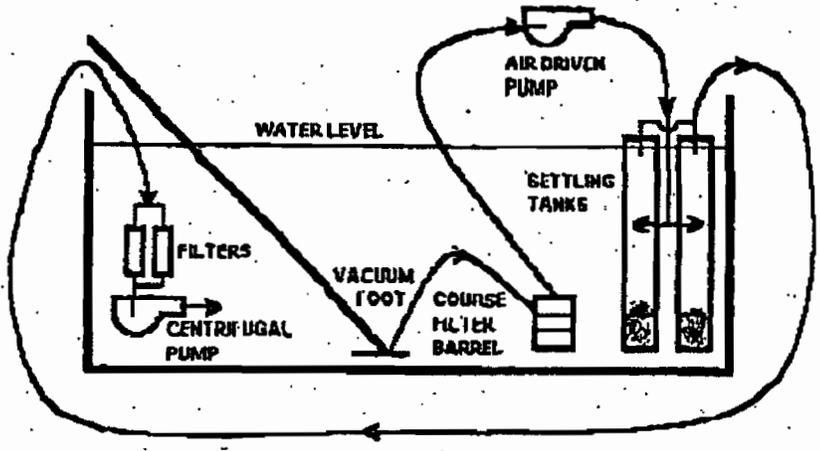


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M52A

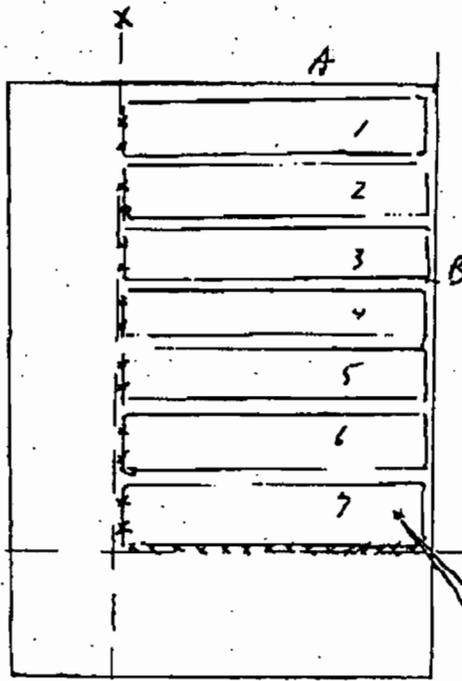
**SCHEMATIC OF PROPOSED NEW
SLUDGE REMOVAL SYSTEM**



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DOE OFFICE OF CLASSIFICATION
T. Staler DR DATE: 1/28/2009
T. Staler

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Figure A



- Overhead view spent fuel pond
 - Contains 7 storage racks

M52B

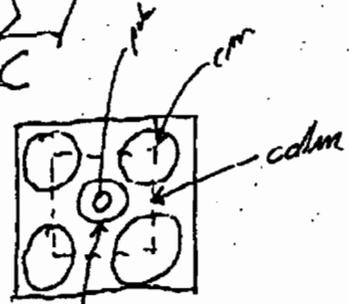
- 29 pins are to be welded in to plate along x & y to prevent core from being withdrawn from penetration.
- Sides A & B are not a problem because of walls of spent fuel storage pond.
- Rods will be welded onto base. - see Figure B

Figure B - Profile of a rack - from 'x' view



Figure C

Overhead view of a portion of a rack. (enlarged)



IAEA - suggested addition to prevent removal of core from top. The addition is essential additional column.

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CHRON

#66 (7153)

US SPENT FUEL TEAM

**TO: CHERIE FITZGERALD, US DOE WH-42
202 586 8525, FAX 202 586 2323**
**FROM: WINSTON LITTLE, DOE ONSITE MONITOR
850 2 381 4423, FAX 850 2 381 2473**
DATE: SATURDAY, NOVEMBER 25, 1995

Engineer Li requested that the medical room be converted to an office--to be his office. He noted that the room has been staffed by a doctor for almost 3 months, and never once used. He noted that this was an inefficient use of both space and the doctor's time. After consulting with Cherie, I approved the switch.

