07-119A-91

ORIGINAL

OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: Nuclear Regulatory Commission
Incident Investigation Team

Title: Nine Mile Point Nuclear Power Plant
Interview of: ANIL JULKA

Docket No.

LOCATION: Scriba, New York

DATE: Friday, August 23, 1991 PAGES: 1 - 20

ANN RILEY & ASSOCIATES, LTD.
1612 K St. N.W., Suite 300
Washington, D.C. 20006
(202) 293-3950

ERRATA SHEET

ADDENDUM

Page	Line	Correction and Reason for Correction
5	24	FSAR CHAPTER 7.4 (INCLUDED THE PERIOD)
6	9	HPCS INSTEAD OF HPSC (TYPO)
6	11	We did loose instead of did'nt (Do not know the reason for this discrepancy)
10	5	Lower should be higher
10	6	lower voltage should be high voltage
10	10	no audible should be no credible.
11	17	graded should be degraded
11	19	sat should be set
13	11	lock, or should be lockout
14	7	I looked should be we looked (I personally did not inspect transformer at that time).
15	18	those connection should be this condition
16	4	reductions for should be deductions from
18	12	floor should be flour

Date 10/2/91 Signature Anil K. Jukla

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

INCIDENT INVESTIGATION TEAM

- - - - - - - - - - - - - - - - - - - -

Interview of :

ANIL JULKA :

(Closed) :

- - - - - - - - - - - - - - - - - - - -

Conference Room B
Administration Building
Nine Mile Point Nuclear
Power Plant, Unit Two
Lake Road
Scriba, New York 13093
Friday, August 23, 1991

The interview commenced, pursuant to notice, at 1:10 p.m.

PRESENT FOR THE IIT:

Jose Ibarra, NRC

Jim Stoner, Duke, NRC

PROCEEDINGS

[1:10 p.m.]

MR. IBARRA: This is Jose Ibarra from the NRC. I'm a team member from the IIT and with me I have Jim Stoner.

Today we will be interviewing Anil Julka from Niagara Mohawk. Anil, would you please state your name, your position, experience with the company?

MR. JULKA: Okay. My name is Anil Julka. I'm an electrical design supervisor for Niagara Mohawk electrical design group. I have been with Niagara Mohawk for approximately five years now.

My previous experience includes AEs and Westinghouse.

MR. IBARRA: Can you tell me your involvement or your responsibility in assessing what happened on August 13th?

MR. JULKA: Okay. After the event I'm also part of the TSC task force for evaluation. After the event I got a call that we had declared a site area emergency so I came up to the site and at first they were just evaluating what had happened. And I got here around 9 o'clock or so or a little after that. And our main concern, we were hypothesizing at that point. We knew there was a transformer fault, but we were hypothesizing how the fault

had started.

So, I guess my primary responsibility that day was the major support for, you know, reactor shutdown. And after that my primary responsibility was tasked with reviewing the electrical distribution system to see what type of transients had occurred, and reviewing if the system had operated as designed and assist UPS people with the trouble shooting efforts and also with the main transformer wherever they needed help. So those were my primary responsibilities.

MR. IBARRA: One of the obvious faults was lighting. What assessments have gone on in lighting to assure that what the operator saw was correct and also final assessments as to what this is going to mean?

MR. JULKA: Okay. We have reviewed the entire plant lighting system. You know, we have five types of lighting systems. We have a normal lighting, emergency lighting, essential, egress and eight-hour battery pack lighting system.

During this event the essential portion of the lighting system was lost because of the loss of UPS. The normal lighting was still available, the emergency lighting was still available. In some of the areas we do have anomaly in the system that in some stairways there is a concern which was expressed, I guess, back in '89 that if we

loose UPS, certain areas -- stairwell areas get -- the eight-hour battery packs do not come on because they are fed from the normal source and since the lighting there is fed from UPS you could loose the UPS and the eight-hour battery packs do not come on.

At that time we did make an evaluation using Appendix R and it was documented that the Appendix R lighting was required for loss of normal power also in this case. And at that time also we did not loose normal power. So what -- last year, I guess, we started looking at the entire UPS loading issue because the electrical group was concerned about the loading on the UPS's. And at that time we decided that we should fix that anomaly also. So, rather than leave it as a modification of 89-042 which will address that issue and there's more that's currently being scheduled for refuel outage and thereafter.

So, our evaluation of the incident really says that, yeah, we did loose essential lighting. They did -- my understanding from talking -- looking at the operator's report is that they had to use flashlight in certain areas, but those are open stairways, so there is enough light coming in from other sides, so it wasn't completely dark, but there was some lighting coming in from the other sides.

Other than that anomaly we have not really found anything else which is contradictory to our commitments.

MR. IBARRA: There was an issue then with lighting in '89, an UPS redistribution of loads in '90, correct?

MR. JULKA: State that again? I didn't follow that.

MR. IBARRA: In 1990, there was a study done on the redistribution of the lighting according to the new UPS that were going to be put in?

MR. JULKA: I believe that was '91. Don't quote me on that. I thought we did it earlier this year.

MR. IBARRA: But, is the lighting issue separate from the distribution issue?

