What is my Roller Bit telling me?

TRACK V-B = HDD

Bruce Beatty

UCT 2020

Fort Worth, Texas

January 28, 2019

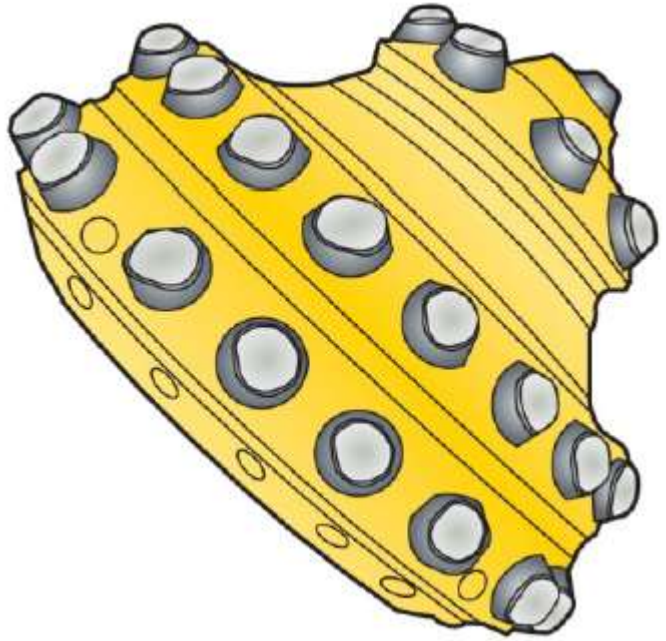
Epiroc

What is my Roller bit telling me?

- How to identify common bit wear issues thru visual inspection
  - Worn cutter
  - Worn Lug
- Key factors in bit performance and life
  - WOB
  - RPM
  - Nozzles
  - Silica content (mud and formation)
  - Handling

Worn cutter

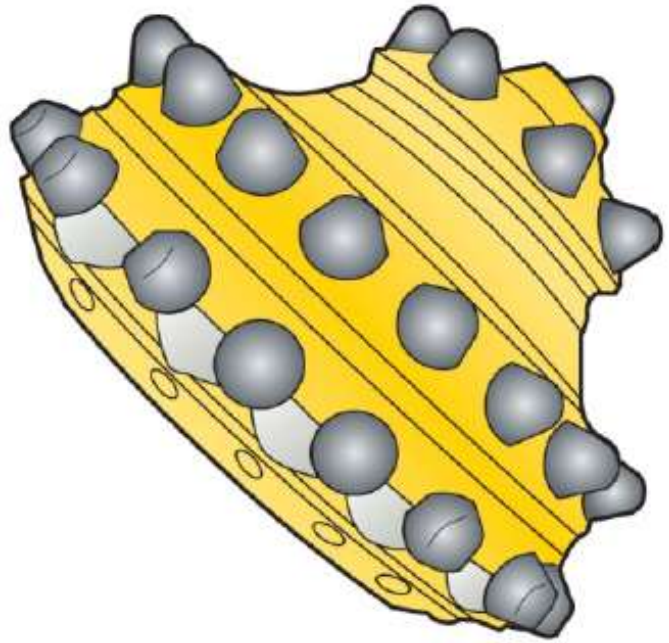
- Flat Crested Wear
  - The original shape of the teeth has become flattened, not rounded due to normal wear.



Cause	Remedy
Shallow spalling of rock due to Low WOB and or High RPM	Increase WOB and or Lower RPM

Worn cutter

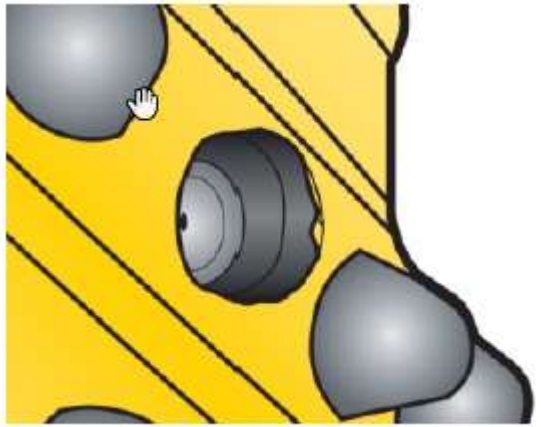
- Erosion
  - When cuttings wear away the steel of the cone shell.
  - Can result in lost inserts.



Cause	Remedy
Abrasive formations being recut due to low cutting evacuation	Increase mud flow
Abrasive formation contacting cone shell between the inserts due to excessive WOB (over-drilling)	Reduce WOB or go to a harder bit

Worn cutter

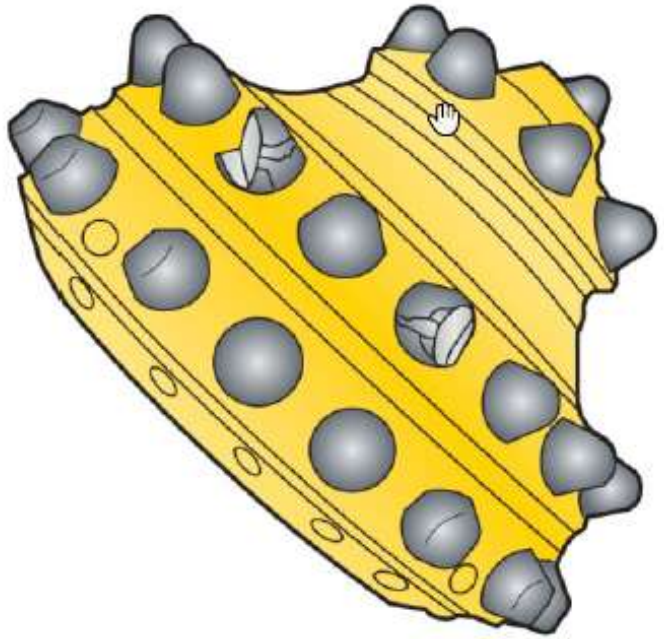
- Lost inserts
  - When one or more teeth have been completely removed from the cone. With TCI bits there will be an entirely empty insert hole, containing no carbide)



Cause	Remedy
Cone shell erosion	Ensure proper hole cleaning and WOB

Worn cutter

- Chipped insert.
  - Impact with another bit or metal object.



Cause	Remedy
Impact with another hard object	Protect inserts from coming into contact with hard objects

Worn Lug

- Abrasion (comet trails) – nearing seal failure

Cause	Remedy
Contact with formation	Ensure proper hole cleaning and or reduce RPM

Worn Lug

- Heavy abrasion with seal and compensator failures

Cause	Remedy
Contact with formation	Ensure proper hole cleaning and or reduce RPM

What is my Roller bit telling me?

- Managing these key factors will enhance your bit performance and life.
  - WOB
  - RPM
  - Nozzles
  - Silica content (mud and formation)
  - Handling

- Questions?

Bruce Beatty
bruce.beatty@Epiroc.com
(303) 513-1231