INCREMENTAL CHANGE Release Notification Date: 10/10/2024

SPM 70-00-10 SAFE HANDLING OF SUSPECTED HEXAVALENT CHROMIUM RESIDUE ON ENGINE PARTS

DISCLAIMER

The Incremental Changes published by GE Aerospace are considered Instructions for Continued Airworthiness. These Incremental Changes, along with the current Manual revision and published Temporary Revisions, constitute the latest Instructions for Continued Airworthiness.

GE Designated: -CONFIDENTIAL-

HIGHLIGHTS

HIGHLIGHT REFERENCE	DESCRIPTION OF CHANGE
tk70-00-10-800-801	Technical Change: Changed safety instructions for assemblies and components that contain hexavalent chromium residue.

TASK 70-00-10-800-801

1. General.
   A. This section gives the safety instructions that are applicable for assemblies and components that may contain hexavalent chromium (Cr(VI)) residue. Refer to Figure 1 for recommended actions.
2. General Work Practices.

Subtask 70-00-10-800-001

WARNING: IF ENGINE HARDWARE HAS BEEN OBSERVED WITH RESIDUE, IMMEDIATELY CONTACT YOUR LOCAL ENVIRONMENTAL, HEALTH AND SAFETY (EHS) REPRESENTATIVE TO EVALUATE WHETHER FOLLOWING THIS SPM WILL ENSURE COMPLIANCE WITH ALL LOCAL SITE APPLICABLE REQUIREMENTS. REFER TO Figure 2, Figure 3, AND Figure 4 FOR TYPICAL APPEARANCE OF RESIDUE THAT MAY CONTAIN HEXAVALENT CHROMIUM.

WARNING: DO NOT USE ANY COMPRESSED AIR, PNEUMATIC TOOLS, AEROSOL CANS, ETC. AROUND THE MATERIAL.

WARNING: FOR MAINTENANCE OPERATIONS INVOLVING PHYSICAL PROCESSING (INCLUDING, BUT NOT LIMITED TO, MECHANICAL CLEANING THROUGH GRIT OR PLASTIC MEDIA BLASTING, GRINDING, MACHINING, BUFFING, DRILLING, OR SANDING) OF THE AFFECTED AREA, CONSULT YOUR EMPLOYER'S HEALTH AND SAFETY EXPERT TO DETERMINE IF ADDITIONAL ENGINEERING CONTROLS AND/OR PERSONAL PROTECTIVE EQUIPMENT ARE APPROPRIATE.

WARNING: THIS ENGINE, MODULE AND ATTACHING PARTS MAY HAVE RESIDUES PRESENT ON THEIR

SURFACES THAT MAY CONTAIN HEXAVALENT CHROMIUM. WHEN YOU WORK WITH THIS ENGINE, YOU MUST OBEY THE PRECAUTIONS THAT FOLLOW:

* YOU MUST OBEY ALL APPLICABLE ENVIRONMENTAL, HEALTH AND SAFETY REGULATORY PRECAUTIONS BEFORE YOU MOVE, TOUCH, REPLACE OR DISCARD HARDWARE THAT CONTAINS HEXAVALENT CHROMIUM.

* HEXAVALENT CHROMIUM MAY CAUSE ADVERSE HEALTH EFFECTS IF INGESTED, INHALED, OR CONTACTED WITH SKIN AND REQUIRES CARE IN HANDLING.

- AVOID CONTACT WITH SKIN, EYES AND MUCUS MEMBRANES.

- AVOID INHALATION OR INGESTION OF RESIDUE.

- WEAR DISPOSABLE NITRILE GLOVES AND EYE PROTECTION WHENEVER INSPECTING OR HANDLING PARTS WITH THE SUSPECTED RESIDUE.

- IN CASE OF CONTACT, IMMEDIATELY IRRIGATE AFFECTED AREA WITH RUNNING WATER.

- IF CONTACT IS SEVERE, OBTAIN MEDICAL ATTENTION.

A. Refer to Figure 2, Figure 3, and Figure 4 for typical appearance of residue that may contain hexavalent chromium.

B. Avoid getting any of the suspect material airborne.

C. Minimize moving any unmitigated contaminated parts within the facility to reduce the potential for the suspect material to contaminate other areas of facility.

3. Personal Protection and Hygiene.

Subtask 70-00-10-800-002

A. Avoid skin and eye contact with the residue.

B. In case of any contact with the residue, clean the parts of your skin that have not been protected with personal protective equipment and contact your local EHS representative.

