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ORIGINAL

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Agency: U.S. Nuclear Regulatory Commission
Incident Investigation Team

Title: Interview of: Tom King
(Closed)

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ERRATA SHEET

ADDENDUM

Page	Line	Correction and Reason for Correction
7	15	word "do" should be "root" — error
8	13	word "and" should be "of" — "
18	20	word "layer" should be "Letter" — "
28	25	insert the words "in all cases" between the words "where" "the" — Clarification
11	22-24	Strike these lines and replace with "support of safety related equipment or could cause a plant scram or ~~transient~~ safety system actuation" — factual error
12	4	Replace "tech specs" with "list of equipment" — factual error
16	11	Replace "tech specs" with "scope" — factual error
	12	" " " " " " " "
33	24	Delete the words "except the scope was broader" — " "

Date 10/3/91 Signature Tom King

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

INCIDENT INVESTIGATION TEAM

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In the Matter of: :

INTERVIEW OF: :

TOM KING :

(CLOSED) :

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Nuclear Regulatory Commission

Interview Room

Woodmont Building

8120 Woodmont Ave.

Bethesda, Maryland

Wednesday, September 4, 1991

The above-entitled matter commenced at 3:15 o'clock p.m., when were present:

On behalf of the Incident Investigation Team:

MICHAEL JORDAN, NRC

JACK ROSENTHAL, NRC, AEOD

FRANK ASHE, NRC

P R O C E E D I N G S

[3:15 p.m.]

MR. ROSENTHAL: What interested me in interviewing you was, in fact, the maintenance aspect. We're talking about non-1E, non-safety grade equipment, where part of the probable causes look to be associated with maintenance, and one of our missions is to look at both the event and the generic implications and what were the regulatory requirements and what's the regulatory process. And I know that you were involved in a maintenance rule for quite awhile, so you become a resource to me, okay.

So why don't we start out by -- what was your involvement with the maintenance rule?

[Pause to answer the door.]

[Mr. Rosenthal leaves the interview room.]

MR. JORDAN: Go ahead.

MR. KING: Let me give you a little history. Back in late '87, NRR prepared a paper to the Commission in response to a question they had asked on the need for a maintenance rule, and at that time they recommended against having a maintenance rule, but did recommend a policy on maintenance, the conditions that should encourage good maintenance and lay forth the practices and scope and so forth that they felt should be included in a maintenance program.

The Commission agreed to issue a policy statement in the interim, but also said that they wanted to pursue a rule. So I think it was in March of '88, a policy statement was issued on maintenance, and in there it was stated -- and it listed the activities and the scope of a maintenance program, but in there it also stated the Commission's intent to proceed with a maintenance rule.

At that point in time, I was in the Office of Research. I still am. Research does rulemaking. That particular rulemaking was assigned to my branch. That's when I became involved in it. It was the March or April of '88 timeframe.

We then proceeded -- and we got an aggressive schedule from the Commission; they wanted something out like in about nine months -- we proceeded then to start to explore options for the rule, had some discussions with industry, conducted a workshop in July of '88 on various rulemaking options, solicited a lot of comments and feedback from industry, primarily rebuttals against all the rulemaking options, and in, I believe it was November of '88, developed a proposed rule for comment.

It was what we call a process-oriented rule in that it laid out the activities that should be in a maintenance program and said licensees should set goals and monitor the effectiveness of their program against those

goals, but it didn't specify what those goals should be. It left them up to the licensee. And it was a broad scope program. It covered safety as well as non-safety equipment, pretty much everything in the plant, everything inside the fence actually. And that was driven quite a bit by the Commission's desire and views at the time, that maintenance should not be something you apply only to a portion of the plant, that it's a program that should apply to everything, and they supported and pushed for a very broad scope rule.

So that was put out for comment in November of '87, and a lot of comments --

MR. JORDAN: '87 or '88?

MR. KING: Excuse me, '88. We got a lot of comments on the rule. We had a very aggressive schedule to turn that into a final rule, because at the time, Chairman Zech was leaving in June of '89, and he wanted something he could act on before he left, so he asked for a final rule in April of '89 and a Reg Guide. The proposed rule did not have a Reg Guide with it.

So we stuck with the process-oriented rule, did some finetuning of the scope, finetuning of the activities that should comprise a maintenance program, developed a general maintenance Reg Guide that expanded a little bit on what all these maintenance activities should encompass, and gave the Commission in April of '89 a final rule and a

proposed Reg Guide, briefed them on the package that we gave them, and then they decided to hold up on issuing the final rule and studied the problem for 18 months, and at that time told us to issue a revised policy statement that stated our intent to monitor industry progress on maintenance and to come back at the end of 18 months and make a decision on a maintenance rule.

So we issued a revised -- worked on a revised policy statement and issued it, I believe it was in November of '89. I've brought copies with me of these things, if you want to run copies of these policy statements and so forth.

MR. JORDAN: Super.

MR. KING: So you can get the exact dates of the reference.

Anyway, we did issue that, and it laid out -- stated the Commission's intent to continue monitoring maintenance, pushed for the industry to develop a maintenance standard and for them to voluntarily implement and sort of have some commitment to following that standard, but on a voluntary basis.

As a follow-up after that policy statement went out, we continued to work on the Reg Guide to refine it. We did issue the Reg Guide that we developed for comment in August of '89, and then we encouraged the industry to develop a standard, and we gave them a deadline by which we

wanted them to develop a standard.

Subsequent to the policy statement coming out in November of '89, there was some follow-up actions and follow-up reports to the Commission on several things. One was what are the criteria with which we're going to judge industry's progress in the maintenance area, and we sent the Commission four criteria, and they added a couple more to it.

There was some work at AEOD looking at a maintenance effectiveness indicator. There were at least a couple reports on that to the Commission as to things that were looked at and discarded and what they came up with in a trial program for using it and encouraged the industry to do the same, work with the Staff on developing a maintenance indicator.

MR. ROSENTHAL: These statements, did they pertain to safety-related and non-safety-related and important to safety?

MR. KING: Yes. Originally, the proposed maintenance rule was -- basically the scope was everything inside the fence, including the fence, and that was driven by the Commission.

The final maintenance rule, the Staff recommended a scope that was somewhat narrower, not a whole lot. We dropped out security stuff, because that's covered by 50 or

70 or whatever it was. But we did cover most of the balance-of-plant equipment and non-safety grade balance-of-plant equipment. Anything that was described in the FSAR basically was included in the scope of the maintenance rule.

MR. ROSENTHAL: And that included both programs for corrective and preventive or just --

MR. KING: Predictive, preventive, and corrective.

MR. JORDAN: But it's based on a system that says: Tell me how many times it fails, and what is happening, or is it review of the vendor's recommended program and establishing that ahead of time?

MR. KING: All of the above. It was a collection of what the Commission thought were good maintenance practices, starting with review of vendor recommendations, looking at operating experience, do cause analysis and corrective action, implement predictive maintenance where possible, a preventive and a corrective maintenance program, have good procedures, good training, quality assurance. You know, it had all those elements.

MR. JORDAN: Is that the original rule, or is that rule that exists right now?

MR. KING: That was in the original proposed rule and the final rule that we proposed to the Commission in April of '89.

MR. JORDAN: Okay.

MR. KING: All of those elements were in it. Also all of those elements were in both policy statements, both the original and the revised policy statement.

MR. JORDAN: Okay.

MR. KING: Those elements are not in the rule that was ultimately issued as a final rule.

MR. JORDAN: They were not?

MR. KING: They were not. That stuff was taken out of there.

MR. JORDAN: What's in the final?

MR. KING: The final rule is called performance oriented rule. Basically it says that licensees should establish methods to monitor the effectiveness and maintenance by setting goals on performance and monitoring performance against those goals.

If they don't meet the goals, to take corrective action to meet them. But it doesn't get into the nitty-gritty of what should be in a maintenance program, or what those goals should be. It's a very short rule and it's performance oriented.

MR. JORDAN: Strictly performance oriented?

MR. KING: Strictly performance oriented. They did not have to report that information, either, but it has to be available onsite if the Commission would want to look at it.

MR. ROSENTHAL: There's a class of faults which are revealing faults, something was wrong and you can modify your maintenance programs based on your history with something going wrong. Then there's other stuff which sits there and you never monitor it and it's just fine and then one day it comes back to haunt you, you know, bang!

The only way you could have done something about it was to have an extensive preventive maintenance program. Do you know of those concepts and worries -- were those concepts and worries in the work that you had done, and do you -- and how did that carry over into the Commission's rule, if at all?

MR. KING: Certainly the scope of the maintenance program in the original maintenance proposed rule covered those kinds of equipment as well as things that are normally operating. We didn't really get into, in the rule or the proposed Reg Guide, differences in maintenance between equipment that sits there and equipment that's, you know, routinely being exercised so that you could see whether it's working or not.

