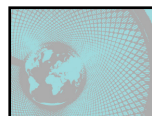
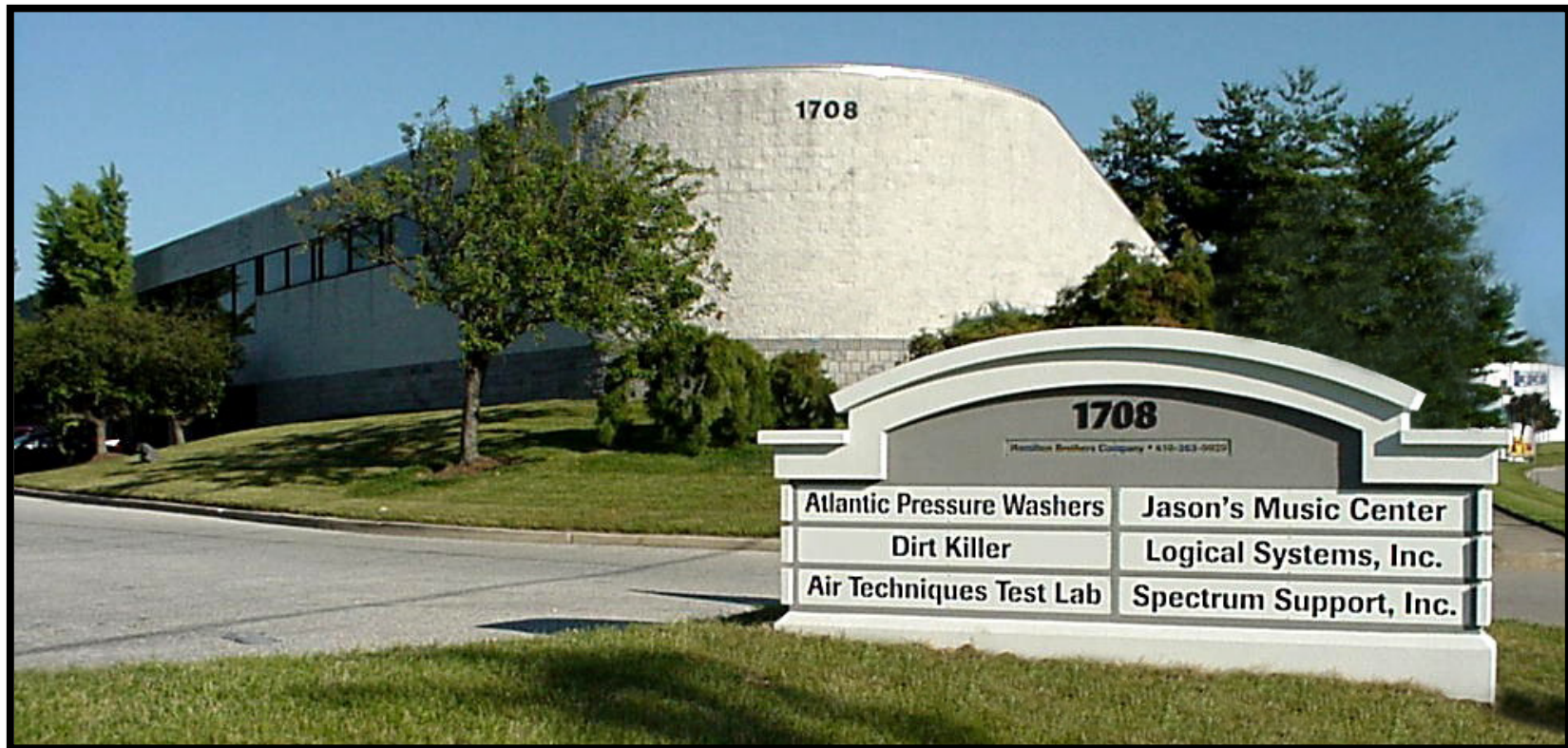


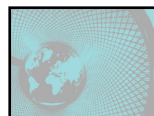
***Filter Test Facility
Report On The Testing of HEPA
Filters for the DOE
FY 2010 – FY 2nd Quarter 2012***

Air Techniques International Test Laboratory 1708 Whitehead Rd., Baltimore, MD 21207



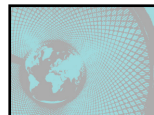
Air Techniques International Test Laboratory Overview

- Air Techniques International established an independent Filter Test Laboratory in Baltimore, Maryland
- DOE performs a ASME/ANSI NQA-1 Quality Audit
- DOE issued contract to ATI Filter Test Laboratory (ATITL) to perform tasks of the former DOE Filter Test Facility
- Secretary of Energy Memo, June 4, 2001, the Filter Test Lab is to be utilized by DOE Site Contractors
- Testing service is provided to the DOE complex
- Inspection and testing is performed in accordance with what DOE contractors specify
- As a minimum, inspection and testing is performed in accordance with the DOE Standards and/or ASME AG-1 and additional site specific requirements.
- DOE work has top priority



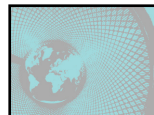
DOE SITES & CONTRACTORS

- Argonne National Laboratory
- B&W Y-12
- Brookhaven National Laboratory
- Hanford Site
 - Pacific Northwest National Laboratory Battelle Northwest
 - CH2M Hill PRC
 - Washington River Protection Solutions
- Idaho Site
 - Idaho National Laboratory/Battelle Energy Alliance
 - Bechtel BWXT Idaho
 - Idaho Treatment Group
- Jefferson Laboratory
- Los Alamos National Laboratory
- Lawrence Livermore National Laboratory
- New Brunswick Laboratory



DOE SITES & CONTRACTORS

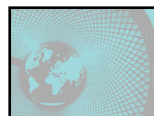
- Mississippi State University
- Nevada Test Site
- Oak Ridge National Laboratory UT Battelle
 - Isotek Systems LLC
 - WAI Tru Project
- Pantex B&W
- Paducah
- Portsmouth B&W Conversion Services
- Sandia National Laboratory
- Savannah River Nuclear Solutions
- West Valley Environmental Services