C. Wear disposable nitrile gloves and eye protection whenever inspecting or handling parts potentially contaminated with this residue.

D. No eating, touching eyes/mouth/face, drinking, smoking, bathroom breaks or physical interactions (i.e. handshaking) without first washing hands and face (or any other potentially exposed area) to avoid the risk of contact and/or ingestion.

E. If your clothing has the potential to become contaminated, wear protective disposable coveralls.

4. Cr(VI) Determination of Residue.

Subtask 70-00-10-800-003

A. This section describes two different methods for determining if a suspect residue contains hexavalent chromium. Sites can use either one of the two methods or assume that the material contains Cr(VI) and continue with Subtask 70-00-10-800-004 (paragraph 5.).

CAUTION: DELETED.

(1) Deleted.

(a) Deleted.

(b) Deleted.

CAUTION: DELETED.

NOTE: Deleted.

NOTE: Deleted.

(2) Alternative Method Available. Use FieldCore developed Hanna Instrument HI-93723, HI-3846, or HI-93749 Method.

NOTE: HI-93749 can detect Cr(VI) at lower levels.

(a) Use modified wipe sampling kits HI-93723-01 or HI-93723-03 and HI-93749-01 or HI-93749-03.

(b) Add 5 ml of distilled or deionized water to a test tube or similar device.

(c) Wet cotton swab with water from test tube.

(d) Take sample of residue with wet cotton swab.

(e) Pour contents of HI-3846, HI-93723, or HI-93749 into, test tube, cap tests tube, and shake.

(f) Put the cotton swab in test tube and shake.

(g) Color change indicates positive for Cr(VI).

(h) Since the test tubes, water, or wipes that are used for the test can potentially contain Cr(VI), always run a blank sample through the process to make sure that a color change is not observed with the material you

are using.

(i) A blank sample is where you take a wipe out of the container and put it in the test tube and run through the procedure and check for a color change by holding the test tube against a white background.

(j) If you do not get a color change you can use your wipes, test tubes, and water for Cr(VI) testing.

(k) If you get a color change, one of your testing components has residual Cr(VI) and should not be used for testing engine components for Cr(VI). You will need to determine which component(s) has the residual Cr (VI) and replace it with a non Cr(VI) containing material.

WARNING: ACID SOLUTIONS ARE VERY ACTIVE AND CAUSE SERIOUS BURNS. AVOID CONTACT WITH SKIN, AND CLOTHING. AVOID BREATHING OF VAPORS. IF CONTACT OCCURS, WASH IMMEDIATELY WITH ABUDANT QUANTITY OF WATER.

WARNING: OPERATORS SHOULD WEAR FACE SHIELD, GLOVES, PROTECTIVE CLOTHING AND PROTECTIVE SHOES.

CAUTION: HEXAVALENT CHROMIUM INDICATOR SOLUTION (S1216) SHALL NOT DIRECTLY CONTACT WITH THE PART.

(3) Alternative Method. Use Hexavalent Chromium Indicator Solution S1216.

(a) Wet the tip of the cotton swab with deionized water or isopropyl alcohol.

(b) Swab some residue on the cotton swab from the suspect residue.

(c) Take 0.1 ml of S1216 solution using a micro-pipette.

(d) Drop the solution on the tip of the cotton swab where suspect residue located.

(e) The presence of Cr(VI) instantaneous color change to pink can be observed as the solution touch the cotton swab/suspect residue.

NOTE: To make sure of the quality of the results, multiple samples should be tested with the same method.

5. Removal of Loose Suspect Residue.

Subtask 70-00-10-800-004

WARNING: WEAR RESPIRATORY PROTECTION WHILE CONDUCTING THESE PROCEDURES, UNLESS DETERMINED TO BE UNNECESSARY BY A LOCAL HEALTH AND SAFETY ASSESSMENT.

NOTE: If you need to utilize other methods, please contact your local EHS representative for further guidance and instruction.

NOTE: For components to be shipped in the dirty condition with no cleaning or isolation method applied reference Subtask 70-00-10-800-005 (paragraph 6.) below.

