

SRS Aligning Mission Needs and Aging Infrastructure: *Savannah River Nuclear Solutions Perspective*

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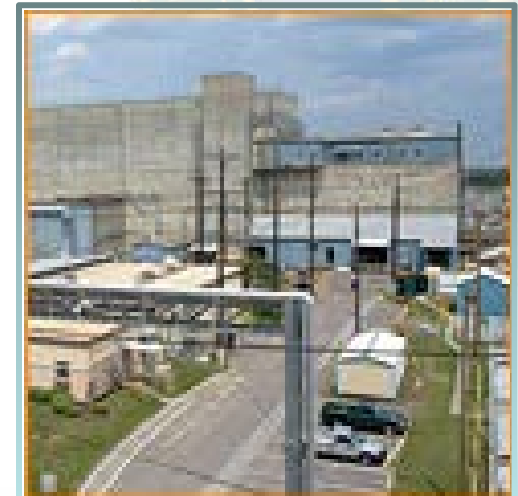
Savannah River Site





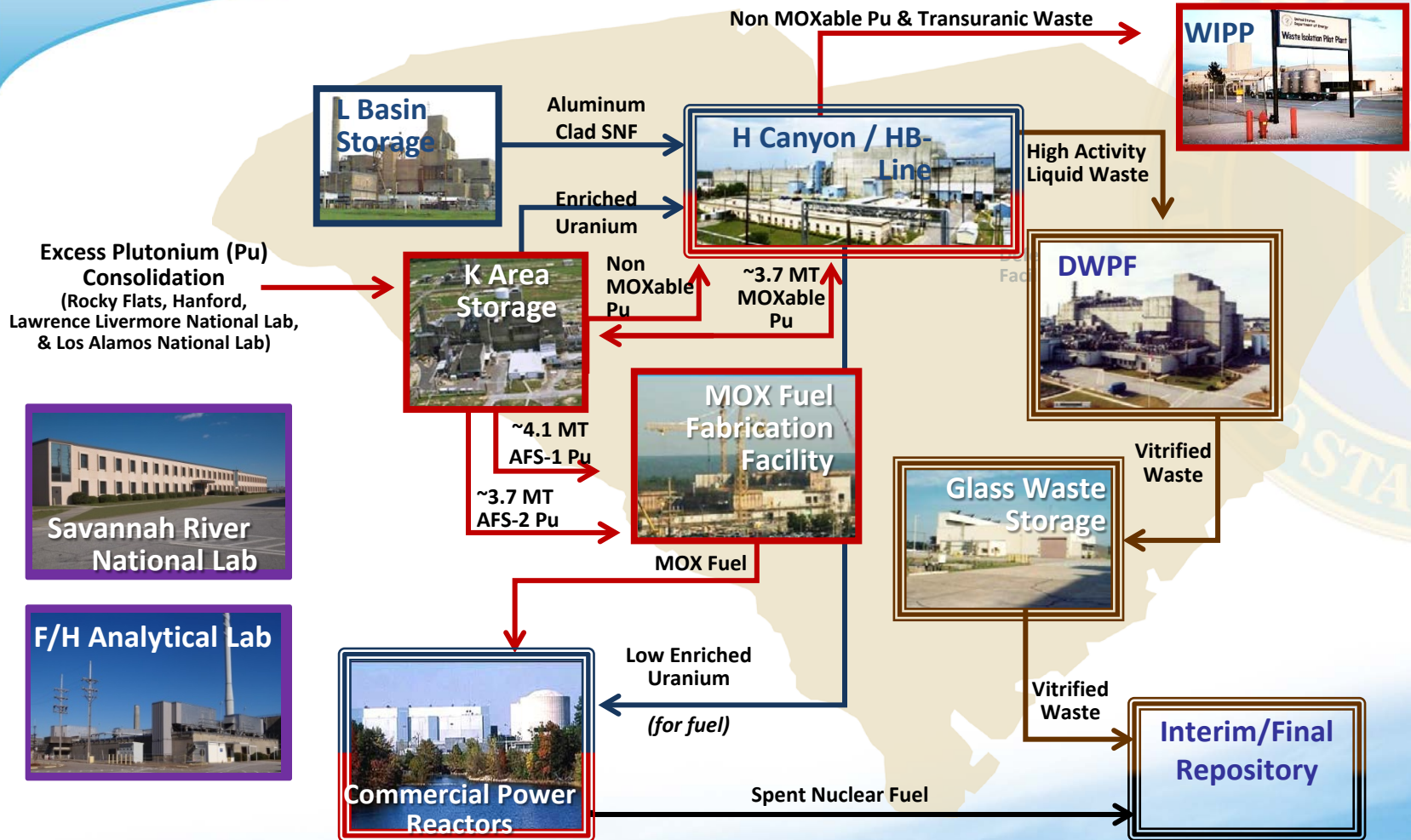
SRNS and Aging Infrastructure

- Much of the SRS Infrastructure is over 60 years old
- Costs continue to increase for temporary fixes to keep the infrastructure in a minimal working order
- SRNS is the Management and Operations contractor at SRS and has responsibility for maintaining the general site – over 300 square miles
- SRNS also operates the majority of the facilities onsite (H-Canyon, HB-Line, Tritium Facilities, L-Area, K-Area, F/H Laboratory and SRNL)
- Historical mission of SRS has evolved over time – enduring missions
- Existing missions and potential new work for DOE EM and NNSA require site infrastructure and operating facilities to be maintained