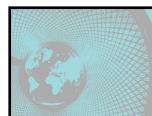
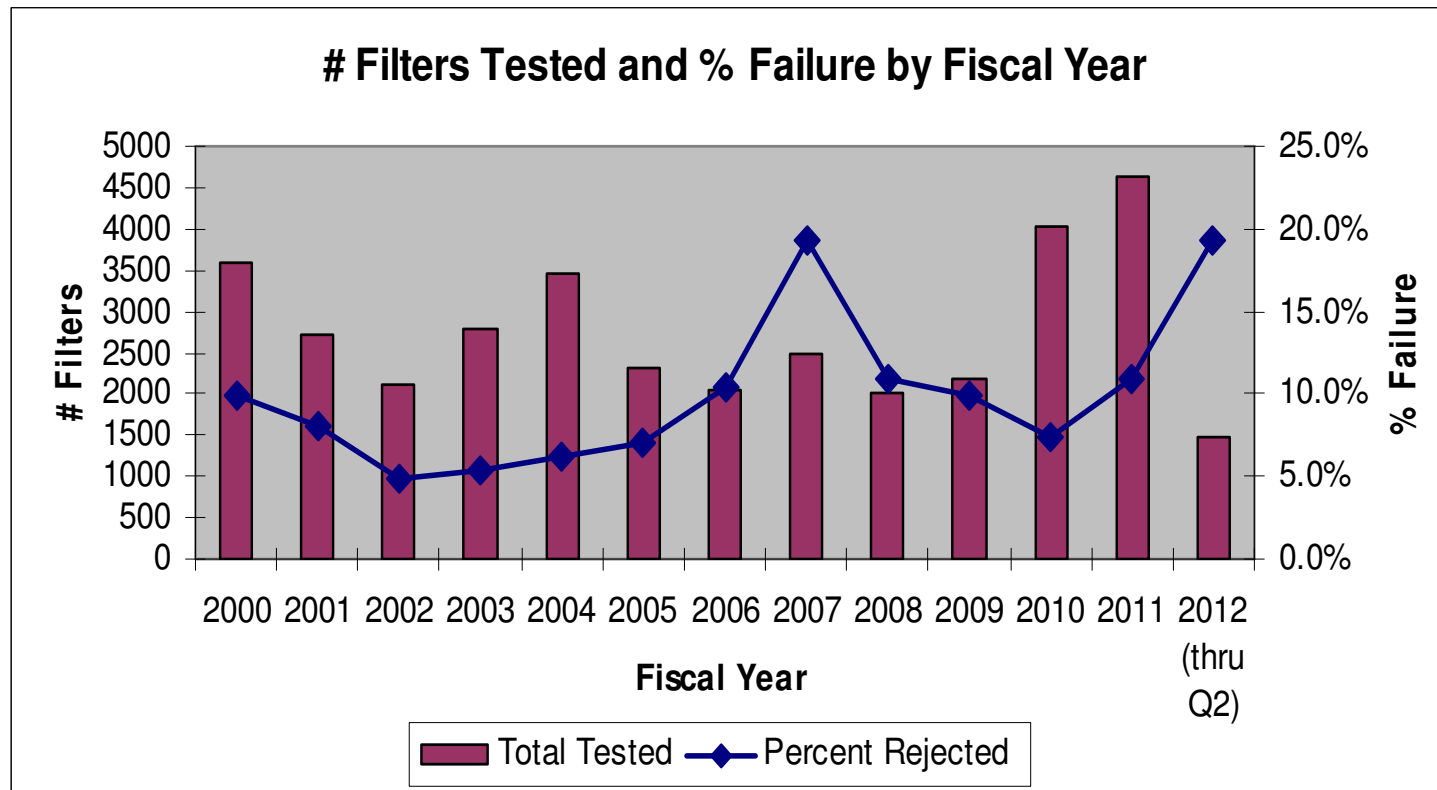
Summary Of Filter Rejections

Fiscal Year (Oct 1 – Sept .30)	Number Tested	Number Rejected	Percent Rejected
2000	3597	354	9.8%
2001	2722	217	8.0%
2002	2127	102	4.8%
2003	2772	151	5.4%
2004	3441	215	6.3%
2005*	2331	168	7.2%
2006	2044	213	10.4%
2007	2472	485	19.6%
2008	2012	220	10.9%
2009	2175	217	10.0%
2010	4025	299	7.4%
2011	4636	477	10.9%
2012 (thru 2 nd Quarter)	1460	281	19.3%

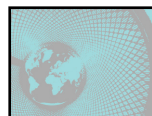
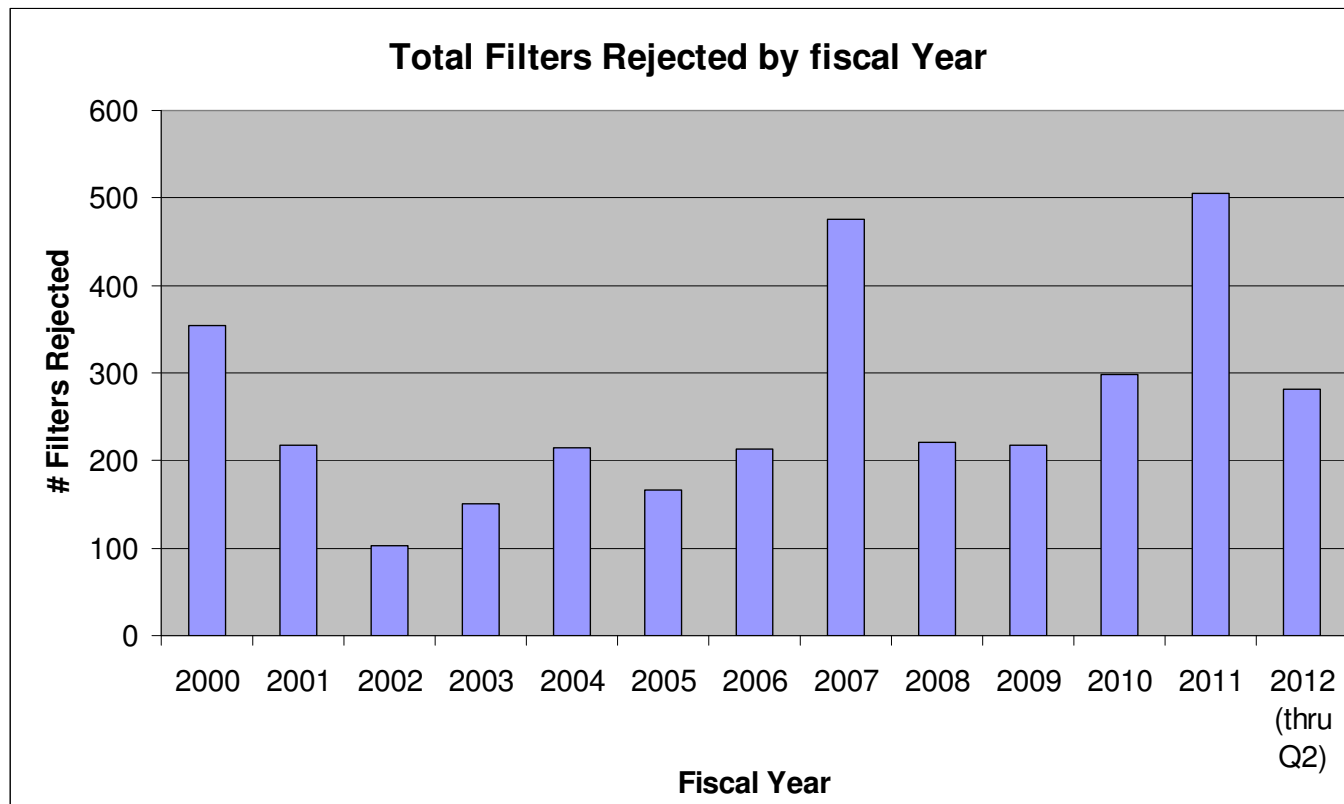
•*Test facility closed 5 months for relocation and audit



