207 Big Springs Avenue
Tullahoma, TN 37388
(931) 455-2617

Micro Craft, Inc.

Briefing to NDIA Manufacturing Division

Dr. Kenneth W. Sullivan, P.E.
Mr. Steve Gleason, CISSP
October 19, 2016

Vision

"Micro Craft is the "Go To Partner" for tough challenges in creating the Future of Flight and sustaining existing capabilities for Aerospace, Defense and Commercial customers while creating value for our stakeholders."

Micro Craft History

Proud to be 100% Employee Owned

- Founded in 1958 by craftsman Charles Folk
- Key provider of complex wind tunnel models and other specialty hardware – pioneers in CNC, EDM, etc.

- Rapid expansion in 1990s into space and technology markets

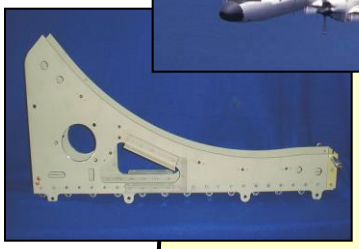
- Prime contractor and vehicle manufacturer and integrator for NASA's X-43A and X-43C Hyper-X Programs

- After a brief period of ownership by an investment group, Micro Craft was acquired by ATK in 2003.
- In 2011, Micro Craft was acquired by its employees and became a **100% Employee-owned Small Business**.

Micro Craft Core Competencies

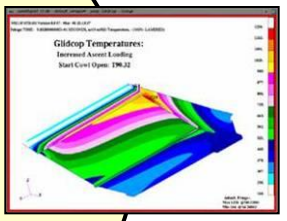
Proud to be 100% Employee Owned

Kinetic Weapons Development



Flight Hardware

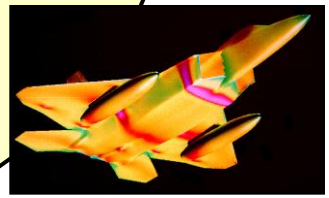
Low Cost Demonstrators and Systems Engineering



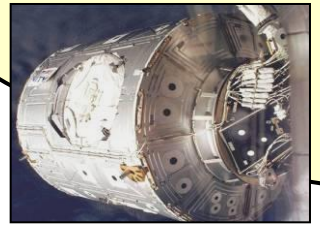
Micro Craft Core Competencies

Design and Analysis

Space Flight Hardware



Test Hardware



Development, Engineer, Test, and Manufacture

Manufacturing Capabilities

Proud to be 100% Employee Owned

- **Celebrating 50+ years of experience in providing precision manufacturing to NASA, DoD, and OEMs**

- **Manufacturing**
  - 57,000 sq. ft. facility
  - 3-,4-,and 5-axis milling
  - Large CNC lathe machining
  - Wire EDM, die sink EDM
  - ID/OD grinding
  - Metals, composites, ceramics, and exotic metals
  - Complex components, assemblies and integrated systems
  - Prototype research hardware
  - Electronics Lab and cable harness facilities
- **Quality**
  - AS 9100 Rev C and ISO 9001:2008 Certification
  - 2005 Comet Award for Excellence in Manufacturing
  - DPD (Digital Product Definition) and MBD (Model Base Definition) Boeing Certified
  - Lockheed Martin Quality Select Supplier
  - NASA Small Business Contractor of the Year

bsi.

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - AS9100 REV C AND ISO 9001:2008

This is to certify that: Micro Craft Inc.
207 Big Springs Avenue
Tullahoma
Tennessee
37388
USA

Holds Certificate No: FM 550221

and operates a Quality Management System which complies with the requirements of AS9100 REV C and ISO 9001:2008. BSI Group America Inc. is accredited under the Aerospace Registration Management Program and the assessment was performed in accordance with the requirements of AS9104 Rev A for the following scope:

Research, Design, Development, Manufacture, Integration and Testing of Advanced Aerospace and Industrial Systems.

This certificate is traceable to this company's original registration, Certificate Number 6613 dated January 11, 2007 and issued by aqa International.

For and on behalf of BSI:

Gary Fenton, Global Assurance Director

Originally Registered: 01/05/2010 Latest Issue: 12/14/2012 Expiry Date: 12/13/2015

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...making excellence a habit.

Reputation for Quality

- **AS 9100 Rev C and ISO 9001-2008 (Cert. FM 550221)**
- **DPD (Digital Product Definition) and MBD (Model Base Definition) Boeing Certified**
- **ISO 10012-1 Metrological Confirmation System for measuring equipment**

- **PC-DMIS software**
- **Inspect to CAD models**
- **Currently an approved flight hardware manufacturer for companies such as Boeing, Gulfstream, Lockheed Martin, Northrop, and Pratt & Whitney**

Aerospace Systems / Prototypes / Models

Proud to be 100% Employee Owned

- Involved in the development of virtually every major domestic and many foreign fixed wing, rotary wing, and missile system programs since the 1950s
- Unique vertically integrated capability: design, analysis, fabrication, instrumentation, assembly, and test support

Metal and Composite Wind Tunnel Models

Full-Scale F-22 Composite Radar Cross Section Model

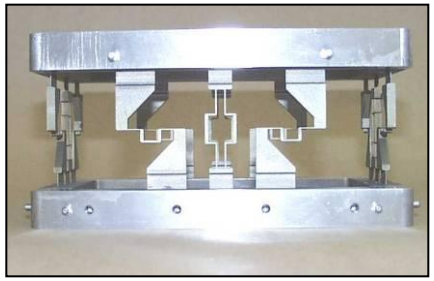
Components for the X-45 Unmanned Combat Air Vehicle (UCAV)

Prototype Manufactured Parts

Proud to be 100% Employee Owned

Fully Instrumented Nozzles

Force and Moment Measuring Balances



Large Handling Fixtures and Weldments

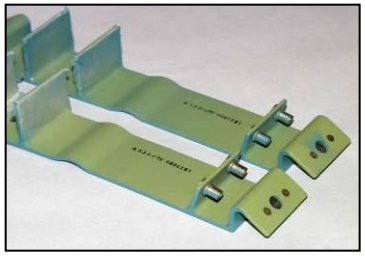
Nuclear Research Hardware

Fan Blades

Cooling Cart for NASA Ames Airborne Observatory

Space Flight Hardware

Wind Tunnel Model Hardware



Sheetmetal Flight Hardware

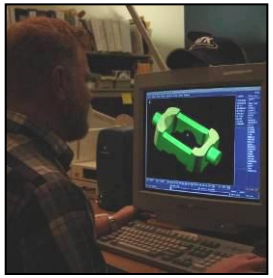
Military Aircraft Component Manufacture

Proud to be 100% Employee Owned

Providing out-of-production flight hardware is one of our core competencies.

