Criminology: The scientific study of crime, criminals, criminal behavior, and corrections.

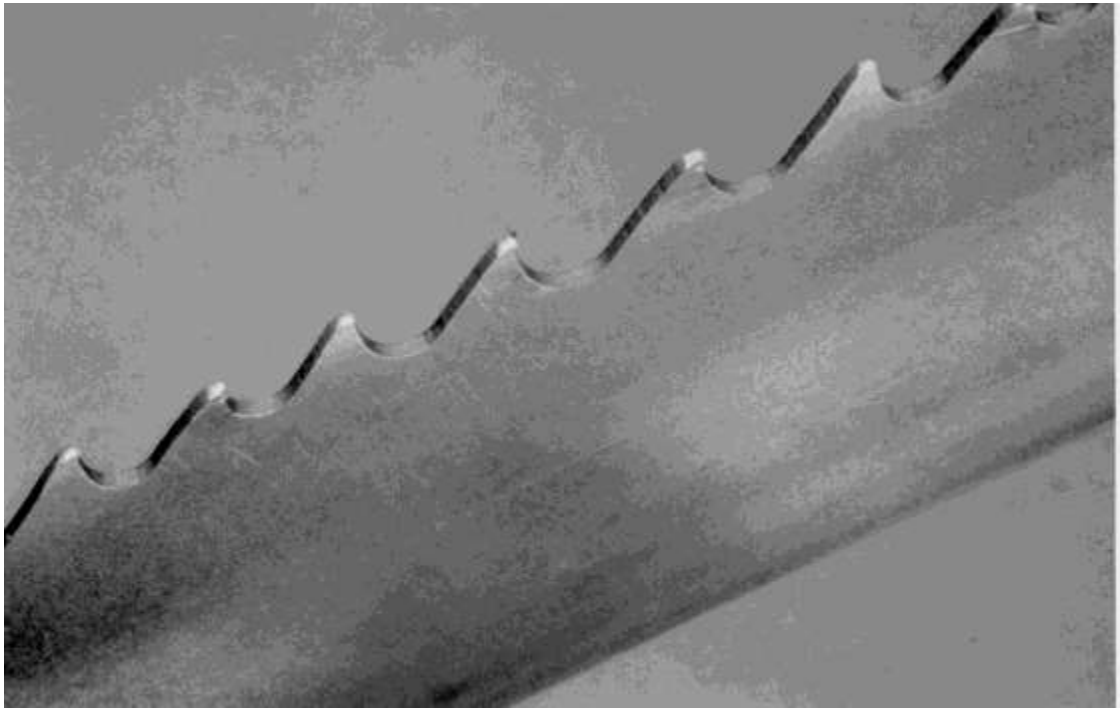
Coroner: A public officer whose primary function is to investigate by inquest any death thought to be of other than natural causes

Solutions to Sawing Problems

through Band Evaluation

Observation #1

Heavy even wear on tips and corners of teeth.



The wear on teeth is smooth across the tips and the corners of set teeth have become rounded.

Probable Cause:

A. Improper break-in procedure.

B. Excessive band speed for the type of material being cut. This generates a high tooth tip temperature resulting in accelerated tooth wear.

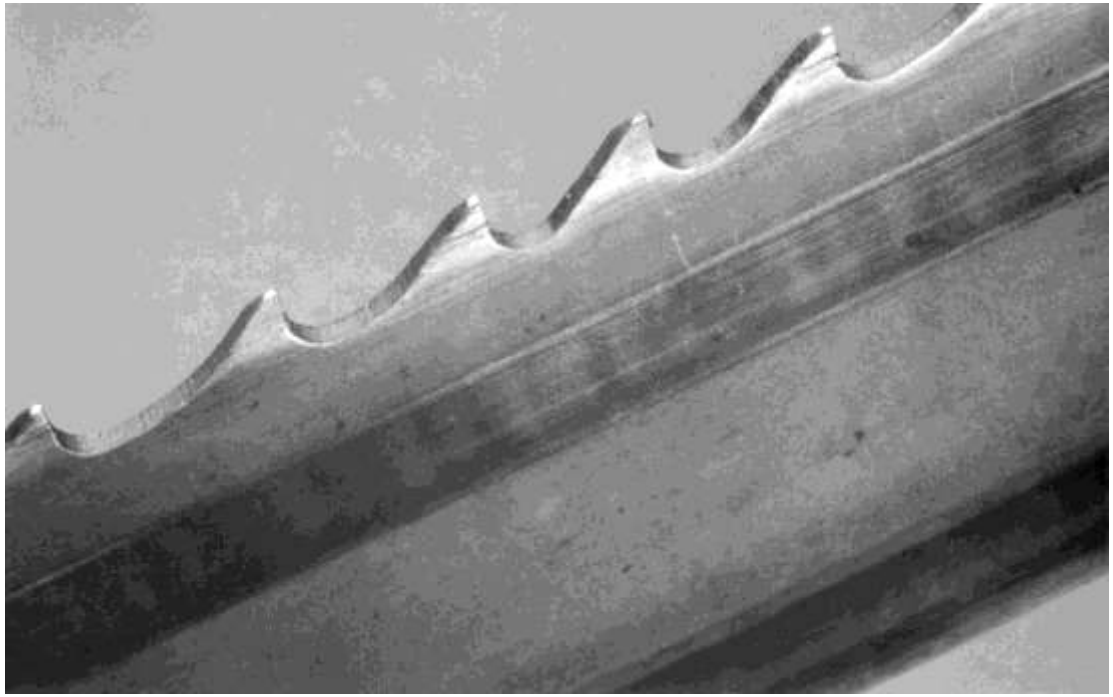
C. Low feed rate causes teeth to rub instead of penetrate. This is most common on work hardenable materials such as stainless and tool steels.