My own view is that, you know, it was acknowledged that-- certainly recognized that there were differences in that type of equipment, and that ought to be -- a licensee ought to be thinking about what kind of maintenance he'd apply to something that just sits there, versus something

that's routinely operating and sort of, you know, constantly -- you can see whether it's working or not.

But we didn't get into the details of how to do that. I mean, we did recognize that not everything gets the same maintenance; that some things may strictly be corrective maintenance, light bulbs or something. And then some things may be -- you want a good preventive maintenance program. Well, we tried to let the licensee sort out how he wants to apply the various elements of his maintenance program to what equipment.

MR. ROSENTHAL: I'd like to give you a specific scenario and then have you comment about how you conceptually think that the proposed maintenance rule as proposed by the staff, might have addressed this, and how the now-Commission's drafted maintenance rule which, I take it, is on the street with a five year implementation --

MR. KING: That's right.

MR. ROSENTHAL: -- how it would implement it. Okay, I have a piece of equipment called the UPS, uninterruptable power supply which is always running and I need it running to keep the plant making electricity. So, it's always operating.

It is clearly not safety related, and various members of the staff could argue all day about whether it's important to safety or not, because we've -- okay, in it

sits some little batteries, D-cell batteries, and for all the years it's running, you don't monitor those batteries; there's no indicator lights on the batteries, you don't do anything with the batteries.

They could be dead as a doorknob, but this plant continues to run and everything's fine until, one day, you have a pulse of -- an electrical disturbance and you needed those batteries and they weren't there. Now, how would something like that have been addressed with the staff proposed rule, and how would it be encompassed by the current issued rule?

MR. KING: I'm not sure it's encompassed by the current issued rule. The scope is different on the current issued rule. It's different in that it doesn't include as much as the scope of the original proposed rule.

MR. JORDAN: What would be excluded under the current rule that would exclude this from being -- as you understand it to be?

MR. KING: Well, the current rule -- I didn't bring a copy with me, but as I recall it, it covers all safety related equipment and it covers equipment that's in the tech specs. It covers ATWS, station blackout, equipment needed for station blackout and there's one other one. I forget which one it is -- hydrogen rule, maybe.

That's sort of the extent of the scope of the

equipment.

MR. JORDAN: So, if it falls outside of that, that, itself, would eliminate it.

MR. KING: If it's not in the tech specs, it's probably not going to be covered by the current rule. I mean, the licensee is not going to have to establish some goal for that equipment, some performance goal for that equipment.

MR. JORDAN: Even if it fails routinely, they would not have to?

MR. KING: Even if it rails routinely, they would not have to.

MR. JORDAN: Go on. So, under the old rule, --

MR. KING: Well, under the old rule, I think the scope -- it would clearly be covered in the scope because it was -- we had an item in the scope -- if it was something which, if it failed, could cause a challenge to the plant and could cause a plant scram. It was clearly within the scope of the maintenance rule.

Now, the old rule -- I know the old Reg Guide didn't have enough detail in it, I think, to -- for me to make a judgment at this point, whether those batteries would be tested or not. I would suspect, if there had been a failure, either at that plant or at some other plants, of that kind of equipment, through a root cause determination,

if it wasn't in before, it would certainly be in now because it would be within the scope and people are supposed to learn from root cause failure and enhance their maintenance program.

MR. JORDAN: What it if it wasn't in the root cause failure under the old rule? Under the new rule, it doesn't fall at all. If it wasn't a root cause failure or wouldn't be -- it wouldn't readily identify it as a problem until it happens and didn't happen until now.

MR. KING: I suspect it would not have been there until now.

MR. JORDAN: You would not have expected them to do some type of maintenance until it's identified as a problem, under the old rule?

MR. ROSENTHAL: Under the new rule.

MR. JORDAN: Under the new rule, it doesn't exist at all because it's non-safety-related.

MR. KING: Under the new rule, I don't think it would be either way.

MR. JORDAN: It eliminates it under the new rule because of the tech spec.

MR. KING: Because of the scope.

MR. JORDAN: Under the old rule --

MR. KING: But would the maintenance program test that particular subcomponent of the hardware? It's hard for

me to say that, yes, it would, definitely, other than I know through the root cause words that were in the rule and in the Reg Guide, that after this failure, that certainly everybody would be expected to pick up on that and include it in.

Whether it would have been in before or not, I can't really say.

MR. ASHE: Under the old rule, was there any attempt to prioritize maintenance activities on selected equipment?

MR. KING: No.

MR. ASHE: Is there a reason for that that you recall? Was it just lack of understanding, lack of knowledge or no criteria or a combination of all of the above?

MR. KING: The Commission felt good maintenance should apply across the board.

MR. ASHE: That's a very tall order. And, in fact, that tremendous amounts of resources to back such an order. Is it realistic? Do you really need to do that? Was there any kind of evaluation done like that to attempt to even make it within the Commission's guidelines to include everything; but within everything, hey, here are some things that are a little bit more important than other things? Was there any -- no attempt was made or --

MR. KING: There was no attempt to prioritize either the elements of a good maintenance program that we felt should apply or phased implementation or even the scope of what was in there. I think it was -- it was --

MR. ROSENTHAL: By our current regulations, do you believe that licensees are required to perform preventive maintenance on safety-related equipment?

MR. KING: Our current regulations? Yes. For safety-related equipment, yes.

MR. ROSENTHAL: What about for important to safety equipment?

MR. KING: Are you talking about --

MR. ROSENTHAL: Or let's say nonsafety-related?

MR. KING: Should I assume that the rule that was issued a month or so ago was in place?

MR. ROSENTHAL: Well, under our current regulations, before the rule and after the rule, how do you think that this will wash?

MR. KING: I think before the rule was issued a month or so ago, by the strict layer of the regulations, I don't think they were required to perform maintenance on non-safety related equipment. I think we could, in certain instances, when events happened in nonsafety area and caused some cascading effects back into the plant, the trip safety system tripped the plant-challenge safety systems. I think

there were -- you could make a connection between nonsafety-related and safety of the plant. As I understand from talking with the NRR folks and so forth, that there were, through enough arm-twisting and give and take back and forth, there, if it was a real serious problem, something could be done about it, even though the strict letter of the regulation -- you couldn't point to some strict letter of the regulation to back you up.

With the new regulation, it will be easier to say, yes, that's covered in the scope. Because if something in the tech specs, if you're having a problem with it, I think it's pretty clear. If you're outside the tech specs, out in some balance-of-plant area, I think you'd be back to where you were before. Trying to make the case that this is a real problem, even though it's -- you can't point to some word in the regulation that clearly identifies it.

MR. JORDAN: Under the new regulation, if these UPS's were safety-related, 1E-type equipment, do you need the fault-generated problem before you identify preventive maintenance, or as it should be, you should have recognized the potential for that fault and done preventive maintenance on it all along? Do you understand what I'm saying?

It sounded like before, if you wait to add the fault, the industry then recognizes the fault, and then they took preventive maintenance from then on to prevent that

fault. Under the new rule, if it's safety-related, does it still apply that way? Do you wait till the fault -- once the fault is identified, then everybody takes preventive maintenance from then on, or do we hold people accountable for recognizing the potential for batteries in their systems that may not have maintenance on them and should have maintenance on them, even in safety -- if there isn't safety applications?

MR. KING: Under the new regulation, there is no guidance or requirement on what should be in the maintenance program. The rule is directed toward we want certain performance out of your equipment.

MR. JORDAN: Strictly performance?

MR. KING: Reliability. A guy could say well I can get 99 percent reliability, say he picks that as his goal. I can get that, but he had no maintenance on his equipment.

MR. JORDAN: That's his goal?

MR. KING: We -- that rule would allow a licensee to take that position. Now, the minute he starts to have failures and you realize he's not meeting his goal, he's obligated to go find out why and do something about it. That may mean more maintenance or maybe he chooses to replace the equipment and go back to his, you know, leave it alone attitude.

That's the main difference between what's on the books today and what the staff that was --

MR. JORDAN: Strictly performance oriented.

MR. KING: -- strictly performance -- the licensee can do whatever he wants, as long as he's getting performance.

MR. JORDAN: 99 percent, 80 percent?

MR. KING: He picks the number. He picks the number. But he has to pick it consistent with other things that he's told us like through his individual plant examination. If he's saying my feedwater pumps are 99 -- have a 99 percent reliability and that's what he's put in his IPE, he cannot turn around and say, for the purposes of his maintenance rule, it's 80 percent.

MR. JORDAN: Okay.

MR. KING: And that -- that, I think, is fairly clear.

MR. ROSENTHAL: Let me take an aside, and then we'll get back to maintenance. A couple of times I have used the word important to safety, as distinct from safety-related. Do you know anyplace where the NRC has clearly expounded what's the phrase, important to safety and defined what equipment falls in that bin?

MR. KING: There have been attempts to expand on that by internal staff guidance. Back when Harold Denton

was head of NRR, I remember seeing some of the guidance on that. And the Commission paper was prepared proposing a rulemaking to clarify that back in '86 or so. It never went anywhere. That was another rule that was assigned to me that the Commission never decided to act on it; but there has never been any action on that proposal.

