

Core Facility Revitalization Preliminary Project Risk Registry - 08/19/2016

Risk No.	Risk Title	Risk Category	Date Submitted	Date Last Revised	Risk Owner	Cause	Effect	Risk Timeframe Which phase could this event occur in? Design, Bid, Construction and/or Commissioning	Probability of Event (x100,%)	Impact of Event	Current Cost Impact Estimates (Use \$K) O: Optimistic, ML: Most Likely, P: Pessimistic			Schedule Impact (Use time in months) O: Optimistic, ML: Most Likely, P: Pessimistic			Assumptions for Cost and Schedule Estimates	Overview of Risk Handling Plan	Risk Handling Approach Avoid, Mitigation, Transfer, Accept	Steps and Schedule for Handling the Plan	When to Reduce or Retire Risk	Risk Retired (Date)
											O	ML	P	O	ML	P						
WBS 1.0 - General Project Risks																						
1	Continuing Resolution Beyond Base Assumptions Cause Delays	4. Schedule 3. Cost	6/8/16		FPD	Congressional continuing resolution is implemented beyond current assumptions (FY17 - 12M, FY18 - 3M, and FY19 - 3M)	Schedule delays and cost impacts.	General	0.65	Medium	\$0	\$430	\$860	0	1	2	Monthly BNL/Contractor project support costs and potential delays.	Maintain schedule contingency and cost contingency. Avoid early FY start of major activities	Accept	Implement assumptions prior to baseline. Maintain cost and schedule contingency.	End of each FY and FY 2020 budget Approval	
2	Late Approval of Critical Decisions - BNL	1. Management	6/8/16		PD	Delays in development, review and/or approval of project documentation by BNL.	Project costs could be impacted and delays could occur.	General	0.1	Low	\$0	\$188	\$376	0	1	2	Monthly BNL project support cost.	Strive for first round approvals by Independent Project Review. Apply adequate resources to ensure timely development, review and approval of CD documents. Track milestones on project schedule. Complete early scheduling of IPR's and ESAAB.	Mitigate	Ensure complete and accurate submittals to expedite review and approval. Maintain constant communication with Program Manager. Conduct self assessment activities.	CD-3B	
3	Late Approval of Critical Decisions - DOE	1. Management	6/8/16		FPD	Delays in development, review and/or approval of project documentation by DOE.	Project costs could be impacted and delays could occur.	General	0.1	Low	\$0	\$188	\$376	0	1	2	Monthly BNL project support cost.	Strive for first round approvals by Independent Project Review. Apply adequate resources to ensure timely development, review and approval of CD documents. Track milestones on project schedule. Complete early scheduling of IPR's and ESAAB.	Mitigate	Ensure complete and accurate submittals to expedite review and approval. Maintain constant communication with Program Manager. Conduct self assessment activities.	CD-3B	
4	Funding Profile Changes	3. Cost 4. Schedule	6/8/16		FPD	Congressional Budget cuts and/or DOE senior level management decision to reallocate funding.	Increased cost and schedule delays	General	0.25	Medium	\$0	\$430	\$860	0	1	2	Monthly BNL/Contractor project support costs and potential delays. Actual DOE estimates and recommendations.	Good EVM practices, risk mitigation and reporting. Avoid/mitigate baseline changes.	Mitigate	Maintain adequate cost and schedule contingency. Has not been an issue to date with prior CR's.	FY2020 budget approval	
5	Change in Management / BNL Project Personnel	1. Management	6/8/16		PD	Retirements, promotions, budget cuts and alternative employment.	Decreasing efficiency in project execution. Increased management and design costs due to loss in continuity.	General	0.1	Medium	\$0	\$215	\$430	0	0.5	1	Monthly BNL/Contractor project support costs and potential delays.	Maintain communications and clear documentation. Ensure project knowledge is preserved through documentation and control.	Mitigate	Constant communication and knowledge transfer.	CD-4	
6	Inadequate BNL Resources	1. Management 4. Schedule	6/8/16		PD	Lack of funding, timeliness and/or commitment of matrixed organizations to provide adequate resources during design management and construction management processes, ESH&Q and procurement.	Inefficient project management, rework and schedule delays.	Design, Bid, Construction, Commissioning	0.1	Medium	\$0	\$215	\$430	0	0.5	1	Monthly BNL/Contractor project support costs during construction	Aggressive hiring strategies, tailoring of acquisition strategy to ensure efficient use of resources. Resource loaded schedule promotes resource leveling and adequate forecasting or anticipated needs.	Mitigate	Maintain constant communication with project team and key BNL project personnel. Hire additional contract support as needed.	CD-4	

