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Progress Report on TSD Initiatives – Part 1

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Katsuya Yonehara, Kavin Ammigan, Kay Mills, Keith Anderson,
Kris Anderson, Meredith Lee, Mike Campbell, Nandhini Dhanaraj, *et al.*

TSD Topical Meeting

Dec. 17, 2020

Overview of TSD Initiatives

Initiated in Oct. 2020

- **Voluntary** services and **team activities** outside of normal job assignments, may be developed into a project
- Contribute with **individual's strength and interests**

Be supported with resources or professional trainings (charge to Home Code)

Teams	Members
SharePoint Contents Management	Yun, Meredith, Nandhini, Georgi L., Kay
Engineers' Corner / Engineering Resources	Kris, Yun, Dave, Georgi L., Meredith, Nandhini
Education and Outreach	Yun, Meredith, Nandhini, Dave
Climate Changes	Frederique, Kavin, Yun
Automation Workshop	Mike C., Katsuya, Georgi L. Dave, Keith A.

We will be presenting the **objectives, actions, and plans** of these teams' effort in the following slides, followed by a separate presentation from the "Automation Workshop" team

Team (1) – SharePoint Contents Management

Team members	Yun, Meredith, Nandhini Georgi L. Kay
Objectives	<ul style="list-style-type: none">• Best practices for data management (Archiving and Sharing Data)• Metadata System for Manageability and Findability• Nintex Workflows to create customizable forms<ul style="list-style-type: none">• Quality Control for technicians to enter inspections/measurements for target / horns fabrication• Approval process for engineering documents• Professional Development on Data Management• Explore Site Features• Interact with lab's other supported contents platforms (Teamcenter, DocDB, Indico, Office 365, MS teams, OneDrive, etc.)
Actions	<ul style="list-style-type: none">• Individual trainings (Site owner, Designer)• Created many news sites / pages, co-managed by members• File uploading from members in other departments
Next step	Group training plan under development (Metadata, Workflow)

