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ENVIRONMENTAL COMPLIANCE & AREA COMPLETION PROJECTS (EC&ACP) STANDARD OPERATING PROCEDURES, VOL. I

P-AREA OPERABLE UNIT REACTOR BUILDING AND DISASSEMBLY BASIN FIELD INSPECTION CHECKLIST

Manual:	**C3**
Procedure:	**ER-IDS-019-065**
Revision:	**3**
Effective Date:	**10/25/2016**
Type-Class:	**Form**
Page:	**1 of 11**

4/12/18

WORKING COPY

This document is a Working Copy. Prior to start of work, verify this is the latest revision per the Procedure Index.

Charles P. Carter — **Verified By**

10-25-17 — **Date**

CAUTION

The Inspector shall IMMEDIATELY notify the Post-Closure Manager and Environmental Compliance Authority if there has been a breach or compromise of the institutional controls of this waste unit. This notification shall be in accordance with Savannah River Site post-closure inspection procedures.

NOTE

1. Manual C3, ER-SOP-019, *Waste Unit Inspection and Maintenance*, shall be referred to for inspection details.
2. Steps in this checklist may be completed concurrently or in any order.
3. Due to high elevation and hard to reach area of the roofs, this verification may be performed by reviewing and evaluating the aerial photos obtained annually and by comparing them to the baseline photos located in EC&ACP Document Control under P-Area CD (SRNS-MM-2013-00014). Changes such as structural collapses, visual water seepage from lower portions of the building, visible changes in standing water, or drainage patterns on the roofs shall be evaluated for action. This method of inspection may continue until such time that a walkdown inspection of the roofs is necessary and possible repairs are needed. Any photos used for this evaluation shall be attached to the inspection report and included in the file submitted to EC&ACP Document Control.

☑ **SCHEDULED** ☐ **UNSCHEDULED**

A = Satisfactory X = Unsatisfactory (Explanation required)		**A or X**	**Observation/Corrective Action Taken**
1.	Verify roads are accessible to 105-P Reactor Building and Basin.	A	
2.	Verify 105-P Reactor Building Complex roofs are functioning and free of woody vegetation. Submit inspection reports to Cognizant Technical Function to review and evaluate functionality of roofs. (**REFER TO** Note 3).	X	VEGETATION GROWING ON ROOF. SEE MAP NOTED. REF. MAINT. REGISTER PC-2017-00090

P-Area Operable Unit Reactor Building and Disassembly Basin Field Inspection Checklist

Manual: C3
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☑ SCHEDULED ☐ UNSCHEDULED

A = Satisfactory X = Unsatisfactory (Explanation required)		A or X	Observation/Corrective Action Taken
3.	Verify access doors to 105-P Reactor Building complex and concrete cover at the 108-1P and 108-2P Engine House are sealed.	A	
4.	Verify excessive deterioration of disassembly basin cover has not occurred, basin cover is free from debris, and woody vegetation.	X	SEVERAL AREAS OF CAULKING IN EXPANSION JOINTS NEED REPAIR. SEE MAP NOTE (2). REF MAINT. REGISTER PC-2017-00091
5.	Check integrity of stone armament for presence of excessive erosion. Maintain area surrounding the building up to and including perimeter roads for vegetation.	A	
6.	Verify there are no unauthorized excavations, digging, or construction activities at or close vicinity of the building.	A	
7.	Other SEE PREVIOUS YEARS INSPECTION, DATED 10-26-16	NOTE	DETERIORATED CONCRETE AT EDGE OF STACK AREA DOES NOT APPEAR TO HAVE CHANGED SINCE LAST INSPECTION. SEE MAP NOTE (3) FOR LOCATION.