Micro Craft has expertise and experience with:

- **The P-3 Orion, S-3 Viking, C-130 Hercules,C-141 Starlifter, F-16 Falcon, F-15 and C-5 Galaxy**
- **Digitizing existing parts for building CAD models "reverse engineering"**
- **Tooling development**
- **Component obsolescence studies**
- **Benefit and trade-off analyses for alternative manufacturing methods and weight reduction**
- **Metal and composites manufacture**
- **Researching old specifications and recommending alternatives for obsolete processes**



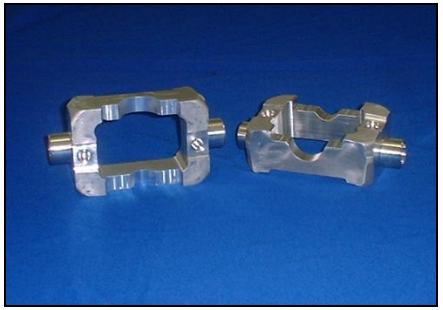
Precision Flight Hardware and Assemblies

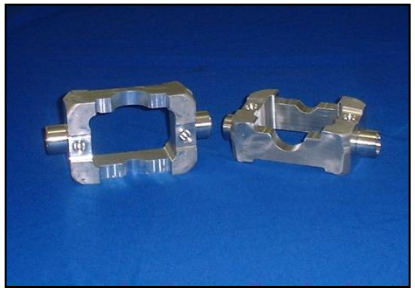
Proud to be 100% Employee Owned

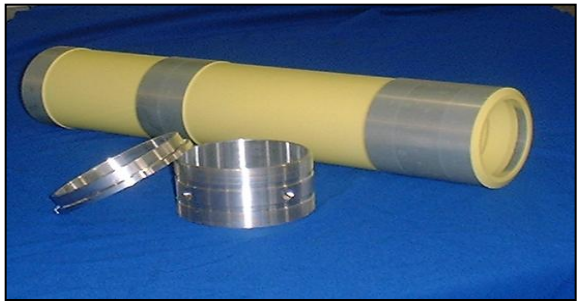
Landing Gear Lighting Assemblies for Eaton Aerospace and Goodrich Aerospace

Limited Production Manufactured Parts

Proud to be 100% Employee Owned



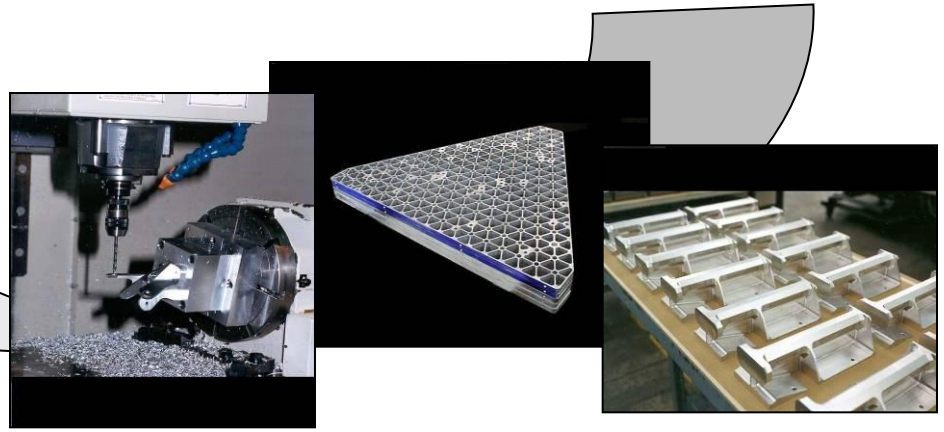




Boeing Delta IV Flight Hardware

Proud to be 100% Employee Owned

- **Boeing preferred supplier for Delta II, III, and IV; rated gold for delivery performance**
- **Multiple ship-sets of complex brackets, isogrids, and other specialized hardware**
- **Over 400 line items**
- **Over 22,000 parts delivered with 99% on-time delivery and a discrepancy rate of less than 1%**
- **Reduced costs on Delta III parts by 30-40%**
- **Prepared Lean Manufacturing processes to support Decatur, AL, assembly plant**



