


Drop Gyro Operating Procedure

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- Purpose:** The purpose of this procedure is to provide written instruction for the operational check and rig up and rig down of the Drop Gyro.
- Scope:** This procedure shall apply as the standard method for Drop Gyro Operations.
- Responsibilities:** This procedure shall be performed by the Huracan Survey Engineer in conjunction with the rig crew as specified within the brackets **<Responsible Person>**.

- Safety (general):** Personnel performing this procedure must take all practicable steps to protect their own health & safety & the health & safety of others by complying with applicable Occupational Health and Safety Acts and Regulations and by adhering to Company & Customer safety requirements.
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Danger
- Safety (specific):** Manual Handling. Gyro running gear weight bars weigh 72 lbs so ensure suitable HIP techniques are used.

Step A

1. Pre-Job Operational Check

<Huracan Survey Engineer> On arrival to the wellsite the following must be performed once standard wellsite arrival formalities have been completed:

- A1.1 Obtain information into the work string and decide on rubber centraliser or spring centralisers.
- A1.2 Perform step back 5 x 5 in the area to assess potential hazards.
- A1.3 As the Gyro is very fragile, ensure that the Gyro is well supported at all times or stored in the Gyro carry case.
- A1.4 Perform wellsite survey for surface reference azimuth using sub-meter DGPS unit.
- A1.5 Check battery voltage and install batteries into gyro barrel.
- A1.6 Ensure that surface laptop is fully charged and connect to drop gyro.
- A1.7 Remove old surveys and start a new survey. Install gyro into pressure barrel and prepare gyro for standard drop configuration.
- A1.8 Make up surface retrieval tool.

2. Gyro Survey

Wellsite operation:

- A2.1 **<Huracan Survey Engineer>** Discuss with the company man the survey scope and obtain the work string details to ensure correct depth while surveying out of hole, potential tight spots and other issues that may impact the survey.
- A2.2 **<Huracan Survey Engineer>** Hold safety meeting with rig crew to ensure that all personnel working in and around the work area are aware of the potential hazards and responsibilities associated with the operation.
- A2.3 **<Pump Operator / Rig Crew / Huracan Survey Engineer>** Pick up drop Gyro using winch line and side door entry lifting device into the work string, drop gyro and allow to fall for 1min/1000ft of workstring + 5 mins for safety.
- A2.4 **<Huracan Survey Engineer>** Start the survey prior to POOH with the workstring.
- A2.5 **<Huracan Survey Engineer>** **The tool must never be rotated quickly while the survey is running unless specific precautions are taken, and that is to pause the survey, perform rotation then resume.**
- A2.6 **<Huracan Survey Engineer>** Perform a survey at each connection at a QC survey at every 10 joints or 100m whichever is first.
- A2.7 **<Driller / Huracan Survey Engineer>** A survey must be performed within 2 mins and when the tool is stationary. As time approaches 2 mins, make the driller stop, once everything is stationary, pause the tool and resume.

- A2.8 **<Roughneck / Huracan Survey Engineer>** Once at surface, pick up the surface retrieval tool with a tugger, ensure the latch is closed and run it in hole and latch the survey tool, once latch perform a survey the tool.
- A2.9 **<Roughneck / Huracan Survey Engineer>** Once the survey is completed start to pull the gyro out of the hole. Once the pulling tool is at surface, c-plate and unlatch retrieval tool and lay out.
- A2.10 **<Huracan Survey Engineer>** Perform survey, connect the lifting tool to the gyro and lift to calibration position, install surface mount scope and perform surface reference azimuth calibration. Survey is now complete.
- A2.11 **<Driller / Huracan Survey Engineer>** Lift out tool and lay down

3. Post-Job

<Huracan Survey Engineer> The following is a procedure for post-job processing and maintenance:

- A3.1 Remove gyro from pressure barrel and download.
- A3.2 While downloading clean equipment and stow.
- A3.3 Once the survey is downloaded, check data and QC and deliver survey.
- A3.4 Ensure equipment is sufficiently secured prior to departure from the wellsite.