



## LAKE ENGINEERING CO.

P.O. Box 296  
10 Austin Avenue  
Greenville, RI 02828  
Tel: 401-949-4733  
Fax: 401-949-0220

May 1, 2017

U S Nuclear Regulatory Commission  
Attn: Document Control Room  
Washington, DC 20555-0001

Subject: Interim Notification per 10 CFR Part 21  
Potentially Degraded Snubber SF1154 Hydraulic Fluid

### Background

Between September 9, 2014 and June 26, 2015, Lake Engineering Company (LEC) received from Momentive Performance Materials a total of four 55-gallon drums containing SF1154 fluid from Batch No. 14ELVS145. Lake Engineering shipped fluid from three of these drums to various nuclear plants in 5-gallon and 1-gallon containers. The remaining drum was shipped in its entirety on November 14, 2014 to Kraftwerk Leibstadt (KKL) nuclear plant in Switzerland on a commercial purchase order. Most of the fluid in this drum was used shortly after receipt by KKL during hydraulic snubber refurbishment.

### Notification of Anomaly

On March 6, 2017 Lake Engineering Co. received notification that KKL had recently inspected the fluid remaining in the drum and, in contrast to the normal clear appearance observed during snubber refurbishment, the fluid color was white and opaque and appeared to have a thicker than normal consistency.

### Evaluation to Date by Lake Engineering Company

At LEC's request, a 250 ml sample of the fluid remaining in the drum at KKL was shipped to LEC for evaluation. Upon its receipt the sample was transferred to a glass beaker and allowed to rest undisturbed for 48 hours after which it was confirmed to be white in color. Some stratification was also observed whereby the fluid appeared to be more dense at the bottom of the beaker. Viscosity was measured for samples of fluid extracted from the beaker at just below the surface, at mid level, and at the bottom, the results of which were 229 cSt, 245 cSt, and 303 cSt respectively. This is contrasted with the viscosity of 165 cSt that was measured during Lake Engineering's original receipt inspection of the applicable drum of fluid.

At LEC's request, an unused 5-gallon pail of fluid from each of the three remaining drums was returned by selected end users to Lake Engineering Company for evaluation. Upon their receipt, viscosity was measured for a sample of fluid extracted from just below the surface, at mid level, and the bottom of all three pails. All measured viscosity values were consistent with the viscosity measured during original receipt inspection of the respective drums.

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Evaluation to Date by Lake Engineering Company (cont'd)

Following viscosity measurement, all fluid from each of the three pails discussed above was transferred to a separate 5-gallon glass jug. At the customer's request, the fluid in one of the returned pails had been dyed by Lake Engineering prior to shipment. This is common practice for fluid intended for use in snubbers with a reservoir sight glass. After allowing the fluid to settle, the undyed fluid in two of the returned jugs was observed to be cloudy and a significant number of flat chips of white semisolid material were observed to have accumulated at the bottom. On the other hand, no evidence of cloudiness or solid material was observed in the dyed fluid in the remaining jug. It is noted that, following dyeing, as is LEC standard practice for dyed fluid, this fluid had been subjected to a 10 micron absolute filtration process in order to remove any dye particulate.

Evaluation by OEM

Momentive Performance Materials has been notified regarding the above anomalies and a sample of fluid has been sent to Momentive for their evaluation. The results of Momentive's evaluation are yet to be received.

U S Nuclear Plants to Which Fluid from Batch 14ELVS145 Was Shipped by LEC

Millstone (dyed)  
Nine Mile Point (dyed)  
Duane Arnold (clear)  
Monticello (clear)  
Pilgrim (clear)  
Three Mile Island (dyed)  
Three Mile Island (clear)  
Grand Gulf (clear)  
Peach Bottom (dyed)

Further Action by Lake Engineering Company

Lake Engineering Company shall continue in its evaluation to determine whether the subject anomalies represent defects which could create a substantial safety hazard. In part, such determination will involve interaction between Lake Engineering Company and selected end users from the above list of plants pertaining to plant specific hardware and activities.

Lake Engineering shall also continue to coordinate with Momentive Performance Materials in determining the cause of the anomalies and in establishing manufacturing methods that will preclude future incidence of the above described anomalies.

We believe there is a strong possibility that the absence of the above anomalies in the returned pail of dyed fluid is due to the fact that the fluid was subjected to Lake Engineering's post-dyeing filtration process. Confirmation in this regard will be based on the results of our continued evaluation.

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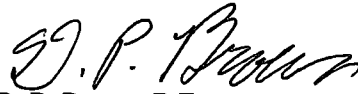
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Within 60 days following the date of this notification, Lake Engineering Company shall submit a final or a second interim report documenting the results of the continued evaluation described above.

If there are any questions or if additional information is required, please contact the writer by mail or by phone using the contact information provided above or by email at [dbrown@lakeengineeringri.com](mailto:dbrown@lakeengineeringri.com).

Very truly yours,

LAKE ENGINEERING COMPANY



D. P. Brown, P.E.  
President

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cc: P. Guay - QA Mgr.