D. Hard materials being cut such as "Flame Cut Edge" or abrasive materials being cut such as "Fiber Reinforced Composites."

E. Insufficient cutting fluid due to inadequate supply, improper ratio, and / or improper application

Observation #2

Wear on both sides of teeth.



The side of teeth on both sides of band have heavy wear markings.

Probable Cause:

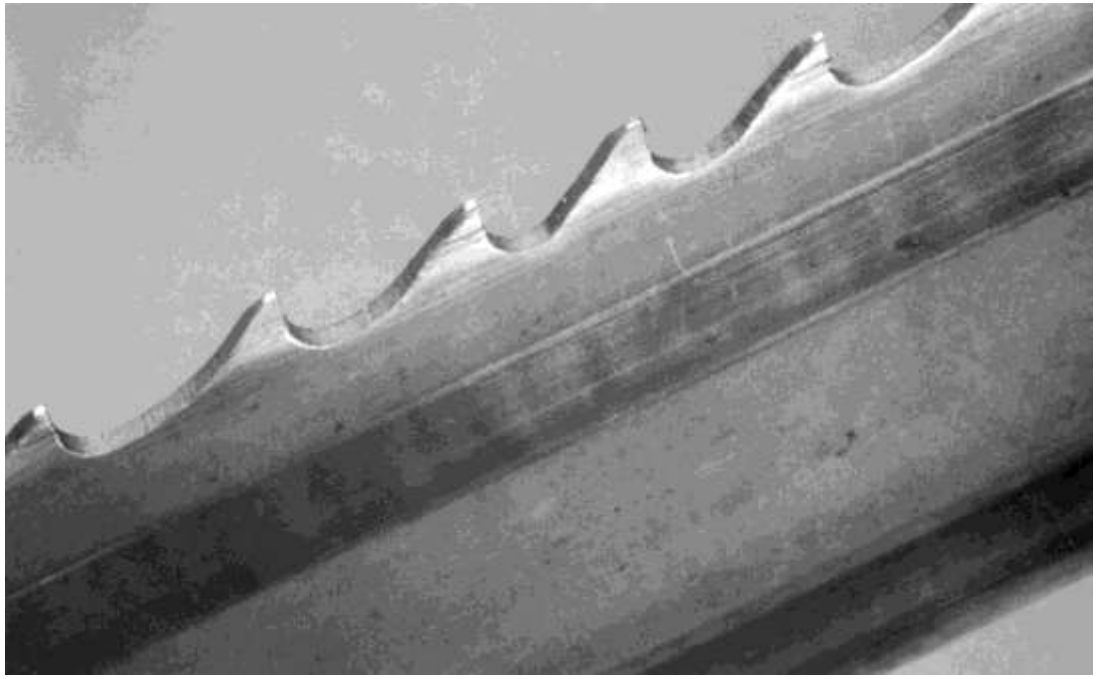
A. Broken, worn or missing back-up guides allowing teeth to contact side guides

B. Improper side guides for band width.

C. Backing the band out of an incomplete cut.

Observation #3

Wear on one side of teeth.



Probable Cause:

A. Worn wheel flange, allowing side of teeth to contact wheel surface or improper tracking on flange-less wheel.

B. Loose or improperly positioned side guides.

C. Blade not perpendicular to cut.

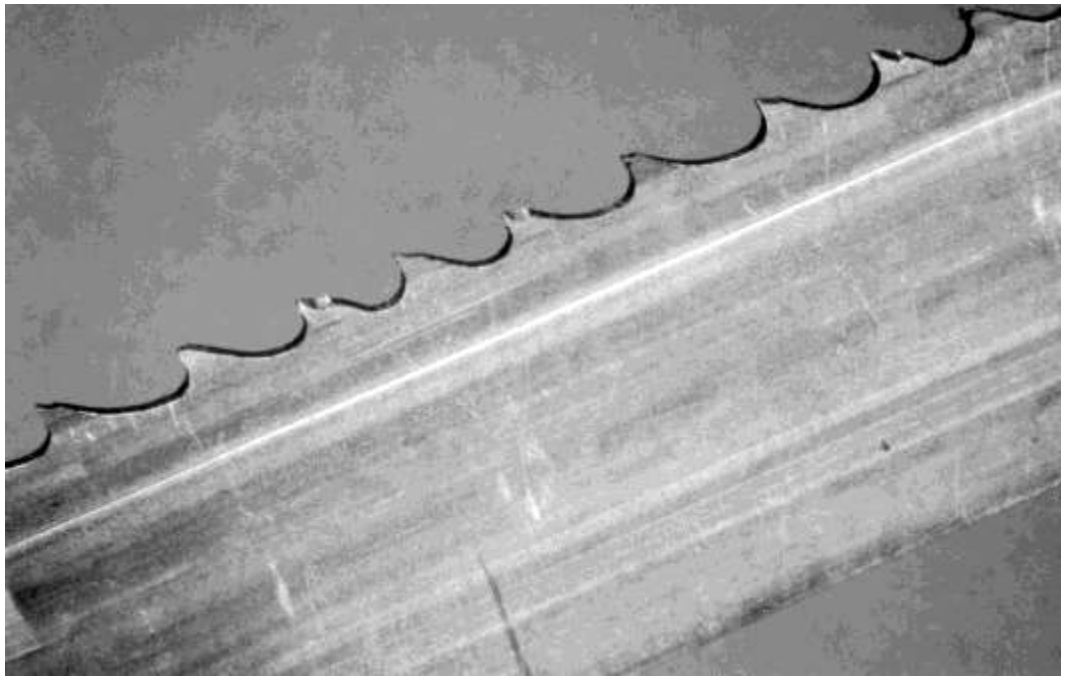
D. Blade rubbing against cut surface on return stroke of machine head.

E. The teeth rubbing against a part of machine such as chip brush assembly, guards, etc.

Only one side of the teeth has heavy wear markings.

Observation #4

Chipped or broken teeth.



A scattered type of tooth breakage on tips and corners of the teeth.

Probable Cause:

A. Improper break-in procedure.

B. Improper blade selection for application.

C. Handling damage due to improper opening of folded band.

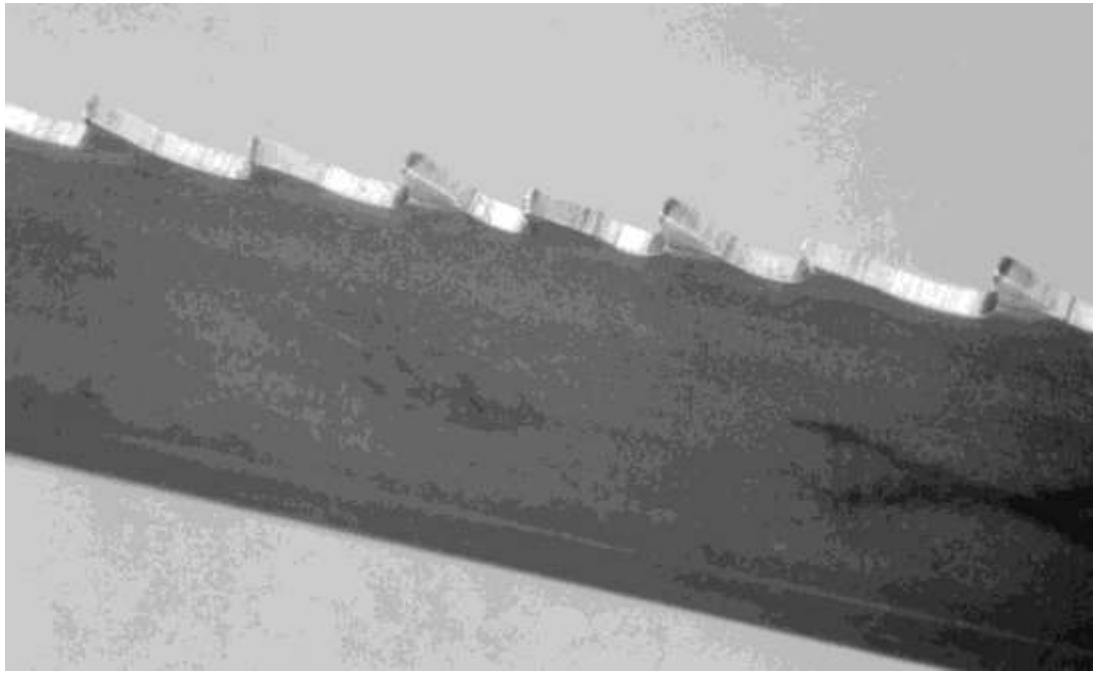
D. Improper positioning or clamping of material. (Bars that have spun)

E. Excessive feeding rate or feed pressure.

F. Hitting hard spots or hard scale in material.

Observation #5

Discolored tips of teeth due to excessive frictional heat.



The tooth tips show a discolored surface from generating an excessive amount of frictional heat during use.

