Install Permanent Down-hole Gauges SOP	***SOP# GN013***
Scope of Work	The following Standard Operating Procedure specifically applies to: Installation of Permanent Downhole Gauge
QHSE References *(Applicable SOP's, Management Plans, Systems & Client / Industry Information)*	• Pre-Job Safety Meeting & Induction Record as applicable • JSA GN010 Permanent Gauge Installation • KIN-AOG-QHSE-MAP002 -HSEMP • KIN-AOG-QHSE-MAP008-Field Ops ERP • Current version of Wellsite Permit to Work System • GAR-01-12-2019 WLD – Downhole Equipment Audit Va[1]-2 -Audit
Last Updated	Revision 1.3, 13-Jan-20
Responsibilities	Wellsite crew to abide be SOP at all times
Specialist Equipment	Pneumatic Installation Unit, Handheld Pneumatic Banding Machine
Associated & Additional Controls Required	• *All employees have the right and the responsibility to stop a job if they feel that the job is unsafe or if there is a danger to themselves or any other fellow worker / contractor from the activity or if there is the potential of damage or failure of any equipment or damage to the environment.* • *If an operating company procedure and Service Company procedure do not correspond, then a procedural review shall be undertaken and endorsed by the relevant Supervisor to determine the acceptable way forward. In the absence of the review / endorsement process as above, the operating company procedure shall prevail.* • *All employees, contractors and others engaged to work for or on behalf of Kinetic Australian Oil & Gas are responsible for taking 'all practicable steps' to protect their own health and safety and the health and safety of others by complying with the WHS Act 2011 and by adhering to all relevant legislation, company and client/customer safety requirements.*

Any statement in *Bold and Italics* is a critical step and must be carried out as it is written.

Icon	Description
NOTE	*Information to assist in the safe completion of this procedure*
CAUTION	***Insert Cautions points between steps as required.***
HOLD	***Insert hold points between steps as required.***
DANGEROUS GOODS	***Insert Dangerous Goods points where Hazardous Chemicals / Dangerous Goods use occurs***
	Insert Manual Handling points where manual handling is required

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HOLD	**A spotter must be used to direct Kinetic Vehicles when interaction between Mobile Plant and Plant & Equipment is 3 metres or less e.g. Rigging Up & Down Operations. The Spotter shall be a suitably competent Kinetic worker as designated by the Kinetic Crew and will have control of the site / area whilst interaction between plant occurs. The form of communication between all applicable parties shall be established & confirmed by the spotter prior to commencing.**	
1	**Before departing for location:** • Confirm tubing install depth then check there is the required meterage on the spool. • Check TEC Cable insulation and continuity. • Check gauge is as requested by client. Ensure pressure gauge is function correctly. • Check sufficient cross coupling protectors and bands for installation plus 100% backup. • Check suitable wellhead outlet and fittings for rod lock / wellhead. • Cable splice available. You will need an assortment of Swagelok fittings / Fittings for the job (Job Specific): • 1/4" NPTM male to ¼" tubing (most common). • 1/8" NPTM male to ¼" tubing. • 3/8" NPTM male to ¼" tubing. • 1/2" NPTM male to ¼" tubing. • 3/4" NPTM male to ¼" tubing. • 1" NPTM male to ¼" tubing. • ½" NPTM to 1" NPTF Bushes. • ½" NPTM to 1" NPTF Bushes. Job Specific Tools include: • Shifters, spanners to suit all sizes of pipework. • Encapsulation stripper. • Thread tape. • Pipe bender. • Pipe cutter. • Allen Keys.	
CAUTION	***The use of the all non-hazardous area electrical equipment is restricted to an area outside of hazardous area zones of the wellsite, refer to hazardous area zoning for the applicable wellsite or use 4m from all well or well production equipment as a guide.***	
2	Report to Client OCR and confirm scope of work or set depths has not changed; Report to Rig Manager and complete any third-party checklists and inductions Gauge supervisor to provide a copy of relevant documentation (SOP, lifting certification, inductions as required by either OCR or rig manager). Unload and spot gauge installation equipment if possible. **Spotting Spooling Unit:** • Kinetic or rig spotter to assist loader driver to reverse any equipment into position • Move TEC cable spooling unit to agreed location on site outside of the hazardous area • Attach TEC cable spooling sheave to tugger line from rig and install at appropriate location as agreed between rig manager and Gauge Installation Technician. • Place gauge installation equipment, banding equipment in suitable area on rig floor (be aware of introducing trip hazards), hook to regulator / air supply. • Ensure tape around TEC Cable spool so when tension is release it does not back spool • Place TEC cable/gauge through sheave.	