A. The residue removal procedures described below will not clean all Cr(VI) from the engine hardware. Instead, these procedures are designed to safely remove any loose Cr(VI) residue that has the greatest potential to become airborne which is the most likely route of exposure. After the loose material is removed, the risk of exposure to any Cr(VI) that may become airborne is significantly reduced. In order to fully remove Cr(VI) from the assemblies/component it is necessary to apply appropriate immersion cleaning procedures as detailed in the relevant sections of the Engine Shop Manual.

NOTE: If the subject part or assembly has not been immersion chemical cleaned with an approved method referenced in the Engine Shop Manual (refer to Paragraph 5.C.(3)), it is necessary to provide customer awareness information on the release to service documentation (for example: carry forward task list) detailed per Paragraph 5.C.(4).

(1) Equipment.

(a) There are two different alternative methods available to prevent airborne migration of the suspect residue. Method 1 details two alternative procedures to clean loose suspect residue (a. hand-wipe degreasing and /or b. high-efficiency particulate air (HEPA) vacuum). Method 2 provides a procedure to immobilize loose suspect residue in-situ.

1 The following equipment is required for the vacuum application alternate of this process:

WARNING: WITHOUT THE COLLECTION BAG, THERE IS A HIGH POTENTIAL TO MAKE THE RESIDUE AIRBORNE.

a Vacuum equipment with 99.97 percent efficiency against 0.3 microns particles HEPA filtered.

b The vacuum must have an inner collection bag that collects all the material being sucked up by the vacuum.

B. Materials.

Airborne Preventative Oil - Table 1

Code No.	Description
C02-039	Oil, Penetrating

C02-053	Oil, Penetrating
C04-003	Solvent, General
C04-035	Solvent, General

C. Procedure.

(1) Method 1: Clean loose residue (use one or both of the following alternative procedures).

NOTE: Solvent C04-003 is effective in removing Cr(VI) containing residue from engine parts.

(a) Alternative Procedure Available. In case of excessive residue, clean the part. Refer to TASK 70-21-23-110-053, Cleaning Method No. 23 - Hand-Wipe Degreasing.

(b) Alternative Procedure. Vacuum the Cr(VI) suspicious residue area with an HEPA filtered equipment.

WARNING: MANY FILTERS WILL INDICATE THAT THEY ARE 99.97 PERCENT EFFICIENT AT A DIFFERENT MICRON LEVEL. THOSE FILTERS ARE NOT HEPA FILTERS. IF IN DOUBT, PURCHASE AN HEPA FILTER AND REPLACE THE EXISTING FILTER.

WARNING: IF THE HOSE IS FARTHER THAN ONE HOSE DIAMETER DISTANCE AWAY THERE IS A POSSIBILITY THAT THE MATERIAL MAY NOT BE COLLECTED AS IT IS BEING SCRAPED OFF, THUS POTENTIALLY CAUSING IT TO BECOME AIRBORNE.

WARNING: DISPOSABLE GLOVES AND A RESPIRATOR MUST BE WORN WHEN EMPTYING THE BAG.

NOTE: It is not mandatory to remove or clean suspected Cr(VI) residue. Residue which can potentially become airborne may alternatively be isolated by applying the approved penetrating oils in Table 1 via method 2 Subtask 70-00-10-800-004 (paragraph 5.C.(2)).

(c) Place the inlet of the vacuum hose within one diameter of the hose to the area being cleaned. Using nonpower tools, scrape the residue off the part maintaining the one diameter distance of the hose to the area being cleaned.

(2) Method 2: Isolate loose residue.

(a) Optional Procedure. Apply one of the penetrating oils in Table 1 using a Q-tip or soft bristle brush to dampen affected areas prior to removal by scraping and/or wiping.

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(3) If required post application of Methods 1 or 2, clean the part with an approved immersion chemical cleaning method in Engine Shop Manual.

(4) Customer awareness: If the subject part or assembly has not been immersion chemical cleaned with an approved method in the Engine Shop Manual per Paragraph 5.C.(3), it is necessary to provide the following information on the release to service documentation (for example: carry forward task list):

* "WARNING: THE SUBJECT PART(S) AND/OR ASSEMBLIES (INSERT ALL PART OR ASSEMBLY DETAILS HERE) HAS BEEN PROCESSED IN ACCORDANCE WITH SPM 70-00-10 (SAFE HANDLING OF SUSPECTED HEXAVALENT CHROMIUM RESIDUE ON ENGINE PARTS), AND RESIDUE HAS BEEN SEQUESTERED IN-SITU.