Probable Cause:

A. Insufficient cutting fluid due to inadequate supply, improper ratio and/or improper application.

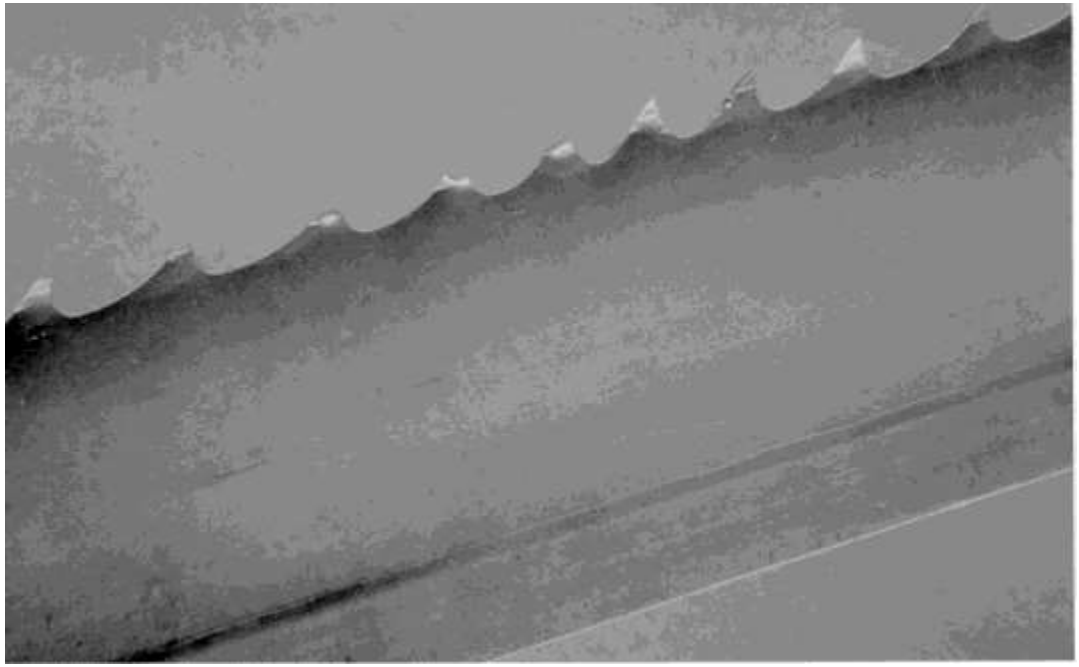
B. Excessive band speed.

C. Improper feeding rate.

D. Band installed backwards.

Observation #6

Tooth strippage.



Section or sections of teeth which broke from the band backing.

Probable Cause:

A. Improper or lack of break-in procedure.

B. Worn, missing or improperly positioned chip brush.

C. Excessive feeding rate or feed pressure.

D. Movement or vibration of material being cut.

E. Improper tooth pitch for cross sectional size of material being cut.

F. Improper positioning of material being cut.

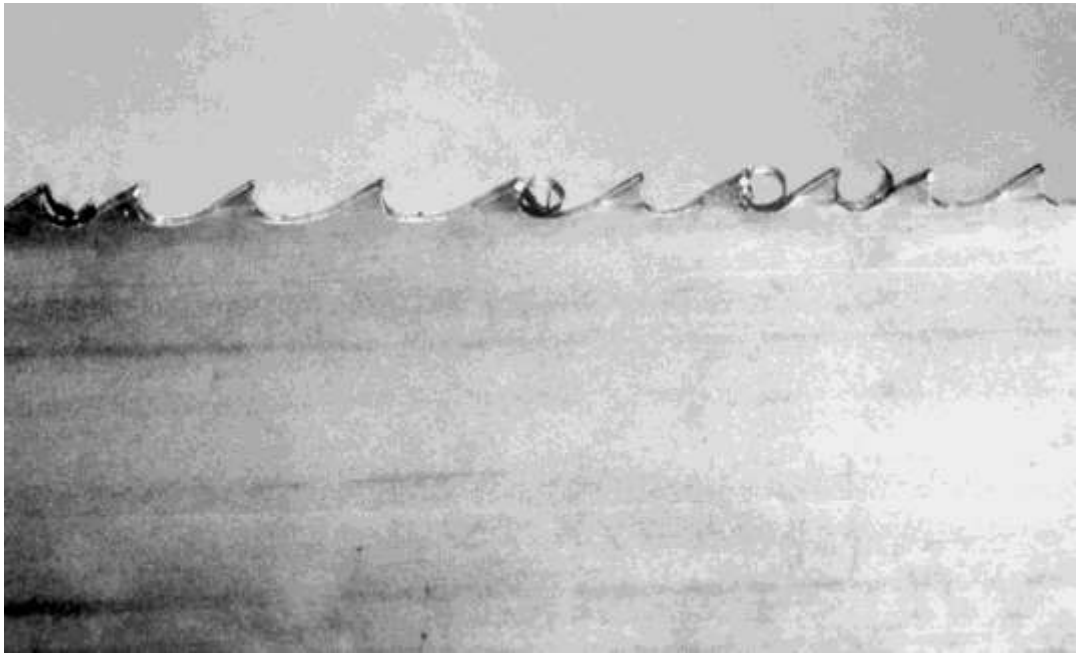
G. Insufficient cutting fluid due to inadequate supply, improper ratio and/or improper application.

H. Hard spots in material being cut.

I. Band speed too slow for grade of material being cut.

Observation #7

Chips welded to tooth tips.



High temperature or pressure generated during the cut bonding the chips to the tip and face of teeth.