MR. JULKA: That's correct. That's correct.

MR. IBARRA: Two different studies?

MR. JULKA: Different studies, right.

MR. IBARRA: Okay. But the lighting issue was a few years before the distribution on the UPS?

MR. JULKA: The lighting issue came up in '89.

MR. IBARRA: Okay. The instruments that failed in the control room, can you tell us what happened there and how, and the assessment you've done so far?

MR. JULKA: First of all, in our commitment, we did not loose any of the safety related instrumentation in the plant, even control room. Our commitment in USAR or FSAR Chapter 74, is that we need four safety systems for safe shutdown which is the reactor core isolation cooling

system, which is called RCIC; you got standby liquid control system, SLS; RHR shutdown cooling mode and remote shutdown system. These systems and control and instrumentation for these systems was available, at least electrically, although I have heard that RCIC went in off for a while because of a valve, but it was not due to the UPS loss or any -- the event that happened that day. And my understanding is also that at the time RCIC was declared inop, it was not really required and we still had HPSC available.

We didn't loose plant annunciators, computers, feedwater control. Those are some of the things -- there is a complete list of things we have which were lost and we have evaluated those things and we have a separate group set up who is going to be doing the safety assessment of all these things which were lost to insure that they will not require our preliminary indication as that, yes, they were not required for safe shutdown of the plant. They assist operators, but in no way are necessary for a safe shutdown.

MR. IBARRA: Was Rixie or RCIC all of it inoperable or only portions of it inoperable?

MR. JULKA: Portions of it.

MR. IBARRA: So you did have one channel available versus -- two channels?

MR. JULKA: Well, in the initial portion of the

event it was available to support core cooling. But there was a lack of full close indication for the valves, AOV-156, that's the primary containment isolation valve.

But it was not really needed at the time it was declared inop.

MR. IBARRA: The computer systems were not available, can you tell me what those were fed off of and does that make sense that they would have lost those?

MR. JULKA: Yeah. Well, most of the plant computer system is fed of 1G, UPS 1G which was lost during this event and the LWS computer is fed off the UPS 1B. So we lost five of the non-safety UPS's which are all the same type, Exide, 1A, 1B, 1C, 1D and 1G. So loss of those will result in loss of plant computer system and that's -- since they are non-safety and they do feed the computer systems.

MR. IBARRA: Your regulatory guide 197 instrumentation, was that all purple?

MR. JULKA: I don't have full details on that, but my -- I would suspect they were, but don't --

MR. IBARRA: How about the post-accident monitoring instrumentation?

MR. JULKA: Yeah. Post-accident should be operable.

MR. IBARRA: Okay. On the Appendix R assessment, the assessment of whether the capability existed to put out

fires, can you tell me a little bit about your involvement, your group involvement in that assessment?

MR. JULKA: We have an Appendix R engineer in our group. He looked at the Appendix R issue and our commitment in FSAR for Appendix R is in accordance with the fire protection guidelines, you know, reg guide Appendix R scenario in our plant is considered with the loss of normal off-site power identified in any given area you have a capability to shut down the plant.

We didn't really get into that scenario in this case because normal power was still available. So our evaluation really states, you know, that Appendix R compliance was not really impacted.

MR. IBARRA: When was your group called to look at that electrically?

MR. JULKA: Our group was never really called to look at anything electrically, except to look at the entire electrical distribution system. It was my decision, I guess, for now that within my group that we should look at every system there is which is, in fact, to make sure that loss of these UPS systems would not really affect any electrical related systems in the plant. And our compliance to USAR was still valid.

MR. IBARRA: Since a few of the instruments were inoperable previous to the event itself, are you going to

have any involvement with assessing the impact that some of those instruments being inoperable would have -- did have on the event -- being able to indicate in the control room?

MR. JULKA: Yeah, that will be assess as part of our safety assessment.

MR. STONER: Have you reviewed -- completed a review of the electrical distribution system, and have you made a determination whether the system -- the in-plant systems as well as the switch yard systems operated as designed, including the associated protective systems?

MR. JULKA: Yeah. We had a pretty extensive review of the protective relaying associated with the unit protection system. And we also had a fellow from GE, Mel Crenshaw do an independent assessment for us. From what we have seen so far, our preliminary report has been put out. We have not seen any anomalies in the protective relaying area, I think everything operated as it was supposed to.

Everything -- all the relays operated as designed and isolated the fault. So we don't really see any anomalies there.

MR. STONER: Does any of the information available indicate that there were any perturbations that were superimposed upon the voltages that were supplied -- or, excuse me, are the source for the UPS systems or the safety buses, and if not, would you expect -- what kind of

perturbations may you have expected to be seen there, if any?

MR. JULKA: Initially, when the event happened and we did not have the oscillographs from Scriba. We did -- in our initial information was that UPS's tripped on lower voltage. We did suspect some lower voltage transients at that time. But from noon on the 8/13 -- the day of the event, we received the copies of the oscillographs from Scriba and at that time it was very clear to us that from what was shown on the 345 side that there were no audible phase transients in the plant.

