TSD *SharePoint* for Quality Assurance Documentation

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TSD Topical Meeting

January 18, 2024

Outline

- Introduction
- Eric's Story
- Overview of NuMI Target TA-07 Site, by Andrew
- ***SharePoint*** Basic Features, by Andrew
- ***SharePoint*** for CNC Welding & Advanced Functions, by Adrian
- Summary: *Team Effort & a Sense of Ownership*

TSD *SharePoint* Home

This is the TSD Intranet Portal for Collaboration, Integration, and Communication

TSD Resources and Communications

Administrative

- TSD Vacation Calendar
- TSD Org-chart
- TSD Personnel Directory
- Timecard Instructions
- TSD Budget Codes
- Travel Authorization Guide
- Hiring Resources
- Onboarding Resources
- Transition Plan
- Office Supply Resource
- BTW Floor Plan
- BTW Office Assignments
- SharePoint Management
- AD Office Map
- TSD Managers' Corner
- MS Office 365 Installation

Engineering Resources

- Engineering Resource Texts
- Work Planning & Control
- Structure Safety
- Drafting and GD&T
- Teamcenter and NX
- ANSYS & NX Simcenter
- ASME BPVC Section VIII
- TSD Design Reviews
- Procurement Resources
- Vendors List
- Lectures and Workshops
- TSD Virtual Library
- Material Properties
- Automation Workshop

Target Systems and Facilities

TSD Integration

- Fabrication Status
- Building Walkthroughs
- System Assignment Matrix (Excel Sheet)
- Summer Shutdowns
- Target Hall Procedures

NuMI/NOvA Target System

NuMI Target Hall Intranet Portal
(Beam Operations and System maintenance)

- MI-65 Target Hall
- NuMI-AIP 1-MW Upgrade
- Procedures
- Targets-n-Horns Master List
- Drawings
- Focusing Horns
- Target
- CNC TIG Welding

AP0 Target Station

- System Maintenance Log
- Operations
- Beam Operating Scenarios
- Summer Shutdowns
- Drawings
- Procedures

BNB Target Station

- BNB Horn 05 Inventory
- Maintenance

Projects

High Power Targetry R&D

- Graphite Ion Irradiation
- Graphite Characterization
- Sinuous Target
- HiRadMat Thermal Shock Exp.
- Ti Alloy Studies
- DPA experiment in FY23

TSD Science

- NuML Artificial Intelligence and Machine Learning
- Beamline Monitoring Plots
- Muon Monitor Plots
- Radiation Hard Instrumentation Ideas

MARS Code System

- MARS15 Code Overview
- Computing Resources

PIP-II Beam Absorbers and Vacuum Windows

- 25 KW Absorber
- 2 KW Absorber
- Beam Windows

LBNF Target System

We are going to present today

There is a wealth of information, and we are excited to have everyone working ***together*** to create a primary source of ***collaboration*** and ***connection***.

Maintaining Quality Assurance Documentation on *SharePoint*

In addition to the **QA documentation required for projects and operations (not our directive)**, here we present ***SharePoint*** for the fabrication team, enhancing communication and collaboration.

Purpose :

- Preserve and share knowledge >> efficiency
- Learn from past experiences >> onboarding new team members
- Consistent quality standards >> reliability, traceability and accountability
- Future reference >> operations & troubleshooting
- Fabrication status, inventory, continuous improvement
- Basis for audits, groundwork for future projects

Documents need to be shared within the fabrication team

- Drawings (controlled version are in Teamcenter, not everyone has access to it)
- Requirements, specifications, fabrication steps, and procedures
- Reports of inspection & quality control (measurements, survey, leak check, pressure testing, weld quality, etc.)

Benefit of Using *SharePoint* for Team Collaboration

- Web-based, accessible for all levels of team
- Developed by Microsoft, familiar user interface, easy to use
- Centralized with logically or visually linked documents, easy to find
- Enterprise-level reliability, Microsoft, trusted platform, dedicated FNAL team
- File recovery, backup tapes from lab's SharePoint management team
- Permission control, site level, group based, documents folder, individual file

Additional features as of Jan. 17, 2020, from Kimerly Myles:

- **Hybrid environment-** both on premise SharePoint hosted with our own server farm plus a SharePoint environment in the cloud (with the advantage that you can share files with external stakeholders.
- **Enterprise search capability** displaying results from Indico (in progress) , Docdb private and public (available now), Service Now (in progress) Team Center (investigating as potential project); Inspire (available now).
- **Ability to share documents with external stakeholders** as long as they have a personal email tied to a Microsoft account via our online Office 365 instance of SharePoint.
- Ability to use 3rd part tool "**Nintex**" **forms** and workflows to create customizable forms with instructional content and workflow such as **approval workflow**, workflow that moves files between lists or libraries pending approval etc.
- The ability to use **managed meta data to make filtering easier**, and to create columns that can be used with this data across multiple lists and/or libraries to provide a standard way to tag content.

We are ***grateful*** to those who have started their ***SharePoint*** journey.

Let's share Eric's story

ERIC'S STORY

Fermilab TSD Initiative Committee

Go Green Home TSD SharePoint Home

SharePoint Contents Management

Scope:

- Establish best practices across the department for **Archiving and Sharing Data**;
- Establish a **Metadata System** to enable maximum **Manageability** and **Findability** of our TSD digital contents;
- Develop **Nintex Workflows** to create customizable forms with instructional content per **Quality Control** for technicians to enter inspections/ measurements on customized instructional forms for device fabrication or system operation, or **approval process** for engineering documents;
- **Professional Development on Data Management** that support the long-term preservation, access, and reuse of our data;
- Maximize the use of the **Site Features** (there are 38 Site features can be activated or deactivated);
- **Integrate SharePoint** with lab's other supported contents platforms (Teamcenter, DocDB, Indico, Office 365, MS teams, OneDrive, etc.).

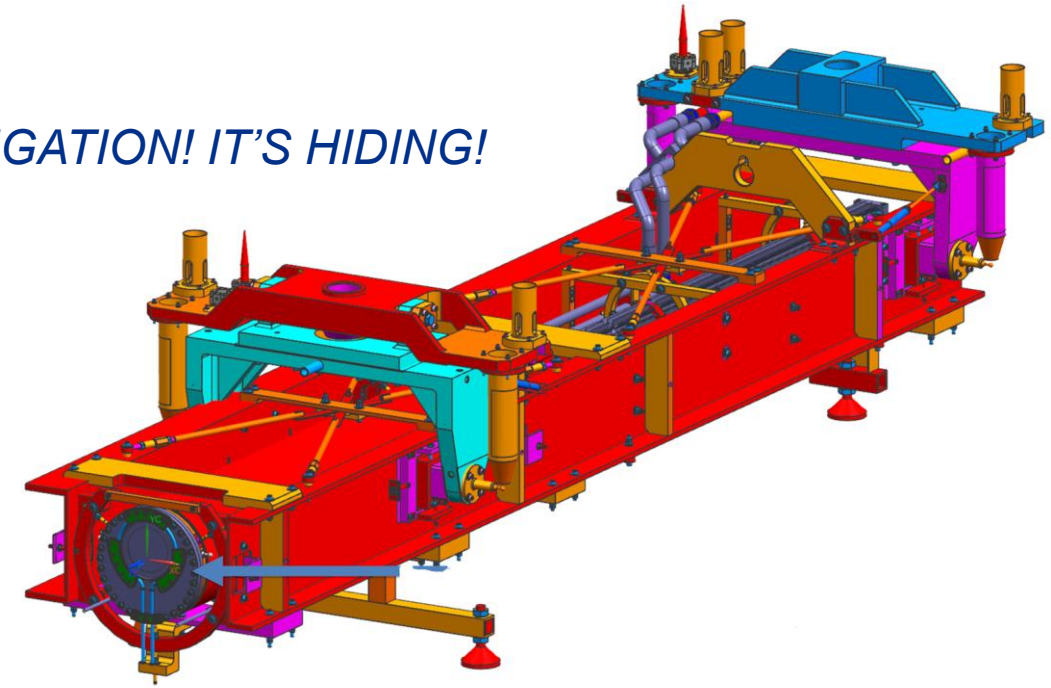
Team Members: Yun He, Meredith Lee, Nandhini Dhanaraj, George Lolov
Others are welcome!