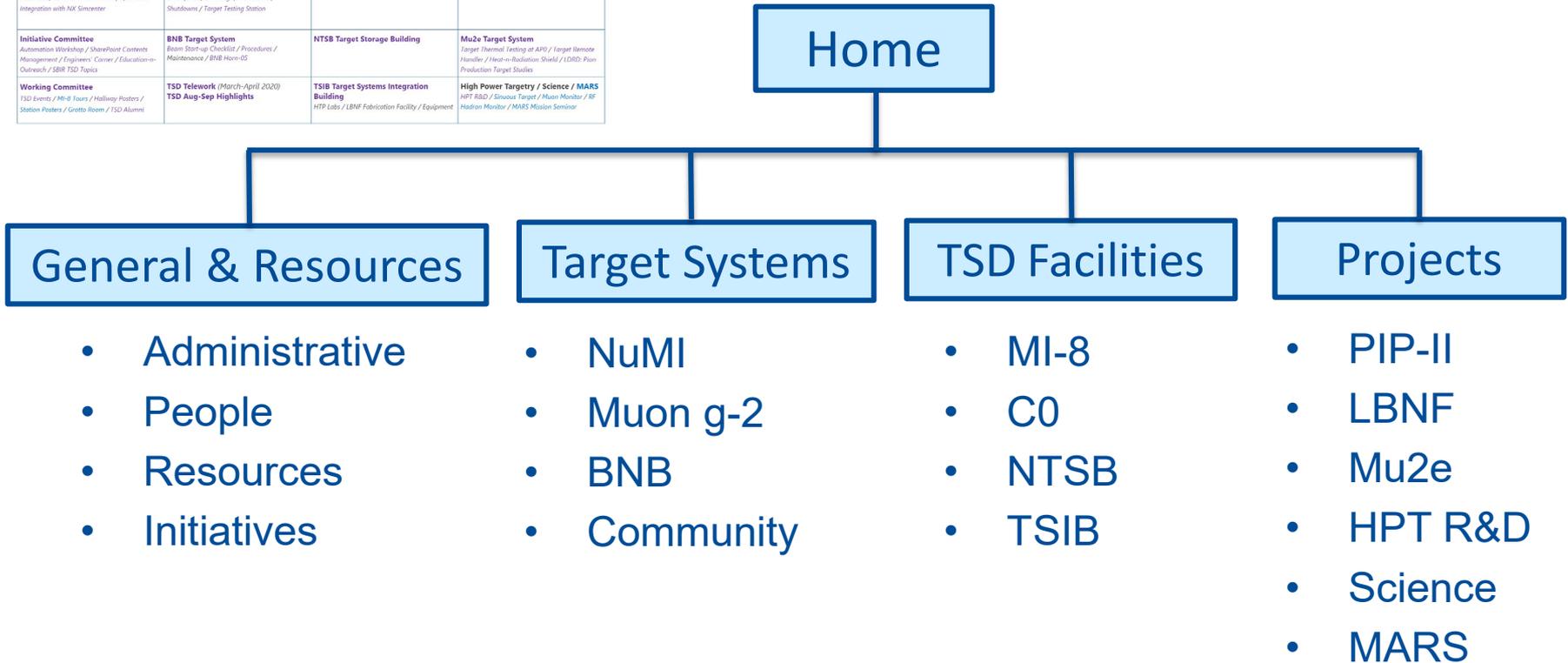
SharePoint Contents Management – Yun



TSD site architecture

Elements: sub-sites, pages, documents

TSD General and Resources	Target Systems In Operation	TSD Facilities	Projects
Administrative TSD Directory / Systems Assignment Matrix / TSD Vacation Calendar / TSD Budget Codes / B/W Office Assignments / TA Information Guide / Accelerator Division Office Map	NuMI/NOVA Target System Operations / NuMI AIP Upgrade / MI-05 Target Hall / Procedures / Loading Horn / Target-Horn Inventory, TA-05, TA-06, PH1-05, PH1-06 / Drawings / Target Hall Air and Water Control	MI-8 Target Service Building Horn Pulse Testing / MI-8 Fact Sheet / CNC TIG Welding / Equipment	PIP-II TL Beam Absorber 25 KV Absorber / 2 KV Absorber / Beam Wind-out
Resources and Engineering TSD Engineering Procedures / TSD Safety / TSD Computing Resources / Procurement Resources / Lectures and Workshops / ANSYS Integration with NX Simcenter	Muon g-2 Target Station Elog / Operations / RAW Systems / Target Rotation System / Target Air Blower / Target-In-Lens Spares / Drawings / Procedures / Shutdowns / Target Testing Station	C0 Remote Handling Facility Equipment / Procedures / Target Autopsy	LBNF Target System Design Reviews (Absorber PDR / Module PDR / Horn A PDR / Target CDR) / Procedures / Plan Production Measurements at MC enter
Initiative Committee Automation Workshop / SharePoint Contents Management / Engineers' Corner / Education-- Outreach / SBIR TSD Topics	BNB Target System Beam Start-up Checklist / Procedures / Maintenance / BNB Horn-05	NTSB Target Storage Building	Mu2e Target System Target Thermal Testing at APD / Target Remote Handler / Heat-in-Evaluation Shield / LDRD: Plan Production Target Studies
Working Committee TSD Events / MI-8 Tours / Hallway Posters / Station Posters / Grotto Room / TSD Alumni	TSD Telework (March-April 2020) TSD Aug-Sep Highlights	TSIB Target Systems Integration Building HPT Labs / LBNF Fabrication Facility / Equipment	High Power Targetry / Science / MARS HPT R&D / Simons Target / Muon Monitor / BF Hadron Monitor / MARS Mission Seminar



SharePoint Contents Management – Nandhini

Managing sites:

- PIP-II beam Window
- 2 kW beam absorber

Received SharePoint Designer training

- The training was a one-on-one session, tailored to meet the trainee's needs
- You can direct the training by asking questions on what you would like to learn

- Capture work progress and share results of design/simulations for beneficial discussions
- Easy capture/sharing of information for Design Reviews and Engineering Notes
- A well guided road map for new hires/visitors/reviewers