(a) Ensure the following warning statements are adhered to during any future maintenance activity:

* "WARNING: THIS ENGINE, MODULE AND ATTACHING PARTS MAY HAVE A RESIDUE PRESENT ON THEIR SURFACES THAT MAY CONTAIN HEXAVALENT CHROMIUM. WHEN YOU WORK WITH THIS ENGINE, YOU MUST OBEY THE PRECAUTIONS THAT FOLLOW.

* YOU MUST OBEY ALL APPLICABLE ENVIRONMENTAL, HEALTH AND SAFETY REGULATORY PRECAUTIONS BEFORE YOU MOVE, TOUCH, REPLACE OR DISCARD HARDWARE THAT CONTAINS HEXAVALENT CHROMIUM.

* HEXAVALENT CHROMIUM MAY CAUSE ADVERSE HEALTH EFFECTS IF INGESTED, INHALED, OR CONTACTED WITH SKIN AND REQUIRES CARE IN HANDLING.

- AVOID CONTACT WITH SKIN, EYES AND MUCUS MEMBRANES.

- AVOID INHALATION OR INGESTION OF RESIDUE.

- WEAR DISPOSABLE NITRILE GLOVES AND EYE PROTECTION WHENEVER INSPECTING OR HANDLING PARTS WITH THE SUSPECTED RESIDUE.

- IN CASE OF CONTACT, IMMEDIATELY IRRIGATE AFFECTED AREA WITH

RUNNING WATER.

- IF CONTACT IS SEVERE, OBTAIN MEDICAL ATTENTION.

* Refer to Standard Practice Manual SPM 70-00-10 (SAFE HANDLING OF SUSPECTED HEXAVALENT CHROMIUM RESIDUE ON ENGINE PARTS)."

6. Shipping Guidance.

Subtask 70-00-10-800-005

A. The shipping recommendations given below is for guidance purposes only.

(1) TYPE OF REQUIRED PACKAGING:

* Package metal part(s) into a sealed plastic bag that is sufficiently strong so it will not tear or rupture during transportation.
* Ensure less than 5 kg (11 Lb) of residue per inner container (sealed bag(s)).
* Package sealed metal parts into a strong outer packaging such as a strong fibreboard (cardboard) box.
* Strong outer packaging (such as a fibreboard (cardboard) box or wooden crate) must be capable of withstanding incidents normally encountered in transportation.
* Packaging must be compatible with metal parts.
* Secure parts to prevent movement during transportation.
* Securely close the fibreboard (cardboard) box.

(2) REQUIRED LABELS, MARKINGS, AND PAPERWORK:

* If packaged as outlined above, no hazard labels required, package markings, or paperwork required.

(3) COMMENTS:

* If shipped by ground transportation within the domestic U.S., can be shipped as not restricted according to 49 Code of Federal Regulations (CFR) 171.4(c).
* For European ground shipments, further exception is allowed per Alternative Dispute Resolution (ADR) 3.3, Special Provision 672. The parts may be shipped not subject to any other requirements so long as the parts are packaged in good quality packaging strong enough to withstand the shocks and loadings normally encountered during transport and the amount of residue per package does not exceed 5 kg (11 Lb).
* Local requirements may vary, consult locally designated transportation agency to confirm.

NOTE: For U.S. domestic ground shipments, can be shipped as not restricted.

NOTE: The U.S. did not harmonize with the United Nations (UN) aquatic toxicity criteria and uses a list based approach for Marine Pollutants in 49 CFR 172.101, Appendix B.

7. Managing Suspected Hexavalent Chromium-Contaminated Waste Packaging Guidance.

Subtask 70-00-10-800-006

A. The following is a suggested process to manage packaging that is suspected to be contaminated with Cr(VI) residue.

(1) Use an industrial hygiene (IH) approved method for quarantining packaging suspected of having Cr(VI) contamination, managing the material in a way that ensures the contamination is contained.

(2) Because the amount of contamination will vary, the site should use generator knowledge, including on previous residuals encountered, to classify the waste.

(3) If the site cannot confirm that the residue is free from hex chrome, manage the waste under the assumption that the residue contains hexavalent chrome pending further evaluation. Prepare to collect a sample by performing the following steps in the sequence listed.