Reference information

	Description
SharePoint Features Kimberly Myles	1. **Hybrid environment**- both **on premise** SharePoint hosted with our own server farm plus a SharePoint environment in the **cloud** (with the advantage that you can share files with external stakeholders. 2. **Enterprise search** capability displaying results from Indico (in progress) , Docdb private and public (available now), Service Now (in progress) Team Center (investigating as potential project); Inspire (I believe this is available now). 3. Ability to **share documents with external stakeholders** as long as they have a personal email tied to a **Microsoft account via our online Office 365 instance of SharePoint**. 4. Ability to conduct list or library specific search to find the content you need quickly. 5. New homepage "modern" view displays constantly updated visualization of files that are visited the most on a site for quick access. 6. Ability to **control document access by site owners.** There is even capability of creating sites that require 2 factor authentication for extra sensitive materials. (Example is the current MFA site) 7. Ability to create filters displaying list items from a different site in a site on your current site. 8. Ability to use 3rd part tool **"Nintex"** forms and **workflows** to create customizable forms with instructional content and workflow such as approval workflow, workflow that moves files between lists or libraries pending approval etc. And **surveys** that enable users to submit forms that only they can see besides site owners restricting only for their view so that they do not see other submissions. 9. Ability to interact with other solutions at the lab such as WordPress. We currently have a list view app in WordPress that displays a SharePoint list in WordPress without custom code. 10. The ability to save custom views of a list or library 11. The ability to **use managed meta data to make filtering easier,** and to create columns that can be used with this data across multiple lists and/or libraries to provide a standard way to tag content. 12. **Community site** template enables discussion threads with the ability to like content or answer questions and have this easily accessible in long threads via tabs specific to "Answers" or "Likes".
SharePoint Training Materials	For **Site Owners** For **Designers** For **Contributors**
Data Management and Metadata Online training material from	**Definition of Research Data:** *Data should be valid, shared, and are heterogeneous and contextualized within research communities.* **Metadata:** *Without supporting documentation and metadata, data may be rendered meaningless and unusable.* Metadata is defined as structured information that describes, explains, locates, and otherwise represents something else. Metadata allows data to be found and interpreted. At a minimum, one needs to know who created the data, when the data were created or published, and a title or descriptive name used to refer to the dataset. Digital data should also have a unique and persistent identifier. Two metadata standards commonly used to describe research data are Dublin Core and the Data Documentation Initiative.

The Beginning

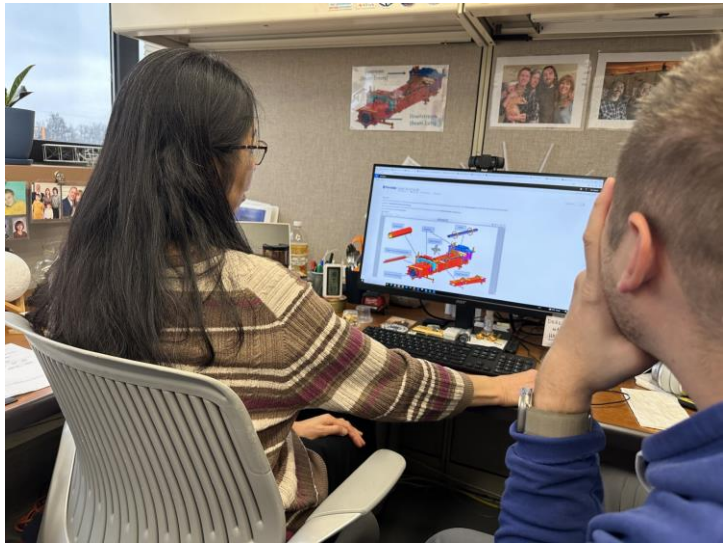
- ***My new assignment***
  - *NuMI Target TA-07 & TA-08 spare production.*
  - *It's such a fascinating engineering art…*
- ***Necessity…***
  - *The Mother of invention*
  - *For me, it was getting up to speed as quickly as I could.*
- ***My experience…***
  - *In the early days... NAVIGATION! IT'S HIDING! FRUSTRATION!*



Journey with *SharePoint*

- ***SharePoint* beginner**
  - *I'm a user of this tool, and in the beginning, it overwhelmed me*

- ***SharePoint* Team**
  - ***Yun's*** *passion, stepped up to set the site structure and provided tutorials*
  - ***Andrew****, my work partner, worked along my side*
  - ***Georgi****, lead engineer, uploaded the files*
  - ***Adrian****, used advanced feature to fulfill my ideas*

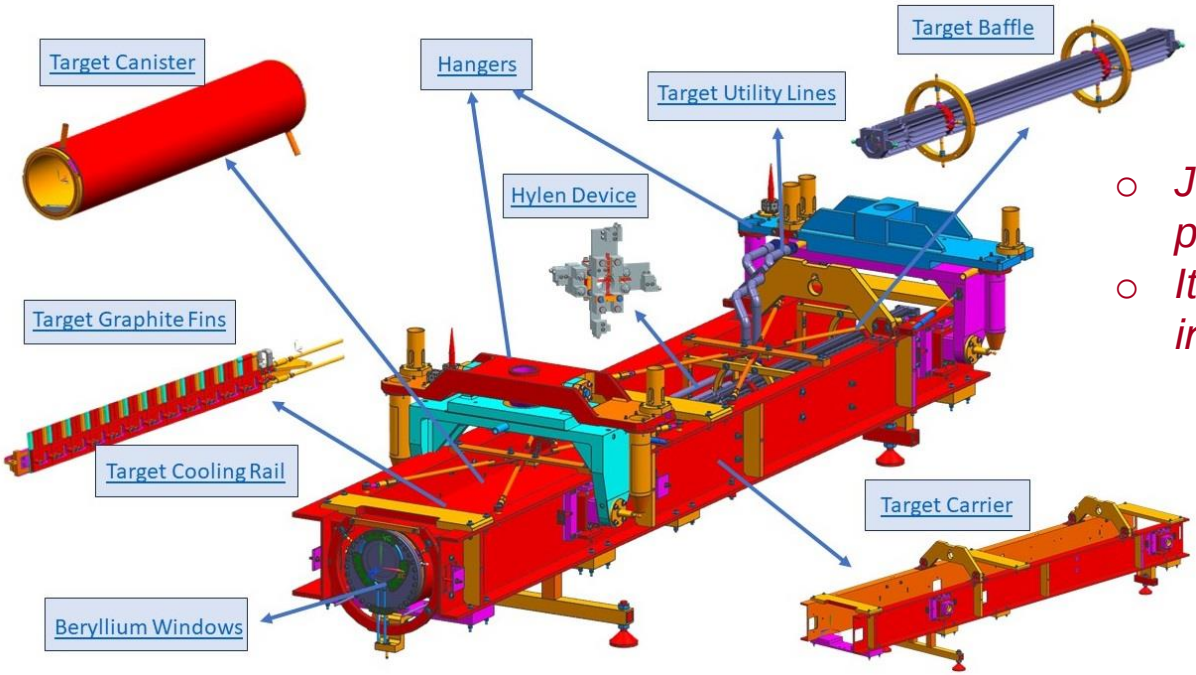


Possibilities & Connection!