SRS – An Integrated Mission



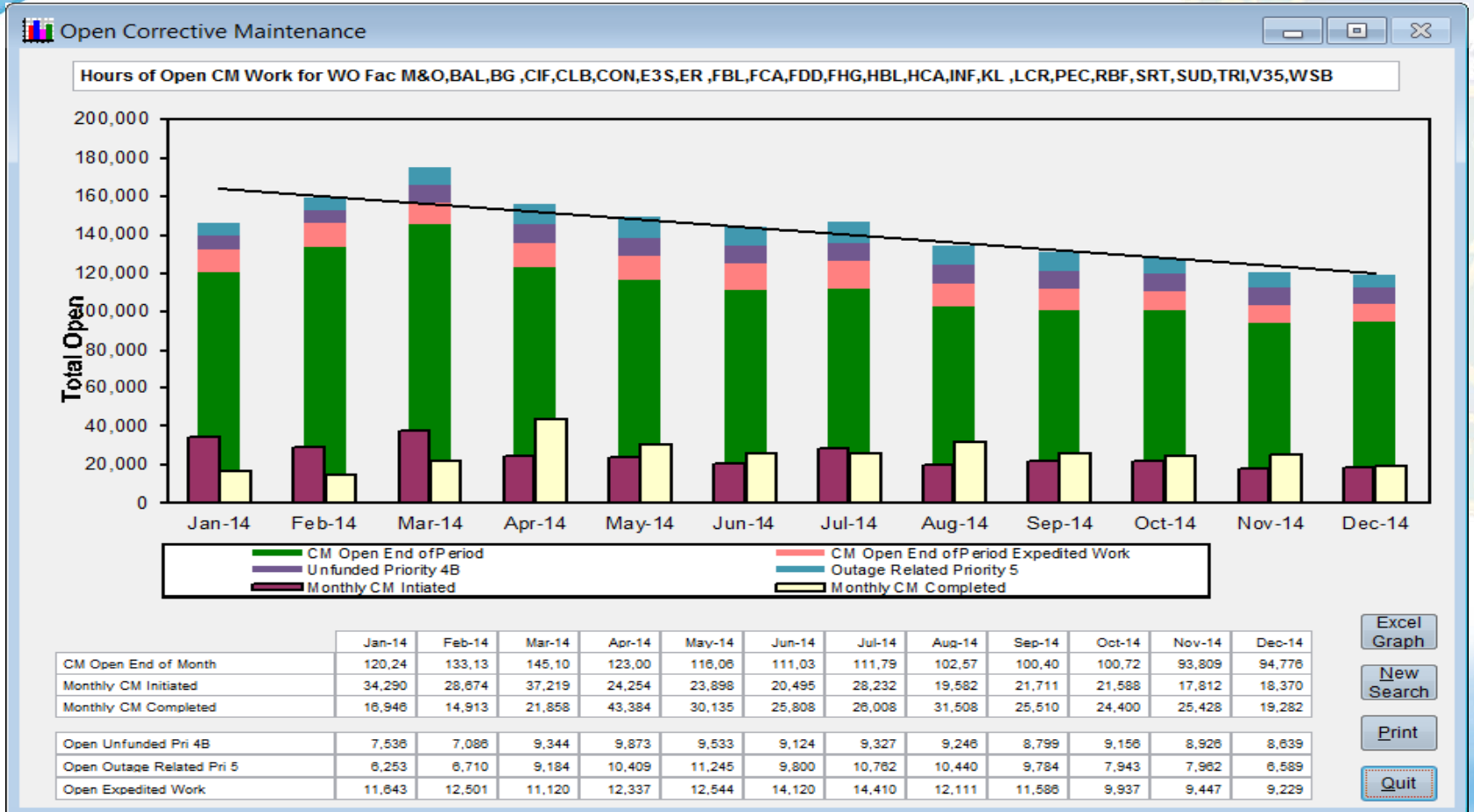


Infrastructure Program Overview

- Infrastructure upgrades consist of projects, modifications and repair work
- Drivers include facility life extension, DSA revision (STD-3009) and new mission requirements
- System deficiencies identified through a variety of means:
 - System Health Reports, TSR Surveillances, functional tests, calibrations, operator rounds, proficiency runs, housekeeping walkdowns
- Repair work is handled through Work Management system and is performed by Maintenance and Construction
 - Overall site trend is positive
- Modifications managed through a prioritization system for design and field installation work



Corrective Maintenance Backlog





Safety Systems

– *Well Maintained and Highly Reliable*

- Systems, structures and components that are credited to protect the offsite population and the onsite worker are maintained as Safety Class or Safety Significant
- Operability defined in the facility Technical Safety Requirements, including periodic surveillances, functional tests and calibrations
- System Engineers monitor system performance, perform periodic System Health reports which includes aging equipment management
- Action items are generated to maintain high level of reliability and system availability
- Due to their function, Safety Systems are prioritized over other equipment for corrective maintenance and for modifications

***No compromise on maintaining equipment
important to nuclear safety***



Design Priority List

- A management tool to ensure Design Agency resources are being applied on high priority needs in a facility
- Periodic meetings are held with Operations, Engineering, Radiological Protection and Maintenance to review ranking and consider emergent needs