Inspected By		
Charles P. Carter / Richard Feagin	Charles P. Carter / Richard Feagin	10-25-17 / 10-26-17
(Print Name)	(Signature)	(Date)

Review By Cognizant Technical Function		
PETER AVOLI	Peter Avoli	12-11-17
(Print Name)	(Signature)	(Date)

Review By Post-Closure Manager		
George W Joyner	George W Joyner	12/12/17
(Print Name)	(Signature)	(Date)

P-Area Operable Unit Reactor Building and Disassembly Basin Field Inspection Checklist	Manual: C3 Procedure: ER-IDS-019-065 Revision: 3 Page: 3 of ~~8~~ 11

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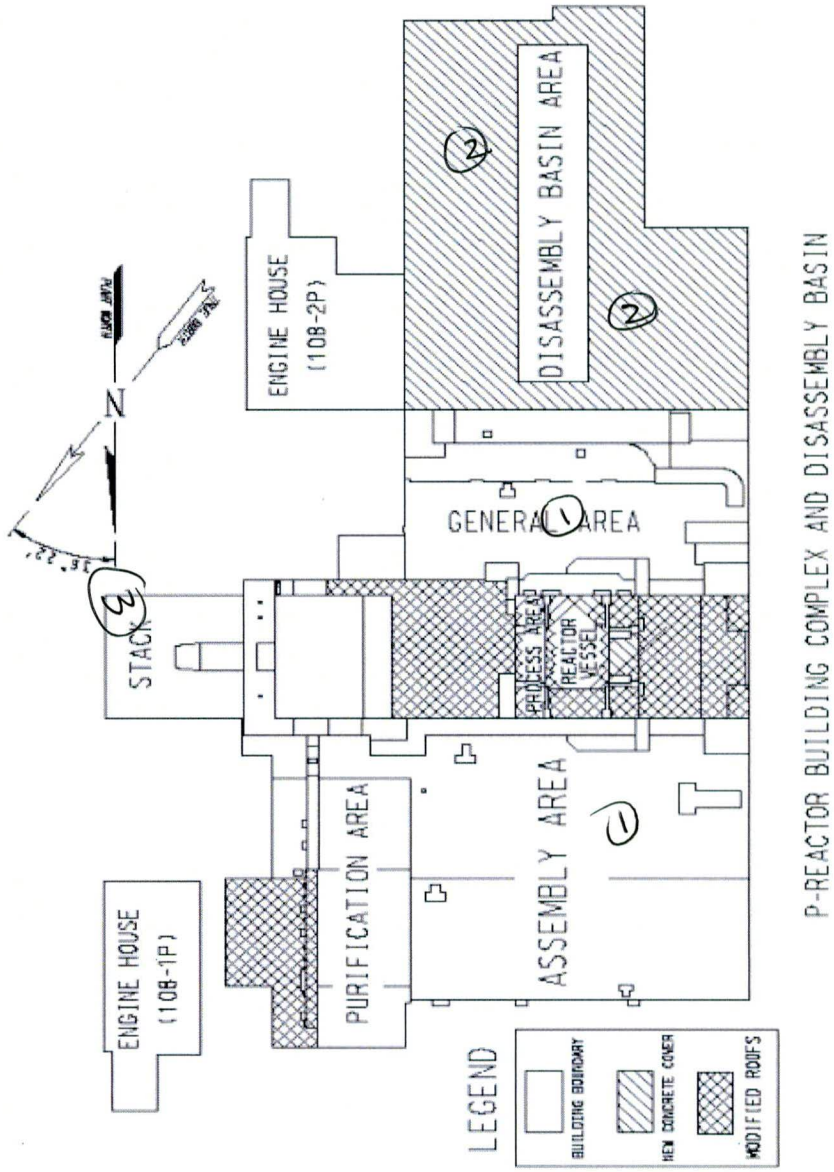
P-Area Operable Unit Reactor Building and Disassembly Basin

Remote Worker
S2 - E4



NOTES: ① VEGETATION GROWING ON ROOF. ACP IS CURRENTLY DEVELOPING A WORK PACKAGE TO CLEAN SILT, SAND, DEBRIS AND REMOVE VEGETATION.
② SEVERAL AREAS OF CAULKING IN EXPANSION JOINTS NEED REPAIR. ACP WILL DEVELOP A WORK PACKAGE TO REPAIR CAULKING JOINTS ON THE DISASSEMBLY BASIN COVER
SEE ATTACHED CTF REVIEW COMMENTS

2017, 105-P Inspection

Condition of the roofs remained the same since last inspection. There was no further deterioration at the edge of concrete roof were stack was located and the flaw on the high hat (See Attached Memo). Vegetation growth is present at various areas on the roof. The sediment should be removed to eliminate and prevent vegetation. Some spots exist on the roof that cause the potential for pooling water. A crack on the process room cap appears to be widening and should continue to be monitored. The crack on the north face below the actuator has no change. Please see pictures for further details.