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3	A toolbox meeting will be held with relevant parties & discuss job scope, sheave placement and lifting procedure, well control, annular pressure while running cable and exclusion zones i.e. from spooling unit to rig floor prior to commencing running in hole with the completion. If non routine work for this rig or as designated by the OCR or rig manager a WPTW will be completed.	
4	**Rig Up:** • Clear below the sheave while lifting. • Lift top sheave with tugger line into position in the derrick, install in the derrick and secure both main and backup sheave restraints. • Ensure gauge is secured to a handrail and handrail is secured with a restraint so it cannot be lifted out of position by the gauge / TEC cable. • Complete all other tasks necessary to RIH with gauge.	
HOLD	***Install barricading - run barrier tape from the spooling unit to the rig floor as to stop unauthorised access around the spooler and under the cable while cable is being run in hole or under tension.***	
5A	**If a gauge carrier pup joint is being used** • Drift gauge pup joint with suitable drift • Place pup joint into elevators and stab onto completion • Torque gauge pup joint to completion string	
HOLD	***Ensure all personnel are clear of pup joint gauge carrier lugs while pup joint is being made up.***	
5B	**If a Cannon Clamp style gauge carrier is being used** • Ensure fingers are clear prior to installing Cannon style gauge carrier wedges.	
HOLD	***Ensure hole cover is used while installing gauge / gauge carrier and at ALL times while working over the well.***	
6	**Installation of the gauge into the gauge carrier** • Install gauge into gauge carrier using ¼" NPT gauge fitting or Cannon style gauge carrier.	
7	**RIH with TEC Cable** • Ensure that there is sufficient room between the slips so that TEC cable is not damaged while running in hole. • The first four joints after the gauge must be without back tension so ensure personnel on the spooling unit and have sufficient cable slack as to not place the gauge cablehead under tension. • After the fourth cross coupling protector has been installed then increase air pressure until sufficient back tension is on the TEC cable (equivalent to two people holding back the reel) • Monitor gauge while running in hole.	
HOLD	***Whenever preparing to close the slips ensure cable is clear of the slips. It is essential that you hold the TEC Cable in the slip bowl recess so that the cable will not be crushed by the slips as this could render the TEC cable inoperable and requiring total removal and recommencement of installation.***	

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8a	**RIH with Banded Cross Coupling Protectors** • Place mat around tubing to protect against drop objects into the well • Install cross coupling protectors on each coupling or as per clients specific recommendation by lifting tong out of the way; rig personnel to pull TEC cable against tubing using open hand and pulling it tight against tubing • Kinetic personnel to install cross coupling protector and tighten using pneumatic banding machine	
CAUTION	***The FROMM Pneumatic banding machine has the potential to pull 1000lbs and crush fingers so ensure rig personnel are aware that hands are to be clear of the bands while banding and only open hands and palms are used to pull the TEC cable against the tubing***	
8b	**RIH with Cannon Cross Coupling Protectors** • Place mat around tubing to protect against drop opbjects into the well • Install cannon cross coupling protectors on each coupling or as per clients specific recommendation by lifting tong out of the way; rig personnel to pull TEC cable against tubing using open hand and pulling it tight against tubing • Use manual clossing tool to close it sufficient to be able to install wedge • Install wedge and secure using pneumatic hammer or backup hand tool in the event of air hammer falure.	
8c	**RIH with Forged Cross Coupling Protectors** • Install cross coupling protectors on each coupling or as per clients specific recommendation by lifting tong out of the way; rig personnel to pull TEC cable against tubing using open hand and pulling it tight against tubing • Kinetic personnel to install cross coupling protector and tichten using pneumatic ratchet • Check torque with torque wrench as per manufacturers recommendation	
9	**Installing TEC cable through hanger assembly, landing and installing Rodlock:** • With the production tubing nearing the measured set depth set slips with approx. 4ft of production tubing protruding above rig floor; • Screw hanger onto production tubing; • Confirm TEC cable cut length (more is better to an extent as it can be cut to suit) but keep length below pressure test point (Annular / BOP ram). • Tape TEC cable on the real to ensure TEC cable does not bird nest • Cut the TEC cable with pipe cutter at the appropriate length to be able to pressure test hanger and have sufficient length for the wellhead outlet. • At this point sheave can be left in the Derrick or lowered depending on operation requirements. • Install bored-thru to ¼" tubing Swagelok fitting on underside of hanger after removing Allen screw, repeat for top side of hanger; • Pass the TEC cable through the hanger from the bottom side of the hanger being cautious not to kink the Tec cable. • Once it's completely fed through the hanger, lock of the bottom Swagelok fitting by applying 1-1/4 turns after the fitting is finger tight. Lock the top using the same procedure. • Tape cable to the landing joint. • OCR to orientate and land the hanger and orientate as required. • Pressure test hanger and rig crew to nipple down BOP and floor.	
10	• Rod-lock to be lifted over in place, while its suspended feed TEC cable through side port. • Lower rod-lock into place whilst holding TEC cable, once rod-lock is landed on flange tighten up.	

