CII RT 264 Update

Product Integrity Concerns

Beyond The Threat of Counterfeit Products in Construction

NWCCC Meeting – Seattle, WA

May 31, 2012

Agenda

- **Review of RT 264**
  - Research and Methodology
  - Findings
  - Case Studies
- **What's happened since Then??? Actions by Industry**
  - Mustang
  - Phillips 66 - ConocoPhillips
  - Fluor
- **Q&A**

Recent Webinar Presenters

- **Panelists**
  - Max Casada – Phillips 66
  - Ted Kelly – Mustang
  - Jay Pendergrass – Fluor Corporation

- **Moderator**
  - Ed Ruane – Fluor Corporation

U.S. Federal Aviation Authority estimate:

Each year, **2% of 26 million parts** installed on airplanes are counterfeit.

These **520,000 counterfeit parts** pose a real threat to safety.

Introduction

- **Message is NOT to cease doing business with any country or global region.**
  - goods of excellent quality and integrity are available from all nations and regions
  - possessing the option of procuring from all countries and global regions is a key to a contractor's competitiveness and an owner's best interests

- **Research effort, research summary, and the presentation are meant to improve product integrity in the global marketplace.**

RT 264 Purpose

- **Target counterfeit and/or suspect goods and materials to narrow size and range of investigation.**
- **Provide in-depth investigation of counterfeiting issues affecting E&C industry.**
- **Increase awareness of threat in all segments of industry.**
- **Focus attention on best methods for mitigating and overcoming threat.**

Research Questions

- **Is this a problem?**
  - If so, how big a problem?
- **What countries are the sources of the counterfeit construction items?**
- **What particular items constitute the problem for the construction industry?**
- **What are the most likely destinations for problem items?**

Research Field Team

Research Team Members

- Max Casada, ConocoPhillips
- Cui Shuai, U. of Florida
- Tielman de Villiers, Bateman Engineering
- Russel Dingman, U. of Florida
- Jim Dvorscek*, Abbott
- Fang Dongping, Tsinghua U.
- Sarah Farmerie, U. of Florida
- Mark Fleet, Sunoco
- Ted Kelly, Mustang
- Edward Minchin, Jr., U. of Florida
- Vince Molina, Air Products
- Brian Monks, Underwriters Laboratories
- Pan Jiayi, Tsinghua U.
- Jay Pendergrass, Fluor
- Tan Zhe, Tsinghua U.
- David Traffanstead*, Jacobs Co-Chair
- Russell Walters, U. of Florida

Team Co-Chair

Research Approach/Method

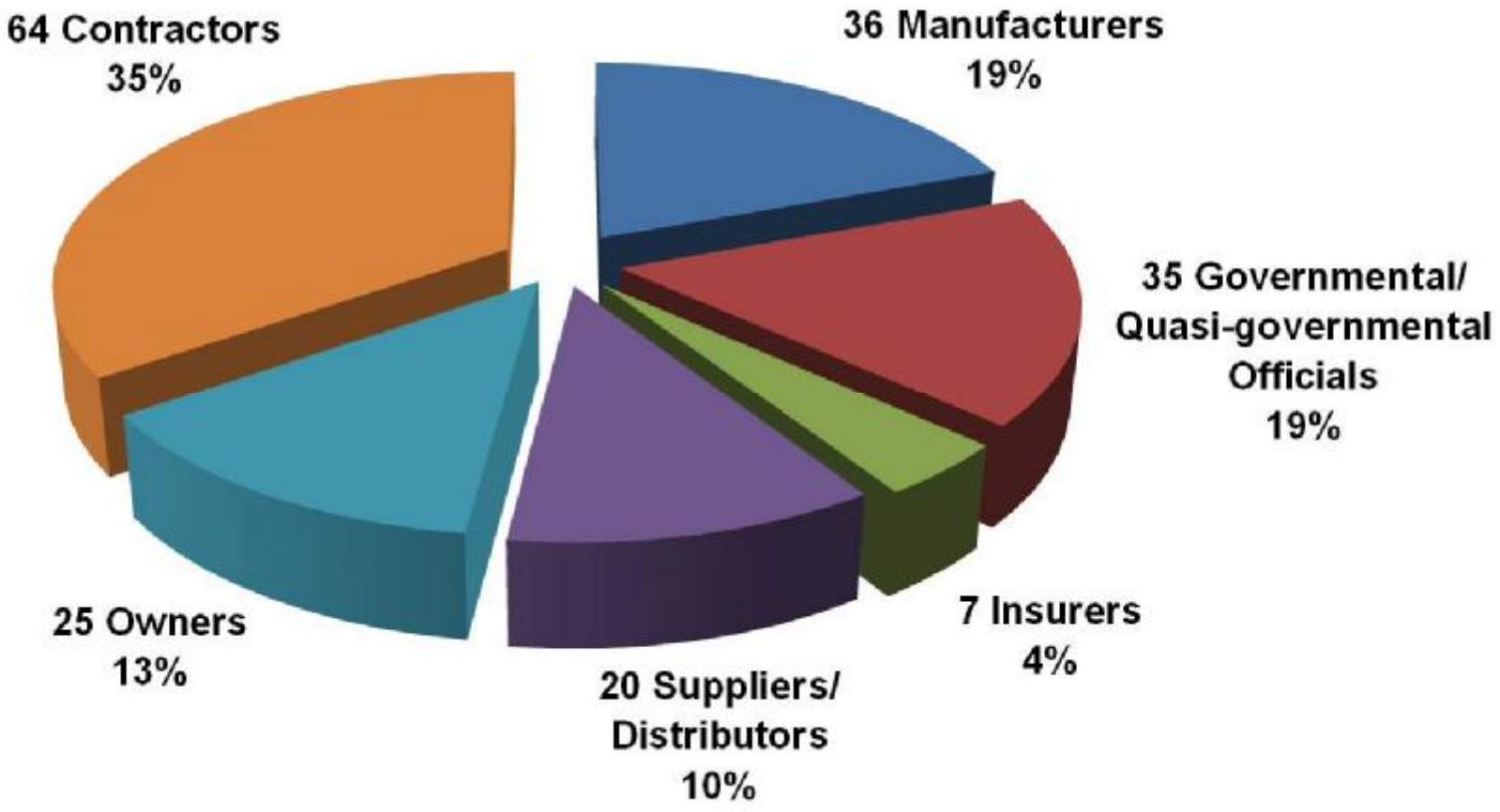
- **Interviews**
  - No survey!
- **Literature**
  - At outset, three documents on Internet
    - Many more posted during the research
- **Focus on “Type B” counterfeiting**
- **Most sources spoke on condition of anonymity**
  - Some allowed organization to be revealed
  - Causes lack of references and traditional citation on some points