2 kW Beam Absorber EDIT LINKS

Thermal Analyses for 2kW Absorber

2-kW Beam Absorber Home

MARS Data for 2kW Absorber
Profile of Heat Loads

Thermal Analyses for 2kW Absorber

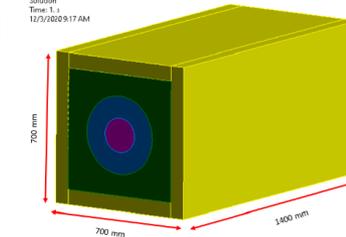
Steady State Thermal with Concrete Shielding

Documents
Beam Windows Home
PIP-II Absorbers Home

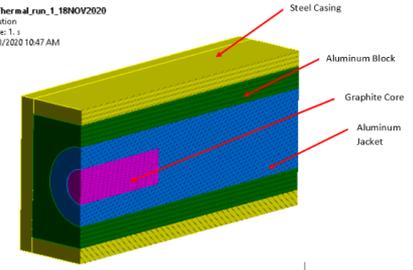
EDIT LINKS

3D Model of the 2kW Absorber:

G:\Thermal_run_1_18NOV2020
Solution
Time: 1.1
12/3/2020 9:17 AM



G:\Thermal_run_1_18NOV2020
Solution
Time: 1.1
12/3/2020 10:47 AM



Heat load summary:

Graphite Core (POCO ZXF-50)	453 W (radius 8 cm x length 0.5 m) Total: 954 W	17 kg
Aluminum Core, 6061-T6 (Block + Jacket - Backstop)	Aluminum Jacket Front End upto End of Graphite Core (inner radius 8 cm and outer radius 18 cm for length from 0 m to 0.5 m) Aluminum Backstop (radius 18 cm for length from 0.5 m to 1.4 m) Aluminum Block (inner radius 18 cm and outer square box of 56 cm for length from 0 m to 1.4 m)	1158.1 kg
Structural Steel Casina	143 W (bounding box dimensions as shown above and thickness of the plates 7 cm)	1939 kg



in

Beam Windows

Beam Windows Home

Structural Analysis

MARS Energy Deposition Data

Thermal Analysis

Thermal Network Calculations

Steady State Thermal

Loading Sensitivity Check

Transient Thermal Analyses

Material Properties

PIP-II Beam Absorber Home

EDIT LINKS

Introduction/Background:

Beam Windows are components that are used in the beamlines to provide a means to separate the beam vacuum from the β windows are thin (in the order of 0.010 - 0.015") circular discs made of Beryllium that are welded to the beam pipe to form the ν break the windows are subjected to thermal loads in the form heat generation from the beam energy deposition.

- BTL window
- US absorber wall window
- US graphite core window

Tasks to be completed prior to the PIP-II Windows Final Design Review:

- FEA results normal operation steady-state conditions. Should include thermal results and thermal stress results.
- FEA results for per-pulse stress. Should include thermal results and thermal stress results.
- Calculate fatigue life safety factor. Are dynamic stress waves an issue?
- Present FEA results for accident conditions. Determine maximum acceptable number of accident condition pulses.
- Above topics should include window material selection criteria.

Design of Vacuum Windows:

The FESHM 5033.1 chapter provides guidance for designing vacuum windows. The design of the windows mainly involves the material of construction. This can be accomplished manually by solving the equations provided in Roark's Formulas for Stress & Strain in the equation constant in the seventh edition of this handbook, the error should be corrected as per guidance provide if performed by FEA simulations (the results shown in the images are from ANSYS 2020R2 simulations).



SharePoint Contents Management – Meredith

Managing sites:

- PH1-05 and PH1-06 fabrication, assembly, final QA, pulse testing, and installation
- NuMI Horns, Hi-pot testing procedures and results

Received SharePoint Owner training

- Differences between SharePoint on web.fnal.gov, Fermipoint and Fermicloud
- Permissions at site, library and folder levels
- Twelve different permission levels

PH1-05

This site contains photos, documentation and other information for NuMI horn PH1-05.
PH1-05 Fabrication, Pulse Testing, Hi-pot Testing, Installation, and Troubleshooting



PH1-05 Fast Facts

- First Horn 1 with modified stripline for 1 MW beam operation
- Redesigned stripline to better address temperature and fatigue stress concerns associated with 1 MW operation
- Pulse tested to 140,000 pulses
- Survey and alignment following final assembly found 0.002" offset
- Installed in the NuMI beamline during 2020 summer shutdown



