

ORIGINAL

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Agency: Nuclear Regulatory Commission
Incident Investigation Team

Title: Nine Mile Point Nuclear Power Plant
Interview of: RICHARD J. REYNOLDS

Docket No.

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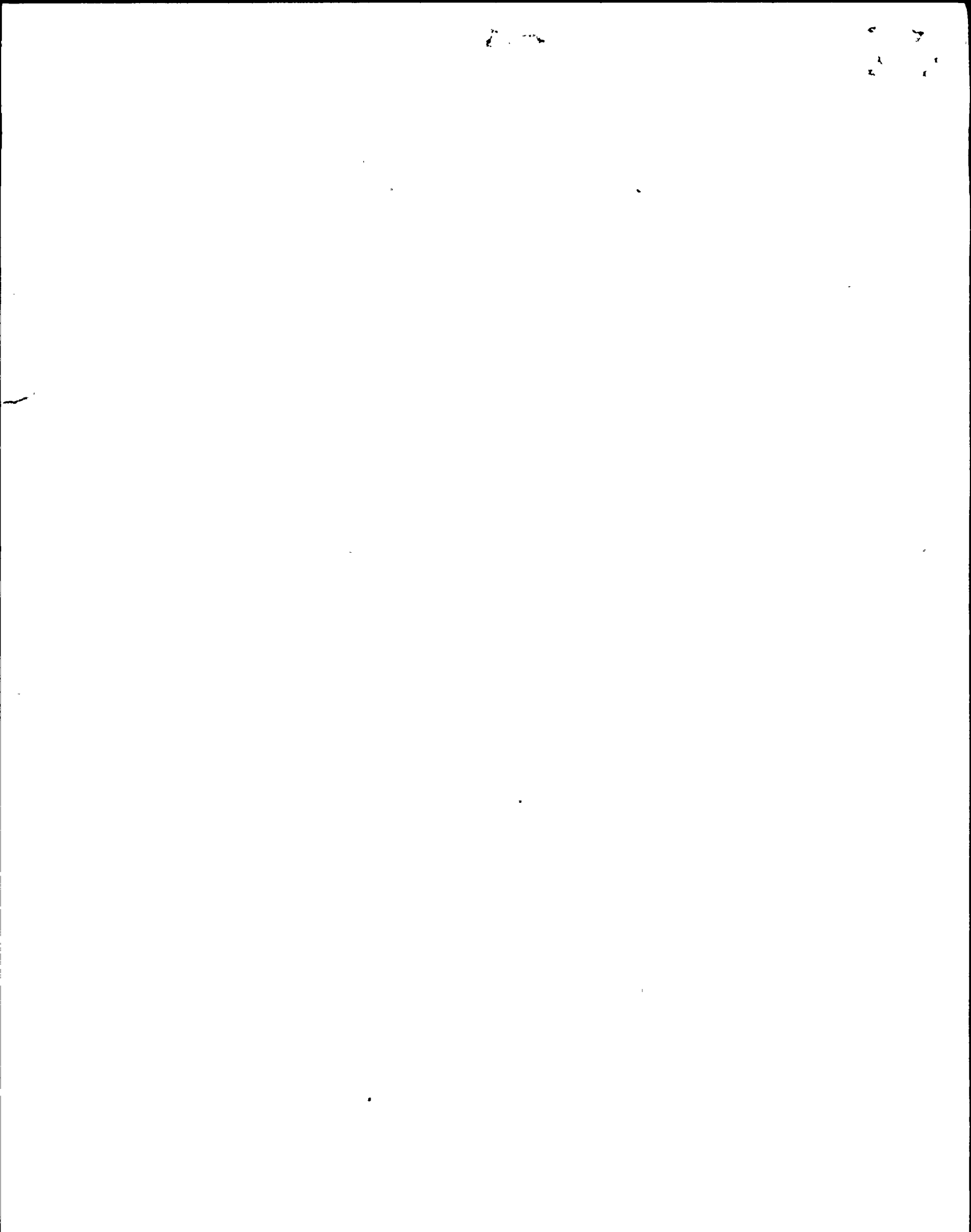
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
INCIDENT INVESTIGATION TEAM

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Interview of :
RICHARD J. REYNOLDS :
(Closed) :

Conference Room B
Administration Building
Nine Mile Point Nuclear
Power Plant, Unit Two
Lake Road
Scriba, New York 13093
Wednesday, August 21, 1991

The interview commenced, pursuant to notice,
at 10:15 a.m.

PRESENT FOR THE IIT:
Michael Jordan, NRC
Rich Conte, INPO

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P R O C E E D I N G S

[10:15 a.m.]

MR. JORDAN: Good morning. It's August the 21st, 1991. It's about 10:15 in the morning. We are at the Nine Mile Point, Unit Two, in the P Building.

We are conducting an interview concerning a transient that occurred on August the 13th, 1991.

My name is Michael Jordan. I am with the U.S. NRC out of Region III.

MR. CONTE: I'm Rich Conte, Region I.

MR. REYNOLDS: My name is Richard Reynolds, and I am a reactor operator at Nine Mile Two.

MR. JORDAN: Okay, Rich. Why don't you go ahead and just first give us a background of what your experience is, your overall experience, background experience.

MR. REYNOLDS: Prior to nuclear operator?

MR. JORDAN: Yes, prior to nuclear operator, when you got to be -- you're a reactor operator and when you got your license.

Are you licensed?

MR. REYNOLDS: Yes.

MR. JORDAN: Okay.

MR. REYNOLDS: I had started working for Niagara Mohawk in May of 1980 as a guard at Unit One I spent two years there, then came to Unit Two as an operator and I was



1 an unlicensed operator for five years, I think.

2 I licensed about two and half, three years ago on
3 Unit Two so I was here through much of the construction.

4 Prior to that I worked at construction at the
5 site, as a laborer.

6 MR. JORDAN: Okay. In your own words, why don't
7 you just tell us what led up to and where you were at when
8 the event happened and first of all, what was your position?
9 Are you -- were you on the Midshifts?

10 MR. REYNOLDS: No, I am a relief operator now.

11 MR. JORDAN: You're a relief operator. That
12 position is a --

13 MR. REYNOLDS: Day crew. I work days or fill in
14 for RO's that are on vacation.

15 MR. JORDAN: But you work strictly days normally
16 and fill in?

17 MR. REYNOLDS: Yes.

18 MR. JORDAN: So you were coming in about the time
19 of the event?

20 MR. REYNOLDS: That's right.

21 MR. JORDAN: So why don't you take this from that
22 point.

23 When you came through the security gate, which
24 path did you take to get to the control room?

25 MR. REYNOLDS: Okay--



1 MR. JORDAN: Did you happen to be at the gate with
2 the bottleneck because of the site emergency that was
3 declared at 6:00? Or did you --

4 MR. REYNOLDS: No, it must have been seconds after
5 it. There was a few people on the front steps of the
6 security building and they said you better get in there,
7 they're waiting for you! Because they knew I was an
8 operator.

9 I went into the security center -- you're an
10 operator -- the board was up with the "x" under the nut,
11 "not a drill," so I saw that.

12 I wasn't sure what --

13 MR. JORDAN: Where was this board at?

14 MR. REYNOLDS: As you enter the security building,
15 just before you turn to come back through the metal detector
16 and explosives machine there is a large board that security
17 sets up whenever they are having a drill or an emergency
18 situation.

19 That was the first true indication I had that
20 something was wrong, so I came through security. They asked
21 me if I was an operator. I said yes, so they let me in
22 because they weren't letting anyone else in at the time.

23 I proceeded to my locker to get my keys and my
24 dosimeter so that if I was needed to go out in the plant I
25 could get where I had to go to.



1 MR. CONTE: What building is the locker room?

2 MR. REYNOLDS: It's in the control building, the
3 aux services building.

4 MR. CONTE: Did you notice any lighting problem
5 when you went through those buildings?

6 MR. REYNOLDS: It's right by the Cardox tanks, as
7 soon as you enter the building, and I really hadn't seen the
8 lighting problem yet.

9 MR. CONTE: Take us -- keep walking.

10 MR. REYNOLDS: Okay. Two operators came and stuck
11 their head in the locker room door -- my locker is just
12 inside the door and said, hey, have you got a flashlight? I
13 did so I gave them my flashlight and they said they were
14 going down to look at the UPS panels. So then I proceeded
15 ot the control room after that.

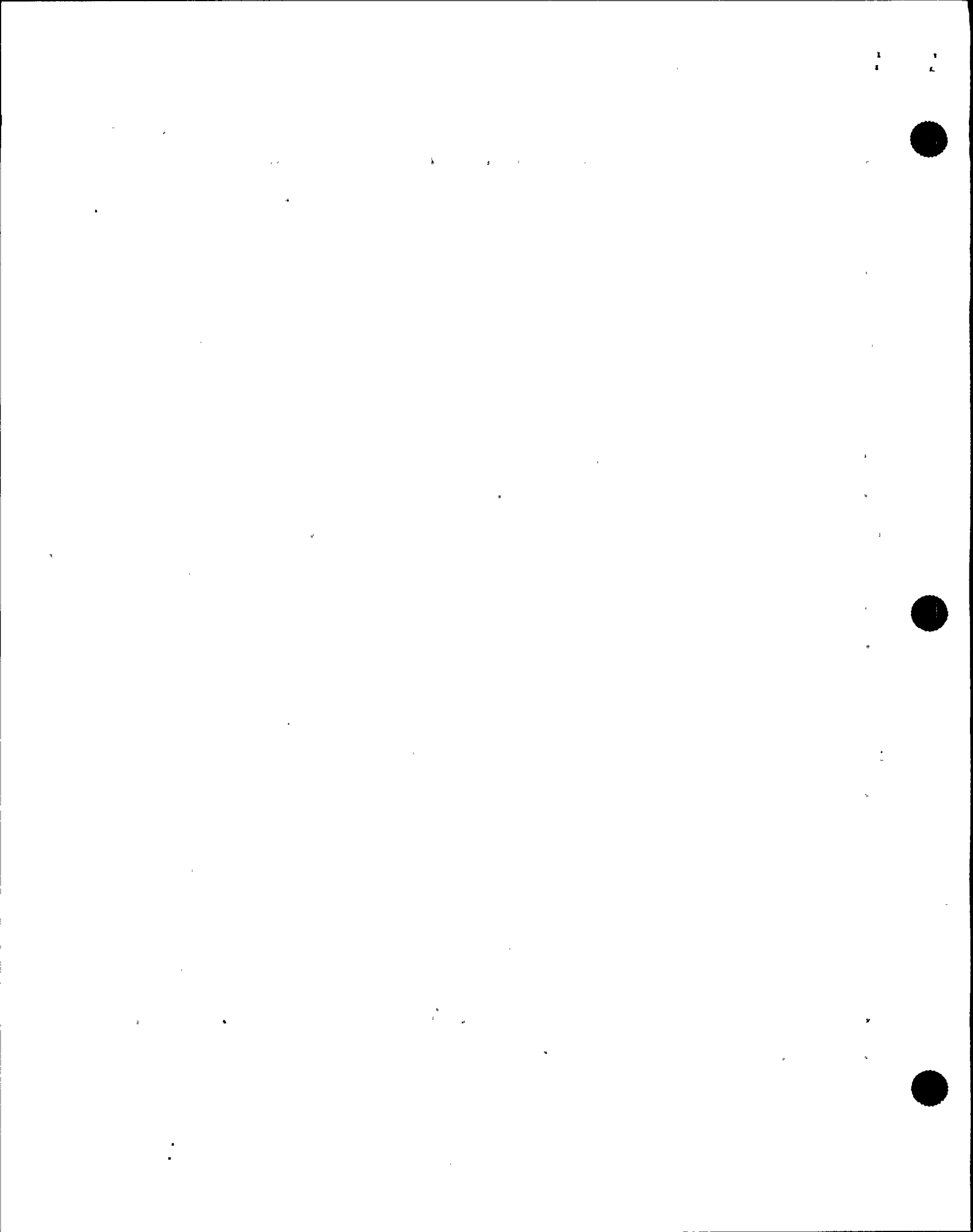
16 MR. JORDAN: Do you know who those guys were?

17 MR. REYNOLDS: Mike Garbus, who is one of the
18 relief CSOs, and I believe Bob Spooner, who is the CSO on
19 blue shift.

20 Then I proceeded to the control room. I entered
21 through the back door.

22 MR. CONTE: No lighting problems on the path you
23 took --

24 MR. REYNOLDS: The stairwell! The stairwell I
25 noticed and since they said UPS, and I am aware that the



1 stairs, emergency lighting on the stairs is not UPS --

2 MR. CONTE: That was black? Was that black or did
3 it have some emergency lighting on it?

4 MR. REYNOLDS: There was some lighting in there
5 but it wasn't bright like normal.

6 MR. CONTE: How do you define the stairwell?
7 Southwest corner of the control building? Southeast corner
8 of the control building?

9 MR. REYNOLDS: It's north.

10 MR. CONTE: Is it on a corner of the building?

11 MR. REYNOLDS: No, it's not actually in the
12 control building. It's by the turbine building elevator.
13 It's the north --

14 MR. CONTE: When you go in through the Cardox and
15 you make a right there immediately at that elevator?

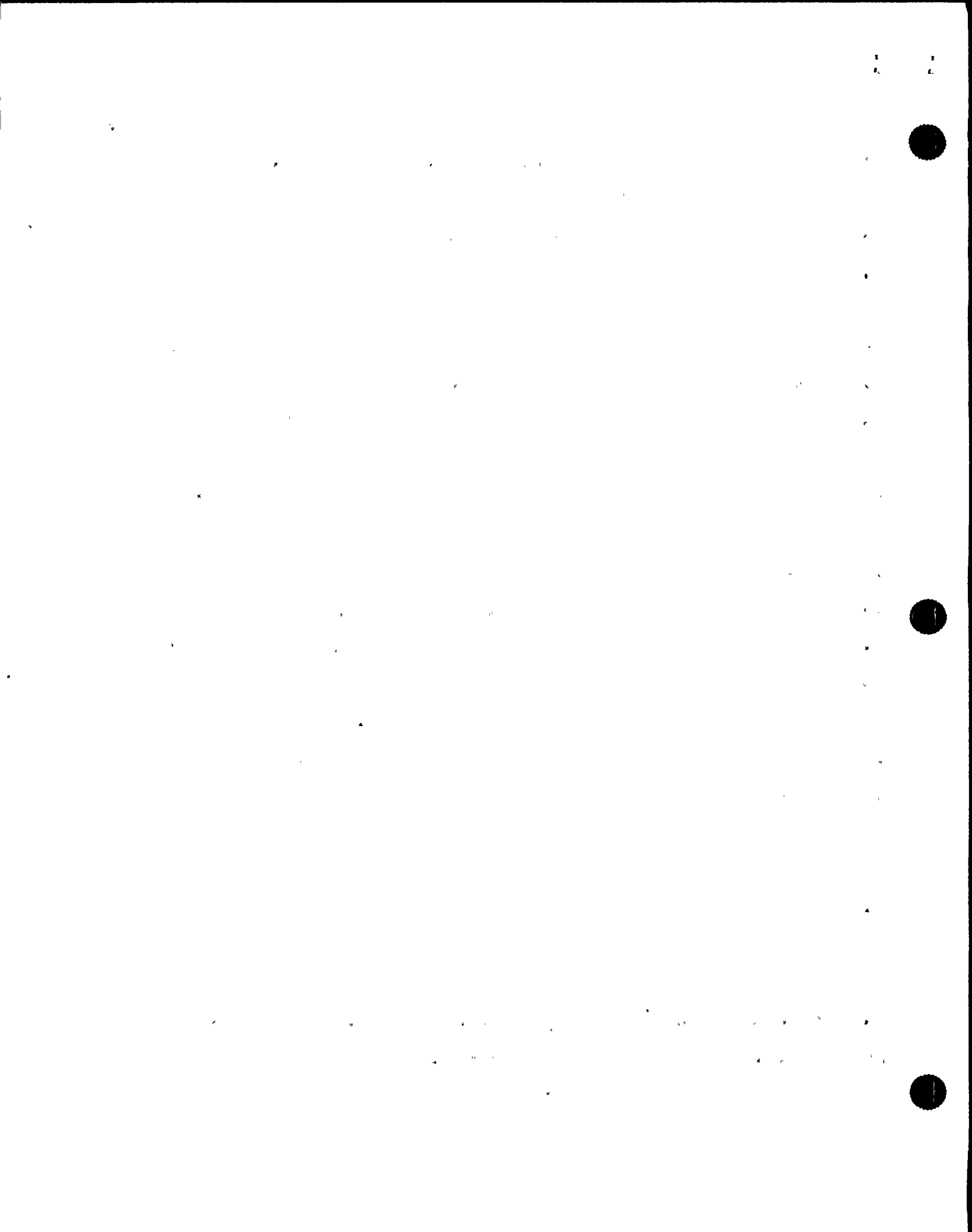
16 MR. REYNOLDS: That -- an elevator, yes.

17 MR. CONTE: Okay. We have been calling it the aux
18 service building.

19 MR. REYNOLDS: Yes, it's the actual correct name.

20 MR. CONTE: Aux service building, okay. Continue
21 on your path to the control room.

22 MR. REYNOLDS: Then when I entered the front
23 control panel area I saw the SSS was at the EOPs and I
24 looked around and saw that there were no annunciators or
25 just two or three. I'd never seen that so dark.



1 MR. JORDAN: Do you have any idea about what time
2 this is?

3 MR. REYNOLDS: This had to be someplace around ten
4 to twelve or you know fifteen after 6:00, when I got to the
5 control room. I was standing behind the SSS and Brian
6 Hilliker, who was operating RCIC, was giving me a brief on
7 what he up to that point as far as he knew had transpired.

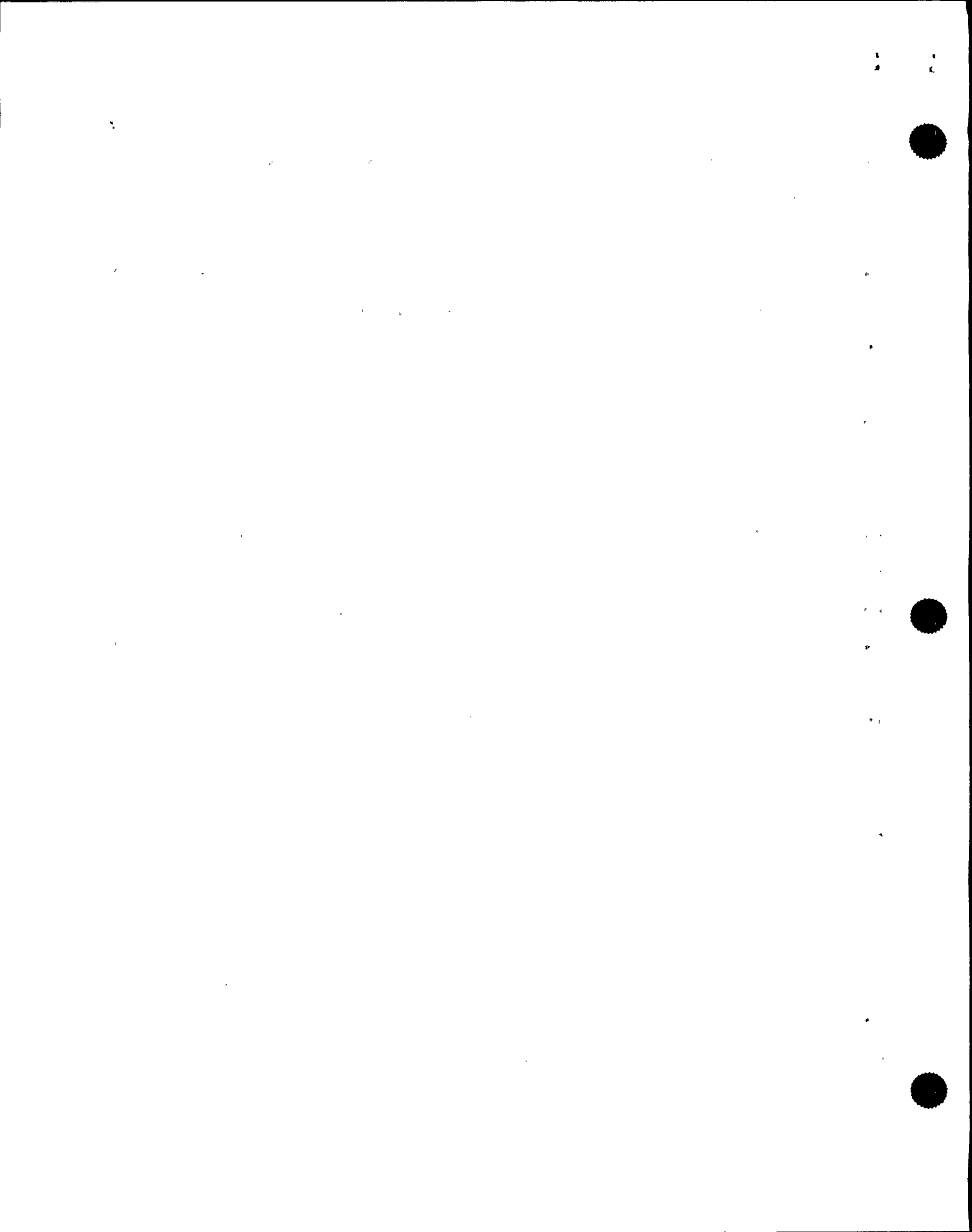
8 Then he just told me they were having a problem
9 with feedwater. They were trying to watch the level, that
10 there was some kind of a power loss, so I told Mike Conway,
11 who is the SSS, Conway, that I was there and available to
12 assist.

13 Then he was still dealing with the level and the
14 control rod problem, as I remember. I then went over to the
15 electrical panels, the 852 panel, and I was trying to
16 ascertain what power we had lost. I wasn't sure at that
17 point, I don't know if anyone was but I wasn't, of what was
18 gone.

19 I knew there was a problem with the UPS because
20 the computer was off and the here-here wasn't working.

21 MR. JORDAN: How did you know the here-here wasn't
22 working?

23 MR. REYNOLDS: Somebody told me that, that the
24 here-here was out, the Gaitronics I know, and they go before
25 so I knew that was an UPS supply system.



1 MR. JORDAN: I'm going to ask you something. Is
2 there a difference between the Gaitronics and the here-here
3 system?

4 MR. REYNOLDS: They are the same. The Gaitronics
5 is the here-here. I'll just try to use the correct name.

6 MR. JORDAN: That's fine. That's fine. I was just
7 curious. We hear Gaitronics and then we hear here-here and
8 I was just curious. I always thought that they were the
9 same and I just wanted to confirm that they are the same.

10 MR. CONTE: While we're asking for clarifications,
11 how did the UPS radio get to be called "leaky wire?"

12 Is that a slang or what?

13 MR. REYNOLDS: No. There is a re-transmitter on
14 the system, as I understand it, and this comes from my guard
15 training, that you transmit on your radio on a certain
16 frequency and this leaky wire goes all through the plant.
17 It's a gray cable that's encased in plastics about oh a
18 half-inch cable. There is one right by the door to the
19 Cardox room that comes down on a cable tray on the outside
20 of it and when you transmit, you transmit on a certain
21 frequency that goes into the leaky wire, which in turn goes
22 to the retransmitter which transmits at another frequency so
23 that your radio is receiving and sending on a different
24 frequency actually.

25 MR. CONTE: I see, okay.



1 MR. REYNOLDS: That way you can talk from parts of
2 the plant that you couldn't possibly -- a little walkie-
3 talkie couldn't penetrate the concrete and steel that's
4 between you and the control room.

