SNubber Users Group 2026 Summer Conference & Trade Show

Call To Order

Ed Dundon

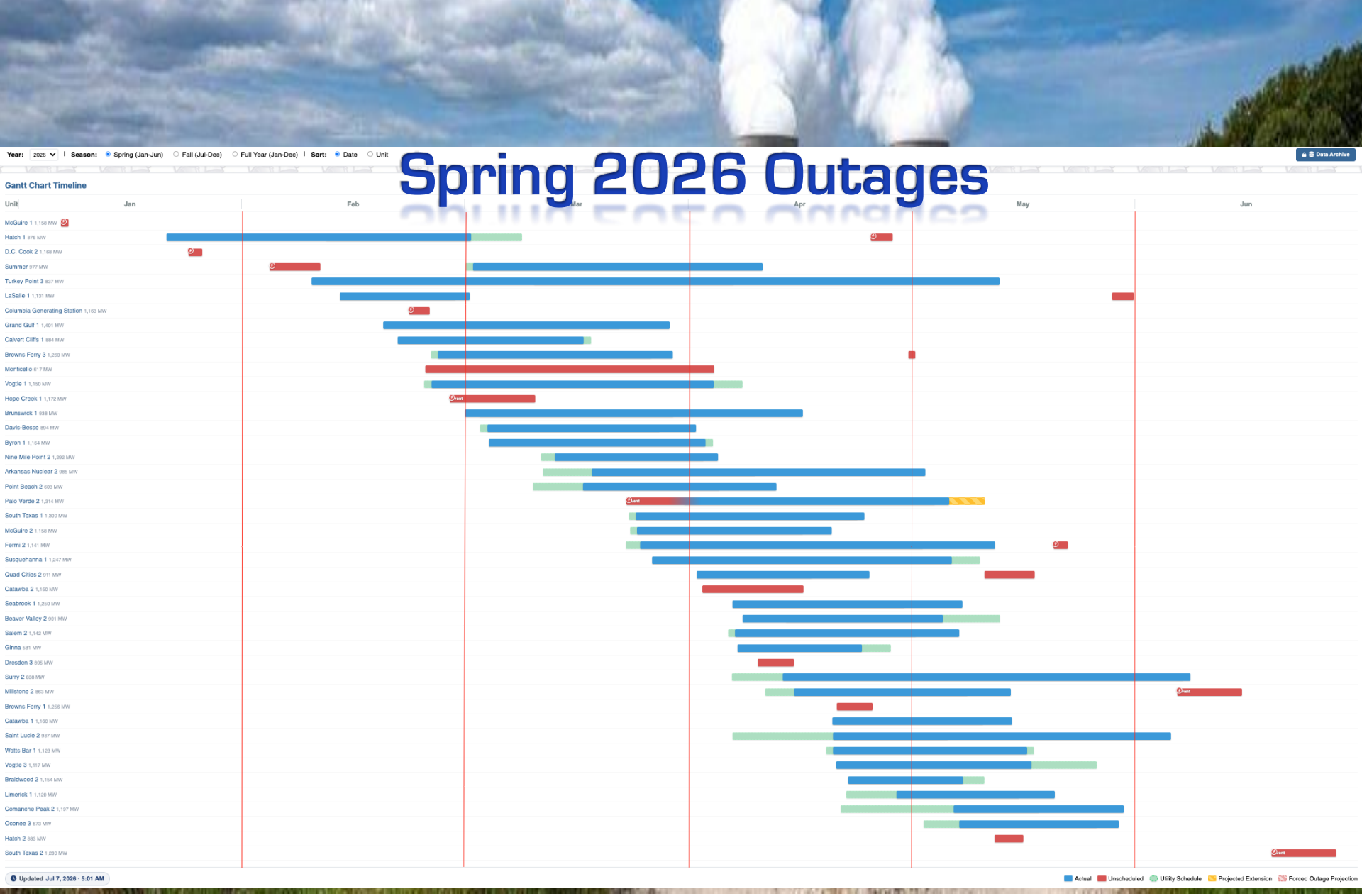
Administrative Items

- Safety Items & Logistics
- Introduce Directors and Officers
- Agenda Review
- Beverage Break @ 9:15; sponsored by SNUG
- Lunch @ 11:45; sponsored by Lisega
- Beverage Break @ 2:30; sponsored by SNUG

Staffing Challenges for Outage Support in the Nuclear Power Industry

Spring 2026 Outages

- Spring 2026; 37 Outages between January 17 and May 28
  - 21 plants shut down in the first half of the Spring
  - 16 plants shut down in the second half of the Spring


Year: 2026
Season: Spring (Jan-Jun) Fall (Jul-Dec) Full Year (Jan-Dec)
Sort: Date Unit
Data Archive
Spring 2026 Outages
Gantt Chart Timeline
Unit
Jan
Feb
Mar
Apr
May
Jun
McGuire 1 1,158 MW
Hatch 1 876 MW
D.C. Cook 2 1,168 MW
Summer 977 MW
Turkey Point 3 837 MW
LaSalle 1 1,131 MW
Columbia Generating Station 1,163 MW
Grand Gulf 1 1,401 MW
Calvert Cliffs 1 884 MW
Browns Ferry 3 1,260 MW
Monticello 617 MW
Vogtle 1 1,150 MW
Hope Creek 1 1,172 MW
Brunswick 1 938 MW
Davis-Besse 894 MW
Byron 1 1,164 MW
Nine Mile Point 2 1,292 MW
Arkansas Nuclear 2 985 MW
Point Beach 2 603 MW
Palo Verde 2 1,314 MW
South Texas 1 1,300 MW
McGuire 2 1,158 MW
Fermi 2 1,141 MW
Susquehanna 1 1,247 MW
Quad Cities 2 911 MW
Catawba 2 1,150 MW
Seabrook 1 1,250 MW
Beaver Valley 2 901 MW
Salem 2 1,142 MW
Ginna 581 MW
Dresden 3 895 MW
Surry 2 838 MW
Millstone 2 863 MW
Browns Ferry 1 1,256 MW
Catawba 1 1,160 MW
Saint Lucie 2 987 MW
Watts Bar 1 1,123 MW
Vogtle 3 1,117 MW
Braidwood 2 1,154 MW
Limerick 1 1,120 MW
Comanche Peak 2 1,197 MW
Oconee 3 873 MW
Hatch 2 883 MW
South Texas 2 1,280 MW
Updated Jul 7, 2026 · 5:01 AM
Actual
Unscheduled
Utility Schedule
Projected Extension
Forced Outage Projection

Snubbers

Snubber support vendors invest in developing personnel with specialized skills related to Snubber Programs, including:

- Visual Examination of Snubbers
- Functional Testing
- Removal and Installation
- Snubber Rebuilds

Personnel require extensive training, Qualifications, Certification and, experience within the specific skill

Staffing Challenges

- Nuclear Plant Skilled Workers Depend on Outages to Make a Living
  - Spring Outage Season is typically 20 weeks long
  - Fall Outage Season is typically 15 weeks long
- Most Outage workers will only get two or three jobs a season (each job is three to four weeks long)

Staffing Challenges

- Challenges
  - Limited Number of Trained, Qualified, and Certified People in the Industry
  - Overlapping Outage Start Dates
  - Short Outage Durations
  - Difficulty Finding Reasonable, and Cost Effective Accommodations
  - Travel Time and Distance between Outages

2027 Outages

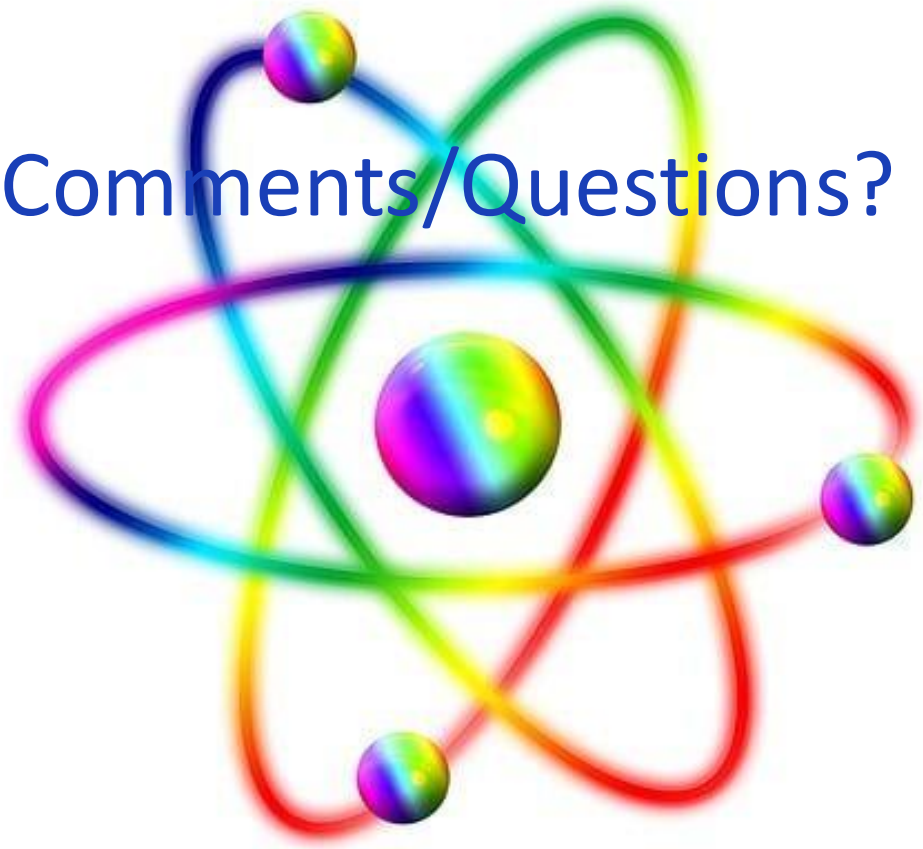
- The 2027 projected outage schedule*:
  - 29 outages during the Spring season
  - 25 outages during the Fall season, according to preliminary projections
- Outages Durations are short,
  - In 2026, Average was 33 days; shortest 12 days, longest 96 days
  - Typically, 3-5 days for in-processing, 8 hours per day
  - Outages work hours are 72 to 84 hours per week

*NukeWorker.com

2027 Outages

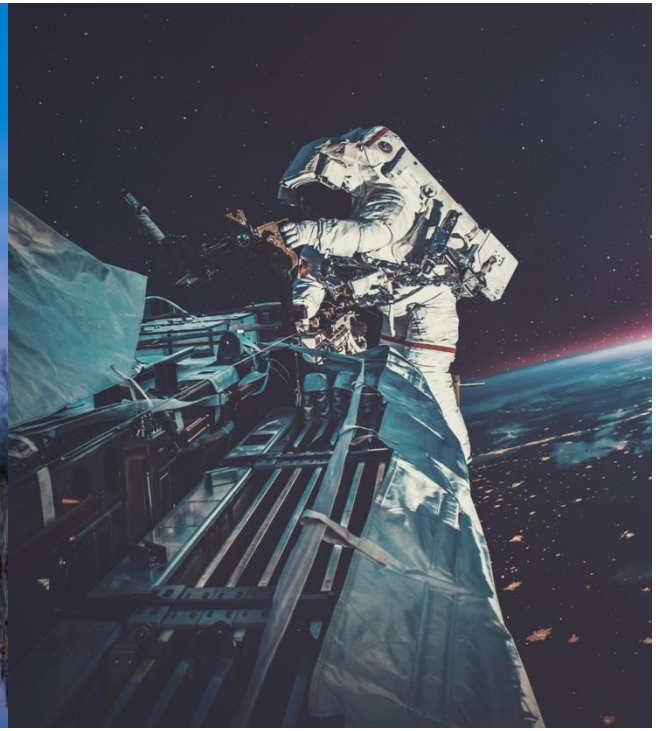
- How can we address the Challenges?
  - Allow trainees/apprentices during the outages to increase the available staff
  - Adjust the Outage Start Dates

Comments/Questions?



Contractor Staffing Challenges And Mitigation For Multiple Industry Outages In The Same Window

SNUG 2026

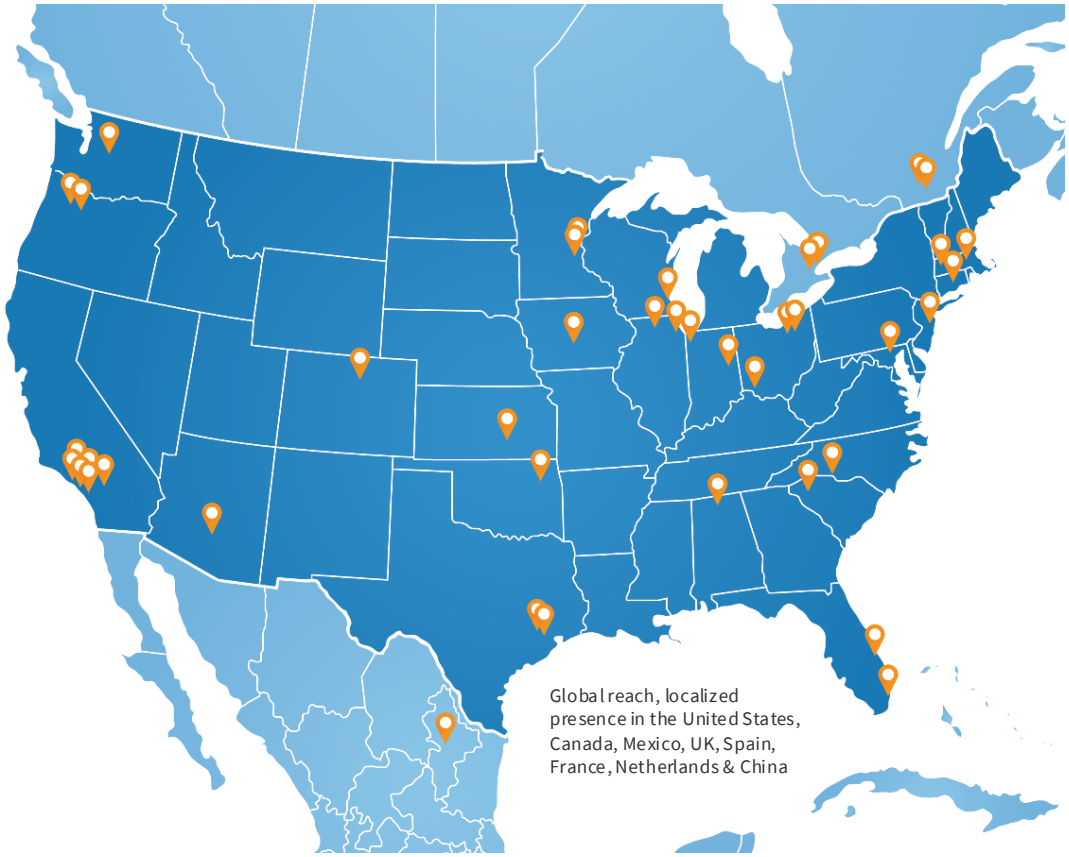


Aerospace & Energy Americas Business Unit Overview

element

1,700+
Engaged Experts

11,000+
Customers



42
Locations

3
Countries

element

SERVICES

- Dynamics
- Environmental
- EMI
- Valve & High Flow
- **Snubber**
- Nuclear Equipment & Third Party Qualification
- Calibration
- Admin & Engineering

Snubber Department & Services

Snubber Services & Facilities

Turnkey services to support maintenance and surveillance programs for all types and sizes of mechanical and hydraulic snubbers:

- Snubber Services: ASME OM Code
  - Removal /Installation
  - Inspection
  - Repair & Refurbishment
- Capabilities include:
  - Procedure and work package development
  - Visual inspection, snubber removal and reinstallation
  - On-site and in-house functional testing
  - On-site and in-house repair and overhaul
  - Failure analysis
- Facilities & Equipment
  - (8) Small Bore test machines (200-130,00 lb load capability)
  - (2) Portable Large Bore test machines (1.6 million lb load capability)
  - (1) Non-Portable Large Bore test machine (2.0 million lb load capability)
  - (9) Snubber Trailers (7 test and 2 rebuild)
- Investments
  - Personnel
    - (32) New Hires, Training and Qualifications (Rigging, VT, Safety, etc.)
  - Test Machine Improvements (new hardware and software)

Snubber Department & Services

Snubber Best Practices

- **Personnel & Training:**
  - 60+ dedicated Element snubber professionals
  - Continuous training and qualification during non-outage seasons to maintain workforce readiness.
    - Rigging and lifting practices, Visual (VT) inspection techniques, Hands-on installation and removal training, Nuclear quality and safety requirements
    - Cross-training personnel to improve flexibility and support multiple customer sites.

- **Pre-Outage:**
  - ***Schedule Early***
  - PO Placement – Min. 60 days prior to outage
  - Build Continuity Through Strategic Staffing
    - Assign the same crews to the same stations whenever possible.
      - Develop site familiarity with plant procedures, personnel, and work packages.
    - Rotate personnel strategically to ensure redundancy and develop additional qualified resources.
  - Internal Resource Management (Loadout Boards)
    - Identify staffing gaps and eliminate scheduling conflicts
    - Balance workloads across multiple outages
    - Ensure efficient onboarding
  - Snubber Rebuilds: Reduces schedule risk & improves outage execution.
    - Ship snubbers to Element Huntsville as early as possible.
    - Identify replacement parts and long-lead components early.

- **Outage Execution:**
  - Dedicated QA personnel available to travel and support field activities.

Contractor Staffing Challenges and Mitigation for Multiple Industry Outages in the Same Window

ASC Engineered Services

Visual Examination Questions - Pass/Fail?

ISTD Visual Examination Requirements

- **ASME OM Code 2004 w/ 2006 Addenda** (2022 Code virtually identical)
- **ISTD-4230 Visual Examination Requirements.** Snubber installations shall meet all of the requirements of ISTD-4231 through ISTD-4233.
- **ISTD-4231 Restrained Movement.** Snubbers shall be installed so they are capable of restraining movement when activated. Examinations shall include observations for the following and the conditions shall be evaluated when found:
  (a) loose fasteners, or members that are corroded or deformed
  (b) disconnected components or other conditions that might interfere with the proper restraint of movement
  Snubbers evaluated to be incapable of restraining movement shall be classified unacceptable.

How about loose mounting brackets?

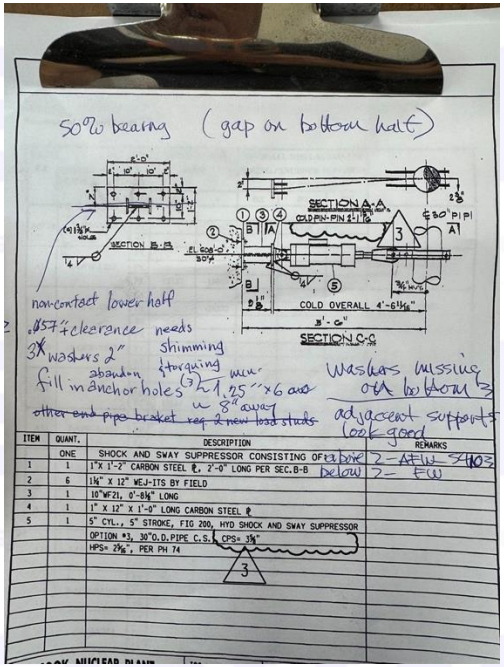
outside pin-pin so NOT programmatic

2022 ISTD-3110 Examination Boundary. The examination boundaries shall include the snubber assembly from pin to pin, inclusive.

Question: How does your plant interpret a loose mounting plate?

ISTD Visual Examination Requirements

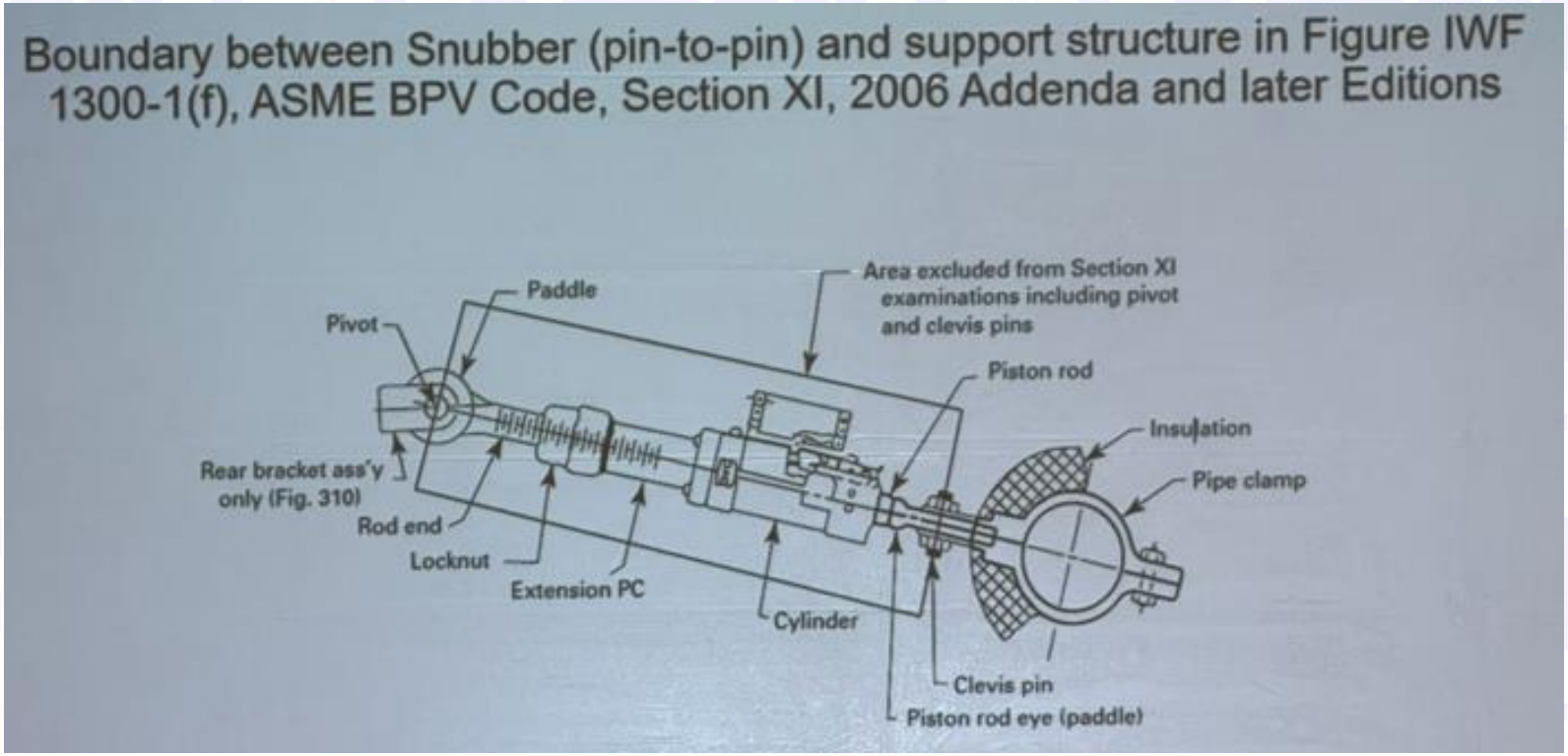
- **First Question**
- **How about these mounting brackets?**



ISTD Visual Examination Requirements

- Outside Pin – Pin
  - so not Programmatic failure
    - **2022 ISTD-3110 Examination Boundary.** The examination boundaries shall include the snubber assembly from pin to pin, inclusive.
  - What do we do now?
    - Write a condition report
    - Work with/hand off to Design Structural Engineering or EFIN during an outage
    - What other effects?
      - Do you then check snubbers both up & down stream to ensure this isn't a larger problem?
        - Some locations do and provide in the condition report

ISTD Visual Examination Requirements



ISTD Visual Examination Requirements

ISTD-4231 Restrained Movement. continued –

For example, fluid supply or content for hydraulic snubbers

shall be observed. An observation that the fluid

level is equal to or greater than the **minimum specified amount** that is sufficient for actuation at its operating

extension is considered to satisfy this requirement. If

the fluid is less than the minimum amount, the installation

shall be identified as unacceptable, unless a test

establishes that the performance of the snubber is within

specified limits.

Dependent on your reading of these lines if it is leaking and procedure provides an acceptable fluid setting you are below minimum specified.

Question: How does your plant interpret a leak?

ISTD Visual Examination Requirements

- Dependent on your reading of these *"shall"* guidelines
  - if it is leaking and procedure provides an acceptable fluid setting is the snubber below minimum specified?
  - Do you care if it is with a large population and a few acceptable failures?
  - With <100 in your DTPG a failure leads to Table 4252-1 periodicity reduction to 2/3's on visual inspections.
    - Do you need to functionally test now?
- How does your plant interpret a leak?

Did you know there are likely technical statements by your vendor stating your snubber is functional with a level of fluid so as long as the snubber is not drawing air?

ISTD Visual Examination Requirements

- What would you do with these?

