

Responses to Science Recommendations

Responses to Science Recommendations from Previous Reviews

Jefferson Lab SoLID Project
Collaboration Meeting

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Xiaochao Zheng

University of Virginia



Outline

1. Recommendation tracker overview
 - History and usage
2. Summary of science and science-related technical recommendations
3. Request to close completed science recommendations
4. Summary of remaining science and science-related technical recommendations prior to CD-? review
5. Summary

Recommendation Tracker Overview

1. SoLID Recommendation Tracker

- Spreadsheet to track tasks with responsible individuals, status, and estimated completion dates
- Currently tracking 36 recommendations from 2015 and 6 recommendations from 2019 Director's Reviews.

2. 2015 JLab Director's Review – 15 science and science-related technical, 14 technical, and 7 management recommendations; plus findings that need sorted and tracked.

3. 2019 JLab Director's Review – 6 management recommendations; plus 82 comments/suggestions that need sorted and tracked.

4. To date, a total of 24 tasks (11 science or science-related technical, 9 technical, 4 management) are considered by the collaboration to be completed and we have requested or request these to be closed.

SoLID Recommendation Tracker

Recommendation identifier:
2015 DR.F/C/R-##

A snapshot of the tracker spreadsheet:

item number
Findings, Comments, Recommendations
“DR” = “Director’s Review” (and year)

	A	B	C	D	E	F	G	H	I
1	Identifier	Category (drop-down list)	Subsystem (drop-down list)	Recommendation	Owner	Status [Updated] "The next steps"	Progress "What has been done so far"	CD Deadline (Complete by Approval of)	Estimated Completion Date
2	2015 DR.R-01	phy	General	End-to-end simulations with realistic subsystem responses and material budgets, and complete track finding and reconstruction should be developed.	Sylvester Joosten, Zhiwen Zhao, Ole Hansen	Open	Responses in pCDR 2017 Section 12		
3	2015 DR.R-02	phy	General	Acceptances, efficiencies, and systematic uncertainties should be simulated for each of the core measurements.	Richard Holmes, Zhiwen Zhao	Request to Close	Responses in pCDR 2017 Section 17		
				For the PVDIS measurements, the					

Each task has a “CD Deadline” – needs to be completed by approval of CD#

To do: Insert table of

Project stage Number of (science, tech, management etc) tasks

Between Science Review and CD0

Between CD0 and CD1

Post CD1 approval

Post CD2 approval

Milestones	Terminology
CD-0	Approve Mission Need
CD-1	Approve Alternative Selection and Cost Range
CD-2/3a	Approve Performance baseline and Long Lead Procurement
CD-3	Approve Start of Construction
CD-4	Approve Project Completion

2019-DR from The SoLID Recommendation Tracker

	A	B	C	D	E	F	G
1	Identifier	Category (drop-down list)	Subsystem (drop-down list)	Recommendation	Owner	Status	Progress
23	2019 DR.R-01	pm	Management	Make a pre-R&D plan, including a notional schedule, that resolves all significant technical questions if implemented. Include static/warm tests of the magnet.		Open	
24	2019 DR.R-02	pm	Management	Put in place a strategy for transition to a 413.3-quality documentation package. Insure sufficient resources of appropriate types are assigned. Include a training plan for candidates for critical roles.		Open	
25	2019 DR.R-03	pm	Management	Complete resolving the recommendations from the previous review.		Open	
26	2019 DR.R-04	pm	Safety	Carefully re-examine the experiment's implementation to determine if any new or enhanced hazards, ie. beyond "normal" for JLab, have been incorporated. Adjust the implementation as necessary.		Open	
27	2019 DR.R-05	pm	Management	Review the scope/designs for opportunities to reduce costs while meeting the technical requirements. Incorporate the changes into the plan.		Open	
28	2019 DR.R-06	pm	Management	Update the pCDR to incorporate the improvements identified in the other recommendations. (a) Make the links between "physics" requirements and equipment requirements more crisp. (b) Expand the details of engineering integration.		Open	
29							

There are also 82 (un-numbered) comments and suggestions. Need to track those too and identify tasks.