Shuttle-to-MIR Tunnel Extension

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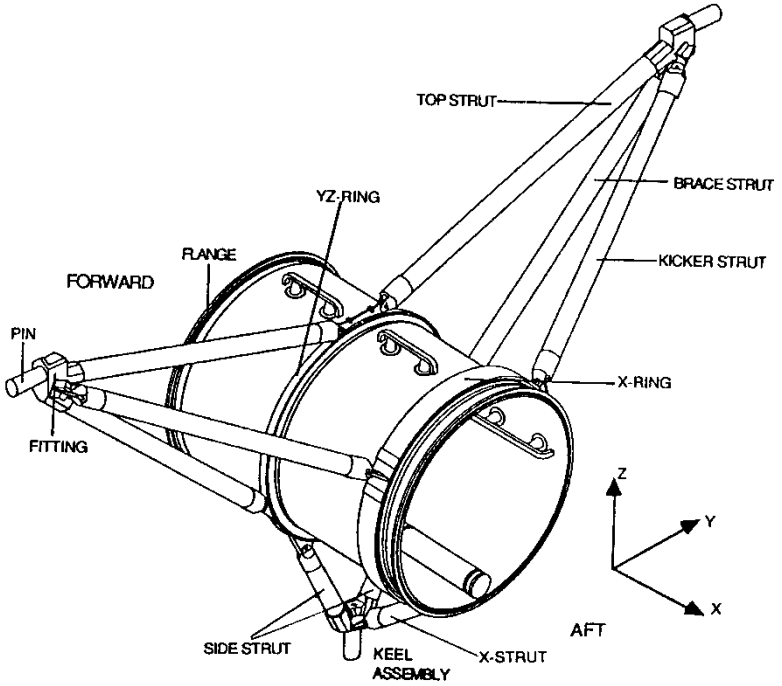
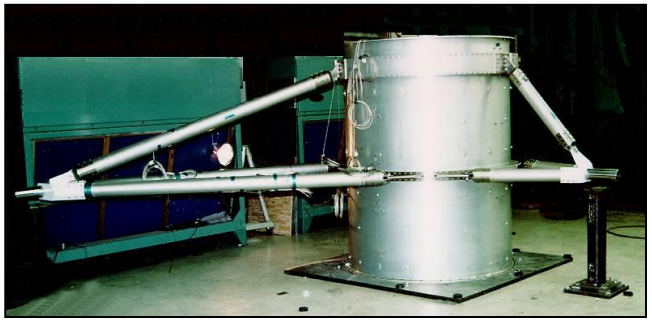
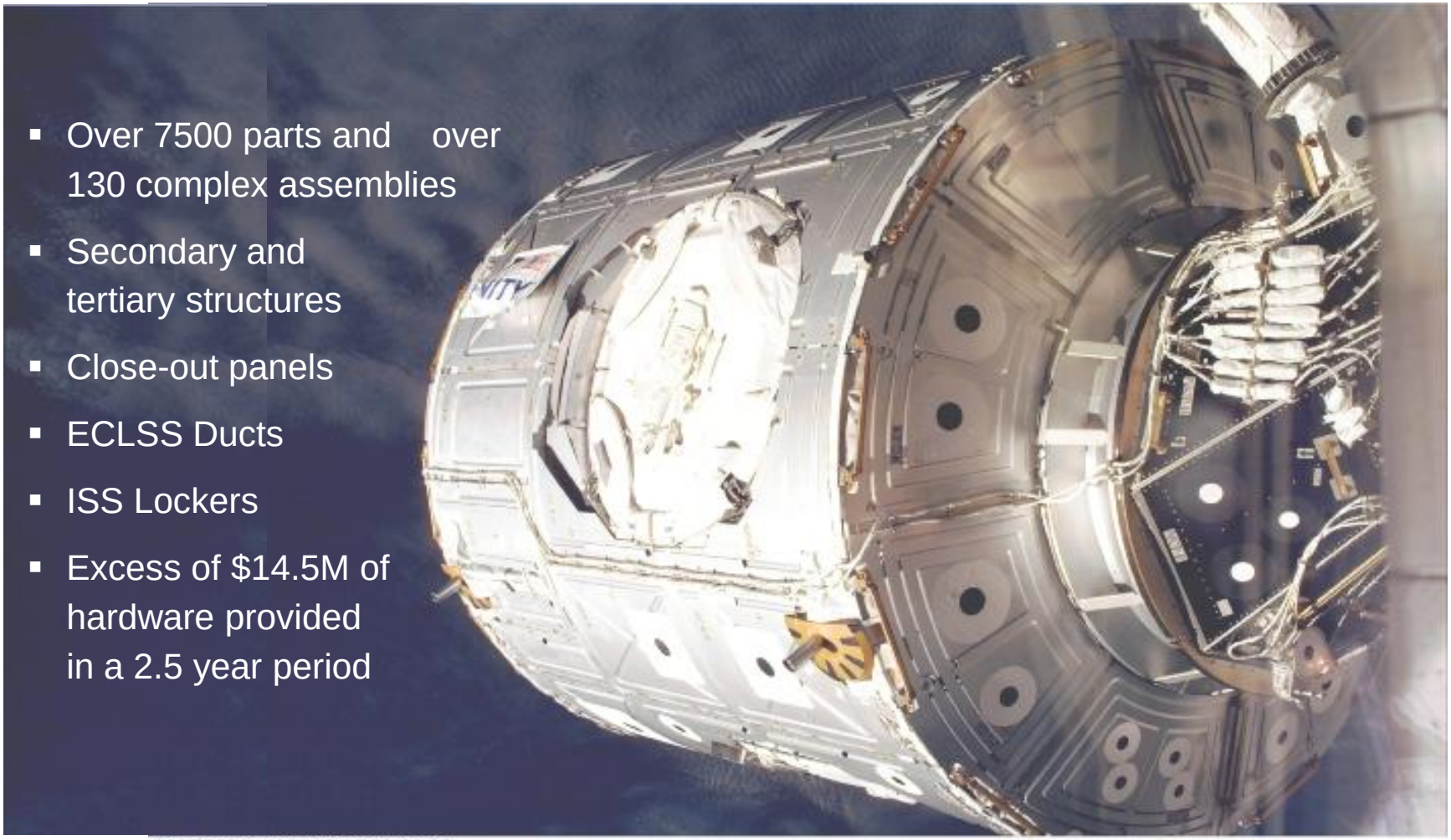


SPACEHAB TUNNEL AND ITS HARDWARE



Unity Node for the ISS

- Over 7500 parts and over 130 complex assemblies
- Secondary and tertiary structures
- Close-out panels
- ECLSS Ducts
- ISS Lockers
- Excess of $14.5M of hardware provided in a 2.5 year period