5 MR. JORDAN: Is "leaky wire" an acronym or is
6 leaky wire a --

7 MR. REYNOLDS: I don't really know.

8 MR. CONTE: That's fine, we were just wondering.
9 We have heard "leaky wire" about a thousand
10 times.

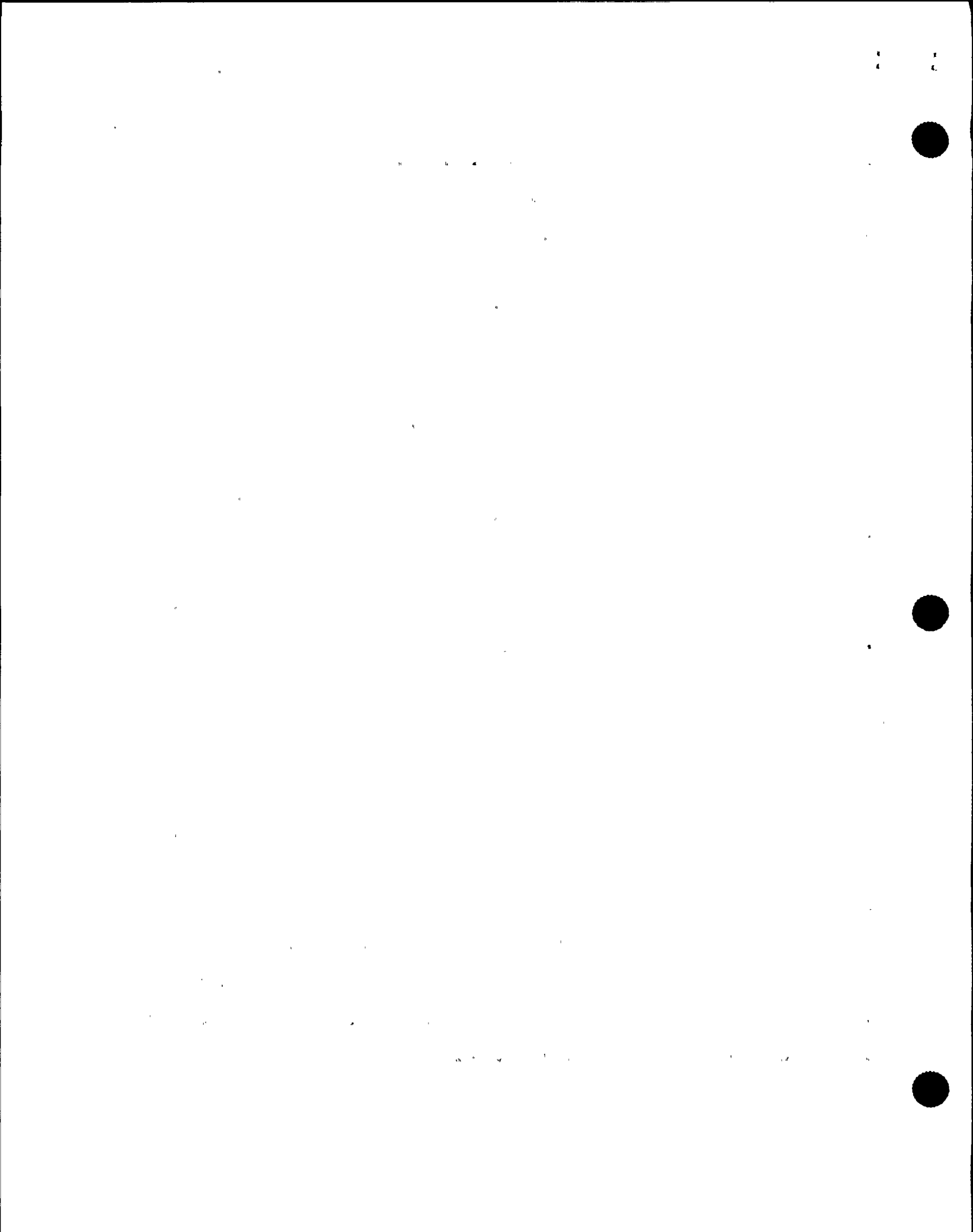
11 MR. JORDAN: We were just curious where the term
12 "leaky wire" came from. That is what they call the system.
13 I understand how it works. I was just curious that it was
14 an acronym or a vendor name or whatever, and if you don't
15 know, that's fine.

16 Go ahead. You were saying you were in the control
17 room.

18 MR. JORDAN: You were looking at the electrical
19 panels. You had heard that the here-here was off. You knew
20 the computer was off.

21 MR. REYNOLDS: The Gaitronics was off.

22 I was looking at the indications for power to the
23 emergency buses, that the diesels were not on, so that it
24 wasn't an offsite power loss. These are things that I'm
25 assuming as I go through my inspection of the panels. I was



1 just about to the end of that panel, ready to go on to the
2 851 panel -- I think that's when the power came back to the
3 UPS, not all at once, and I couldn't identify which thing
4 came back first.

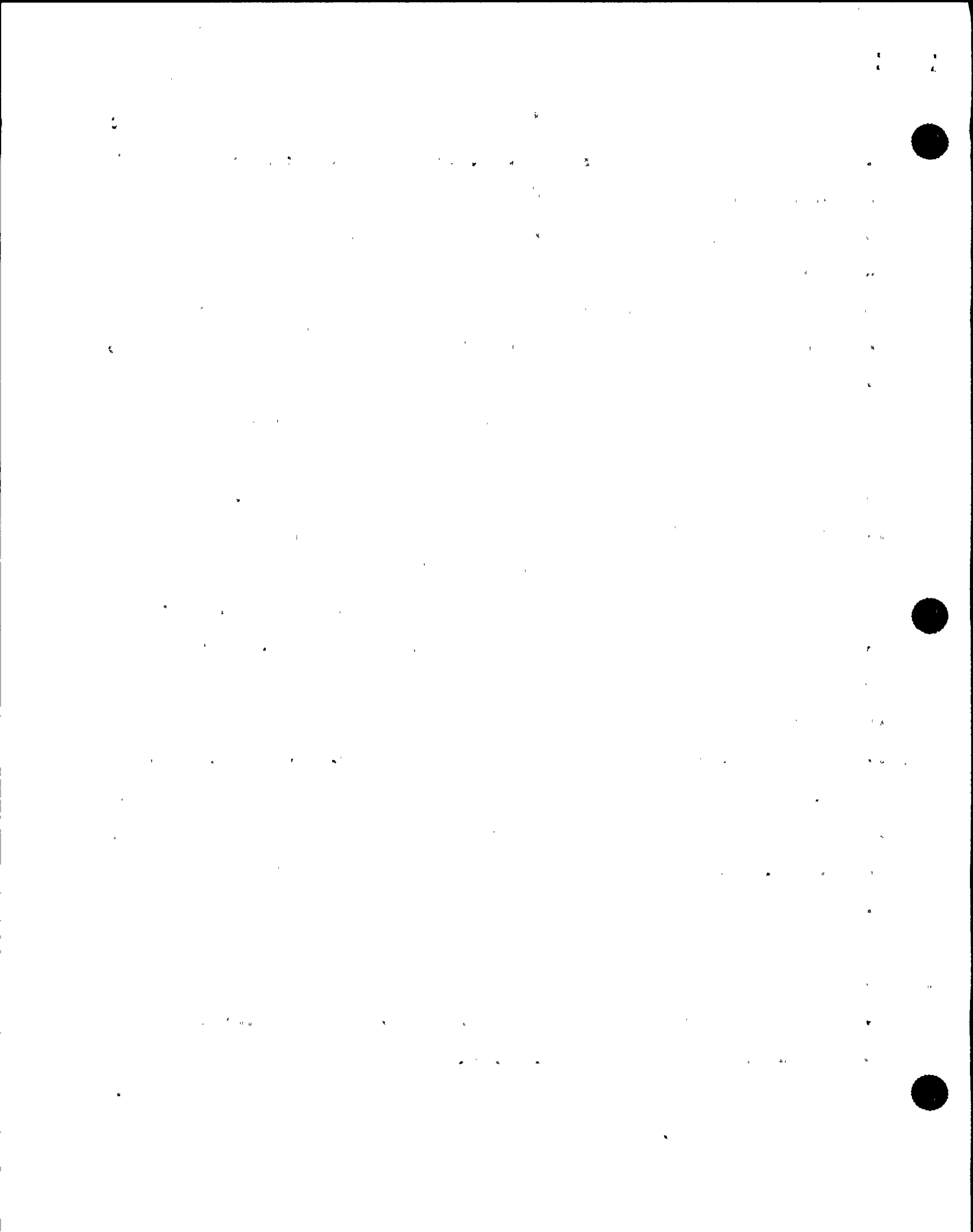
5 MR. CONTE: You're the first I heard that talks
6 about reviewing the electrical power distribution system on
7 the left there, at the panels. Did you notice anything
8 unusual on those power distribution breaker position
9 indications?

10 MR. REYNOLDS: No, I don't believe so. I think
11 they were what I expected: the tripped breakers, the green
12 flags, red flags, red lights, green lights.

13 MR. CONTE: And you remember confirming that house
14 loads were on the reserve transformers, that that shift had
15 been successful because of the trip? Or don't you remember
16 verifying that?

17 MR. REYNOLDS: I think I satisfied myself. I
18 don't know if I verified it to anyone else. It's difficult
19 to recall, because of the exciting feeling at the time. It
20 was a rather exhilarating and not an altogether pleasant
21 experience.

22 MR. CONTE: Okay. Well, the bottom line is, you
23 don't remember the specifics. You did check that panel, and
24 then you got put on some other assignment, or you heard
25 about UPS coming back on line.



1 MR. REYNOLDS: Well, no. Annunciators started
2 coming on.

3 MR. CONTE: Okay.

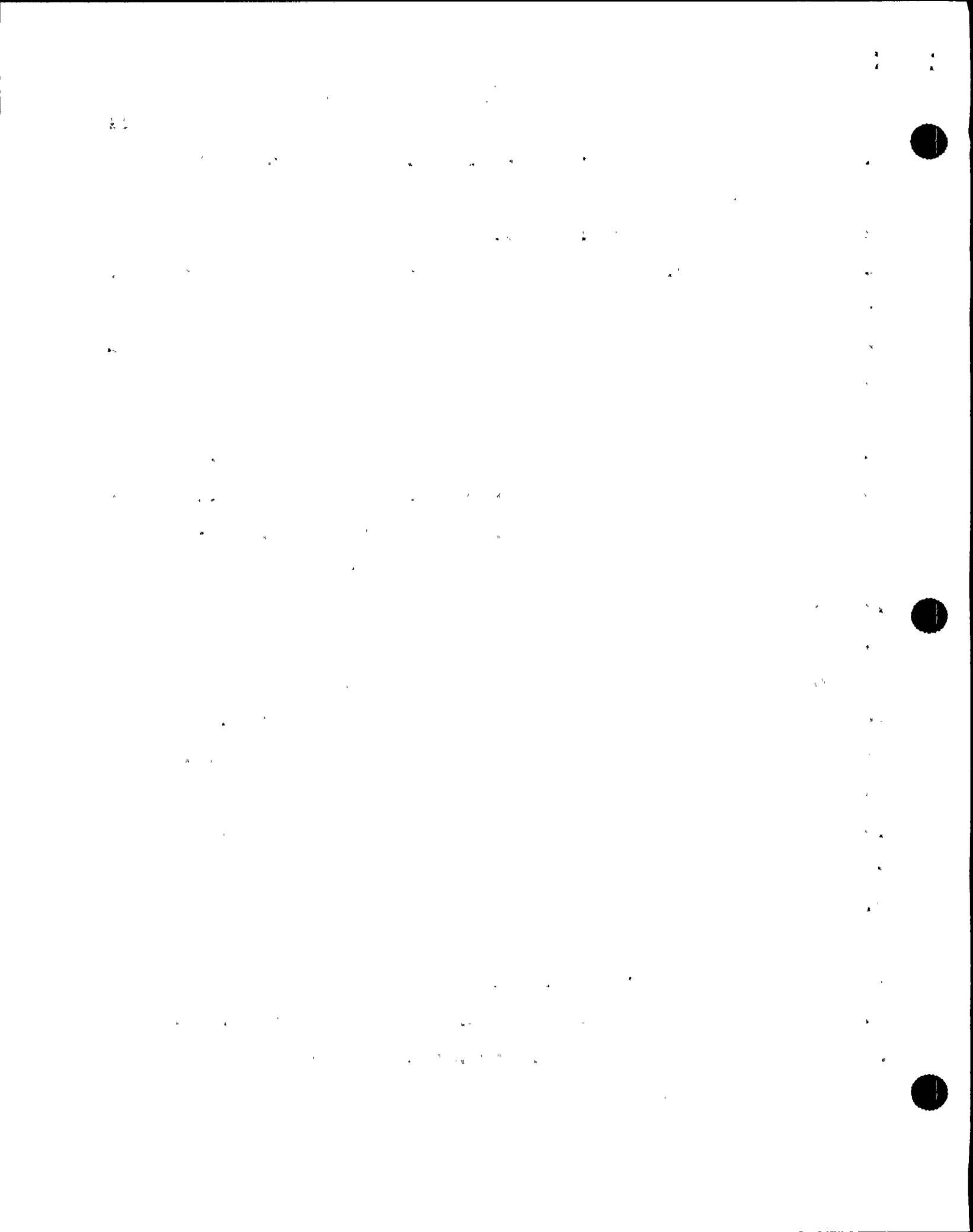
4 MR. REYNOLDS: That's when we just tried to take
5 care of the alarms that were coming in, seeing what was
6 valid. There were more people in the control room by then;
7 more people had arrived.

8 The SSS assigned me two things. He asked me
9 questions to verify for him, and I swear I don't recall -- I
10 remember there were about two things he said: tell me what
11 something is -- and I don't remember what he said -- and I
12 found that out for him and went back and told him, and
13 another thing. Then they were trying to get back some
14 feedwater supply, and shortly he assigned me pressure
15 control. That's where he gave me a pressure band for the
16 EOPs, to use a bypass valve to maintain pressure. That's my
17 involvement up to that point, and that was about it. After
18 that, I just maintained the pressure in his band, and then,
19 as he expanded it and said, Cool down at a certain rate, I
20 did that.

21 MR. CONTE: Did you fill out an operator statement
22 at the end of this event, later in that day?

23 MR. REYNOLDS: No.

24 MR. CONTE: I was going to ask, maybe you had put
25 it down in that operator statement, what the SSS had asked



1 you to do, those two items, but, since you don't have a
2 statement, I guess we don't know -- we won't know at this
3 point -- not that it's important. Anything that will help
4 you refresh your memory is permissible to come in here.

5 So you don't remember that. You went on to the --
6 you were given the pressure control band on the bypass
7 valves.

8 MR. JORDAN: Do you know what the band was?

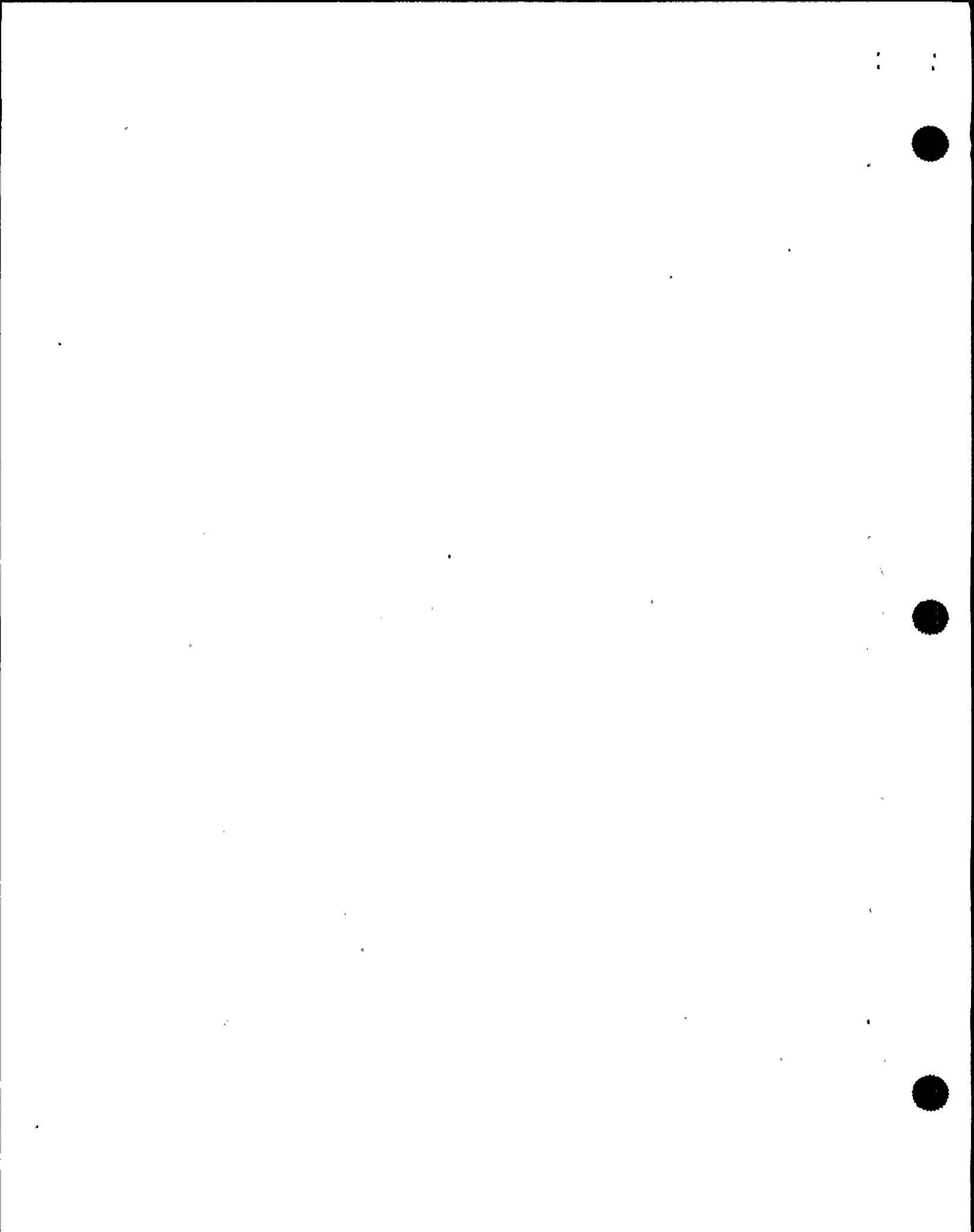
9 MR. REYNOLDS: The initial band, I believe, was 5
10 to 600. It could have been 7 to 600. I try not to
11 memorize them, because they change as you move along through
12 any kind of a scenario or an event. The pressure band
13 changes, so, if you don't really memorize the one that
14 you're at, you'll be able to remember the one that you're
15 supposed to have right now. I'm not sure if it was 7 to 6,
16 but it was within the capacity -- I believe it was 6 to 5,
17 so it was within the capacity of a booster pump, which they
18 were trying to start at the time.

19 MR. CONTE: By the way, another curiosity question
20 on the design. What's the bypass capacity of those bypass
21 valves, 100 percent reactor power or what?

22 MR. REYNOLDS: Approximately 25.

23 MR. CONTE: Okay.

24 How long were you on the pressure control with the
25 bypass valves? The whole morning, or what?



1 MR. REYNOLDS: All day.

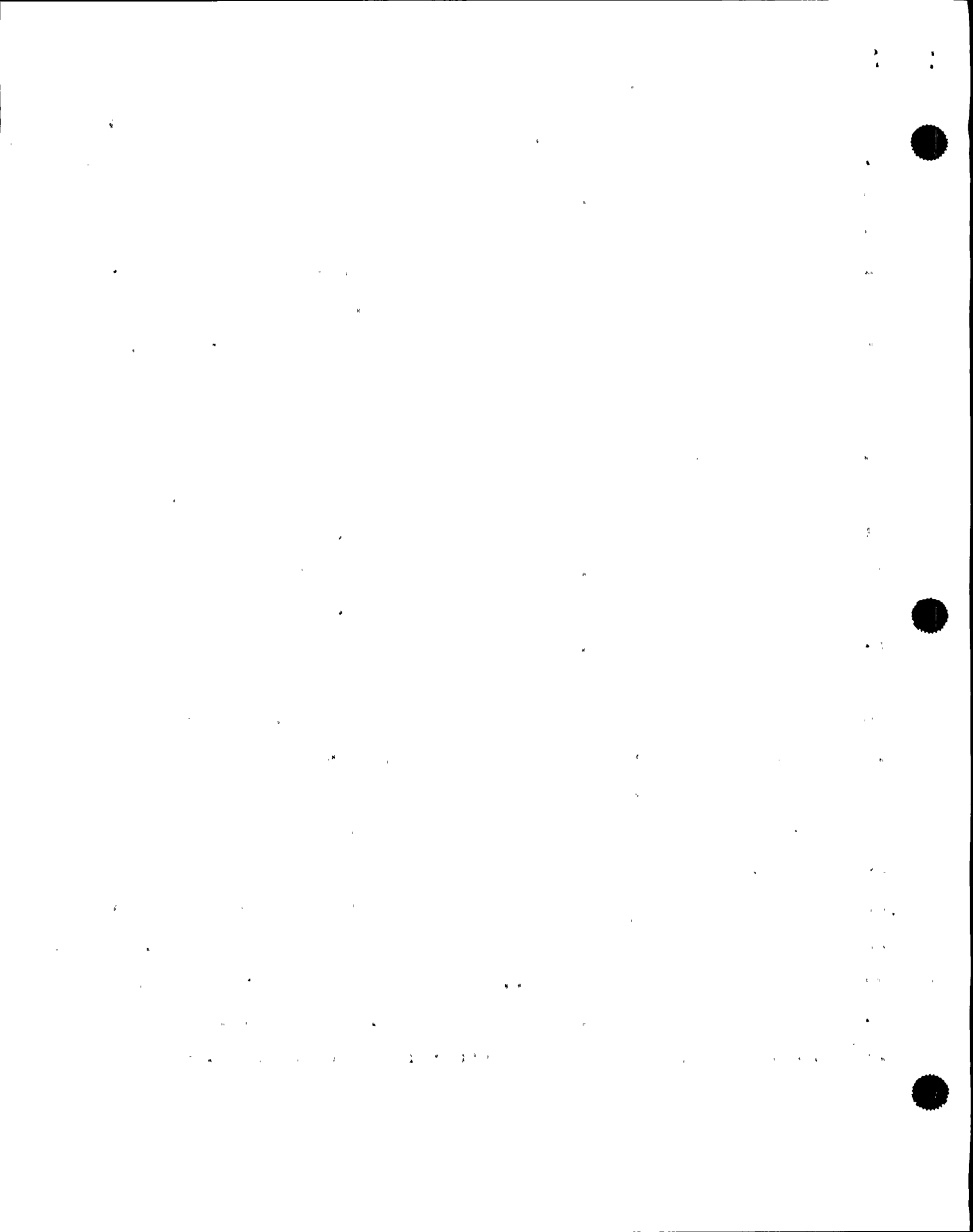
2 MR. CONTE: All day?

3 MR. REYNOLDS: Well, first it was pressure control
4 per the EOPs, and then I was to proceed with the cool-down,
5 so I monitored the pressure and opened bypass valves as
6 required to allow the unit to cool down. At first I had to
7 coordinate with the operators on the booster pumps, so that
8 we didn't end up with a big cold-water addition or exceeding
9 cool-down rate right off and we didn't have any swells if I
10 had to shut the valve, and we wouldn't have a shrink.

11 It went very smoothly as far as the pressure
12 control and the cool-down, very smooth. There were no
13 transients through that.

14 MR. CONTE: While you were concentrating on
15 pressure control, were you able to make some assessment of
16 the mood in the control room, in terms of crowd control,
17 noise level from people throughout the day, overall command
18 and control? How would you characterize those aspects, or
19 were you too busy looking at your pressure control band,
20 concentrating on that?

21 MR. REYNOLDS: I thought it was very good. There
22 was never any question about who was in charge. All the
23 instructions were clear and concise, and people repeated
24 back their instructions. It looked like a simulator
25 scenario for an exam. It looked like an evaluated simulator



1 scenario.

2 [Laughter.]

3 MR. REYNOLDS: In fact --

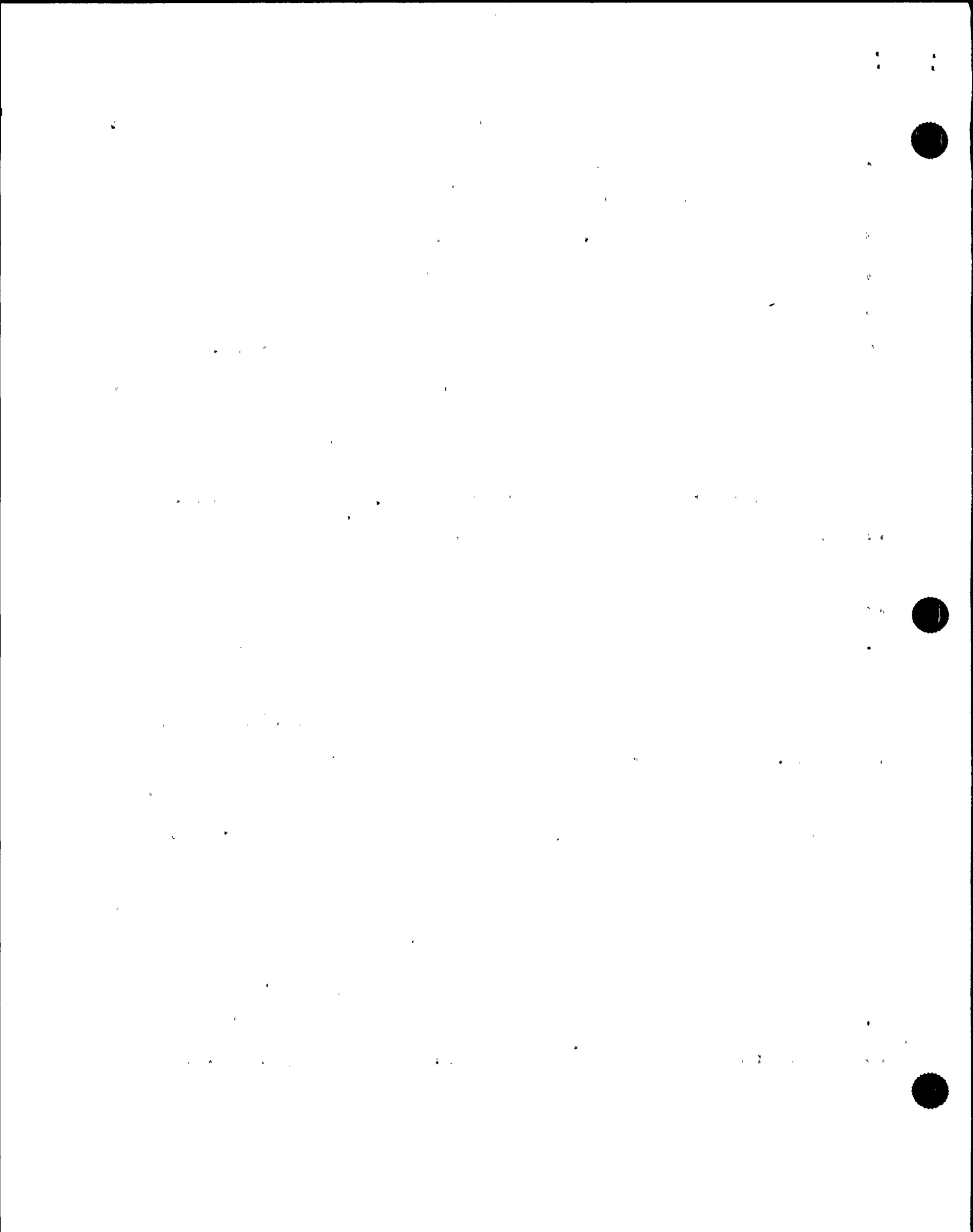
4 MR. CONTE: We're laughing because we oversee
5 those simulator scenarios in the exams.

