1.0 PURPOSE

This document details the recommended safe job procedure for cutting of samples using a hacksaw.

2.0 SCOPE

This procedure applies to all employees and students required to use a hacksaw for cutting of samples.

3.0 REFERENCES

NIL

4.0 DEFINITIONS

NIL

5.0 PROCEDURE

5.1 SAFETY ASPECTS

- Safety glasses must be worn when hacksawing.
- Appropriate gloves must be worn when handling samples with sharp and/or jagged edges.
- Samples to be cut should be firmly secured, use vice where possible, refer 5.4.
- Use correct posture when sawing, refer 5.6.
- Use ear muffs if noise from sawing operation is uncomfortable.
The cutting operation produces a sharp edge and/or the sample itself may have sharp/ragged edges from previous cutting operations. These sharp edges have caused injuries to operators, in particular to the hand which pushes the hacksaw which frequently comes in close contact to these edges. Where sharp edges exist an appropriate glove worn on the hand pushing the hacksaw is recommended (if appropriate on both hands). However, wearing gloves when hacksawing can be somewhat of a hindrance to the operation and as such is left to the operator’s discretion.

5.2 SAMPLE PREPARATION

If necessary mark appropriate area to be cut with either marking pen, pencil or scriber, etc. This helps ensure a straight cut is made.

5.3 CHECK WORK AREA

Clear work area so that there are no samples or equipment that may cause a hindrance when sawing.

5.4 SAMPLE CUTTING

5.4.1 When Using a Vice

Position sample so that the cutting line is as close to the vice jaws as practicable to avoid unnecessary noise and vibration during cutting.

Tighten the vice with hand pressure only, keeping the body fairly close to the vice handle. If body is too far from vice strain to muscles may occur or a fall may occur due to being in an unbalanced position. Care must be taken to ensure fingers are not caught in vice between workpiece.

5.4.2 Sample Cutting Not Using a Vice

Sample may be cut in any location providing the following guidelines are followed:

- Sample must be in a stable position
- Avoid cutting at awkward angles (watch posture)
- Relocate sample to more appropriate position prior to cutting if necessary.
5.5 HACKSAW SELECTION AND/OR REPLACEMENT OF BLADE

Ensure the hacksaw is fitted with appropriate blade for job (18 tpi for thick material and 24 tpi for thin material).

Check condition of blade before commencing cut for both wear pattern and state of teeth.

Incorrectly worn or damaged blades are more susceptible to failure. If blade needs replacing or in doubt remove blade by unscrewing wing nuts.

Place new blade on the locating pins with the teeth pointing away from operator.

Tighten the frame by means of wing nut until the blade is rigid, then give approximately three more turns to wing nut.

*Blade may shatter if correct tension is not obtained.*

5.6 TAKE UP CORRECT POSITION

(left handed people to use opposite hands and stance to those quoted)

Grip the hacksaw firmly using both hands, the right hand around the pistol grip and the left hand on the curved end of the frame.

Stand with left foot forward so that weight is evenly distributed to give a more efficient cutting action.

Hold the hacksaw close to the chest prior to and during cutting.

More stress is placed on wrists and arms if body weight is not evenly distributed.

5.7 BEGINNING SAW CUT

Initially grip the saw with the right hand only and use the thumb of the left hand to guide the blade on the cutting line.

Use sufficient pressure so that the saw bites immediately into the metal.

Blade will slip if insufficient pressure is used and may cause injury to left hand.

Remove the pressure on the saw blade on the return stroke.
Use short strokes until the slot made by the saw is sufficient to guide the blade.

For hard materials a drop of oil/kero on the metal may make cutting easier.

### 5.8 SAWING THE REMAINDER OF THE WORKPIECE

Remember possible injury to hand when it comes close to the sample or vice during the cutting operation.

During cutting use **entire length of blade**.

Use sufficient pressure so that the teeth bite into the metal on the forward stroke and relieve the pressure on the backward stroke. *Blade may shatter if excessive pressure is used.*

Keep the blade moving in a straight line avoiding any twisting or binding action. *Blade may shatter if twisting or binding occurs during sawing.*

*Use slow cutting rate and short cutting strokes to complete the cutting operation. Injury to hand may result when the material finally parts if care is not taken.*

### 5.9 REMOVE SAMPLE FROM VICE

Release vice using hand pressure only. *Take care to avoid strain to muscles.*

Remove sample from vice. *Use gloves where the sample has sharp edges or where undue heating has taken place during the cutting.*

### 5.10 HOUSEKEEPING

Clean work area on completion of job. Sweep away cutting debris using brush and pan. Return equipment to appropriate place.

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