I've never seen anything that's formal guidance to licensees on that, but I've seen some internal staff guidance.

MR. ROSENTHAL: Under today's regulations, is the licensee required to have up-to-date drawings for the installed safety-related equipment?

MR. KING: My understanding is I'd say yes.

MR. ROSENTHAL: And for equipment that is not tagged safety-related? What's the story?

MR. KING: I'm going to have to pass on that one. I'm not sure. I'd have to look at the words in the rule before I answered that.

MR. ASHE: In terms of the new rule it seems like it's focusing mostly on the reliability of the equipment as identified by the licensee. Is there any criteria in this rule that would suggest how you go about attaining such a reliability figure?

MR. KING: The rule itself does not have any guidance. The statement of considerations for the rule does

and the staff is working on a reg guide.

What the statement of considerations says is if you have got a PRA you should make your reliability goals, your performance goals consistent with what you have assumed in the PRA and through your individual plant examination program if they don't have a PRA they still have to do an individual plant examination and the performance goals ought to be consistent with what they are claiming in their IPE.

Now hopefully the reg guide will expand on that somewhat in terms of plant level goals or system level versus component level goals, but the reg guide isn't written yet.

MR. JORDAN: Does the regulation, does the rule reference the reg guide?

MR. KING: No. The rule does not reference the reg guide. The rule is very short.

MR. JORDAN: So enforcement-wise we're just relying on the rule?

MR. KING: Yes, but the rule isn't effective for another five years.

MR. JORDAN: Yes, but when the rule becomes effective --

MR. KING: There'll be a reg guide hopefully.

MR. JORDAN: But the reg guide only becomes effective if the rule enforces it, right?

MR. KING: The reg guide is written to say here is an acceptable way to comply with the rule. The licensee can choose some other way if he writes to propose it.

NUMARC is also with this latest official rule that's out, they've come in and said, hey, wait a minute, we want to write a standard down.

Hopefully you guys will endorse it instead of endorsing your own reg guide so there is a dual effort going on. NUMARC's working on a standard and we're working on a reg guide and if they come in on time as something that is reasonable to endorse I think we have indicated that we will seriously consider endorsing their standard.

MR. ROSENTHAL: After the Salem ATWS event, the NRC wrote a generic letter, 83-

MR. ASHE: -28.

MR. ROSENTHAL: 83-28. Were you involved in that?

MR. KING: No.

MR. ASHE: Since the new rule is performance-based, it looks like you are waiting for, it appears to be waiting for actual events to happen before you can really even trigger a reliability number.

Is there anything in there that takes a front-end approach to reliability rather than just looking at what's happened in the past?

MR. KING: Well, I presume the licensee has an

operating history in his plant and he would know, in the feedwater pump he would know what his reliability has been for the past five or ten years.

MR. ASHE: Right, but that's after the fact. That's sort of operating history and that's consistent with performance based new rule.

In addition to that, there is another approach to reliability, and that is somewhat of a front-end approach.

Is there anything in the new rule that would get the second part of that, the front-end approach of reliability rather than just focusing on operating history?

Do you recall anything in terms of guidance to the licensee?

MR. KING: In terms of guidance to the licensee, no.

MR. ASHE: In coming up with the reliability number that he comes up with -- this is a performance based rule, which means he's using operating history to come up with the number he has to come up with -- is there anything else in the guidance that would give him a different approach to factor in also?

MR. KING: Well, if he doesn't have operating history -- I mean there are probably a number of components that haven't failed on his plant -- he's going to have to choose some reliability value for those based upon maybe

some estimate of what he thinks the real failure rate is and then monitor the performance of his equipment and hopefully as time goes on, maybe he'll get some failure data, maybe he won't.

What I'm trying to say is there is probably some pieces of equipment he's going to have to project what the failure rate is because he doesn't have any data. You know, pipes don't fail and the vessel doesn't fail, and there's probably a number of other things that haven't failed in his plant that he's going to have to make some assumptions on and set some goals on and hope that if he does get some failure data it's not negating these assumptions and if that's what you mean by forward-looking, yes, I think that's in the rule.

MR. ASHE: Well, I'm trying to focus on the guidance that the rule would leave the licensee to not just consider operating history experience but perhaps some front-end type of information, like for example if you lose this we know it's operating the feedwater control, it's going to put the plant through a transient or things like that, that would cause him to not just look at let's say EDP converters on the feedwater system which may have 100 percent reliability but rather look at, you know, other things in terms of other than operating history.

It seems like there's not too much in that area.

is that a fair way to characterize it?

MR. KING: Yes, certainly the rule does not have any kind of differentiation like that. I think the rule -- I can't remember the exact words -- does acknowledge -- maybe it's a statement of consideration -- acknowledge that there are some pieces of equipment where you may not have a failure history just because they don't fail and in those cases maybe some sort of, instead of having a performance monitoring program, maybe some other acceptable way for doing maintenance would be, establishing maintenance goals would be acceptable.

In other words you wouldn't be able to monitor performance but maybe you could set some goals on the UT inspection this often and that kind of thing that would take the place of performance monitoring goals.

I think the rule does have the flexibility for differentiating between equipment where you can get some failure data and equipment where you can't.

I'm trying to remember whether it is in the rule or the statement of considerations but it will certainly be talked about in the reg guide.

MR. JORDAN: The reg guide is still being developed.

Is there any other programs that you know of that the NRC's working on as far as maintenance programs? The

history, you brought us up to the current two-month ole rule. Have you told the industry that we're reg guiding it and then we're going to wait five years and then six years from now or ten years from now we may identify additional maintenance requirements or anything like that?

MR. KING: The industry certainly knows we're working on the reg guide and the schedule for that.

MR. JORDAN: You don't know of anything else in the agency that they're working on as far as the maintenance program goes?

MR. KING: No, no I think the maintenance team inspections are over. Whether we reinstitute those or not is who knows at this point.

MR. ROSENTHAL: Can you describe your involvement in the MTIs themselves or in the use of the results of those, of the maintenance team inspection results?

MR. KING: Well, I wasn't involved in the MTIs themselves at all. One of my people went out and went on one or two of those.

MR. ROSENTHAL: Okay.

MR. KING: We did take the results though and tried to factor them into the final rule and also into the final rule that was sent to the Commission in April of '89 as well as into the final recommendation.

It went to the Commission a few months ago that

said don't have a rule. By taking those results we looked at what were the weaknesses, common weaknesses found, because we wanted to make sure that the reg guide that we proposed addressed those as well as we use that information on trying to determine what's the need for the rule in the regulatory analysis that backs up the rule.

MR. ROSENTHAL: The Staff had at one time a proposed maintenance rule. They did the maintenance team inspections. SALP scores and maintenance were improving. Forgot what else it was --

MR. KING: The performance indicators generally.

MR. ROSENTHAL: Okay, and then a decision was made to recommend to the Commissioners that we don't need a maintenance rule. Right? And that was in '89 or '90?

MR. KING: '90. '89 we recommended a final rule.

MR. ROSENTHAL: Right.

MR. KING: They said, well, let's think about it for 18 months while we monitor the industry progress on maintenance.

MR. ROSENTHAL: So just recently, in the last few months?

MR. KING: April of '91 -- April of this year -- April of '91 is when the recommendation went back and said okay, we've monitored progress for 18 months; we recommend at this time no rule.

MR. ROSENTHAL: Who made that recommendation to the Commission?

MR. KING: Jim Taylor. Jim Taylor signed the memo, the SECY paper.

MR. ROSENTHAL: And that was based on input from?

MR. KING: NRR, Research, AEOD, and all the regions that looked at Maintenance Team inspection results, SALP scores, industry commitments. A lot of things were factored in there.

MR. ROSENTHAL: So they go off to a meeting and decide they don't need a maintenance rule from our executives. I was not at that meeting.

MR. KING: I was not at that meeting either. Charlie Ader was at that meeting, if you wanted to talk to somebody else. He's Branch Chief in my division now. He actually had the responsibility for writing this final package that went to the Commission that said we don't recommend a rule, but if you're going to go with a rule, here's two options, and the Commission came up with a third option and put it out.

He might be a good one to talk to on the recent history. I'm more familiar with the old original history.

MR. ASHE: If the new rule were to be issued three weeks from now and somebody came up to you with an event in which five identical pieces of equipment were lost

simultaneously, a lot of essential lighting was lost, severe plant transient, some confusion in the operators, would that make any changes in the new rule?

Would the new rule change any as a result of that?

MR. KING: We were under a lot of constraints in putting out this final rule written by the Commissioners. The rule was handed to us by the Commission; said go write a statement of considerations and change your reg analysis to support this rule.

So from a practical standpoint, we didn't have much flexibility to change anything in the rule. Given the constraints that -- the kind of rule that they wanted, I'm not sure, given what you just said, that it would effect the rule at all. I think possibly the reg guide would be influenced by that. I don't think the rule would.