Al and John spent the day calibrating the NaI counter, and performing preliminary assessments on pool water samples. Initial cesium estimates were in the range of 45-65 micro-Ci/liter. Gongs installed a light controller in the camera case.

This morning, the purification line was running smoothly. status: 55 gpm, chillers off, temperature 43 F. At about 3:00, I noted that the diesels were off, and that the purification pump was running on DPRK power with a flow of 40 gpm. I told engineer Li to return the pump to diesel power. He agreed, but also wanted it made clear that we would pay for the consumed diesel fuel. I agreed, and we will do a test next week to determine the consumption rate of fuel.

The status of visas is still highly uncertain. Denis Reynolds

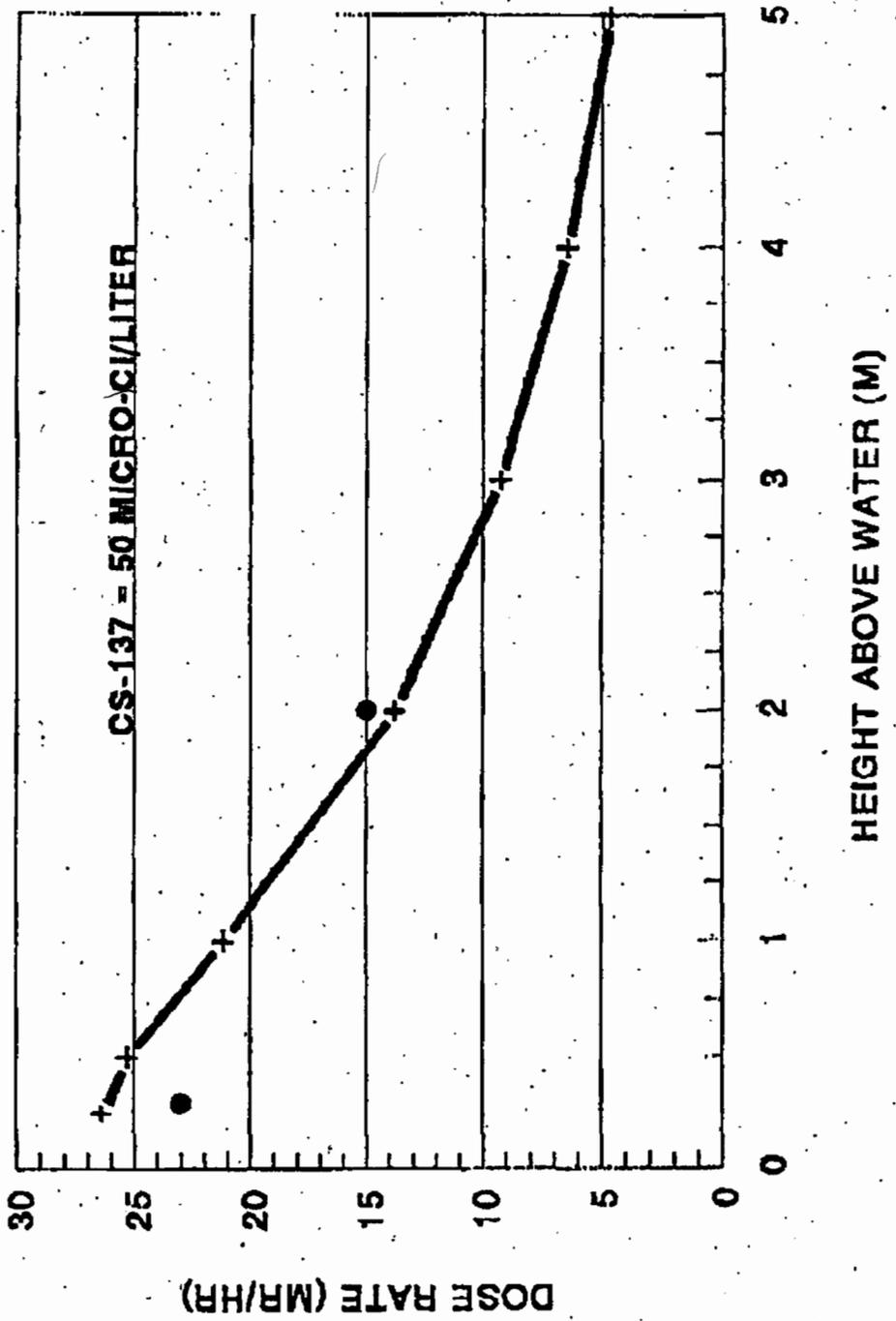
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CALCULATED DOSE RATE FROM CS-137 (BASED ON 6 M CUBE POOL)

