

item 12 - #3

Subj: Old IP reports  
Date: 5/1/2000  
To: lad@nrc.gov

Laura:

Here is a compressed file of all that I have written for Emmett and Stephanie for Indian Point. Some of these responses are from specific questions and may not make a lot of sense unless the question is included. However, I hope it will be useful to you. They are compressed, self extracting files. Place them in a directory and double click on it using Explorer, or type the name in a DOS box and it will execute, producing a number of WordPerfect files. Let me know if you have any trouble.

Caius

Subj: Three tubes, analysts setup  
Date: 5/2/2000  
To: aneff@prodigy.net  
CC: (elm@nrc.gov), (smc1@nrc.gov)

Andy:

NRC still wants an explanation of why the three tubes (34/51, 35/51 of SG22 and 29/46 of SG23) were missed by one analyst.

Also, in investigating the missed indication 2/5 of steam generator 24, I need to know the where the analyst set the phase. Would you recall the setup used by both the primary and secondary analyst in 1997 and measure the voltage and phase of the 100% notch and send me the values.

Thanks, Caius

ubj: Phase setting  
Date: 5/2/2000  
To: elm@nrc.gov, smc1@nrc.gov

File: C:\WP\FINDIAN~6.NRR (209259 bytes)  
DL Time (32000 bps): < 2 minutes

Emmett:

Here are plots with the phase set correctly and 7 degrees low. I hope that this helps. I have contacted Andy to get the actual measurement of how low the phase was set. I'll be back after 4:00

Caius

Subj: Follow up questions  
Date: 5/17/2000  
To: aneff@prodigy.net  
CC: (smc1@nrc.gov), (elm@nrc.gov)

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Andy:

I hope you are busy writing up the training and inspection procedures now. I have several questions left over from the inspections.

What training were you using, particular for the review of the data for the rotating probes? Was any of this training written?

Was the frequency that you measured the phase shift of the 100% through wall defect 300 kHz?

How many of the tubes that were on the plugging list due to "noisy data" removed after inspection with the high-frequency probe?

Have a good time going over all the data and wrapping up the inspection.

Caius

Subj: Using Ian for site visits

Date: 5/17/2000

To: ejs@nrc.gov

CC: elm@nrc.gov, smc1@nrc.gov, (tees@airmail.net)

Ted:

The discussion about using Ian Barnes for Indian Point gave me another idea. If you remember, I mentioned several years ago that the plants in his region were getting a better inspection than the other regions. I believe it would be a good idea to use him to visit at least a sampling of the plants in the other region to bring their inservice inspections up to par with those in his region. At least those with deficiencies would know that they need to improve their inspection.

Caius

Subj: Re: IP2 Steam Generator DP Call

Date: 5/17/2000

To: JFH@nrc.gov

Jeff:

I do know what this document is. If it contains inspection results or conclusions that I should know about, please mail me a copy at:

Caius Dodd

11740 North Williamsburg Drive

Knoxville, TN 37922

Thanks, Caius

Subj: The Judas Tube

Date: 5/17/2000

To: elm@nrc.gov, smc1@nrc.gov, ejs@nrc.gov

Ted:

After further thought about the phone conference this morning, I believe that we should institute the "Judas Tube" program. This would consist of collecting tubes from the test and current inspection that had defects in them. They would be recycled back into the analysis data stream with the date, row and column disguised to match the other tubes in

the cal group. The readings would be changed so they would match the cal standards in that cal group. This can be done with a simple c-program. Each cal group would contain at least one Judas Tube, and the analyst would be graded on their ability to detect these defects. If the analyst did not achieve a passing grade, they would have to be retrained and retested. Also, all cal groups that they analyzed would have to be redone by a qualified analyst. Into this collection of Judas Tubes, we would also insert a few "Monkey Tubes", such as 34/51, with defects so obvious that even a monkey could find them. If an analyst missed one of these tubes, that would be an automatic failure, and he would have to be retrained and tested. Also, all the tubes he had analyzed would have to be redone. In keeping with the Judas Tube program, I think that the utility should reanalyze all of the cal groups done by the analyst who missed the "monkey tubes" at the Indian Point inspection.