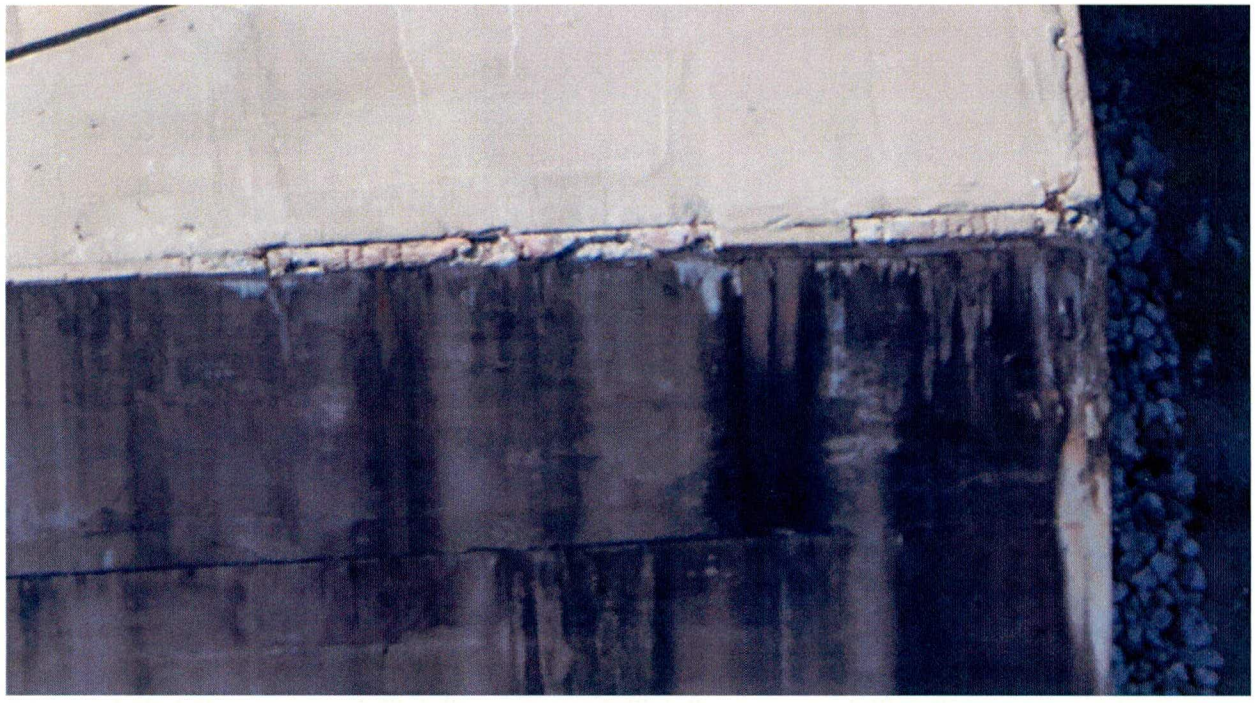


Photo 1: Concrete Edge Degradation

Figure 2: Vegetation

2017, 105-P Inspection

Figure 3: Potential Area for Pooling

Figure 4: Crack on Process Cap

Figure 5: Crack on North Face

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INTEROFFICE MEMORANDUM

May 30, 2017 SRNS-E3520-2017-00008-SM, Revision 1

TO: WILLIAM B. GRIFFIN 730-4B/3128

FROM: GUY R. BALDWIN 730-2B/2175 GRB

105-P ACTUATOR TOWER ROOF SLAB FLAW AT THE SOUTHEAST CORNER

Ref: 1. SDD-2011-00144, Revision 0, "105-P Roofs Final Report – Final Configuration Summary"
2. Drawings:
- C-CC-P-00020, R3
- C-CC-P-00023, R1
- C-CC-P-00024, R1

A concrete flaw was recently identified in the edge of the southeast corner of the roof cap slab on top of the 105-P Actuator Tower. The flaw is a hole into the edge of the 12" thick concrete slab exposing one of the edge bars. Photos of the flaw are provided in this document.