Interviews

- **187 interviews**
  - Approximately 135 face-to-face
- **Standard interview instrument**
- **Four groups of organizations**
  - Manufacturer/supplier/distributor
  - Contractors/owners
  - Government/quasi-govt. agencies
  - Insurance companies

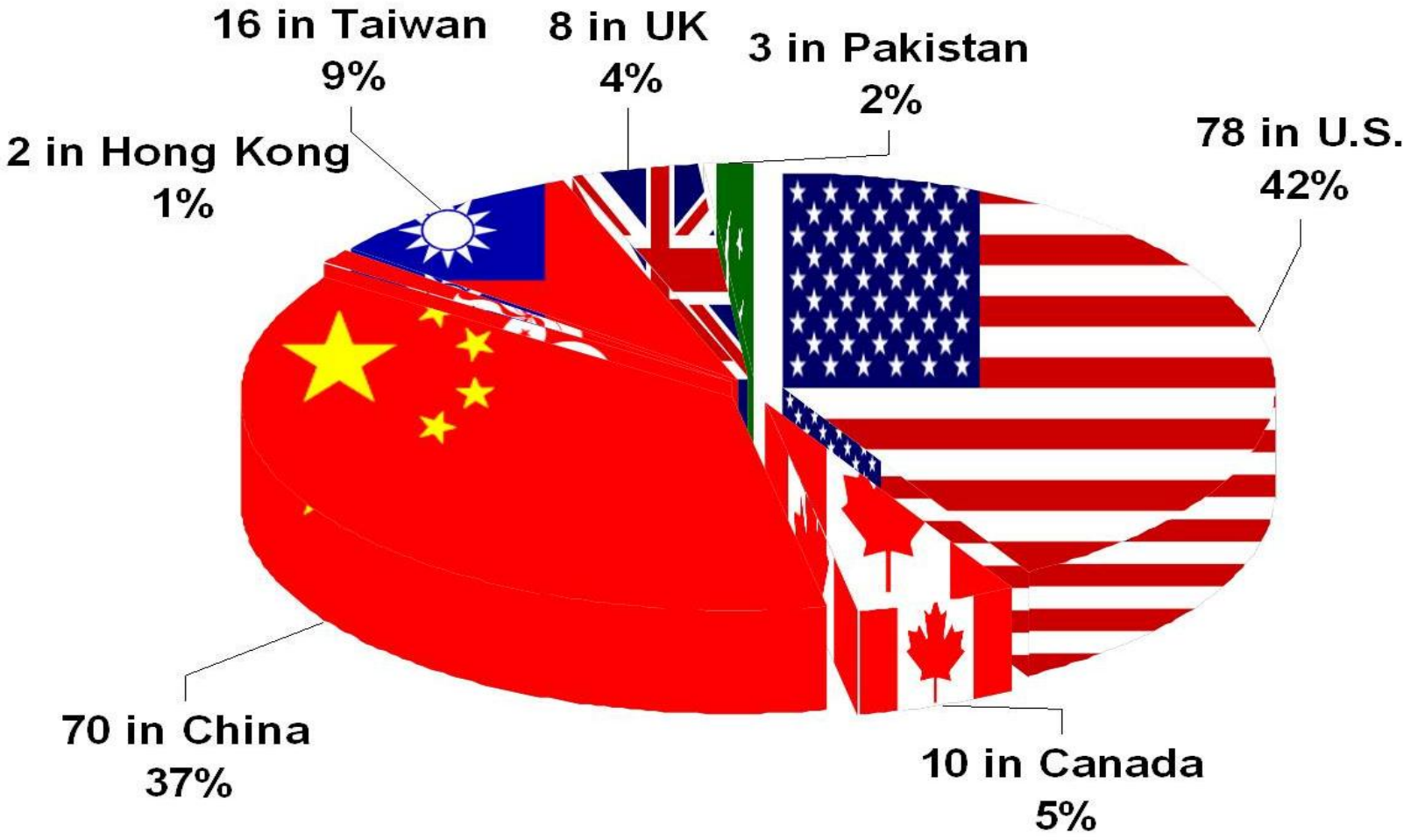
Study Interview Analysis

- **187 interviews**



Study Interview Analysis

- **187 interviews - 19 major cities, seven countries**



FINDINGS

76% of U.S. interviewees reported having experienced counterfeiting within their organizations.

Destination, and Order Locations of Counterfeit Goods

Countries	Source Country Frequency	Destination Country Frequency	Order Location Frequency
Canada		8	5
China	35	12	20
India	7		
Italy	2		3
Middle East		2	3
Singapore		2	
US	6	40	38
Mexico, Taiwan, Romania, S. Korea	2 each		

Common Methods of Counterfeiting in the Construction Industry

Counterfeit Method	Frequency	Percent*
Stamp	30	24%
Documentation	29	24%
Brand	23	19%

** percentage of reported counterfeit items that were fraudulently represented by this means*

Most Commonly Counterfeited Construction Items

Counterfeited Items	Frequency
Steel	**17**
Valves	**13**
Pipe	**12**
Fasteners	**10**
Circuit breakers	**7**
Rotating equipment parts	**6**
Electric tools and small equipment	**6**
Pipe fittings	**6**
Pressure vessel	**5**
Cement	**4**
Electrical conduit fittings	**3**
Electrical equipment, flanges, rebar, waterproofing, welding rods	**2 each**
Capacitors, cement kiln, copper wiring, door panic bars, fan belts, gaskets, glass, ground rods, hand tools, heavy equipment parts, masonry, network routers, O-rings, paint, safety equipment, sprinkler heads, subsea system, tires, titanium bar stock, turbine, blades, weld wire, conduit fittings, switchgear, refractory	**1 each**

Countries Seen as the Most Dangerous Source Countries by Industry

Country	Number of those Citing
China	28
India	8
Hong Kong	4
Russia	4
Eastern Europe	3
Indonesia	3
Africa, Mexico, Taiwan, Thailand, Vietnam	2 each
Brazil, Cuba, France, Iraq, Middle East, S. America, S. Korea	1 each

Effectiveness of Third-party Validation

	Frequency	Percent
