

LIGO - EG40006 - 00 B



Facsimile Cover Sheet

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Date: January 28, 1994

**Pages including this
cover page: Ten (10)**

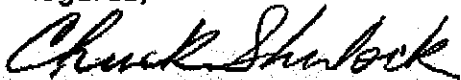
Comments:

Larry, here are two (2) revised alternate coupon cleaning procedures. I believe I have incorporated all your comments of 1/27/94. The first one is for steam cleaning only. Since this is a new one, I have labeled it as CLCOUPAO Draft #1 for alternate method #0. The second one is CLCOUPA1 Draft #2 for the Mirachem 500. Please look these over and call me Monday to give me additional comments or to give me the go ahead on them.

We talked to TubTec regarding possible contaminating lubricants. They stated that there aren't any that come in contact with the steel. The only lubricant they use is ordinary automobile lubricating grease for some bearings so I put that in the procedure to be used.

Have a good weekend.

Regards,



Chuck Sherlock
Houston Corporate Welding

cc: Marty Tellalian - Plainfield CBITS
Ken Flessas - CBICLH

CLCOUPAO

Draft 1

930212

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**CLEANING OF PLAIN COUPONS
BY ALTERNATE METHOD #0
FOR OUTGASSING TESTS
CALTECH**

CNS 01-28-94

1.0 SCOPE:

This alternate coupon cleaning procedure covers both the initial hydrocarbon contamination of the plate material and the cleaning of the 0.115" x 1" x 18" coupons for the final outgassing tests.

2.0 PERSONNEL:

Experienced personnel shall perform and supervise all cleaning performed in accordance with this alternate procedure.

3.0 REFERENCES:

3.1 California Institute of Technology Technical Specification Number 1100004 for Beam Tube Modules and Number 1100007 for Type 304L Stainless Steel Vacuum Products.

3.2 ASTM Designation A 380 Standard Practice for Cleaning and Descaling Stainless Steel Parts, Equipment and Systems (as a guide).

3.3 Packaging per Caltech instructions.

4.0 EQUIPMENT AND MATERIALS:

4.1 Lint free cloths or paper towels.

4.2 100 Watt blacklight with 3650 Angstrom unit wavelength.

4.3 Blacklight meter capable of measuring at least 800 $\mu\text{w}/\text{cm}^2$.

4.4 Electric hot air dryer.

4.5 Steam cleaner (Jenny) with a heater coil and a dead man type hand held sprayer.

4.6 Vinyl polyester recovery containment pallet system for catching and retaining the used cleaning and rinse solutions.

4.7 Neoprene or other chemical resistant gloves and apron or coveralls, face shields or goggles with side shields and foot coverings as needed.

4.8 Caltech packaging plastic.

4.9 Electrical tie wraps.

4.10 Tube of automobile lubricating grease.

5.0 PROCEDURE:

5.1 Before shearing the coupons from the Caltech supplied sheets of heat treated 304L stainless steel, lay out the cut lines for the coupons. Then wipe automobile lubrication grease across the cut lines on the steel sheet surface in a pattern that will result in approximately half of the surface of each coupon being coated with the grease after it has been sheared.

5.2 Wipe the excess grease from the surface of the sheet steel with clean clothes or paper towels until it feels dry to the touch.

5.3 Shear the coupons from the steel sheet following the cut lines.

5.4 Adjacent to the steam jenny, place a vinyl polyester recovery containment pallet system to catch and retain the used Mirachem 500 cleaning solution and rinse water. This is in a protected area.

5.5 Turn on the steam cleaner heating coils.

5.6 Spray water from the steam cleaner spray nozzle into the sanitary sewer drain until it reaches the boiling point (turns to steam).

5.7 With the steam cleaner sprayer held only a few inches away, thoroughly spray the grided pallet of the vinyl polyester recovery containment system to remove any dirt or other contaminants from its surface.

5.8 Stand the coupons on end by wedging one end of the coupons in the groove between the vinyl polyester grided pallet and the interstices of the vinyl polyester recovery containment system.

5.9 Attach a thermocouple to the surface of one of the coupons approximately in the middle of the 18" length.

5.10 With the steam cleaner sprayer held only a few inches away, thoroughly spray the upper half of both surfaces of all the coupons for a minimum of fifteen (15) seconds to a maximum of thirty (30) seconds. While wearing neoprene rubber or chemical resistant gloves, turn all the coupons end for end and wedge the opposite end of each coupon in the groove between the vinyl polyester grided pallet and the interstices of the vinyl polyester recovery containment system so that both surfaces of the opposite end of each coupon are exposed. Then thoroughly spray the opposite upper half of both surfaces of all the coupons for a minimum of fifteen (15) seconds to a maximum of thirty (30) seconds. Monitor the thermocouple reading during both cycles of steam only cleaning and record the maximum coupon surface temperature noted.