6 MR. REYNOLDS: If we had had this probably as a
7 simulator scenario, we would have asked for something more
8 realistic.

9 MR. CONTE: So once again, normal, day-to-day
10 communications may get a little sloppy. Generally, people
11 try to make an effort to repeat back. But in light of, this
12 was a real event, it just made people aware to respond and
13 put themselves in the simulator scenario environment and
14 perform in good communications and things like that. Is
15 that what you're saying?

16 MR. REYNOLDS: I know that's what happened in my
17 mind, when I first came in the control room. I looked
18 around and saw that the annunciators were all out. This is
19 something that I had never seen, except in the simulator.
20 My mind started to put me in a simulator frame of mind,
21 performance-enhanced excitement, I guess. I don't know what
22 you'd exactly call it.

23 MR. CONTE: That's a good point. We were going to
24 ask you that question. What have you seen before in
25 training on this kind of a problem? Clearly I don't think



1 anybody has thrown the all-five-UPS failure at you in the
2 simulator, but have they put you through drills where some
3 UPS's have gone down? You've seen the loss-of-annunciator
4 situation? You've seen the frozen APRM meters.

5 MR. REYNOLDS: Yes.

6 MR. CONTE: Everything that I just said?

7 MR. REYNOLDS: I believe so, yes -- in training.

8 MR. JORDAN: In training? For the record, say
9 what you saw?

10 MR. REYNOLDS: We've had all those scenarios
11 played before us or evaluated in the simulator.

12 MR. CONTE: Okay.

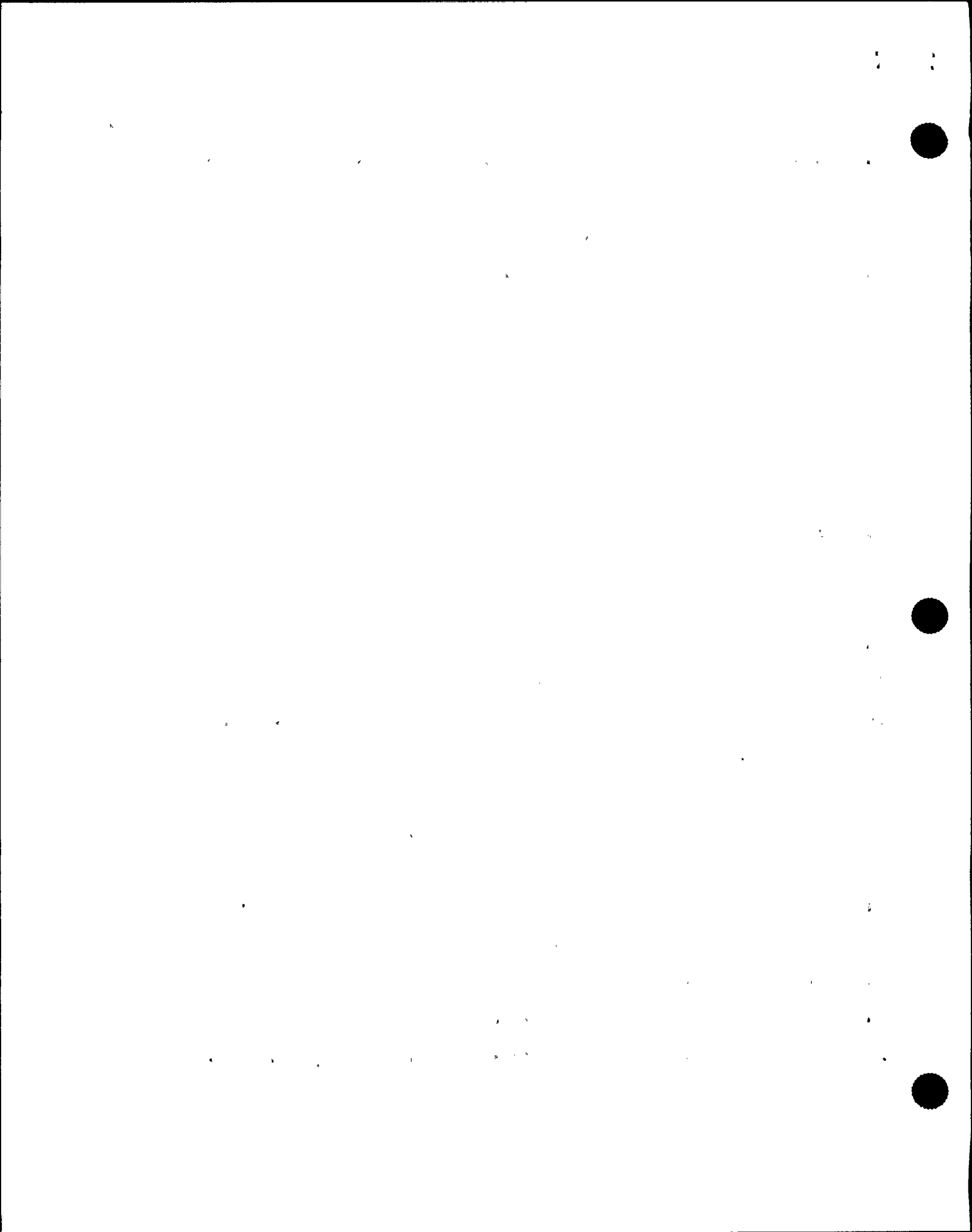
13 MR. REYNOLDS: In fact, they just started
14 stressing electrical more than they had in the past, due to
15 the line 5 loss a few weeks or months ago.

16 MR. JORDAN: What happened during the line 5 loss?
17 Were you on shift at that time?

18 MR. REYNOLDS: No, I wasn't there.

19 MR. JORDAN: Okay. Do you know what -- was there
20 a training session? What was taught? What lessons were
21 learned from the line 5 losses you know that happened?

22 MR. REYNOLDS: They showed us in the simulator --
23 attempted to recreate it, so that everybody was more
24 familiar with it. The individual who were there that day
25 said that it went well, that everybody did just what they



1 were supposed to do for a loss of offsite power for one
2 line, and the plant performed exactly as expected, as far as
3 the service water, the load sequencing, the diesel start.
4 That was for the line 5 loss.

5 MR. CONTE: We're not that familiar with offsite
6 power distribution. Could you briefly explain lines 1
7 through 5, 6, 7? How many lines do you have coming into the
8 plant?

9 MR. REYNOLDS: Line 5 and 6 are the two incoming.
10 They're numbered by power control, and that, numbered by us,
11 is 1, 2, 3, 4, 5 outgoing-incoming. They're numbered by
12 power control. It's line 5 Scriba and line 6. They're our
13 two 115 offsite power supply lines.

14 MR. CONTE: These are the transmission lines. You
15 could see one going to the east of the cooling tower and the
16 other one going to the west of the cooling tower, across the
17 road, going out to Scriba. Is that the lines you're talking
18 about?

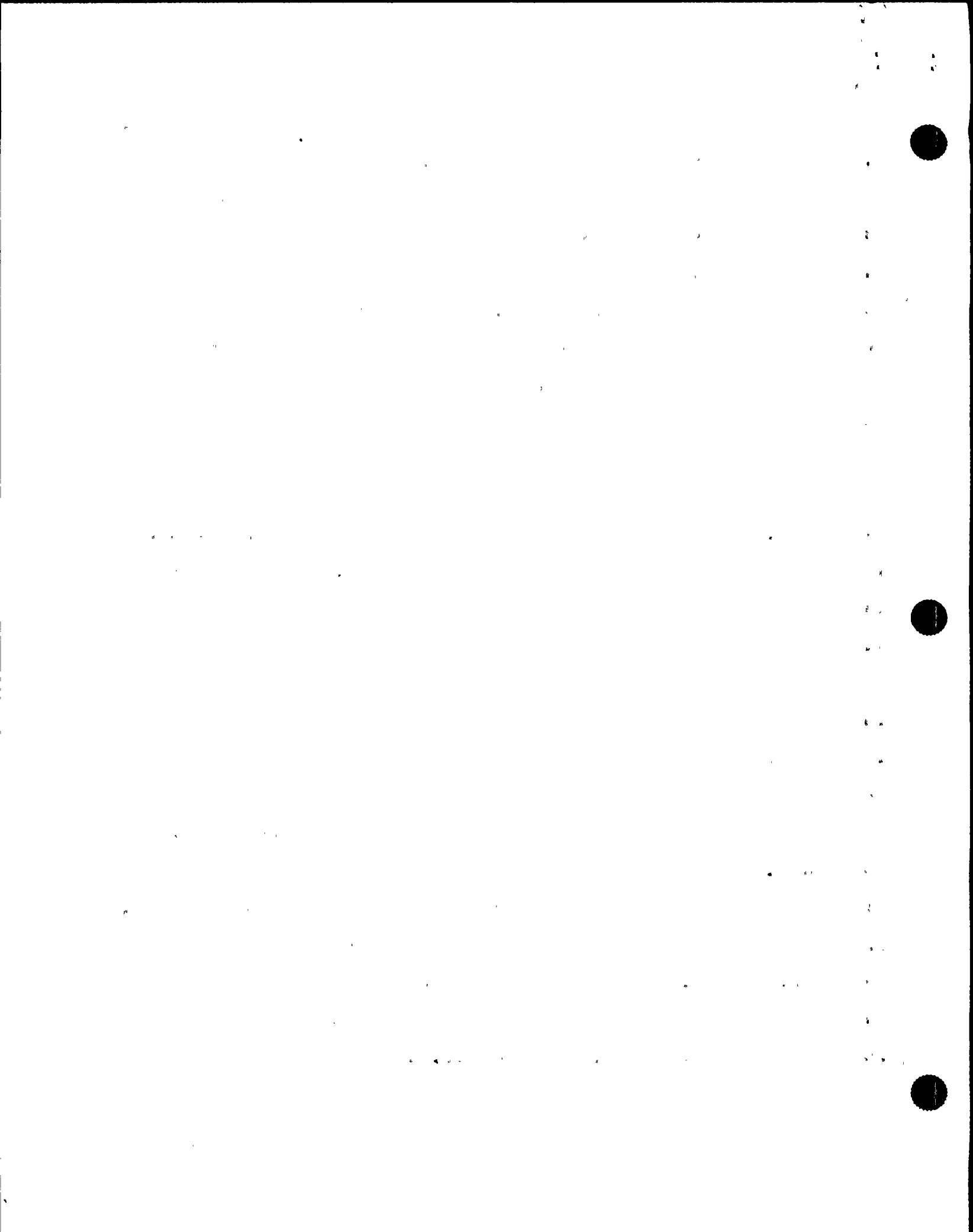
19 MR. REYNOLDS: Right. They come into the 115
20 yard.

21 MR. CONTE: So lines are dedicated to Unit Two.

22 MR. REYNOLDS: Out of the Scriba sub. That's
23 correct. One's off one ring, and one's off the other.

24 MR. CONTE: Okay.

25 Is there any intertie, like with FitzPatrick and



1 Unit One on site here, or is that intertying done over at
2 Scriba station?

3 MR. REYNOLDS: It's all across the road, at the
4 Scriba sub.

5 MR. CONTE: Okay.

6 MR. JORDAN: And when was this line 5 lost?

7 MR. REYNOLDS: I'm not sure what the date was.

8 MR. JORDAN: A couple weeks ago, a month ago, two
9 years ago?

10 MR. REYNOLDS: No, it was this year, but it was --
11 I'm trying to think why I wasn't there, whether I was on a
12 day out. See, I just became a relief operator in June, so
13 it was before that.

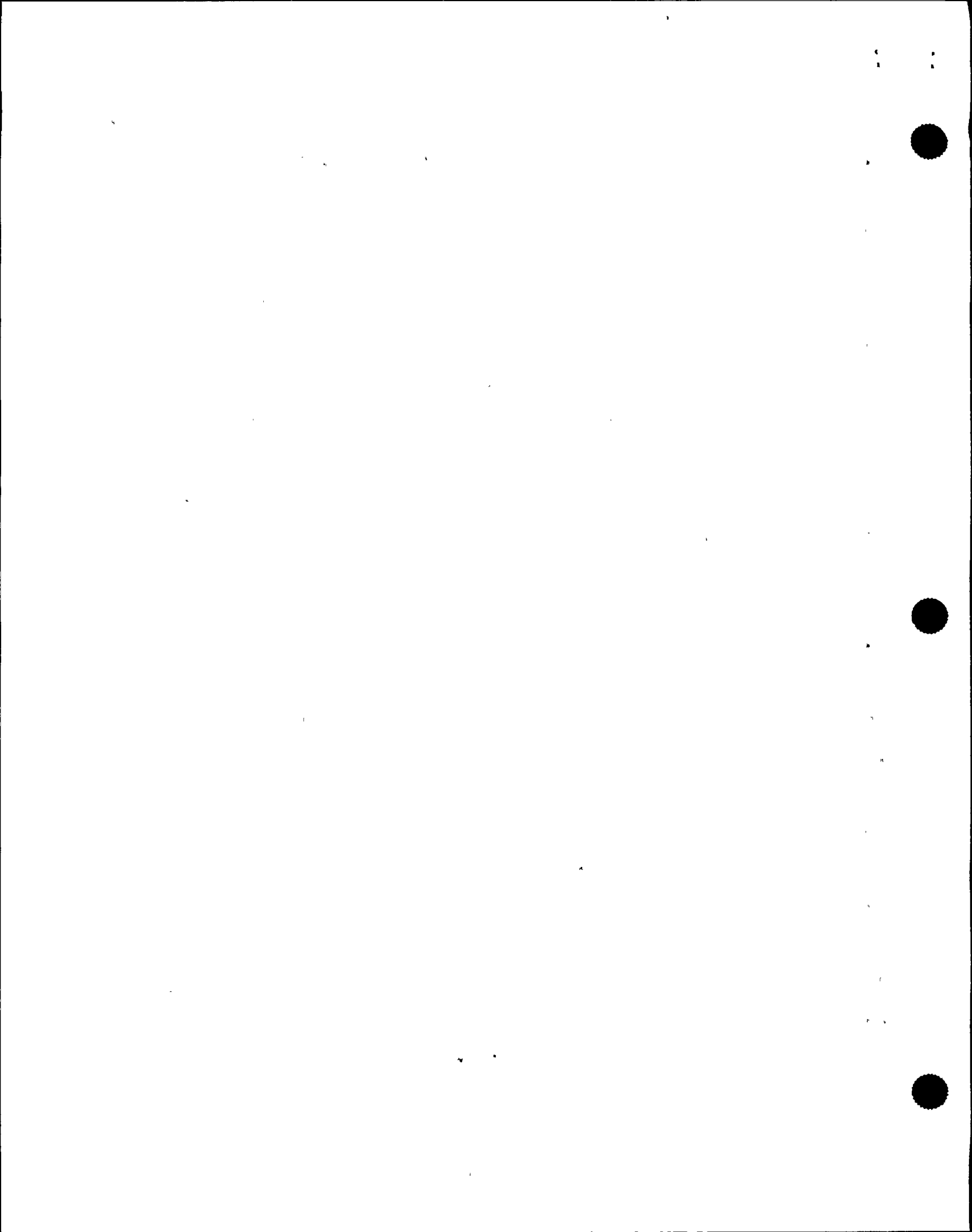
14 MR. JORDAN: But it was this year, though.

15 MR. REYNOLDS: It was this year, yes.

16 MR. JORDAN: I want to go back just a little bit,
17 and then we can go on.

18 One of the things that Rich asked was about crowd
19 control in the control room, and you mentioned that you
20 thought that things were going well, that it was well
21 controlled. Did you feel there was a lot of people around
22 you? Did you feel tightly squeezed, that you could get to
23 where you needed to, accomplish what you needed to do?

24 Do you feel like there were more people than what
25 you needed to do your job --, you personally?



1 MR. JORDAN: Let's go off the record.

2 [Pause to answer door.]

3 MR. JORDAN: We went off the record for a minute
4 because of an interruption by a transcriber and now we're
5 back on record.

6 MR. REYNOLDS: All right. Let's see. The
7 question was, did I feel crowded?

8 MR. JORDAN: Yes.

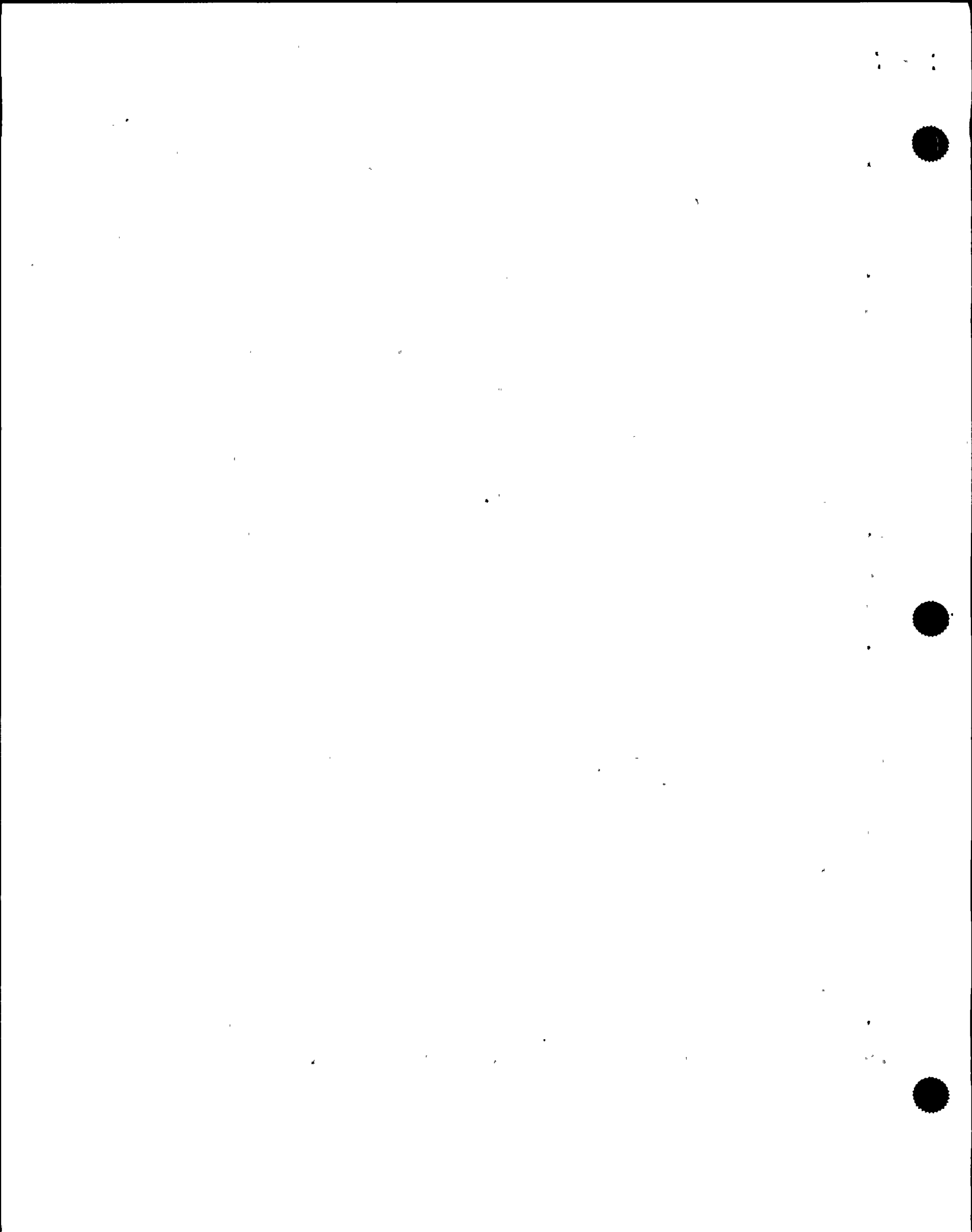
9 MR. REYNOLDS: No. I never felt crowded. I had
10 plenty of room at the panel. There were a lot of people in
11 the control room. I must say there was more than you would
12 need but there was the right amount of people there if you
13 needed people to go out in the plant. There was, you know,
14 they had three shifts of people I think there.

15 MR. JORDAN: But for you to accomplish your
16 assigned duties there was no problem with --

17 MR. REYNOLDS: There was no crowding at my panel
18 where I was.

19 MR. JORDAN: What were the two assignments that
20 you don't remember doing, if you remember?

21 MR. REYNOLDS: One I recall now was -- you asked
22 me a question about feedwater pumps and I identified that
23 the LV10s, the feedwater level control valves, were locked
24 up and -- it finally came back to me. I knew there was
25 something up there. I'm doing it in my mind. I'm walking



1 up that way.

2 I went back and reported to the SSS that the LV10s
3 were frozen. They were locked up and --

4 MR. JORDAN: What did you use for that indication?

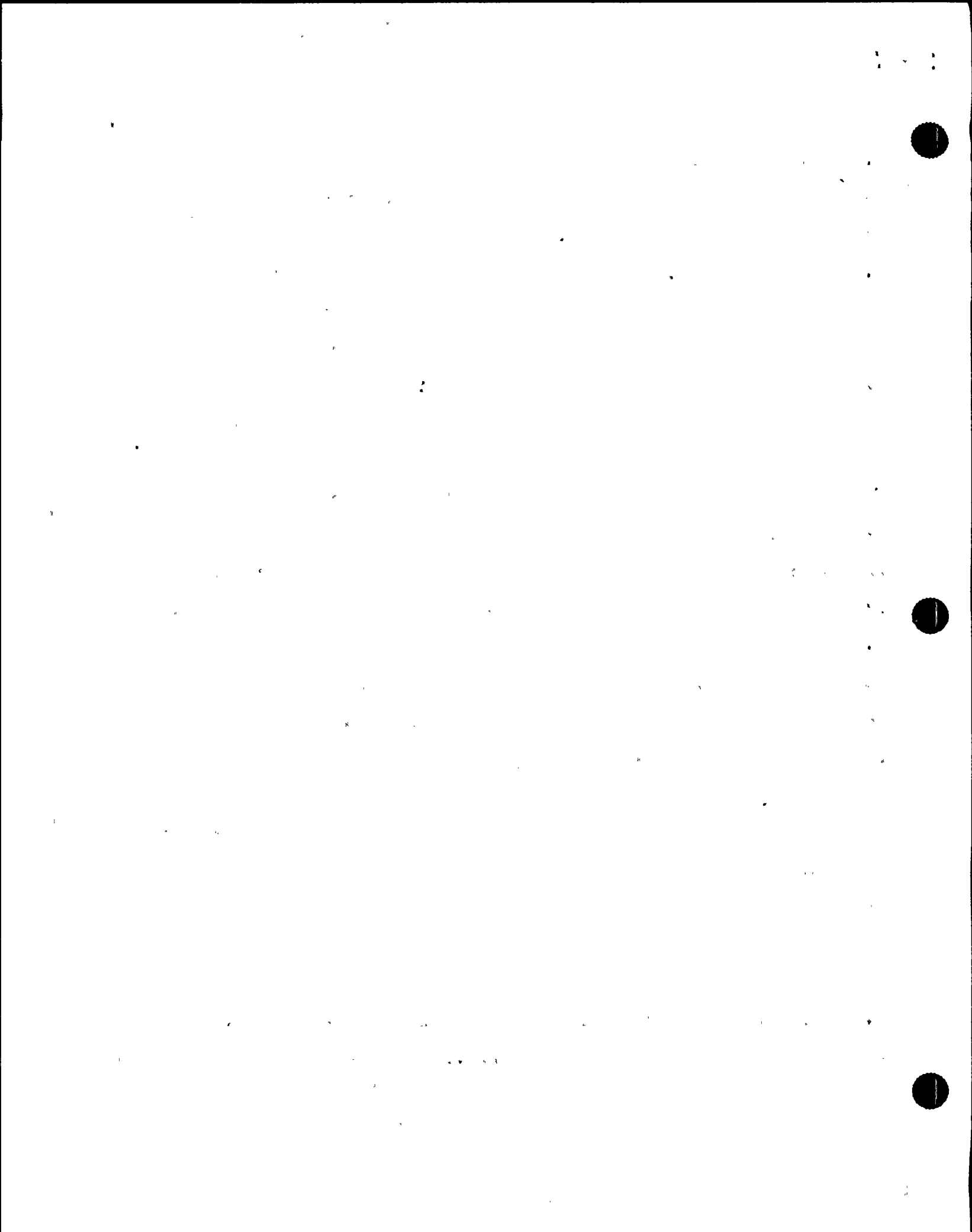
5 MR. REYNOLDS: The orange lights above -- there is
6 a lockout above the LV10 controllers, level valve
7 controllers, and the fact that what the controller was
8 asking for in the indicated valve position -- the valve
9 position was 60 percent or so, normally where it is 100
10 percent power, and what it was requesting was way down,
11 lower, much much lower, and so we reset it though so that we
12 could shut them because I am always very conscious of an
13 overfeed whenever we have any kind of a scram. That is one
14 of the things I look at.

