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Title: NCO-5 Technician Cuts Finger while Cutting Gasket Material

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Report

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## NCO-5 Technician Cuts Finger while Cutting Gasket Material.

**Team Members:** Steve Schreiber, Stanley Trujillo, John McNeel, Mark Welsh, Robert Monsalve-Jones, Greg Ortega, Xavier Martinez, Ruby Padilla

### **Introduction:**

As part of the ADPSM Safety Improvement Plan, the WSST has established a subcommittee for a Learning Team. The purpose of a Learning Team is to transfer and communicate the information into operational feedback and improvement. We want to pay attention to the small things that go wrong because they are often early warning signals and may provide insight into the health of the whole system.

### **Brief Description of Event:**

On 11/17/15, an ADPSM Research Technician was in the process of making an O-ring using an “on the job O-ring splicing kit” that consisted of gasket material, a jig (to hold gasket in place to perform a straight cut), a razor blade, and glue. As the technician cut the gasket (using his right hand) toward his body, the utility knife came in contact with and lacerated his left thumb that was helping to hold the plastic jig in place. The technician noticed blood, contacted his first line manager and was transported to occupational medicine. The laceration required three sutures for closure. The employee was released without restrictions on 11/30/15.

### **On the Job O-Ring Splicing Kit**

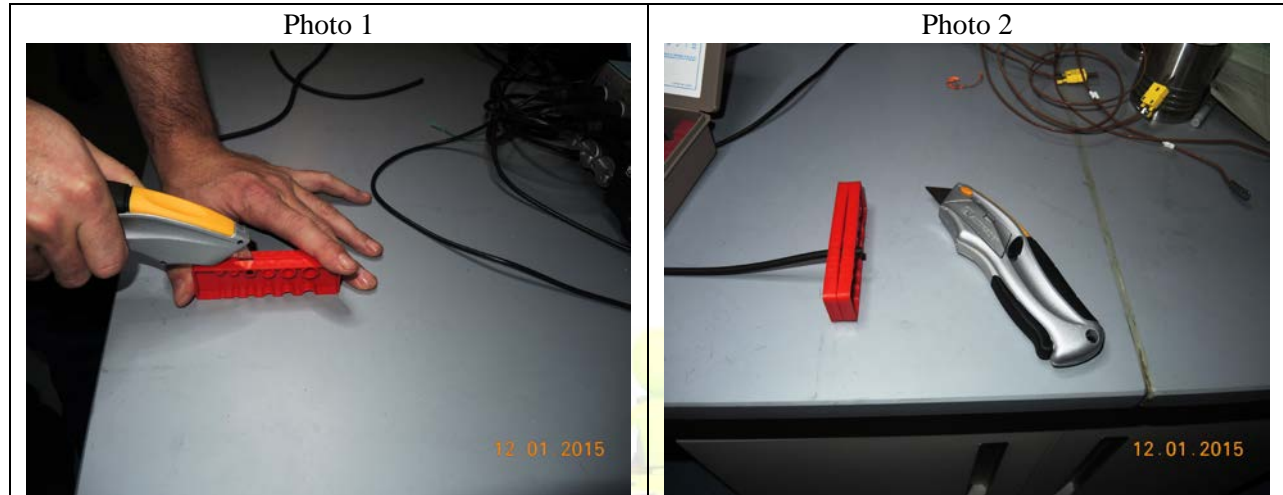


### **Kit Instruction Close-up**



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As a result of the incident described above, the Learning Team was contacted to perform a Learning Team Review. The Learning Team met with representatives from NCO-5 and MET-1 to discuss and re-enact the event so as to try and identify opportunities for improvement. Pictures (1 & 2) demonstrate the process.



As a result of the incident described above, the learning team along with the workers and supervisors has been tasked with determining the following:

**1. What's important for us to know? How did this event happen?**

The following existing conditions were (may have been) contributing factors to the incident:

- Workers testing different gasket materials for the vacuum chamber.
- Workers provided with “On the Job O-ring Splicing Kit” (recommended by manufacturer), containing gasket material, a jig, a razor blade, and glue.
- Worker substituted a utility knife instead of a razor blade so as to have a better handle/grip.
- Worker had made two prior cuts without incident prior to injury.
- Worker was simply trying to cut the gasket material with the tool/equipment designed and provided to perform the task.