MR. ASHE: Do you think it should be?

MR. KING: It depends what kind of rule you're going with. If you're going with a rule like we have now, probably not. If you're going with a more process-oriented rule, like we recommended back in April, I think it could. We'd give serious consideration to see does this rule and this reg guide -- would it have fixed that kind of problem or prevented that kind of problem.

This whole maintenance rule thing has been under a lot of constraints. This has not been something where the

staff had freehand to develop it.

MR. JORDAN: The recommendation not to have the rule, you say that came out because the SALP scores on maintenance had been going up and the reliability of the plants had been going up, and, therefore --

MR. KING: That was part of it.

MR. JORDAN: -- overall maintenance, they felt, had been effective because the plants were performing better. Is that --

MR. KING: There were four criteria the staff recommended for judging whether we have a rule or don't have a rule. The Commission added two more to that list. So there were six factors that were looked at.

MR. JORDAN: What were those?

MR. KING: The two that the Commission added, one was enforceability, having a rule help us enforce problems in the maintenance area, take enforcement action in the maintenance area. I don't recall the other one they added. We suggested, well, let's look at the Maintenance Team inspection results, let's look at the industry commitment to improve, let's look at the industry commitment to do some self-assessment on their own, monitor how well they're doing in maintenance. I forget what the fourth one was.

They're all laid out -- they're all laid out in the final Commission paper that went up on the maintenance

rule in April of 1991, and each of those is talked about and what the staff's views were on those.

MR. ROSENTHAL: We're really scampering to gather documents. Can you help us gather some of those documents?

MR. KING: Sure.

MR. ASHE: He said he had some here, right?

MR. KING: I brought the old history with me.

MR. JORDAN: As far as the new rule, do you have that in there, also?

MR. KING: No. I have it in my office. I don't have it in here.

MR. JORDAN: Do you mind getting us some of this stuff?

MR. KING: No.

MR. ROSENTHAL: Before we finish, we'll make up a list.

MR. KING: Yes. Make up a list and tell me what you want.

MR. ROSENTHAL: I would very much appreciate it.

MR. KING: Charlie Ader has got extra copies of the final package. If you're going to call him down, I'll just send them down. But I've got the old -- the original rules and policy statements with me, if you want copies of those.

MR. ROSENTHAL: Was there any reliance on NUMARC

initiatives in the thinking about this whole development of the maintenance rule?

MR. KING: It certainly was prominent in the decision to hold off action for 18 months and monitor industry progress. One of the things we encourage industry to do is to develop a standard and to voluntarily implement and monitor industry performance against that standard.

MR. ROSENTHAL: And they never did?

MR. KING: They did. They took -- INPO took their maintenance document and revised it somewhat and NUMARC sent that in as the industry standard. NUMARC also said over the next four or five years, we will, I think, have each licensee -- I can't remember whether it was a self-assessment or we'll have INPO do an assessment of how each licensee is doing against that standard. That was a one-shot deal that would take place over the next four or five years.

MR. JORDAN: When did that start?

MR. KING: When would it start? It would start like fairly soon, in the next year or so.

MR. JORDAN: It wasn't something that they did in the past when we first --

MR. KING: No.

MR. JORDAN: -- when we said we were going to issue a rule.

MR. KING: This is a commitment they made to try and cut off having a maintenance rule and it was one of the criteria that the staff used to judge whether we need a rule or not. But as I said, it was a one-shot commitment to do this self-assessment.

MR. JORDAN: We don't know if they've done any plants yet or not.

MR. KING: Well, they're probably not going to do any now because they've got a rule. They offered this up in lieu of a rule.

MR. JORDAN: In lieu of a rule.

MR. KING: In lieu of the rule. Now that they've got a rule, they're probably not going to do that. I think the document, the April of 1991 document is a very good document to read. It's got a lot of that history in it.

MR. JORDAN: That's the document that goes to where, from who to who?

MR. KING: It's a SECY paper.

MR. JORDAN: The SECY paper.

MR. KING: To the Commission.

MR. JORDAN: On why we didn't -- why the staff doesn't recommend a rule.

MR. KING: Here's what we looked at, here's what we found, we don't recommend a rule, but if you want one, here's two options, and they developed a third option.

MR. JORDAN: Did either of those two options include non-safety-related.

MR. KING: Yes.

MR. JORDAN: They would have.

MR. KING: They would have included non-safety-related.

MR. JORDAN: Excluding, you said, up to, but excluding what the defense and the security aspects because it's covered under something else.

MR. KING: Yes. The security system was taken out of the scope.

MR. JORDAN: But one of the two options --

MR. KING: Basically, it covered most of balance-of-plant.

MR. JORDAN: Was it still based on performance type of action or was it based on --

MR. KING: One was a fine-tuning of the rule, final rule we had proposed in April 1989, process-oriented, laid out all the elements and activities a good maintenance program should have and had the scope in there.

MR. JORDAN: Okay.

MR. KING: The other one was a reliability-based rule. It was more along the lines of what the Commission proposed, except the scope was broader.

MR. ROSENTHAL: If we send a licensee an

information notice that discusses the maintenance of something or an event that occurred because there wasn't maintenance of that something in some other plant, what do you expect -- what are your expectations for the licensee in terms of what the licensee should do with it?

What is he required to do with it?

MR. KING: Well, he's required to read it. That's about all he's required to do.

MR. ROSENTHAL: Okay. And then -- but you're also an NRC manager. So, okay, you tell me what the -- you're saying, by the regulations, he is required to read it.

MR. KING: Uh-huh.

MR. ROSENTHAL: Okay. But what is your expectation?

MR. KING: Well, my expectation would be, if I were a licensee, I'd look at that and see if it applies to my plant and what should I do to make sure I don't have that problem, and I would think a responsible licensee -- I would expect a responsible licensee to do that, whether we told them to do it or not.

I mean he's -- there's good information in those INs that could help him make money for his utility, I think, in the long run, as well as contribute to safety, and I think safety and making money for the utility go hand in hand.

MR. ROSENTHAL: Is there a disconnect between what our expectations are with respect to providing them with all this operating experience and what the regulations require?

MR. KING: I'm not sure I can answer that.

I can see we don't want to take every event that happens out there and make licensees do something with it.

I think it's good that we issue the information, and I would, like I said, expect a responsible licensee to do -- look at his plant and, if it makes sense to do something, to do it, without us having to force him to do it.

Whether that's actually happening or the extent to which that's happening, I don't know.

MR. JORDAN: I don't have anything else.

MR. KING: I mean they're ultimately responsible for their plants, and you know, in one way, putting out INs, you know, keeps the burden of responsibility on them to understand their plant and take action where they feel it should be taken. I'm not opposed to that. I think that's good.

MR. ASHE: Is there any specific thing in the new maintenance rule that you would like to change if you could?

MR. KING: Well, I'll give you my own personal opinion.

I think the process maintenance rule is the better

rule for the agency to implement. I think the one that we sent to the Commission in April '89 was good enough to come in. I think the one we sent them in April of '91 was even better in terms of having the words adjusted, fine-tuned, if you will.

I think it would have accomplished more. It would have given the staff more enforcement capability to use where it's needed, not to abuse it, but to use it as needed.

I think it would have given an inspector more to look for in terms of doing some proactive action on maintenance, not reactive, waiting for something to happen before we can take action.

So, my own personal opinion is that we should have put out a process rule a long time ago.

[Pause.]

MR. ROSENTHAL: Are we asking you the right -- you know, we've told you a little bit about the event. You have some general idea and you know what we've discussed here.

There's always the chance that we're not asking the right questions. Should we have asked different questions? Is there something else that we should lay on the table along the lines that we've been going?

MR. KING: I think the general thrust of your question, as I gather it, is if we had a maintenance rule, would that have helped prevent this situation? Given the

fact that we have one now, is it the right one to address these kind of situations?

No, I don't have any other question to add. I think we've talked about that.

MR. JORDAN: I've got one question.

Do you think the rule, why it's the way it is, is because of the push from the industry, or you just really think that that's the way -- that the Commission really felt that's the way to go?

Do we get any indication that the industry was so pushy, anti-maintenance, that we as an agency said okay, fine, this is good enough based on what the staff found as a result of MTIs?

MR. KING: Industry was anti-rule right from the beginning. They never changed. I think one of the reasons the Commission waited 18 months and studied it more was because of the uproar from the industry on the original accelerated schedule to get a maintenance rule out.

I think the staff bent over backwards to give the industry a chance to get their act together and make some commitments in the April of '91 recommendation, really gave the industry the benefit of the doubt, if you will, that they were truly improving and going to continue to improve in the maintenance area.

I think two commissioners weren't satisfied. They

wanted a rule. They probably wanted it from a long time ago.

A third one wanted -- was big on performance-based regulation, and there was a compromise struck that he would go with the rule as long as it's performance-based, and they wrote the rule, and it was, you know, one of those efforts to get it out before the Chairman's term ended.

