



Field Service Bulletin

FSB No.	FSB-001 – Optimised RLG Alignment Procedure
Revision	B
Issue Date	15 th July 2010
Subject	Correct alignment procedure for CDL RLG subsea gyro products without GPS input and consequences of incorrect alignment.
Issue	Client reported divergence of 2 x miniRLG2 gyro headings on same ROV during subsea operations.
Equipment Affected	MiniRLG2, MiniPOS2, MiniPOS3, MiniPOSNAV
Tools Required	Terminal program, Burton Tail, Power supply
Safety Issues	NONE

Summary

Following investigation by CDL engineers, it seems the most likely cause for the issue was the use of 'stationary alignment' while the RLG's were in fact experiencing some vessel motion during the alignment phase. Using this incorrect alignment mode, the RLG's will converge on true heading over time but may never reach full system accuracy.



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Revision History

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- Rev A** First revision of this document
- Rev B** Clarification on requirement for warm up period,
addition of miniPOS3 to equipment listing
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Revision	Author	Date	Approval
Rev A	C Spy	16/04/10	K McBarron
Rev B	K McBarron	15/07/10	C Crighton



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Solution

To successfully align the MiniRLG2 the appropriate alignment mode must be selected within the RLG menu system. There are 4 alignment modes available in the MiniRLG2 system:

1. Docked stationary alignment
 2. Stationary alignment
 3. Stationary alignment with GPS
 4. Moving Base with GPS
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- 1) A docked stationary alignment is where the unit is guaranteed to be completely stationary and will not move at all i.e. fixed to solid ground.
 - 2) Stationary alignment is a quasi stationary alignment that will remove the effects of normal vessel motion (E.g. vessel in DP). Vessel pitch and roll has a net zero displacement and can therefore be corrected. High vessel motion during alignment will reduce the alignment accuracy of all gyro systems.
 - 3) Stationary alignment with GPS the unit will align as above but will take its initial position from the GPS input.
 - 4) Moving base with GPS the unit will align while steaming using the GPS aiding. The unit must be moving while performing this alignment.

Without GPS input the below is recommended alignment procedure and menu settings for alignment when vessel motion is present:

1. Ensure correct latitude is set.
2. Choose Stationary Alignment within MiniRLG2 menu.
3. Set the alignment time to 20min. This will improve settling point accuracy.
4. If possible, power up the unit 2 hours before needed to warm up the laser assembly. Stable internal temperatures benefit all optical gyro systems.
5. Transit to site and enter DP
6. In the gyro menu restart the alignment or power system off and on which will force an alignment.
7. Do not move vessel until the unit has aligned – this has been achieved when the mode field in the MiniRLG2 string goes to 9. If the mode field is not visible it is recommended to wait 25 min after the heading appears before moving.
8. Before launching ROV compare all gyro systems on the vehicle are in agreement.
9. Gyro is now operational at full system accuracy and may well be operating significantly better than the stated accuracy.



10. Alignment is not required again unless power is removed from the unit. If this occurs above must be repeated to achieve full system accuracy.

Note: The above procedure is to 'optimise' the RLG alignment for best performance. The stated run up times in the CDL documentation for system specified accuracy are still valid.

Two hour temperature stabilisation is not a requirement but will produce improved performance when aligning optical gyro systems under dynamic conditions when no GPS signal is available.



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