HEPA FILTERS TESTED / REJECTED



HEPA FILTER REJECTION BY NUMBER



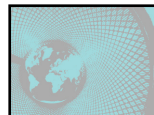
Rejection Categories

Resistance: Criteria of ≤ 1.0 " w.g. for filters rated ≥ 500 -1250 cfm and 1.3" w.g. for filters rated ≤ 125 - ≥ 2000 cfm

Penetration: $\leq 0.03\%$

Manufacturing Defects:

- Filter Frame/Case Defective
- Gaskets
- Faceguard installation
- Filter pack installation
- Defective media
- Sealant problems
- Separators
- Missing rivets or bolts
- Dimensional tolerance
- Out of square measurements



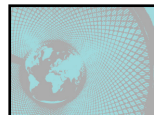
Rejection Categories

P.O/ Specification Discrepancy:

- Missing UL labels
- Labeled incorrectly
- Filters rated incorrectly
- Wrong model number
- Packaging

Shipping Damage:

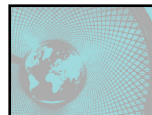
- (Inspect Damage to Shipping Crates, Pallets & Filter Cartons)
- Reject Filter when Damaged



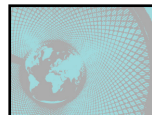
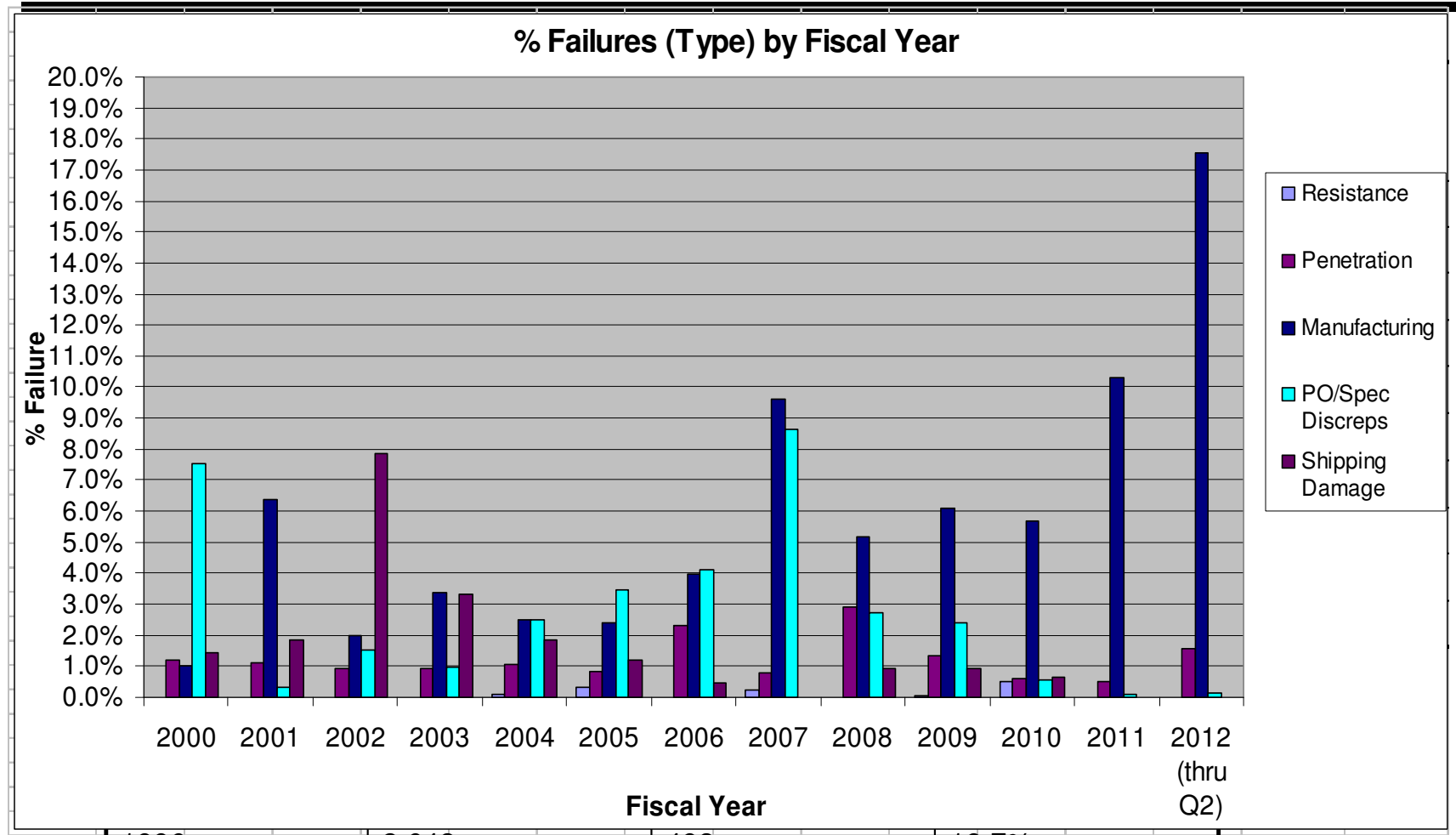
Summary Of Filter Rejections

Fiscal Year	Resistance	Penetration	Mfg. Defects	P.O. /Spec.	Shipping Damage	Total
2000	0	43	36	270	5	354
2001	0	30	174	9	4	217
2002	0	20	42	32	8	102
2003	0	26	93	27	5	151
2004	3	36	86	86	4	215
2005*	8	19	56	81	2	168
2006	0	47	81	84	1	213
2007	6	19	237	214	0	485
2008	0	59	104	55	2	220
2009	1	29	133	52	2	217
2010	21	25	228	23	2	299
2011	1	23	477	4	0	505
2012 (thru 2 nd Quarter)	0	23	256	2	0	281

