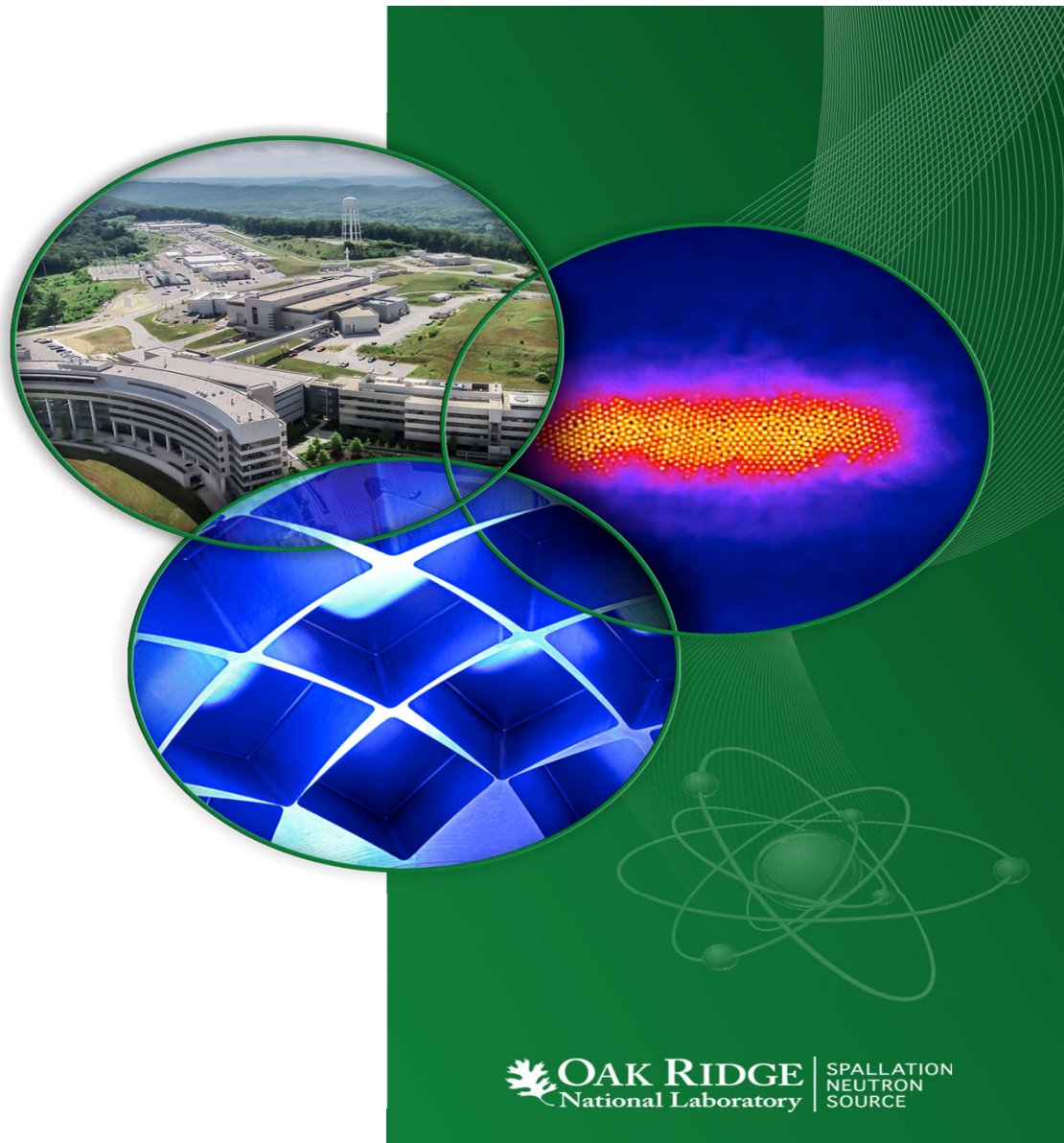


PPU Metrics

June 2021

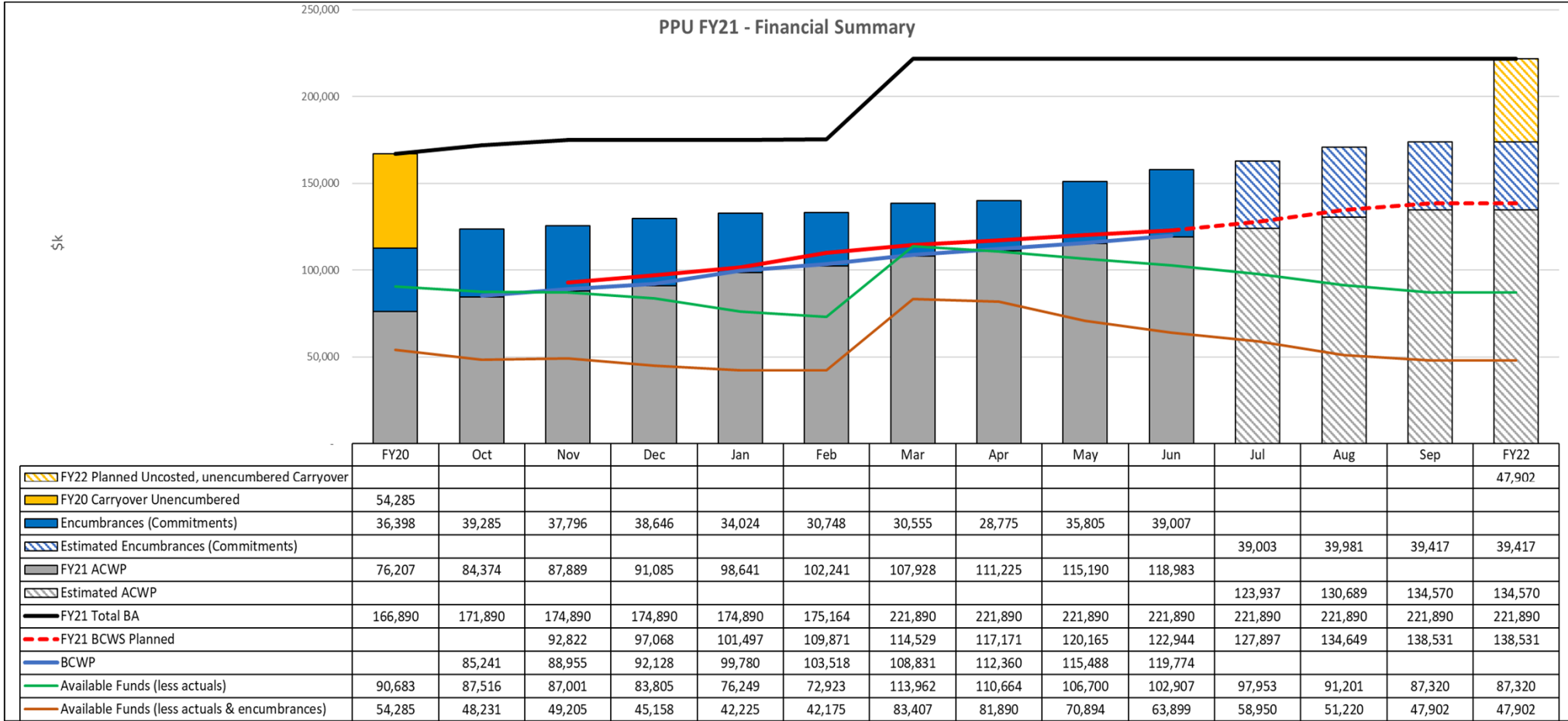


ORNL is managed by UT-Battelle
for the US Department of Energy

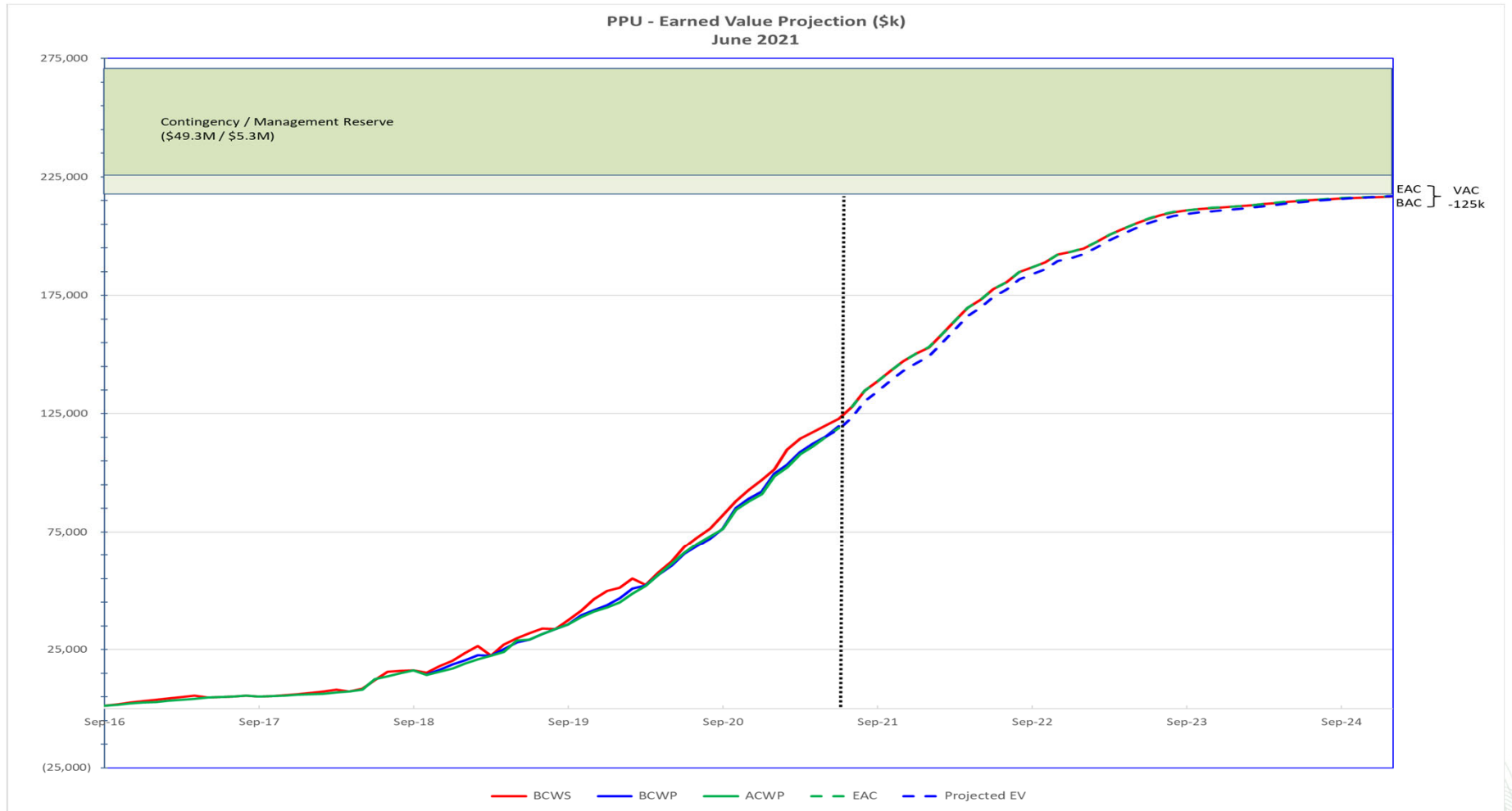
 **OAK RIDGE** | SPALLATION
National Laboratory | NEUTRON
SOURCE

PPU Project Overall Status

PPU: Project Financial Summary



PPU – Earned Value Projection



PPU: Costs – WBS Level 2

WBS Description	Prior Costs	Prior FY21 Costs	June Costs	Total FY21 Costs	Total Costs to Date	Commits (with OH)
P.1 Project Management	5,883,425	2,554,017	392,429	2,946,446	8,829,871	742,534
P.2 SCL Systems	5,924,975	2,519,223	378,703	2,897,926	8,822,902	9,248,431
P.3 RF Systems	12,347,958	7,183,942	480,201	7,664,144	20,012,101	11,082,760
P.4 Ring Systems	6,980,063	2,712,651	369,642	3,082,293	10,062,356	2,952,423
P.5 First Target Station Systems	10,224,569	6,806,296	1,764,270	8,570,566	18,795,136	5,681,074
P.6 Conventional Facilities	2,522,645	323,059	33,222	356,281	2,878,926	44,617
P.7 R&D (OPC)	2,265,525	62,492	-	62,492	2,328,017	1,070
P.8 Pre-Ops (OPC)	56,292	19,911	396	20,308	76,599	-
P.9 Pre-CD1 Activities (OPC)	7,249,768	-	-	-	7,249,768	-
P.10 Long Lead Procurements	22,751,625	16,801,967	375,460	17,177,427	39,929,053	9,254,238
Total PPU	76,206,845	38,983,559	3,794,325	42,777,884	118,984,729	39,007,148

