



PECO ENERGY

PECO Energy Company
2301 Market Street
PO Box 8699
Philadelphia, PA 19101-8699
215 841 4000

February 15, 1994

Mr. Sohan Garg
Department of Environmental Resources
Lee Park, Suite 6010
555 North Lane
Conshohocken, PA 19428

Dear Mr. Garg:

Subject: Limerick Generating Station NPDES Permit No. PA0051926

Pursuant to Chapter 92.7, "Reporting of New or Increased Discharges," we are requesting that the subject permit be amended to allow the use of R.J.D. Products, Inc. Formula #65 Foaming Agent to perform condenser leakage testing at Limerick Generating Station. The foam will be applied over an entire tube sheet, and a vacuum will then be applied on the steam side of the condenser. The vacuum will cause the foam to recede into any leaking tubes. Upon completion of testing, the foaming agent will be washed from the tube sheets to the cooling tower basin and eventually discharged, via cooling tower blowdown, to outfall 001. Typical usage will be approximately 1.5 gallons of agent per tube sheet with a total of 24 tube sheets to be tested. The maximum expected concentration of the product in the cooling tower basin is 8 ppm. If needed, an anti-foaming agent (previously approved) will be applied to the cooling tower basin to control potential foaming problems. Attached is the product information sheet and material safety data sheet.

A copy of this letter (including any attachments or enclosures) is being sent to the U.S. Nuclear Regulatory Commission (USNRC) in accordance with the Limerick Generating Station, Units 1 and 2, Environmental Protection Plan, Section 3.2, which stipulates that USNRC shall receive a copy of any proposed changes to the NPDES permit at the same time that the permitting agency is notified.

Testing of the condenser is scheduled to begin shortly, therefore, we would appreciate your immediate attention and response to our request. If you have any questions or require additional information, please contact me at (215) 841-5177.

Sincerely,

Robert M. Matty, Jr.
Engineer
Environmental Affairs

220038

Attachment

9402280285 940215
PDR STPRG ESGPA
PDR

cc: U.S. Nuclear Regulatory Commission, Document Control Desk
(Docket Nos. 50-352 and 50-353 & License Nos. NPF-39 and NPF-85)
T. T. Martin, Administrator, USNRC, Region 1
N. S. Perry, USNRC Senior Resident Inspector, LGS

JE231

THE **RJD** FOAM PRODUCTS, INC. FOAM METHOD OF LEAK DETECTION

Robert J. Duncan Pres. of RJD FOAM PRODUCTS has been operating a Foam Business for over 25 years. He is well experienced in condenser testing. Please feel free to call me or our distributors if you have any questions.