Probable Cause:

A. Insufficient cutting fluid due to inadequate supply, improper ratio and/or improper application.

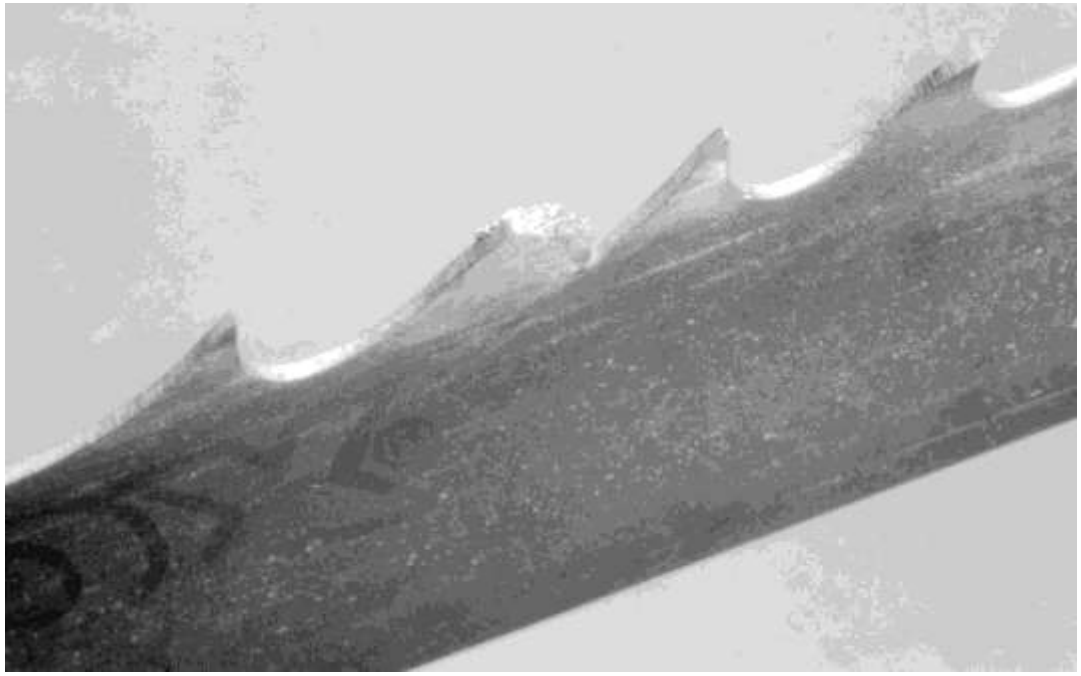
B. Worn, missing or improperly positioned chip brush.

C. Improper band speed.

D. Improper feeding rate.

Observation #8

Gullets loading up with material.



High temperature or pressure generated during the cut bonding the chips to the tip and face of teeth.

Probable Cause:

A. Too fine of a tooth pitch - insufficient gullet capacity.

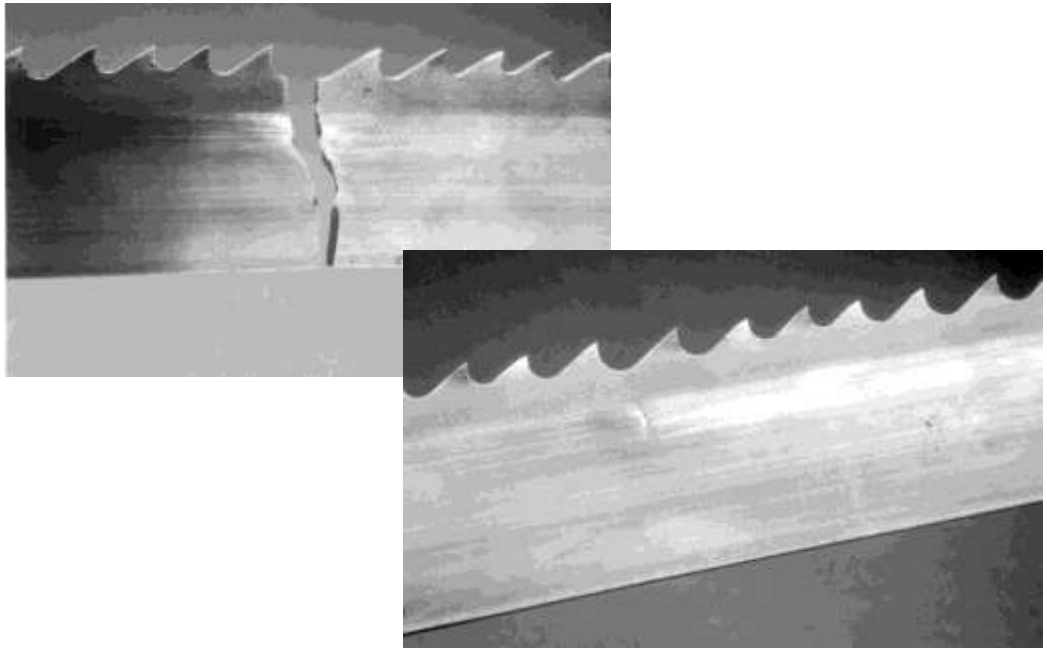
B. Excessive feeding rate producing too large of a chip.

C. Worn, missing or improperly positioned chip brush.

D. Insufficient cutting fluid due to inadequate supply, improper ratio and/or improper application.

Observation #11

Body breakage or crack from gullets.