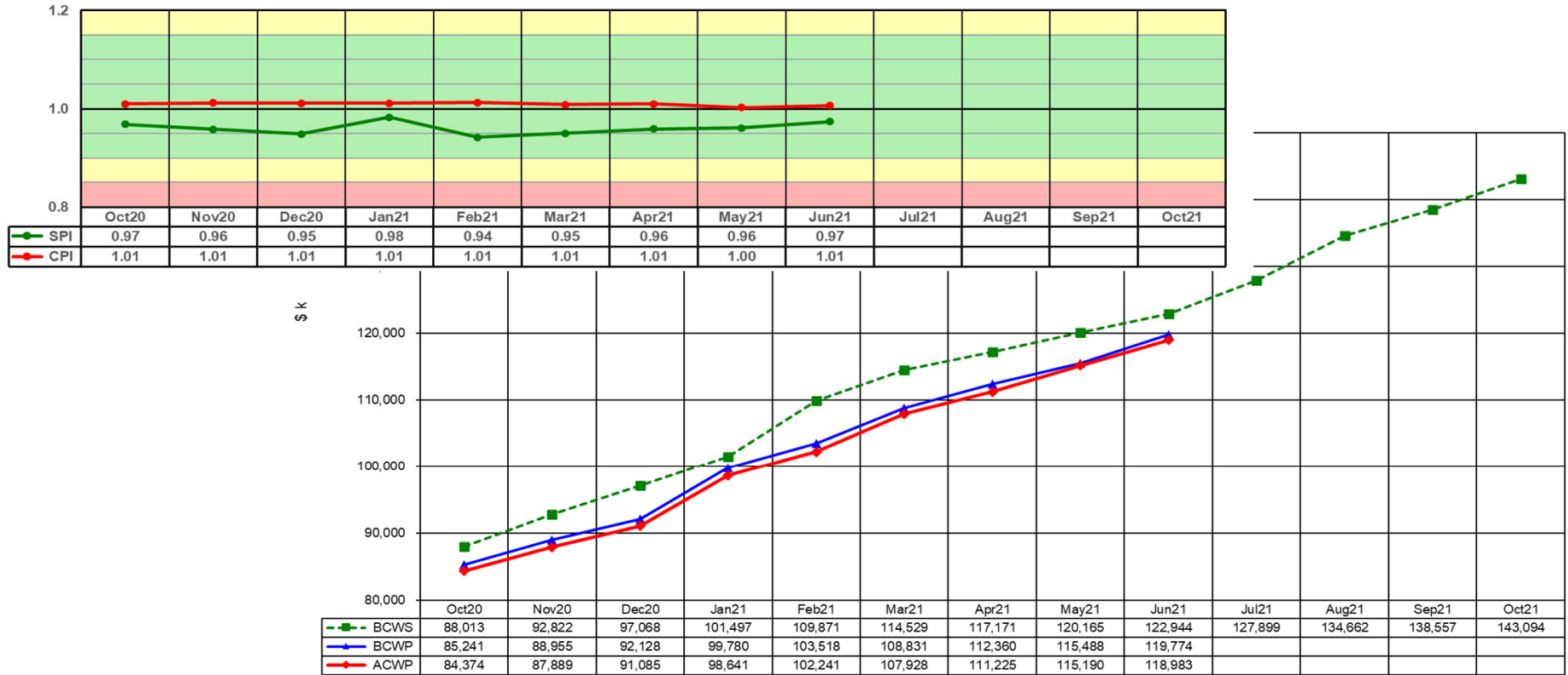
PPU: Cost Performance Report – Format 1

**CONTRACT PERFORMANCE REPORT
FORMAT 1 - WORK BREAKDOWN STRUCTURE
PERFORMANCE DATA (WBS Level 2)**

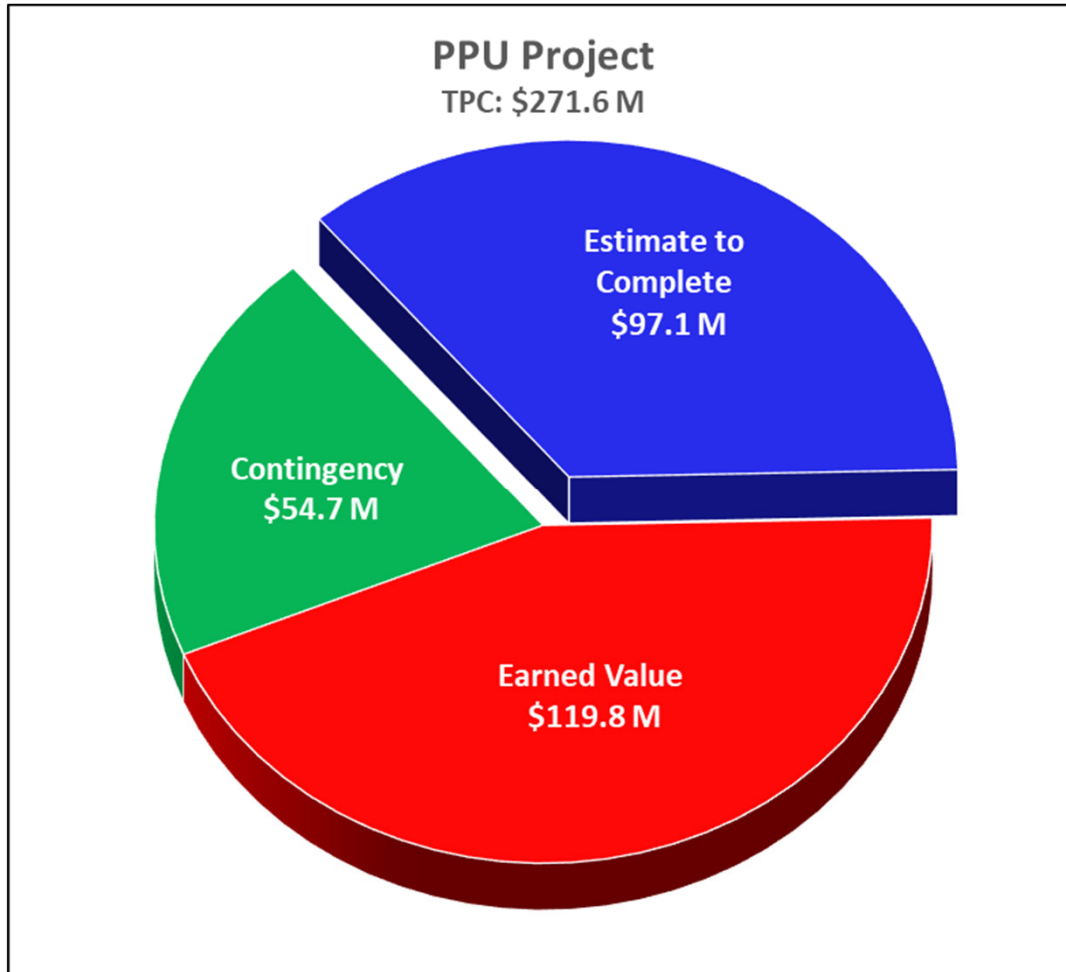
June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE							AT COMPLETE		
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE				BAC	EAC	VAC
				SV	CV				SV	SPI	CV	CPI			
P.01 - PPU Project Management	382	398	392	16	5	9,213	9,213	8,830	0	1.00	384	1.04	22,169	21,786	383
P.02 - SCL Systems	368	112	379	(256)	(267)	9,609	8,986	8,823	(623)	0.94	163	1.02	23,887	23,719	168
P.03 - RF Systems	664	720	480	56	240	19,844	20,317	20,012	472	1.02	304	1.02	44,061	44,030	31
P.04 - Ring Systems	552	233	370	(319)	(136)	10,511	9,440	10,062	(1,072)	0.90	(623)	0.94	20,551	21,346	(795)
P.05 - First Target Station Systems	611	2,337	1,763	1,725	574	18,195	18,800	18,794	605	1.03	7	1.00	34,544	34,655	(111)
P.06 - Conventional Facilities	51	22	33	(28)	(11)	2,809	2,794	2,879	(15)	0.99	(85)	0.97	10,900	10,985	(86)
P.07 - R&D	54	0	0	(54)	0	2,321	2,315	2,328	(6)	1.00	(13)	0.99	2,476	2,489	(13)
P.08 - Pre-Ops	5	5	0	0	4	92	92	77	0	1.00	15	1.19	1,137	1,122	15
P.09 - Pre-CD-1 Activities	0	0	0	0	0	7,250	7,250	7,250	0	1.00	0	1.00	7,250	7,250	0
P.10 - Long Lead Procurements	92	460	375	367	84	43,099	40,567	39,929	(2,531)	0.94	638	1.02	49,785	49,503	282
TOTAL	2,779	4,286	3,793	1,507	493	122,944	119,774	118,983	-3,170	0.97	791	1.01	216,761	216,886	-125
Cumulative Thresholds:									Management Reserve				5,338	5,338	
<ul style="list-style-type: none"> Red: CPI/SPI <0.85 or >+1.20 AND >\$100k Yellow: CPI/SPI between 0.85-0.90 or 1.15-1.20 AND >\$100k 									Contingency				49,469	49,343	
									TPC				271,567	271,567	

PPU: SPA Chart & Cost/Schedule Performance Indices

PPU
Total Project
Cost/Schedule Performance Index Chart
(Cumulative Data)



PPU: Status



Cumulative	Work Planned	BCWS	122,944
	Work Performed	BCWP	119,774
	Actual Costs	ACWP	118,983
	Schedule Perf Index	SPI	0.97
	Cost Perf Index	CPI	1.01
	Planned % Complete		
Actual % Complete			55%

BAC	Budget at Complete	BAC	216,761
	Estimate to Complete	ETC	96,987
	Management Reserve	MR	5,338
	Contingency	Cont	49,469
	Total Project Cost	TPC	271,567
	% Cost Contingency		

EAC	Estimate at Complete	EAC	216,886
	Estimate to Complete	ETC	97,112
	Management Reserve	MR	5,338
	Contingency	Cont	49,343
	Total Project Cost	TPC	271,567
	% Cost Contingency		

Variance at Complete	VAC	(125)
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Schedule Contingency	Months	42
% Schedule Contingency		98%

PPU: DOE FY21 Annual Work Plan Milestones

System	Milestone Name	Planned Finish	Actual Date	Current Forecast	Owner	
P.2	Super Conducting Linac (SCL) Systems					
	P2319MS05	Completion of Cryomodule Shipping Tests (Jlab)	20-Jun-21	23-Feb-21		Matt Howell
	P228MS197	Award Contract for Inner Extension, Outer Extension, and Waveguide Cover	01-Aug-21	27-Apr-21		Matt Howell
P.3	Radio Frequency (RF) Systems					
	P362P90	Award of Remaining High Voltage Converter Modulator (HVCM) Transformers Complete	12-Apr-21	18-Dec-20		John Moss
	P333MS002	Receipt of 3MW Klystron Test Article	03-Aug-21		16-Sep-21	John Moss
	P342MS50	Fabrication of Low Level Radio Frequency (LLRF) Platform Complete	15-Sep-21		29-Oct-21	John Moss
P.4	Ring Systems					
	P422P175MS	Award Contract for Fabrication of Chicane 2/3 (and Spare), Injection Dump Septum Magnets and Spare Coil Sets	04-May-21	28-Apr-21		Nick Evans
	P462D384	Preliminary Design Review of Beam Power Limiting System (BPLS) Complete	04-May-21	04-Mar-21		Nick Evans
	P432DFDC	Final Design of Injection Dump Imaging System Complete	29-Jun-21	18-May-21		Nick Evans
	P462D454	Final Design of PPS Interface Complete	06-Sep-21	29-Jun-21		Nick Evans
	P432P979	Fabrication of Injection Dump Window Full Assembly for Installation Complete	30-Sep-21		20-Aug-21	Nick Evans
P.5	First Target Station (FTS) Systems					
	P5921MS006	Award Contract for 2MW Target	29-Nov-20	30-Oct-20		Bernie Riemer
	P5921MS140	Fabrication of PPU Front Body Development Test Article Complete	01-Mar-21	26-Feb-21		Bernie Riemer
	P5942MS145	Fabrication of PPU Test Target 1 Shroud Complete	12-Jul-21		23-Aug-21	Bernie Riemer
	P542MS230	Award Contract for Ortho/Para Converter Vessel Assembly	18-Jul-21		30-Aug-21	Bernie Riemer
	P582MS10	Fabrication of Second Carbon Delay Bed Vessel and Cartridge Complete	30-Sep-21	03-May-21		Bernie Riemer
P.10	Long Lead Procurements (LLPs)					
	P222MS06	Receipt of Last Five Production Cavities at Jlab	13-May-21	25-Feb-21		Matt Howell
	P621PM01	Conventional Facilities (CF) Construction of Klystron Gallery Complete	13-May-21	06-Apr-21		Mark Connell

Legend: Green - On/Ahead of Schedule, Yellow - Moderately Late (<3 months), Red - Very Late (>3 months) or Critical Path (>1 month)

Project Change Requests

PPU June FY2021 PCRs (\$s in thousands)

PCR Number	PCR Description	Dollar Change
PP-2021-07	Award of Cryomodule Cabinets and LLRF Racks	\$ 293
PP-2021-08	RF Electrical Installation Schedule and Transmitter Deliveries Update	\$ 78
RI-2021-09	Injection Dump Quadrupole Power Supply (PS) and Injection Dump Quadrupole Corrector PS Award	\$ 14
RI-2021-10	Primary and Secondary Stripper Foil Mechanisms Design Update	\$ (124)
SL-2021-05	Award of Airside Components	\$ (201)
OP-2021-01	Additional Activity to Align with the Five-Year Plan	\$ -
PP-2021-06	Remove Quotation Marks from Activity Titles	\$ -
RI-2021-11	Ring - CAM Change (Roseberry to Barbier)	\$ -
Total May PCR Changes		\$ 60

\$k	May 2021 Baseline	June 2021 Baseline
P.01 Project Management	22,169	22,169
P.02 SCL Systems	24,082	23,887
P.03 RF Systems	43,696	44,061
P.04 Ring Systems	20,662	20,551
P.05 First Target Station Systems	34,544	34,544
P.06 Conventional Facilities	10,900	10,900
P.07 R&D	2,476	2,476
P.08 Pre-Ops	1,137	1,137
P.09 Pre CD-1 Activities	7,250	7,250
P.10 Long Lead Procurements	49,785	49,785
Revised Baseline	216,701	216,761
Management Reserve	5,105	5,338
Contingency	49,762	49,469
PPU - Total with Contingency	271,567	271,567

Major Risk Summary

Risk ID	Description	Expiration	Mitigation	Post - Mitigation Score	Probability	Schedule Impact (d)	Cost Impact
T-P.4-013	Fermilab has competing projects or resource issues	6/30/2022	Maintain good communication between PPU and Fermilab so that schedule challenges can be discovered early and mitigated. Engage project management and Fermilab management as needed to ensure this work receives adequate priority. Perform periodic visits to Fermilab to assess progress.	16	75%	121	\$ 250,000
T-P.1-004	Difficulty in finding/retaining staff	10/1/2025	Monitor staffing plans vs actual staffing; start the recruiting of professional staff at least 4 months before needed hire data; start the recruiting of technician staff at least 1 month in advance. Stay abreast of other construction projects at ORNL and in the area as they may be a competitor when obtaining skilled trades from Knoxville Building and Trades. Establishment of BOA for staff augmentation	12	40%	120	\$ 1,000,000
T-P.1-007	SNS operating schedule changes delays project by 6 months	10/1/2025	Ensure a member of the PPU team is on the NScD scheduling committee to represent the PPU needs. Communicate PPU requirements well and often throughout the directorate. Ensure PPU priorities are NScD priorities.	12	40%	121	\$ 1,000,000
T-P.6-014	Construction competition for RTBT	9/30/2023	Communicate early with potential vendors to attract interest and to keep abreast of local market developments. Monitor other conventional facilities projects at ORNL and surrounding DOE facilities, e.g., Y-12. Consider the use of incentives for early completion, which may also serve to attract potential bidders.	12	80%	20	\$ 500,000
T-P.1-018	Critical SNS component failure delays PPU by at least 12 months or delays KPP demonstration	10/1/2025	Maintain good communication between PPU, SNS Operations, and NScD management team. Conduct periodic Vulnerability Workshops to assess vulnerabilities within the SNS neutron production systems. (recent workshop conducted March 11, 2021). PPU personnel participate in these workshops. Include identified mitigations in the SNS operations plans, including annual budget allocations.	10	20%	240	\$ 2,000,000
T-P.1-028	Standing Army Cost for Schedule Contingency	7/31/2028	PPU management will monitor progress and will seek to minimize early-finish delays.	10	25%	0	\$ 2,200,000

Major Risk Summary

Risk ID	Description	Expiration	Mitigation	Post - Mitigation Score	Probability	Schedule Impact (d)	Cost Impact
T-P.5-030	CMS is not capable of 2MW operations	5/31/2025	Biannual status reports on the health of the CMS, its outlook for 2MW operations, and activities to improve 2MW readiness are now provided from the CMS System Engineer to the FTS Systems Level 2 Manager. Notable issues or concerns by the L2 lead will be elevated to Project Leadership's attention.	10	30%	200	\$ -
T-P.1-016	Operations tasks required for PPU not complete when required	10/1/2025	Maintain good communication with RAD and NTD to minimize risk.	9	40%	120	\$ 500,000
T-P.3-020	Transmitter vendor delivery slips due to workload/competition	8/30/2022	Maintain good communication between PPU and L3Harris so that schedule challenges can be discovered early and mitigated. Perform periodic vendor visits to assess progress.	9	40%	120	\$ 50,000
T-P.1-015	Actual funding profile received by project does not match profile used for planning	10/1/2025	Maintain good communication with BES to make sure PPU funding needs are clearly understood. Promptly respond to requests for information from BES and congress regarding project funding needs. Ensure field work proposals and project data sheets are completed promptly and reflect project funding needs.	8	25%	160	\$ 2,000,000

P.02

SCL Systems

P.02 - Cost Performance Report – Format 1

June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE						AT COMPLETE			
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE				BAC	EAC	VAC
				SV	CV				SV	SPI	CV	CPI			
P.02 - SCL Systems	368	112	379	(256)	(267)	9,609	8,986	8,823	(623)	0.94	163	1.02	23,887	23,719	168
P.02.01 - Management and System Integration	29	29	18	0	10	927	927	857	0	1.00	70	1.08	1,122	1,052	70
P.02.01.01 - Management and System Integration -SCL Systems	29	29	18	0	10	927	927	857	0	1.00	70	1.08	1,122	1,052	70
P.02.02 - Cavities	(12)	(91)	20	(78)	(110)	1,711	1,179	1,313	(533)	0.69	(134)	0.90	2,474	2,615	(141)
P.02.02.01 - Management and System Integration	8	8	3	0	5	265	265	228	0	1.00	37	1.16	315	278	37
P.02.02.02 - Cavity Procurement	0	0	(0)	0	0	150	150	150	0	1.00	(0)	1.00	150	150	(0)
P.02.02.04 - Cavity Reprocessing	0	0	0	0	0	1	0	0	(1)	0.00	0		108	108	0
P.02.02.05 - Coupler Acquisition	55	0	16	(55)	(16)	831	670	776	(161)	0.81	(106)	0.86	846	952	(106)
P.02.02.07 - HTA Testing	0	0	1	0	(1)	328	29	33	(298)	0.09	(3)	0.90	328	338	(11)
P.02.02.08 - Coupler Waveguide Transition	(75)	(99)	1	(24)	(100)	137	64	126	(73)	0.47	(61)	0.51	727	788	(61)
P.02.03 - Cryomodule Integration (Partner Laboratory Scope)	330	148	320	(183)	(172)	5,519	5,389	5,253	(130)	0.98	136	1.03	14,186	14,050	136
P.02.03.01 - Partner Laboratory Component Development	330	148	320	(183)	(172)	5,519	5,389	5,253	(130)	0.98	136	1.03	14,186	14,050	136
P.02.04 - Cryogenics	3	3	0	0	3	70	70	35	0	1.00	36	2.03	826	791	36
P.02.04.01 - Management and System Integration	3	3	0	0	3	31	31	13	0	1.00	18	2.47	120	102	18
P.02.04.02 - Cryogenic Components	0	0	0	0	0	25	25	8	0	1.00	17	3.05	654	637	17
P.02.04.03 - Cryogenics System Testing and Development	0	0	0	0	0	14	14	14	0	1.00	0	1.00	52	52	0
P.02.05 - Utility Systems	6	10	4	5	6	116	122	89	6	1.05	33	1.37	1,022	977	46
P.02.05.01 - Management and System Integration	6	6	4	0	2	76	76	44	0	1.00	31	1.71	176	145	31
P.02.05.02 - Beamline Vacuum	0	1	0	1	1	5	7	5	1	1.27	1	1.27	185	184	1
P.02.05.03 - Insulating Vacuum System	0	4	0	4	4	35	39	35	5	1.13	5	1.13	611	593	17
P.02.05.04 - Water Systems	0	0	0	0	0	0	0	5	0		(5)	0.00	50	55	(5)
P.02.06 - System Integration	7	7	0	0	7	303	410	339	107	1.35	70	1.21	2,229	2,159	70
P.02.06.01 - Management and System Integration	7	7	0	0	7	204	204	181	0	1.00	23	1.13	410	387	23
P.02.06.02 - Completed Cryomodule Testing	0	0	0	0	0	0	0	0	0		0		763	763	0
P.02.06.03 - Cryomodule in Tunnel	0	0	0	0	0	0	0	0	0		0		641	641	0
P.02.06.04 - Cryomodule Testing in Tunnel	0	0	0	0	0	0	0	0	0		0		209	209	(0)
P.02.06.05 - Plasma Process MB Cryomodule in Tunnel	0	0	0	0	0	99	206	159	107	2.08	47	1.30	206	159	47
P.02.07 - SCL Controls	6	6	17	0	(11)	963	890	937	(73)	0.92	(47)	0.95	2,027	2,075	(47)
P.02.07.01 - Management and System Integration	6	6	17	0	(11)	226	226	326	0	1.00	(100)	0.69	390	490	(100)
P.02.07.02 - Linac Beamline Vacuum Controls	0	0	0	0	0	151	114	98	(38)	0.75	16	1.16	223	208	16
P.02.07.03 - Linac Insulating Vacuum System Controls	0	0	0	0	(0)	253	229	192	(24)	0.91	37	1.19	340	303	37
P.02.07.04 - Cryomodule Controls	0	0	0	0	0	333	321	321	(12)	0.97	0	1.00	1,074	1,074	(0)

P.02.02.05.05 - Variance Explanation

CONTRACT PERFORMANCE REPORT								FORM APPROVED	
FORMAT 5 - Explanations and Problem Analysis								OMB No. 0704-0188	
1. CONTRACTOR		2. CONTRACT		3. PROGRAM		4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade		a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3		b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION									
P.02.02.05.05 / ORNL - Testing - Coupler Acquisition									
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI
Current:	55	0	16	-55	-100%	-16	-	0.00	0.00
Cumulative:	821	660	766	-161	-20%	-106	-16%	0.80	0.86
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC			
At Complete:	836	942	-106	-13%	2.50	1.00			
<p>Explanation of Variance/Description of Problem:</p> <p>RF Conditioning of couplers has slowed due to the availability of the RF test stand and the recovery of hardware from Jlab due to slow string assembly.</p> <p>Impact:</p> <p>There is no impact on the cryomodule string assembly at Jlab. Jlab currently has 10 conditioned RF couplers. RF coupler testing continues with delivery of couplers ahead of the Jlab string assembly schedule. Plans are to deliver 4 couplers to Jlab in July.</p> <p>Corrective Action:</p> <p>None</p>									
Prepared by: Wayne Steffey		Date: 7/15/2021		Approved by (PM): Mark Champion			Date: 2021.07.21 10:03:42 -04'00'		
Reviewed by (CAM): John Mammosser		Date: 2021.07.20 16:55:58 -04'00'		Digitally signed by John Mammosser Date: 2021.07.20 16:55:58 -04'00'			Digitally signed by Mark Champion Date: 2021.07.21 10:03:42 -04'00'		