ISS Secondary Structure

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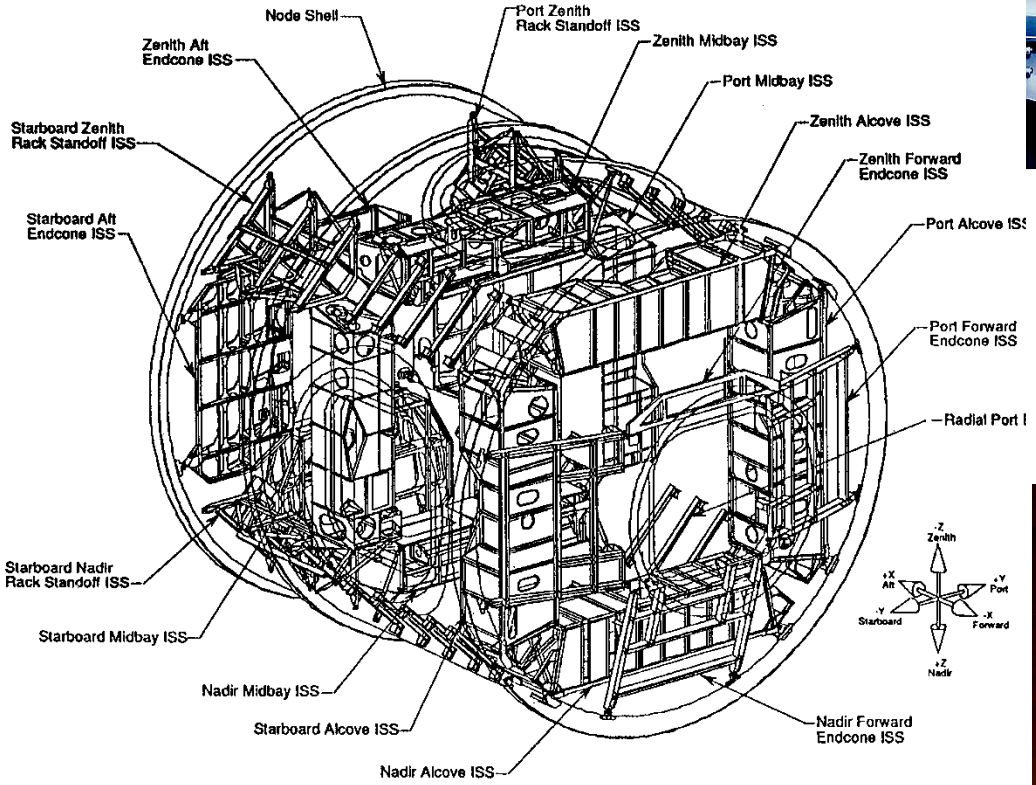

Space Station Node Internal Outfitting-Secondary Structure

What makes Micro Craft Different?

Proud to be 100% Employee Owned

1. **Provides secure facility that has classified engineering and manufacturing capability**
2. **Quality department in place to support critical and complex aerospace hardware component manufacture**
3. **Broad customer base that requires Micro Craft to support "one of a kind" to high production, mix model manufacture in firm-fixed price and cost-plus fixed fee R & D markets**
4. **Aggressively implementing ("baking in") Cybersecurity requirements in business processes and management systems**

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Implementing Cybersecurity at a Small Aerospace and Defense Supplier

Mr. Steve Gleason, CISSP

Cyber Security/Compliance Obscurity

Unfortunately cyber security has come to depict a range of nefarious computer break-ins by shadowy hackers with cryptic names that compromise the credit card accounts of retail store patrons, emails by notable politicians, and the control of cars and unmanned aircraft.

As regulations have emerged, federal contractors have been given little or no insight regarding achieving compliance. December 31, 2017 is the drop dead date. Third party assessment companies even provide a minute by minute count down on their websites, intentions are clear.

