

OFFICE OF THE SECRETARY
CORRESPONDENCE CONTROL TICKET

Date Printed: Jul 16, 2004 11:14

PAPER NUMBER: LTR-04-0449
ACTION OFFICE: EDO

LOGGING DATE: 07/15/2004

To: Caldwell, Rill

AUTHOR: Tom Gurdziel
AFFILIATION: NY
ADDRESSEE: Sue Gagner
SUBJECT: Typical Flus Schematic

cys: EDO
DEDMRS
DEDH
DEDM
AO
DEDR
NRK

ACTION: Appropriate
DISTRIBUTION: RF (cy did go to Chairman, Comrs, OIG on 7/16/04)

LETTER DATE: 07/12/2004

ACKNOWLEDGED No

SPECIAL HANDLING: Release

NOTES: OCM #5496

FILE LOCATION: ADAMS

DATE DUE:

DATE SIGNED:

5496

From: "Tom Gurdziel" <tgurdzie@dreamscape.com>
To: <opa@nrc.gov>
Date: 7/12/04 8:16AM
Subject: FW: Emailing: flus.pdf

Good morning,

I would appreciate you, once again, forwarding this to the Chairman, the Commissioners, and the Inspector General.

Thank you,

Tom Gurdziel

-----Original Message-----

From: Tom Gurdziel [mailto:tgurdzie@dreamscape.com]
Sent: Sunday, July 11, 2004 10:41 PM
To: opa3@nrc.gov
Cc: Richard W. Lamoreaux; Rep. Marcy Kaptur; Gordon K. Hunegs; James M. Trapp; J. Mangels; J. Funk; Glenn Meyer; Ed Stronski; David Lochbaum; : opa@nrc.gov
Subject: Emailing: flus.pdf

Good morning,

I hope you get this picture. It shows that a "Typical FLUS Schematic" monitors both BELOW the reactor vessel and ABOVE the reactor vessel. (And can apparently monitor up to 8 different areas with the same FLUS equipment.)

That was on slide 6. You can look on slide 3 to see the recommendation: "Sensor tube can be installed in close proximity to areas historically prone to leakage."

Thank you,

Tom Gurdziel

FLÜS

Leak Detection System



A

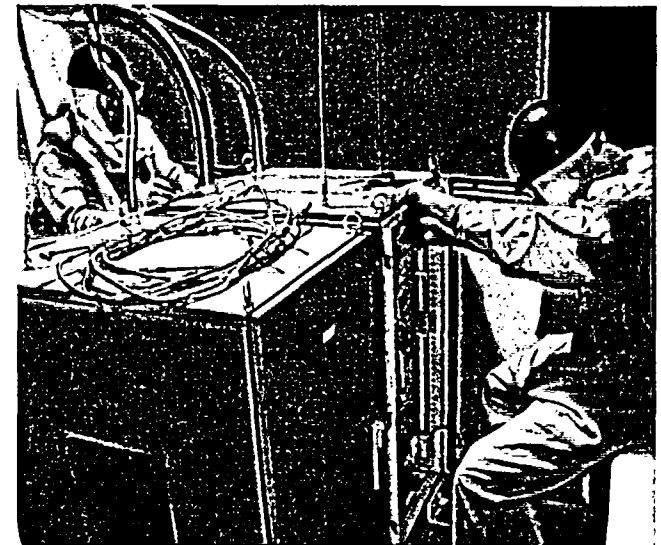
FRAMATOME ANP

FLÜS Leak Detection System

▷ **What is FLÜS?**

- ◆ *The FLÜS by Framatome-ANP is an innovative monitoring system which provides for rapid and reliable detection of steam and water leaks*
- ◆ *It's the most intelligent leak detection system in the world*
- ◆ *FLÜS (pronounced "floose") is an acronym—meaning humidity leakage monitoring system*