MR. JORDAN: That's it.

THE REPORTER: Finished?

MR. ROSENTHAL: Last word: Thank you.

[Whereupon, at 4:10 p.m., 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: Tom King

DOCKET NUMBER:

PLACE OF PROCEEDING: Bethesda, Maryland

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.

07518-91B

OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: U.S. Nuclear Regulatory Commission
Incident Investigation Team

Title: Interview of: Tom King
(Closed)

Docket No.

LOCATION: Bethesda, Maryland

DATE: Wednesday, September 4, 1991 PAGES: 1 - 38

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ERRATA SHEET

ADDENDUM

Page	Line	Correction and Reason for Correction	
7	15	word "do" should be "root"	— error
8	13	word "and" should be "of"	— "
18	20	word "layer" should be "Letter"	— "
28	25	insert the words "in all cases" between the words "where" "the"	— Clarification
11	22-24	Strike these lines and replace with "support of safety related equipment or could cause a plant scram or ~~transient~~ safety system actuation"	factual error
12	4	Replace "tech specs" with "list of equipment"	factual error
16	11	Replace "tech specs" with "scope"	factual error
	12	" " " " "	" "
33	24	Delete the words "except the scope was broader"	" "

Date. 10/3/91 Signature Tom King

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

INCIDENT INVESTIGATION TEAM

- - - - - - - - - - - - - - - - - - -X

In the Matter of: :

INTERVIEW OF: :

TOM KING :

(CLOSED) :

- - - - - - - - - - - - - - - - - - -X

Nuclear Regulatory Commission

Interview Room

Woodmont Building

8120 Woodmont Ave.

Bethesda, Maryland

Wednesday, September 4, 1991

The above-entitled matter commenced at 3:15 o'clock p.m., when were present:

On behalf of the Incident Investigation Team:

MICHAEL JORDAN, NRC

JACK ROSENTHAL, NRC, AEOD

FRANK ASHE, NRC

PROCEEDINGS

[3:15 p.m.]

MR. ROSENTHAL: What interested me in interviewing you was, in fact, the maintenance aspect. We're talking about non-1E, non-safety grade equipment, where part of the probable causes look to be associated with maintenance, and one of our missions is to look at both the event and the generic implications and what were the regulatory requirements and what's the regulatory process. And I know that you were involved in a maintenance rule for quite awhile, so you become a resource to me, okay.

So why don't we start out by -- what was your involvement with the maintenance rule?

[Pause to answer the door.]

[Mr. Rosenthal leaves the interview room.]

MR. JORDAN: Go ahead.

MR. KING: Let me give you a little history. Back in late '87, NRR prepared a paper to the Commission in response to a question they had asked on the need for a maintenance rule, and at that time they recommended against having a maintenance rule, but did recommend a policy on maintenance, the conditions that should encourage good maintenance and lay forth the practices and scope and so forth that they felt should be included in a maintenance program.

The Commission agreed to issue a policy statement in the interim, but also said that they wanted to pursue a rule. So I think it was in March of '88, a policy statement was issued on maintenance, and in there it was stated -- and it listed the activities and the scope of a maintenance program, but in there it also stated the Commission's intent to proceed with a maintenance rule.

At that point in time, I was in the Office of Research. I still am. Research does rulemaking. That particular rulemaking was assigned to my branch. That's when I became involved in it. It was the March or April of '88 timeframe.

We then proceeded -- and we got an aggressive schedule from the Commission; they wanted something out like in about nine months -- we proceeded then to start to explore options for the rule, had some discussions with industry, conducted a workshop in July of '88 on various rulemaking options, solicited a lot of comments and feedback from industry, primarily rebuttals against all the rulemaking options, and in, I believe it was November of '88, developed a proposed rule for comment.

It was what we call a process-oriented rule in that it laid out the activities that should be in a maintenance program and said licensees should set goals and monitor the effectiveness of their program against those

goals, but it didn't specify what those goals should be. It left them up to the licensee. And it was a broad scope program. It covered safety as well as non-safety equipment, pretty much everything in the plant, everything inside the fence actually. And that was driven quite a bit by the Commission's desire and views at the time, that maintenance should not be something you apply only to a portion of the plant, that it's a program that should apply to everything, and they supported and pushed for a very broad scope rule.

So that was put out for comment in November of '87, and a lot of comments --

MR. JORDAN: '87 or '88?

MR. KING: Excuse me, '88. We got a lot of comments on the rule. We had a very aggressive schedule to turn that into a final rule, because at the time, Chairman Zech was leaving in June of '89, and he wanted something he could act on before he left, so he asked for a final rule in April of '89 and a Reg Guide. The proposed rule did not have a Reg Guide with it.

So we stuck with the process-oriented rule, did some finetuning of the scope, finetuning of the activities that should comprise a maintenance program, developed a general maintenance Reg Guide that expanded a little bit on what all these maintenance activities should encompass, and gave the Commission in April of '89 a final rule and a

proposed Reg Guide, briefed them on the package that we gave them, and then they decided to hold up on issuing the final rule and studied the problem for 18 months, and at that time told us to issue a revised policy statement that stated our intent to monitor industry progress on maintenance and to come back at the end of 18 months and make a decision on a maintenance rule.

So we issued a revised -- worked on a revised policy statement and issued it, I believe it was in November of '89. I've brought copies with me of these things, if you want to run copies of these policy statements and so forth.

MR. JORDAN: Super.

MR. KING: So you can get the exact dates of the reference.

Anyway, we did issue that, and it laid out -- stated the Commission's intent to continue monitoring maintenance, pushed for the industry to develop a maintenance standard and for them to voluntarily implement and sort of have some commitment to following that standard, but on a voluntary basis.

As a follow-up after that policy statement went out, we continued to work on the Reg Guide to refine it. We did issue the Reg Guide that we developed for comment in August of '89, and then we encouraged the industry to develop a standard, and we gave them a deadline by which we

wanted them to develop a standard.

Subsequent to the policy statement coming out in November of '89, there was some follow-up actions and follow-up reports to the Commission on several things. One was what are the criteria with which we're going to judge industry's progress in the maintenance area, and we sent the Commission four criteria, and they added a couple more to it.

There was some work at AEOD looking at a maintenance effectiveness indicator. There were at least a couple reports on that to the Commission as to things that were looked at and discarded and what they came up with in a trial program for using it and encouraged the industry to do the same, work with the Staff on developing a maintenance indicator.

MR. ROSENTHAL: These statements, did they pertain to safety-related and non-safety-related and important to safety?

MR. KING: Yes. Originally, the proposed maintenance rule was -- basically the scope was everything inside the fence, including the fence, and that was driven by the Commission.

The final maintenance rule, the Staff recommended a scope that was somewhat narrower, not a whole lot. We dropped out security stuff, because that's covered by 50 or

70 or whatever it was. But we did cover most of the balance-of-plant equipment and non-safety grade balance-of-plant equipment. Anything that was described in the FSAR basically was included in the scope of the maintenance rule.

MR. ROSENTHAL: And that included both programs for corrective and preventive or just --

MR. KING: Predictive, preventive, and corrective.

MR. JORDAN: But it's based on a system that says: Tell me how many times it fails, and what is happening, or is it review of the vendor's recommended program and establishing that ahead of time?

MR. KING: All of the above. It was a collection of what the Commission thought were good maintenance practices, starting with review of vendor recommendations, looking at operating experience, do cause analysis and corrective action, implement predictive maintenance where possible, a preventive and a corrective maintenance program, have good procedures, good training, quality assurance. You know, it had all those elements.

MR. JORDAN: Is that the original rule, or is that rule that exists right now?

MR. KING: That was in the original proposed rule and the final rule that we proposed to the Commission in April of '89.

MR. JORDAN: Okay.

MR. KING: All of those elements were in it. Also all of those elements were in both policy statements, both the original and the revised policy statement.

MR. JORDAN: Okay.

MR. KING: Those elements are not in the rule that was ultimately issued as a final rule.

MR. JORDAN: They were not?

MR. KING: They were not. That stuff was taken out of there.

MR. JORDAN: What's in the final?

MR. KING: The final rule is called performance oriented rule. Basically it says that licensees should establish methods to monitor the effectiveness and maintenance by setting goals on performance and monitoring performance against those goals.

If they don't meet the goals, to take corrective action to meet them. But it doesn't get into the nitty-gritty of what should be in a maintenance program, or what those goals should be. It's a very short rule and it's performance oriented.

MR. JORDAN: Strictly performance oriented?

MR. KING: Strictly performance oriented. They did not have to report that information, either, but it has to be available onsite if the Commission would want to look at it.

MR. ROSENTHAL: There's a class of faults which are revealing faults, something was wrong and you can modify your maintenance programs based on your history with something going wrong. Then there's other stuff which sits there and you never monitor it and it's just fine and then one day it comes back to haunt you, you know, bang!