- **THREATS AND VULNERABILITIES ARE REAL AND INCALCULABLE**

- **COMPLY OR DIE**

Micro Craft Environment

- **58 employees, 40 of which are owners**

- **Manufacturing Craftsmen and CNC operators, Manufacturing Management, Engineers, Estimators, Accounting, Contracts, Security, IT, Business Development, Executive Management**

- **Unclassified and Classified Programs**

- **Network**

  75 workstations
  10 servers
  Wireless guest and internal access
  CNC controllers
  Firewall
  Tablets, Smart Phones

Rapid Security/Control Assessment

Categorize

- Administrative
- Physical
- Technical

Inventory

- Compliant
- Partial
- No
- N/A

Prioritize

- Risk to Assets
- Cost of Acquisition
- Ease of Implementation

*Security vs. Compliance

Get to Work

Implement each control based on priority

Identify low hanging fruit along the way*

Prepare and respond to control impact on users

- Supporting users in a small business is a unique challenge
- Attitudes toward new security controls will not change over night (“this is the kind of thing they did when we were owned by…)
- Regular group communication either through email or formal training sessions is critical to timely implementation of security controls.
- Most small business users wear multiple hats
- Controls will expose processes that must be altered and improved (document)

Use assessment tool to document as you continue to assess and implement

Self Assessment - Evidence

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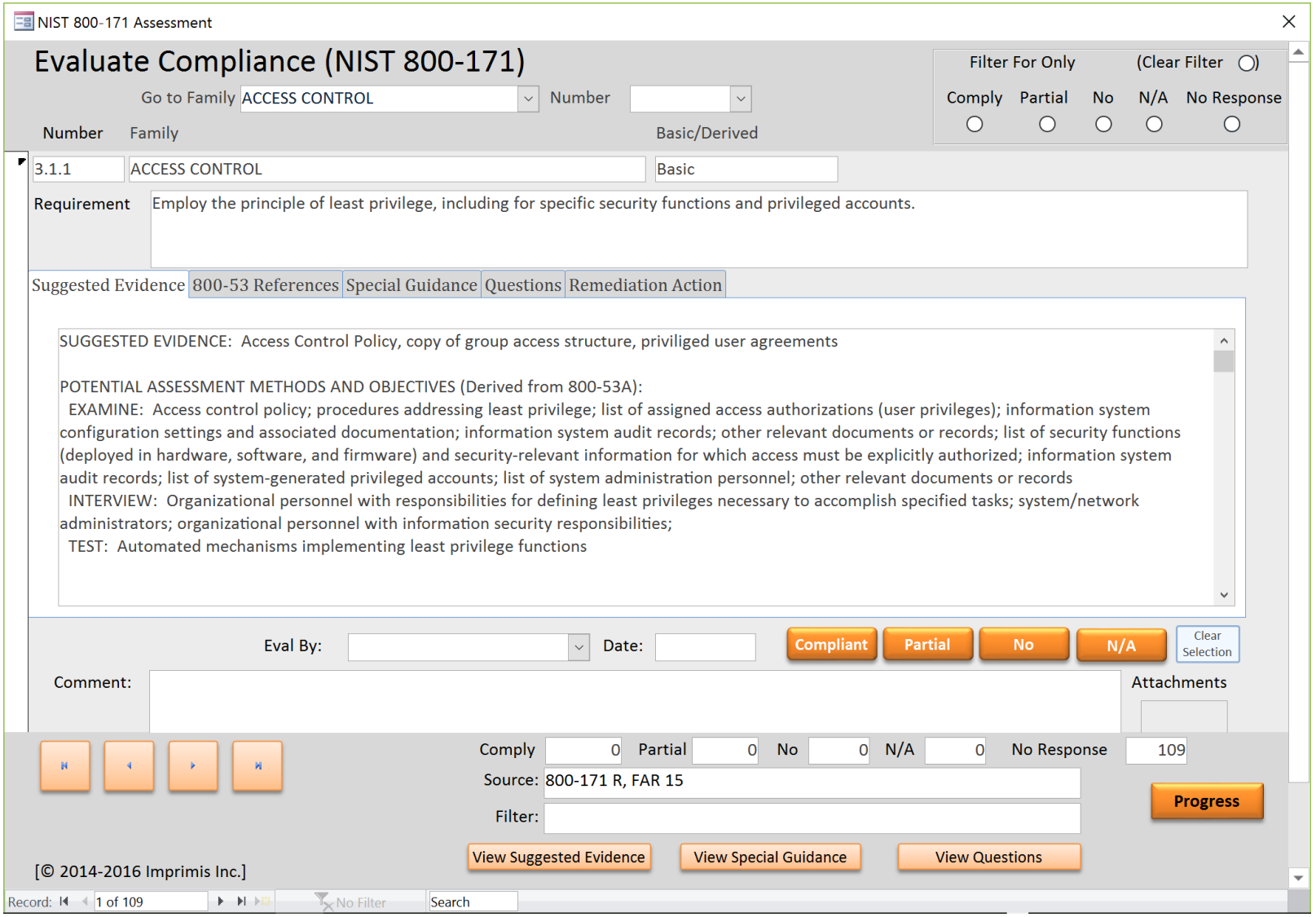