15 We have had, long ago, the first 30 second scram
16 the plant ever experienced there was an overfeed or it may
17 have happened more than once then, long ago, so it's one
18 thing that I always try to remember.

19 MR. CONTE: Are you sure that the controller was
20 not fooling you from the point of view that UPS power was
21 out? How do know that that controller was --

22 MR. REYNOLDS: Well, the power was back. The UPS
23 power was back on by now. Any assignment he gave me of the
24 one that I don't exactly recall now was after UPS was back.

25 He was not dealing with me at all until the power



1 came back on. He was busy with the operators at 603.

2 MR. CONTE: Okay, so let's take one situation, the
3 one where power is back.

4 You were asked to verify lockup. Let's just say
5 full power. Operator asked you -- there's some kind of
6 transient, there's no loss of annunciators, none of that.
7 the way you would verify lockup is you expect to see a
8 yellow light above the controller. That light is labelled
9 "lockout" of some sort.

10 The controller reading -- what would you expect
11 the controller demand signal to be? What would you expect
12 the valve position to be, zero for demand or low for demand,
13 and 60 percent for valve position? Is that the way you
14 would expect to see the lockout if it really existed?

15 MR. REYNOLDS: There is an annunciator common for
16 the three level valves that should come in any time this
17 happens. It is right above them.

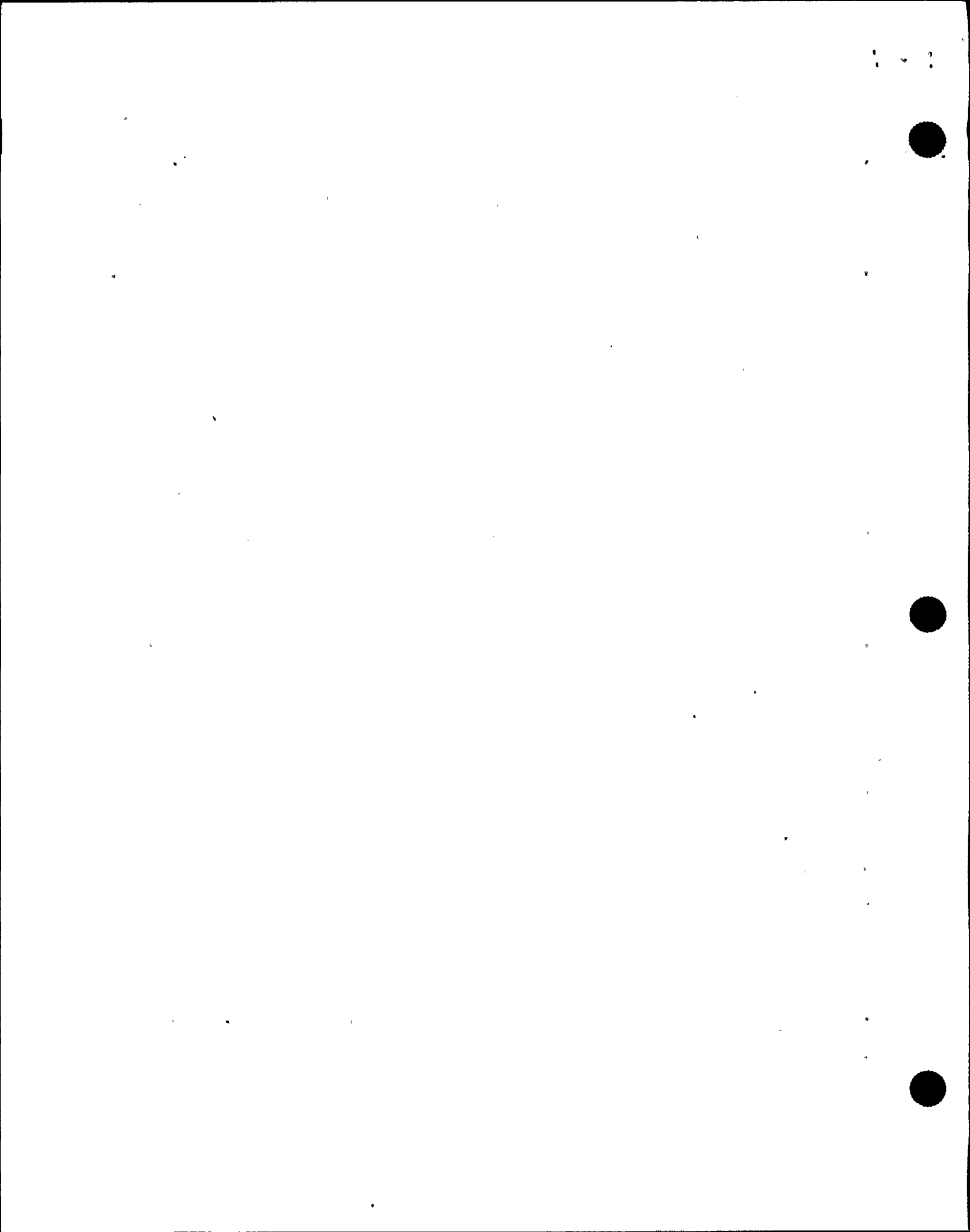
18 MR. CONTE: Annunciator says feedwater lockout?

19 MR. REYNOLDS: LV10 ABC lockout -- something like
20 that.

21 MR. CONTE: Okay.

22 MR. REYNOLDS: They're MOVs and the lockout leaves
23 them as-is. The controller can request whatever it believes
24 it should to maintain level and the valve won't respond.

25 In this situation with the valves open, if there



1 had been sufficient pressure in the feedwater system, we
2 would have flooded the vessel because they wouldn't close.
3 We would have had to isolate the 21s, which are the major
4 feedwater isolation valves. We would not have been able to
5 control the 10 valve, which is the normal feed up.

6 MR. CONTE: So when the shift supervisor asked you
7 to verify the lockout, did he also direct you to close the
8 valve?

9 MR. REYNOLDS: No. There were I believe two
10 operators reviewing the procedure for feedwater at the time
11 and he directed them to reset and shut the valves or do what
12 was necessary at that point in time because we didn't really
13 know if everything, if all of our control power was
14 restored. There was still some question, at least in my
15 mind, of what we really had and what we didn't have.

16 MR. CONTE: How do you reset? You just press a
17 button?

18 MR. REYNOLDS: No, in that case it was apparently,
19 the demand and position signals were so far apart that it
20 caused the lockup to come in. They just -- well, I wasn't
21 there for when they did. I was now on steam pressure
22 control, but I believe what they did was put the valves in
23 manual and increase the demand signal until it matched close
24 enough with the actual valve position that it allowed the
25 lockout to be reset.

20



1 MR. CONTE: Okay. From the top of your head, and
2 this is not an exam, do you remember what all the inputs
3 that would close a lockout on feedwater?

4 MR. REYNOLDS: All of them? No. That error in the
5 signal and then there's some electrical problems that would
6 -- it's not something you want to have.

7 MR. CONTE: So there's a lot of them?

8 MR. REYNOLDS: Not a lot.

9 MR. CONTE: But the one you remember which you
10 mentioned in your discussion here was a difference, that
11 when there is a big difference between demand and actual
12 position of the valve you get a lockout.

13 MR. REYNOLDS: Yes.

14 MR. CONTE: Is that yes?

15 MR. REYNOLDS: Yes -- yes, I'm sorry. Can't hear
16 me that way, eh?

17 MR. CONTE: Now let's take the situation during
18 the power outage. Did you happen -- it looks like you
19 didn't have really that specific assignments so you started
20 walking down the panels.

21 Did you happen to make any observations on
22 feedwater during the power outage now, and what did you see?

23 MR. REYNOLDS: One of the things that Brian
24 Hilliker told me when I first came in was that they had lost
25 feedwater pumps and so I didn't even look up to that end of



1 that panel and there was no one over by 852 so I went over
2 there to see -- there wasn't that many people in the control
3 room when I got there.

4 MR. CONTE: Does the feedwater lockout trip the
5 pumps?

6 MR. REYNOLDS: No, but in this case -- this is
7 what I believe happened and to the feedwater pumps was that
8 the turbine trip caused the -- let me get the terms straight
9 -- the flow limiter logic engaged, which is an orange light
10 on the back part -- on the vertical section --

11 MR. CONTE: Flow limiter?

12 MR. REYNOLDS: Yes, I believe, yes.

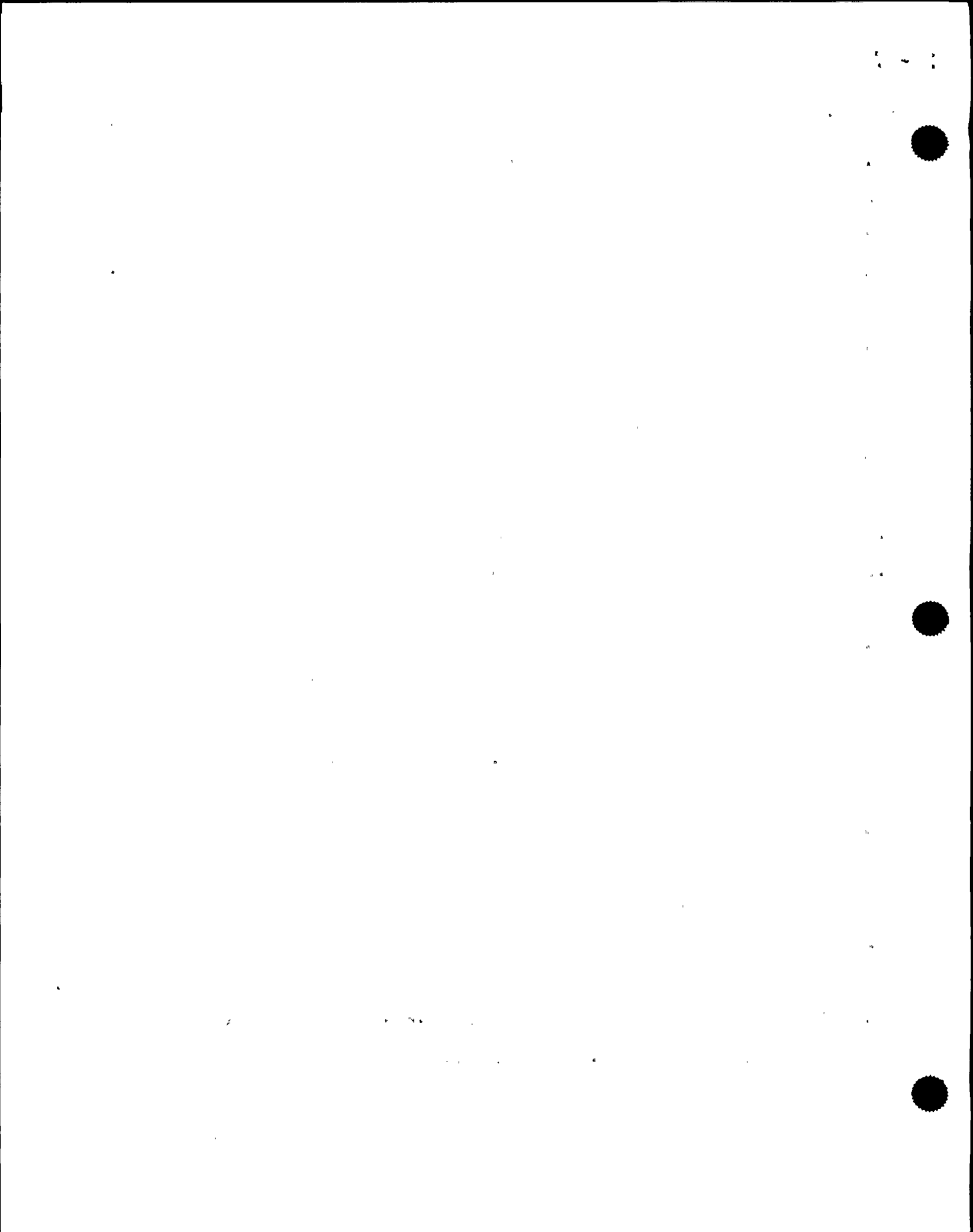
13 MR. CONTE: Which flow limiter, recirc?

14 MR. REYNOLDS: No, feedwater.

15 MR. CONTE: Feedwater flow limiter.

16 MR. REYNOLDS: Right, and that comes in on turbine
17 trip and low suction pressure. That would lower the level
18 that was -- it would close down on the LV10s, the level
19 control valves, to keep the feedwater pumps from tripping.

20 What I surmised at the time and haven't found out
21 anything different till yet is that the feedwater pumps had
22 their low suction in for the period of time that it takes
23 for them to trip. There's two trips, 210 for a certain time
24 limit and 190 and the flow limiter is supposed to give you
25 more time. The flow limiter logic gives you more time at the



1 lower suction to give them a chance to recover, and that's
2 why I thought the feedwater pumps tripped.

3 It may or may not be right but at the time and up
4 till now still I thought the feedwater pumps tripped was
5 that the valves didn't close so they continued to feed at
6 100 percent and they had low suction. I thought that's why
7 they tripped then, low suction.

8 MR. JORDAN: You say there's a time? We're
9 talking about how long is the time?

10 MR. REYNOLDS: Seconds, 25 seconds or 15 seconds.
11 I believe they may have changed it.

12 MR. JORDAN: But it's a time delay, low suction
13 for length of period of time after a turbine trip, then
14 you'll trip the feedwater pumps.

15 MR. REYNOLDS: Well, this is at all times on the
16 feedwater pumps. There is a low suction trip.

17 MR. JORDAN: Right.

18 MR. REYNOLDS: There's two set points and each one
19 has a timer on it.

20 MR. JORDAN: Okay.

21 MR. REYNOLDS: The lower pressure is a shorter
22 timer.

23 MR. JORDAN: If there's a higher pressure and a
24 lower pressure, either of those have timers -- oh, they both
25 have timers on them. Either of those with a turbine trip



1 will cause the feedwater pumps to trip.

2 MR. REYNOLDS: The lower pressure didn't have a
3 timer on it at one time. It was instant -- unless you had
4 the flow limiter logic; then there was an extension and
5 that was unless the timer had already started. If it hadn't
6 already started then you didn't get the extension, it was
7 very involved circuitry there as I recall.

8 MR. CONTE: What do you think caused low suction
9 pressure on the pumps? Is that normal for a reactor trip?

10 MR. REYNOLDS: On the turbine trip, that would
11 cause a shrink, which would, you know, the pressure would go
12 very high and cause level to be indicated very low and the
13 feed pumps would try to recover level so they would pump,
14 they would open up more, and that is what causes the low
15 suction pressure for them. They are trying to pump more
16 water than they can, plus the trip takes out your pump
17 forward fourth point heater drain pumps so there's basically
18 one-third of your feedwater flow has just been taken away.

19 It's going to cause the lower suction pressure
20 right immediately there.

21 MR. CONTE: But that normally happens on a reactor
22 trip and you don't normally get a feedwater trip any time
23 there is a turbine or reactor trip, is that right?

24 MR. REYNOLDS: Well, turbine trips -- see, the
25 valve should have closed down. The LV10s should have taken,



1 the flow limiter logic should have closed them down but that
2 would have reduced the feedwater flow, which would have
3 increased your suction pressure to the pumps.

4 A normal scram if you hit level three, then you
5 get your set point set down light on, which lowers the level
6 that the feedwater pumps want to maintain so that you don't
7 overfeed.

8 MR. CONTE: What are the sensing elements for this
9 feedwater limiting logic? Does reactor level have anything
10 to do with it, the selected level for control, or don't you
11 remember?

12 MR. REYNOLDS: Without the prints I don't think I
13 could answer that.

14 MR. CONTE: Well, you have given us some things to
15 pursue because we are curious about why the feedwater pumps
16 tripped.

17 MR. REYNOLDS: That's why I thought the feedwater
18 pumps tripped and I didn't know if anybody else --

19 MR. CONTE: We appreciate that.

20 MR. REYNOLDS: -- was aware of what I thought
21 about it I told.

22 MR. CONTE: Okay. I don't have anything else.
23 Any questions?

24 MR. JORDAN: Is there anything that we haven't
25 covered that you think there would be a benefit to us,



1 either things that you heard or issues that you saw that we
2 didn't cover in our conversation here that you would like to
3 tell us about?

4 MR. REYNOLDS: The feedwater was the one I wanted
5 to talk about.

6 MR. JORDAN: Can I ask a different question. Were
7 there things -- were either procedures, training, equipment,
8 are there things in the control room that you felt were very
9 beneficial for you in accomplishing that you'd say you're
10 glad you had that in order to accomplish whatever your tasks
11 were assigned in the control room, and the converse of that
12 is were there things that you wished you had that you
13 weren't available to have to use in the control room?

14 In other words, next time around, you'd say, gee,
15 I wish we had this available for me in the same transient
16 and I believe the answer is no, because if you were on the
17 bypass, your bypass valves were available and your jack was
18 available and you could cool down.

19 Were there any other things that you thought of
20 that, gee, you wish you had that you didn't have that you'd
21 say next time around -- procedure, a piece of equipment,
22 training, you know, anything of that nature that you'd say,
23 you know, give it to me next time so if I have to go through
24 this again it would make it easier for you?

25 MR. REYNOLDS: Well, there is one thing, not



1 specific to this event, but I have identified this and I
2 believe there is modifications in the system now to have
3 this done is to put a wide range level indicator near the
4 feedwater control section of the 603 panel because whenever
5 you are in wide range and you are feeding with feedwater, if
6 you are in manual control then you have to constantly get
7 feedback from the 601 operator or you have to try to get
8 away from your valves, which you are not supposed to do, to
9 see the level indicator which is -- there is a wide range
10 level indicator on 603 but it is fully to the other side of
11 the panel from the level control valves.

12 I have always said I wish we had that over there,
13 and I've mentioned it before to the trainers and to the
14 company and I believe there is a modification in the works
15 to have something placed over there.

16 MR. JORDAN: You need the wide range monitors, the
17 wide range level instrumentation near the --

18 MR. REYNOLDS: -- level control valve section,
19 603, left.

20 MR. JORDAN: That's for feedwater?

21 MR. REYNOLDS: Right.

22 MR. CONTE: Where is the wide range now, which
23 panel?

24 MR. REYNOLDS: Well, there is one wide range
25 indicator that is on 603 but it is fully to the other side



1 of the panel over by the recirc pumps, 602 panel, right? It
2 is the last gauge on that section on the other side of the
3 full core display.

4 MR. CONTE: What is the range of wide range in
5 terms of inches, approximately?

6 MR. REYNOLDS: Wide is 5 to 205.

7 MR. CONTE: And narrow range is?

8 MR. REYNOLDS: 145 to 205.

9 MR. JORDAN: So if you are below 145, and you're
10 feeding with feedwater in manual, you may well be below the
11 implementing the emergency operating procedures?

12 MR. REYNOLDS: Absolutely.

13 MR. JORDAN: So you have a narrow range close to
14 the feedwater --

15 MR. REYNOLDS: You have a narrow and an upset
16 range and then you have the shutdown range is right next to
17 you there but unless you're high, those aren't any good. If
18 you are below 145 you don't know what level it is without
19 getting a report from another operator, who may be busy
20 himself.

21 MR. JORDAN: Okay. Things that looked good to
22 you? Things that you thought went well, that you liked,
23 that you're glad you had?

24 I think one of the things you mentioned earlier
25 was that the training on simulators and the stress on



1 running through scenarios I take it was something that you
2 felt comfortable, you felt that helped you in this type of
3 thing because you'd seen, maybe not this event, but you've
4 seen the type of things where the crews worked together then
5 to accomplish the goals?

6 MR. REYNOLDS: I feel confident that we were well
7 trained to tackle this incident, even though when I first
8 got there I didn't know exactly what it was, but I had
9 confidence in the SSS. I used to be on A shift until June
10 so that I was familiar with that --

11 MR. JORDAN: -- with that crew?

12 MR. REYNOLDS: Right, right. I had worked with
13 them in a simulator for years. I was an original A shift
14 and so I felt confident with the people there. I felt
15 confident that we had been trained and here we are now
16 finally going to use this training which we'd hoped we'd
17 never have the opportunity to use and there we were and we
18 did it.

19 I thought that it was handled well.

20 MR. JORDAN: Okay. Anything else you want to put
21 on the record?

22 MR. REYNOLDS: I don't believe so.

23 MR. JORDAN: Okay, we can go off the record.

24 [Whereupon, at 10:58 a.m., the taking of the
25 interview was concluded.]



143

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: Int. of RICHARD J. REYNOLDS

DOCKET NUMBER:

PLACE OF PROCEEDING: Scriba, N.Y.

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.



IAN ROTHROCK
Official Reporter
Ann Riley & Associates, Ltd.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 311



OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: Nuclear Regulatory Commission
Incident Investigation Team

Title: Nine Mile Point Nuclear Power Plant
Interview of: RICHARD J. REYNOLDS

Docket No.