ISTD Visual Examination Requirements

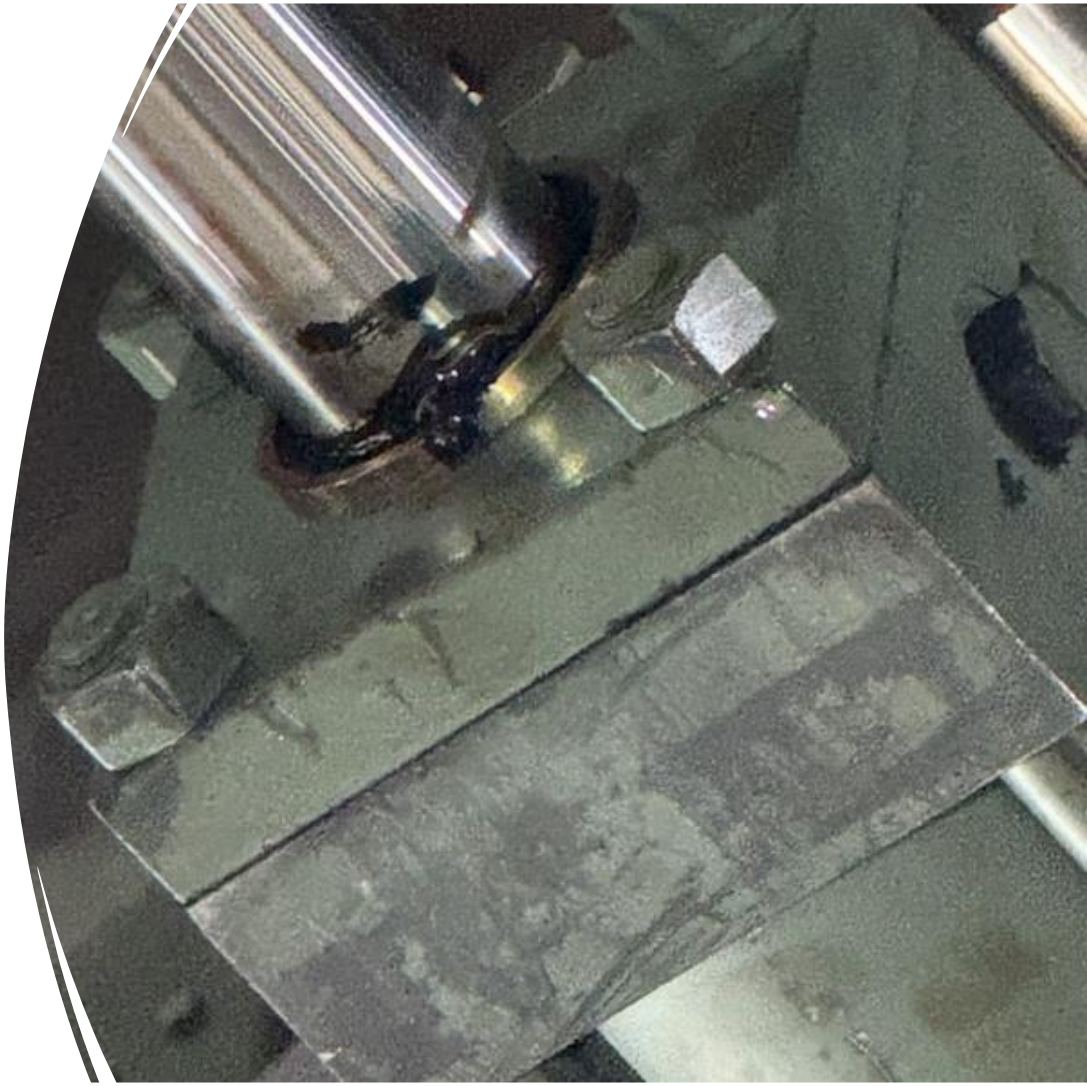
- What would you do with these?

Dust seal no leakage… degradation due to heat reposition seal, maybe choose for next outage.

ISTD Visual Examination Requirements

- What would you do with these?

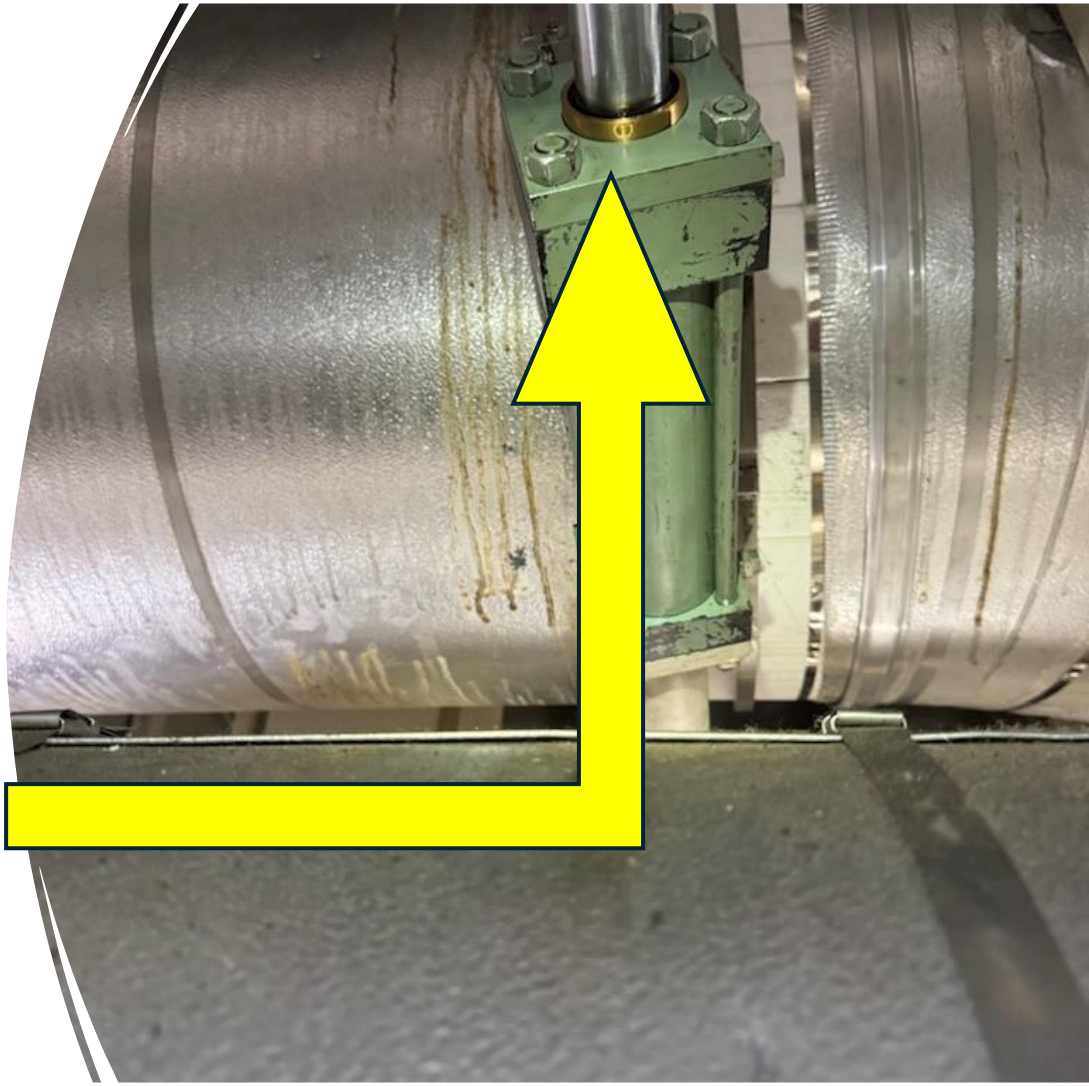
Happened to be dripping fluid as well rubber…



ISTD Visual Examination Requirements

- What would you do with these?

- As you can see visible leakage
- Note drippings ran down sides of pipe from upper snubber in prior outage
  - Do you clean those remnants?
  - Should we try to clean them OCC?



ISTD Visual Examination Requirements

- What would you do with these?

Looks like no problem at all… this fluid had solidified at 24 years with a 25 year lifecycle… thought everything was fine until snubber removed and the line of fluid did not! Last LEXAN reservoir.

ISTD Visual Examination Requirements

- What would you do with these? A missing washer?

Washer has been ground into the dog ear mount bracket. It was replaced but was below the level of configuration and the “bearing” was unaffected allowing operation w/o exception.

ISTD Visual Examination Requirements

ISTD-4240 Operational Readiness Test Evaluation. A snubber that requires further evaluation or is classified as unacceptable during inservice examination may be tested in accordance with the requirements of ISTD-5210. Results that satisfy the operational readiness test criteria of ISTD-5210 shall be used to accept the snubber, provided the test demonstrates that the unacceptable condition did not affect operational readiness.

If the visual exam is determined to be an unacceptable visual examination → Functional Test is a way to prove acceptable condition.

Question: What may result from a leaking snubber?
SLM adjustment?
Condition Evaluation?

And **Welcome** to a new member

- Jeff Calderwood – AEP Cook

Inventor of the "Calderwood" Vent, a term growing acceptance in the industry…

Also known as a High Point Vent.

Conclusion

- Many decision maker resources
  - Procedures
  - Code
  - Size of DTPG Populations
  - Manufacturer/OEM and support
  - Vendor support
- Feel free to utilize your vendors and OEMs for support
  - Much thanks to Onora & Guy Levy over the years
- Your SNUG members are here to help. We've all been through the trials & tribulations.
- Much thanks to historical help from Onora Cable and Guy Levy!

“Previously Untested” Snubbers

Definition and Impacts

“Previously Untested” Definition and Impacts

The term “untested” appears 4 times in ISTD:

ISTD-5314, 5413, 5421, 5313

ISTD-5314 FMG Sample Composition. When samples from an FMG are required, they shall be selected randomly from untested snubbers in the FMG.

“Previously Untested” Definition and Impacts

ISTD-5413 Additional Sample Selection. Additional samples, if required, shall be selected randomly from the remaining population of the DTPG, or from untested snubbers of the FMG as applicable.

ISTD-5421 DTPG Testing. When an applicable FMG has not been established, the number of unacceptable snubbers shall determine additional samples in accordance with ISTD-5412. The additional samples shall be selected randomly from the remaining untested snubbers of the DTPG.

“Previously Untested” Definition and Impacts

ISTD-5313 Additional DTPG Sample Composition

When an unacceptable snubber has not been assigned to an FMG, the additional sample required by ISTD-5320 shall be taken from the DTPG. As practicable, the additional sample shall include the following:

(a) snubbers of the same manufacturer’s design

(b) snubbers immediately adjacent to those found unacceptable

(c) snubbers from the same piping system

(d) snubbers from other piping systems that have similar operating conditions such as temperature, humidity, vibration, and radiation

(e) snubbers that are previously untested

“Previously Untested” Definition and Impacts

- The term “previously untested” in ISTD-5313 has caused the most confusion.

- Has led to misinterpretation and selective interpretation regarding additional sample selection
  - “Cherry picking” eligible SLM-tested snubbers that met the 10% Plan resample requirements and tested SAT, while excluding other eligible SLM-tested snubbers that were failures.
  - Testing anticipated failures as SLM tests to avoid having to test in DTPG testing.

- Inquiries 23-117 and 24-1596 surfaced the question; formal responses were issued

“Previously Untested” Definition and Impacts

Interpretation# OM-24-02 / Record# 23-117

QUESTION: Is it a requirement of OM 2004 Edition / 2006 Addenda up to and including 2022 Edition, ISTD-5313 and ISTD-5413 to select additional snubbers that have not already been tested for sampling or service life monitoring during the current test campaign?

REPLY: Yes

“Previously Untested” Definition and Impacts

Interpretation# OM-24-03 / Record# 24-1596

QUESTION 1: Is it a requirement that all snubbers in each DTPG be included in each 37 plan snubber sample selection per ISTD-5411, regardless of Service Life Monitoring considerations?

REPLY 1: Yes

QUESTION 2: Is it a requirement that only untested snubbers selected per ISTD-5421 or ISTD-5423, be included in the additional sample selection, regardless of Service Life Monitoring considerations?

REPLY 2: Yes

“Previously Untested” Definition and Impacts

- SCDR opened a clarification item 24-01 because the Code wording remained susceptible to future misinterpretation.

- Resolution is to add “during the current test campaign” after “previously untested” in ISTD-5313. This is also reflected in the OM-1 Section DRD draft.

“Previously Untested” Definition and Impacts

Impacts – What this means

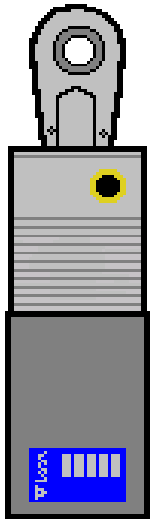
- “Untested” refers only to whether the snubber has been tested as part of the DTPG sample plan during the current test campaign.
- Snubbers tested for SLM cannot be excluded from DTPG initial or additional sample selection. The only allowed exemptions are described in ISTD-5251 (replacement snubbers or snubbers repaired due to not meeting visual exam acceptance).
- The Owner should use caution when taking credit for snubbers already tested during the test campaign window for other reasons, such as service life monitoring. (10% Plan)

Questions?

Morning Beverage Break
Sponsored by

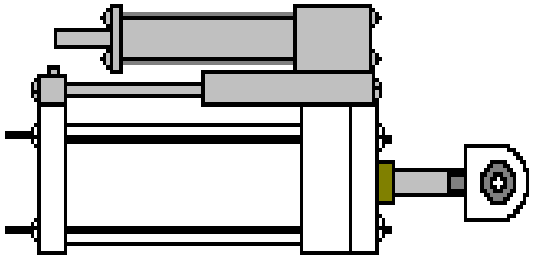
Return By 10:00 am

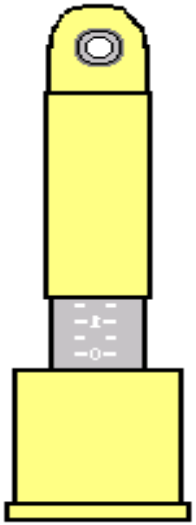
Dominion Nuclear CT
Millstone Units
2 & 3
Change to 24 Month Fuel Cycle



Ed Dundon

SNUG Summer July 2026 Conference





Background

Spring of 2028 - MP3 will switch to a 24-month fuel cycle

Spring of 2029 – MP2 will switch to a 24-month fuel cycle

- **This will increase the Millstone capacity factor**
- **The spring outage will correlate with EPA requirement to reduce Circulating Water flow from the Niantic Bay**
  - **The spring is the winter flounder spawning season.**

Background Cont.

- Millstone Station complies with the 2012 OM Code for its snubber program requirements
- Millstone utilizes the 10% test plan each outage for functional testing.
- Millstone uses a drop & swap program plan for DTPG
  - Remove the snubber to be tested
  - Swap in a rebuilt or new snubber in the location to minimize unavailability
  - Test removed snubber
  - Overhaul if needed

Background Cont.

- **Service Life Program -** Captures snubbers that are approaching the end of life & not part of the DTPG for that outage
  - PSA mechanical snubbers normally have a service life of 18 years. (Area for improvement)
  - A few PSA snubbers in hot areas or high vibration areas have less than 18 years. (Area of Focus)
  - Grinnell/ASC hydraulic snubbers have a service life of 10 years. (Area of Focus)
  - Hydraulics such has Lisega 3306 & Grinnell Configuration A snubbers have a service life of 20+ years

Background Cont.

- **100% Visual Examination Program**
  - **OMN-13 with 10-year maximum examination interval**
  - **Millstone uses a 9-year examination strategy that coincides with 18M fuel cycle**
  - **We do accessible and inaccessible snubbers at once.**
  - **MP2 is due in Spring 2029**
  - **MP3 is due in Spring 2028**

Outage Planning for 24M Cycle

We are planning 2 - 3 cycles ahead of the change

- **MP2 - Last 18-month cycle – Cycle 32**
- **MP2 - First 24-month cycle - Cycle 33**

- **MP3 - Last 18-month cycle – Cycle 25**
- **MP3 - First 24-month cycle - Cycle 26**

Currently:

- **MP2 is in Cycle 31**
- **MP3 is in Cycle 24**

Outage Planning for MP2 24M Cycle

18M Run – Cycle 31 – MP2 is here

(last 18M Outage - 2R31)

18R run – Cycle 32

(Transition 18/24M Outage 2R32)

24M Run – Cycle 33

Outage Planning for MP3 24M Cycle

18M Run – Cycle 24 MP3 is here

(last 18M Outage - 3R24)

18R run – Cycle 25

(Transition 18/24M Outage 3R25)

24M Run – Cycle 26

Outage Planning for 24M Cycle

- **Need to see that service life Drop Dead Date (DDD) will span the 24 months cycle**
  - **Some snubbers may need to be pulled back because they do not meet the first 24M duration.**
  - **Depending upon the additional amount snubbers added in the refueling outage starting before the first 24M cycle, will we need to start rebuilding snubbers in the outage prior to the last 18M cycle?**

Impact to 10% DTPG

No Real Change

Snubbers with < 22 years service life
will need to be refurbished independent of DTPG

Ideal Service life is 20 year + the time rebuilt snubber was sitting on the shelf

Shelf time can be 1 to 12+ months.

Impact to Service Life

- More snubbers will be rebuilt each outage
- Snubbers impacted have ≤ 20 year life
- Need to evaluate stock piling snubbers from previous outage.
- May need to rebuild more snubbers immediately before the outage.
- Need to evaluate changing snubber types to those with longer service. (> 20 years)

Impact to Service Life

- **Completed changing over from NRRG-159 grease to NRRG-2 grease, which has a longer life at higher temperatures**

- **Review Basic-PSA DR 3020 for increasing SL from 18Y to 20Y**
  - **Level 1 Locations – as found drag test $\leq$ 2% change SL to 20Y or 20+Y**

- **Design changes from mechanical snubbers to hydraulic snubbers with > 20-year SL**

Impact to Visual Examination Plan

- Depends
  - What is the length of your 100% interval?
  - Does your examination interval allow for any grace?
  - When does the 24M cycle change occur in relation to your examination interval?
  - You will have to adjust accordingly.

Impact to Millstone 100% Visual Inspection

We got lucky - NOTHING

Code Case OMN-13 - 10-year maximum examination interval & MPS uses a 9-year examination strategy

MP2:

- **100% is due in spring 2029**
- **MP2 - First 24-month cycle- Cycle 33 starts May of 2029**

MP3:

- **100% is due in spring 2028**
- **First 24-month cycle- Cycle 26 starts May of 2028**

Going Forward

MPS – Starting a new ISI interval in December 2028

Need to review the newer OM Code requirements

&

adjust accordingly

See what changes in service life intervals can be implemented

What changes will our new owner bring??

The End

Questions and Comments

Service Life Monitoring of Snubbers

Summer 2026 Conference

July 14, 2026

St. Paul, MN

By: Scott Esposito

PURPOSE

WHY:

Increase Service Life Monitoring (SLM) requirements knowledge

BENEFIT:

Gain a better understanding of Service Life Monitoring

SLM GUIDANCE

- Non-Mandatory Appendix F
  - Predicted Service Life
    - Manufacturers recommendation
    - Design review
  - Service Life Reevaluation
    - Knowledge of the Operating Environment
    - Direct Measurement of Environmental Parameters
    - As-found Testing

SLM GUIDANCE

- Non-Mandatory Appendix F
  - Knowledge of Operating Environment Effects
    - Identification of Degraded Snubbers
    - Trending
  - Cause Evaluation of Degraded or Failed Snubbers
    - Failure Evaluation Data Sheet
    - Diagnostic Testing

SLM GUIDANCE

- Non-Mandatory Appendix F
  - Shortened Service Life
  - Service Life Extension
  - Separate Service Life Populations

SLM Code Requirements

- ISTD-6100 Initial Service Life
  - Manufacturer's recommendation
  - Review of actual and expected service conditions

SLM Code Requirements

- ISTD-6200 Service Life Reevaluation
  - Shall be performed for all installed snubbers at least once each fuel cycle
  - Based on review of results
  - If the snubber's service life will be exceeded it shall be:
    - Replaced
    - Technical Justification
    - Reconditioned

SLM Code Requirements

- ISTD-6300 Cause Determination
  - Causes of snubber failures shall be
    - Determined
    - Documented
    - Considered for reestablishing service life

SLM Code Requirements

- ISTD-6400 Additional Monitoring Requirements for Snubbers That Are Tested Without Applying a Load to the Snubber Piston Rod
  - Fluid sample monitoring for particulates, viscosity and moisture content
  - Monitoring of piston seal, piston rod seal and cylinder integrity

SLM Code Requirements

- ISTD-6500 Testing for Service Life Monitoring Purposes
  - Results of testing do not require additional testing in accordance with ISTD-5320 and ISTD-5420
  - Shall be evaluated for appropriate corrective actions

SLM Code Requirements

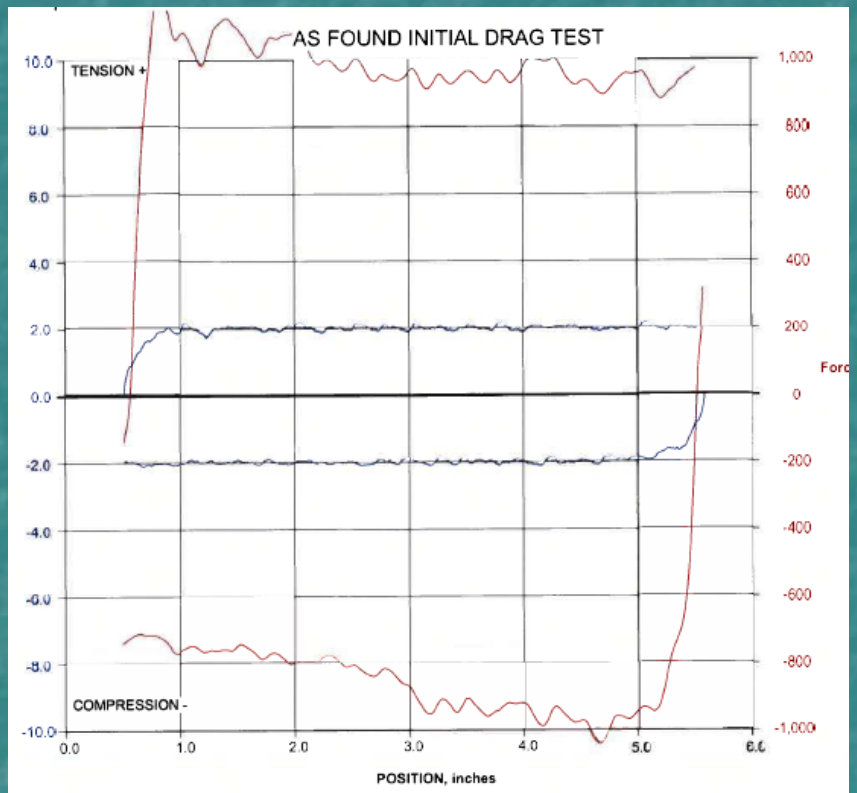
- ISTD-6600 Review of Operational Readiness Test Data
  - Review of traces
    - Snubber subjected to progressive degradation
    - Severe operating environments not previously identified

SLM Code Requirements

- ISTD-6700 Examination During Assembly
  - Review of traces
    - Examination of snubbers and parts during disassembly for signs of degradation or severe operating environments

SLM Disassembly Examination

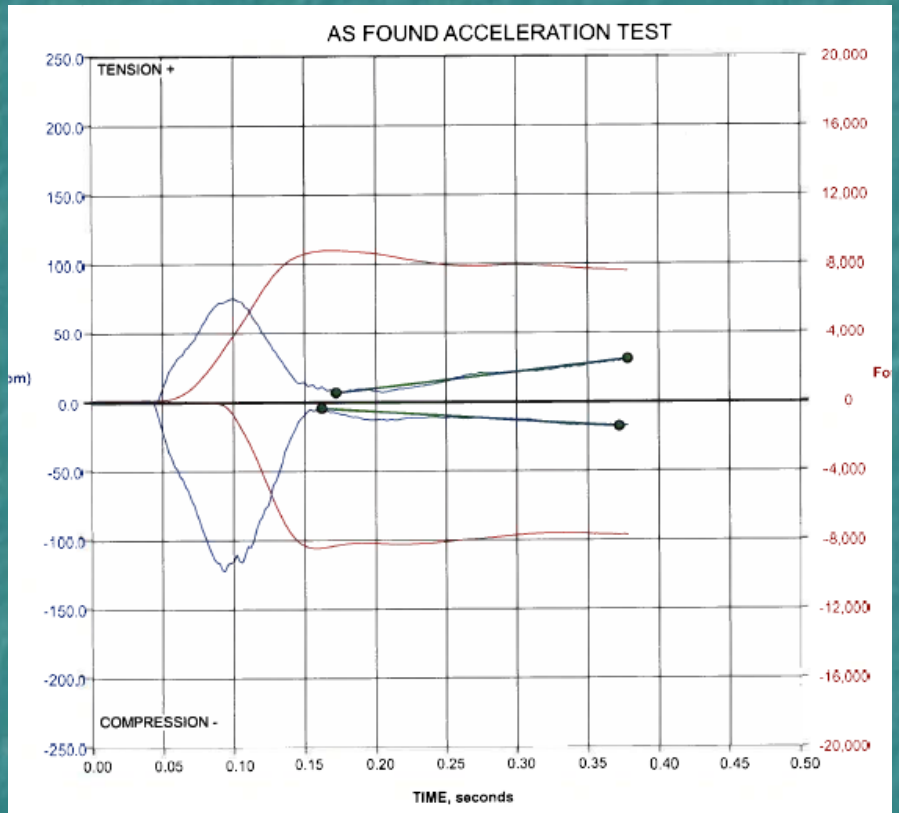
SLM Disassembly Examination



PARAMETER	MIN/MAX	TENSION	COMPRESSION
Breakaway Load (lb)	0/750.0	321.2	-226.9
Peak Load (lb)	0/750.0	1196.7*	-1040.7*
Average Load (lb)	0/750.0	900.7*	-775.7*

* indicates need for evaluation

SLM Disassembly Examination



PARAMETER	MIN/MAX	TENSION	COMPRESSION
Acceleration (g)	0.000/0.030	0.005	-0.003
Test Load (lb)	6,000/12,750	8812	-8445

SLM Mechanical Disassembly Examination

Possible signs of degradation:

- Changes in grease properties
  - Dark brown tacky consistency
  - Black pasty consistency
  - Brownish powdery consistency

- Which parts show signs of grease degradation?
- Is the grease located where it is not desired?
- Consider qualitative testing

SLM Mechanical Disassembly Examination

Possible signs of degradation:

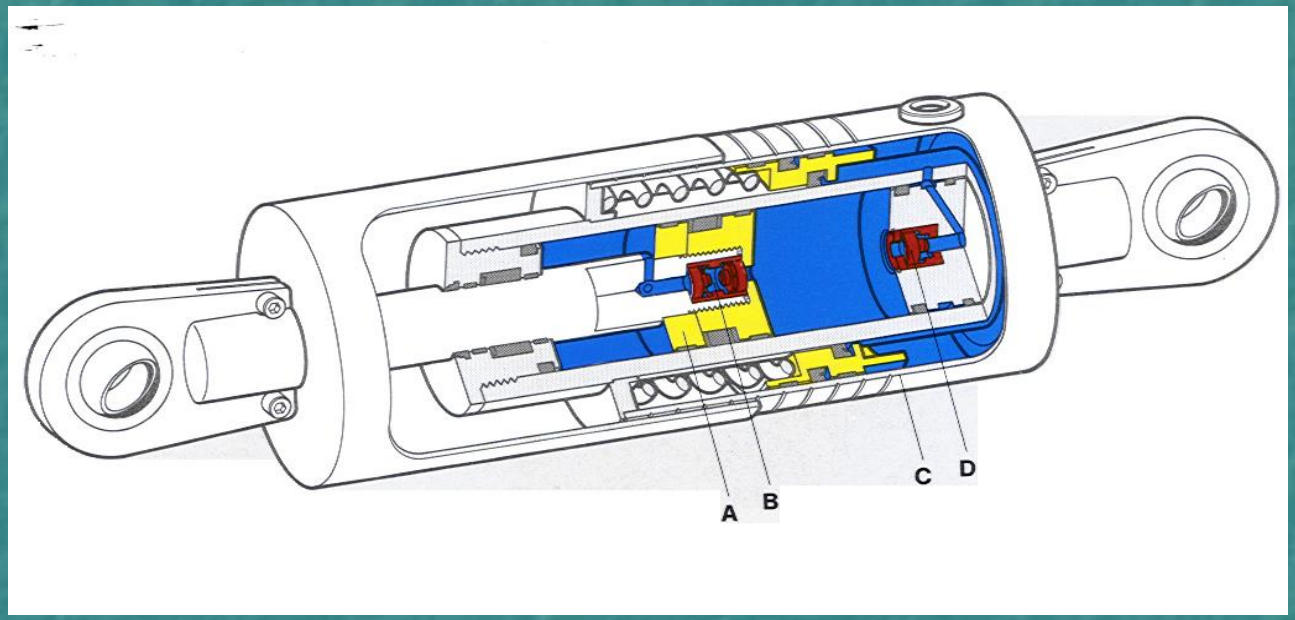
- Signs of vibration
  - Fretting on various parts
    - Internal or external

- Which parts show signs of vibration degradation?

