	50
Arte Arte Arte Arter	station f Station Object ng to R.O. Sight R.O. Bow Stern Bow Stern Bow Stern Bow	07 August 2007 Solkkia Bambang/Anto + 8 hours P4 1 ° 16 ° 23,5496 ° 116 ° 48 ° 19,7757 ° P2 4 ° 8 ° 32,0000 ° Local Time 10:01,56 PM 10:04,01 PM	" E Horizontal • • " 4 8 32 347 40 40	hverse flatter Origin Latitud Origin Longitu Scale Factor Easting : Northing : Easting : Northing : Sorthing : Vertical ddd mmss	hing e ude 478361.5360 m 9859271.1890 m 9859339.4500 m 9859339.4500 m Observed Horizontal	298 2572236 0 ° 117 ° E 0.9996	563 Vessel HSt	50
strument Diserver .ocal Time instrument i .atitude of .ongitude o Reference (rue Bearin 0bs 1 2 3 4 5 6 8 9	station f Station Object ng to R.O. Sight R.O. Bow Stern Bow Stern Bow Stern Bow	Solkkia Bambang/Anto + 8 hours P4 1 ° 16 ° 23,5496 ° 116 ° 48 ° 19,7757 ° P2 4 ° 8 ° 32,0000 ° Local Time 10:01,56 PM 10:04,01 PM	" E Horizontal • • " 4 8 32 347 40 40	Origin Latitud Origin Longitu Scale Factor Easting : Northing : Northing : Northing : Vertical ddd mmss	e de 478361.5360 m 9859271.1890 m 478366.4800 m 9859339.4500 m Observed Horizontal	0 ° 117 °E 0.9996 Vessel H (Deg	Vessel HSč Heading	50
Observer ocal Time hstrument i atitude of i congitude of rue Bearin 0bs 1 1 2 3 3 6 8 9 	station f Station of Station Object ng to R.O. Sight R.O. Bow Stern Bow Stern Bow Stern Bow	Bambang/Anto + 8 hours P4 1 ° 16 ° 23.5496 ° 116 ° 48 ° 19.7757 ° P2 4 ° 8 ° 32.0000 ° Local Time 10:01:56 PM 10:04:01 PM	" E Horizontal • • " 4 8 32 347 40 40	Origin Longitu Scale Factor Easting : Northing : Easting : Northing : bservation Vertical ddd.mmss	ude 478 361.5360 m 9859271.1890 m 478 366.4800 m 9859339.4500 m Observed Horizontal	117 °E 0.9996 Vessel H (Deg	HS	50
ocal Time nstrument : atitude of : atitude of : ongitude of : ongitude of : ongitude of : Obs 1 2 3 4 5 7 8 9	Station f Station of Station Object ng to R.O. Sight R.O. Bow Stern Bow Stern Bow Stern Bow	+ 8 hours P4 1 ° 16 ° 23.5496 ° 116 ° 48 ° 19.7757 ° P2 4 ° 8 ° 32.0000 ° Local Time 10:01:56 PM 10:04:01 PM	" E Horizontal • • " 4 8 32 347 40 40	Scale Factor Easting : Northing : Easting : Northing : bservation Vertical ddd.mmss	478361.5360 m 9859271.1890 m 478366.4800 m 9859339.4500 m Observed Horizontal	0.9996	HS	50
strument : atitude of : ongitude of : eference (rue Bearin 0bs 1 2 3 4 6 7 8 9	Station f Station of Station Object ng to R.O. Sight R.O. Bow Stern Bow Stern Bow Stern Bow	P4 1 ° 16 ' 23.5496 ' 116 ° 48 ' 19.7757 ' P2 4 ° 8 ' 32.0000 ' Local Time 10:01:56 PM 10:04:01 PM	" E Horizontal • • " 4 8 32 347 40 40	Easting : Northing : Easting : Northing : bservation Vertical ddd.mmss	9859271.1890 m 478 366 4800 m 9859339.4500 m Observed Horizontal	Vessel I (Degi	HS	50
artitude of 1 .ongitude of 2 Peterence (Obs 1 2 3 4 5 7 8 9	f Startion of Startion Object ng to R.O. Sight R.O. Bow Stern Bow Stern Bow Stern Bow	1 • 16 · 23.5496 · 116 • 48 · 19.7757 · P2 4 • 8 · 32.0000 · Local Time 10:01:56 PM 10:04:01 PM	" E Horizontal • • " 4 8 32 347 40 40	Northing : Easting : Northing : bservation Vertical ddd.mmss	9859271.1890 m 478 366 4800 m 9859339.4500 m Observed Horizontal	(Deg	HS	50
.ongitude o Reference (irue Bearin Obs 1 2 3 4 5 6 7 8 9	of Station Object ng to R.O. Sight R.O. Bow Stern Bow Stern Bow Stern Bow	116 • 48 ' 19.7757 ' P2 4 • 8 ' 32.0000 ' Local Time 10:01:56 PM 10:04:01 PM	" E Horizontal • • " 4 8 32 347 40 40	Northing : Easting : Northing : bservation Vertical ddd.mmss	9859271.1890 m 478 366 4800 m 9859339.4500 m Observed Horizontal	(Deg	Heading	
Reference (True Bearin Obs 1 2 3 4 5 6 7 8 9	Object ng to R.O. Sight R.O. Bow Stern Bow Stern Bow Stern Bow	P2 4 • 8 · 32,0000 · Local Time 10:01:56 PM 10:04:01 PM	Aeimuth Ol Horizontal • • • 4 8 32 347 40 40	Easting : Northing : bservation Vertical ddd.mmss	478366.4800 m 9859339.4500 m Observed Horizontal	(Deg	Heading	
True Bearin Obs 1 2 3 4 5 6 7 8 9	ng to R.O. Sight R.O. Bow Stem Bow Stem Bow Stem Bow	4 • 8 ' 32.0000 ' Local Time 10:01:56 PM 10:04:01 PM	Azimuth Ol Horizontal • • • 4 8 32 347 40 40	Northing : bservation Vertical ddd.mmss	9859339.4500 m Observed Horizontal	(Deg		
0bs 1 2 3 4 5 6 7 8 9	Sight R.O. Bow Stern Bow Stern Bow Stern Bow	Local Time 10:01:56 PM 10:04:01 PM	Azimuth Ol Horizontal • • • 4 8 32 347 40 40	vertical ddd.mmss	Observed Horizontal	(Deg		
1 2 3 4 5 6 7 8 9	R.O. Bow Stern Bow Stern Bow Stern Bow	Time 10:01:56 PM 10:04:01 PM	Horizontal • • " 4 8 32 347 40 40	Vertical ddd.mmss	Horiz ontal	(Deg		
1 2 3 4 5 6 7 8 9	R.O. Bow Stern Bow Stern Bow Stern Bow	Time 10:01:56 PM 10:04:01 PM	• · · · · · · · · · · · · · · · · · · ·	ddd mmss			rees) i	
1 2 3 4 5 6 7 8 9	R.O. Bow Stern Bow Stern Bow Stern Bow	10:01:56 PM 10:04:01 PM	4 8 32 347 40 40		DISTANCE		<u> </u>	(Deg)
2 3 4 5 6 7 8 9	Bow Stern Bow Stern Bow Stern Bow	10:04:01 PM	347 40 40	I	DISTANCE	CALC	GYRO	C-0
2 3 4 5 6 7 8 9	Stem Bow Stem Bow Stem Bow	10:04:01 PM						
3 4 5 6 7 8 9	Bow Stern Bow Stern Bow		354 49 00	90.0000	35.69	191.8	189.5	2.3
3 4 5 6 7 8 9	Stern Bow Stern Bow			90.0000	54,94			
3 4 5 6 7 8 9	Bow Stern Bow		347 38 25	90.0000	35.73	191.7	190.3	1.4
4 5 6 7 8 9	Stern Bow		354 45 50	90.0000	55 D 3	101.1	100.0	1.1
4 5 6 7 8 9	Bow	10:06:34 PM	347 38 00	90.0000	35.70	191.4	191.4	0.0
5 6 7 8 9			354 40 15	90.0000	55 DD	101.4	101.4	0.0
5 6 7 8 9		10:08:37 PM	347 33 25	90.0000	35.70	193.7	191.0	2.7
6 ···· 7 ···· 8 ···· 9 ····	Stern		355 28 00	90.0000	54,95	183.7	191.0	2.0
6 ···· 7 ···· 8 ···· 9 ····	Bow	10:11:03 PM	348 23 00	90.0000	35.75	100.0	189.9	2.4
7 8 9	Stern		355 28 05	90.0000	55.01	192.3	169.9	2.4
7 8 9	Bow	10:14:02 PM	348 19 50	90.0000	35.71			
8 ····· 9 ····	Stern		355 28 35	90.0000	55.05	192.4	189.9	2.5
8 ····· 9 ····	Bow	10:16:10 PM	348 22 05	90.0000	35.71			
9	Stern	10.10.101101	355 30 20	90.0000	55 D2	192.4	190.8	1.6
9	Bow	10:18:51 PM	348 21 35	90.0000	35.69			
	Stern		355 06 25	90.0000	54,99	191.4	191.3	0.1
	Bow	10:20:49 PM	347 55 10	90.0000	35.75			
10	Stem	10.20.101101	354 48 45	90.0000	54,99	191.4	190.8	0.6
10	Bow	10:22:36 PM	347 45 35	90.0000	35.72			
	Stem	10.22.30 FIM	354 50 15	90.0000	55.72 55.D1	191.7	190.4	1.3
	Bow	10:25:53 PM	347 44 05	90.0000	35.70	_		
11		10.20.03 FIM				191.6	188.7	2.9
	Stem	40.07.40.854	354 49 05	90.0000	55.02	_		
12	Bow	10:27:49 PM	347 41 10	90.0000	35.70	191.6	189.8	1.8
	Stem	10.00 IO 81.1	354 45 45	90.0000	55.00			
13	Bow	10:29:40 PM	347 40 40	90.0000	35.71	192.0	189.8	2.2
	Stern		354 53 30	90.0000	54,98			
14	Bow	10:31:55 PM	347 43 05	90.0000	35.70	192.1	190.5	1.6
	Stern		355 00 15	90.0000	55 D 5			
15	Bow	10:33:30 PM	347 51 15	90.0000	35.70	191.8	190.8	1.0
	Stern		354 57 25	90.0000	55 D 1			
16	Bow	10:35:17 PM	347 50 50	90.0000	35.70	192.0	189.4	2.6
	Stern		355 01 00	90.0000	54,97	.52.0	199.4	2.0
17	Bow	10:37:20 PM	347 53 35	90.0000	35.70	191.5	189.6	1.9
	Stern		354 51 50	90.0000	55 D 3	181.5	108.0	1.8
10	Bow	10:39:21 PM	347 41 10	90.0000	35.68	101.0	100.5	
18	Stern		354 47 45	90.0000	54,99	191.6	190.5	1.1
	Bow	10:41:05 PM	347 35 10	90.0000	35.70	404.4	400.0	
19	Stern		354 32 25	90.0000	55.01	191.1	190.2	0.9
		10:42:59 PM	347 21 25	90.0000	35.69			
20		10.72.001101	354 40 20	90.0000	55.04	191.8	190.3	1.5
	Bow		0011-00120	00.0000	0024	Mean ($c \rightarrow -$	4.6
	Stern					wearing	C-O) =	1.6