The voltage did that and we did experience undervoltage, especially in the B phase. You know, there were the associated undervoltage in the other two phases and that under voltage was carried through the plant and that was evident from the trouble shooting that we have done on UPS to date and also at the same time, since our safety systems are normally fed from the 115 kV offsite source which originates from the 345 kV at the Scriba station, we did see a dip in that voltage.

The reason I say that is because we did see undervoltage relay flags on the divisional buses come in. However, at that time it was not sufficient to initiate any actions required due to the undervoltage. Mainly, the diesel didn't start, you know, that undervoltage really

starts the diesel.

So, I guess overall we didn't really foresee any extraordinary voltage transients. We did find undervoltage in the plant for a few cycles while the line 23 which is the 345 kV line was disconnected from the system. We did accomplish a fast transfer as designed and all the loads were transferred over to the reserve station service which is a normal feed for the safety related buses.

So, we don't really see any anomalies there in the electrical distribution system.

MR. STONER: From the information available, could you and have you approximated what the voltage is -- may have been on the three phases at the input source to the six -- to the UPS systems and to the 4160 volt safety systems?

MR. JULKA: Yeah. On the safety systems we suspect the voltage got below 92.5 which is our commitment for the graded voltage level relays. It went down below that and the 80 percent which is the backup protection for loss of voltage, and that sat for three seconds, those didn't come in. So I think all we know is it got down to below 92.5 and not 80 for three seconds.

I imagine looking then in a rough approximation will be we were maybe around 78-79 percent for just cycles. And on the UPS, as per our discussions before, initially we calculated from the Scriba station, we found out what the

voltages there were and we transformed those voltages back to the plant and UPS's are fed from 208/120*/Wye system.

We did find the voltages, especially in the B phase, dipped down to 65 some odd volts. But that was based on that fault that was on the 345 side. Then we also calculated a voltage based on if the low voltage winding phase B was shorted out, what the voltages would be. So those two extreme voltage evaluations tell us that the voltage was between 48 and 65.

In all reality, I guess we would suspect that voltage was around 55, somewhere in the middle if those were the two extreme cases and we know that neither one of them really were true. So, it's really a hypothesis and we have bounded the voltage which is consistent with the evaluation which is being done with the UPS right now.

MR. STONER: What protective relay actions occurred during this event?

MR. JULKA: Okay. Since the phase B main transformer had fault in it the differential relay for the main transformer B operated and the unit differential which also connects the generator, includes the generator and transformer region; that also operated. We had fault pressure relays on the transformer which operated. And those were the primary relays which operated and they operated the lock out -- different lock out relays and

different schemes which initiates a turbine trip. At the same time we also noticed start-up -- generator to start-up overcurrent relays came in and operated a different set of schemes.

Our conclusion is that those came in after the 345 kV line was disconnected from the system. Since those relays have an on-line contact in series with them, that those relays should only come on when the unit is off-line. So, we imagine those relays came in a little later after the generator was disconnected from the system. And they do operate another lock, or relay which sends a slow transfer signal and that was another evidence that fast transfer did take place, because those relays came in later on and our charts show that the 115 kV lines did pick up the load soon after disconnecting from the 345.

MR. IBARRA: Anil, can you explain how come the diesel generators did not come on?

MR. JULKA: The diesel generators are started only if the degraded voltage relays on the safety buses -- the voltage stays degraded for 30 seconds. And we did not -- we did initiate the relays, but we did not initiate the timers. Our timers did not have enough time because the voltage did not dip for that long.

MR. IBARRA: What is the assessment so far, as far as the -- where the fault occurred on the high side and the

low side, can you explain?

MR. JULKA: I think it's the hypothesis, right now -- our initial indication we had was that the above ground currents flowing in the 345 kV system. So, I had initially hypothesized the ground to be in the -- or whatever the word is, to be on the high side.

With all the transformer exposed, I looked at the transformer. So far they are saying that the fault may have started on the low side. So, I don't think there is a definite conclusion on that as yet. I think we can only determine that after the transformer is sent out for evaluation and they open it up and see that it -- we know definitely that the 345 kV system had a ground in it -- ground current flowing through it.

MR. IBARRA: What would be the difference in assessment if it occurred on one side and the other side as far as the protection of the system?

MR. JULKA: The protection schemes would operate either way. The only difference would be if there was a ground fault on the low voltage side prior to short -- you know, shorting out completely. I think the ground voltage relays on the generator side may have operated quicker. They are disconnected after the lockout relay operates.

So it was a race in time, I guess with different relays operating time. But I would have expected that the

generator ground relays may have come in if the fault had started on the ground side. On the low voltage side.

MR. IBARRA: How long does it take to clear a fault and get back on line?

MR. JULKA: If a fast transfer is going to take place is going to take place we should clear the fault within six cycles and transfer over to the other reserve transformers. So our commitment in the FSAR is the six cycles from the initiation from the lockout. After the lockout relay operate the initiator timer, which is set for six cycles, and if the transfer does not take place in six cycles we disconnect the offsite sources and we go for a slow transfer.