LOCATION: Scriba, New York

DATE: Wednesday, August 21, 1991

PAGES: 1 - 30

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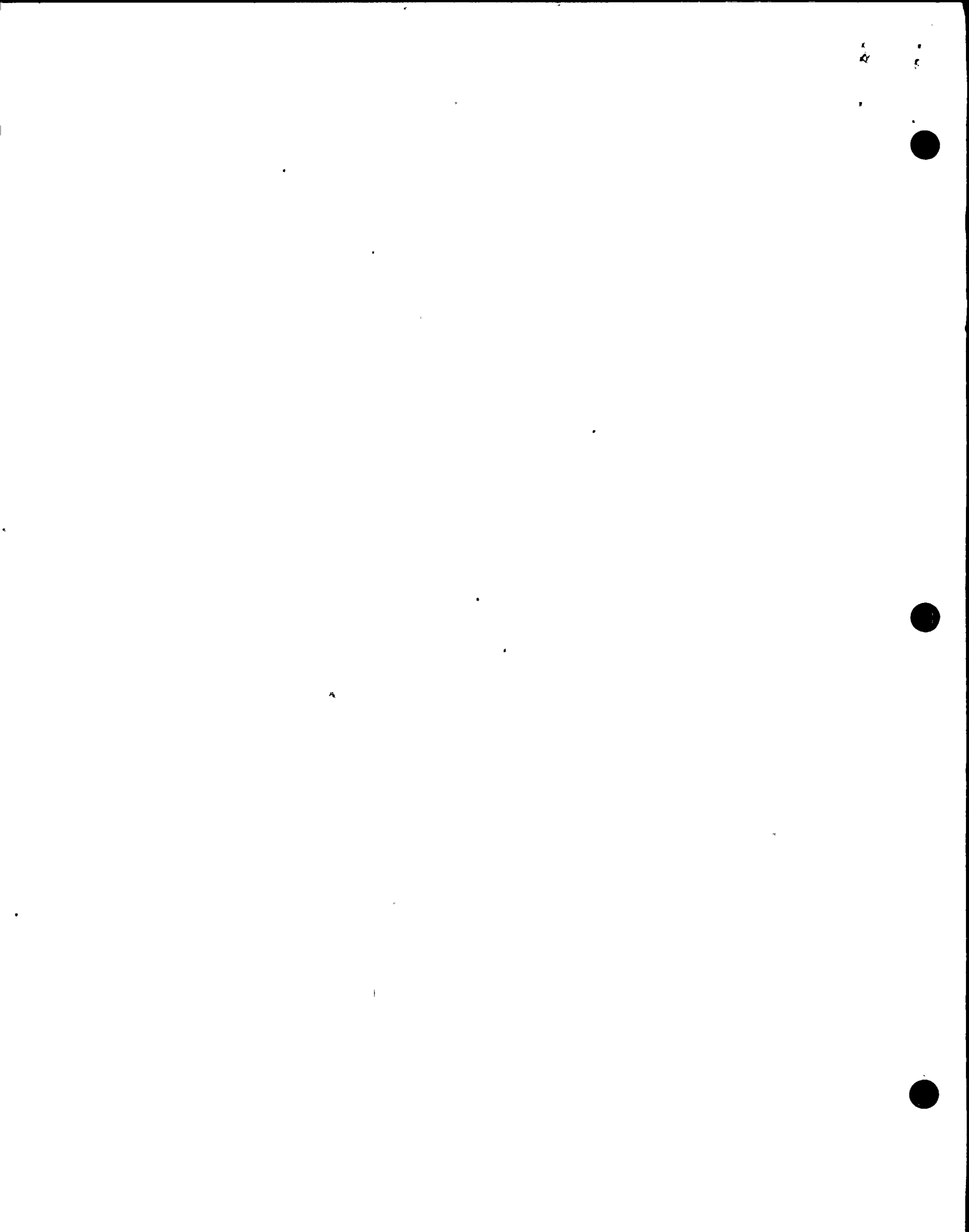


Exhibit 3-1 (continued)

ADDENDUM TO INTERVIEW OF Richard J. Reynolds
(Name/Position)

<u>Page</u>	<u>Line</u>	<u>Correction and Reason for Correction</u>
5	19	Blue should be "B" shift
6	1	NOT should be ON
8	11	UPS should be "OCS"
11	10-12	The OTHER THING WAS Report what condenser vacuum was.
14	6	Probably should be Problem
10	10	that should be NOT
19	15	30 should be OR
29	6	MINUS 5 TO 205

Page ___ of ___ Signature Richard J. Reynolds Date 8/22/91

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
INCIDENT INVESTIGATION TEAM

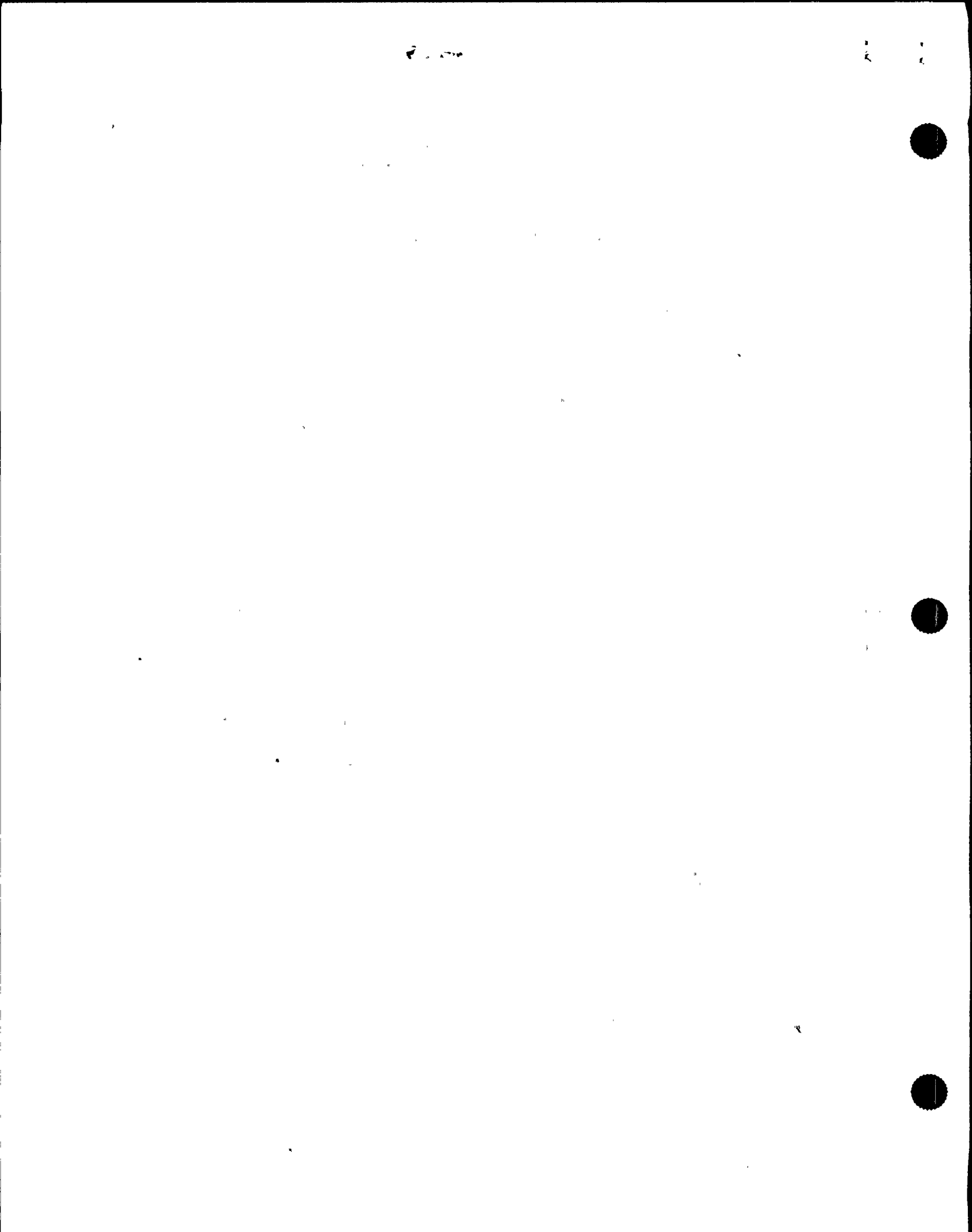
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Interview of :
RICHARD J. REYNOLDS :
(Closed) :

Conference Room B
Administration Building
Nine Mile Point Nuclear
Power Plant, Unit Two
Lake Road
Scriba, New York 13093
Wednesday, August 21, 1991.

The interview commenced, pursuant to notice,
at 10:15 a.m.

PRESENT FOR THE IIT:
Michael Jordan, NRC
Rich Conte, INPO



P R O C E E D I N G S

[10:15 a.m.]

MR. JORDAN: Good morning. It's August the 21st, 1991. It's about 10:15 in the morning. We are at the Nine Mile Point, Unit Two, in the P Building.

We are conducting an interview concerning a transient that occurred on August the 13th, 1991.

My name is Michael Jordan. I am with the U.S. NRC out of Region III.

MR. CONTE: I'm Rich Conte, Region I.

MR. REYNOLDS: My name is Richard Reynolds, and I am a reactor operator at Nine Mile Two.

MR. JORDAN: Okay, Rich. Why don't you go ahead and just first give us a background of what your experience is, your overall experience, background experience.

MR. REYNOLDS: Prior to nuclear operator?

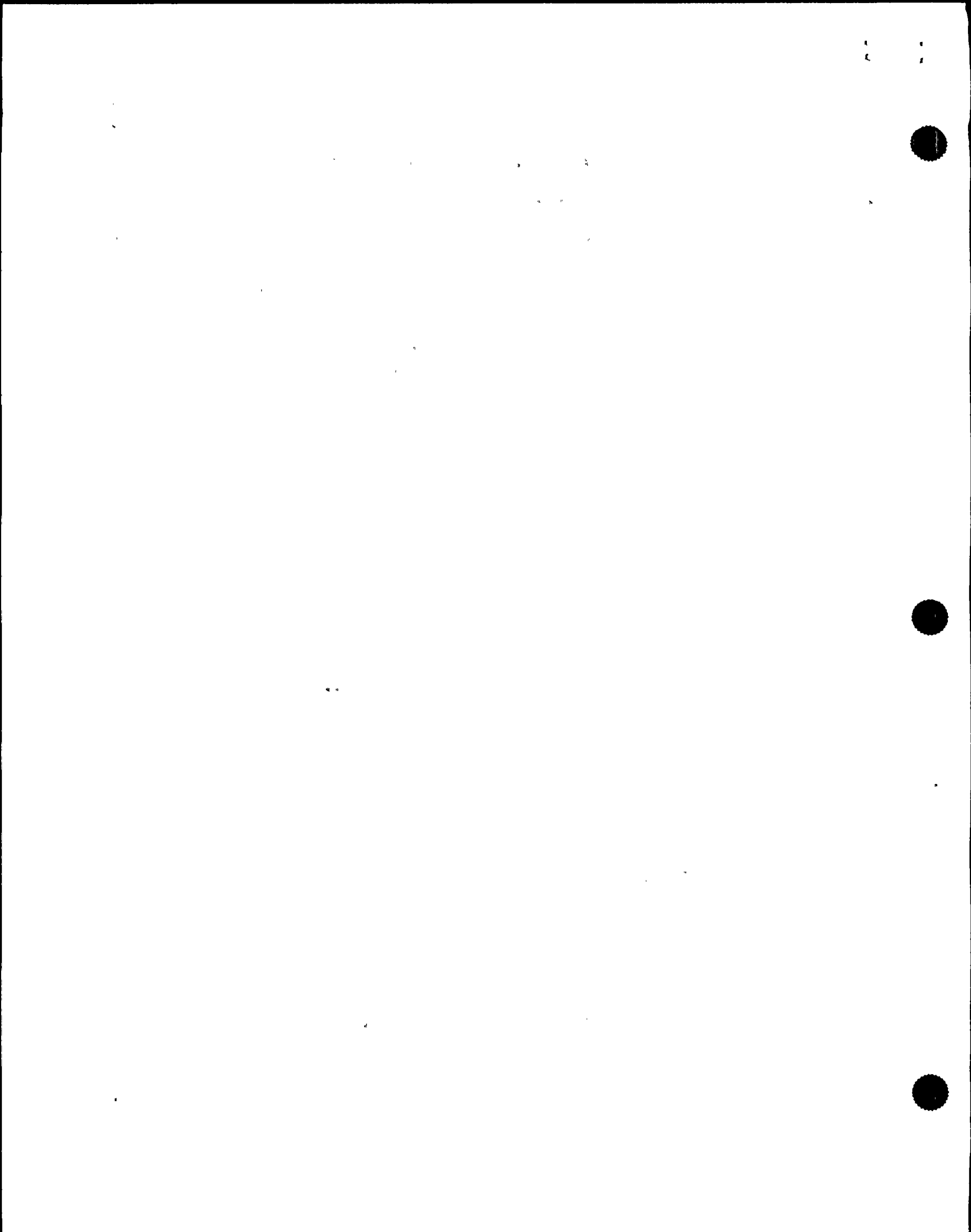
MR. JORDAN: Yes, prior to nuclear operator, when you got to be -- you're a reactor operator and when you got your license.

Are you licensed?

MR. REYNOLDS: Yes.

MR. JORDAN: Okay.

MR. REYNOLDS: I had started working for Niagara Mohawk in May of 1980 as a guard at Unit One I spent two years there, then came to Unit Two as an operator and I was



1 an unlicensed operator for five years, I think.

2 I licensed about two and half, three years ago on
3 Unit Two so I was here through much of the construction.

4 Prior to that I worked at construction at the
5 site, as a laborer.

6 MR. JORDAN: Okay. In your own words, why don't
7 you just tell us what led up to and where you were at when
8 the event happened and first of all, what was your position?
9 Are you -- were you on the Midshifts?

10 MR. REYNOLDS: No, I am a relief operator now.

11 MR. JORDAN: You're a relief operator. That
12 position is a --

13 MR. REYNOLDS: Day crew. I work days or fill in
14 for RO's that are on vacation.

15 MR. JORDAN: But you work strictly days normally
16 and fill in?

17 MR. REYNOLDS: Yes.

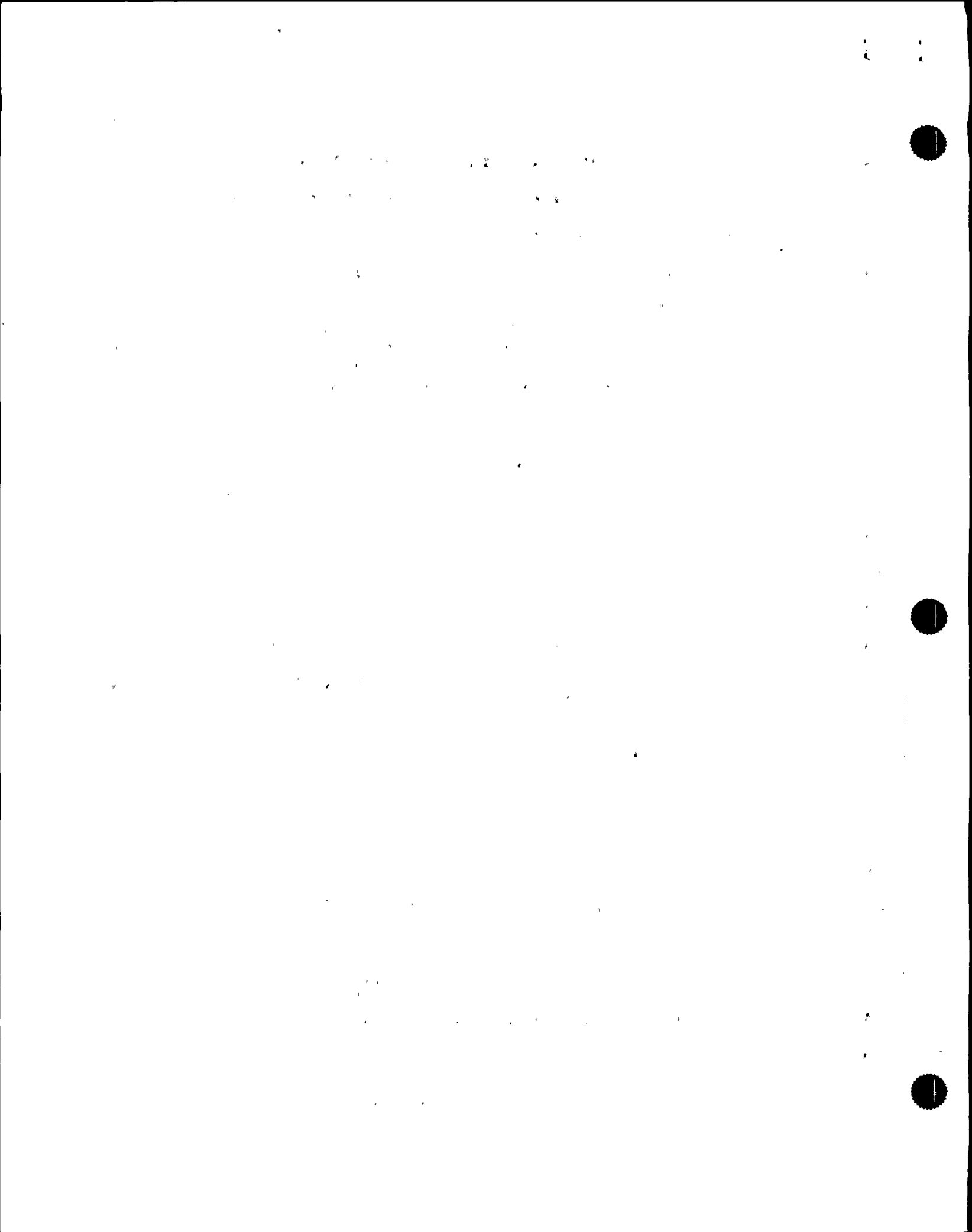
18 MR. JORDAN: So you were coming in about the time
19 of the event?

20 MR. REYNOLDS: That's right.

21 MR. JORDAN: So why don't you take this from that
22 point.

23 When you came through the security gate, which
24 path did you take to get to the control room?

25 MR. REYNOLDS: Okay--



1 MR. JORDAN: Did you happen to be at the gate with
2 the bottleneck because of the site emergency that was
3 declared at 6:00? Or did you --

4 MR. REYNOLDS: No, it must have been seconds after
5 it. There was a few people on the front steps of the
6 security building and they said you better get in there,
7 they're waiting for you! Because they knew I was an
8 operator.

9 I went into the security center -- you're an
10 operator -- the board was up with the "x" under the nut,
11 "not a drill," so I saw that.

12 I wasn't sure what --

13 MR. JORDAN: Where was this board at?

14 MR. REYNOLDS: As you enter the security building,
15 just before you turn to come back through the metal detector
16 and explosives machine there is a large board that security
17 sets up whenever they are having a drill or an emergency
18 situation.

19 That was the first true indication I had that
20 something was wrong, so I came through security. They asked
21 me if I was an operator. I said yes, so they let me in
22 because they weren't letting anyone else in at the time.

23 I proceeded to my locker to get my keys and my
24 dosimeter so that if I was needed to go out in the plant I
25 could get where I had to go to.



1 MR. CONTE: What building is the locker room?

2 MR. REYNOLDS: It's in the control building, the
3 aux services building.

4 MR. CONTE: Did you notice any lighting problem
5 when you went through those buildings?

6 MR. REYNOLDS: It's right by the Cardox tanks, as
7 soon as you enter the building, and I really hadn't seen the
8 lighting problem yet.

9 MR. CONTE: Take us -- keep walking.

10 MR. REYNOLDS: Okay. Two operators came and stuck
11 their head in the locker room door -- my locker is just
12 inside the door and said, hey, have you got a flashlight? I
13 did so I gave them my flashlight and they said they were
14 going down to look at the UPS panels. So then I proceeded
15 ot the control room after that.

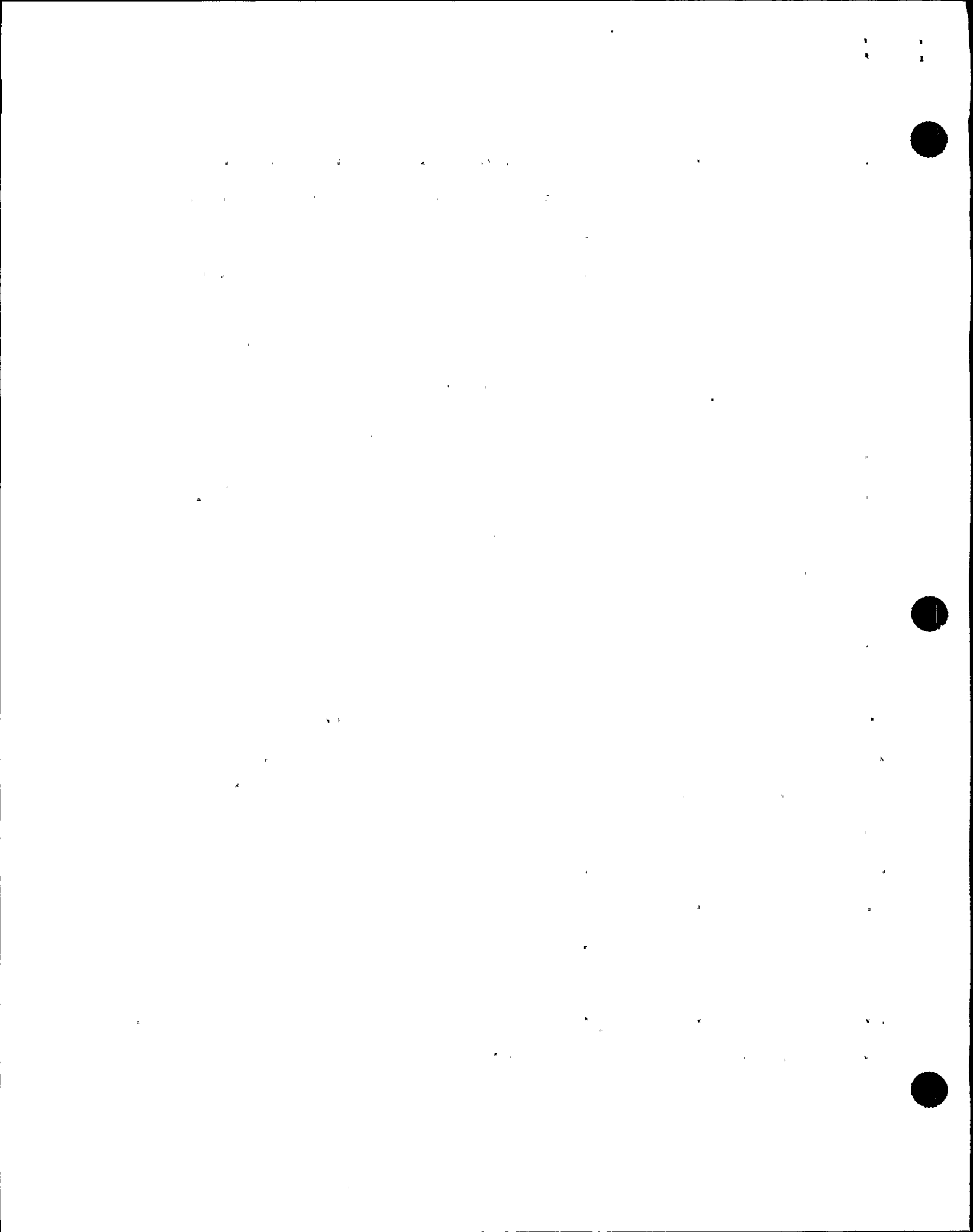
16 MR. JORDAN: Do you know who those guys were?

17 MR. REYNOLDS: Mike Garbus, who is one of the
18 relief CSOs, and I believe Bob Spooner, who is the CSO on
19 blue shift.

20 Then I proceeded to the control room. I entered
21 through the back door.

22 MR. CONTE: No lighting problems on the path you
23 took --

24 MR. REYNOLDS: The stairwell! The stairwell I
25 noticed and since they said UPS, and I am aware that the



1 stairs, emergency lighting on the stairs is not UPS --

2 MR. CONTE: That was black? Was that black or did
3 it have some emergency lighting on it?

4 MR. REYNOLDS: There was some lighting in there
5 but it wasn't bright like normal.

6 MR. CONTE: How do you define the stairwell?
7 Southwest corner of the control building? Southeast corner
8 of the control building?

9 MR. REYNOLDS: It's north.

10 MR. CONTE: Is it on a corner of the building?

11 MR. REYNOLDS: No, it's not actually in the
12 control building. It's by the turbine building elevator.
13 It's the north --

14 MR. CONTE: When you go in through the Cardox and
15 you make a right there immediately at that elevator?

16 MR. REYNOLDS: That -- an elevator, yes.

17 MR. CONTE: Okay. We have been calling it the aux
18 service building.

19 MR. REYNOLDS: Yes, it's the actual correct name.

20 MR. CONTE: Aux service building, okay. Continue
21 on your path to the control room.

22 MR. REYNOLDS: Then when I entered the front
23 control panel area I saw the SSS was at the EOPs and I
24 looked around and saw that there were no annunciators or
25 just two or three. I'd never seen that so dark.



1 MR. JORDAN: Do you have any idea about what time
2 this is?

3 MR. REYNOLDS: This had to be someplace around ten
4 to twelve or you know fifteen after 6:00, when I got to the
5 control room. I was standing behind the SSS and Brian
6 Hilliker, who was operating RCIC, was giving me a brief on
7 what he up to that point as far as he knew had transpired.

