UNITED STATES OF AMERICA

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NUCLEAR REGULATORY COMMISSION

In the Matter of:	
IE TMI INVESTIGATION INTERVIEW	
of	
Richard R. Lentz Design Engineer	
	Ter ()
	NRC Investigation Site TMI Nuclear Power Plant
	Middletown, Pennsylvania
	June 1, 1979
	(Date of Interview)
	(Date Transcript Typed)
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	이 이번 정말 소통했다.
NPC DEDCONNEL	
INC PERSONNEL:	
Robert Marsh, Investigator	
Anthony N. Fasano, Inspection Specialist	
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1 MARSH: The date is June 1, 1979. The time is 2:27 p.m. and my name is 2 Bob Marsh and I am an Investigator with the U. S. Nuclear Regulatory 3 Commission assigned to the Region III Offices in Chicago, Illinois. 4 This afternoon we are at Corporate Headquarters of GPU Service Corporation 5 which are located at 260 Cherry Hill Road in Mountain Lakes, New Jersey. 6 At this time we will be conducting an interview of Richard R. Lentz who 7 is a Design Engineer with GPU and prior to starting, I would like to 8 have each individual in the room identify himself, spell his last name 9 and indicate what his position is. Tony if we could start with you and 10 just go around the table. 11 12 FASANO: Anthony N. Fasano, Inspection Specialist, NRC. 13 14 LENTZ: Richard R. Lentz, Control Systems Engineer. 15 16 HOVER : J. G. Hover, Manager, Generation Division Support. 17 18 MARSH: Thank you. Prior to starting, Mr. Lentz we have a short dis-19 cussion regarding the two page memo which you have in front of you. 201 Without going into detail, the memo basically puts out the purpose for 21 the investigation by the NRC, the scope of this investigation, the 22 authority under which its being conducted. It also addresses the 23 rights of the individual being interviewed and on the second page are 241 25

1	several questions that I would like to get your response to at this
2	time, if I might. The first question reads, do you understand the
3	above making reference to the two page memo?
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5	LENTZ: Yes, I do.
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7	MARSH: The second question reads. Do we have your permission to tape
8	this interview?
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10	LENTZ: Yes, you do.
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12	MARSH: And thirdly, do you want a copy of this tape and transcript?
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14	LENTZ: Yes.
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16	MARSH: Fine. There is a fourth question that is not called out speci-
17	fically on the second page, but it is included in the body of the first
18	page and that addresses your right, if you so desire, to have a company
19	representative present with you during the interview and it is my
20	understanding that this is Mr. Hover's capacity in the room at this
21	time.
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23	LENTZ: Okay.
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MARSH: Mr. Lentz, to start with, if we could, could you provide us with a brief resume of your experience in the nuclear field then go into a description of your duties with GPU and then finally, we'd like you, in your own words, to give us your recollections of your association with the event of March 28 involving Three Mile Island, starting with the manner and time which you first found out about it and then more or less the sequence of events that took place that you were involved in during the first couple of days.

10 LENTZ: Okay. Essentially, my experience in the nuclear field starts 11 with my naval experience back in 1965. I began training as a Reactor 12 Operator in the Naval Nuclear Power Program, served as a Reactor Operator 13 on the submarine "Benjamin Franklin" for three years and then after a 14 period of shore duty in the Naval Submarine School, served for two 15 years as the Reactor Control Division Chief Petty Officer on the submarine 16 "Thomas Edison" which I was, not only a Reactor Operator, but also the 17 Engineering Watch Supervisor and started to receive some training 18 towards the Engineering-Officer of the Watch on the submarine. After 191 that I ... after my discharge from the Navy I was a startup test engineer 20 with Three Mile Island Unit 1 and there I was the cognizant engineer 21 for the reactor protection systems, the integrated control systems, 22! several other minor control systems, such as the nuclear detectors and 23 other systems. Most of my time was spent on the reactor protection 24 equipment and integrated control system and I was a startup test engineer