**2. How was the organization managing the hazard?**

- PA-DOP-01655, *General Maintenance Procedures for the Assembly and Test Facility in PF-5*.

**3. What failed? What worked? What tools would have helped prevent this event?**

What Failed?

- Technique used to hold the jig in place.
- Jig provided by the manufacturer slightly opened during use allowing utility knife to move forward and strike thumb.



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What Worked?

- Good response to worker injury. Appropriate steps taken to ensure worker was treated promptly.

What was surprising?

- During the cutting motion the employee was applying pressure down onto the jig with the jig separating enough for the blade to come in contact with workers thumb.

What tools would have helped prevent this event?

- Use of a vice or tool to hold jig in place during cutting, keeping fingers away from blade. Recommended by worker post injury. See photos (3 & 6) below:
- Use alternative cutting tools (i.e. utility knives – with auto retract). See photos 7 – 8.
- Use of PPE (i.e. leather gloves, cut resistant gloves).

Photo 3  
(Vice)

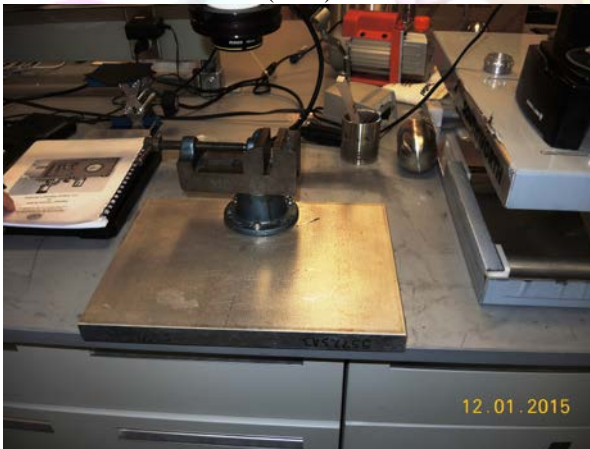


Photo 4  
(Vice holding jig in place)

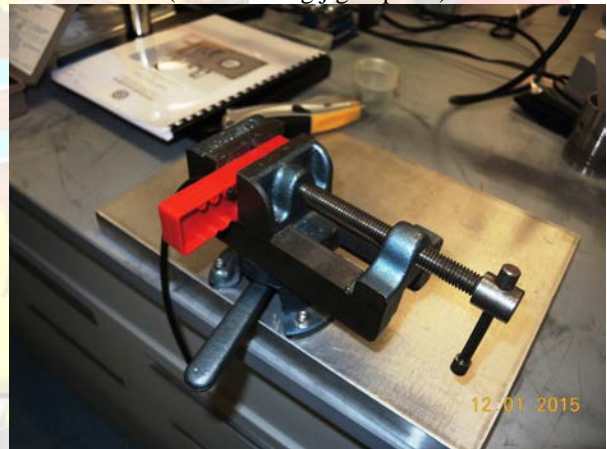


Photo 5  
(Vice holding jig in place using razor blade to cut)



Photo 6  
(Vice holding jig in place using utility knife to cut)



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4. **Error Precursors:**

1) Task Demands; 2) Work Environment; 3) **Individual Capabilities**; 4) **Human Nature**

Comments:

- Individual Capabilities:
  - New Technique- Worker had performed only two cuts with this tool prior to injury.
  - Lack of proficiency/Inexperience- Again, worker had performed only two cuts with this tool prior to injury.
- Human Nature:
  - Assumptions- Since tool/jig was provided by the manufacturer as the tool to use to cut gasket material, the worker thought it was safe.
  - Inaccurate risk perception- Again, since tool/jig was provided by the manufacturer as the tool to use to cut gasket material, the worker thought it was safe. Additionally, the worker had attempted to improve safety by using a hand-held utility knife versus the finger-held cutting blade provided by the manufacturer.