- Prioritization is based on safety and security, functional classification, available redundancy, mission need, facility support

H CANYON											
DESIGN ENGINEERING PRIORITY LIST											
Priorty	Facility	Title	MT #	MT Status	Design Output Document #	Speed Chart	Estimated Hours	Hours to Go	Comments/Current Status	Responsible Engineer	Design Authority Engineer
1	H Canyon	Provide Seismically Qualified 291-H Annulus Discharge Damper	MT-HCA-2013-00014	Approved	M-DCP-H-13014	02WTDMMGEN			DCP with Mike Patterson since 10/27/14	Brian Pool/ Frank Berry	Mike Patterson
2	H Canyon	Repair Voids in HEPA Filter Room above Doors 12 and 13	MT-HCA-2014-00009	Approved	C-DCP-H-04356	02WTDMMGEN			Complete, issued to DCC	Amit Ganguly	Skip Hicks
3	H Canyon	Install fire dampers at duct penetrations in stairwell in sections 1 and 18	MT-HCA-2009-00033 Rev. 1	Approved	M-DCP-H-14007	02WTDMMGEN	500		Work On-Hold per Carlton Travis due to DA priorities	Mike Petrella	Mike Patterson
4	H Canyon	Correct NFPA 101 Violations - Cable Tray section 1 stairway	MT-HCA-2013-00003 Rev. 1	Not Approved	E-DCP-H-14005	02WTDMMGEN			MT change FC from "SC" to "GS". MT with Leon Scott 8/19/14. Issued DCP w/o Penetration Scope for team review 12/4/14. (Raiford, Scott, Hicks and Carter to go)	Steve Gasperini	Darrel Raiford
5	H Canyon	Replace mixer settler 13.1M (1A Bank) VFD	MT-HCA-2012-00008	Approved	E-DCP-H-14010	02WTDMMGEN			DCP issued for team Review 11/13/14. Dukes, Hart, Scott, Raiford, Beauchamp, Carter, Mcmillan and Crouch.	Chandra Prakash	Darrel Raiford
6	H Canyon	SRE - Replace H-Canyon RRT Rollup Door	MT-HCA-2012-00009	Approved	TBD	02WTDMMGEN	850		Scope not authorized at this time.	Frank Berry	Darrel Raiford



