U.S. DEPARTMENT OF COMMERCE
BUREAU OF INDUSTRY AND SECURITY

NATIONAL DEFENSE INDUSTRIAL ASSOCIATE
AND
AEROSPACE INDUSTRIES ASSOCIATION
JOINT CONFERENCE

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Office of Technology Evaluation
Bureau of Industry and Security (BIS)

Mission:

- Develops export control policies
- Issues export licenses
- Prosecutes violators to heighten national security
- Develops and implements programs that ensure a technologically superior defense industrial base

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Office of Technology Evaluation (OTE)

- MISSION:
  - OTE is the focal point within BIS for assessing:
    - The effectiveness of export controls
    - The capabilities of the U.S. industrial base to support the national defense

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
BIS/OTE Industry Surveys & Assessments
Issues Examined

- Economic health, competitiveness, and financial performance
- Production capabilities and constraints
- Supply chain network, customers and suppliers
- Foreign competition, sourcing, and dependencies
- Sales, exports, market share
- Investment and R&D
- Employment and core competencies
- Cyber security
- Other topics as needed

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
BIS/OTE Industry Surveys & Assessments
Current Projects

- Cleared Facilities Assessment – DSS
- U.S. Bare Printed Circuit Board Assessment – Navy Crane
- Biomedical Cyber Security Pilot
- C-17 Aircraft Supplier Assessment – DOD OEA
- U.S. Rocket Propulsion Supply Chain Assessment – NASA
- U.S. Textile, Apparel & Footwear Assessment – U.S. Senate
- U.S. Integrated Circuit Design & Manufacturing Industry Assessment – DOC
- Section 232 Investigations: Effects of Imports on National Security
  - Steel
  - Aluminum

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Section 232 Investigations – Effects of Imports on National Security

- Section 232 of the Trade Expansion Act of 1962, provides the Secretary of Commerce with the authority to conduct investigations to determine the effects of imports of any article on the national security of the United States.

- Criteria reviewed during an investigation include:
  - Requirements for defense and essential civilian sectors
  - Quantity, quality and availability of imports
  - Impact of foreign competition on economic welfare of essential domestic industry
  - The displacement of any domestic products causing substantial unemployment
  - Decrease in USG revenue
  - Loss of investment, specialized skills and productive capacity

- Two active investigations: Steel and Aluminum

- Secretary’s report to the President due within 270 days of assessment initiation
  - Focus on whether article in question is imported in such quantities or under such circumstances as to threaten national security
  - If a threat is determined, the President can “adjust the imports of an article and its derivatives” (tariffs, quotas, etc.)

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
U.S. Biomedical Industry Cyber Security Pilot Survey:

Survey Background

• Initial Discussions in late 2014 led to partnership with the FBI National Cyber Investigative Joint Task Force (NCIJTF)

• Agreement to perform a pilot survey of 10 companies, selected by NCIJTF

• Survey goals:
  • Develop a baseline of the challenges and impacts to industry caused by malicious cyber activity
  • Determine range of preventative measures used by industry to protect Commercially Sensitive Information (CSI)

• With support and input from NCIJTF, BIS conducted site visits/field tests, designed the survey instrument, carried out survey compliance, and tabulated data

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Respondents’ Facilities by Country

Total Facilities in Country in Parentheses – 115 facilities in 36 countries

- United States (34)
- Australia (5)
- India (3)
- Canada (4)
- Sweden (3)
- Italy (3)
- France (3)
- United Arab Emirates (2)
- Turkey (2)
- Belgium (2)
- All Others (19 Facilities in 16…)

Number of Respondents with Facility in Country

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
### Malicious Cyber Incidents 2013-2015 and Detection/Prevention Controls and Capabilities

<table>
<thead>
<tr>
<th>Size</th>
<th>Total Incidents</th>
<th># of Incident Types Able to Detect &amp; Prevent</th>
<th># of Critical Cyber Controls in Place by Internal Staff</th>
<th>Are Able to Detect APTs</th>
<th>% of Employees Receiving Cyber Training</th>
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<td>95%</td>
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</tbody>
</table>