Timeline of Events

July 2020	Stripline spacers consisting of 4 custom thicknesses machined
August 2020	Pulse testing and magnetic field mapping
September 2020	Final outfitting, leak checking, water line pressure testing and hipot
September 2020	Survey and alignment to verify fiducialization at M-8
October 2020	Installation in target hall
November 2020	Final successful hipot in target hall with all instrumentation line, water line and stripline connections made



NuMI Focusing Horns NuMI Facility EDIT LINKS

Search this site

Horn Hi-pot Testing

- NuMI Focusing Horns
 - Horn-1 Megawatt Upgrade
 - Horns FEA for 700 kW
 - Horns Heating Loads
 - Quality Assurance
 - Horn Pulse Testing
 - Horn Hi-pot Testing**
 - Power Supply Transmission Line
 - PS Polarity Setting
 - Stripline Block
 - Horn IC Welding
 - General Horn Documents
 - Fabrication of Spare Horns
 - PH1-05
 - PH1-06
 - PH2-04
 - Documents
 - TSD SharePoint Home
- EDIT LINKS

Hi-pot testing is performed in multiple stages as a horn QA process. Components that are expected to be electrically isolated are hipot tested to confirm that they are indeed isolated. Large voltages in the range of 1-3 kV are applied between the components and the leakage current is measured in microamps. The resulting resistance is calculated using Ohm's Law, $V = IR$. If the leakage current is reasonably low, this confirms that the components are isolated. Otherwise, high leakage currents indicate an electrically-conductive connection between the components that requires troubleshooting to resolve. In the context of NuMI horns, calculated resistances in the megaohm range and higher are considered acceptable.

It is a best practice to hipot before and after when the horn has been moved, when assemblies such as water lines or instrumentation lines are installed, and after every other major change to the horn or its environment that could jeopardize isolation.

Factors that can affect the leakage current measurement:

- Scale chosen for hipot measurement
- Humidity in the air surrounding the system
- Residual water in the system being measured
- Foreign objects that provide unwanted electrical connection



Hipot equipment setup

Description	In Hot Cell, Horn connected to Stripline Block	In Hot Cell, Horn connected to Instr. cables / Water lines
Preparations	Make sure is no objects are touching or too close to the stripline block conductors. Setup guards around the module plus sign high voltage or verbally inform personnel in area. Setup hipot about 3 feet from the stripline block.	Make sure is no objects are touching or too close to the stripline block conductors. Setup guards around the module plus sign high voltage or verbally inform personnel in area. Setup hipot about 3 feet from the stripline block.
	Hipot stripline block conductors with	Hipot Horn W/O Instr. cables and water lines connected
	Hipot stripline block conductors with horn	Hipot Horn W/ Instr. cables and water lines connected



SharePoint Contents Management – Georgi L.

Managing sites:

- NuMI Target fabrication, assembling, final QA, and installation
- NuMI WAR Room, Horn 1 ground fault investigation

Effective communication when a technical crisis happens



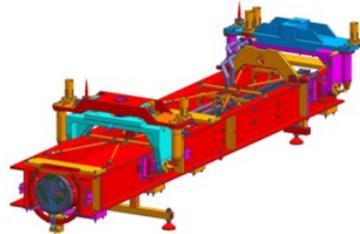
- MET-05 fabrication home
- Baffle Fabrication and Survey
- Cooling Rail Assembly
- Cooling Rail Survey
- Target Can Survey
- Target Can Assembly
- Cooling Water Flow Test
- MET-05 design and analysis
 - Drawing Baffle F10041831
 - Target DS Be Window
- Parts inventory
- Photos
- Documents
- Pages
- EDIT LINKS

Search this site

This site provides documentation on the fabrication and quality control of

Completion Overview

TA-05



Baffle Assembly

Cooling Rail Assembly
Target Carrier

Horn 1 Ground Fault Investigation

This page captures the discussions, inspections, and status reports for the **Horn 1 ground fault investigation and recovery** during November - Dec 2020. **Anderson, George Lolov, Katsuya Yonehara, Hiep Le, Howie Pfeffer, NuMI Team, et al.**