P.02.02.07.05 - Variance Explanation

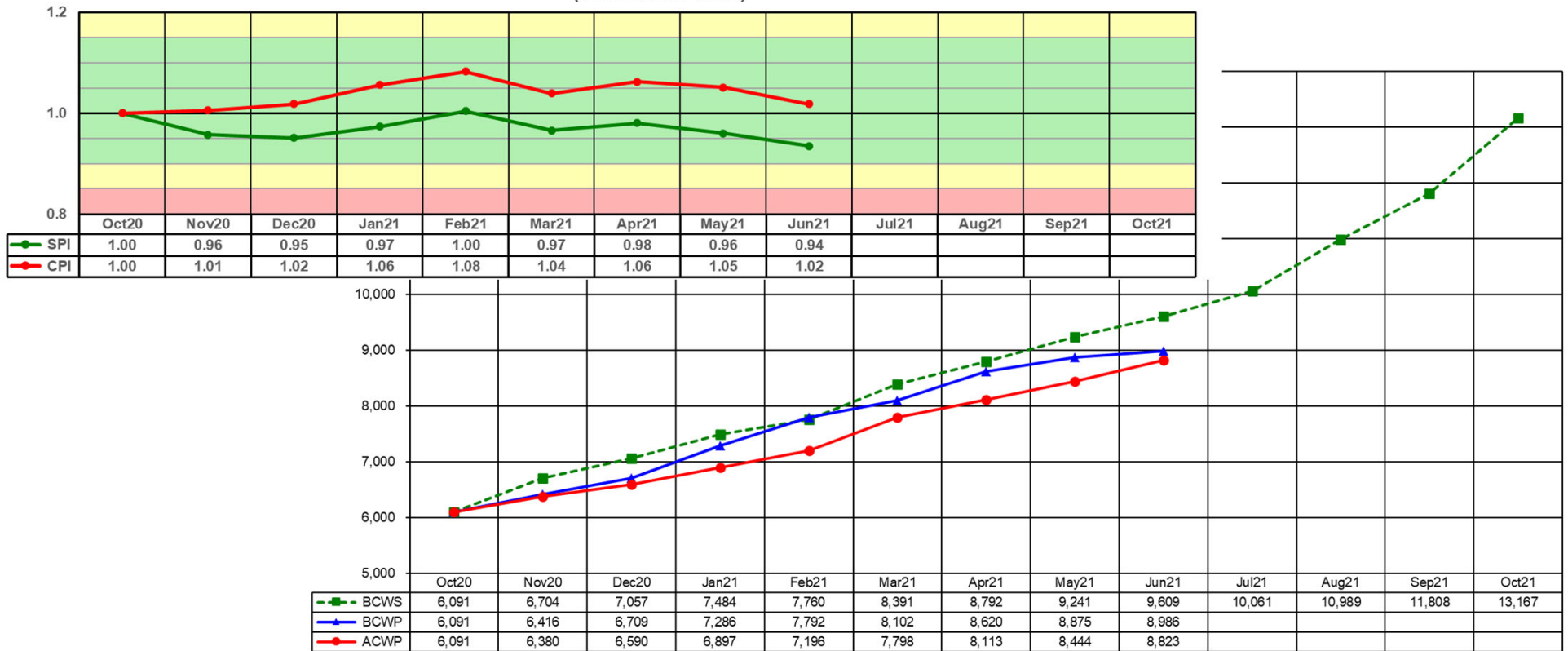
CONTRACT PERFORMANCE REPORT								FORM APPROVED	
FORMAT 5 - Explanations and Problem Analysis								OMB No. 0704-0188	
1. CONTRACTOR		2. CONTRACT		3. PROGRAM		4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade		a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3		b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION									
P.02.02.07.05 / ORNL - Testing - HTA Testing									
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI
Current:	0	0	1	0	-	-1	-	-	0.00
Cumulative:	298	0	3	-298	-100%	-3	-	0.00	0.00
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC			
At Complete:	298	309	-11	-4%	1.01	0.98			
<p>Explanation of Variance/Description of Problem:</p> <p>The cavity was delivered late from Jlab but was received and work started in July. Preparation is underway for inserting into the cryostat. Plans are to perform the RF testing by the end of August.</p> <p>Impact:</p> <p>None. Does not impact downstream activities. The variance will resolve itself upon completion of testing.</p> <p>Corrective Action:</p> <p>None.</p>									
Prepared by: Wayne Steffey		Date: 7/15/2021		Approved by (PM): Mark Champion			Date: 2021.07.21 10:04:37 -0400		
Reviewed by (CAM): John Mammosser		Date: 2021.07.20 16:53:59 -0400		Digitally signed by John Mammosser Date: 2021.07.20 16:53:59 -0400			Digitally signed by Mark Champion Date: 2021.07.21 10:04:37 -0400		

P.02.06.05.04 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED		
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188		
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD		
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade			a. FROM (YYYYMMDD) 01-Jun-21		
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3			b. TO (YYYYMMDD) 30-Jun-21		
5. EVALUATION									
P.02.06.05.04 / ORNL - Installation - Plasma Process MB Cryomodule in Tunnel									
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI
Current:	0	0	0	0	-	0	-	-	-
Cumulative:	99	206	159	107	108%	47	23%	2.08	1.30
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC			
At Complete:	298	309	-11	-4%	0.66	0.61			
Explanation of Variance/Description of Problem:									
All planned plasma processing on medium beta cryomodules was completed ahead of schedule due to the early availability of cryomodules in the linac maintenance program.									
Impact:									
None.									
Corrective Action:									
None.									
Prepared by:		Date:							
Wayne Steffey		7/15/2021							
Reviewed by (CAM):		Date:		Approved by (PM):		Date:			
John Mammosser				Mark Champion					
Digitally signed by John Mammosser Date: 2021.07.20 16:59:22 -0400				Digitally signed by Mark Champion Date: 2021.07.21 10:02:50 -0400					

P.02 - Performance

PPU
P.02 Super Conducting Linac (SCL) Systems
Cost/Schedule Performance Index Chart
(Cumulative Data)



P.02 - DOE FY21 Annual Work Plan Milestones

P.2 SCL Systems	Planned Finish	Actual Finish	Current Forecast	Owner
Completion of Cryomodule Shipping Tests (JLab)	20-Jun-21	23-Feb-21		Matt Howell
Award Contract for Inner Extension, Outer Extension, and Waveguide Cover	01-Aug-21	27-Apr-21		Matt Howell

P.02 – Risks

Near Term Risks

	Risk ID and Description	Trigger	Expiration	Potential Cost Impact	Potential Schedule Impact
1	T-P.2-020 - Partner Laboratory Priorities	4/1/2019	1/31/2023	150K	90d
2	T-P.2-040 - Cryostat component (spaceframe) is dimensionally out of tolerance	6/1/2021	3/1/2022	25K	60d
3	T-P.2-043 - Cryomodule vacuum loss during testing or commissioning	6/1/2021	4/1/2024	750K	121d
4	T-P.2-041 - CM is damaged during movement or testing	6/1/2021	4/1/2024	100K	10d
5	T-P.2-014 - First 2 Cryomodule Delivery Is Late	6/11/2021	5/15/2022	25K	60d
6	T-P.2-013 - Cryomodule Shipment	6/11/2021	1/31/2023	200K	60d
7	T-P.2-017 - Second delivery of 3 Cryomodules Is Late	11/3/2021	10/1/2022	25K	60d
8	T-P.2-028 - Installation of Cryomodules	12/20/2021	12/1/2022	25K	8d

Emerging New Risks (describe risk and potential impacts)

P.02 – Issues Needing Attention

	Issue	Need	Need Date	Responsible	Current Status
1	Tanked cavities were exhibiting field emission	Develop process to reliably qualify tanked cavities	7/31/2021	Ed Daly	Updated process. SNS personnel observed processing and assembly steps. Two tanked cavities have qualified consecutively.
2					
3					
4					

P.02 – Key Activities Next 90 Days

	Key Activity	Responsibility	Comments	Status	Time Frame
1	Integrate cold mass 1 with space frame and thermal shield	Ed Daly		String 1 in cold mass assembly area	
2	Build cold mass 2	Ed Daly		4 qualified tanked cavities ready for assembly	
3	Get quotations for 8 th cryomodule components	Ed Daly	Some quotes are coming back higher than estimated	Several quotes are out for bid	
4	Process and deliver more couplers	John Mammosser		Scheduling RF availability for processing	
5					

P.03

RF Systems

P.03 - Cost Performance Report – Format 1 (Pg. 1)

June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE							AT COMPLETE		
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE				BAC	EAC	VAC
				SV	CV				SV	SPI	CV	CPI			
P.03 - RF Systems	664	720	480	56	240	19,844	20,317	20,012	472	1.02	304	1.02	44,061	44,030	31
P.03.01 - Management and System Integration	10	10	11	0	(1)	375	375	369	0	1.00	5	1.01	534	529	5
P.03.01.01 - Management and System Integration - RF Systems	10	10	11	0	(1)	375	375	369	0	1.00	5	1.01	534	529	5
P.03.02 - SCL HPRF	1	0	3	(1)	(3)	4,919	4,919	4,892	(0)	1.00	27	1.01	12,965	13,072	(107)
P.03.02.01 - Management and System Integration	0	0	0	0	0	44	44	44	0	1.00	0	1.00	81	81	(0)
P.03.02.02 - Transmitters (SCL)	0	0	0	0	0	4,860	4,860	4,841	0	1.00	19	1.00	6,267	6,248	19
P.03.02.03 - Klystrons (SCL)	0	0	1	0	(1)	15	15	5	0	1.00	9	2.70	6,080	6,038	41
P.03.02.05 - Circulators (SCL)	1	0	2	(1)	(2)	1	1	2	(0)	1.00	(1)	0.48	537	705	(167)
P.03.03 - NCL HPRF	175	0	1	(175)	(1)	1,297	1,097	1,084	(200)	0.85	14	1.01	4,985	5,000	(15)
P.03.03.01 - Management and System Integration	0	0	0	0	0	15	15	15	0	1.00	0	1.00	15	15	0
P.03.03.02 - Transmitters (NCL)	0	0	0	0	0	0	0	0	0	1.00	0	1.00	209	210	(1)
P.03.03.03 - Klystrons (NCL)	175	0	1	(175)	(1)	1,203	1,003	990	(200)	0.83	14	1.01	4,682	4,696	(14)
P.03.03.04 - Circulators (NCL)	0	0	0	0	0	57	57	57	0	1.00	0	1.00	57	57	0
P.03.03.05 - Glycol/Water Loads (NCL)	0	0	0	0	0	22	22	22	0	1.00	0	1.00	22	22	0
P.03.04 - LLRF	323	86	70	(237)	16	4,027	4,661	4,560	635	1.16	101	1.02	5,947	5,873	74
P.03.04.01 - Management and System Integration	7	7	6	0	1	156	156	127	0	1.00	29	1.23	335	306	29
P.03.04.02 - LLRF System	260	70	61	(190)	10	3,545	3,799	3,818	254	1.07	(19)	0.99	4,840	4,887	(47)
P.03.04.03 - Arc Detectors	25	5	3	(20)	3	88	461	425	373	5.25	36	1.08	487	451	36
P.03.04.04 - Reference Line	31	4	1	(27)	3	238	246	189	7	1.03	56	1.30	285	229	56
P.03.05 - Existing Linac Modulators	39	134	32	96	102	3,155	3,185	3,235	30	1.01	(50)	0.98	4,869	4,957	(87)
P.03.05.01 - Management and System Integration	5	5	4	0	1	172	172	168	0	1.00	3	1.02	277	274	3
P.03.05.02 - Modulator system	0	0	0	0	0	29	29	29	0	1.00	0	1.00	29	29	0
P.03.05.04 - Modulator System Test Article and Development Activities	0	0	0	0	0	455	455	455	0	1.00	0	1.00	455	455	0
P.03.05.05 - Warm Linac Test HVCM	0	0	0	0	0	1,405	1,405	1,405	0	1.00	0	1.00	1,405	1,405	0
P.03.05.06 - Upgrade RFQ/DTL Modulators	33	129	28	96	101	1,094	1,124	1,178	30	1.03	(54)	0.95	2,703	2,793	(91)

P.03 - Cost Performance Report – Format 1 (Pg. 2)

June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE							AT COMPLETE		
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE				BAC	EAC	VAC
				SV	CV				SV	SPI	CV	CPI			
P.03.06 - New Linac Modulators	39	92	46	53	46	2,686	2,634	2,492	(52)	0.98	142	1.06	5,322	5,225	97
P.03.06.01 - Management and System Integration	5	5	6	0	(1)	120	120	100	0	1.00	20	1.20	236	216	20
P.03.06.02 - Transformer	4	0	5	(4)	(5)	364	361	357	(3)	0.99	4	1.01	1,320	1,297	23
P.03.06.03 - SCR System	0	0	0	0	0	30	30	19	0	1.00	10	1.53	94	84	10
P.03.06.04 - Modulator System	7	11	1	5	11	564	556	493	(9)	0.98	62	1.13	1,812	1,813	(2)
P.03.06.05 - Modulator Control System	24	76	35	52	41	942	901	856	(41)	0.96	45	1.05	986	941	45
P.03.06.06 - Integrated System	0	0	0	0	0	15	15	15	0	1.00	0	1.00	224	224	0
P.03.06.07 - Modulator Test Article & Testing	0	0	0	0	0	650	650	650	0	1.00	0	1.00	650	650	0
P.03.07 - Utilities	39	347	302	308	44	2,351	2,430	2,444	79	1.03	(14)	0.99	7,728	7,742	(14)
P.03.07.01 - Management and System Integration	52	52	61	0	(8)	736	736	740	0	1.00	(4)	0.99	1,569	1,573	(4)
P.03.07.02 - Water Utilities, New Cold Linac SCL RF Cooling System (KL-06)	5	40	(9)	35	49	438	422	424	(16)	0.96	(2)	1.00	1,158	1,159	(2)
P.03.07.03 - Water Utilities, Modify Existing RFQ/DTL RF Cooling System (KL-04)	1	4	1	2	2	126	94	93	(32)	0.75	2	1.02	631	630	1
P.03.07.07 - Electrical	(20)	250	249	270	1	1,050	1,177	1,186	127	1.12	(10)	0.99	4,370	4,379	(10)
P.03.08 - RF Controls	22	12	13	(10)	(1)	577	565	513	(12)	0.98	52	1.10	982	930	51
P.03.08.01 - Management and System Integration	4	4	2	0	2	148	148	143	0	1.00	5	1.04	224	219	5
P.03.08.02 - Linac RF Controls	18	8	11	(10)	(2)	426	414	368	(12)	0.97	46	1.13	750	704	46
P.03.08.03 - Linac Water System Controls	0	0	0	0	0	2	2	2	0	1.00	0	1.00	8	8	0
P.03.09 - RF/SCL Global Controls	16	39	2	23	37	458	450	423	(8)	0.98	27	1.06	729	702	26
P.03.09.01 - Management and System Integration	5	5	4	0	2	169	169	144	0	1.00	25	1.17	246	221	25
P.03.09.02 - Linac/SCL Timing/MPS	0	2	(2)	2	3	38	36	41	(2)	0.96	(5)	0.88	90	94	(5)
P.03.09.03 - Linac/SCL Protection System	10	0	0	(10)	(0)	190	163	144	(27)	0.86	19	1.14	251	233	18
P.03.09.04 - Linac/SCL Networking and Computing Infrastructure	1	32	0	31	32	61	82	94	21	1.34	(12)	0.87	141	153	(12)

P.03.04.02.03 - Variance Explanation

CONTRACT PERFORMANCE REPORT								FORM APPROVED	
FORMAT 5 - Explanations and Problem Analysis								OMB No. 0704-0188	
1. CONTRACTOR		2. CONTRACT		3. PROGRAM		4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade		a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3		b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION									
P.03.04.02.03 / ORNL - Procure/Fab - LLRF System									
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI
Current:	213	17	21	-197	-92%	-5	-29%	0.08	0.77
Cumulative:	399	620	605	222	56%	15	2%	1.56	1.03
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC			
At Complete:	1,235	1,245	-10	-1%	0.98	0.96			
<p>Explanation of Variance/Description of Problem:</p> <p>This positive schedule variance is due to early receipt of all Frequency Conversion Chassis (FrCC) components (\$88K), as well as early partial receipts of both LLRF Platform components (\$144K). These positive variances are somewhat offset by later than planned receipt of some picoammeter components (-\$10K).</p> <p>Impact:</p> <p>No negative impact is expected due to early full and early partial shipments being received. The early receipt of LLRF platform components does not mitigate schedule pressure because we need to receive at least portions of all components to allow for testing.</p> <p>Corrective Action:</p> <p>None, this positive variance will go away as the scheduled receipt dates of these items occurs. The largest part, LLRF platform components, will be in August 2021 and the remaining FrCCs will be in July.</p>									
Prepared by: Wayne Steffey		Date: 7/15/2021		Approved by (PM): Mark Champion			Date: 2021.07.16 13:54:31 -0400'		
Reviewed by (CAM): Mark Crofford		Date:		Digitally signed by Mark Crofford Date: 2021.07.16 13:04:53 -0400'			Digitally signed by Mark Champion Date: 2021.07.16 13:54:31 -0400'		

