

**From:** Joseph Schoppy  
**To:** thomas\_g\_cleary@dom.com  
**Date:** 12/30/04 2:09PM  
**Subject:** Millstone Unit 3 heat sink inspection

Tom,

Presently, I'm scheduled to conduct a Heat Sink Performance Inspection for Millstone Unit 3 during the week of 2/7/05. Based on risk, resident inspector input, and recent heat sink inspections (dating back to IR 2000-011, including the last biennial inspection); the sample will be limited to the B RPCCW heat exchanger, the B containment recirculation spray cooler, and the B EDG JW and air cooler heat exchangers. I plan to look at testing, maintenance, configuration control, problem identification & resolution, and performance monitoring. I hope to accomplish my mission via system walkdowns, interviews, and documentation reviews.

Attached is a request for information for my upcoming inspection. I would like the information the morning of February 7. Any of the information (not too bulky to mail) that is ready prior to January 26, can be provided electronically; to the residents; or mailed to our Region I office to my attention. (That will allow me to get a jump on some of the data during my prep week in the Region).

Please set up an Entrance Meeting for February 7 (15 minutes any time 12:30 p.m. - 5:00 p.m.).

Please set up an Exit Meeting for February 11 (30 minutes any time in the morning). However, if it's more convenient for your organization to get together on Thursday afternoon, then I will work to support that (I would still inspect onsite through Friday but would try to front load the more risk significant portions).

Please set up walkdowns of the service water pumphouse, the EDG heat exchangers, the RPCCW heat exchangers, and the containment recirculation spray coolers (if possible) with the respective system engineers (30 minutes each any time after 12:30 p.m. on 2/7 through 6:00 p.m. on 2/8).

If you have any questions or comments please don't hesitate to reply. Please acknowledge receipt of this e-mail. Thank you.

I'm looking forward to working with you.

In general, with the exception of nuclear safety, everything is negotiable.

Regards,  
Joe

**CC:** Kam1; LTd; SMS2; SRk

**Mail Envelope Properties** (41D4527B.1A8 : 7 : 35230)

**Subject:** Millstone Unit 3 heat sink inspection  
**Creation Date:** 12/30/04 2:09PM  
**From:** Joseph Schoppy

**Created By:** JGS@nrc.gov

**Recipients**

dom.com  
 thomas\_g\_cleary (thomas\_g\_cleary@dom.com)

nrc.gov  
 kp1\_po.KP\_DO  
 KAM1 CC (Kam1)  
 LTD CC (LTd)  
 SMS2 CC (SMS2)  
 SRK CC (SRk)

**Post Office**

kp1\_po.KP\_DO

**Route**

dom.com  
 nrc.gov

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
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**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

### **MILLSTONE UNIT 3 HEAT SINK PERFORMANCE REQUEST FOR INFORMATION**

Heat exchangers (HXs) of choice: B RPCCW, B containment recirculation spray (CRS) cooler, B EDG JW, and B EDG air cooler.

- Copy of Dominion's GL 89-13 response\*.
- Copy of Dominion's 89-13 program\*.
- Copy of Dominion's GL 96-06 response\*.
- Copy of Dominion's response to NRC IN 94-59\*.
- Copy of Dominion's response to NRC IN 96-36\*.
- List of condition reports associated with service water (SW), RPCCW, the CRS system, EDG JW, and EDG air cooler HXs within the past two years (just the subject line).
- Most recent system health reports for SW, RPCCW, CRS, and the EDGs.
- List of any planned work (PMs, CMs, or STs) on these systems (SW, RPCCW, CRS, and the EDGs) during the week of 2/7.
- List of any completed work (PMs, CMs, or STs) on the RPCCW HXs, CRS coolers, EDG JW HXs, and EDG air cooler HXs within the past two years.
- Copy of the most recent results of any SW intake silt and/or pump bay inspections.
- Copy of the most recent ST results for the SW pumps and B EDG\*\*.
- System operating procedure for SW, RPCCW, CRS, and the EDGs.\*
- Copy of AOP 3560 for a loss of SW and the AOP for severe weather.
- Copy of the most recent IST results for the following valves: B EDG cooler outlet AOVs, B RPCCW HX inlet supply MOVs, B CRS cooler inlet supply MOVs, and TPCCW HXs inlet supply MOVs\*\*.
- Design basis performance calculations for B RPCCW HX, B CRS cooler, B EDG JW HX, and B EDG air cooler HX\*.
- Copy of the most recent report from environmental engineering (SW system status relative to control of biotic fouling corrosion and macrofouling).
- List of number of tubes plugged in B RPCCW HX, B CRS cooler, B EDG JW HX, and B EDG air cooler HX.
- Copy of SP-3626.14, SP-3626.13, technical evaluation M3-EV-02-0031, and EN 31084\*.