Measurement Station



FLÜS Leak Detection

▶ **More Reliability**

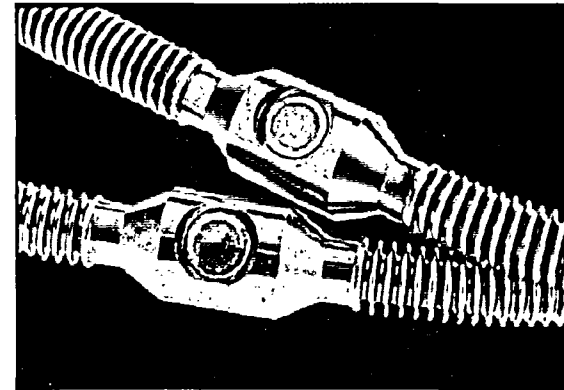
- ◆ *FLÜS means security*
- ◆ *Detects even the smallest leaks- 0.005 gpm*
- ◆ *Provides early indication of component degradation*

▶ **More Measurement**

- ◆ *It's proactive*
- ◆ *FLÜS' key is the sensor tube*
- ◆ *Sensor tube can be installed in close proximity to areas historically prone to leakage*

▶ **More Experience**

- ◆ *We've brought the technology to the United States*
- ◆ *Satisfied customers in Europe, Canada and the United States*
- ◆ *Tailored to meet customer needs*



FLÜS Sensor tubes



FLÜS Sensitive Section

FLÜS Simplified Installation

▷ **More Features**

- ◆ *FLÜS can be used in nuclear power plants to monitor for potential leakage in pressurized water or steam carrying components.*
- ◆ *FLÜS operates on the principle of humidity detection and is an area leak detector.*
- ◆ *High detection sensitivity and ability to locate the position of leaks to within several feet.*
- ◆ *FLÜS can utilize secure network communications*