Very Effective	32	55%
Partially Effective	23	40%
Ineffective	3	5%

What We Found

- **Most counterfeit products are not 40-50% off.**
- **But lower prices motivate people to buy from China.**
- **Not everyone who buys from China is prepared to deal with the scope of Chinese counterfeiting. Third shift workers and other issues.**

What We Found

- **Four Chinese interviewees view counterfeiting as just one step in a company's climb from start-up to a thriving, legitimate business.**
- **Four Chinese interviewees believe that counterfeiting should be encouraged to stimulate local and national economies.**
- **Seventeen Chinese interviewees believe that, in China, third-party verification services are worthless**
- **In China, there are no written standards for consulting services in many areas of consulting.**

What We Found

- **“We don’t have that problem.”**
- **“We’ve used the same suppliers for 40 years.”**
- **Some AVLs don’t get updated very often.**
- **Think counterfeiting refers to currency.**
- **People are confident that their quality program will save them.**

What We Found

- **Reward far exceeds risk for counterfeiters.**
  - Overwhelming opinion of interviewees
- **Customs officials don't know what to look for.**
  - *"Construction items are not on our radar….We don't know what to look for…Please train us."* Port Master, Port of NJ
- **One large (CII member) owner has had "five incidents (of counterfeiting) with a financial impact exceeding $10 million each, and 13 incidents that had a financial impact between $1 million and $10 million each."**

Organized Crime

- **Level of profitability is relatively high, while the level of risk is relatively low.**
- **Law enforcement tends to focus less on these types of crimes and penalties are less severe.**
- **Now the link between counterfeiting & organized crime is broadly acknowledged.**
- **New opportunities deriving from the globalization of markets and the widespread distribution of technologies.**

(Source: Interviews with Nat'l Manufacturers Advocacy Group and U.S. State Dept; United Nations Interregional Crime and Justice Research Institute (UNICRI))