And there's another relay which monitors that and only connects the buses after 30 seconds and it also disconnects, feedwater -- all the large motors, feedwater condensate booster, recirc pump is tripped to low speed, so those connection did take place. That's where there was some confusion in it initially whether it was a fast transfer or slow transfer because we did have a trip of the feedwater recirc pump and condensate booster pumps. But looking at the charts we have established that fast transfer did take place and we had to review other things on why those pumps tripped.

MR. IBARRA: Can you explain the in-plant

monitoring system, what's available and what -- during this incident?

MR. JULKA: Not a whole lot. I guess we have -- we had to make all our reductions for the 345 kV side. We had an oscillograph in the plant which is an old style -- old type which was not working at the time of the event. So we did not really have too much information on the plant side. We had to make our deductions from the high voltage side.

MR. STONER: You indicated there was no operation of the generator neutral ground relay. Has that system been checked to verify that it is in service?

MR. JULKA: Right. We did check the resistor. We checked the transformer and they have verified that the system is in tact. We had a concern after -- you know, the different theories on other transformer came out, that since a fault could happen on the low voltage side, so we wanted to check out the generator grounding system, isophase bus and the other transformers. So they have checked that out and they have verified that, yeah, it does work properly. There is no damage to that piece of equipment.

MR. STONER: Have you been able to determine whether the generator surge arresters may have operated on the isolated phase bus system?

MR. JULKA: We asked them to check that, but I

don't have the final indication if there was a damage there or if they operated at this time. But we should have that information by tomorrow.

MR. STONER: Do those arresters have counters or would the determination of their operation simply be a matter of inspection?

MR. JULKA: It will be just a matter of inspection.

MR. IBARRA: Can you tell me what other consultants have helped you in your assessment of this event as far as distribution is concerned -- electrical distribution?

MR. JULKA: Well, the assessment was made by our group, but we had some consultants verify what we had done for an independent review. And that was Mel Crenshaw from GE. He has prepared a report and I have given a copy to Jim Stoner -- of his report. Plus there were some, you know, other people at Niagara Mohawk -- people. There were some consultants called in from Stone and Webster for different evaluations to -- you know, make out some lists and stuff; like load lists, and also helped with the UPS in the plant. Since I didn't think UPS was clearly system engineering, design had to be involved in that so we had people we called in from Stone and Webster to stay full time at the UPS issue.

MR. IBARRA: Who are the people from Stone and Webster looking at distribution?

MR. JULKA: There was nobody from Stone and Webster looking at distribution. There was one guy from Stone and Webster -- Steve Tsombaris who looked at the UPS and helped with the UPS testing. We had on our distribution side, we had Leon Blasiak, he's an ex-Niagara Mohawk retiree who was initially involved. So he was involved with looking at some of the Scriba stuff -- voltages.

We had one guy, Ranjit Das who was here to help with the fire protection and Appendix R from ASTA which is a floor engineering -- he is ex-Stone and Webster, but now he works for ASTA, so we called him for some assistance in the lighting and Appendix R issues since he's a known Appendix R engineer in the industry right now and he was involved with the original design.

And we had three -- we had four more people who were assisting us down in Salina Meadows with the preparation of the load list, plant impact statements. That included, you know, Steve Erikson, Pat O'Brien, Roger Wyatt, and there were two other people who were helping us put it together over the week last weekend.

MR. IBARRA: Initially when the UPS went down, they were able to bring them up on the maintenance bus or the maintenance side, yet I guess two hours into the event

they tried to line it up with the normal AC. Do you have any idea why they would try to do that? And why not leave it on the maintenance?

MR. JULKA: Repeat that question again, I think I'm --

MR. IBARRA: Originally they brought the UPS back up on the maintenance -- the alternate power supply. And yet later on into the event, a few hours later, they tried to switch to the normal line up. Do you happen to have any reason why they would do that and not just leave it as it was?

MR. JULKA: No. I guess I don't -- I'm not that familiar with the operations procedures so I would rather not answer that question.

MR. IBARRA: But as far as you're -- the quality of power from the alternate source in the normal AC source going into the UPS, is it the same?

MR. JULKA: Yeah. The regulation is the same on the voltages. It's plus or minus two percent. But I think initially when the UPS went down the operations people started to recover and after a couple of hours we had our system engineer in, so at that time I think they may be trying to connect that to the regular source.

MR. IBARRA: If we looked past the UPS to let's say the 120 site, would we notice any difference in the bus

-- in the AC whether it was off the inverter or whether it was off the maintenance?

MR. JULKA: No. It doesn't really matter, I guess, downstream if they get plus or minus two percent. I think that's covered by -- the UPS's regulate that. And so, you know, there was no concern on the -- the UPS systems do have loads which are sensitive for the voltage regulation and since the loads were disconnected so there was no deviation farther down the line.

MR. IBARRA: Okay. That's all that we have. That terminates the interview.

[Whereupon, at 1:45 p.m., the taking of the interview was concluded.]

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission

In the Matter of:

NAME OF PROCEEDING: Interview of Anil Julka

DOCKET NUMBER: (Not applicable)

PLACE OF PROCEEDING: Scriba, New York

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Mark Handy
Official Reporter
Ann Riley & Associates, Ltd.