---+--- CALCULATION ● EXPERIMENT



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DOE OFFICE OF CLASSIFICATION
T. Stelar DR DATE: 1/29/2004
T. Stelar

U.S. spent fuel team (DOE) weekly summaries
20080002437

CHRON

7154
#67

US SPENT FUEL TEAM

TO: CHERIE FITZGERALD, US DOE NN-42
 202 586 8525, FAX 202 586 2323

FROM: WINSTON LITTLE, DOE ONSITE MONITOR
 850 2 381 4423, FAX 850 2 381 2473

DATE: MONDAY, NOVEMBER 27, 1995

Engineer Li had no additional information on visas.

The purification line was running well this morning. Status: flow 55 gpm, temperature 43 F, chillers out, all filters in except pre-filter Bank B and cesium unit.

We began a 1-day test to determine the quantity and cost of diesel fuel consumed by the generator for running the purification line pump. Currently, the generator, which has a capacity of about 30 kw, is putting out about 7 kw. The nominal pump power is 5 kw.

Al and John continued their analysis of pool water using the NaI counter. They have done an outstanding job of finally getting this system to work. Their best estimate for Cs-137 is 45 micro-Ci/liter, with an uncertainty of about 10%. This cesium concentration is consistent with the dose rate measurements over the pool. See enclosed graph.

At about 11:30, Al and John began additional tests with the sludge vacuum system. The pool water was remarkably clear since we had not done any operations in the pool for several days. They vacuumed for about one-half hour, with several stops to clean debris off the foot. The area vacuumed--about .5 square meters--looked clean and shiny through the clear water. Just before noon, the pole broke free from the foot and vacuum line--at which point we stopped for lunch.

In the afternoon, Al and John determined that the cause of the pole detachment was the loss of the bolt that joins the pole with the foot. In the morning, they plan to re-attach the foot and resume vacuuming tests.

NAC and CenTec each paid 400\$ for the use of cars during the last week.

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T. Steler DR DATE: 1/29/2007

WITHOUT ENCL/ATTACHMENTS

2008000 2437

U.S. spent fuel team (DOE) weekly summaries

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M55

Facsimile

Nikko Enterprises, Inc.
Beijing Office
Tel: (+86-10) 508-8613
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Nikko Enterprises, Inc.
464 Hudson Terrace
Englewood Cliffs
New Jersey 07632, USA
Tel: (1-201) 871-2300
Fax: (1-201) 871-9707

Number of Pages (including Cover Page): 1 Page

TO: Mr. Kenneth Quinones - Department of State
Washington, D.C. - (202) 647-5286

FROM: D. Sang Chua
Beijing, P.R. of China

DATE: November 27, 1995

SUBJECT: Spent Fuel Team Visa Status

Dear Mr. Quinones:

Currently there are 5 members in Nyongbyon: Winston Little (DOE), Denis Reynolds (State Dept.), John Newey (Centec), Al Miller (Centec), and George Jackson (NAC). Thomas Grim of DOE Oakland Office was originally scheduled to arrive in Pyongyang on Nov. 25 to replace Mr. Little. Not only his visa is not ready, even if the visa is readied on time, Mr. Grim did not arrive in Beijing as scheduled. We have sent facsimile to his attention on Nov. 21 in Oakland requesting confirmation on his arrival in Beijing, but unfortunately to no avail.