OBSERVATIONS:

1. The flaw is near the southeast corner, on the east side in the edge of the 12" cap slab overhang.
2. One of the epoxy-coated rebars is exposed. The bar is clean with no cement paste on it. From the edge detail on Drawings C-CC-P-00023 & 00024 it is seen the exposed bar is a #6 hooked bar that was intended to have 3" of concrete cover. There is no corrosion visible on the bar.
3. Given the location of the exposed bar, it is expected there are at least two bent bars (one each way) embedded between the flaw and the corner.
4. A crack starts at the top of the flaw and runs vertically down the thickness of the slab, turns at the bottom of the slab across the corner at approximately 45 degrees and appears to turn up vertically on the south side of the slab. There are other crack branches seen as well. There is some efflorescence seen on the bottom of the slab along the crack.
5. There appears to be a foreign substance in the flaw where the bar disappears near the top of the slab. The substance looks like a wad of grass or frayed rope.
6. The surface of the flaw appears to vary. The upper right portion in Photo DSC 0009 (attached) is clearly a break. The aggregate is fully exposed or split. The flaw near the exposed bar has a coating of cement paste over the aggregate; however there is no paste visible on the exposed bar.
7. The "105-P Aerial Taken 9-14-12" (attached) shows this flaw was visible one year after the slab placement in 2011.

DISCUSSION:

The observations of the surface texture indicate the flaw is a void in the concrete that had a thin veneer on the surface. The thin veneer was likely stripped away when the forms were removed, leaving the void exposed. Thus, the flaw is deemed a product of construction, which is corroborated by the attached "105-P Aerial Taken 9-14-12", showing the flaw was present a year after the slab was constructed.

The crack across the corner is an indication the corner was subjected to an impact, perhaps during removal of the scaffolding and forms used during installation. Given the bars embedded in the projecting portion of the corner, it is not likely the corner will fall off. This is further assured by the presence of effervescence on the bottom of the slab along the crack. The slab has Integral Crystalline Waterproofing (ICW) in the concrete mix to seal cracks should they form after the slab has hardened. Thus, it is thought the cracks are annealing over time.

The presence of this flaw in the edge of the overhang does not threaten the underlying Actuator Tower. There is no indication the flaw will allow water to get into the building. The exposed rebar would be vulnerable to corrosion without the epoxy coating; however, the coating protects the bar for a time.

RECOMMENDATION:

Continue to surveille the flaw on an annual basis for signs of degradation. If it is seen the exposed bar is corroding, or if the corner is degrading further it would be prudent to consider applying a repair mortar with corrosion inhibitor.

If you have questions, call me at 2-8971.

