

**From:** Sigmon, Chet Austin <Chet.Sigmon@duke-energy.com>  
**Sent:** Monday, September 27, 2021 2:09 PM  
**To:** Klos, John  
**Cc:** Zaremba, Arthur H.; Grzeck, Lee  
**Subject:** [External\_Sender] RE: [EXTERNAL] chet, is it possible NRC could also get related pictures, as appropriate, from/related to today's Stm Gen. discussion?, thanks John K (eom)  
**Attachments:** Primary Separator Curved Arm Stiffener Erosion NRC Presentation.pdf

John,

Attached is a PDF file of the presentation, which also updates some of the wording to reflect "erosion" as opposed to "FAC" which was discussed on the call today. Please use this file when updating anything on your end.

Thank you,

***Chet A. Sigmon, P.E.***

*Senior Nuclear Engineer  
Fleet Licensing  
Duke Energy  
Office: (704) 382-7269  
Cell: (704) 929-3138*

---

**From:** Sigmon, Chet Austin  
**Sent:** Monday, September 27, 2021 1:08 PM  
**To:** Klos, John <John.Klos@nrc.gov>  
**Cc:** Zaremba, Arthur H. <Arthur.Zaremba@duke-energy.com>; Grzeck, Lee <Lee.Grzeck@duke-energy.com>  
**Subject:** RE: [EXTERNAL] chet, is it possible NRC could also get related pictures, as appropriate, from/related to today's Stm Gen. discussion?, thanks John K (eom)

John,

See the presentation attached. The list of attendees is as follows:

Chet Sigmon  
Art Zaremba  
Etienne Fonteneau  
Mitch Hatley  
Chuck Cauthen  
Dan Mayes

Thank you,

***Chet A. Sigmon, P.E.***

*Senior Nuclear Engineer  
Fleet Licensing  
Duke Energy  
Office: (704) 382-7269  
Cell: (704) 929-3138*

---

**From:** Klos, John <[John.Klos@nrc.gov](mailto:John.Klos@nrc.gov)>

**Sent:** Monday, September 27, 2021 11:26 AM

**To:** Sigmon, Chet Austin <[Chet.Sigmon@duke-energy.com](mailto:Chet.Sigmon@duke-energy.com)>

**Cc:** Klos, John <[John.Klos@nrc.gov](mailto:John.Klos@nrc.gov)>

**Subject:** [EXTERNAL] chet, is it possible NRC could also get related pictures, as appropriate, from/related to today's Stm Gen. discussion?, thanks John K (eom)

**\*\*\* CAUTION! EXTERNAL SENDER \*\*\* STOP. ASSESS. VERIFY!!** Were you expecting this email? Are grammar and spelling correct? Does the content make sense? Can you verify the sender? If suspicious report it, then do not click links, open attachments or enter your ID or password.

Thanks in advance,

*John Klos*

**DORL Mcguire, Surry Licensing Project Manager**

**U.S. NRC, Office of Nuclear Reactor Regulation (NRR),**

**Division of Operating Reactor Licensing (DORL),**

**NRC/NRR/DORL/LPL2-1, MS O9E3**

**Washington, DC 20555-0001**

**301.415.5136, [John.Klos@NRC.gov](mailto:John.Klos@NRC.gov)**

**Hearing Identifier:** NRR\_DRMA  
**Email Number:** 1374

**Mail Envelope Properties** (BYAPR03MB43287D4685569374F6A64BD5A0A79)

**Subject:** [External\_Sender] RE: [EXTERNAL] chet, is it possible NRC could also get related pictures, as appropriate, from/related to today's Stm Gen. discussion?, thanks John K (eom)  
**Sent Date:** 9/27/2021 2:09:27 PM  
**Received Date:** 9/27/2021 2:10:26 PM  
**From:** Sigmon, Chet Austin

**Created By:** Chet.Sigmon@duke-energy.com

**Recipients:**  
"Zaremba, Arthur H." <Arthur.Zaremba@duke-energy.com>  
Tracking Status: None  
"Grzeck, Lee" <Lee.Grzeck@duke-energy.com>  
Tracking Status: None  
"Klos, John" <John.Klos@nrc.gov>  
Tracking Status: None