These are Little, Mr. Reynolds, Mr. Miller, Mr. Newey, and Mr. Jackson.

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#10

CHRON US SPENT FUEL TEAM

TO: CHERIE FITZGERALD, US DOE MN-42
202 586 8525, FAX 202 586 2323
FROM: WINSTON LITTLE, DOE ONSITE MONITOR
850 2 381 4423, FAX 850 2 381 2473
DATE: TUESDAY, NOVEMBER 28, 1995

We measured the fuel consumption rate for the diesel generator loaded with the purification line pump. The rate was 97.5 liters/day. At least for the next few days, we plan to keep the pump and the laboratory computer on diesel power since DPRK power is unreliable--it was off for a couple of hours today.

George spent the day assembling and testing the pressure washing system. This system was designed to clean fuel rods. but

11/29/95 07:07 202 586 2323
'95-11-29 18:30 PYONGYANG-KOREA

RA Libby
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CHRON
#9
#1151

US SPENT FUEL TEAM

TO: CHERIE FITZGERALD, US DOE NN-42
202 586 8525, FAX 202 586 2323
FROM: WINSTON LITTLE, DOE ONSITE MONITOR
850 2 381 4423, FAX 850 2 381 2473
DATE: WEDNESDAY, NOVEMBER 29, 1995

Al and John continued counting samples using the NaI counter. As reported, the preliminary Cs-137 value was 45 micro-Ci/liter, with an uncertainty of about 10%; the new measurements support the preliminary estimate.

Al, John, and George resumed work on the vacuuming system. We first tried to restart vacuuming, but the flow was too low (about 3 gpm, where we left off yesterday). Concluding that the filter bags were full, we began the tedious task of reloading filter bags. We began at 10:15, and by noon we had opened all eight canisters and removed one bag. The water is now clearer than when Gordon and Roger performed the same task about 2 weeks ago.

Al, John, and George worked diligently all afternoon reloading filter bags. By the end of the day, all canisters were reloaded with new bags, and the lids on 5 canisters had been secured. The dose rate near (about 10 cm from the side at half-height) 4 bags was measured; the values were 30, 30, 40, and 50 mR/hr. Tomorrow, we plan to finish securing the lids on the last 3 canisters, and, if time permits, vacuum more of the pool.

Incidental note: the main reason the bags are difficult to reload is that they are so far under the surface. For the proposed new system, why are the bags near the bottom? Why not at or near the surface? The dose rate in the sludge does not appear to be any greater than the water itself. Cesium would not be expected to concentrate in sludge.

We informed Engineer Li that all team members wish to leave on Saturday, 12/2. We are running very short of money, and this is the latest date that all team members can leave and still pay bills. Otherwise, since we have no outside support, we face the unacceptable situation where one or more team members could be detained in DPRK for an indefinite period because of inability to pay bills. We told Engineer Li that we will resume activities as soon as visas are available. Late in the afternoon, Safety Engineer Li said that they had no further information on visas, and that they would try to get our team seats on the Saturday flight.

At the end of the day, the purification line was running well with a flow of 55 gpm and a water temperature of 45 F.

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CHRON #70
M58

US SPENT FUEL TEAM

TO: CHERIE FITZGERALD, US DOE NN-42
202 586 8525, FAX 202 586 2323
FROM: WINSTON LITTLE, DOE ONSITE MONITOR
850 2 381 4423, FAX 850 2 381 2473
DATE: THURSDAY, NOVEMBER 30, 1995

During the last few days, house voltage has been very low (about 80 volts), and the florescent lights in the office do not even start. Thus, it is both cold and dark.

During the morning, Al and John, working with the DPKK staff, closed the lids on the last 3 sludge removal canisters. Progress was slow; it is a painstaking task. Until the sludge removal system is completely redesigned (or replaced), further replacement of filter bags is of questionable value. We discussed with Engineer Li the possibility of lifting the skid to the surface, and changing the bags while the skid was hanging from the crane. Everyone finally concluded that this was a bad idea.

