



Weatherford®



REAL RESULTS

MetalSkin® Solid Expandable Cased-Hole Liner Seals Off Perforated Thief Zone to Restore Water Injection to Well in Octogenarian Field

Objectives

- Isolate the perforations in a thief zone of a well to re-establish effective injection rates and pressures. This field, first produced in the early 1920s, is enhanced with a secondary waterflood oil-recovery project that commenced in the 1970s. Water-injection profile tests on the 705 well indicated a thief zone in the formation that was taking 57% of the injected water. This well is on strike with the 668 well in this field, an oil production well that had suffered a sharp production decline estimated at 50 BOPD over the preceding six months.



Running the 5 1/2-in. *MetalSkin* cased-hole liner system on the operator's 705 well. The *MetalSkin* system offers a long-term solution for deformed, worn, corroded, eroded, or parted casing.

Location

California, USA

Well Type

Water injection

Hole Angle

0° to 2°

Casing

7-in., 26-lb/ft K-55, ID 6.276 in. (159.4 mm)

Liner

- *MetalSkin* cased-hole liner:
 - 5 1/2-in., 17-lb/ft VM-42
- Pre-expanded ID: 4.892 in. (124.3 mm)
- Post-expanded ID: 5.678 in. (144.2 mm)
- Pre-expanded length: 195 ft (59 m)
- Post-expanded length: 185 ft (56 m)

Liner Setting Depth

5,890 ft (1,795 m) MD

Work String

3 1/2- x 2 7/8-in. PH6 P110 tubing

Products/Services

- *MetalSkin* cased-hole liner system
- Fishing, tubular running, and completion services



Weatherford®

REAL RESULTS

Results

- Caliper log inspection of the casing and blank-pipe spacing between perforations in the thief zone indicated substantial casing wall loss below the injection packer, which was set at a depth of 5,705 ft (1,739 m). The original 7-in., 26-lb/ft casing was found to have an ID of 6.456 in. (164 mm), comparable to that of 7-in., 20-lb/ft casing, across the interval where the *MetalSkin* liner would be expanded. Thus, a larger-diameter *MetalSkin* expansion cone, designed for 7-in., 20-lb/ft casing, was used to compensate for the casing wall loss and to ensure an adequate hydraulic seal.
- Weatherford successfully ran and expanded 195 ft (59.4 m) of 5 1/2- x 7-in. *MetalSkin* solid expandable cased-hole liner across the perforated thief zone, extending from 5,700 to 5,900 ft (1,730 to 1,798 m).
- The operator installed a new injection packer inside the *MetalSkin* liner and resumed water injection.

Value to Client

- Water injection rates and pressures are gradually rising to effective levels, which should ultimately restore oil recovery to rates recorded before the sharp decline.
- The success of this operation demonstrated the effectiveness of the *MetalSkin* cased-hole liner, giving the operator a new cost-saving option for repairing many similar wells in this 80-year-old field to substantially increase overall production.



Expansion cone and anchor joint. The *MetalSkin* cased-hole liner system gives operators a solid alternative to cement squeezes, providing more positive and permanent zonal isolation. With the *MetalSkin* system, the cone is run below the expandable casing; so no launcher (cone housing) is required.