- *I love all the possibilities with* ***collaboration*** *that also brings* ***connection****!*

Creative Idea

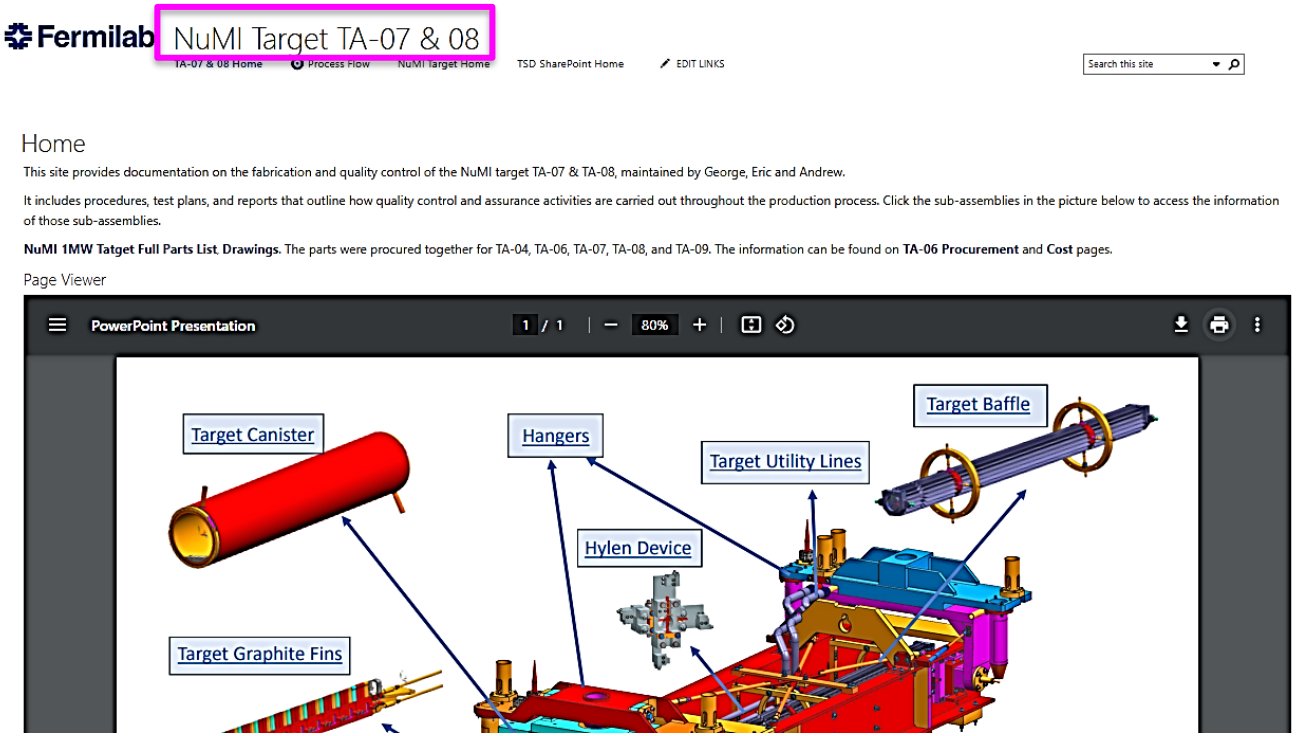
- ***My Visually Wired Grey Matter***
  - *My grey matter is wired to work visually*
  - *My early exploration of **SharePoint** my wiring was short circuiting*
  - *I started asking questions, a personal mantra of mine...“Smile and Be Curious”*
- ***Satisfying My Brain!***
  - *I am impressed that **SharePoint** has the functionalities for my brain’s wiring.*



- *Just simply click the link in the picture*
- *It will lead me to the information that I’m looking for!*

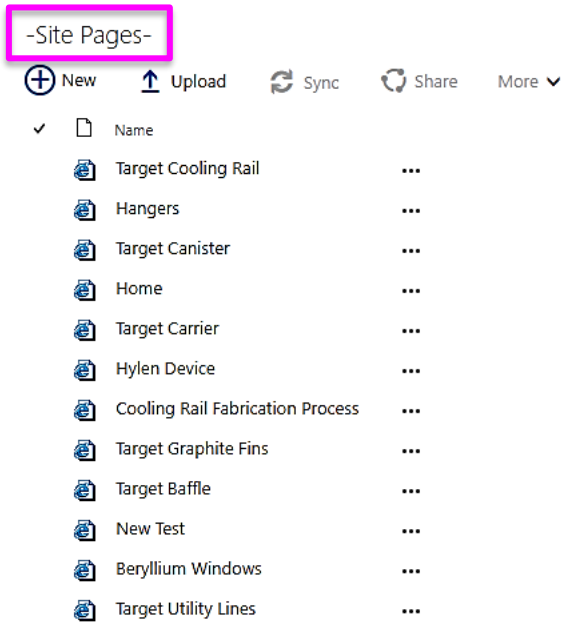
Taking the Plunge

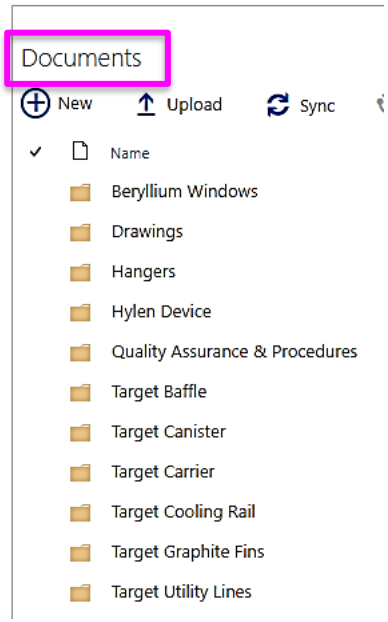
- ***Deep Dive***
  - *Andrew supplied me the **LIFELINE** to do this as he has a more extensive experience with this tool I do not yet have.*
- ***Owning NuMI TA-07 & 08 Site***
  - *That's our platform for QA Documentation, which is important…for the team, for future operations…*



"Becoming" Fearless

- ***Being a Co-owner of Target TA-07 & 08 Site***
  - *I can develop this site in the best interest of my team*
  - *The operative word is "becoming" as I will make mistakes which I view simply as lessons.*
  - *Yun & Andrew's support with SharePoint, gives me great comfort. I encourage you to find your support*
- ***Pages and Documents of Sub-assemblies***
  - *This is where the QA documents reside*





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My Goal

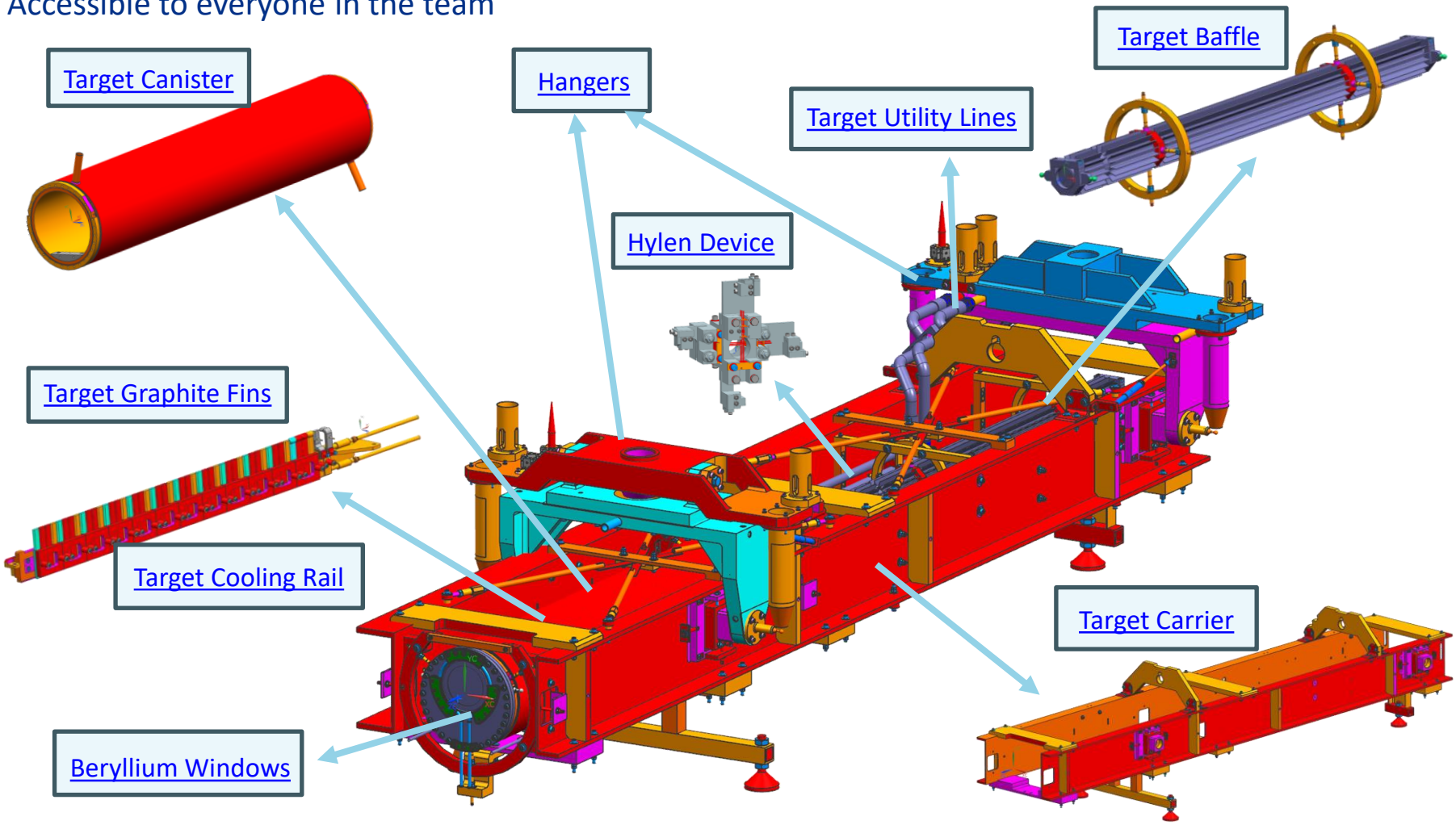
- ***Let's Get Together…and "Share" the Point***
  - *The future... having **SharePoint** as common a tool as a wrench for a technician and comfortable enough that it is second nature.*
  - *I look forward to making contributions on **"Share" Point**.*