(a) Identify a laboratory that is approved by local jurisdiction to perform analysis using Environmental Protection Agency (EPA) Method 6010C for Resource Conservation and Recovery Act (RCRA) metals Toxicity Characteristic Leaching Procedure (TCLP) (or equivalent outside US) which will include chromium and silver.

(b) Speak with laboratory to confirm sample container and minimum sample size and obtain a chain of custody (CoC). The CoC is used to document/record the sequence of custody, control, transfer, analysis, and disposition of the sample(s) collected.

(c) Once the previous steps are completed and the appropriate sample container is obtained, use appropriate IH precautions while collecting a representative sample which can be expected to exhibit the average properties of the whole amount of suspected contaminated material.

(d) Ensure that the sample is packaged without residue on the outside, place the contaminated Personal Protective Equipment (PPE) in the waste container sampled, maintain chain of the custody documentation, while having the sample picked up or delivered to lab as soon as possible (ASAP) not to

exceed 28 days.

(4) Develop a waste profile based on sample results.

(5) If lab results or generator knowledge confirm that the residue is Cr(VI), consider whether the material is "hazardous" under applicable law and dispose of as hazardous waste according to local regulations (e.g. US D007 Chromium 5.0 ppm (mg/L)/ D011 Silver 5.0 ppm (mg/L)).

8. Quality.

Subtask 70-00-10-800-007

A. Visually check the part and assure that the risk of exposure to any Cr (VI) that may become airborne is significantly reduced and/or all traces of suspected residue are removed. Refer to Figure 5 for an example of an engine component identified with residue containing Cr(VI) that has been successfully cleaned.

9. Unwanted Material Disposal

Subtask 70-00-10-800-008

NOTE: Cr(VI) contaminated materials may trigger new regulatory requirements for impacted sites. Consider whether waste streams need to be re-characterized and address potential new environmental obligations accordingly.

A. All waste potentially coming into contact with the Cr(VI) residue, such as rags, Q-tips/brushes, wastewater, gloves, disposable coveralls should be treated and properly disposed of according to local waste regulations.