5.11 Allow the coupons to air dry. Only use the electric hot air dryer if the humidity is so high as to prevent rapid drying of the coupons.

5.12 When the coupons are thoroughly dry, while wearing neoprene rubber or chemical resistant gloves, wrap all the coupons in a piece of the Caltech supplied plastic for shipping and carry them to a darkened lab room.

5.13 Blacklight inspect all coupons for hydrocarbon contamination as follows:

5.13.1 Turn on and warm up the blacklight for a minimum of five (5) minutes.

5.13.2 The examiner shall be in the darkened area for at least five (5) minutes to allow time for eye adaptation to the darkness prior to viewing the coupon surfaces. If the examiner wears glasses or lenses, they shall not be photosensitive.

5.13.3 Confirm the maximum distance at which the blacklight produces $800 \mu\text{w}/\text{cm}^2$ on the examination surface using the blacklight meter.

5.13.4 In a darkened area, blacklight inspect all surfaces of all coupons. During the inspection, hold the blacklight no further from the examination surface than the distance established in step 5.13.3.

5.13.5 If the blacklight inspection reveals no hydrocarbon contamination on the surfaces of the coupons, proceed to step 5.14. If the blacklight inspection reveals residual amounts of hydrocarbon contamination, this cleaning method shall be considered inadequate and this procedure shall be voided.

5.14 Package the coupons in accordance with the Caltech packaging instructions and ship them to Caltech along with the maximum coupon surface temperature noted during cleaning.

CLCOUPA1
Draft 2
930212

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**CLEANING OF PLAIN COUPONS
BY ALTERNATE METHOD #1
FOR OUTGASSING TESTS
CALTECH**

~~CNS 01-28-94~~

1.0 SCOPE:

This alternate coupon cleaning procedure covers both the initial hydrocarbon contamination of the plate material and the cleaning of the 0.115" x 1" x 18" coupons for the final outgassing tests.

2.0 PERSONNEL:

Experienced personnel shall perform and supervise all cleaning performed in accordance with this alternate procedure.

3.0 REFERENCES:

3.1 California Institute of Technology Technical Specification Number 1100004 for Beam Tube Modules and Number 1100007 for Type 304L Stainless Steel Vacuum Products.

3.2 ASTM Designation A 380 Standard Practice for Cleaning and Descaling Stainless Steel Parts, Equipment and Systems (as a guide).

3.3 Packaging per Caltech instructions.

4.0 EQUIPMENT AND MATERIALS:

4.1 Lint free cloths or paper towels.

4.2 100 Watt blacklight with 3650 Angstrom unit wavelength.

4.3 Blacklight meter capable of measuring at least 800 $\mu\text{w}/\text{cm}^2$.

4.4 Electric hot air dryer.

4.5 Mirachem 500 Cleaner/Degreaser mixed with water in a proportion of one (1) part by volume of Mirachem 500 to three (3) parts by volume of water.

4.6 Steam cleaner (Jenny) with a heater coil and a dead man type hand held sprayer.

4.7 Vinyl polyester recovery containment pallet system for catching and retaining the used cleaning and rinse solutions.

4.8 Neoprene or other chemical resistant gloves and apron or coveralls, face shields or goggles with side shields and foot coverings as needed.

4.9 Two (2) chemical resistant plastic two (2) gallon containers for pump type sprayers.

4.10 Caltech packaging plastic.

4.11 Electrical tie wraps.

4.12 Tube of automobile lubricating grease.

5.0 PROCEDURE:

5.1 Before shearing the coupons from the Caltech supplied sheets of heat treated 304L stainless steel, lay out the cut lines for the coupons. Then wipe automobile lubrication grease across the cut lines on the steel sheet surface in a pattern that will result in approximately half of the surface of each coupon being coated with the grease after it has been sheared.

5.2 Wipe the excess grease from the surface of the sheet steel with clean clothes or paper towels until it feels dry to the touch.

5.3 Shear the coupons from the steel sheet following the cut lines.

5.4 Adjacent to the steam jenny, place a vinyl polyester recovery containment pallet system to catch and retain the used Mirachem 500 cleaning solution and rinse water. This is in a protected area.

5.5 Turn on the steam cleaner heating coils.

5.6 Spray water from the steam cleaner spray nozzle into the sanitary sewer drain until it reaches the boiling point (turns to steam).

5.7 With the steam cleaner sprayer held only a few inches away, thoroughly spray the grided pallet of the vinyl polyester recovery containment system to remove any dirt or other contaminants from its surface.

5.8 Stand the coupons on end by wedging one end of the coupons in the groove between the vinyl polyester grided pallet and the interstices of the vinyl polyester recovery containment system.

5.9 Attach a thermocouple to the surface of one of the coupons approximately in the middle of the 18" length.

5.10 Nearly fill both pump type sprayer plastic containers with water.

5.11 Mix one (1) part by volume of Mirachem 500 cleaner/degreaser with three (3) parts of water in both of the plastic spray containers.

