

Penetration Safety: Permit Form

Department: Electrical Safety Support Group

Program: Penetration Safety

Owner: Program Manager, Electrical Safety Officer, Perry Anthony

Authority: ES&H Manual, Chapter 44, Penetration Safety

Instructions

All penetrations within a radiologically controlled area (RCA), a radioactive material management area (RMMA), or part of accelerator shielding (for example, the Accelerator Housing Structure, End Station A Hall, Klystron Gallery Floor) require a penetration permit.

A penetration permit is required for all Class 2 penetrations and for Class 1 penetrations unless the hazards and controls are documented in a routine or non-routine job hazard analysis and mitigation document (JHAM)¹ and they are not in an RCA or radioactive material management area.

Class 1 penetrations are defined as any made into hollow walls, hollow ceilings, or hollow floors, or a penetration into solid materials to a depth of 2.0 inches or less; *Class 2 penetrations* as any deeper than 2.0 inches or all the way through solid materials

Pre-planning

All penetrations within a radiologically controlled area (RCA), a radioactive material management area (RMMA), or part of accelerator shielding (for example, the Accelerator Housing Structure, End Station A Hall, Klystron Gallery Floor) require the "Radiation Safety" portion of the form to be completed by Radiation Protection Department in ES&H. Please allow two days for the review.

Workers will evaluate hazards and controls as required for the penetration work to be performed, checking behind walls, under floors, or through false ceilings to attempt to locate hidden utilities or other hazards (such as asbestos). In most industrial environments, electric wiring is run in metal conduit. However, it is possible for Romex cable or other soft-surfaced electrical wiring to be present within hollow walls of some buildings, especially in some transportable buildings.

Verifying metal stud locations by measuring from adjacent studs or by using detection equipment to determine that the metal is not an electric conduit or gas pipe.

If it is suspected that hidden hazards exist at the point of penetration, relocate the work, if possible. If the work cannot be relocated, use non-destructive testing (NDT) devices (ground penetrating radar, x-ray, magnetic, induction, conductive, or other devices and methods) to determine whether additional hazards exist. If the penetration is to be made into a solid load-bearing wall, use NDT prior to performing the penetration to ensure that the penetration does not interrupt wall reinforcement.

1 "Job Hazard Analysis", <http://www-group.slac.stanford.edu/esh/general/hazanalysis/jham.htm>

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Work Request # (if applicable): _____ Date Permit Submitted: 10-19-06

GENERAL INFORMATION

Area/location	Date(s) work will be performed	Job description (location of penetration, material to be penetrated, tools, etc)
BSY	10-23-06 to 10-27-06	Concrete walls and floors, Hi-Hi hammer drill
Responsible line manager or designee (name/organization)	Phone #	Other information (depth of penetration, etc)
Hans Imfeld MET AEG	3472	2" or less

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CLASS 1 PENETRATION CHECKLIST

Hollow walls, ceilings or floors, or 2 inches or less into solid material

	Yes	N/A
Checked other side of walls, under floors, or through false ceilings for hazards?	_____	<u>X</u>
Verified stud locations?	_____	<u>X</u>
Non-conductive tools to be used?	<u>X</u>	_____
Masonry bits and hand tools to be used for initial penetration?	_____	<u>X</u>
Drill bit stops or short drill bits (2 inches or less) to be used for solid material?	<u>X</u>	_____
Electrical tools equipped with GFCIs or double insulated?	<u>X</u>	_____
GFCIs tested?	<u>X</u>	_____
Appropriate PPE specified (see page 3) and obtained?	<u>X</u>	_____
PPE inspection(s) up to date?	<u>X</u>	_____
Penetration is within a radiologically controlled area or a radioactive material management area? <i>If yes, complete the "Radiation Safety" portion of the form.</i>	<u>X</u>	_____
Penetration is part of accelerator shielding (for example: the Accelerator Housing Structure, End Station A Hall, Klystron Gallery Floor)? <i>If yes, complete the "Radiation Safety" portion of the form.</i>	<u>X</u>	_____
Checklist completed by: <u>Hans Infeld</u>	Date: <u>10-19-06</u>	

CLASS 2 PENETRATION CHECKLIST

Greater than 2 inches into solid material

	Yes	N/A
Reviewed historical records, engineering plans, and drawings?	_____	_____
Area responsible person/designee, customer/requester, or other personnel consulted?	_____	_____
Visually inspected proposed location of penetration?	_____	_____
Checked other side of walls, under floors, or through false ceilings for hazards?	_____	_____
De-energized and locked/tagged-out energy sources as required?	_____	_____
NDT used to determine if additional hazards exist?	_____	_____
<i>If yes, list results under "Hazards."</i>	_____	_____
NDT used to determine wall reinforcement?	_____	_____
Electrical tools equipped with GFCI or double-insulated?	_____	_____
GFCIs tested?	_____	_____
Appropriate PPE specified (see page 3) and obtained?	_____	_____
PPE inspection(s) up to date?	_____	_____
Short drill bits used or equipment marked to limit penetration depth?	_____	_____
Penetration is within a radiologically controlled area or a radioactive material management area. <i>If yes, complete the "Radiation Safety" portion of the form.</i>	_____	_____
Penetration is part of accelerator shielding (for example: the Accelerator Housing Structure, End Station A Hall, Klystron Gallery Floor)? <i>If yes, complete the Radiation Safety Portion of the form.</i>	_____	_____
Checklist completed by: _____	Date: _____	

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HAZARDS AND REQUIRED CONTROLS

May reference JHAM or AHA if hazards/controls are documented there.

Hazards

Type and size of energy sources present (including results from NDT, if used):

N/A

Hazards specific to the tools that will be used:

Flying debris, noise

Work environment hazards (such as moisture, lead, asbestos):

~~radiation~~ possible radiation in concrete dust

Other hazards:

N/A

Controls

Procedural requirements:

use indicator to control 2" penetration.

Types and classification of PPE:

Eye protection, Ear protection

Other controls:

~~radiation~~ Use radiation vac to clean drilled dust

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RADIATION SAFETY

Radiological Survey (to be completed by ES&H Radiation Protection Department)

This section to be completed if the penetration will be within a radiologically controlled area, radioactive materials management area, or if it meets Radiation Protection criteria for review

Special requirements for this penetration:

HEPA Filtered vacuum, obey all posted requirements for working in a contaminated area.

Penetration does not need special requirements: RWR

Checked by:

[Signature]

Date:

19 Oct 2006

Radiation Safety Survey

Special requirements for this penetration:

Penetration does not need special requirements.

Checked by:

[Signature]

Date:

10/19/06

REVIEW, APPROVAL, AND AUTHORIZATION

Any deviation from the scope of work identified on this permit requires re-validation of this permit. This penetration permit expires 30 days after issuance.

CLASS 1 AND 2 AUTHORIZATIONS

I have discussed the hazards and controls with the workers and verified that they are trained/qualified to perform the work.

[Signature]
Responsible Line Manager/Designee Signature

DATE: 10-19-06

CLASS 2 AUTHORIZATIONS ONLY

[Signature]
Area Responsible Person

DATE: 10/19/06