* * * FOR ALL

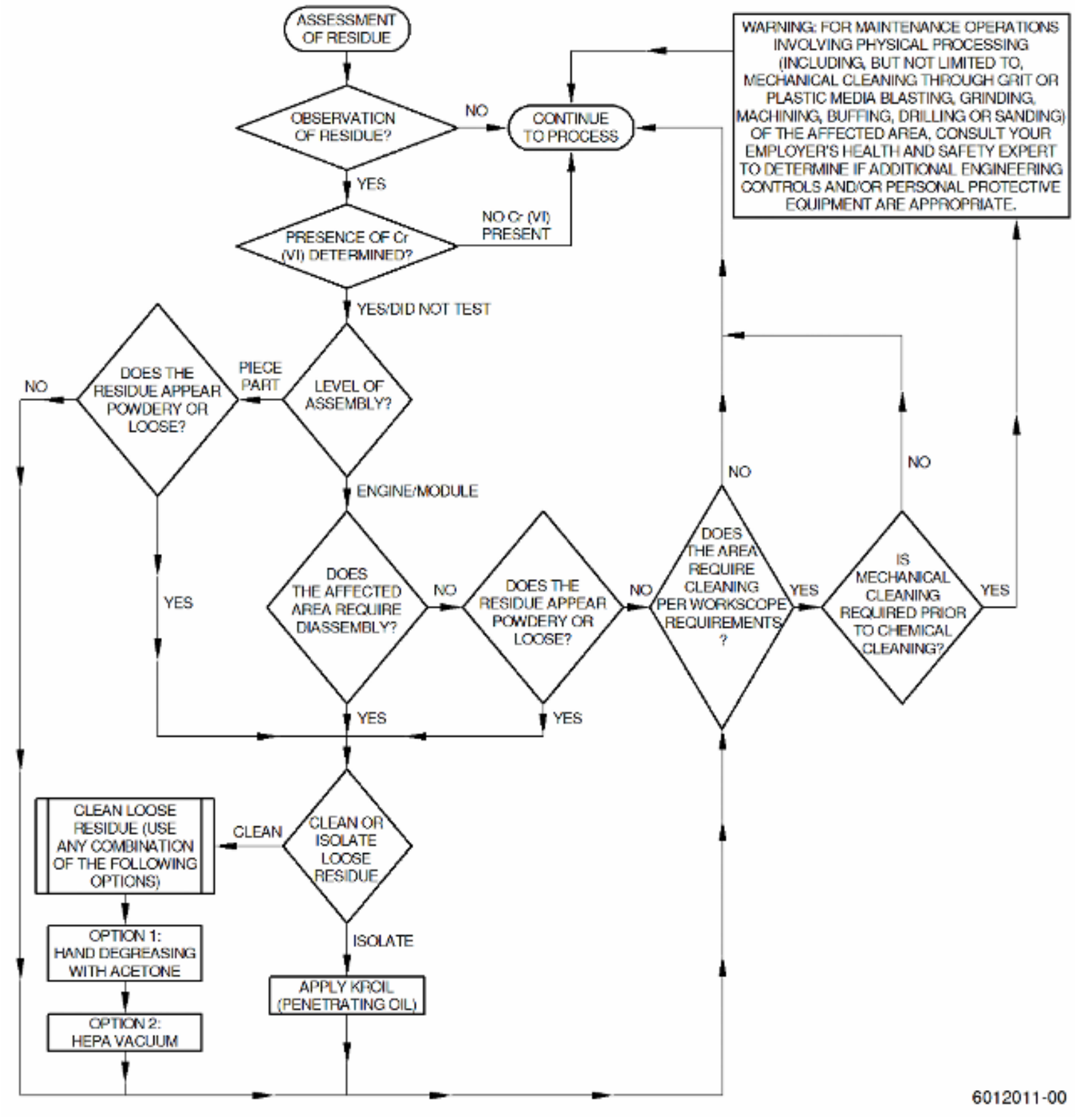

Figure 1 Handling and Removal of Suspected or Confirmed Cr(VI) Residue Flow Chart

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Figure 2 Photo of an Engine Assembly Containing Residue that may Contain Hexavalent Chromium

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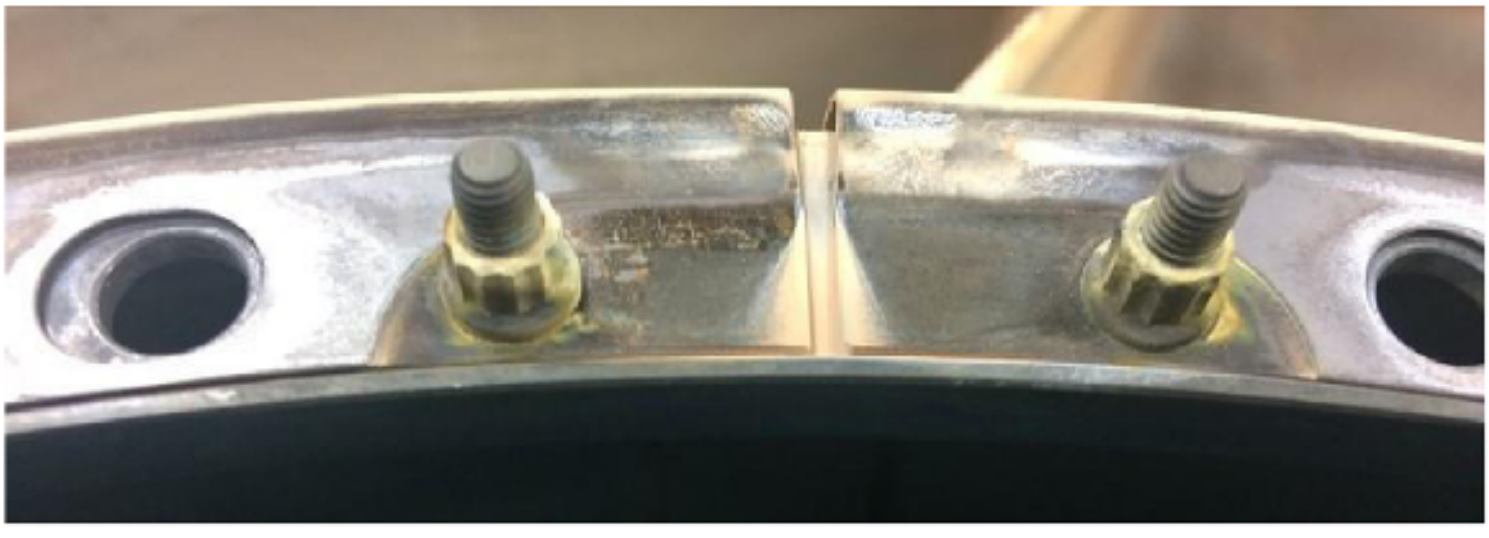

