

MMS

Multilateral System & Completions

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Introduction & Definitions

- TAML : (Technology Advancement of Multilaterals) is the result of a group of operators with multilateral experience who developed a categorization system for multilateral wells based on the amount and type of support provided at the junction.

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Level definitions

LEVEL 1

Open hole junction

LEVEL 2

Cased & cemented mainbore / open hole lateral / lateral liner unsupported

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Level definitions

LEVEL 3

Cased & cemented mainbore / open hole lateral / lateral liner anchored to mainbore

LEVEL 4

Cased & cemented mainbore & lateral / no pressure isolation at the junction

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Level definitions

LEVEL 5

Cased & cemented mainbore & lateral / pressure isolation at the junction achieved with the completion equipment

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Level definitions

The Downhole Splitter is regarded as a TAML Level 6 multilateral is a unique system and process that allows two distinct wells to be drilled, cased, and completed from a single surface conductor. When completed, each well can be produced, serviced, and worked over independently of the other.

MMS *Example of completing a TAML Level 3 multilateral junctions.*

Step one: Drilling the Lateral



- Starts with drilling out of lateral pre-milled window to create the lateral well-bore.
- Once the lateral has been drilled, the whipstock is removed in preparation of running the lateral liner.

MMS *Example of completing a TAML Level 3 multilateral junctions.*

Step Two: Installing the Deflector



- The system deflector is then run into the lower latch assembly.
- This automatically orients the deflector towards the lateral window.

MMS *Example of completing a TAML Level 3 multilateral junctions.*

Step Three: Running the Lateral Liner



- A bullnose on the lateral liner deflects off of the deflector assembly and into the lateral well bore

MMS *Example of completing a TAML Level 3 multilateral junctions.*

Step Four: Orienting the Liner Running Tool



- The liner running tool engages the upper orienting latch coupling.
- Drill pipe is rotated to engage the orienting latch assembly

MMS *Example of completing a TAML Level 3 multilateral junctions.*

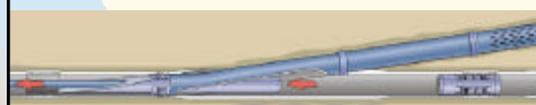
Step Five: Setting the Transition Joint Assembly



- The liner running tool strokes through the orienting latch assembly as the Transition Joint locks into a profile in the main casing

MMS *Example of completing a TAML Level 3 multilateral junctions.*

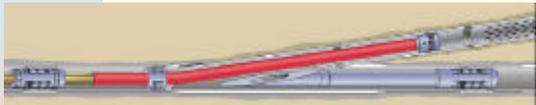
Step Six: Removal of the Liner Running Tool



- The liner running tool is removed

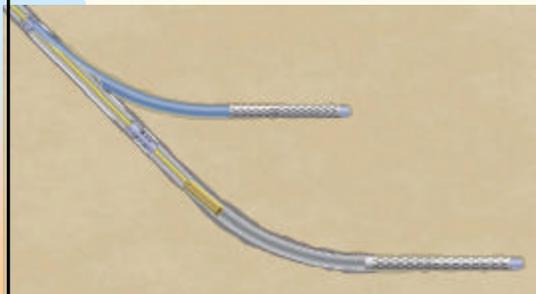
MMS Example of completing a TAML Level 3 multilateral junctions.

Step Seven: Retrieval of the Deflection Tool



- The liner deflector can be retrieved, or it can be left in the hole.

MMS Example of Artificial Lift in Multilateral Wells



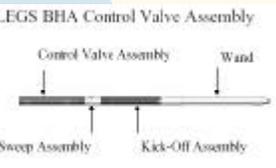
MMS Limitations and drawbacks

- Higher initial costs
- Complicated drilling, completion and production technologies
- Sensitive to poor vertical permeability
- Complicated and expensive stimulation
- Often slower and less effective cleanup
- Cumbersome wellbore management during production
- Technology still in development stage

MMS Using Coiled Tubing for Multilateral Work-Overs

- A new bottom hole assembly (BHA) enables a new method to workover multilateral wells using coiled tubing.
- This BHA combined with a lateral entry guidance system (LEGS) makes it possible to perform workover treatment in wellbores that were previously impossible

MMS LEGS BHA Function



- Two modes of operation; circulating and navigating
- Can switch the mode of operation by pumping at a given flow rate through the BHA
- Circulating mode is used to deliver treatment fluids

MMS Kick-off Assembly



The Kick-Off Assembly pivots the wand about the base of the wand, radially outward.

 **Sweep Assembly** 

 The Sweep Assembly rotates the wand and the Kick-Off Assembly about its center axis, through a maximum of 360 degrees.

 This figure shows a design of the LEGS BHA that will not permit the tool to be misguided by the entrance geometry of the junction.

LEGS BHA