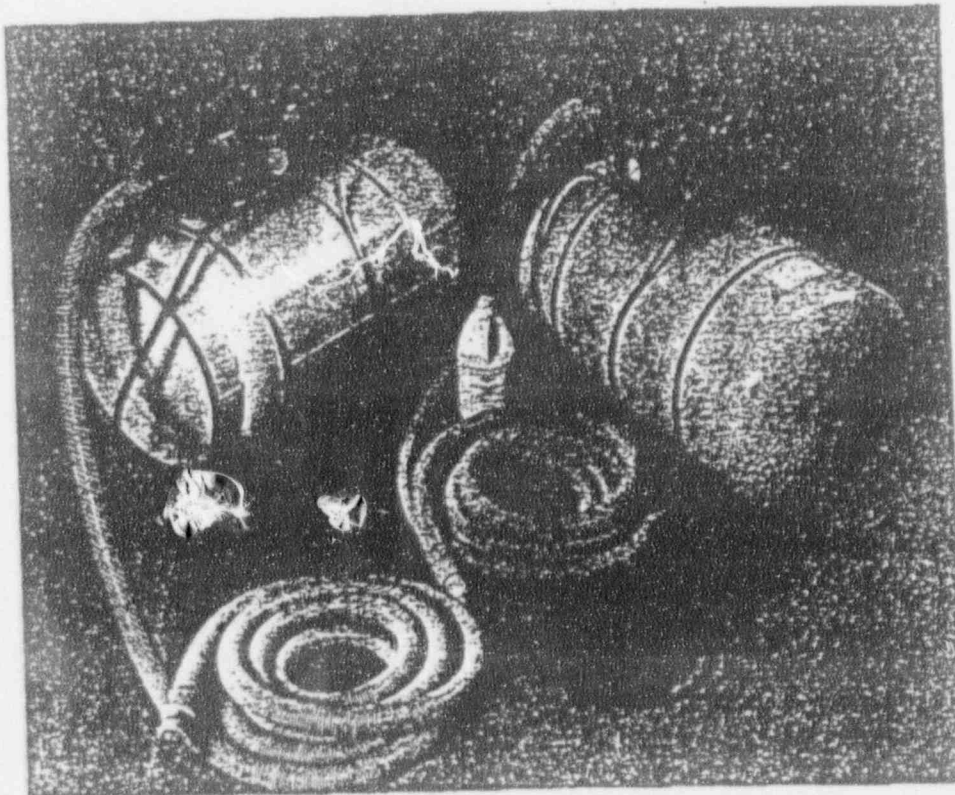
Introducing RJD FOAM PRODUCTS, manufacturing Foam Generators and a Foam Agent for industry. The RJD FOAM GENERATOR and FORMULA 65 FOAM AGENT, LEAK DETECTOR were originally designed to meet the needs of Utility Companies in testing of their condensers for leakage. Foam Testing of condensers has proven very successful and is superior to all presently used methods. This aspect of our business has been steadily growing and extensive research has resulted in our improving our present Agent. We now offer, in one size, a well engineered Foam Generator to fill the varied needs of industry. While the original purpose of the Foam Generator, condenser testing, still requires the major portion of our production, we are now promoting other uses for our products.

Wherever the use of Foam is applicable, the RJD GENERATORS and FOAM AGENT are the answer to high volume, low cost, portable foam production.

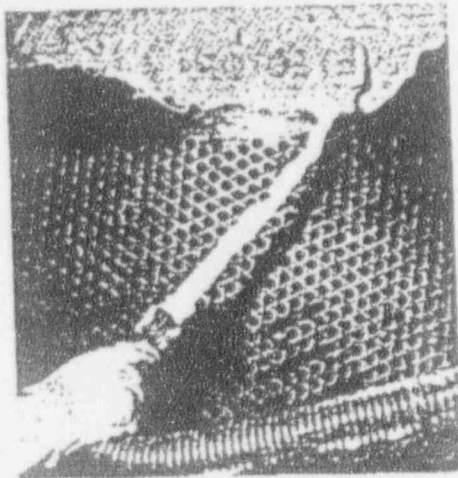
Shown at the right are some "on site" photos of "foam testing" a 200 MW condenser at a large Eastern Utility. The enclosed reprint from Combustion magazine details the operation.

FOAMING AGENT

The RJD Foam Agent is of the highest quality, is perfectly safe, is designed for strong film strength and will foam in presence of sea water. The foam generation method used provides a dry foam with equal distribution of the active materials throughout the entire foam-film.



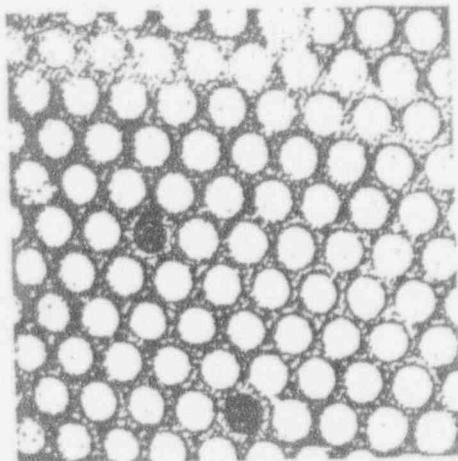
— Standard Model 1-965-42 —



Tube-sheets are sudsed in a few minutes. Suds are fed continuously from the 1-1/2 in. delivery hose.