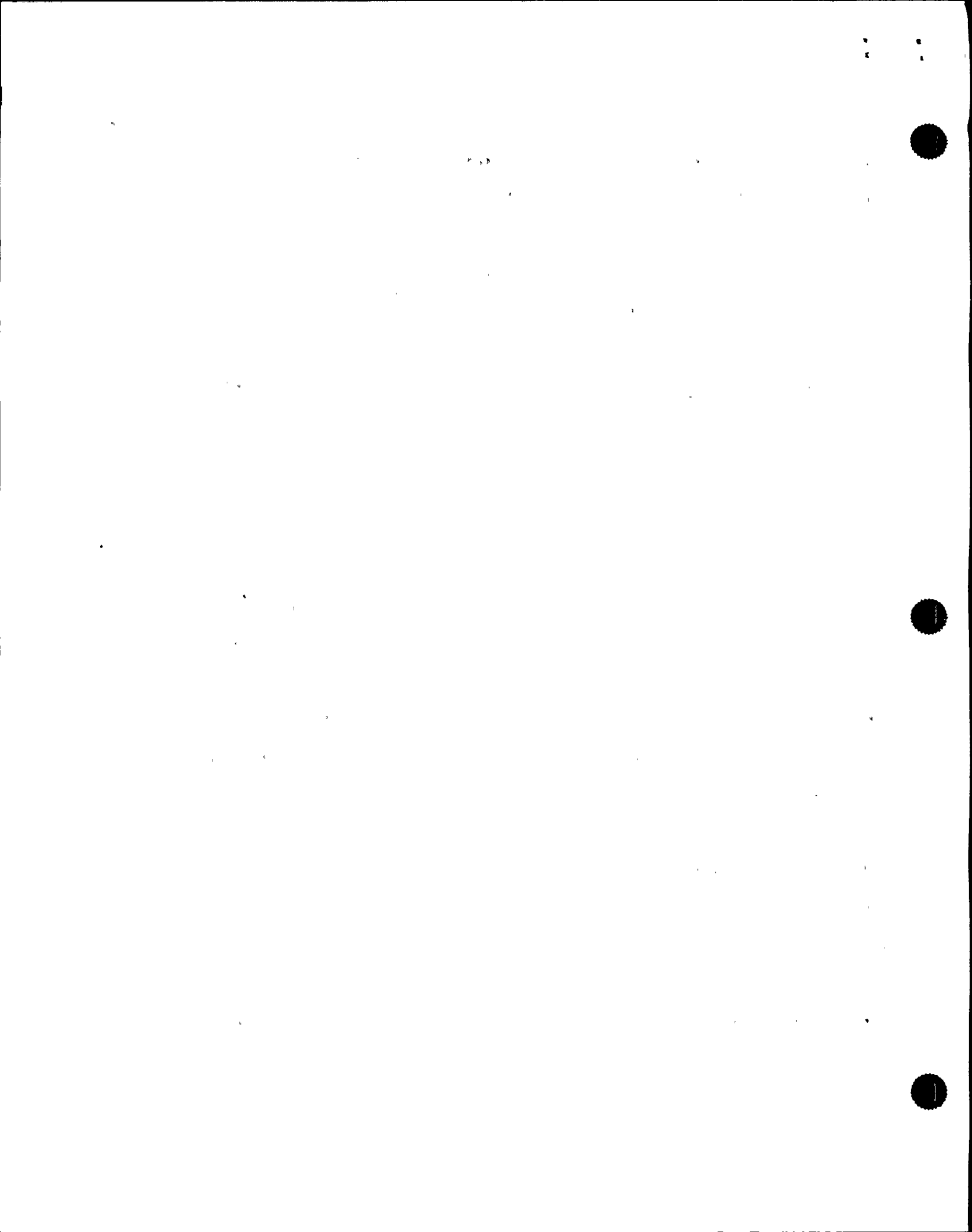
8 Then he just told me they were having a problem
9 with feedwater. They were trying to watch the level, that
10 there was some kind of a power loss, so I told Mike Conway,
11 who is the SSS, Conway, that I was there and available to
12 assist.

13 Then he was still dealing with the level and the
14 control rod problem, as I remember. I then went over to the
15 electrical panels, the 852 panel, and I was trying to
16 ascertain what power we had lost. I wasn't sure at that
17 point, I don't know if anyone was but I wasn't, of what was
18 gone.

19 I knew there was a problem with the UPS because
20 the computer was off and the here-here wasn't working.

21 MR. JORDAN: How did you know the here-here wasn't
22 working?

23 MR. REYNOLDS: Somebody told me that, that the
24 here-here was out, the Gaitronics I know, and they go before
25 so I knew that was an UPS supply system.



1 MR. JORDAN: I'm going to ask you something. Is
2 there a difference between the Gaitronics and the here-here
3 system?

4 MR. REYNOLDS: They are the same. The Gaitronics
5 is the here-here. I'll just try to use the correct name.

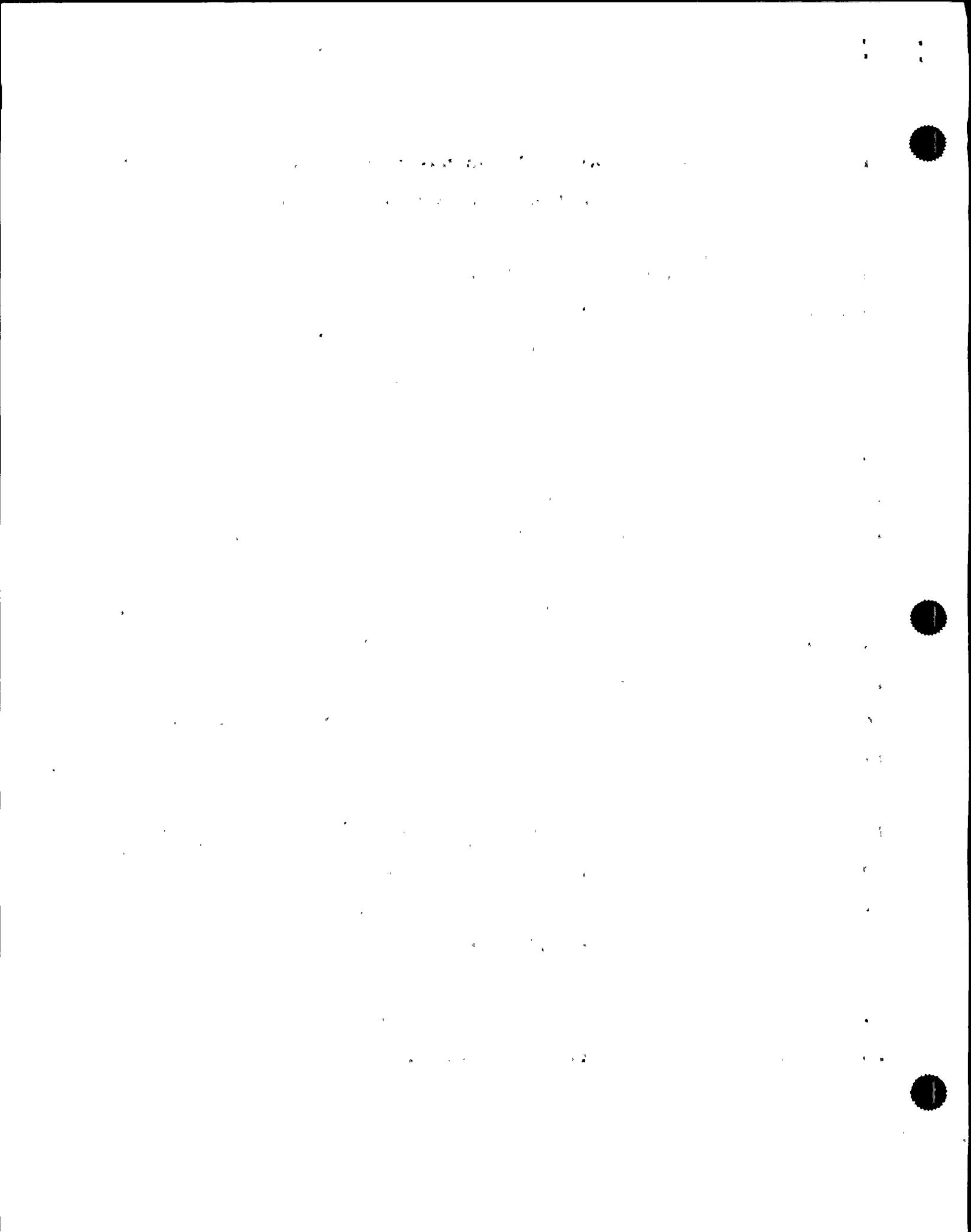
6 MR. JORDAN: That's fine. That's fine. I was just
7 curious. We hear Gaitronics and then we hear here-here and
8 I was just curious. I always thought that they were the
9 same and I just wanted to confirm that they are the same.

10 MR. CONTE: While we're asking for clarifications,
11 how did the UPS radio get to be called "leaky wire?"

12 Is that a slang or what?

13 MR. REYNOLDS: No. There is a re-transmitter on
14 the system, as I understand it, and this comes from my guard
15 training, that you transmit on your radio on a certain
16 frequency and this leaky wire goes all through the plant.
17 It's a gray cable that's encased in plastics about oh a
18 half-inch cable. There is one right by the door to the
19 Cardox room that comes down on a cable tray on the outside
20 of it and when you transmit, you transmit on a certain
21 frequency that goes into the leaky wire, which in turn goes
22 to the retransmitter which transmits at another frequency so
23 that your radio is receiving and sending on a different
24 frequency actually.

25 MR. CONTE: I see, okay.



1 MR. REYNOLDS: That way you can talk from parts of
2 the plant that you couldn't possibly -- a little walkie-
3 talkie couldn't penetrate the concrete and steel that's
4 between you and the control room.

5 MR. JORDAN: Is "leaky wire" an acronym or is
6 leaky wire a --

7 MR. REYNOLDS: I don't really know.

8 MR. CONTE: That's fine, we were just wondering.
9 We have heard "leaky wire" about a thousand
10 times.

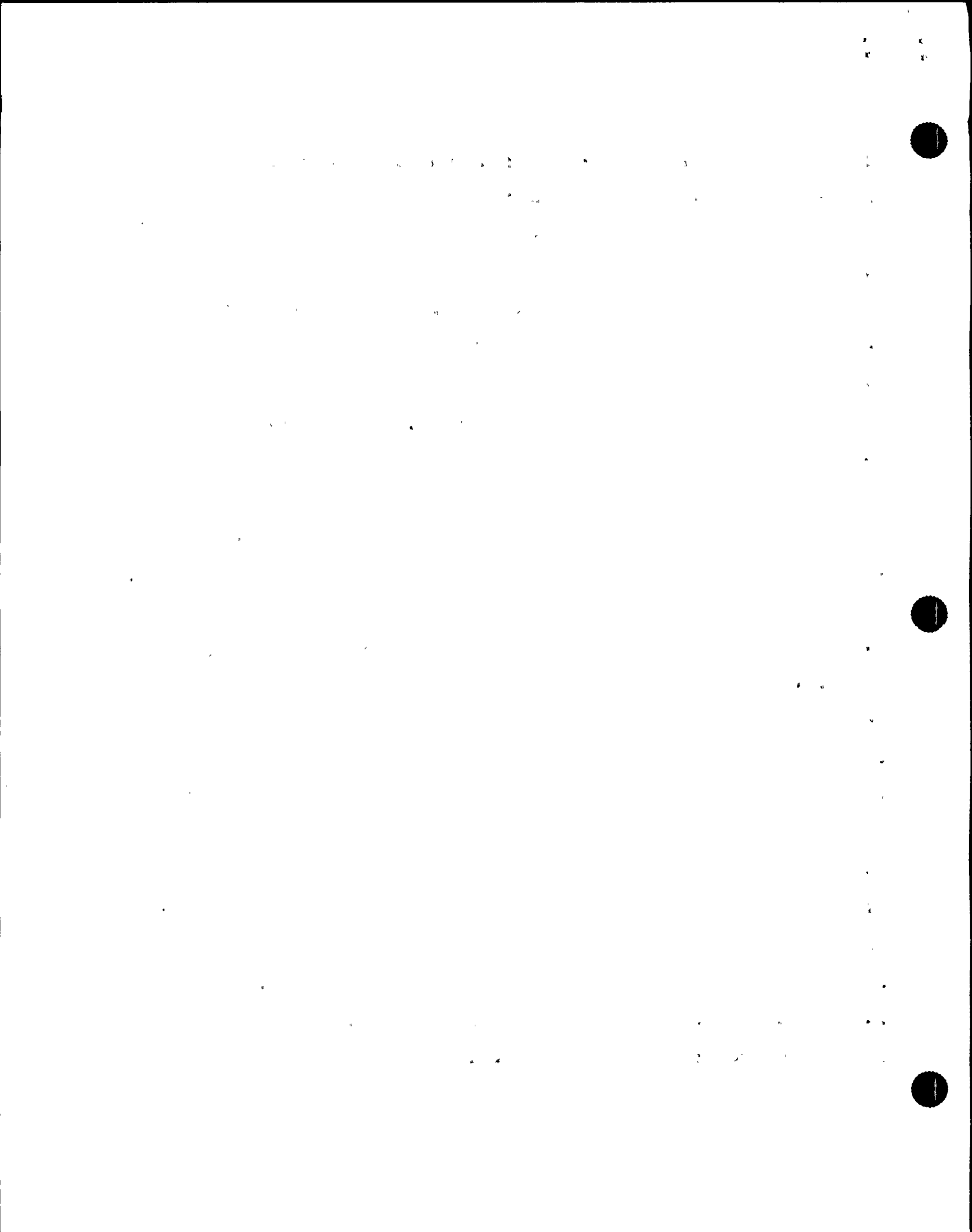
11 MR. JORDAN: We were just curious where the term
12 "leaky wire" came from. That is what they call the system.
13 I understand how it works. I was just curious that it was
14 an acronym or a vendor name or whatever, and if you don't
15 know, that's fine.

16 Go ahead. You were saying you were in the control
17 room.

18 MR. JORDAN: You were looking at the electrical
19 panels. You had heard that the here-here was off. You knew
20 the computer was off.

21 MR. REYNOLDS: The Gaitronics was off.

22 I was looking at the indications for power to the
23 emergency buses, that the diesels were not on, so that it
24 wasn't an offsite power loss. These are things that I'm
25 assuming as I go through my inspection of the panels. I was



1 just about to the end of that panel, ready to go on to the
2 851 panel -- I think that's when the power came back to the
3 UPS, not all at once, and I couldn't identify which thing
4 came back first.

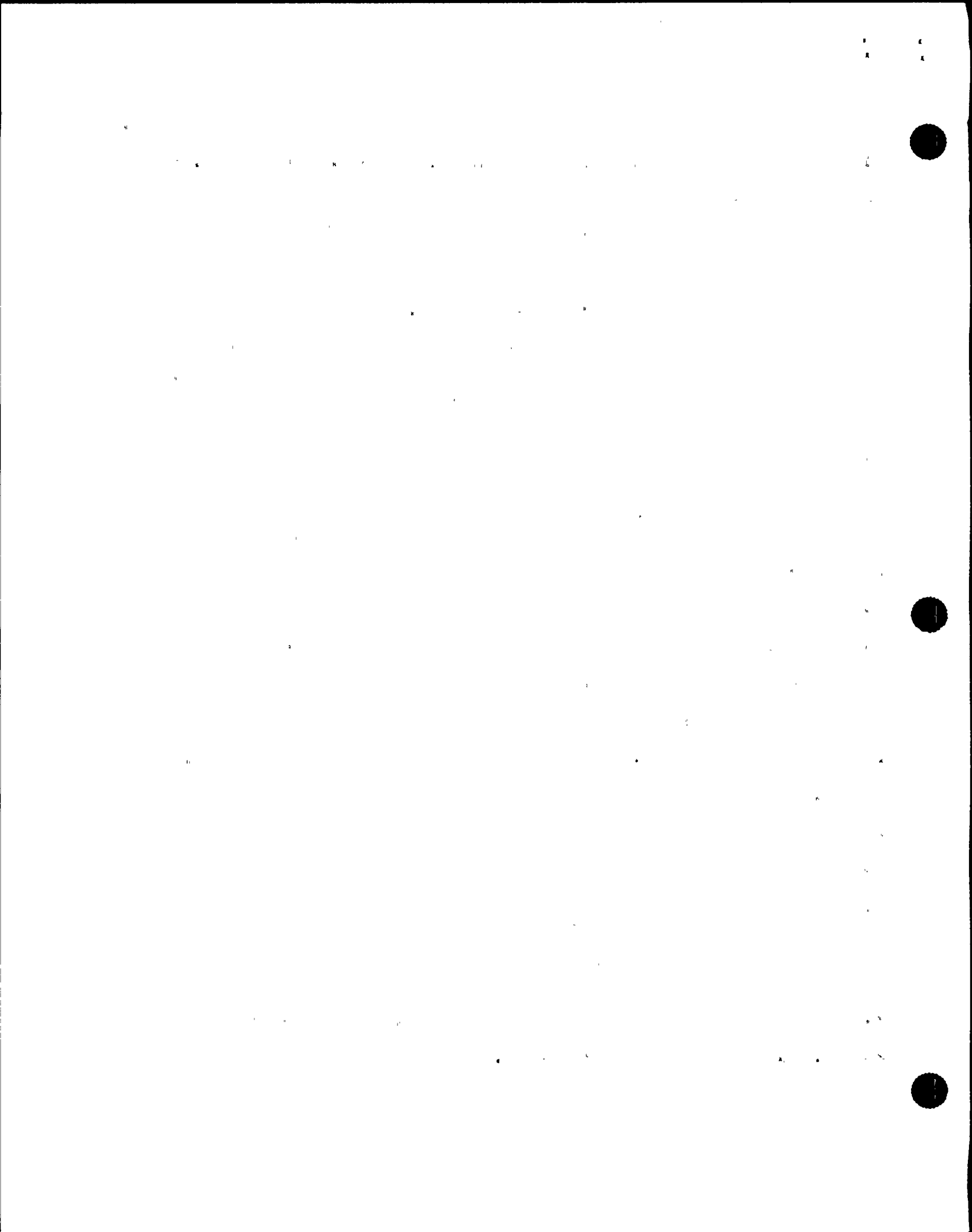
5 MR. CONTE: You're the first I heard that talks
6 about reviewing the electrical power distribution system on
7 the left there, at the panels. Did you notice anything
8 unusual on those power distribution breaker position
9 indications?

10 MR. REYNOLDS: No, I don't believe so. I think
11 they were what I expected: the tripped breakers, the green
12 flags, red flags, red lights, green lights.

13 MR. CONTE: And you remember confirming that house
14 loads were on the reserve transformers, that that shift had
15 been successful because of the trip? Or don't you remember
16 verifying that?

17 MR. REYNOLDS: I think I satisfied myself. I
18 don't know if I verified it to anyone else. It's difficult
19 to recall, because of the exciting feeling at the time. It
20 was a rather exhilarating and not an altogether pleasant
21 experience.

22 MR. CONTE: Okay. Well, the bottom line is, you
23 don't remember the specifics. You did check that panel, and
24 then you got put on some other assignment, or you heard
25 about UPS coming back on line.



1 MR. REYNOLDS: Well, no. Annunciators started
2 coming on.

3 MR. CONTE: Okay.

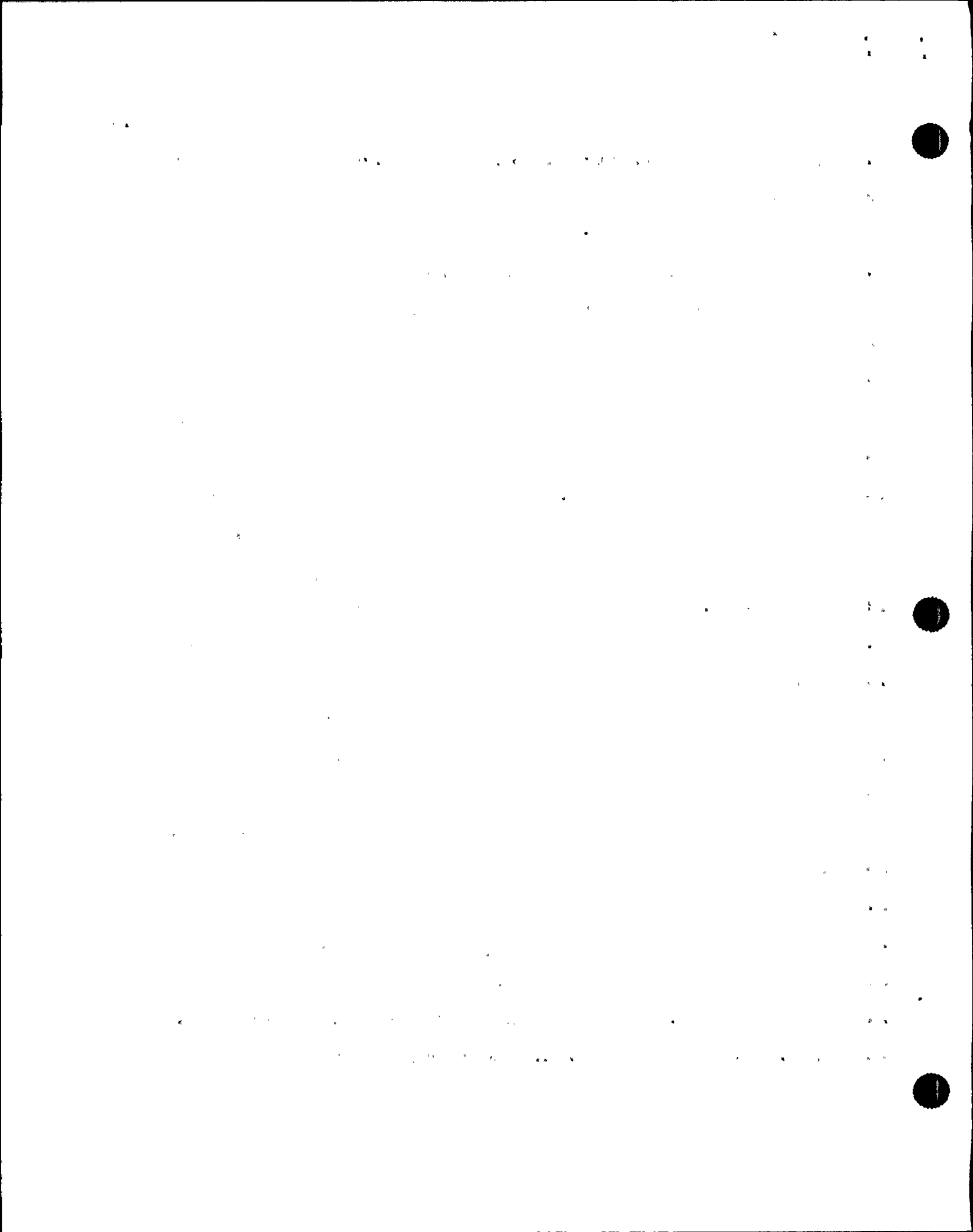
4 MR. REYNOLDS: That's when we just tried to take
5 care of the alarms that were coming in, seeing what was
6 valid. There were more people in the control room by then;
7 more people had arrived.

8 The SSS assigned me two things. He asked me
9 questions to verify for him, and I swear I don't recall -- I
10 remember there were about two things he said: tell me what
11 something is -- and I don't remember what he said -- and I
12 found that out for him and went back and told him, and
13 another thing. Then they were trying to get back some
14 feedwater supply, and shortly he assigned me pressure
15 control. That's where he gave me a pressure band for the
16 EOPs, to use a bypass valve to maintain pressure. That's my
17 involvement up to that point, and that was about it. After
18 that, I just maintained the pressure in his band, and then,
19 as he expanded it and said, Cool down at a certain rate, I
20 did that.

21 MR. CONTE: Did you fill out an operator statement
22 at the end of this event, later in that day?

23 MR. REYNOLDS: No.

24 MR. CONTE: I was going to ask, maybe you had put
25 it down in that operator statement, what the SSS had asked



1 you to do, those two items, but, since you don't have a
2 statement, I guess we don't know -- we won't know at this
3 point -- not that it's important. Anything that will help
4 you refresh your memory is permissible to come in here.