Case Studies

Threat of Explosions and Fire

- **Explosions from counterfeit circuit breakers could kill anyone close to the explosion, then the fire.**

  - NEMA

Case Study: U.S. Govt. Facility in Europe

- **Installation of 48 specific name-brand telecommunication routers.**
  - Contractor (a CII member) purchased from a U.S. Fortune 500 authorized distributor of such branded products.
  - Distributor had acquired units from supposedly authorized master distributor of the specified manufacturer.
- **The specified manufacturer had (and has) authorized manufacturing facilities in China.**
  - All 48 units supplied were labeled as Chinese in origin.
  - The packaging and accompanying documentation were examined by the contractor upon receipt at the project site; were found to be perfectly consistent with similarly provided products.

(Sources: Interviews with contractor, FBI, and U.S. State Department)

U.S. Govt. Facility in Europe, cont.

- **Within the first few months of service, 12 of the devices progressively failed.**
  - incubation period
- **All 48 units confirmed to be counterfeit.**
- **Not only were they counterfeit, but when the serial numbers were examined, they were all valid.**
  - Counterfeiters were so sophisticated that they had applied serial numbers of identical genuine devices whose original purchaser(s) had not bothered to register them.
- **Subsequently learned from State Dept. interview that the U.S. military has purchased "over 400" counterfeit routers from the same supply network.**

Steel Pipe

- **Piping grade P91, P92, and WB36 forgeries from China resulted in a main steam line rupture at the Huadian Datong 2 x 300 MW power plant.**
  - Pipe was marked as made under the name SMANT, USA.
  - Pipe had been manufactured in China, shipped to the U.S. for fraudulent stamping, then shipped back to China for installation.
  - Two workers were killed and one seriously injured.

(Source: Industry Alert)

Pressure Vessel

- Recently failed while under hydro test during post-fabrication testing.
- According to the interviewee, further investigation revealed that “(the mill) falsified records.”

(Source: Interview with Petrochemical Co., Insurance Co.; Industry Alerts)

- Manufactured in China; plate milled in China.

Pressure Vessel, cont.

- **Interviewee (CII member):**
  - "Additionally it appears API (American Petroleum Institute) gave the manufacturer a 'free pass' and no sanctions or penalty, unless there was a follow-up which I don't have."
  - Apparently this pressure vessel had reached **50% of the required test pressure** when the shell ruptured.
  - Metallurgical failure report is not available. However, the substandard welding shows that it is unlikely that this vessel would have conformed to any kind of pressure vessel code.
- **Heard almost identical story from insurance co. representative about another incident.**

Nuclear Power Plant

- **Counterfeit 5-inch stop-check valve was installed at a Southeastern U.S. nuclear power plant.**
  - One installed, one in power plant warehouse

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Legitimate (left) and counterfeit (right) five-inch stop check valves at southeast U.S. nuclear power plant.
One counterfeit valve had been installed in a non-safety application; a second was in inventory. NRC file photo.

API Coupling Manufacturer

- **Oil-well failure caused by counterfeit couplings resulted in $2 million loss, drawing the attention of federal authorities**
  - Counterfeiting detected by manufacturer, not FBI.
  - Took four years to prosecute.
  - **9-5/8” coupling:** originated from 10,655’ of rejected pipe stock
  - **2-3/8” coupling** – one of approx. 150,000 lbs of counterfeit couplings seized during search of manufacturer

(Source: FBI Case File)

THE UNITED STATES
DEPARTMENT of JUSTICE

Office of Public Affairs

FOR IMMEDIATE RELEASE Thursday, November 5, 2009

Defendants Sentenced to Prison for Role in Counterfeit Pipe Coupling Scheme

Hayden B. Greene, 32, of Tulsa, Okla., and James Robert Roy, 42, of Tomball, Texas, were sentenced today to 30 months and 15 months in prison, respectively, for conspiring to manufacture and sell counterfeit pipe couplings.

Greene and Roy were each also sentenced to three years of supervised release following their respective prison terms and ordered to pay $10,901 in restitution, jointly and severally with their co-defendant. Greene and Roy each pleaded guilty on Aug. 12, 2009, before U.S. District Judge Keith P. Ellison in Houston to one count of conspiracy to traffic in counterfeit goods and commit fraud.

In their plea agreements, Greene and Roy admitted that they and a co-defendant conspired in a counterfeiting scheme to manufacture and sell oilfield pipe couplings stamped with a certification mark owned and registered by the American Petroleum Institute (API),

So, what do we do?

Top Three Supply-chain Priorities

1. Know your **supply chain** intimately, from top to bottom.

2. Tighten security on your **supply chain**.

3. Educate everybody, especially people in your **supply chain**.

Ted Kelly

Global Procurement Manager
Wood Group Mustang

MUSTANG
Actions Underway

What We are Doing

- **Continue to Raise awareness in the organization and train on mitigating the threat.**
  - Engineering
  - Purchasing
  - Expediting
  - Supplier Quality Surveillance
  - Supplier Community
  - Project Management

What We are Doing

Engineering

- Review specifications to ensure that material composition is defined and industry standards are clear.