The only way you could have done something about it was to have an extensive preventive maintenance program. Do you know of those concepts and worries -- were those concepts and worries in the work that you had done, and do you -- and how did that carry over into the Commission's rule, if at all?

MR. KING: Certainly the scope of the maintenance program in the original maintenance proposed rule covered those kinds of equipment as well as things that are normally operating. We didn't really get into, in the rule or the proposed Reg Guide, differences in maintenance between equipment that sits there and equipment that's, you know, routinely being exercised so that you could see whether it's working or not.

My own view is that, you know, it was acknowledged that-- certainly recognized that there were differences in that type of equipment, and that ought to be -- a licensee ought to be thinking about what kind of maintenance he'd apply to something that just sits there, versus something

that's routinely operating and sort of, you know, constantly -- you can see whether it's working or not.

But we didn't get into the details of how to do that. I mean, we did recognize that not everything gets the same maintenance; that some things may strictly be corrective maintenance, light bulbs or something. And then some things may be -- you want a good preventive maintenance program. Well, we tried to let the licensee sort out how he wants to apply the various elements of his maintenance program to what equipment.

MR. ROSENTHAL: I'd like to give you a specific scenario and then have you comment about how you conceptually think that the proposed maintenance rule as proposed by the staff, might have addressed this, and how the now-Commission's drafted maintenance rule which, I take it, is on the street with a five year implementation --

MR. KING: That's right.

MR. ROSENTHAL: -- how it would implement it. Okay, I have a piece of equipment called the UPS, uninterruptable power supply which is always running and I need it running to keep the plant making electricity. So, it's always operating.

It is clearly not safety related, and various members of the staff could argue all day about whether it's important to safety or not, because we've -- okay, in it

sits some little batteries, D-cell batteries, and for all the years it's running, you don't monitor those batteries; there's no indicator lights on the batteries, you don't do anything with the batteries.

They could be dead as a doorknob, but this plant continues to run and everything's fine until, one day, you have a pulse of -- an electrical disturbance and you needed those batteries and they weren't there. Now, how would something like that have been addressed with the staff proposed rule, and how would it be encompassed by the current issued rule?

MR. KING: I'm not sure it's encompassed by the current issued rule. The scope is different on the current issued rule. It's different in that it doesn't include as much as the scope of the original proposed rule.

MR. JORDAN: What would be excluded under the current rule that would exclude this from being -- as you understand it to be?

MR. KING: Well, the current rule -- I didn't bring a copy with me, but as I recall it, it covers all safety related equipment and it covers equipment that's in the tech specs. It covers ATWS, station blackout, equipment needed for station blackout and there's one other one. I forget which one it is -- hydrogen rule, maybe.

That's sort of the extent of the scope of the

equipment.

MR. JORDAN: So, if it falls outside of that, that, itself, would eliminate it.

MR. KING: If it's not in the tech specs, it's probably not going to be covered by the current rule. I mean, the licensee is not going to have to establish some goal for that equipment, some performance goal for that equipment.

MR. JORDAN: Even if it fails routinely, they would not have to?

MR. KING: Even if it rails routinely, they would not have to.

MR. JORDAN: Go on. So, under the old rule, --

MR. KING: Well, under the old rule, I think the scope -- it would clearly be covered in the scope because it was -- we had an item in the scope -- if it was something which, if it failed, could cause a challenge to the plant and could cause a plant scram. It was clearly within the scope of the maintenance rule.

Now, the old rule -- I know the old Reg Guide didn't have enough detail in it, I think, to -- for me to make a judgment at this point, whether those batteries would be tested or not. I would suspect, if there had been a failure, either at that plant or at some other plants, of that kind of equipment, through a root cause determination,

if it wasn't in before, it would certainly be in now because it would be within the scope and people are supposed to learn from root cause failure and enhance their maintenance program.

MR. JORDAN: What it if it wasn't in the root cause failure under the old rule? Under the new rule, it doesn't fall at all. If it wasn't a root cause failure or wouldn't be -- it wouldn't readily identify it as a problem until it happens and didn't happen until now.

MR. KING: I suspect it would not have been there until now.

MR. JORDAN: You would not have expected them to do some type of maintenance until it's identified as a problem, under the old rule?

MR. ROSENTHAL: Under the new rule.

MR. JORDAN: Under the new rule, it doesn't exist at all because it's non-safety-related.

MR. KING: Under the new rule, I don't think it would be either way.

MR. JORDAN: It eliminates it under the new rule because of the tech spec.

MR. KING: Because of the scope.

MR. JORDAN: Under the old rule --

MR. KING: But would the maintenance program test that particular subcomponent of the hardware? It's hard for

me to say that, yes, it would, definitely, other than I know through the root cause words that were in the rule and in the Reg Guide, that after this failure, that certainly everybody would be expected to pick up on that and include it in.

Whether it would have been in before or not, I can't really say.

MR. ASHE: Under the old rule, was there any attempt to prioritize maintenance activities on selected equipment?

MR. KING: No.

MR. ASHE: Is there a reason for that that you recall? Was it just lack of understanding, lack of knowledge or no criteria or a combination of all of the above?

MR. KING: The Commission felt good maintenance should apply across the board.

MR. ASHE: That's a very tall order. And, in fact, that tremendous amounts of resources to back such an order. Is it realistic? Do you really need to do that? Was there any kind of evaluation done like that to attempt to even make it within the Commission's guidelines to include everything; but within everything, hey, here are some things that are a little bit more important than other things? Was there any -- no attempt was made or --

MR. KING: There was no attempt to prioritize either the elements of a good maintenance program that we felt should apply or phased implementation or even the scope of what was in there. I think it was -- it was --

MR. ROSENTHAL: By our current regulations, do you believe that licensees are required to perform preventive maintenance on safety-related equipment?

MR. KING: Our current regulations? Yes. For safety-related equipment, yes.

MR. ROSENTHAL: What about for important to safety equipment?

MR. KING: Are you talking about --

MR. ROSENTHAL: Or let's say nonsafety-related?

MR. KING: Should I assume that the rule that was issued a month or so ago was in place?

MR. ROSENTHAL: Well, under our current regulations, before the rule and after the rule, how do you think that this will wash?

MR. KING: I think before the rule was issued a month or so ago, by the strict layer of the regulations, I don't think they were required to perform maintenance on non-safety related equipment. I think we could, in certain instances, when events happened in nonsafety area and caused some cascading effects back into the plant, the trip safety system tripped the plant-challenge safety systems. I think

there were -- you could make a connection between nonsafety-related and safety of the plant. As I understand from talking with the NRR folks and so forth, that there were, through enough arm-twisting and give and take back and forth, there, if it was a real serious problem, something could be done about it, even though the strict letter of the regulation -- you couldn't point to some strict letter of the regulation to back you up.

With the new regulation, it will be easier to say, yes, that's covered in the scope. Because if something in the tech specs, if you're having a problem with it, I think it's pretty clear. If you're outside the tech specs, out in some balance-of-plant area, I think you'd be back to where you were before. Trying to make the case that this is a real problem, even though it's -- you can't point to some word in the regulation that clearly identifies it.

MR. JORDAN: Under the new regulation, if these UPS's were safety-related, 1E-type equipment, do you need the fault-generated problem before you identify preventive maintenance, or as it should be, you should have recognized the potential for that fault and done preventive maintenance on it all along? Do you understand what I'm saying?

It sounded like before, if you wait to add the fault, the industry then recognizes the fault, and then they took preventive maintenance from then on to prevent that

fault. Under the new rule, if it's safety-related, does it still apply that way? Do you wait till the fault -- once the fault is identified, then everybody takes preventive maintenance from then on, or do we hold people accountable for recognizing the potential for batteries in their systems that may not have maintenance on them and should have maintenance on them, even in safety -- if there isn't safety applications?

MR. KING: Under the new regulation, there is no guidance or requirement on what should be in the maintenance program. The rule is directed toward we want certain performance out of your equipment.

MR. JORDAN: Strictly performance?

MR. KING: Reliability. A guy could say well I can get 99 percent reliability, say he picks that as his goal. I can get that, but he had no maintenance on his equipment.

MR. JORDAN: That's his goal?

MR. KING: We -- that rule would allow a licensee to take that position. Now, the minute he starts to have failures and you realize he's not meeting his goal, he's obligated to go find out why and do something about it. That may mean more maintenance or maybe he chooses to replace the equipment and go back to his, you know, leave it alone attitude.

That's the main difference between what's on the books today and what the staff that was --

MR. JORDAN: Strictly performance oriented.

MR. KING: -- strictly performance -- the licensee can do whatever he wants, as long as he's getting performance.

MR. JORDAN: 99 percent, 80 percent?

MR. KING: He picks the number. He picks the number. But he has to pick it consistent with other things that he's told us like through his individual plant examination. If he's saying my feedwater pumps are 99 -- have a 99 percent reliability and that's what he's put in his IPE, he cannot turn around and say, for the purposes of his maintenance rule, it's 80 percent.