Q13b 10 respondents
Challenges in Protecting Against Cyber Security Risks

- Lack of Trained Cyber Security Personnel
- Lack of Buy-In From Employees
- Limited Knowledge of Issues and Risks
- Inadequate and/or Lack of Timely Threat Information
- Poor Collaboration Across Business Lines
- Insufficient Budget Resources
- Low Prioritization by Senior Leadership

“Employee actions continue to be the primary source of system compromises”

“FBI PIN notifications are often a day to days late in arriving. Old information is of little help. Critical threat intel has to be within minutes or hours not days”

4 of 10 respondents had no written instructions for employees on reporting cyber incidents

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
C-17 Aircraft Supplier Assessment

- Partnership with U.S. Department of Defense, Office of Economic Adjustment (OEA) and City of Long Beach
- Two-year effort to assess the impact on the industrial supply chain of the 2015 shutdown of the Boeing C-17 Aircraft facility in Long Beach, CA
- Coordinated the transfer of excess U.S. Government and Boeing tooling and equipment from the facility to local community colleges and worker training centers

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Phase I: Background and Coordination

Status

650 C-17 Aircraft Suppliers (728 sites) by state

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Cleared Facilities Assessment

- Partnership with U.S. Department of Defense, Defense Security Service (DSS)

- Covers all operations at respondents’ locations, including but not limited to DSS cleared areas

- Survey designed to collect data covering 25 product/service categories with 210 product and service areas

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
DSS Project Schedule

- DSS/BIS coordinated undertaking to survey all DSS cleared facilities
- 10,000 Surveys deployed to date

~13,000 Total Facilities

- Survey deployment began July 2015
- Sent out in waves of ~1,000 facilities

Primes (companies with 10+ facilities)

- Prime survey deployment began November of 2016
- Each Prime decides on best method for internal distribution

Universities

- University deployment begins summer 2017
- About 140 Facilities

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Most Identified Product/Service Areas

210 total product/service areas separated into 25 categories

Respondents identified a total of 38,653 products/services, covering each of the 210 product/service areas

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Foreign Corporate Activity

- 212 respondent organizations* engaged in a total of 477 mergers, acquisitions, divestitures, or joint ventures with foreign entities
  - 184 acquisitions by 113 companies
    - Companies acquired in U.K (44), Canada (28), Australia (13), France (8), 38 others
  - 14 mergers by 8 companies
    - Companies merged with in South Korea (3, U.K. (3), France (2), 6 others
  - 231 joint ventures by 97 companies
    - Joint ventures with entities in U.K (29), Japan (23), China (20), U.A.E. (13), Saudi Arabia (12), Mexico (12), 51 others
  - 48 divestitures by 34 companies
    - From businesses in U.K. (6), Mexico (6), Germany (5), France (4), Canada (3), 21 others

- 35 respondents had foreign parent companies:
  - U.K. (10), Canada (5), France (4), South Korea (4), 8 others

* Multi-facility organizations typically provided corporate level merger data; as a result not all data is at the facility level

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Critical Facilities Assessment

Percent of Respondents in Each Product/Service Category Engaged in Mergers, Acquisitions, and Joint Ventures

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED

6,884 respondents
Percent of Respondents in Each Product/Service Area Engaged in Mergers, Acquisitions, and Joint Ventures

- S5 - Other chemical products (41 total facilities)
- Q8 - Other nuclear products (62 total facilities)
- Y3 - Construction (347 total facilities)
- O2 - Automatic and semi-automatic weapons (62 total facilities)
- G3 - Sonobouys (46 total facilities)
- Y2 - Canine training services (28 total facilities)
- L4 - Solid rocket motors and related equipment (62 total facilities)
- Y17 - Medical services (99 total facilities)
- K3 - Rotary wing aircraft (including helicopters) (274 total facilities)
- J2 - Chemical compositions of signature control
- A3 - Alloys (35 total facilities)
- B16 - Flexible circuit boards (132 total facilities)
- O5 - Rockets (endo and exoatmospheric) (75 total facilities)
- K5 - Airframes and structural components (including...
- Y9 - General contracting (214 total facilities)

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Support of USG Agencies by Dependence on Agency

Percent of Location’s Total Sales that Support USG Agency

Q4a 6,884 respondents

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Most Frequently Identified USG Programs