Overview of NuMI Target TA-07 Site
SharePoint Basic Features

Andrew

NuMI Target Sub-assemblies

The links on the sub-assemblies in the picture provide easy, web-based access to their information
Accessible to everyone in the team



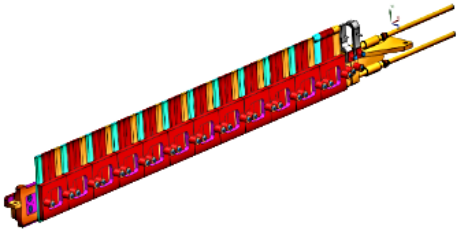
Target TA-07 Site Overview, by Andrew

Target Cooling Rail

One of nine sub-assemblies of NuMI Target

The target rail is constructed from Aluminum and features gundrilled water cooling channels to provide cooling to the target fins, preventing excessive heat or potential fracturing. Spring-loaded bolts are used to clamp the fins to the aluminum rail, ensuring effective thermal contact.

Requirements / Specifications	Fabrication Steps
1. Gundrilled water channels must meet tolerances specified in drawing 2. Final machined bars must meet material thickness specifications in drawing 3. All welds must be free of voids or impurities and must have complete weld fusion 4. Completed cooling rail must be able to hold 100 psi over 1 hour during hydrostatic pressure test	1. The process starts with a machine shop gundrilling the water channels into Aluminum blanks. At the same time the bellows weldments (bellows are welded to SS tubes on one end and a SS-Al explosion bonded tube on the other) can be fabricated by delivering all necessary parts to a specialty welding vendor. 2. The gundrilled bars are sent out for X-rays to determine the straightness of the gundrill 3. If straightness checks pass, the opening for the vertical gundrilled channel opening is plugged off and welded over 4. More X-rays are taken to ensure the plug weld integrity looks good 5. The bars are then sent to another machine shop for final machining (put all the features in to allow for mounting the graphite fins)



Drawings

Procedures

Referencing Cooling Rail (AS-TA0X-015)
Cooling Rail Spring Measurements (AS-TA0X-021)
Installing Pudal Wires (AS-TA0X-031)

Fabrication of Cooling Rail

Log entries by technicians or lead engineer

⊕ new item or edit this list

Find an item

✓	Step #		Description	Notes / Reports	ID	Modified By
	2	...	Final cooling rail pressure tests.	TA-08 cooling rail presssure test results.pdf TA-09 cooling rail pressure test results.pdf	2	Andrew J. Rauch
	1	...	Cooling Rail Fabrication: Gundrilling, Final Machining, Bellows Weldment	Cooling Rail available for use in TA-07 or TA-04 (TBD based on baffle status) Bellows weldment X-ray results (Feb. 25, 2022), sample welds shown below.	1	Eric Carson

Test reports

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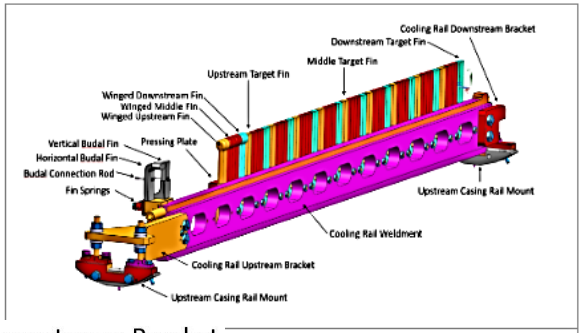
Navigating Information

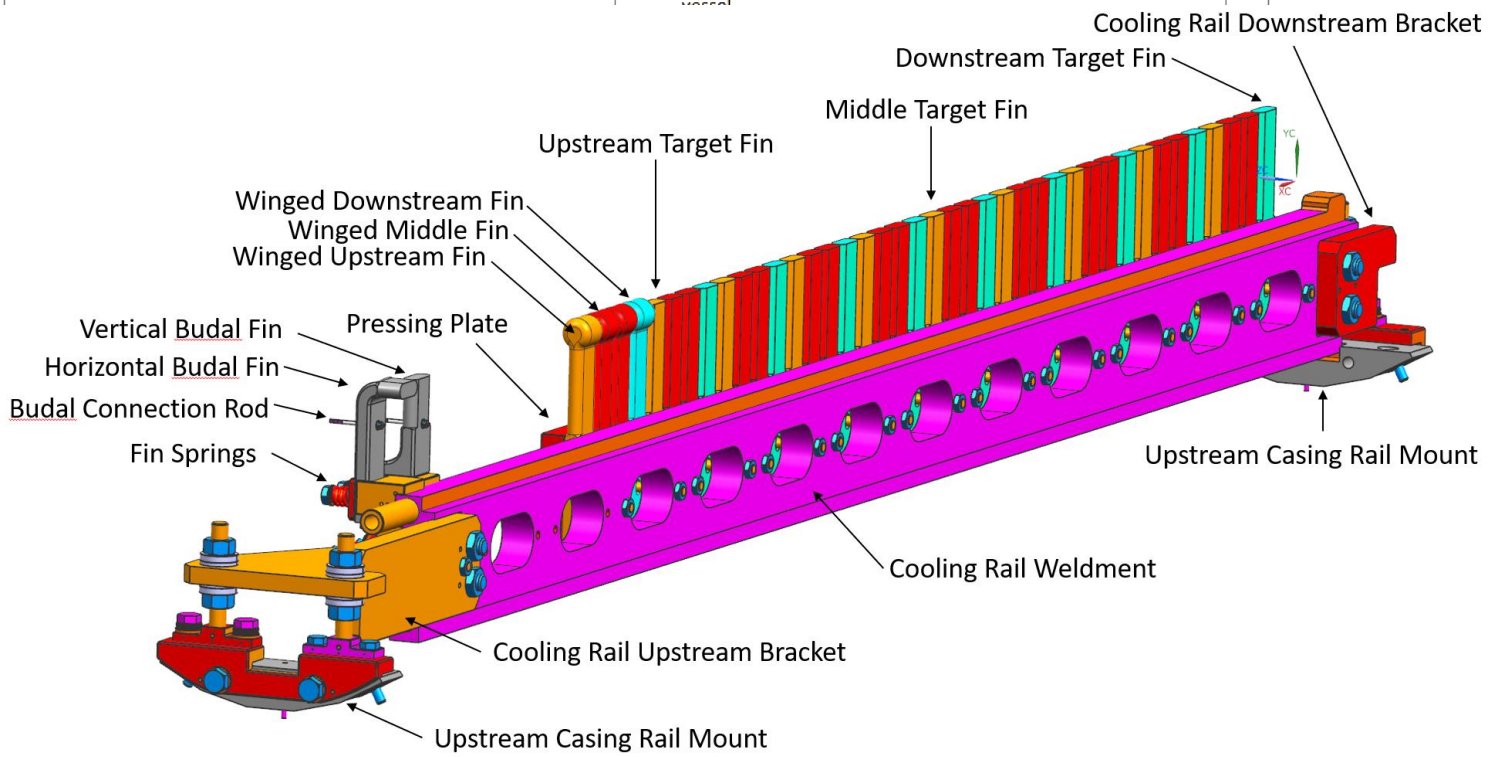
clicking the image enlarges it for more details

Target Graphite Fins

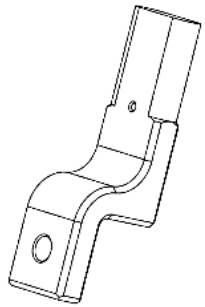
The NuMI target fins are made of POCO ZXF-5Q graphite material and directly interact with the proton beam to produce a beam shower of secondary particles (pions, muons, etc.). Interaction with beam produces a lot of heat within the graphite, so they are mounted to a water cooled Aluminum rail to prevent the fins from fracturing due to theraml stress.

