Pt 21 96712

NAK Engineering, Inc.
420 AVIATION BLVD., SANTA ROSA, CA 95403
TELEPHONE: (707) 542-9998 FAX: (707) 542-6666

Oct 10, 1996

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir,

Pursuant to my letter dated Aug. 5, 1996 and in accordance with the requirements of Title 10, Chapter 1, Code of Federal Regulations, Part 21, NAK Engineering, Inc. has established and adopted revised procedures to assemble fuel oil lines and eliminate the possible defective condition that was found at Mcguire. We have notified each of the affected nuclear stations and furnished copies of the new assembly procedures to the system engineers at McGuire and Brunswick. Through direct communications with the responsible system engineers, we have been advised that the both cites are fully aware of the possible defect or condition and have taken necessary action to examine the affected parts and perform any necessary repairs.

As stated in my letter of Aug. 5, 1996, the root cause of the failure was determined to be an inadequate tightening value to insure the correct seating of the sleeve that seal the fuel line connection. The revised procedure incorporates specific tightening values, inspection criteria, and acceptance values to determine if the "crimping" of the sleeve is adequate.

Should anyone have any questions regarding this condition or corrective action please contact:

Norman E. Nelson
NAK Engineering, Inc.
420 Aviation Blvd.
Santa Rosa, Ca. 95403

phone: 707-542-9996
fax: 707-542-6666

Sincerely,

Norman E Nelson
Manager, Quality Assurance

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NAK Engineering, Inc.
420 AVIATION BLVD., SANTA ROSA, CA 95403
TELEPHONE: (707) 542-9986 FAX: (707) 542-6866

August 5, 1996

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir,

In accordance with the requirements of Title 10, Chapter 1, Code of Federal Regulations, Part 21, NAK Engineering, Inc. hereby notifies the Commission of a potential defect or condition in a component of the Nordberg model FS1316HSC Standby Diesel Generator. There exists a potential problem with the fuel injection line assembly which connects the fuel pump to the injector.

NAK Engineering, Inc. has supplied these fuel line assemblies to the following sites:

UTILITY	SITE	SERIAL NUMBER(S)	MODEL
Duke Power Co	McGuire	1030-1270/1273	FS 1316 HSC
Carolina Power & Light	Brunswick	1030-1328/1331	FS 1316 HSC

On or about June 20, 1996, we were advised of a single leaking fuel line assembly that occurred on McGuire Nuclear Station's Emergency Diesel Generator Unit 1B, Cylinder 4R. It was determined that the leak was caused by the fuel line sleeve coming loose which eliminated the fuel connection seal.

There were no unusual engine noises, temperature changes, cylinder firing pressure changes noted prior to the fuel line leak. The operator discovered significant fuel spray emitting from the fuel pump.

At this time Duke Power initiated a ROOT CAUSE FAILURE ANALYSIS investigation and they determined that the probable cause was inadequate crimping of the ferrule sleeve onto the fuel line during assembly. In order to establish corrective action, tests were conducted by Duke Power Co. at their McGuire Nuclear Station's Met Lab to evaluate different torque and tightening values to determine the values to achieve optimum "crimping" of the ferrule sleeve. Samples of the same fuel line material, and ferrule sleeves, were provided. Duke installed the ferrule sleeves at varying torque values and conducted "pull" tests. It was concluded that the fuel line nut should be tightened 1 1/8-1 1/4 turns past hand tight or 150 ft lbs. of torque to achieve optimum ferrule

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sleeve crimping.

While corrective action procedures have been implemented, the fuel line replacement on cylinder number 4R was installed before the corrective action procedures were finalized and before corrective action was taken. It was further believed that this was a unique occurrence
On July 30, 1996 the replacement fuel line developed the same leaking problem. Since then all fuel lines produced and furnished after July 18, 1996 have been assembled using the new torque and tightening techniques.

All fuel line assemblies supplied before July 18, 1996, either in service , or in site inventories, should either be returned to NAK Engineering, Inc. for examination and the crimping tightening procedures checked and verified or this work should be done on site. A written procedure will be furnished within the next 60 days to the affected sites to accomplish the necessary inspection and repairs.

Should anyone have any questions regarding this condition or corrective action please contact:

Norman E. Nelson
NAK Engineering, Inc.
420 Aviation Blvd.
Santa Rosa, Ca. 95403

phone: 707-542-9996
fax: 707-542-6666

A copy of this letter will be forwarded to all of the affected sites referenced in paragraph 2 of this letter.

Sincerely,

Norman E Nelson
Manager, Quality Assurance