P.03.04.03.03 - Variance Explanation

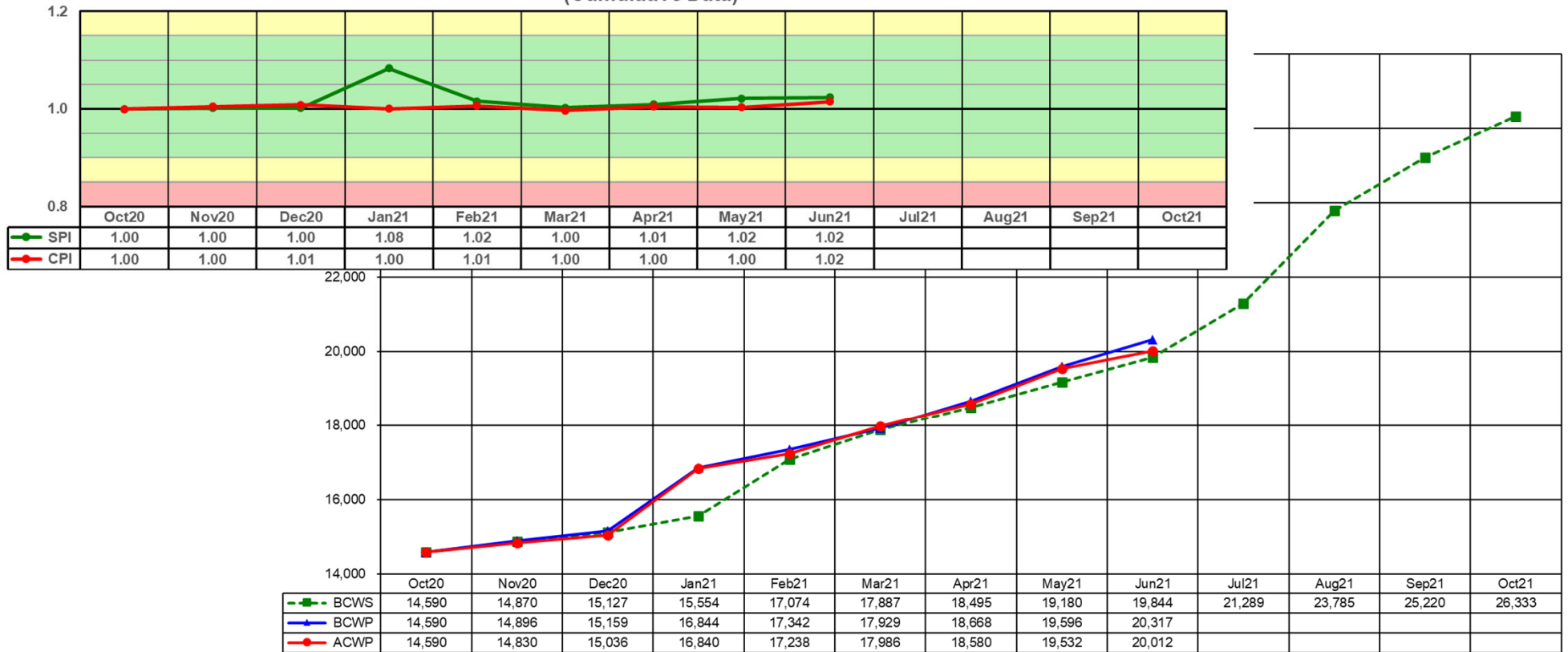
CONTRACT PERFORMANCE REPORT								FORM APPROVED	
FORMAT 5 - Explanations and Problem Analysis								OMB No. 0704-0188	
1. CONTRACTOR		2. CONTRACT		3. PROGRAM		4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade		a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3		b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION									
P.03.04.03.03 / ORNL - Procure/Fab - Arc Detectors									
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI
Current:	25	5	3	-20	-79%	3	47%	0.21	1.88
Cumulative:	47	420	385	373	796%	36	8%	8.96	1.09
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC			
At Complete:	421	386	36	8%	0.04	1.00			
<p>Explanation of Variance/Description of Problem:</p> <p>This positive schedule variance is due to early receipt of all Arc detectors (~\$373K).</p> <p>Impact:</p> <p>No impact due to early receipt of Arc detectors since installation waits on racks to be installed.</p> <p>Corrective Action:</p> <p>None, this positive variance will go away as the scheduled receipt dates of these items occurs. The Arc detectors are scheduled for receipt in August 2021.</p>									
Prepared by: Wayne Steffey		Date: 7/15/2021		Approved by (PM): Mark Champion			Date: 2021.07.16 13:53:36 -0400		
Reviewed by (CAM): Mark Crofford		Date: _____		Digitally signed by Mark Champion Date: 2021.07.16 13:53:36 -0400			Digitally signed by Mark Crofford Date: 2021.07.16 13:04:05 -0400		

P.03.07.07.03 - Variance Explanation

CONTRACT PERFORMANCE REPORT								FORM APPROVED	
FORMAT 5 - Explanations and Problem Analysis								OMB No. 0704-0188	
1. CONTRACTOR		2. CONTRACT		3. PROGRAM		4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade		a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3		b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION									
P.03.07.07.03 / ORNL - Procure/Fab - Electrical									
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI
Current:	-58	174	183	232	-	-9	-5%	-	0.95
Cumulative:	322	429	453	107	33%	-24	-6%	1.33	0.95
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC			
At Complete:	1,249	1,273	-24	-2%	1.03	1.00			
<p>Explanation of Variance/Description of Problem:</p> <p>The positive schedule variance is mostly due to early completion of the first milestone of the cryo racks procurement "MS#1 - Verification of Material Procurement" (+\$114K) and early receipt of batch 4 cables and connectors (+\$50K). These positive variances are offset slightly by later than planned receipt of Batch 4 cables (-\$57K).</p> <p>Impact:</p> <p>No significant impacts are expected from any of the above mentioned items.</p> <p>Corrective Action:</p> <p>None, the positive variance will go away once the early items occur in the baseline schedule. The largest one, MS#1, will occur in July.</p>									
Prepared by: Wayne Steffey		Date: 7/15/2021		Approved by (PM): Mark Champion			Date: 2021.07.16 13:56:00 -04'00'		
Reviewed by (CAM): Greg Norman		Date: 2021.07.16 11:41:01		Digitally signed by Mark Champion Date: 2021.07.16 13:56:00 -04'00'			Digitally signed by Greg Norman Date: 2021.07.16 11:41:01 -04'00'		

P.03 - Performance

PPU
P.03 RF Systems
Cost/Schedule Performance Index Chart
(Cumulative Data)



P.03 - DOE FY21 Annual Work Plan Milestones

P.3 RF Systems	Planned Finish	Actual Finish	Current Forecast	Owner
Award of Remaining HVCM Transformers Complete	12-Apr-21	18-Dec-20		John Moss
Receipt of 3MW Klystron Test Article	03-Aug-21		16-Sep-21*	John Moss
Fabrication of LLRF Platform Complete	15-Sep-21		29-Oct-21**	John Moss

**3MW klystron schedule delays are being caused by bottle-necking at the CPI cold test facility, a dynamic fabrication load at the factory, and a leak found in the vacuum oven at the start of the klystron processing. CPI has installed parallel cold testing lines to alleviate the bottleneck and repaired the vacuum leak. The PPU RF team is actively working with CPI to recover the lost time and will make a factory visit at the end of July during the 3MW factory acceptance testing.*

***The LLRF platform is late due to the significant increase in lead time for the electronic components needed for the printed circuit boards. The lead times have increased from approximately 16 weeks to 52. These longer lead times are being experienced across the industry and are attributed to lagging COVID induced delays.*

P.03 – Risks

Near Term Risks

	Risk ID and Description	Trigger	Expiration	Potential Cost Impact	Potential Schedule Impact
1	T-P.3-008 – Replacement LLRF control system is late	8/1/2020	12/31/2021	125K	21d
2	T-P.3-033 - Onsite klystron testing reveals that it does not meet specs	8/1/2020	12/31/2022	50K	120d
3	T-P.3-030 - Installation does not match 3D model	8/25/2020	9/1/2022	50K	20d
4	T-P.3-012 - Controls Software Requirements	11/1/2020	7/31/2021	50K	20d
5	T-P.3-025 - Delivery of boards delayed due to unavailable ceramic capacitors	11/1/2020	10/1/2021	50K	80d
6	T-P.3-031 - Availability of DB is compromised	1/1/2021	10/1/2021	350K	80d
7	T-P.3-034 - Prototype results require redesign of subsystem(s) for upgrades of the existing linac modulators	2/1/2021	7/15/2021	100K	120d
8	T-P.3-035 - Circulator Performance	2/26/2021	6/30/2021	700K	60d

P.03 – Risks Cont.

Emerging New Risks (describe risk and potential impacts)

1. Late SCL klystron deliveries due to factory workload causes delays to the installation schedule.

P.03 – Issues Needing Attention

	Issue	Need	Need Date	Responsible	Current Status
1	Continued delivery delays of SCL klystrons and 3MW first article	Continued schedule refinement.	7/15/2021	CPI/SNS	Received schedule update and accrued first milestone. No change in scheduled over the last 6 weeks.
2	Transmitter late deliveries	Continued schedule refinement.	7/15/2021	L3 Harris/SNS	No change in the last 6 weeks.
3	Circulator production delayed	Complete high-power testing	8/30/2021	MT/SNS	Circulator returned for re-tuning.
4	LLRF component deliveries delayed	Continued communication with vendor	10/1/2021	VadaTech/SNS	Latest information indicates late November delivery
5	RFQ/DTL HVCM prototype tank testing	Study anomalous test results (IGBT currents affecting output pulse)	10/1/2021	SNS	Moving tank to HEBT for testing

P.03 – Key Activities Next 90 Days

	Key Activity	Responsibility	Comments	Status	Time Frame
1	FAT of 3MW klystron (P333D250)	Moss	Delayed from original schedule ~10 week	Incomplete	August 2021
2	Site testing of FA circulator	Moss	Underway	Incomplete	July 2021
3	Receipt of LLRF platform components	Crofford	DOE milestone scheduled 09/2021	Incomplete	November 2021
4	SCL HVCM Spares component payment milestones	Anderson	Due 08/30/2021 from AOPT	Incomplete	August 2021
5					


P.04

Ring Systems

P.04 - Cost Performance Report – Format 1

June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE							AT COMPLETE		
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE				BAC	EAC	VAC
				SV	CV				SV	SPI	CV	CPI			
P.04 - Ring Systems	552	233	370	(319)	(136)	10,511	9,440	10,062	(1,072)	0.90	(623)	0.94	20,551	21,346	(795)
P.04.01 - Management and System Integration	10	10	13	0	(4)	566	566	597	0	1.00	(31)	0.95	1,176	1,206	(31)
P.04.01.01 - Management and System Integration - Ring Systems	10	10	13	0	(4)	503	503	534	0	1.00	(31)	0.94	1,113	1,144	(31)
P.04.01.02 - Design	0	0	0	0	0	63	63	63	0	1.00	0	1.00	63	63	0
P.04.02 - Injection Region	169	112	114	(57)	(2)	3,296	3,193	3,351	(104)	0.97	(158)	0.95	7,816	8,125	(309)
P.04.02.01 - Management and System Integration	4	4	3	0	2	129	129	118	0	1.00	11	1.09	296	285	11
P.04.02.02 - Injection Region Magnets	71	37	48	(34)	(11)	2,240	2,195	2,426	(45)	0.98	(231)	0.90	5,386	5,621	(235)
P.04.02.03 - Power Supplies	4	4	1	(0)	3	296	325	297	29	1.10	28	1.09	406	378	28
P.04.02.04 - Vacuum Systems	46	0	58	(46)	(58)	578	477	491	(101)	0.82	(14)	0.97	1,323	1,348	(25)
P.04.02.05 - Primary and Secondary Stripper Foil Mechanisms	43	67	5	24	62	52	67	19	14	1.27	48	3.60	405	493	(88)
P.04.03 - Injection Dump	122	38	33	(84)	6	1,104	939	935	(165)	0.85	4	1.00	1,421	1,431	(11)
P.04.03.01 - Management and System Integration	4	4	4	0	(0)	65	65	60	0	1.00	6	1.09	116	111	6
P.04.03.02 - Injection Dump Imaging System	118	34	29	(84)	6	873	708	709	(165)	0.81	(1)	1.00	1,138	1,154	(16)
P.04.03.03 - Injection Dump Engineering Review	0	0	0	0	0	166	166	167	0	1.00	(0)	1.00	166	167	(0)
P.04.04 - Extraction Region	2	2	10	(0)	(8)	1,254	1,247	1,299	(7)	0.99	(52)	0.96	2,217	2,269	(52)
P.04.04.01 - Management and System Integration	2	2	3	0	(1)	114	114	123	0	1.00	(8)	0.93	189	197	(8)
P.04.04.02 - Extraction Region Magnets	0	0	1	0	(1)	235	228	229	(7)	0.97	(1)	0.99	305	306	(1)
P.04.04.03 - Power Supplies	0	0	6	(0)	(6)	905	905	947	0	1.00	(42)	0.96	1,723	1,765	(42)
P.04.05 - Utilities	3	3	2	0	2	449	448	423	(1)	1.00	25	1.06	1,767	1,742	25
P.04.05.01 - Management and System Integration	3	3	1	0	2	62	62	49	0	1.00	13	1.26	111	98	13
P.04.05.02 - Main Ring Dipole XFMR Upgrade	0	0	1	0	(1)	13	12	8	(1)	0.90	4	1.45	63	60	4
P.04.05.03 - RN-03 DIW Cooling Upgrade	0	0	0	0	0	332	332	332	0	1.00	0	1.00	1,278	1,278	0
P.04.05.04 - PFN Room HVAC	0	0	0	0	0	42	42	33	0	1.00	9	1.27	315	306	9
P.04.06 - Ring Control Systems	245	67	198	(178)	(131)	3,757	2,962	3,380	(795)	0.79	(418)	0.88	5,883	6,308	(425)
P.04.06.01 - Management and System Integration	7	7	1	0	6	99	99	60	0	1.00	39	1.64	250	212	39
P.04.06.02 - Beam Power Limit System	217	54	184	(163)	(130)	3,488	2,715	3,170	(773)	0.78	(455)	0.86	5,089	5,552	(463)
P.04.06.03 - Personnel Protection System	20	6	13	(14)	(7)	133	114	115	(19)	0.86	(2)	0.99	340	340	(0)
P.04.06.04 - Ring Injection Section Controls	1	0	0	(1)	0	37	34	34	(3)	0.92	0	1.00	180	180	0
P.04.06.05 - Ring Extraction Section Controls	0	0	0	0	0	0	0	0	0	0	0	0	23	23	0
P.04.07 - RTBT Stub	0	0	0	0	0	35	35	35	0	1.00	0	1.00	165	165	0
P.04.07.02 - RTBT Stub Temporary Shielding	0	0	0	0	0	1	1	1	0	1.00	0	1.00	131	131	0
P.04.07.03 - RTBT Stub Earth Berm Shielding	0	0	0	0	0	34	34	34	0	1.00	0	1.00	34	34	0
P.04.08 - Accelerator Physics	2	2	1	0	1	49	49	42	0	1.00	7	1.16	107	100	7
P.04.08.01 - Accelerator Physics	2	2	1	0	1	49	49	42	0	1.00	7	1.16	107	100	7

P.04.02.03.04 - Variance Explanation

CONTRACT PERFORMANCE REPORT								FORM APPROVED	
FORMAT 5 - Explanations and Problem Analysis								OMB No. 0704-0188	
1. CONTRACTOR		2. CONTRACT		3. PROGRAM		4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade		a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3		b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION									
P.04.02.03.04 / ORNL - Installation - Power Supplies									
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI
Current:	0	0	0	0	-	0	-	-	-
Cumulative:	0	28	3	28	-	26	91%	-	10.73
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC			
At Complete:	55	29	26	47%	0.51	1.00			
<p>Explanation of Variance/Description of Problem:</p> <p>The Injection Kicker Power Supply Installation was performed early to take advantage of operational resource availability during the FY21 winter outage.</p> <p>Impact:</p> <p>There is no PPU impact. However, early installation of the Injection Kicker Power Supply frees up resources during the Winter FY22A outage for operational (non-PPU) tasks.</p> <p>Corrective Action:</p> <p>None required</p>									
Prepared by: Wayne Steffey		Date: 7/15/2021		Approved by (PM): Mark Champion			Date:		
Reviewed by (CAM): 		Date: Digitally signed by Robert Saethre Date: 2021.07.16 14:59:44 -04'00'		Date: Digitally signed by Mark Champion Date: 2021.07.16 15:26:01 -04'00'					

P.04.02.04.02 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED			
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188			
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade			a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3			b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION										
P.04.02.04.02 / ORNL - Design - Vacuum Systems										
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI	
Current:	46	0	58	-46	-100%	-58	-	0.00	0.00	
Cumulative:	578	477	491	-101	-18%	-14	-3%	0.82	0.97	
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC				
At Complete:	681	696	-16	-2%	1.07	0.99				
Explanation of Variance/Description of Problem:										
The Vacuum Chambers design is behind schedule due to the loss of two key resources (one to extended medical leave and one to attrition).										
Impact:										
The ability to quickly bring in an experienced subcontractor has lessened the impact. It is expected that the overall design and subsequent procurement activities will be in line with the current working schedule.										
Corrective Action:										
A subcontractor with relevant experience has been added to the team to help with design and analysis activities. The to-go schedule and estimate is under review and a PCR will be processed in August to adjust resources and schedule.										
Prepared by:		Date:								
Wayne Steffey		7/15/2021								
Reviewed by (CAM):			Date:		Approved by (PM):		Date:			
Charlotte Barbier			Date: 2021.07.19 10:56:51 -04'00'		Mark Champion		Date: 2021.07.19 11:11:06 -04'00'			
Digitally signed by Charlotte Barbier					Digitally signed by Mark Champion					