Purchasing

- Enhance prequalification process and update Supplier information regularly.

Expediting

- Expedite further into the supply Chain to:
  - Review Supplier Purchase Orders issued to sub-suppliers.
  - Verify material specifications have been passed onto sub-suppliers.
  - Verify origin of materials meet specification.

What We are Doing

Supplier Quality Surveillance

- Don't "Expect" what you Don't "Inspect"
- Enhance Supplier Quality Surveillance
  - Increase facility visits
  - Review material certifications for authenticity
  - Positive Material Identification (PMI) of critical components

Laboratory Chemical Analysis

ASTM A751

PMI Standards & Specifications

API-RP-578, MSS-SP-137, PFI-ES-42

Portable X-Ray Fluorescence

Portable Optical Emission Spectrometry

What We are Doing

Supplier Community

- Product integrity issues are not always counterfeit issues.
  - Investigate the problem to identify the source and avoid just having the supplier replace the product.
- It is a Global Supply Chain. Most manufacturers are sourcing materials from Low Cost Countries to reduce cost in a very competitive market place.
  - You can buy it next door, but chances are something is coming from elsewhere. KNOW your supply chain.

Project Management

- Budget for Expediting and Supplier Quality Surveillance to actively be engaged on the project to mitigate the risk of poor quality or counterfeit materials.

ConocoPhillips

Max Casada

Global Quality Manager
Phillips 66

Phillips 66 / ConocoPhillips Actions Underway

What We are doing

General Actions

- Communicated the findings of RT264 across the organization with particular emphasis to Engineering, Projects, Quality, and Procurement.
- Monitor for behaviors that would put supply chain at risk (e.g. ordering outside defined plans)

Inspection/ Testing

- PMI – requiring PMI for all alloy and have implemented a 100% verification of PMI in the field.
- Traceability required on components and clear expectations on certification of test records/ documentation (BS EN 10204:204 type 3.1 or 3.2).

What We are doing

- **Supplier Quality Management**
  - AVL -- Enhanced the AVL (known as PMFL) by going deeper to assure that manufacturers are listed/ qualified to a site. Moving to use Local DUNS #'s & improved audit plan.
  - Sub-supplier Awareness – Have increased expectations to provide listing of qualified suppliers for key components. Require approval prior to any changes. (e.g. foundries and forgemasters)
  - Implementation of Supplier Quality Alert process to screen, validate, and communicate internal and external quality incidents.
  - Development of transparent Non-conformance reporting system to allow documentation and communication of counterfeit, fraudulent or substandard items.

What We are doing

- **Supplier Chain/ Procurement**
  - Reduction of Sourcing Base – Focusing to fewer manufacturers on critical items. Assuring ability to meet in-country use guidelines and global demand.
  - Clear awareness of risk potential introduced by distributor arrangements; seek to maximize direct purchases. Evaluate any key distributors management of “returns”.
- **Engineering/ Projects**
  - Enhanced expectations for technical procurement specifications including use of detailed testing, documentation, etc. requirements.
  - Seamless workflow between Quality and Engineering; integrated Supplier Quality process using Commodity Engineers concept.

What We are doing

Industry Groups

- Encouraging reporting – Encouraging certification bodies to provide more clear means of communicating cases of counterfeit or fraudulent activities.
- Promoting that industry communication of counterfeit incidents is parallel to communication of safety events.
- Providing resources to Industry Forums to increase awareness of counterfe
  e.g. Valve World America, VMA Forum, etc.

FLUOR®

Jay Pendergrass

Executive Director - Procurement
Fluor Corporation

FLUOR
Actions Underway

Supplier Quality Improvement

Deliver to Client Expectations

1. **Educate clients on the threats and get early alignment on level and types of surveillance strategies required given specific scope of supply on project.**
2. **Use proven Fluor practices for qualifying suppliers and sub-suppliers:**
   a. Perform Plant Surveys and Evaluations of Supplier Quality System (ESQS) by SQS direct-hire personnel
   b. Verify country of origin and material supplied by requesting Material Test Reports (MTRs)
3. **Evaluate non-traditional suppliers with Fluor's Supplier Pre-Qualification Program via**
   a. Desktop analysis
   b. Facility site visits by SQS personnel
4. **Report counterfeiting and other supplier abnormalities via Fluor's Issues, Alerts and Warnings global database.**

Align with Project Team

1. **Raise awareness internally across Fluor disciplines.**
2. **Enhance Fluor procedures to address accountabilities of Project Management, Engineering, Procurement and Construction in SQS activities – Supplier Quality is a team sport!**
3. **Include hours in the project budgets for these critical activities.**
4. **Evaluate suppliers via Fluor's Supplier Performance Measurement System by procurement, engineering, quality and construction personnel and use these ratings to determine future bid opportunities.**