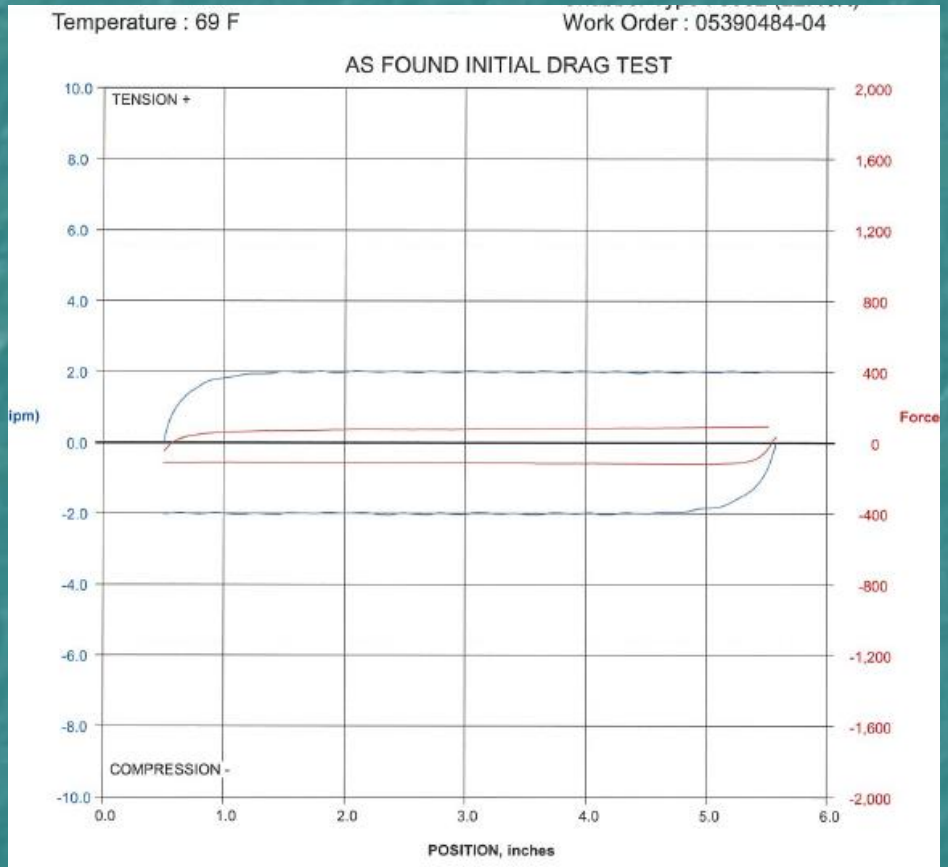
- How will the degraded parts affect future testing after refurbishment?

SLM Disassembly Examination

Hydraulic Snubber Cutaway

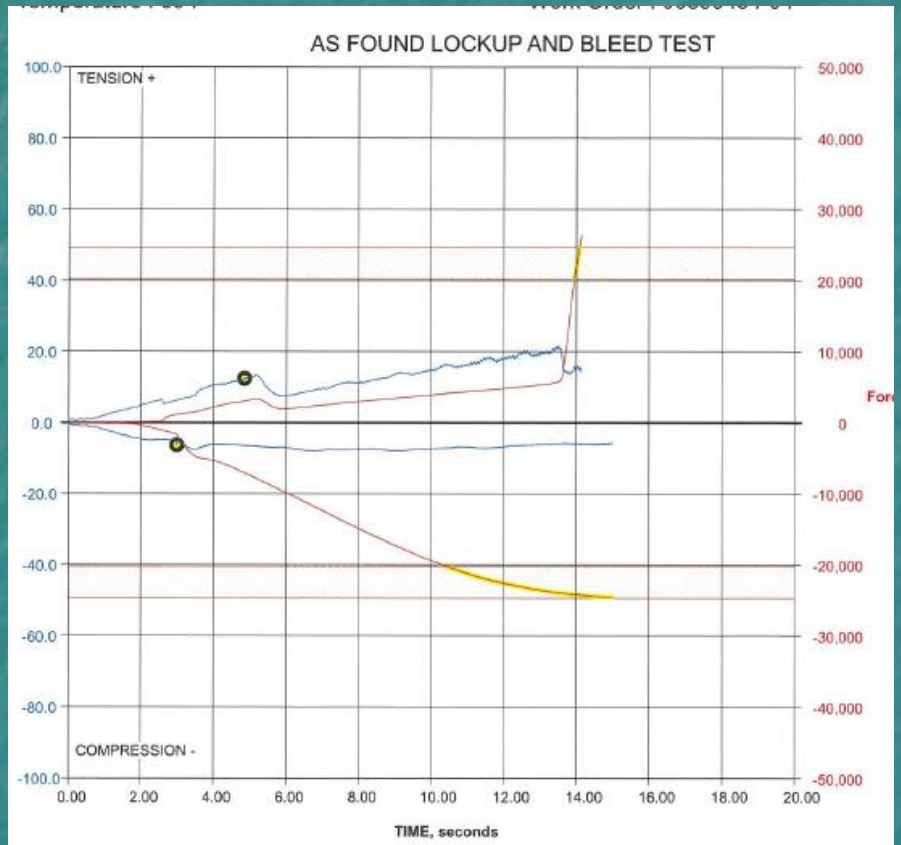


SLM Disassembly Examination



PARAMETER	MIN/MAX	TENSION	COMPRESSION
Breakaway Load (lb)	0/1122.5	8.9	-58.9
Peak Load (lb)	0/1122.5	92.4	-121.1
Average Load (lb)	0/1122.5	67.6	-105.1

SLM Disassembly Examination

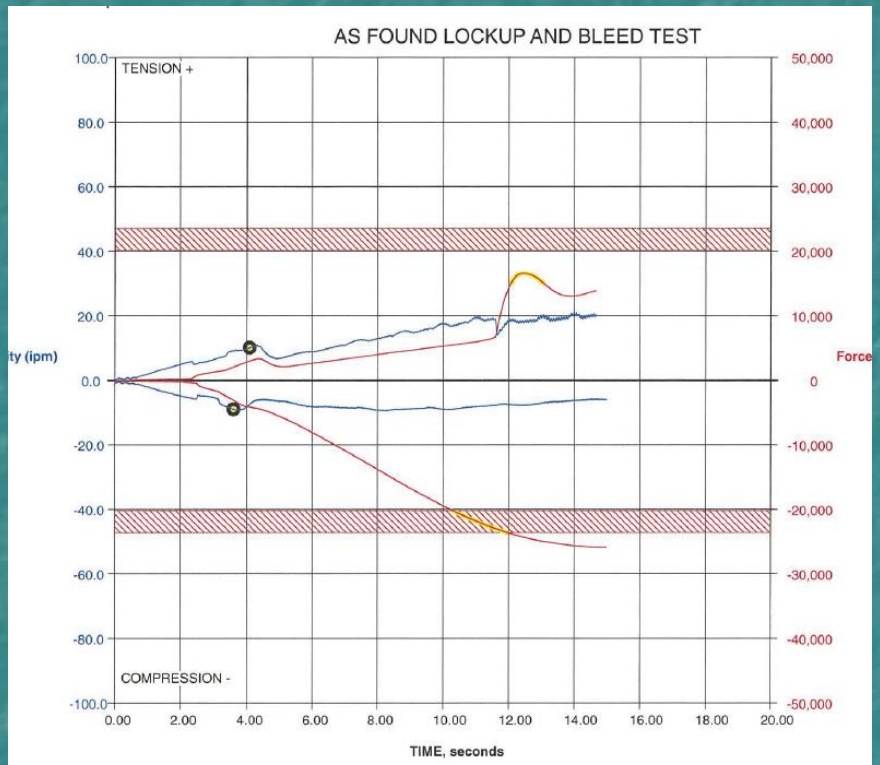


PARAMETER	MIN/MAX	TENSION	COMPRESSION
Lockup Rate (ipm)	4.72/50.00	12.44	-6.26
Bleed Rate (ipm)	0.47/4.72	15.28*	-6.47*
Test Load (lb)	20,205/24,695	22574	-22994

* indicates need for evaluation

SLM Disassembly Examination Previous Outage

SLM Disassembly Examination Previous Outage



PARAMETER	MIN/MAX	TENSION	COMPRESSION
Lockup Rate (ipm)	4.72/50.00	10.13	-8.97
Bleed Rate (ipm)	0.47/4.72	18.65*	-8.00*
Test Load (lb)	20,205/23,573	16103*	-22009

* indicates need for evaluation

SLM Hydraulic Disassembly Examination

Possible signs of degradation:

- Changes in oil properties
  - Dark brown or amber color
  - Black particles
  - Gunk or sludge

SLM Hydraulic Disassembly Examination

Possible signs of degradation:

- Signs of vibration
  - Scoring in the cylinder
  - Grooves in the piston
  - Wear band worn

SLM Hydraulic Disassembly Examination

Possible signs of degradation:

- Signs of heat
  - Discoloration on cylinder or piston shaft
  - Worn wiper

SERVICE LIFE MONITORING OF SNUBBERS

Questions?

CURTISS-WRIGHT

TESTAN IIIB // Small TESTAN, Big Savings

Marius Rosca

TESTAN IIIB | Agenda

- Safety Minute
- Premise/Problem
- Solution
- Delivery & Savings
- Conclusion

Safety Minute

- **Work from home evacuation protocol**
  - Fire (in or around home)
  - Earthquake
  - Others

Always be ready, even at home.

Premise/Problem

TETAN II/III weight

Polar crane

Time windows

Premise/Problem

Solution

Same TESTAN, but smaller pieces

From one (1) piece to two (2) pieces

Weight restriction: 250 lbs.

Envelope restriction due to manholes

Solution

- **Two (2) main systems**
  - Electrical (40 lbs.)
  - Hydraulic (240 lbs.)
- **Computer (Laptop)**
- **Secure, simple lifting/hoisting**
- **Power: 460 VAC**
- **Hydraulic fluid volume: 5 gal.**

Delivery & Savings

AEP // D.C. Cook Fall 2025 Outage Use

$$$ Savings

Thank You

https://nuclear.curtisswright.com/brands/enertech

714-982-1961 (office) // 714-588-4420 (mobile)
mrosca@curtisswright.com

nfrank@curtisswright.com

714-831-7912 (mobile)

GSE Solutions Acquires Iddeal Concepts, Inc.

JULY 2026

GSE SOLUTIONS®
Engineering Tomorrow's Energy

Who We Are

GSE Solutions supports nuclear power and clean-energy fleets worldwide through integrated engineering services and software that strengthen operational performance. Our experts, including many former nuclear utility professionals, combine decades of experience with modern best practices to help customers reduce rework, cost, and risk.

Over 50 Years in the Making

1970s

IN THE BEGINNING

Originally Link Simulation, a division of the Singer Co., GSE built the first-ever nuclear simulator, derived from their WWII pilot simulators.

1980s

BUILDING A STRONG FOUNDATION IN NUCLEAR POWER

GSE leads the industry with over 1,100 installations, setting the benchmark in high-fidelity nuclear simulation.

1990s

SHAPING THE FUTURE OF POWER OPERATIONS

Leveraging cutting-edge technology and advanced software to enhance and modernize the future of nuclear and power generation.

2000s

INVESTING IN ENGINEERING EXCELLENCE

GSE broadens portfolio in design engineering, simulation, thermal performance, and engineering program services.

2010 - EnVision
2018 - True North Consulting
2019 - DP Engineering
2026 - Iddeal Concepts, Inc.

2020s

SUPPORTING CARBON-FREE ELECTRICITY & BETTER PERFORMANCE

GSE Solutions was formed to leverage its multidiscipline expertise, advanced engineering services and cutting-edge software to bring more value to customers

GSE SOLUTIONS®

About GSE Solutions

- More than five decades of proven industry experience
- Hundreds of customers in over 50 countries
- Delivering advanced engineering services and cutting-edge software to nuclear power and energy facilities
- Engineering design and analysis to programs, plant performance, compliance, and simulation
- GSE supports the future of clean energy production and the decarbonization of the power industry
- Headquartered in Columbia, Maryland
- ISO 9001-2015, ANSI N45 App B
- Privately owned by Pelican Energy Partners a growth equity investor dedicated to expanding nuclear energy services to support the sector

GSE SOLUTIONS®

Experienced Leadership

Ravi Khanna
President & CEO
25+ Years of Experience

Damian DeLongchamp
COO
25+ Years of Experience

Dr. Bahram Meyssami, Ph.D.
CTO
25+ Years of Experience

Brian Papson
CFO
15+ Years of Experience

Travis Duckro
Senior Vice President
Head of Sales
15+ Years of Experience

Dean Hecht
Director
Systems & Simulation
20+ Years of Experience

Mike Anderson
Director
Programs & Performance
20+ Years of Experience

Lee Windham
Director
Design & Analysis
40+ Years of Experience

GSE Solutions Acquires Iddeal Concepts

- GSE Solutions has acquired Iddeal Concepts – enterprise IT solutions and data management software, Iddeal Services – project management, on-site support and training, and Iddeal Solutions, a full-service Engineering Program services and support company for ASME Section XI Inservice Inspection and O&M Code Inservice Testing programs and plant implementation, expanding our Engineering Program capabilities and strengthening our technical depth in ASME Code programs.
- The purchase also brings the IDDEAL Software Suite® which integrates information on defined requirements, industry regulations and standards, plant components, systems, and examination programs - facilitating easier, more efficient organization, scheduling, and tracking of all engineering, inspection, and examination work.
- This acquisition adds specialized expertise across ASME Section XI ISI, OM Code IST, enterprise IT, on-site services, and the IDDEAL Software Suite® - further strengthening GSE's Programs & Performance division and the value we deliver to nuclear utilities.

GSE SOLUTIONS

GSE Solutions Acquires Iddeal Concepts

Iddeal Concepts, Inc. was originally formed in 2001 for continuation of the development of the IDDEAL Software Suite®. **Iddeal Concepts, Inc.** was comprised of three (3) focus group or entities working together

Iddeal Concepts

Enterprise IT solutions, Developer of the IDDEAL Software Suite® products for improved profitability, regulatory and client specific compliance and analysis, common-process data management.

Iddeal Solutions

Engineering Programs development and updates (ASME/O&M Code programs) RI-ISI programs and periodic updates, assessments, regulatory requirements, and SME management consulting and professional services

Iddeal Services

Project management, support of client site software setup, implementation, regulatory & IDDEAL training. Outage support, plant technical support, SME's and NDE project managers (Appendix B QA Program)

GSE Solutions Acquires Iddeal Concepts

What is the **IDDEAL Software Suite®**?

- The **IDDEAL Software Suite®** focuses on full functionality for the Nuclear Community Engineering Programs, including ISI, CISI, IST, Snubbers, FAC, Buried Piping, Service Water and IVVI programs; NDE inspection records and reports; NDE Personnel Certifications and Equipment control
- The **IDDEAL** software was first released in 1994, and is currently considered an *Industry Standard* for Engineering Program Code Compliance
- The **IDDEAL Software Suite®** is being implemented by 95% of the US Commercial Nuclear Utilities and three international utilities
- The **IDDEAL Software Suite®** Engineering Program software is developed, supported, and maintained in the US

Version 8.9

Version 9

Iddeal Software Suite

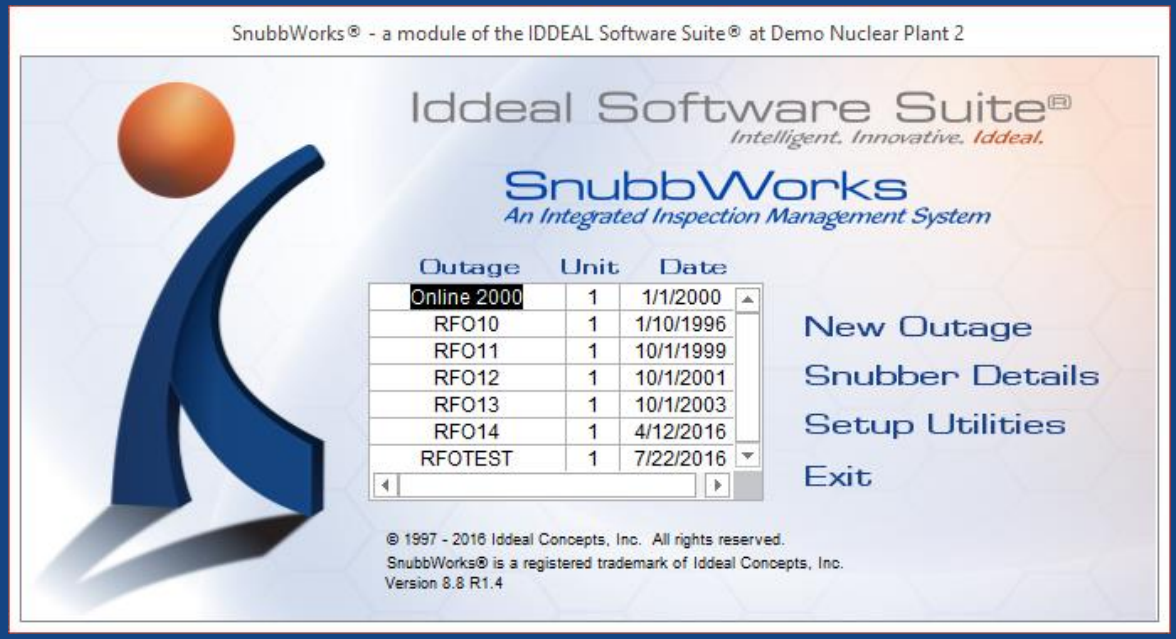
Version 9

Version 8.9

Version 8.8 houses the Snubbworks, FAC, EquipWorks, and Certworks programs. On sites that have not upgraded to Version 9, this version has BOP and ISI.

Version 9

Version 8.9

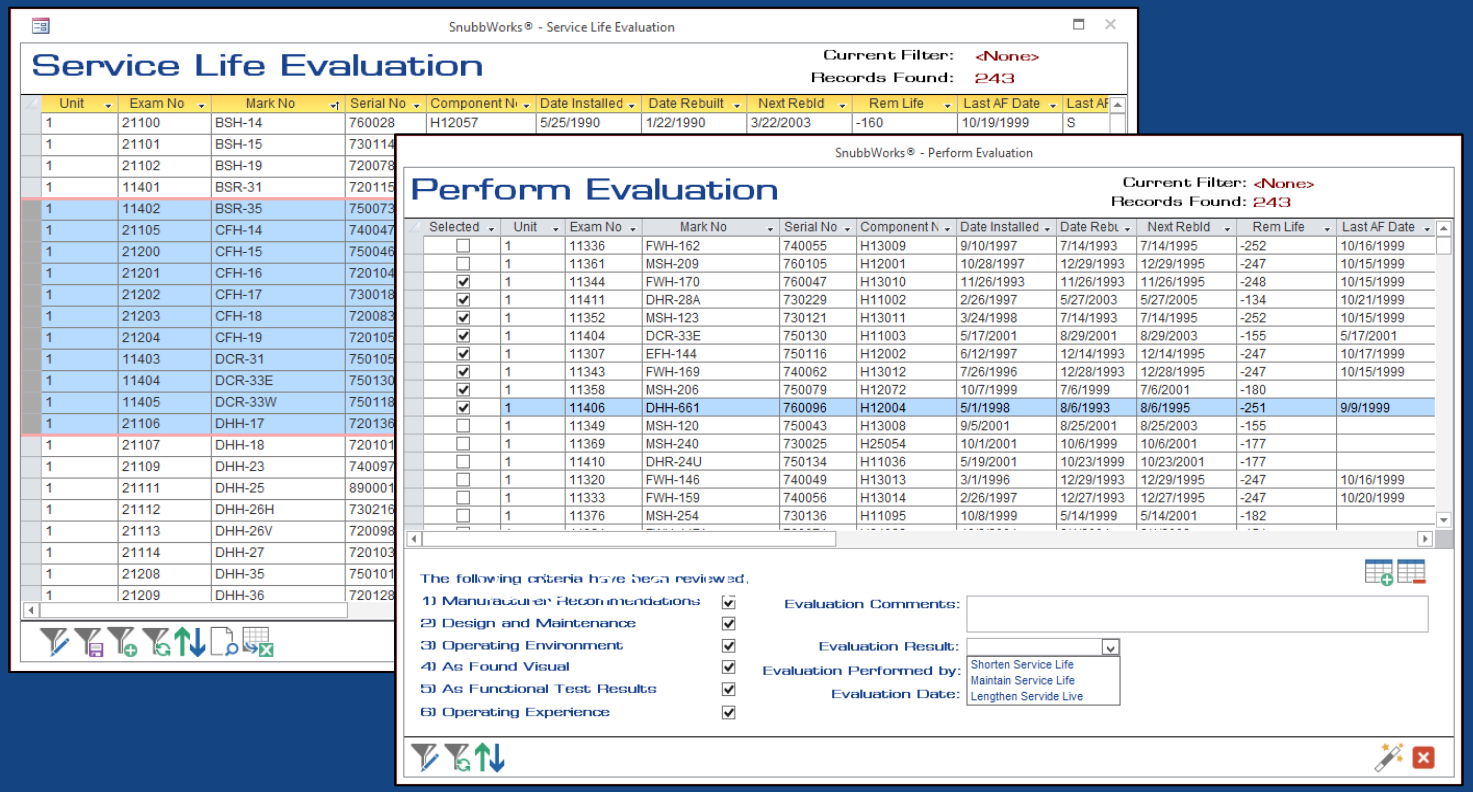


Version 8.8 Snubbworks landing screen.