In the afternoon, Al and John resumed vacuuming. For about 15 minutes the flow stayed high, about 30 gpm. During this period, they were able to vacuum a sizable area--I would estimate 4-5 m2. The flow then dropped to 1-3 gpm over a few minute interval. Although they continued to vacuum for another 15 minutes, very little additional area was vacuumed. Again, we saw a plume of sludge coming from the pump after the flow began to drop. During vacuuming, for 5-10 seconds, the pump made a loud sound--as if a solid object were passing through the pump. However, it continued to operate, so I guess that there was no serious damage.

After completing vacuuming, we began again the tedious task of changing filter bags. Before quitting for the day, we removed the bolts from all 8 canisters.

To summarize the vacuuming operation: the vacuuming itself appears to go reasonably well (as long as the lines don't clog and the pump is not damaged by solid debris). However, replacement of the filter bags is excruciatingly slow. From our few tests, I would estimate that 20 filter changes would be required for the west pool alone. At best, assuming 2 days for a cycle, this would translate to about 40 working days, or almost 2 months actual time.

At the end of the day, the purification line was operating well. The flow was 55 gpm, and the temperature was 45 F. Pressure has slowly begun to increase over pre-filter Bank A; the pressure drop is about 10 psi.

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T. Steler DR DATE: 1/29/2009
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202 586 2323

RA Libby

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MLO

US SPENT FUEL TEAM

TO: CHERIE FITZGERALD, US DOE NN-42
 202 586 8525, FAX 202 586 2323

FROM: WINSTON LITTLE, DOE ONSITE MONITOR
 850 2 381 4423, FAX 950 2 381 2473

DATE: FRIDAY, DECEMBER 1, 1995

In the morning meeting, Engineer Li said he had no new information on visas. He said that they were still trying to extend my visa from 12/5 to 12/9.

He also said that they were running short of lubricant, anti-freeze, and fuel filters for the diesels, and that supplies would only last for 1-2 more weeks. CarTen plans note. Thus, we told

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'95-12-02 18:14

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V CAROTENUTO

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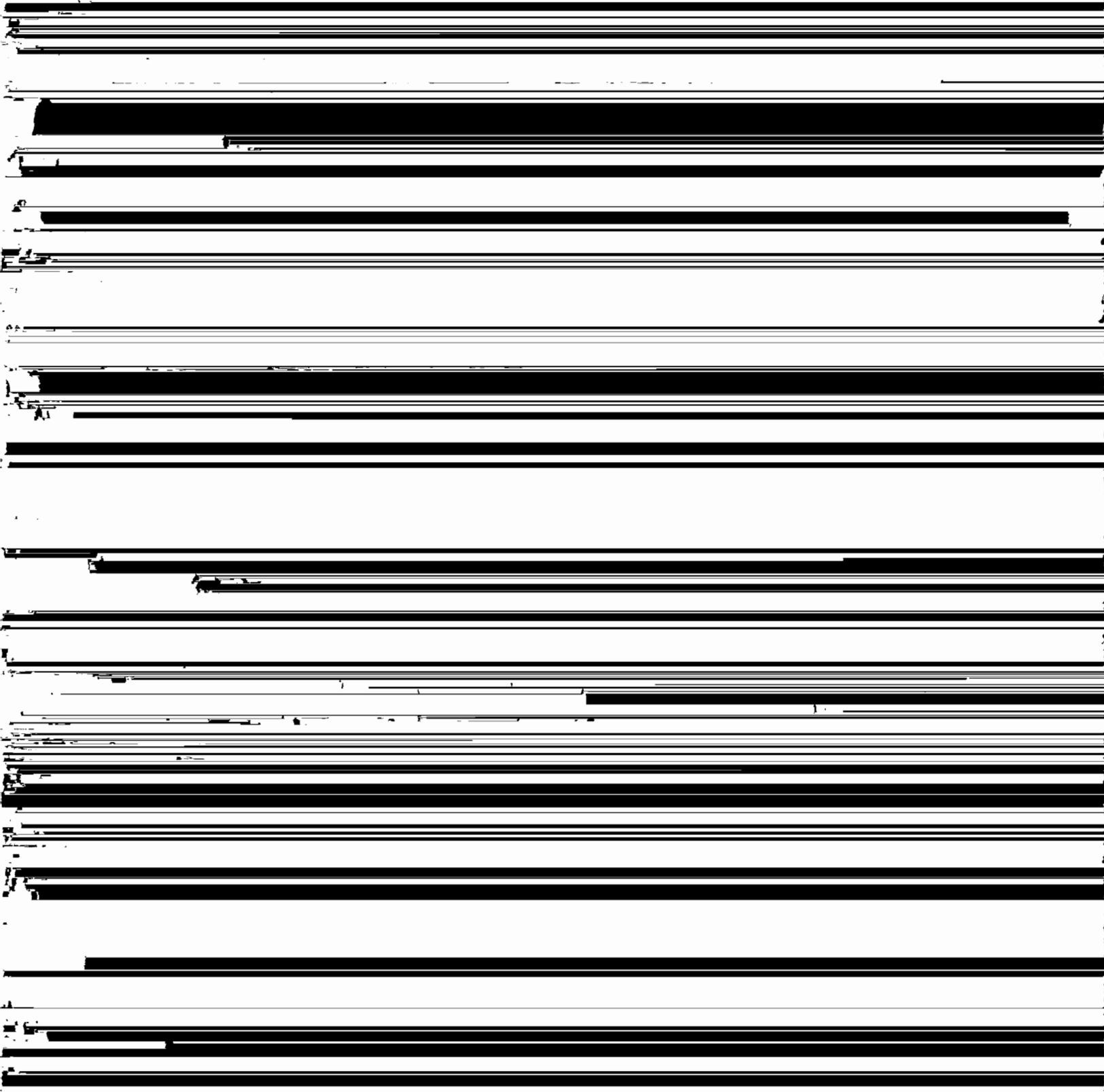
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CHRON #72