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WBS 1.01 - Project Design and Engineering																						
7	Failure to Capture User Requirements	1. Management 2. Programmatic	6/8/16		PM/User	Input from users is not captured or provided on a timely basis.	Design costs may increase, additional construction costs may be incurred later in project.	Design, Construction, Commissioning	0.2	Very High	\$329	\$873	\$1,524	0.25	1	2	Estimated .5%, 1%, 1.5% of Construction Budget (Including Design Costs) plus monthly BNL project support costs.	Continuous and proactive discussion and design reviews with user representatives. Control costs and changes through the IPT and change control board. Ensure "buy in" from stakeholders.	Mitigate	Laboratory pre-programming and Conceptual Design Effort performed. Conduct of Extensive Design Reviews.	Final design	
8	Significant Increase in Project Scope (Creep)/Design Contingency/Estimate Uncertainty	3. Cost 4. Schedule	6/8/16		PM	Scope of project significantly increases as design matures. (Technical / Mechanical)	Cost and schedule may be impacted	Design, Construction	0.75	Very High	\$1,436	\$2,872	\$4,416	0.25	0.5	1	Estimated 3%, 6%, 9% of Construction Budget plus monthly BNL project support costs.	Project controls, value engineering and design reviews. Establish scope creep contingency in both cost and schedule. Enforce design to cost clause.	Mitigate	Scope Programming by Design team, Management oversight of the Design team, and Cost and Schedule contingencies	Receipt of Qualified Cost Proposal	
9	Failure to Comply with Code and Regulatory Requirements During Design	1. Management 3. Cost 4. Schedule 5. Safety/ Environmental	6/8/16		PM	Interpretation of applicable codes and regulations is not accepted by the AHJ.	Increase in cost and schedule delays due to installation of noncompliant systems and components.	Design, Construction, Commissioning	0.2	Medium	\$218	\$436	\$762	0.25	0.5	1	.25%, .5%, .75% of Construction Budget Including possible Re-Design plus monthly BNL/Contractor project support costs.	Ensure involvement of key SME's in the design review process and construction inspection process. Ensure contractually that cost impacts associated with inadequate designs are borne by the A/E (design to code)	Mitigate	Maintain constant communication with AHJ throughout all phases of the project.	Final Commissioning	
10	Limited Competition results in higher than expected cost	3. Cost 4. Schedule	6/8/16		Procurement/ PM	Construction market is very active with many competing projects. The number of contractors interested in bidding is reduced to two or less thus reducing competition.	Potential cost and schedule impact	Bidding	0.3	Very High	\$1,107	\$2,429	\$3,752	0	0.5	1	2.5%, 5%, or 7.5% of Construction Budget plus monthly BNL project support cost	Encourage interest in construction community and maintain adequate project contingency.	Mitigate	Initiate contact with Contractor community prior to and immediately preceding RFP period to encourage interest and participation.	Receipt of Qualified Cost Proposal	
11	Design Estimate exceeds project budget	3. Cost 4. Schedule	6/8/16		PM	Design professionals cost estimate exceeds the amount budgeted for the project construction.	Potential cost and schedule impact	Design	0.2	Low	\$0	\$188	\$376	0	1	2	BNL monthly project support costs.	Ensure QC/QA during design to develop detailed designs and valid cost estimates. Enforce design to cost clause in A/E contract.	Mitigate	Project manager will ensure detailed review of A/E design, estimates, and plans & specs. Conduct a value engineering exercise during design. Obtain independent cost estimates.	Receipt of Qualified Cost Proposal	