07-1198-91

OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: Nuclear Regulatory Commission
Incident Investigation Team

Title: Nine Mile Point Nuclear Power Plant
Interview of: ANIL JULKA

Docket No.

LOCATION: Scriba, New York

DATE: Friday, August 23, 1991 PAGES: 1 - 20

ANN RILEY & ASSOCIATES, LTD.
1612 K St. N.W., Suite 300
Washington, D.C. 20006
(202) 293-3950

Dupe of

9305060241

ERRATA SHEET

ADDENDUM

Page	Line	Correction and Reason for Correction
5	24	FSAR CHAPTER 7.4 (INCLUDED THE PERIOD)
6	9	HPCS INSTEAD OF HPSC (TYPO)
6	11	We did loose instead of did'nt (Do not know the reason for this discrepancy.)
10	5	Lower should be higher
10	6	lower voltage should be high voltage
10	10	no audible should be no credible.
11	17	graded should be degraded
11	19	sat should be set
13	11	lock, or should be lockout
14	7	I looked should be we looked (I personally did not inspect transformer at that time).
15	18	those connection should be this condition
16	4	reductions for should be deductions from
18	12	floor should be flour

Date 10/2/91 Signature Anil K. Jukka

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

INCIDENT INVESTIGATION TEAM

- -

Interview of :

ANIL JULKA :

(Closed) :

- -

Conference Room B
Administration Building
Nine Mile Point Nuclear
Power Plant, Unit Two
Lake Road
Scriba, New York 13093
Friday, August 23, 1991

The interview commenced, pursuant to notice, at 1:10 p.m.

PRESENT FOR THE IIT:

Jose Ibarra, NRC

Jim Stoner, Duke, NRC

P R O C E E D I N G S

[1:10 p.m.]

MR. IBARRA: This is Jose Ibarra from the NRC. I'm a team member from the IIT and with me I have Jim Stoner.

Today we will be interviewing Anil Julka from Niagara Mohawk. Anil, would you please state your name, your position, experience with the company?

MR. JULKA: Okay. My name is Anil Julka. I'm an electrical design supervisor for Niagara Mohawk electrical design group. I have been with Niagara Mohawk for approximately five years now.

My previous experience includes AEs and Westinghouse.

MR. IBARRA: Can you tell me your involvement or your responsibility in assessing what happened on August 13th?

MR. JULKA: Okay. After the event I'm also part of the TSC task force for evaluation. After the event I got a call that we had declared a site area emergency so I came up to the site and at first they were just evaluating what had happened. And I got here around 9 o'clock or so or a little after that. And our main concern, we were hypothesizing at that point. We knew there was a transformer fault, but we were hypothesizing how the fault

had started.

So, I guess my primary responsibility that day was the major support for, you know, reactor shutdown. And after that my primary responsibility was tasked with reviewing the electrical distribution system to see what type of transients had occurred, and reviewing if the system had operated as designed and assist UPS people with the trouble shooting efforts and also with the main transformer wherever they needed help. So those were my primary responsibilities.

MR. IBARRA: One of the obvious faults was lighting. What assessments have gone on in lighting to assure that what the operator saw was correct and also final assessments as to what this is going to mean?

MR. JULKA: Okay. We have reviewed the entire plant lighting system. You know, we have five types of lighting systems. We have a normal lighting, emergency lighting, essential, egress and eight-hour battery pack lighting system.

During this event the essential portion of the lighting system was lost because of the loss of UPS. The normal lighting was still available, the emergency lighting was still available. In some of the areas we do have anomaly in the system that in some stairways there is a concern which was expressed, I guess, back in '89 that if we

loose UPS, certain areas -- stairwell areas get -- the eight-hour battery packs do not come on because they are fed from the normal source and since the lighting there is fed from UPS you could loose the UPS and the eight-hour battery packs do not come on.

At that time we did make an evaluation using Appendix R and it was documented that the Appendix R lighting was required for loss of normal power also in this case. And at that time also we did not loose normal power. So what -- last year, I guess, we started looking at the entire UPS loading issue because the electrical group was concerned about the loading on the UPS's. And at that time we decided that we should fix that anomaly also. So, rather than leave it as a modification of 89-042 which will address that issue and there's more that's currently being scheduled for refuel outage and thereafter.

So, our evaluation of the incident really says that, yeah, we did loose essential lighting. They did -- my understanding from talking -- looking at the operator's report is that they had to use flashlight in certain areas, but those are open stairways, so there is enough light coming in from other sides, so it wasn't completely dark, but there was some lighting coming in from the other sides.

Other than that anomaly we have not really found anything else which is contradictory to our commitments.

MR. IBARRA: There was an issue then with lighting in '89, an UPS redistribution of loads in '90, correct?

MR. JULKA: State that again? I didn't follow that.

MR. IBARRA: In 1990, there was a study done on the redistribution of the lighting according to the new UPS that were going to be put in?

MR. JULKA: I believe that was '91. Don't quote me on that. I thought we did it earlier this year.

MR. IBARRA: But, is the lighting issue separate from the distribution issue?