**Post Office:** BYAPR03MB4328.namprd03.prod.outlook.com

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>	
MESSAGE	2103	9/27/2021 2:10:26 PM	
Primary Separator Curved Arm Stiffener Erosion NRC Presentation.pdf			635188

**Options**  
**Priority:** Normal  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**

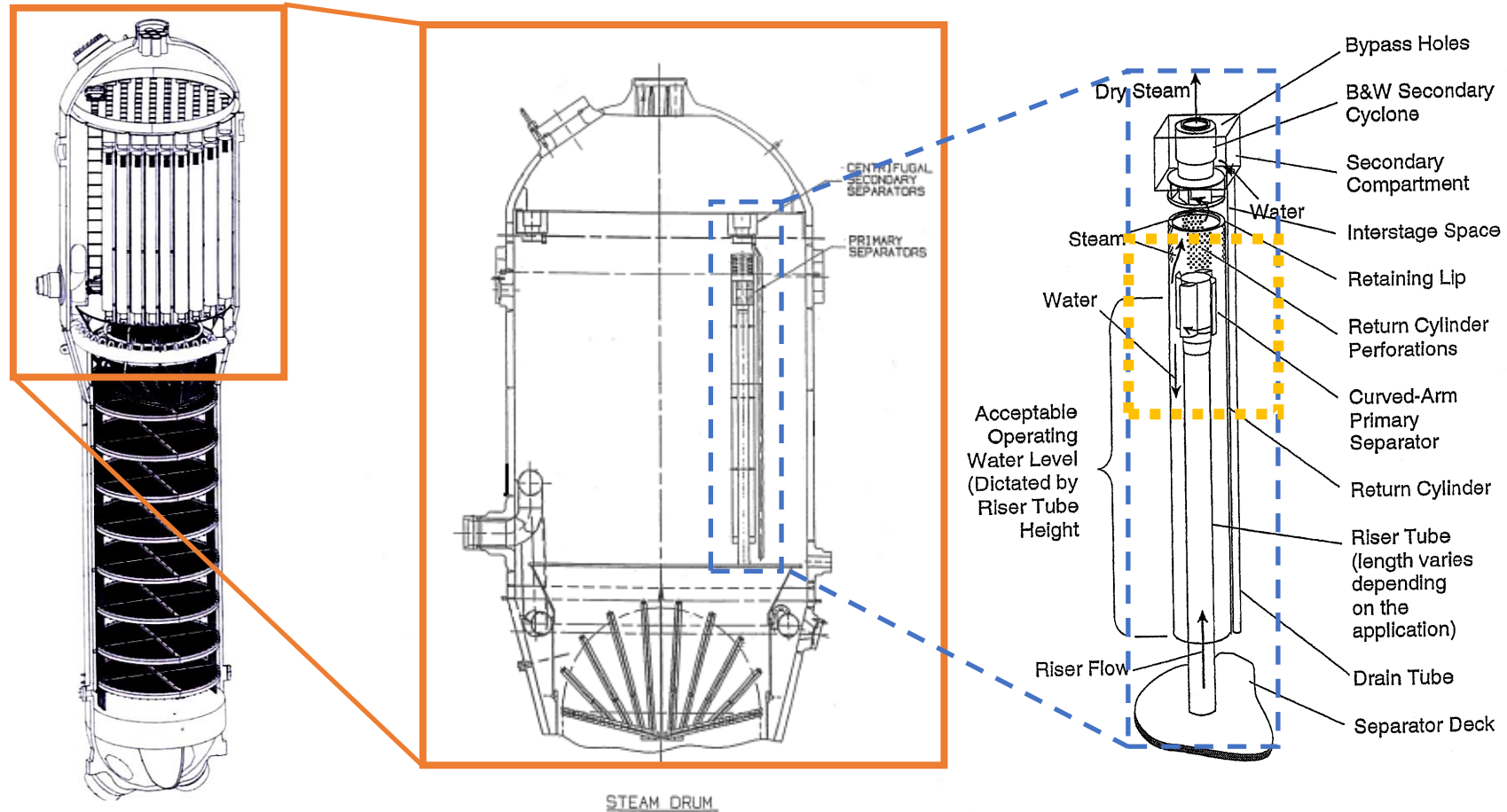
# McGuire Unit 2 Steam Drum Inspection

Primary Separator Curved Arm Stiffener Erosion

# McGuire Steam Drum Inspection Plan

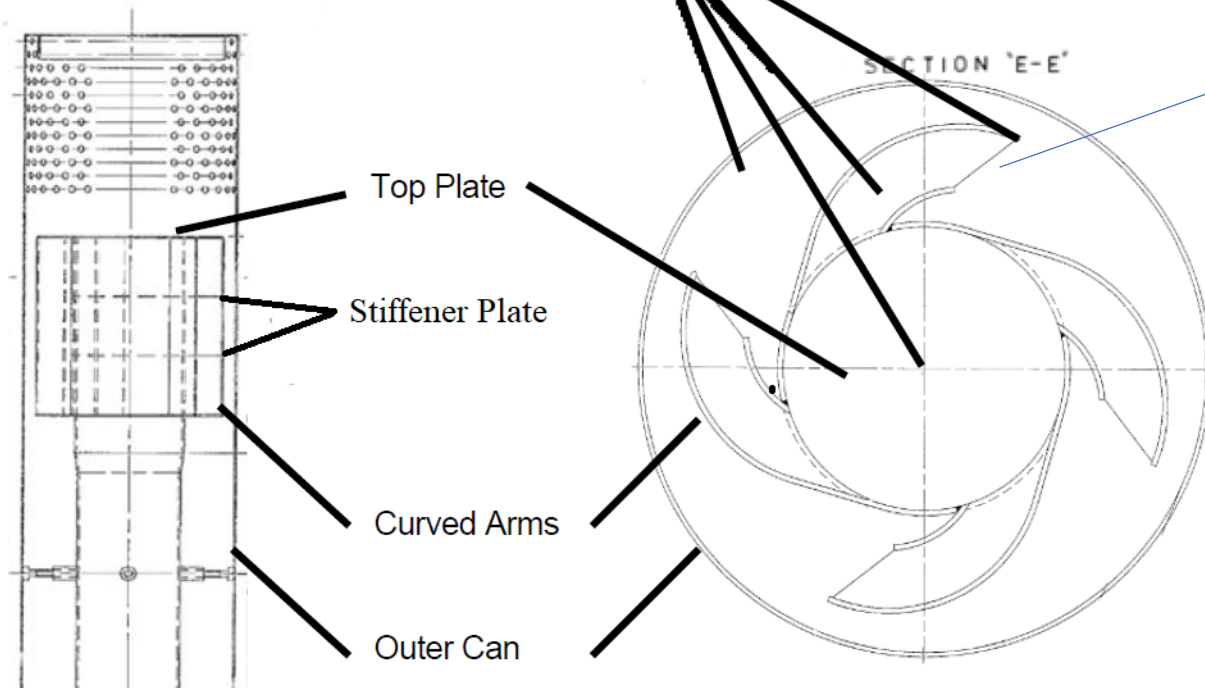
- As part of the McGuire M2R27 Steam Generator Steam Drum inspection, Duke requested an inspection plan from the SG OEM.
- The following was recommended by the OEM
  - recommended we follow our normal Steam Drum Inspection plan.
  - recommended inspection of a sample of Secondary Separator bottom plate (metrology) and all separator skimmer wall area (visual), where erosion has been found previously McGuire.
  - provided additional visual inspection areas based off recent OE.
  - recommended that 30 Primary Separators should be visually inspected with particular interest in the following:
    - Primary Separator Top Plate
    - Inside surface of a sample of the Curved Arms
    - Stiffener Plates within a sample Curved Arms
    - ID surface of the Outer Cylinder (Can).
- During the Inspection on Sept 18<sup>th</sup>, a new to McGuire issue was found. Through wall erosion was found in five Stiffener Plates in two Primary Separator Curved Arm Separators.
  - Three Stiffener Plates in the #2 Primary Separator
  - Two Stiffener Plates in the #6 Primary Separator
- This erosion has been found within the industry previously (Darlington U3 and Wolsong), however, this was the first time inspection of this region