Optimize Staffing

1. **Enhance surveillance strategy for critical orders in low-cost countries:**
   a. Increase surveillance levels of effort
   b. Staff the lead SQS resident with a non-national to reduce the likelihood of intimidation
2. **Train SQS personnel specifically around hazards of counterfeit goods and the most common methods to enter the supply chain.**
3. **Support industry certifications for SQS personnel.**

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BACK-UP SLIDES

Types of Counterfeiting

- **Type A**
  - Really good stuff
    - Not as dangerous
  - Not as prevalent
    - Not as much profit to be made
- **Type B**
  - Looks authentic
  - Fits and seems to work well for a short time
    - incubation period
  - Passes typical industry QA/QC testing
  - Often fails under normal operations
- **Type C**
  - Junk
  - Anyone can see that it is not authentic

The Counterfeit Game

A question for you…

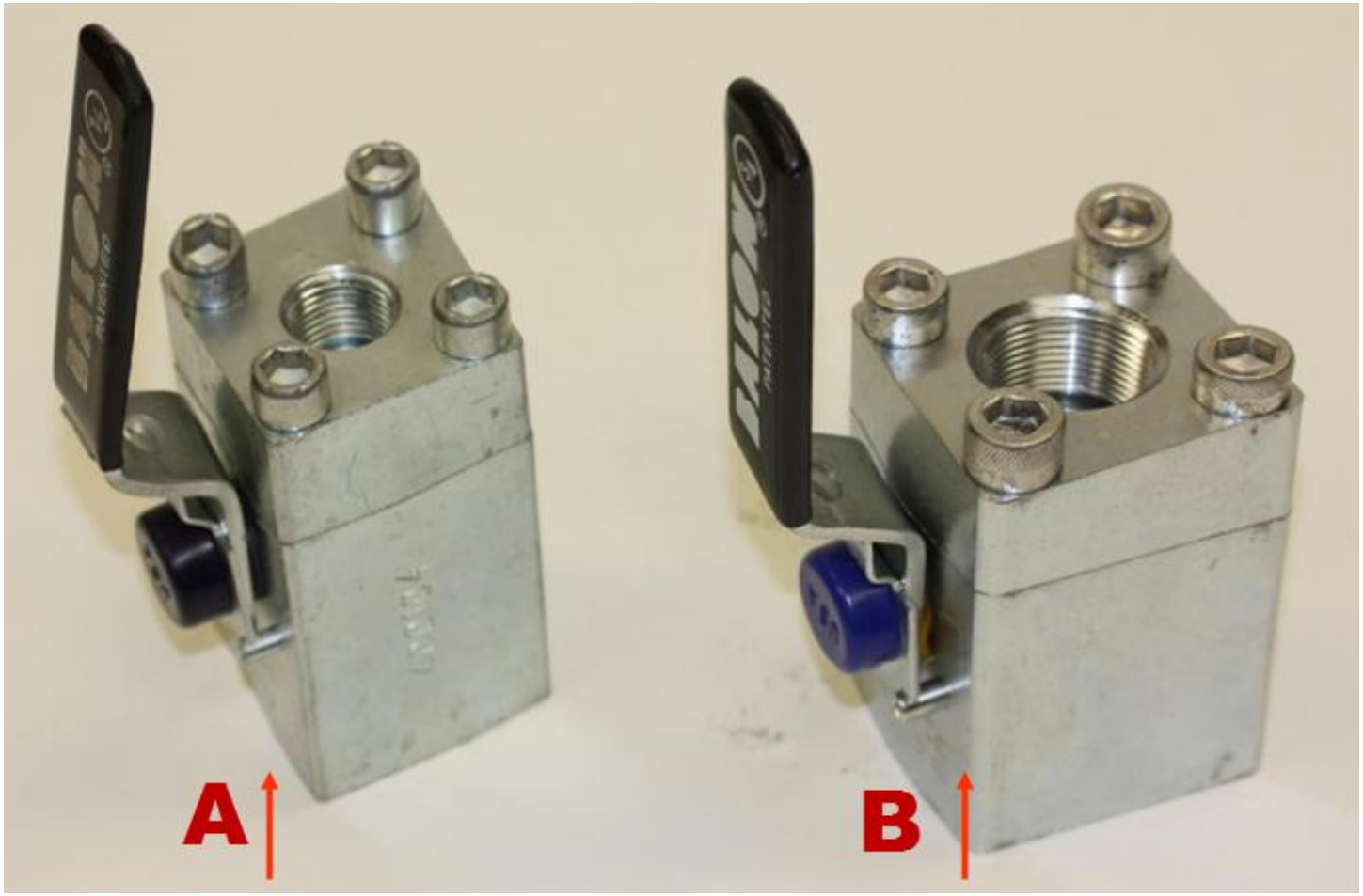
Which part of the crane is counterfeit?