MR. JULKA: That's correct. That's correct.

MR. IBARRA: Two different studies?

MR. JULKA: Different studies, right.

MR. IBARRA: Okay. But the lighting issue was a few years before the distribution on the UPS?

MR. JULKA: The lighting issue came up in '89.

MR. IBARRA: Okay. The instruments that failed in the control room, can you tell us what happened there and how, and the assessment you've done so far?

MR. JULKA: First of all, in our commitment, we did not loose any of the safety related instrumentation in the plant, even control room. Our commitment in USAR or FSAR Chapter 74, is that we need four safety systems for safe shutdown which is the reactor core isolation cooling

system, which is called RCIC; you got standby liquid control system, SLS; RHR shutdown cooling mode and remote shutdown system. These systems and control and instrumentation for these systems was available, at least electrically, although I have heard that RCIC went in off for a while because of a valve, but it was not due to the UPS loss or any -- the event that happened that day. And my understanding is also that at the time RCIC was declared inop, it was not really required and we still had HPSC available.

We didn't loose plant annunciators, computers, feedwater control. Those are some of the things -- there is a complete list of things we have which were lost and we have evaluated those things and we have a separate group set up who is going to be doing the safety assessment of all these things which were lost to insure that they will not require our preliminary indication as that, yes, they were not required for safe shutdown of the plant. They assist operators, but in no way are necessary for a safe shutdown.

MR. IBARRA: Was Rixie or RCIC all of it inoperable or only portions of it inoperable?

MR. JULKA: Portions of it.

MR. IBARRA: So you did have one channel available versus -- two channels?

MR. JULKA: Well, in the initial portion of the

event it was available to support core cooling. But there was a lack of full close indication for the valves, AOV-156, that's the primary containment isolation valve.

But it was not really needed at the time it was declared inop.

MR. IBARRA: The computer systems were not available, can you tell me what those were fed off of and does that make sense that they would have lost those?

MR. JULKA: Yeah. Well, most of the plant computer system is fed of 1G, UPS 1G which was lost during this event and the LWS computer is fed off the UPS 1B. So we lost five of the non-safety UPS's which are all the same type, Exide, 1A, 1B, 1C, 1D and 1G. So loss of those will result in loss of plant computer system and that's -- since they are non-safety and they do feed the computer systems.

MR. IBARRA: Your regulatory guide 197 instrumentation, was that all purple?

MR. JULKA: I don't have full details on that, but my -- I would suspect they were, but don't --

MR. IBARRA: How about the post-accident monitoring instrumentation?

MR. JULKA: Yeah. Post-accident should be operable.

MR. IBARRA: Okay. On the Appendix R assessment, the assessment of whether the capability existed to put out

fires, can you tell me a little bit about your involvement, your group involvement in that assessment?

MR. JULKA: We have an Appendix R engineer in our group. He looked at the Appendix R issue and our commitment in FSAR for Appendix R is in accordance with the fire protection guidelines, you know, reg guide Appendix R scenario in our plant is considered with the loss of normal off-site power identified in any given area you have a capability to shut down the plant.

We didn't really get into that scenario in this case because normal power was still available. So our evaluation really states, you know, that Appendix R compliance was not really impacted.

MR. IBARRA: When was your group called to look at that electrically?

MR. JULKA: Our group was never really called to look at anything electrically, except to look at the entire electrical distribution system. It was my decision, I guess, for now that within my group that we should look at every system there is which is, in fact, to make sure that loss of these UPS systems would not really affect any electrical related systems in the plant. And our compliance to USAR was still valid.

MR. IBARRA: Since a few of the instruments were inoperable previous to the event itself, are you going to

have any involvement with assessing the impact that some of those instruments being inoperable would have -- did have on the event -- being able to indicate in the control room?

MR. JULKA: Yeah, that will be assess as part of our safety assessment.

MR. STONER: Have you reviewed -- completed a review of the electrical distribution system, and have you made a determination whether the system -- the in-plant systems as well as the switch yard systems operated as designed, including the associated protective systems?

MR. JULKA: Yeah. We had a pretty extensive review of the protective relaying associated with the unit protection system. And we also had a fellow from GE, Mel Crenshaw do an independent assessment for us. From what we have seen so far, our preliminary report has been put out. We have not seen any anomalies in the protective relaying area, I think everything operated as it was supposed to.

Everything -- all the relays operated as designed and isolated the fault. So we don't really see any anomalies there.

MR. STONER: Does any of the information available indicate that there were any perturbations that were superimposed upon the voltages that were supplied -- or, excuse me, are the source for the UPS systems or the safety buses, and if not, would you expect -- what kind of

perturbations may you have expected to be seen there, if any?

MR. JULKA: Initially, when the event happened and we did not have the oscillographs from Scriba. We did -- in our initial information was that UPS's tripped on lower voltage. We did suspect some lower voltage transients at that time. But from noon on the 8/13 -- the day of the event, we received the copies of the oscillographs from Scriba and at that time it was very clear to us that from what was shown on the 345 side that there were no audible phase transients in the plant.