# Steam Drum Arrangement



# Primary Curved Arm Separator Stiffener Plate

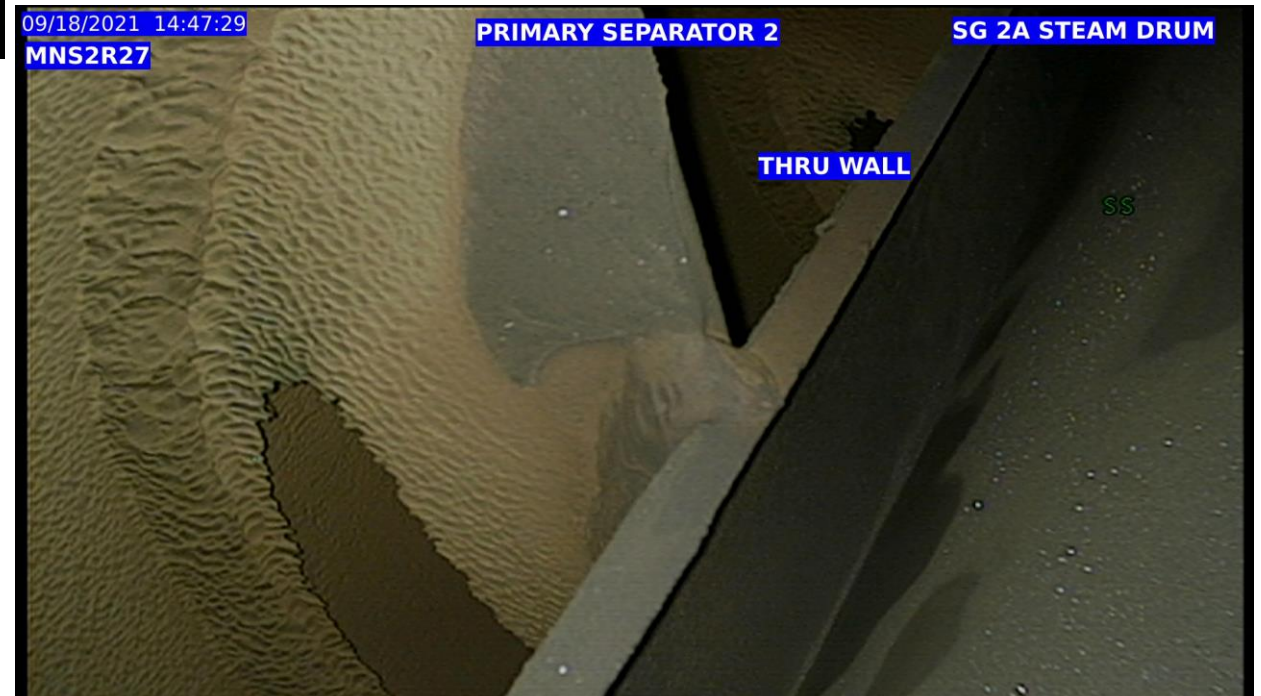
Top plate, horizontally oriented curved arm stiffener plates, curved arm leading edges and the inner surface of the outer can are areas of particular interest



Stiffener plate is rounded, but approximately 1.38" X 7.65" curved CS plate that is 0.112" thick. There are two internal stiffener plates per curved arm for a total of 8 plates per Primary Separator.



New Stiffener Plate Erosion  
in Primary Separator # 2 &  
#6 (max. estimated at 1"x4")





# Conclusion:

- No Issues were noted in the general inspection.
- Primary Separators
  - No issues noted with Primary Separator Top Plate
  - No Issues were noted on the ID of the Separator Outer Cylinder
  - Some minor erosion was noted on the inside surface of the curved arms outer wall, but no TW degradation.
  - Stiffener Plates
    - Erosion was found in Five Stiffener Plates in two Primary Separator Curved Arm Separators.
    - None of the Stiffener Plates observed were completely eroded
    - No Issue with continued operation (OEM)
    - Plan is to monitor this erosion in planned future inspections.
- Secondary Separators
  - No new issues noted.
  - Secondary Separator Skimmer Wall erosion is continuing. 54 separators were found with through wall degradation vs 43 during M2R25 (2018). It appears that portions of the skimmer wall are flaking off and migrating to the bundle area. No degradation was associated with these parts during the ECT/SSI inspections.
  - Secondary Separator Bottom Plate erosion is continuing, though none were found with through wall degradation. Worst case erosion was 94.8% TW vs 47.6% as left in M2R25 (2018).