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1 for Unit 2 and again it was the reactor protection systems, integrated 2 control system and had a little bit more involvement with the control 3 rod drive system and more balance of plant, meaning the secondary 4 support type instrumentation. After the startup of Unit 2 about May-June 5 of last year, 1978, I was transferred up here, I received my transfer 6 before we had realized that we weren't going to get it started in June 7 of last year and served here as ... kind of back and forth to the 8 island until we get it started up, and also in the electrical and 9 instrumentation department. After we got the Unit started up. I was 10 transferred again over into the Control and Safety Analysis Section and 11 there my duties consisted of analyzing transients such as this incident 12 that happened and other lesser events so that we could find out exactly 13 what happened, what we could do to prevent them and in essence, using 14 my experience as a startup engineer and knowledge of the reactor pro-15 tection system, the control systems and so on to get a, you know, a 16 on-hands type experience of the equipment rather than a designer's idea 17 of the equipment. When this event occurred ... that morning we received 18 word that it happened and it was kind of sketchy. The impression I had 19 that it was just a typical reactor trip but that somehow during the 201 recovery or in shutting the plant down that the emergency feedwater had 21 not initiated properly and that when they did initiate it, that they 22 had ruptured one of the tubes in the steam generator and this had 23 caused some contamination in the secondary plant and it was this con-24 tamination that they were worried about that was being released.

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Initially we were going to go down there to find out what caused the accident and to basically have sort of a short term recovery. It looked, ... you know, from what I recall at the time that it was only going to be two to three weeks to clean up the problem and get the Unit back on the line. Then it did not appear that bad. I would say the first recollection I had of anything being abnormal was on the way down listening to the radio in the car they had cordoned off the area and were not letting people in and around Three Mile Island and were considering evacuating and that to me made me think that, hey, something happened there a lot more worse than a ruptured tube in a steam generator. When we arrived at the site and I'd say that that really drove home that something was bad in that they would not let us enter the site, they had the security guards at the north gate, directed us on up to the Observation Center and there we went in and tried to find out what had happened but the Observation Center was used as a control center for the, ... what is it, ...

MARSH: The environmental survey teams?

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201 LENTZ: And that, and the majority of people there that you could talk to didn't have an idea of exactly what was going on. It wasn't that, you know, not that people didn't know what was going on, the people that I could get free to talk to that I knew and so on I knew would talk to me just had no more of an idea of what was going on then I did.

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Eventually, ... it was about 6:00, 6:30 or so, George Kunder came out 2 and gave Gary Broughton and I, Jim Moore, and George Leman, and Julian 3 Abromovitch a brief run down and said that you know he would be glad to 4 those of us that wanted to go in to help collect data and any of us 5 that wanted to go in and help them with the problem onto the site and I 6 felt that it was rather important for me to get in there and get some 7 of the data so that Gary Broughton and I can analyze it and start 8 trying to get an idea of what happened. The rest of the men, not being 3 that familiar with plant operations, or so on, felt that they would just be in the way in there and declined. They stayed there at the 11 Observation Center waiting for my return. Once I got in on the site 12! into the Control Room, things looked under control. I could see that 13 things were a lot worse than even that George had relayed to me when I could see that the control console Th indicators were pegged high and the T indicators were pegged low and that the pumps weren't running and they were trying to get a pump started. I stayed back out of the way waiting for personnel that I knew would know where information was that I could get a hold of to get it out. It was after they had gotten the reactor coolant pumps started, I'm not sure exactly what time it was sometine around 8:00, 8:30 or so after they gotten the coolant pumps started that I finally got a hold of someone and had learned that ... I forget his name, but one of the Unit 2 engineers had gotten ... had gathered all the data during the early portion of the transient that came off of the computer, the alarm summary reviews, sequence of

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events and the other data that I knew, would be readily available and easy to interpret and to give us an idea of what happened. Seeing that this data was not available and trying to find him and he wasn't available and wouldn't be available until the next morning, I made xerox copies of the alarm summary reviews and information that was there in the storage area behind the printers on the plant computer, feeling that if I didn't get a copy of it now it might get lost and that we wouldn't have any record of it.

MARSH: What was the volume of the records that were there behind the computer in the storage compartment?

13 <u>LENTZ</u>: It was your 8 x 10 inch printout computer paper fanfolded and 14 then a pile of it was at least 3/4 of an inch high. It took me about 2 15 hours of standing at the xerox machine copying it. One sheet at a 16 time.

18 <u>MARSH</u>: What time span would that have covered? Six hour period, one 19 hour period, two hour period?

<u>LENTZ</u>: It was from about ... I think it was from about 2 or 8:30 in
the morning until right after they started the cooling pump at 2000.
So it was about 12 hours of data.