Correction for Gyrocompass = 1.6 °



							TAIL	. BUOY V	ERIFICAT	ION (S/N 13	314)			Ţ	JGRO
Date						_	: 07th	August 2007		D.	atum/Sp	heroid :		WG 584	/wes	34
Vess	el						: Pacifi	ic Titan		S	emi-majo	oraxis :		637	8137	
Jobl	Numb	er					: 148	8		Inv	erse flat	tening :		298.2	572238	
Loca	tion						: Sema	iyang Wharf			Proj	ection :		UTMZ	one 50 \$	5
Instr	umen	t					: Sokk	ia Set 48			Oriç	gin Lant :		0°00	7 00" N	
Obse	erver						: Bam	bang/Anto Si	naga		Origin	Long :		11	7°E	
LST	> U	тс о	ffset				: -8.0	hrs			Scale	Factor :		0.9	996	
Inst.	Statio	n					: P4			D	GPSAn	t In use:	HP (Sta	arboard	Antenna)
Latiti	ude o	fStat	ion				: 01	° 16' 23.5496	"S		E	asting :	478	361.536	Scale	Factor
Long	itude	ofst	ation				: 116°	48' 19.7757"	E		No	rthing :	9859	27 1.189	0.9	99811
Refe	rence	e Obj	ect					13661			E	asting :	478	366.480	Conv	ergenœ
Bear	ing to	R.O					: 04°C	18'32" G			No	rthing :	9859	339.450	(•)00	°00' 16'
Pod	S/No.						: 1314				E	asting :	478	363,533		
Pod	Heigt						-0.66				No	rthing :	9859	323,611		
Obs	hh mm ss hh mm ss mtrs East									Height	Com	puted		erved	(>0
	hh	mm	SS	hh	mm	SS	mtrs		North	Ant.	Brg	Dist	Brg	Dist	Brg	Dist
1	hh mm ss hh mm ss mtrs East 15 59 26 319 43 12 21.866 478347.528 98 16 1 6 319 50 57 21.846 478347.579 98								9859287.718	11.53	24.057	41.155	21.264	35.000	2.793	6.155
2			-						9859287.734	11.53	24.000	41.121	23.969	39.800	0.031	1.321
3				319	52		21.646	478347.586	9859287.741	11.53	23.993	41.112	24.048	39.300	-0.055	1.812
4	16	2	19	319	39	27	21.636	478347.530	9859287.680	11.53	24.032	41.187	23.575	38.900	0.457	2.287
5	16	2	56	319	52	33	21.656		9859287.748	11.53	24.006	41.108	23.782	38.900	0.224	2.21
6	16	3	34	319	40	27	21.636	478347.535	9859287.684	11.53	24.028	41.182	24.204	39.300	-0.176	1.88
7	16	4	1	319	31	54	21.656	478347.481	9859287.664	11.53	24.088	41.220	24.008	39.200	0.080	2.02
8	16	4	22	319	41	37	21.666	478347.521	9859287.711	11.53	24.063	41.163	22.748	40.700	1.315	0.46
9	16	5	5	319	40	31	21.646	478347.529	9859287.692	11.53	24.041	41.177	21.528	39.400	2.513	1.78
10	16	5	31	319	40	57	21.676		9859287.716	11.53	24.079	41.163	21.385	39.400	2.694	1.76
11	16	5	58	319	38	34	21.686	478347.493	9859287.714	11.53	24.101	41.172	21.958	39.500	2.143	1.67
12	16	6	20	319	41	7	21.676	478347.512	9859287.717	11.53	24.078	41.162	23.206	39.300	0.872	1.86
13	16	6 7	40	319	39	23	21.666	478347.510	9859287.702	11.53	24.072	41.175	22.211	39.200	1.861	1.98
14	16	7	17	319	41	17	21.676	478347.513	9859287.718	11.53	24.078	41.161	21.522	39.500	2,556	1.66
15	16		48	319	42	11	21.676		9859287.721	11.53	24.074	41.156	21.578	39.000	2,496	2.16
16	16	8	14	319	41	17	21.666	478347.519	9859287.710	11.53	24.064	41.165	21.327	38.900	2.737	2.27
17 18	16 16	8 9	41	319 319	40 39	23 32	21.676 21.686	478347.508	9859287.714 9859287.718	11.53	24.081 24.098	41.166	21.610	38.700 38.600	2.471 2.060	2.47
18 19	10 16	9	3 52	319	39 40	32 25	21.686	478347.498	9859287.718	11.53	24.098	41.100	22.038 22.447	38.600	1.634	2.57
19 20	10 16	9 10	92 9	319	40	20	21.676	478347.509	9859287.714	11.53	24.081	41.100	22.447	39.200	1.034	2.36
٣	10	10	9	1019	72				9859287.712	11.530	24.059	41.162	22.565	39.030	1.495	2.30
									9659287.712 0.020	0.000	24.069 0.032	0.025	1.062	1.1	1,495	1.05