5 So you don't remember that. You went on to the --
6 you were given the pressure control band on the bypass
7 valves.

8 MR. JORDAN: Do you know what the band was?

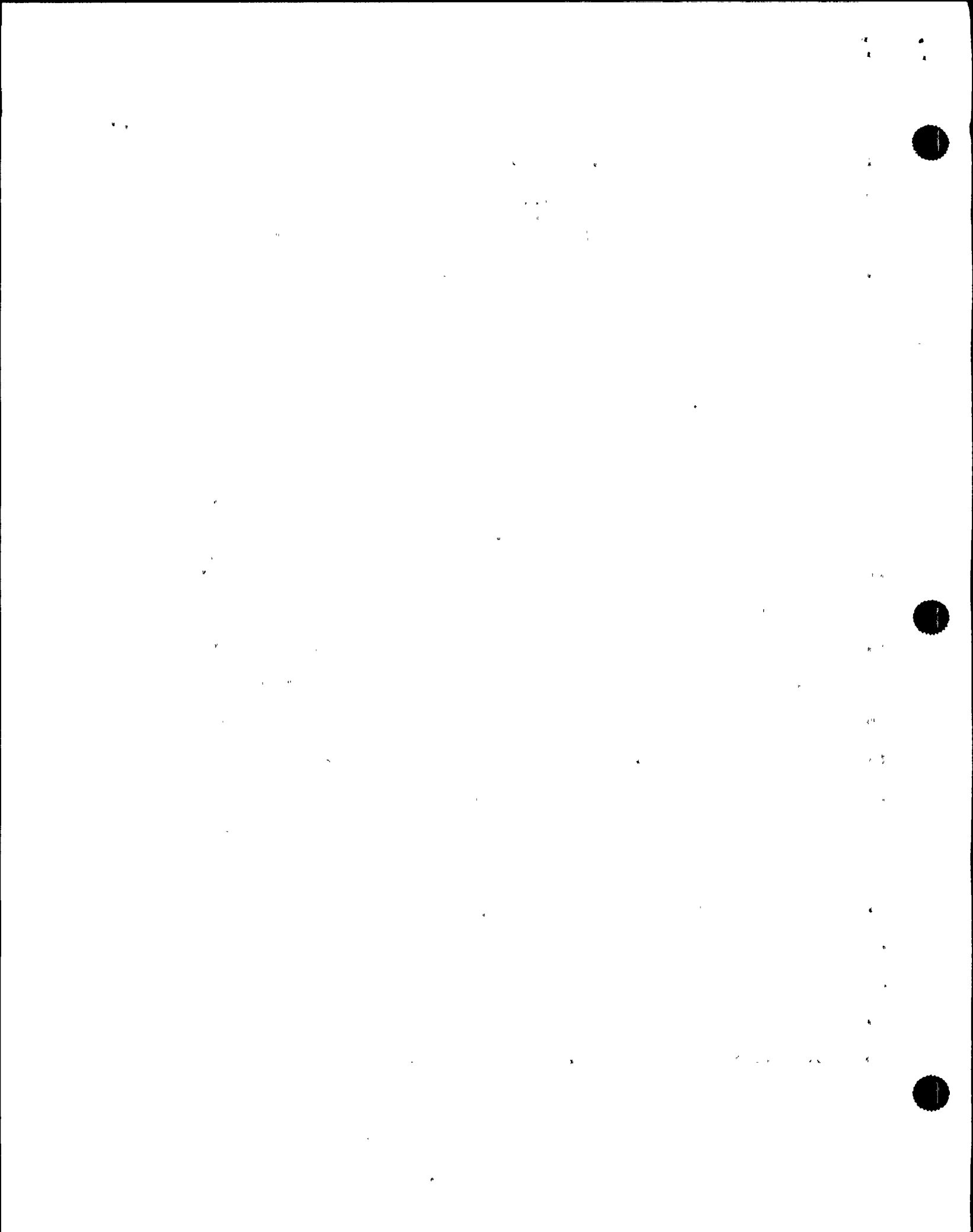
9 MR. REYNOLDS: The initial band, I believe, was 5
10 to 600. It could have been 7 to 600. I try not to
11 memorize them, because they change as you move along through
12 any kind of a scenario or an event. The pressure band
13 changes, so, if you don't really memorize the one that
14 you're at, you'll be able to remember the one that you're
15 supposed to have right now. I'm not sure if it was 7 to 6,
16 but it was within the capacity -- I believe it was 6 to 5,
17 so it was within the capacity of a booster pump, which they
18 were trying to start at the time.

19 MR. CONTE: By the way, another curiosity question
20 on the design. What's the bypass capacity of those bypass
21 valves, 100 percent reactor power or what?

22 MR. REYNOLDS: Approximately 25.

23 MR. CONTE: Okay.

24 How long were you on the pressure control with the
25 bypass valves? The whole morning, or what?



1 MR. REYNOLDS: All day.

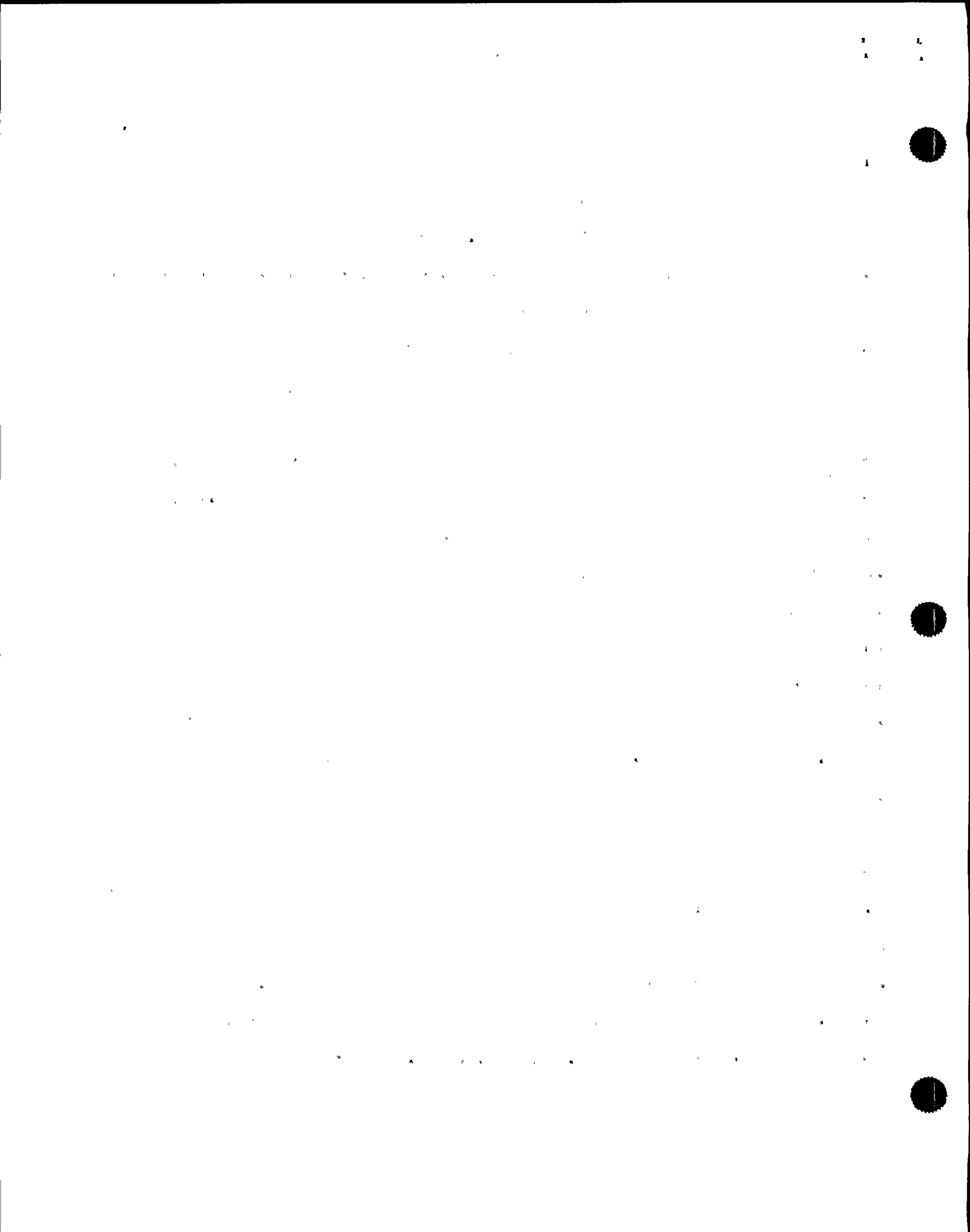
2 MR. CONTE: All day?

3 MR. REYNOLDS: Well, first it was pressure control
4 per the EOPs, and then I was to proceed with the cool-down,
5 so I monitored the pressure and opened bypass valves as
6 required to allow the unit to cool down. At first I had to
7 coordinate with the operators on the booster pumps, so that
8 we didn't end up with a big cold-water addition or exceeding
9 cool-down rate right off and we didn't have any swells if I
10 had to shut the valve, and we wouldn't have a shrink.

11 It went very smoothly as far as the pressure
12 control and the cool-down, very smooth. There were no
13 transients through that.

14 MR. CONTE: While you were concentrating on
15 pressure control, were you able to make some assessment of
16 the mood in the control room, in terms of crowd control,
17 noise level from people throughout the day, overall command
18 and control? How would you characterize those aspects, or
19 were you too busy looking at your pressure control band,
20 concentrating on that?

21 MR. REYNOLDS: I thought it was very good. There
22 was never any question about who was in charge. All the
23 instructions were clear and concise, and people repeated
24 back their instructions. It looked like a simulator
25 scenario for an exam. It looked like an evaluated simulator



1 scenario.

2 [Laughter.]

3 MR. REYNOLDS: In fact --

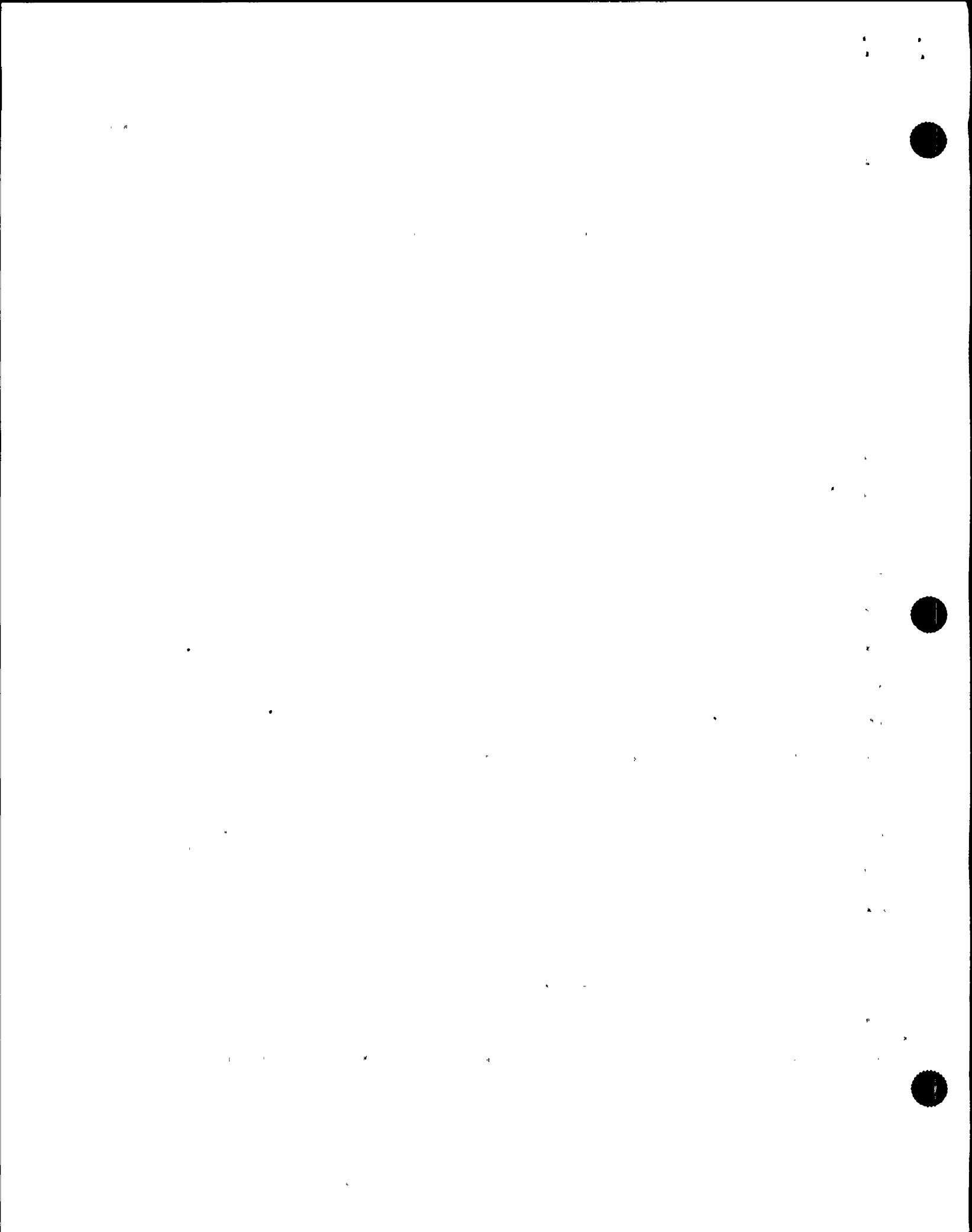
4 MR. CONTE: We're laughing because we oversee
5 those simulator scenarios in the exams.

6 MR. REYNOLDS: If we had had this probably as a
7 simulator scenario, we would have asked for something more
8 realistic.

9 MR. CONTE: So once again, normal, day-to-day
10 communications may get a little sloppy. Generally, people
11 try to make an effort to repeat back. But in light of, this
12 was a real event, it just made people aware to respond and
13 put themselves in the simulator scenario environment and
14 perform in good communications and things like that. Is
15 that what you're saying?

16 MR. REYNOLDS: I know that's what happened in my
17 mind, when I first came in the control room. I looked
18 around and saw that the annunciators were all out. This is
19 something that I had never seen, except in the simulator.
20 My mind started to put me in a simulator frame of mind,
21 performance-enhanced excitement, I guess. I don't know what
22 you'd exactly call it.

23 MR. CONTE: That's a good point. We were going to
24 ask you that question. What have you seen before in
25 training on this kind of a problem? Clearly I don't think



1 anybody has thrown the all-five-UPS failure at you in the
2 simulator, but have they put you through drills where some
3 UPS's have gone down? You've seen the loss-of-annunciator
4 situation? You've seen the frozen APRM meters.

5 MR. REYNOLDS: Yes.

6 MR. CONTE: Everything that I just said?

7 MR. REYNOLDS: I believe so, yes -- in training.

8 MR. JORDAN: In training? For the record, say
9 what you saw?

10 MR. REYNOLDS: We've had all those scenarios
11 played before us or evaluated in the simulator.

12 MR. CONTE: Okay.

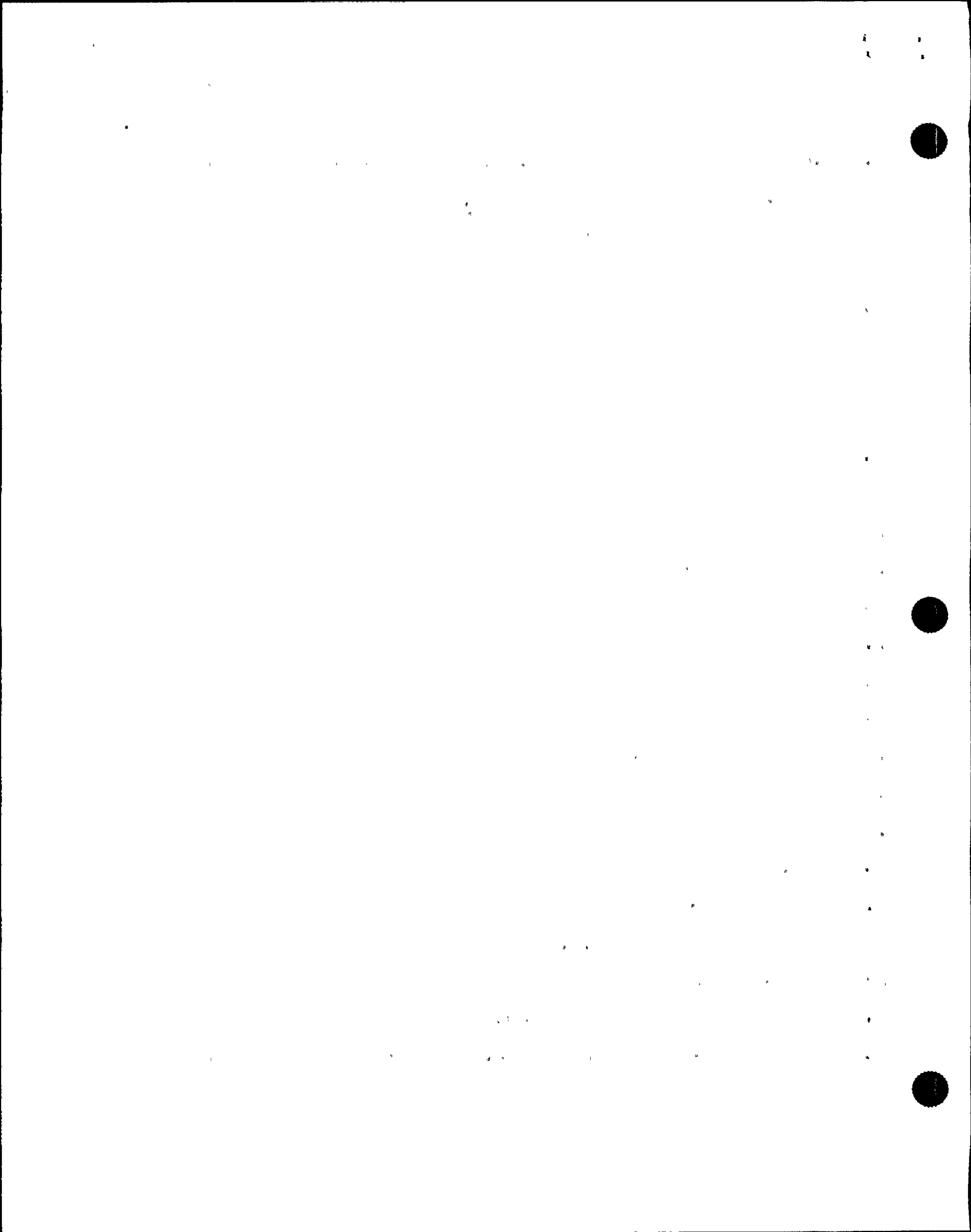
13 MR. REYNOLDS: In fact, they just started
14 stressing electrical more than they had in the past, due to
15 the line 5 loss a few weeks or months ago.

16 MR. JORDAN: What happened during the line 5 loss?
17 Were you on shift at that time?

18 MR. REYNOLDS: No, I wasn't there.

19 MR. JORDAN: Okay. Do you know what -- was there
20 a training session? What was taught? What lessons were
21 learned from the line 5 losses you know that happened?

22 MR. REYNOLDS: They showed us in the simulator --
23 attempted to recreate it, so that everybody was more
24 familiar with it. The individual who were there that day
25 said that it went well, that everybody did just what they



1 were supposed to do for a loss of offsite power for one
2 line, and the plant performed exactly as expected, as far as
3 the service water, the load sequencing, the diesel start.
4 That was for the line 5 loss.

5 MR. CONTE: We're not that familiar with offsite
6 power distribution. Could you briefly explain lines 1
7 through 5, 6, 7? How many lines do you have coming into the
8 plant?

9 MR. REYNOLDS: Line 5 and 6 are the two incoming.
10 They're numbered by power control, and that, numbered by us,
11 is 1, 2, 3, 4, 5 outgoing-incoming. They're numbered by
12 power control. It's line 5 Scriba and line 6. They're our
13 two 115 offsite power supply lines.

14 MR. CONTE: These are the transmission lines. You
15 could see one going to the east of the cooling tower and the
16 other one going to the west of the cooling tower, across the
17 road, going out to Scriba. Is that the lines you're talking
18 about?

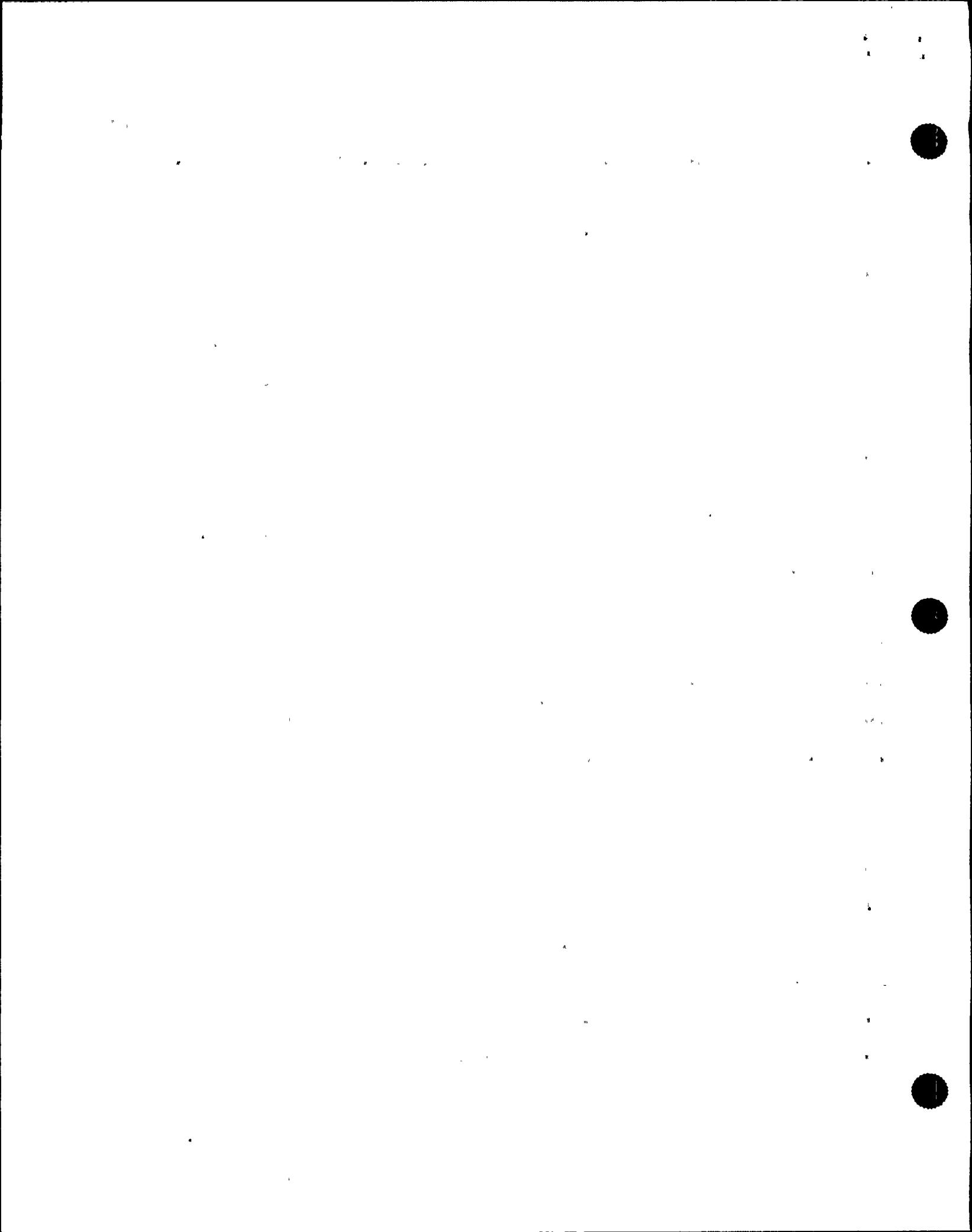
19 MR. REYNOLDS: Right. They come into the 115
20 yard.

21 MR. CONTE: So lines are dedicated to Unit Two.

22 MR. REYNOLDS: Out of the Scriba sub. That's
23 correct. One's off one ring, and one's off the other.

24 MR. CONTE: Okay.

25 Is there any intertie, like with FitzPatrick and



1 Unit One on site here, or is that intertying done over at
2 Scriba station?

3 MR. REYNOLDS: It's all across the road, at the
4 Scriba sub.

5 MR. CONTE: Okay.

6 MR. JORDAN: And when was this line 5 lost?

7 MR. REYNOLDS: I'm not sure what the date was.

8 MR. JORDAN: A couple weeks ago, a month ago, two
9 years ago?

10 MR. REYNOLDS: No, it was this year, but it was --
11 I'm trying to think why I wasn't there, whether I was on a
12 day out. See, I just became a relief operator in June, so
13 it was before that.

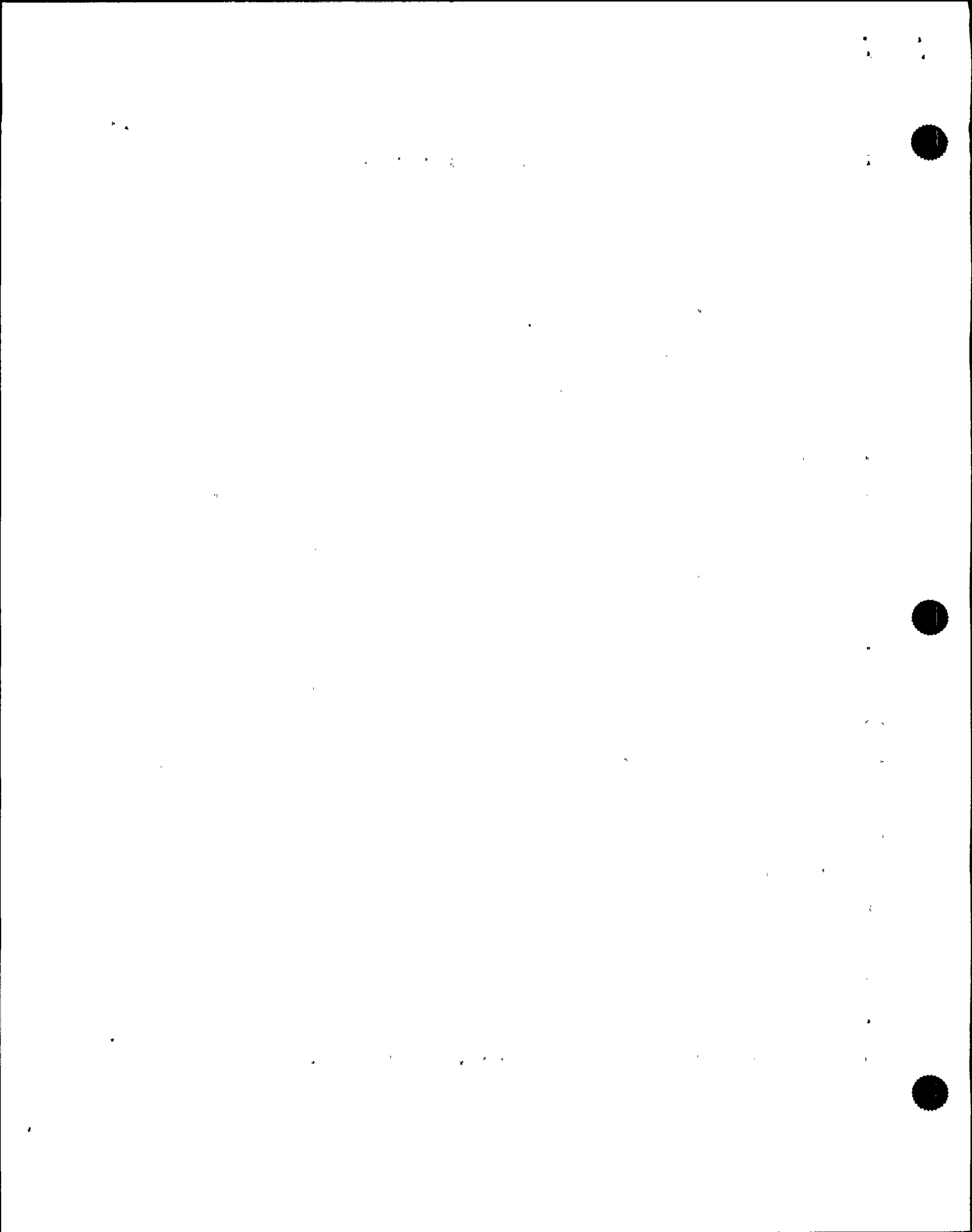
14 MR. JORDAN: But it was this year, though.

