

METAL MUNCHER AMT performed 17 casing cuts in one run

An operator was performing a plug and abandonment operation on one of their wells in the North Sea. The well conditions did not allow for the casing to be milled out due to the high equivalent circulating density (ECD), so they reached out to Baker Hughes, a GE company (BHGE), for a solution to efficiently cut and pull 1,143.6 ft (348.57 m) of 13³/₈-in., 72 lb/ft. P-110 casing.

BHGE proposed the 11³/₄-in. **HERCULES™ multistring cutter**—a hydraulically-activated, solid-body tool used to cut through multiple large-diameter strings quickly and reliably. Each of the three knives were dressed with **METAL MUNCHER™ advanced milling technology (AMT) inserts**. The AMT cutting inserts had shown excellent performance in recent jobs, with minimal wear after cutting through hard steel, similar to the casing for this operation. Their reinforced edges resist chipping and feature high-performance carbide chemistry with a strong bonding surface that enables faster cutting.

The operator wanted to cut the casing in 36-ft (11-m) sections so that retrieved pieces could be transported off the rig without additional cutting at surface. BHGE proposed tripping in and cutting all

of the sections before pulling them. This approach would greatly reduce trip-time compared to 17 consecutive cut/retrieve trips.

The team cut seven sections of casing before pulling out of hole to check the knives. Though there was little wear documented, the knives were replaced before deploying downhole for a second trip. The team successfully completed the remaining 17 cuts in a single run—stopping only because the cutting operation was complete. After pulling out of hole, the knives showed minimal wear (see Figure 1 on back). The total time (slips to slips) for all 24 cuts was just over 25 hr, with total actual cutting time of just under 5 hr. This resulted in an average time-per-cut of 12 minutes.

The team proceeded to successfully pull the 24 casing sections using a 10¹/₂-in. **Model B spear** with an average time-per-pull of 5.64 hr.

The operator was extremely pleased with the efficiency of the operation—with zero miss runs and additional time saved by eliminating multiple trips to replace knives.



Challenges

- Customer required efficient cut and pull operations due to well control conditions not permitting milling
 - Make 24 cuts with no miss runs
 - Pull 24 casing sections with no miss runs

Results

- Cut 13³/₈-in. casing 17 times in a single trip
- Performed average cut time of 12 minutes
- Showed minimal wear on AMT knives



Figure 1. Comparison of new knife (left) and used knives (right) after 17 cuts, showing minimal wear of METAL MUNCHER AMT inserts.

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