							TAIL	. BUOY V	ERIFICAT	ION (S/N 14	11)			Ţ	JGRO			
Date							: 07th	August 2007		D,	atum/Sp	heroid :		WG 584	/WGS8	34			
Vess	el						: Pacifi	ic Titan		S	emi-majo	oraxis :		637	8137				
Job I	Numb)er					: 141	8		Inv	erse flat	tening :		298.2	572238				
Loca	tion						: Sema	ayang Wharf			Proj	ection :		UTMZ	one 50 S	3			
Instr	umen	rt					: Sokk	ia Set 48			Orig	gin Lat :		0°00	7 00" N				
Obs	erver						: Bam	bang/Anto Si	naga		Origin	h Long :		11	7° E				
LST	> U	тс о	Iffset				: -8.01	hrs			Scale	Factor :		0.0	9996				
Inst.	Statio	n					: P4			D	GPSAn	t In use:	HP (Sta	arboard	Antenna	0			
Latit	ude o	fStat	ion				: 01	° 16' 23.5496	"S		E	asting :	478	361.536	Scale	e Factor			
Long	jitude	ofst	ation				: 116°	48' 19.7757"	E		No	orthing :	9859	27 1.189	0.9	99811			
Refe	rence	e Obj	ect				: ISN	13661			E	asting :	478	366.480	Conv	ergenœ			
Bear	ing to	R.O					: 04°C	18°32" G			No	orthing :	9859	339.450	(\cdot) 00	°00' 16''			
Pod	S/No.						: 1411				E	asting :	478	363,942					
Pod	Heigt	nt					-0.65				No	orthing :	9859	323.804					
Obs	Time (LOC) Grid Bra Dist Computed Prism									Height	Com	puted	Obse	erved	0	>0			
	Time (LOC) Grid Brg/Dist Computed hh mm ss hh mm ss mtrs East 14 31 33 319 45 23 21.666 478347.539 9 14 32 12 319 47 11 21.666 478347.548 9								North	Ant.	Brg	Dist	Brg	Dist	Brg	Dist			
1	14	hh mm ss hh mm ss mtrs East 14 31 33 319 45 23 21.666 478347.539 98 14 32 12 319 47 11 21.666 478347.538 98							9859287.727	11.53	24.464	41.468	21.043	44.700	3.411	-3.232			
2	14	32	12	319	47	11	21.666	478347.548	9859287.734	11.53	24.447	41.459	17.539	44.200	6,908	-2.741			
3	14	32	48	319	44	56	21.676	478347.530	9859287.732	11.53	24.468	41.467	19.888	42.400	4.580	-0.933			
4	14	33	23	319	42	43	21.676	478347.520	9859287.723	11.53	24.477	41.479	28.517	42.000	-4040	-0.521			
5	14	44	44	319	45	12	21.666	478347.538	9859287.726	11.53	24.464	41.469	24.275	42.100	0.179	-0.63			
6	14	45	7	319	45	46	21.666	478347.541	9859287.728	11.53	24.462	41.466	21.212	43.500	3240	-2.03			
7	14	45	41	319	39	26	21.676	478347.504	9859287.710	11.53	24.490	41.497	22.667	42.600	1.823	-1.10			
8	14	46	11	319	49	15	21.666	478347.558	9859287.742	11.53	24.438	41.447	21.801	42.700	2,637	-1.25			
9	14	46	42	319	50	52	21.666	478347.565	9859287.749	11.53	24.432	41.439	22.041	42.600	2,391	-1.16			
10	14	47	27	319	43	15	21.656	478347.535	9859287.710	11.53	24.449	41.484	22.530	43.200	1,919	-1.72			
11	14	47	58	319	41	22	21.666	478347.520	9859287.710	11.53	24.469	41.490	22.235	43.200	2.234	-1.71			
12	14	48	19	319	44	43	21.666	478347.536	9859287.724	11.53	24.456	41.472	18.604	43.600	5.852	-2.13			
13	14	48	51	319	45	14	21.666	478347.538	9859287.726	11.53	24.454	41.469	20.486	43.300	3,968	-1.83			
14	14	49	12	319	42	53	21.666	478347.527	9859287.716	11.53	24.463	41.482	19,169	43.200	5.294	-1.72			
15	14	49	55	319	43	22	21.686	478347.516	9859287.734	11.53	24.488	41.471	26.591	43.400	-2.103	-1.93			
16	14	50	50 37 319 45 34 21.666 478347.540 9859287.727 11.53 24.453 41.467 30.056 43.600 -5.						-5.603	-2.13									
17	14	51	1	319	40	53	21.666	478347.517	9859287.708	11.53	24.471	41.493	19.344	43.700	5.127	-2.21			
18	14	51	47	319	43	11	21.676	478347.522	9859287.725	11.53	24.475	41.476	19.640						
19	14	52	31	319	45	14	21.666	478347.538	9859287.726	11.53	24.464	41.469	29.400	44.800	-4,946	-3.33			
20	14	53	40	319	41	17	21.666	478347.519	9859287.710	11.53	24.469	41.491	33.216	46.100	-8.747	-4.61			
						L N	lean	478347.533	9859287.725	11.530	24.461	41.473	23.013	43.430	1.448	-1.96			
						Ste	d. Dev.	0.015	0.011	0.000	0.015	0.015	4.322	10	4.319	0.98			