Self Assessment – 800-53 Reference

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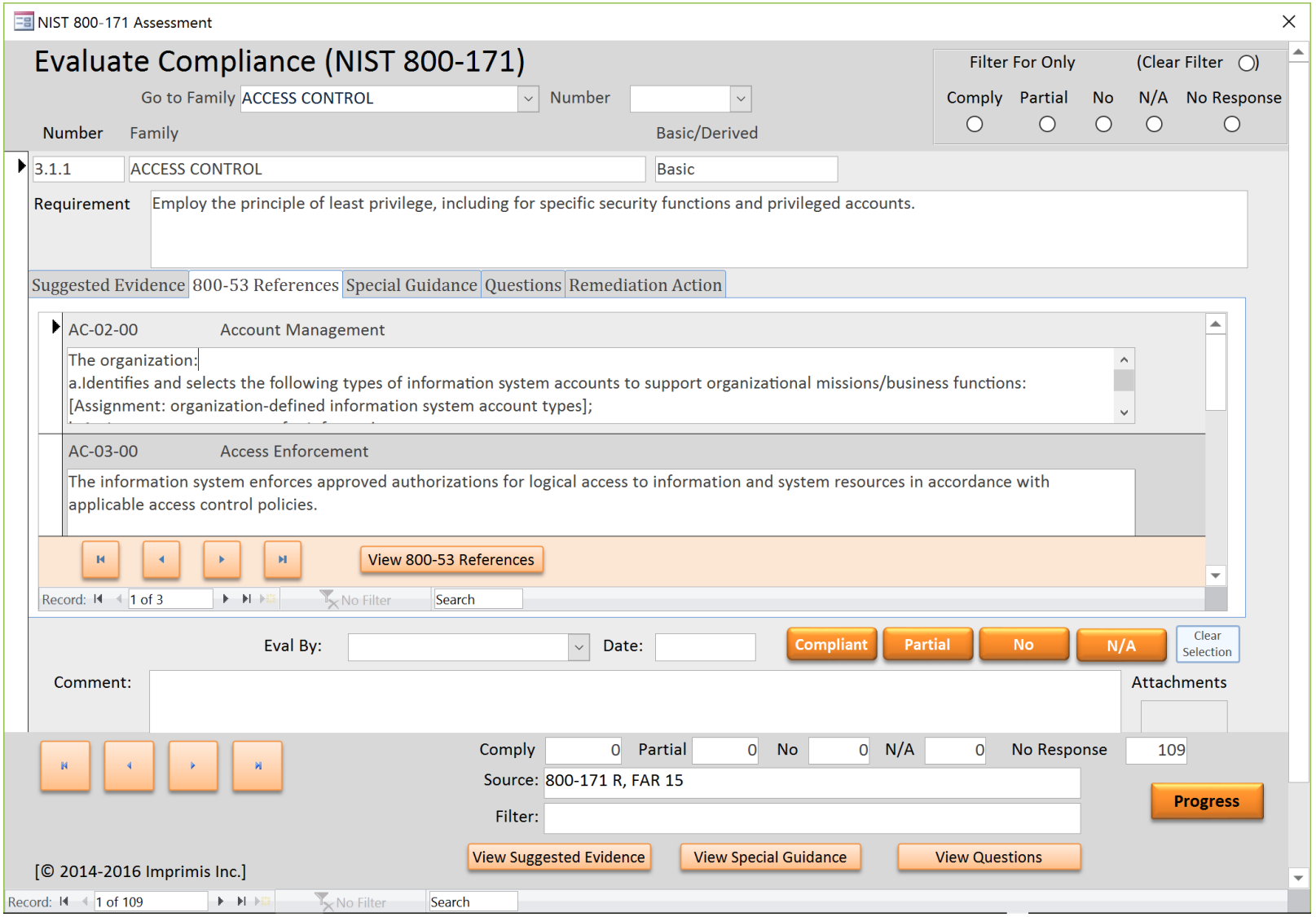
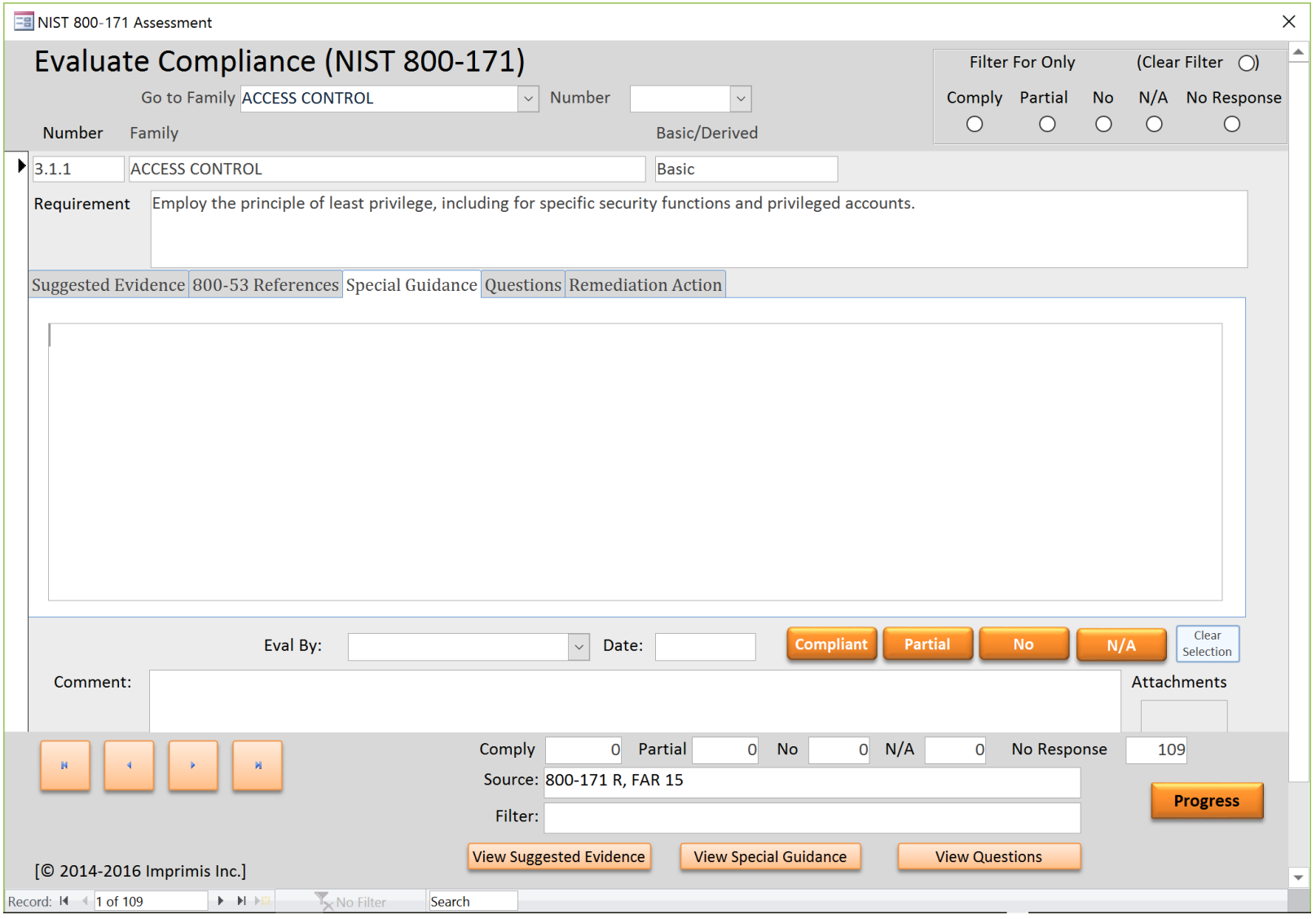