Events, Status Reports and Reference Documents



Most Recent Updates

Marty Murphy at 11:02 pm, Dec. 10, 2020
Target scans are complete. We'll have a toolbox meeting:

Friday AM:

- Georgi & Keith testing air diverter flow rate with ch
- The Great Shielding Migration: All shield modules,
 - Nando (crane), Mike & Paul rigging and fork t
 - Clay rigging shaft.
 - Jim TH crane.
- Vincent and Keith take down cameras.
- Open Horn-2 R-blocks and remove BLM. Clay on cr
- Clean any remaining caulk and noodle from battlem

Friday PM:

Virtual NuMI War Room

Summary of Horn 1 Recovery

+ new discussion

Recent What's hot My discussions ...

- NuMI PH1-05 Ground Fault Discovery Email Chain**
Please find the email chain messages leading up to the ground fault...
By Georgi Lolov | In Horn 1 Recovery 2020 December | December 4
- Installation of SLB-10 and PH1-05 Part 2**
Hi All, SLB-10, PH1-05, and PH1-05/Module water and instrume...
By Georgi Lolov | In Horn 1 Recovery 2020 December | December 2
- Installation of SLB-10 and PH1-05 Part 1**
Hi All, This morning we started with a hipot of PH1-05 after allowing...
By Georgi Lolov | In Horn 1 Recovery 2020 December | December 2
- PH1-05 Hipot Results 12-2-2020**
The results of the hipots performed today on PH1-05 can be found ...
By Meredith Lee | In Horn 1 Recovery 2020 December | December 2
- SLB Pulse Testing - New QA Step**

SharePoint Contents Management – Kay

Managing Administrative site

Please let me know if you'd like to have other information on this site



TSD Administrative

EDIT LINKS

Search this site

TSD Administrative

TSD Administrative Home

TSD Org Chart

TSD Directory

Systems Assignment Matrix

TSD Vacation Calendar

Resources

TSD Budget Codes

TA Information Guide

Telework Internet Reimbursement

BTW

Office Assignments

TA and Timecard

Documents

TSD SharePoint Home

Covid-19 TSD Town Hall Meeting Bob Zwaska 10/22/2020

Fermilab COVID-19 Employee Information and Resources

Lab's Finance

Travel and Reimbursement

Time, Attendance

Procurement, Work

TA Information Guide

TA Information Needed

- Conference start date and end date
- Registration fee (if any) and amount
- Please email the Admin the link to the conference you are attending
- Inform Admin if the conference will be out of State/Territory
- How long you plan on attending the conference
- If personal time is being used
- Budget Code
- Who will be acting as Funding Approver
- **Provide receipts to Admin after your return from business trip**

TSD Budget Codes

Signature Authority (xlsx), May 13, 2020

Task Number + Long Task Name
20.37.01.05.02 WIP HADM-06
20.37.01.05.03 WIP HADM-07
20.37.01.06.02 WIP HORN 1 / PH1-06
20.37.01.06.04 WIP HORN 2 / PH2-05
20.37.01.06.05 WIP HORN 1 / PH1-07
20.37.01.06.06 WIP HORN 1 / PH1-08
20.37.01.07.03 WIP TARGET / TA-06
20.37.01.07.04 WIP TARGET / TA-07
20.37.01.07.05 WIP TARGET / TA-08
20.37.01.07.06 WIP TARGET / TA-09
20.37.01.08.01 WIP MBT-04 HORN
20.37.01.08.03 WIP MBT-05 HORN&TARG
20.37.02.01.04 MARS DEVEL / EXEC
20.37.02.01.05 GENERAL TS OPS-TSD

SharePoint Contents Management – Yun

- Lab's **SharePoint Administration team** Kimberly, Bob S., and Keenan have met with us to answer our questions regarding **lab's long-term plans or policies** for contents management
- They are developing a customized **group training** per TSD's request on the following topics:
 - **Nintex Workflow** in SharePoint. The useful applications for us include **approval process** for engineering documents, **quality control** for technicians to enter inspections/measurements on customized instructional forms for device **fabrication** or system **operation**;
 - **Metadata and search** functions, to enable maximum **Manageability** and **Findability** of our digital contents;
 - Better understanding and maximizing the use of the **Site Features**. There are 38 Site features can be activated or deactivated, but I played around once and ended up with the site corrupted;
 - Hybrid system handling of **On-premise and Cloud versions**.