P.04.03.02.03 - Variance Explanation

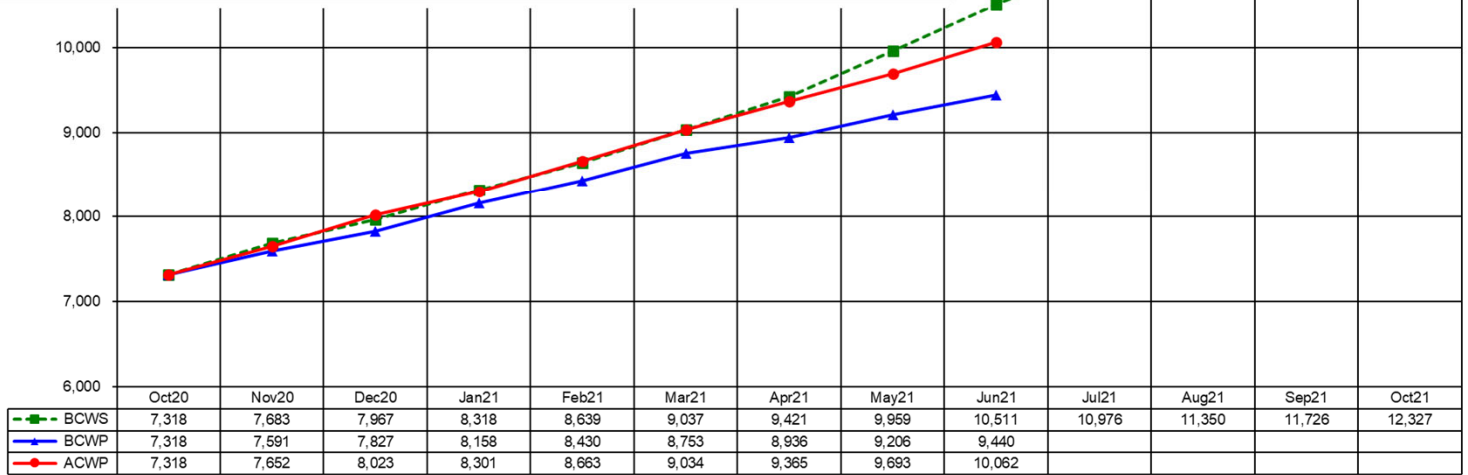
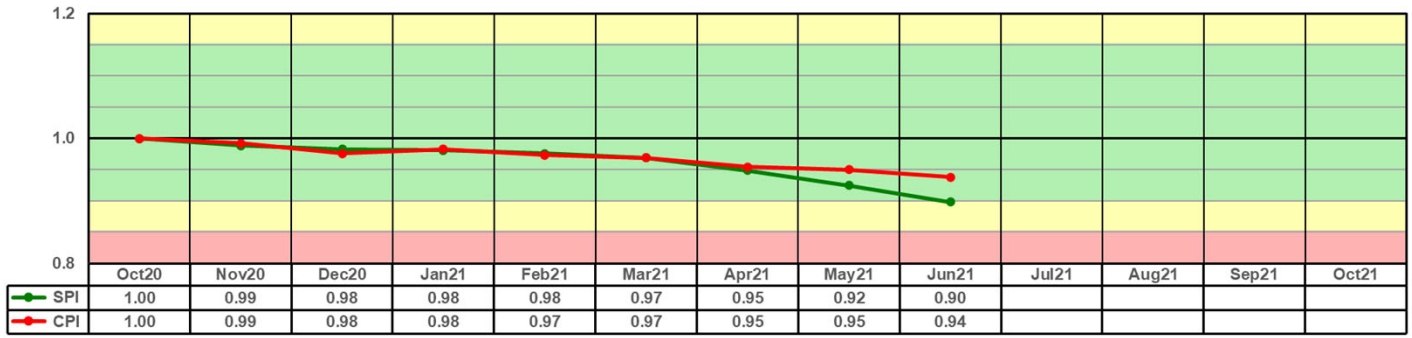
CONTRACT PERFORMANCE REPORT							FORM APPROVED			
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188			
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade			a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3			b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION										
P.04.03.02.03 / ORNL - Procure/Fab - Injection Dump Imaging System										
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI	
Current:	100	1	-1	-99	-99%	2	157%	0.01	-	
Cumulative:	183	41	44	-142	-78%	-4	-9%	0.22	0.92	
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC				
At Complete:	300	317	-17	-6%	1.01	0.95				
Explanation of Variance/Description of Problem:										
Fabrication and delivery of the Injection Dump window assembly and spare flange weldment has been delayed. The RID window assemblies were initially delayed when Keller's spin-forming subcontractor took an additional three weeks complete the domed window pieces and the associated masks used to apply the luminescent coating and create fiducials. When the window pieces were received at Keller one of the coordinate measuring machines went down during incoming receipt inspection. Shipment for coating was delayed by another three weeks.										
Impact:										
None. The windows have been coated by Stonybrook, returned to Keller and final fabrication of the window assemblies is underway. The current forecast for receipt is late August 2021. The Injection Dump Imaging System will be installed during the FY22B outage (start date 21 Mar 22).										
Corrective Action:										
None required										
Prepared by: Wayne Steffey			Date: 7/15/2021							
Reviewed by (CAM):				Date:			Approved by (PM):		Date:	
Charlotte Barbier				Digitally signed by Charlotte Barbier Date: 2021.07.19 09:25:55 -0400'			Mark Champion		Digitally signed by Mark Champion Date: 2021.07.19 11:12:40 -0400'	

P.04.06.02.02 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED			
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188			
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade			a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3			b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION										
P.04.06.02.02 / ORNL - Design - Beam Power Limit System										
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI	
Current:	196	43	184	-153	-78%	-141	-323%	0.22	0.24	
Cumulative:	3,468	2,690	3,170	-778	-22%	-480	-18%	0.78	0.85	
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC				
At Complete:	4,073	4,566	-493	-12%	1.53	0.99				
Explanation of Variance/Description of Problem:										
<p>The Beam Power Limit System (BPLS) scope was not identified as part of the original project scope. When the need for this system was realized, the cost and schedule was developed quickly. It became apparent that in some cases the necessary level of schedule detail and some required elements were not included in the plan at that time. Additionally, in order to address comments and recommendations from the BPLS Preliminary Design Review, the plan for the digital portion of the design was reworked, delaying planned activities.</p>										
Impact:										
<p>To meet the installation schedule, work proceeded on in-scope tasks that are not currently detailed in the baseline schedule (e.g., design review documents baselined at a summary level). These are incurring cost with no earned value. In addition, the PDR-related design changes are understood and have been communicated to the review committee with positive feedback. While the re-design activity has caused a schedule delay, the new design is simplified so the meeting the original scheduled installation dates is still possible.</p>										
Corrective Action:										
<p>The addition of schedule detail and the corresponding estimates to ensure a robust schedule is in process. A to-go forecast will be finalized in July and a PCR will be processed so the baseline is at a sufficient level of detail to effectively manage the BPLS scope.</p>										
Prepared by:		Date:								
Wayne Steffey		7/15/2021								
Reviewed by (CAM):		Date:		Approved by (PM):			Date:			
White, Karen S.		Digitally signed by White, Karen S. Date: 2021.07.19 17:57:54 -04'00'		Mark Champion			Digitally signed by Mark Champion Date: 2021.07.20 13:21:59 -04'00'			

P.04 - Performance

PPU
P.04 Ring Systems
Cost/Schedule Performance Index Chart
(Cumulative Data)



P.04 - DOE FY21 Annual Work Plan Milestones

P.4 Ring Systems	Planned Finish	Actual Finish	Current Forecast	Owner
Award Contract for Fabrication of Chicane 2/3 (and Spare), Injection Dump Septum Magnets and Spare Coil Sets	04-May-21	28-Apr-21		Nick Evans
Preliminary Design Review of Beam Power Limiting System (BPLS) Complete	04-May-21	04-Mar-21		Nick Evans
Final Design of Injection Dump Imaging System Complete	29-Jun-21	18-May-21		Nick Evans
Final Design of PPS Interface Complete	06-Sep-21	22-Jun-21		Nick Evans
Fabrication of Injection Dump Window Full Assembly for Installation Complete	30-Sep-21		20-Aug-21	Nick Evans

P.04 – Risks

Near Term Risks

	Risk ID and Description	Trigger	Expiration	Potential Cost Impact	Potential Schedule Impact
1	T-P.4-013 - FERMI lab has competing projects or resource issues	2/1/2019	6/30/2022	250K	121d
2	T-P.4-005 - Ring Vacuum Vessel Fabrication Complications	3/1/2020	3/31/2022	50K	20d
3	T-P.4-023 - Beam Power Limit System Redesign	3/1/2021	10/31/2022	500K	60d

Emerging New Risks (describe risk and potential impacts)

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P.04 – Issues Needing Attention

	Issue	Need	Need Date	Responsible	Current Status
1	Anticipated key resource for BPLS V&V is no longer available.	Identify and assign replacement resources for V&V activities.	16-Jul-21 Complete	Karen White	A PO has been placed to cover the DPU and some of the balance of V&V. Still need to identify areas where additional coverage will be needed. Upon review of the BPLS V&V needs, it was determined that non-safety systems do not require the rigor of a separate V&V process and will be covered under the existing BPLS System and Systems Integration testing.
2					
3					
4					

P.04 – Key Activities Next 90 Days

	Key Activity	Responsibility	Comments	Status	Time Frame
1	Issue Purchase Order for Fan Packages for Main Ring Dipole XFMR	Greg Norman	Installation during FY22A Outage	PO 4000188431 issued May 18th	May 2021
2	Award contract for fabrication of the Injection Dump Quadrupole Magnet	Rob Saethre		PO 4000190477 issued July 30 th	July 2021
3	Conduct BPLS Firmware Mini-PDR	Karen White		On schedule	Sept 2021
4					
5					

P.05

First Target Station Systems


P.05 - Cost Performance Report – Format 1 (Pg. 1)

June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE								AT COMPLETE		
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE				BAC	EAC	VAC	
				SV	CV				SV	SPI	CV	CPI				
P.05 - First Target Station Systems	611	2,337	1,763	1,725	574	18,195	18,800	18,794	605	1.03	7	1.00	34,544	34,655	(111)	
P.05.01 - Management and System Integration	39	39	36	0	3	1,122	1,122	1,120	0	1.00	2	1.00	2,798	2,796	2	
P.05.01.01 - Management and System Integration - First Target Station Systems	39	39	36	0	3	1,122	1,122	1,120	0	1.00	2	1.00	2,798	2,796	2	
P.05.02 - Neutronics	0	0	0	0	0	473	473	474	0	1.00	(1)	1.00	473	474	(1)	
P.05.02.01 - Management and System Integration	0	0	0	0	0	101	101	101	0	1.00	(1)	0.99	101	101	(1)	
P.05.02.02 - Evaluations at 1.3 GeV (Neutronics)	0	0	0	0	0	262	262	262	0	1.00	0	1.00	262	262	0	
P.05.02.03 - System Design Support	0	0	0	0	0	9	9	9	0	1.00	0	1.00	9	9	0	
P.05.02.04 - FTS Source Performance	0	0	0	0	0	97	97	97	0	1.00	0	1.00	97	97	0	
P.05.02.05 - FTS Facility Support	0	0	0	0	0	5	5	5	0	1.00	0	1.00	5	5	0	
P.05.03 - Mercury Process Systems	24	6	54	(18)	(48)	1,852	1,726	2,007	(126)	0.93	(281)	0.86	2,496	2,777	(281)	
P.05.03.01 - Management and System Integration	2	2	0	0	1	132	132	134	0	1.00	(1)	0.99	234	236	(2)	
P.05.03.02 - Evaluations at 1.3 GeV (Mercury Process Systems)	0	0	0	0	0	43	43	43	0	1.00	0	1.00	43	43	0	
P.05.03.03 - Hg Pump Tank Overflow	0	1	12	1	(11)	514	475	550	(39)	0.92	(76)	0.86	997	1,073	(76)	
P.05.03.04 - Hg Return GLS	22	0	37	(22)	(37)	1,063	977	1,205	(87)	0.92	(228)	0.81	1,073	1,301	(228)	
P.05.03.05 - In-Cell Target Gas Supply Hardware	0	3	5	3	(2)	99	99	75	(0)	1.00	24	1.33	148	124	24	
P.05.04 - Moderator Cryogenic Systems	10	11	1	0	10	1,459	1,347	1,412	(112)	0.92	(65)	0.95	2,513	2,583	(70)	
P.05.04.01 - Management and System Integration	10	10	0	0	10	244	244	212	0	1.00	33	1.15	612	579	33	
P.05.04.02 - Ortho-Para Hydrogen Converters	0	0	1	0	(1)	548	546	650	(2)	1.00	(104)	0.84	955	1,059	(104)	
P.05.04.03 - Ortho-Para Hydrogen Converter Diagnostics	0	0	0	0	0	432	419	409	(12)	0.97	10	1.02	587	580	7	
P.05.04.04 - Hydrogen Refill System Expansion and Relocation	0	0	0	0	0	235	137	141	(97)	0.59	(3)	0.98	359	365	(6)	
P.05.05 - Vessel and Shielding Systems	0	0	0	0	0	446	446	446	0	1.00	0	1.00	446	446	0	
P.05.05.01 - Management and System Integration	0	0	0	0	0	147	147	147	0	1.00	0	1.00	147	147	0	
P.05.05.02 - Evaluations at 1.3 GeV (Vessel and Shielding Systems)	0	0	0	0	0	299	299	299	0	1.00	0	1.00	299	299	0	

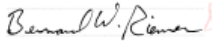
P.05 - Cost Performance Report – Format 1 (Pg. 2)

June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE							AT COMPLETE		
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE			BAC	EAC	VAC	
				SV	CV				SV	SPI	CV				CPI
P.05.06 - Target Utility Systems	97	164	166	67	(2)	2,106	1,851	1,475	(256)	0.88	376	1.26	3,819	3,445	374
P.05.06.01 - Management and System Integration	2	2	1	0	0	210	210	216	0	1.00	(7)	0.97	289	296	(7)
P.05.06.02 - Evaluations at 1.3 GeV (Target Utility Systems)	0	0	0	0	0	75	75	75	0	1.00	0	1.00	75	75	0
P.05.06.03 - Upgrades for 1.3 GeV systems	0	0	0	0	0	5	5	5	0	1.00	0	1.00	5	5	0
P.05.06.04 - Upgrades for Gas Injection	95	163	164	67	(2)	1,817	1,561	1,178	(256)	0.86	383	1.33	3,449	3,068	381
P.05.07 - Instrument Systems	0	0	0	0	0	40	40	40	0	1.00	0	1.00	40	40	0
P.05.07.01 - Management and System Integration	0	0	0	0	0	40	40	40	0	1.00	0	1.00	40	40	0
P.05.08 - MOTS	271	81	49	(190)	32	966	884	817	(82)	0.92	67	1.08	2,065	1,998	67
P.05.08.01 - Management and System Integration	5	5	11	0	(6)	181	181	220	0	1.00	(40)	0.82	397	437	(40)
P.05.08.02 - Additional MOTS Delay Bed	15	20	22	5	(2)	69	326	327	257	4.75	(1)	1.00	347	348	(1)
P.05.08.03 - MOTS Upgrades for Gas Injection	56	56	4	0	52	387	260	168	(128)	0.67	91	1.54	937	845	91
P.05.08.04 - MOTS Cold Trap and Shielding	196	0	12	(196)	(12)	329	118	102	(211)	0.36	16	1.16	384	367	16
P.05.09 - 2 MW Target	154	2,018	1,368	1,864	650	6,818	8,477	8,412	1,659	1.24	66	1.01	15,103	15,038	64
P.05.09.01 - Management and System Integration	42	42	20	0	22	347	347	200	0	1.00	147	1.74	1,538	1,391	147
P.05.09.02 - Target Module	65	1,337	1,332	1,272	5	3,991	5,328	5,330	1,337	1.34	(3)	1.00	8,380	8,381	(2)
P.05.09.03 - Supporting Hardware	0	2	4	2	(3)	42	20	14	(22)	0.47	6	1.41	42	37	5
P.05.09.04 - PPU Test Target	46	637	11	591	625	2,439	2,783	2,867	344	1.14	(85)	0.97	5,143	5,229	(86)
P.05.10 - Safety, Controls and Operations	16	18	88	2	(70)	1,300	842	1,138	(458)	0.65	(295)	0.74	3,180	3,583	(403)
P.05.10.01 - Management and System Integration	3	3	1	0	2	69	69	65	0	1.00	4	1.07	152	249	(97)
P.05.10.02 - System Integration for Safety Authorization	0	0	0	0	0	433	433	422	0	1.00	10	1.02	503	492	10
P.05.10.03 - Controls Integration	13	15	87	2	(72)	801	343	651	(458)	0.43	(308)	0.53	2,387	2,702	(314)
P.05.10.04 - Operating Procedures and Training	0	0	0	0	0	(2)	(2)	0	0	1.00	(2)		138	140	(2)
P.05.11 - Gas Injection Development	0	0	1	0	(1)	1,613	1,591	1,454	(22)	0.99	137	1.09	1,613	1,476	137
P.05.11.01 - Management and System Integration - Gas Injection Development	0	0	0	0	0	29	29	25	0	1.00	4	1.16	29	25	4
P.05.11.02 - Gas Injection	0	0	1	0	(1)	1,584	1,563	1,430	(22)	0.99	133	1.09	1,584	1,451	133

P.05.03.04.02 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED			
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188			
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade			a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3			b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION										
P.05.03.04.02 / ORNL - Design - Hg Return GLS										
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI	
Current:	22	0	37	-22	-100%	-37	-	0.00	0.00	
Cumulative:	1,063	977	1,205	-87	-8%	-228	-23%	0.92	0.81	
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC				
At Complete:	1,073	1,301	-228	-21%	-	1.00				
<p>Explanation of Variance/Description of Problem:</p> <p>Budget for the remote installation mockup for the overflow tank (OFT) is captured on a one day receive activity. The decision was made to fabricate the mockup at ORNL and the cost of the fabrication is already being incurred. Claiming partial credit for the receive activity will help to alleviate the variance but some cost variance will remain as the fabrication cost is tracking higher than originally estimated.</p> <p>Impact:</p> <p>A negative cost variance will likely be carried forward.</p> <p>Corrective Action:</p> <p>The control account manager will claim partial credit for the receive activity to adequately capture the onsite progress of fabrication.</p>										
Prepared by: Wayne Steffey		Date: 7/15/2021		Approved by (PM): Mark Champion			Date: 2021.07.19 10:55:38 -0400			
Reviewed by (CAM): 		Date: 2021.07.16 12:26:09 -0400								