Facility Integrated Priority List

- A management tool to prioritize infrastructure needs to support funding decisions
- Criterion: Safety and Health, Regulatory Compliance, Mission Support and Cost
- List is periodically reviewed and updated based on emergent issues, changes in mission etc.
- Amount of available funding is an important factor in which items will be worked during the Fiscal Year

H Area Infrastructure Integrated Priority List (IPL)

Rev. 2 Updated 1/21/2015

Item #	Org	Priority Order	Priority Rank	Description	Estimate of Cost	Funding Source	Comments
1	HCA	1	H	REPLACE 285-H UNIT SUBSTATIONS (2.4kV AND 480V) (PROCUREMENT & INSTALLATION)	5076		E-DCP-H-07025 Rev. July 2011 (On the CI IPL)
2	HCA	2	H	REPLACE RETURN BASIN (281-2H) SUBSTATION & TRANSFORMER (PROCUREMENT & INSTALLATION)	1000		(On the CI IPL)
3	HCA	3	H	Make 7 th level Canyon roof repairs	700		(On the Site CI IPL)
4	HBL	4	H	Design and Isolate Phase III Vessel Vent vessels from HBL Vessel Vent System (Rev. 6)	(TSR)		MT-HBL-2014-00006
5	HBL	5	H	Design and provide alternate pumping system for NT31/32 transfers to 9.6 (Rev. 6)	(TSR)		MT-HBL-2014-00008
6	HBL	6	H	Design and replace NT-31/32 Bartex level instrumentation with radar level inst.			MT-HBL-2011-00007 Rev. 1
7	HCA	7	H	Revise drawing and fabricate 75 GPM jet jumper for tank 8.8 (Support TRM)			MT-HCA-2014-00005
8	HBL	8	H	TIE-IN CONNECTION FOR ALTERNATE DIESEL GENERATOR FOR HB-LINE	500		(MT-HBL-2009-00001) (On the CI IPL) (INCLUDES DIESEL INSTALLATION)
9	HCA	9	H	221-H section 1 and 18 stairwell ductwork mod. - Install fire dampers at duct penetrations			(MT-HCA-2009-00033) M-DCP-H-14007
10	HCA	10	H	Design for removal of cable tray and install metal conduits in stairwell 1 - NFPA 101 violation			(MT-HCA-2013-00003 Rev. 1 not approved) E-DCP-H-14005