MR. JORDAN: Okay.

MR. KING: And that -- that, I think, is fairly clear.

MR. ROSENTHAL: Let me take an aside, and then we'll get back to maintenance. A couple of times I have used the word important to safety, as distinct from safety-related. Do you know anyplace where the NRC has clearly expounded what's the phrase, important to safety and defined what equipment falls in that bin?

MR. KING: There have been attempts to expand on that by internal staff guidance. Back when Harold Denton

was head of NRR, I remember seeing some of the guidance on that. And the Commission paper was prepared proposing a rulemaking to clarify that back in '86 or so. It never went anywhere. That was another rule that was assigned to me that the Commission never decided to act on it; but there has never been any action on that proposal.

I've never seen anything that's formal guidance to licensees on that, but I've seen some internal staff guidance.

MR. ROSENTHAL: Under today's regulations, is the licensee required to have up-to-date drawings for the installed safety-related equipment?

MR. KING: My understanding is I'd say yes.

MR. ROSENTHAL: And for equipment that is not tagged safety-related? What's the story?

MR. KING: I'm going to have to pass on that one. I'm not sure. I'd have to look at the words in the rule before I answered that.

MR. ASHE: In terms of the new rule it seems like it's focusing mostly on the reliability of the equipment as identified by the licensee. Is there any criteria in this rule that would suggest how you go about attaining such a reliability figure?

MR. KING: The rule itself does not have any guidance. The statement of considerations for the rule does

and the staff is working on a reg guide.

What the statement of considerations says is if you have got a PRA you should make your reliability goals, your performance goals consistent with what you have assumed in the PRA and through your individual plant examination program if they don't have a PRA they still have to do an individual plant examination and the performance goals ought to be consistent with what they are claiming in their IPE.

Now hopefully the reg guide will expand on that somewhat in terms of plant level goals or system level versus component level goals, but the reg guide isn't written yet.

MR. JORDAN: Does the regulation, does the rule reference the reg guide?

MR. KING: No. The rule does not reference the reg guide. The rule is very short.

MR. JORDAN: So enforcement-wise we're just relying on the rule?

MR. KING: Yes, but the rule isn't effective for another five years.

MR. JORDAN: Yes, but when the rule becomes effective --

MR. KING: There'll be a reg guide hopefully.

MR. JORDAN: But the reg guide only becomes effective if the rule enforces it, right?

MR. KING: The reg guide is written to say here is an acceptable way to comply with the rule. The licensee can choose some other way if he writes to propose it.

NUMARC is also with this latest official rule that's out, they've come in and said, hey, wait a minute, we want to write a standard down.

Hopefully you guys will endorse it instead of endorsing your own reg guide so there is a dual effort going on. NUMARC's working on a standard and we're working on a reg guide and if they come in on time as something that is reasonable to endorse I think we have indicated that we will seriously consider endorsing their standard.

MR. ROSENTHAL: After the Salem ATWS event, the NRC wrote a generic letter, 83-

MR. ASHE: -28.

MR. ROSENTHAL: 83-28. Were you involved in that?

MR. KING: No.

MR. ASHE: Since the new rule is performance-based, it looks like you are waiting for, it appears to be waiting for actual events to happen before you can really even trigger a reliability number.

Is there anything in there that takes a front-end approach to reliability rather than just looking at what's happened in the past?

MR. KING: Well, I presume the licensee has an

operating history in his plant and he would know, in the feedwater pump he would know what his reliability has been for the past five or ten years.

MR. ASHE: Right, but that's after the fact. That's sort of operating history and that's consistent with performance based new rule.

In addition to that, there is another approach to reliability, and that is somewhat of a front-end approach.

Is there anything in the new rule that would get the second part of that, the front-end approach of reliability rather than just focusing on operating history?

Do you recall anything in terms of guidance to the licensee?

MR. KING: In terms of guidance to the licensee, no.

MR. ASHE: In coming up with the reliability number that he comes up with -- this is a performance based rule, which means he's using operating history to come up with the number he has to come up with -- is there anything else in the guidance that would give him a different approach to factor in also?

MR. KING: Well, if he doesn't have operating history -- I mean there are probably a number of components that haven't failed on his plant -- he's going to have to choose some reliability value for those based upon maybe

some estimate of what he thinks the real failure rate is and then monitor the performance of his equipment and hopefully as time goes on, maybe he'll get some failure data, maybe he won't.

What I'm trying to say is there is probably some pieces of equipment he's going to have to project what the failure rate is because he doesn't have any data. You know, pipes don't fail and the vessel doesn't fail, and there's probably a number of other things that haven't failed in his plant that he's going to have to make some assumptions on and set some goals on and hope that if he does get some failure data it's not negating these assumptions and if that's what you mean by forward-looking, yes, I think that's in the rule.

MR. ASHE: Well, I'm trying to focus on the guidance that the rule would leave the licensee to not just consider operating history experience but perhaps some front-end type of information, like for example if you lose this we know it's operating the feedwater control, it's going to put the plant through a transient or things like that, that would cause him to not just look at let's say EDP converters on the feedwater system which may have 100 percent reliability but rather look at, you know, other things in terms of other than operating history.

It seems like there's not too much in that area.

is that a fair way to characterize it?

MR. KING: Yes, certainly the rule does not have any kind of differentiation like that. I think the rule -- I can't remember the exact words -- does acknowledge -- maybe it's a statement of consideration -- acknowledge that there are some pieces of equipment where you may not have a failure history just because they don't fail and in those cases maybe some sort of, instead of having a performance monitoring program, maybe some other acceptable way for doing maintenance would be, establishing maintenance goals would be acceptable.

In other words you wouldn't be able to monitor performance but maybe you could set some goals on the UT inspection this often and that kind of thing that would take the place of performance monitoring goals.

I think the rule does have the flexibility for differentiating between equipment where you can get some failure data and equipment where you can't.

I'm trying to remember whether it is in the rule or the statement of considerations but it will certainly be talked about in the reg guide.

MR. JORDAN: The reg guide is still being developed.

Is there any other programs that you know of that the NRC's working on as far as maintenance programs? The

history, you brought us up to the current two-month ole rule. Have you told the industry that we're reg guiding it and then we're going to wait five years and then six years from now or ten years from now we may identify additional maintenance requirements or anything like that?

MR. KING: The industry certainly knows we're working on the reg guide and the schedule for that.

MR. JORDAN: You don't know of anything else in the agency that they're working on as far as the maintenance program goes?

MR. KING: No, no I think the maintenance team inspections are over. Whether we reinstitute those or not is who knows at this point.

MR. ROSENTHAL: Can you describe your involvement in the MTIs themselves or in the use of the results of those, of the maintenance team inspection results?

MR. KING: Well, I wasn't involved in the MTIs themselves at all. One of my people went out and went on one or two of those.

MR. ROSENTHAL: Okay.

MR. KING: We did take the results though and tried to factor them into the final rule and also into the final rule that was sent to the Commission in April of '89 as well as into the final recommendation.

It went to the Commission a few months ago that

said don't have a rule. By taking those results we looked at what were the weaknesses, common weaknesses found, because we wanted to make sure that the reg guide that we proposed addressed those as well as we use that information on trying to determine what's the need for the rule in the regulatory analysis that backs up the rule.

MR. ROSENTHAL: The Staff had at one time a proposed maintenance rule. They did the maintenance team inspections. SALP scores and maintenance were improving. Forgot what else it was --

MR. KING: The performance indicators generally.

MR. ROSENTHAL: Okay, and then a decision was made to recommend to the Commissioners that we don't need a maintenance rule. Right? And that was in '89 or '90?

MR. KING: '90. '89 we recommended a final rule.

MR. ROSENTHAL: Right.

MR. KING: They said, well, let's think about it for 18 months while we monitor the industry progress on maintenance.

MR. ROSENTHAL: So just recently, in the last few months?

MR. KING: April of '91 -- April of this year -- April of '91 is when the recommendation went back and said okay, we've monitored progress for 18 months; we recommend at this time no rule.

MR. ROSENTHAL: Who made that recommendation to the Commission?

MR. KING: Jim Taylor. Jim Taylor signed the memo, the SECY paper.

MR. ROSENTHAL: And that was based on input from?

MR. KING: NRR, Research, AEOD, and all the regions that looked at Maintenance Team inspection results, SALP scores, industry commitments. A lot of things were factored in there.

MR. ROSENTHAL: So they go off to a meeting and decide they don't need a maintenance rule from our executives. I was not at that meeting.

MR. KING: I was not at that meeting either. Charlie Ader was at that meeting, if you wanted to talk to somebody else. He's Branch Chief in my division now. He actually had the responsibility for writing this final package that went to the Commission that said we don't recommend a rule, but if you're going to go with a rule, here's two options, and the Commission came up with a third option and put it out.

He might be a good one to talk to on the recent history. I'm more familiar with the old original history.