							TAII	BUOYN	/ERIFICAT	IION (S/N 1	503)			ſ	GRO
Date							: 07th	August 2007		Da	atum/Sp	heroid :		WG 584	1/WGS8	4
Vess	el						: Placifi	ic Titan		S	emi-majo	oracxis ∶		63	78137	
Jobt	lumb	er					: 148	3		Inv	erse fl <i>a</i> t	tening :		298.2	2572236	
Loca	tion						: Sema	ayang Wharf			Proj	ection :		UTMZ	one 50 S	3
Instr	umen	t					: Sokk	ia Set 48			Orig	gin Latt :		0°00	0'00" N	
Obse	erver						: Bam	bang/Anto Si	naga		Origin	Long :		11	17° E	
LST	> U	тс о	Iffs et				: -8.0	hrs			Scale	Factor :		0.9	9996	
Inst.	Statio	n					: P4			D	GPSAn	t In use:	HP (St	arboard	Antenna)	
Latiti	ide o	fStat	ion				: 01	° 16' 23.5496	"S		E	asting :	478	361.536	Scale	Factor
Long	itude	ofst	ation				: 116°	48' 19.7757"	E		No	rthing :	9859	27 1.189	0.99	9811
Refe		,						13661				asting :		366.480		ergence
Bear	ing to	R.O					: 04°C	18°32" G			No	orthing :	9859	339.450	(·) 00°	'00' 16''
Pod							: 1503				E	asting :		363,562		
Pod	Ť						-0.68					orthing :	9859	323.623		
Obs	hh mm ss hh mm ss mtrs East									Height		puted		erved	-	-0
									North	Ant.	Brg	Dist	Brg	Dist	Brg	Dist
1	15	-							9859287.734	11.53	24.134	41.173	25.991	38.800	-1.857	2.373
2		-							9859287.728	11.53	24.140	41.180	26.104	39.000	-1.964	2.180
3		3 38 319 41 35 21.696 478347.501 3 51 319 40 12 21.696 478347.495 4 4 319 42 32 21.686 478347.512 4 23 319 41 22 21.686 478347.512 4 23 319 41 22 21.696 478347.500							9859287.730	11.53	24.117	41.172	21.590	40.500	2.527	0.672
4		15 3 51 319 40 12 21.896 478347.495 15 4 4 319 42 32 21.686 478347.512 15 4 23 319 41 22 21.696 478347.500 15 4 23 319 41 22 21.696 478347.500							9859287.733	11.53	24.135	41.174	21.930	40.700	2.205	0.474
5	15	4	47	319	41	53	21.686	478347.509	9859287.728	11.53	24.120	41.175	21.622	41.100	2.498	80.0
6	15	5	3	319	43	22	21.686	478347.516	9859287.734	11.53	24.114	41.167	25.873	39.900	-1.759	1.27
7	15	5	22	319	41	31	21.686	478347.507	9859287.726	11.53	24.121	41.177	29.080	40.400	-4,959	0.78
8	15	5	59 ~~	319	40	14	21.686	478347.501	9859287.721	11.53	24.126	41.184	29.046	40.600	-4,920	0.58
9	15	6	20	319	37	37	21.686	478347.489	9859287.710	11.53	24.137	41.198	28.650	40.300	-4.513	0.90
10	15	6 7	48	319	36	25	21.686	478347.483	9859287.705	11.53	24.141	41.205	28.487	40.400	-4.346	0.80
11 12	15 15	8	32	319 319	35 36	47 11	21.686 21.686	478347.480 478347.482	9859287.703 9859287.704	11.53 11.53	24.144	41.208 41.206	28.775 29.778	41.400 40.500	-4.631 -5.636	-0.19 0.71
12	15	。 8	39	319	35	47	21.686	478347.480	9859287.703	11.53	24.142	41 208	28.991	39.800	-4.847	1.41
13	15	9	10	319	37	- - 19	21.686	478347.487	9859287.709	11.53	24.138	41 200	28.239	40.700	-4.101	0.50
15	15	9	46	319	40	47	21.686	478347.504	9859287.723	11.53	24.130	41,181	35.146	44.500	-11.022	-3.32
16	15	10	17	319	+n∂ 40	-m 40	21.686	478347.504	9859287.723	11.53	24.124	41.181	28.807	38.700	-4,683	2.48
17	15	11	2	319	39	2	21.686	478347.496	9859287.716	11.53	24.131	41,191	30.352	40.800	-6.221	0.39
18	15	11	35	319	39	23	21.686	478347.497	9859287.717	11.53	24.130	41.189	26.387	39.300	-2.257	1.89
19	15	12	8	319	38	22	21.686	478347.492	9859287.713	11.53	24.134	41.194	30.207	40.800	-6073	0.39
20	15	13	20	319	39	56	21.686	478347.500	9859287.720	11.53	24.127	41.186	31.181	40.900	-7.054	0.29
						N	lean	478347.497	9859287.719	11.530	24.131	41.188	27.812	40.455	-3.681	0.73
							d. Dev.	0.011	0.011	0.000	0.009	0.013	3.345	12	3.343	1.22



							TAIL	. BUOY V	ERIFICAT	ION (S/N 15	511)			Ţ	JGRO
Date							: 07th	August 2007		Da	atum/Sp	heroid :		WG 584	/wgs	34
Vess	el						: Placifi	ic Titan		Se	emi-majo	oraxis :		637	8137	
Jobł	Numb)er					: 148	3		Inv	erse fl <i>a</i> t	tening :		298.2	572236	
Loca	tion						: Sema	ayang Wharf			Proj	ection :		UTMZ	one 50 %	3
Instru	umen	ſt					: Sokk	ia Set 48			Orig	gin Lant :		0°00	7 00" N	
Obse	erver						: Bam	bang/Anto Si	naga		Origin	Long :		11	7°E	
LST	> U	тс о	Iffset				: -8.0	hrs			Scale I	Factor :		80	996	
Inst.	Statio	on					: P4			D	GPSAn	t In use:	HP (St	arboarda	Antenna)
Latiti	ude o	fStat	ion				: 01	° 16' 23.5496	'S		E	asting :	478	361.536	Scale	Factor
Long	itude	ofst	ation				: 116°	48' 19.7757''	E		No	rthing :	9859	27 1.189	0.9	99811
Refe	rence	e Obj	ect				: ISN :	13661			E	asting :	478	366.480	Conv	ergen œ
Bear	ing to	R.O					: 04°C	18'32" G			No	rthing :	9859	339.450	(.) 00	°00' 16''
Pod	S/No.						: 1511				E	asting :	478	363,569		
Pod	Heigt	nt					-0.65				No	rthing :	9859	323.603		
Obs	Time (LOC) Grid Brg/Dist Computer hh mm ss hh mm ss mtrs East							Comput	ed Prism	Height	Com	puted	Obse	erved	(>0
	hh	hh mm ss hh mm ss mtrs East 15 21 43 319 41 17 21.086 478347.506 9 15 22 19 319 41 17 21.686 478347.506 9							North	Ant.	Brg	Dist	Brg	Dist	Brg	Dist
1	15	nh mm ss hh mm ss mtrs East 15 21 43 319 41 17 21.686 478347.506 9 15 22 19 319 41 17 21.686 478347.506 9 15 22 19 319 41 17 21.686 478347.506 9							9859287.725	11.53	24.143	41.161	22.400	40.200	1.743	0.961
2	15	22	19	319	41	17	21.686	478347.506	9859287.725	11.53	24.143	41.161	21.704	40.300	2.439	0.861
3	15	22	46	319	41	31	21.646	478347.533	9859287.696	11.53	24.089	41.176	26.756	35.200	-2.667	5,976
4	15	23	13	319	41	46	21.656	478347.528	9859287.704	11.53	24.102	41.171	27.765	34.800	-3.663	6.371
5	15	23	47	319	41	47	21.646	478347.535	9859287.697	11.53	24.088	41.175	28.097	34.500	-4009	6.67
6	15	24	9	319	40	23	21.646	478347.528	9859287.691	11.53	24.094	41.182	20.100	43.700	3,994	-2.52
7	15	24	32	319	40	1	21.646	478347.526	9859287.690	11.53	24.095	41.184	20.710	43.000	3,385	-1.82
8	15	24	56	319	41	44	21.646	478347.534	9859287.697	11.53	24.089	41.175	20.844	42.500	3245	-1.33
9	15	25	28	319	39	56	21.646	478347.526	9859287.689	11.53	24.096	41.185	34.019	41.300	-9,923	-0.12
10	15	25	52	319	40	16	21.646	478347.527	9859287.691	11.53	24.094	41.183	29.780	39.200	-5.686	1.98
11	15	26	10	319	39	37	21.656	478347.518	9859287.696	11.53	24.110	41.182	19.274	41.400	4.836	-0.22
12	15	27	17	319	39	52	21.646	478347.525	9859287.689	11.53	24.096	41.185	16.708	33.900	7.388	7.28
13	15	27	43	319	38	14	21.646	478347.518	9859287.682	11.53	24.102	41.194	24.745	37.700	-0.643	3.49
14	15	28	7	319	38	7	21.646	478347.517	9859287.682	11.53	24.103	41.194	25.346	38.200	-1.243	2.99
15	15	28	35	319	39	23	21.666	478347.510	9859287.702	11.53	24.124	41.179	25.504	38.500	-1.380	2.68
16	15	28	52	319	39	46	21.646	478347.525	9859287.689	11.53	24.096	41.185	25.627	38.900	-1.531	2.29
17	15	29	33	319	40	2	21.646	478347.526	9859287.690	11.53	24.095	41.184	26.504	39.700	-2.409	1.48
18	15	30	14	319	41	42	21.656	478347.528	9859287.704	11.53	24.102	41.171	23.662	40.600	0.440	0.57
19	15	30	53	319	41	42	21.646	478347.534	9859287.696	11.53	24.089	41.175	26.153	40.800	-2.064	0.37
20	15	31	19	319	41	12	21.646	478347.532	9859287.694	11.53	24.091	41.178	27.572	41.000	-3.481	D.18
						L N	lean	478347.524	9859287.696	11.530	24.102	41.179	24.663	39.270	-0.561	1.91
										0.000	0.016	0.009	4065	2.8	4069	2.85