P.05.04.04.03 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED				
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188				
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD				
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade			a. FROM (YYYYMMDD) 01-Jun-21				
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3			b. TO (YYYYMMDD) 30-Jun-21				
5. EVALUATION											
P.05.04.04.03 / ORNL - Procure/Fab - Hydrogen Refill System Expansion and Relocation											
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI		
Current:	0	0	0	0	-	0	-	-	-	-	
Cumulative:	98	1	0	-97	-99%	0	66%	0.01	2.98		
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC					
At Complete:	98	100	-2	-2%	1.00	0.97					
<p>Explanation of Variance/Description of Problem:</p> <p>Procurement award of the hydrogen refill system gas panel has been delayed by the departure of the P.05.04 level 3 manager and the lack of a ready replacement that understands the scope. Questions from P.05.10.03 controls on functionality and compliance of a vendor proposal have been slow to resolve due to loss of continuity. (Note that gas panel is only part of the hydrogen refill system upgrade. Other related scope - mainly field installation design work- is also behind for similar reasons. This is not broken out as a separate activity.)</p> <p>Impact:</p> <p>Delay of the gas panel procurement by several months will not impact the Moderator Cryogenics System upgrade deployment. There is a desire to install this upgrade before the extended outage to 1) gain early experience with its operation and 2) relieve work scope during the extended outage. This can still happen - provided the field installation design work picks up momentum . An engineering and designer resource is needed for the field installation design work.</p> <p>Corrective Action:</p> <p>The First Target Systems level 2 manager and the controls engineer have gained understanding of the design approach developed by the level 3 manager and his subcontractor engineering. Communication with vendor has been helpful, if slow. Now SNS Fire Safety appears to have changed requirements for the outdoor hydrogen equipment; this may lead to further design completion delays. The P.5 L2 has not had time to resolve the change or other outstanding controls issues with gas panel vendor.</p>											
Prepared by: Wayne Steffey		Date: 7/15/2021		Reviewed by (CAM):  Digitally signed by Bernie Riemer Date: 2021.07.19 10:20:30 -04'00'			Approved by (PM): Mark Champion		Date: Digitally signed by Mark Champion Date: 2021.07.20 13:23:59 -04'00'		

P.05.06.04.02 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED			
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188			
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD			
a. NAME		a. NAME		a. NAME			a. FROM (YYYYMMDD)			
UT-Battelle		SNS Proton Power Upgrade (PPU)		Proton Power Upgrade			01-Jun-21			
b. LOCATION (Address and ZIP Code)		b. NUMBER		b. PHASE			b. TO (YYYYMMDD)			
Oak Ridge National Laboratory				CD-3			30-Jun-21			
5. EVALUATION										
P.05.06.04.02 / ORNL - Design - Upgrades for Gas Injection										
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI	
Current:	95	108	103	12	13%	4	4%	1.13	1.04	
Cumulative:	1,556	1,418	1,089	-138	-9%	329	23%	0.91	1.30	
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC				
At Complete:	1,707	1,378	329	19%	0.47	1.00				
<p>Explanation of Variance/Description of Problem:</p> <p>Subcontractor and internal staff design effort continued to progress in June, but a positive cost variance persists as resource ramp up was slower than expected.</p> <p>Impact:</p> <p>None. The variance will likely resolve itself over time.</p> <p>Corrective Action:</p> <p>A purchase requisition was processed in June for additional subcontractor work in July. This is expected to alleviate the cost variance over time. The control account manager will continue to closely monitor the cost of design.</p>										
Prepared by:		Date:								
Wayne Steffey		7/15/2021								
Reviewed by (CAM):		Date:		Approved by (PM):			Date:			
Erica Ahlschwede		Digitally signed by Erica Ahlschwede Date: 2021.07.27 12:35:34 -04'00'		Mark Champion			Digitally signed by Mark Champion Date: 2021.07.27 13:51:06 -04'00'			

P.05.08.04.03 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED			
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188			
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade			a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3			b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION										
P.05.08.04.03 / ORNL - Procure/Fab - MOTS Cold Trap and Shielding										
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI	
Current:	196	0	0	-196	-100%	0	-	0.00	-	
Cumulative:	228	16	12	-211	-93%	5	28%	0.07	1.39	
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC				
At Complete:	228	223	5	2%	0.98	1.00				
Explanation of Variance/Description of Problem:										
Manufacturing delays (vendor work load and availability of raw materials) at the vendor have resulted in a schedule variance of \$211K.										
Impact:										
None. The manufacturing delay is not expected to delay the installation date of this equipment.										
Corrective Action:										
None. The manufacturing delay is not expected to delay the installation date of this equipment.										
Prepared by: Wayne Steffey		Date: 7/15/2021		Approved by (PM): Mark Champion			Date: Digitally signed by Mark Champion Date: 2021.07.19 11:35:48 -04'00'			
Reviewed by (CAM): Bernie Riemer		Date: Digitally signed by Bernie Riemer Date: 2021.07.16 11:14:13 -04'00'								

P.05.09.01.01 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED			
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188			
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD			
a. NAME		a. NAME		a. NAME			a. FROM (YYYYMMDD)			
UT-Battelle		SNS Proton Power Upgrade (PPU)		Proton Power Upgrade			01-Jun-21			
b. LOCATION (Address and ZIP Code)		b. NUMBER		b. PHASE			b. TO (YYYYMMDD)			
Oak Ridge National Laboratory				CD-3			30-Jun-21			
5. EVALUATION										
P.05.09.01.01 / ORNL - Management and System Integration - 2 MW Target										
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI	
Current:	42	42	20	0	0%	22	52%	1.00	2.07	
Cumulative:	347	347	200	0	0%	147	42%	1.00	1.74	
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC				
At Complete:	1,538	1,391	147	10%	0.89	1.00				
<p>Explanation of Variance/Description of Problem:</p> <p>Fewer hours than anticipated are being spent on travel to the vendor for oversight due to Covid travel restrictions.</p> <p>Impact:</p> <p>No Impact. Regular communication is being kept with target vendor and all fabrication requests are being issued in a timely manner.</p> <p>Corrective Action:</p> <p>The CAM will review estimated hours and anticipated travel/oversight as Covid travel restrictions ease going forward.</p>										
Prepared by:		Date:								
Wayne Steffey		7/15/2021								
Reviewed by (CAM):		Date:		Approved by (PM):			Date:			
Kevin Johns		Date: 2021.07.20 10:48:41 -04'00'		Mark Champion			Digitally signed by Mark Champion Date: 2021.07.21 09:57:54 -04'00'			

P.05.09.02.03.03 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED			
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188			
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade			a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3			b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION										
P.05.09.02.03.03 / ORNL - Procure/Fab - Target Module Assembly										
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI	
Current:	65	1,337	1,332	1,272	1950%	5	0%	20.50	1.00	
Cumulative:	1,472	2,809	2,814	1,337	91%	-5	0%	1.91	1.00	
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC				
At Complete:	5,685	5,690	-5	0%	1.00	1.00				
Explanation of Variance/Description of Problem:										
The completion of water cooled shroud front sleeves milestone was completed early by the vendor.										
Impact:										
None. The completion of the milestone occurred early and will resolve itself.										
Corrective Action:										
Regular communication will be kept with the vendor to track completion of milestones.										
Prepared by:		Date:								
Wayne Steffey		7/15/2021								
Reviewed by (CAM):		Date:		Approved by (PM):		Date:				
Kevin Johns		Date: 2021.07.20 10:59:49 -04'00'		Mark Champion		Digitally signed by Mark Champion Date: 2021.07.21 10:01:11 -04'00'				

P.05.09.03.03 - Variance Explanation

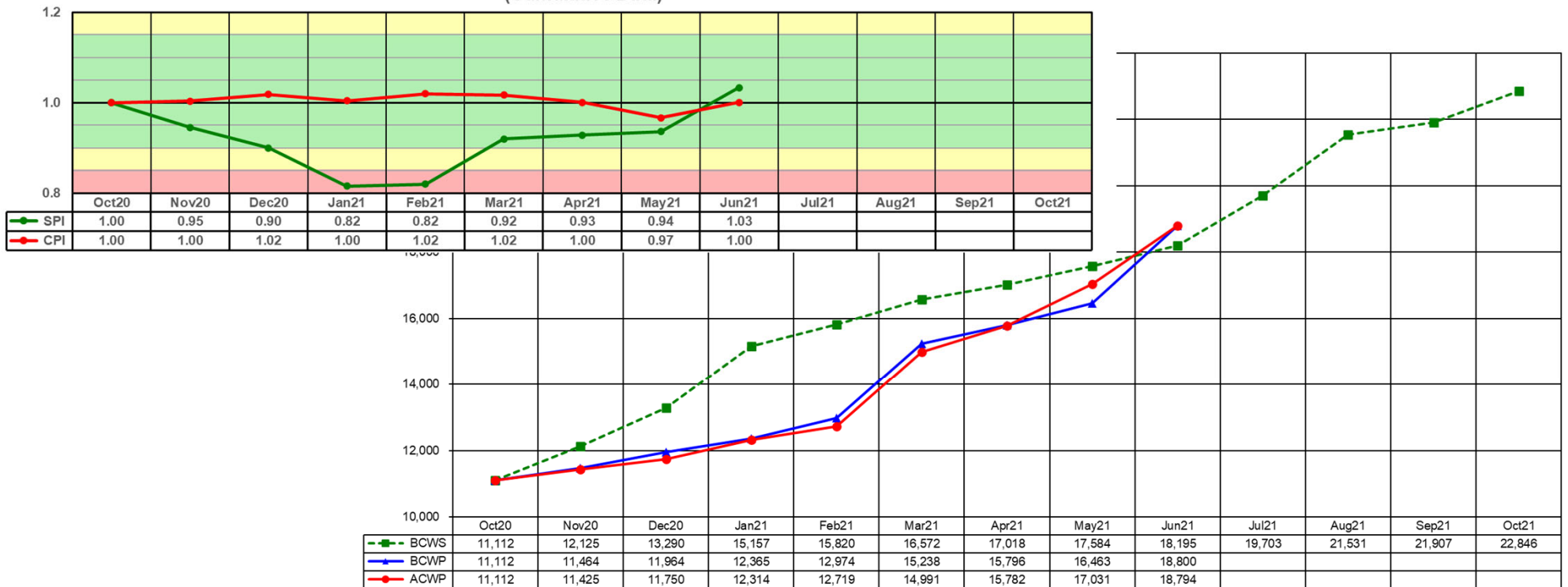
CONTRACT PERFORMANCE REPORT							FORM APPROVED		
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188		
1. CONTRACTOR		2. CONTRACT		3. PROGRAM		4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade		a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3		b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION									
P.05.09.03.03 / ORNL - Procure/Fab - Supporting Hardware									
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI
Current:	0	0	0	0	-	0	-	-	-
Cumulative:	25	4	4	-21	-83%	0	10%	0.17	1.11
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC			
At Complete:	25	25	0	0%	0.98	0.97			
<p>Explanation of Variance/Description of Problem:</p> <p>The release of jumpers for fabrication was delayed until changes to the connecting vent line shield block (VLSB) were completed to ensure no design changes were needed. The jumpers have been sent to procurement for RFQ.</p> <p>Impact:</p> <p>None. The variance will resolve itself.</p> <p>Corrective Action:</p> <p>The jumpers will be ordered and the variance will resolve.</p>									
Prepared by: Wayne Steffey		Date: 7/15/2021		Approved by (PM): Mark Champion			Date: Digitally signed by Mark Champion Date: 2021.07.21 10:00:35 -04'00'		
Reviewed by (CAM): Kevin Johns		Date: 2021.07.20 10:49:10 -04'00'							

P.05.10.03.02 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED			
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188			
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade			a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3			b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION										
P.05.10.03.02 / ORNL - Design - Controls Integration										
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI	
Current:	13	15	87	2	14%	-72	-468%	1.14	0.18	
Cumulative:	772	343	645	-430	-56%	-303	-88%	0.44	0.53	
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC				
At Complete:	1,273	1,583	-310	-24%	1.48	0.99				
<p>Explanation of Variance/Description of Problem:</p> <p>Target Controls design work is behind schedule due to late completion of requirements (P&ID, PCD) from other target subsystems. In particular, there is a resource shortage to provide mechanical information which needs to be resolved for parts of the Controls Design. The cost has increased due to design changes which increased the number of I/O points to be controlled.</p> <p>Impact:</p> <p>Delays in starting design work could lead to delays in implementation and installation.</p> <p>Corrective Action:</p> <p>Two additional engineers will begin working part-time on Target Controls scope in mid-August to accelerate progress versus the schedule. A PCR will be needed due to the increased cost for additional scope.</p>										
Prepared by: Wayne Steffey		Date: 7/15/2021		Approved by (PM): Mark Champion			Date: 2021.07.28 12:58:15 -04'00'			
Reviewed by (CAM): White, Karen S.		Date: 2021.07.28 12:40:31 -04'00'								

P.05 - Performance

PPU
P.05 First Target Station Systems
Cost/Schedule Performance Index Chart
(Cumulative Data)



P.05 - DOE FY21 Annual Work Plan Milestones

P.5 First Target Station Systems	Planned Finish	Actual Finish	Current Forecast	Owner
Award Contract for 2MW Target	29-Nov-20	30-Oct-20		Bernie Riemer
Fabrication of PPU Front Body Development Test Article Complete	01-Mar-21	26-Feb-21		Bernie Riemer
Fabrication of PPU Test Target 1 Shroud Complete	12-Jul-21		23-Aug-21*	Bernie Riemer
Award Contract for Ortho/Para Converter Vessel Assembly	18-Jul-21		30-Aug-21**	Bernie Riemer
Fabrication of Second Carbon Delay Bed Vessel and Cartridge Complete	30-Sep-21	03-May-21	23-Sep-21**	Bernie Riemer

**Weld defects in the final electron beam weld of PPU Test TT#1 water-cooled shroud were found by ORNL inspectors. After repair and reinspection, delivery of TT#1 is now anticipated at the end of August or beginning of September.*

***The solicitation for the Ortho/Para Converter Vessel Assembly missed being issued in May. Issues with procurement package documents were resolved and the solicitation was issued in early June. Eight companies have been approached. A second (and final) extension was given for the RFP period. This will postpone the award about 1 month. There is float to the planned installation to accommodate this.*

P.05 – Risks

Near Term Risks

	Risk ID and Description	Trigger	Expiration	Potential Cost Impact	Potential Schedule Impact
1	T-P.5-024 - Analysis reveals additional controls and/or protection system requirements for 2 MW target.	11/1/2021	11/1/2022	200K	60d
2	T-P.5-027 - IRP is not installed prior to the long outage	12/1/2021	12/15/2022	0K	60d
3	T-P.5-032 - Late delivery of test targets	12/15/2021	1/31/2022	0K	0d

Emerging New Risks (describe risk and potential impacts)

1. Delays in completing final design of molecular sieve beds and risk finishing installation of equipment in outage prior to extended outage. P.5.6, P.5.8.
2. MCS L3 – Abruptly losing Matt Williamson leaves P.5.4 with Matt Howell as interim by default while replacement is sought for CMS system engineer. This could delay procurement awards and finishing controls design work.
3. CMS hydrogen heat exchanger now appears sufficiently sized for 2MW operation provided that the helium system can operate at lower temperature with capacity. Replacement of H2 HX seems unlikely for 2MW operation; key is a healthy helium system.
4. Recent issues with fabrication of aluminum PBWs at both vendors are cause for concern. We may reactivate risk T-P.5-003. All PPU FTS evaluations and upgrade designs are based upon an aluminum PBW.

P.05 – Issues Needing Attention

	Issue	Need	Need Date	Responsible	Current Status
1	P.5 controls design progress. Needs other P.5.n designs completed: MSB; HRS	Finish the MSB design asap. HRS gas panel award – need to confirm vendor device selection meets functional and safety requirements. MCS PCD / DCN not fully complete.	MCS – July MSB – August, earlier wanted.	Karen White Angel Berrocal Erica Ahlschwede Bernie Riemer	Controls design momentum has increased. Input from remaining P.5 subsystems need to be finalized. HRS gas panel questions still not fully resolved. MSB design completion 1 or 2 months out.
2	Final design of MSB expected in August; wanted sooner.	New design approach from PDR due to shield paint temperature limitation and RSC wanting source term reduced.	Sooner than August FDR wanted	Erica Ahlschwede Greg Stephens Bernie Riemer	FDR now looking like October – combined with gas recirculation. Schedule changes in March PCR. Schedule risk for planned installations. Controls work for MSB remains on hiatus but has resumed on gas recirculation.
3	Replacement needed for Charlotte Barbier for P.5.10 scope.	Responsible / capable people needed for P.5.10 scope	now	Bernie Riemer	Resolved L3 – Charlotte agreed to stay on as lead. L4 - Safety integration: Jacob Platfoot L4 - Controls: Karen White (Angel Berrocal) L4 - Operations: Greg Stephens
4	Pedestal manipulator repairs needed for OFT installation mockup testing. One arm broken and other issues.	Repair by August to conduct mockup testing	Aug 1 2021	Operations Makalya Edwards	Resolved. Assessment of issues has led to 'live with it' decision. Partial capability will be OK for mockup tests. Those test expected to start week of Aug. 9.