Body break from gullet. Gullet crack. The origin of the fracture is indicated by a flat area on the fracture surface.

Probable Cause:

A. Excessive back-up guide "pre-load".
(see next slide)

B. Improper band tension.

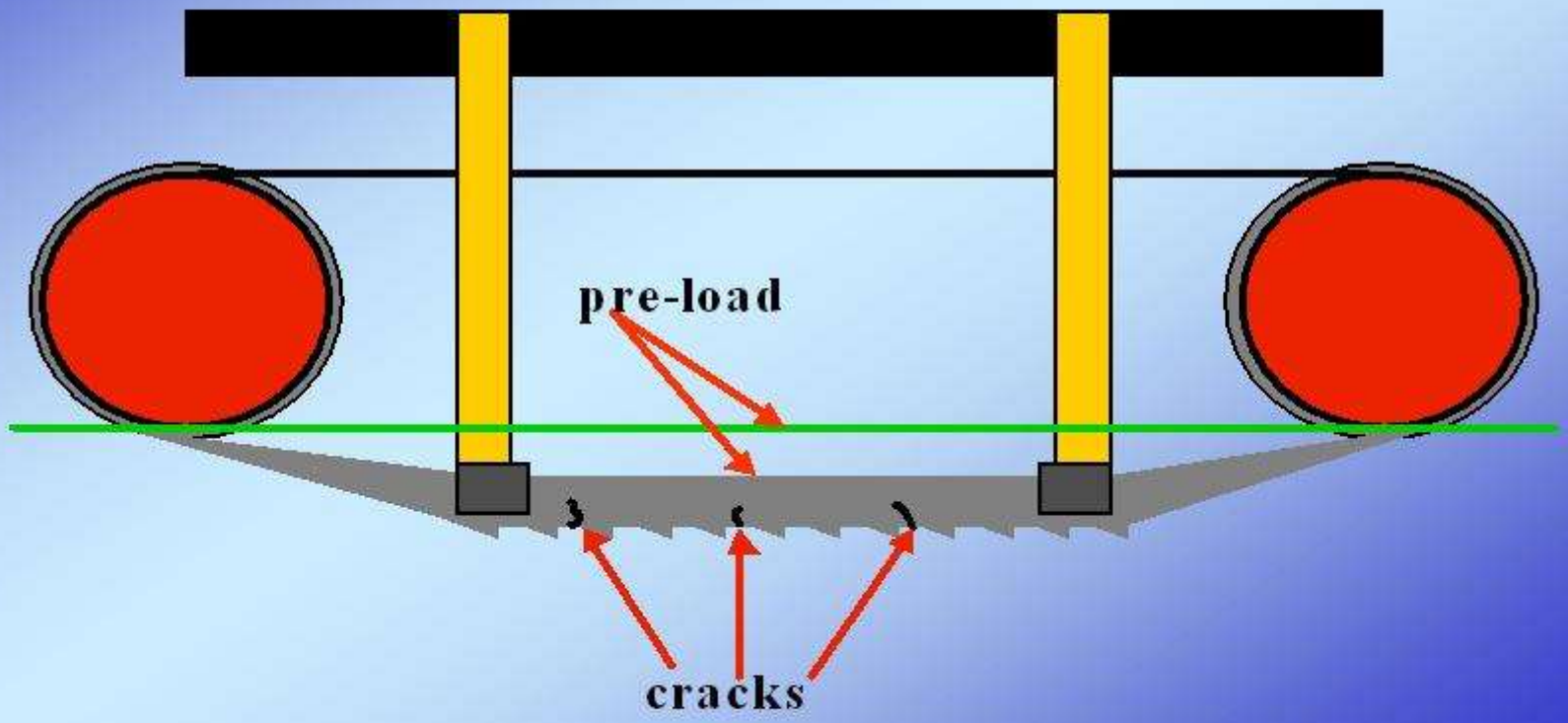
C. Guide arms spread to maximum capacity.