Non-sensitive
Tubing

Non-sensitive tubing route

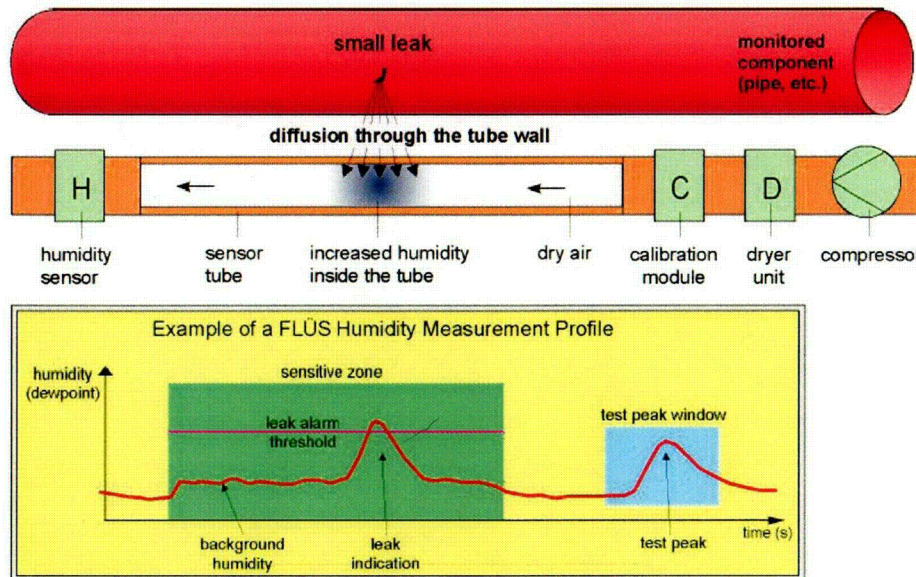


Room sensor

Spacer Coil

Inside Reactor Cavity

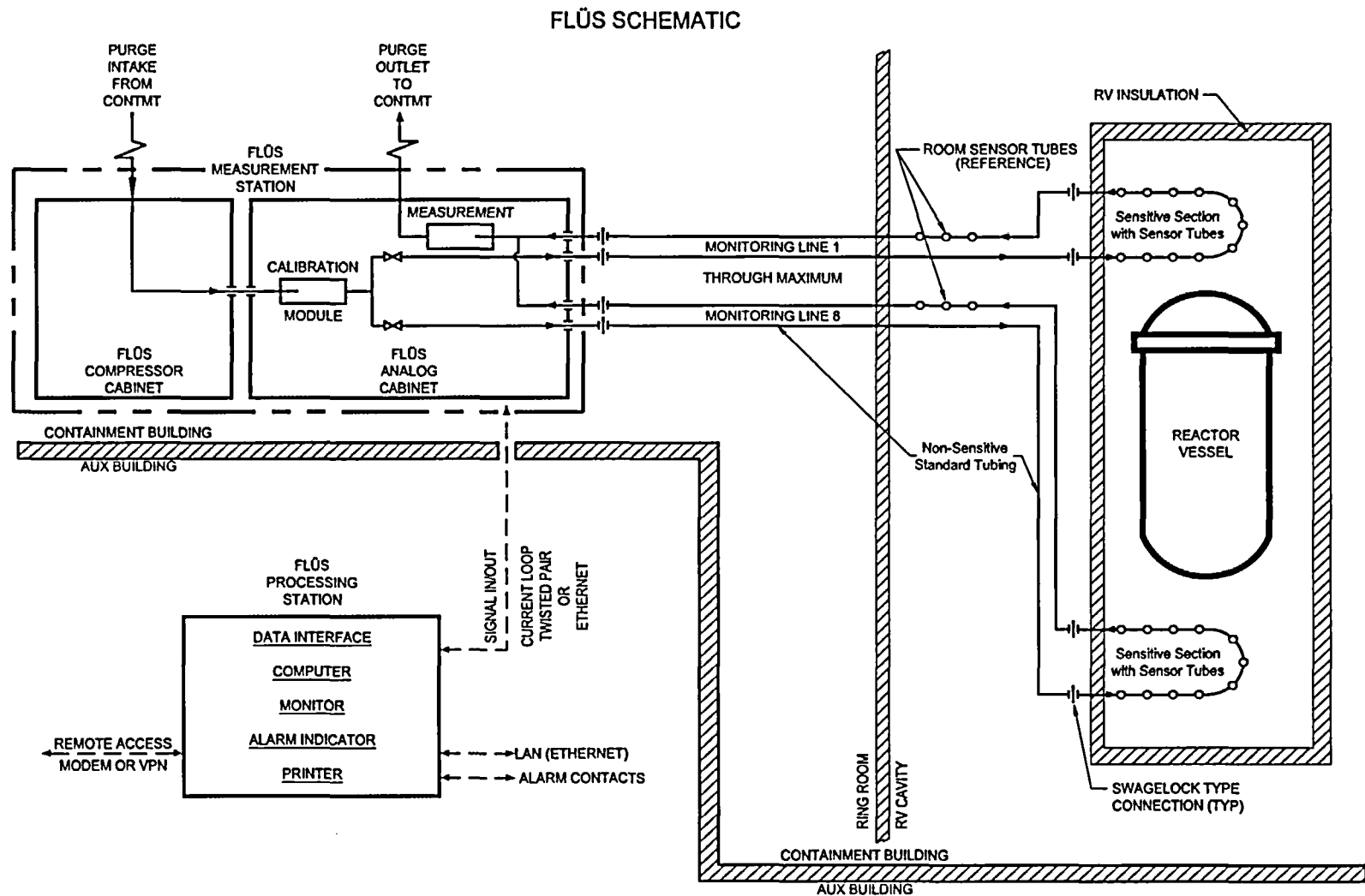
More Versatility



- » FLÜS monitors an area by installing sensors in a measurement loop
- » FLÜS measures the humidity profile around the sensors

- » High moisture content will trigger a calibrated threshold alarm
- » The humidity measurement trace helps pinpoint the leak location
- » Comparison of “background” and “test” peaks to the sensitive area allows discrimination of leaks and false alarms

Typical FLÜS Schematic



FLÜS Leakage Detection System

Task

- » Detection and localization of leakages at pressure retaining systems
- » Leak level indication