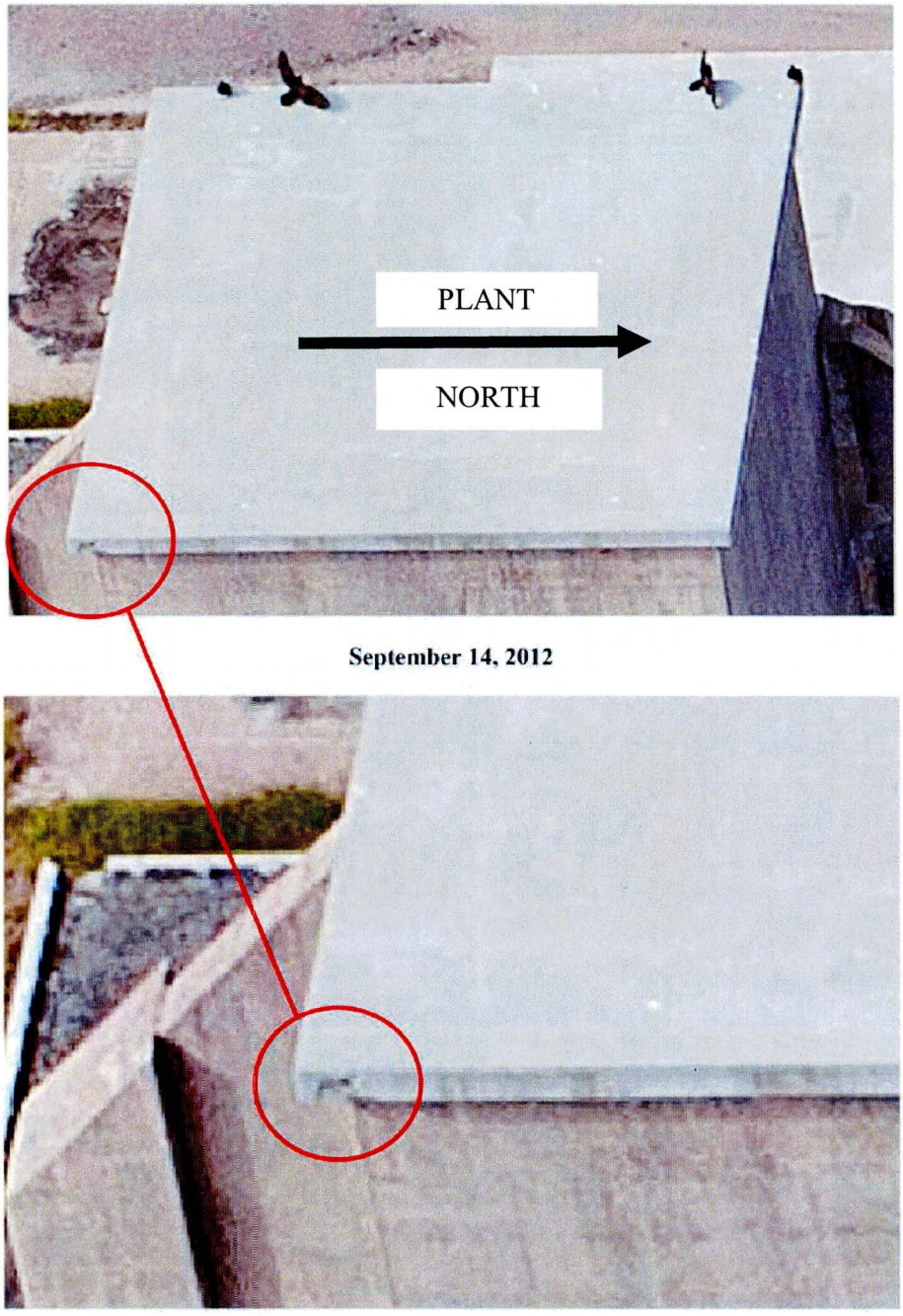
grb
Attachment
c: S.A. Carey, 730-2B/2176
T.F. Gaughan, 730-4B/323
J.V. Grigsby 730-2B/2137 (EDWS)
J.M. Griffith 730-4B/3003
G.S. Elchoufi, 730-2B/218
J. K. Blankenship 730-4B/3126
P. V. Avioli 730-4B/3039
J. K. Santos 730-4B/3002
C.L. Bergren, 730-4B/320

Image DSC 0009

Note the cracking across the underside of the overhang corner, exposed epoxy coated bar (depth 3"), aggregate exposed near the surface but not near the bar and the foreign material near the top of the exposed bar..

105-P Actuator Tower Roof Prep

Note the clear distance between the edge bars and the form is approximately 3" and the bars are coated with epoxy. No explanation for the welded wire mesh on top of the reinforcing grid.



Aerial taken September 14, 2012 showing flaw was present one year after construction