M62

US SPENT FUEL TEAM

TO: CHERIE FITZGERALD, US DOE NN-42
202 586 8525, FAX 202 586 2323
FROM: WINSTON LITTLE, DOE ONSITE MONITOR



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12/04/95 07:47

202 586 2323
TEL: 850-2-814423

RA Libby

V CAROTENUTO
U4 DEC 95 18:25 NO.001 P.01

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#.73

M63

US SPENT FUEL TEAM

CHRON

TO: CHERIE FITZGERALD, US DOE NN-42
202 586 8525, FAX 202 586 2323
FROM: WINSTON LITTLE, DOE ONSITE MONITOR
850 2 381 4423, FAX 850 2 381 2473
DATE: MONDAY, DECEMBER 4, 1995

In the morning meeting, Engineer Li said that he had no information on visas, but perhaps that Safety Engineer Li, who may arrive later in the day, might have some information (never came).

At 10:00, we began removing filter bags, and removed all bags by 11:00. Dose rates, a few cm from the half-height of each bag, were as follows: 30, 40, 50, 45, 45, 40, 40, and 50 mR/hr. The dose rate 30 cm over the pool water was 23 mR/hr. By noon, we had inserted 5 new filter bags.

In the afternoon, we resumed work on the vacuuming system. By 5:00, we had completed adding the filter bags and shut all lids. We thus resumed vacuuming, selecting an area immediately south of

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01/05/96 14:45

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+++ V CAROTENUTO

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T-568 P. 01

M65 #82

FAX FROM THE DPRK

TO: CHERIE FITZGERALD - DEPARTMENT OF ENERGY - USA
FROM: JON B. WOLFSTHAL - DOE Field Office - DPRK
DATE: JANUARY 4, 1996

ABW
CHRON

Welcome back to the world of legible faxes. I apologize for yesterday's hand written production as my computer is now back and running. In the process of preparing to drain and replace "A" pre-filters, Johan and Bob ran into a potentially significant problem. The main drain line, which makes draining of all of the systems for repairs, replacements, etc. possible is frozen. The section of frozen line is in the spent fuel building. Accessing the line directly would require us to cut through protective sheeting on the ground and remove some metal trench covers. The immediate consequences of the frozen drain line are as follows:

We cannot replace the "A" filters without draining out the water. In itself, this is not a major problem. Once NAC begins to install equipment and begin vacuuming, however, the "B" pre-filters will begin to clog and eventually need replacement. "A" filters must be changed out by then or we have no pre-filtration. The system can operate by bypassing the pre-filters, but that puts the main strain on the main filters which will quickly become clogged themselves.

