

*Lockheed Martin Missiles & Fire Controls*

## **GUIDELINES FOR**

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# Tailoring FOD Controls

Presentation handout for  
*“FOD is not just an airplane problem”*



**PRESENTED BY**  
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# Control Guideline

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The following are general consideration guidelines for each type of control to be applied in an effort to mitigate risk associated with specific products, processes and/or areas.

The five major control categories are presented with individual controls identified under each category. It is noted that the individuals controls can appear under multiple major category types, as appropriate.

This is not intended to be an exhaustive list of all possible types of controls, but rather a listing to help with the understanding of the process and this presentation. Your specific controls and definitions may (and probably will) differ from those shown below.

## **PEOPLE CONTROLS**

- **Personnel Attire** – Unique restrictions may apply which can include, but are not limited to, personal items such as jewelry, eyewear, ear protection, pens, pencils, etc. Personal items may require removal or securing to eliminate or reduce risk. Other Personnel Protective Equipment should be restrained or tethered and accounted for upon leaving the area. Area-specific work attire may be included in the plan.
- **Organizer Belt Pouches** – A “pouch-like” closed bag/container used to secure employee personal items. The fanny pack is usually attached to the individual by a strap or belt and may be issued to individuals or available for general use.
- **Training Requirement** – Additional training requirements identified as necessary to support the FOD area assessment or qualification plan. These can include FOD awareness and specific training for certain high risk processes
- **Visitor Requirements** – Visitor controls such as FOD awareness training/indoctrination or escort requirements.

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## **TOOL CONTROLS**

- **Tethered Tools** – A lanyard of sufficient strength (wire, rope, cable, etc.) attached to the tool/equipment and to the user or fixed secure object. The tether shall be of minimum length to preclude damage from tethered tool “free swing.”
- **Tool Accountability** – Tools used for normal production shall be maintained, stored and tracked to assure accountability. Accountability methods can include the use of a chit, token or other means of identifying the person in possession of the tool. This is used in conjunction with a check in /check out system. A lower level of tool accountability can be achieved by visual controls such as shadow boarding or shadowboxing
- **Shadowbox** – A tool or kit assembly box with specific, marked locations for each part or tool so that a missing part or tool will be readily noticeable.
- **Listed Tools per Container** – A listing of tools or equipment entering and leaving a FOD designated area. All loose tools are contained in a tote tray, soft tool bag, or other suitable spill-proof container. Tote trays or containers can be used for storing/carrying/transporting tools or equipment in a secure manner to prevent inadvertent dropping (e.g., a tool holder, an apron with pocket rings to which tools can be secured). If tote trays with lids are used they should have the lid secured to the tote tray body.
- **Sponge Count; tools and supplies**– An inventory process, where tools and shop supplies, are accounted for prior to release of product to subsequent processes.

# Control Guideline

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## **PART CONTROLS**

- **Shadowbox** – A kit assembly box with specific, marked locations for each part so that a missing part will be readily noticeable.
- **Sponge Count Parts** – An inventory process, where all materials and parts are accounted for prior to release of product to subsequent processes. Records shall be maintained with the appropriate product or work area documentation until all items are successfully accounted for at the completion of the process, or longer as required.
- **Kitted Parts** – Allocated and accounted for parts assigned to a specific application and/or use in the exact quantity needed. The quantity, configuration and identification of the parts are secured in a package and controlled while being used. All parts must be accounted for after completion of the tasks.
- **Special Packaging and/or Handling** – Unique packaging may be required to prevent product damage or facilitate transportability between process areas. This can also apply to movement of the finished product. These requirements should be on documented on the control plan and / or the work instruction
- **Special Marking** – Unique product identification that informs the subsequent process recipient the product is FOD or Debris Free.

## **SPECIAL CONTROLS**

- **Entry controls-** Signs indicating entry by authorized personnel only, or positive controls such as cipher locks to assure that only trained, authorized personnel have access to the area.
- **Removal Tools** – Magnetic retrieval tools, encapsulating adhesives, tape, etc.
- **Specialized Training** – Individualized area and/or product handling competency training considered over-and-above general FOD training.
- **Special Inspection Tools** – Borescopes, x-rays devices, roll fixtures, special handling fixtures, etc.
- **Special Lighting** – Black lights, insensitive lighting, etc.
- **Environmental** – Area air pressure, flooring types, area paint coloring, type of work top surfaces, area filtration, etc.

# Control Guideline

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## **AREA CONTROLS**

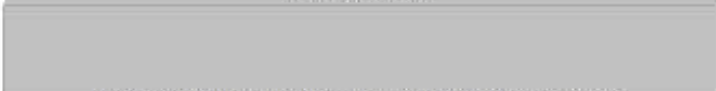
- **Entry controls-** Signs indicating entry by authorized personnel only, or positive controls such as cipher locks to assure that only trained, authorized personnel have access to the area.
- **Designated Containers-** Containers located in strategic areas for trash, rags and used solvents
- **Visitor Control** – Methods of visitor control can include escort requirements, training prior to entry into FOD designated area and management approval or authorization to enter designated areas.
- **Posters and Signs** – FOE/FOD posters and FO warning signs may be used to help maintain general area employee and visitor awareness.
- **FOD Collectors** – Container used to collect FOD for further review and corrective/preventive action.
- **FOD Control Entry Log** – Specific log to track all items carried into or removed from a FOD Critical or Control area.
- **Entry Item Holding Container** – Containers placed at the entry to a FOD designated area used to temporarily store personnel items such as badges, jewelry, pens/pencils or other items that could become loose during normal work activities in the area. Containers usually are not secure and should not be used for items of personal value.
- **Consumable Supply control** – Control of supplies that are used in a work area that do not become a permanent part of the product or assembly. Examples are: cotton swabs, rags, sandpaper, brushes, and applicators, which could become FOD.
- **Clean-As-You-Go-** Cleaning the product and the immediate work area as soon as an assembly operation is complete (e.g., drilling is one operation, installation is another; therefore, cleaning after drilling would be required, as well as cleaning after completion of the installation operation). Clean work areas thoroughly at least once per day at the end of each shift. Ensure that all construction debris is removed from newly constructed/renovated areas, prior to occupation.



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# Missiles and Fire Control

Form No. MFC-0152



## FOD WORK AREA QUALIFICATION PLAN

Work Area [Redacted]	Location [Redacted]	Revision N/C
Process [Redacted]	Product [Redacted]	

Potential Risk  
[Redacted]

### Controls and Risk Mitigation Plan

People	Parts	Area
▶ [Redacted]	▶ [Redacted]	▶ [Redacted]
▶ [Redacted]	▶ [Redacted]	▶ [Redacted]
▶ [Redacted]	▶ [Redacted]	▶ [Redacted]
▶ [Redacted]	▶ [Redacted]	▶ [Redacted]
▶ [Redacted]	▶ [Redacted]	▶ [Redacted]
Tools	Special Controls	▶ [Redacted]
▶ [Redacted]	▶ [Redacted]	▶ [Redacted]
▶ [Redacted]	▶ [Redacted]	▶ [Redacted]

### Signatures & Dates

Supervisor	Date	Quality Engineer	Date	Engineer / Production Engineer	Date
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Lockheed Martin Missiles and Fire Control  
 Model for FOE in manufacturing and assembly areas  
 Handout guideline