Version 9

Version 8.9

Service Life Expanded “Evaluation Determinations”

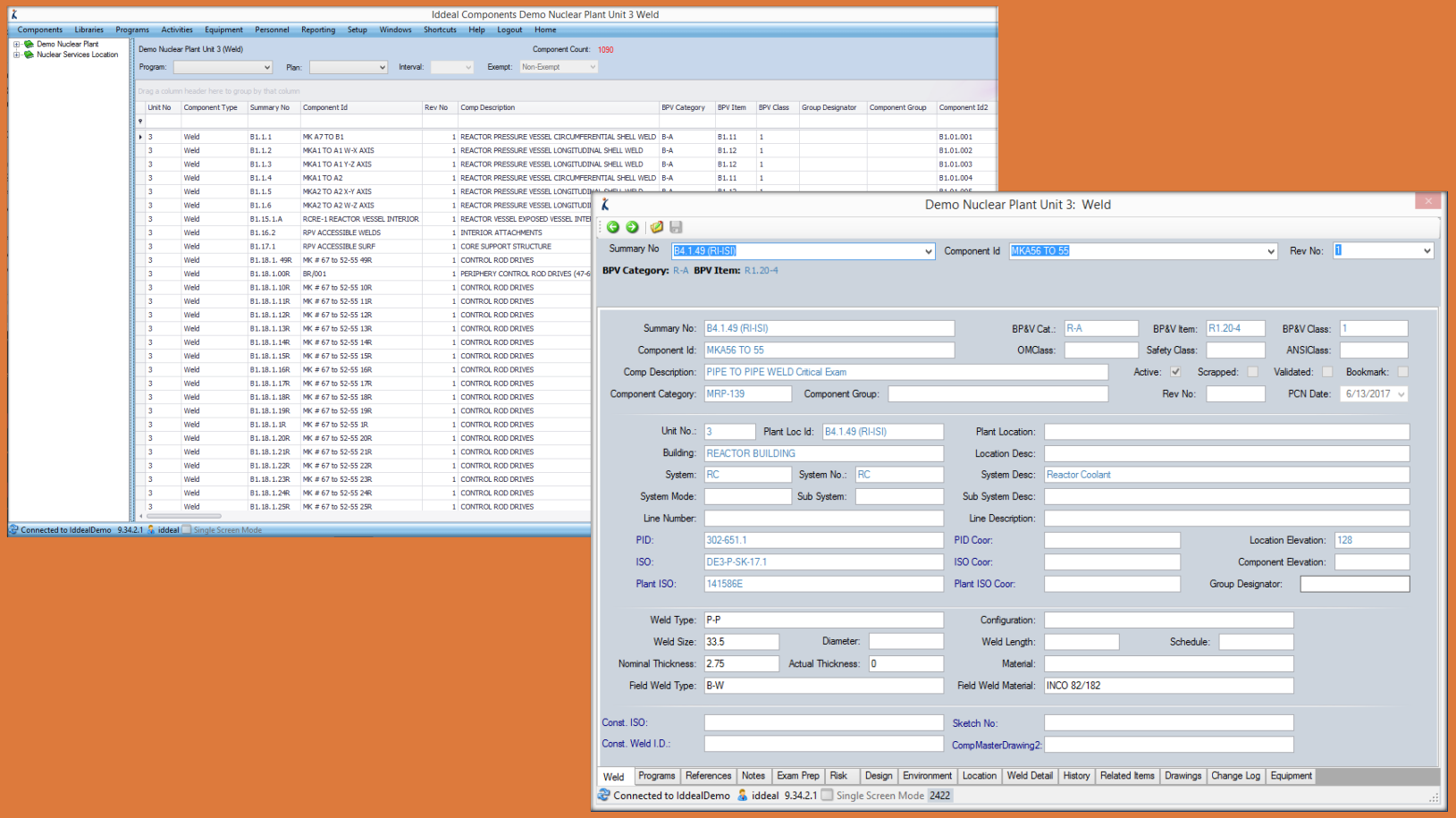


Version 8.9

Version 9

Version 9 has ISI, IST, Appendix J, IVVI, Relief Valve, Condition Monitoring and BOP programs.

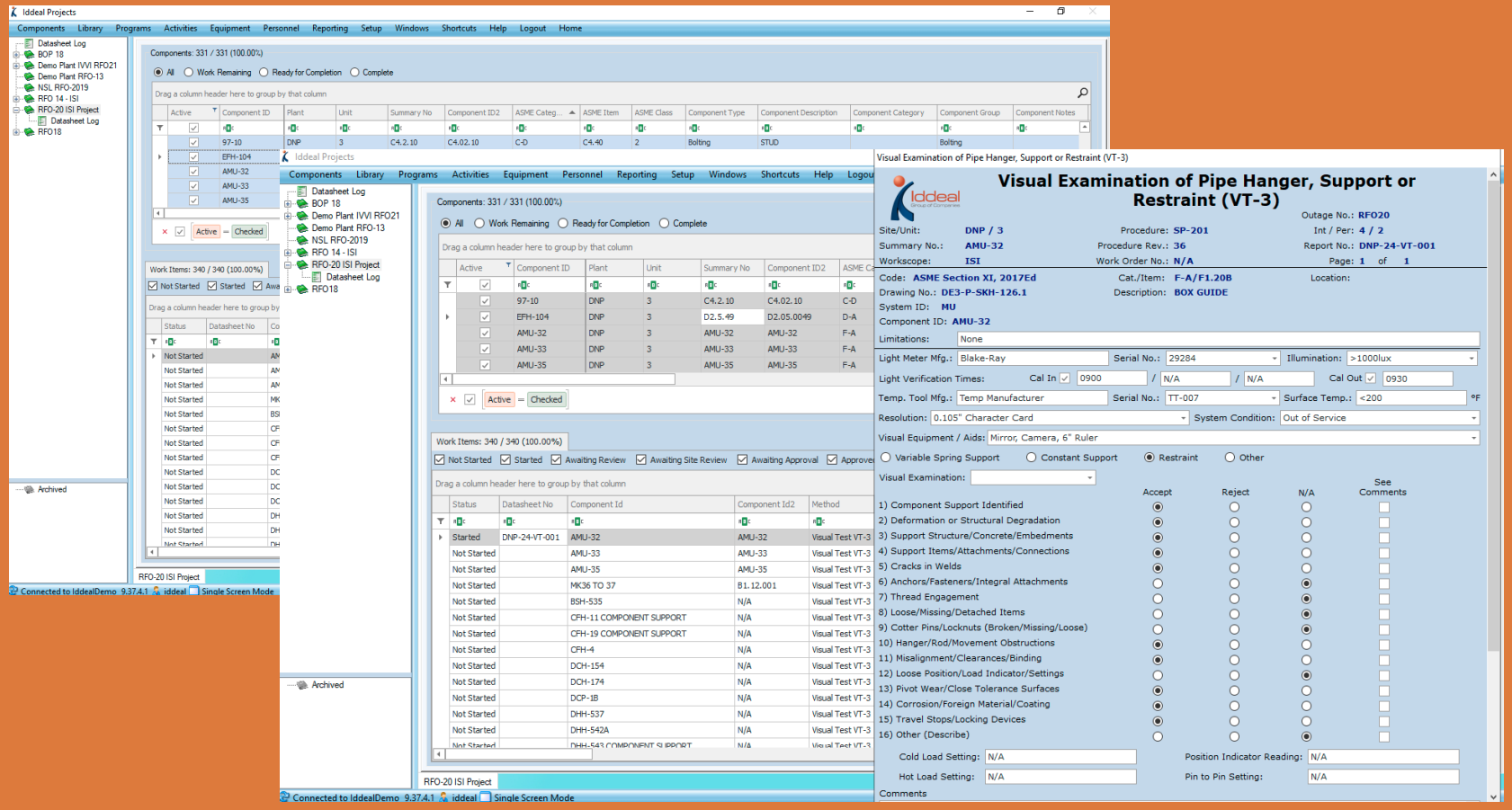
Component Database Listing and Details



Version 8.9

Version 9

Activities – Outage Implementation



Version 8.9

Version 9

Activities – Outage Implementation

Version 8.9

Version 9

Visual Examination of
Pipe Hanger, Support or Restraint (VT-3)

Outage No.: RFO20
Site/Unit: DNP / 3 Procedure: SP-201 Int / Per: 4 / 2
Summary No.: AMU-32 Procedure Rev.: 36 Report No.: DNP-24-VT-001
Workscope: ISI Work Order No.: N/A Page: 1 of 1

Code: ASME Section XI, 2017Ed Cat./Item: F-A/F1.20B Location:
Drawing No.: DE3-P-SKH-126.1 Description: BOX GUIDE
System ID: MU
Component ID: AMU-32
Limitations: None

Light Meter Mfg.: Blake-Ray Serial No.: 29284 Illumination: >1000lux
Light Verification Times: Cal In ☑ 0900 / N/A / N/A Cal Out ☑ 0930
Temp. Tool Mfg.: Temp Manufacturer Serial No.: TT-007 Surface Temp.: <200 °F
Resolution: 0.105" Character Card System Condition: Out of Service
Visual Equipment / Aids: Mirror, Camera, 6" Ruler
Variable Spring Support ☐ Constant Support ☐ Restraint ☑ Other ☐
Visual Examination:

	Accept	Reject	N/A	See Comments
1) Component Support Identified	☑	☐	☐	☐
2) Deformation or Structural Degradation	☑	☐	☐	☐
3) Support Structure/Concrete/Embedments	☑	☐	☐	☐
4) Support Items/Attachments/Connections	☑	☐	☐	☐
5) Cracks in Welds	☑	☐	☐	☐
6) Anchors/Fasteners/Integral Attachments	☐	☐	☑	☐
7) Thread Engagement	☐	☐	☑	☐
8) Loose/Missing/Detached Items	☐	☐	☑	☐
9) Cotter Pins/Locknuts (Broken/Missing/Loose)	☐	☐	☑	☐
10) Hanger/Rod/Movement Obstructions	☑	☐	☐	☐
11) Misalignment/Clearances/Binding	☑	☐	☐	☐
12) Loose Position/Load Indicator/Settings	☐	☐	☑	☐
13) Pivot Wear/Close Tolerance Surfaces	☑	☐	☐	☐
14) Corrosion/Foreign Material/Coating	☑	☐	☐	☐
15) Travel Stops/Locking Devices	☑	☐	☐	☐
16) Other (Describe)	☐	☐	☑	☐

Cold Load Setting: N/A Position Indicator Reading: N/A
Hot Load Setting: N/A Pin to Pin Setting: N/A
Comments
None

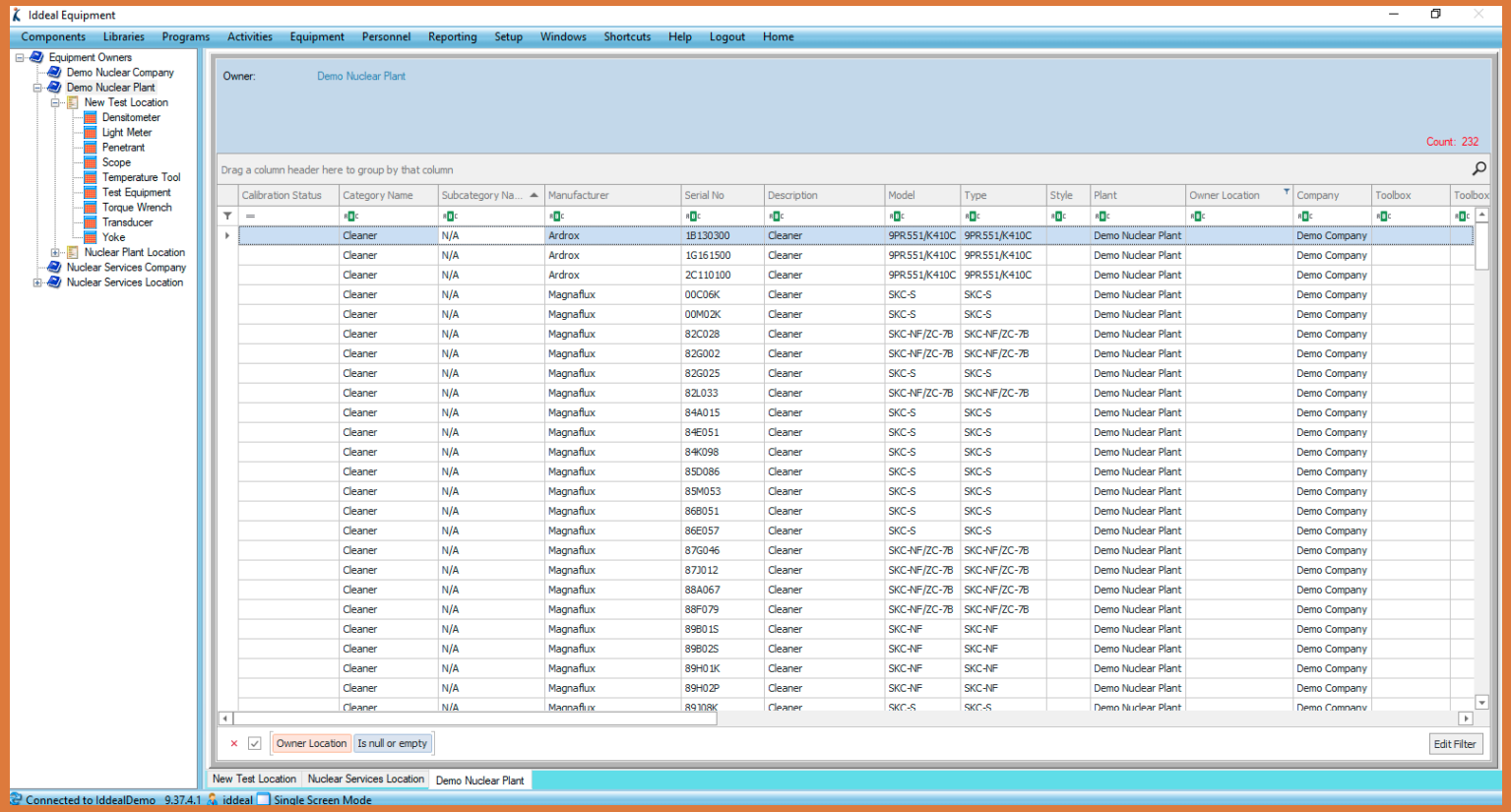
Results: Accept ☑ Reject ☐ N/A ☐ N/A
Percent of Coverage Obtained > 90%: N/A Reviewed Previous Data: Yes

Examiner	Level	Signature	Exam Date	Reviewer	Signature	Date
Star, Mr. Iddeal			01/25/2024			
Examiner	Level	Signature	Exam Date	Site Review	Signature	Date
N/A						
Other	Level	Signature	Date	Final Review	Signature	Date
N/A						

Supplemental Report

Report No.: DNP-24-VT-001
Summary No.: AMU-32 Page: 2 of 2
Sketch or Photo: O:\Iddeal_Server_Ver8\Iddeal_DE1\Data\Graphics\Anchor_Darling_snubber.BMP

NDE Equipment List – Outage Implementation

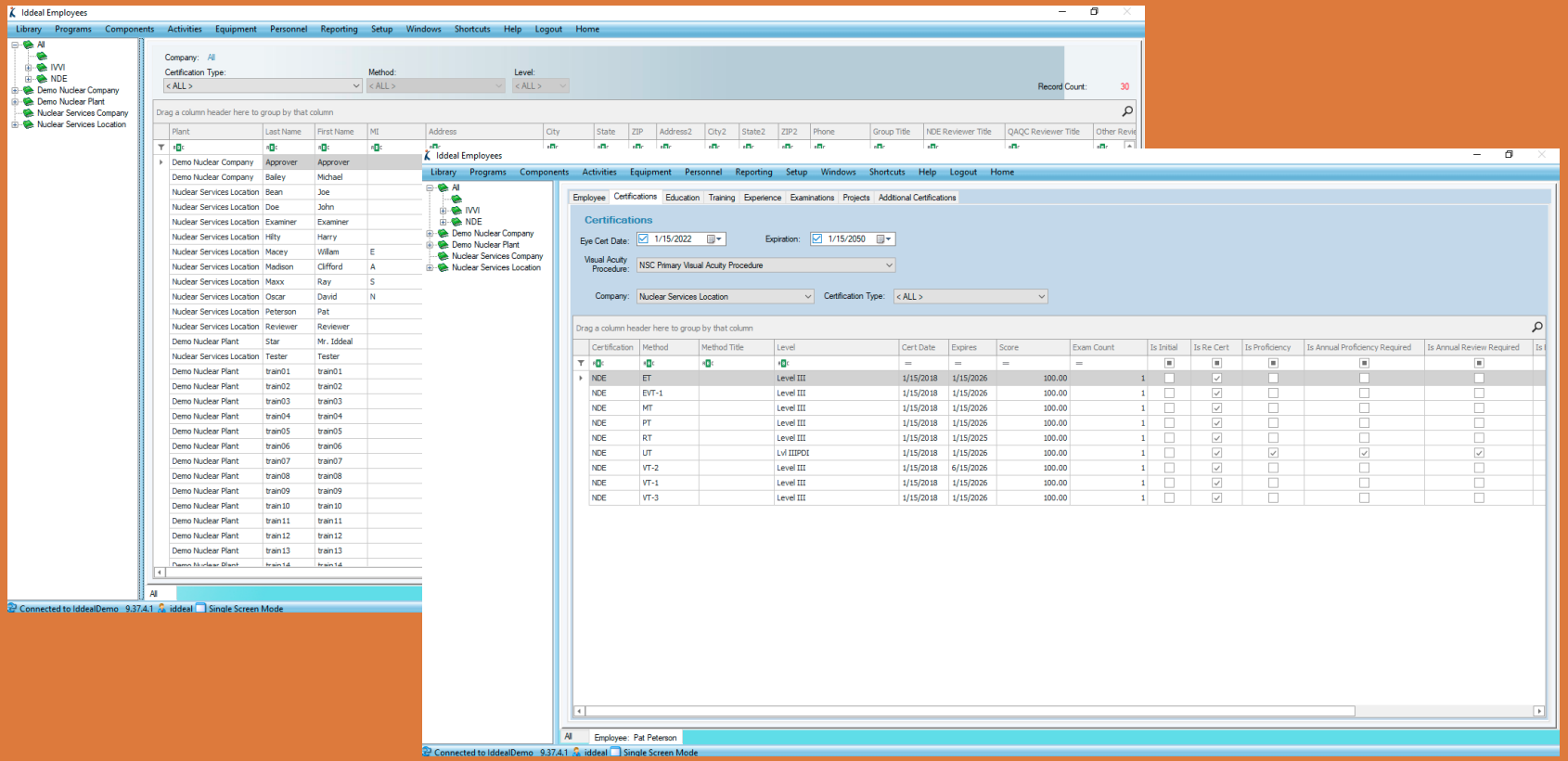


All Calibrated Equipment and Consumables that will be used on a Datasheet must come from this Equiment List

Version 8.9

Version 9

NDE Personnel List – Outage Implementation



All NDE Certified Personnel that will show on a Datasheet must come from this Personnel List

Version 8.9

Version 9

GSE Solutions Acquires Iddeal Concepts

What does this mean for the customers of **Iddeal Concepts, Inc**.?

- GSE is making all efforts for the transition from ICI to GSE to be seamless and smooth
- GSE has committed to continue to maintain and develop the **IDDEAL Software Suite®** to meet our customer needs
- GSE has a dedicated **IDDEAL Software Suite®** Product Manager, Emilio Camacho, to be the Point-of Contact for our customers
- GSE will continue to provide the customer support for the **IDDEAL Software Suite®**, on-site support, Engineering Program support and assistance, **IDDEAL Software Suite®** training
- Combined expertise with ICI further strengthening GSE's Programs & Performance division and the value we deliver to nuclear utilities

Maximizing Fleet Performance Through Integrated Services

DESIGN ENGINEERING MODS & UPGRADES

Leverage end-to-end engineering design modifications and upgrade solutions with specialized experts who ensure precise, timely delivery.

SIMULATION & MODELING SOLUTIONS

Use simulation to train employees, mitigate risks, validate control strategies, assess human factors, and improve procedures using real-world scenarios.

PERFORMANCE & MW OPTIMIZATION

Achieve megawatt improvement, increase efficiencies, reliability, and optimization of power/fuel ratios to drive substantial cost savings.

ENGINEERING PROGRAMS SUPPORT

Navigate regulatory requirements to meet complex regulations with a proactive team at the forefront of technology, strategy, and emerging trends.

BALANCE OF PLANT SERVICES

Improve reliability, efficiency, and asset longevity across all systems, enabling safer operations, lower lifecycle costs, and sustained long-term performance.

GSE SOLUTIONS®

Representative GSE Customers

[1]*The trademarks above are the property of the referenced companies; GSE disclaims ownership of such marks. Inclusion of a representative customer herein is not intended to suggest endorsement or recommendation.*

GSE SOLUTIONS

Why GSE

- **Over 50 years of experience** in the nuclear power industry
- A deep bench of well-known, **industry-leading experts**
- Commitment to **precision** in every deliverable
- **Agile** business model for faster responses
- **High-quality** standards in all our work
- **Collaborative** approach with open communication
- **Tailored** services boost efficiency and extend operational life
- **Innovative solutions** enhance performance, support the generation of safe, carbon-free electricity and drive substantial cost savings
- **One company** delivering a wide range of focused solutions from engineering design and analysis to programs, plant performance, compliance, and simulation

GSE SOLUTIONS

GSE SOLUTIONS®

info@gses.com

www.gses.com

company/gse-solutions

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Patrick Peterson
Director of Site Services and Training
patrick.peterson@gses.com

Lunch Sponsored By

RETURN BY 1:00 PM

Administrative Items
Bob fandetti

- Lisega Vibration Control Systems
- Code Case OMN-31
- Comparing Plots from Different Test Benchess
- Beverage break at 2:30 PM
- Outage Issues
- Understanding 10CFR Part 21
- ASME OM SCDR (ISTD) Liaison Report
- Question Cards

LISEGA
A BUHLMANN COMPANY

Vibration Control Systems

AGENDA

- **INTRODUCTION / TECHNICAL INFORMATION**
- **VIBRATION ISOLATION**
  - SPRING ELEMENTS
- **DAMPING**
  - VISCOELASTIC DAMPER
  - TUNED MASS DAMPER

LISEGA GROUP

The LISEGA Group is an internationally active, medium-sized family-owned company with German roots. Since 2024, LISEGA has been part of the BUHLMANN Group.

VICODA

In addition to products and services in the field of pipe support technology, the LISEGA Group offers product solutions for static and dynamic mounting and vibration reduction of machines, plants and structures under the product brand VICODA.

VIBRATION ISOLATION - VIBRATION DAMPING

VIBRATION ISOLATION

Vibration Isolation means the decoupling of dynamic forces and vibrations by using an elastic layer, e.g. helical steel springs.

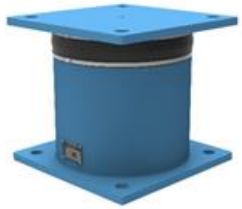
This effect can always be observed in both directions, i.e. from the engine to the environment as well as in the opposite direction.

Spring Element

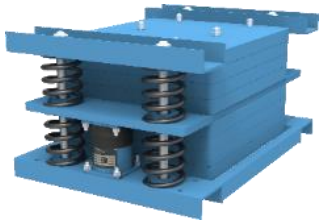
VIBRATION DAMPING

Vibration Damping is the capability of a component to dissipate energy from a vibrating system, thus reducing the vibration amplitudes to an acceptable level.

Viscoelastic Damper



Tuned Mass Damper

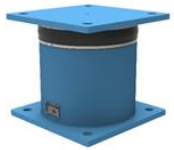


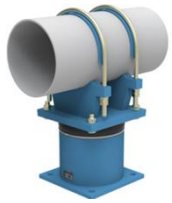
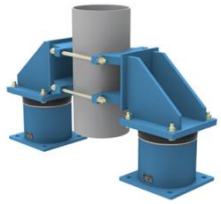
PRODUCT GROUPS

SPRING ELEMENTS




VISCOELASTIC DAMPER



TUNED MASS DAMPER




VIBRATION ISOLATION

SPRING ELEMENTS

VIBRATION ISOLATION

		Federelement spring element S-WV-3040-4../47			VICODA
		General tolerances DIN ISO 2768-mK	Date	Name	VICODA GmbH Gerhard-Liesegang-Straße 1 27404 Zeven I Germany Tel.: +49 (0) 42 81/98 59-0 Fax: +49 (0) 42 81/98 59-100 www.vicoda.de E-Mail: info@vicoda-gmbh.com
		established	09.02.17	MWU	
		checked			
No.	Revision	released			700609 Drawing No.: 0 Revision

DAMPING

VISCOELASTIC DAMPER

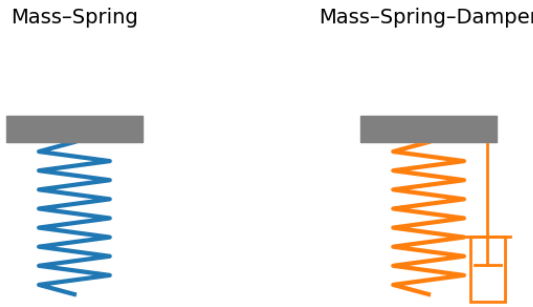
VIBRATION DAMPING

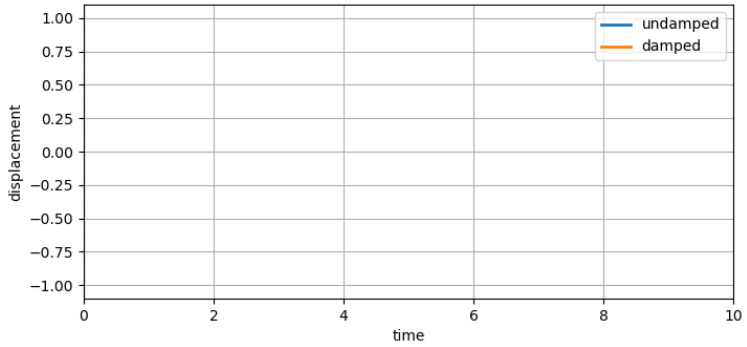
TYPICAL FIELDS OF APPLICATION:

- Pipework vibration
- Vibration resonance phenomena

WHY DAMPING?