•*Test facility closed 5 months for relocation and audit

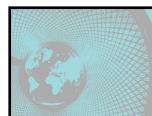


HEPA FAILURES BY TYPE

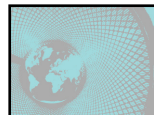


Summary Of Manufacturing Defects

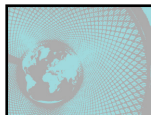
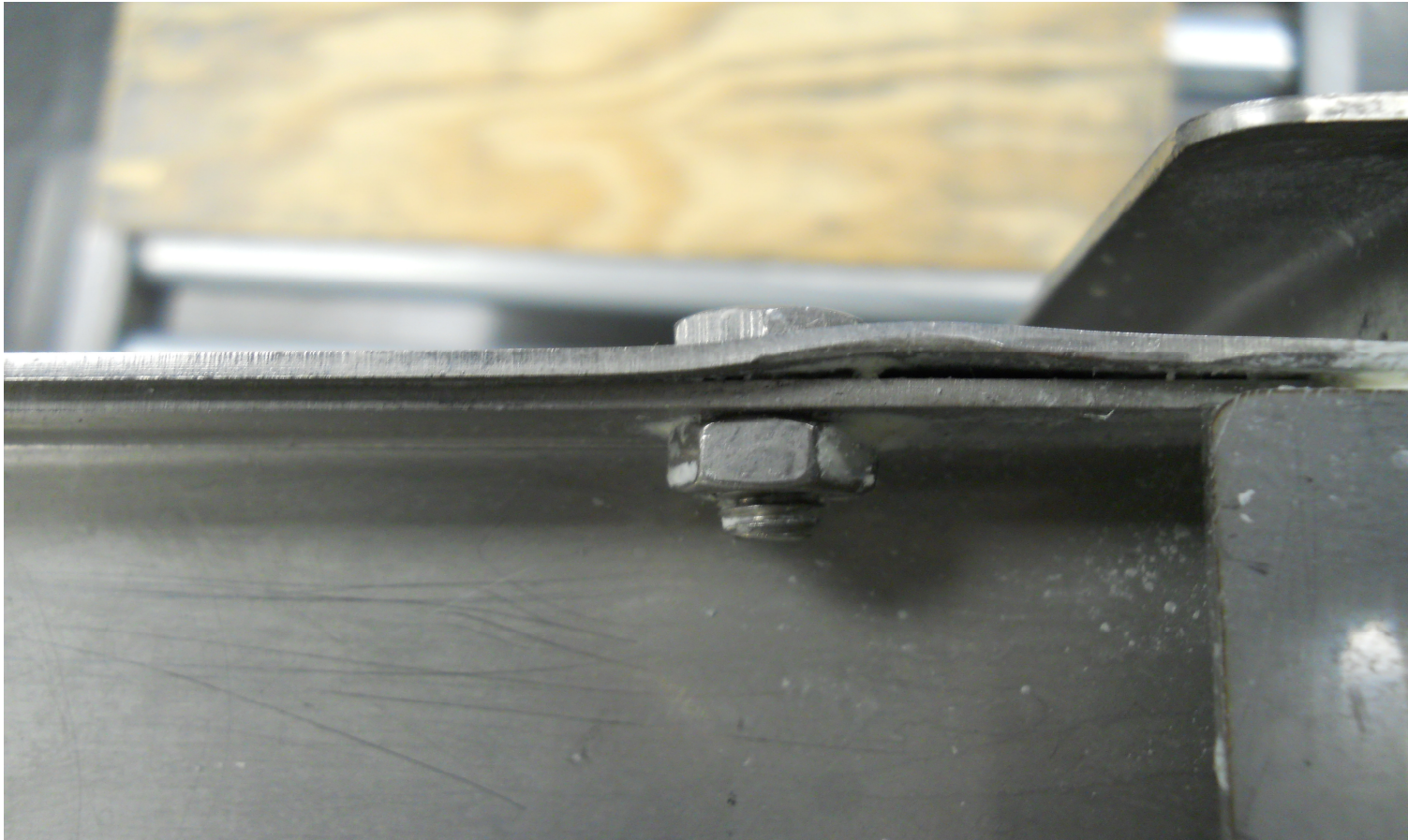
Mfgr. Defect	2010 1st	2010 2nd	2011 1st	2011 2nd	2012 1st	Percent
Filter Case Defective	3	0	0	0	2	0.5%
Gaskets	7	72	325	0	185	61.4%
Faceguard Installation	7	33	32	7	3	8.5%
Filter Pack Installation	6	0	0	0	0	0.6%
Defective Media	1	0	4	2	7	1.5%
Sealant Problems	0	0	0	0	2	0.2%
Missing or Loose Rivets/Bolts	0	0	0	0	1	0.1%
Out of Square	32	46	29	31	40	18.5%
Dimensional Tolerances	0	0	0	3	0	0.0%
Workmanship	3	0	23	17	2	4.7%
Fluid Seal	4	13	7	0	12	4.0%
Total	63	165	420	57	256	100%



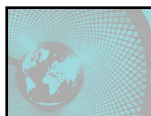
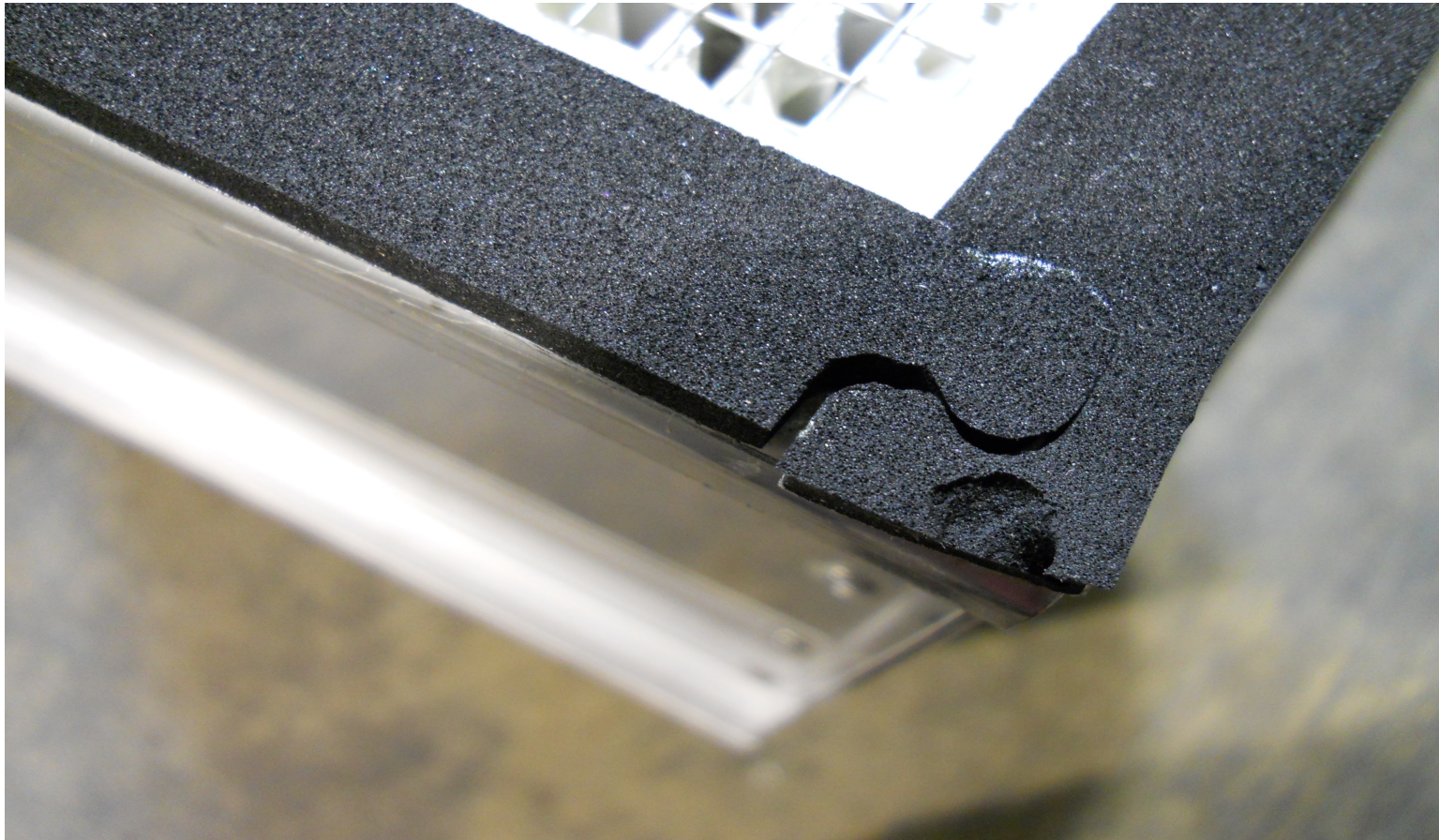
REJECT EXAMPLES