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11	**Install Wellhead Outlet:** • Install lower section of wellhead outlet by passing TEC cable through and tightening up connection • Fill void of rodlock and tighten Wellhead outlet bleed screw • Pressure test as per client recommendation and to API standards suitable for Wellhead outlet and record. • Once pressure test is successful, complete termination of Wellhead outlet as per manufacturers specific instructions. • Insert test leads into wellhead outlet terminal block and secure. • Perform final gauge reading and record. • Remove leads and place wellhead outlet housing on to wellhead and secure with allen screw • Backload equipment as required	
CAUTION	***Only the Fluke 707Ex or other such suitable hazardous area electrical equipment to be used with a hazardous area.***	

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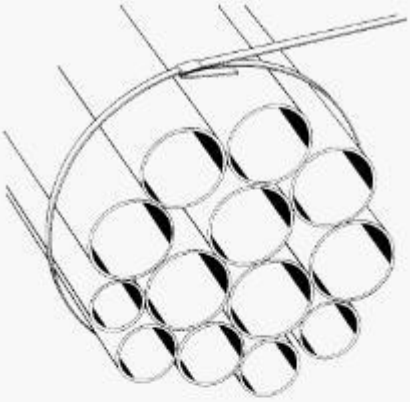
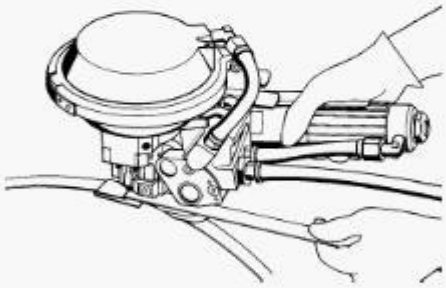
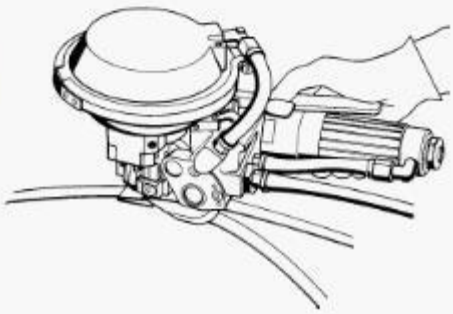
NOTE	FROMM **10 OPERATION** **10.1 Feeding the strap** The strap is fed through the seal, around the package to be strapped and again through the seal. The strap end is then bent. The operator then tensions the loose loop manually making sure that the bent strap end is adjacent to the object to be strapped.  Always wear safety glasses with side shields which conform to ANSI Standard Z87.1.  When handling strap, always wear protective gloves.	
	10.2 Introducing the tool The upper strap is held with the left hand; the right hand lifts the air motor and introduces the tool from the right to the left and from the rear to the front. The air motor is then released.	
	10.3 Tensioning the strap The tension valve lever A48.1232 is pressed down. The lever is caught completely and the strap is tensioned until the air motor stalls. If the cycle has to be interrupted the catch A48.1234 has to be pressed to the left.	

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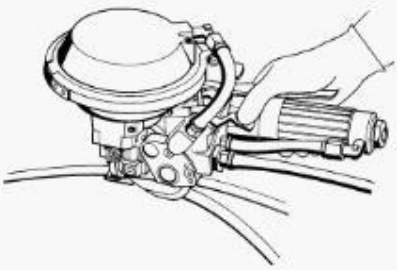
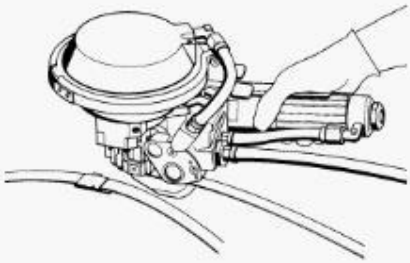
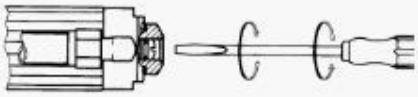
NOTE	FROMM **10.4 Sealing the strap** The sealing valve lever A48.1233 is pressed down until the seal is notched and the upper strap sheared; the tensioning process is interrupted automatically.  **10.5 Releasing the tool** The tool can be released from the strapping without any further action after completing the strapping cycle. By lifting the air motor the strap end is removed from the tool.  **10.6 Tension regulation** The tension is regulated by the continuous adjustment of the throttle screw L2.1412. The air supply is reduced by turning the screw clockwise. The throttle screw is located at the rear end of the air motor. 	

Standard Operating Procedure – *Preparation, Review and Approval*

	Title	Name	Signature	Date
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