Critical Infrastructure Integrated Priority List

Full Critical Infrastructure IPL Exec. IPT Rev. 10										Final Updated 10/30/2014		Page 1
Item #	Funds/ Org	Project Name	Risk Class	Cost (\$K)				Total Cost To Go	Risks	Comments / Mitigation		
				Est. Phase FY15	Cost (\$K) Phase FY16	Cost (\$K) Phase FY17	Cost (\$K) Phase FY18					
1	12 SFP	Replace Degraded L-Area Main Power Supply (L-Area Reliable Power); Risk & \$ Increased	CL3 FY08	\$1,200 E & P & C	\$2,000 P & C	\$1,000 P & C	\$0 None	\$4,200	90+ year old electrical switchgear. Unplanned power outage increases risk for personnel injury in L Area facilities and surrounding buildings, due to the loss of normal lighting, ventilation, etc.	Revised risk due to recent failures of 13 8kV breakers. Estimate revised. Due to age of SOW documents, design needs to be reviewed by Design Eng. Engineering path forward is in development. Design & Procurement Specs completed. Procurement/Installation of new switchgear awaiting funding. Engineering Path Forward being developed to provide details for responding to various power loss scenarios.		
2	11C NMM	K-Area Reliable Power	CL2 FY11	\$1,732 E & P	\$490 P & C	\$2,147 P & C	\$1,147 P & C	\$5,663	90+ years old. Unplanned power outage like the one experienced in K Area on 8/23/2011 increases risk for personnel injury in K Area facilities and surrounding buildings, due to the loss of normal lighting, ventilation, etc.	K-Area meets the FY2016 Budget Development Guidance for a Minimum Safe Facility in Hot Standby. Reference: Risk Assessment # KCA-080 & KCA-106 Design & Procurement Specs completed. Procurement/Installation of new switchgear awaiting funding. Engineering Path Forward being developed to provide details for responding to various power loss scenarios.		
3	13 SS	A-Area Fire Water Supply Upgrades	BPH		\$3,311 E & P & C	\$0 None	\$0 None	\$3,311	Severely degraded. Safety Sig. 60 year old Firewater Supply Syst. (FWS) including pumps, tanks & associated equipment needs immediate replacement. Failure of the FWS would cause all SRNL Haz. Cat. 2 Nuclear Facility and hot lab ops. to be terminated.	\$1,691K funded in FY15. Project and Design activities continue. Temporary Exemption (LE) Number SR-S-SRID-PA12-TE-2014-001 has been prepared for approval by DOE Closely monitor the system condition. Optimize PM Program to minimize service interruption. Develop, prioritize and prepare system temporary and permanent modes in the event that equipment system failures happen.		
4	11C HCA	Replace 285-H Unit Substations (2.4KV and 480V) (Procurement & Installation)	CL4 FY08	\$1,300 P	\$2,700 C	\$0 None	\$0 None	\$4,000	Substations 50+ years old, rusting and deteriorating. Failures will prevent the supply pumps and cooling tower fans from providing normal and independent process cooling water to the H Canyon facilities resulting in suspending facility operations.	Design Complete FY11. Equipment requires 8 months lead time. Accepting Risk		
5	11C HCA	Replace Return Basin (281-2H) Substation & Transformer (Procurement & Installation)	BPH	\$650 E & P	\$1,350 C	\$0 None	\$0 None	\$2,000	50+ years old. Part of 285-H substation. Failure will prevent the supply pump and cooling tower fans from providing normal and independent process cooling water to the H Canyon facilities resulting in suspending facility operations.	No work funded at this time. Accepting Risk		
6	11C HCA	Repair 221 H-Canyon Level 7 Roof	BPH	\$250 P & C	\$250 C	\$0 None	\$0 None	\$500	Roof membrane is leaking. Roof is a Safety Class structure and leaks are a source of mineral deposits in the warm crane walkway and have the potential to cause unplanned crane and process outages.	No work funded at this time. Accepting Risk		
7	11C HCA	294-1H Sand Filter Roof Upgrades	BPH	\$375 P & C	\$375 C	\$0 None	\$0 None	\$750	Roof membrane is leaking. A water intrusion potential impact to Safety Class function of the 294-1H Sand Filter which is 1 of 2 sand filters that operate in parallel to remove radioactive particulate from H Canyon and HBL process ventilation streams.	No work funded at this time. Accepting Risk		
8	11C HCA	292-H Roof Restoration (roof currently leaking)	BPH	\$375 P & C	\$375 C	\$0 None	\$0 None	\$750	Roof is a Safety Class structure and leaks are a source of mineral deposits in the building and have the potential to cause unplanned equipment (Canyon Exhaust, Recycle Vessel Vent, and Process Vessel Vent fans and electrical distribution outages).	No work funded at this time. Accepting Risk		
9	11C HCA	294-H Sand Filter Roof Upgrades	BPH	\$666 P & C	\$667 C	\$667 C	\$0 None	\$2,000	Roof membrane is leaking. A water intrusion potential impact to Safety Class function of the 294-H Sand Filter which is 1 of 2 sand filters that operate in parallel to remove radioactive particulate from H Canyon and HBL process ventilation streams.	No work funded at this time. Accepting Risk		

LEGEND

Estimate Class	Phases	Risk Level
CL1 Class 1	E Engineering	High
CL2 Class 2	P Procurement	
CL3 Class 3	C Construction	Moderate
CL4 Class 4	E&P Eng. & Procurement	
CL5 Class 5	P&C Procurement & Const.	Low
BPH Budget Place Holder	E&P&C Eng & Procurement & Const.	

Estimate Class	Class 1	Class 2	Class 3	Class 4	Class 5
Expected Accuracy Range	L: -3% to -10% H: +3% to +15%	L: -5% to -15% H: +5% to +20%	L: -10% to -20% H: +10% to +30%	L: -15% to -30% H: +20% to +50%	L: -20% to -50% H: +30% to +100%

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SRNS Infrastructure Strategic Outlook

- SRNS will continue to work closely with DOE to identify and address infrastructure needs
 - Critical Infrastructure Integrated Priority List
 - Infrastructure Alignment Study
 - Tritium Responsive Infrastructure Modification Plan
 - SRNL Infrastructure Sustainment Plan
- New missions as potential source of facility infrastructure funding
- Evaluate existing site infrastructure vs. future missions
- Consolidation of buildings and site services
- Explore and support innovative approaches

Infrastructure requires continued management attention and substantial funding to allow the Savannah River Site to continue meeting its vital national missions