Requirements / Specifications	Fabrication Steps
1. Results of RGA after bakeout must be similar to past data (low impurity and hydrocarbon concentrations) 2. After baekout, graphite fins must be kept under vacuum at all times (except during survey and assembly onto rail) 3. Fins will need to be sanded accordingly to ensure proper fit onto the rail	1. Machine shop will wire EDM the graphite fins from blocks of graphite material 2. The fins will be placed on a bakeout fixture and sent to NWA for bakeout 3. After baekout the fins are immediately stored in a vacuum vessel





ements (AS-TA0X-012)
(AS-TA-013)



lal Fin F10108968 L Shaped Budal Fin

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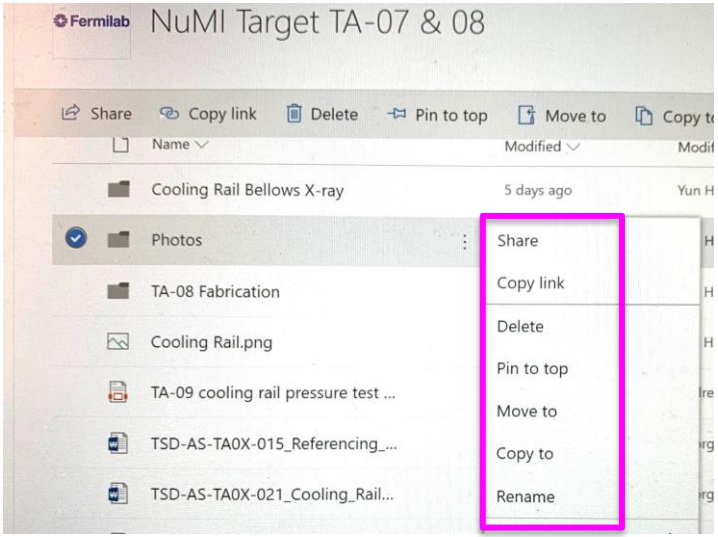
Making Contributions Is Easy

- ***Two steps*** (TA-07 Home)
  - *Upload files to Documents folder*
  - *Link the file on Page*
- ***Make a Log entry*** *(Target Cooling Rail page)*

Fabrication of Target Fins

new item or edit this list

✓	Step #		Description	Notes / Reports
	2	•••	TA-07 Bakeout and Assembly	All graphite fins ba sitting under vaccu
	1	•••	TA-08 Machining	All graphite fins m assembly area. - G

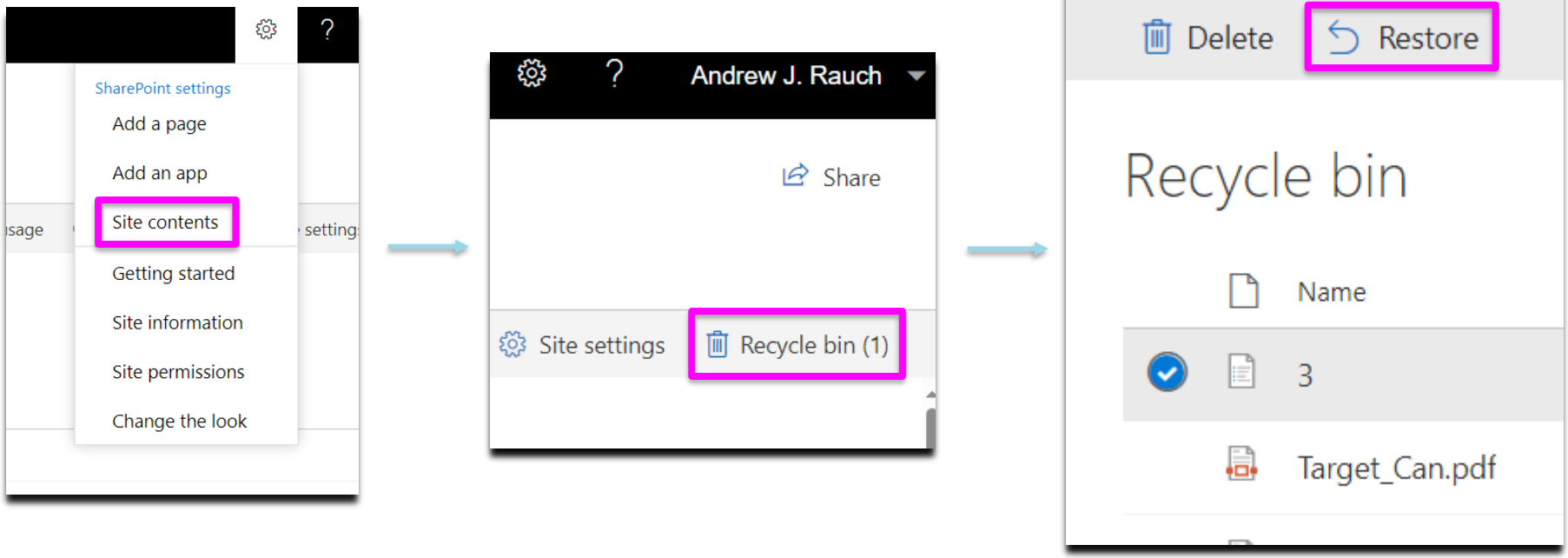


- ***Flexible in re-organizing files***

Common SharePoint Operations

"Eliminate the fear"

- ***Become familiar with SharePoint operations***
  - *Cloud storage*
- ***Most mistakes are reversable***
  - *Recycling bin holds all deleted files and sites for 93days*