Basic Physics

- » Measurement of the increase of local moisture content inside the thermal insulation of the monitored component (resp. of the global humidity at different measuring points within the monitored room)

Installation Effort

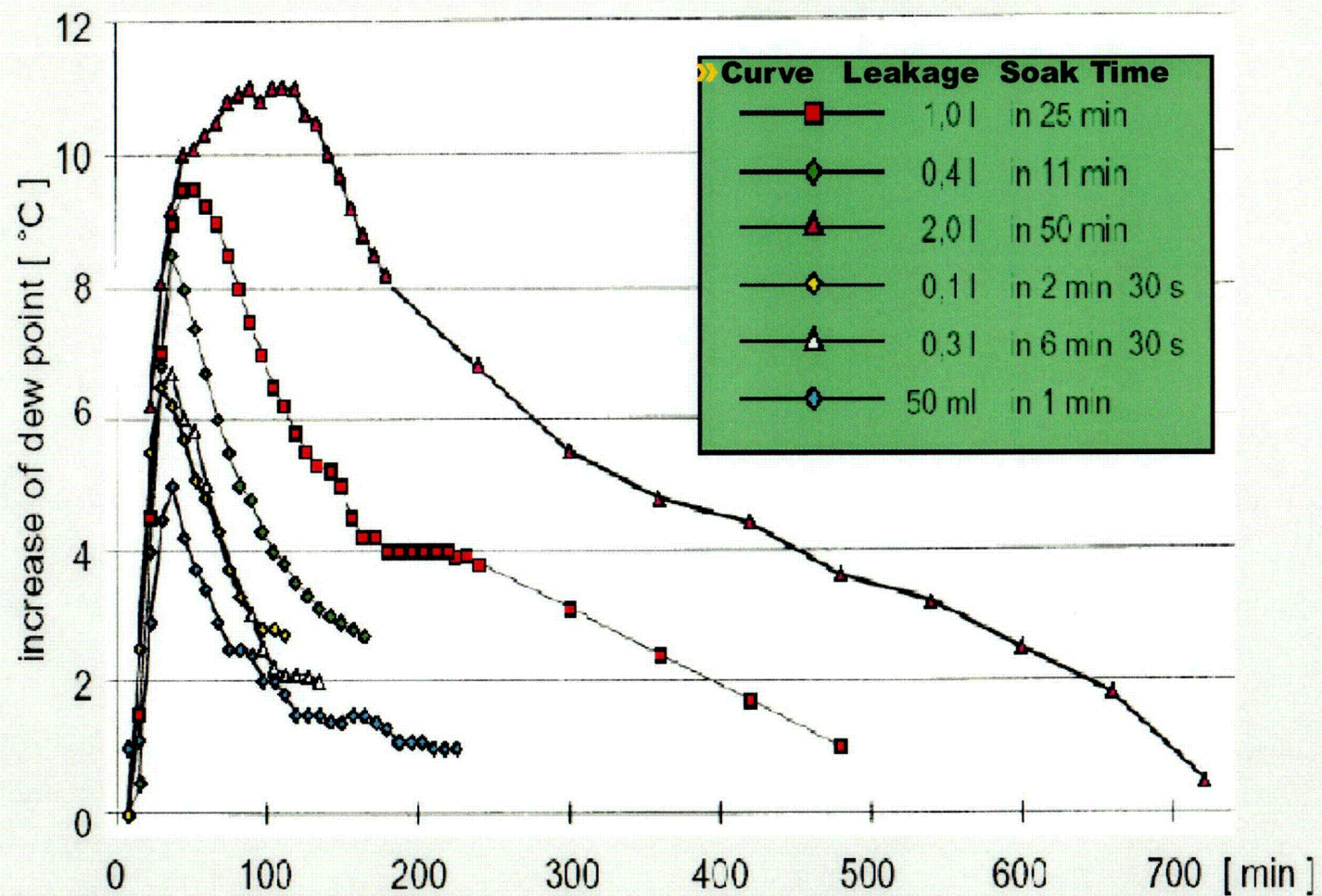
- » Flexible sensor tube with sensitive elements every few feet, laid along the component within thermal insulation
- » Sensitive section containing FLÜS sensor tubes with Measurement Station in-containment and Processing Station accessible outside containment
- » Sensor tube of closed loop with FLÜS station at central position
- » Automatically working measuring cycle (15 to 60 min)