Suds are smoothed out by operator and the entire tube-ends are plugged as illustrated.



Two tubes show up as leaders as the vacuum on the steam side causes the suds to recede into the leaking tube.

SPECIFICATIONS

The RJD Foam Generators as illustrated.

The Model No. 1-965-42, 42 gallon tank capacity — 20 gals. of liquid, requires one gallon of Foaming Agent when charging.

The 42 gal. model is for use on condensers over 50 MW capacity where large amounts of foam are required.

Model No. 1-965-42, consists of a heavily constructed glass-lined tank, which stores the liquid and is fitted with a stainless steel agitating jet, level-valve, and drain valve. A separation and control tank unit is mounted at the tank outlet connection.

This unit is fitted with a separating baffle, pressure-gauge, safety-valve, fill connection, control and delivery hose. The unit is also fitted with the remote-operated control-valve and air-regulator. All fittings are of high quality brass.

The entire assembly is mounted on a sturdy dolly provided with large wheels for ease of mobility.

Note: All units operate with air pressures from 150 psig to 75 psig. Air consumption is not excessive as the 5/32" jet only requires 35 psig. All units are designed to operate at between 2-3 psig, for best results.

RJD. FOAM PRODUCTS, INC.
FORMULA 65

Experience with the Use of Foam for Condenser Leak Detection

The modern high temperature, high pressure steam generator requires water of the highest possible purity. One source of contamination has been and continues to be leaks from the condenser. Obviously condenser leakage should be held at a minimum and whenever leaks do develop they should be quickly located and plugged. Unfortunately leak detection on condensers has always been costly and time-consuming.

At present the principal methods of leak detection are:

- A. The use of plastic sheeting material to seal tube ends.
- B. Hydrotesting, using a fluorescent dye and black light detection.
- C. Flame testing using candles.
- D. Observation for drying tube ends.
- E. On a split condenser, mounting a manometer external to the condenser water box, slowly filling waterbox and observing level at which conductivity changes, thus locating the relative horizontal location of the leak.
- F. Use of supersonic listening devices.
- G. Selectively plugging each tube end using a solid plug on one end and an inclined manometer or a sensitive diaphragm alarm device, plugged into the other end.

All of these are slow, and, relatively ineffective. But a new method has been developed recently - the foam testing method. It is far superior in sensitivity and time required to any of the methods mentioned. For example, both halves of a 200 MW condenser are effectively tested on-the-line or off-the-line in less than 3 hours.

Foam Testing Development

Foam testing of condensers has been under development for almost twenty years. It was necessary to find the means to produce a satisfactory foam quickly, in large

quantities, and a reasonable cost.

The foam agent must have the following qualities:

- A. Must be absolutely safe to use, harmless to humans, animal life, marine life, fabrics and metals.
- B. Must have the ability to produce a stable dense foam of high film strength with excellent cohesive and adhesive properties.
- C. Must be stable in the presence of sea water.

How the Method Works

When testing a condenser for leaks, both tube sheets are sealed with foam. When the steam side of the tube is exposed to vacuum, a vacuum will be created inside of a leaking tube and the foam plugs will recede into the tube. When the steam side is exposed to pressure the inside of the tube will become pressurized and foam plugs will be forced out.

Procedure, Condenser Leak Testing, Unit in Service One-Half Condenser Out of Service

- A. With an air hose, thoroughly blow water from tubes and tube sheets; this minimizes foam dilution.
- B. Foam both tube sheets generously, forcing the foam into the tubes. Brush down sheets using a soft broom or a rubber squeegee. Next, apply a second foam coating, directing the foam toward the top of the sheet, allowing it to flow over the entire sheet. Brush sheets from top to down and observe for leaks.
- C. When a leak is detected, jet the tube with air to identify to the worker at the other end. Place temporary plugs in each end of the tube. A vacuum will be observed when plugs are withdrawn. The leaking tube may be verified by plugging one end and inserting a sensitive water manometer into the other end.