P.05 – Key Activities Next 90 Days

	Key Activity	Responsibility	Comments	Status	Time Frame
1	P534D170b - Procure hardware for remote installation mockup for OFT Continued	Makayla Edwards / Jeremy Slade	Mockup tests needed to complete OFT design. Schedule timing logic off?	Fabrication complete. On track to begin testing w/o Aug. 9 ORNL shop is building the mockup. Assembly in progress. Testing to start week of Aug. 9	Mockup fabrication expected mid July 2021.
2	P564D45 - Final Design Review Mol Sieve skid and shielding	Erica Ahlschwede / Greg Stephens	MSB redesign underway	FDR now looking like October – together with Gas Recirc upgrade. PCR was executed in March Progress.	August FDR per the updated schedule.
3	P583D80 - Final Design Review MOTS Upgrades; P583P11 - Procure MOTS hardware	Greg Stephens	Awaiting MSB design completion	Delay bed installation underway. Cold trap is in fabrication. MOTS MSB – same design as GAR MSB.	MSB FDR expected in August
4	P5103P76 - Procure control hardware for the target utility systems; P5103P61 - Procure control hardware I&C for the moderator cryogenics systems	Karen White / Angel Berrocal	Still outstanding details needed from MSB and MCS to complete controls designs	Need MSB design finished. MCS HRS upgrade design is not settled; impacted by loss of L3 CAM. BR and AB trying.	HRS – after a ~month MSB – after August
5	Award HRS gas panel subcontract Call for MCS converter vessel assembly RFPs issued. Order catalyst material (will be GFE).	Bernie Riemer / Matt Howell	HRS gas panel – sole source Want to issue solicitation for converter vessel before procurement pause.	MCS Converter RFP issued. Award will slip into September. HRS gas panel issues not resolved – no progress.	This summer? Fall likely

P.06

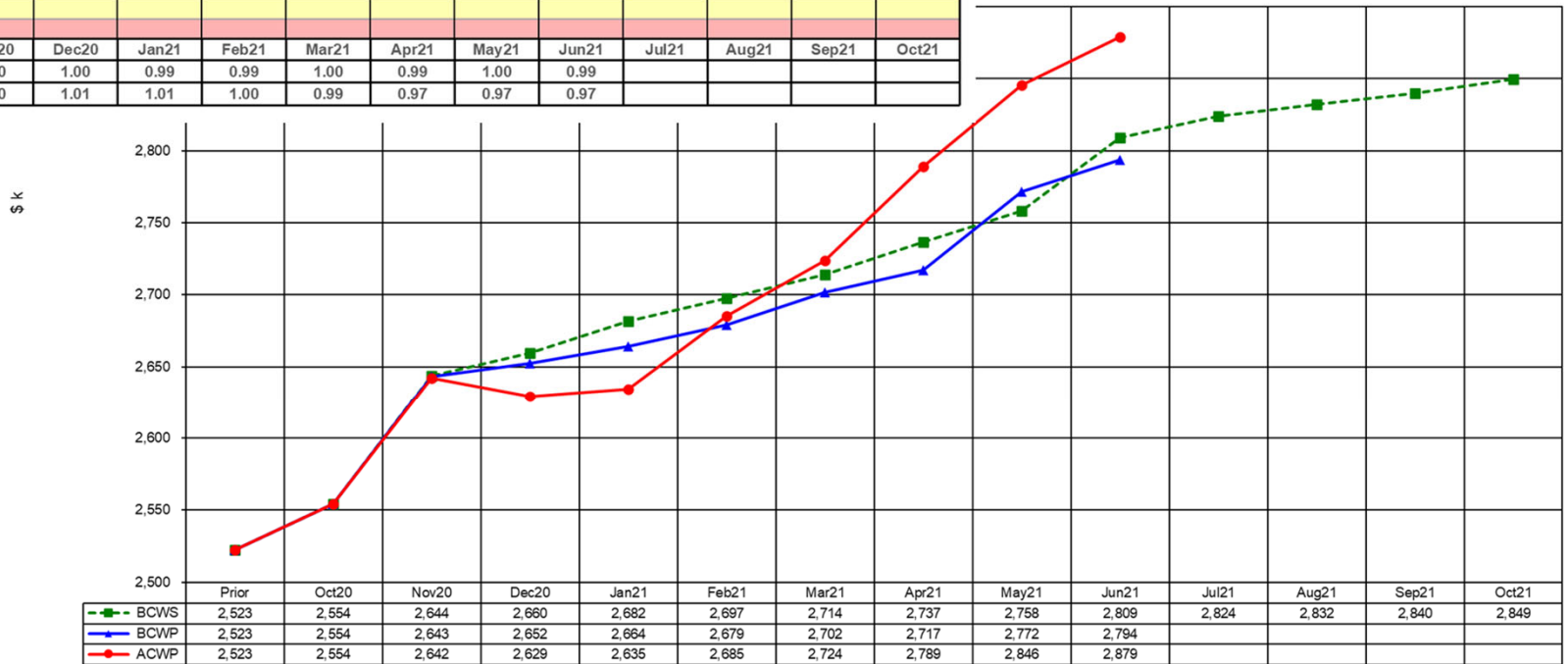
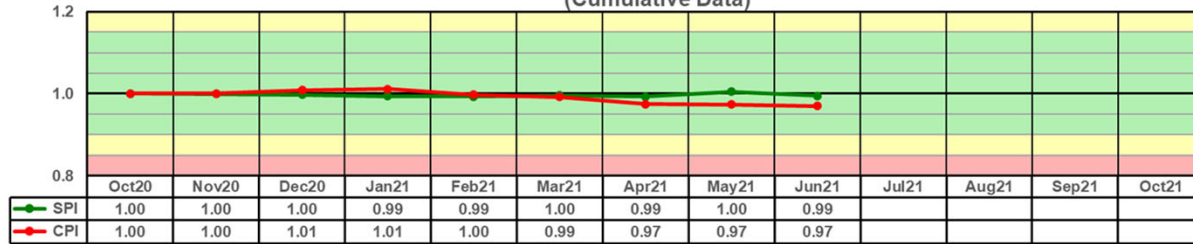
Conventional Facilities

P.06 - Cost Performance Report – Format 1

June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE							AT COMPLETE		
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE				BAC	EAC	VAC
				SV	CV				SV	SPI	CV	CPI			
P.06 - Conventional Facilities	51	22	33	(28)	(11)	2,809	2,794	2,879	(15)	0.99	(85)	0.97	10,900	10,985	(86)
P.06.01 - Management and System Integration	6	6	4	0	2	179	179	165	0	1.00	14	1.08	309	295	14
P.06.01.01 - Management and System Integration - Conventional Facilities	6	6	4	0	2	179	179	165	0	1.00	14	1.08	309	295	14
P.06.02 - Building Modifications	44	16	29	(28)	(13)	2,630	2,615	2,714	(15)	0.99	(99)	0.96	10,591	10,691	(100)
P.06.02.01 - Klystron Gallery Building Modifications	8	8	10	0	(2)	1,742	1,742	1,768	0	1.00	(27)	0.98	1,749	1,776	(27)
P.06.02.02 - RTBT Modifications	1	1	1	0	(0)	731	731	724	0	1.00	7	1.01	8,628	8,621	7
P.06.02.03 - Facility DI Water and HVAC Controls	36	7	18	(28)	(11)	157	142	222	(15)	0.90	(79)	0.64	214	294	(79)

P.06 - Performance

PPU
P.06 Conventional Facilities
Cost/Schedule Performance Index Chart
(Cumulative Data)



P.06 - DOE FY21 Annual Work Plan Milestones

- None.

P.06 – Risks

Near Term Risks

	Risk ID and Description	Trigger	Expiration	Potential Cost Impact	Potential Schedule Impact
1	T-P.6-011 - STS design impacts the RTBT stub design	2/1/2019	9/30/2023	50K	10d
2	T-P.6-012 - STS construction field work area overlaps with RTBT stub construction area	8/1/2021	6/30/2023	200K	20d

Emerging New Risks (describe risk and potential impacts)

P. 06 (CF) – Key Activities Next 90 Days

	Key Activity	Responsibility	Comments	Status	Time Frame
1	Minimal activity				
2					
3					
4					
5					

P.06 (CF) – Issues Needing Attention

	Issue	Need	Need Date	Responsible	Current Status
1	Subcontract Senior Project Manager that has been on RTBT stub project from conceptual design until now is retiring in the next 6 months.	PM role will be transitioned to Level 2 manager and new subcontract employee.	12/31/21	Mark Connell	Transition planning in progress.
2					
3					
4					

P.07

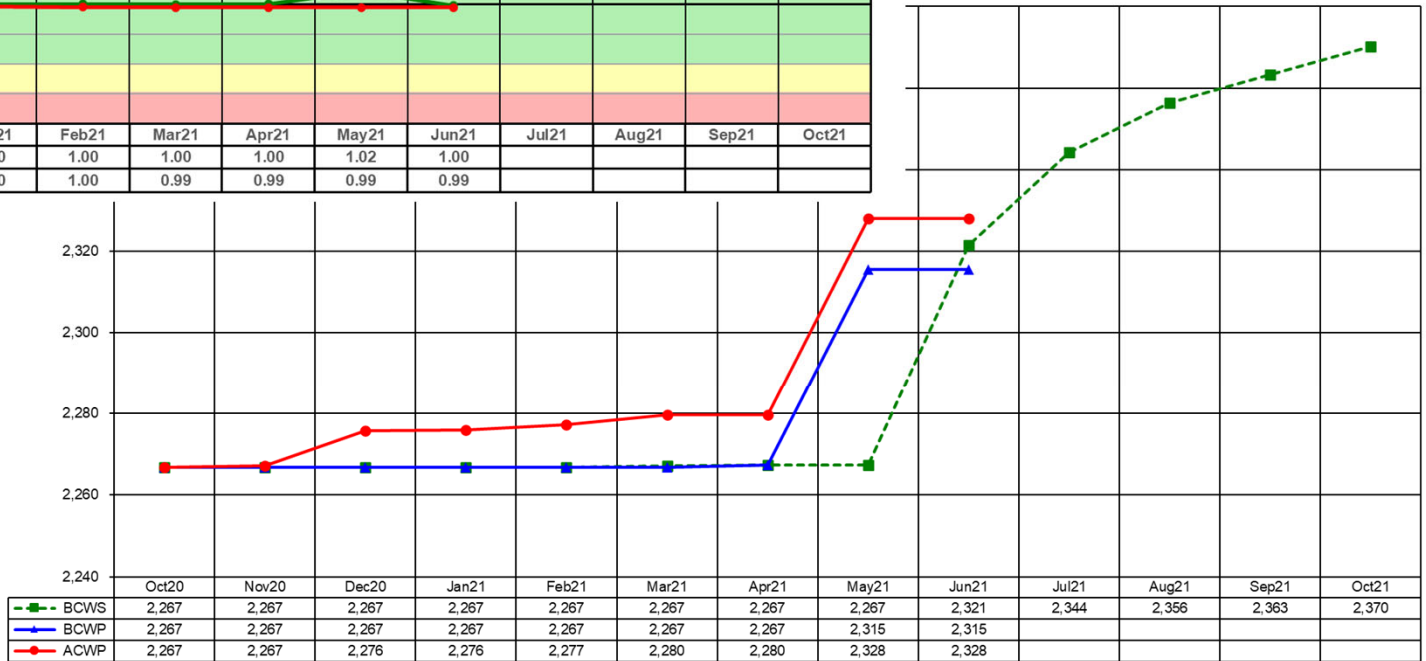
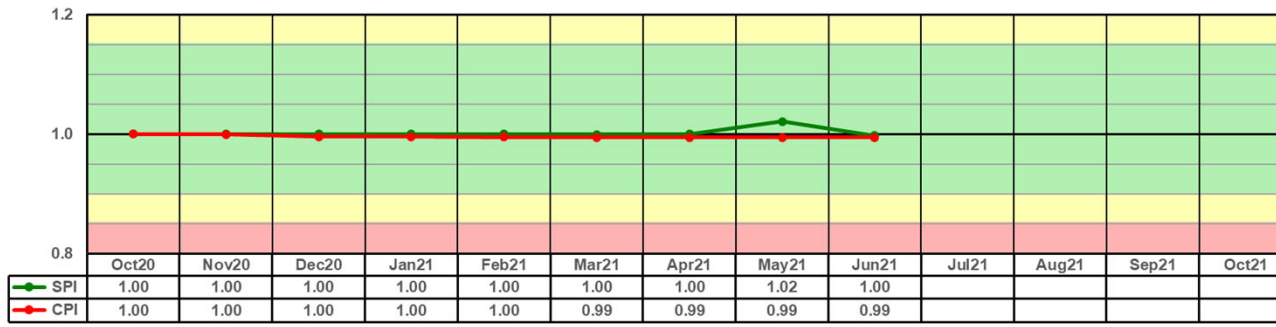
Research & Development

P.07 - Cost Performance Report – Format 1

June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE							AT COMPLETE		
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE				BAC	EAC	VAC
				SV	CV				SV	SPI	CV	CPI			
P.07 - R&D	54	0	0	(54)	0	2,321	2,315	2,328	(6)	1.00	(13)	0.99	2,476	2,489	(13)
P.07.01 - Gas Injection Development	0	0	0	0	0	1,992	1,992	1,992	0	1.00	0	1.00	1,992	1,992	0
P.07.01.01 - Management and System Integration - Gas Injection Development	0	0	0	0	0	13	13	13	0	1.00	0	1.00	13	13	0
P.07.01.03 - Gas Injection in Mercury	0	0	0	0	0	1,979	1,979	1,979	0	1.00	0	1.00	1,979	1,979	0
P.07.02 - Foil Development	54	0	0	(54)	0	330	324	336	(6)	0.98	(13)	0.96	484	497	(13)
P.07.02.02 - Design - Foil Development	54	0	0	(54)	0	330	324	336	(6)	0.98	(13)	0.96	484	497	(13)

P.07 - Performance

PPU
P.07 Research & Development
Cost/Schedule Performance Index Chart
(Cumulative Data)



P.07 – Risks

Near Term Risks

	Risk ID and Description	Trigger	Potential Cost Impact	Potential Schedule Impact
1	None			
2				
3				

Emerging New Risks (describe risk and potential impacts)

P.07 – Issues Needing Attention

	Issue	Need	Need Date	Responsible	Current Status
1	None				
2					
3					
4					

P.07 – Key Activities Next 90 Days

	Key Activity	Responsibility	Comments	Status	Time Frame
1	Receive Two Wavelength Pyrometer	Willem Blokland	Pyrometer will be installed in the lab in preparation for testing of stripper foils at PPU beam intensity	Received May 13 th	May 2021
2					
3					
4					
5					

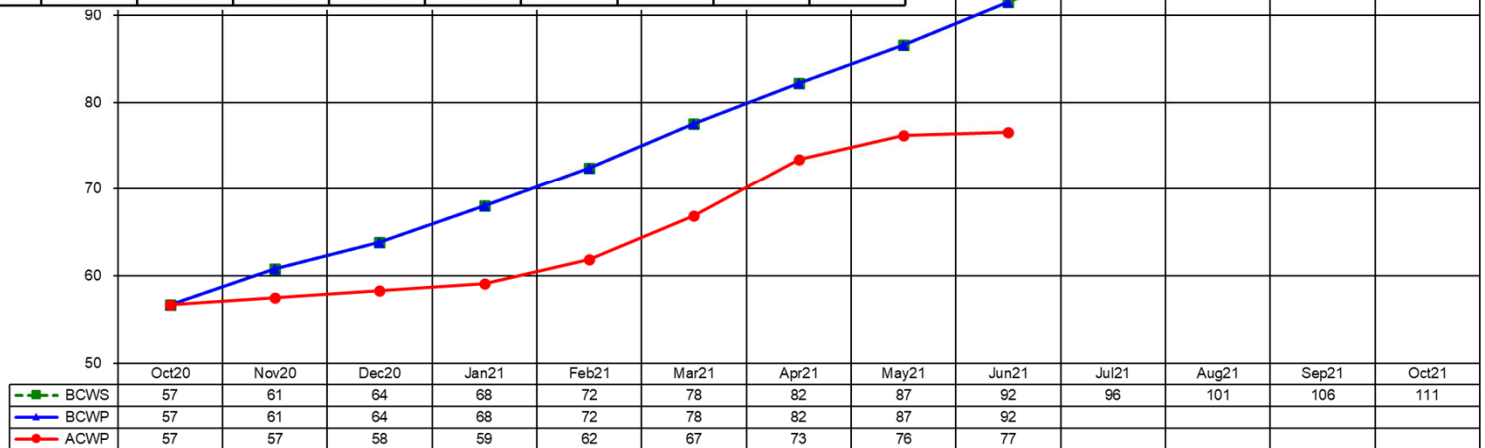
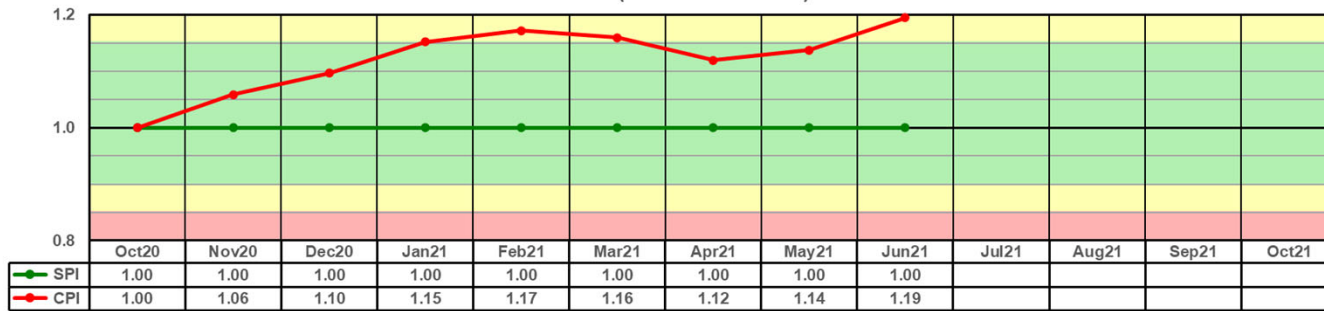
P.08 Pre-Operations

P.08 - Cost Performance Report – Format 1

June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE							AT COMPLETE		
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE				BAC	EAC	VAC
				SV	CV				SV	SPI	CV	CPI			
P.08 - Pre-Ops	5	5	0	0	4	92	92	77	0	1.00	15	1.19	1,137	1,122	15
P.08.01 - Commissioning	0	0	0	0	0	0	0	0	0		0		933	934	(0)
P.08.01.01 - Commission PPU Components with Beam	0	0	0	0	0	0	0	0	0		0		933	934	(0)
P.08.03 - Regulatory Compliance	5	5	0	0	4	92	92	77	0	1.00	15	1.19	204	189	15
P.08.03.03 - ARR Planning	5	5	0	0	4	92	92	77	0	1.00	15	1.19	204	189	15

P.08 - Performance

PPU
P.08 Pre-Ops
Cost/Schedule Performance Index Chart
(Cumulative Data)