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MARSH: And your saying that the remainder for the time of the event, 4 a.m. up till they had been removed by one of the operators who was consolidating a package? LENTZ: Right. Now I did find this package the next morning with all of the data that he had. MARSH: Who is he? LENTZ: I'm trying to remember his name. I'm going down the list: Miller, Zewe, Scheimann, Faust, MARSH: Frederick. LENTZ: No, it was a Unit 1, I believe, electrical engineer, or excuse me, Unit 2 Electrical Engineer, Mike Benson, it's not Bensel, it's Benson. FASANO: Benzel is electrical; Benson is nuclear. LENTZ: Yea. Mike Benson, Nuclear Engineer. MARSH: Okay fine.

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LENTZ: After I got the xerox copies of the data that were there that had printed off on the computer, I put the data back there in the baskets behind the printers and took the xerox copies that I had on out to the Observation Center.

MARSH: About what time was this?

LENTZ: Pretty close to midnight. 11, 11:30. I don't remember what time I got back there, but I remember I got back to the motel right around midnight. And we didn't stay there very long after I got back.

FASAND: When you were xeroxing the data, did you xerox any of the analog output?

LENTZ: No.

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17 <u>FASANO</u>: Was any of the analog data taken off the charts at that time 18 do you know of?

LENTZ: I'm fairly sure that all the data, at least the data during the significant portion of the event, from the time of the trip until about the time of the coolant pump was restarted was taken off the following day which would be the 29th, sometime in the morning. Now I kind of get to it by hearsay or whatever, my recollection that it was Ivan

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Porter that directed to have just this portion of the data taken off and this was all put in a manila folders and ... your standard inter-company routine envelopes and once I found that this data had been taken off I got xerox copies of that hoping that that would also help because we discovered that due to a problem on the computer there was a portion of data that was missing from the alarm summary review typer and it left out some data which would have been helpful as to when high pressure injection pumps were started or stopped basically left a hole from about 5:00 to 5:53 or so. We were looking for some way to fill in that hole.

FASANO: You did find information to fill in that hole?

14 LENTZ: Not computer data. Over the period of the next week or so I 15 searched everywhere I could and finally came to the conclusion that it just never got printed out.

18 FASANO: Go back a little bit here. What time were you informed that 191 the event had taken place, say when you first came in to your office 20 you say you heard things but you didn't fix a time?

LENTZ: It was somewhere between 8:30 and 9:00 in the morning of the 28th.

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FASANO: How were you informed?

LENTZ: My Supervisor, Gary Broughton came in and said that, you know, looks like we'll be making, or that you may have to make a trip to Three Mile Island to collect some data on the transient. At the time it looked like it was, like I said, just a normal trip, normal transient and we would need the information for analysis.

FASAND: Did you know there was a general emergency decleared?

LENTZ: No I didn't. Not at that time.

FASANO: You learned this over the radio then in your car radio?

LENTZ: Even though I had heard that the police had cordoned off the area the first time I knew there was a general emergency was when I went to the Observation Center sometime talking to people then.

FASANO: So that information was not transmitted to GPU apparently, or at least to you?

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LENTZ: Well at least not to me.

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1	FASANO: You were to look at the emergency feedwater not initiating
2	properly you said?
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4	LENTZ: Just basically into the whole problem.
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6	FASAND: Okay, but when did you find out the emergency feedwater had
7	not initiated properly? It sounded like you knew the first day. Is
8	that correct?
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10	LENTZ: I knew something had happened that something happened that
11	caused a leak in the steam generator.
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13	FASANO: A potential leak or a leak. Do you today that there is a
14	leak?
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16	LENTZ: They said that the secondary system was contaminated and they
17	were worried about how they were going to decontaminate it and it's
18	hard to separate what I know now as compared to what I knew then.
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20	FASANO: I understand.
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22	LENTZ: But I do know that we knew that the secondary system was con-
23	taminated and was going to have to be cleaned up.
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FASANO: Okay.

LENTZ: It didn't look like a major problem.

<u>FASANO</u>: Well then at this time, to your best recollection did you know that once-through steam generators had lacked water in the first eight minutes.

LENTZ: No, that I didn't know.

<u>FASANO</u>: Okay. So it was an improper action that caused the potential of having something happen to your steam generators. That was the information you had?

LENTZ: Right.

<u>FASANO</u>: Subsequently, what is the results on your data collection as far as the performance of your involvement? What I'm getting at is have you, you say all data, now when you say all that's kind of encompassing. Was there any sequence of things that you had to evaluate or look at or were you just collecting the data?