Answer: Fake Crane

Which part of the crane is counterfeit?

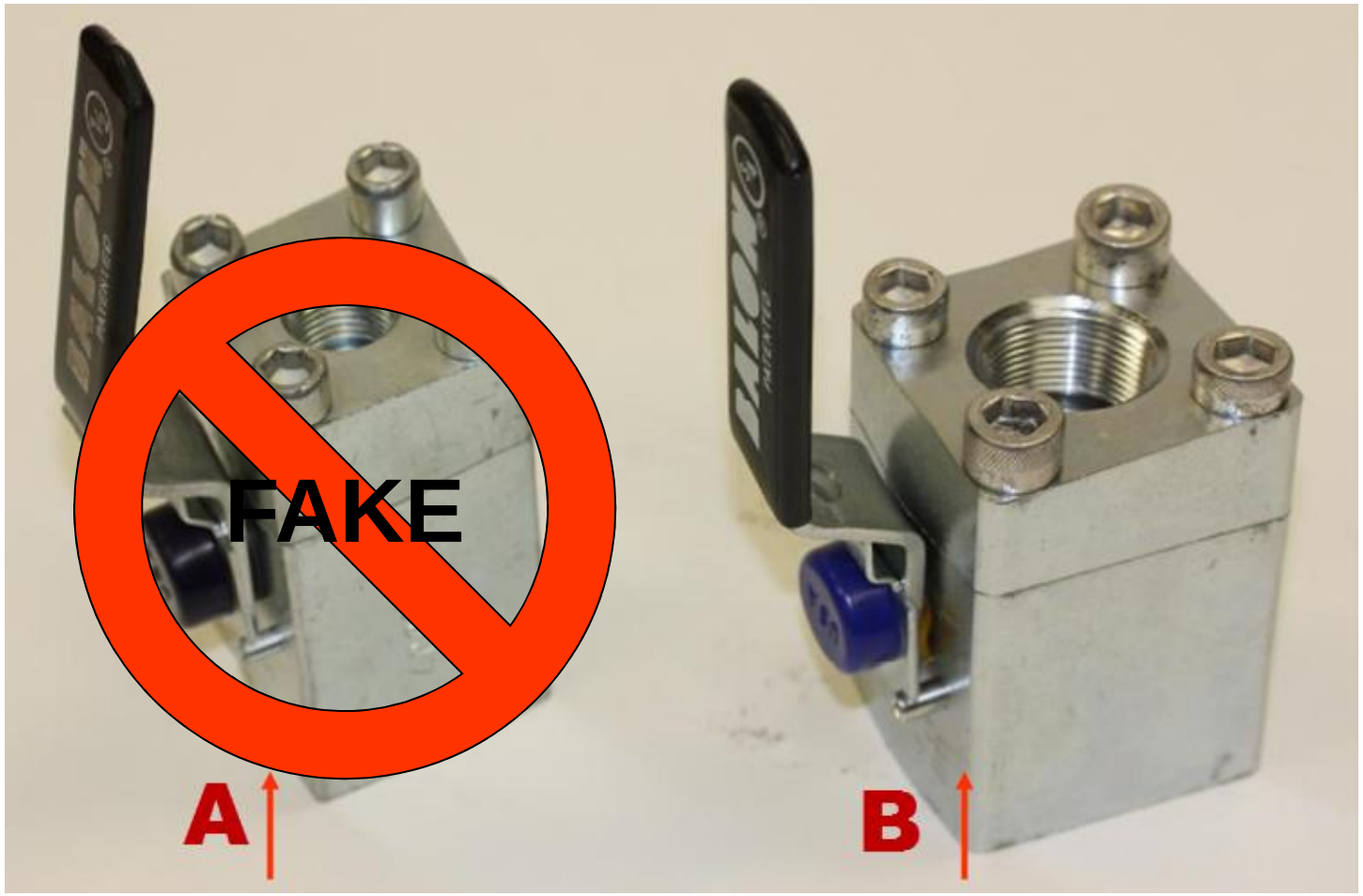
A question for you…

Which of these 3000 psi rating Balon valves is fake?

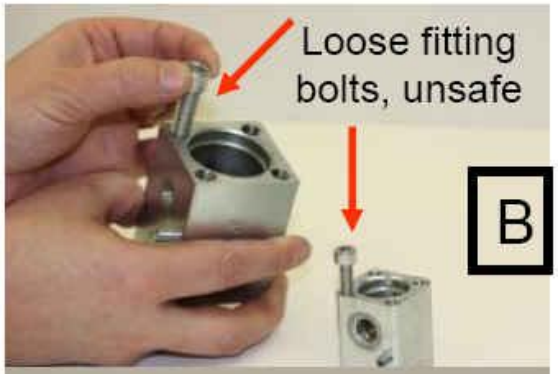


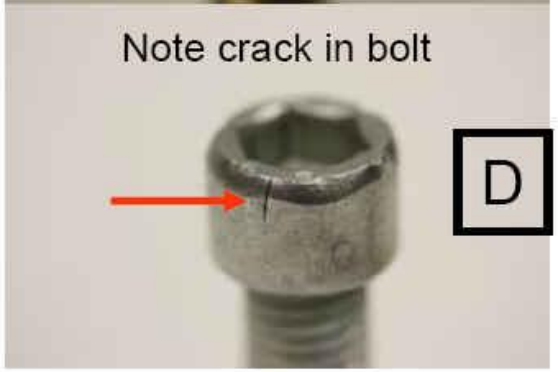
Answer: A

Which of these 3000 psi rating Balon valves is fake?