							TAI	BUOYN	ERIFICAT	TION (S/N 20)41)			Ţ	JGRO
Date							: 07th	August 2007		D	atum/Sp	heroid :		WG 584	∔/WGS8	34
Vess	el						: Pacifi	c Titan		S	emi-majo	oraxis :		637	78137	
Job N	lumi	ber					: K-148	3		Inv	rerse fl <i>a</i> t	tening :		298.2	572236	
Locat	tion						: Sema	iyang Wharf			Proj	ection :		UTMZ	one 50 %	3
Instru	ımer	nt					: Sokk	ia Set 48			Orig	gin Lant :		0°00	7 00" N	
Obse	rver						: Bam	b <i>a</i> ng/Anto Si	naga		Origin	Long :		11	7° E	
LST-	-> U	тс с)ffset				: -8.0	hrs			Scale I	Factor :		0 8	9996	
Inst.	Stati	on					: P4			D	GPSAn	t In use:	HP (Sta	arboard.	Antenna)
Latitu	ide o	fStat	tion				: 01	° 16' 23.5496'	'S		E	asting :	478	361.536	Scale	Factor
Long	itude	ofst	ation				: 116°	48 19.7757"	E		No	orthing :	98593	27 1.189	0.9	99811
Refe	ence	e Obj	ect				: ISN	13661			E	asting :	478	366.490	Conv	ergenœ
Beari	ng te	0 R.O					: 04°C	18'32" G			No	rthing :	9859	339.450	(.)00	°00' 16"
Pod	5/No						: 2041				E	asting :	478	363.538		
Podl							-0.66				No	rthing :	9859	323.598		
Obs	Time(LOC) Grid Brg/Dist Computed Prism Height Computed Observed bh mm ss hh mm ss mtrs East North Ant. Brg Dist Brg Dist I								(>0						
	bh mm ss hh mm ss mtrs East North Ant. Brg Dist Brg Dist 1 11 36 21 319 37 7 21.666 478347.499 9859287.693 11.53 24.095 41.178 28.308 42.600 - 2 11 36 55 319 37 44 21.666 478347.502 9859287.695 11.53 24.093 41.175 28.308 42.600 -								Brg	Dist						
1	No mm ss hh mm ss mtrs East North Ant. Brg Dist Brg Di 11 36 21 319 37 7 21.666 478347.499 9859287.693 11.53 24.095 41.178 28.308 42.0 2 11 36 55 319 37 44 21.666 478347.502 9859287.693 11.63 24.095 41.175 28.308 42.0 3 11 37 26 319 38 23 21.666 478347.505 9859287.698 11.63 24.090 41.171 28.308 42.0							42.600	-4213	-1.422						
_	11	36 21 319 37 7 21.666 478347.499 9859287.693 11.53 24.095 41.178 28.308 42.600 36 55 319 37 44 21.666 478347.502 9859287.695 11.53 24.095 41.178 28.308 42.600 37 26 319 38 23 21.666 478347.505 9859287.695 11.53 24.093 41.175 28.308 42.600 37 26 319 38 23 21.666 478347.505 9859287.698 11.53 24.090 41.171 28.308 42.600							42.600	-4215	-1.425					
3														42.600	-4218	-1.429
4	11	37	55	319	38	12	21.666	478347.504	9859287.697	11.53	24.091	41.172	28.308	42.600	-4217	-1.428
5	11	38	32	319	39	29	21.668	478347.511	9859287.703	11.53	24.086	41.165	25.310	39.200	-1224	1.97
6	11	38	57	319	38	48	21.666	478347.507	9859287.700	11.53	24.089	41.169	23.136	37.200	0.953	3.97
7	11	39	27	319	40	14	21.666	478347.514	9859287.706	11.53	24.083	41.161	22.587	37.200	1.496	3.96
8	11	40	19	319	38	50	21.666	478347.507	9859287.700	11.53	24.089	41.169	21.914	37.900	2.175	3.27
9	11	40	54	319	39	21	21.666	478347.510	9859287.702	11.53	24.087	41.166	22.023	37.700	2.064	3.47
10	11	41	28	319	38	19	21.666	478347.505	9859287.698	11.53	24.091	41.171	22.209	37.000	1.882	4.17
11	11	41	59	319	40	12	21.666	478347.514	9859287.706	11.53	24.083	41.161	22.300	37.700	1.783	3.46
12	11	42	30	319	37	40	21.666	478347.502	9859287.695	11.53	24.093	41.175	22.577	38.300	1.516	2.87
13	11	43	24	319	37	56	21.666	478347.503	9859287.696	11.53	24.092	41.174	22.857	38.600	1.235	2.57
14	11	44	3	319	38	15	21.666	478347.505	9859287.698	11.53	24.091	41.172	23.319	38.500	0.772	2.67
15	11	44	47	319	39	21	21.668	478347.510	9859287.702	11.53	24.087	41.166	22.894	38.400	1.193	2.77
16	11	46	15	319	37	14	21.666	478347.500	9859287.693	11.53	24.095	41.177	23.402	38.700	0.693	2.48
17	11	46	49	319	38	27	21.666	478347.506	9859287.698	11.53	24.090	41.171	23.805	38.800	0.285	2.37
18	11	46	21	319	39 	34	21.666	478347.511	9859287.703	11.53	24.086	41.165	23.756	39.000	0.330	2.16
19 20	11 11	47 48	28 18	319 319	38 39	18 17	21.666	478347.505 478347.510	9859287.698 9859287.702	11.53 11.53	24.091	41.172	23.676 24.903	39.300 39.500	0.415	1.87
20	11	40	10	319	39				9859287.702				24.903 24.195			
						<u> </u>	ilean 1. Dev.	478347.507 0.004	0.004	11.530 0.000	24.089 0.004	41.170 0.005	24.195	39.170 1.9	-0.106 2.278	2.00