Caius

Subj: More on the Judas Tube  
Date: 5/18/2000  
To: elm@nrc.gov, smc1@nrc.gov, ejs@nrc.gov

File: C:\WPAFINDIAN9.NRR (5381 bytes)  
DL Time (32000 bps): < 1 minute

Emmett:

Here are more thoughts on the fallout of the three missed tubes. If you want to require that the analysts that missed these calls have all their data redone, the utility should be notified soon. I have attached an expanded discussion of this program.

Caius

Subj: Revised Judas Tube Program for Indian Point  
Date: 5/19/2000  
To: elm@nrc.gov, smc1@nrc.gov  
CC: ejs@nrc.gov

Emmett:

I talked to Indian Point some yesterday afternoon. The calls by the analyst that reviewed R34C51 of SG22 were reviewed and he missed something like 6 out of 18 tube calls. I believe that when an analyst misses something like this, there is something fundamental wrong with the program (training, guidelines, instructions, data management), and it should be corrected immediately. Some methods of screening should be done during the inspection to insure that this type of performance is detected very early in the inspection. With this type of performance, the utility does not achieve the 90% confidence level that EPRI claims.

I explained to the utility that the Judas Tube program was a general one that I believed all utilities should be using during their inspection. I believe that we can achieve almost the same thing by requiring the single analyst calls at Indian Point be reviewed. If any analyst has missed a "Monkey Tube", then all tubes that that analyst did must be

reanalyzed. I suggested that Andy review the single analyst calls and determine which cal groups must be redone. Tubes that have a high signal-to-noise ratio, such as R34C51 and R35C51 of SG22 should be declared "Monkey Tubes". I will be glad to look at a tape of any scans that Andy has questions about and give my opinion. This procedure would probably correct this problem at Indian Point for this inspection, but I think NRR should push for the full Judas Tube Program for future tests at all utilities, and add this to the analyst monitoring program.

On the other side of the coin, some of the calls that I reviewed were not defective tubes. The signal-to-noise was low enough that it was a guess if the indication was a real defect or not. The pressure tests on the tubes showed no change in the signal. This proved that if it was a defect, it was not large enough to have any significance effect on the tube's integrity. Most likely, it was a deposit on the tube OD. A significant number of tubes that the utility has plugged fall into this class. A reanalysis of the data will probably turn up some more tubes in this category. I do not believe that these tubes will need to be plugged, but that is a decision to be made after the reanalysis. However, any new "Monkey Tubes" would need to be plugged.

I will be glad to discuss this with you this morning before the 10:00 am phone call.

Caius

Subj: Follow-up Questions  
Date: 5/19/2000  
To: aneff@prodigy.net  
CC: elm@nrc.gov, smc1@nrc.gov

Andy:

I am re-sending a message that I sent on 5/17. You may have been away and not gotten it.

Caius

Andy:

I hope you are busy writing up the training and inspection procedures now. I have several questions left over from the inspections.

What training were you using, particular for the review of the data for the rotating probes? Was any of this training written?

Was the frequency that you measured the phase shift of the 100% through wall defect 300 kHz?

How many of the tubes that were on the plugging list due to "noisy data" removed after inspection with the high-frequency probe?

Have a good time going over all the data and wrapping up the inspection.

Caius

Subj: Judas Tube Program  
Date: 5/19/2000  
To: dcl@nrc.gov

Dave:

Here is the Judas Tube Program and the Email that I sent Emmett this morning.