15 MR. REYNOLDS: It was this year, yes.

16 MR. JORDAN: I want to go back just a little bit,
17 and then we can go on.

18 One of the things that Rich asked was about crowd
19 control in the control room, and you mentioned that you
20 thought that things were going well, that it was well
21 controlled. Did you feel there was a lot of people around
22 you? Did you feel tightly squeezed, that you could get to
23 where you needed to, accomplish what you needed to do?

24 Do you feel like there were more people than what
25 you needed to do your job -- you personally?



1 MR. JORDAN: Let's go off the record.

2 [Pause to answer door.]

3 MR. JORDAN: We went off the record for a minute
4 because of an interruption by a transcriber and now we're
5 back on record.

6 MR. REYNOLDS: All right. Let's see. The
7 question was, did I feel crowded?

8 MR. JORDAN: Yes.

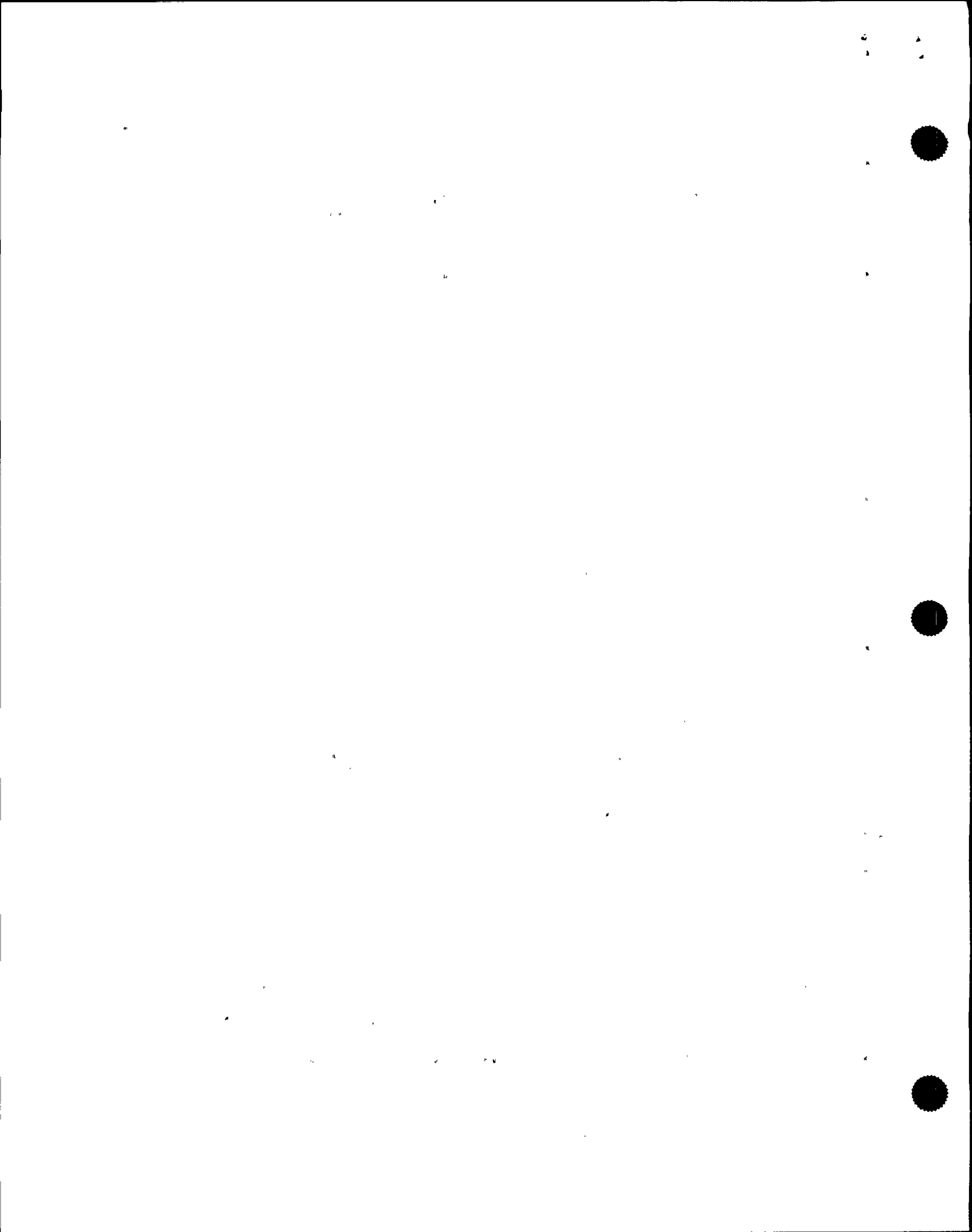
9 MR. REYNOLDS: No. I never felt crowded. I had
10 plenty of room at the panel. There were a lot of people in
11 the control room. I must say there was more than you would
12 need but there was the right amount of people there if you
13 needed people to go out in the plant. There was, you know,
14 they had three shifts of people I think there.

15 MR. JORDAN: But for you to accomplish your
16 assigned duties there was no problem with --

17 MR. REYNOLDS: There was no crowding at my panel
18 where I was.

19 MR. JORDAN: What were the two assignments that
20 you don't remember doing, if you remember?

21 MR. REYNOLDS: One I recall now was -- you asked
22 me a question about feedwater pumps and I identified that
23 the LV10s, the feedwater level control valves, were locked
24 up and -- it finally came back to me. I knew there was
25 something up there. I'm doing it in my mind. I'm walking



1 up that way.

2 I went back and reported to the SSS that the LV10s
3 were frozen. They were locked up and --

4 MR. JORDAN: What did you use for that indication?

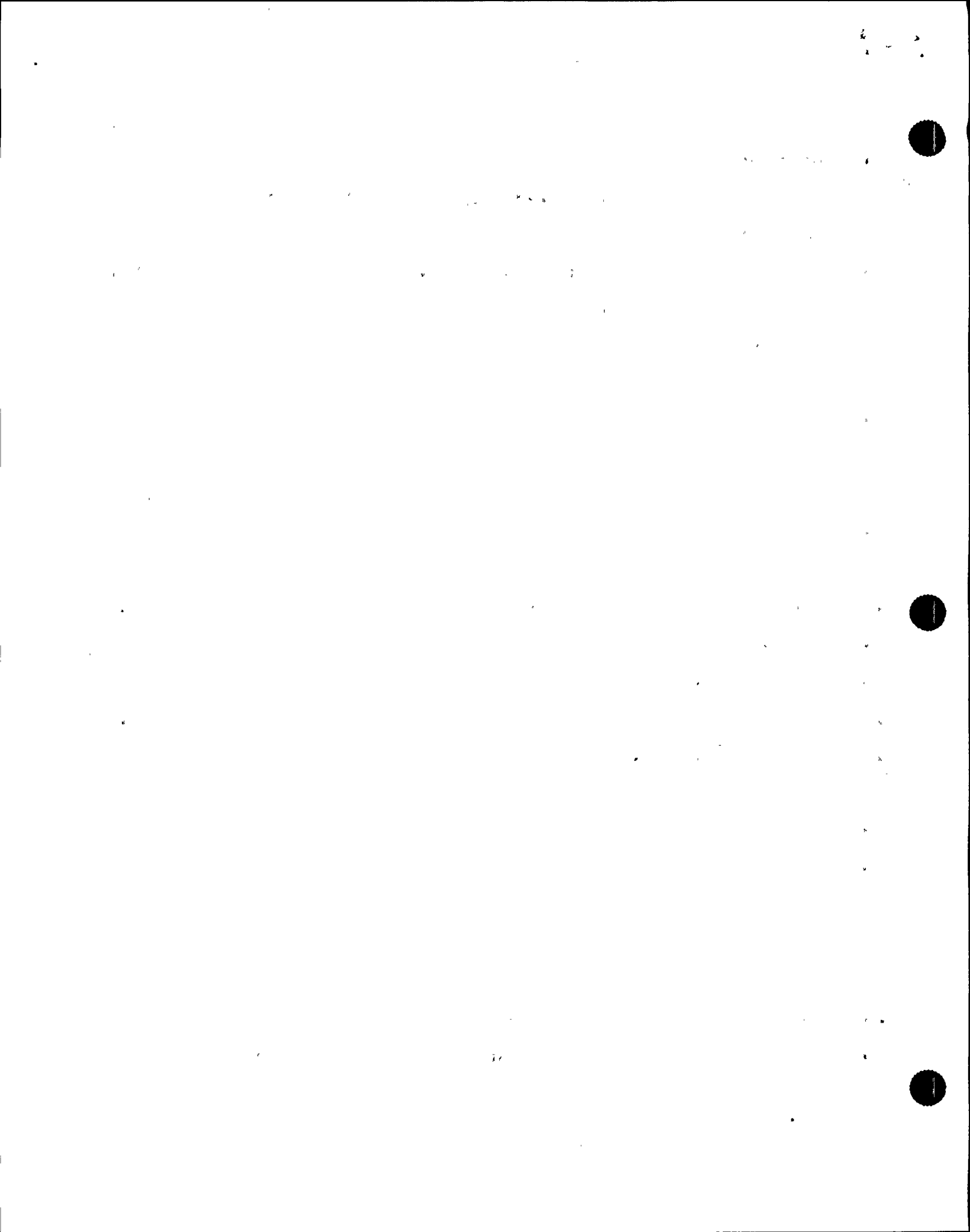
5 MR. REYNOLDS: The orange lights above -- there is
6 a lockout above the LV10 controllers, level valve
7 controllers, and the fact that what the controller was
8 asking for in the indicated valve position -- the valve
9 position was 60 percent or so, normally where it is 100
10 percent power, and what it was requesting was way down,
11 lower, much much lower, and so we reset it though so that we
12 could shut them because I am always very conscious of an
13 overfeed whenever we have any kind of a scram. That is one
14 of the things I look at.

15 We have had, long ago, the first 30 second scram
16 the plant ever experienced there was an overfeed or it may
17 have happened more than once then, long ago, so it's one
18 thing that I always try to remember.

19 MR. CONTE: Are you sure that the controller was
20 not fooling you from the point of view that UPS power was
21 out? How do know that that controller was --

22 MR. REYNOLDS: Well, the power was back. The UPS
23 power was back on by now. Any assignment he gave me of the
24 one that I don't exactly recall now was after UPS was back.

25 He was not dealing with me at all until the power



1 came back on. He was busy with the operators at 603.

2 MR. CONTE: Okay, so let's take one situation, the
3 one where power is back.

4 You were asked to verify lockup. Let's just say
5 full power. Operator asked you -- there's some kind of
6 transient, there's no loss of annunciators, none of that.
7 the way you would verify lockup is you expect to see a
8 yellow light above the controller. That light is labelled
9 "lockout" of some sort.

10 The controller reading -- what would you expect
11 the controller demand signal to be? What would you expect
12 the valve position to be, zero for demand or low for demand,
13 and 60 percent for valve position? Is that the way you
14 would expect to see the lockout if it really existed?

15 MR. REYNOLDS: There is an annunciator common for
16 the three level valves that should come in any time this
17 happens. It is right above them.

18 MR. CONTE: Annunciator says feedwater lockout?

19 MR. REYNOLDS: LV10 ABC lockout -- something like
20 that.

21 MR. CONTE: Okay.

22 MR. REYNOLDS: They're MOVs and the lockout leaves
23 them as-is. The controller can request whatever it believes
24 it should to maintain level and the valve won't respond.

25 In this situation with the valves open, if there



1 had been sufficient pressure in the feedwater system, we
2 would have flooded the vessel because they wouldn't close.
3 We would have had to isolate the 21s, which are the major
4 feedwater isolation valves. We would not have been able to
5 control the 10 valve, which is the normal feed up.

6 MR. CONTE: So when the shift supervisor asked you
7 to verify the lockout, did he also direct you to close the
8 valve?

9 MR. REYNOLDS: No. There were I believe two
10 operators reviewing the procedure for feedwater at the time
11 and he directed them to reset and shut the valves or do what
12 was necessary at that point in time because we didn't really
13 know if everything, if all of our control power was
14 restored. There was still some question, at least in my
15 mind, of what we really had and what we didn't have.

16 MR. CONTE: How do you reset? You just press a
17 button?

18 MR. REYNOLDS: No, in that case it was apparently,
19 the demand and position signals were so far apart that it
20 caused the lockup to come in. They just -- well, I wasn't
21 there for when they did. I was now on steam pressure
22 control, but I believe what they did was put the valves in
23 manual and increase the demand signal until it matched close
24 enough with the actual valve position that it allowed the
25 lockout to be reset.



1 MR. CONTE: Okay. From the top of your head, and
2 this is not an exam, do you remember what all the inputs
3 that would close a lockout on feedwater?

4 MR. REYNOLDS: All of them? No. That error in the
5 signal and then there's some electrical problems that would
6 -- it's not something you want to have.

7 MR. CONTE: So there's a lot of them?

8 MR. REYNOLDS: Not a lot.

9 MR. CONTE: But the one you remember which you
10 mentioned in your discussion here was a difference, that
11 when there is a big difference between demand and actual
12 position of the valve you get a lockout.

13 MR. REYNOLDS: Yes.

14 MR. CONTE: Is that yes?

15 MR. REYNOLDS: Yes -- yes, I'm sorry. Can't hear
16 me that way, eh?

17 MR. CONTE: Now let's take the situation during
18 the power outage. Did you happen -- it looks like you
19 didn't have really that specific assignments so you started
20 walking down the panels.

21 Did you happen to make any observations on
22 feedwater during the power outage now, and what did you see?

23 MR. REYNOLDS: One of the things that Brian
24 Hilliker told me when I first came in was that they had lost
25 feedwater pumps and so I didn't even look up to that end of



1 that panel and there was no one over by 852 so I went over
2 there to see -- there wasn't that many people in the control
3 room when I got there.

4 MR. CONTE: Does the feedwater lockout trip the
5 pumps?

6 MR. REYNOLDS: No, but in this case -- this is
7 what I believe happened and to the feedwater pumps was that
8 the turbine trip caused the -- let me get the terms straight
9 -- the flow limiter logic engaged, which is an orange light
10 on the back part -- on the vertical section --

11 MR. CONTE: Flow limiter?

12 MR. REYNOLDS: Yes, I believe, yes.

13 MR. CONTE: Which flow limiter, recirc?

14 MR. REYNOLDS: No, feedwater.

15 MR. CONTE: Feedwater flow limiter.

16 MR. REYNOLDS: Right, and that comes in on turbine
17 trip and low suction pressure. That would lower the level
18 that was -- it would close down on the LV10s, the level
19 control valves, to keep the feedwater pumps from tripping.

20 What I surmised at the time and haven't found out
21 anything different till yet is that the feedwater pumps had
22 their low suction in for the period of time that it takes
23 for them to trip. There's two trips, 210 for a certain time
24 limit and 190 and the flow limiter is supposed to give you
25 more time. The flow limiter logic gives you more time at the

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author details the various methods used to collect and analyze the data. This includes both manual and automated processes. The goal is to ensure that the data is as accurate and reliable as possible.

The third part of the document focuses on the results of the analysis. It shows that there is a clear trend in the data, which is consistent with the initial hypothesis. This finding is significant and warrants further investigation.

Finally, the document concludes with a summary of the findings and a list of recommendations. It suggests that the current methods are effective but could be improved with the use of more advanced software.



1 lower suction to give them a chance to recover, and that's
2 why I thought the feedwater pumps tripped.

3 It may or may not be right but at the time and up
4 till now still I thought the feedwater pumps tripped was
5 that the valves didn't close so they continued to feed at
6 100 percent and they had low suction. I thought that's why
7 they tripped then, low suction.

8 MR. JORDAN: You say there's a time? We're
9 talking about how long is the time?

10 MR. REYNOLDS: Seconds, 25 seconds or 15 seconds.
11 I believe they may have changed it.

12 MR. JORDAN: But it's a time delay, low suction
13 for length of period of time after a turbine trip, then
14 you'll trip the feedwater pumps.

15 MR. REYNOLDS: Well, this is at all times on the
16 feedwater pumps. There is a low suction trip.

17 MR. JORDAN: Right.

18 MR. REYNOLDS: There's two set points and each one
19 has a timer on it.

20 MR. JORDAN: Okay.

21 MR. REYNOLDS: The lower pressure is a shorter
22 timer.

23 MR. JORDAN: If there's a higher pressure and a
24 lower pressure, either of those have timers -- oh, they both
25 have timers on them. Either of those with a turbine trip



1 will cause the feedwater pumps to trip.

2 MR. REYNOLDS: The lower pressure didn't have a
3 timer on it at one time. It was instant -- unless you had
4 the flow limiter logic; then there was an extension and
5 that was unless the timer had already started. If it hadn't
6 already started then you didn't get the extension, it was
7 very involved circuitry there as I recall.

8 MR. CONTE: What do you think caused low suction
9 pressure on the pumps? Is that normal for a reactor trip?

10 MR. REYNOLDS: On the turbine trip, that would
11 cause a shrink, which would, you know, the pressure would go
12 very high and cause level to be indicated very low and the
13 feed pumps would try to recover level so they would pump,
14 they would open up more, and that is what causes the low
15 suction pressure for them. They are trying to pump more
16 water than they can, plus the trip takes out your pump
17 forward fourth point heater drain pumps so there's basically
18 one-third of your feedwater flow has just been taken away.

19 It's going to cause the lower suction pressure
20 right immediately there.

21 MR. CONTE: But that normally happens on a reactor
22 trip and you don't normally get a feedwater trip any time
23 there is a turbine or reactor trip, is that right?

24 MR. REYNOLDS: Well, turbine trips -- see, the
25 valve should have closed down. The LV10s should have taken,



1 the flow limiter logic should have closed them down but that
2 would have reduced the feedwater flow, which would have
3 increased your suction pressure to the pumps.

4 A normal scram if you hit level three, then you
5 get your set point set down light on, which lowers the level
6 that the feedwater pumps want to maintain so that you don't
7 overfeed.

8 MR. CONTE: What are the sensing elements for this
9 feedwater limiting logic? Does reactor level have anything
10 to do with it, the selected level for control, or don't you
11 remember?

12 MR. REYNOLDS: Without the prints I don't think I
13 could answer that.

14 MR. CONTE: Well, you have given us some things to
15 pursue because we are curious about why the feedwater pumps
16 tripped.

17 MR. REYNOLDS: That's why I thought the feedwater
18 pumps tripped and I didn't know if anybody else --

19 MR. CONTE: We appreciate that.

20 MR. REYNOLDS: -- was aware of what I thought
21 about it I told.

22 MR. CONTE: Okay. I don't have anything else.
23 Any questions?

24 MR. JORDAN: Is there anything that we haven't
25 covered that you think there would be a benefit to us,



1 either things that you heard or issues that you saw that we
2 didn't cover in our conversation here that you would like to
3 tell us about?

4 MR. REYNOLDS: The feedwater was the one I wanted
5 to talk about.

6 MR. JORDAN: Can I ask a different question. Were
7 there things -- were either procedures, training, equipment,
8 are there things in the control room that you felt were very
9 beneficial for you in accomplishing that you'd say you're
10 glad you had that in order to accomplish whatever your tasks
11 were assigned in the control room, and the converse of that
12 is were there things that you wished you had that you
13 weren't available to have to use in the control room?

14 In other words, next time around, you'd say, gee,
15 I wish we had this available for me in the same transient
16 and I believe the answer is no, because if you were on the
17 bypass, your bypass valves were available and your jack was
18 available and you could cool down.

19 Were there any other things that you thought of
20 that, gee, you wish you had that you didn't have that you'd
21 say next time around -- procedure, a piece of equipment,
22 training, you know, anything of that nature that you'd say,
23 you know, give it to me next time so if I have to go through
24 this again it would make it easier for you?

25 MR. REYNOLDS: Well, there is one thing, not



1 specific to this event, but I have identified this and I
2 believe there is modifications in the system now to have
3 this done is to put a wide range level indicator near the
4 feedwater control section of the 603 panel because whenever
5 you are in wide range and you are feeding with feedwater, if
6 you are in manual control then you have to constantly get
7 feedback from the 601 operator or you have to try to get
8 away from your valves, which you are not supposed to do, to
9 see the level indicator which is -- there is a wide range
10 level indicator on 603 but it is fully to the other side of
11 the panel from the level control valves.

12 I have always said I wish we had that over there,
13 and I've mentioned it before to the trainers and to the
14 company and I believe there is a modification in the works
15 to have something placed over there.

16 MR. JORDAN: You need the wide range monitors, the
17 wide range level instrumentation near the --

18 MR. REYNOLDS: -- level control valve section,
19 603, left.

20 MR. JORDAN: That's for feedwater?

21 MR. REYNOLDS: Right.

22 MR. CONTE: Where is the wide range now, which
23 panel?

24 MR. REYNOLDS: Well, there is one wide range
25 indicator that is on 603 but it is fully to the other side



1 of the panel over by the recirc pumps, 602 panel, right? It
2 is the last gauge on that section on the other side of the
3 full core display.

4 MR. CONTE: What is the range of wide range in
5 terms of inches, approximately?

6 MR. REYNOLDS: Wide is 5 to 205.

7 MR. CONTE: And narrow range is?

8 MR. REYNOLDS: 145 to 205.

9 MR. JORDAN: So if you are below 145, and you're
10 feeding with feedwater in manual, you may well be below the
11 implementing the emergency operating procedures?

12 MR. REYNOLDS: Absolutely.

13 MR. JORDAN: So you have a narrow range close to
14 the feedwater --

15 MR. REYNOLDS: You have a narrow and an upset
16 range and then you have the shutdown range is right next to
17 you there but unless you're high, those aren't any good. If
18 you are below 145 you don't know what level it is without
19 getting a report from another operator, who may be busy
20 himself.

21 MR. JORDAN: Okay. Things that looked good to
22 you? Things that you thought went well, that you liked,
23 that you're glad you had?

24 I think one of the things you mentioned earlier
25 was that the training on simulators and the stress on



1 running through scenarios I take it was something that you
2 felt comfortable, you felt that helped you in this type of
3 thing because you'd seen, maybe not this event, but you've
4 seen the type of things where the crews worked together then
5 to accomplish the goals?

6 MR. REYNOLDS: I feel confident that we were well
7 trained to tackle this incident, even though when I first
8 got there I didn't know exactly what it was, but I had
9 confidence in the SSS. I used to be on A shift until June
10 so that I was familiar with that --

11 MR. JORDAN: -- with that crew?

12 MR. REYNOLDS: Right, right. I had worked with
13 them in a simulator for years. I was an original A shift
14 and so I felt confident with the people there. I felt
15 confident that we had been trained and here we are now
16 finally going to use this training which we'd hoped we'd
17 never have the opportunity to use and there we were and we
18 did it.

19 I thought that it was handled well.

20 MR. JORDAN: Okay. Anything else you want to put
21 on the record?

22 MR. REYNOLDS: I don't believe so.

23 MR. JORDAN: Okay, we can go off the record.

24 [Whereupon, at 10:58 a.m., the taking of the
25 interview was concluded.]



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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: Int. of RICHARD J. REYNOLDS

DOCKET NUMBER:

PLACE OF PROCEEDING: Scriba, N.Y.

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.



IAN ROTHROCK
Official Reporter
Ann Riley & Associates, Ltd.