We have several options to address the problem.

1) Do nothing and wait for the new team with the new heaters. Once installed, they can focus one of the smaller heating units directly on the drain line in the spent fuel building. If the line can be thawed before the "B" filters become clogged, the filters can simply be changed. It would be useful to have a CENTEC person here, but not necessary. The risks are that the system is not thawed before the "B" filters clog. In this case, the vacuum team would have to stop work and thaw out the system. The treatment system CAN/CAN, operate without the pre-filters, but the main filters will become clogged more quickly and we have a limited number of spares on hand.

2) Our team can attempt to focus the heaters on the drain line before the new team arrives. It may be possible for the lines to be thawed and for us to change out the filters before the new team arrives. This would eliminate the possibility of a work stoppage in the vacuuming process -- something I know should be avoided. The worst case is that we are not able to complete the job and the new team will have to complete the job without CENTEC assistance. Johan believes that they could change out filters without him but also thinks that we can get the job done before they arrive. His presence would be of obvious value, since he knows the system and identified the current problem.

3) We can cut the drain line and drain the pool water in the back end of the line and in the filters directly into a 55 gallon drum. This has the greatest risk of a spill and also raises the danger of not being able to quickly reconnect the drain line. This option should enable us to quickly change out the filters, but both Johan and Bob agree that it is the least desirable of the three options, due to the risks of spill and possible problems in reconnection. Chief Engineer Li would most likely object to the procedure due to the risk of contamination.

* * All three of us recommend that we adopt option 2 (and this sounds like an NSC paper). In the worst case, Johan explains what needs to be done when the new team arrives and they complete the job. What we need to know if the following:

How long will it take to heat the spent fuel building to a point where the line unfreezes? How long is the installation of the new vacuum system supposed to take (both expected and then probable)? How much particulate matter is the installation expected to take? I know these are hard to predict, but even guesses would be useful in making our decision.

I will call you at home Thursday evening to discuss our options and see what you think we should do. It's not the end of the world, but it is a problem we should solve now before it forces a slow down in the vacuuming work.

In addition, we were asked by DPRK reps. Today about the next shipment: # of containers, weight, dimensions. They need to make shipping arrangements from Beijing. Fax what you can when you can. Everything else is well. How your trip was good. I'll talk with you tonight (your time).

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DATE: 1/6/96
T. Stier

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01/05/86 14:45
96-01-05 18:36

202 586 2323
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--- V CAROTENUTO

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**DAILY FAX FROM THE HOUSE OF THE
NINE DRAGONS NYONBYON DPRK**

01/10/96 13:39 PUBLIC KP

202 586 2323 TEL: 850-2-817123

RA Libby

V CAROTENUTO 002/007 NO. 002 P. 01

DAILY FAX FROM DPRK

#89
M61
CHRON

TO: Cherie F. Fitzgerald / Dick Libby - 001-202-586-6188
FROM: Jon B. Wolfsthal TRANSFERRED TO OTHER AGENCY
DATE: JAN 3, 1996 TRANSFER FOR DIRECT REPLY - DOE

My Wordperfect File gave out TODAY. I will try to reload tomorrow.
We are ~~not~~ Fairing much better than my WP file. All here is well.
Our team returned work as spent full facility today after 3 day
Inpatient. Today. Our Morning Meeting w/ CE L. went well. We
Turned over a copy of Pre-Filter Change out Procedures. L. informed
us that Rad Waste from Previous Filter Change had not yet been
removed and that our change out would have to wait. He stated his
intent to have material removed to permit change of Pre-Filter "A"
This week.