You are all welcome to join this training, please let me know

Team (2) – Engineers' Corner / Engineering Resources

Team members

Kris, Yun, Dave, Georgi L., Meredith, Nandhini

- Provide a place to better understand and reference the work that others in the group are doing;
- Capture group discussions and individual status reporting
- Share engineering resources: structural safety, welding qualifications, lifting safety, material properties, TSD text book virtual library
- Work planner and progress tracking

TSD Engineers' Corner

This site is focused on the people, we: each individual in our TSD engineers group.

Date	Presenters	Discussions and Information Sharing
Dec. 11, 2020	Sujit	Shutdown Updates, LBNF Target Review, Winter Break Plans, TSD Holiday Party, TSD General Home
Dec. 8, 2020	Dave, Nnamdi	Shutdown status, SharePoint Contents Management and Material Properties Database initiatives start-up, TSD holiday party planning
Dec. 4, 2020	Hiep, Meredith, Georgi	Shutdown status, Instrumentation retirees, MCenter HSS (Horned Hadronic Spectrometer), NTSB
Dec. 1, 2020		Shutdown status, Critical fasteners
Nov. 24, 2020	Yun, Patrick, Hiep	Shutdown update, Review season (NTSB, LBNF, PIP-II absorber review work, startup of TSD Engineering and Best Practices internal reviews).
Nov. 20, 2020	Sujit, Mike, Nandhini	FEA dynamic analysis
Nov. 17, 2020	Nnamdi, Keith	TSIB budget

Projects Status

In Alphabet Order

Project	Task	Assignee(s)	Team	Current or Planned
LBNF	Transitioning	Hiep, Yun	Georgi M.	Procurement, Inventory
	Target Hall operations	Yun, Nandhini	Georgi M.	RFN system, target rotation/blow
BNS	Horn-DS	Hiep	Nandhi	Target Be window procurement
	Target Hall operations	Hiep		Procedures, knowledge transfer
DD RHF	ETI plan revised for updated LBNF plan	Mike		
HPT RHF		Kevin, Raj		
LBNF	Absorber design	Vladimir		
	Delay pipe window remote handling	Dave		
	Flipping fixture for conductor assembly	Meredith		In final design stage and preparing for mini design review
	Horn A, B and C Module Design	Mike		
	Nickel plating fixture for beam conductor	Meredith		Initial part design
	Spring inside layout for Horn B & C	Nnamdi		

Engineering Resources – Georgi L. / Meredith / Dave

Engineering Resource Texts

Can be found here:
<https://techstreet-proxy.fnal.gov/>
 (Use the search bar to look up documents)

Most Up to Date FESHM Chapters Found Here:
<https://eshq.fnal.gov/manuals/feshm/>

Structural Safety

Minimum Design Loads and Associated Criteria for Buildings and Other Structures 2017	ASCE/SEI 7-16
Aluminum Design Manual 2020	ADM
Steel Construction Manual American Institute of Steel Construction, Fifteenth Edition (2017)	AISC
Fermilab Environment, Safety and Health Manual Chapter 5100 (September 2020)	FESHM 5100: Structural Safety
ASME Section VIII, Division 2, Part 5 Design by Analysis	ASME VIII

Welding Qualifications

Section IX: Welding, Brazing, and Fusing Qualifications 2019	ASME IX
Internal Oxidation for Piping Welds (June 2020)	PFI ES-50
ASME Section IX Class Training Materials	

Lifting

Fermilab Environment, Safety and Health Manual Chapter 10200: Lift Plans	FESHM 10200: Lift Plans
Fermilab Environment, Safety and Health Manual Chapter 10110: Below the Hook Lifting Devices (Sept 2020)	FESHM 10110: Below the Hook Lifting Devices
BTH-1 Design of Below the Hook Lifting Devices (2017)	ASME BTH-01

