

Ra Markers - Pip tags and Marker subs

Maxpro Radioisotope & Marker Sub Tech Data



Maxpro Radioisotope Marker Sub (yellow dot shows position of pip tag).

APPLICATIONS

- TCP depth correlation

FEATURES

- Highly visible to survey tools that detect gamma rays
- Radioactive marker positively contained inside sub with set screws
- Fully open

BENEFITS

- Accurate method for correlating pipe conveyed gun systems
- Containment of radioisotope marker guarantees retrieval
- Allows unrestricted flow through tubing

MAXPRO RADIOISOTOPE MARKER SUB HARDWARE SPECIFICATIONS		
Tubing Sizes (in)	3-1/2 (89) IF	4-1/2 (89) IF
Assembly Part Nbr	MRMS-031	MRMS-041
O.D. (in)	4.44	4.44
I.D.(in)	2.99	2.99
Make up Length (ft)	0.72	0.72
Max. Operating Pressure(psi)	10,000	10,000
Max. Tension (lbf)	350,000	350,000

MAXPRO PIP TAG Technical data

<p>Radioactive Material Co-60 1 u Ci Exempt Quantity from NRC & State Licenses Spectrum Techniques, Oak Ridge, TN USA</p>	
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Spectrum Techniques Exempt Radioisotopes

Model	Radioactive Material	Standard Activity /source (micro Ci)	Maximum Activity /source (micro Ci)	Half/life	Radiation	Energy (keV)	Branch (%)
Co-60	Cobalt 60	1	1	5.27 yrs	γ	1173	99.9
					γ	1333	99.9
					β	317.9	100

Maxpro Radioisotope Pip Tag Specs

Operation considerations

The typical method of correlating a TCP gun string is to use the pipe tally. Even though this process is straight forward, depth errors are produced by pipe stretch that is unaccounted for. Pipe stretch can be hard to predict due to factors such as selected pipe stretch calculation parameters, well tortuosity, buoyancy effects and surface friction. As a well gets deeper, the inaccuracies become larger.

Maxpro Radioisotope Marker Sub can be used to make very accurate depth correlation of pipe conveyed gun systems.

A small radioisotope pip tag is secured inside a cavity on the side of the Marker Sub with a set screw. The sub is then placed a known distance above the firing head as part of the work string and run in hole to the proposed perforating depth.

A wireline gamma ray tool is run through the tubing to perform the correlation log. The resulting log will show a large spike at the depth of the pip tag. When this log is compared to the open hole gamma ray log, adjustments can be made to the work string placing the guns on depth. As the Marker Sub has the same or larger diameter than the surrounding tubing, it will not cause any restriction to fluid flow. This makes it an ideal choice to use the sub in permanent completion perforating systems.

Typically, the 1-μCi pip tags used is Cobalt-60 (5.27 years half-life)

Maxpro will supply tagged marker sub to licensed user clients for depth marking and correlation purposes only in the oil and Gas industry.

Gammy Ray CCL Correlation Tool



The GRST (Gamma Ray Survey Tool) is one of the downhole tools developed for Maxpro Integrated Services. It provides standard GR and CCL readings, and due to its small outer diameter of 43 mm (1 11/16 inch) and also reduced length of 1420 mm (4.6 ft) this tool is suitable for a wide range of applications such as TCP correlation jobs, depth correlation when combined with other tools, and depth determination passes among others.

Some features to mention are: digital CCL with adjustable downhole gain, state of the art scintillation detector, inter module CAN bus communication, capable of being run on slick line when combined with battery pack, without any change required from the original wireline configuration, low operating voltage and power consumption, high pressure and temperature rating.

Main Applications:

- Lithological determination ,TCP correlation,Depth determination, Correlation

SPECIFICATIONS	
Outer Diameter	1 11/16" (43mm)
Length	Length 55.2" (1420mm)
GR Range	0-65535 gapi
GR Accuracy	+/- 7%
CCL Adjustable Gain	0-36 db
Operating voltage	60 volts
Current consumption	30 mA
Max. Pressure	15,000 psi
Max. Temperature	150 degC
Battery Operation	Yes