- F-35 Joint Strike Fighter Aircraft (F-35)
- Littoral Combat Ship (LCS)
- Ballistic Missile Defense System (BMDS)
- DDG 51 Arleigh Burke Class Guided Missile Destroyer (DDG 51)
- SSN 774 Virginia Class Submarine (SSN 774)
- DDG 1000 Zumwalt Class Destroyer (DDG 1000)
- P-8A Poseidon Multi-Mission Maritime Aircraft
- Ohio Class Submarine Replacement (Ohio)
- CVN 78 Gerald R. Ford Class Nuclear Aircraft
- V-22 Osprey Joint Services Advanced Vertical Lift Aircraft
- UH-60M Black Hawk Helicopter (UH-60M)
- C-130J Hercules Transport Aircraft (C-130J)
- EA-18G Growler Aircraft (EA-18G)
- MH-60R Multi-Mission Helicopter (MH-60R)
- E-2D Advanced Hawkeye Aircraft (E-2D AHE)

Number of Respondents

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Type and Location of Critical Suppliers

- Y: Services and Other Products
- B: Electronics
- X: Software
- A: Raw Materials
- W: C4 (Command, Control, etc.)
- K: Aeronautic Systems
- C: Manufacturing Equipment
- F: Optics
- M: Marine Systems
- P: Energy Systems & Energetics
- N: Ground Systems
- L: Space Systems
- O: Armaments and Survivability
- I: Radars
- G: Acoustic Sensors

557 respondents identified 1,239 foreign inputs from 82 countries.

Top locations: Canada (214), U.K. (137), Germany (102), Japan (80), France (58), China (56)

Items supplied include: Machined alloys, circuit boards, ICs, flight data recorders, fiber optics, GPS modules, rotary engines

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Non-U.S. Citizen Employees at U.S. Facilities

Total of 26,958 non-U.S. citizen workers listed by country of citizenship

- India (586 facilities)
- China (319 facilities)
- Mexico (270 facilities)
- United Kingdom (249 facilities)
- Canada (330 facilities)
- El Salvador (92 facilities)
- Malaysia (37 facilities)
- Afghanistan (31 facilities)
- Philippines (149 facilities)
- South Korea (ROK) (127 facilities)
- France (97 facilities)
- All Others

Includes workers from Cuba (220 in 32 facilities), Iran (125 in 72 facilities), Russia (112 in 76 facilities)

- Green Card
- Other Visa
- H1B
- F1

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Sales Performance

60% of respondents saw sales increase from year 1 to year 3

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Defense Sales as a Percentage of Total Sales

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Financial Risk

- Financial Risk calculation based primarily on profit margins, debt levels, liquidity

- Most of the complete responses allowed for a financial risk measurement

- Reasons for lack of measurement:
  - Source data mismatches (e.g. reporting income statement data at the facility level and balance sheet data at the corporate level)
  - Unavailable or missing data (e.g. no assets or sales listed, newly formed business)

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Cyber Security Measures in Place by Respondent Size

Small: Under $25M in annual sales; Medium: $25M - $100M in annual sales; Large: Over $100M in annual sales

- **Malware Defenses**
  - Small: 79%
  - Medium: 90%
  - Large: 94%

- **Data Recovery Capability**
  - Small: 74%
  - Medium: 89%
  - Large: 92%

- **Controlled Use of Admin Privileges**
  - Small: 73%
  - Medium: 88%
  - Large: 92%

- **Data Protection**
  - Small: 73%
  - Medium: 87%
  - Large: 91%

- **Wireless Access Control**
  - Small: 67%
  - Medium: 82%
  - Large: 89%

- **Account Monitoring and Control**
  - Small: 65%
  - Medium: 82%
  - Large: 93%

- **Controlled Access Based on Need**
  - Small: 63%
  - Medium: 80%
  - Large: 88%

- **Application Software Security**
  - Small: 64%
  - Medium: 76%
  - Large: 83%

- **Network Port & Service Limitation**
  - Small: 60%
  - Medium: 79%
  - Large: 88%

- **Incident Response and Management**
  - Small: 59%
  - Medium: 78%
  - Large: 86%