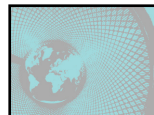
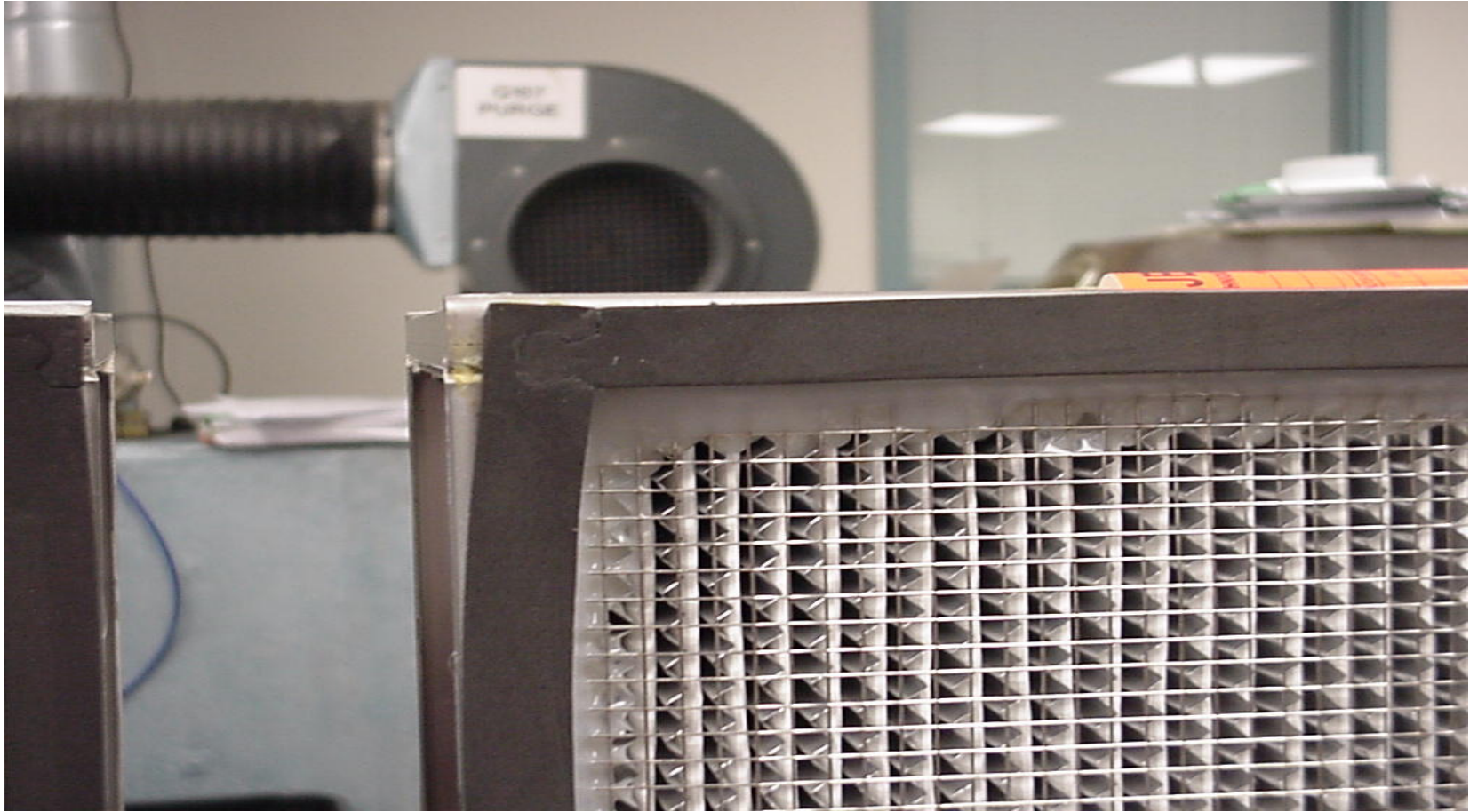
BENT CASE- REJECT