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LENTZ: I was just collecting data and I did this for about the first three days. That was my responsibility to gather the data to ensure that the tape from the reactimeter which is basically a sort of transient type monitor that is connected to some analog points, that this tape got saved and that we got a printout of this tape so that we could us it in aiding our analysis of the problem and ensuring that these analog recording charts and so on, all got saved and that nobody walked off with them.

10 <u>FASANO</u>: So the first day of activity was mainly to make contacts, to 11 assure that you had copies of information of both analog and digital, 12 in particular the digital data.

14 LENTZ: Right.

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16 <u>FASANO</u>: And for future review and analysis. During the first day did 17 you do any analysis, did you give any advice, did you get involved to 18 any degree in the operations?

20 <u>LENTZ</u>: The first day we plotted, we did a plot of pressure and temper-21 ature and we took temperature and did a saturation, you know, look up 22 in the steam tables to find saturation pressure and basically discovered 23 that they depressurized to the point that they got below the saturation

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curves. It caused possibly a bubble in the vessel and so on and this is about the extent of my actual analysis and involvement that first day. FASANO: What time was that that you came up with these findings? LENTZ: This was late that evening. FASANO: 8:00, 9:00. You were xeroxing around 8:00? LENTZ: Right. It was after I'd come back to the Observation Center and before we had gone, before we had left that evening. FASANO: Midnight? LENTZ: Yea. FASANO: You really had information after 6 or 6:30, I guess Mr. Kunder came out and briefed you then you went to the Control Room, about what time did you arrive in the Control Room? LENTZ: It was before they started the pump, I'd say about 7:00 or so, 1900.

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FASANO: Okay. And at that time you had a chance to look and you saw that the T_h , that the hot leg temperature pegged? LENTZ: Right. FASANO: And at that time I guess you were concerned about ... did you look at pressure at that time also? LENTZ: No, I just remember seeing Th pegged high and T down at the bottom of the instrument. I couldn't even tell you the temperature that it read, that it was down at the bottom of its range on the wide range. FASANO: Do you have any questions? MARSH: I've got one question. The xerox copies of these documents that you made for your own use, what was the disposition of those, are they still available? LENTZ: They were gathered together and put in files and it was during the course of the next two or three days that I started gathering up this data and organizing a file. It was on about the second or third

day that they moved me over into a data analysis section trying to analyze exactly what caused the problem and coming up with, at that stage of the game basically nothing more than a sequence of events of what had happened and what may have triggered the event. Not exactly how it had happened but when each thing had happened because it was, the magnitude of it was just to great to find out how each event had happened and whether an operator had initiated it or whether some other plant parameter or some other plant condition had initiated the event. And there, you know, we gathered the xerox copies together in files and put them under a heading of duplicate data or xerox copy data and had the original data also there in the file. And then about three or four days later, maybe a week later, the rest of the trend recorder logs, the rolls of trend recorder data were included in this file and was transferred over, I believe it was Jerry Wiser.

MARSH: Bob Long?

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LENTZ: Bob Long and Jerry Wiser and so on in that group. They took control of it, cataloging it and so on because this, we were getting so much that you couldn't put it into a manila folder and file in that way anymore. Just too much information and too hard to find what you need and too hard to make sure that you didn't lose anything.

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MARSH: By the way, that does bring out a point, which I'll address to you, Mr. Hover that you might want to ensure that all your people here are aware of, that there has been an ordered issued by NRC that the preservation of all records ...

HOVER: Yes, that's been sent out to everybody.

MARSH: I know that some people today referring to personal notes and they should be cautioned to preserve those. I don't see any need to collect them at this time, but as long as they are preserving them if anything should come up.

HOVER: Yes.

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FASANO: In your capacity at GPU, do you look at transients, other transients, or previous transients, other than this particular event, are you familiar with previous transients at TMI-2?

LENTZ: Yes, I was deeply involved in the main steam safety valve problem where the main steam safety valves failed to reseat and this caused a depressurization and safety injection into the system and tried to find out exactly what had happened and why it happened and through this analysis and my input we were able to determine that the main steam safety valve had stayed open longer than they should have.

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MARSH: I'm going to interrupt for a minute and break the tape at this point.

MARSH: Resuming now, the time being 2:58, reading 480 on the meter.