							TAIL	. BUOY V	ERIFICAT	ION (S/N 12	260)			Ţ	JGRO
Date							: 08th	August 2007		D.	atum/Sp	heroid :		WG 584	/wgs	34
Vess	el						: Pacifi	ic Titan		S	emi-majo	oraxis :		637	8137	
Jobl	Numb)er					: K-148	в		Inv	erse flat	tening :		298.2	572238	
Loca	tion						: Sema	ayang Wharf			Proj	ection :		UTMZ	one 50 \$	3
Instr	umen	ſt					: Sokk	ia Set 48			Orig	;in Lat :		0°00	/ 00" N	
Obs	erver						: Bam	bang/Anto Si	naga		Origin	Long :		11	7°E	
LST	> U	тс о	Iffset				: -8.0	hrs			Scale I	Factor :		0.9	996	
Inst.	Statio	n					: P4			D	GPSAn	t In use:	HP (Sta	arboard)	Antenna)
Latit	ude o	fStat	ion				: 01	° 16' 23.5496	'S		E	asting :	478	361.536	Scale	Factor
Long	itude	ofst	ation				: 116°	48' 19.7757''	E		No	rthing :	98592	27 1.189	0.9	99811
Refe	rence	e Obj	ect				: ISN	13661			E	asting :	478	366.480	Conv	ergenæ
Bear	ing to	R.O					: 04°C	18°32"G			No	rthing :	9859	339.450	(•) 00	°00' 16''
Pod	S/No.						: 1260				E	asting :	478	370284		
Pod	Heigl	nt					-0.66				No	rthing :	9859	344.145		
Obs	Tin	ne(L	OC)		Grid	Brg/I	Dist	Comput	ed Prism	Height	Com	puted	Obse	erved	(>0
	hh	mm	ss	hh	mm	ss	mtrs	East	North	Ant.	Brg	Dist	Brg	Dist	Brg	Dist
1	12	11	39	323	7	57	34.364	478340.919	9859298.681	11.53	32.862	55,490	27.129	56.200	5.733	-0.710
2	12	12	1	323	7	46	34.234	478340.995	9859298.575	11.53	32.755	55.536	26.788	56.400	5,967	-0.864
3	12	12	29	323	8	1	34.230	478341.000	9859298.574	11.53	32.750	55.534	29.149	57.300	3.601	-1.766
4	12	12	54	323	7	55	34.230	478340.999	9859298.573	11.53	32.750	55.535	28.540	56.100	4210	-0.565
5	12	13	5	323	7	46	34.234	478340.996	9859298.576	11.53	32.755	55.535	30.555	57.700	2 200	-2.16
6	12	13	40	323	11	51	34.232	478341.029	9859298.598	11.53	32.738	55,499	28.909	56.600	3.829	-1.10
7	12	14	46	323	9	57	34.364	478340.935	9859298.693	11.53	32.875	55.471	27.818	53.700	5.057	1.77
8	12	15	3	323	10	44	34.230	478341.022	9859298.590	11.53	32.740	55.510	28.234	54,100	4.506	1.41
9	12	15	30	323	8	32	34.225	478341.007	9859298.573	11.53	32.743	55.531	27.597	51.300	5.146	4.23
10	12	16	7	323	11	25	34.232	478341.026	9859298.596	11.53	32.739	55,503	30.736	56.000	2.003	-0.50
11	12	16	42	323	7	52	34.230	478340.999	9859298.573	11.53	32.750	55.536	27.523	54.200	5.227	1.34
12	12	17	13	323	9	11	34.225	478341.012	9859298.577	11.53	32.740	55.526	31.888	56.700	0.852	-1.17
13	12	17	58	323	12	35	34.227	478341.038	9859298.599	11.53	32.730	55.494	32.055	59.400	0.675	-3.91
14	12	18	12	323	8	48	34.228	478341.007	9859298.577	11.53	32.745	55.528	32.046	59.200	0.699	-3.67
15	12	18	43	323	10	42	34.225	478341.024	9859298.586	11.53	32.735	55.512	31.990	58.600	0.745	-3.09
16	12	19	36	323	7	41	34.230	478340.997	9859298.572	11.53	32.751	55.537	31.126	58.300	1.625	-2.76
17	12	20	9	323	8	33	34.229	478341.005	9859298.576	11.53	32.747	55 <i>.</i> 530	29.164	56.800	3.583	-127
18	12	21	25	323	9	52	34.228	478341.016	9859298.583	11.53	32.741	55.518	29.838	53.800	2,903	1.72
19	12	22	18	323	12	2	34.229	478341.033	9859298.597	11.53	32.734	55.498	30.523	54.200	2211	1.30
20	12	23	49	323	7	46	34.229	478340.998	9859298.571	11.53	32.750	55.537	29.777	54.700	2,973	0.84
						—		478341.003	9859298.592	11.530	32.756	55.518	29.569	56.065	3.187	-0.55
											0.039	0.020	1.744	2.1	1.763	2.10



							TAIL	BUOY V	ERIFICAT	ION (S/N 15	i18)			Ţ	JGRO
Date							: 08th	August 2007		Da	atum/Spl	heroid :		WG 584	/wgs	34
Vess	el						: Pacifi	ic Titan		S	emi-majo	oraxis ∶		637	8137	
Jobł	Numb	er					: 148	3		Inv	erse fl <i>a</i> t	tening :		298.2	572238	
Loca	tion						: Sema	iyang Wharf			Proj	ection :		UTMZ	one 50 \$	3
Instr	umen	t					: Sokk	ia Set 48			Orig	jin Lant ∶		0°00	/ 00" N	
Obse	erver						: Bam	bang/Anto Si	naga		Origin	Long :		11	7°E	
LST	> U	тс о	iffs et				: -8.0	hrs			Scale I	Factor :		0.9	996	
Inst.	Statio	n					: P4			D	GPS An	t In use:	HP (Sta	arboard	Antenna)
Latiti	ude o	fStat	ion				: 01	° 16' 23.5496	"S		E	asting :	478	361.536	Scale	Factor
Long	itude	ofst	ation				: 116°	48' 19.7757"	E		No	rthing :	9859	27 1.189	0.9	99811
Refe	rence	Obj	ect					13661			E	asting :	478	366.480	Conv	ergenæ
Bear	ing to	R.O					: 04°C	18'32"G			No	rthing :	9859	339.450	(•)00	'00' 16''
	S/No.						: 1518					asting :		370.005		
Pod	Heigl						-0.66					rthing :	9859	344.178		
Obs	hh mm ss hh mm ss mtrs East									Height		puted		erved		>0
		hh mm ss hh mm ss 12 27 44 322 35 42 12 28 2 322 35 32							North	Ant.	Brg	Dist	Brg	Dist	Brg	Dist
1	12 27 44 322 35 42 34.463 478340.601 985 12 28 2 322 35 32 34.234 478340.740 985								9859298.565	11.53	32.833	55,632	31.937	56.300	0.896	-0.668
2			_						9859298.382	11.53	32.605	55.710	31.975	56.100	0.630	-0.390
3						-			9859298.380	11.53	32.600	55.710	32.086	56.000	0.514	-0.290
4	12	28	48	322	35	39	34.230	478340.743	9859298.379	11.53	32.601	55.710	32.127	55.700	0.474	0.010
5	12	29	13	322	34	17	34.234	478340.730	9859298.374	11.53	32.610	55.721	31.932	55.600	0.678	0.12
6	12	29	42	322	33	46	34.232	478340.727	9859298.369	11.53	32.609	55.727	32.115	55.300	0.494	0.43
7	12	30	16	322	35	12	34.226	478340.742	9859298.373	11.53	32.598	55.715	32.075	55.300	0.523	0.42
8	12	30	39	322	34	32	34.230	478340.734	9859298.373	11.53	32.605	55.720	31.996	55.300	0.609	0.42
9	12	31	7	322	35	34	34.225	478340.745	9859298.375	11.53	32.596	55.712	31.978	55.300	0.618	0.41
10	12	31	48	322	36	23	34.232	478340.748	9859298.385	11.53	32.600	55.703	31.955	55.200	0.645	0.50
11	12	32	15 50	322	36	12	34.230	478340.747	9859298.383	11.53	32.599	55,705	31.660	55.100	0.939	0.60
12	12	32	53	322	34	23	34.225	478340.736	9859298.368	11.53	32.600	55,723	31.573	55.300	1.027	0.42
13	12 12	33	27	322	35 35	34	34.227	478340.744	9859298.376	11.53	32.598	55.712	31.272	55.300	1.326	0.41
14		33	59 24	322		12	34.228	478340.741	9859298.375	11.53	32.600	55.715	31.213	55.200	1.387	0.51
15	12	34 34	25	322	35 34	56 22	34.225	478340.748	9859298.377	11.53	32,595	55,709	31.209	55,100	1,386	0.61
16 17	12	34 35	51 25	322 322	34 35	22 34	34.230 34.229	478340.733 478340.743	9859298.372 9859298.378	11.53 11.53	32.605	55.722 55.711	31.303 31.394	55.000 54.900	1.302	0.72
17 18	12	35 36	20 14	322	35	34 21	34.229 34.228	478340.743	9859298.378	11.53	32.600 32.596	55.704	31.394 31.956	55.200	1.206	0.50
10	12	30	43	322	35	21	34.229	478340.730	9859298.377	11.53	32.601	55.713	31.800	55.300	0.573	0.41
20	12	38	40 23	322	34	22	34.229	478340.74	9859298.371	11.53	32.604	55,722	31.996	55.300	0.608	0.42
2	12	00	200	042			lean	478340.734	9859298.386	11.530	32.613	55,710	31.8	55.4	0.824	0.32
						-	d. Dev.	0.032	0.043	0.000	0.052	0.020	0.332	0.4	0.329	0.32