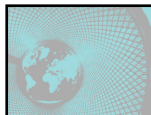
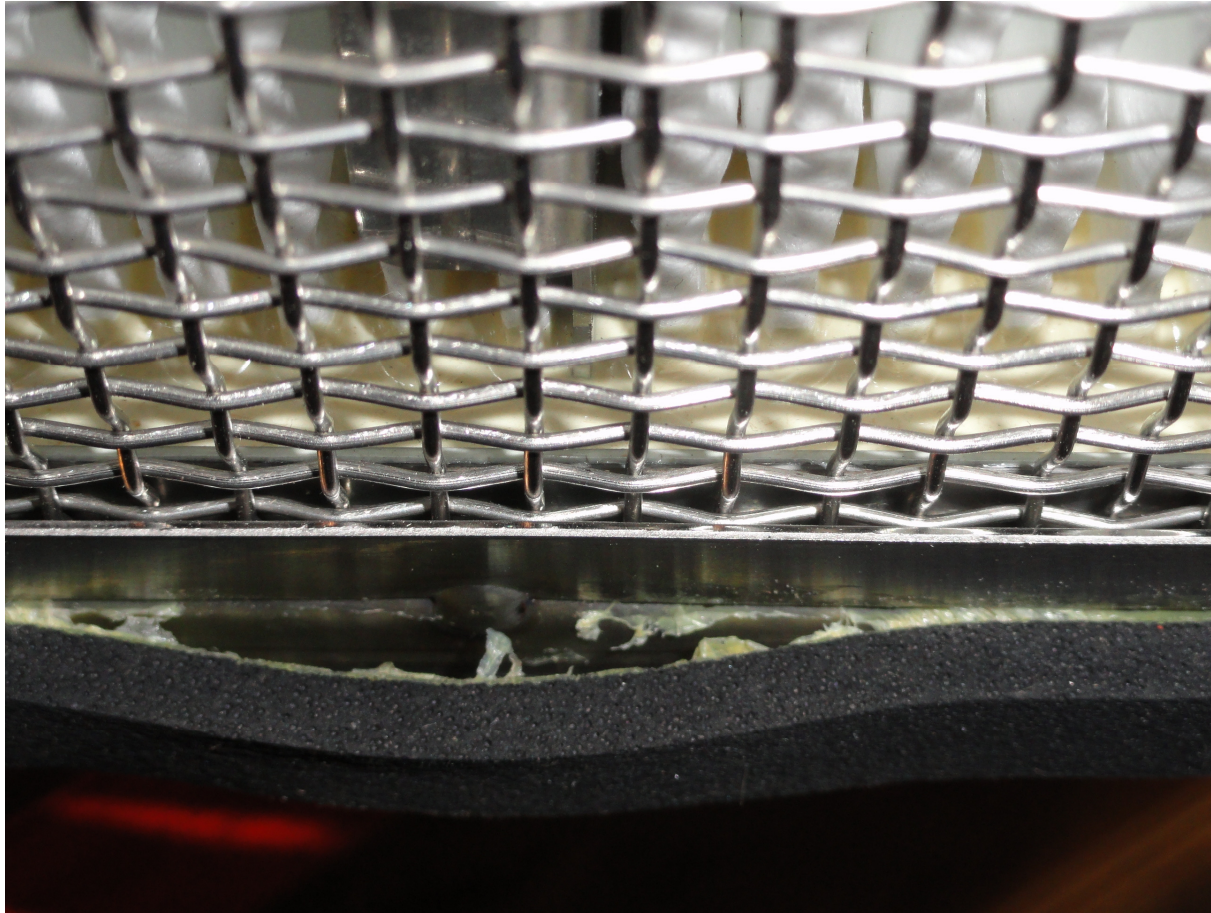
GASKET - REJECT



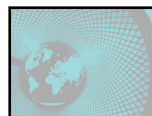
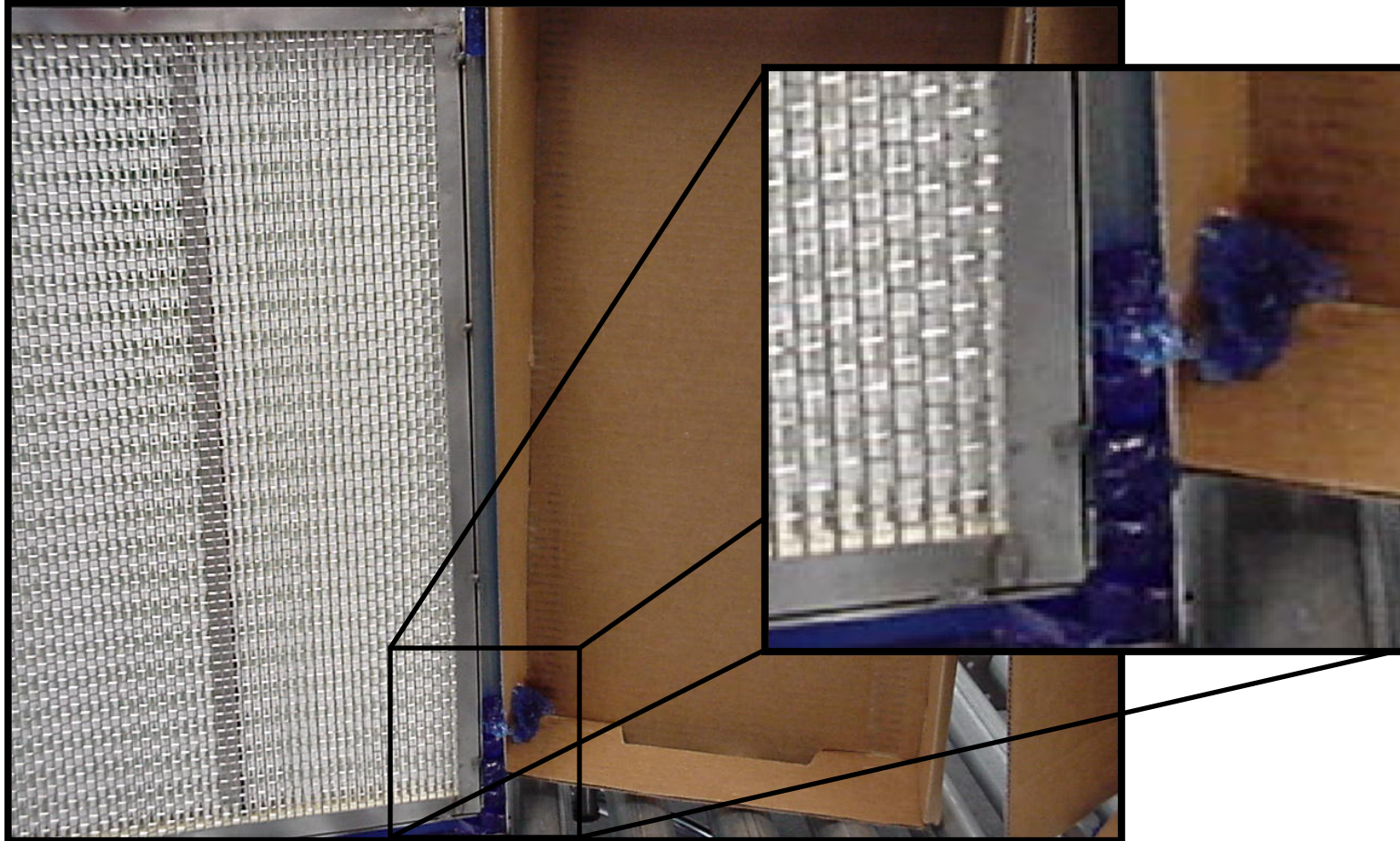
GASKET - REJECT