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Figure 3 Photo of an Engine Assembly Containing Residue that may Contain Hexavalent Chromium

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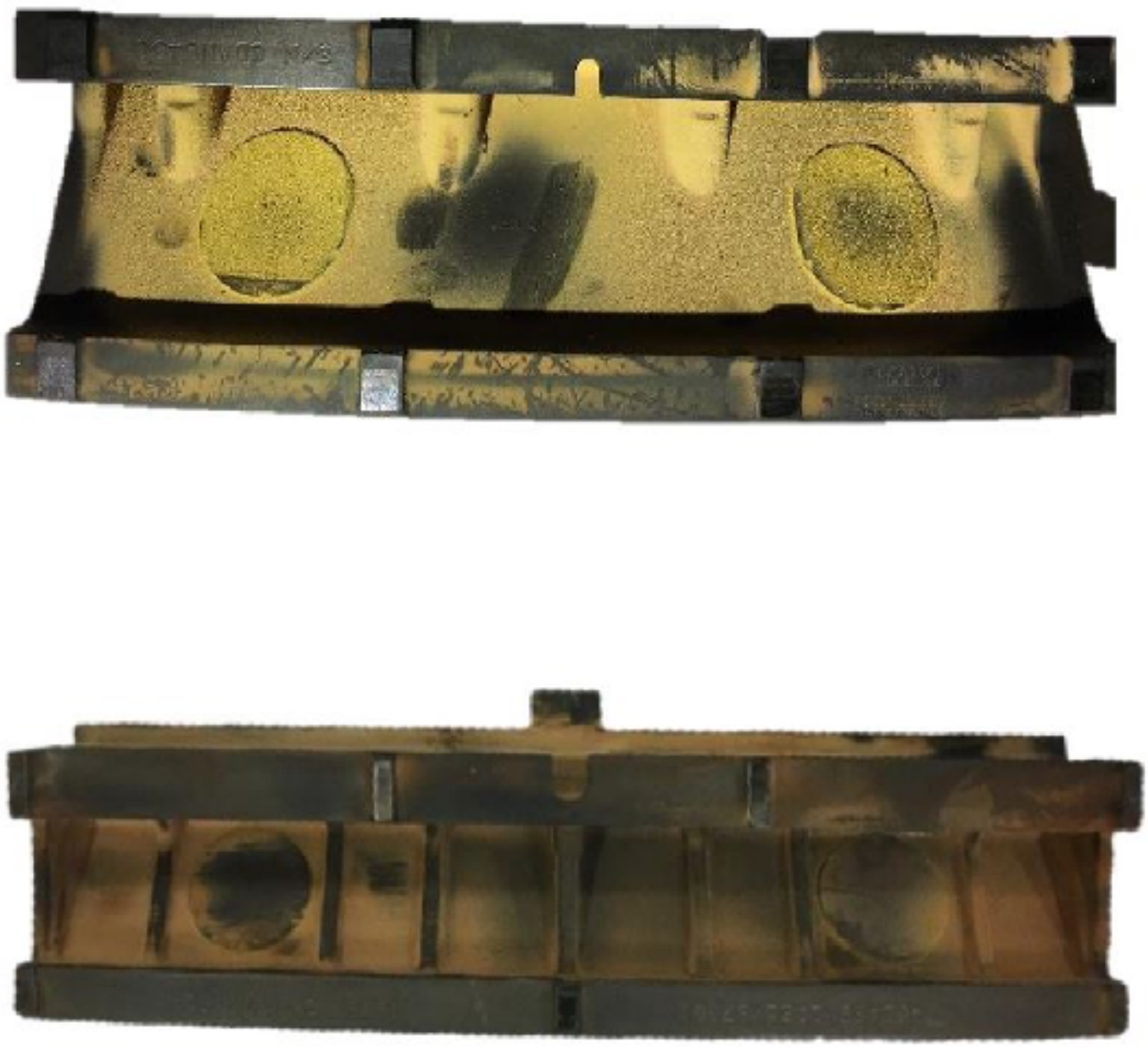

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Figure 4 Photos of Engine Components Containing Residue that may Contain Hexavalent Chromium that is Loose/Powdery in Nature

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Figure 5 Photo of Completely Cleaned Engine Component Formerly Having Hexavalent Chromium Residue.