- ☐ Copy of the most recent visual and eddy current inspections for the B RPCCW HX, B CRS cooler, B EDG JW HX, and B EDG air cooler HX (as applicable). Copy of most recent performance test for each of the above HXs if using that methodology.\*\*
- ☐ Copy of the most recent QA and engineering self-assessment of Dominion's 89-13 program\*.
- ☐ B RPCCW, B CRS cooler, B EDG JW, and B EDG air cooler HX data sheets.\*
- ☐ Anything else that you think may help me assess the health of your safety-related heat exchanger/heat sink performance monitoring program.

\* I do not need my own copy, especially for larger documents. Temporary access to material works.

\*\* Just the cover sheet and data section. I do not need my own copy, especially if these documents can be easily viewed elsewhere in the plant. Temporary access to material works.

NOTE: Not to worry, if I ask for a document there's a high probability that I will review it (some in more depth than others, of course). Thanks in advance for your support.

**From:** Joseph Schoppy  
**To:** William\_D\_Bartron@dom.com  
**Date:** 1/31/05 1:45PM  
**Subject:** Re: Fwd: Millstone Unit 3 heat sink inspection

Bill,

Please excuse my ignorance, what systems does the CCI/EGS fouling determination ST involve (OPS will do the A and B Train CCI/EGS fouling determination Surveillances, 3626.13-2 and 3 on 7 Feb (@1900); AWO's M3-04-08087 and M3-04-08088)?

Any progress in setting up walkdowns with the respective system engineers (service water pumphouse, the EDG heat exchangers , the RPCCW heat exchangers, and the containment recirculation spray coolers (if possible))?

Thanks!

Joe

**Mail Envelope Properties** (41FE7CC3.584 : 7 : 35230)

**Subject:** Re: Fwd: Millstone Unit 3 heat sink inspection  
**Creation Date:** 1/31/05 1:45PM  
**From:** Joseph Schoppy  
  
**Created By:** JGS@nrc.gov

**Recipients**

dom.com

William\_D\_Bartron (William\_D\_Bartron@dom.)

**Post Office****Route**

dom.com

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
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**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**From:** Joseph Schoppy  
**To:** William\_D\_Bartron@dom.com  
**Date:** 2/4/05 12:11PM  
**Subject:** Re: Fwd: Millstone Unit 3 heat sink inspection

Bill,

Thanks for the info. As I waded through more of the SW & HX info, I was able to pick up on many of the designators.

The SW walkdown time will work. Hopefully, I'll be onsite and badged by late morning.

We should try to get together late morning or right after the Entrance.

Additional info needed (but not before COB Tuesday):

- (1) status of work orders M3-04-14292, M3-04-14293, M3-04-14294 (just the scheduled date, I don't need the whole work order)
- (2) Copy of OD MP3-072-04, is this still active?
- (3) Access to or a copy of calculations 90-069-1130 M3 and 90-069-01065M3
- (4) Millstone 3 response to NRC IN 98-02
- (5) SP 3626.13-002 data sheets for B RPCCW and B EDG HXs for the last two weeks
- (6) SP 3626.14-001 data sheets for B RSS HX for the last flush
- (7) scheduled date for next cleaning of EGS\*E1B & EGS\*E2B?
- (8) Last report or product from the Millstone Aquatic Services Branch
- (9) The following CRs, including documentation of any action and current status:

03-08819  
03-09039  
03-09241  
04-06364  
04-03673  
03-04802  
03-05524  
03-05653  
03-05942  
04-10667  
04-04036  
04-13786  
03-08729  
04-09331

Please acknowledge receipt.

Thanks!