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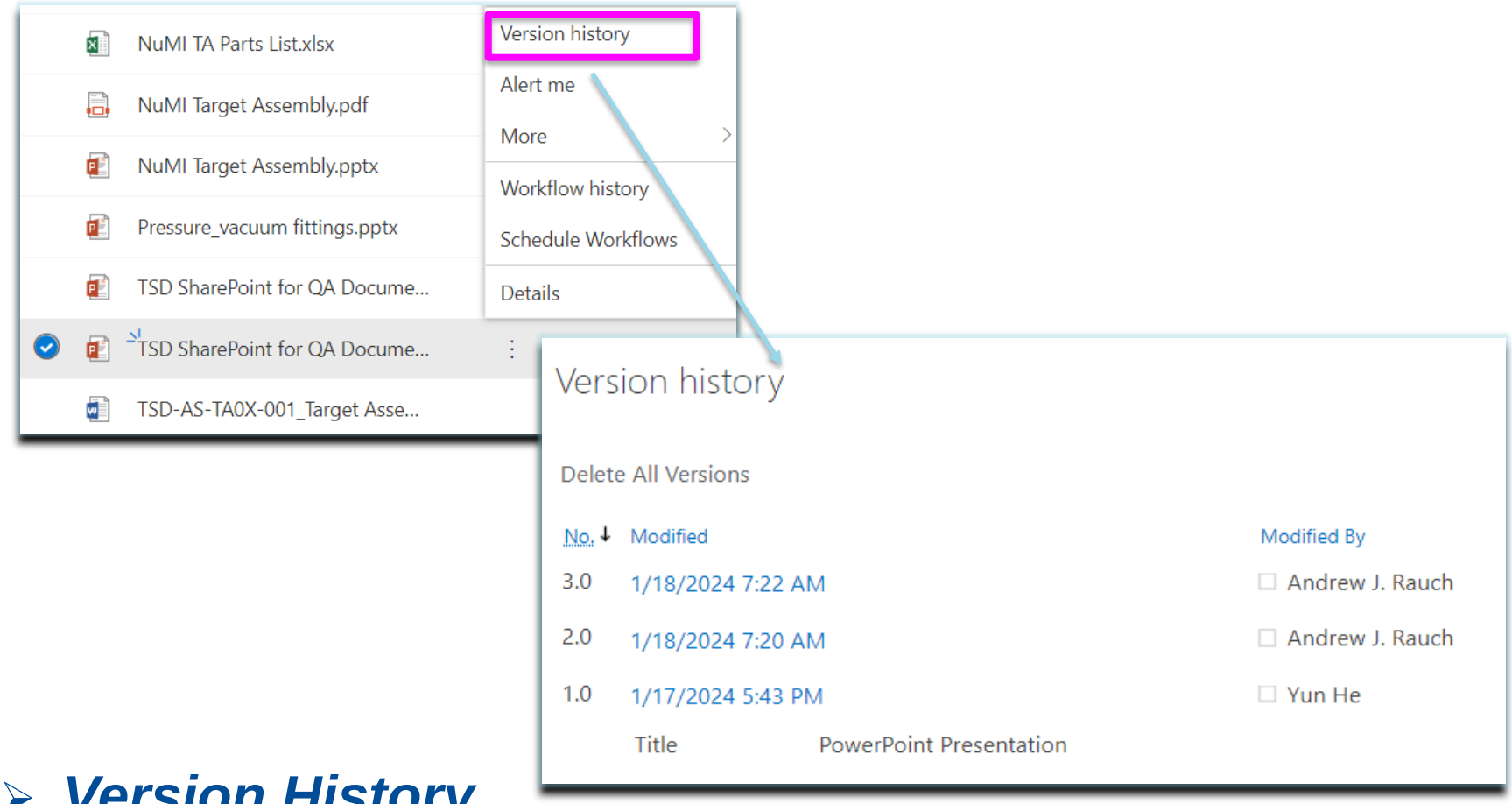
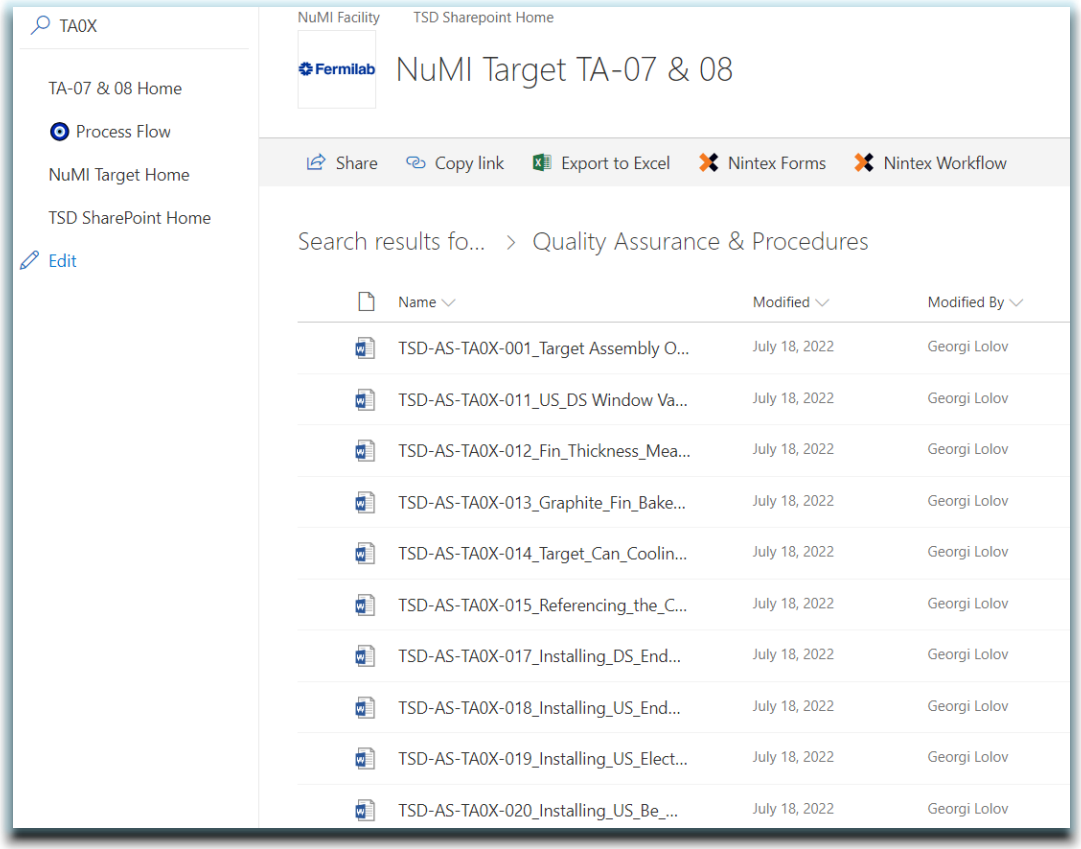
Common SharePoint Operations



- ***Version History***
  - *When done correctly each edit of a document has a new version created and saved behind the scenes.*

Name files consistently for easy retrieval

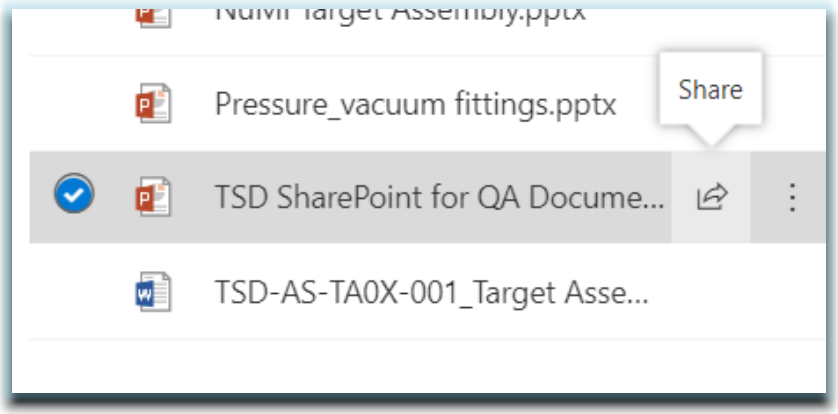
- ***Common vocabulary***
  - *Part/drawing numbers*
- ***Tags***
  - *Use a tag to start or end a file name. Ex. TA0X*