5.12 Insert the screened suction line of the steam cleaner into one of the plastic containers of Mirachem 500 cleaning solution. Spray the water (as steam) from the steam cleaner spray nozzle into the sanitary sewer until the Mirachem 500 cleaning solution starts coming through.

5.13 Spray the Mirachem 500 cleaning solution from the steam cleaner spray nozzle back into its plastic container until the Mirachem 500 cleaning solution reaches the boiling point (turns to steam).

5.14 With the steam cleaner sprayer held only a few inches away, thoroughly spray the exposed surfaces of all the coupons with the Mirachem 500 cleaning solution for a minimum of fifteen (15) seconds to a maximum of thirty (30) seconds. While wearing neoprene rubber or chemical resistant gloves, turn all the coupons end for end and wedge the opposite end of each coupon in the groove between the vinyl polyester grided pallet and the interstices of the vinyl polyester recovery containment system so that both opposite surfaces of the opposite end of each coupon are exposed. Then thoroughly spray the opposite upper half of both surfaces of all the coupons for a minimum of fifteen (15) seconds to a maximum of thirty (30) seconds. Monitor the thermocouple reading during both cycles of the Mirachem 500 steam cleaning and record the maximum surface temperature noted.

5.15 After completing step 5.14, remove the screened suction line of the steam cleaner from the Mirachem 500 cleaning solution container. Connect the suction line of the steam cleaner to the water supply. Spray the existing Mirachem 500 cleaning solution from the steam cleaner into the vinyl polyester containment pallet until all the Mirachem 500 cleaning solution has been pumped through. Then spray water from the steam cleaner spray nozzle into the sanitary drain until it reaches the boiling point (turns to steam).

5.16 With the steam cleaner sprayer held only a few inches away, thoroughly spray the upper half of both surfaces of all the coupons for a minimum of fifteen (15) seconds to a maximum of thirty (30) seconds. While wearing neoprene rubber or chemical resistant gloves, turn all the coupons end for end and wedge the opposite end of each coupon in the groove between the vinyl polyester grided pallet and the interstices of the vinyl polyester recovery containment system so that both surfaces of the opposite end of each coupon are exposed. Then thoroughly spray the opposite upper half of both surfaces of all the coupons for a minimum of fifteen (15) seconds to a maximum of thirty (30) seconds. Monitor the thermocouple reading during both cycles of steam only cleaning and record the maximum coupon surface temperature noted.

5.17 Allow the coupons to air dry. Only use the electric hot air dryer if the humidity is so high as to prevent rapid drying of the coupons.

5.18 When the coupons are thoroughly dry, while wearing neoprene rubber or chemical resistant gloves, wrap all the coupons in a piece of the Caltech supplied plastic for shipping and carry them to a darkened lab room.

5.19 Blacklight inspect all coupons for hydrocarbons as follows:

5.19.1 Turn on and warm up the blacklight for a minimum of five (5) minutes.

5.19.2 The examiner shall be in the darkened area for at least five (5) minutes to allow time for eye adaptation to the darkness prior to viewing the coupon surfaces. If the examiner wears glasses or lenses, they shall not be photosensitive.

5.19.3 Confirm the maximum distance at which the blacklight produces $800 \mu\text{w}/\text{cm}^2$ on the examination surface using the blacklight meter.

5.19.4 In a darkened area, blacklight inspect all surfaces of all coupons. During the inspection, hold the blacklight no further from the examination surface than the distance established in step 5.19.3.

5.19.5 If the blacklight inspection reveals no hydrocarbon contamination on the surfaces of the coupons, proceed to step 5.20. If the blacklight inspection reveals residual amounts of hydrocarbon contamination, this cleaning method shall be considered inadequate and this procedure shall be voided.

5.20 Package the coupons in accordance with the Caltech packaging instructions and ship them to Caltech along with the maximum coupon surface temperature noted during cleaning.

5.21 Dispose of the Mirachem 500 cleaning/rinse water solution by flushing into the sanitary sewer as allowed by the MSDS for this product.



CBI Company Ltd

TRANSMITTING ON OMNIFAX G661
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PAGE: 1 OF 1
TO: Larry Jones
Caltech

DATE: January 5, 1994
FAX NO. (818) 304-9834

FROM: Ken Flossas
REF: LIGO Project - Vacuum Port Fittings

Per our earlier telephone discussion, Caltech is planning on using a VAT series 10 UHV gate valve (or equal) at each vacuum port.

The flange for this series comes as either an ISO-F (with 12AM10 threaded bolt holes) or CF-F (UNF - 5/16" Ø threaded bolt holes).

Please confirm which model flange design will be specified by Caltech.

This effect pricing on the matching conflat flange we are providing.

Thanks.

FAX CC: Mary TULLMAN, PLED ENGR, NOE 'C' (818) 439-6012