Reprinted from COMBUSTION, March 1965

FOAM METHOD
LEAK DETECTION

COMBINATION WATER AND
AIR CONDENSER GUNS

718-786-6088

JOHN R. ROBINSON, INC.

POWER PLANT SPECIALTIES
38-05 30th STREET
LONG ISLAND CITY, N.Y. 11101 U.S.A.

1-800-726-1026

CONDENSER TUBE
CLEANING BRUSHES

EXPANSION PLUGS FOR
LEAKY CONDENSER TUBES

FAX: 718-786-6090

In reply to your request for the chemical breakdown of the R.J.D. Foam Products, Inc. - R.J.D. Special Foam Agents - New and improved Formula #65, please note the following:

INGREDIENT

Anionic detergent
Phosphates
Silicates
Sodium nitrite
Water

We thank you for the opportunity to be of service to you.
If you need any further data, please do not hesitate to contact our office.

Very truly yours,

JOHN R. ROBINSON, INC.

Frank Cunningham
Frank Cunningham

FC:AEW.

MATERIAL SAFETY DATA SHEET

FOAM AGENT

1/5/93

SECTION I: GENERAL INFORMATION

PRODUCT NAME: FORMULA 65 CHEMICAL NAME AND SYNONYMS: FOAM AGENT
 CHEMICAL FAMILY: ANIONIC SURFACTANT FORMULA: MIXTURE
 MANUFACTURER: RJD FOAM PRODUCTS INC, DIST BY JOHN R ROBINSON INC.
 38-05 30 ST. L.I.C. N.Y 11101 TEL. 718-786-6088

SECTION II: COMPOSITION

NAME	%	CAS#
Water	90	
Sodium lauryl sulfate	7-8	68585-47-7
Sodium nitrite	<1	7632-00-0
Sodium tripolyphosphate	<1	7758-29-2
Sodium metasilicate	<0.5	6834-92-0

SECTION III: PHYSICAL DATA

Boiling point: over 212 deg F (100 deg C.)	Critical Temp: not applicable
Solubility in water: complete	Specific Gravity: 1.02
Viscosity: 5-20 cps	Evaporation rate: not determined
Vapor pressure: not determined	Decomposition Temp: not determined
Percent volatile by volume: 90	Corrosion rate: not applicable
Vapor density: not applicable	pH: 10-10.9
Freezing point: 50-58 deg. F. cloud point	Appearance and odor: straw colored liquid; bland odor

SECTION IV: FIRE AND EXPLOSION DATA

NON FLAMMABLE NOT EXPLOSIVE

SECTION V: HEALTH HAZARD DATA

Effects of overexposure: not applicable Threshold Limit Value: not applicable
 Emergency and First Aid Procedures: In case of accidental eye contact, flush eyes immediately with plenty of water for at least 15 minutes. If irritation persists consult physician. Prolonged or repeated contact with skin may cause irritation; wash off skin with water. If ingested, consult physician.

SECTION VI: REACTIVITY DATA

STABILITY: STABLE-HAZARDOUS POLYMERIZATION WILL NOT OCCUR - AVOID STRONG OXIDIZING AGENTS

SECTION VII: SPILL OR LEAK PROCEDURES For concentrated product, small spills may be soaked up with absorbent and disposed of in accordance with all applicable federal, state and local regulations. Material collected with absorbent may be disposed in a permitted landfill in accordance with federal, state, and local regulations. Highly diluted solutions may be flushed into sewage disposal systems as would ordinary household detergents and shampoos without noticeable harmful effects.

SECTION VIII: SPECIAL PROTECTION INFORMATION

Respiratory Protection: not normally required. Ventilation: not normally required.
 Eye protection: Prevent concentrate from splashing into eyes. Safety glasses recommended.
 Skin: Rinse with water. Contaminated clothing: Rinse out thoroughly before reusing.

SECTION IX: SPECIAL PRECAUTIONS: NONE