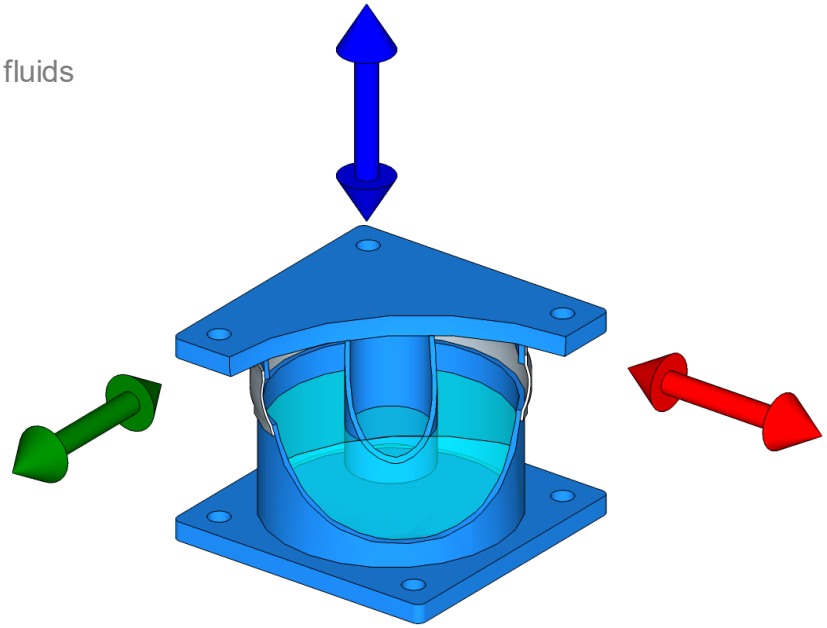
- Reducing movements of a vibrating system at resonance
- Damping can be achieved through a variety of energy conversion (material damping, friction, eddy current damping, viscous behavior...)
- Increase of damping = Increase of energy dissipation
- Reduction of resonance amplification





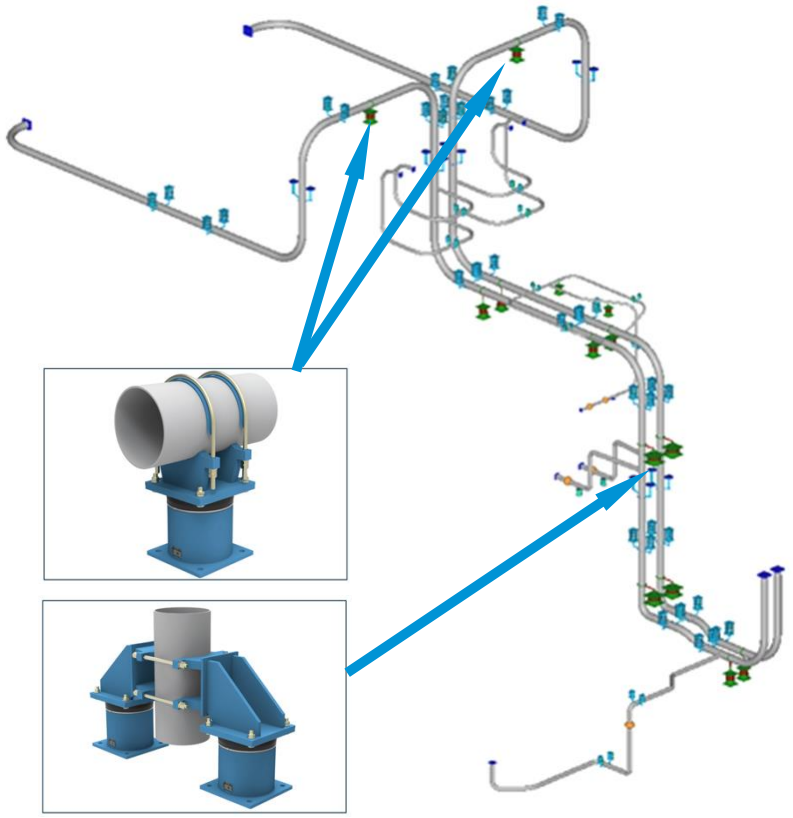
PROPERTIES OF VISCOELASTIC DAMPER

- Damping forces are generated by shearing and displacing of viscous fluids
- Effective in all degrees of freedom
- Immediate response w/o delay or time lag, no threshold value
- Velocity proportional damping resistance
  - ☞ low resistance forces in case of thermal expansions
  - ☞ high forces at high impact velocities
- Maintenance free, no wear and tear
- No support of static loads ➔ no impact on existing support system



DAMPING IN PIPING SYSTEMS

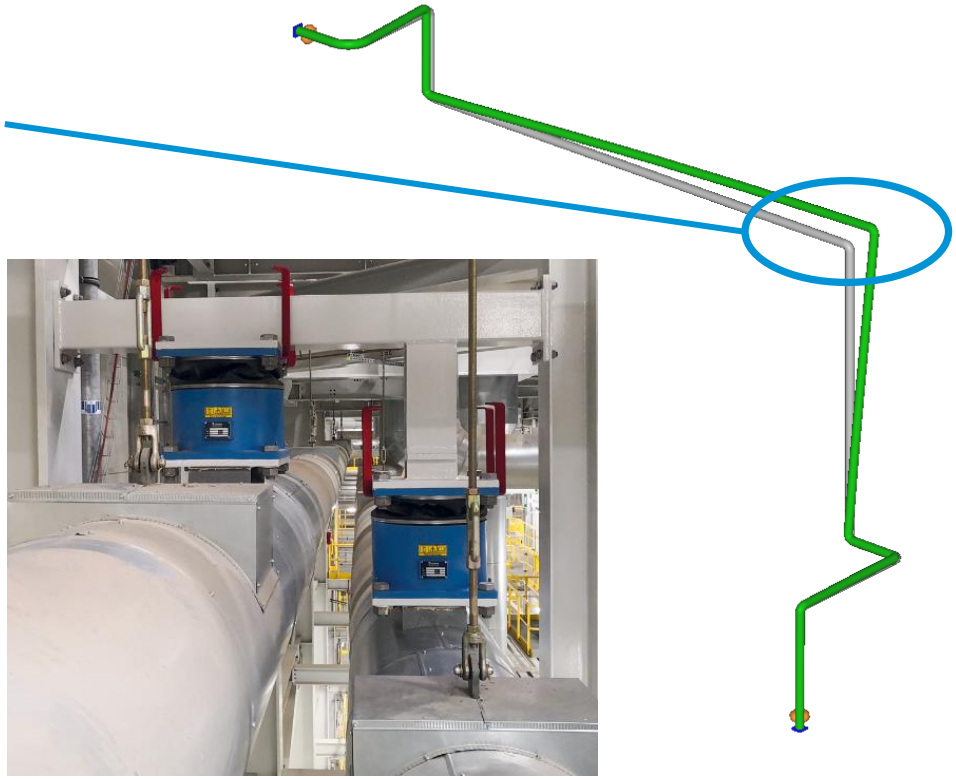
- Piping structures are typically poorly damped systems that can be easily excited even during normal operation
- Excitations are particularly critical when they contain frequencies that correspond to or closely approximate the natural frequencies of the piping system (resonance)
- VDs can be easily added and integrated into an existing piping system.



REQUIRED DATA FOR DAMPER SELECTION

- Most effective damper installation at (or near) the locations of the occurring vibrations
- Ambient temperature range at installation location ?
- Vibration direction ? 

- Vibration mode information
- Frequencies ?
- Amplitudes ?
- Measurement data (time records) available ?
- Stiff and load-bearing damper-support structure available/possible ?
- Thermal deflection at installation node ?



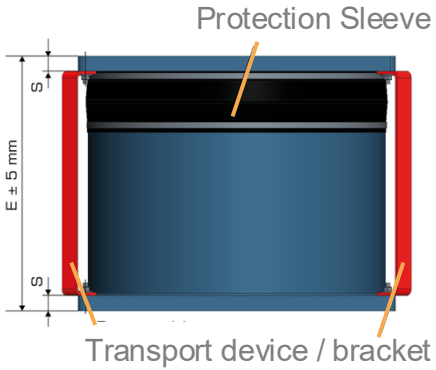
VISCOELASTIC DAMPER

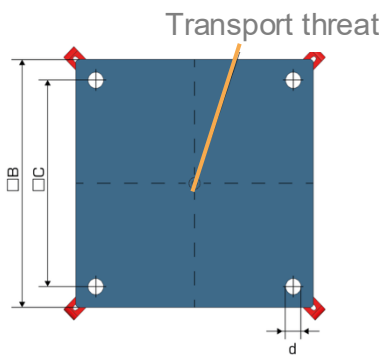
DIMENSIONS AND TECHNICAL PARAMETERS

Please refer to catalog at

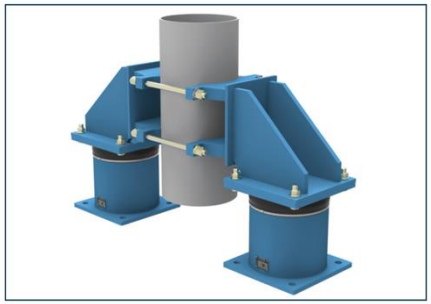
https://www.lisega.de/downloads/

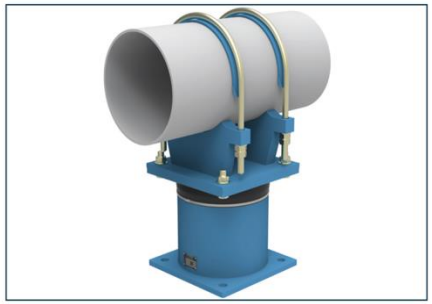
- Mounting equipment (clamps etc.) available
- Static loads cannot be supported by dampers
- Sufficient support structure required





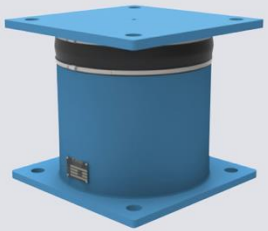
Typical assembly





VISCOELASTIC DAMPER

OPERATING TEMPERATURE SPECIFICATION AT DAMPER INSTALLATION LOCATION

Product properties		
	Type	Description
	**Viscoelastic – Type VD**	**Bitumen** based fluid, high damping parameters temperature range: + 20°C to + 80°C, 8 fluids in steps of 10°C (ΔT 20°C , depending on application)
	Viscoelastic – Type VM	**Polybutene** based fluid, medium damping parameters temperature range: – 10°C to + 40°C, one fluid
	Viscoelastic – Type VI	**Silicon** based fluids, low damping parameters temperatures range: – 30°C to + 110°C, one fluid

EXAMPLES OF INSTALLATION

DAMPING

TUNED MASS DAMPER

TUNED MASS DAMPER (TMD)

FUNCTIONAL PRINCIPLE

Additional mass & stiffness

- A small additional mass is connected to the vibrating component via a spring (stiffness) and, optionally, a damper.

Counter-resonance

- The damper is tuned so that it vibrates at the same frequency as the disruptive vibration, but out of phase (in push-pull mode)

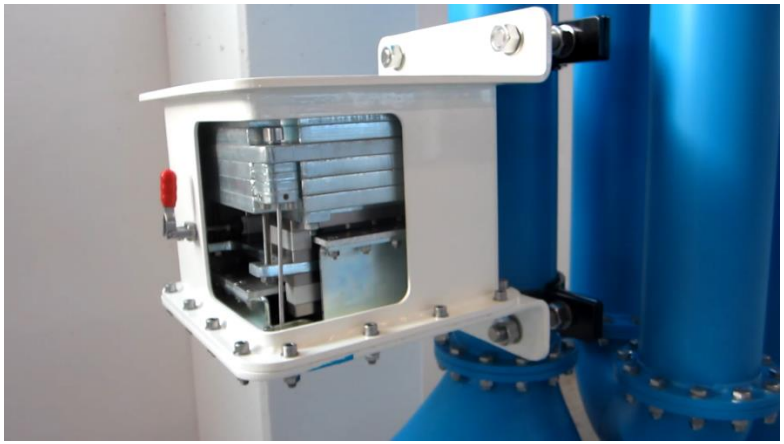
Extinction

- The damper mass generates a counterforce that counteracts the excitation force of the structure. This effectively ‘absorbs’ the vibration energy and calms the main structure

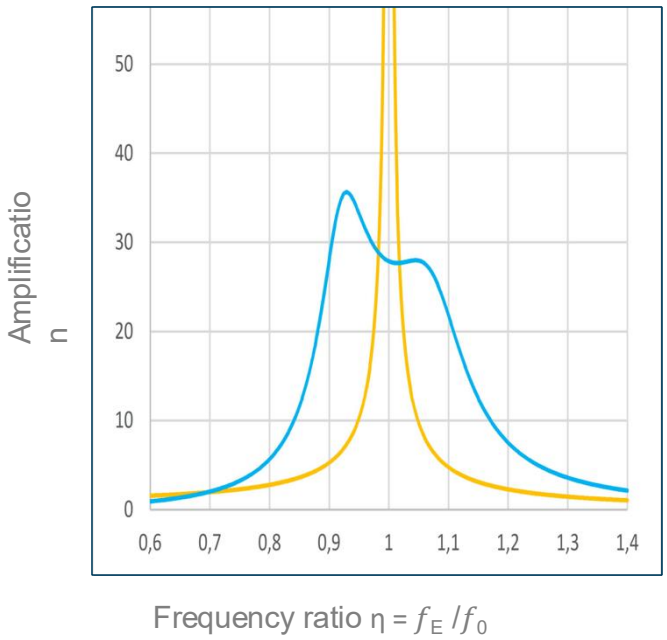
YouTube

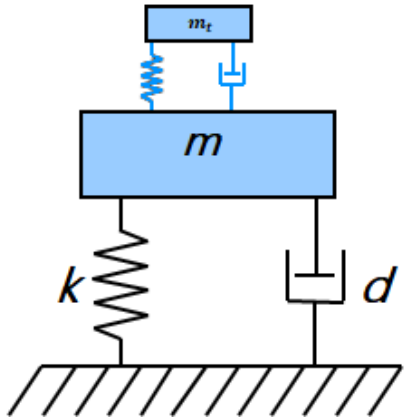
Source: YouTube

TMD DEMONSTRATION MODEL FOR PIPING



TMD – THEORETICAL BACKGROUND





Energy dissipation by force compensation

Energy dissipation by viscous elastic damping

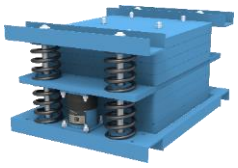
TMD – THEORETICAL BACKGROUND

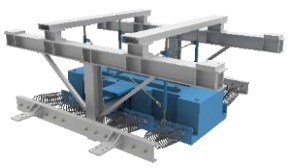
DESIGN PARAMETER FOR TUNED MASS DAMPER:

- Working direction: vertical or horizontal
- Moving mass of TMD: m_t : _____[kg]
- Modal mass of vibrating structure m_h : _____[kg]
- Damping parameter of TMD: d_t : _____[Ns/m]
- Stiffness of TMD: k_t : _____[N/mm]
- Tuning frequency of TMD: f_t : _____[Hz]
- Available installation space L x W x H : _____[m]

EXAMPLES

DESIGN AND MANUFACTURE OF A WIDE VARIETY OF TMD





EXAMPLES

WINDTURBINE-TMD

- Vortex induces vibrations
- Pendulum TMD
- 4000kg moving mass
- 90mm Amplitude
- frequency 1.2Hz
- Friction damper
- 2nd tower mode

EXAMPLES

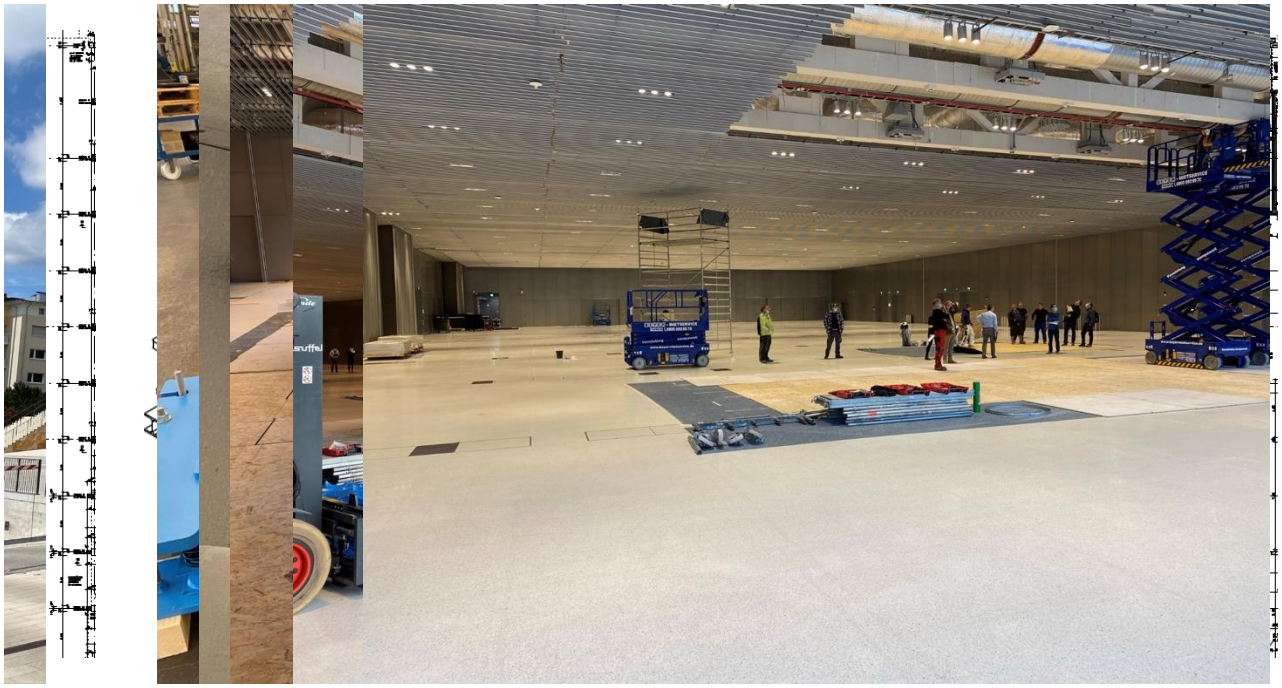
ON-SITE SERVICE

- Installation supervision
- Measurement
- Commissioning
- On-site tuning
- Reporting

EXAMPLES

FLOOR-TMD

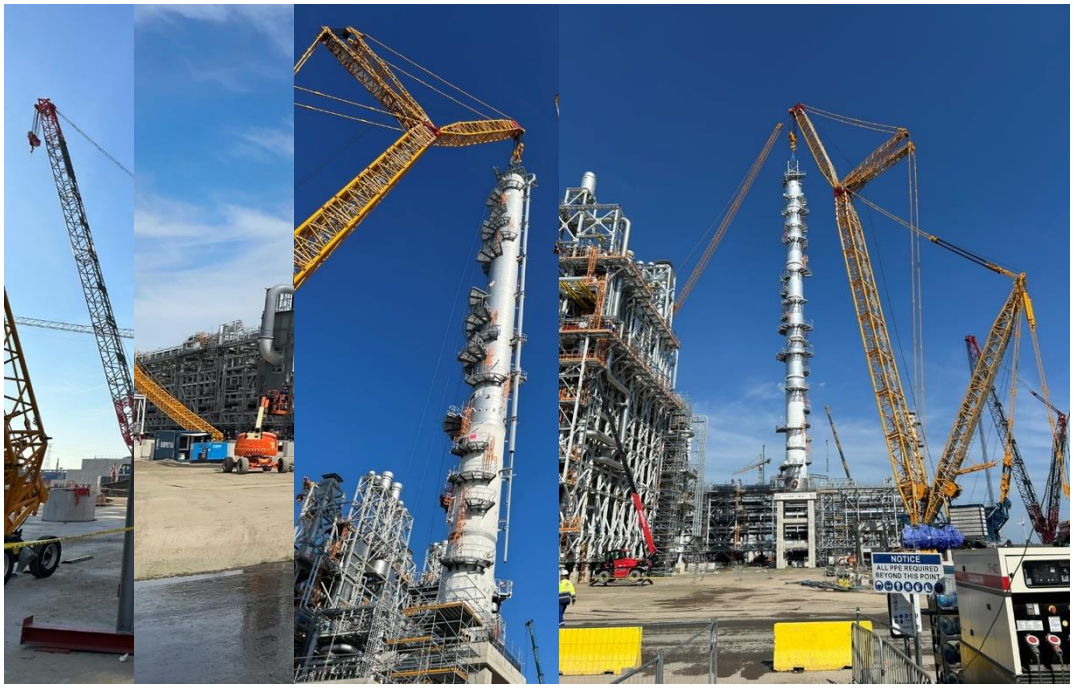
Concert Hall



EXAMPLES

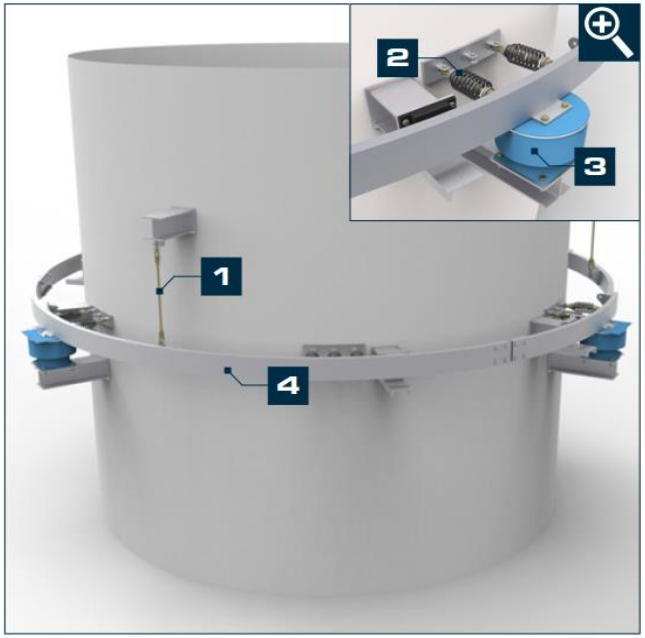
COLUMN-TMD

Chemical plant



EXAMPLES

CHIMNEY-TMD



1 Pendulum
2 Springs
3 Viscoelastic dampers
4 Mass ring

EXAMPLES

PIPEWORK-TMD

EXAMPLES

PIPEWORK-TMD

EXAMPLES

LISEGA PIPEWORK TMD DESIGN FEATURES

- Clamps with wide contact surface for even force distribution on thin-walled pipes
- Symmetrical design of the weight forces to minimise the clamp tightening torques
- Clamp screw connection with spring washers to compensate for thermal size changes
- Optional spring supports for weight reduction for the pipelines

Thank you!

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REGULATORY GUIDE 1.192, REV-5 OPERATION AND MAINTENANCE CODE CASE ACCEPTABILITY, ASME OM CODE

RG 1.192, Revision 5, includes information reviewed by the NRC on OM Code Cases listed in the 2022 Edition of the OM Code and on the ASME Codes & Standards (C&S) Connect website. This revision updates and supersedes RG 1.192, Revision 4, which included information from the 2020 Edition of the OM Code.

REGULATORY GUIDE 1.192, REV-5 CODE CASE OMN-31

- Table 2, "Conditionally Acceptable OM Code Cases," lists the OM Code Cases that are acceptable, provided that they are used with the identified conditions (i.e., the OM Code Case is generally acceptable, but the NRC has determined that the requirements in the Code Case, which are alternatives to the OM Code, must be supplemented in order to provide an acceptable level of quality and safety).