Parameters of Evaluation

- » FLÜS-dew point as function of sensor position along loop

FLÜS Sensitivity

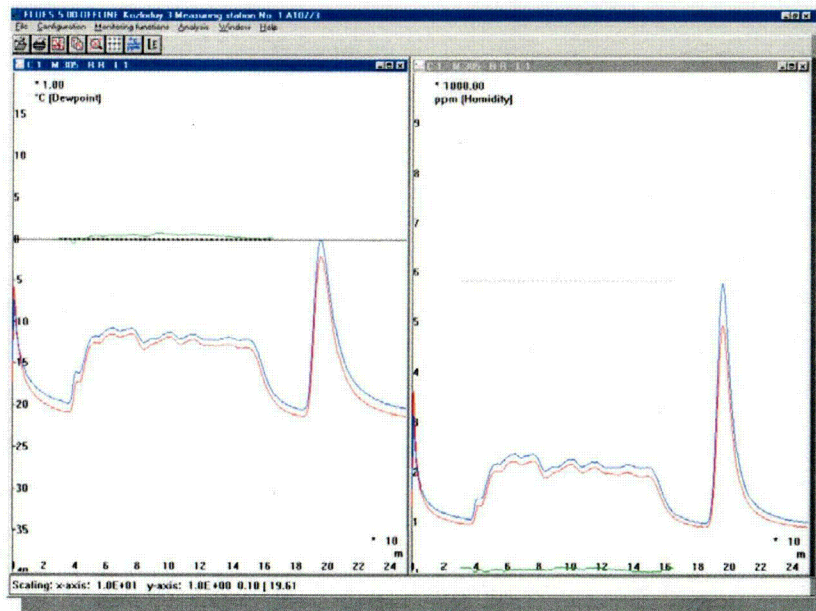
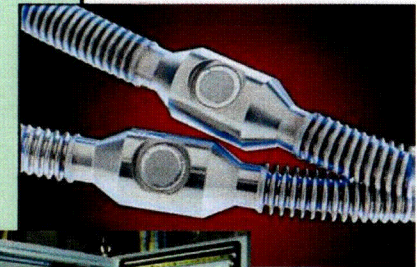
FLÜS - Indication for various leak quantities



FLÜS Measurement

■ Hardware

- Temperature and radiation resistant sensor tube (no electronics)
- centralized moisture instrument



■ Software

- WINDOWS user interface
- PC based instrumentation and evaluation



Why FLÜS?

- ▶ ***FLÜS is a proven solution installed at various plants worldwide***
- ▶ ***FLÜS can verify that plant components are NOT leaking above a threshold, possibly reducing costly inspections or justifying extended inspection frequencies***
- ▶ ***Detects even small leaks from components containing pressurized water or steam and determines their position with measurable precision***
- ▶ ***Automated data analysis and alarm indication provides early identification and trending of leakage***
- ▶ ***Easy to install with no outage critical path impact***
- ▶ ***Low cost maintenance over the life of the plant***
- ▶ ***Has inherent self-diagnostic capabilities***
- ▶ ***Analysis can discriminate against false alarms***
- ▶ ***Provides a continuous indication of component integrity during operation***



5496

From: Sue Gagner
To: Bell, Hubert; Bolling, Vicki; Fortune, Tojuana; Waller, Antoinette
Date: 7/15/04 3:49PM
Subject: Fwd: FW: Emailing: flus.pdf

In the attached e-mail, which we received in the Office of Public Affairs, Mr. Gurdziel again asks that I forward a letter from him to the Chairman, the Commissioners, and the Inspector General.

I therefore am forwarding it to you for such handling as you deem appropriate.