



MAGIS-100 PM meeting

2/23/2023

Status

- AION engineering discussion
 - Met with Mike Booth this week to discuss how we might start collaborative work focused on engineering information sharing
 - They have deadlines approaching to finish the PDR
 - Suggested starting the discussions the week after next with the topic of magnetic shielding
 - Linda and I have plenty of notes from this discussion with Mike that we can post
- The ICRADA has moved forward with approval from our director's office
- Much of the information that follows is directly from the OHEP call

From OHEP talk: Schedule development and reporting progress

- Reporting progress
 - Have first status report against technically limited schedule established Dec-2022
 - A first look is in the slides below (it is a work in progress)
 - We will soon be requesting status for Jan/Feb to establish regular bi-monthly cadence
- Schedule development
 - Have a procurement-delay scenario of that pushes several major procurements into FY24
 - **Note - This was specifically requested by OHEP, partly to quantify immediate needs**
 - Scenario includes appropriately-sequenced in-shaft installation work, taking into account occupancy limitations, crane usage, etc.
 - **Note – the assumption here is that there will be several different contractors working on the shaft and access will need to be coordinated**

Schedule summary including the Dec-2022 update

First review of
FY23 delayed
M&S scenario

- Note: the delays in the right column are from the procurement-delay scenario

- include both M&S delays and the necessary in-shaft sequencing

- “Other milestones” will be changed to our final intermediate milestones to show the source of delays

Milestone comparisons for various schedules		Corrected August 2022 update	First review of Dec 2022 update	First review of + in-shaft installation sequencing	
Activity ID	Critical milestones	Analysis date	12/16/22	1/25/23	2/13/23
A1503500	Civil design complete		4/12/23	6/5/23	9/29/23
A1503520	Shaft modular section installation complete		5/15/24	9/12/24	6/2/25
A1503530	Two atom sources installed		6/26/24	11/13/24	6/9/25
A1503540	First laser beam		7/15/24	12/3/24	8/5/25
A1803240	First atoms		7/17/24	12/5/24	6/27/25
A1503560	Laser-atom interactions		8/7/24	12/30/24	8/19/25
	Other milestones				
A1503280	Adjustable Supports designs complete - milestone		12/29/22	5/23/23	9/29/23
A1503760	Milestone - laser room construction complete		2/27/23	6/6/23	6/6/23
A1503220	Installation of LTS complete - milestone		11/30/23	2/1/24	3/29/24
A1503770	Milestone - Installation of structural systems (shaft) complete		2/20/24	5/1/24	4/11/25
A1503780	Milestone - Assembly of 17 modular sections complete		5/13/24	9/10/24	12/16/24
A1206100	Phase 1 shaft installation complete - milestone		5/15/24	9/12/24	6/2/25
A1206110	Phase 2 shaft installation complete - milestone		7/12/24	12/2/24	7/31/25
A1207060	Construction complete - milestone		8/7/24	12/30/24	8/19/25

Preview of CPR – First performance report against Dec 2022 Schedule

CONTRACT PERFORMANCE REPORT											
FORMAT 1 - WORK BREAKDOWN STRUCTURE											
1. CONTRACTOR				3. PROGRAM				4. REPORT PERIOD Through December 2022			
a. NAME Fermi National Accelerator Laboratory				a. NAME MAGIS 100				a. FROM (YYYYMMDD)			
8. PERFORMANCE DATA											
Budget Code	Budget Code Name (1)	CUMULATIVE TO DATE					AT COMPLETION			Schedule Performance Index SPI	Cost Performance Index CPI
		BUDGETED COST		ACTUAL	VARIANCE		BUDGETED	ESTIMATED	VARIANCE		
		WORK SCHEDULED (7)	WORK PERFORMED (8)	COST WORK PERFORMED (9)	SCHEDULE (10)	COST (11)	(14)	(15)	(16)		
	Project management	2,007,687	1,926,882	1,296,029	-80,805	630,853	3,256,864	3,257,579	-715	0.96	1.49
	Civil Construction M&S	423,691	0	351,534	-423,691	-351,534	710,872	724,998	-14,126	0.00	0.00
	Experiment and Shaft System M&S	197,102	6,687	183,921	-190,415	-177,234	1,031,055	1,034,671	-3,615	0.03	0.04
	Building and Site System M&S	215,814	45,147	8,784	-170,667	36,363	757,877	758,471	-594	0.21	5.14
	Controls, Interlocks, and Networking M&S	15,626	1,160	0	-14,466	1,160	184,656	186,593	-1,936	0.07	0.00
	Design, Engineering, and Prototyping SWF	1,670,142	822,854	1,540,099	-847,287	-717,245	2,077,815	2,081,171	-3,356	0.49	0.53
	Civil Construction SWF	38,391	11,926	0	-26,466	11,926	89,700	90,739	-1,040	0.31	0.00
	Controls, Interlocks, and Networking SWF	20,530	478	0	-20,052	478	230,615	237,401	-6,787	0.02	0.00
	Qualification, Assembly, and Installation SWF	30,640	0	0	-30,640	0	2,333,963	2,370,835	-36,872	0.00	0.00
g. TOTAL		4,619,623	2,815,134	3,380,367	-1,804,489	-565,233	10,673,416	10,742,458	-69,042	0.61	0.83

These are the new set of budget codes

Variations are likely overstated – working to synchronize all needed inputs for reporting

This is likely a reasonable estimate at completion

- **Warning: This is still a work in progress**
- Working now to synchronize reporting with latest schedule

Punch list

- Expect to complete core recommendations for establishing baseline by end of March
- Expect baseline sign-off in April
- Expect finalizing documentation in May
- Most effort now going towards freezing baseline schedule
- ICRADA is moving forward through the system

Recommendation (if applicable)	Item	Promised Date	Expected Date	% Done	Comment and Status
2020 M1	Funding Guidance	10/1/2022		65%	Profile studies. In discussion with OHEP.
2020 M8	PMP	7/15/2022	5/17/2023	75%	Needs update after new 2023 baseline established.
2020 M4	MOA	8/1/2022	5/17/2023	50%	Sent for signatures.
2020 M6	I-CRADA		3/30/2023	90%	Proceeding with new system. Data entered.
	Freeze baseline schedule		3/15/2023	50%	Process Dec status update first, then final schedule vetting and resource leveling (has been 1 year since last leveled).
2022 PM10	Milestone table		3/15/2023	85%	Draft list in Dec 2022. Modeled after SBN style.
2022 CS6	Update estimate uncertainty	8/1/2022	3/30/2023	50%	Updated affected BOE's. Remaining line by line update to other BOE's to be done in 2023. Update to P6 reports needed.
	Procurement Table		3/30/2023	75%	Updated to match schedule 1/13/23. Awaiting Dec status update, then ready to put into ALP tool. Priority given to laser room.
2022 ESHQ2	High level HA report	6/1/2023	5/17/2023		By next director's review
2022 ESHQ3	QA Plan	10/1/2022	5/17/2023	50%	Also 2020 ESHQ25. Testing with stakeholders. Doc done.
2022 CS7	Variance analysis reporting		3/30/2023	50%	Reports are ready to implement after Dec status update. Follow SBN? Think about using spreadsheet. Quarterly may be enough. Talk to Peter Wilson.
2022 CS8	EAC and ETC tracking	12/15/2022	3/30/2023	50%	Reports are ready to implement after Dec status update. Follow SBN? Might be to track convergence now (ealier than later)
2022 PM9	Tailored status approach	12/15/2022		70%	Reports are ready to implement after Dec status update.
2022 PM12	2020 recommendations				Duplicate with individual recommendations in this list.
2020 M7	Decision Process	8/1/2022		50%	Document needed for succesful method previously demonstrated. Make sure this is written down and acknowledgements
2020 AI14	Interconnections	8/1/2022		50%	Collaboration-wide edits to interface table in progress July-Aug 2022
2020 AI18	Shipping Risk	Ongoing		30%	
2020 ESHQ29	Thermal Loads	9/1/2022			Awaiting bake of Stanford prototype: measure then run analysis
2020 M2	Project Support	8/1/2022	9/9/2022	100%	Duplicate - Deputy PM search.
2022 PM11	Deputy PM		9/9/2022	100%	Done.
2022 CS4	Align cost codes to WBS		10/15/2022	100%	Implemented.
2022 CS5	BOE updates	8/1/2022	12/1/2022	100%	Done. Duplicates 2020 TS11
	Schedule update after CS5 (and partial CS6)		1/11/2023	100%	Done. Links to CS5
2020 ESHQ24	QA Needs	7/15/2022		100%	Done. Engaged with Fermilab ES&H, QA plan being tested with collaborators.
2022 ESHQ1	ESH Project Support Group	9/1/2022		100%	First meeting end of June 2022. Likely done.

Status – Procurements

- Laser room contract has moved forward through approvals
 - Currently with procurement.
- Necessary electrical work procurements will be coming next
 - Meeting to make sure all requirements are captured.

Status: Risks

- Have begun to update risk registry.
 - Risks are now being coupled to WBS and schedule activities.
 - Looking into tighter integration with P6 activities for automating risk window and status
 - Fine tuning risks so that it is clear when they are mitigated or realized.
 - Going forward, will review risks during status updates
 - Several risks have been realized/retired based on our review.
- Working to understand how to adjust risk estimates for current supply chain and escalation conditions.
 - Inquiring about economy forecasts for both materials and labor looking out towards Sept – Dec.
 - Adjustments are needed to upcoming shaft construction

Coming schedule and cost report changes

- Currently restructuring M&S activities
 - Moving to Procure -> SVT -> Deliver model
 - M&S schedule variances will more accurately reflect how spending happens
 - Splitting initially large purchases into more manageable pieces
- BOE review in progress – will update labor estimates accordingly.