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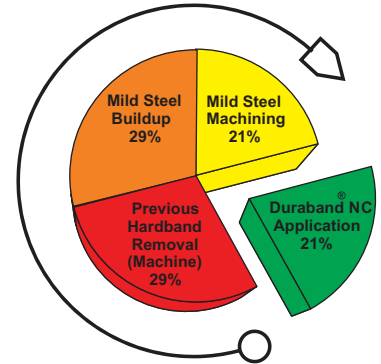
### Data Sheet

# HARDBANDING RE-APPLICATION COST COMPARISON

*Hardbanding Costs are Dramatically Reduced with Tuffband®NC and Duraband®NC*

The cost of hardband re-application can be very expensive if the previous hardband must be removed before re-application can be completed. As the chart shows - close to 80% of the total cost of the re-application is dominated by the previous hardbanding removal, the application of mild steel as a build-up, and subsequent machining of the mild steel to prepare the tool joint for application of the new hardband.

Duraband®NC or Tuffband®NC can substantially reduce the cost of re-application since they can be applied over some previous hardbandings without the need for removal, providing the proper inspection procedures have been carried out. However, there are certain ones that they cannot go over. If this is the case, then the complete re-application is required, which includes previous hardbanding removal, mild steel build-up and machining. It should be noted that once this procedure has been completed, any subsequent re-application of Duraband®NC or Tuffband®NC should not include removal of the hardbanding and any associated procedures.



The Relative Cost of Worn Hardbanding Removal and Application of Duraband or Tuffband

For a string of 600 worn tools joints with Duraband®NC, applied from the beginning, the re-application will be achieved much faster and with significant savings (see examples below). If everyone used Duraband®NC, costly hardband repairs would be a thing of the past.

There is far less risk associated with a straight new application of Duraband®NC, with no need to remove material from your tool joint. Duraband®NC requires no dressing because it has no slag, which is another cost saving. With consistent re-application, the performance of the Duraband®NC will get better and better as there is no dilution from a steel base.

**Industry Average Cost for Procedure per Tool Joint (USD)**

Hardband Removal \$112  
Mild Steel Build-Up \$112  
Machining \$80  
Hardband Application \$112

#### **Example 1 - Removal/Re-Application of Previous Hardbanding**

Over time all 600 tool joints required complete procedure; removal, build-up and machining, followed by hardbanding.

**Total Estimated Cost: \$250,000**

#### **Example 2 - Removal/Re-Application of 20% of Previous Hardbanding**

During life of drill string 25% of the tool joints were rejected and required complete procedure; removal, build-up and machining, followed by hardbanding.

**Total Estimated Cost: \$115,000**

#### **Example 3 - Re-Application Only - No Removal Required**

Duraband®NC was applied to new pipe. Removal of previous hardbanding is NOT necessary. Tool joints re-hardbanded.

**Total Estimated Cost: \$65,000**



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