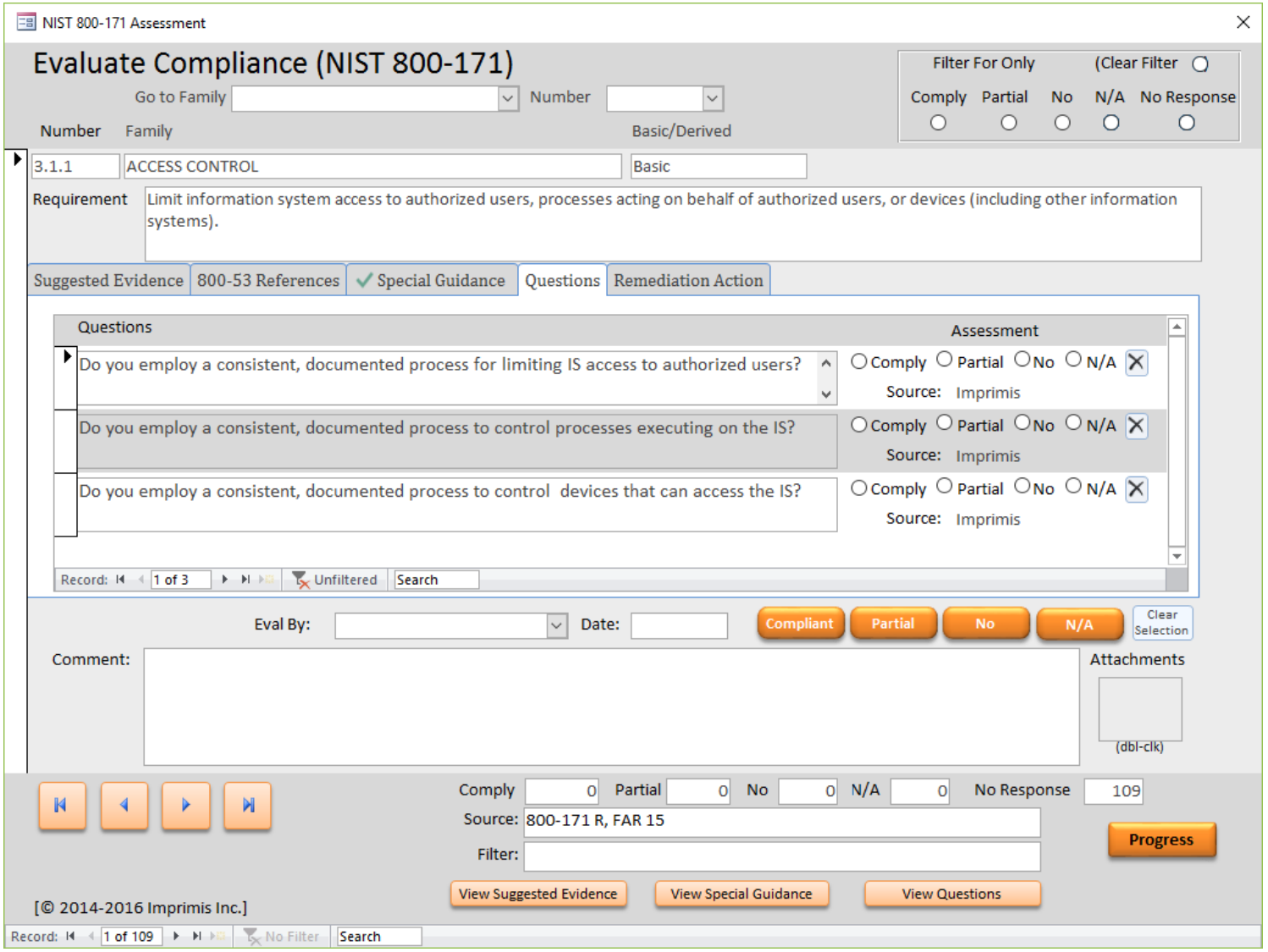
Self Assessment - Guidance

Proud to be 100% Employee Owned



Self Assessment - Questions

Proud to be 100% Employee Owned



Self Assessment - Remediation

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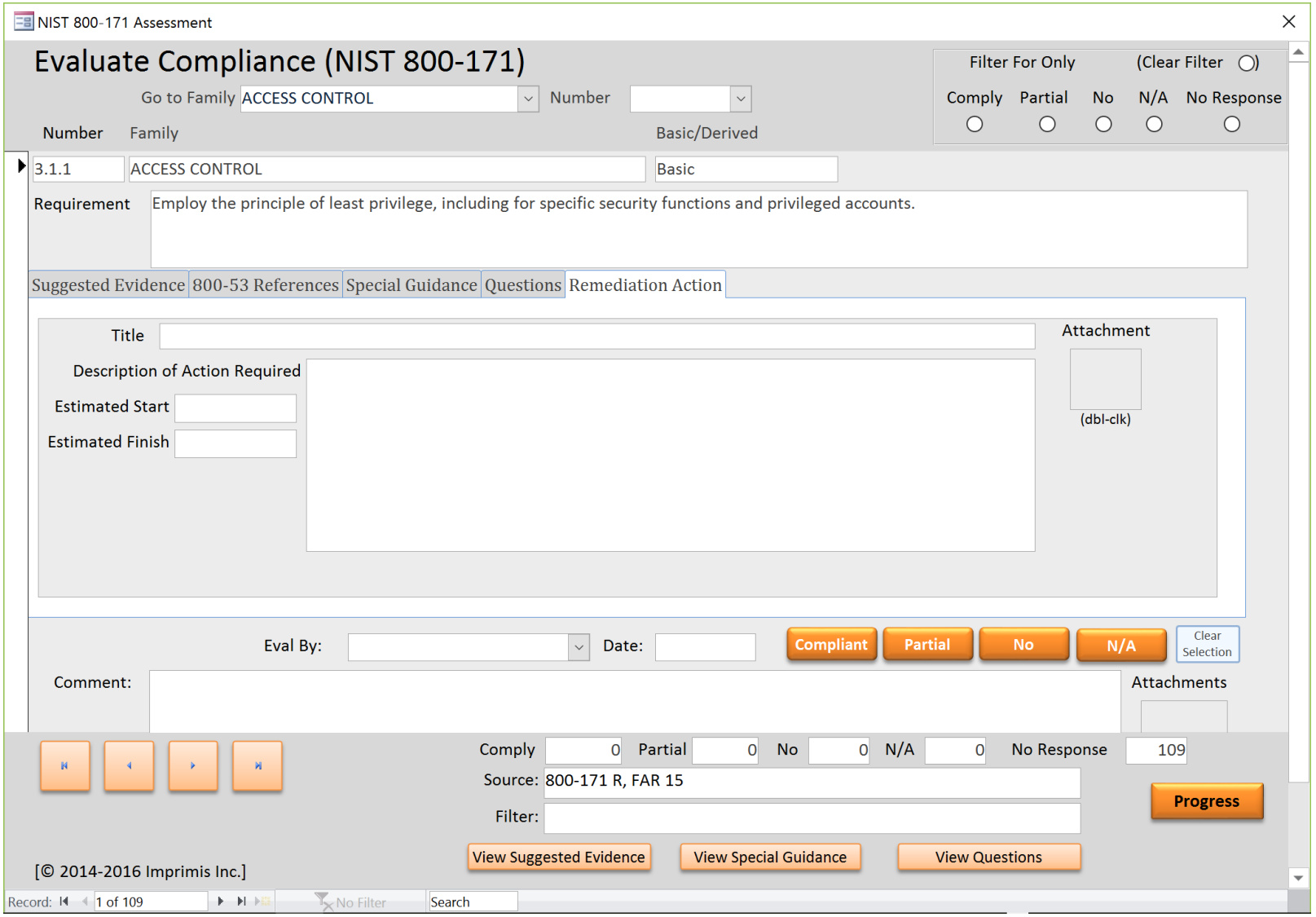


Self Assessment Tool

Comments:

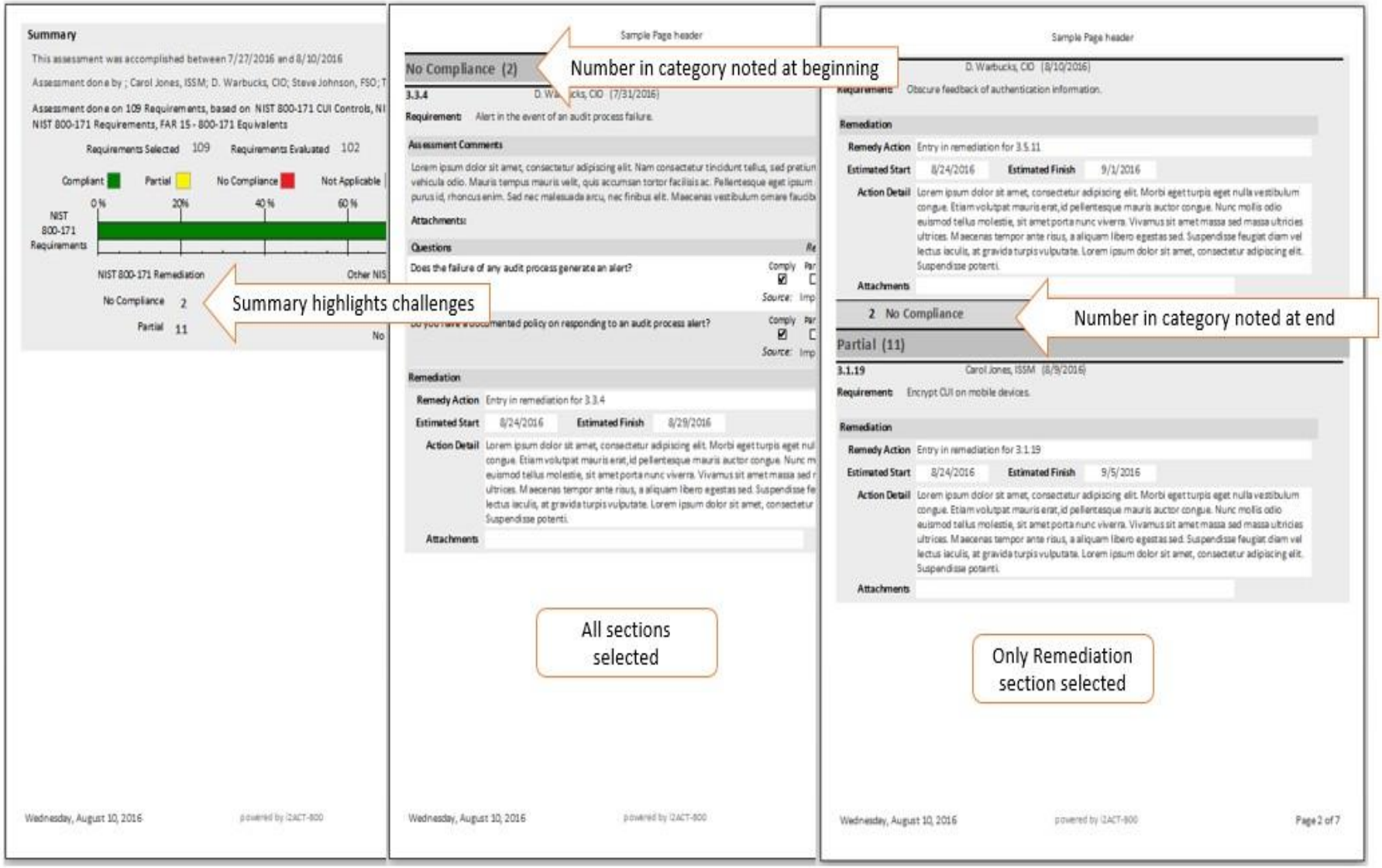
- A comment should be entered for each control, detailing what the organization is doing or how the control is being met.

Attachments:

- Existing policy's or developing policies attached here for audit review.

Self Assessment - Remediation Report

Proud to be 100% Employee Owned



Self Assessment - POAM

Proud to be 100% Employee Owned

	A	B	C	D	E	F	G	H	I	J
1	Requirement/Control	Assessment	Remediation Title	Start Date	Finish Date	Notes	Date Evaluated	Evaluated By	Attachments	
2	3.1.2	Partial	Entry in remediation for 3.1.2	2/23/2016	2/23/2016	Phasellus sagittis mi nec nisl sagittis, id gravida neque faucibus. In pretium lorem faucibus pharetra sodales. Sed mollis ex maximus libero suscipit finibus et aliquam arcu. Vivamus ultricies.	2/8/2016	Carol Jones, ISSM	0	
3	3.1.8	Partial	Entry in remediation for 3.1.8	2/23/2016	3/18/2016	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam consectetur tincidunt tellus, sed pretium eros. Nam ut vehicula odio. Mauris tempus mauris velit, quis accumsan tortor facilisis ac. Pellentesque eget ipsum auctor, congue purus id, rhoncus enim. Sed nec malesuada arcu, nec finibus elit. Maecenas vestibulum ornare faucibus. Duis eu.	2/2/2016	Ted Baxter, IT manager	0	
4	3.1.21	Partial	Entry in remediation for 3.1.21	2/23/2016	3/17/2016	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam consectetur tincidunt tellus, sed pretium eros. Nam ut vehicula odio. Mauris tempus mauris velit, quis accumsan tortor facilisis ac. Pellentesque eget ipsum auctor, congue purus id, rhoncus enim. Sed nec malesuada arcu, nec finibus elit. Maecenas vestibulum ornare faucibus. Duis eu.	1/30/2016	Ted Baxter, IT manager	0	
5	3.3.8	Partial	Entry in remediation for 3.3.8	2/23/2016	2/25/2016	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi eget turpis eget nulla vestibulum congue. Etiam volutpat mauris erat,id pellentesque mauris auctor congue. Nunc mollis odio euismod tellus molestie, sit amet porta nunc viverra. Vivamus sit amet massa sed massa ultricies ultrices. Maecenas tempor ante risus, a aliquam libero egestas sed. Suspendisse feugiat diam vel lectus iaculis, at gravida turpis vulputate. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Suspendisse potenti.	2/3/2016	D. Warbucks, CIO	0	
	3.4.4	Partial	Entry in remediation for 3.4.4	2/23/2016	2/23/2016	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi eget turpis eget nulla vestibulum congue. Etiam volutpat mauris erat,id pellentesque mauris auctor congue. Nunc mollis odio euismod tellus molestie, sit amet porta nunc viverra. Vivamus sit amet massa sed massa ultricies ultrices. Maecenas tempor ante risus, a aliquam libero egestas sed. Suspendisse feugiat diam vel lectus iaculis, at gravida turpis vulputate. Lorem ipsum dolor	2/8/2016	Carol Jones, ISSM	0	

Self Assessment Tool Tips

- **Gather all existing policy and procedure documents**
- **Utilize SANS templates and attach to each control**
- **If possible to divide and conquer by delegating policy gathering and creation**
- **Don’t hesitate to mark No upon first pass evaluation. Progress through the questions as quickly as possible.**
- **From an auditors perspective, a POAM is the most important document produced in IS accreditation.**
- **Utilize SANS SSP Tool**

The Path Forward

Physical network segmentation

- Infrastructure in place: wiring, server and desktop hardware in place
- Conducting phased testing

Applying “baked-in security” principals to:

- Lean process improvement projects
- Program management software development

“Securing American Manufacturing” Partner

- ManTech, LANL and Oak Ridge cyber security initiative
- Serving as a test bed model for security assessments
- Participating in penetration testing to demonstrate program effectiveness

Questions?

Micro Craft, Inc. Proprietary