REGULATORY GUIDE 1.192, REV-5
CODE CASE OMN-31

Code Case Number	Table 2 Conditionally Acceptable OM Code Cases Title/Condition
OMN-20 (2022 Edition)	*Inservice Test Frequency* This OM Code Case is applicable to the editions and addenda of the OM Code listed in 10 CFR 50.55a(a)(1)(iv). Although OM Code Case OMN-20 has an applicability statement in its inquiry and reply, the guidance in OM Code Case OMN-20 is acceptable for application at nuclear power plants with a Code of Record of any edition or addenda of the OM Code incorporated by reference in 10 CFR 50.55a(a)(1)(iv). Note 1: The conditions are identical to those imposed on OMN-20 in previous revisions to RG 1.192.
OMN-31 (2022 Edition)	*Alternative to Allow Extension of ISTA-3120 Inservice Examination and Test Intervals From 10 Years to 12 Years* Contrary to the ASME OM Code Case Applicability Index, this OM Code Case may only be applied by licensees who are implementing the ASME OM Code, 2017 Edition, or later edition, of the ASME OM Code incorporated by reference in 10 CFR 50.55a as the Code of Record for the IST Program at their nuclear power plants. Further, licensees may only begin implementing Code Case OMN-31 at the beginning of an IST interval as specified in ASME OM Code, paragraph ISTA-3120.

REGULATORY GUIDE 1.192, REV-5
CODE CASE OMN-31

The latest NRC approved Applicability Index (07-01-2022) only allows the use of OMN-31 through the 2020 OM Code.

Revised July 1, 2022

ASME OM CODE CASES

OMN-30	Alternative Valve Position Verification Approach to Satisfy ISTC-3700 for Valves Susceptible to Stem-Disk Separation	1998	2020
OMN-31	Alternative to Allow Extension of ISTA-3120 Inservice Examination and Test Intervals From 10 Years to 12 Years	2001	2020

REGULATORY GUIDE 1.192, REV-5 CODE CASE OMN-31

Revised Applicability Index but not approved by the NRC (12-1-2025) allows the use of OMN-31 through the 2022 OM Code.

Revised December 1, 2025

OMN-26	Alternative Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves	SG – Motor Operated Valves	2012	2022
OMN-27	Alternative Requirements for Testing Category A Valves (Non-PIV/ CIV)	SC – Valves	1998	2022
OMN-28	Alternative Valve Position Verification Approach to Satisfy ISTC-3700 for Valves Not Susceptible to Stem-Disk Separation	SC - Valves	1998	2022
OMN-29	Pump Condition Monitoring Program	SC - Pumps	2004	2022
OMN-30	Alternative Valve Position Verification Approach to Satisfying ISTC-3700 for Valves Susceptible to Stem-Disk Separation	SC - Valves	1998	2022
OMN-31	Alternative to Allow Extension of ISTA-3120 Inservice Examination and Test Intervals From 10 Years to 12 Years	SC – General Requirements	2001	2022

REGULATORY GUIDE 1.192, REV-5
CODE CASE OMN-31

Plants implementing new IST Snubber Programs should determine whether an Alternate Request must be submitted to the NRC or whether they can wait until the NRC approves the latest Applicability Index (02/2026).

Functional Test Plots

Comparing Plots from Different Test Benches

By: Scott Esposito

Functional Test Plots

Why:

- Increase test plot interpretation knowledge

Benefit:

- Gain a better understanding of test plots and how test benches function

Test Bench Operation

Barker/Diacon Bench

DRAG TESTS:
- Velocity is maintained at the rate set by the user. Pump speed is adjusted during the test to maintain constant velocity.

ACCELERATION (PSA MECHANICAL):
- Pressure is preset at the level desired by the user to limit force applied to the required load. No adjustments made during the test.

BLEED ONLY (AD MECHANICAL):
- Load is monitored in real time during the test and adjusted to maintain user set level.

ACTIVATION (HYDRAULIC LOCKUP AND BLEED):
- Initially velocity is controlled to generate a user specified velocity ramp rate. When the snubber activates, the bench will switch to active load control to maintain the bleed load within the user specified range.

Wyle (Element) Bench

DRAG TESTS:
- Low pressure is set to move the snubber. A closed loop is used to control the position of the snubber and keep the bench moving at the desired set point velocity.

ACCELERATION (PSA MECHANICAL):
- Pressure is preset at the level desired by the user to achieve the required load.

BLEED ONLY (AD MECHANICAL):
- Pressure is preset at the level desired by the user to achieve the required load.

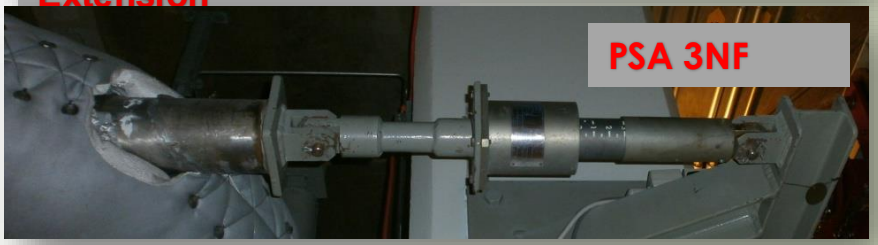
ACTIVATION (HYDRAULIC LOCKUP AND BLEED):
- Pressure is preset at the level desired by the user to achieve the required load.

Basic Pacific Scientific (PSA) - Mechanical

(1/4NF, 1/2NF, 1NF, 3NF, 10NF, 35NF, & 100NF)

Operation:

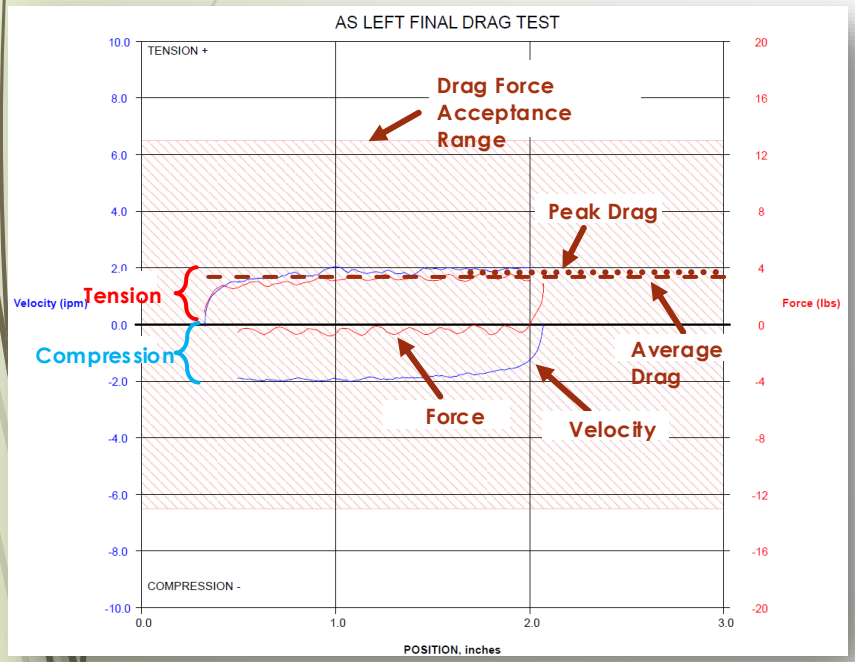
- Mechanical
- Limits acceleration
- Converts linear movement to rotational motion of inertial mass
- Internal capstan spring tightens around the support cylinder to resist inertial mass rotation
  - A braking force is applied
  - Gradual thermal movement is possible
- Braking force releases
  - load is removed, or
  - inertia mass is spinning such that the capstan spring is relaxed



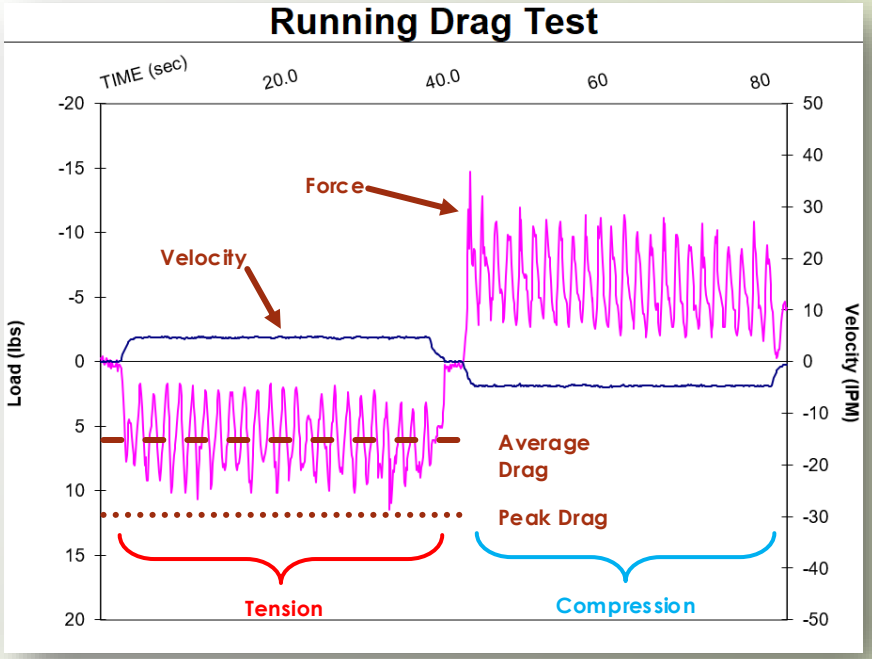
Basic Pacific Scientific (PSA) - Mechanical

(1/4NF, 1/2NF, 1NF, 3NF, 10NF, 35NF, & 100NF)

Barker/Diacon Bench



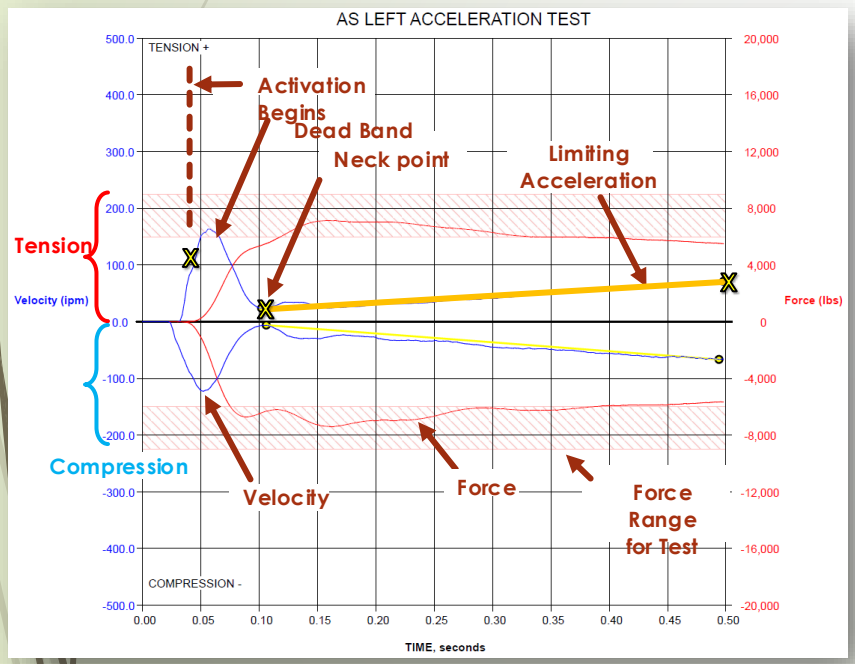
Wyle (Element) Bench



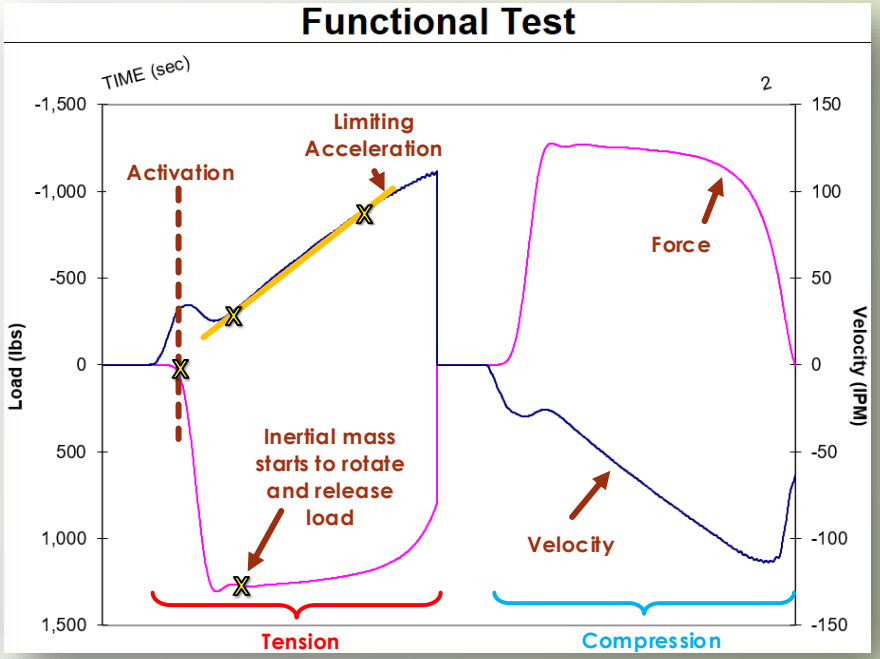
Basic Pacific Scientific (PSA) - Mechanical

(1/4NF, 1/2NF, 1NF, 3NF, 10NF, 35NF, & 100NF)

Barker/Diacon Bench



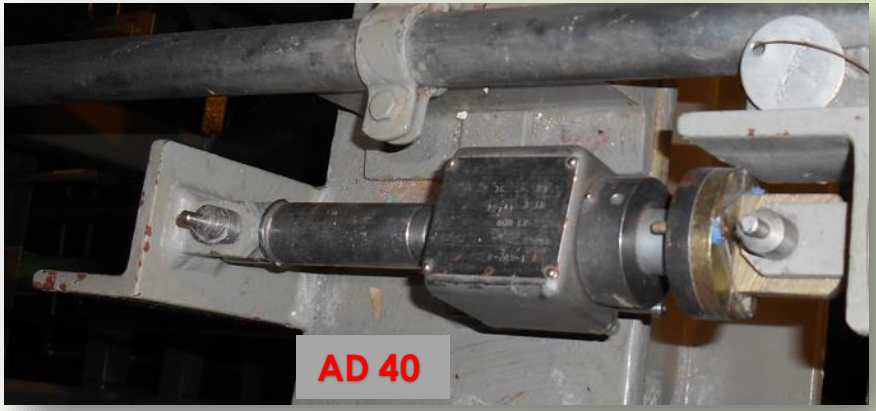
Wyle (Element) Bench



Anchor Darling (AD) - Mechanical
(40, 70, 150, 500, 1600, 5500, & 12500)

Operation:

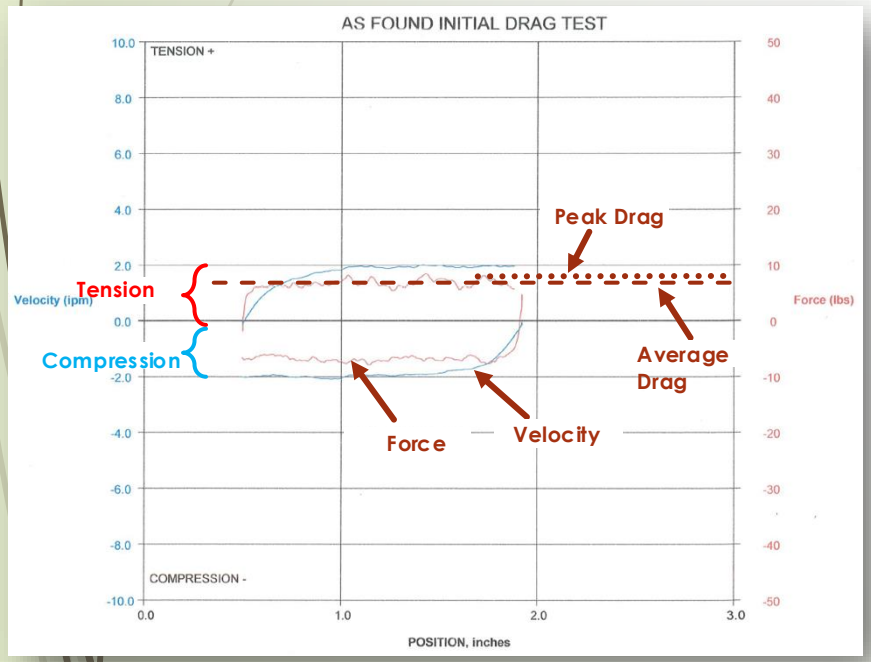
- Mechanical
- Limits Velocity
- Converts linear movement to rotational motion of internal gears
- Size 40, 70, 150, & 500
  - Motion is translated by a geared rack
  - Two internal verges oscillate and limit the velocity of a geared rack
- Size 1600, 5500, & 12500
  - Same concept as above
  - Motion translated by a ball screw mechanism and step-up gearing
  - Three internal verges



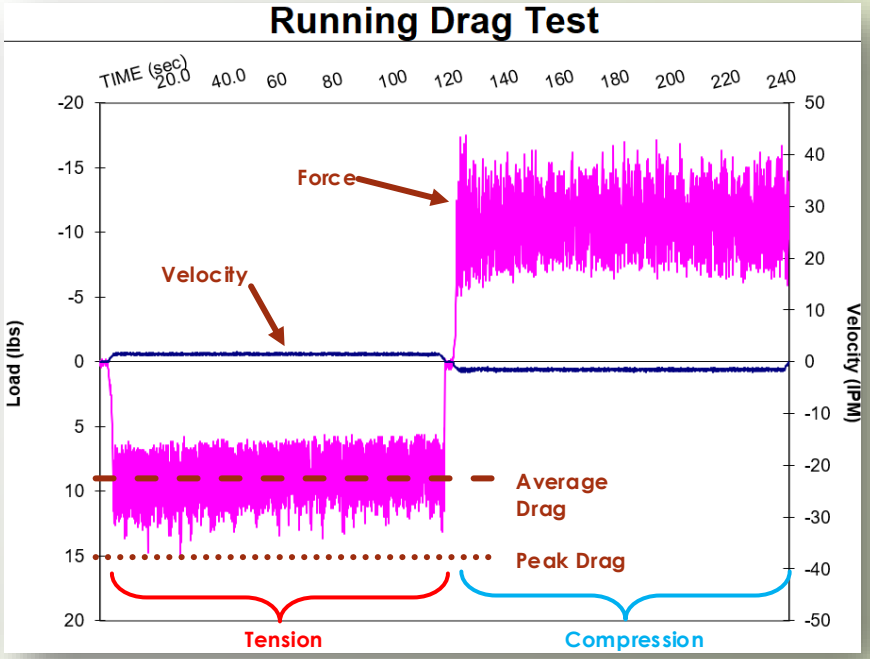
Anchor Darling (AD) - Mechanical
(40, 70, 150, & 500)

12-117SL AD 71 SN 52

Barker/Diacon Bench

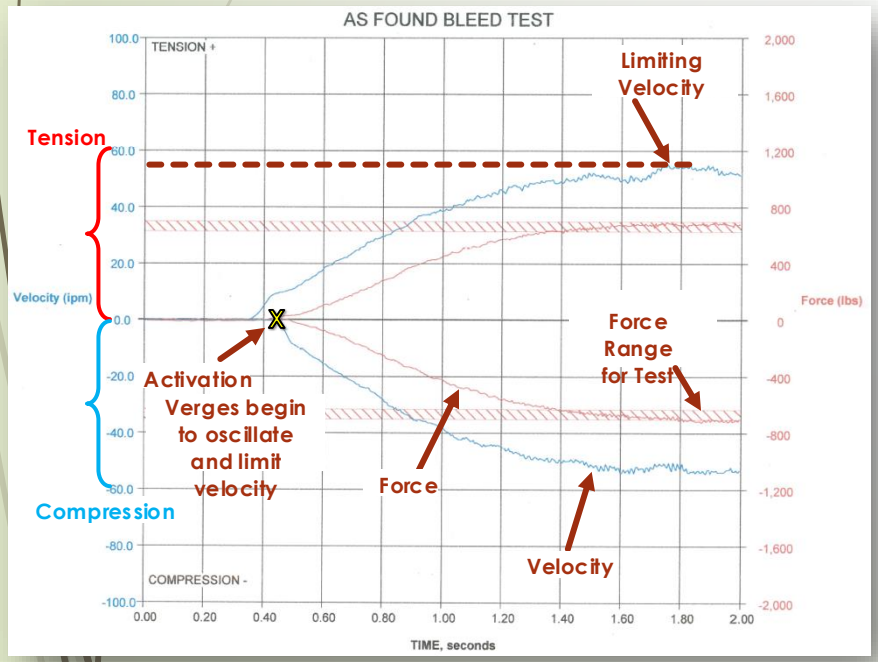


Wyle (Element) Bench

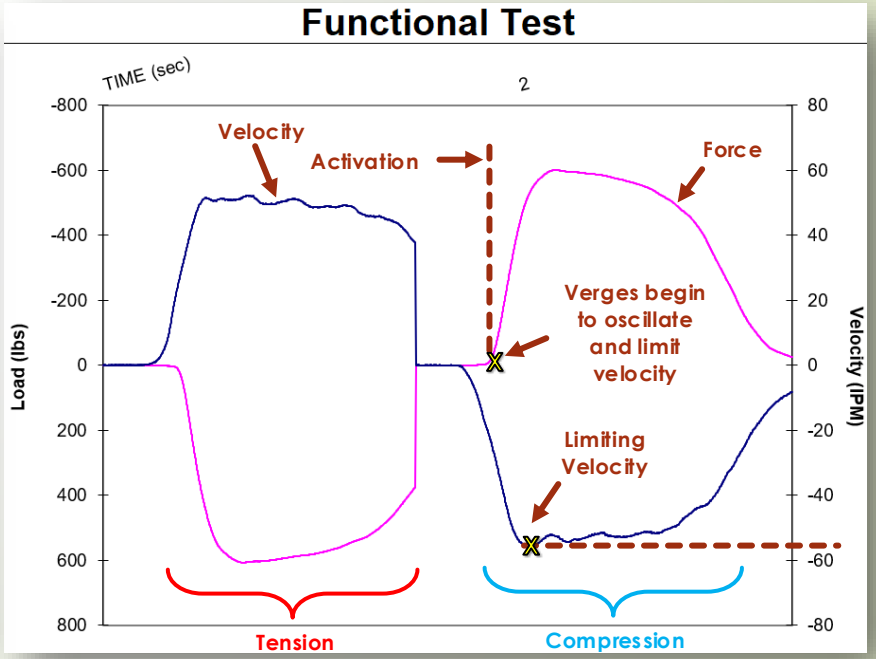


Anchor Darling (AD) - Mechanical
(40, 70, 150, & 500)

Barker/Diacon Bench

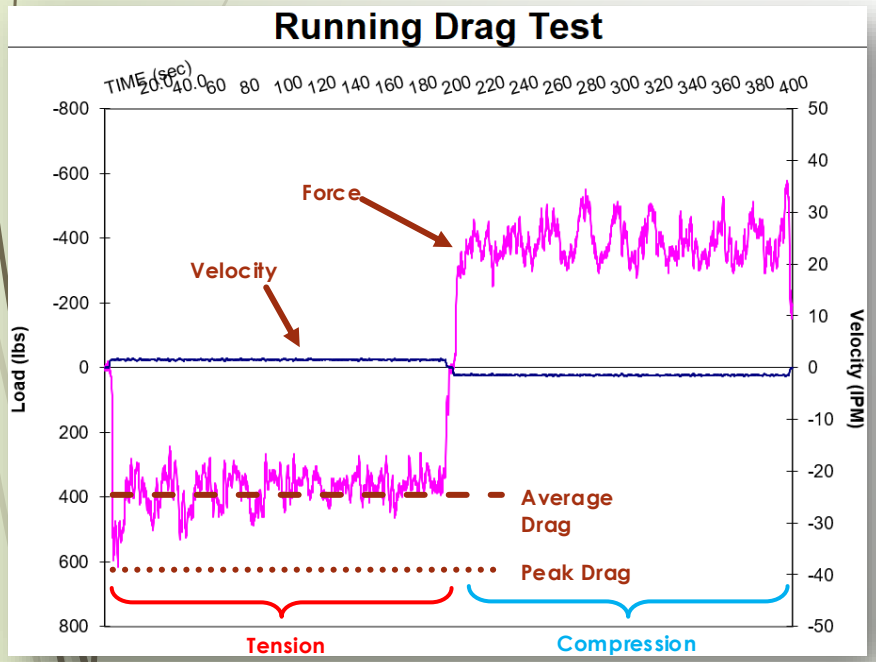


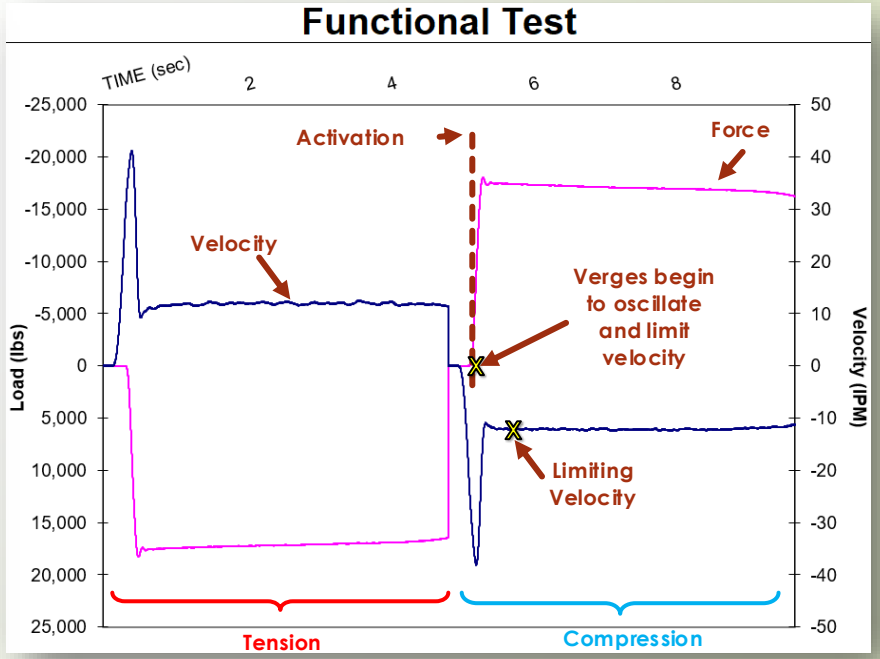
Wyle (Element) Bench



Anchor Darling (AD) - Mechanical
(1600, 5500, & 12500)

Wyle (Element) Bench





Hydraulic – Grinnell, Anvil, Lisega, & Bergen-Paterson

Operation:

- Hydraulic
- Limits velocity
- Movement of a piston rod forces fluid through a (poppet valve or disk valve)
  - Valves are held open by spring force and are calibrated or adjusted in the factory or on-site
  - At a set velocity/back pressure the valve closes and the snubber restrains movement
  - A small bypass orifice/flow path allows for a reduced movement during the dynamic event
  - As the dynamic event dissipates, the valve reopens allowing normal thermal movement

Bergen-Paterson

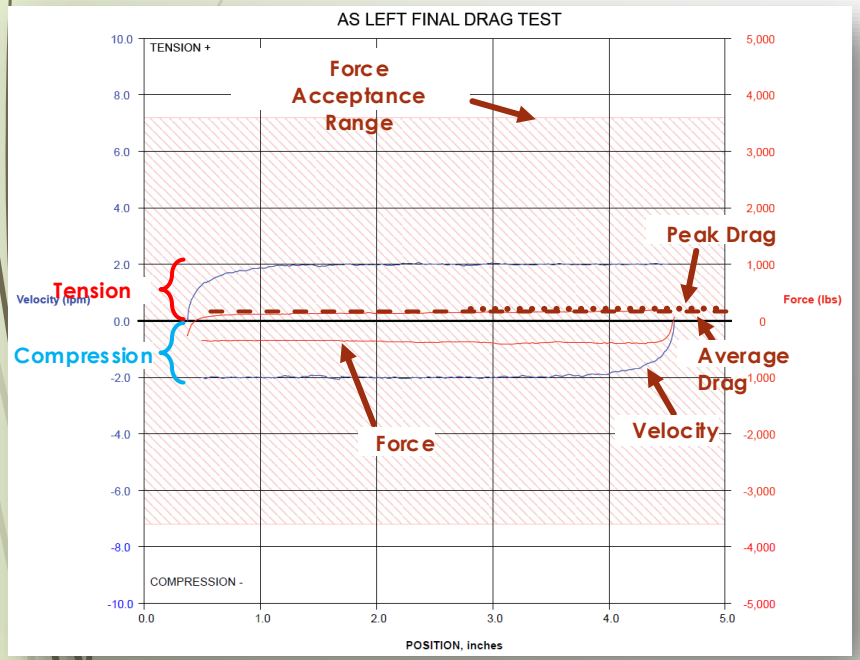
Lisega type 30

Anvil 3306N/3307N size: 1/2 x 4

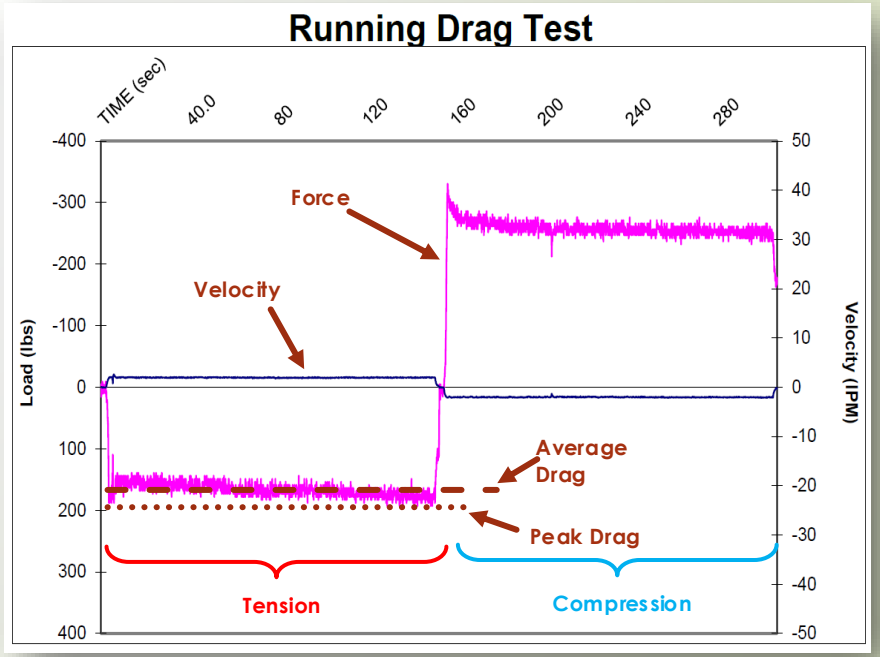
Grinnell Fig 200N/201N size: 4 x 10

Hydraulic – Grinnell, Anvil, Lisega, & Bergen-Paterson

Barker/Diacon Bench

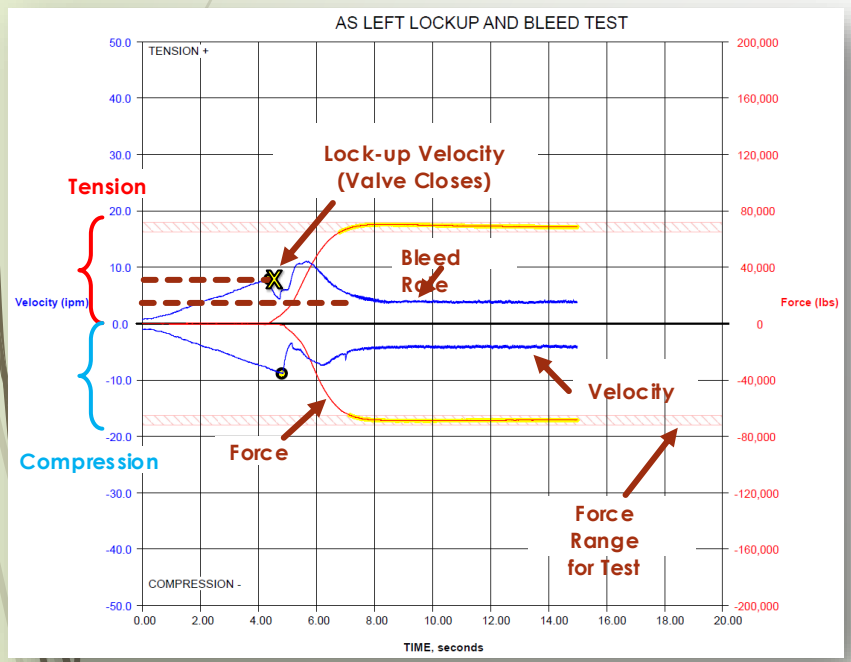


Wyle (Element) Bench

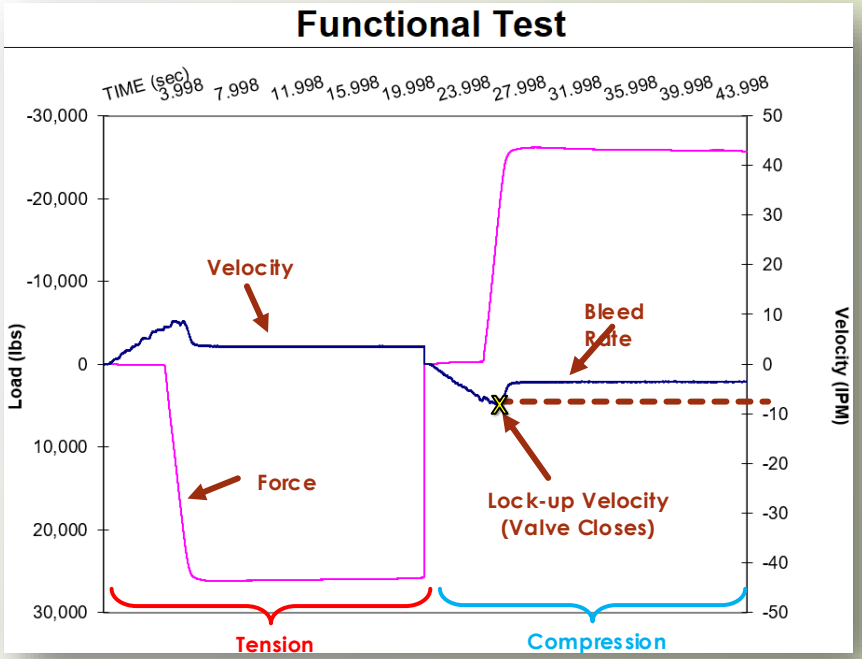


Hydraulic – Grinnell, Anvil, Lisega, & Bergen-Paterson

Barker/Diacon Bench



Wyle (Element) Bench



Large Bore - Hydraulic
(Paul-Munroe and Lisega)

Operation:

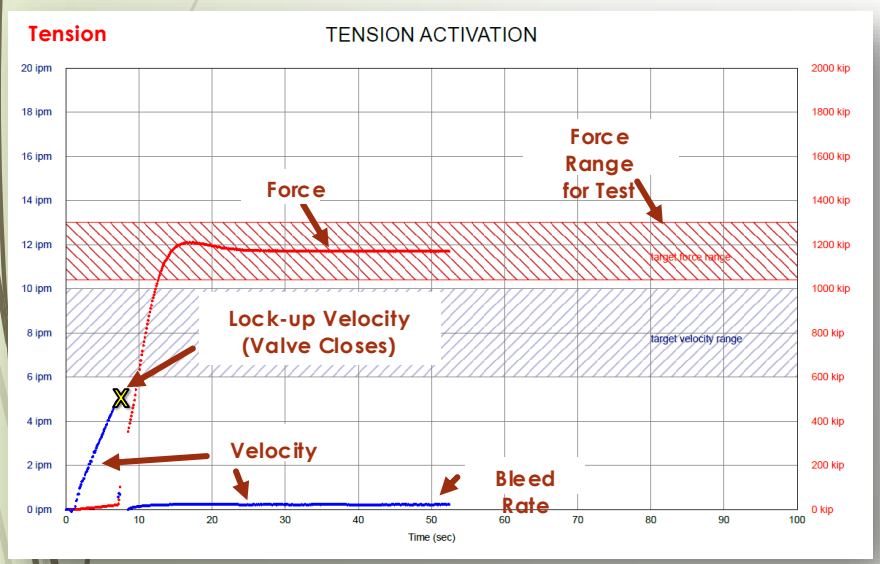
- Hydraulic
- Limits velocity
- Movement of a piston rod forces fluid through a biased check valve (poppet valve or disk valve)
  - Valves are held open by spring force and are calibrated by the manufacturer or onsite
  - At a set velocity/back pressure the valve closes and resists movement creating a stiff strut
  - A small bypass groove/flow path allows for continued thermal movement during the event
  - As the event dissipates, the valve reopens allowing normal free thermal movement again

Lisega type 31

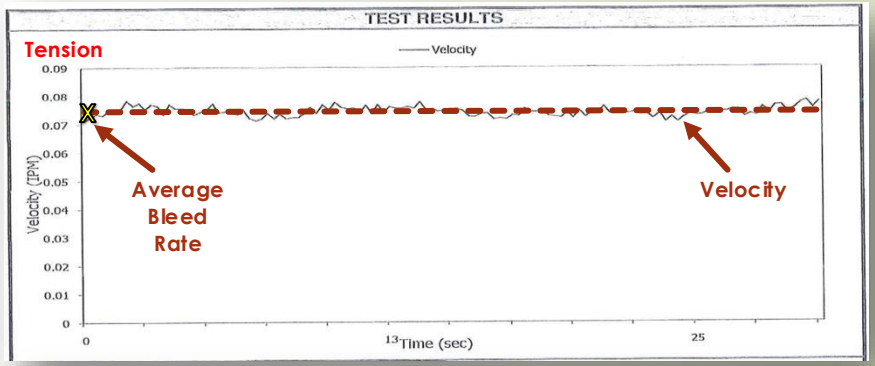
Paul Munroe size: 20 x 3

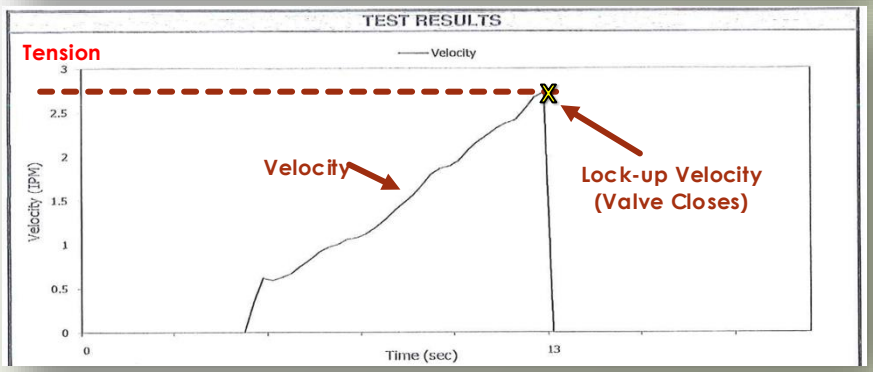
Large Bore - Hydraulic
(Paul-Munroe and Lisega)

Barker/Diacon



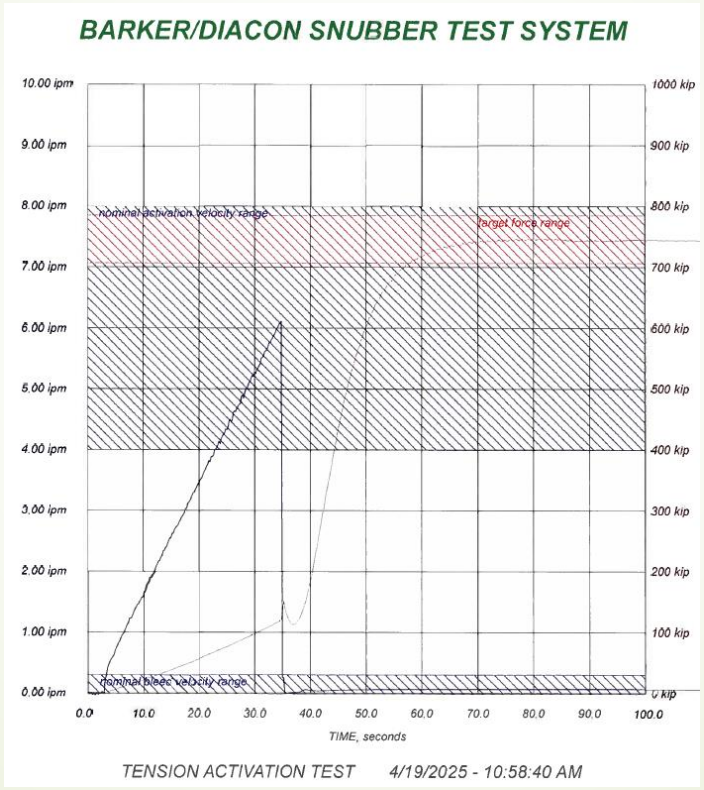
Curtiss-Wright (Enertech)





Large Bore - Hydraulic
(Paul-Munroe and Lisega)

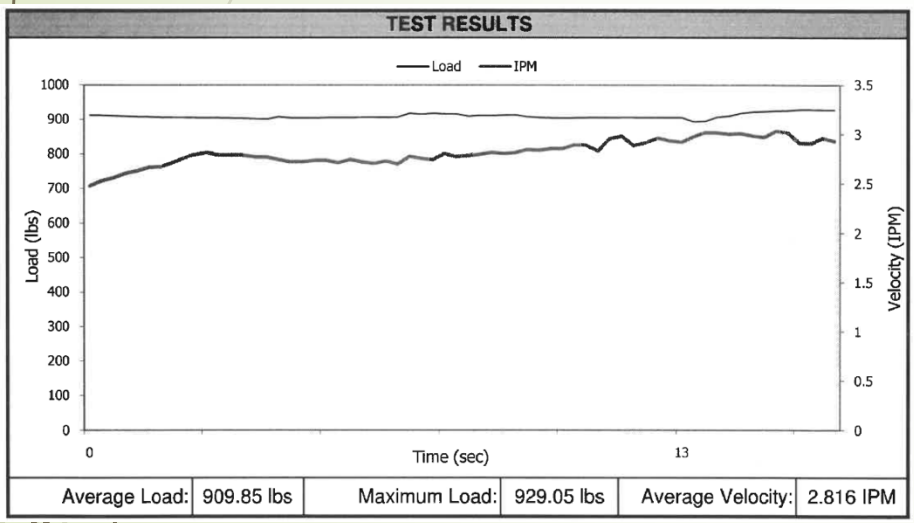
Barker/Diacon



Large Bore – Hydraulic Paul-Munroe

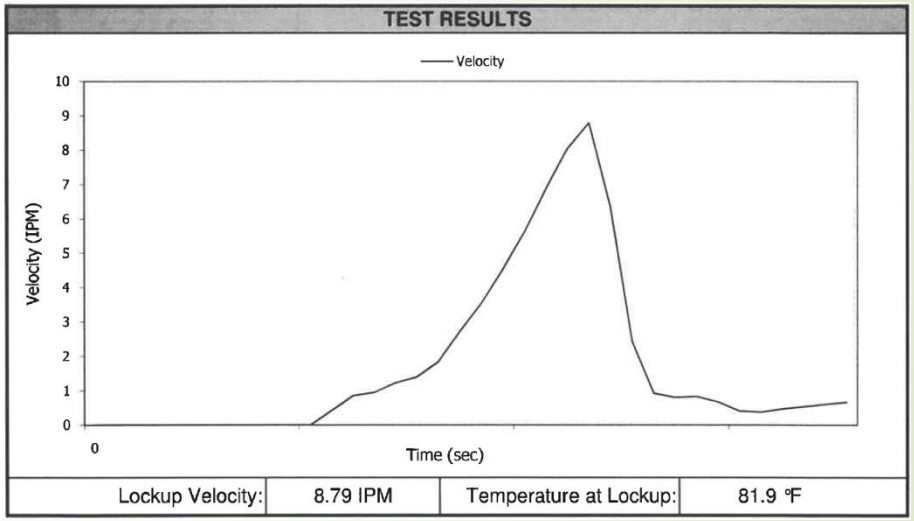
Curtiss-Wright (Enertech)

Drag Test



Average Load:	909.85 lbs	Maximum Load:	929.05 lbs	Average Velocity:	2.816 IPM

Lockup Test

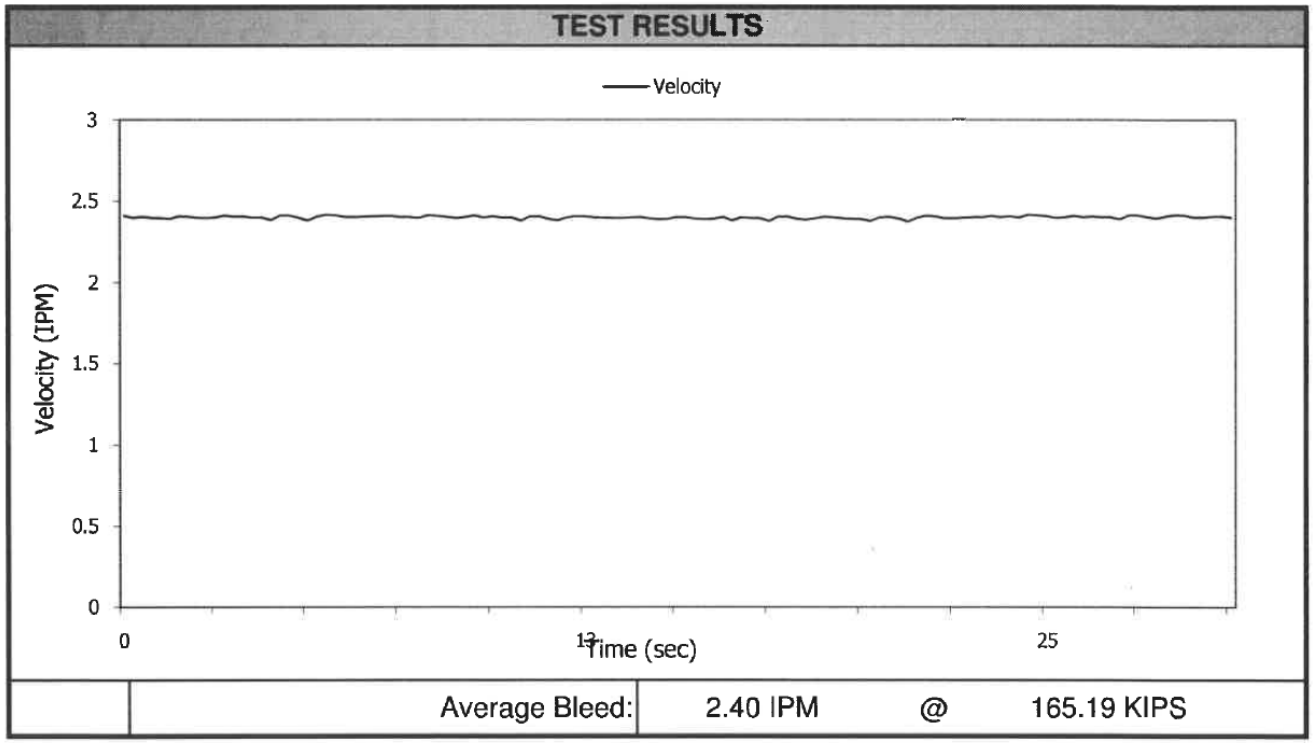


Lockup Velocity:	8.79 IPM	Temperature at Lockup:	81.9 °F

Large Bore – Hydraulic Paul-Munroe

Curtiss-Wright (Enertech)

Bleed Test



Questions?

Afternoon Beverage Break
Sponsored by

Return By 3:00 pm

Outage issues

What are some snubber related issues you had during this past spring outage season?

What issues have you seen on a repetitive basis (not necessarily during every outage)?

Other recuring issues: Vibration on the discharge of MSSV for BWR.

Getting snubbers free released after testing when they came from a clean area.

Failure due to not unpinning of snubber attached to valves or other components

Understanding 10 CFR Part 21?

Jeff Stallman, P.E.
Summer SNUG 2026

AGENDA

01 Purpose

02 History

03 Regulatory Framework

04 Components and Criteria

05 Deviation versus Defect

06 Discovery and Reporting

Purpose of Part 21

*To enhance the NRC's **'defense in depth'** measure for assuring the public's health and safety.*

Prompt notification of defects ensures they can **identify potentially generic safety issues and rapidly disseminate that information** to all other affected nuclear facilities before a failure.

10 CFR PART 21: KEY REGULATORY MOMENTS & EVOLUTION

REPORTING OF DEFECTS AND NONCOMPLIANCE

ERA OF 1974

1974

SECTION 206

- ESTABLISHES NRC
- MANDATES DEFECT REPORTING

PART 21 ADOPTED

1977

42 FR 28893

ESTABLISHES REQUIREMENTS

AMENDMENTS

1991

BROADENS SCOPE

- INCLUDE LICENSEES, ALL SUPPLIERS
- CLARIFY EVALUATION DUTIES

AMENDMENTS

1996

COMMERCIAL GRADE DEDICATION (CGD)

- ENHANCES PROCESS
- ADDS RESPONSIBILITIES FOR DEDICATING ENTITIES

RECENT & ONGOING CLARIFICATIONS

2000s – PRESENT

- NUREG GUIDANCE
  - NUREG-0302
  - NUREG-1022
- INDUSTRY CONSENSUS STANDARDS (e.g., NEI)

CONTINUED FOCUS ON SAFETY-RELATED PROCUREMENT

Regulatory Framework

Governing Regulation:

- 10 CFR Part 21 - Reporting of Defects and Noncompliance

Key Sections -

- §21.3 - Definitions
- §21.21 - Notification of failure to comply or existence of a defect
- §21.41 - Procedures
- §21.51 thru .61 - Records and reporting requirements

Relationship to Other Requirements:

- 10 CFR 50 Appendix B (QA Program)
- Corrective Action Programs (CAP)
- Procurement Engineering Controls

Part 21 - Components

Basic Component

- A **safety-related** structure, system, or component (SSC), or part thereof, that **affects its safety function**.
- Designed and manufactured under a **quality assurance program** (10 CFR 50 Appendix B) or commercial grade items which have successfully completed the **dedication process**.

Commercial Grade Item (CGI)

- An SSC, or part thereof that affects its **safety function,** that was **not designed and manufactured as a basic component.**

Dedication

- **Commercial item that is dedicated for use in a safety-related application.**
- Provides reasonable assurance that a CGI will perform its intended safety function and is deemed equivalent to an item designed and manufactured under a quality assurance program.

Part 21 - Criteria

*"A defect or failure to comply that could create a substantial safety hazard, **were it to remain uncorrected**."*

Where can these be found?