12	Increasing Cost Escalation Rates Results in Higher Construction Cost	3. Cost 4. Schedule	6/8/16		PM	Market prices due to worldwide demand for commodities have increased at a rate higher than the anticipated Inflation rate used for the project.	Construction costs will increase. Possible cost negotiations.	Design, Bidding	0.25	Very High	\$443	\$1,215	\$2,429	0	0.25	0.5	1%, 2.5%, or 5% of Construction Budget due to recent market volatility plus possible BNL monthly project support cost.	Develop escalation analysis and conduct periodic estimating during the design process to ensure project cost is within funding allocation.	Mitigate	Maintain cost and schedule contingency. Conduct VE exercises and maintain potential scope deducts	Receipt of Qualified Cost Proposal	

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WBS 1.02 - Construction																						
13	User Generated Scope Changes During Construction	3. Cost 4. Schedule	6/8/16		User/PM	Additional user requirements resulting in changes to planned functional usage result in increased project scope.	Increase in cost and schedule duration.	Construction	0.9	Very High	\$658	\$1,094	\$1,531	0.5	1	1.5	Estimated 1%, 1.5%, 2% of Construction Budget plus monthly BNL project support costs.	Project controls, value engineering and design reviews. Establish scope creep contingency in both schedule and cost. Control changes through change control board.	Mitigate	Project director will ensure detailed review and approval of proposed changes. User review of contract drawings conducted again (post award).	Substantial Completion	
14	Design Errors and/or Omissions	3. Cost 4. Schedule	6/8/16		PM	Significant errors or inadequate detail in the design documents cause changes.	Construction change orders and potential delays associated with redesign efforts.	Design, Bid, Construction, Commissioning	0.6	High	\$329	\$658	\$1,094	0.25	0.5	1	Estimated .5%, 1%, 1.5% of Construction Budget plus monthly BNL project support costs.	Ensure QC/QA during design to develop detailed designs and investigate existing conditions to avoid design detail corrections in the field. Enforce design to cost clause in A/E contract	Mitigate	Project manager will ensure detailed review of A/E design, plans & specs.	Final Commissioning	
15	Failure to comply with OCMED / Safety Program requirements	3. Cost 4. Schedule 5. Safety/ Environmental	6/8/16		PM	Failure of contractor to comply with safety standards, lack of knowledge and understanding of OCMED program.	The project could be shut down or delayed	Construction	0.1	Low	\$0	\$94	\$188	0	0.5	1	BNL Monthly Project Support cost.	Evaluate Sub-contractor safety records during qualification process. Specify requirement for Sub-contractor to maintain safety professional onsite. Review subcontractor safety plans and PHA's/HASP. Provide ES&H oversight.	Mitigate	Ongoing review and oversight throughout the term of the project by the Sub-contractor's health and safety professional and limited oversight by BNL staff.	Substantial Completion	
16	CM/GC Construction Contract Not Awarded	1. Management 3. Cost 4. Schedule	6/8/16		PM/ Procurement	CM/GC Construction contract not awarded due to poor pre-construction performance	Project may need to convert toevaluated "low bid" procurement	Bid	0.05	High	\$564	\$752	\$940	3	4	5	BNL Monthly Project Support cost.	Maintain strict oversight of CM/GC pre-construction performance	Mitigate	Conduct internal assessment of CM/GC performance at 60% Design.	Construction Phase contract award	
17	Logistical issues with the isolation of existing building systems.	1. Management 3. Cost 4. Schedule	6/8/16		PM	Shared building systems prove to be difficult to isolate and maintain in operation for remaining users.	Increased cost and schedule duration.	Construction	0.6	Medium	\$158	\$315	\$580	0.25	0.5	1	BNL/Contractor monthly project support costs plus \$50K/\$100K/\$150K material allowance/rentals	Preparation and verification of complete as-built documentation as part of the design package	Mitigate	Anticipate areas of concern and prepare alternate work plans as required.	Substantial Completion	
18	Construction delays due to work in occupied areas of buildings.	1. Management 3. Cost 4. Schedule	6/8/16		PM	Construction activities prove too disruptive for remaining building occupants.	Increased cost and schedule duration.	Construction	0.3	Medium	\$158	\$315	\$473	0.25	0.5	0.75	BNL/Contractor monthly project support costs plus \$50K/\$100K/\$150K material allowance/rentals	Prepare thorough project phasing plans. Isolate construction area from occupied areas of building.	Mitigate	Coordination of phasing plans. Review work plans with user representative at logical intervals.	Substantial Completion	