D. Improper beam bar alignment.

E. Side guide adjustment is too tight.

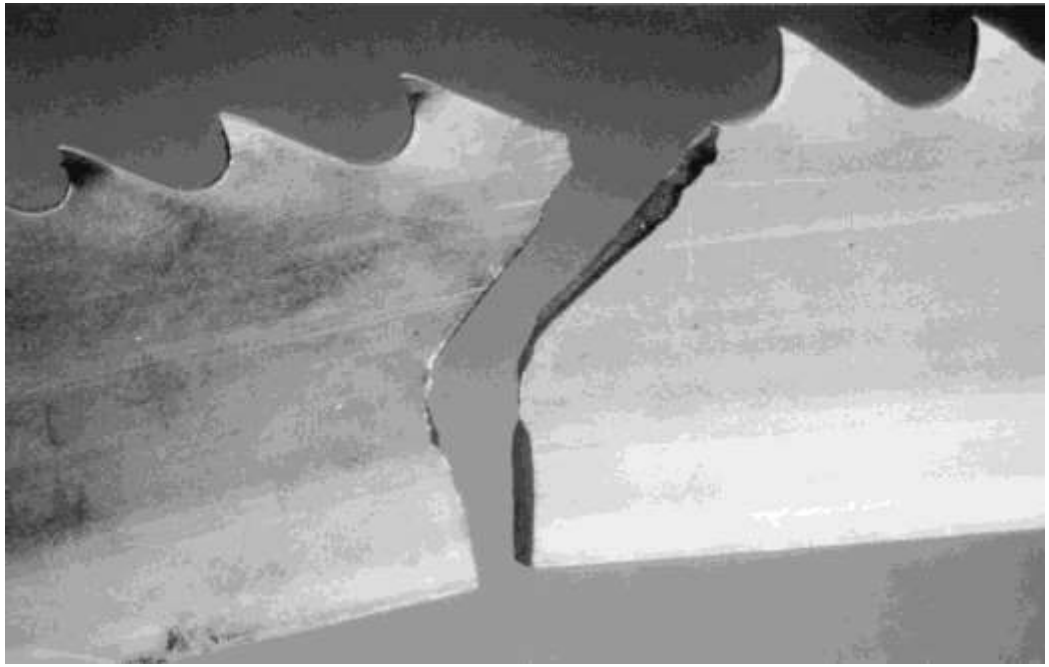
F. Excessively worn teeth.

Pre-load



Observation #12

Body breakage - fracture traveling in an angular direction.



The fracture originates in the gullet and immediately travels in an angular direction into the backing of band.

Probable Cause:

A. An excessive twist type of stress existed.

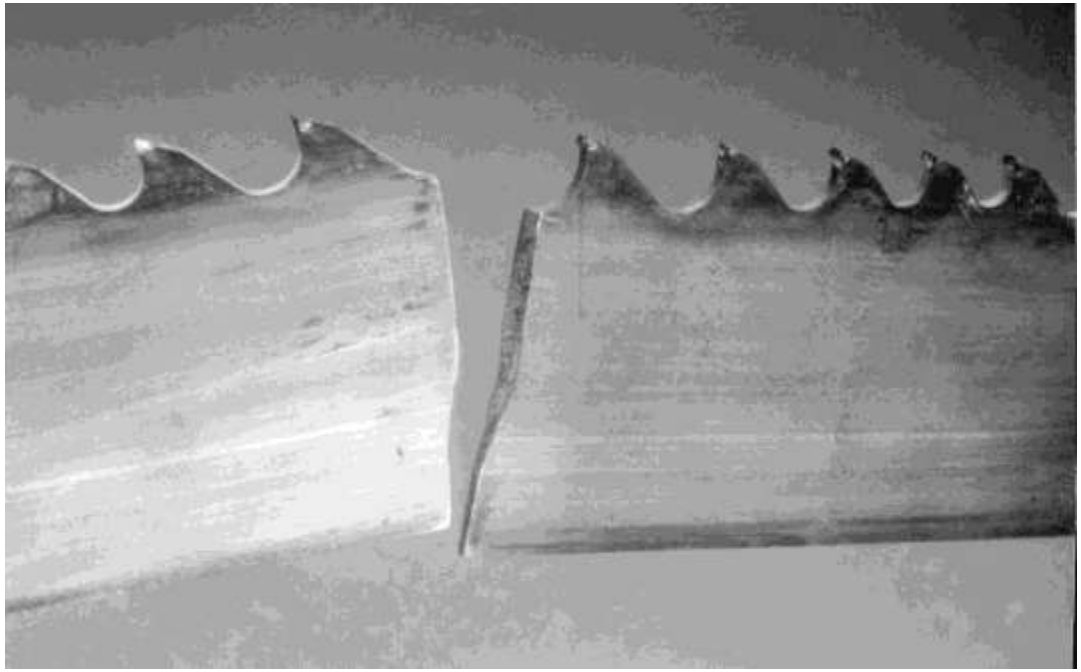
B. Guide arms spread to capacity causing excessive twist from band wheel to guides.

C. Guide arms spread too wide while cutting small cross sections.

D. Excessive back-up guide "pre-load".

Observation #13

Body breakage or cracks from back edge.



The fracture originates from the back edge of band. The origin of the fracture is indicated by a flat area on the fracture surface.

Probable Cause:

A. Excessive back-up guide "pre-load" will cause back edge to work harden which results in cracking.

B. Excessive feeding rate.

C. Improper band tracking - back edge rubbing heavy on wheel flange.

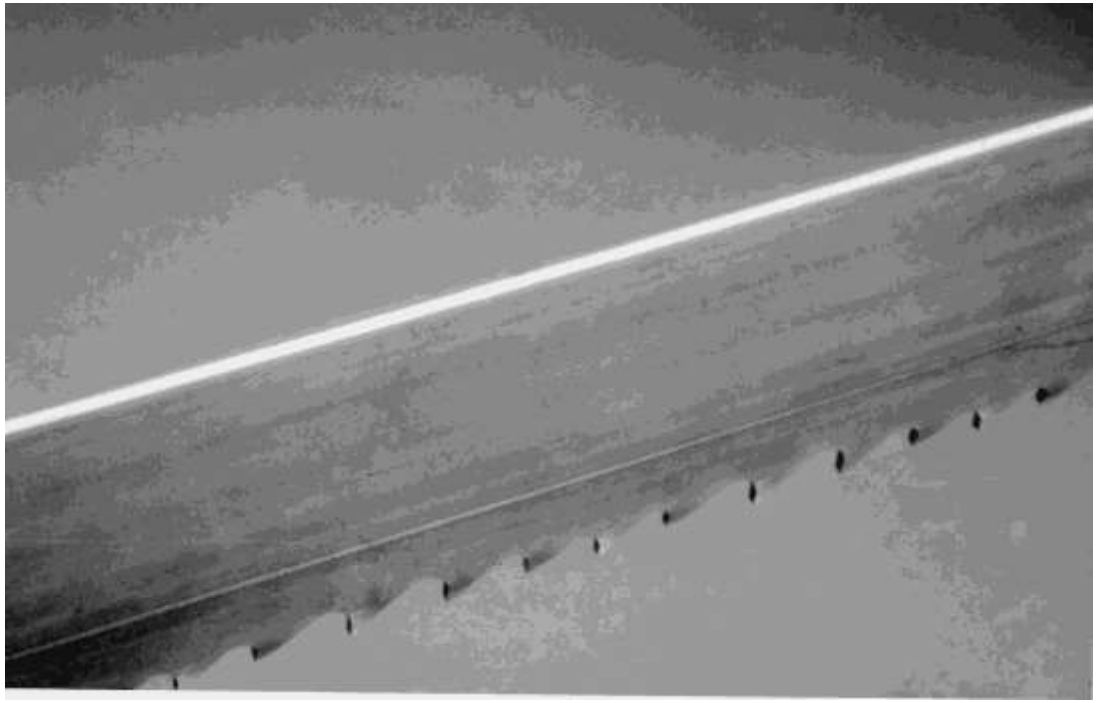
D. Worn or defective back-up guides.

E. Improper band tension.

F. Notches in back edge from handling damage.

Observation #14

Heavy wear and/or swaging on back edge.



Heavy back edge wear will have a polished appearance or abnormal grooves worn into surface. Swaging of corners can also occur.

Probable Cause:

A. Excessive feeding rate.

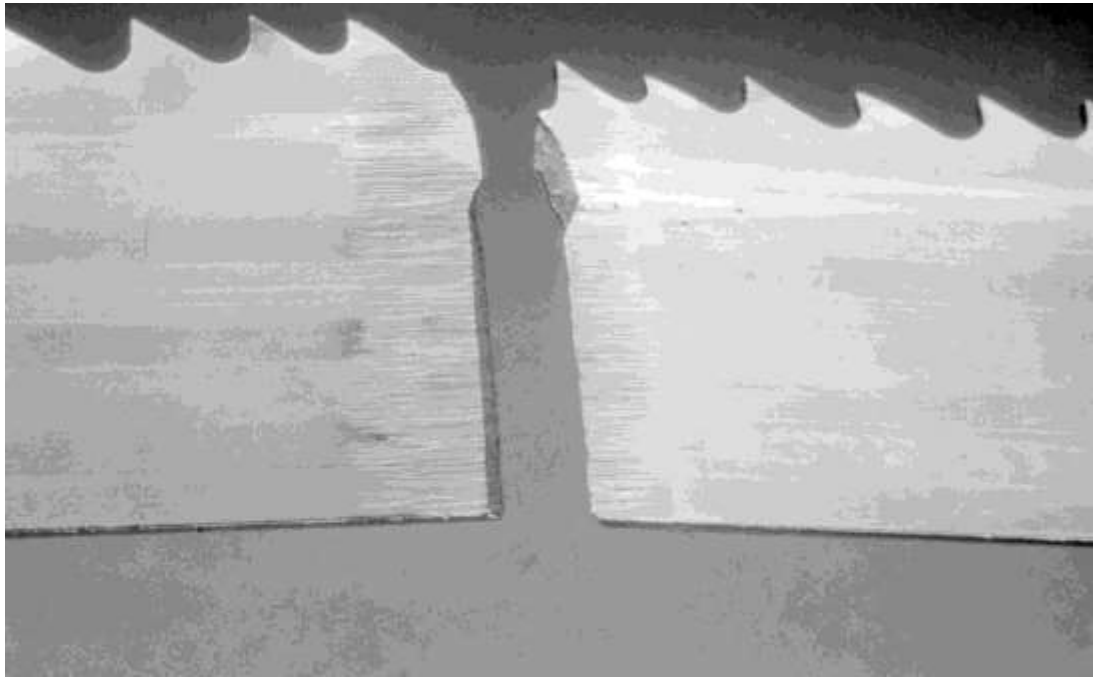
B. Excessive back-up guide "pre-load".

C. Improper band tracking - back edge rubbing heavy on wheel flange.

D. Worn or defective back-up guides.

Observation #15

Butt weld breakage.



To determine if the band broke at the weld, inspect the sides at the fracture to see if there are grind markings from the weld finishing process.

Probable Cause:

A. Any of the factors that cause body breaks can also cause butt weld breaks.

(See Observations #11, #12 and #13).

Thank You!