- Installed in the plant
- Warehouse stock
- At the supplier or dedication facility
- During plant construction

Substantial Safety Hazard (SSH)

- A loss of safety function to the extent that there is major reduction in the degree of protection provided to public health and safety for any facility or activity licensed or otherwise approved or regulated by the NRC

Part 21 - Deviation vs Defect

Deviation

- A **departure from** the **technical requirements** including:
  - Procurement document
  - Specified in early site permit information
  - Standard design certification
  - Standard design approval.

Substantial Safety Hazard is determined by an evaluation

Defect

- A **deviation** in a delivered basic component that could create a **Substantial Safety Hazard (SSH)**
- **Installation, use,** or **operation** of a basic component **containing a defect**
- A **deviation** in a portion of a facility (permitting, construction, or operating) provided the deviation could create a **substantial safety hazard** and the portion of the facility containing the deviation has been **offered to the purchaser for acceptance**.
- A **condition or circumstance** involving a basic component that **could contribute to the exceeding of a safety limit**
- An **error, omission or other circumstance** in a **design certification, or standard design approval** that could create a **substantial safety hazard**.

UNDERSTANDING NRC DEFINITIONS: DEVIATION VS. DEFECT

DEFINITION OF DEVIATION

A ***departure*** from the ***technical or quality requirements*** specified in a procurement document.

- Requires
- Requires assessment
- May not lead to a safety hazard

- May not lead to a substantial safety hazard

THE KEY DIFFERENCE: IMPACT ON SAFETY

ASSESSMENT REQUIRED: TO DETERMINE SUBSTANTIAL SAFETY HAZARD

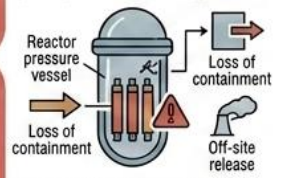
DEFINITION OF DEFECT

A condition or characteristic in a ***Basic Component*** that creates a ***Substantial Safety Hazard***.

10 CFR Part 21

- Confirmed condition
- Direct link to substantial safety hazard

Substantial Safety Hazard (SSH) in Nuclear Application



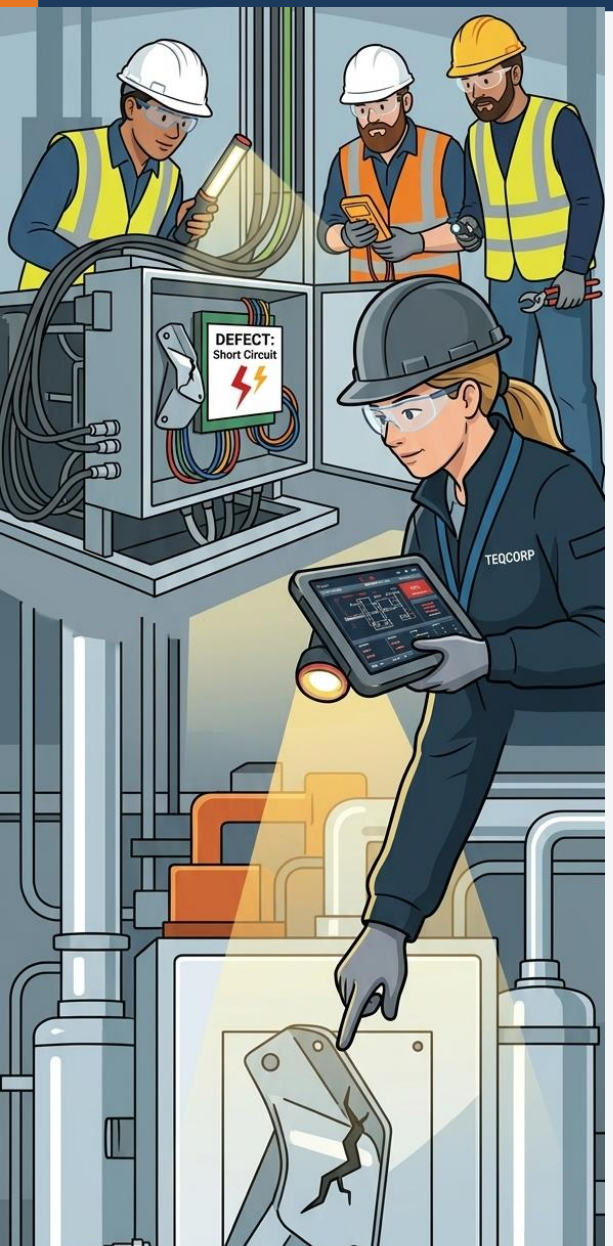
- Direct link to a condition creating a Substantial Safety Hazard (SSH).
- Potentially affects multiple components or systems.

A Deviation is ***not necessarily*** a Defect.

All Defects are ***rooted*** in a Deviation (or failure to comply).

The link to ***Substantial Safety Hazard*** transforms Deviation to Defect.

Discovery



Definition

- **Completion of the documentation first identifying** the existence of a deviation or failure to comply potentially associated with a substantial safety hazard.

Practical Scenario

- A safety-related component fails in the field, and a corrective action report is initiated to evaluate the cause.
- An evaluation is performed and identifies a deviation or defect in the component potentially associated with a substantial safety hazard that caused the failure.
- Completion of the evaluation (testing, internal inspection, etc.) would be the date of discovery.

NOTE:
*If the evaluation **cannot be completed within 60 days** of discovery and the failure/deviation **could potentially be associated with a substantial safety hazard**, then an **Interim Report should be sent within 60 days**.*

Reporting

Evaluation

- **< 60 days** from discovery
- Determine if a potential defect or failure to comply could create a substantial safety hazard, were it to remain uncorrected

Interim Reports

- When evaluation of an identified deviation or failure to comply, potentially associated with a substantial safety hazard, **cannot be completed within 60 days** from discovery
- Must be submitted in writing within 60 days of discovery
- Should describe the deviation or failure to comply that is being evaluated
- Should also state when the evaluation will be completed

10 CFR Part 21 NRC REPORTING TIMELINE: PROCESS & KEY MILESTONES

1 DISCOVERY & IDENTIFICATION

0 Days

DOCUMENT THE DEVIATION
(Potential Defect or Noncompliance)

START EVALUATION CLOCK

2 EVALUATION PERIOD

Up to 60 Days

60 DAYS
(from Discovery)

Determine if Deviation is a **DEFECT** that could create a **Substantial Safety Hazard** (SSH) or violate Technical Specifications

OR

INTERIM REPORT
Submit within 60 Days if evaluation cannot be completed

3 INITIAL NOTIFICATION

2 DAYS

Notify NRC Operations Center (Oral)

Within 2 Days of **DEFECTION** or **FAILURE TO COMPLY DETERMINATION** by Responsible Officer

4 WRITTEN REPORT

30 DAYS

Submit **WRITTEN REPORT** to NRC

Within 30 Days of **INITIAL NOTIFICATION**

5 FINAL CLOSEOUT & RECORDKEEPING

Implement **CORRECTIVE ACTION**

Notify affected purchasers (if applicable)

Retain Records for minimum 5 Years (Evaluations) or 10 Years (Notifications)

Note: Timeline is illustrative. For detailed requirements, refer to 10 CFR 21.21.

Thank You

Questions & Discussion

Jeff Stallman, P.E.

ASME OM SUBCOMMITTEE ON DYNAMIC RESTRAINTS (ISTD) LIAISON REPORT

Presented by Steve Norman

Summer 2026

SNubber User Group Conference & Trade Show

CURRENT ISSUES

- Item 20-04: Service Life Monitoring
- Item 21-02: Grace Period for Code 10 Year Visual Examination Interval
- Item 22-02: Contingency Sample Testing
- Item 22-03: Code Review for 2022 Edition
- Item 23-01: Grace Period for Code Case OMN-13 10 Year Visual Examination Interval
- Item 24-01: Clarification of “Snubbers That Are Previously Untested”
- Item 24-02: Inquiry 08-752 Was Never Answered
- Item 24-04: Define “Degraded”
- Item 24-05: Determine If Code Case OMN-10 Needs To Be Updated

NEW BUSINESS UPCOMING

- Item 25-01: New OM-2 Code Section DRD
- Item 25-02: Requirements For Resuming Snubber Program When Restarting A Previously Shut Down Plant
- Item 25-03: OM-1 Code Section DRD

USE OF THE ASME OM CODE IS REQUIRED BY THE NRC

- Latest Rulemaking includes the 2020 Edition of the OM Code
- Final Rule issued October 27, 2022
- Federal Register 87 FR 65128
- The NRC Staff is initiating a proposed Rulemaking to incorporate by reference the 2022 Edition of the OM Code, with conditions as appropriate.

ISTD ASME OM CODE

- ASME OM Code, 2022 Edition has been published
- Present OM Code for legacy plants is being updated and reformatted and will be rebranded as OM-1
- New 2024 Edition of the OM-2 Code for advanced reactor designs has been published. This code is significantly different from the original OM Code.
- NRC has stated they will not include the OM-2 Code in 10CFR50.55a. It will be endorsed for advanced reactor designed plants under a Reg Guide. If a legacy plant wishes to use the OM-2 Code, they will have to request permission from the NRC no longer published

CHANGES INCLUDED IN THE 2022 EDITION

- ISTD-4200 “Inservice Examination” Revised

ISTD-4200 INSERVICE EXAMINATION

In previous editions, ISTD-4200 only stated:

Snubbers shall be visually examined on the required schedule and evaluated to determine their operational readiness.

ISTD-4200 now reads:

Snubbers shall be visually examined on the required schedule and evaluated to determine their operational readiness. The inservice intervals represent the maximum time between examinations for any individual snubber. Examinations may be performed at any time during the interval, but any snubber that exceeds this time between examinations shall be classified as unacceptable until such time as an acceptable examination or test in accordance with ISTD-4240 is completed.

CHANGES INCLUDED IN THE 2022 EDITION (CONT'D)

- ISTD-4200 "Inservice Examination" Revised
- ISTD-4234 "Examination Prior to Maintenance or Testing" added

ISTD-4234
EXAMINATION PRIOR TO MAINTENANCE OR TESTING

ISTD-4234 did not exist in previous editions

ISTD-4234 reads:

All snubbers shall be examined in accordance with the requirements of ISTD-4210 through ISTD-4240 prior to conducting any maintenance, stroking, or testing, and prior to removal, for any reason, from their installed location.

2022 PUBLISHED CHANGES (CONT'D)

- ISTD-4200 "Inservice Examination" Revised
- ISTD-4234 "Examination Prior to Maintenance or Testing" added
- ISTD-4252 (a) and (e) revised

ISTD-4252
SUBSEQUENT EXAMINATION INTERVALS

ISTD-4252(a) did read:

a) Subsequent examination intervals shall begin at the end of the previous examination interval, and conclude at the end of the next refueling outage.

ISTD-4252(a) has been revised to read:

a) Subsequent examination intervals shall begin at the end of the previous examination interval~~, and conclude at the end of the next refueling outage~~.

ISTD-4252
SUBSEQUENT EXAMINATION INTERVALS

ISTD-4252(e) did read:

(e) Snubbers determined to be unacceptable based on the visual examination acceptance criteria at any time during the interval shall be counted in determining the subsequent examination interval in accordance with Table ISTD-4252-1.

ISTD-4252(e) has been revised to read:

(e) Snubbers determined to be unacceptable based on the visual examination acceptance criteria at any time during the interval shall be counted in determining the subsequent examination interval in accordance with Table ISTD-4252-1, regardless of the means of discovery. This shall include, for example, all unacceptable snubbers found during scheduled visual examinations; observed during walkdowns, maintenance, testing, snubber replacement, reservoir fluid level monitoring, transient dynamic event or water hammer evaluations; or service life monitoring activities. The total number of unacceptable snubbers shall be applied when using Table ISTD-4252-1 and ISTD-4253.

2022 PUBLISHED CHANGES (CONT'D)

- ISTD-4200 "Inservice Examination" Revised
- ISTD-4234 "Examination Prior to Maintenance or Testing" added
- ISTD-4252 (a) and (e) revised
- Notes (1) through (6) of Table ISTD-4252-1 revised and Note (7) added

TABLE ISTD-4252-1 VISUAL EXAMINATION TABLE NOTES

NOTES (1) through (6) did read:

(1) Interpolation between population or category sizes and the number of unacceptable snubbers is permissible. The next lower integer shall be used when interpolation results in a fraction.

(2) The basic interval shall be the normal fuel cycle up to 24 mo. The examination interval may be as great as twice, the same, or as small as fractions of the previous interval as required by the following notes. The examination interval may vary ±25% only to accommodate an extended outage or an unplanned event during the examination interval. The ±25% variance is specifically not to be used to extend an examination for an additional refueling cycle.

(3) If the number of unacceptable snubbers is equal to or less than the number in Column A, then the next examination interval may be increased to twice the previous examination interval, not to exceed 48 mo [±25% of the current interval as defined in Note (2) above]. In that case, the next examination according to the previous interval may be skipped.

(4) If the number of unacceptable snubbers exceeds the number in Column A, but is equal to or less than the number in Column B, then the next visual examination shall be conducted at the same interval as the previous interval.

(5) If the number of unacceptable snubbers exceeds the number in Column B, but is equal to or less than the number in Column C, then the next examination interval shall be decreased to two-thirds of the previous examination interval or, in accordance with the interpolation between Columns B and C, in proportion to the exact number of unacceptable snubbers.

(6) If the number of unacceptable snubbers exceeds the number in Column C, then the next examination interval shall be decreased to two-thirds of the previous interval.

TABLE ISTD-4252-1 VISUAL EXAMINATION TABLE NOTES

NOTES (1) through (7) have been revised extensively and now read:

(1) Reference ISTD-4252(e) for considerations regarding unacceptable snubbers. Interpolation between population or category sizes and the number of unacceptable snubbers is permissible. The next lower integer shall be used when interpolation results in a fraction.

(2) The basic interval shall be the length of the normal fuel cycle up to 24 months. The examination interval may be as great as twice, the same, or as small as fractions of the previous interval as required by Notes (3) through (6). The following grace periods may be applied to the resulting intervals:

  (a) For intervals less than 2 yr, completion of the examinations may be extended by up to 25% of the interval.

  (b) For intervals greater than or equal to 2 yr, completion of the examinations may be extended by up to 6 months except as noted in Note (7). The examination interval grace period noted above shall not be used to extend an examination period for an additional fuel cycle.

(3) For intervals up to and including 24 months, if the number of unacceptable snubbers is equal to or less than the number in Column A, then the next examination interval may be increased to twice the previous examination interval, with a maximum nominal interval of 48 months and limitations as defined in Note (2) above.

(4) If the number of unacceptable snubbers is equal to or less than the number in Column B, then the next visual examination may be conducted at the same interval as the previous interval.

(5) For extended intervals up to 48 months, if the number of unacceptable snubbers exceeds the number in Column B, but is equal to or less than the number in Column C, then the next examination interval shall be decreased to two-thirds of the previous examination interval or, in accordance with the interpolation between Columns B and C, in proportion to the exact number of unacceptable snubbers.

(6) For extended intervals up to 48 months, if the number of unacceptable snubbers exceeds the number in Column C, then the next examination interval shall be decreased to two-thirds of the previous interval.

(7) If the previous examination was performed at the maximum interval of two fuel cycles as described in Note (3) and the number of unacceptable snubbers is equal to or less than the number in Column A, the subsequent examination interval may be extended to a maximum of 10 yr provided all requirements of ISTD-4253 are met. No grace period extension is applicable to extend any visual examination beyond 10 yr.

TABLE ISTD-4252-1 VISUAL EXAMINATION TABLE NOTES

Let's look at each note individually.

NOTE (1) did read:

(1) Interpolation between population or category sizes and the number of unacceptable snubbers is permissible. The next lower integer shall be used when interpolation results in a fraction.

NOTE (1) now reads:

(1) Reference ISTD-4252(e) for considerations regarding unacceptable snubbers. Interpolation between population or category sizes and the number of unacceptable snubbers is permissible. The next lower integer shall be used when interpolation results in a fraction.

TABLE ISTD-4252-1 VISUAL EXAMINATION TABLE NOTES

NOTE (2) did read:

The basic interval shall be the normal fuel cycle up to 24 months. The examination interval may be as great as twice, the same, or as small as fractions of the previous interval as required by the following notes. The examination interval may vary ±25% only to accommodate an extended outage or an unplanned event during the examination interval. The ±25% variance is specifically not to be used to extend an examination for an additional refueling cycle.

NOTE (2) now reads:

The basic interval shall be the length of the normal fuel cycle up to 24 months. The examination interval may be as great as twice, the same, or as small as fractions of the previous interval as required by Notes (3) through (6). The following grace periods may be applied to the resulting intervals:

(a) For intervals less than 2 yr, completion of the examinations may be extended by up to 25% of the interval.

(b) For intervals greater than or equal to 2 yr, completion of the examinations may be extended by up to 6 months except as noted in Note (7). The examination interval grace period noted above shall not be used to extend an examination period for an additional fuel cycle.

TABLE ISTD-4252-1 VISUAL EXAMINATION TABLE NOTES

NOTE (3) did read:

If the number of unacceptable snubbers is equal to or less than the number in Column A, then the next examination interval may be increased to twice the previous examination interval, not to exceed 48 mo [±25% of the current interval as defined in Note (2) above]. In that case, the next examination according to the previous interval may be skipped.

NOTE (3) now reads:

For intervals up to and including 24 months, if the number of unacceptable snubbers is equal to or less than the number in Column A, then the next examination interval may be increased to twice the previous examination interval, with a maximum nominal interval of 48 months and limitations as defined in Note (2) above.

TABLE ISTD-4252-1 VISUAL EXAMINATION TABLE NOTES

NOTE (4) did read:

If the number of unacceptable snubbers exceeds the number in Column A, but is equal to or less than the number in Column B, then the next visual examination shall be conducted at the same interval as the previous interval.

NOTE (4) now reads:

If the number of unacceptable snubbers is equal to or less than the number in Column B, then the next visual examination may be conducted at the same interval as the previous interval.

TABLE ISTD-4252-1 VISUAL EXAMINATION TABLE NOTES

NOTE (5) did read:

If the number of unacceptable snubbers exceeds the number in Column B, but is equal to or less than the number in Column C, then the next examination interval shall be decreased to two-thirds of the previous examination interval or, in accordance with the interpolation between Columns B and C, in proportion to the exact number of unacceptable snubbers.

NOTE (5) now reads:

For extended intervals up to 48 months, if the number of unacceptable snubbers exceeds the number in Column B, but is equal to or less than the number in Column C, then the next examination interval shall be decreased to two-thirds of the previous examination interval or, in accordance with the interpolation between Columns B and C, in proportion to the exact number of unacceptable snubbers.

TABLE ISTD-4252-1 VISUAL EXAMINATION TABLE NOTES

NOTE (6) did read:

If the number of unacceptable snubbers exceeds the number in Column C, then the next examination interval shall be decreased to two-thirds of the previous interval.

NOTE (6) now reads:

For extended intervals up to 48 months, if the number of unacceptable snubbers exceeds the number in Column C, then the next examination interval shall be decreased to two-thirds of the previous interval.

TABLE ISTD-4252-1 VISUAL EXAMINATION TABLE NOTES

New NOTE (7) has been added, which reads:

If the previous examination was performed at the maximum interval of two fuel cycles as described in Note (3) and the number of unacceptable snubbers is equal to or less than the number in Column A, the subsequent examination interval may be extended to a maximum of 10 yr provided all requirements of ISTD-4253 are met. No grace period extension is applicable to extend any visual examination beyond 10 yr.

2022 PUBLISHED CHANGES (CONT'D)

- ISTD-4200 "Inservice Examination" Revised
- ISTD-4234 "Examination Prior to Maintenance or Testing" added
- ISTD-4252 (a) and (e) revised
- Notes (1) through (6) of Table ISTD-4252-1 revised and Note (7) added
- ISTD-4253 "Additional Requirements for 10-yr Interval" added

ISTD-4253
ADDITIONAL REQUIREMENTS FOR 10-YR INTERVAL

ISTD-4253 did not exist in previous editions

ISTD-4253 reads:

All snubbers within the scope of Subsection ISTD may be examined and evaluated at least once every 10 yr in accordance with Table ISTD-4252-1, Note (7) provided the following requirements are satisfied:

(a) If at any time during an examination interval the cumulative number of unacceptable snubbers per ISTD-4252(e) exceeds the applicable value from Table ISTD-4252-1, Column B, the current examination interval shall end, and all remaining examinations must be completed within the current fuel cycle. The duration of the subsequent examination interval shall be reduced to the 48-month maximum cycle examination interval used prior to implementing the 10-yr interval. The beginning of the subsequent fuel cycle shall be the starting date for the new examination interval.

(b) No alternatives to ISTD-5200 testing requirements that allow for extended test intervals shall be used in conjunction with examination intervals that exceed a nominal value of 48 months.

2022 PUBLISHED CHANGES (CONT'D)

- ISTD-4200 "Inservice Examination" Revised
- ISTD-4234 "Examination Prior to Maintenance or Testing" added
- ISTD-4252 (a) and (e) revised
- Notes (1) through (6) of Table ISTD-4252-1 revised and Note (7) added
- ISTD-4253 "Additional Requirements for 10-yr Interval" added
- ISTD-6600 "Review of Operational Readiness Test Data" added

ISTD-6600
REVIEW OF OPERATIONAL READINESS TEST DATA

ISTD-6600 did not exist in previous editions

ISTD-6600 reads:

All inservice test data shall be evaluated for indications of snubber degradation or other anomalies. This includes a review of test traces, where available. The results of this evaluation shall be used

(a) to identify snubbers that are subject to progressive degradation

(b) to identify severe operating environments not previously identified

2022 PUBLISHED CHANGES (CONT'D)

- ISTD-4200 "Inservice Examination" Revised
- ISTD-4234 "Examination Prior to Maintenance or Testing" added
- ISTD-4252 (a) and (e) revised
- Notes (1) through (6) of Table ISTD-4252-1 revised and Note (7) added
- ISTD-4253 "Additional Requirements for 10-yr Interval" added
- ISTD-6600 "Review of Operational Readiness Test Data" added
- ISTD-6700 "Examination During Assembly" added

ISTD-6700
EXAMINATION DURING ASSEMBLY

ISTD-6700 did not exist in previous editions

ISTD-6700 reads:

Snubbers and snubber parts that are disassembled (during failure evaluation, refurbishment, etc.) shall be examined for indications of degradation and severe operating environments.

UPCOMING CHANGES

Record 23-498 was approved by the OM Standards Committee on Ballot 24-3142RC1 to change paragraph 3.4 of Code Case OMN-15 regarding the use of the Case along with extended visual examination intervals.

Paragraph 3.4 did read:

3.4 Code Case OMN-13

This Code Case shall not be used in conjunction with Code Case OMN-13.

Subparagraph 3.4 now reads:

3.4 Limitations for Use in Conjunction with an Extended Visual Examination Interval

The use of this Case is not permitted if either of the following conditions exist:

(a) the licensee is using the 2020 or earlier edition of the ASME OM Code and has adopted Code Case OMN-13 for extended visual examination intervals

(b) the licensee is using the 2022 or later edition of the ASME OM Code and has extended their visual examination interval beyond two refueling cycles (or 48 months) while implementing paragraph ISTD-4253 and Note 7 of Table 4252-1

UPCOMING CHANGES

- Ballot 23-718 for Record 23-483 was issued on 03/07/23 for a four-week Review and Comment period. This ballot closed on 04/17/23 and the item received fourteen comments. Responses have been provided for all comments. Tim Canter is working on a new revision.
- Ballot 24-68 for Record 24-22 (Grace Period for Code Case OMN-13 10 Year Visual Examination Interval) closed on 01/31/24 with five (5) negatives and three (3) comments. The record Project Manager must respond to all comments and negatives before ASME will take any further action. This item will most likely have to be reballoted.

UPCOMING CHANGES

- Ballot 24-71 for Record 24-23 (Grace Period for Code 10 Year Visual Examination Interval) closed on 01/31/24 with six (6) negatives and three (3) comments. The record Project Manager must respond to all comments and negatives before ASME will take any further action. This item will most likely have to be reballoted.
- Ballot 24-1685 for Record 24-1270 (Code Review for 2022 Edition) is a four-week review and comment ballot and was issued to all OM subcommittees on 05/28/24. The ballot closed on 07/15/24 and received ten (10) comments. Responses have been posted to all of the comments however, based on the comments received, additional changes to the proposal file are needed and the item should then be reballoted for comments.

FUTURE MEETINGS

- Thursday, July 16, 202. This will be a face-to-face meeting and will be held at The DoubleTree by Hilton St. Paul Downtown Hotel in St. Paul, Minnesota in conjunction with the Summer 2026 SNubber Users Group Conference & Trade Show.
- Wednesday, December 9, 2026. Again, this will be a face-to-face meeting and will be held at the Sheraton Sand Key Resort in Clearwater Beach, Florida in conjunction with the December 2026 ASME OM Code Week.

ASME OM SUBCOMMITTEE ON DYNAMIC RESTRAINTS (ISTD) LIAISON REPORT

SNUG
SNUBBER USERS GROUP

Question Cards
or
Questions from the Floor

?

SNUG
SNUBBER USERS GROUP

Daily Adjournment

Wednesday's Session Begins at 8:00 AM