John replaced 2 UV lamps in the water Treatment System today. He
also took water samples, but we were unable to complete our Testing
due to lack of HCl Acid to treat water. We will complete Rad
Evaluation of samples tomorrow.

Bob F. isolated source of contamination in WTS today. His
"HOT SPOT" appears to be left over from previous water spill +
should be cleaned up this week. Bob also requests next team to
bring a few 1" 3 ring Binders for Health Physics log.

If we are not able to change out Pre-Filter this week, incoming
team will have to perform the job. We will learn procedures to
them.

How was Dick's Trip to Calif? Does he have info on Boiler? How
was your Trip? Where did you go? is government open yet?

I will call Cherie at home tomorrow night (U.S. Wed.)

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Jon B. Wolfsthal

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T. Sieler DR DATE: 1/29/2009

HS/SLW
HRS/SMI 3/25/09

U.S. spent fuel team (DOE) weekly summaries

#85

~~CONFIDENTIAL~~
~~U.S. Spent Fuel Team~~
~~CRD~~
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7169

To: Cherie Fitzgerald, US DOE NN-42
From: Ken Ames, DOE Onsite Monitor
Date: Monday, January 8, 1996

We arrived at the site without difficulty in spite of the 4" snowfall last night. The chem lab, where heaters had been left on, was reasonably warm but the temperature in the office was 34°F.

George Pannell and Mike Miles started getting the NAC generators ready to run by connecting battery chargers and plugging in the block heaters. They expect to be able to start them up tomorrow morning when diesel fuel will be delivered. They also laid out the cable which will be used to provide power from the main NAC distribution panel near the fuel pool to a subpanel which will be installed in the office. We showed the Chief Engineer what we planned to do and got permission for holes in the walls so the cable can be routed.

We showed the Chief Engineer the schematic of the new sludge vacuuming system and also Jim Viebrock's schedule for sludge vacuuming and canning equipment installation. The Chief Engineer was satisfied with both, but we will have more discussion to settle the disposition of the existing sludge vacuuming system. The original discussions (Nov '94 & Jan '95) of waste disposal did not specifically address the problem of disposing of contaminated equipment which is not needed. We will have to jointly agree whether the existing system is to be considered as waste or as excess equipment which can be utilized in the future. George and Mike looked in the east basin and believe that with just a little movement of the fuel baskets, the new system can be installed without removing the existing one. Once we have verified that there is indeed room, we may offer this option to the Chief Engineer. Possible sites for storage of the existing system if it is removed are the pit at the east end of the pool area and the room where the DPRK water treatment equipment is.

I gave the Chief Engineer the boiler drawings Randy Thomas had faxed to me. He was pleased with them and is anxious to get a firm shipping date. I told him that I might soon have an electronic version of the drawing we could use, which would make it possible to produce an AutoCAD layout of the building dimensioned in meters.

Jon Wolfsthal did an excellent job as site DOE rep. The Chief Engineer praised both John and Johan for a job well done and said he hoped they would be back many times. Both left today with big smiles. I think the fact that Jon would smoke with the Chief Engineer made up for his youth and the fact that he's not an engineer.

If it fits other people's schedules, I will stay an additional week, leaving the DPRK on the 30th (yes, I cleared it with Becky). It only seems fair since I won't be coming back until April and I'd like to see sludge vacuuming finished and get well into installation of the canning equipment. If you decide to take me up on this, please call Delta and see whether they can move my return reservation a week later. You should be able to access my reservation by referring to my departure date, 1/2/96 and flight number, 628, PSC > SLC.

I just received a two-page fax sent through CenTec by Cherie to Jon on the 5th of January. It is the page with information on Jon's flight reservations. Jon had received the fax I sent from the GW Sheraton with only about a 12 hour delay.

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DOE OFFICE OF CLASSIFICATION HS-93
T. Sieler DR. DATE: 12/1/2009
J. Sullivan

U.S. spent fuel team (DOE) weekly summaries