MR. ASHE: If the new rule were to be issued three weeks from now and somebody came up to you with an event in which five identical pieces of equipment were lost

simultaneously, a lot of essential lighting was lost, severe plant transient, some confusion in the operators, would that make any changes in the new rule?

Would the new rule change any as a result of that?

MR. KING: We were under a lot of constraints in putting out this final rule written by the Commissioners. The rule was handed to us by the Commission; said go write a statement of considerations and change your reg analysis to support this rule.

So from a practical standpoint, we didn't have much flexibility to change anything in the rule. Given the constraints that -- the kind of rule that they wanted, I'm not sure, given what you just said, that it would effect the rule at all. I think possibly the reg guide would be influenced by that. I don't think the rule would.

MR. ASHE: Do you think it should be?

MR. KING: It depends what kind of rule you're going with. If you're going with a rule like we have now, probably not. If you're going with a more process-oriented rule, like we recommended back in April, I think it could. We'd give serious consideration to see does this rule and this reg guide -- would it have fixed that kind of problem or prevented that kind of problem.

This whole maintenance rule thing has been under a lot of constraints. This has not been something where the

staff had freehand to develop it.

MR. JORDAN: The recommendation not to have the rule, you say that came out because the SALP scores on maintenance had been going up and the reliability of the plants had been going up, and, therefore --

MR. KING: That was part of it.

MR. JORDAN: -- overall maintenance, they felt, had been effective because the plants were performing better. Is that --

MR. KING: There were four criteria the staff recommended for judging whether we have a rule or don't have a rule. The Commission added two more to that list. So there were six factors that were looked at.

MR. JORDAN: What were those?

MR. KING: The two that the Commission added, one was enforceability, having a rule help us enforce problems in the maintenance area, take enforcement action in the maintenance area. I don't recall the other one they added. We suggested, well, let's look at the Maintenance Team inspection results, let's look at the industry commitment to improve, let's look at the industry commitment to do some self-assessment on their own, monitor how well they're doing in maintenance. I forget what the fourth one was.

They're all laid out -- they're all laid out in the final Commission paper that went up on the maintenance

rule in April of 1991, and each of those is talked about and what the staff's views were on those.

MR. ROSENTHAL: We're really scampering to gather documents. Can you help us gather some of those documents?

MR. KING: Sure.

MR. ASHE: He said he had some here, right?

MR. KING: I brought the old history with me.

MR. JORDAN: As far as the new rule, do you have that in there, also?

MR. KING: No. I have it in my office. I don't have it in here.

MR. JORDAN: Do you mind getting us some of this stuff?

MR. KING: No.

MR. ROSENTHAL: Before we finish, we'll make up a list.

MR. KING: Yes. Make up a list and tell me what you want.

MR. ROSENTHAL: I would very much appreciate it.

MR. KING: Charlie Ader has got extra copies of the final package. If you're going to call him down, I'll just send them down. But I've got the old -- the original rules and policy statements with me, if you want copies of those.

MR. ROSENTHAL: Was there any reliance on NUMARC

MR. KING: This is a commitment they made to try and cut off having a maintenance rule and it was one of the criteria that the staff used to judge whether we need a rule or not. But as I said, it was a one-shot commitment to do this self-assessment.

MR. JORDAN: We don't know if they've done any plants yet or not.

MR. KING: Well, they're probably not going to do any now because they've got a rule. They offered this up in lieu of a rule.

MR. JORDAN: In lieu of a rule.

MR. KING: In lieu of the rule. Now that they've got a rule, they're probably not going to do that. I think the document, the April of 1991 document is a very good document to read. It's got a lot of that history in it.

MR. JORDAN: That's the document that goes to where, from who to who?

MR. KING: It's a SECY paper.

MR. JORDAN: The SECY paper.

MR. KING: To the Commission.

MR. JORDAN: On why we didn't -- why the staff doesn't recommend a rule.

MR. KING: Here's what we looked at, here's what we found, we don't recommend a rule, but if you want one, here's two options, and they developed a third option.

MR. JORDAN: Did either of those two options include non-safety-related.

MR. KING: Yes.

MR. JORDAN: They would have.

MR. KING: They would have included non-safety-related.

MR. JORDAN: Excluding, you said, up to, but excluding what the defense and the security aspects because it's covered under something else.

MR. KING: Yes. The security system was taken out of the scope.

MR. JORDAN: But one of the two options --

MR. KING: Basically, it covered most of balance-of-plant.

MR. JORDAN: Was it still based on performance type of action or was it based on --

MR. KING: One was a fine-tuning of the rule, final rule we had proposed in April 1989, process-oriented, laid out all the elements and activities a good maintenance program should have and had the scope in there.

MR. JORDAN: Okay.

MR. KING: The other one was a reliability-based rule. It was more along the lines of what the Commission proposed, except the scope was broader.

MR. ROSENTHAL: If we send a licensee an

information notice that discusses the maintenance of something or an event that occurred because there wasn't maintenance of that something in some other plant, what do you expect -- what are your expectations for the licensee in terms of what the licensee should do with it?

What is he required to do with it?

MR. KING: Well, he's required to read it. That's about all he's required to do.

MR. ROSENTHAL: Okay. And then -- but you're also an NRC manager. So, okay, you tell me what the -- you're saying, by the regulations, he is required to read it.

MR. KING: Uh-huh.

MR. ROSENTHAL: Okay. But what is your expectation?

MR. KING: Well, my expectation would be, if I were a licensee, I'd look at that and see if it applies to my plant and what should I do to make sure I don't have that problem, and I would think a responsible licensee -- I would expect a responsible licensee to do that, whether we told them to do it or not.

I mean he's -- there's good information in those INs that could help him make money for his utility, I think, in the long run, as well as contribute to safety, and I think safety and making money for the utility go hand in hand.

MR. ROSENTHAL: Is there a disconnect between what our expectations are with respect to providing them with all this operating experience and what the regulations require?

MR. KING: I'm not sure I can answer that.

I can see we don't want to take every event that happens out there and make licensees do something with it.

I think it's good that we issue the information, and I would, like I said, expect a responsible licensee to do -- look at his plant and, if it makes sense to do something, to do it, without us having to force him to do it.

Whether that's actually happening or the extent to which that's happening, I don't know.

MR. JORDAN: I don't have anything else.

MR. KING: I mean they're ultimately responsible for their plants, and you know, in one way, putting out INs, you know, keeps the burden of responsibility on them to understand their plant and take action where they feel it should be taken. I'm not opposed to that. I think that's good.

MR. ASHE: Is there any specific thing in the new maintenance rule that you would like to change if you could?

MR. KING: Well, I'll give you my own personal opinion.

I think the process maintenance rule is the better

rule for the agency to implement. I think the one that we sent to the Commission in April '89 was good enough to come in. I think the one we sent them in April of '91 was even better in terms of having the words adjusted, fine-tuned, if you will.

I think it would have accomplished more. It would have given the staff more enforcement capability to use where it's needed, not to abuse it, but to use it as needed.

I think it would have given an inspector more to look for in terms of doing some proactive action on maintenance, not reactive, waiting for something to happen before we can take action.

So, my own personal opinion is that we should have put out a process rule a long time ago.

[Pause.]

MR. ROSENTHAL: Are we asking you the right -- you know, we've told you a little bit about the event. You have some general idea and you know what we've discussed here.

There's always the chance that we're not asking the right questions. Should we have asked different questions? Is there something else that we should lay on the table along the lines that we've been going?

MR. KING: I think the general thrust of your question, as I gather it, is if we had a maintenance rule, would that have helped prevent this situation? Given the

fact that we have one now, is it the right one to address these kind of situations?

No, I don't have any other question to add. I think we've talked about that.

MR. JORDAN: I've got one question.

Do you think the rule, why it's the way it is, is because of the push from the industry, or you just really think that that's the way -- that the Commission really felt that's the way to go?

Do we get any indication that the industry was so pushy, anti-maintenance, that we as an agency said okay, fine, this is good enough based on what the staff found as a result of MTIs?

MR. KING: Industry was anti-rule right from the beginning. They never changed. I think one of the reasons the Commission waited 18 months and studied it more was because of the uproar from the industry on the original accelerated schedule to get a maintenance rule out.

I think the staff bent over backwards to give the industry a chance to get their act together and make some commitments in the April of '91 recommendation, really gave the industry the benefit of the doubt, if you will, that they were truly improving and going to continue to improve in the maintenance area.

I think two commissioners weren't satisfied. They

wanted a rule. They probably wanted it from a long time ago.

A third one wanted -- was big on performance-based regulation, and there was a compromise struck that he would go with the rule as long as it's performance-based, and they wrote the rule, and it was, you know, one of those efforts to get it out before the Chairman's term ended.

MR. JORDAN: That's it.

THE REPORTER: Finished?

MR. ROSENTHAL: Last word: Thank you.

[Whereupon, at 4:10 p.m., 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: Tom King

DOCKET NUMBER:

PLACE OF PROCEEDING: Bethesda, Maryland

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
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