Equipment and Instrumentation

 <p>Digital Microscope VHS-7530 Series</p>	<p>Keyence Digital Microscope VHS-7530 Brochure</p>
 <p>Formlabs Fused HT</p>	<p>Formlabs Fused HT 3D Printer</p> <ul style="list-style-type: none"> Capabilities: prints FDM and UL94V0 parts. Status: awaiting setup by TSD engineers. <p>Formlabs HT Overview.pdf Formlabs HT User Guide.pdf</p>
 <p>Mark Two</p>	<p>Markforged Mark Two Continuous Carbon Fiber 3D Printer</p> <ul style="list-style-type: none"> Capabilities: prints continuous carbon fiber filament composites with comparable material properties to aluminum. Status: coordinating install and training by certified Markforged technician. <p>Mark Two Spec Overview.pdf Markforged Composites Datasheet V3.pdf Composites Design Guide.pdf</p>
 <p>Ultimaker S5 Pro</p>	<p>Ultimaker S5 Pro</p> <p>Overview Product Sheet</p> <p>Assembly includes:</p> <ul style="list-style-type: none"> Ultimaker S5 (middle) Air Manager (top) Material Station (bottom) <p>Build Chamber: 330 x 240 x 300 mm (13 x 9.4 x 11.8 inches)</p> <p>Material Compatibility:</p> <ul style="list-style-type: none"> PLA Styrenic Resin

Engineering Resources – Nandhini

TSD Virtual Library

This webpage captures the resources owned by TSD members for loaning and book sharing. The type of material can be ebooks, hardcopy books, etc.

Type	Title	Book Author(s)	Edition/Publication Details	Owner
Hardcopy Book	Introduction to Heat Transfer	Frank P. Incropera, David P. DeWitt	Third Edition	N. Dhanaraj
Hardcopy Book	Introduction to Heat Transfer	Frank P. Incropera, David P. DeWitt	First Edition	K. Anderson and M. Campbell
Hardcopy Book	Mechanics of Materials	Gere and Timoshenko	Fourth Edition	N. Dhanaraj
Hardcopy Book	Heat Transfer	Holman	8th Edition	N. Dhanaraj
Hardcopy Book	Mechanical Behavior of Materials	Norman E. Dowling	Second Edition	N. Dhanaraj

Material Properties

Initiated by Nandhini Dhanaraj

This webpage captures the properties of various materials used in different applications.

Note to Contributors:

If you have an image file that contains plots of material properties, you can use it from the image files. The link is as follows for the software and it has a tutorial view.

Web Digitizer Free Software

Citation for the software

Material Properties:

Material	Properties	Application	Source	Related Documents	Contributor
Aluminum 6061-T6	Thermal Conductivity (W/m-K): 167	2kW Absorber for PIP-II	ASM Matweb		N. Dhanaraj
Graphite POCO ZXF-5Q	Material Properties from Entegris Thermal Conductivity	2kW Absorber Core for PIP-II	Entegris POCO Materials	Graphite MSDS Entegris Safety Sheet	Y. He
Beryllium PF-60	Consolidated thermal and mechanical properties	Beam Windows		Beryllium Design Guide Beryllium Physics	K. Ammigan

Work Planner /Progress Tracking – Yun, Meredith, Nandhini

Yun's Work Planner

20% = 1 day/week = 4 days/month

10% = 4 hrs/week = 2 days/month

Tasks	Current activities	Dec-2020	Jan-2021	Feb-2021
TSD Eng/Operations	One-on-one(s), support their projects (Mu2e, NuMI, BNB, PIP-II, Horn welding), Timecard	15%	25%	25%
NuMI-AIP	Shutdown, project controls, reports, target module	10%	10%	10%
TSD Administrative	One-on-one(s), management mtg, TSD Topical meeting	10%	10%	10%
AP0 Target Station	Transformer fabrication, target station operations - beam start-up	10%	10%	10%
TSD Initiatives	Automation workshop	5%	10%	10%
Meetings, File Management, Emails, etc.		10%	10%	10%
SharePoint Development	Develop new sub-sites	10%	10%	10%
Training	SLLP elective			
Holiday-vacation	Thanksgiving, Christmas, New Year	25%	10%	
Lab wide effort	PAFA	5%	5%	