Caius

### The Judas Tube Program

The eddy-current practical exams are generally designed to insure that an analyst calls defects greater than a given depth or voltage at a 90% confidence level. Indian Point and many other utilities do not count off on their exam for false positives. This makes it possible for analyst to "call everything that moves" without going into a detailed study to determine if the indication is really a defect or not. When the analyst gets on the job, he can not make too many false positive calls because it would overburden the resolution analyst. The analyst's performance is monitored each day, and he gets feedback from this monitoring. Too many false positive calls will result in retraining and being sent home if this continues. Therefore, the level of performance of the analyst falls of during production data analysis. Some method of monitoring this performance during production is needed.

I believe that NRC should institute the "Judas Tube" program. This would consist of collecting tubes from the test and current inspection that had defects in them. They would be recycled back into the analysis data stream with the date, row and column disguised to match the other tubes in the cal group. The readings would be changed so they would match the cal standards in that cal group being done. This can be done with a simple c-program. Each cal group would contain at least one Judas Tube, and the analyst would be graded on their ability to detect these defects. If the analyst did not achieve a passing grade, they would have to be retrained and retested. Also, all cal groups that they analyzed would have to be redone by a qualified analyst. Into this collection of Judas Tubes, we would also insert a few "Monkey Tubes", such as R34C51 of Steam Generator 22, with defects so obvious that even a monkey could find them. If an analyst missed one of these tubes, that would be an automatic failure, and he would have to be retrained and tested. Also, all the tubes he had analyzed would have to be redone.

The analyst's evaluation program could be extended to include any normal defective tubes from the plant that come through the data analysis program. If the plant had enough normal defective tubes, then the Judas Tubes would not need to be inserted. However, this is seldom the case. It would also keep the analyst on their toes and insure that they would examine each tube, since they know that they will get some bad tubes in every cal group. This will slow down the analysis speed, more from the increased care that each analyst will take rather than the insertion of the extra tubes. However, it will insure that the tubes get the quality of inspection that NRC has been led to believe they are getting.

In keeping with the Judas Tube program, I think that the utility should re-analyze all of the cal groups done by the analysts who missed the "monkey tubes" at the Indian Point inspection. The utility should be notified as soon as possible about this so that they will have time to include this in their program without impacting their critical path.

Subj: Analyst review at Waltz Mill  
Date: 5/19/2000  
To: aneff@prodigy.net  
CC: (smc1@nrc.gov), (elm@nrc.gov)

Andy:

When will work start at Waltz Mill on the analyst review? I will want to have an Eddynet station there for this review. Let me know what I need to bring in the way of software and buttons.

Caius

Subj: Indian Point review  
Date: 5/19/2000  
To: lah2@nrc.gov

File: C:\AMERIC~1.0\MISC\TEMP\INDIAN~1.ZIP (176477 bytes)  
DL Time (32000 bps): < 1 minute

Lisa:

I am sending you two reports that outline some of my findings thus far. Indianpt2.nrr deals with the overall inspection. Indianpt7.nrr deals with the settings used for the tube that leaked. Both files are written in Word Perfect. Let me know if I can send you anything else. I noticed that AOL automatically compressed these attached files. If you are unable to read them, let me know and I will compress them in a manner that I know you can use.

Caius Dodd

Subj: Probe write-up  
Date: 5/30/2000  
To: wls@nrc.gov

File: C:\ZIP\FINPROBES.EXE (528828 bytes)  
DL Time (32000 bps): < 5 minutes

Wayne:

Here is a compressed file with the probes write-up in it. Execute it to uncompress it. It is in WordPerfect format. Let me know if I can be of any more help.

Caius

Subj: U-bend defects, POD  
Date: 5/31/2000  
To: elm@nrc.gov, smc1@nrc.gov

Stephanie and Emmett:

It appears that there were 9 u-bend cracked tubes in 1997. The 1997 inspection caught one of these. I am sure that the inspection method used in 1997 was qualified at 80% POD at a 90% confidence level. Keep that in mind when Westinghouse says that the current high-frequency probe is qualified at a 91.5% POD at a 90% confidence level.

Of the 7 defects that were inspected with the high-frequency probe, I have profiled all of them. Some were done both before and after pressure testing. I am now working on the 1997 data for the defects.

Caius