Joe

**Mail Envelope Properties** (4203ACD7.584 : 7 : 35230)

**Subject:** Re: Fwd: Millstone Unit 3 heat sink inspection  
**Creation Date:** 2/4/05 12:11PM  
**From:** Joseph Schoppy  
**Created By:** JGS@nrc.gov

**Recipients**

dom.com

William\_D\_Bartron (William\_D\_Bartron@dom.

**Post Office****Route**

dom.com

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
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**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None  
**Concealed Subject:** No  
**Security:** Standard

**From:** Joseph Schoppy  
**To:** William\_D\_Bartron@dom.com  
**Date:** 2/7/05 12:20PM  
**Subject:** Re: Fwd: Millstone Unit 3 heat sink inspection

Bill,

I'm onsite in the resident's office. Where should I meet Ed? Please check and see when M3-02-06010 (E2B HX cleaning) is scheduled for as one of the CRs or work orders that I stumbled across had it scheduled for 2/7/05 (today). Thanks!

Joe

**Mail Envelope Properties** (4207A36E.584 : 7 : 35230)

**Subject:** Re: Fwd: Millstone Unit 3 heat sink inspection  
**Creation Date:** 2/7/05 12:20PM  
**From:** Joseph Schoppy  
**Created By:** JGS@nrc.gov

**Recipients**

dom.com

William\_D\_Bartron (William\_D\_Bartron@dom.)

**Post Office****Route**

dom.com

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
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**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**From:** Joseph Schoppy  
**To:** William\_D\_Bartron@dom.com  
**Date:** 2/16/05 2:44PM  
**Subject:** RPCCW follow-up

Bill,

I need your assistance. (1) Please send me a copy of operations' abnormal procedure for loss of RPCCW and rising temperatures on RCP seal cooling. (2) Obtain from operations (ROs and/or SROs, or the operations training folks) a rough time line of actions in response to rising RPCCW temperatures on the A RPCCW train and actions for rising RPCCW temperatures on both loops. Thanks!

Joe

**Mail Envelope Properties** (4213A2A3.B2F : 7 : 35230)

**Subject:** RPCCW follow-up  
**Creation Date:** 2/16/05 2:44PM  
**From:** Joseph Schoppy

**Created By:** JGS@nrc.gov

**Recipients**

dom.com

William\_D\_Bartron (William\_D\_Bartron@dom.

nrc.gov

kp1\_po.KP\_DO

SMS2 CC (SMS2)

**Post Office**

kp1\_po.KP\_DO

**Route**

dom.com

nrc.gov

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
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**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**From:** Joseph Schoppy  
**To:** William\_D\_Bartron@dom.com  
**Date:** 3/7/05 1:06PM  
**Subject:** Re: MP3 Heat Sink Inspection

Bill,

Thanks. I'll get a copy from the residents. I attempted to follow-up with Jeff Langan earlier today (to ensure that we're still on the same page) but understand that he's out for the week. I talked to Paul Atkinson (who's acting for Jeff) and gave him a quick run down of our needs. The most recent operability determination should be sufficient to let us know where you stand now on operability. If Dominion is holding firm to the position that engineering had previously adequately evaluated the continued operability of the RPCCW HXs (given the deflected divider plate issue), then I would need to see the previous documentation of that in order to make a reasonable and fair assessment. I have copies of previous CRs and HX inspection forms but have not seen the associated engineering evaluations that had addressed operability going forward. In addition, I haven't seen engineering's previous evaluation of the D.C. Cook OE. I am interested in any associated evaluations of the above issues from May 2003 through February 7, 2005. I also understand that preliminary follow-up indicates that the wording in the associated LOE justification (non-conservative design of the divider plates as reported by the vendor) may not be correct. Engineering has found no information to support this. I was hoping that that aspect of the issue could also be firmly resolved. I would appreciate hearing back relative to where Dominion is with respect to the potential finding as discussed at our Exit meeting on February 11, 2005. As always, thanks for your continued support.

Please acknowledge receipt.

Joe

**Mail Envelope Properties** (422C980B.FA9 : 7 : 35230)

**Subject:** Re: MP3 Heat Sink Inspection  
**Creation Date:** 3/7/05 1:06PM  
**From:** Joseph Schoppy

**Created By:** JGS@nrc.gov

**Recipients**

dom.com

William\_D\_Bartron (William\_D\_Bartron@dom.

nrc.gov

kp1\_po.KP\_DO

SMS2 CC (SMS2)

**Post Office**

kp1\_po.KP\_DO

**Route**

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<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
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**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**From:** Joseph Schoppy  
**To:** William\_D\_Bartron@dom.com  
**Date:** 3/11/05 6:30AM  
**Subject:** Millstone Unit 3 heat sink inspection

Bill,

Is engineering still on track for completing their RPCCW HX evaluation and follow up review this week?