5. **ISSM Five Step Process:**

1) Define Scope of Work; 2) Analyze Hazards; 3) **Develop and Implement Controls**;  
4) Perform Work; 5) Ensure Performance/Feedback

Comments:

- Develop and Implement Controls- Blade (hazard) use instructions did not warn of sharps hazard or require use of any PPE (leather glove or cut resistant glove), or sharps hazard warning.

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**Pose the Following Question to Affected Employee:**

*“What would you do differently in the future to prevent this from happening again”?*

- Pay closer attention to “technique” described in tool kit instructions.
- Keep an additional supply of O-ring gaskets on site to prevent workers from having to cut gaskets when needed.
- Use a blade with handle (i.e. Stanley™ utility scraper).
- Use PPE (leather gloves and/or cut resistant gloves) whenever handling using sharps (i.e. blades).

**Defense-in-Depth Analysis:**

- Change the method of holding/securing the jig.
- Change tool used (blade) and blade recommended by manufacturer to incorporate one using a blade with handles.

**Organizational/System Issues:**

- N/A.

**What Did We Learn?**

Utility knives and razor blades are handy tools used often. However they always pose a hazard whenever handling and/or using and the greatest hazard, needless to say, is getting cut.






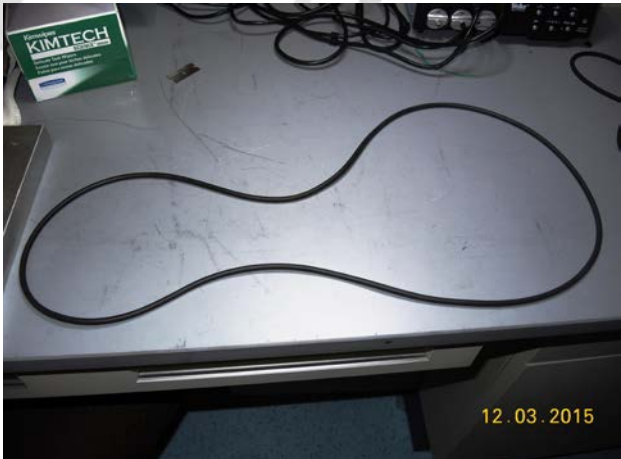
It is important to note how this event demonstrated how even though the worker was using the correct tool kit for the job (as provided by the manufacturer), there was room for improving the kit/tools and worker technique. As a safety precaution the worker evaluated the hazards associated with handling a straight blade and chose to use a utility knife.

Although hindsight is 20/20, there were still weaknesses in the process including the jig being able to separate during use, a cutting tool change creating lateral in addition to vertical slicing pressure and the method used for holding the jig.

The pictures below demonstrate the tools involved in this event along with recommendations provided by workers involved (see photos A –D)



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|   |   |
|---|---|
| <p>Photo A<br/>(Straight blade included in O-ring splicing kit but not used to cut gasket material)</p>  | <p>Photo B<br/>(Utility Knife used instead to cut gasket material)</p>                          |
| <p>Photo C<br/>Recommended by worker to use in place of blade<br/>(Stanley™ Utility Razor Scraper)</p>  | <p>Photo D<br/>Recommended by worker<br/>(Use of vice to hold jig in place to cut gasket)</p>  |
| <p>Photo E<br/>(Gasket material ready to be glued together)</p>                                        | <p>Photo F<br/>(Gasket material final product)</p>    |



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**Recommended Improvement Corrective Actions?**

1. The ADPSM Learning Team will present this report at next WSST meeting.
2. Post this Learning Team Review in the PSM Lessons Learned Database.
3. The hazard associated with cutting gasket material will be eliminated as gaskets will no longer be made on site instead purchased from a manufacturer.
4. Reminder to use caution when working with sharps/ blades.
5. If the decision is made to use the jig, consider the use of a vice to hold the jig in place keeping fingers away from the blade.
6. When using a straight blade consider using one with a handle.

**Should Improvement/Corrective Actions be tracked and entered into PFITS?**

No

**Additional Pictures:**



Learning Team pictured above (from left to right): Andrew Thronas (NCO-5), Jonathan Atencio (NCO-5), Tim Schollenberger (MET-1), Brent Espinoza (MET-1), John McNeel (DSESH-TA55), Richard O'Leary, Elisha Herrera (DSESH-TA55)

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**Approvals:**

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