Details of Unauthorized Reproductions of Balon Valves



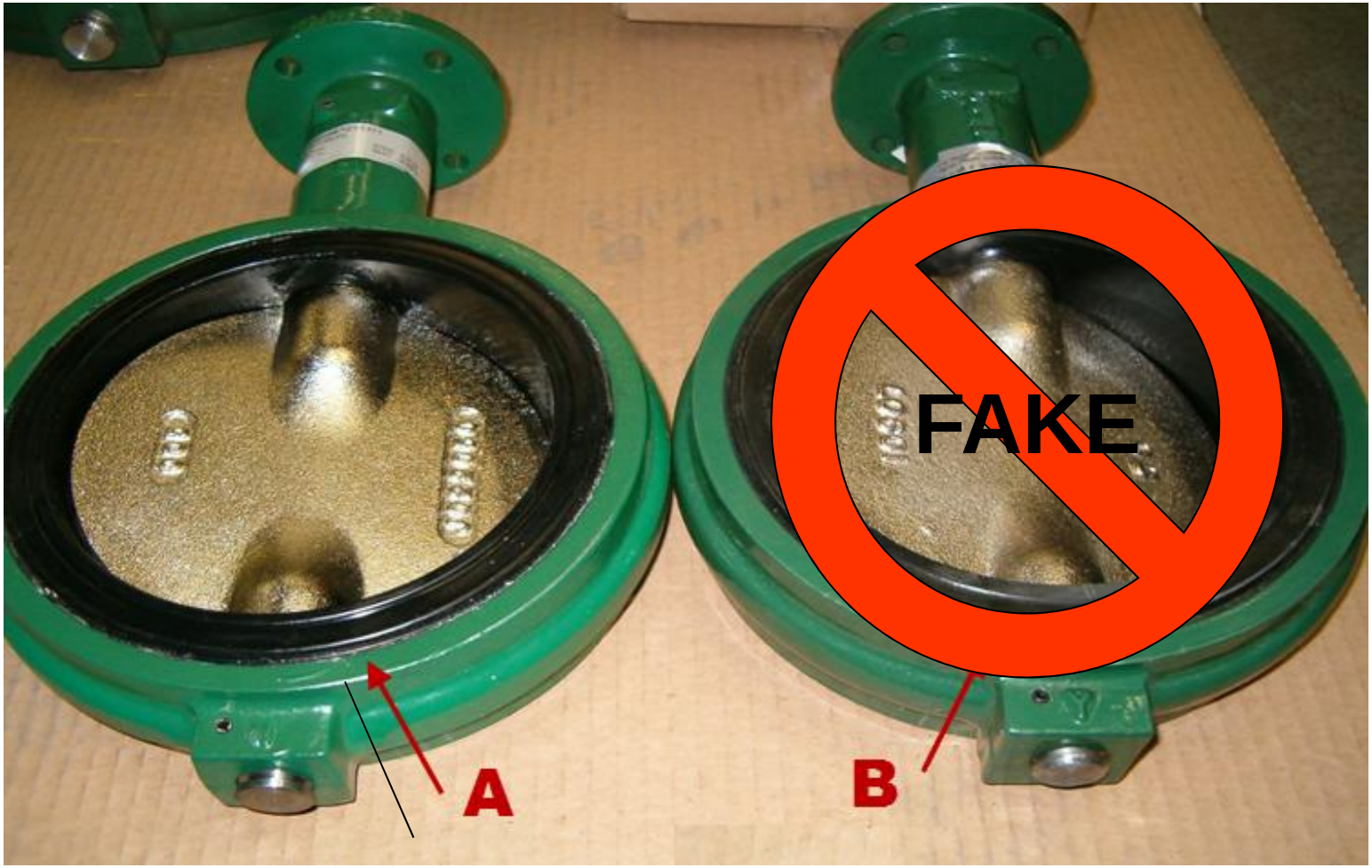


A question for you…

Which of these Cameron Demco valves is fake?

Answer: B

Which of these Cameron Demco valves is fake?



DEMCO

Fake valve

Letter style and location is slightly different on the two bodies. The pad is a little larger on the copied valve.

DEMCO

Fake valve

"BU" marking to signify Buna

6" seat mark

Standard DEMCO seat markings include the part number and a Material marking as well as the size in standard units.