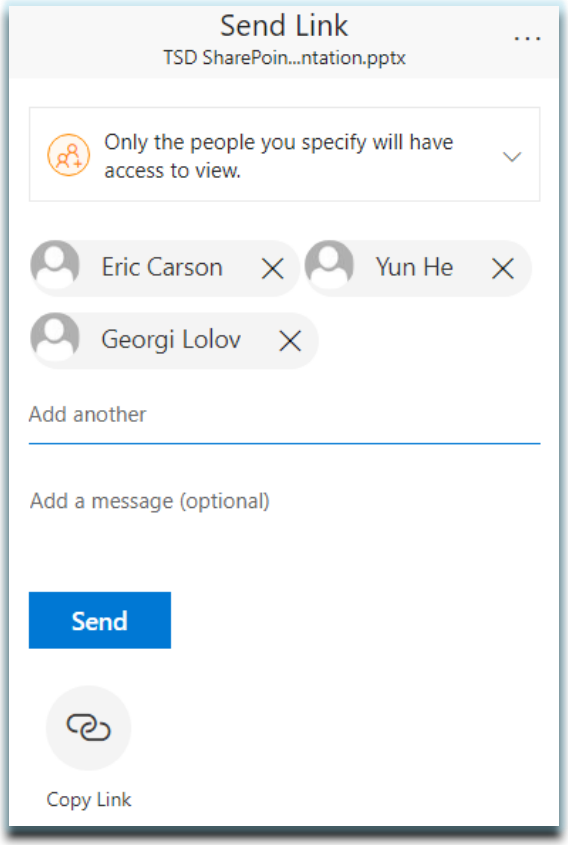


Common SharePoint Operations

➢ *Control sharing*

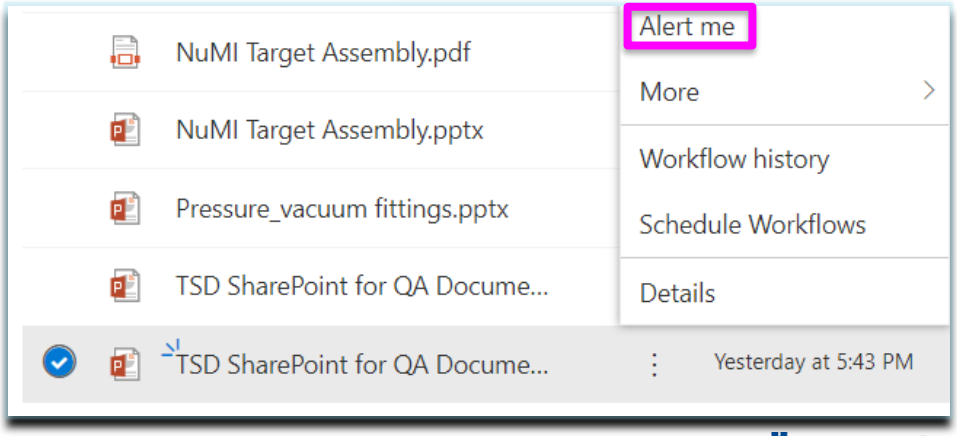
- *input who can see and edit documents*





➢ *Create alerts*

- *Get notified as soon as a change is made.*



SharePoint QA Site Horn CNC Welding
SharePoint Advanced Functions

by Adrian

SharePoint QA Sites for Other Projects, by Adrian

Horn CNC TIG Welding

- *Knowledge has been passed down from Kris to Yun >> Cory >> Meredith*
- *Well documented on SharePoint: welding setup, routines, best practices & lessons learned, how to guide*
- *Enabled Adrian to learn the critical skills efficiently & effectively*
- *Horn CNC TIG Welding 2023 Effort: updated/newly developed welding routines, status of PH1-07, 08, 09*

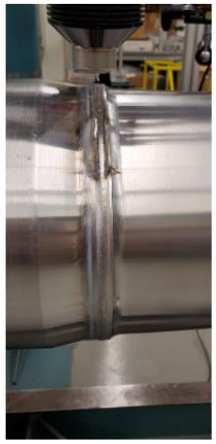
LBNF Stripline Friction Stir Welding

A page under LBNF Target System >> Horn A Prototype Fabrication

Welding Routine Documentation

- ***Used to be a table format***
  - *Fine, but becomes harder to search*
  - *Can't be sorted*
  - *Can't be filtered*
- ***Changed over to a list which fixes the issues from above***
  - *Working with Nintex Forms further simplifies documentation*

Table Routine Format

<table>
<tr>
<td>Sample: PH1-09 4th Weld
Routines:
H1_8144-tack
H1_8144-6</td>
<td>10/11/2022</td>
<td>Increased amps by 2 due to the slightly thicker horn material compared to the sample
Crown is slightly flatter than both sample welds, but not enough to need a cover layer</td>
<td>PH1-09_4th_weld.pdf
PH1-09_4th_weld_summary.pdf</td>
<td>  </td>
<td>PH1-09_8144-tack1
PH1-09_8144-tack2
PH1-09_8144-tack3
PH1-09_8144-tack4
PH1-09_8144</td>
</tr>
<tr>
<td>Sample: H1_8144-2 reweld
Routines:
H1_8.144-7.xlsx</td>
<td>10/18/2022</td>
<td>Decreased weld by 1 amp from H1_8144-6
First run had a wire feed issue, created a divet without any filler metal
Wire was realigned and 2nd weld started at 180 degrees but arc did not form
The tungsten electrode was resharpened and a 3rd weld was run which did completly
The wire ran incorrectly at the begining and the electrode hit the divet formed previously so a new sample was run</td>
<td>H1_8144-2-reweld.pdf
H1_8144-2-reweld-summary.pdf</td>
<td></td>
<td>H1_8144-2-1st_reweld
H1_8144-2-2nd_reweld
H1_8144-2-3rd_reweld</td>
</tr>
<tr>
<td>Sample: Old C0 reweld
Routines:
H1_8.144-7.xlsx</td>
<td>10/18/2022</td>
<td>Reran the same routine from H1_8.144-7
Issues from previous sample were not present</td>
<td>OldC0-8144-reweld.pdf
OldC0-8144-reweld-summary.pdf</td>
<td></td>
<td>OldCO-Reweld</td>
</tr>
<tr>
<td>Sample: PH1-08
Routines:
H1_8.144-tack.xlsx
H1_8.144-7.xlsx</td>
<td>10/18/20222</td>
<td>Welded completely with no issues
Alignment details are below
<table>
<tr><th>DS Boss</th><th>Shim Ref</th><th>Direction Level</th></tr>
<tr><td>S3</td><td>0.035"</td><td>BR</td></tr>
<tr><td>S2</td><td>0.030"</td><td>BR</td></tr>
</table>
Crown was flat and full penetration was achieved
Underbead at 0 degrees was slighly larger but was even on both sides</td>
<td>PH1-08_8144_tack_2.pdf
PH1-08_8144_tack_2-summary.pdf
PH1-08_8144_tack_3.pdf
PH1-08_8144_tack_3-summary.pdf
PH1-08_8144_tack_4.pdf
PH1-08_8144_tack_4-summary.pdf
PH1-08_8144_weld.pdf
PH1-08_8144_weld-summary.pdf</td>
<td>  </td>
<td>PH1-08_8144-tack1
PH1-08_8144-tack2
PH1-08_8144-tack3
PH1-08_8144-tack4
PH1-08_8144-weld</td>
</tr>
</table>

List Routine Format

Welding Routines [3]