Joe

**CC:** SMS2

**Mail Envelope Properties** (4231814C.2E6 : 7 : 35230)

**Subject:** Millstone Unit 3 heat sink inspection  
**Creation Date:** 3/11/05 6:30AM  
**From:** Joseph Schoppy  
  
**Created By:** JGS@nrc.gov

**Recipients**

dom.com

William\_D\_Bartron (William\_D\_Bartron@dom.

nrc.gov

kp1\_po.KP\_DO

SMS2 CC (SMS2)

**Post Office**

kp1\_po.KP\_DO

**Route**

dom.com

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**Files**

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**Size**

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**Date & Time**

03/11/05 06:30AM

**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**From:** Joseph Schoppy  
**To:** William\_D\_Bartron@dom.com  
**Date:** 3/13/05 11:54PM  
**Subject:** Re: MP3 Heat Sink Inspection

Bill,

Thanks for the additional information. Sounds like we're getting close to having all the information that we need to make an informed decision and assessment relative to what, if any, Dominion performance deficiencies existed and if so, is the issue "more than minor" in nature. I remain open-minded. I trust that your engineering folks also remain receptive to potential areas for improvement.

Still needed: (1) Copy of Dominion's evaluation of the D.C. Cook OE (OE16319), including the date evaluated (I have their limited evaluation of OE16319 included in CR-05-01281, dated 2/10/05). Most plants have a well defined process for handling incoming OE (NRC INFO Notices, SOERs, SILs, OExxxx, etc.) to ensure it is evaluated and acted upon (when deemed necessary) in a timely manner. For example, an OE review group often performs initial screening and creates an action request for additional engineering evaluation if potentially applicable (usually a 30 - 60 day review time). Engineering would then use the corrective action process to track identified actions. How was OE16319 processed, evaluated, and documented? (2) Copy of the investigation closure notes for CR-03-05528. You mentioned in your e-mail that I have a copy already. I double-checked my folder of "stuff," and do not have it. I apologize if I had it then lost it. I have two pages of CR-03-05528 assignment text and assignment closure notes, though there is no mention of the OE or TEMA design guidelines. The assignment closure notes do mention that CR-03-05528 is closed to CR-03-04924 (same issue) and that CR-03-04924 will investigate and develop the corrective action plan. I have the closure notes for CR-03-04924 but they don't appear to discuss the OE or TEMA Standards (they do discuss contacting the vendor to inquire about stiffening the divider plate though).

I reviewed OD No. MP3-004-05. Two quick comments: (1) This is the type of engineering evaluation that I was looking for to assess the continued operability of the RPCCW HXs given the under-designed divider plate, potential for weld fatigue failure, and OE16319. Surely, if this work product fell out of CR-03-04924, then this e-mail campaign could have been avoided. (2) There appears to be some inaccuracy in the last sentence of the first paragraph of the "Flow/Heat Transfer" section ("During these inspections, no indication of bypass flow (i.e. erosion of the plate cover, washout of biofouling growth) has been observed."). For example, on A RPCCW HX inspection on 2/6/02 - "found degradation on inlet cover in divider plate gap and around gasket surface" (CR-02-01063); on A RPCCW HX inspection on 6/24/03 - "The damage to the cover is both mechanically induced (due to apparent bowing of the divider plate between the inlet and outlet channels) and due to erosion" (CR-03-06080); and on C RPCCW HX inspection on 6/9/03 - "a small area of coating of the cover at the tip of the divider plate channel was also found degraded. At the bottom of the cover, there is an area that appears to be subjected to very turbulent flow and erosion that was previously coated. The coating appears to be missing from this area and metal erosion evident" (CR-03-05524).