Request to close: (science tasks only – part 1)

	A	B	C	D	E	F	G	
1	Identifier	Category (drop-down list)	Subsystem (drop-down list)	Recommendation	Owner	Status [Updated] "The next steps"	Progress "What has been done so far"	
3	2015 DR.R-02	phy	General	Acceptances, efficiencies, and systematic uncertainties should be simulated for each of the core measurements.	Richard Holmes,Zhiwen Zhao	Request to Close	Responses in pCDR 2017 Section 17	
4	2015 DR.R-03	phy	General	For the PVDIS measurements, the viability of the elastic scattering calibration procedure, to determine absolute Q^2 should be demonstrated by simulations for similar scattering angles to those probed in DIS, and with realistic misalignments.	Paul Souder,Richard Holmes	Request to Close	Responses in pCDR 2017 Section 17.3.2	
5	2015 DR.R-04	phy	General	Bin migration effects should be simulated for the measurements of the sharply rising J/ψ production cross section near threshold.	Zein-Eddine Meziani,Michael Paolone	Request to Close	Responses in pCDR 2017 Section 17.4	
6	2015 DR.R-05	phy	General	The signal and background trigger rates should be simulated for the J/ψ measurements.	Zhiwen Zhao	Request to Close	Responses in pCDR 2017 Section 13.1.2	
9	2015 DR.R-08	phy	General	Better comparisons with the expected results on programs such as SBS and particularly CLAS12 are needed to clarify the need for the SoLID SIDIS program. Crisp demonstrations of the improvements possible with SoLID should be developed.	Tianbo Liu, Zhihong Ye, Jianping Chen,Haiyan Gao	Request to Close	Responses in pCDR 2017 Section 2.2.6	
10	2015 DR.R-09	phy	General	The SoLID Collaboration should investigate the possibility of kaon identification, especially given their high luminosity.	Yi Wang,Alexandre Camsonne	Request to Close	Responses in pCDR 2017 Section 2.2.5 and 11.8	

Request to close: (science tasks only – part 2)

	A	B	C	D	E	F	G	
1	Identifier	Category (drop-down list)	Subsystem (drop-down list)	Recommendation	Owner	Status [Updated] "The next steps"	Progress "What has been done so far"	
10	2015 DR.R-09	phy	General	The SoLID Collaboration should investigate the possibility of kaon identification, especially given their high luminosity.	Yi Wang,Alexandre Camsonne	Request to Close	Responses in pCDR 2017 Section 2.2.5 and 11.8	
11	2015 DR.R-10	phy	General	The SoLID collaboration should investigate the feasibility of carrying out a competitive GPD program. Such a program would seem particularly well suited to their open geometry and high luminosity. If SoLID's luminosity is sufficiently high to permit a program of precise Double Deeply Virtual Compton Scattering (DDVCS) measurements, it would make a groundbreaking contribution to GPD studies.	Zhiwen Zhao,Garth Huber,Alexandre Camsonne	Request to Close	Responses in pCDR 2017 Section 2.5.1	
13	2015 DR.R-17	phy	General	The collaboration is encouraged to explore the power of extended kaon identification (through Cherenkov or TOF).	Yi Wang,Alexandre Camsonne	Request to Close	Responses in pCDR 2017 Section 11.8	
14	2015 DR.R-24	phy	Software	Having a functional simulation and reconstruction routines as soon as possible should be a high priority in the software effort. Such software will pay off many times over in experimental design and avoiding pitfalls.	Sylvester Joosten, Zhiwen Zhao, Ole Hansen	Request to Close	Responses in pCDR 2017 Section 12	
15	2015 DR.R-25	phy	General	Complete radiation calculations to determine activation and absorbed dose on components of concern and mitigate as appropriate.	Lorenzo Zana	Request to Close	Responses in pCDR 2017 Section 14	
16	2015 DR.R-26	phy	Infrastructure	It should be confirmed that the baffle design, including the support structure, is optimized for background rejection and signal acceptance. Furthermore the baffle design should minimize generation of secondary backgrounds.	Paul Souder,Richard Holmes	Request to Close	Responses in pCDR 2017 Section 6	

Science tasks for completion prior to CD? approval

	A	B	C	D	E	F	G	H
	Identifier	Category (drop-down list)	Subsystem (drop-down list)	Recommendation	Owner	Status [Updated] "The next steps"	Progress "What has been done so far"	CD Deadline (Complete by Approval of)
2	2015 DR.R-01	phy	General	End-to-end simulations with realistic subsystem responses and material budgets, and complete track finding and reconstruction should be developed.	Sylvester Joosten, Zhiwen Zhao, Ole Hansen	Open	Responses in pCDR 2017 Section 12	
7	2015 DR.R-06	phy	DAQ	The dead-time(s) in the DAQ chain should be modeled.	Alexandre Camsonne	Open		
8	2015 DR.R-07	phy	Software	The development of a simulation framework with realistic reconstruction and analysis should be pursued with high priority and increased resources.	Sylvester Joosten, Zhiwen Zhao, Ole Hansen	Open	Responses in pCDR 2017 Section 12	
12	2015 DR.R-16	phy	Software	The collaboration is strongly encouraged to develop an end-to-end realistic simulation and reconstruction to further optimize cost and physics reach and derive clear performance requirements for the individual subdetectors.	Sylvester Joosten, Zhiwen Zhao, Ole Hansen	Open	Responses in pCDR 2017 Section 12	
17								
18								
17								

Science tasks for completion prior to CD? approval

#1- End-to-end simulations with realistic subsystem responses and material budgets, and complete track finding and reconstruction should be developed.

We used the GEMC framework for our simulation with a realistic setup and simple responses for all detectors with digitization for GEM and tracking including field effects. Results were adequate for the optimization of the detectors design (in progress, Section 12).

#6-The dead-time(s) in the DAQ chain should be modeled.

A preliminary study for the FADC part including modeling and testing using the Compton Polarimeter DAQ shows a deadtime of 0.1% is achievable. Studies on the other part of the DAQ chain (GEM) is planned (in progress).

#7-The development of a simulation framework with realistic reconstruction and analysis should be pursued with high priority and increased resources.

The collaboration is making progress toward developing a full end-to-end simulation of all SoLID experiments and has been soliciting increased resources to fully realize this objective. (in progress, see Section 12).

#16 -The collaboration is strongly encouraged to develop an end-to-end realistic simulation and reconstruction to further optimize cost and physics reach and derive clear performance requirements for the individual subdetectors.

A unified simulation framework with simple reconstruction for the optimization of each subsystem design has been implemented. The collaboration is making progress toward developing a full end-to-end simulation of all SoLID experiments. (in progress, Section 12)

Science tasks for completion prior to CD1 approval

Summary

1. Recommendation tracker spreadsheet tracks recommendations from previous reviews: 36 recommendations and 55 Findings from 2015 JLab Director's Review; 6 recommendations and 82 comments from 2019 JLab Director's review
2. Total of 15 Science or Science-related technical recommendations from 2015 DR, non science recommendations from 2019 DR. We request to close 11 of these.
3. (Findings and comments should be worked on)
4. TBA: Recommendations that need to be completed prior to DOE CD-0 and CD-1 reviews have been identified.

Collaboration To-Do's

1. Formally close all completed tasks (11 so far on science, 2019 DR report still questioned on the evidence of closing)
2. Assign CD# deadline to all open recommendations
3. Add 2019 preCDR sections (?? or are these identical to 2017 preCDR?) to tracker
4. Sort 55 findings from 2015 DR and 82 comments/suggestions from 2019 DR, identify closed/open(tasks), for tasks, identify owner, progress, expected completion CD/date, keep tracking.

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