Progress tracking Nandhini's

Bi-weekly	Description (links)
December 11, 2020	Engineering Group Meeting Update (.pptx)
November 20, 2020	Steady State Thermal Analysis for 2kW Absorber. Engineering Group Meeting Update (.pptx)
November 11, 2020	Completed transient thermal analyses for window assembly (FEA and Hand Calculations). Results available at SharePoint site for Normal Operations and Accident Conditions.
Oct. 30	PIP-II beam window loading sensitivity check for three scenarios: <ul style="list-style-type: none"> vacuum load and thermal load vacuum load only thermal load only steady state thermal analysis , cross-check with thermal network calculations
Oct. 16	PIP-II beam window SharePoint setup , material properties , MARS data , structural analysis

Progress tracking

Meredith's

Monthly or bi-Weekly	Description (links)
Nov. 10 - Dec. 4	<p>Update 12-4-2020</p> <ul style="list-style-type: none"> Coordinating Markforged printer install with certified Markforged technician <ul style="list-style-type: none"> Now on hold LBNF spider support sockets - assembly models and drawings signed through <ul style="list-style-type: none"> Starting fabrication LBNF flipping fixture - calculations and final preparations for internal review <ul style="list-style-type: none"> Incorporated suggestions made by Keith and Dave Target hall activities <ul style="list-style-type: none"> Working through master hipot list for PH1-05 during its reinstallation LBNF water tank bracket and pivot lug FEA document review Horn SharePoint sites development <ul style="list-style-type: none"> Hipot site Horn sites SharePoint Site Owner Training
Oct. 27 - Nov. 10	<p>Update 11-10-2020.pdf</p> <ul style="list-style-type: none"> SWE conference recruiting with fSWE <ul style="list-style-type: none"> Attended keynotes and a few professional development sessions Target hall shutdown work <ul style="list-style-type: none"> Master hipot spreadsheets maintenance Ground fault troubleshooting meetings LBNF horn flipping fixture <ul style="list-style-type: none"> Decided it will reside in TSIB rather than MI-8 drop hatch <ul style="list-style-type: none"> Modified anyway to reduce volume Continuing final touches Expect to schedule small, informal review in December Developed work planner on SharePoint Accepted into USPAS Fundamentals of Accelerator Physics course for Jan-Feb 20 SharePoint development initiative

Team (3) – Education and Outreach

Team members	Yun, Meredith, Nandhini, Dave
Objectives	<ul style="list-style-type: none">• Participate in educational and outreach events• Create educational materials, displays, yard sculptures, videos, and animation• Co-op mentorship• MI-8 tours
Actions	<p>Meredith signed up for NAACP ACT-SO program Career Session to serve as a panel member with a 5-7 min presentation:</p> <ul style="list-style-type: none">• Education - Where you went to college and your journey• Where you are employed – Title – (what you do in this role at a high level), strengths & requires to do this role• Advice for someone looking to get your field or Company• A funny story or interesting fact about you or your role <p>Yun, Nandhini, and Meredith attended TARGET HS internship information session</p> <p>Dave’s mentoring co-op student is on-going</p>

Team (4) – Climate Changes

Team members	Frederique, Kavin, Yun
Objectives	Learn more about the sustainability resources at Fermilab and raise awareness in our TSD department to see how we could contribute more on this effort

Topics to discuss >>>> Actions

- Water conservation at Fermilab: huge effort on cooling water system
 - Reduce water consumption? Does it have any impact at the lab level? What impact/effort for employee?
- Energy Savings Performance program: look for renewable energy applications, and implement new energy and water conservation measures.
 - Replace bulb with energy efficient bulb
 - Turn off your office light when you are not in your office
 - Include motion sensor in the common area (grotto, corridor, restroom) with a timer to automatically turn off the light when no activity in the room
 - New green energy (wind energy, solar panel for example)
 - Recycle more and better
- How to communicate ideas, tips... to involve everybody in the department/lab
- What tiny steps can we do to help?
- What CAN we do now / every day?
- Things we can initiate at the lab that can also be done at home

Team (5) – Automation Workshop is covered in a separate presentation

Summary

- Improved collaboration
- Opportunities for professional development
- Getting the department's scientific capacity expanded
- Share scientific and engineering resources / tools
- Contribute in slowing down the climate changes

All are welcome to join this effort or propose new ideas

Together, we will improve our work environment