19	Sub-contractor Default	1. Management 3. Cost 4. Schedule	6/8/16		Procurement	Sub-contractor Defaults, Resigns, or is Terminated.	Performance Bond is Invoked. Possible schedule delay. Potential increased costs.	Construction, Commissioning	0.05	Medium	\$188	\$376	\$564	1	2	3	BNL Monthly project support cost. Bond will cover change in contract amount.	Performance bond requirement. Evaluate Sub-contractors proposed by GC	Mitigate	Pre-qualify Sub-contractors	Substantial Completion	

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27	Construction Material / Raw Material Shortfall / Availability	4. Schedule 3. Cost	6/8/16		CM	Materials required for construction not available due to market forces including worldwide demands for key commodities.	Construction may be delayed.	Bid / Construction	0.25	High	\$265	\$530	\$795	0.5	1	1.5	BNL/Contractor monthly project support costs plus estimated cost increase (\$50K,\$100K,\$150K), delay, and/or "quick-ship" cost. Possible more expensive material required.	Consider early procurement of long lead items. Value engineering to ensure that lower cost and more readily available materials are being specified. Conduct market surveys to enhance intelligence concerning availability of key materials.	Mitigate	Evaluation of chosen materials and systems as part of Value Engineering process.	Substantial Completion	
28	Delays in procurement or the approval process	4. Schedule 3. Cost	6/8/16		Procurement	The procurement process experiences unanticipated delays.	Construction may be delayed Costs may increase.	Bid / Construction	0.25	Medium	\$215	\$430	\$645	0.5	1	1.5	BNL/Contractor monthly project support costs.	Early close coordination with procurement official and staff.	Mitigate	Conduct pre-procurement activities (review meetings) for major procurements with procurement personnel to review requirements and time-lines.	Substantial Completion	
29	Building system performance, materials, or components do not meet design criteria.	2. Programmatic 4. Schedule 3. Cost	6/8/16		PM	The installed building systems do not perform as designed. Materials and/or components are non-compliant	Construction may be delayed Costs may increase.	Construction / Commissioning	0.25	Medium	\$215	\$430	\$645	0.5	1	1.5	BNL/Contractor monthly project support cost	Early involvement of commissioning agent and development of commissioning plan	Mitigate	Consider early involvement of commissioning agent	Final Commissioning	
30	Inclement Weather "Act of God" Natural Disasters	4. Schedule 3. Cost	6/8/16		CM	Inclement weather inhibits or prevents certain construction activities.	Inclement weather or "Act of God" inhibits or prevents critical construction activities.	Construction	0.95	Low	\$104	\$208	\$365	0.125	0.25	0.5	BNL/Contractor monthly project support costs plus allowance for cost of temporary protection and damage \$50K/\$100K/\$150K	Scheduling of Construction Activities. Apply adequate schedule contingency based on potential weather delay.	Avoid/ Accept	Plan construction activities to avoid exterior work during seasons of likely adverse weather conditions.	Substantial Completion	
31	Delays Due to Organized Labor	4. Schedule 3. Cost	6/8/16		CM	Labor disputes result in work stoppage, delays, or subcontractor replacement.	Construction may be delayed. Increase schedule duration results in increased management costs	Construction	0.5	Very Low	\$0	\$108	\$215	0	0.25	0.5	BNL/Contractor monthly project support costs	Conduct market surveys to determine the potential for labor disputes and disruptions in the local market.	Mitigate	Open communications with unions and contractor.	Substantial Completion	
32	Claims & Disputes	3. Cost	6/8/16		Procurement	Significant construction claims and disputes	Increase cost	Construction / Close-out	0.5	Medium	\$242	\$484	\$726	1	2	3	Extended General Conditions	Accurate documentation of schedule performance and change orders. Execute a CM/GC project execution methodology	Mitigate	Continuous involvement and communication with Sr. Procurement Manager.	Substantial Completion/ Contract Close-out	