							TAIL	BUOY V	ERIFICAT	ION (S	5/N 15	75)			f	JGRO
Date							: 08th August 2007			D.	Datum/Spheroid :			WGS84/WG 584		
Vessel							: Pacific Titan			Semi-major axis :			6378137			
Job N	umb	er					: K-1483			Inverse flattening :			298 2572236			
Location							: Sem ayang Wharf			Projection :			UTM Zone 50 S			6
Instru	ment						: Sokkia Set 4B			Origin Lat :			0°00'00" N			
Observer							: Bambang/Anto Sinaga			Origin Long :			117°E			
LST> UTC Offset							: -8.0 hrs			Scale Factor :		0.9996				
Inst. Station							: P4			DGPS Ant. In use:		HP (Starboard Antenna)				
Latitude of Station							: 01° 16' 23.5496'' S				Easting :		478361.536		Scale Factor	
Longitude of station							: 116° 48' 19.7757" E				Northing :		9859271.189		0.999811	
Reference Object							: ISN 13661			Easting :			478366.480		Convergence	
Bearing to R.O.							: 04°08'32" G			Northing :		9859339.450		(·) 00°00' 16"		
Pod S/No.							: 1575			Easting :		478368.878				
Pod Height							-0.66			Northing :			9859344.364			
Obs	Tin	Time(LOC)			Grid	Brg/l	Dist Computed Prism		Height Computed		Observed		C-O			
	hh	mm	8	hh	mm	ÿ	mtrs	East	North	Ant.	Brg	Dist	Brg	Dist	Brg	Dist
1	13	2	41	322	6	47	34.423	478340.396	9859298.357	11.53	31.786	55.477	29.876	55.100	1.910	0.377
2	13	3	13	322	6	43	34.234	478340.512	9859298.207	11.53	31.597	55.542	30 079	54.500	1.518	1.042
3	13	3	46	322	7	34	34.230	478340.522	9859298.209	11.53	31.590	55.536	30,931	54,400	0.659	1.136
4	13	4	1	322	6	11	34.230	478340.511	9859298.200	11.53	31.595	55.548	30,991	54,300	0.604	1.248
5	13	4	53	322	8	1	34.234	478340.523	9859298.214	11.53	31.593	55.530	32.552	53,700	-0.959	1.83
6	13	5	32	322	7	23	34.232	478340.519	9859298.209	11.53	31.593	55,537	32.150	54.100	-0.557	1.44
7	13	5	58	322	7	44	34.226	478340.525	9859298.206	11.53	31.586	55,536	32.150	54.100	-0.564	1.44
8	13	6	27	322	8	12	34.230	478340.527	9859298.212	11.53	31.588	55.530	32.150	54.100	-0.562	1.43
9	13	6	53	322	8	21	34.225	478340.531	9859298.209	11.53	31.582	55.530	32,993	54.100	-1.411	1.43
10	13	7	44	322	9	29	34.232	478340.535	9859298.222	11.53	31.585	55.518	30.760	54.700	0.825	0.82
11	13	8	23	322	8	8	34.230	478340.526	9859298.212	11.53	31.588	55.531	29.164	55,200	2.424	0.33
12	13	9	12	322	8	33	34.225	478340.532	9859298.211	11.53	31.582	55.529	29.164	55,200	2.418	0.33
13	13	10	34	322	9	21	34.227	478340.537	9859298.217	11.53	31.581	55.521	29.164	55,200	2.417	0.32
14	13	11	23	322	7	35	34.228	478340.523	9859298.207	11.53	31.588	55.536	29.164	55,200	2.424	0.34
15	13	12	18	322	8	33	34.225	478340.532	9859298.211	11.53	31.582	55.529	29.164	55,200	2.418	0.33
16	13	13	55	322	7	3	34.230	478340.518	9859298.205	11.53	31.592	55.540	31D38	53,700	0.554	1.84
17	13	14	34	322	7	45	34.229	478340.524	9859298.209	11.53	31.589	55.534	29.337	52,800	2.252	2.73
18	13	15	31	322	8	23	34.228	478340.529	9859298.212	11.53	31.585	55.529	30.457	53,600	1.128	1.93
19	13	16	58	322	9	6	34.229	478340.534	9859298.217	11.53	31.584	55.522	26.195	55.100	5.389	0.42
20	13	17	25	322	2	22	34.229	478340.481	9859298.176	11.53	31.608	55.583	28.DD5	53,600	3,603	1,98
						I	lean	478340.517	9859298.216	11.530	31.599	55.532	30.274	54,395	1.325	1.137
si						Sto	i. Dev.	0.031	0.034	0.000	0.044	0.019	1.685	0.7	1.688	0.71