P.08 – Risks

Near Term Risks

	Risk ID and Description	Trigger	Potential Cost Impact	Potential Schedule Impact
1	None			
2				
3				

Emerging New Risks (describe risk and potential impacts)

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P.08 – Issues Needing Attention

	Issue	Need	Need Date	Responsible	Current Status
1	None				
2					
3					
4					

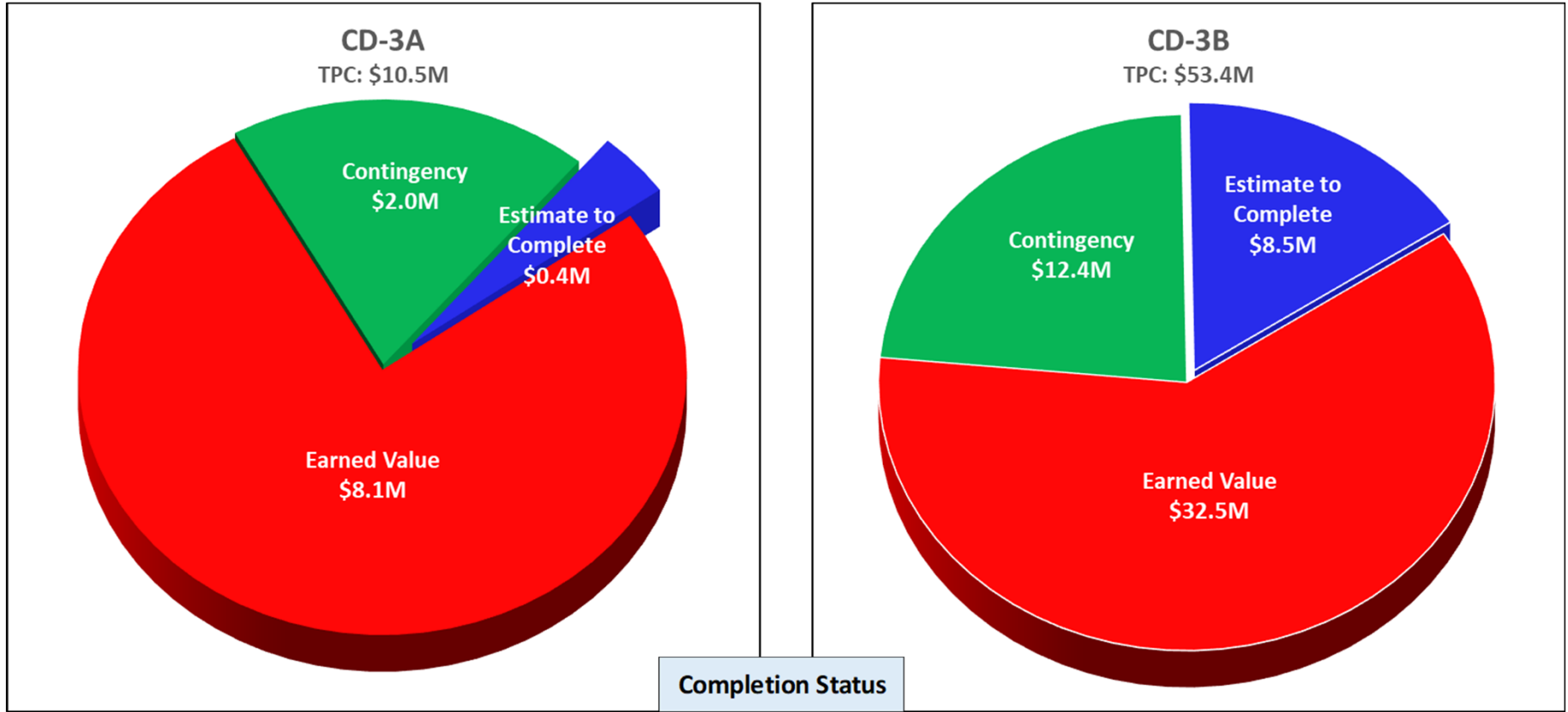
P.08 – Key Activities Next 90 Days

	Key Activity	Responsibility	Comments	Status	Time Frame
1	ARR Planning	Glen Johns		Progressing	Continues through FY2022
2					
3					
4					
5					

P.10

Long Lead Procurements

LLP Status



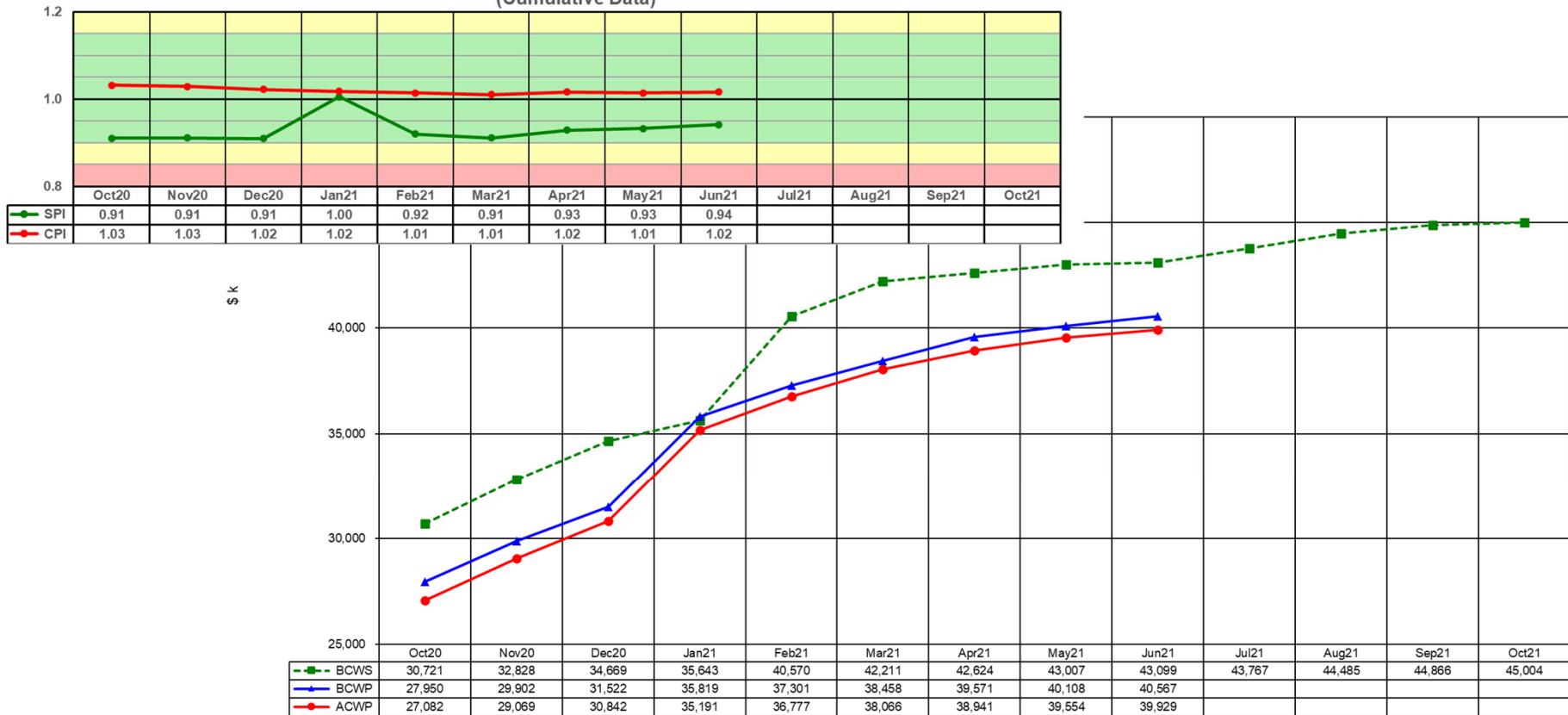
	Completion Status	
	Complete	Planned
CD-3A	95%	99%
CD-3B	79%	85%

P.10 - Cost Performance Report – Format 1

June 2021 (\$k) ITEM	CURRENT PERIOD					CUMULATIVE TO DATE							AT COMPLETE		
	BCWS	BCWP	ACWP	VARIANCE		BCWS	BCWP	ACWP	VARIANCE				BAC	EAC	VAC
				SV	CV				SV	SPI	CV	CPI			
P.10 - Long Lead Procurements	92	460	375	367	84	43,099	40,567	39,929	(2,531)	0.94	638	1.02	49,785	49,503	282
P.10.02 - SCL Systems	17	147	111	129	35	19,754	18,441	18,092	(1,313)	0.93	349	1.02	19,848	19,500	349
P.10.02.01 - Cavities & Material Scanning LLP	0	0	5	0	(5)	6,895	6,617	6,666	(278)	0.96	(49)	0.99	6,895	6,944	(49)
P.10.02.02 - VTA Qualification Hardware LLP	0	0	0	0	0	189	189	189	0	1.00	0	1.00	189	189	0
P.10.02.04 - Couplers LLP	0	0	0	0	0	1,288	1,257	1,322	(31)	0.98	(64)	0.95	1,288	1,353	(65)
P.10.02.05 - Couplers Acquisition	0	0	4	0	(4)	374	374	321	0	1.00	53	1.16	374	321	53
P.10.02.07 - Cryomodule Integration (Partner Laboratory Scope)	17	147	102	129	45	10,063	9,058	8,779	(1,004)	0.90	279	1.03	10,157	9,878	279
P.10.02.08 - Cryomodule Testing	0	0	0	0	0	26	26	24	0	1.00	2	1.09	26	24	2
P.10.02.09 - Cryomodule in Tunnel	0	0	0	0	0	410	410	316	0	1.00	94	1.30	410	316	94
P.10.02.10 - Plasma Process MB Cryomodule In Tunnel	0	0	0	0	(0)	309	309	287	0	1.00	23	1.08	309	287	23
P.10.02.11 - Linac Beamline Vacuum Controls	0	0	0	0	0	56	56	56	0	1.00	1	1.01	56	56	1
P.10.02.12 - Linac Insulating Vacuum System Controls	0	0	0	0	0	124	124	113	0	1.00	11	1.10	124	113	11
P.10.02.13 - Cryomodule Controls	0	0	0	0	0	20	20	20	0	1.00	0	1.00	20	20	0
P.10.03 - RF Systems	21	151	165	129	(15)	15,196	13,978	13,537	(1,218)	0.92	441	1.03	21,748	21,277	471
P.10.03.02 - SCL HPRF	1	136	127	135	9	11,001	9,867	9,786	(1,133)	0.90	81	1.01	15,790	15,710	81
P.10.03.06 - New Linac Modulators	7	15	37	8	(22)	2,864	2,835	2,687	(28)	0.99	149	1.06	4,611	4,432	179
P.10.03.07 - Utilities	0	0	0	0	0	862	862	733	0	1.00	129	1.18	862	733	129
P.10.03.08 - RF Controls	13	0	0	(13)	0	90	34	51	(56)	0.37	(17)	0.66	104	122	(17)
P.10.03.09 - RF/SCL Global Controls	0	0	2	0	(2)	380	380	280	0	1.00	99	1.35	380	280	99
P.10.06 - Conventional Facilities	53	162	99	109	63	8,148	8,148	8,300	(0)	1.00	(152)	0.98	8,189	8,727	(538)
P.10.06.02 - Building Modifications	53	162	99	109	63	8,148	8,148	8,300	(0)	1.00	(152)	0.98	8,189	8,727	(538)

P.10 - Performance

PPU
P.10 Long Lead Procurements
Cost/Schedule Performance Index Chart
(Cumulative Data)



P.10 - DOE FY21 Annual Work Plan Milestones

P.10 LLPs	Planned Finish	Actual Finish	Current Forecast	Owner
Receipt of Last Five Production Cavities at JLab	13-May-21	25-Feb-21		Matt Howell
CF Construction of Klystron Gallery Complete	13-May-21	06-Apr-21		Mark Connell

P.10.02

SCL - LLPs

P.10.02 (SCL) – Risks

Near Term Risks

	Risk ID and Description	Trigger	Expiration	Potential Cost Impact	Potential Schedule Impact
1	None				
2					

Emerging New Risks (describe risk and potential impacts)

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P.10.02 (SCL) – Issues Needing Attention

	Issue	Need	Need Date	Responsible	Current Status
1	PL Procurements	Monitor closely, keep in touch with STL	Current	Matt Howell	Incentive program instituted with a key vendor
2	Supply end can	Correct dimensional issues with supply end cans	Current	Ed Daly	First supply end can has dimensional issues. Working with vendor to correct. Second end can had issue with thermal short. Vendor reworking.
3	Return End Can	Correct dimensional issues with return end cans	Current	Ed Daly	First return end can was out of tolerance by 1 inch in the transverse direction. Vendor reworking. Updating drawing to reflect important bayonet positions relative to beam line.
4					

P.10.02 (SCL) – Key Activities Next 90 Days

	Key Activity	Responsibility	Comments	Status	Time Frame
1	Receive End Cans	Ed Daly		In process	60 days
2	Receive last two cavities	John Mammosser	Cavities mechanically assembled at RI	In process	60 days
3					
4					
5					

P.10.03

RF - LLPs

P.10.03 (RF) – Risks

Near Term Risks

	Risk ID and Description	Trigger	Expiration	Potential Cost Impact	Potential Schedule Impact
1	T-P.3-020 – Transmitter vendor delivery slips due to workload/competition	8/1/2020	8/30/2022	50K	120d

Emerging New Risks (describe risk and potential impacts)

Need to revise T-P.3-020 (or create new risk). Transmitters are delayed due to late subcontractor deliveries.

P.10.03 (RF) – Issues Needing Attention

	Issue	Need	Need Date	Responsible	Current Status
1	Klystron and transmitter production delays	Ongoing communication with vendors	8/1/2021	Moss	Vendor visits planned to assess progress and meet with some sub-suppliers
2					
3					
4					

P.10.03 (RF) – Key Activities Next 90 Days

	Key Activity	Responsibility	Comments	Status	Time Frame
1	Test of FA circulator (P325P116b)	Moss	Unit returned to MT for re-tuning	Ongoing	August 2021
2	AT-HVCM switch plate testing (P364P1040)	Anderson	At Alpha-Omega	Ongoing	July 2021
3	FAT of remaining SCL klystrons	CPI	Sealed and being prepped for test	Ongoing	October 2021
4	FAT of first article AT-HVCM	Alpha-Omega		Upcoming	August 2021
5	FAT of first HPRF Transmitter	L3 Harris	In fabrication	Upcoming	October 2021

P.10.06

CF - LLPs

P.10.06.02.01.03.02 - Variance Explanation

CONTRACT PERFORMANCE REPORT							FORM APPROVED			
FORMAT 5 - Explanations and Problem Analysis							OMB No. 0704-0188			
1. CONTRACTOR		2. CONTRACT		3. PROGRAM			4. REPORT PERIOD			
a. NAME UT-Battelle		a. NAME SNS Proton Power Upgrade (PPU)		a. NAME Proton Power Upgrade			a. FROM (YYYYMMDD) 01-Jun-21			
b. LOCATION (Address and ZIP Code) Oak Ridge National Laboratory		b. NUMBER		b. PHASE CD-3			b. TO (YYYYMMDD) 30-Jun-21			
5. EVALUATION										
P.10.06.02.01.03.02 / ORNL - Procure/Fab - Klystron Gallery Building Modifications (LOE)										
	Budget	Progress	Actuals	SV	SV %	CV	CV %	SPI	CPI	
Current:	53	53	40	0	0%	14	26%	1.00	1.34	
Cumulative:	862	862	1,016	0	0%	-155	-18%	1.00	0.85	
	BAC	EAC	VAC in \$	VAC in %	TCPI to BAC	TCPI to EAC				
At Complete:	902	1,057	-155	-17%	-	1.00				
Explanation of Variance/Description of Problem:										
<p>The Klystron Gallery construction project has required more support from the UTB Project Manager and Construction Field Representative than estimated. The general contractor's project management and project engineering have required significantly more oversight and assistance with submittals, planning, coordination and scheduling. Implementing BIM and the impact of managing the contractor during the COVID-19 pandemic have also increased support costs. Significant support costs were not identified for the electrical interface with operations, survey and alignment support for equipment location verification, and fire protection engineering for daily outages of the building smoke detection system in the initial manpower estimates. Project close out of punch list items and start up and controls installation of HVAC equipment and DI water system equipment have not met project schedule and have delayed completion resulting in additional costs.</p>										
Impact:										
<p>This control account will most likely carry this negative cost variance (CV) through the end of the project.</p>										
Corrective Action:										
<p>None, this negative CV is not recoverable.</p>										
Prepared by: Wayne Steffey		Date: 7/15/2021								
Reviewed by (CAM): Mark Connell		Date:		Approved by (PM): Mark Champion			Date:			
Digitally signed by Mark Connell Date: 2021.07.16 13:29:52 -0400				Digitally signed by Mark Champion Date: 2021.07.16 14:07:50 -0400						

P.10.06 (CF) – Risks

Near Term Risks

	Risk ID and Description	Trigger	Expiration	Potential Cost Impact	Potential Schedule Impact
1	T-P.6-014 - Construction competition for RTBT	2/1/2019	9/30/2023	500K	20d

Emerging New Risks (describe risk and potential impacts)

None.

P.10.06 (CF) – Issues Needing Attention

	Issue	Need	Need Date	Responsible	Current Status
1	Multiple technical change requests are expected from subcontractor.	Subcontractor has begun to provide cost and schedule impacts for potential scope changes	05/31/21	FM-Sylvan/Mark Connell	All change requests from the subcontractor have been negotiated and resolved. Final release received.
2	Daily tracking of critical path activity completion to meet project schedule	Subcontractor tracking activities daily for each crew. UTB personnel tracking schedule performance and activity completion.	Ongoing	FM-Sylvan/UTB construction oversight	All field work is complete. Subcontract close-out process begun.
3					
4					

P.10.06 (CF) – Key Activities Next 90 Days

	Key Activity	Responsibility	Comments	Status	Time Frame
1	Project close-out activities including HVAC test and balance, DI water system commissioning, operations and maintenance documents, warranty documents and contract closure.	FM Sylvan and UTB CM and PM		Ongoing	Close out by 6/30/21 planned.
2					
3					
4					
5					