The voltage did that and we did experience undervoltage, especially in the B phase. You know, there were the associated undervoltage in the other two phases and that under voltage was carried through the plant and that was evident from the trouble shooting that we have done on UPS to date and also at the same time, since our safety systems are normally fed from the 115 kV offsite source which originates from the 345 kV at the Scriba station, we did see a dip in that voltage.

The reason I say that is because we did see undervoltage relay flags on the divisional buses come in. However, at that time it was not sufficient to initiate any actions required due to the undervoltage. Mainly, the diesel didn't start, you know, that undervoltage really

starts the diesel.

So, I guess overall we didn't really foresee any extraordinary voltage transients. We did find undervoltage in the plant for a few cycles while the line 23 which is the 345 kV line was disconnected from the system. We did accomplish a fast transfer as designed and all the loads were transferred over to the reserve station service which is a normal feed for the safety related buses.

So, we don't really see any anomalies there in the electrical distribution system.

MR. STONER: From the information available, could you and have you approximated what the voltage is -- may have been on the three phases at the input source to the six -- to the UPS systems and to the 4160 volt safety systems?

MR. JULKA: Yeah. On the safety systems we suspect the voltage got below 92.5 which is our commitment for the graded voltage level relays. It went down below that and the 80 percent which is the backup protection for loss of voltage, and that sat for three seconds, those didn't come in. So I think all we know is it got down to below 92.5 and not 80 for three seconds.

I imagine looking then in a rough approximation will be we were maybe around 78-79 percent for just cycles. And on the UPS, as per our discussions before, initially we calculated from the Scriba station, we found out what the

voltages there were and we transformed those voltages back to the plant and UPS's are fed from 208/120*/Wye system.

We did find the voltages, especially in the B phase, dipped down to 65 some odd volts. But that was based on that fault that was on the 345 side. Then we also calculated a voltage based on if the low voltage winding phase B was shorted out, what the voltages would be. So those two extreme voltage evaluations tell us that the voltage was between 48 and 65.

In all reality, I guess we would suspect that voltage was around 55, somewhere in the middle if those were the two extreme cases and we know that neither one of them really were true. So, it's really a hypothesis and we have bounded the voltage which is consistent with the evaluation which is being done with the UPS right now.

MR. STONER: What protective relay actions occurred during this event?

MR. JULKA: Okay. Since the phase B main transformer had fault in it the differential relay for the main transformer B operated and the unit differential which also connects the generator, includes the generator and transformer region; that also operated. We had fault pressure relays on the transformer which operated. And those were the primary relays which operated and they operated the lock out -- different lock out relays and

different schemes which initiates a turbine trip. At the same time we also noticed start-up -- generator to start-up overcurrent relays came in and operated a different set of schemes.

Our conclusion is that those came in after the 345 kV line was disconnected from the system. Since those relays have an on-line contact in series with them, that those relays should only come on when the unit is off-line. So, we imagine those relays came in a little later after the generator was disconnected from the system. And they do operate another lock, or relay which sends a slow transfer signal and that was another evidence that fast transfer did take place, because those relays came in later on and our charts show that the 115 kV lines did pick up the load soon after disconnecting from the 345.

MR. IBARRA: Anil, can you explain how come the diesel generators did not come on?

MR. JULKA: The diesel generators are started only if the degraded voltage relays on the safety buses -- the voltage stays degraded for 30 seconds. And we did not -- we did initiate the relays, but we did not initiate the timers. Our timers did not have enough time because the voltage did not dip for that long.

MR. IBARRA: What is the assessment so far, as far as the -- where the fault occurred on the high side and the

low side, can you explain?

MR. JULKA: I think it's the hypothesis, right now -- our initial indication we had was that the above ground currents flowing in the 345 kV system. So, I had initially hypothesized the ground to be in the -- or whatever the word is, to be on the high side.

With all the transformer exposed, I looked at the transformer. So far they are saying that the fault may have started on the low side. So, I don't think there is a definite conclusion on that as yet. I think we can only determine that after the transformer is sent out for evaluation and they open it up and see that it -- we know definitely that the 345 kV system had a ground in it -- ground current flowing through it.

MR. IBARRA: What would be the difference in assessment if it occurred on one side and the other side as far as the protection of the system?

MR. JULKA: The protection schemes would operate either way. The only difference would be if there was a ground fault on the low voltage side prior to short -- you know, shorting out completely. I think the ground voltage relays on the generator side may have operated quicker. They are disconnected after the lockout relay operates.

So it was a race in time, I guess with different relays operating time. But I would have expected that the

generator ground relays may have come in if the fault had started on the ground side. On the low voltage side.

MR. IBARRA: How long does it take to clear a fault and get back on line?

MR. JULKA: If a fast transfer is going to take place is going to take place we should clear the fault within six cycles and transfer over to the other reserve transformers. So our commitment in the FSAR is the six cycles from the initiation from the lockout. After the lockout relay operate the initiator timer, which is set for six cycles, and if the transfer does not take place in six cycles we disconnect the offsite sources and we go for a slow transfer.