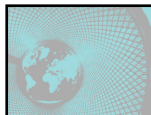
LOOSE GASKET - CASE - REJECT



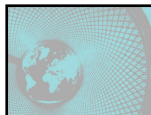
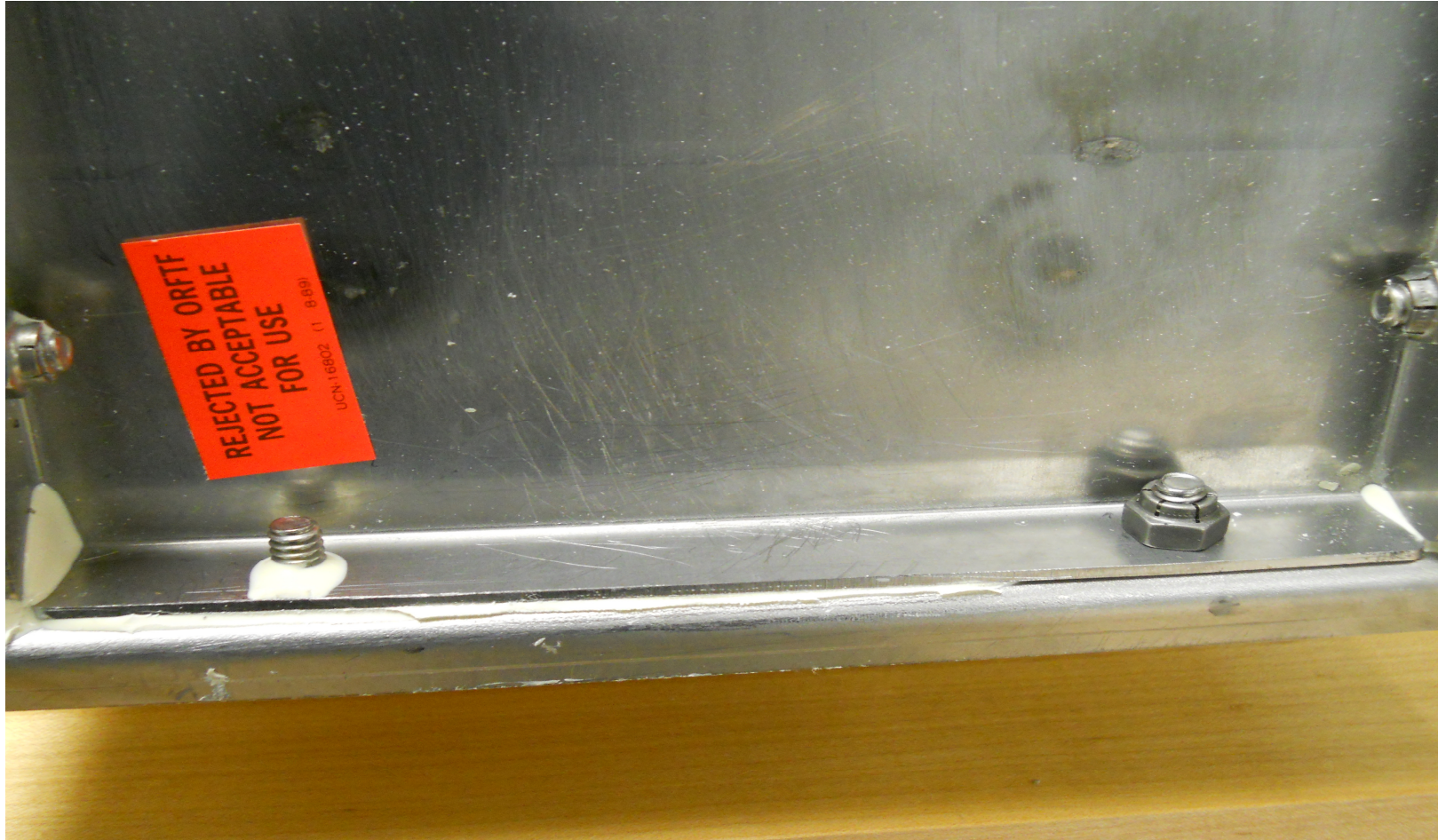
FLUID SEAL - REJECT



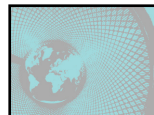
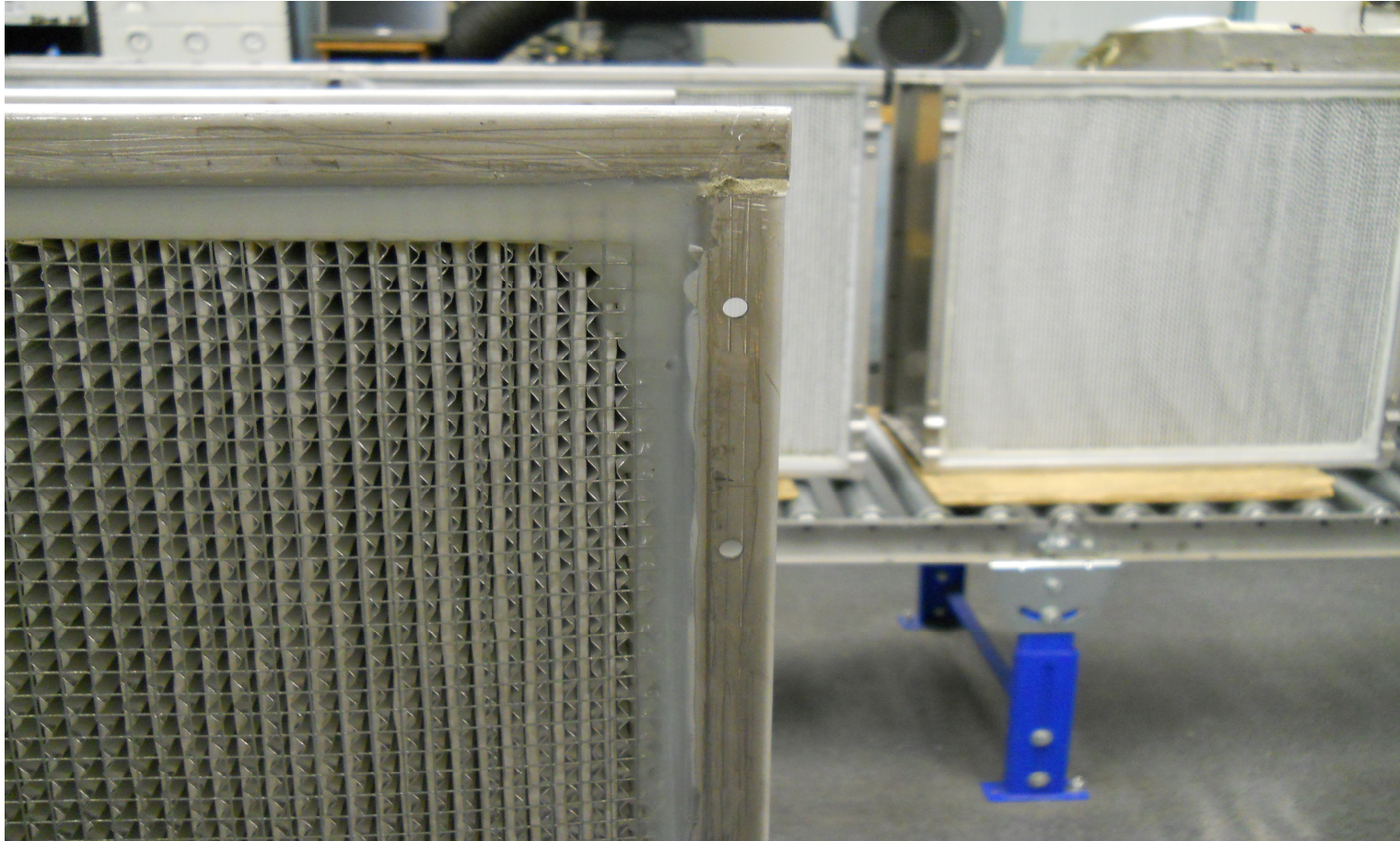
FACEGUARD – EXPOSED STAPLE - REJECT