<u>FASANO</u>: During previous reviews of data I guess it wouldn't be on an emergency call on that day basis, or would it, I mean, such as the one you mentioned, the April transient when you had the problem with the main steam safety values?

11 LENTZ: Usually it was the same day. I'd get called and I'd be told 12 I'd have to go down there either that evening or the next morning and 13 try and gather the data the reaction printouts and I usually got 14 called because of my familiarity with the plant and the fact that I had 15 worked there at the plant, I knew where the control rooms were, I knew 16 the people themselves individually, so they basically do things for me 17 easier and quicker and I knew who to ask, where their offices are, 18 because it's not one building. You've got trailers spread all over and 191 you got electrical in one area and instrumentation somewhere else ... 20 unless you've worked down there for awhile it gets rather difficult, 21! especially if you want to go down there and in four or five hours 22 gather all the necessary information that you need so that you can do 23 an indepth study on the transient.

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FASANO: Did you get involved in any other transients during 1978?

LENTZ: Yes, it was just ... very similar, it was a loss of feedwater ... I'm trying to think ... it was ... I don't remember the initiating event, but it was again a loss of feedwater trip. It ended up being a reactor trip. Several of the other trips that we had, even the normal plant power escalation system, power escalation testing, some of those trips, we looked at because we were looking at using this data to make corrections to the Retran.

FASANO: Retran?

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13 <u>LENTZ</u>: Retran Program, it's a computer printout program that can 14 stimulate what would happen if you lost the condensate pump of feed 15 pump. We were analyzing this data and using it to insure that the 16 Retran Program predicted things the way the plant actually behaved.

FASANO: Would this then be used by B&W?

LENTZ: We were using it for our own information. I assume that eventually some of the information gets passed on to B&W. They work together with us, but I was specifically doing it for our own company.

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FASANO: Do you have any questions?

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MARSH: No, I have no other questions.

FASANO: Well, maybe at this point you might want to express anything you learned that might be helpful for someone coping with a similar situation in the future. If you want to, you can speak out now.

9 LENTZ: Basically, like you've heard, my problems with collecting the 10 data ... I would think that on a transient, any transient, reactor 11 trip, there should be a specific outlined procedure of exactly what 12 happens to the data, who gets it, who is routed to, and so on, because 13 the data that I was looking for the first day ... it ... this is another 14 normal trip, it goes into this routing basket, and this engineer picks 15 it up and so on, and when your trying to find out, because we were 16 pressed for information, what had happened, what had caused it ... it 17 was hard for us to find out what happened and what caused it, because 18 we couldn't find the data or the information that would tell us what 19 had happened. And if there was a specific method, I think at all 20 plants, all nuclear power plants, the data on the computer, or whatever the printoffs are taken off and collected and put in this file and I'd 21 say preferably a fireproof file or something like that so that somebody 22 23 knows where it is and its under controlled access from the very first moment. By my looking for the data during that half hour or so that 24

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1 was missing from the computer, I came to the conclusion that it never 2 got printed out, but I'd hate to think that somewhere floating around 3 that island is 15 to 20 feet of computer tape with that dtata on there 4 because it sure would make things easier for us. like I said, I looked 5 for about a week for it and finally came up with the conclusion, from 6 my experience and knowledge of how that computer works, it could of not 7 got printed out, because a technician went in to repair the computer. 8 If you look at the data, you'll note that both the sequence of events, 9 and the alarm summary are both printing off of one typewriter and not 10 that I'm accusing the technician of something, but the technician could 11 of disconnected the typewriter incorrectly and made the computer think 12 that it had both typewriters there and it printed out information on a 13 non-existent typewriter. And then when he plugged the typewriter back 14 in or did whatever he did, the data started printing out again, but 15 it's nothing more than a software type information thats looking to see 16 if a typewriter is out there. If if thinks the typewriter is out 17 there, it's going to print that data. And since it's not stored in 18 memory anywhere, once it thinks it's printed out, it's lost. As long 19 as it doesn't print it out, it will save it, but once it prints out, 201 it's gone. So a control procedure of data acquisition and control 21 should be instituted essentially at the same time you have any type of 22 emergency condition like that.

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FASANO: That's all I have.

MARSH: If no one has anything else, then we'll close. The time being 3:06 PM with about 652 on the meter and Rich we would just like to say thank you for your time and your comments were appreciated very much. So I'll terminate the interview at the time of 3:07. 988 355