And there's another relay which monitors that and only connects the buses after 30 seconds and it also disconnects, feedwater -- all the large motors, feedwater condensate booster, recirc pump is tripped to low speed, so those connection did take place. That's where there was some confusion in it initially whether it was a fast transfer or slow transfer because we did have a trip of the feedwater recirc pump and condensate booster pumps. But looking at the charts we have established that fast transfer did take place and we had to review other things on why those pumps tripped.

MR. IBARRA: Can you explain the in-plant

monitoring system, what's available and what -- during this incident?

MR. JULKA: Not a whole lot. I guess we have -- we had to make all our reductions for the 345 kV side. We had an oscillograph in the plant which is an old style -- old type which was not working at the time of the event. So we did not really have too much information on the plant side. We had to make our deductions from the high voltage side.

MR. STONER: You indicated there was no operation of the generator neutral ground relay. Has that system been checked to verify that it is in service?

MR. JULKA: Right. We did check the resistor. We checked the transformer and they have verified that the system is in tact. We had a concern after -- you know, the different theories on other transformer came out, that since a fault could happen on the low voltage side, so we wanted to check out the generator grounding system, isophase bus and the other transformers. So they have checked that out and they have verified that, yeah, it does work properly. There is no damage to that piece of equipment.

MR. STONER: Have you been able to determine whether the generator surge arresters may have operated on the isolated phase bus system?

MR. JULKA: We asked them to check that, but I

don't have the final indication if there was a damage there or if they operated at this time. But we should have that information by tomorrow.

MR. STONER: Do those arresters have counters or would the determination of their operation simply be a matter of inspection?

MR. JULKA: It will be just a matter of inspection.

MR. IBARRA: Can you tell me what other consultants have helped you in your assessment of this event as far as distribution is concerned -- electrical distribution?

MR. JULKA: Well, the assessment was made by our group, but we had some consultants verify what we had done for an independent review. And that was Mel Crenshaw from GE. He has prepared a report and I have given a copy to Jim Stoner -- of his report. Plus there were some, you know, other people at Niagara Mohawk -- people. There were some consultants called in from Stone and Webster for different evaluations to -- you know, make out some lists and stuff; like load lists, and also helped with the UPS in the plant. Since I didn't think UPS was clearly system engineering, design had to be involved in that so we had people we called in from Stone and Webster to stay full time at the UPS issue.

MR. IBARRA: Who are the people from Stone and Webster looking at distribution?

MR. JULKA: There was nobody from Stone and Webster looking at distribution. There was one guy from Stone and Webster -- Steve Tsombaris who looked at the UPS and helped with the UPS testing. We had on our distribution side, we had Leon Blasiak, he's an ex-Niagara Mohawk retiree who was initially involved. So he was involved with looking at some of the Scriba stuff -- voltages.

We had one guy, Ranjit Das who was here to help with the fire protection and Appendix R from ASTA which is a floor engineering -- he is ex-Stone and Webster, but now he works for ASTA, so we called him for some assistance in the lighting and Appendix R issues since he's a known Appendix R engineer in the industry right now and he was involved with the original design.

And we had three -- we had four more people who were assisting us down in Salina Meadows with the preparation of the load list, plant impact statements. That included, you know, Steve Erikson, Pat O'Brien, Roger Wyatt, and there were two other people who were helping us put it together over the week last weekend.

MR. IBARRA: Initially when the UPS went down, they were able to bring them up on the maintenance bus or the maintenance side, yet I guess two hours into the event

they tried to line it up with the normal AC. Do you have any idea why they would try to do that? And why not leave it on the maintenance?

MR. JULKA: Repeat that question again, I think I'm --

MR. IBARRA: Originally they brought the UPS back up on the maintenance -- the alternate power supply. And yet later on into the event, a few hours later, they tried to switch to the normal line up. Do you happen to have any reason why they would do that and not just leave it as it was?

MR. JULKA: No. I guess I don't -- I'm not that familiar with the operations procedures so I would rather not answer that question.

MR. IBARRA: But as far as you're -- the quality of power from the alternate source in the normal AC source going into the UPS, is it the same?

MR. JULKA: Yeah. The regulation is the same on the voltages. It's plus or minus two percent. But I think initially when the UPS went down the operations people started to recover and after a couple of hours we had our system engineer in, so at that time I think they may be trying to connect that to the regular source.

MR. IBARRA: If we looked past the UPS to let's say the 120 site, would we notice any difference in the bus

-- in the AC whether it was off the inverter or whether it was off the maintenance?

MR. JULKA: No. It doesn't really matter, I guess, downstream if they get plus or minus two percent. I think that's covered by -- the UPS's regulate that. And so, you know, there was no concern on the -- the UPS systems do have loads which are sensitive for the voltage regulation and since the loads were disconnected so there was no deviation farther down the line.

MR. IBARRA: Okay. That's all that we have. That terminates the interview.

[Whereupon, at 1:45 p.m., the taking of the interview was concluded.]

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission

In the Matter of:

NAME OF PROCEEDING: Interview of Anil Julka

DOCKET NUMBER: (Not applicable)

PLACE OF PROCEEDING: Scriba, New York

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Mark Handy

Mark Handy
Official Reporter
Ann Riley & Associates, Ltd.