new item or edit this list

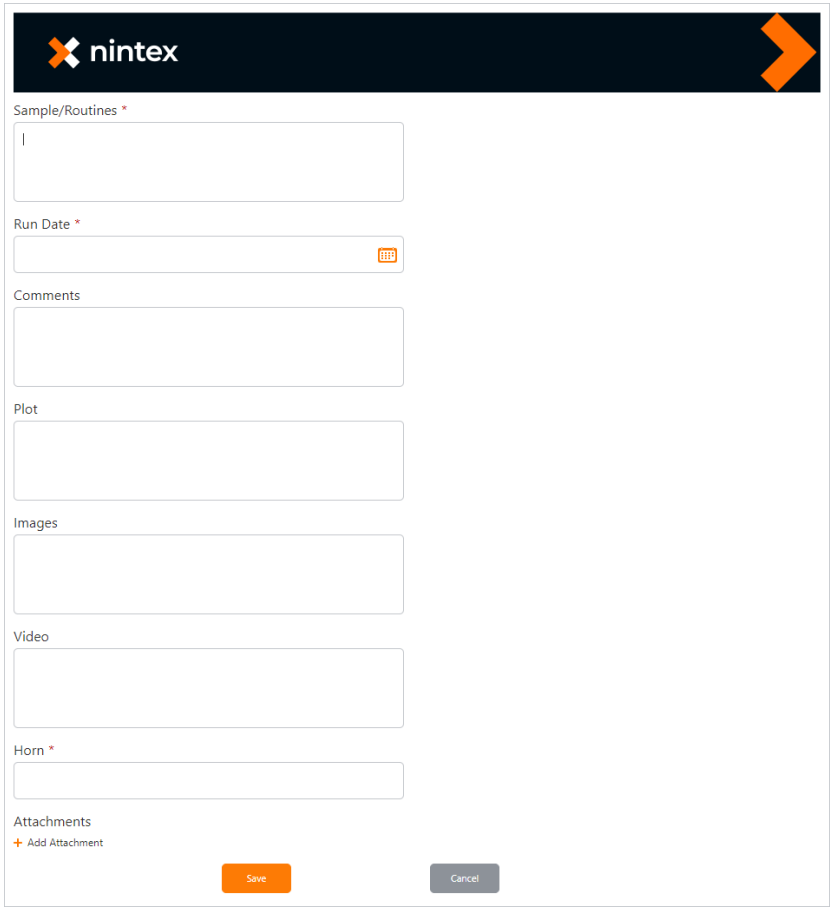
Current View ··· Find an item

Sample/Routines	Run Date	Comments	Plot	Images	Video	Horn
Sample: PH1-09 **Routine:**	12/21/2023	• Continued straightening PH1-09 • Finished with the weld and tailstock runouts at +/-0.005" +/-0.0095" respectively	PH1-09 Str 4 PH1-09 Str 4 Summary PH1-09 Str 5 PH1-09 Str 5 Summary PH1-09 Str 6 PH1-09 Str 6 Summary		PH1-09 Str 3 PH1-09 Str 4 PH1-09 Str 6	PH1-09
Sample: PH1-07, PH1-09 **Routine:**	12/20/2023	• Continued to straighten PH1-07 • Finished with a weld and talilstock runout of +/-0.0025" and +/-0.004" respectively • Then put on PH1-09 with the face running at +/-0.0015" • Paused for the day with the largest displacement at 0.033" (shape was positive instead of being negative)	PH1-07 Str 2 PH1-07 Str 2 Summary PH1-07 Str 3 PH1-07 Str 3 Summary PH1-07 Str 4 PH1-07 Str 4 Summary PH1-09 Str 1 PH1-09 Str 1 Summary PH1-09 Str 2 PH1-09 Str 2 Summary		PH1-07 Str 2 PH1-07 Str 3 PH1-07 Str 4 PH1-09 Str 1 PH1-09 Str 2	PH1-07, PH1-09
Sample: PH1-08, PH1-07 **Routine:**	12/19/2023	• Continued to straighten PH1-08 • Finished with the weld and tailstock being at +/-0.007" and +/-0.0025" respectively • Then went onto PH1-07 with the part face running at +/-0.0015 • Ran some passes on PH1-07 and paused after 1 pass with the tailstock with a low point of -0.097"	PH1-08 Str 6 PH1-08 Str 6 Summary PH1-08 Str 7 PH1-08 Str 7 Summary PH1-08 Str 8 PH1-08 Str 8 Summary PH1-07 Str 1 PH1-07 Str 1 Summary		PH1-08 Str 6 PH1-08 Str 7 PH1-08 Str 8 PH1-07 Str 1	PH1-07, PH1-08
Sample: PH1-08 **Routine:**	12/15/2023	• Started with PH1-08 since PH1-09 needed to get x-rays still • Ran the straightening routine on a sample first to ensure that the speed was going to correctly give us the desired travel • Measured the mounting flange and part faces (+/- 0.0015 on the mounting face and +/-0.001 on the part) • Ran 5 passes and ended with the tailstock having a low point at -0.025"	H1_1992-1 H1_1992-1 Summary PH1-08 Str 1 PH1-08 Str 1 Summary PH1-08 Str 2 PH1-08 Str 2 Summary PH1-08 Str 4 PH1-08 Str 4 Summary PH1-08 Str 5 PH1-08 Str 5 Summary		H1_1992-1 PH1-08_str1 PH1-08_str2 PH1-08_str3 PH1-08_str4 PH1-08_str5	PH1-08
Sample: H1_1992-4, PH1-09 **Routine:** CO_H1_1992-4	12/13/2023	• Ran the same pass as last time but now on H1_1992-4 to check that it was running well • We were satisfied with the results so we then moved onto PH1-09 • PH1-09 ran very well. The piece did not have a uniform divet, but we decided to leave it as is instead of filing more off of the horn **X-Ray Results here (Class 1)**	H1_1992-4 CO H1_1992-4 CO Summary PH1-09 CO PH1-09 CO Summary	 H1_1992-4  PH1-09	H1_1992-4 CO PH1-09 CO	PH1-09

Fermilab

Nintex Forms

- ***Faster entry of data***
- ***Allows for documentation to be seamless***



LBNF Stripline Documentation

- **Meant to keep track of POs, comments, and status**
  - Easy to access for any role transitions
  - Makes it more efficient to catch up on a project that is being handed off
- **Goal is to make a similar page for each horn**
  - Especially for part inspections
  - Pricing for spares production budgets

LBNF Stripline Documentation

Horn A

SDSMT Route

Work has been done with SDSMT to fabricate a complete Horn A stripline. Samples were sent to SDSMT to practice the parameters, and then the real parts were sent for welding. Upon arrival of the stripline, we took them to Alloyweld to get x-ray pictures of all of the welds. About 2/3 of the welds did not pass which became an issue since about $125,000 had already been spent on the effort up to that point. (**X-rays** and **Naming Drawings**) While the SOW and PO include the Horn B stripline welding, we will no longer have them do this work. The horn A stripline is being sent back for a second pass over the welds in an attempt to document how to restir the weld. However, we do not plan to use this stripline on a horn since the failed welds and rework will reduce the lifetime of the stripline. On the right are documents that summarize the work done as well as show the POs that have been placed for this effort.

Pictures of the delivered stripline are **here**.

Documents:

Vendor	PO #	Price	Comments
SDSMT	677940	$69,496.42	Currently open. Horn A stripline is being reworked and will be returned to us mid-January. Stripline B will not be done by them.
Larsen MFG	682749	$13,756.00	PO from 10/2021 for the bent blanks for welding
Excel Machining Inc	676884	$74,500.00	PO from 04/2021 for the machined blanks for welding
THYSSENKRUPP MATERIALS NA	670090	$18,733.99	6101 Material. Used from two previousl POs that are for samples as well so pricing is to be used only as a reference. As a note, each 12x0.375x288" sheet is ~$535/each (Webreq 49696)
Walco Tool and Engineering Corp	693936	$46,907.00	Gang drilling of stripline. Waiting on SDSMT to return the stripline for x-rays

Task Items:

- Follow up with buyer to remove Horn B work from the SDSMT PO
- Work with SDSMT to have the stripline joints rewelded and then taken back to Alloyweld for x-ray inspection

fsw.expert Route

Based on the issues with the SDSMT welds, the team started a hunt of other vendors that could do the work for the new stripline. The summary of the search is in Meredith's documents that she created prior to leaving the lab. (**summary**) Adrian has now become the lead engineer for this effort and is working with Julio and Kris to develop the vendor relationships for the project lifetime. The current plan is to have the stripline samples sent to Germany to have their work qualified prior to proceeding with the stripline work. Once this is done, we will be sending the samples to Alloyweld for inspection. At the moment, there are several POs out for getting the real parts bent and machined. We are confident that fsw.expert will produce good results, but we are taking a conservative approach and sending work to Germany on a step by step basis.

Update: The samples were recieved by FNAL and x-rayed by Alloyweld. All welds were clean. Waiting on fsw.expert to produce a mechanical testing report.

Documents:

Vendor	PO #	Price	Comments
fsw.expert	705137	$30,255.00	PO sent for testing out the 4 material welds. (Webreq 52591). Weld samples were delivered to FNAL and x-rayed. All passed without any issues.
Larsen MFG	704715	$11,250.00	PO sent for the bent blanks (Webreq 52618)
Excel Machining Inc (TBC)	706267	$71,400	PO sent for the machined blanks (Webreq 53344)
THYSSENKRUPP MATERIALS NA	670090	$18,733.99	6101 Material. Used from two previousl POs that are for samples as well so pricing is to be used only as a reference. As a note, each 12x0.375x288" sheet is ~$535/each (Webreq 49696)

Task Items:

- Pay the invoice
- Get the mechanical report from fsw.expert
- Coordinate with buyer to send a PO for the stripline parts assuming the samples pass inspection

Summary

In the coming years, the TSD team will dedicate significant effort to the production of LBNF target system devices.

Team effort for ***SharePoint:***

Technicians may spend 2 hours a week:

- scan handwritten inspection sheets for the parts critical or not meet the specs
- make log entries
- upload photos

Lead engineer may spend 2 hours a week

- set up the site
- upload files
- re-organize documents.

- Please contact Yun and Adrian if you'd like to have ***SharePoint*** sites set up for your project
- Join **Andrew's effort** to explore advanced features that have potential to enhance efficiency