- **Secure Configurations of Network**
  - Small: 58%
  - Medium: 77%
  - Large: 88%

- **Security Skills Assessments and Training**
  - Small: 57%
  - Medium: 65%
  - Large: 77%

- **Secure Configurations on Hardware**
  - Small: 54%
  - Medium: 72%
  - Large: 85%

- **Inventory of Auth/Unauth Devices**
  - Small: 48%
  - Medium: 67%
  - Large: 78%

- **Audit Log Maintenance, Monitoring**
  - Small: 47%
  - Medium: 71%
  - Large: 83%

- **Inventory of Auth/Unauth Software**
  - Small: 46%
  - Medium: 68%
  - Large: 80%

- **Secure Network Engineering**
  - Small: 45%
  - Medium: 66%
  - Large: 81%

- **Continuous Vulnerability Assessment**
  - Small: 46%
  - Medium: 62%
  - Large: 77%

- **Boundary Defense**
  - Small: 38%
  - Medium: 62%
  - Large: 78%

- **Penetration Tests and Red Team**
  - Small: 13%
  - Medium: 30%
  - Large: 59%

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
7% of all respondents reported a cybersecurity incident in the last year.

11% reported a cybersecurity incident in the last three years.
Trends in Spending on Cyber and Physical Security

<table>
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<tr>
<th>Year</th>
<th>Spent More on Cyber</th>
<th>Equal Expenditures</th>
<th>Spent More on Physical</th>
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<tbody>
<tr>
<td>2013</td>
<td>40%</td>
<td>36%</td>
<td>24%</td>
</tr>
<tr>
<td>2014</td>
<td>44%</td>
<td>33%</td>
<td>23%</td>
</tr>
<tr>
<td>2015</td>
<td>46%</td>
<td>31%</td>
<td>23%</td>
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<tr>
<td>2016</td>
<td>50%</td>
<td>28%</td>
<td>22%</td>
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</tbody>
</table>

Q9bA 6,884 respondents
Impacts/Actions from Malicious Cyber Activity

- Major New Investment in Cyber Security
- IT Downtime
- Costs From Damage Assessment/Remediation
- Loss of Sales/ Business Interruption
- Damage to Company Systems
- Damage to IT Infrastructure
- Exfiltration of CSI
- Revised Approach to International Partnerships
- Significant Change in R&D Strategy
- Theft of Software/ Source Code
- Exit from Product/ Business Line
- Exit from Foreign Markets/ Segments

Advanced Persistent Threats (APTs):
- 2,212 respondents indicated ability to detect an APT.
- 453 had encountered APTs in the past three years. 31 reported over 1,000 APTs

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Familiarity with NIST Cyber Framework by Submission Date

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Top Organizational Challenges

Respondents identified all challenges to operations and ranked their top five challenges.

- Government acquisition process
- Healthcare
- Domestic competition
- Labor availability/costs
- Government regulatory burden
- Government purchasing volatility
- Worker/skills retention
- Reduction in USG demand
- Taxes
- Cyber security
- Qualifications/certifications
- Aging workforce
- Aging equipment, facilities, or infrastructure
- Export controls/ITAR & EAR
- Proximity to customers

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
Interest in USG Assistance

- Cyber Security: 1,684 respondents
- Market Expansion/Business Growth: 1,521 respondents
- SBIR/STTR: 1,288 respondents
- Government Procurement Guidelines: 849 respondents
- Technology Acceleration: 759 respondents
- Export Licensing: 695 respondents
- Quality Management and Control: 606 respondents
- Continuous Improvement/Lean Manufacturing: 530 respondents
- Export Assistance: 481 respondents
- Vendor/Material Sourcing: 449 respondents
- Supply Chain Optimization: 404 respondents
- Prototyping: 369 respondents
- Product Design: 347 respondents
- Design for Manufacturability: 293 respondents
- Design for Assembly: 240 respondents
- Environmentally Conscious Manufacturing: 194 respondents

Number of Respondents

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED
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http://www.bis.doc.gov/232  (Section 232 investigations)

Source: U.S. Department of Commerce, Bureau of Industry and Security. UNCLASSIFIED