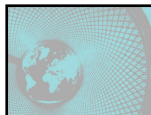
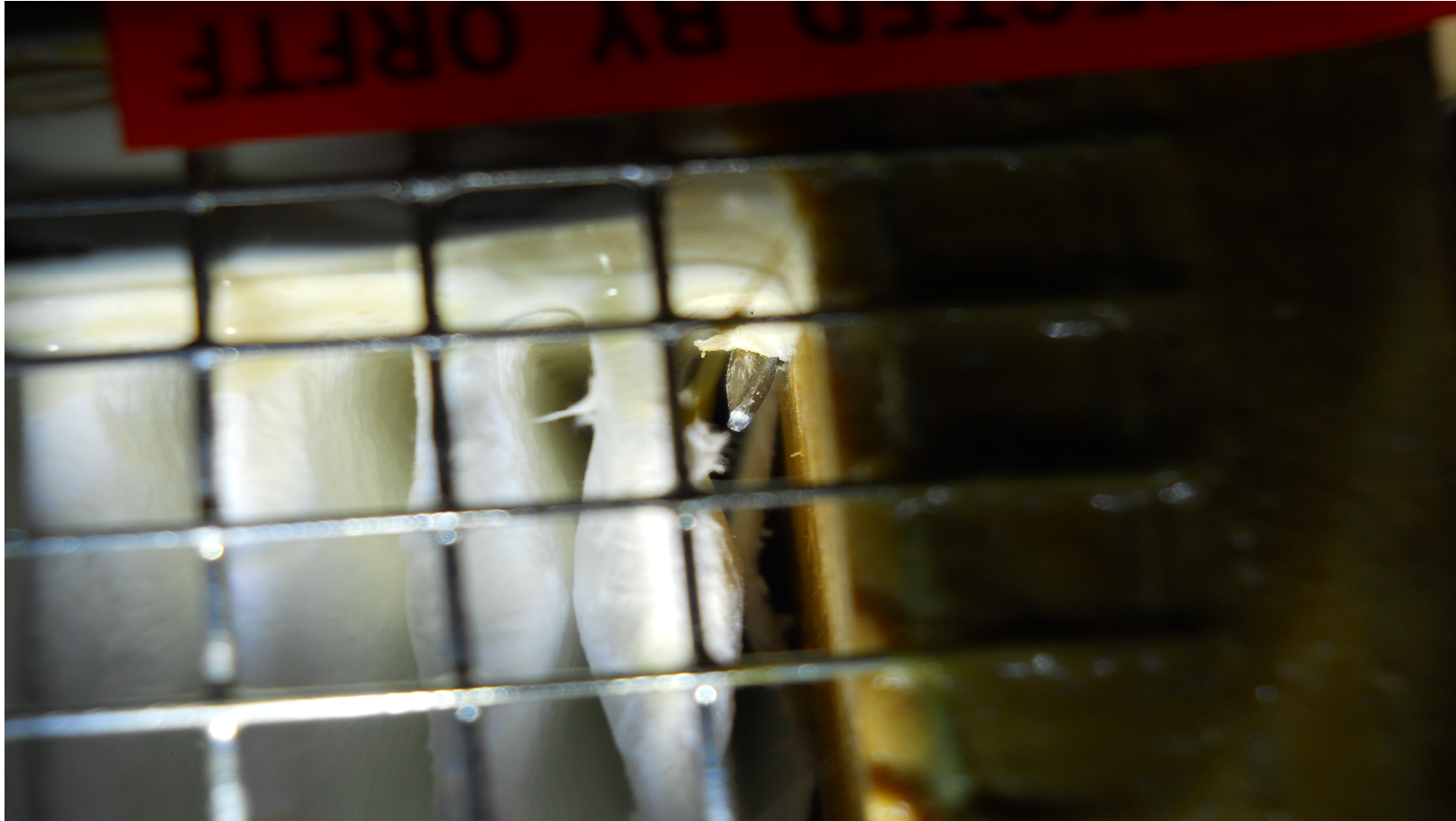
WORKMANSHIP - MISSING BOLT - REJECT



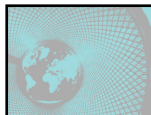
WORKMANSHIP – MISSING CLIP - REJECT



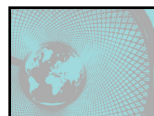
WORKMANSHIP – EXPOSED NAIL REJECT



FILTER CRATE – CONCEALED DAMAGE

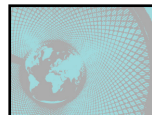


FILTER CRATE – CONCEALED DAMAGE



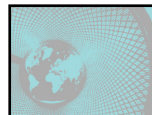
Summary

- ALL MANUFACTURERS' FILTER QUALITY HAS VARIED DURING LAST TWELVE YEARS AS SHOWN BY THE FILTER TEST FACILITY (FTF) REPORTS
- THE MAIN CAUSE FOR FILTER REJECTION CONTINUES TO BE MANUFACTURING DEFECTS
- A NEED FOR CLARIFICATION OF METHODS FOR INSPECTION FOR FTF, MANUFACTURER'S AND DOE CONTRACTOR
- A NEED FOR QUALITY CONTROL INSPECTIONS OF MANUFACTURERS IN ADDITION TO AUDITS



Any Questions?

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- Christopher Hart, Lab Manager
- Julie Stormo, Technician
- Jose Rivera, Technician
- David Crosby , Consultant
- Jan Fretthold, Consultant
- ATI Test Lab e-mail address ATITL@atitest.com
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