

Brookhaven National Laboratory - Core Facility Revitalization (CFR) Project

Project Contingency Analysis - 12/13/2016

No.	Risk Title	Probability of Event (percentage)	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			Weighted Impact (Use \$K) Probability x Cost Impact O: Optimistic, ML: Most Likely, P: Pessimistic			Weighted Impact (Time in Months) Probability x Duration O: Optimistic, ML: Most Likely, P: Pessimistic		
			O	ML	P	O	ML	P	O	ML	P	O	ML	P

WBS 1.0- General Project Risks

1	Continuing Resolution Beyond Base Assumptions Cause Delays	0.65	\$0	\$430	\$860	0	1	2	\$0	\$280	\$559	0	0.65	1.3
2	Late Approval of Critical Decisions - BNL	0.1	\$0	\$188	\$376	0	1	2	\$0	\$19	\$38	0	0.1	0.2
3	Late Approval of Critical Decisions - DOE	0.1	\$0	\$188	\$376	0	1	2	\$0	\$19	\$38	0	0.1	0.2
4	Funding Profile Changes	0.5	\$0	\$430	\$860	0	1	2	\$0	\$215	\$430	0	0.5	1
5	Change in Management / BNL Project Personnel	0.1	\$0	\$215	\$430	0	0.5	1	\$0	\$22	\$43	0	0.05	0.1
6	Inadequate BNL Resources	0.1	\$0	\$215	\$430	0	0.5	1	\$0	\$22	\$43	0	0.05	0.1
WBS 1.0 Totals			\$0	\$1,666	\$3,332	0	5.0	10	\$0	\$575	\$1,150	0.0	1.5	2.9

WBS 1.01 - Project Design and Engineering

7	Failure to Capture User Requirements	0.2	\$358	\$931	\$1,611	0.25	1	2	\$72	\$186	\$322	0.05	0.2	0.4
8	Significant Increase in Project Scope (Creep)/Design Contingency	0.75	\$1,609	\$3,219	\$4,936	0.25	0.5	1	\$1,207	\$2,414	\$3,702	0.1875	0.375	0.75
9	Failure to Comply with Code and Regulatory Requirements During Design	0.2	\$233	\$465	\$805	0.25	0.5	1	\$47	\$93	\$161	0.05	0.1	0.2
10	Limited Competition results in higher than expected cost	0.3	\$1,252	\$2,718	\$4,185	0	0.5	1	\$375	\$815	\$1,255	0	0.15	0.3
11	Design Estimate exceeds project budget	0.2	\$0	\$188	\$376	0	1	2	\$0	\$38	\$75	0	0.2	0.4
12	Increasing Cost Escalation Rates Results in Higher Construction Cost	0.25	\$501	\$1,359	\$2,718	0	0.25	0.5	\$125	\$340	\$680	0	0.0625	0.125
WBS 1.01 Totals			\$3,952	\$8,880	\$14,632	0.75	3.8	7.5	\$1,826	\$3,886	\$6,196	0.2875	1.1	2.175

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WBS 1.02 - Construction

13	User Generated Scope Changes During Construction	0.9	\$716	\$1,181	\$1,646	0.5	1	1.5
14	Design Errors and/or Omissions	0.6	\$358	\$716	\$1,181	0.25	0.5	1
15	Failure to comply with OCMED / Safety Program requirements	0.1	\$0	\$94	\$188	0	0.5	1
16	CM/GC Construction Contract Not Awarded	0.05	\$564	\$752	\$940	3	4	5
17	Logistical issues with the isolation of existing building systems.	0.6	\$158	\$315	\$580	0.25	0.5	1
18	Construction delays due to work in occupied areas of buildings.	0.5	\$158	\$315	\$473	0.25	0.5	0.75
19	Sub-contractor Default	0.05	\$188	\$376	\$564	1	2	3
20	A/E failure to provide engineering support in a timely fashion	0.1	\$0	\$108	\$215	0	0.25	0.5
21	Unforeseen field conditions	0.95	\$265	\$530	\$795	0.5	1	1.5
22	Minor Event or Injury that does not trigger an investigation	0.15	\$0	\$108	\$215	0	0.25	0.5
23	Significant Event or Injury that does trigger an investigation	0.01	\$108	\$215	\$430	0.25	0.5	1
24	Construction delays attributable to BNL Management and/or policy changes	0.25	\$108	\$215	\$323	0.25	0.5	0.75
25	Failure to remove all known contaminated materials/equipment from work site prior to start of construction. (Legacy contamination)Unknown Hazardous Material	0.75	\$208	\$415	\$730	0.25	0.5	1

\$644	\$1,063	\$1,482	0.45	0.9	1.35
\$215	\$429	\$709	0.15	0.3	0.6
\$0	\$9	\$19	0	0.05	0.1
\$28	\$38	\$47	0.15	0.2	0.25
\$95	\$189	\$348	0.15	0.3	0.6
\$79	\$158	\$236	0.125	0.25	0.375
\$9	\$19	\$28	0.05	0.1	0.15
\$0	\$11	\$22	0	0.025	0.05
\$252	\$504	\$755	0.475	0.95	1.425
\$0	\$16	\$32	0	0.0375	0.075
\$1	\$2	\$4	0.0025	0.005	0.01
\$27	\$54	\$81	0.0625	0.125	0.1875
\$156	\$311	\$548	0.1875	0.375	0.75

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			O	ML	P	O	ML	P	O	ML	P	O	ML	P
26	Not Used	0	\$0	\$0	\$0	0	0	0	\$0	\$0	\$0	0	0	0
27	Construction Material / Raw Material Shortfall / Availability	0.25	\$265	\$530	\$795	0.5	1	1.5	\$66	\$133	\$199	0.125	0.25	0.375
28	Delays in procurement or the approval process	0.25	\$215	\$430	\$645	0.5	1	1.5	\$54	\$108	\$161	0.125	0.25	0.375
29	Building system performance, materials, or components do not meet design criteria.	0.25	\$215	\$430	\$645	0.5	1	1.5	\$54	\$108	\$161	0.125	0.25	0.375
30	Inclement Weather "Act of God" Natural Disasters	0.95	\$104	\$208	\$365	0.125	0.25	0.5	\$99	\$197	\$347	0.1188	0.2375	0.475
31	Delays Due to Organized Labor	0.5	\$0	\$108	\$215	0	0.25	0.5	\$0	\$54	\$108	0	0.125	0.25
32	Claims & Disputes	0.5	\$242	\$484	\$726	1	2	3	\$121	\$242	\$363	0.5	1	1.5
			\$3,869	\$7,528	\$11,670	9.125	17.5	27.0	\$1,898	\$3,642	\$5,648	2.8	5.7	9.3
Total			\$7,821	\$18,074	\$29,634	9.9	26.3	44.5	\$3,724	\$8,104	\$5,649	5.33	8.3	14.3
Total "Most Likely" Weighted Impact									\$8,104			8.3 Months		