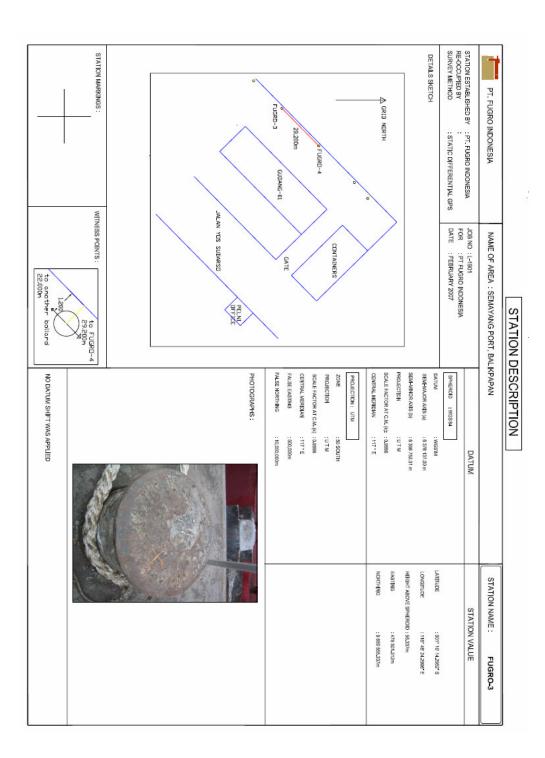
A. SURVEY STATION INFORMATION



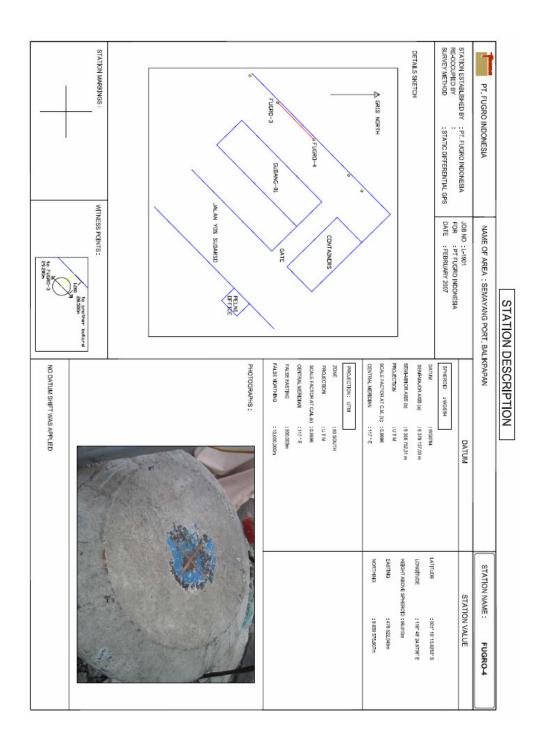














B. DAILY SURVEY REPORTS

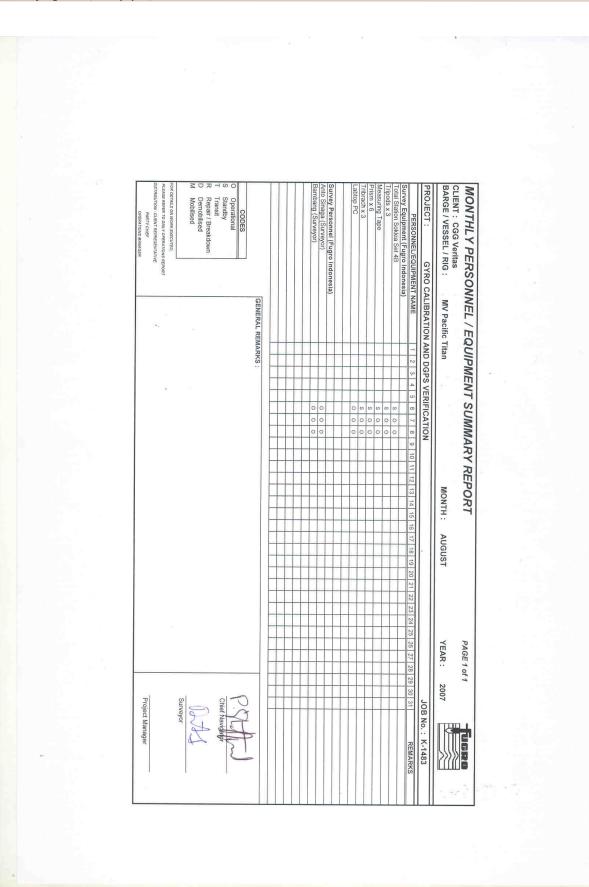
		PERATION R	EPORT		- fu ge			
Client Locatio		G Veritas nayang Port, Balikpap	an					
VESSE		: MV Pacific Titan	DA	ATE : 06 th A	August 2007			
PROJE	СТ	: Gyro Calibration and D	GPS Verification JC					
FROM	то		SUMMARY OF OPE	RATIONS				
0700		(Time UTC+8) Fugro personnel departed	from Soekarno-Hatta A	irport lakarta				
0.00	0900	Fugro personnel arrived a	at Sepinggan Airport, Ba	likpapan.				
	1000	Fugro personnel arrived a	and check in at Grand M	ustika Tiga Hotel				
1850	1900	Standby due to Pacific Tit Fugro personnel met Mar	an is not alongside at So	emayang Port	0			
2100	2200	Reconaissance of the fiel	d Semayang Port	AUL STAFFOR	0			
	7.							
EQUIPN	IENT		STATUS	PERSONNEL	. TITL			
		kia Set 4B	Standby	Anto Sinaga	Survey			
Tripod x			Standby	Bambang	Survey			
Measurin		e	Standby	- 5 X				
Prism x 6			Standby					
Tribrach Labtop F				Standby Standby				
	PIFugn	o Indonesia	CGG Veritas	DOR No				
	60	A	Pittin					
	Anto	Sinaga	PauloSTAFF		1483-01			
	C.u	veyor	Chief Navigator					
	30	veyor	Chief Navigator					
	30	veyor	Ginel Navigator	*				
	30	veyor	Cinel Navigator	*				
	30		Ciner Navigator					



DAI	LYO	PERATION	REPORT		-fugre		
Client Locati		G Veritas nayang Port, Balikp	papan				
VESSE		: MV Pacific Titan	DA	TE : 07 th Aug	ust 2007		
PROJE	СТ	: Gyro Calibration ar	nd DGPS Verification JO				
FROM	то		SUMMARY OF OPER	RATIONS			
0200	0245	(Time UTC+8)					
0300 0315	0315 0400	Depart to the port.	BM Fugro 3 and Fugro 4				
0400	0730	Observation for deter	mine 2 control point near MV	Pacific Titan			
0800	0900	Breakast in hotel	mile 2 control point neal MIV	i aono nidri			
1000	1015	Depart to Semavang	Port				
10:30	11:30	Observation for deter	mine 1 help point, reference p	point for Gyro Calibrat	ion and DGP		
		Verification	1 0 UV				
1230	1330	DGPS Verification					
1245	1415.	Gyro Calibration	Albert				
1430 1900	1730 2300	Pods Verification on V Processing Data	wnarf				
1900	2300	Frocessing Data					
EQUIPN	IENT		STATUS	PERSONNEL	TITLE		
		kia Set 4B	Operational	Anto Sinaga	Surveyor		
Tripod x			Operational	Bambang	Surveyor		
Measuri	ing Tape		Operational		Guiveyor		
Prism x			Operational				
Tribrach			Operational				
Labtop F			Operational				
	PT Fugr	o Indonesia	CGG Veritas	DC	DOR No		
	\cap	10	CVA				
	()	71	1 mpon				
	A 4	Sinora	V.	K14	83-02		
		Sinaga	Pauls STAFFOI				
		vevor	Chief Navigator				
		rveyor	Chief Navigator	<i>x</i> :			
		veyor	Chief Navigator	*			
		veyor	Chief Navigator				
		veyor	Chief Navigator				
		veyor	Chief Navigator				
		veyor	Chief Navigator				
		veyor	Chief Navigator				
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		veyor	Chief Navigator				
		veyor	Chief Navigator				
		veyor	Chief Navigator	-			
		veyor	Chief Navigator				
		veyor	Chief Navigator				
		veyor	Chief Navigator				
				1 (MA			



0/11	LY O	PERATION	REPORT		-fugr	
Client Locati		G Veritas nayang Port, Balil	kpapan			
VESSE		: MV Pacific Titan	DA and DGPS Verification JO		ust 2007	
TROOL	.01	. Gyro cambration a	and DGFS vernication JU	B No. : K1483		
FROM	то		SUMMARY OF OPER	RATIONS		
0700	0000	(Time UTC+8)	P. I.			
0700	0900 0930	Continue Processing	g Data. part to Semayang Port			
0900	1000	Set up equipment fo	or Gyro Calibration		14	
		Start Gyro Calibratio	on			
1000	1100	Continue Gyro Calib	pration (second side)			
1100	1130	Processing Data at	Vessel and Report to Mr Pauls	STAFFORD		
	*,					
				×		
EQUIP	IENT		STATUS	DEDGONNIEL		
		kia Set 4B	Operational	PERSONNEL	TITLE	
Tripod			Operational	Anto Sinaga Bambang	Surveyo	
	ing Tape		Operational	Dambally	Surveyor	
Prism x			Operational			
Tribrach			Operational			
Labtop			Operational			
		<u>Sinaga</u> veyor	PAUM Pauls SMF PO Chief Navigator		K1483-03	
			<u>Pauls</u> Smt Fo Chief Navigator		83-03	







C FIELD DIAGRAM