I understand that engineering determined that the RPCCW HXs were originally adequately designed for a 20 psid d/p based on the TEMA standards at the time. Based on the wording in the OD, it sounds like the original TEMA standard required a thickness greater than 0.50 inch (with the thickness depending on the expected d/p) but the older editions did not explicitly state how to calculate the required thickness. Subsequently, later editions provided guidance on how to calculate the required thickness (0.70 inch for a 20 psid d/p). Once informed that the RPCCW HX divider plates were not designed to the required thickness (in accordance with TEMA standards), engineering should have evaluated the condition to ensure that there was no adverse impact on HX functionality. The plate thickness of only 0.50 inch may explain why the divider plate was deflecting at d/ps less than 20 psid. Thus, it doesn't sound as if the TEMA standard changed over the years, only the means available to calculate the required thickness.

I understand that engineering concluded that no operability determinations were required previously as they had returned the divider plates to their original design and had inspected accessible welds and

coatings for cracking after they had mechanically straightened the divider plates. However, the D.C. Cook OE should have prompted additional evaluation as D.C Cook had apparently frequently inspected their CCW HXs, straightened deflected divider plates, and inspected for and repaired weld cracks (but the divider plates still failed completely while in service). Once a potential failure mechanism (fatigue failure due to repeated deflections and rework) and the potential consequences (complete divider plate failure) are known, then I would think that an evaluation of the condition may be in order. For this reason, I am interested in engineering's previous evaluation of the D.C. Cook OE.

Please forward this to Jeff Langan in engineering and ask Jeff to provide needed information and any comments by close of business on Wednesday, March 16, if possible. I would like to discuss with Jeff on Thursday if possible. I would think that 15 minutes would be sufficient (I'm booked up on Thursday after 3:00 PM though). As I'm on the road this week, the best way to contact me is via e-mail ([jgs@nrc.gov](mailto:jgs@nrc.gov)) or via fax (to my attention at 856-935-3741). I'm confident that we can wrap this up this week. Thanks again for your support.

Please acknowledge receipt.

Joe

**Mail Envelope Properties** (423518FE.FA9 : 7 : 35230)

**Subject:** Re: MP3 Heat Sink Inspection  
**Creation Date:** 3/13/05 11:54PM  
**From:** Joseph Schoppy  
  
**Created By:** JGS@nrc.gov

**Recipients**

dom.com

William\_D\_Bartron (William\_D\_Bartron@dom.

nrc.gov

kp1\_po.KP\_DO

RKL CC (Rkl)

SMS2 CC (SMS2)

**Post Office**

kp1\_po.KP\_DO

**Route**

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**Files**

MESSAGE

**Size**

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**Date & Time**

03/13/05 11:54PM

**Options****Expiration Date:**

None

**Priority:**

Standard

**Reply Requested:**

No

**Return Notification:**

None

**Concealed Subject:**

No

**Security:**

Standard

**From:** Joseph Schoppy  
**To:** William\_D\_Bartron@dom.com  
**Date:** 3/15/05 12:05PM  
**Subject:** Re: MP3 Heat Sink Inspection

Any progress to report? Were you able to get me a block of time to discuss the issue with Jeff Langan later in the week?

**CC:** Sms2

**Mail Envelope Properties** (423715EF.FA9 : 7 : 35230)

**Subject:** Re: MP3 Heat Sink Inspection  
**Creation Date:** 3/15/05 12:05PM  
**From:** Joseph Schoppy  
**Created By:** JGS@nrc.gov

**Recipients**

dom.com

William\_D\_Bartron (William\_D\_Bartron@dom.

nrc.gov

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SMS2 CC (Sms2)

**Post Office**

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**Route**

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**Files**

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**Size**

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**Date & Time**

03/15/05 12:05PM

**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**From:** Joseph Schoppy  
**To:** William\_D\_Bartron@dom.com  
**Date:** 3/23/05 10:37AM  
**Subject:** Re: Response Related to MP3 Heat Sink Inspection

Bill,

Just a quick reminder to send me the completed evaluation for CR-05-01767 (including planned actions associated with it). Thanks!

Joe

**Mail Envelope Properties** (42418D4A.6D0 : 7 : 35230)

**Subject:** Re: Response Related to MP3 Heat Sink Inspection  
**Creation Date:** 3/23/05 10:37AM  
**From:** Joseph Schoppy  
**Created By:** JGS@nrc.gov

**Recipients**

dom.com

William\_D\_Bartron (William\_D\_Bartron@dom.

**Post Office****Route**

dom.com

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
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**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard