

07-598-91A
ORIGINAL

OFFICIAL TRANSCRIPT OF PROCEEDINGS

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

Title: Interview of: Ed Jordan
(Closed)

Docket No.

LOCATION: Bethesda, Maryland

DATE: Wednesday, September 11, 1991 **PAGES:** 1 - 35

ANN RILEY & ASSOCIATES, LTD.

1612 K St. N.W., Suite 300
Washington, D.C. 20006
(202) 293-3950

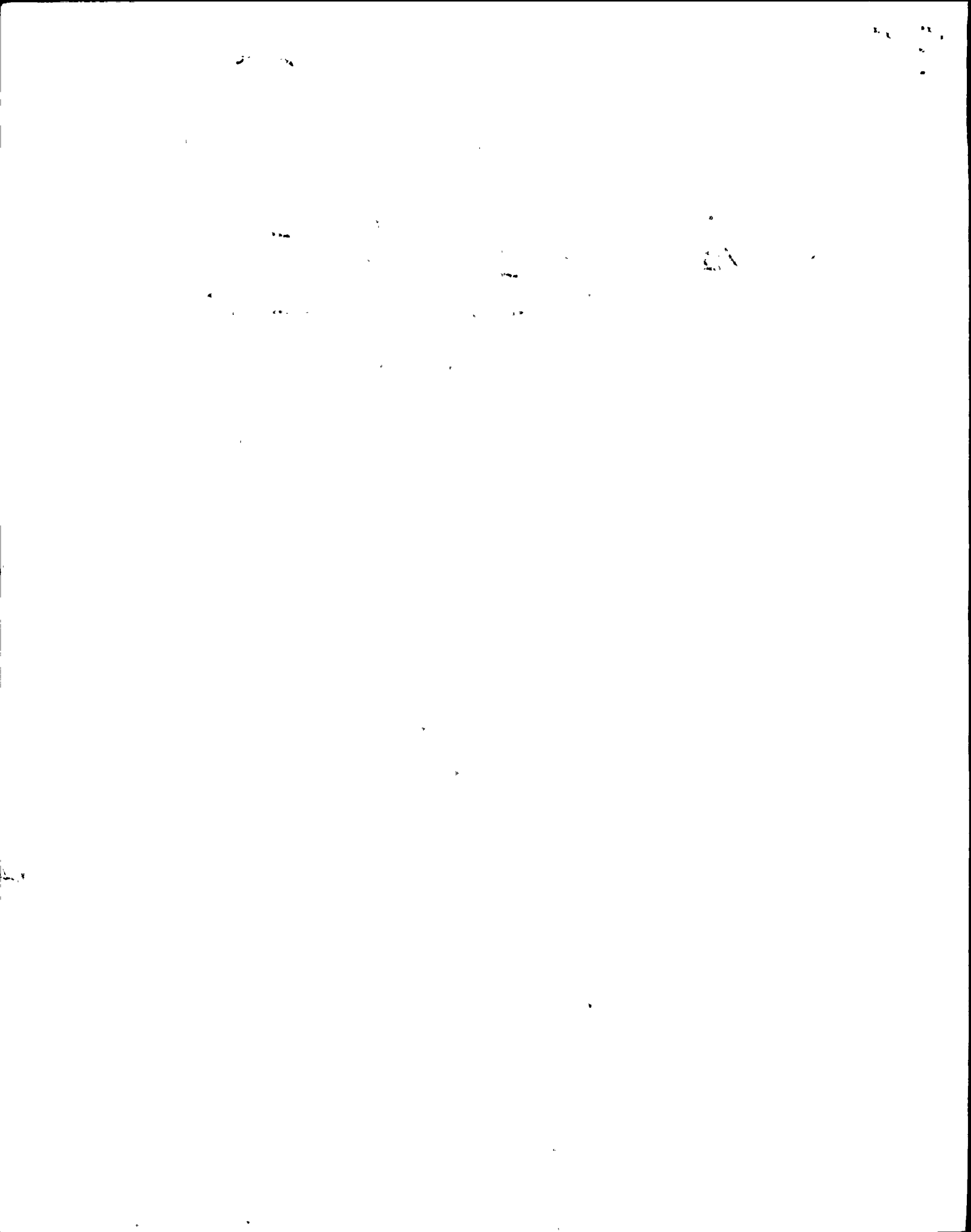
9305070284 911031
PDR ADDOCK 05000410
S PDR



ADDENDUM

<u>Page</u>	<u>Line</u>	<u>Correction and Reason for Correction</u>
2	9	--- -- interviewee
3	19	Officer, <u>I</u> was involved -- --
14	18	in thinking that the line mind
34	7	Mr Ed Jordan <u>Mr Rosenthal</u>

Date 9/13/91 Signature E L Jordan



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
INCIDENT INVESTIGATION TEAM

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

- - - - - X
Interview of: :
ED JORDAN :
(Closed.) :
- - - - - X

U.S. Nuclear Regulatory Commission
Conference Room 100
The Woodmont Building
8120 Woodmont Avenue
Bethesda, Maryland
Wednesday, September 11, 1991

The above-entitled interview commenced in closed session at 9:15 o'clock a.m.

PARTICIPANTS:

- MIKE JORDAN, IIT Team Member
- RICHARD CONTE, IIT Team Member
- JACK ROSENTHAL, IIT Team Member
- ED JORDAN, Interviewee
- LYNN ESTEP, Court Reporter



P R O C E E D I N G S

[9:15 a.m.]

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

MR. MIKE JORDAN: On the record.

My name is Michael Jordan. I'm out of Region III.
I'm a Section Chief for Operating Licensing.

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

MR. ROSENTHAL: Jack Rosenthal. I'm the IIT Team
Leader.

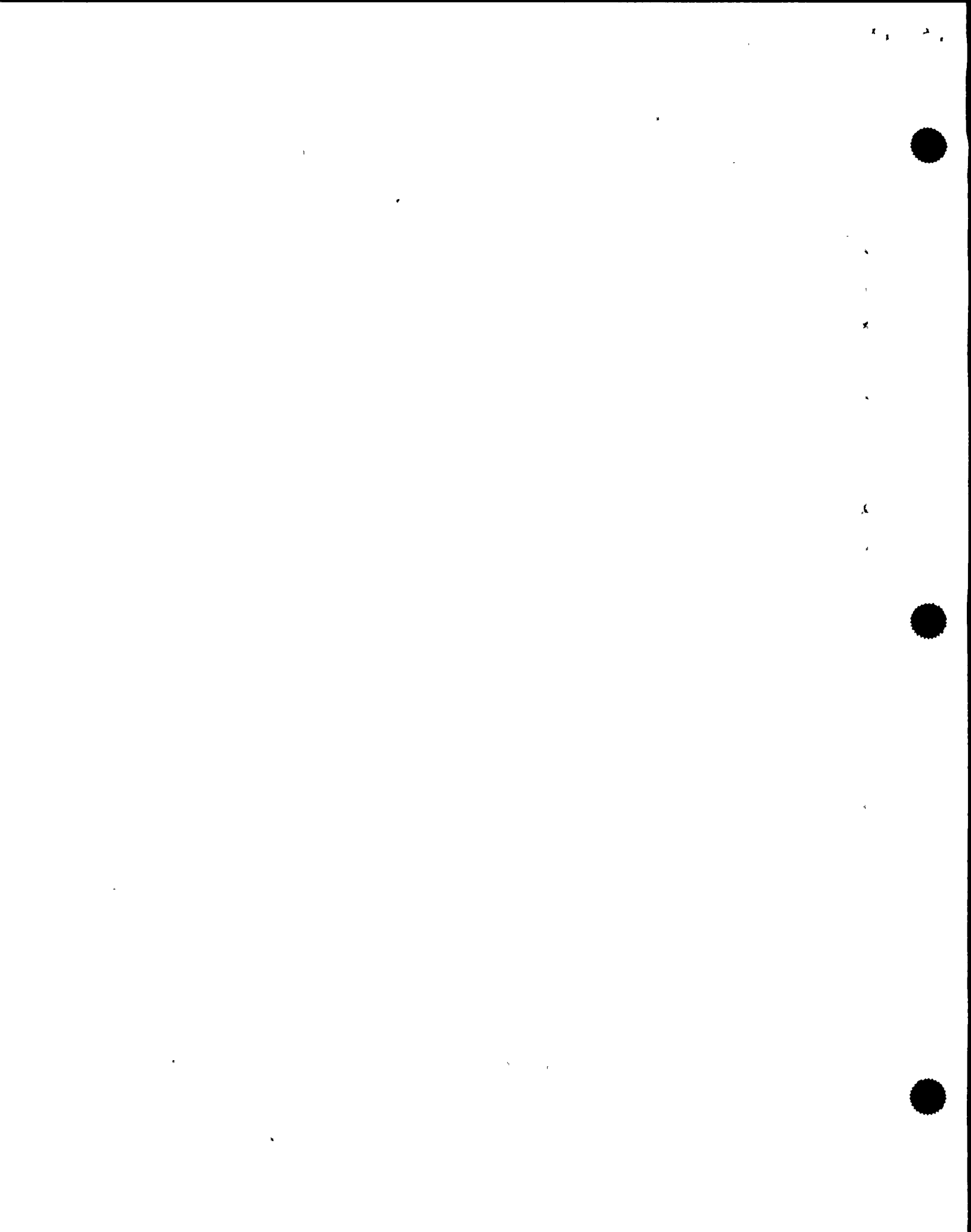
MR. ED JORDAN: And I'm the interview, Ed Jordan,
Director of the Office for Analysis and Evaluation of
Operational Data.

MR. MIKE JORDAN: Okay, Ed.

Rich is going to walk us through the questions
that we've developed.

MR. CONTE: I have just a general list of some
topics here:

The event itself of August 13, 1991, at Nine Mile
2 -- I'm going to ask you what your involvement was, very
briefly, or your staff's involvement in that event; the
Generic Letter 83-28 on SALEM ATWS issues, dealing primarily
with the concept of important to safety, safety-related
equipment, and the handling of vendor-related information;
the maintenance rule; and a review of events, either non-
safety-related events that caused challenges to safety-
related equipment and/or loss-of-annunciation events.



1 So, that's kind of the general topics that we're
2 going to talk about. If you can, at least at this point --

3 MR. ED JORDAN: One at a time?

4 MR. CONTE: We'll take them one at a time, but if
5 you can give us a brief overview of your involvement in any
6 four of them, the detailed involvement, level of
7 involvement, whatever.

8 MR. ED JORDAN: Okay.

9 With respect to the event itself, I was involved
10 in the initial discussions in which the licensee had called
11 the event in, along with the NRR Operations Officer, Duty
12 Officer, was involved in the decision to place the agency in
13 an elevated state of awareness, as opposed to standby, since
14 by the time we were notified, they had, in fact, gotten out
15 of the initial condition of having a loss of electrical
16 power.

17 So, the licensee maintained their site area
18 emergency, as I understand it, based on their procedures,
19 until they were able, through procedures, to get out of it.

20 So, that's just a capsule of -- of my involvement.

21 MR. CONTE: That's good.

22 Could you capsulize the other three areas before
23 we get into detailed questions?

24 MR. ED JORDAN: Okay.

25 The -- the 83-28 area, I was a Division Director



1 in the Office of Inspection and Enforcement at the time 83-
2 28 was issued, was involved in its development and issuance,
3 and -- and it was aimed at, I believe, a -- a slightly
4 different problem.

5 It was aimed at safety-related, as opposed to
6 balance-of-plant equipment.

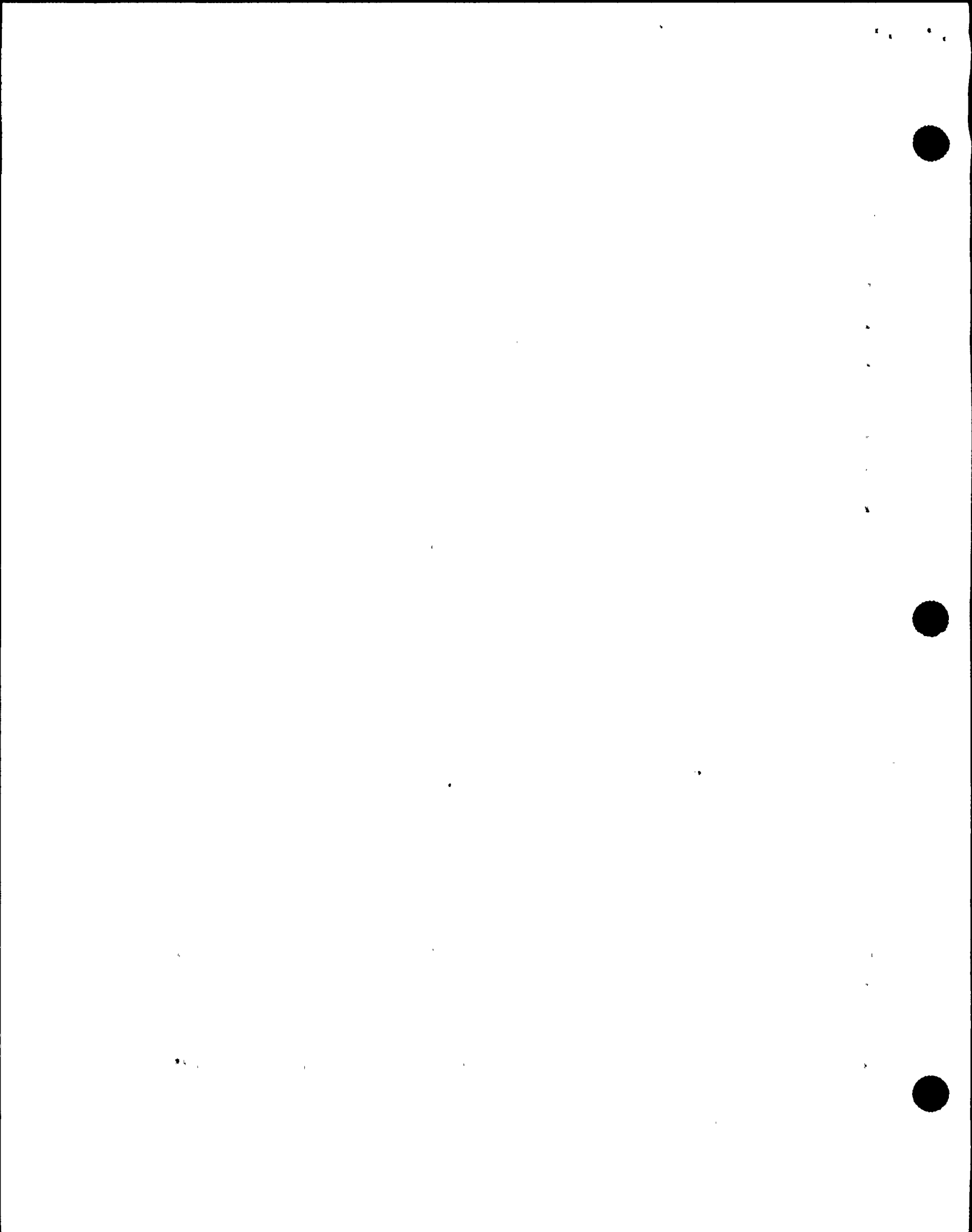
7 So, the extent that that -- that particular
8 generic action would be involved in the response by the
9 licensee, I would -- I would expect would be questionable.

10 In terms of the maintenance rule, my office and
11 myself were deeply involved in developing the -- the
12 maintenance rule package.

13 Tom Novak had a direct role and I, as Office
14 Director, a number of interactions on whether a policy
15 statement or a rule was warranted, a contribution to the
16 Commission paper that went forward recommending by the staff
17 that a policy statement be issued, and we were subsequently
18 involved in -- based on Commission direction -- a --
19 development of a -- a performance-based rule with the Office
20 of Research.

21 So, I've been intimately involved in that, and in
22 that case, the -- the maintenance policy statement and the
23 maintenance rule do encompass more than safety-related,
24 clearly.

25 The object is that we'd go across the plant



1 activities without that distinction between what's
2 classically called safety-related and balance of plant.

3 Then the last one you had was a review of events.
4 I'm not sure what you were looking for there.

5 MR. CONTE: I think it was primarily in the area
6 of the '88 events on loss of annunciators. Why don't we
7 hold off on that and ask what your office did with respect
8 to the development of the information notice -- any further
9 review on that, and hold that until later, okay.

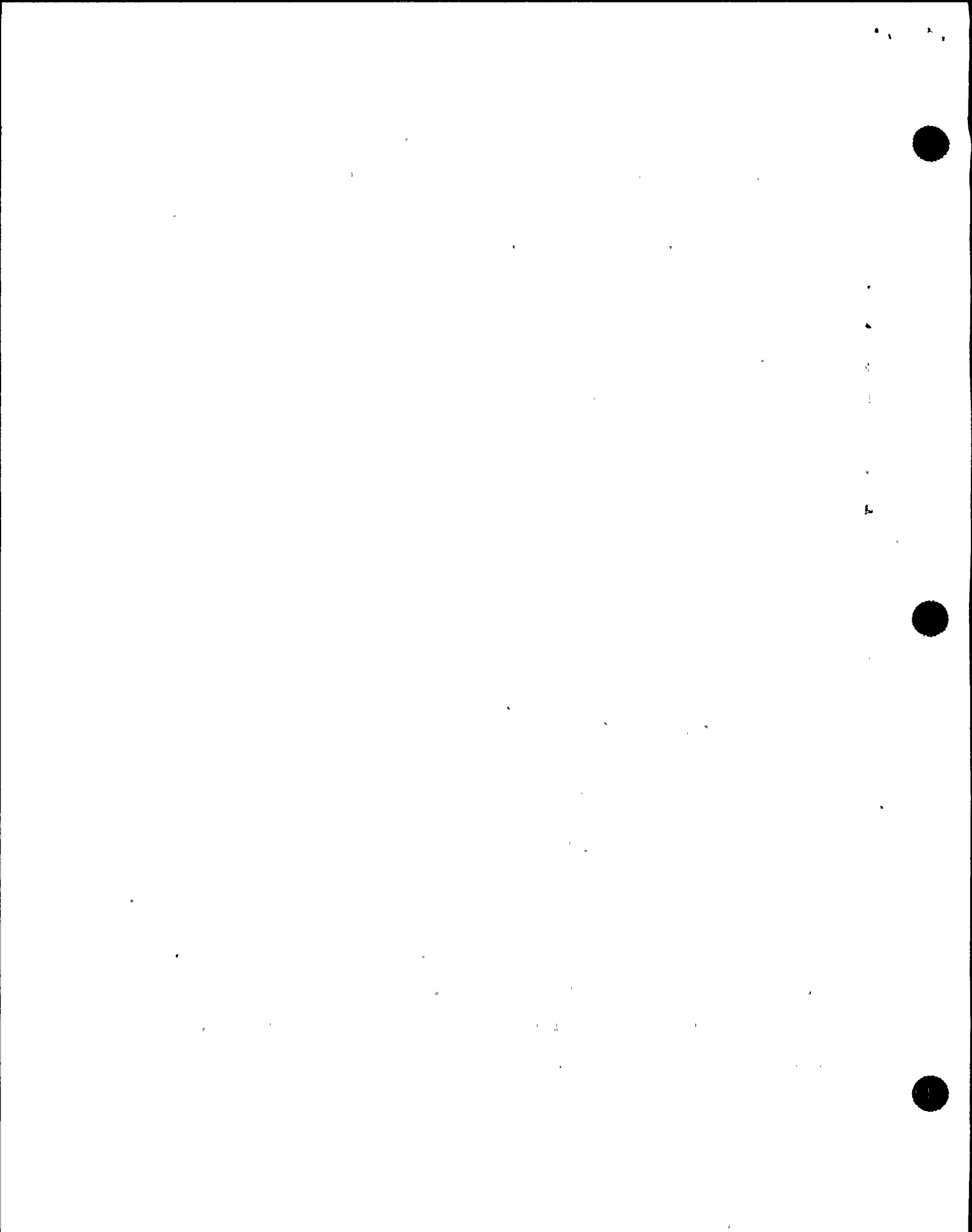
10 MR. ED JORDAN: Okay. Okay.

11 MR. CONTE: Jack, do you want to add something?

12 MR. ROSENTHAL: I want to clear up a couple of
13 points and get back to the generic letter. Let's do these
14 things one at a time.

15 We -- there's general folklore that the NRC told
16 licensees that we wanted -- that they should write the best
17 EPGs they could -- the best emergency procedures they could
18 and to use whatever equipment that was in the plant that
19 made sense to them and that if it was safety-related or
20 nonsafety-related that was okay, and that we would not turn
21 around and take those procedures and everything that they
22 culled out that was not safety-related and make safety-
23 related -- we wouldn't ratchet them.

24 What we didn't want is a set of procedures for the
25 regulators and another set that was the real procedures of



1 the plant.

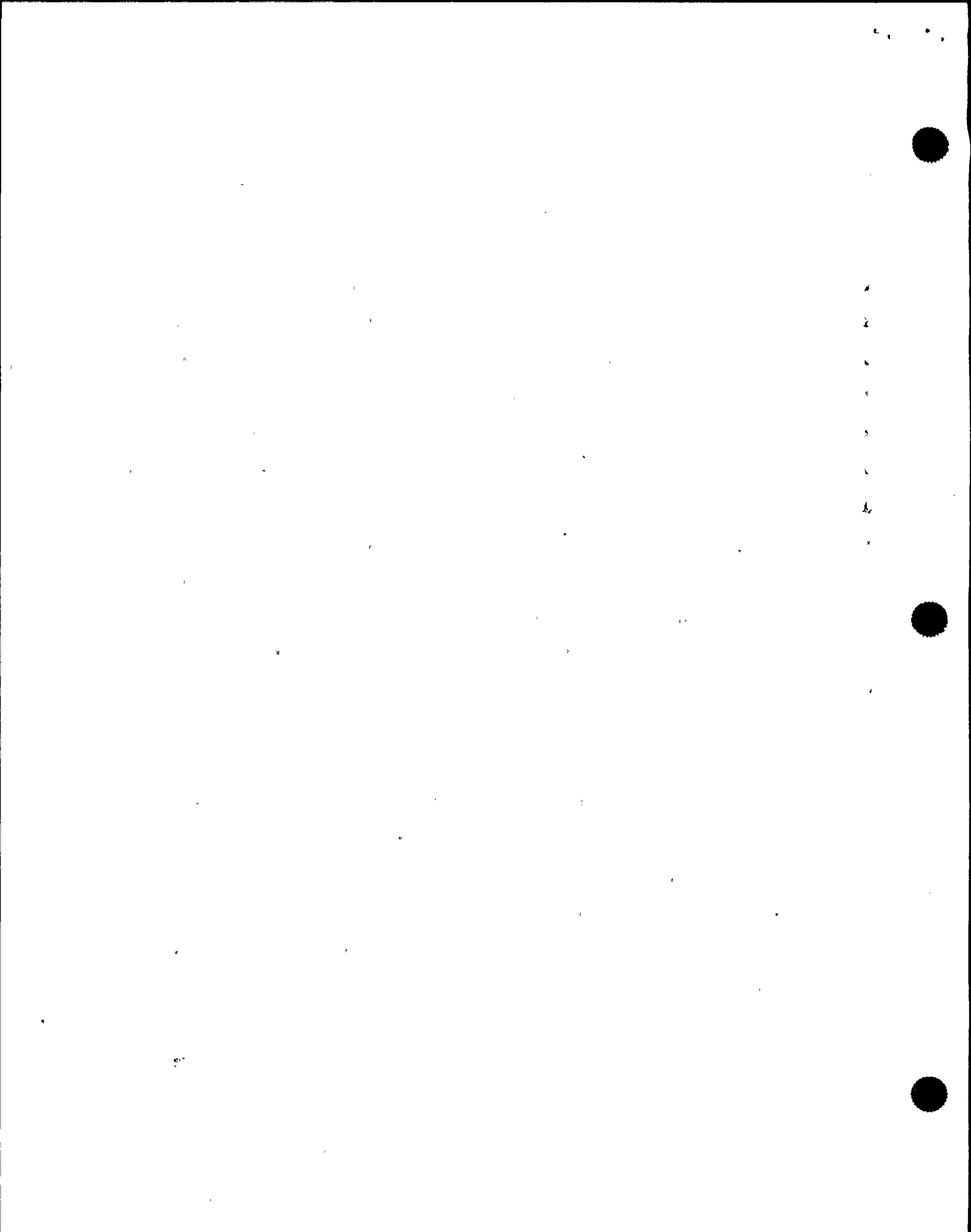
2 Do you know -- is that written down any place? Or
3 is what I'm saying true, to the best of your knowledge?

4 MR. ED JORDAN: To the best of my knowledge, it is
5 true that we asked the licensees, when they wrote their
6 emergency procedures, to use the plant that's in front of
7 them and the equipment that's there, and to identify clearly
8 in the procedures. But it did not in fact change a piece of
9 equipment from balance-of-plant to safety-related because
10 they listed it in the procedures. So, that was not a
11 backfit that was intended, in fact it was set aside.

12 Now, as to where that's written down, I don't
13 know. One would have to research.

14 MR. ROSENTHAL: Let me share with you -- many
15 other senior NRC people and junior NRC people don't know
16 either where it's written down. Maybe it isn't written
17 down.

18 Another thing that we've heard is that there was a
19 concept that if it was needed -- and some of this is in the
20 Reg Guide 1.97 -- if it's needed for a manual action, then
21 it ought to be redundant and of the highest quality, et
22 cetera, in terms of instrumentation and control. But, if it
23 was needed to confirm an action, it was let's say
24 automatically done, it could be of lesser quality or
25 redundancy, et cetera.



1 Have you heard that sort of philosophy espoused?

2 MR. ED JORDAN: With regard to the EPGs, I'm --

3 MR. ROSENTHAL: Just in design in general, either
4 in our review of the emergency to procedures or in our
5 development of requirements for instrumentation systems,
6 that would be some sort of guiding philosophy?

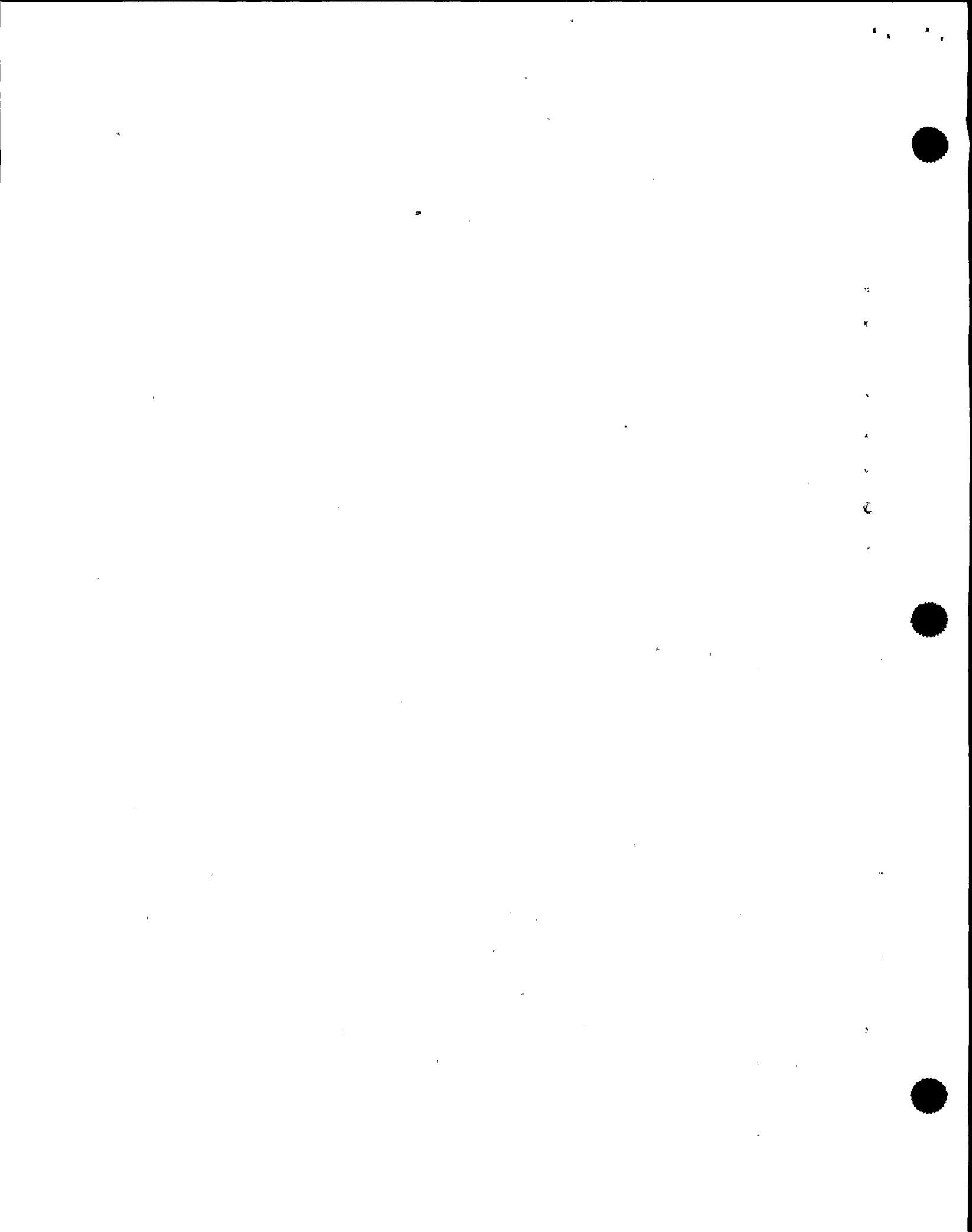
7 MR. ED JORDAN: The instrumentation system, the
8 last word in Reg Guide 1.97, in terms of what's necessary
9 for accident response grew out of TMI. So, that's the best
10 expression I know of for that kind of instrumentation. So,
11 I'm not sure where you're heading.

12 MR. ROSENTHAL: Well, at least one senior person
13 said that it was the underlying philosophy. I can't find
14 where that philosophy is written down or other people know
15 it.

16 MR. ED JORDAN: I don't either.

17 MR. ROSENTHAL: I'll say I'm a bag holder because
18 I wrote it or I took responsibility for much of 1.97. Okay.

19 Generic letter 83-28. We went back and read it
20 three times. There's a big section on reactor trip
21 breakers. And then there's a section on safety-related
22 equipment, the requirements of the trip breakers were even
23 more strenuous than the requirements on safety-related. So,
24 that's the written expectation of the NRC, with respect to
25 vendor interfaces, manuals, drawings, et cetera, et cetera.



1 Was the -- did the expectation exceed the written word? Did
2 it go into important to safety equipment in practice,
3 distinct from writing?

4 MR. ED JORDAN: I am sure the practice varied from
5 utility to utility. There was, I think, an expectation that
6 utilities would apply what some of us believe is an overall
7 graded approach, that nothing is entirely nonsafety-related,
8 and that there is a gradient when one uses quality assurance
9 and the principles of redundancy and diversity and the
10 independence, based on where they fit on the scale. But, if
11 you wanted a legal interpretation, I think the lawyers would
12 say that it would be very hard to issue a strong regulatory
13 action, based on that kind of a spread.

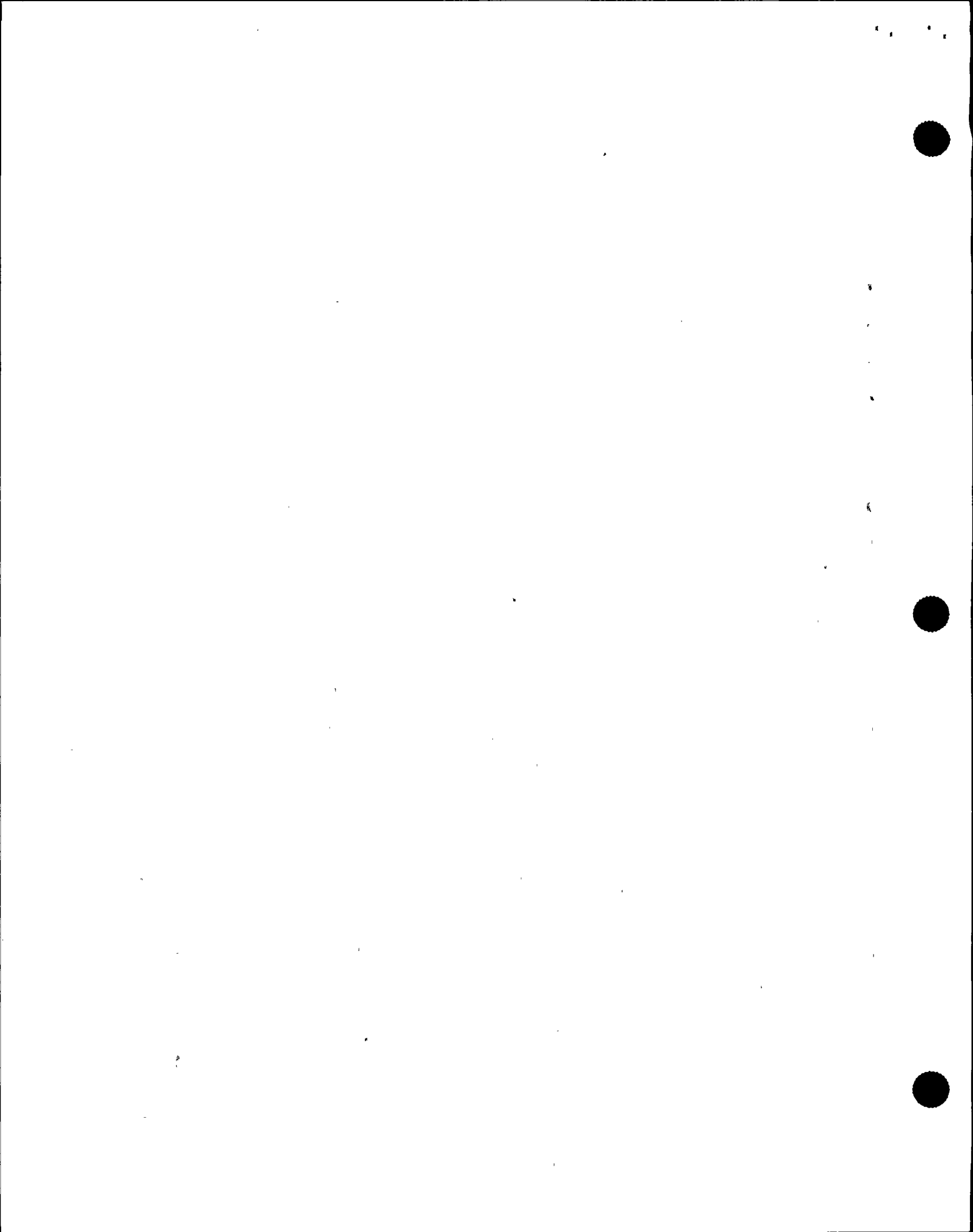
14 MR. ROSENTHAL: So, the letter -- the letter of
15 the Generic Letter is clearly for safety-related equipment.

16 MR. ED JORDAN: It's clearly for that.

17 MR. ROSENTHAL: But the NRC's expectation was that
18 licensees might ignore?

19 MR. ED JORDAN: Yes.

20 The expectation was that the -- the concepts were
21 beneficial further and that, by setting up programs with
22 your vendors and understanding what the manuals apply to and
23 that they're maintained current, was a very important
24 activity, and -- and so, there -- there was expected side
25 benefit.



1 But in terms of a -- a clear regulatory
2 requirement that you must spread it to the -- the main
3 generator turbine turning gear is -- is too great of an
4 extension.

5 So, there is a range.

6 MR. CONTE: With respect to safety-related
7 equipment, would you agree that the Generic Letter -- well,
8 let me ask you: What was the intent of the Generic Letter
9 with respect to vendor -- handling vendor-related
10 information?

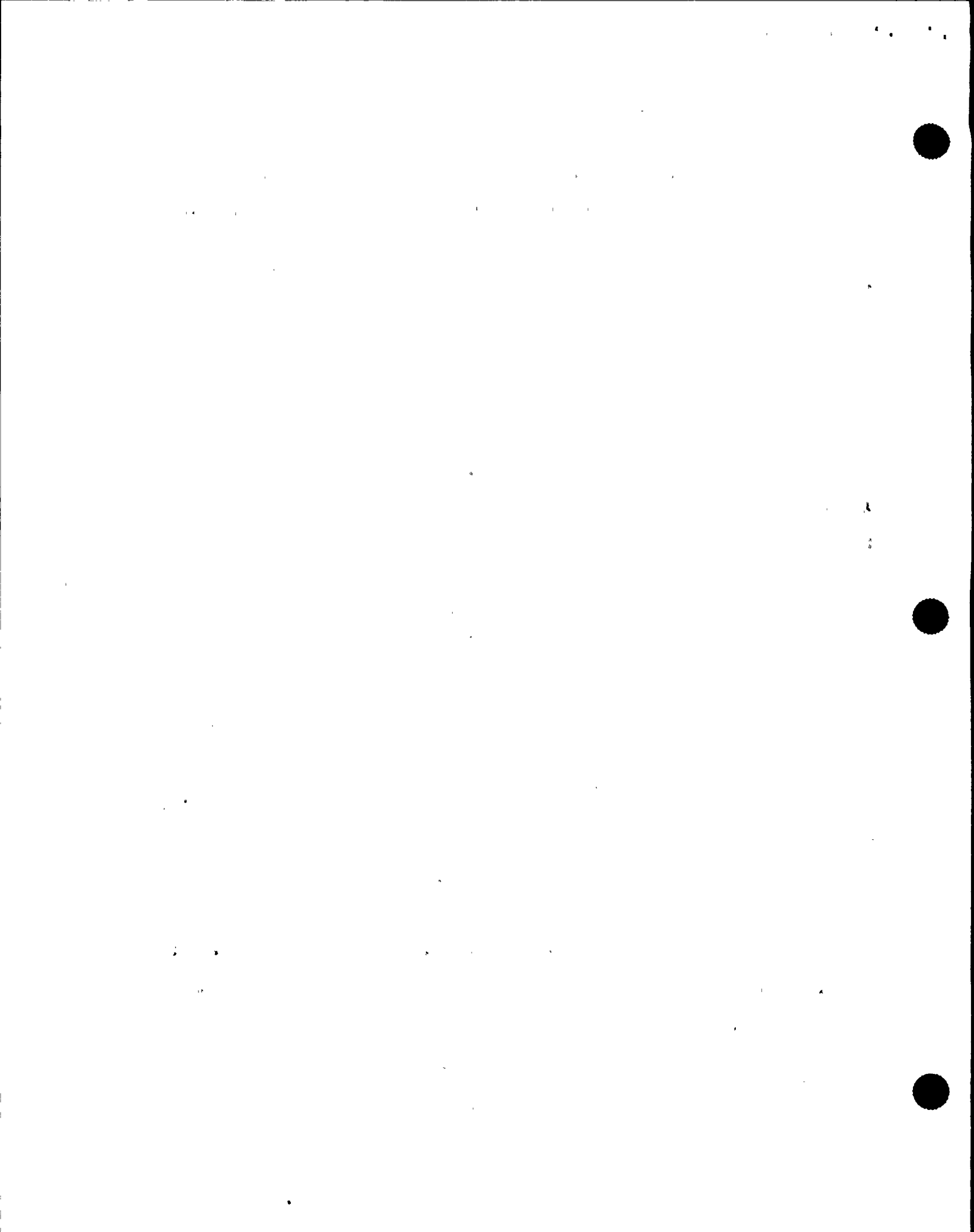
11 Could we say that everything the vendor
12 recommended for safety-related equipment -- for example, on
13 preventive maintenance -- had to be incorporated into the
14 facility, or was there a --

15 MR. ED JORDAN: No.

16 MR. CONTE: Was the position that it had to be
17 evaluated?

18 MR. ED JORDAN: Had to be considered, had to be
19 evaluated and considered.

20 The utility has the ability to make up its own
21 mind based on the manuals, and -- and I think, certainly,
22 some of the material in the manuals would not be applicable
23 to a particular plant, and -- and so, it's not a one-for-one
24 translation, but there should have been a review of -- of
25 the manuals and a determination made as to the applicability



1 of preventive maintenance, corrective maintenance,
2 inspections, and testing with respect to their use of that
3 particular equipment.

4 MR. CONTE: Okay.

5 MR. ROSENTHAL: Are we going on to important to
6 safety?

7 MR. CONTE: Yes.

8 MR. ROSENTHAL: Are you both finished.

9 MR. CONTE: Let's go on to important to safety.

10 MR. MIKE JORDAN: Let's do it that way.

11 MR. ROSENTHAL: Okay.

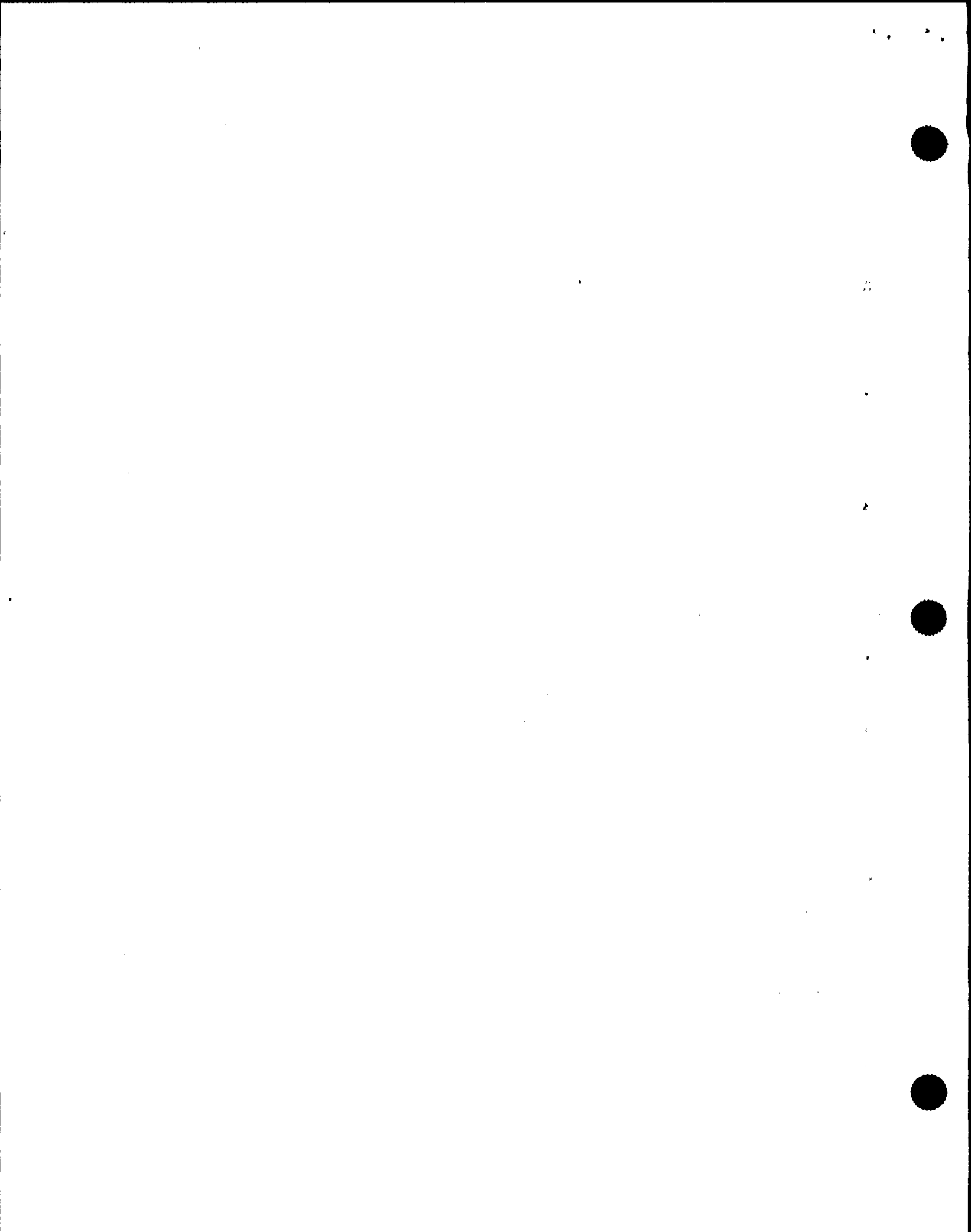
12 MR. CONTE: I have a lead-in question for that, if
13 you will.

14 We dug into this fairly deeply on the staff's
15 handling of the concept of important to safety, and the
16 record seems to end at the end of SECY paper 86 -- I forget
17 the last three digits -- where basically the staff came back
18 with a rewrite or a re-proposal on a regulation on important
19 to safety.

20 Brian Grimes was the contact on it. We talked to
21 him about it.

22 He kind of says that it all ends at that point.
23 It was abandoned by the Commission, no action on it or what
24 have you.

25 Is that your understanding of this?



1 MR. ED JORDAN: I guess the last expression of
2 that controversy, in my view -- and I don't know the date of
3 it, but it was a CRGR meeting in which Ed Case and Vic
4 Stello discussed at great length from their respective
5 viewpoints and experience, and it was, I guess, in my words,
6 a regulatory muddle that we couldn't see through, that it
7 was so obscured by history and had so many implications of
8 backfit, if -- if one took it to its ultimate view that
9 everything is important to safety and -- and try to apply
10 the graded approach in a fashion that one can enforce at a
11 plant, was something that was too big to tackle at the time.

12 So, it, from my recollection, was left as it's an
13 issue, but it was not resolvable at the time, and -- and
14 different people understood the interface differently, and
15 as a result, the staff has been cautious since then not to
16 use in a regulatory way important to safety.

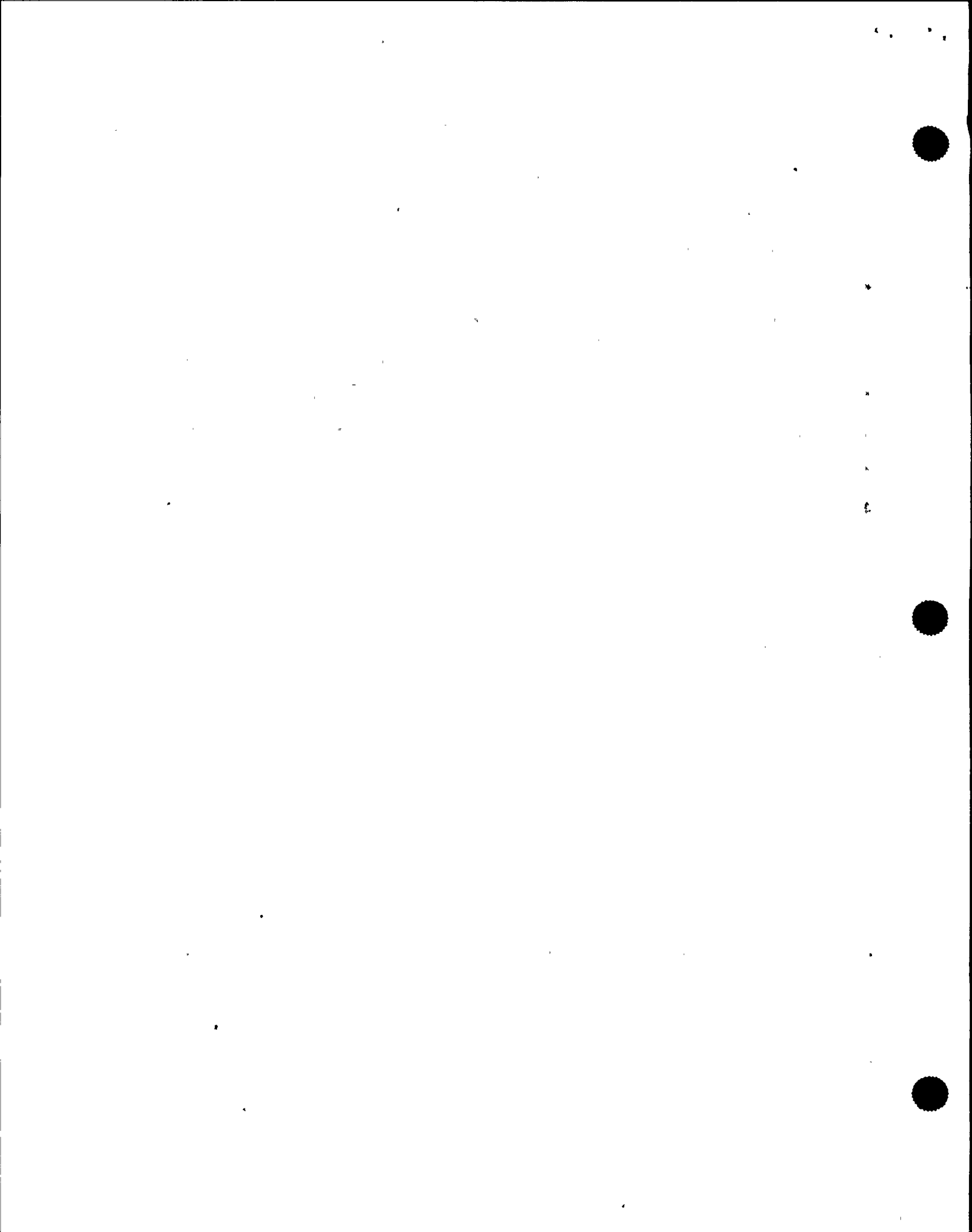
17 MR. CONTE: Is that written down?

18 MR. ED JORDAN: No.

19 MR. ROSENTHAL: There's a Harold Denton letter, if
20 I'm not mistaken, that tells us to be careful using that
21 phrase.

22 MR. CONTE: What date are we talking about? After
23 1986?

24 MR. ROSENTHAL: I think the same sort of
25 timeframe.



1 MR. ED JORDAN: In about that timeframe, but the -
2 - maybe the best way to get the timing would be to go
3 through CRGR minutes, and I believe that Jim Conran --

4 MR. ROSENTHAL: We've already had him in here.

5 MR. ED JORDAN: Matt Taylor would be another
6 person who would illuminate that particular discussion.

7 It was a -- unfortunately, a milestone discussion
8 that didn't result in a resolution, that resulted only in
9 the decision that you couldn't.

10 MR. CONTE: Was that before or after the '86 SECY
11 paper? Do you remember?

12 MR. ED JORDAN: Don't know.

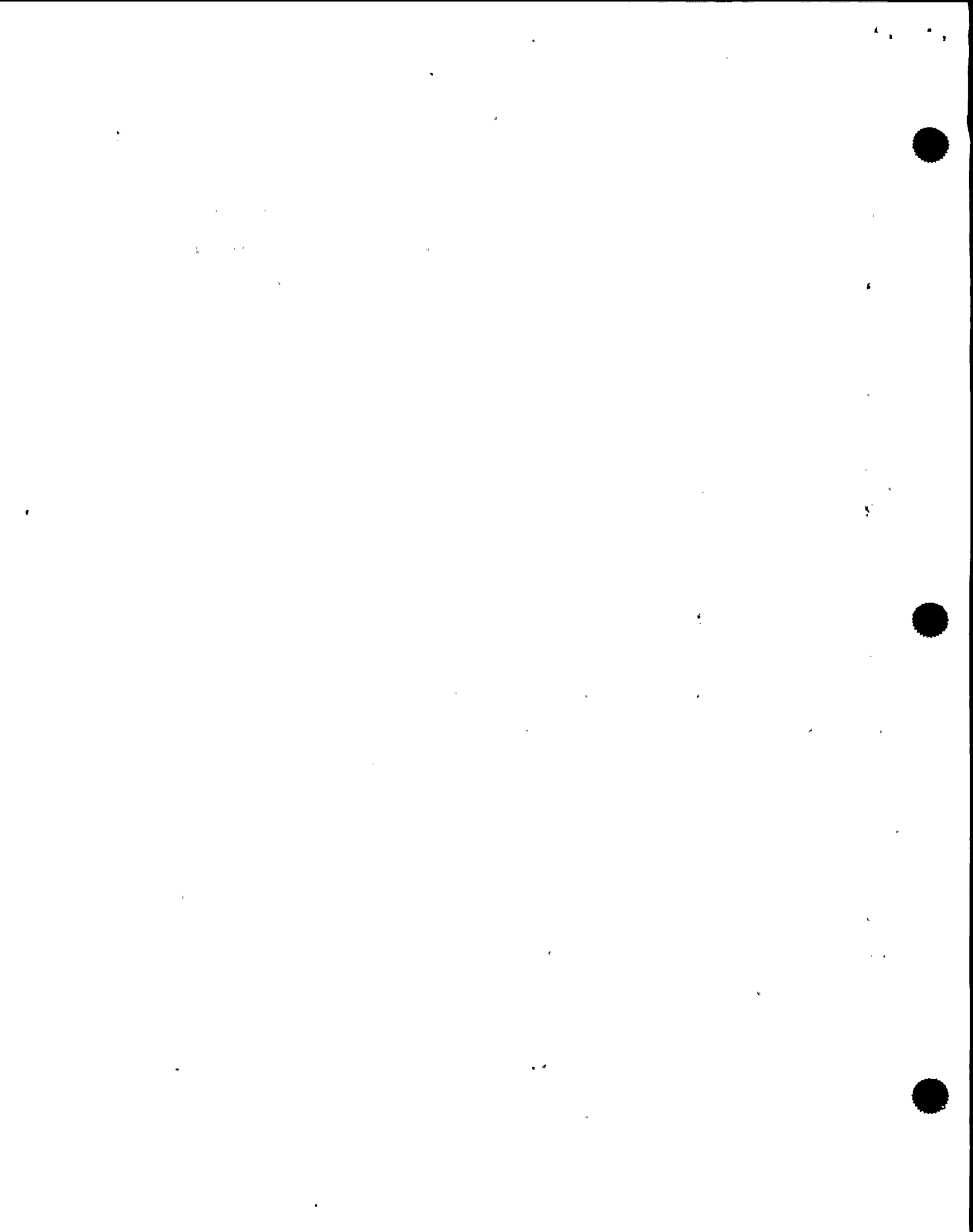
13 MR. CONTE: Chances are it was before the SECY
14 paper went up to the Commission.

15 MR. ED JORDAN: I would -- I would guess so, but
16 that's speculating. The only way to find out is to -- to
17 look at those records. The CRGR minutes, at the time, were
18 rather -- were rather detailed.

19 MR. CONTE: Okay.

20 Would you -- is it fair to say that -- let me pose
21 something to you: Is it fair to say that the maintenance
22 rule is a compromise on this treatment of non-safety-related
23 equipment that appears to be important and needs special
24 treatment?

25 MR. ED JORDAN: I don't like the word



1 "compromise."

2 It is a way of addressing the muddle that I've
3 described, by causing licensees to develop program that
4 reach across all of their equipment and treat the equipment
5 in some kind of an appropriate fashion with respect to the
6 significance to safety.

7 MR. ROSENTHAL: Before we get into the maintenance
8 rule, let's just close on important to safety. Okay?

9 Mike?

10 MR. MIKE JORDAN: I've got nothing else. I think
11 he's covered most of that.

12 MR. ROSENTHAL: Okay.

13 So, let me just back up and ask you for --
14 clearly, at least in my mind, there was a time when the
15 agency spent its resources on a minimum set of equipment
16 which was labeled "safety-related," needed to cope with an
17 accident or shut down the plant.

18 We spent a lot of time and energy assuring that
19 that equipment was high-quality, and a decade ago, or more,
20 there were pretty black-and-white lines drawn between that
21 which was clearly needed and which, by the way, did work
22 here and -- and other stuff, which I'll call balance of
23 plant.

24 I'm using this interview -- it's a very efficient
25 way for me to gather agency philosophy. Can you just give



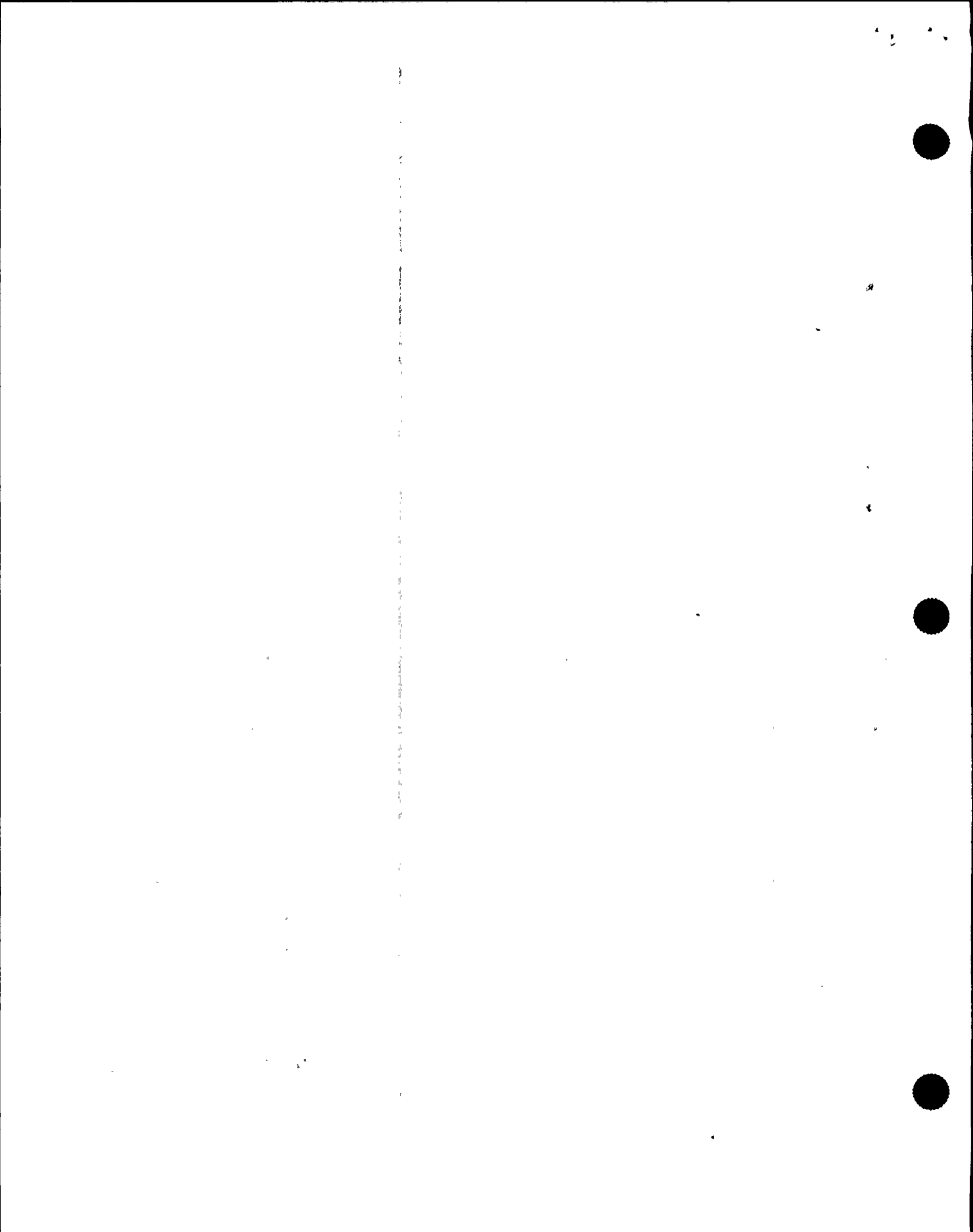
1 us your perception about how this middle-ground or graded
2 approach grew?

3 MR. ED JORDAN: I think it's partly a result of
4 semantics in terms of the rules, the regulations themselves,
5 being ambiguous, carrying both sets of terminology,
6 important to safety and safety-related and people, over the
7 years, recognizing that there is a range of equipment in the
8 plant that initiates challenges and, in fact, is involved in
9 responding to challenges. In the black and white world of
10 safety related, it's gold-plated, redundant, diverse and all
11 those other terms, doesn't really solve all the problems.

12 So, I think, from an industry viewpoint, the
13 industry wanted clear lines. They wanted separation in the
14 plant; that they did not have to apply the extraordinarily
15 expensive processes of detailed design and maintenance, and
16 the regulator wanted to place -- to focus its attention.

17 I think, personally, that we were a little too
18 simplistic in think that the mind could be as sharp as we
19 treated it in the 60's and 70's, and so there was just a
20 growing awareness, I think, among various NRC people that
21 it's gray, and that industry also recognized the grayness.

22 We've just been unable to articulate in a clear
23 fashion, how one copes with the grayness with the regulatory
24 process. I think that's still the case. Programmatically,
25 in maintenance, for instance, licensees can and have, in



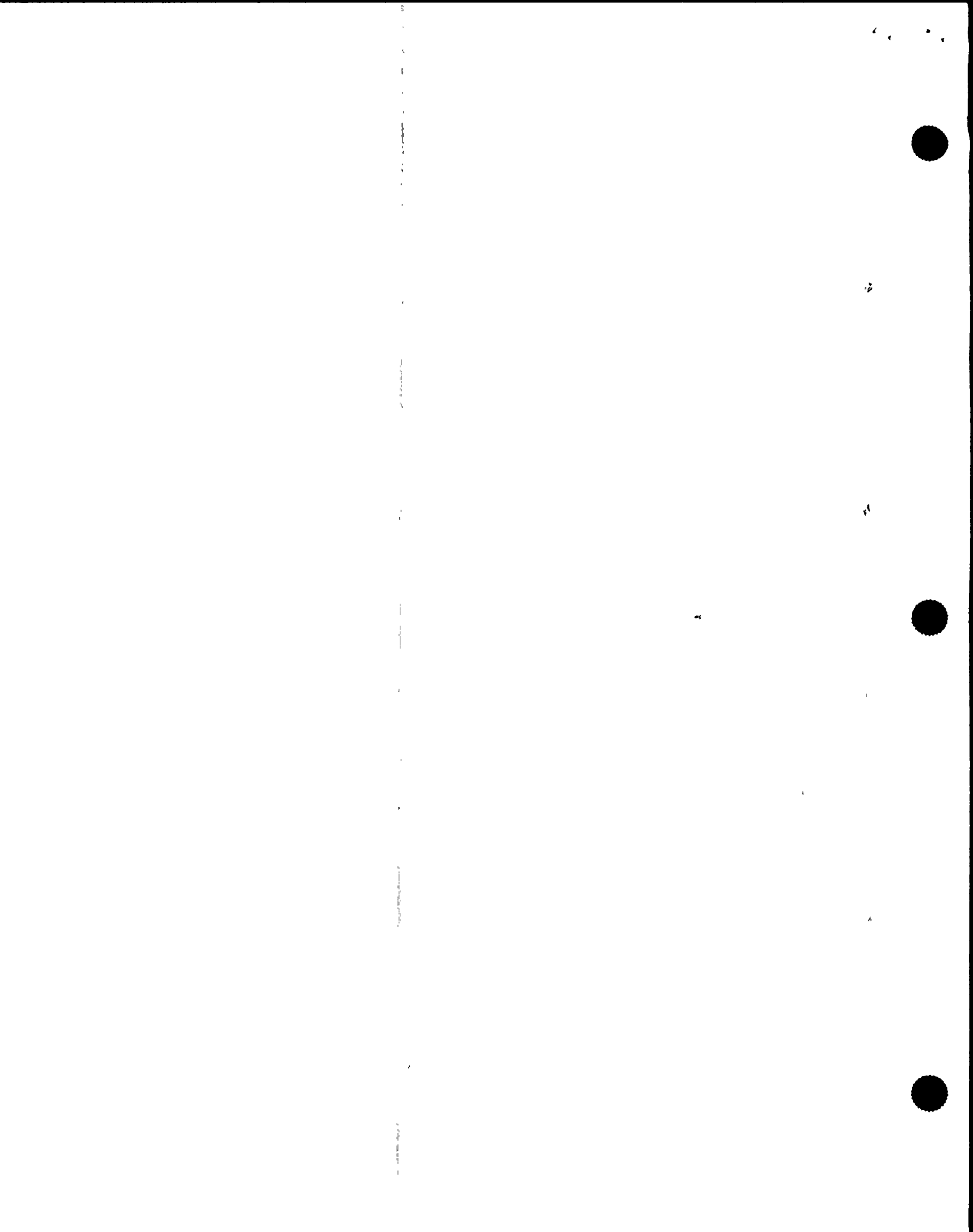
1 some cases, developed maintenance processes that have a
2 graded approach built into them, but despite that, experts
3 would disagree at a specific component, the degree of
4 maintenance or the degree of quality assurance under that
5 scheme would be appropriate.

6 So, I think one just has to accept that.

7 MR. ROSENTHAL: I don't have this in writing, but
8 I've heard people say -- and there's the ring of truth to it
9 -- that every inspection hour that the NRC spends on non-
10 safety-related or balance-of-plant equipment, is one fewer
11 hours that we have to spend on safety related, the most
12 equipment in the plant, and that to some degree, to the
13 extent that we require licensees to spend more resources on
14 the non-safety related, is, again, some time less or
15 resources less that are spent on the most important. What
16 are you feelings on this?

17 MR. ED JORDAN: It certainly is a tradeoff.
18 Safety has been improved in the last five years by
19 substantial improvements in feedwater control and feedwater
20 systems by reducing the initiating rate of transients caused
21 by that system. So, I think that if one were looking at a
22 risk/benefit type analysis, there's been a real positive
23 gain, real improvements in risk as a result of reducing the
24 frequency of those transients.

25 Now, it was expensive on the part of the



1 licensees, but I think it pays off in both risk and in
2 production. So, certainly there are examples where work in
3 the balance-of-plant area does have a substantial benefit in
4 terms of safety by reducing challenge rates.

5 MR. ROSENTHAL: There are questions of the
6 grayness of important to safety; just what should be
7 included or not included in such a middle ground category
8 which, at least in my mind, might then have some, but not
9 necessarily all the pedigree that will be related with
10 safety-related. It would be some middle ground in terms of
11 equipment and requirements, et cetera.

12 In your mind, do things like the control rod
13 position indication, -- do you consider that safety related
14 -- important to safety, at least?

15 MR. ED JORDAN: Oh, certainly. I have a very
16 generous view of important to safety.

17 MR. ROSENTHAL: SPDS?

18 MR. ED JORDAN: Of course, obviously.

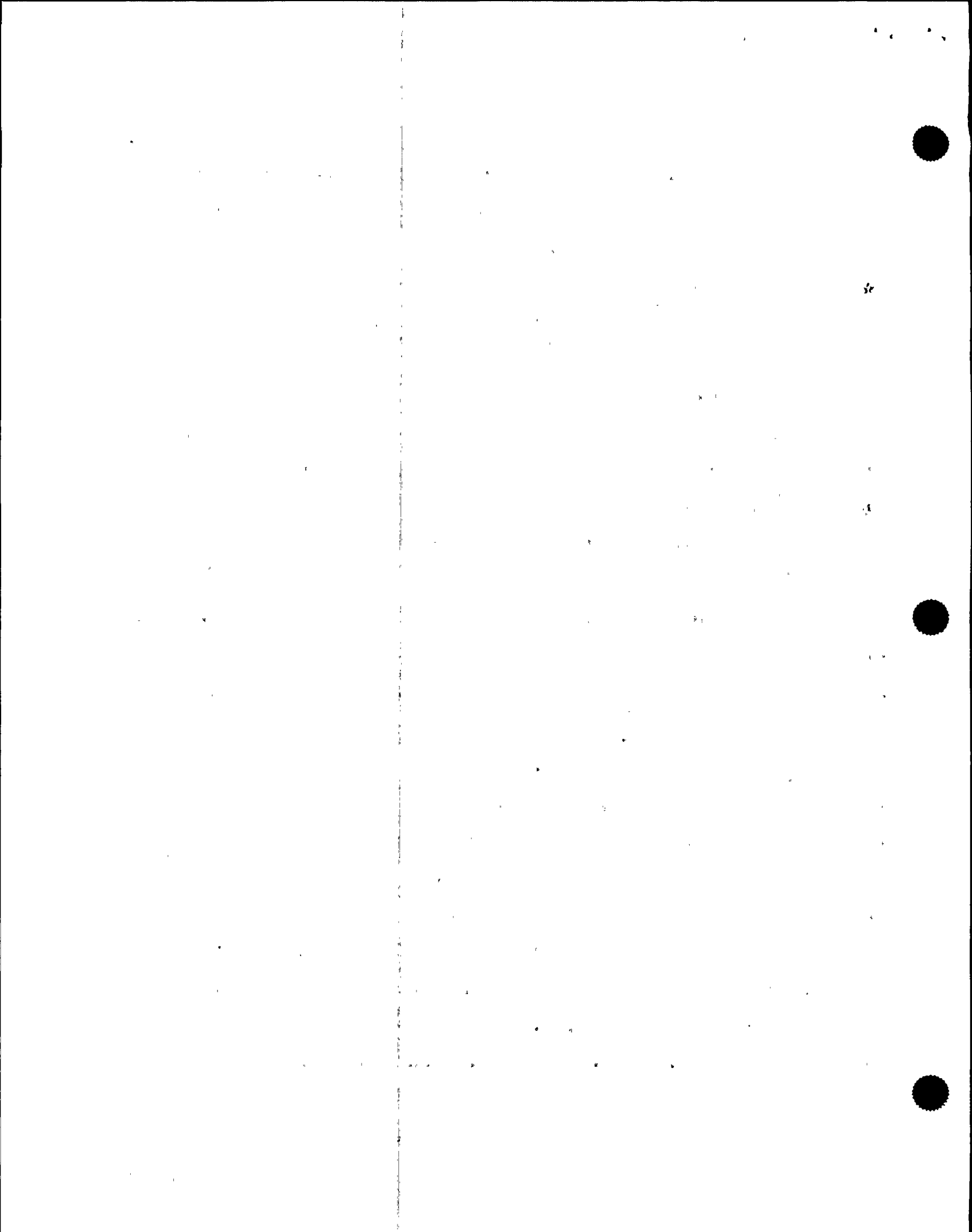
19 MR. ROSENTHAL: Enunciators?

20 MR. ED JORDAN: Surely.

21 MR. ROSENTHAL: Feedwater control system?

22 MR. ED JORDAN: Less, much less in terms of the
23 quality or the contribution that they have, despite their
24 initiator of challenges.

25 MR. ROSENTHAL: How about the lighting that you



1 need in a stairwell to get to some decent equipment -- and I
2 don't expect a snap -- I mean, we've had a lot more time to
3 think about this than you.

4 MR. ED JORDAN: But as soon as you use the
5 terminology, important to safety, then you can say that
6 there is a gradient and almost everything will fit under
7 important to safety, but to different degrees. That means
8 you're making a decision on each of those elements as to how
9 much of the utility's resources or the NRC's resources ought
10 to be applied to that particular area.

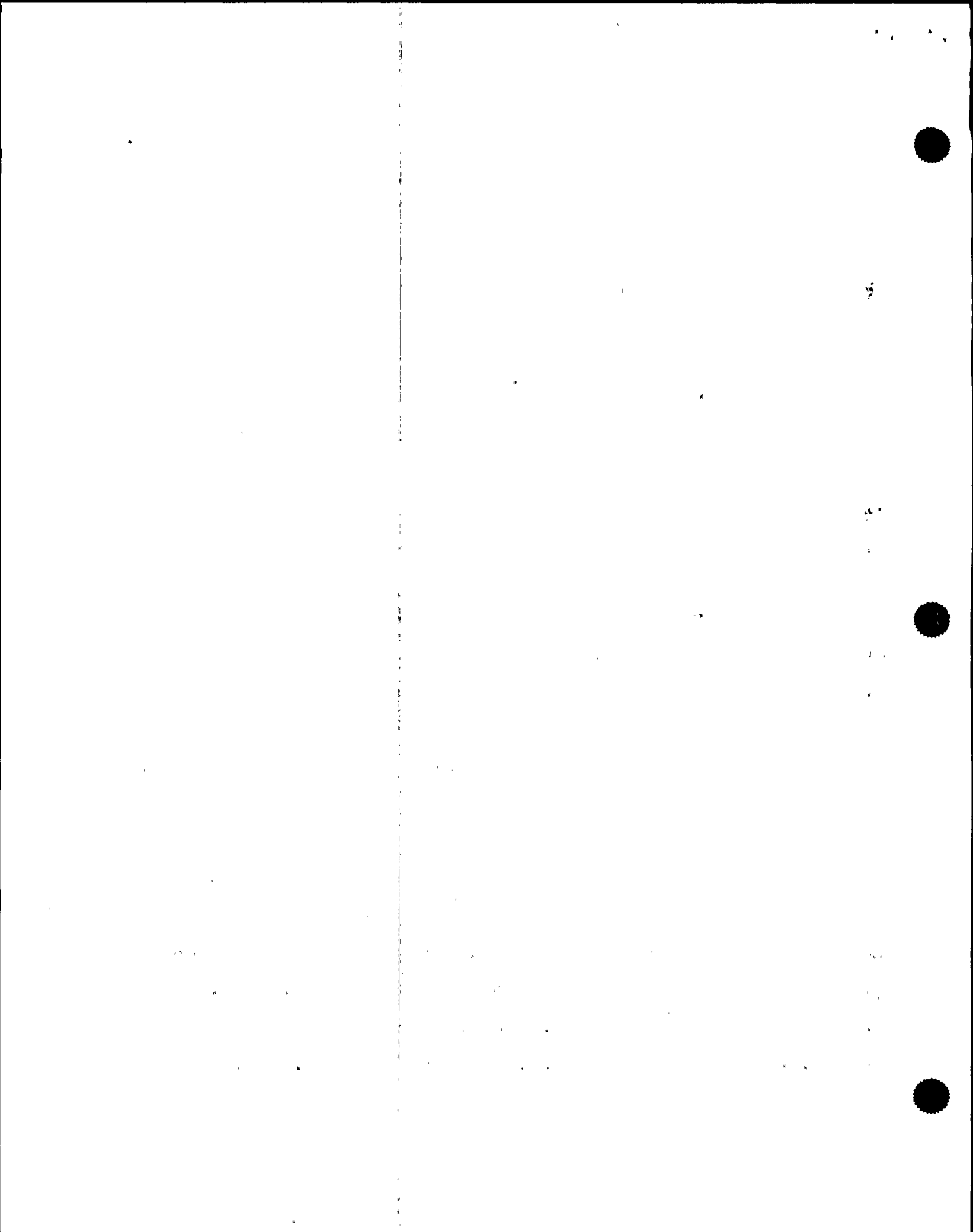
11 I don't think that the NRC ought to spend many of
12 its resources looking at the lighting in a stairway.

13 MR. ROSENTHAL: Because guys carry flashlights?

14 MR. ED JORDAN: Yes.

15 MR. ROSENTHAL: Okay, but then is it your concept
16 that one could, on a system or structure, or even maybe on a
17 component basis, think through how important something was,
18 and there would be graded expectations?

19 MR. ED JORDAN: Sure. The object would be that,
20 you know, when we apply the equipment qualification, you
21 apply equipment qualification to a very limited number of
22 things, those principally that are involved in response to
23 severe accident and have to live with thermal radiation,
24 pressure, moisture conditions. Those must be
25 environmentally qualified and withstand a hostile



1 environment.

2 But if you're talking about the lights in the
3 stairways, I'm not really worried about their environment.
4 If you're talking about the batteries in the UPS, they
5 should be capable of living in the environment of the
6 cabinet. So, if the cabinet runs at 80 degrees or 130
7 degrees, then one has to have the consideration of the aging
8 of the components and a maintenance cycle that takes care of
9 it, or you add more cooling to it.

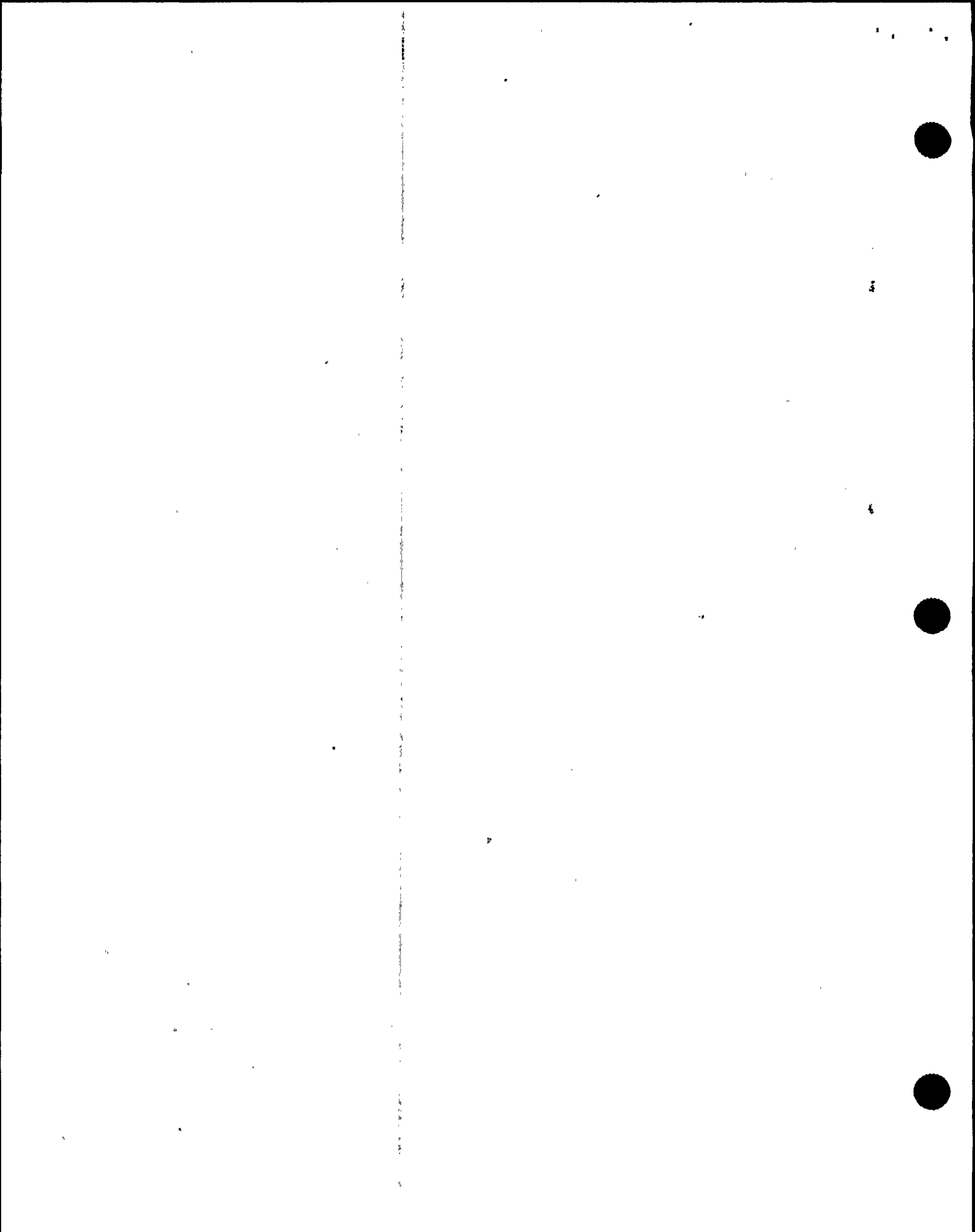
10 So, that's just an industrial practice. You know,
11 industrial design is supposed to take care of those ordinary
12 operating environments, but you wouldn't have to go through
13 an environmental qualification program to establish that.

14 MR. ROSENTHAL: Because most of this stuff doesn't
15 see a harsh environment?

16 MR. ED JORDAN: Right.

17 MR. ROSENTHAL: What about seismic? Would one
18 rethink or at least systematically think out seismic? Not
19 necessarily require, but think it through?

20 MR. ED JORDAN: We are getting into redesigning
21 the entire plant. There has been a consideration once of
22 what should be seismically qualified and the line was drawn
23 at safety-related. In terms of important to safety
24 equipment, one relies on the industrial uniform building
25 code-type design considerations to cause them to be robust.



1 And, as you're aware, in going back and re-examining the
2 seismic capability of plants that weren't designed to
3 specific seismic criteria, we do find a remarkable
4 robustness of equipment. So, those kind of walkdowns, I
5 think, are quite beneficial, looking at existing plants, but
6 I wouldn't go back and redesign each of the elements of the
7 plant systems to be able to withstand the most severe
8 earthquake of that particular geographic location.

9 MR. ROSENTHAL: Let me play devil's advocate for
10 just a moment. In this event they lost a fair amount of
11 equipment which I would term important to safety;
12 information systems --

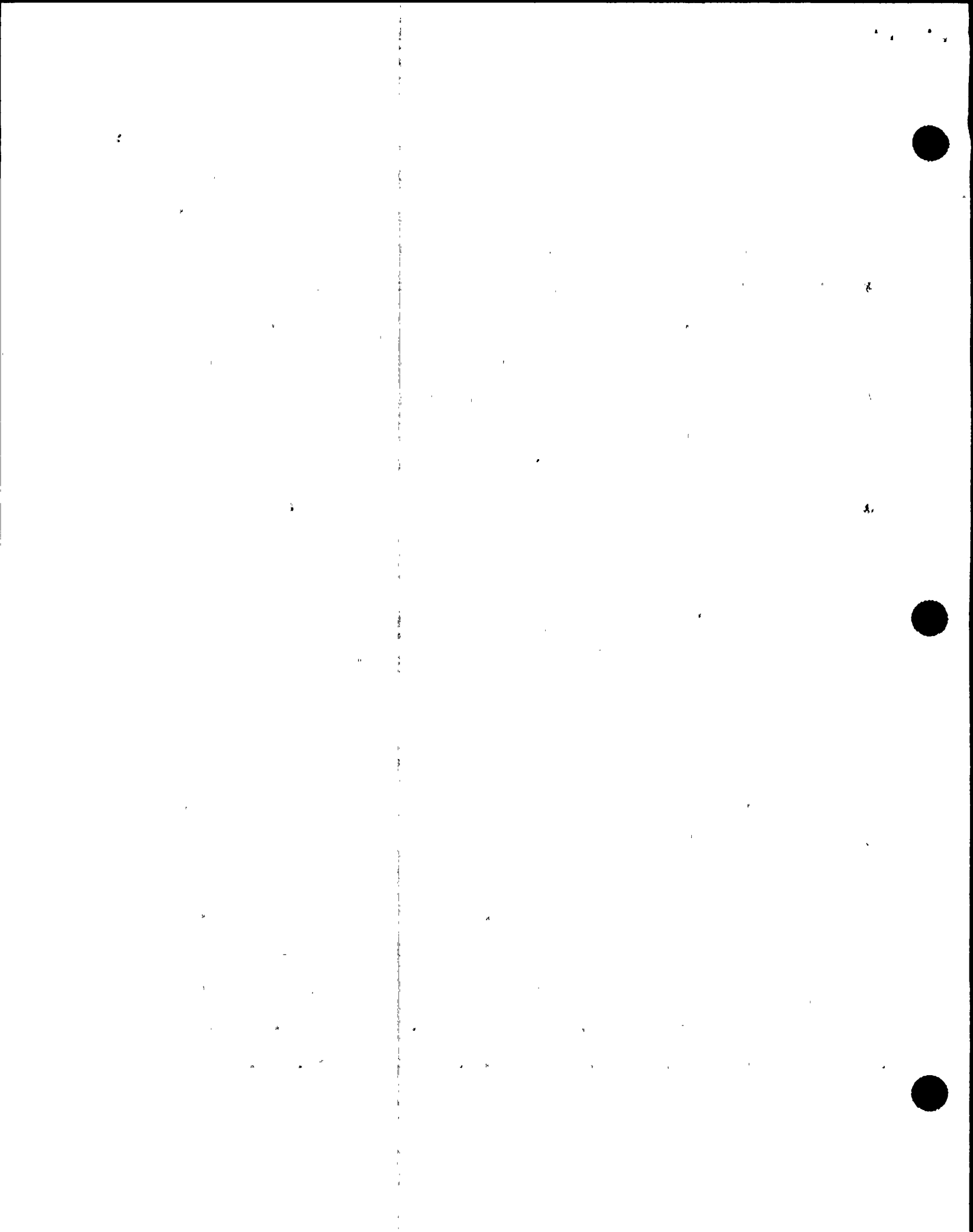
13 MR. MIKE JORDAN: Communications systems --

14 MR. ROSENTHAL: -- communications --

15 MR. MIKE JORDAN: -- instrumentation.

16 MR. ROSENTHAL: Both the emergency procedures
17 worked. The post-accident monitoring, highly-qualified
18 stuff worked, the EPGs worked, the safety-related equipment
19 worked, and the plant was safely shutdown. In that sense,
20 the system worked. Why do more?

21 MR. ED JORDAN: One learns lessons from each of
22 the events that can improve the ability of a plant to
23 withstand relatively frequent events. So, for I think a
24 relatively low cost, this particular plant and others could
25 be made a little more robust to withstand ordinary



1 transients. This was an ordinary transient that it should
2 have withstood, in my view. So, from a regulatory sense,
3 they did okay, but in terms of improving safety performance,
4 this could have been a no, never mind, and should have been.

5 MR. ROSENTHAL: On the important to safety, I
6 always worry that I'm not asking the right questions. Is
7 there something that I should have asked you that I forgot
8 to ask you and that you have a philosophy that would be
9 important to share with us on what we discussed?

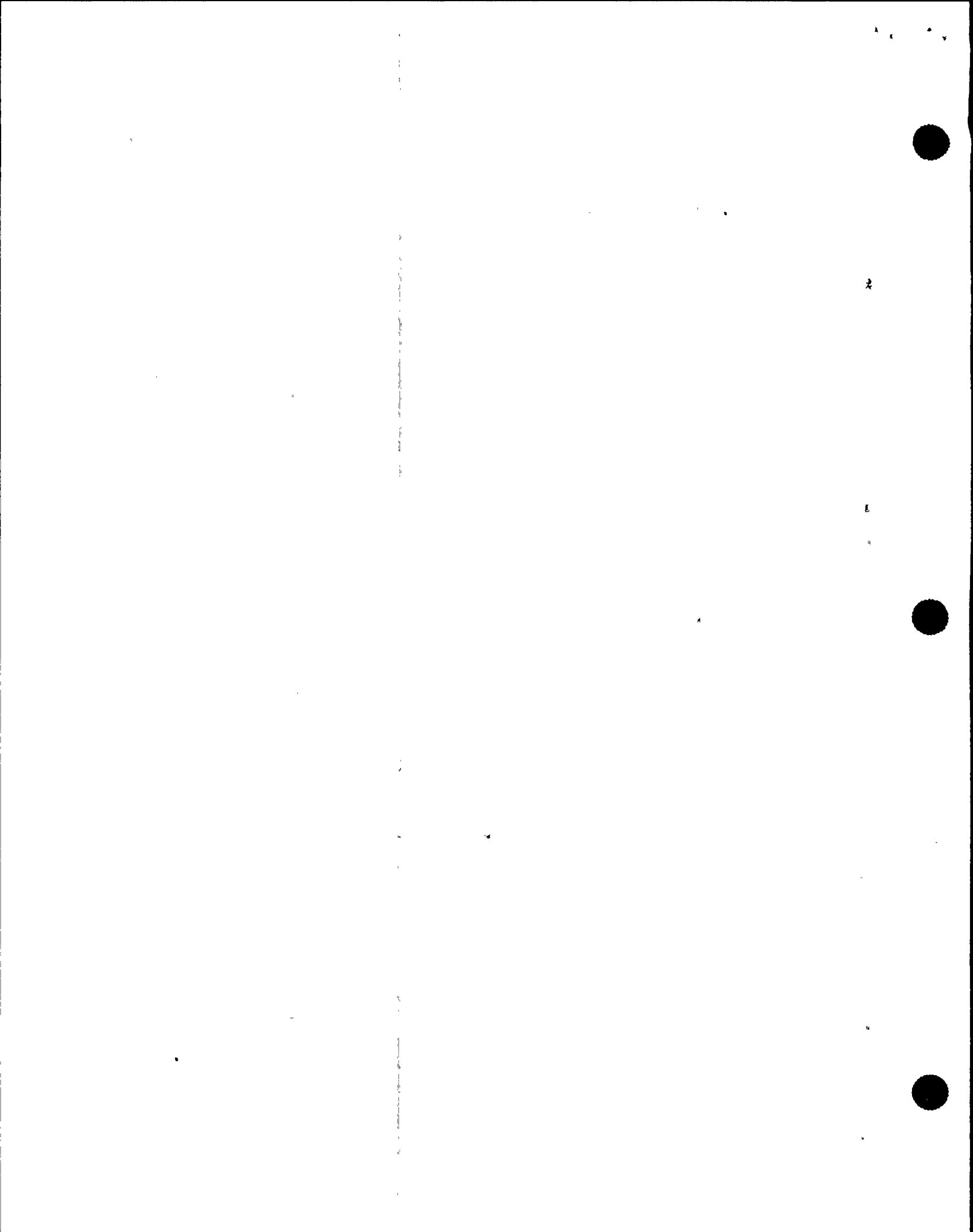
10 MR. ED JORDAN: No. I think we've really covered
11 it -- that it's a concept that is best described as a graded
12 approach to safety. And to put it in regulatory terms so
13 that one knows exactly what this balance-of-plant UPS should
14 be able to withstand, would be a very very difficult task.
15 I, frankly, feel that it's something that we're not yet
16 capable of doing.

17 The most likely ability to more clearly identify
18 the gradient would be through PRAs. And of course the PRA
19 is not going to recognize the vulnerabilities of this
20 particular UPS system and would probably assign the wrong
21 value as to its ability to withstand this kind of event.

22 MR. ROSENTHAL: One of our concerns --

23 MR. ED JORDAN: That's the problem.

24 MR. ROSENTHAL: -- is that FMEAs, typically,
25 failure modes and effects analysis, typically say it's on



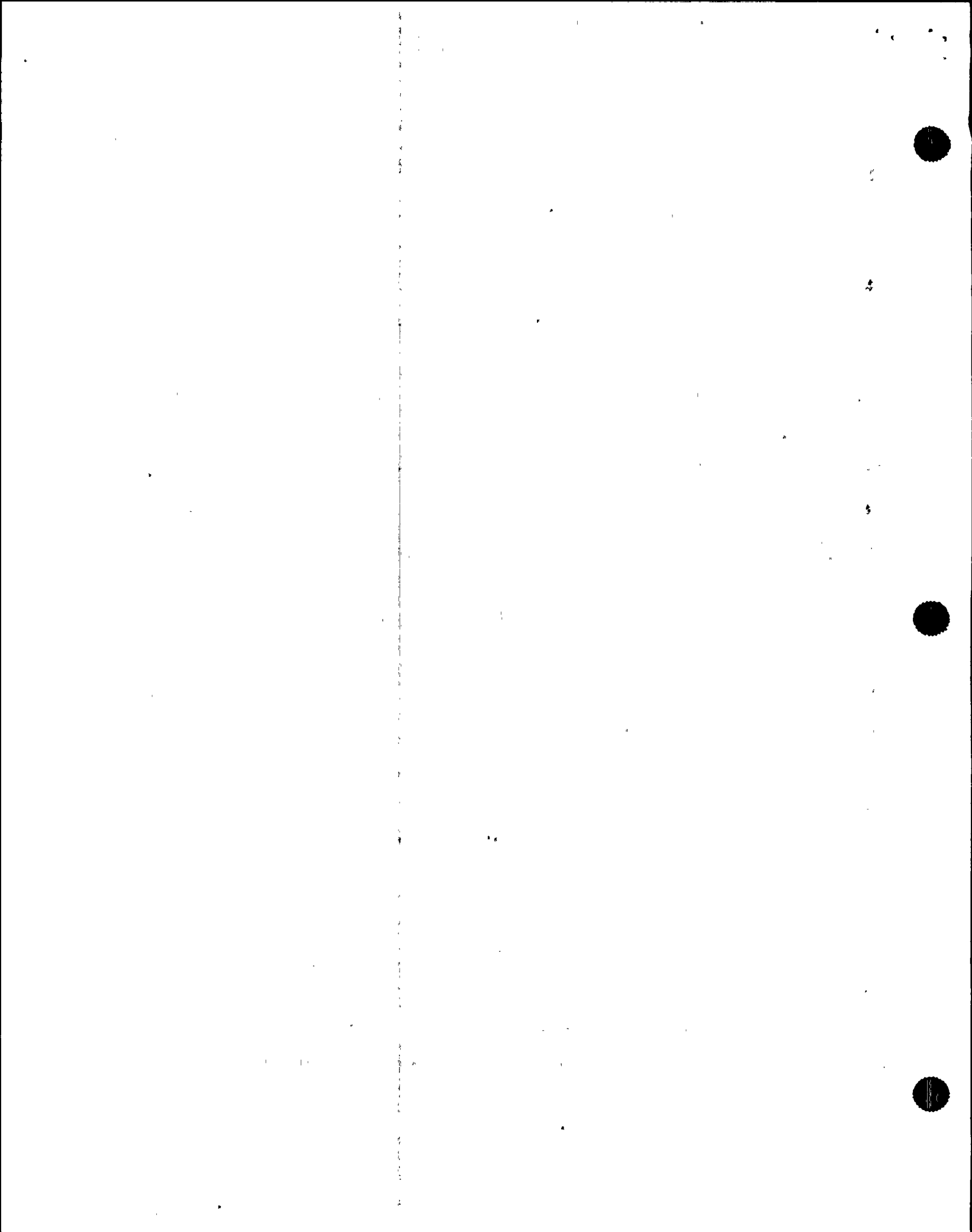
1 and off, it's broken, it's not broken. PRAs often say it's
2 on, it's off, it's broken, it's not broken.

3 Here's an event in which it was degraded and if it
4 had totally failed, that is power to the control logic here,
5 it would have probably flipped to another supply and been
6 just fine. We don't think -- the designers told us they
7 didn't design for degraded voltage, they designed for on and
8 off. Does that mean that we have to reconsider the way
9 we're doing business in PRAs space, FMEAs space.

10 MR. ED JORDAN: I think maybe the answer to that
11 lies in what was the true risk significance of this event?
12 So, when -- when we've done the task analysis and see how it
13 fits in the risk picture, then you can come to the view that
14 because of the risk this poses and the likelihood of it
15 being in a number of other plants, it changes our view, or
16 that the risk in fact was sufficiently low that it doesn't
17 change our view of the level of detail one has to go into
18 when it reviews.

19 I guess my personal opinion is that it should have
20 withstood this kind of event and that either the equipment
21 has become too complex or we have to be able to have tested
22 or demonstrated operability under a wider range of
23 conditions.

24 MR. ROSENTHAL: Here, you have a transformer fault
25 which perturbed the grid. Fitzpatrick, next to Nine Mile



1 and out in to New England, up in New York State, was seen at
2 the reserve transformers in the switchyard which normally
3 power the safety busses, was seen on the safety busses but
4 at insufficient time or duration to cause the diesels to
5 start and came down to the -- and was seen even at the 600-
6 volt safety bus level, because we know the safety-related
7 UPS's went out of sync with the normal power, but continued
8 to function, et cetera.

9 Do we have to rethink transformer failures?

10 MR. ED JORDAN: I guess my view is I didn't learn
11 anything during this event that would say, if we do, that
12 the -- those other circuits appearing to have -- and now,
13 I'm -- I'm reaching further than my knowledge, because
14 you've heard --

15 MR. ROSENTHAL: Yes. Let me interrupt you for
16 just a second.

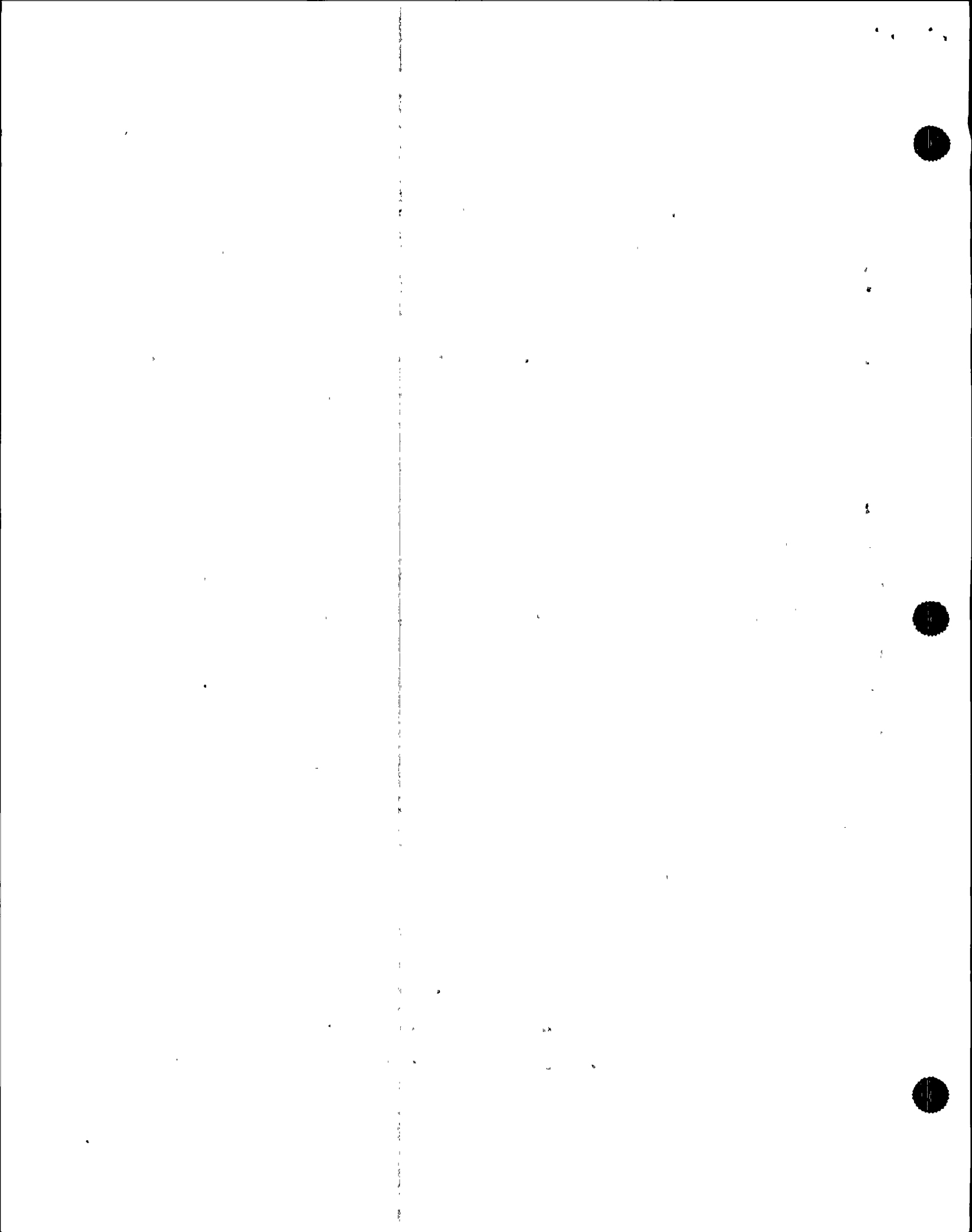
17 I am springing new information on you, in all
18 fairness.

19 MR. ED JORDAN: Yes. And I guess I would say, off
20 the record, you need to be careful not to get people's
21 opinion about things that you have learned and -- and that
22 they have views that are not learned, that are off the wall.

23 MR. ROSENTHAL: Can we stop?

24 [Discussion held off the record.]

25 MR. ROSENTHAL: Okay. We're back on.



1 Are we ready to go into --

2 MR. MIKE JORDAN: I've got one question to ask.

3 MR. ROSENTHAL: Okay.

4 MR. MIKE JORDAN: And that has to do with the gray
5 area of important to safety and the grading of that. How
6 much assurance do we have that the goldplated area of -- in
7 this event, it looked like they all worked -- of safety-
8 related?

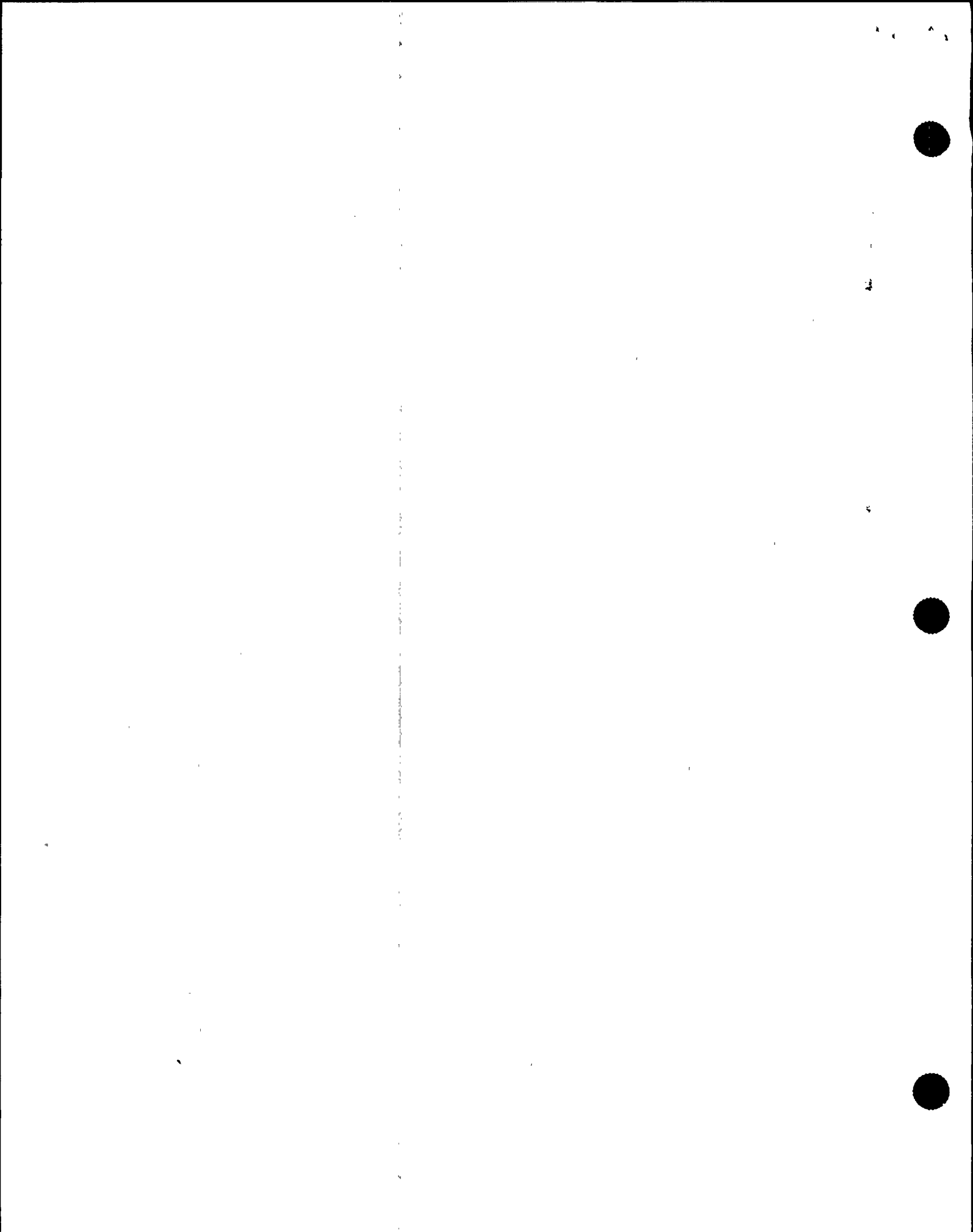
9 Is that identified well enough to the industry
10 that we know that every plant thoroughly understands what
11 important to safety is, both the I&E --

12 MR. ED JORDAN: You're mixing important to safety
13 and safety-related, I think.

14 MR. MIKE JORDAN: But I'm saying, even the safety-
15 related equipment, is that well-identified by us enough so
16 that an AE that builds one plant would apply the same rules
17 and have the same equipment in one plant and the next plant
18 the same equipment as safety-related?

19 MR. ED JORDAN: As far as I'm concerned, there is
20 not much argument about where safety-related lines are
21 drawn.

22 I think that both regulator and industry know,
23 when -- when one uses those terms, that there is a fairly
24 sharp distinction in the equipment that's included, and of
25 course, TMI actions identified and fuzzed some of those



1 areas.

2 SPDS is a perfect example. We said we are not
3 going to require SPDS to be safety-related with gold-
4 plating, etcetera, but it's damned important, and we expect
5 it to be functional most of the time.

6 So, that -- maybe that kind of a thing that came
7 out of the TMI actions helped explain some of the important-
8 to-safety aspects. Even though it didn't use those words,
9 there was a gradient.

10 MR. MIKE JORDAN: But you're saying, in the area
11 of safety-related, you think we've got it well-enough
12 identified that that's not a gray area to the industry.

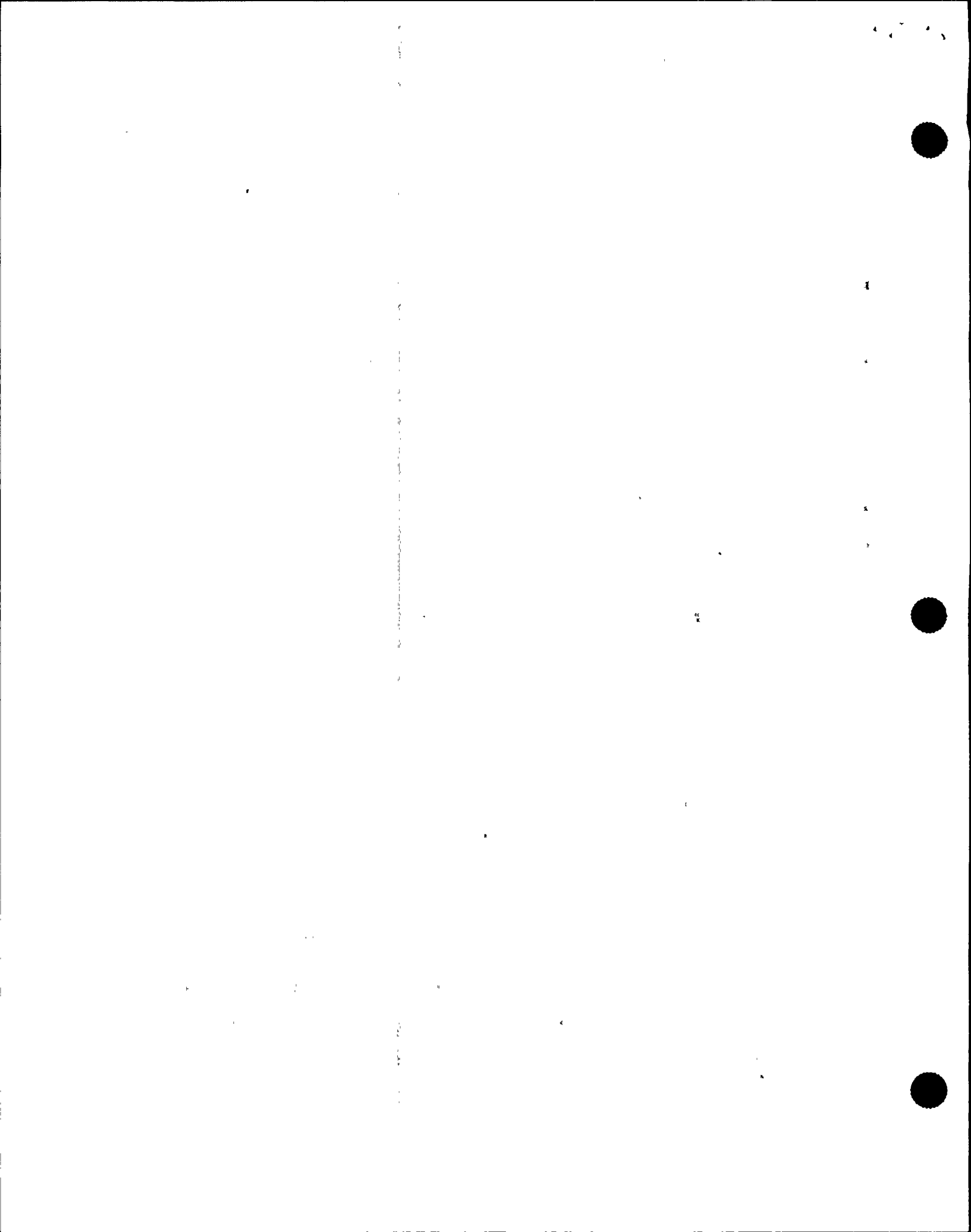
13 MR. ED JORDAN: Well, I spent a lot of time
14 inspecting plants up to 1977 and -- and reviewing diagnostic
15 evaluations and IITs, and there didn't seem to be any
16 arguments about where safety-related was, and if you look
17 back at enforcement history, there just aren't many
18 arguments about what is safety-related and what is not.

19 Those seem to be fairly sharply drawn.

20 MR. ROSENTHAL: Let's move on to maintenance.

21 I can read the words in the maintenance rule, but
22 I'm still confused on what they mean.

23 The maintenance rule says that the scope is for
24 safety-related, and then it goes on, non-safety-related
25 structures, systems, or components that will either mitigate



1 an accident or transient or used in emergency operating
2 procedures, EOPs, or -- it goes on.

3 Please help me with my understanding.

4 MR. ED JORDAN: That's safety-related and other
5 important stuff.

6 MR. ROSENTHAL: So, the SPDS, the control room rod
7 position indication, annunciators in the control room which
8 are clearly used in the EOPs would be examples of non-
9 safety-related structures which would be covered by this.

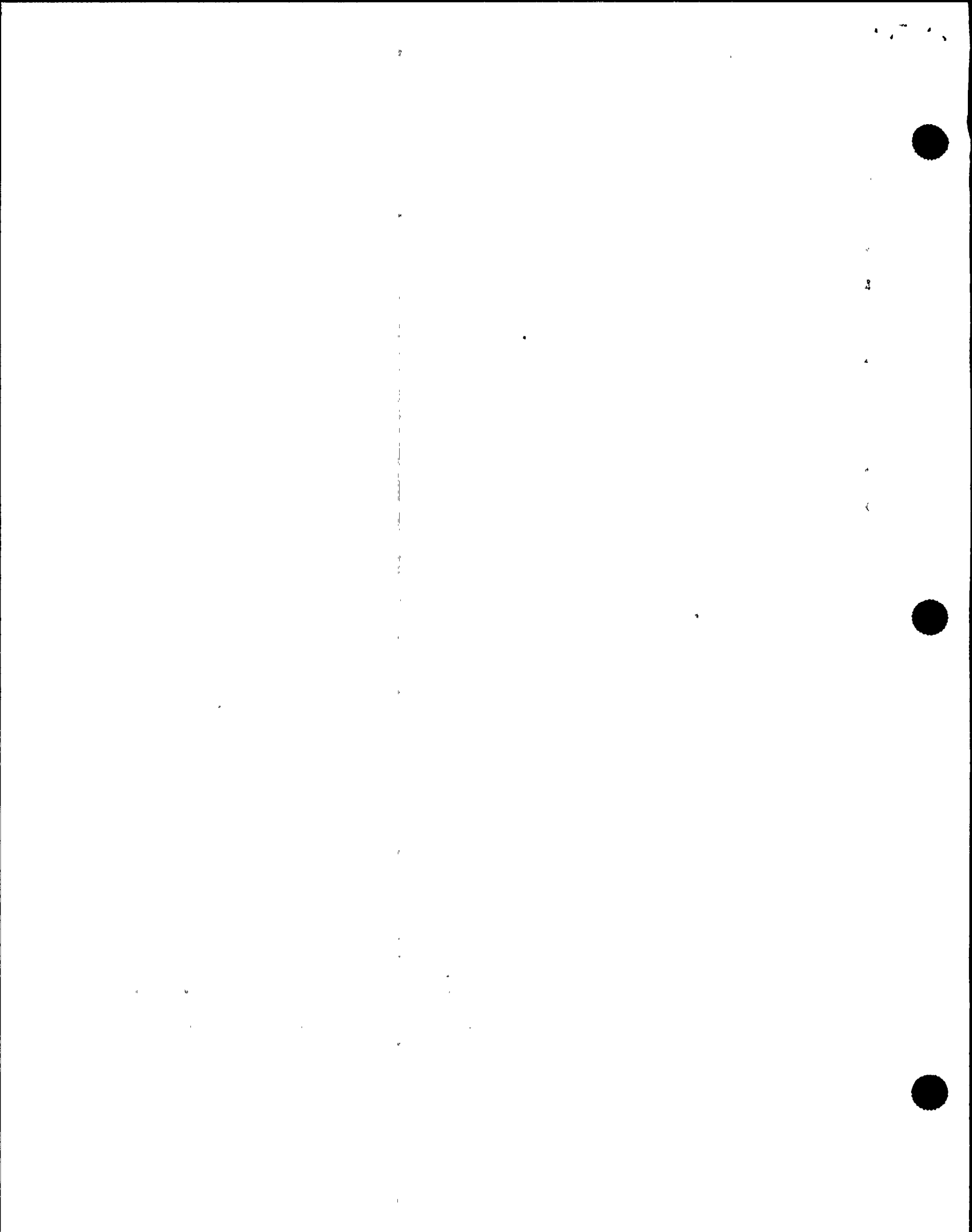
10 MR. ED JORDAN: Yes.

11 MR. ROSENTHAL: When I read the rule and the
12 statement of considerations, it looks like the concept is to
13 monitor performance and then adjust programs accordingly.

14 Is that a fair characterization?

15 MR. ED JORDAN: I guess it's not my understanding.

16 The -- the understanding I have is that licensees
17 are expected to have programs for their evolved maintenance
18 and procedures and -- and to follow them and that the NRC,
19 rather than putting its emphasis on programs, would put its
20 emphasis on looking at the performance, and so, I see the
21 performance-based as putting the NRC's attention on
22 performance, but it wasn't, in my view, intended to shift
23 the licensee's attention from the necessary programs and
24 procedures and training and skilled personnel to merely
25 looking at performance.



1 There is, of course, a reliability-based
2 maintenance scheme that some utilities have adopted, and I
3 don't believe that this was intended to cause all utilities
4 to universally go to a reliability-centered maintenance
5 program.

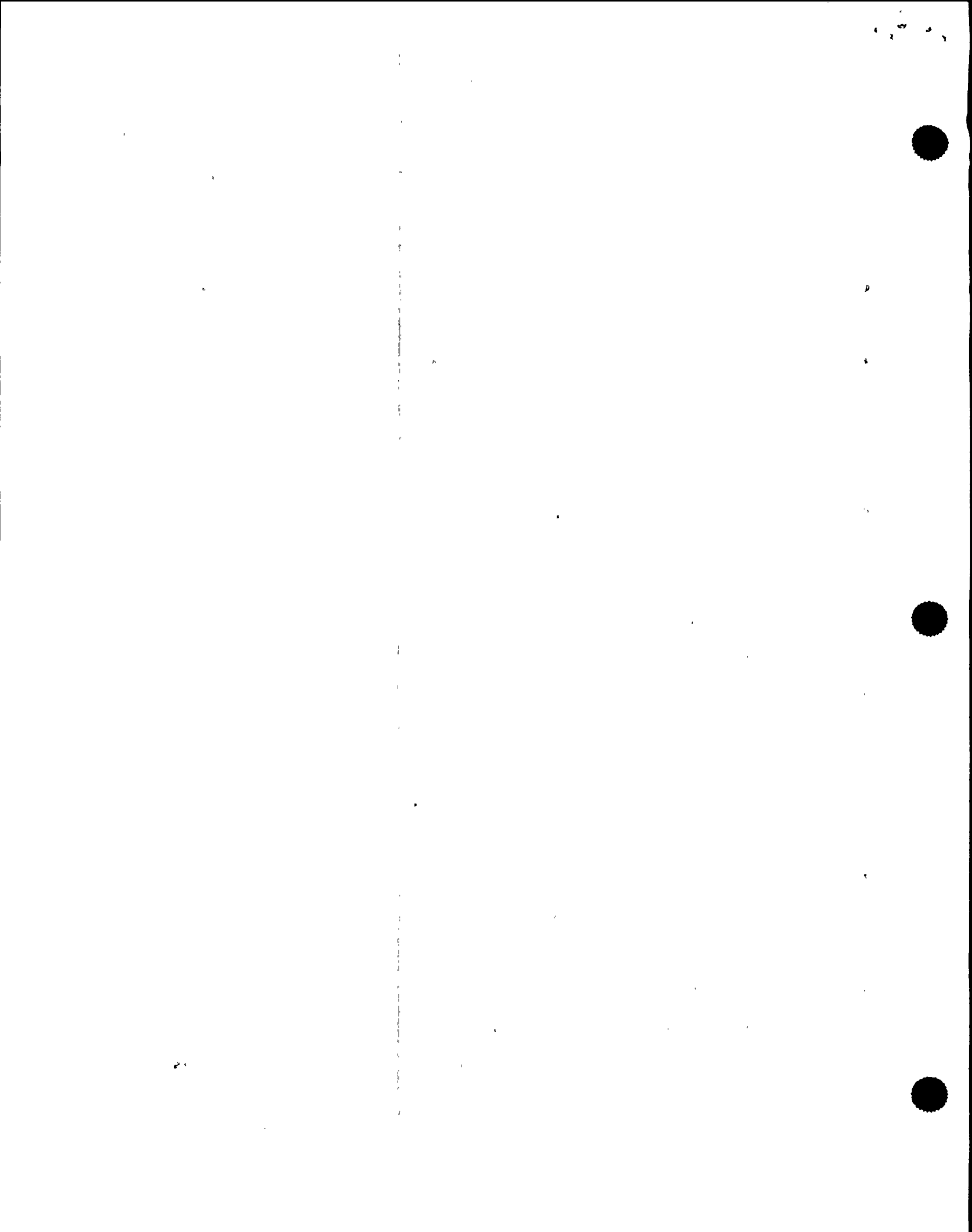
6 MR. ROSENTHAL: If you're watching a feedwater
7 pump that's always running, you can figure out what its
8 reliability is and decide whether you want to do more or
9 less in preventive or corrective maintenance or whatever
10 you're doing.

11 What would the licensee do with respect to
12 something that's a non-revealing fault?

13 MR. ED JORDAN: You're ignoring the answer,
14 because I expect licensees to continue to have preventive
15 maintenance, to continue to do testing, to continue to,
16 during outages, rebuild and refurbish equipment on a
17 schedule that is appropriate for the amount of wear that
18 they incur and -- and not to wait until the -- the pump
19 shows degradation.

20 So, I think there must be a misunderstanding about
21 what the Commission intended with the terminology
22 "performance-based."

23 It's what the Commission is going to be focusing
24 its attention on and emphasizing for its own understanding
25 of whether maintenance is working at a plant, and the

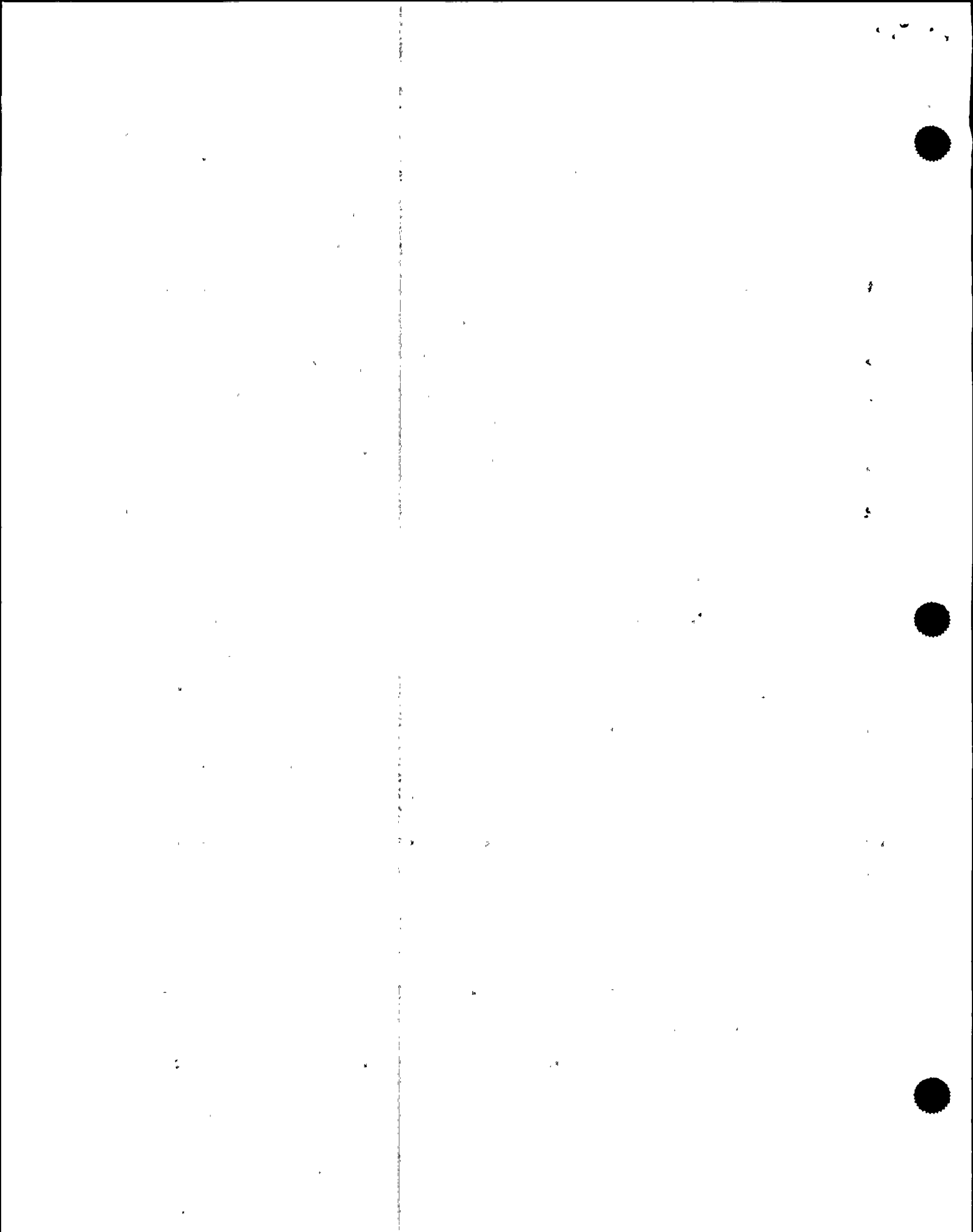


1 example would be that we would be looking across industry at
2 diesel generator reliability and we would also look at
3 plant-specific diesel generator reliability, but we expect
4 the utilities each to continue to do maintenance on their
5 diesels, depending on the -- the wear, age, and
6 characteristics of the individual diesels, not -- not to
7 rely on a performance index as -- as when they do
8 maintenance.

9 MR. ROSENTHAL: That expectation is based on other
10 regulations or based on the most recently published 50.65
11 July 10, '91. Well, we always expected people to maintain
12 their plants, whether we ever had this rule or not.

13 MR. ED JORDAN: Let me back-up. When the NRC went
14 into considerations for rulemaking on maintenance, we
15 examined maintenance at a number of plants, and we came up
16 with views, in terms of programs and implementation. The
17 determination was that there were programs out there and
18 that implementation, in most cases, was fairly good, but
19 there were more problems with implementation than there were
20 with programs.

21 Looking at programs, in terms of how many people,
22 what the organization is, what the maintenance schedule is,
23 and what the procedures are for maintenance, is in I think
24 many people's mind, an inefficient way to regulate a
25 particular activity such as maintenance. So, the regulator



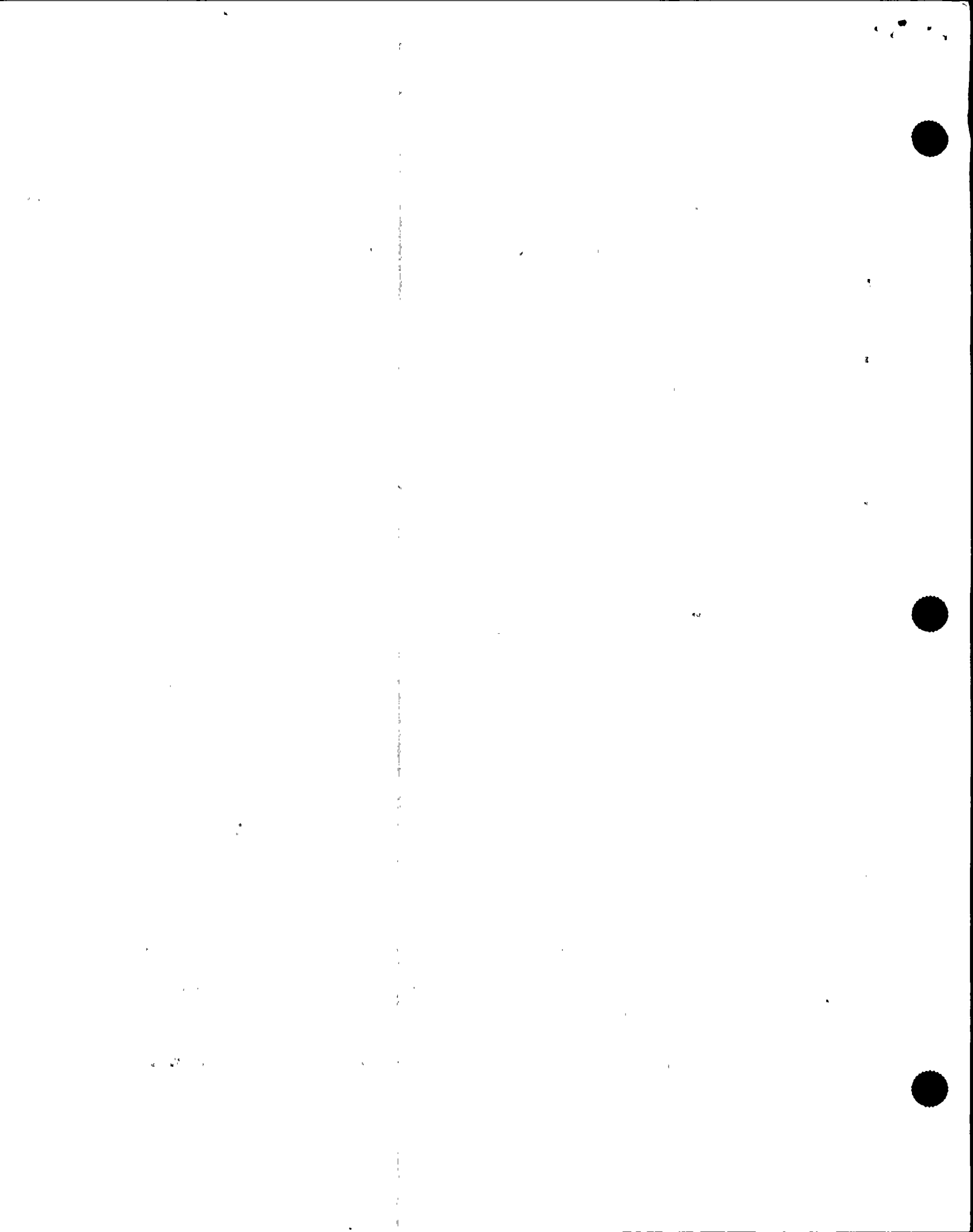
1 perhaps should step back a bit more and look at overall
2 system equipment performance at a plant, and if you have
3 equipment performance problems over a long period of time,
4 then you go back and you look at programs, the training of
5 personnel, the procedures, the maintenance schedules, in
6 order to affect improvements at the plant.

7 But I certainly never anticipated and would be
8 upset if that was misinterpreted by industry to say, hey, we
9 don't have to mess around with the programs anymore. All we
10 have to do is monitor how many times the RHR fails to start.
11 That would be a mistake.

12 MR. ROSENTHAL: There are five specific UPS's that
13 are very much of interest to this IIT. They ran for five
14 years, and although they may have flipped from their normal
15 source of their maintenance source, they continue to provide
16 AC power for five continuous years times five units. So,
17 that's pretty reliable -- pretty good equipment. And, prior
18 to this event, you would have judged the reliability very
19 high. And they were pulling maintenance on this equipment.
20 One could argue about whether it was enough maintenance or
21 not, they were pulling some.

22 So, if you have a performance-based rule, and one
23 would judge that would not want -- would not one judge that
24 performance adequate?

25 MR. ED JORDAN: Absolutely not. That would be too



1 narrow of a look. When you're looking at performance-based
2 considerations of maintenance, you look across the plant.
3 So, you look at the overall equipment performance. If you
4 have problems in the plant, then you go back to the
5 licensee's program. Because -- and I think, frankly, it's
6 up to you to recommend as to whether there was, in fact, an
7 overall maintenance problem at this plant, or whether this
8 was a narrow, one of a kind failure because of the
9 complexity of the equipment and poor manuals or whatever
10 reason for this particular failure.

11 So, I think you're misreading or misunderstanding
12 performance-based, if you would use the argument that, on a
13 performance-based -- look, this equipment is great, because
14 you have to look across the plant and ascertain whether the
15 maintenance program effectiveness, looking at equipment
16 performance, was good or bad at this plant.

17 MR. ROSENTHAL: Now, I can see where in terms of
18 NRC's actions, it's going to look big picture, overall
19 performance. What are the expectations of the utility? I
20 think you said that before. Could you just repeat that?

21 MR. ED JORDAN: The expectations of the utility
22 are that they, in fact, have established and implemented a
23 program and INPO has provided some very fine guidance for an
24 effective maintenance program. They can adopt that and, in
25 fact, the Commission informally said that's good guidance.



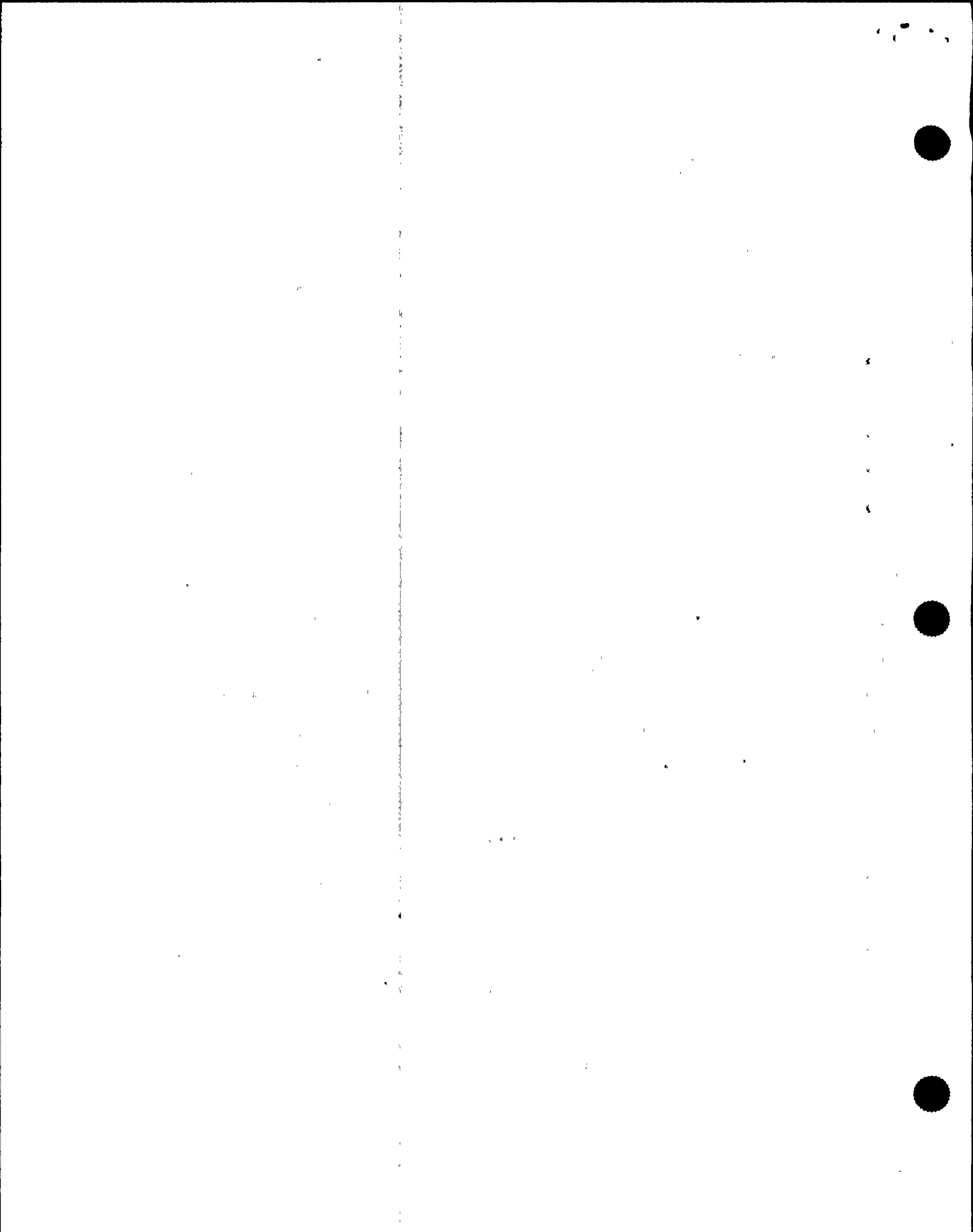
1 That gives them an overall program.

2 Now, utilities, in some cases, have developed a
3 reliability-centered maintenance program and that program
4 has, as one of its features, looking at individual
5 components and adjusting the frequency and intensity of
6 maintenance, based on its failure history. And that has, as
7 an element of it, living with -- I'll give it a failure
8 rate. Some people are uncomfortable with it.

9 In order for it to be effective, in my view, one
10 has to look across a lot more equipment than an individual
11 plant. So, I think it is fundamentally flawed to apply a
12 reliability-centered maintenance program, looking only at
13 one reactor unit, and the small numbers of equipment that
14 are installed there; one ought to have a bigger statistical
15 base on which to determine frequency of maintenance.

16 MR. ROSENTHAL: The expectations of licensees that
17 you spoke to. Some of that I can see in the statement of
18 considerations to the rule, but not in the rule itself. Are
19 there other places where those expectations are made clear?

20 MR. ED JORDAN: Not in a regulatory fashion. I
21 don't know of any other places. If it doesn't stay on your
22 shelf, then it's not useful for utilities. So, unless it is
23 in the regulation, in the regulatory guide that will
24 accompany it, or the statements of considerations or a NUREG
25 that might expand on this activity, it will fall of the



1 people's shelf.

2 So, I'm sure that there were expressions that were
3 compiled and there were discussions with industry, at the
4 regulatory -- annual regulatory meetings, and the special
5 maintenance conference that was held with industry. But
6 those are off-the-shelf, in terms of having a long-term
7 effect.

8 MR. ROSENTHAL: Now there are plans for Reg Guides
9 to be developed to accompany this rule.

10 MR. ED JORDAN: When you label your bookcase and
11 have maintenance as one of the labels, it's equipment that
12 stays on the shelf. The reference is that it stayed on the
13 shelf, that one has to rely on.

14 MR. MIKE JORDAN: One direction we have given to
15 people for developing the Reg Guide, the philosophy that you
16 expounded; do you know if that's identified someplace in the
17 process for the Reg Guide development that we could look at?

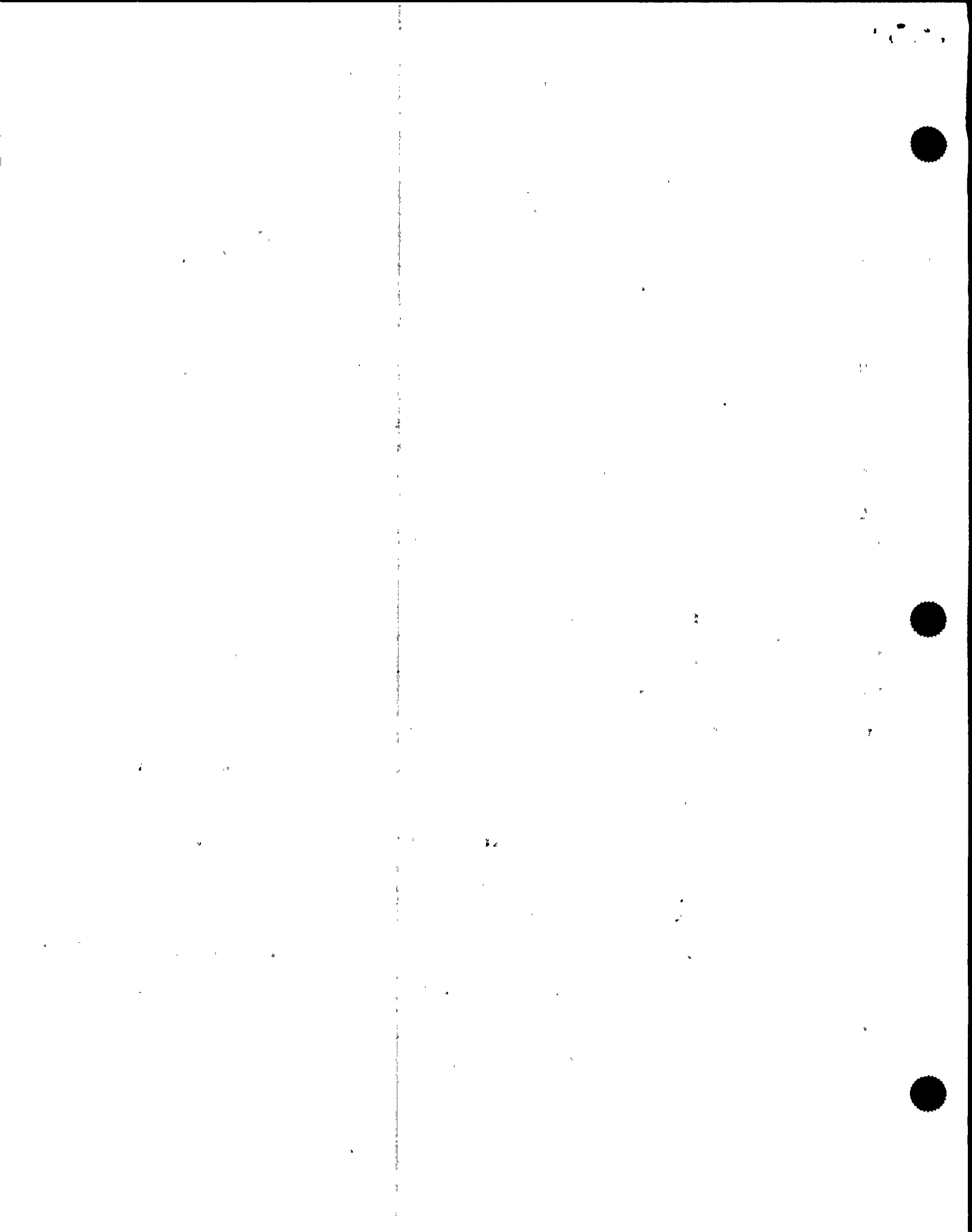
18 MR. ED JORDAN: No, I don't.

19 MR. ROSENTHAL: That's being developed by Research
20 now.

21 MR. ED JORDAN: Yes.

22 MR. ROSENTHAL: You would end up, in your CRGR
23 role, getting involved in far later down the road, I take
24 it?

25 MR. ED JORDAN: Right.



1 MR. ROSENTHAL: Was the maintenance rule, 50.65,
2 July '91, meant to be an umbrella type rule unto which one
3 or more Reg Guides would ultimately be developed, and that
4 would become the umbrella for explaining NRC's expectations
5 of maintenance to licensees?

6 MR. ED JORDAN: It's certainly my understanding,
7 yes.

8 MR. ROSENTHAL: That that would be called the big
9 umbrella?

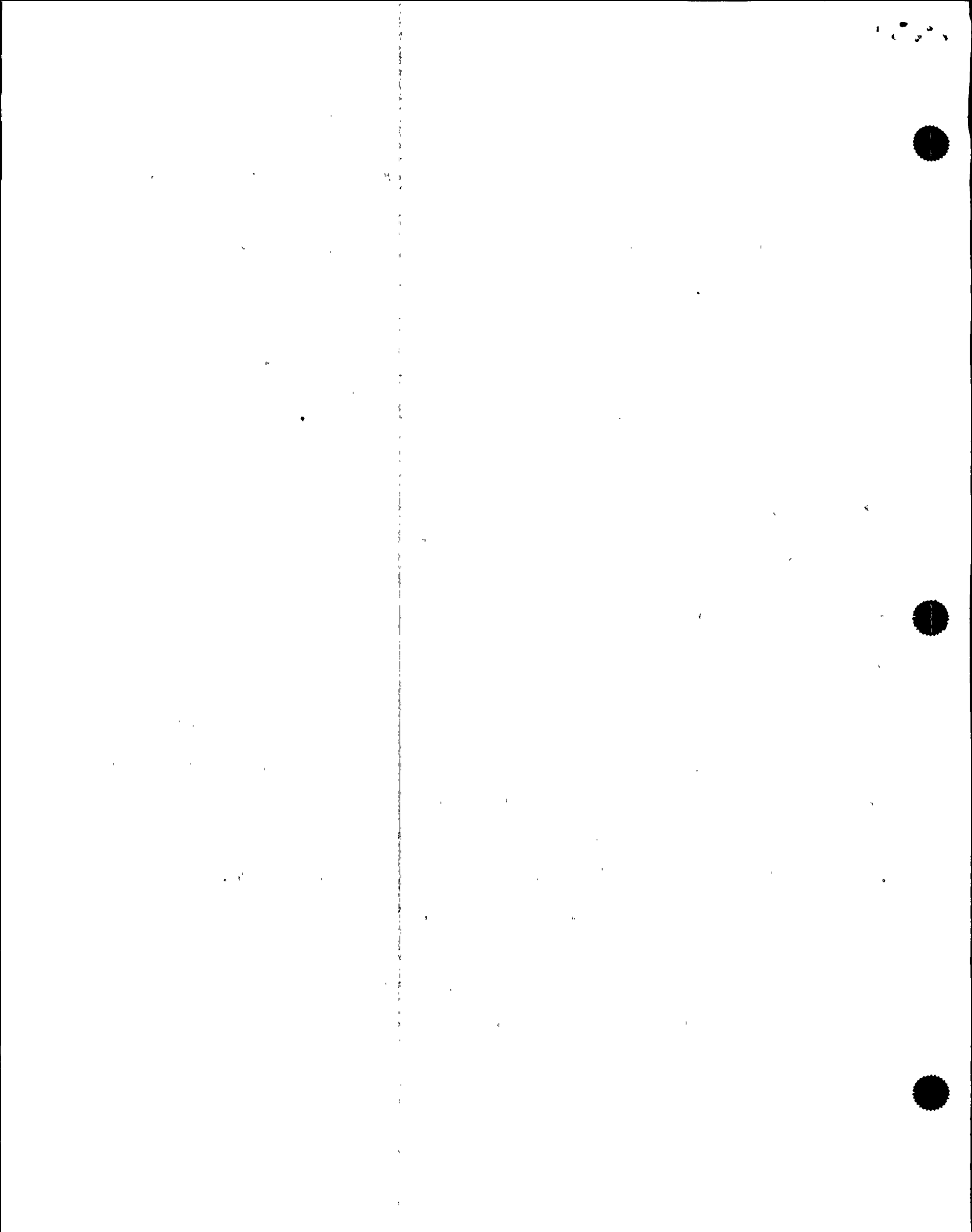
10 MR. ED JORDAN: Yes. In the absence of it, about
11 the only place that maintenance appears in the entire 10 CFR
12 50 series is in Appendix B, a couple of times.

13 MR. ROSENTHAL: Appendix B is clearly for safety
14 related, as I understand it.

15 MR. ED JORDAN: Right.

16 MR. CONTE: On even reviews, the AEOD's function,
17 is there any thought or thinking into relooking at power --
18 non-safety related power supplies in light of the 1988
19 events? There were three events with Calvert, Beaver and
20 Rancho Seco where the enunciator system was lost.

21 MR. ED JORDAN: I think it's an inappropriate
22 question at this time. Once this investigation is done,
23 then there will be actions that will be derived and we'll
24 decide whether we need to reexamine, based on what we
25 learned in this event.



1 MR. CONTE: Prior to the Nine Mile, there's no
2 case study on this type of event as a result of Millstone,
3 for example, which was about a month ago, the same problem,
4 loss of enunciators.

5 MR. ED JORDAN: A similar problem.

6 MR. CONTE: Yes.

7 MR. ED JORDAN: I'll maintain the same answer. To
8 try to develop what actions are going to be taken, based on
9 what we've just learned, is inappropriate.

10 MR. ROSENTHAL: Premature?

11 MR. ED JORDAN: Yes. Inappropriate for this
12 report. I mean, this report identifies, you know, what
13 problems and the relevance to previous problems, and
14 certainly would indicate that there isn't a case study that
15 fits that's been done in the past. But it's not appropriate
16 to ask, are you going to do one?

17 MR. ROSENTHAL: This report will have findings and
18 conclusions?

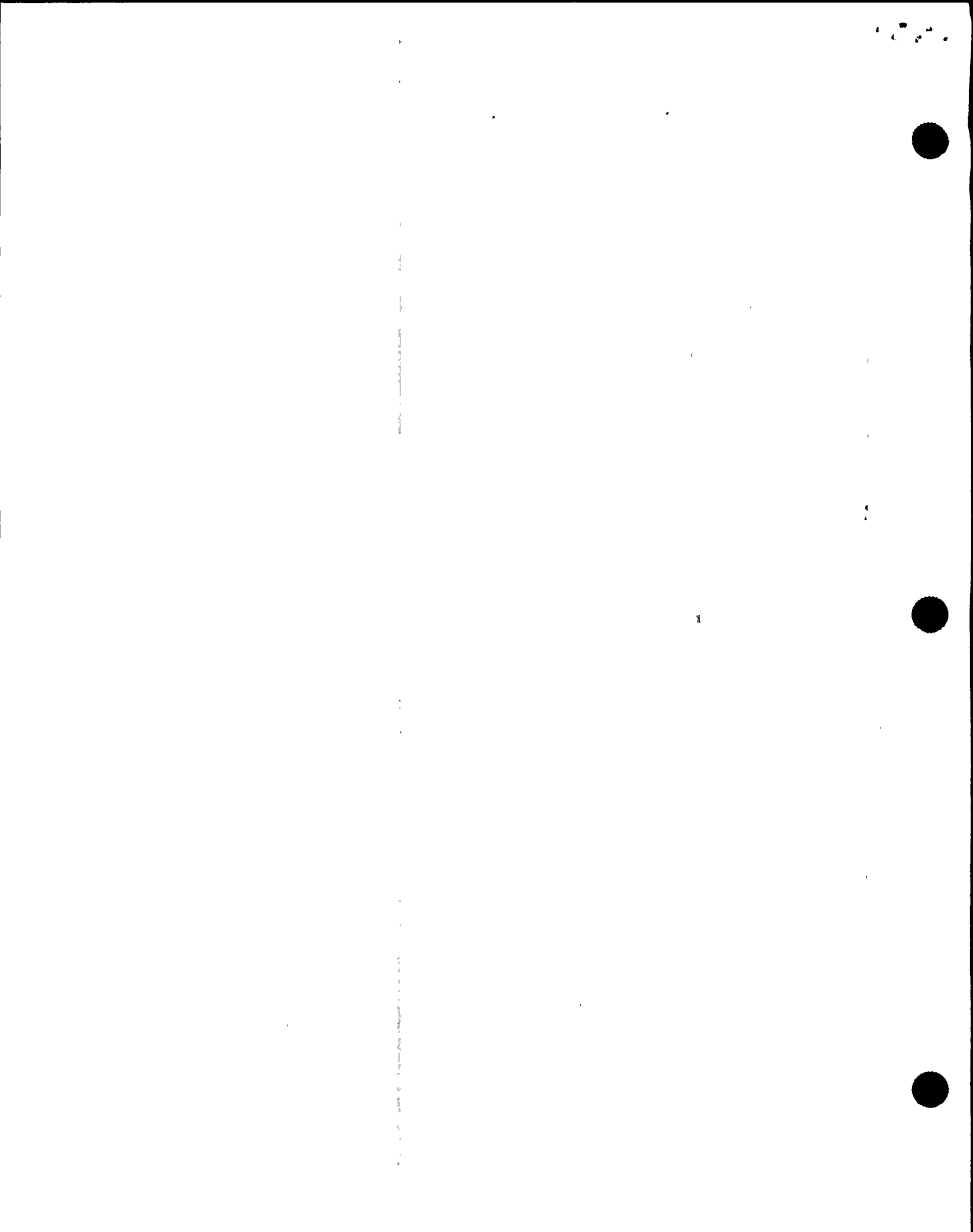
19 MR. ED JORDAN: Right.

20 MR. ROSENTHAL: Then recommendations will be
21 developed by the AEOD, based on the findings and conclusions
22 in the report.

23 MR. ED JORDAN: Correct.

24 MR. ROSENTHAL: That will be clear.

25 MR. CONTE: Is there a pretty substantial record



1 on any of the -- in pursuing issues in the non-safety
2 related world? Persistent failures, closing a number of
3 significant events?

4 MR. ED JORDAN: There's a bookshelf full, for
5 example, air systems.

6 MR. CONTE: Instrument air is a good example?

7 MR. ED JORDAN: It's one that was pursued for
8 years by AEOD and ultimately resulted in a generic letter as
9 a non-safety system. We've said a couple of times, at some
10 point, you guys are going to have to have me in that chair
11 and interview me.

12 MR. CONTE: Towards the end of your --

13 MR. MIKE JORDAN: I have to hit the maintenance
14 rules. When I -- I think we've hit that enough, and
15 important to safety. I think we've --

16 MR. ROSENTHAL: I would like to give Ed the last
17 word. Are there questions that --

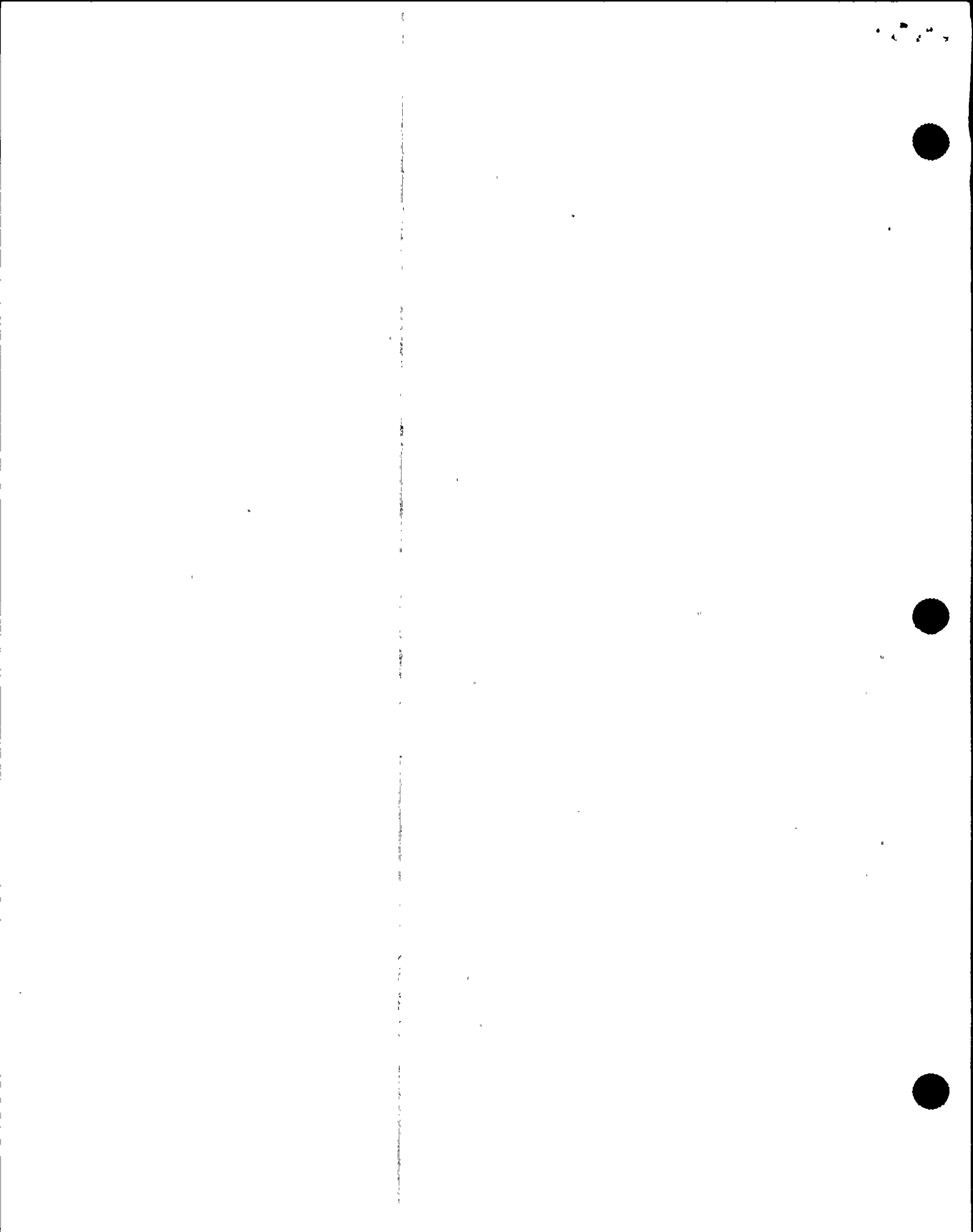
18 MR. ED JORDAN: Yes. I'm trying to be careful not
19 to steer you, so I won't at this point.

20 MR. ROSENTHAL: You want to maintain the
21 independence of the team?

22 MR. ED JORDAN: Yes.

23 MR. ROSENTHAL: I'd like to thank you for coming.

24 MR. ED JORDAN: Well, I appreciate the free
25 coffee.



1 [Laughter.]

2 [Whereupon, at 10:16, the interview was
3 concluded.]

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25



1

2

3



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: Ed Jordan

DOCKET NUMBER:

PLACE OF PROCEEDING: Bethesda, Maryland

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

Marlynn Estep

Official Reporter
Ann Riley & Associates, Ltd.

OFFICIAL TRANSCRIPT OF PROCEEDINGS

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

Title: Interview of: Ed Jordan
(Closed)

Docket No.

LOCATION: Bethesda, Maryland

DATE: Wednesday, September 11, 1991 **PAGES:** 1 - 35

ANN RILEY & ASSOCIATES, LTD.

1612 K St. N.W., Suite 300
Washington, D.C. 20006
(202) 293-3950

Dupe of

9-305070284



ADDENDUM

<u>Page</u>	<u>Line</u>	<u>Correction and Reason for Correction</u>
2	9	--- interviewee
3	18	Officer, I was involved ---
14	18	in thinking that the line in
34	7	Mr Ed Jordan Mr Rosenthal

Date 9/13/91 Signature E L Jordan

20

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
INCIDENT INVESTIGATION TEAM

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

----- X
Interview of: :
ED JORDAN :
(Closed.) :
----- X

U.S. Nuclear Regulatory Commission
Conference Room 100
The Woodmont Building
8120 Woodmont Avenue
Bethesda, Maryland
Wednesday, September 11, 1991

The above-entitled interview commenced in closed session at 9:15 o'clock a.m.

PARTICIPANTS:

- MIKE JORDAN, IIT Team Member
- RICHARD CONTE, IIT Team Member
- JACK ROSENTHAL, IIT Team Member
- ED JORDAN, Interviewee
- LYNN ESTEP, Court Reporter

2 72



P R O C E E D I N G S

[9:15 a.m.]

1
2
3 MR. MIKE JORDAN: On the record.

4 My name is Michael Jordan. I'm out of Region III.
5 I'm a Section Chief for Operating Licensing.

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

7 MR. ROSENTHAL: Jack Rosenthal. I'm the IIT Team
8 Leader.

9 MR. ED JORDAN: And I'm the interview, Ed Jordan,
10 Director of the Office for Analysis and Evaluation of
11 Operational Data.

12 MR. MIKE JORDAN: Okay, Ed.

13 Rich is going to walk us through the questions
14 that we've developed.

15 MR. CONTE: I have just a general list of some
16 topics here:

17 The event itself of August 13, 1991, at Nine Mile
18 2 -- I'm going to ask you what your involvement was, very
19 briefly, or your staff's involvement in that event; the
20 Generic Letter 83-28 on SALEM ATWS issues, dealing primarily
21 with the concept of important to safety, safety-related
22 equipment, and the handling of vendor-related information;
23 the maintenance rule; and a review of events, either non-
24 safety-related events that caused challenges to safety-
25 related equipment and/or loss-of-annunciation events.



1 So, that's kind of the general topics that we're
2 going to talk about. If you can, at least at this point --

3 MR. ED JORDAN: One at a time?

4 MR. CONTE: We'll take them one at a time, but if
5 you can give us a brief overview of your involvement in any
6 four of them, the detailed involvement, level of
7 involvement, whatever.

8 MR. ED JORDAN: Okay.

9 With respect to the event itself, I was involved
10 in the initial discussions in which the licensee had called
11 the event in, along with the NRR Operations Officer, Duty
12 Officer, was involved in the decision to place the agency in
13 an elevated state of awareness, as opposed to standby, since
14 by the time we were notified, they had, in fact, gotten out
15 of the initial condition of having a loss of electrical
16 power.

17 So, the licensee maintained their site area
18 emergency, as I understand it, based on their procedures,
19 until they were able, through procedures, to get out of it.

20 So, that's just a capsule of -- of my involvement.

21 MR. CONTE: That's good.

22 Could you capsulize the other three areas before
23 we get into detailed questions?

24 MR. ED JORDAN: Okay.

25 The -- the 83-28 area, I was a Division Director



1 in the Office of Inspection and Enforcement at the time 83-
2 28 was issued, was involved in its development and issuance,
3 and -- and it was aimed at, I believe, a -- a slightly
4 different problem.

5 It was aimed at safety-related, as opposed to
6 balance-of-plant equipment.

7 So, the extent that that -- that particular
8 generic action would be involved in the response by the
9 licensee, I would -- I would expect would be questionable.

10 In terms of the maintenance rule, my office and
11 myself were deeply involved in developing the -- the
12 maintenance rule package.

13 Tom Novak had a direct role and I, as Office
14 Director, a number of interactions on whether a policy
15 statement or a rule was warranted, a contribution to the
16 Commission paper that went forward recommending by the staff
17 that a policy statement be issued, and we were subsequently
18 involved in -- based on Commission direction -- a --
19 development of a -- a performance-based rule with the Office
20 of Research.

21 So, I've been intimately involved in that, and in
22 that case, the -- the maintenance policy statement and the
23 maintenance rule do encompass more than safety-related,
24 clearly.

25 The object is that we'd go across the plant



1 activities without that distinction between what's
2 classically called safety-related and balance of plant.

3 Then the last one you had was a review of events.
4 I'm not sure what you were looking for there.

5 MR. CONTE: I think it was primarily in the area
6 of the '88 events on loss of annunciators. Why don't we
7 hold off on that and ask what your office did with respect
8 to the development of the information notice -- any further
9 review on that, and hold that until later, okay.

10 MR. ED JORDAN: Okay. Okay.

11 MR. CONTE: Jack, do you want to add something?

12 MR. ROSENTHAL: I want to clear up a couple of
13 points and get back to the generic letter. Let's do these
14 things one at a time.

15 We -- there's general folklore that the NRC told
16 licensees that we wanted -- that they should write the best
17 EPGs they could -- the best emergency procedures they could
18 and to use whatever equipment that was in the plant that
19 made sense to them and that if it was safety-related or
20 nonsafety-related that was okay, and that we would not turn
21 around and take those procedures and everything that they
22 culled out that was not safety-related and make safety-
23 related -- we wouldn't ratchet them.

24 What we didn't want is a set of procedures for the
25 regulators and another set that was the real procedures of



1 the plant.

2 Do you know -- is that written down any place? Or
3 is what I'm saying true, to the best of your knowledge?

4 MR. ED JORDAN: To the best of my knowledge, it is
5 true that we asked the licensees, when they wrote their
6 emergency procedures, to use the plant that's in front of
7 them and the equipment that's there, and to identify clearly
8 in the procedures. But it did not in fact change a piece of
9 equipment from balance-of-plant to safety-related because
10 they listed it in the procedures. So, that was not a
11 backfit that was intended, in fact it was set aside.

12 Now, as to where that's written down, I don't
13 know. One would have to research.

14 MR. ROSENTHAL: Let me share with you -- many
15 other senior NRC people and junior NRC people don't know
16 either where it's written down. Maybe it isn't written
17 down.

18 Another thing that we've heard is that there was a
19 concept that if it was needed -- and some of this is in the
20 Reg Guide 1.97 -- if it's needed for a manual action, then
21 it ought to be redundant and of the highest quality, et
22 cetera, in terms of instrumentation and control. But, if it
23 was needed to confirm an action, it was let's say
24 automatically done, it could be of lesser quality or
25 redundancy, et cetera.



1 Have you heard that sort of philosophy espoused?

2 MR. ED JORDAN: With regard to the EPGs, I'm --

3 MR. ROSENTHAL: Just in design in general, either
4 in our review of the emergency to procedures or in our
5 development of requirements for instrumentation systems,
6 that would be some sort of guiding philosophy?

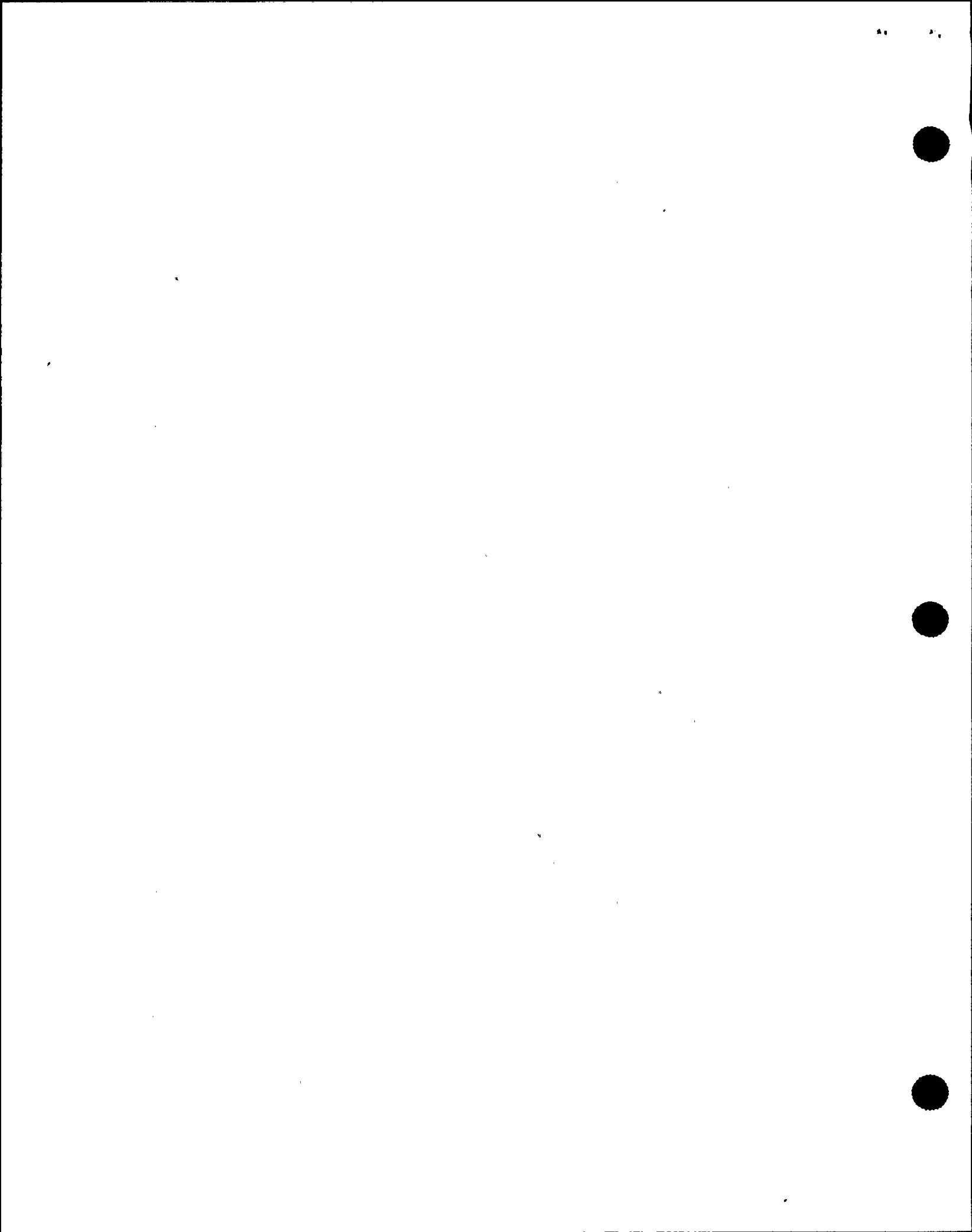
7 MR. ED JORDAN: The instrumentation system, the
8 last word in Reg Guide 1.97, in terms of what's necessary
9 for accident response grew out of TMI. So, that's the best
10 expression I know of for that kind of instrumentation. So,
11 I'm not sure where you're heading.

12 MR. ROSENTHAL: Well, at least one senior person
13 said that it was the underlying philosophy. I can't find
14 where that philosophy is written down or other people know
15 it.

16 MR. ED JORDAN: I don't either.

17 MR. ROSENTHAL: I'll say I'm a bag holder because
18 I wrote it or I took responsibility for much of 1.97. Okay.

19 Generic letter 83-28. We went back and read it
20 three times. There's a big section on reactor trip
21 breakers. And then there's a section on safety-related
22 equipment, the requirements of the trip breakers were even
23 more strenuous than the requirements on safety-related. So,
24 that's the written expectation of the NRC, with respect to
25 vendor interfaces, manuals, drawings, et cetera, et cetera.



1 Was the -- did the expectation exceed the written word? Did
2 it go into important to safety equipment in practice,
3 distinct from writing?

4 MR. ED JORDAN: I am sure the practice varied from
5 utility to utility. There was, I think, an expectation that
6 utilities would apply what some of us believe is an overall
7 graded approach, that nothing is entirely nonsafety-related,
8 and that there is a gradient when one uses quality assurance
9 and the principles of redundancy and diversity and the
10 independence, based on where they fit on the scale. But, if
11 you wanted a legal interpretation, I think the lawyers would
12 say that it would be very hard to issue a strong regulatory
13 action, based on that kind of a spread.

14 MR. ROSENTHAL: So, the letter -- the letter of
15 the Generic Letter is clearly for safety-related equipment.

16 MR. ED JORDAN: It's clearly for that.

17 MR. ROSENTHAL: But the NRC's expectation was that
18 licensees might ignore?

19 MR. ED JORDAN: Yes.

20 The expectation was that the -- the concepts were
21 beneficial further and that, by setting up programs with
22 your vendors and understanding what the manuals apply to and
23 that they're maintained current, was a very important
24 activity, and -- and so, there -- there was expected side
25 benefit.



1 But in terms of a -- a clear regulatory
2 requirement that you must spread it to the -- the main
3 generator turbine turning gear is -- is too great of an
4 extension.

5 So, there is a range.

6 MR. CONTE: With respect to safety-related
7 equipment, would you agree that the Generic Letter -- well,
8 let me ask you: What was the intent of the Generic Letter
9 with respect to vendor -- handling vendor-related
10 information?

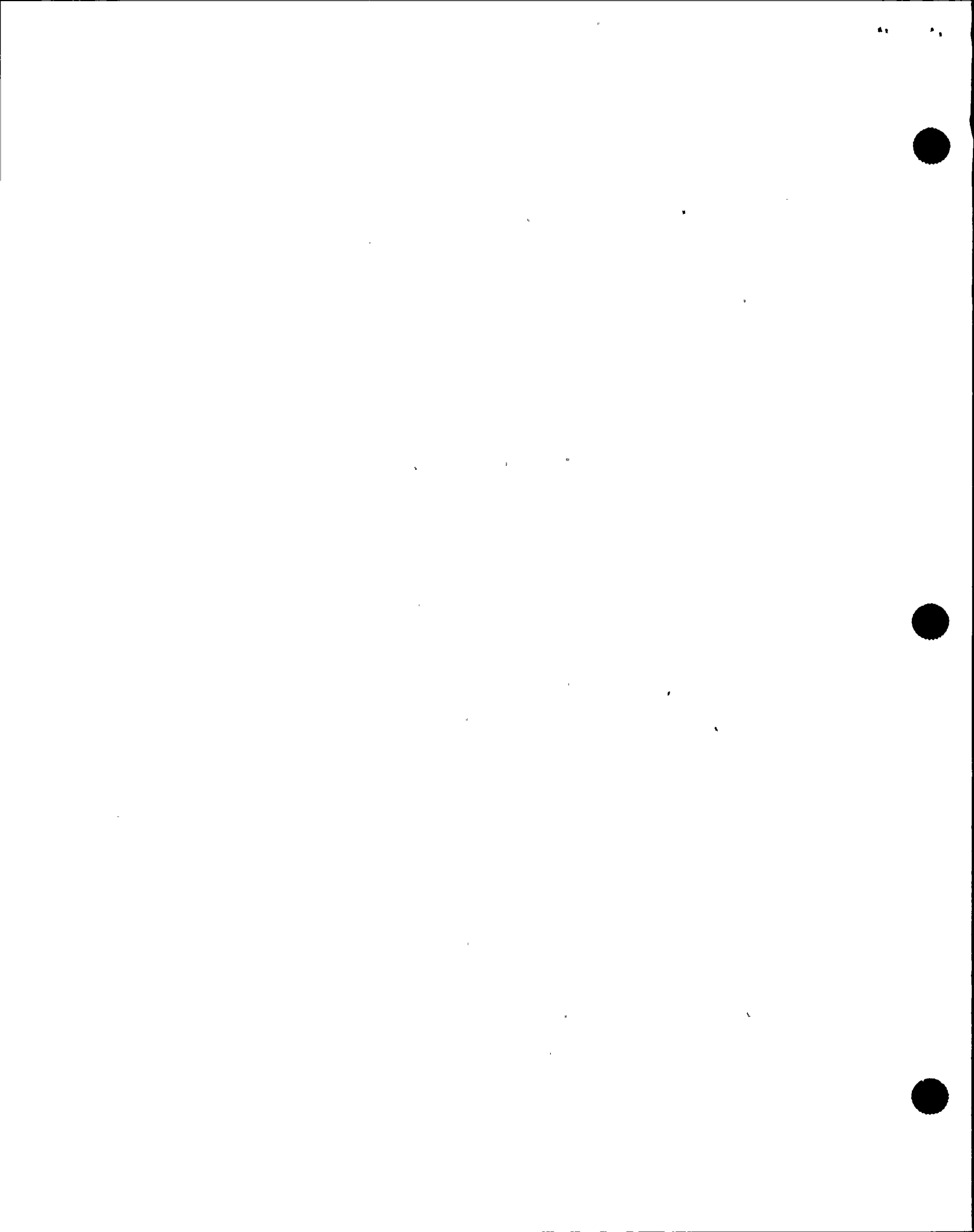
11 Could we say that everything the vendor
12 recommended for safety-related equipment -- for example, on
13 preventive maintenance -- had to be incorporated into the
14 facility, or was there a --

15 MR. ED JORDAN: No.

16 MR. CONTE: Was the position that it had to be
17 evaluated?

18 MR. ED JORDAN: Had to be considered, had to be
19 evaluated and considered.

20 The utility has the ability to make up its own
21 mind based on the manuals, and -- and I think, certainly,
22 some of the material in the manuals would not be applicable
23 to a particular plant, and -- and so, it's not a one-for-one
24 translation, but there should have been a review of -- of
25 the manuals and a determination made as to the applicability



1 of preventive maintenance, corrective maintenance,
2 inspections, and testing with respect to their use of that
3 particular equipment.

4 MR. CONTE: Okay.

5 MR. ROSENTHAL: Are we going on to important to
6 safety?

7 MR. CONTE: Yes.

8 MR. ROSENTHAL: Are you both finished.

9 MR. CONTE: Let's go on to important to safety.

10 MR. MIKE JORDAN: Let's do it that way.

11 MR. ROSENTHAL: Okay.

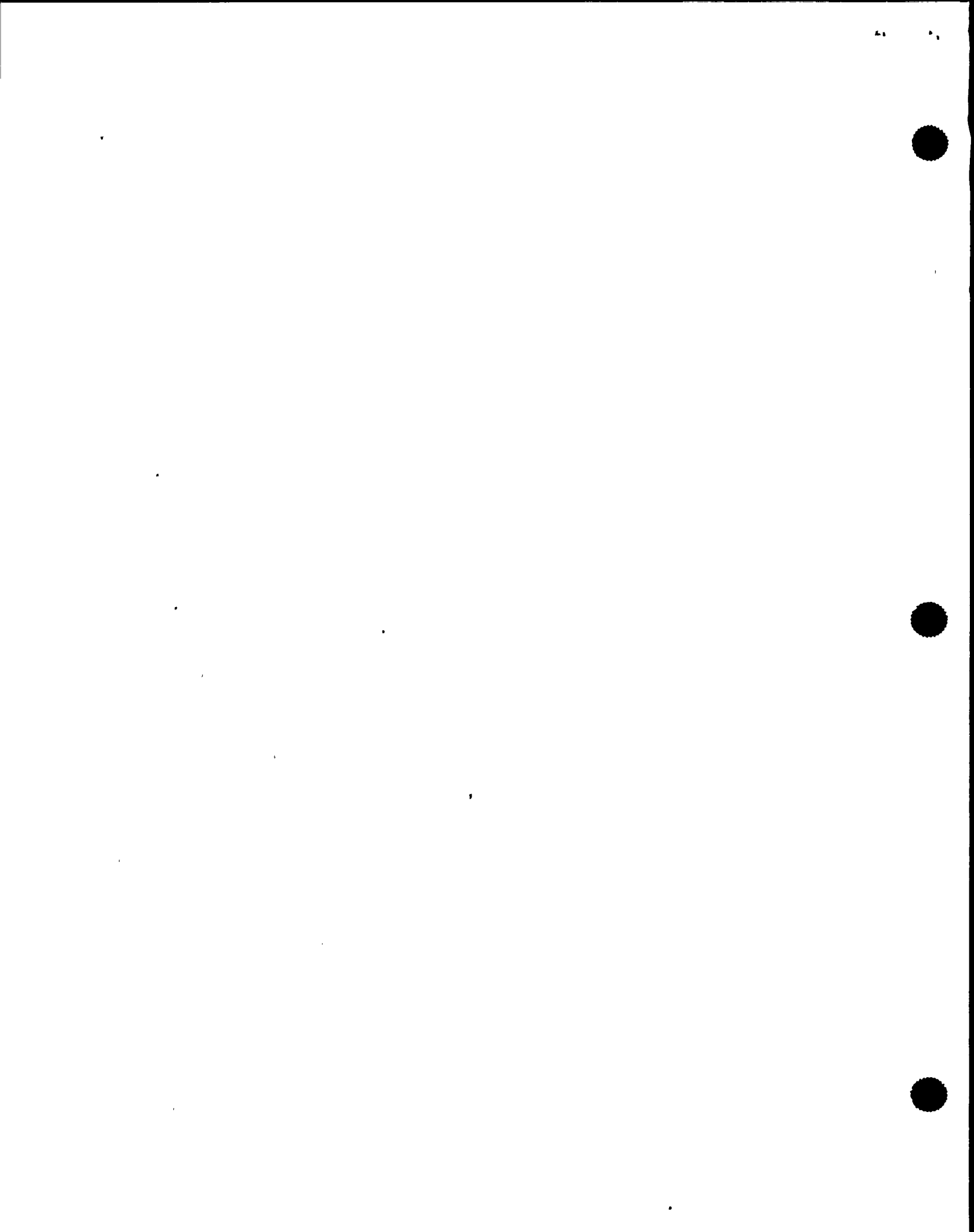
12 MR. CONTE: I have a lead-in question for that, if
13 you will.

14 We dug into this fairly deeply on the staff's
15 handling of the concept of important to safety, and the
16 record seems to end at the end of SECY paper 86 -- I forget
17 the last three digits -- where basically the staff came back
18 with a rewrite or a re-proposal on a regulation on important
19 to safety.

20 Brian Grimes was the contact on it. We talked to
21 him about it.

22 He kind of says that it all ends at that point.
23 It was abandoned by the Commission, no action on it or what
24 have you.

25 Is that your understanding of this?



1 MR. ED JORDAN: I guess the last expression of
2 that controversy, in my view -- and I don't know the date of
3 it, but it was a CRGR meeting in which Ed Case and Vic
4 Stello discussed at great length from their respective
5 viewpoints and experience, and it was, I guess, in my words,
6 a regulatory muddle that we couldn't see through, that it
7 was so obscured by history and had so many implications of
8 backfit, if -- if one took it to its ultimate view that
9 everything is important to safety and -- and try to apply
10 the graded approach in a fashion that one can enforce at a
11 plant, was something that was too big to tackle at the time.

12 So, it, from my recollection, was left as it's an
13 issue, but it was not resolvable at the time, and -- and
14 different people understood the interface differently, and
15 as a result, the staff has been cautious since then not to
16 use in a regulatory way important to safety.

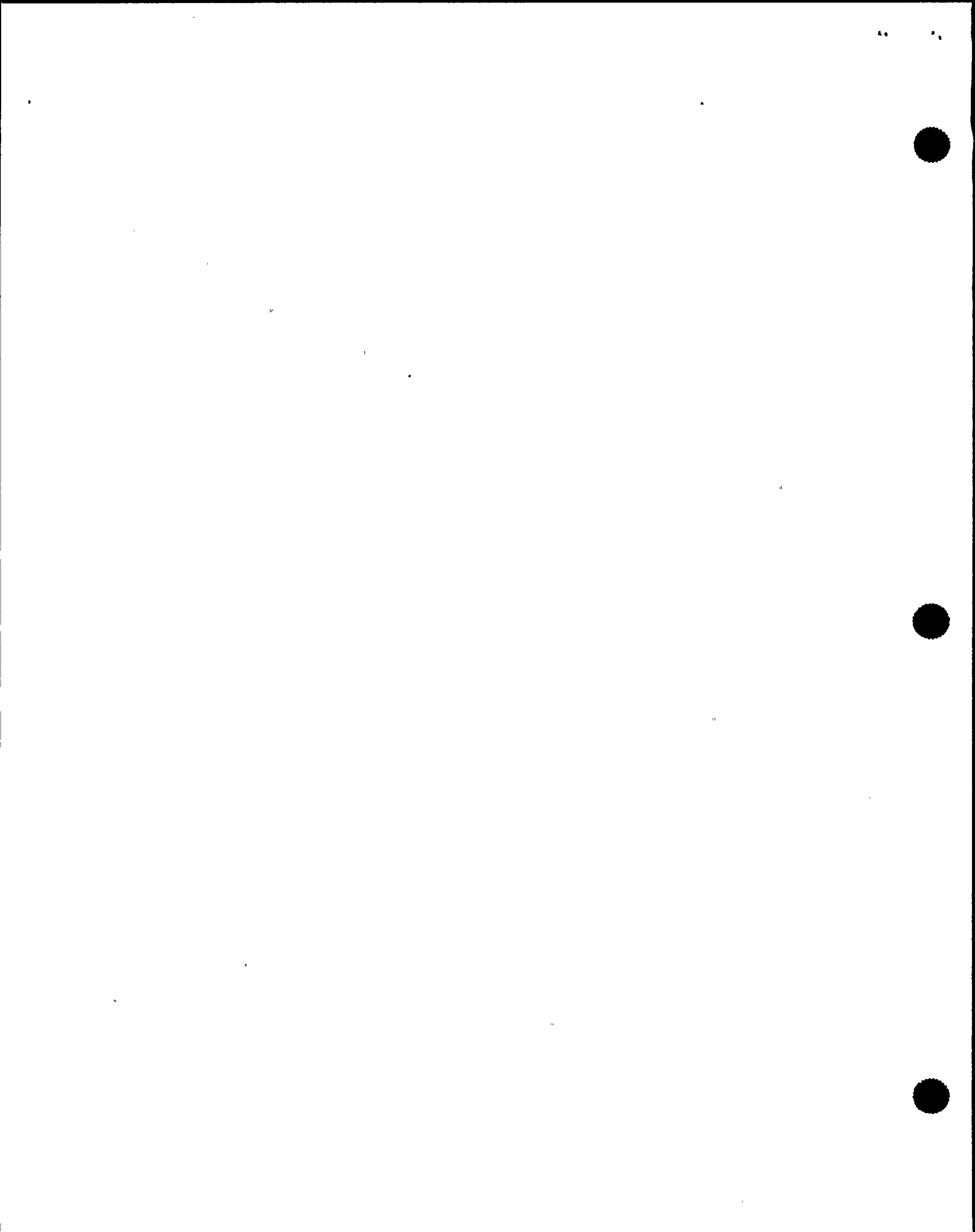
17 MR. CONTE: Is that written down?

18 MR. ED JORDAN: No.

19 MR. ROSENTHAL: There's a Harold Denton letter, if
20 I'm not mistaken, that tells us to be careful using that
21 phrase.

22 MR. CONTE: What date are we talking about? After
23 1986?

24 MR. ROSENTHAL: I think the same sort of
25 timeframe.



1 MR. ED JORDAN: In about that timeframe, but the -
2 - maybe the best way to get the timing would be to go
3 through CRGR minutes, and I believe that Jim Conran --

4 MR. ROSENTHAL: We've already had him in here.

5 MR. ED JORDAN: Matt Taylor would be another
6 person who would illuminate that particular discussion.

7 It was a -- unfortunately, a milestone discussion
8 that didn't result in a resolution, that resulted only in
9 the decision that you couldn't.

10 MR. CONTE: Was that before or after the '86 SECY
11 paper? Do you remember?

12 MR. ED JORDAN: Don't know.

13 MR. CONTE: Chances are it was before the SECY
14 paper went up to the Commission.

15 MR. ED JORDAN: I would -- I would guess so, but
16 that's speculating. The only way to find out is to -- to
17 look at those records. The CRGR minutes, at the time, were
18 rather -- were rather detailed.

19 MR. CONTE: Okay.

20 Would you -- is it fair to say that -- let me pose
21 something to you: Is it fair to say that the maintenance
22 rule is a compromise on this treatment of non-safety-related
23 equipment that appears to be important and needs special
24 treatment?

25 MR. ED JORDAN: I don't like the word



1 "compromise."

2 It is a way of addressing the muddle that I've
3 described, by causing licensees to develop program that
4 reach across all of their equipment and treat the equipment
5 in some kind of an appropriate fashion with respect to the
6 significance to safety.

7 MR. ROSENTHAL: Before we get into the maintenance
8 rule, let's just close on important to safety. Okay?

9 Mike?

10 MR. MIKE JORDAN: I've got nothing else. I think
11 he's covered most of that.

12 MR. ROSENTHAL: Okay.

13 So, let me just back up and ask you for --
14 clearly, at least in my mind, there was a time when the
15 agency spent its resources on a minimum set of equipment
16 which was labeled "safety-related," needed to cope with an
17 accident or shut down the plant.

18 We spent a lot of time and energy assuring that
19 that equipment was high-quality, and a decade ago, or more,
20 there were pretty black-and-white lines drawn between that
21 which was clearly needed and which, by the way, did work
22 here and -- and other stuff, which I'll call balance of
23 plant.

24 I'm using this interview -- it's a very efficient
25 way for me to gather agency philosophy. Can you just give



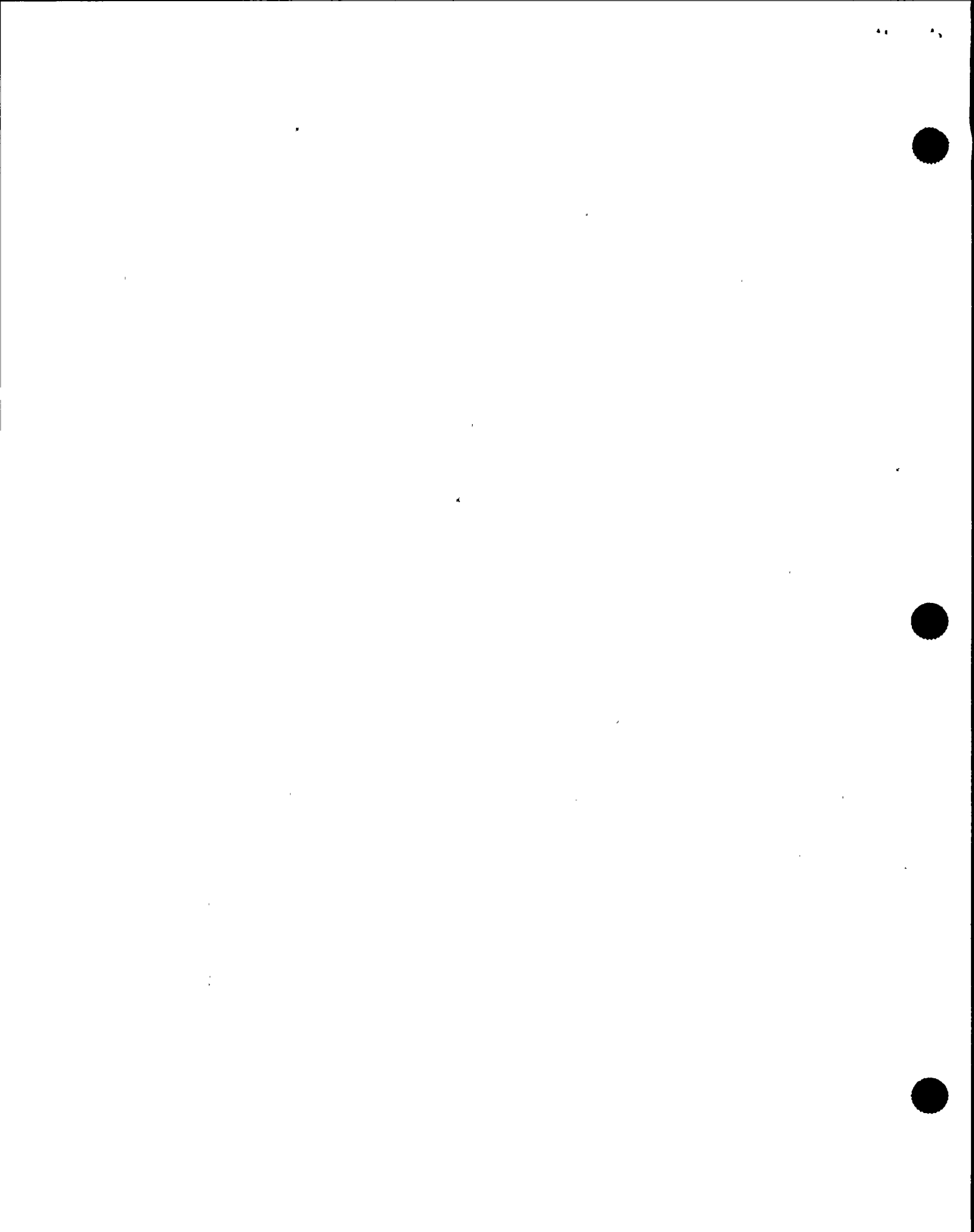
1 us your perception about how this middle-ground or graded
2 approach grew?

3 MR. ED JORDAN: I think it's partly a result of
4 semantics in terms of the rules, the regulations themselves,
5 being ambiguous, carrying both sets of terminology,
6 important to safety and safety-related and people, over the
7 years, recognizing that there is a range of equipment in the
8 plant that initiates challenges and, in fact, is involved in
9 responding to challenges. In the black and white world of
10 safety related, it's gold-plated, redundant, diverse and all
11 those other terms, doesn't really solve all the problems.

12 So, I think, from an industry viewpoint, the
13 industry wanted clear lines. They wanted separation in the
14 plant; that they did not have to apply the extraordinarily
15 expensive processes of detailed design and maintenance, and
16 the regulator wanted to place -- to focus its attention.

17 I think, personally, that we were a little too
18 simplistic in think that the mind could be as sharp as we
19 treated it in the 60's and 70's, and so there was just a
20 growing awareness, I think, among various NRC people that
21 it's gray, and that industry also recognized the grayness.

22 We've just been unable to articulate in a clear
23 fashion, how one copes with the grayness with the regulatory
24 process. I think that's still the case. Programmatically,
25 in maintenance, for instance, licensees can and have, in



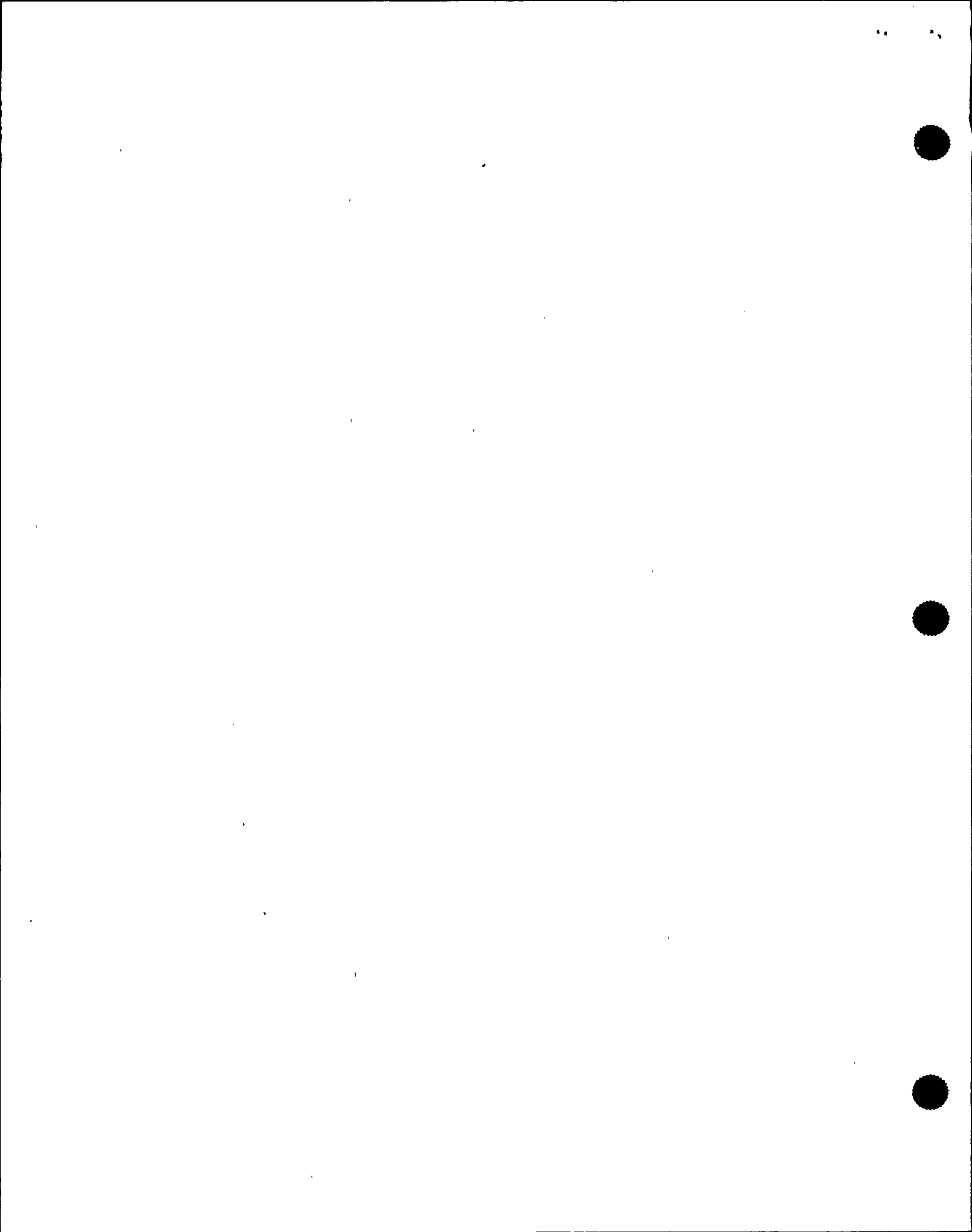
1 some cases, developed maintenance processes that have a
2 graded approach built into them, but despite that, experts
3 would disagree at a specific component, the degree of
4 maintenance or the degree of quality assurance under that
5 scheme would be appropriate.

6 So, I think one just has to accept that.

7 MR. ROSENTHAL: I don't have this in writing, but
8 I've heard people say -- and there's the ring of truth to it
9 -- that every inspection hour that the NRC spends on non-
10 safety-related or balance-of-plant equipment, is one fewer
11 hours that we have to spend on safety related, the most
12 equipment in the plant, and that to some degree, to the
13 extent that we require licensees to spend more resources on
14 the non-safety related, is, again, some time less or
15 resources less that are spent on the most important. What
16 are you feelings on this?

17 MR. ED JORDAN: It certainly is a tradeoff.
18 Safety has been improved in the last five years by
19 substantial improvements in feedwater control and feedwater
20 systems by reducing the initiating rate of transients caused
21 by that system. So, I think that if one were looking at a
22 risk/benefit type analysis, there's been a real positive
23 gain, real improvements in risk as a result of reducing the
24 frequency of those transients.

25 Now, it was expensive on the part of the



1 licensees, but I think it pays off in both risk and in
2 production. So, certainly there are examples where work in
3 the balance-of-plant area does have a substantial benefit in
4 terms of safety by reducing challenge rates.

5 MR. ROSENTHAL: There are questions of the
6 grayness of important to safety; just what should be
7 included or not included in such a middle ground category
8 which, at least in my mind, might then have some, but not
9 necessarily all the pedigree that will be related with
10 safety-related. It would be some middle ground in terms of
11 equipment and requirements, et cetera.

12 In your mind, do things like the control rod
13 position indication, -- do you consider that safety related
14 -- important to safety, at least?

15 MR. ED JORDAN: Oh, certainly. I have a very
16 generous view of important to safety.

17 MR. ROSENTHAL: SPDS?

18 MR. ED JORDAN: Of course, obviously.

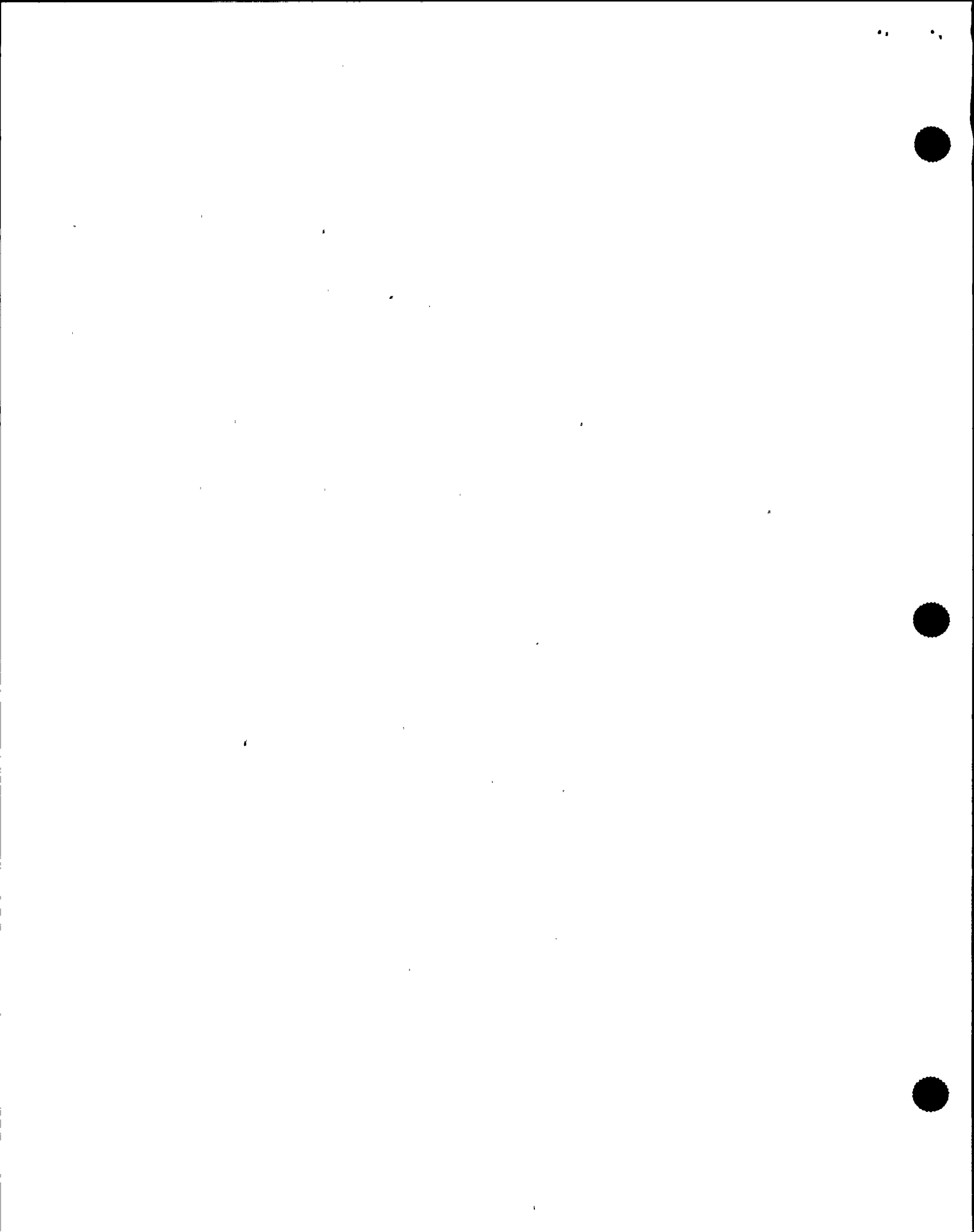
19 MR. ROSENTHAL: Enunciators?

20 MR. ED JORDAN: Surely.

21 MR. ROSENTHAL: Feedwater control system?

22 MR. ED JORDAN: Less, much less in terms of the
23 quality or the contribution that they have, despite their
24 initiator of challenges.

25 MR. ROSENTHAL: How about the lighting that you



1 need in a stairwell to get to some decent equipment -- and I
2 don't expect a snap -- I mean, we've had a lot more time to
3 think about this than you.

4 MR. ED JORDAN: But as soon as you use the
5 terminology, important to safety, then you can say that
6 there is a gradient and almost everything will fit under
7 important to safety, but to different degrees. That means
8 you're making a decision on each of those elements as to how
9 much of the utility's resources or the NRC's resources ought
10 to be applied to that particular area.

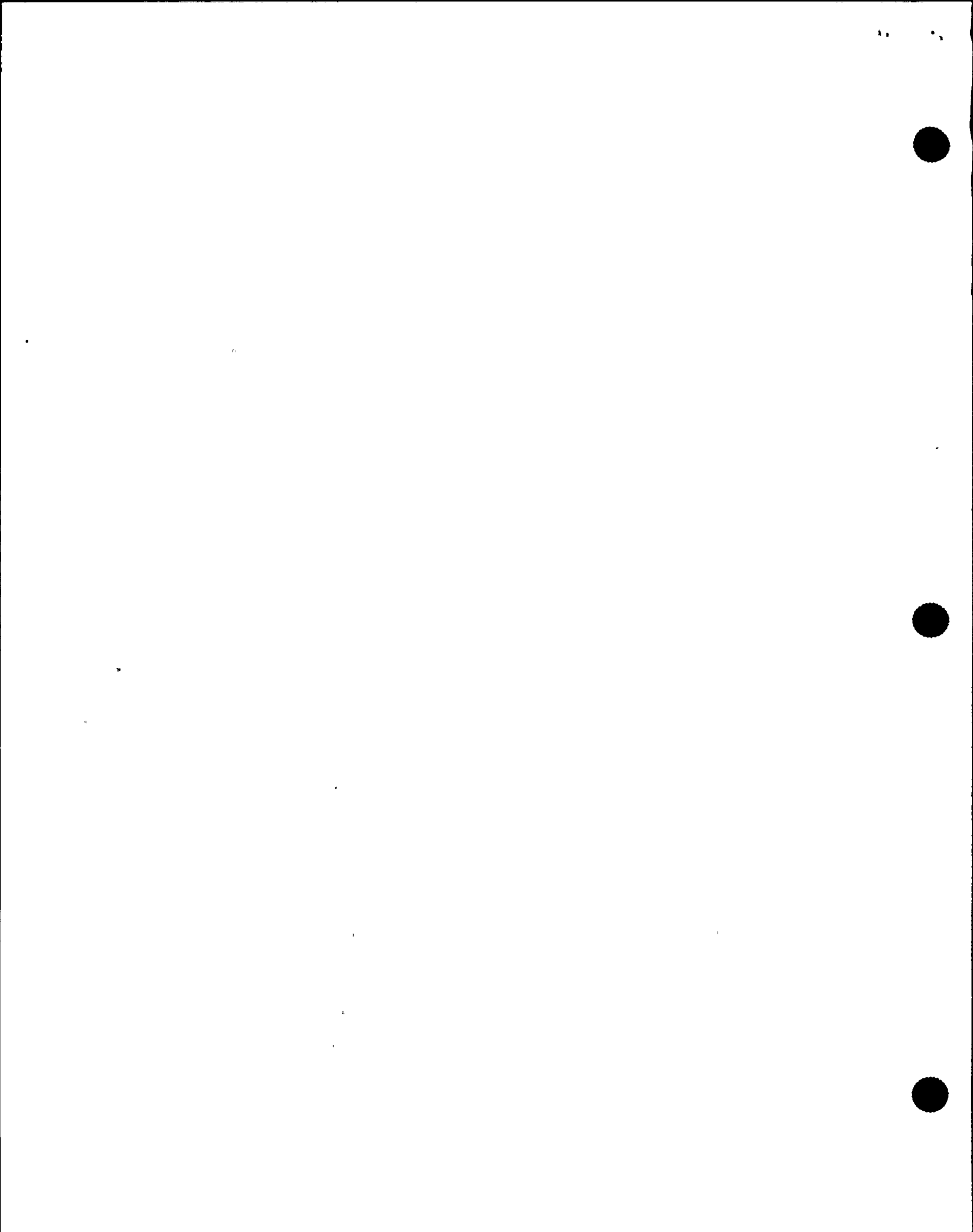
11 I don't think that the NRC ought to spend many of
12 its resources looking at the lighting in a stairway.

13 MR. ROSENTHAL: Because guys carry flashlights?

14 MR. ED JORDAN: Yes.

15 MR. ROSENTHAL: Okay, but then is it your concept
16 that one could, on a system or structure, or even maybe on a
17 component basis, think through how important something was,
18 and there would be graded expectations?

19 MR. ED JORDAN: Sure. The object would be that,
20 you know, when we apply the equipment qualification, you
21 apply equipment qualification to a very limited number of
22 things, those principally that are involved in response to
23 severe accident and have to live with thermal radiation,
24 pressure, moisture conditions. Those must be
25 environmentally qualified and withstand a hostile



1 environment.

2 But if you're talking about the lights in the
3 stairways, I'm not really worried about their environment.
4 If you're talking about the batteries in the UPS, they
5 should be capable of living in the environment of the
6 cabinet. So, if the cabinet runs at 80 degrees or 130
7 degrees, then one has to have the consideration of the aging
8 of the components and a maintenance cycle that takes care of
9 it, or you add more cooling to it.

10 So, that's just an industrial practice. You know,
11 industrial design is supposed to take care of those ordinary
12 operating environments, but you wouldn't have to go through
13 an environmental qualification program to establish that.

14 MR. ROSENTHAL: Because most of this stuff doesn't
15 see a harsh environment?

16 MR. ED JORDAN: Right.

17 MR. ROSENTHAL: What about seismic? Would one
18 rethink or at least systematically think out seismic? Not
19 necessarily require, but think it through?

20 MR. ED JORDAN: We are getting into redesigning
21 the entire plant. There has been a consideration once of
22 what should be seismically qualified and the line was drawn
23 at safety-related. In terms of important to safety
24 equipment, one relies on the industrial uniform building
25 code-type design considerations to cause them to be robust.



1 And, as you're aware, in going back and re-examining the
2 seismic capability of plants that weren't designed to
3 specific seismic criteria, we do find a remarkable
4 robustness of equipment. So, those kind of walkdowns, I
5 think, are quite beneficial, looking at existing plants, but
6 I wouldn't go back and redesign each of the elements of the
7 plant systems to be able to withstand the most severe
8 earthquake of that particular geographic location.

9 MR. ROSENTHAL: Let me play devil's advocate for
10 just a moment. In this event they lost a fair amount of
11 equipment which I would term important to safety;
12 information systems --

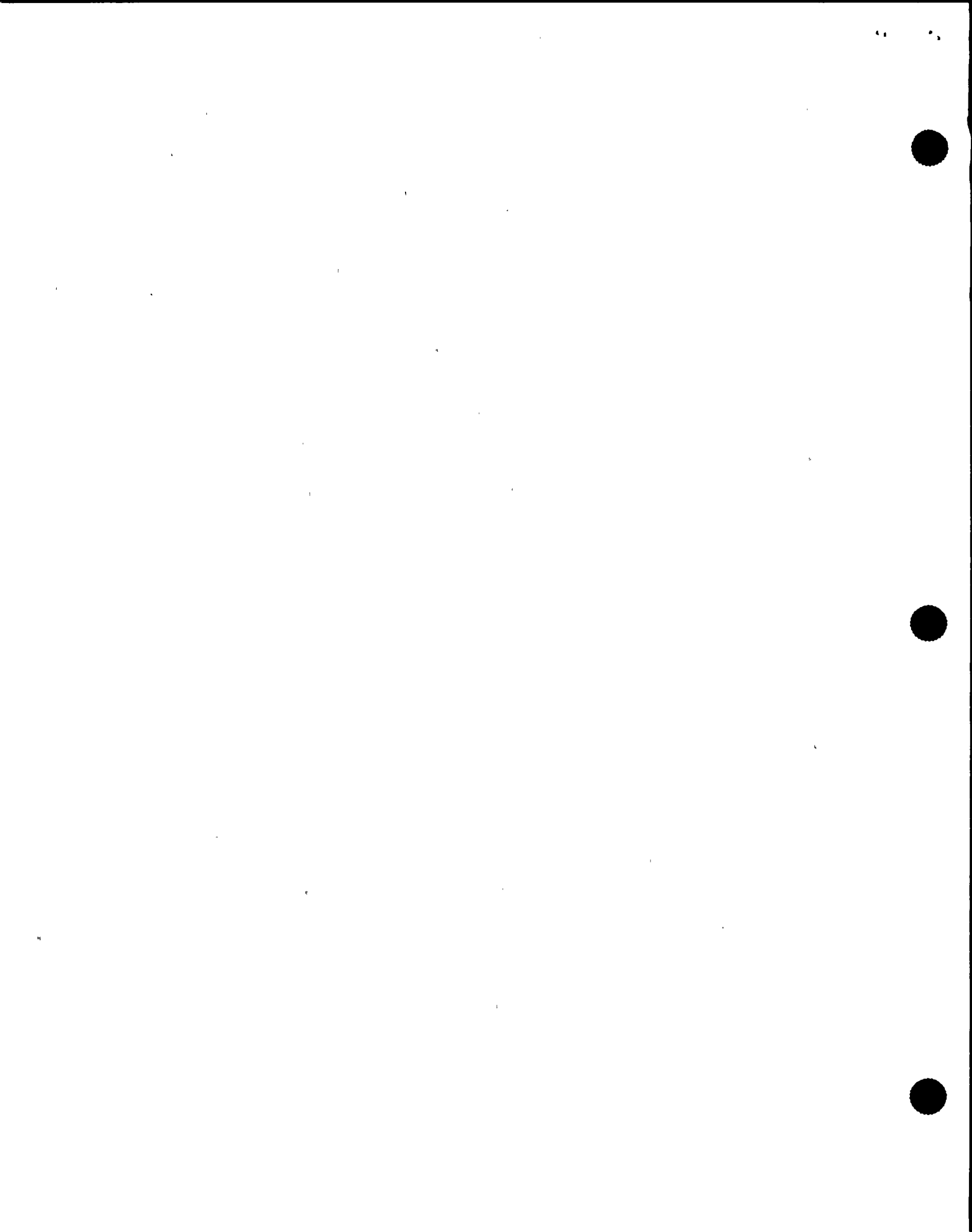
13 MR. MIKE JORDAN: Communications systems --

14 MR. ROSENTHAL: -- communications --

15 MR. MIKE JORDAN: -- instrumentation.

16 MR. ROSENTHAL: Both the emergency procedures
17 worked. The post-accident monitoring, highly-qualified
18 stuff worked, the EPGs worked, the safety-related equipment
19 worked, and the plant was safely shutdown. In that sense,
20 the system worked. Why do more?

21 MR. ED JORDAN: One learns lessons from each of
22 the events that can improve the ability of a plant to
23 withstand relatively frequent events. So, for I think a
24 relatively low cost, this particular plant and others could
25 be made a little more robust to withstand ordinary



1 transients. This was an ordinary transient that it should
2 have withstood, in my view. So, from a regulatory sense,
3 they did okay, but in terms of improving safety performance,
4 this could have been a no, never mind, and should have been.

5 MR. ROSENTHAL: On the important to safety, I
6 always worry that I'm not asking the right questions. Is
7 there something that I should have asked you that I forgot
8 to ask you and that you have a philosophy that would be
9 important to share with us on what we discussed?

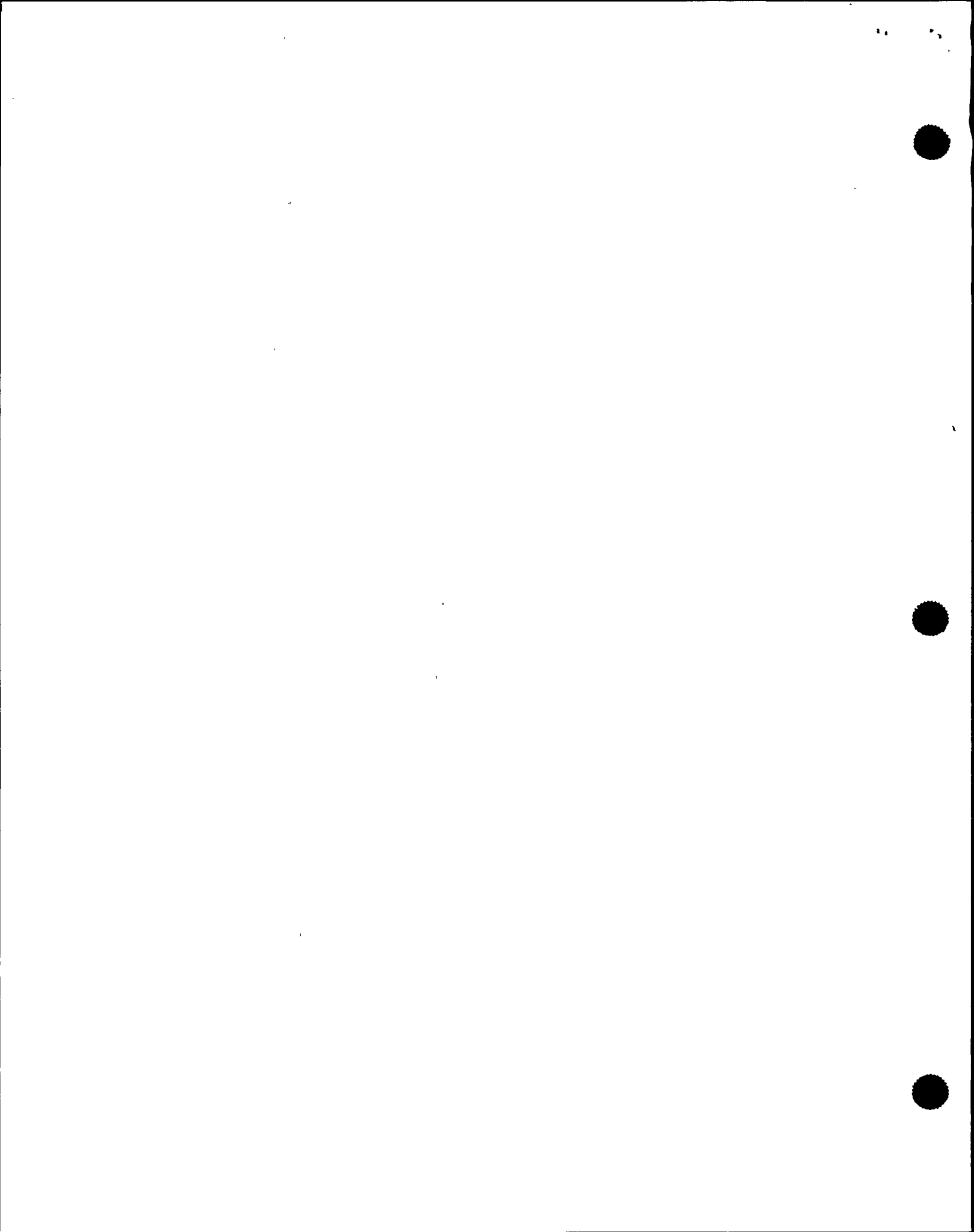
10 MR. ED JORDAN: No. I think we've really covered
11 it -- that it's a concept that is best described as a graded
12 approach to safety. And to put it in regulatory terms so
13 that one knows exactly what this balance-of-plant UPS should
14 be able to withstand, would be a very very difficult task.
15 I, frankly, feel that it's something that we're not yet
16 capable of doing.

17 The most likely ability to more clearly identify
18 the gradient would be through PRAs. And of course the PRA
19 is not going to recognize the vulnerabilities of this
20 particular UPS system and would probably assign the wrong
21 value as to its ability to withstand this kind of event.

22 MR. ROSENTHAL: One of our concerns --

23 MR. ED JORDAN: That's the problem.

24 MR. ROSENTHAL: -- is that FMEAs, typically,
25 failure modes and effects analysis, typically say it's on



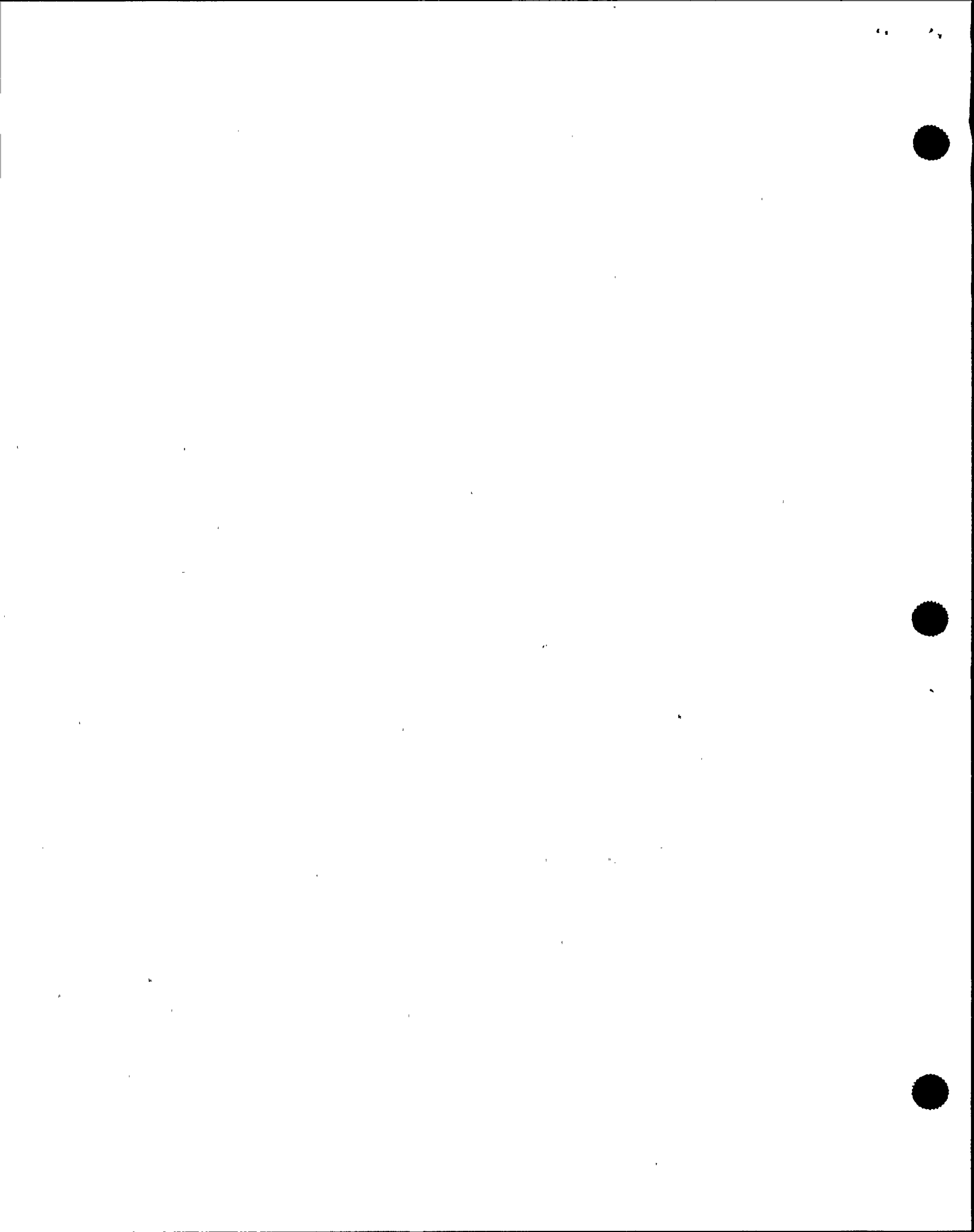
1 and off, it's broken, it's not broken. PRAs often say it's
2 on, it's off, it's broken, it's not broken.

3 Here's an event in which it was degraded and if it
4 had totally failed, that is power to the control logic here,
5 it would have probably flipped to another supply and been
6 just fine. We don't think -- the designers told us they
7 didn't design for degraded voltage, they designed for on and
8 off. Does that mean that we have to reconsider the way
9 we're doing business in PRAs space, FMEAs space.

10 MR. ED JORDAN: I think maybe the answer to that
11 lies in what was the true risk significance of this event?
12 So, when -- when we've done the task analysis and see how it
13 fits in the risk picture, then you can come to the view that
14 because of the risk this poses and the likelihood of it
15 being in a number of other plants, it changes our view, or
16 that the risk in fact was sufficiently low that it doesn't
17 change our view of the level of detail one has to go into
18 when it reviews.

19 I guess my personal opinion is that it should have
20 withstood this kind of event and that either the equipment
21 has become too complex or we have to be able to have tested
22 or demonstrated operability under a wider range of
23 conditions.

24 MR. ROSENTHAL: Here, you have a transformer fault
25 which perturbed the grid. Fitzpatrick, next to Nine Mile



1 and out in to New England, up in New York State, was seen at.
2 the reserve transformers in the switchyard which normally
3 power the safety busses, was seen on the safety busses but
4 at insufficient time or duration to cause the diesels to
5 start and came down to the -- and was seen even at the 600-
6 volt safety bus level, because we know the safety-related
7 UPS's went out of sync with the normal power, but continued
8 to function, et cetera.

9 Do we have to rethink transformer failures?

10 MR. ED JORDAN: I guess my view is I didn't learn
11 anything during this event that would say, if we do, that
12 the -- those other circuits appearing to have -- and now,
13 I'm -- I'm reaching further than my knowledge, because
14 you've heard --

15 MR. ROSENTHAL: Yes. Let me interrupt you for
16 just a second.

17 I am springing new information on you, in all
18 fairness.

19 MR. ED JORDAN: Yes. And I guess I would say, off
20 the record, you need to be careful not to get people's
21 opinion about things that you have learned and -- and that
22 they have views that are not learned, that are off the wall.

23 MR. ROSENTHAL: Can we stop?

24 [Discussion held off the record.]

25 MR. ROSENTHAL: Okay. We're back on.



1 Are we ready to go into --

2 MR. MIKE JORDAN: I've got one question to ask.

3 MR. ROSENTHAL: Okay.

4 MR. MIKE JORDAN: And that has to do with the gray
5 area of important to safety and the grading of that. How
6 much assurance do we have that the goldplated area of -- in
7 this event, it looked like they all worked -- of safety-
8 related?

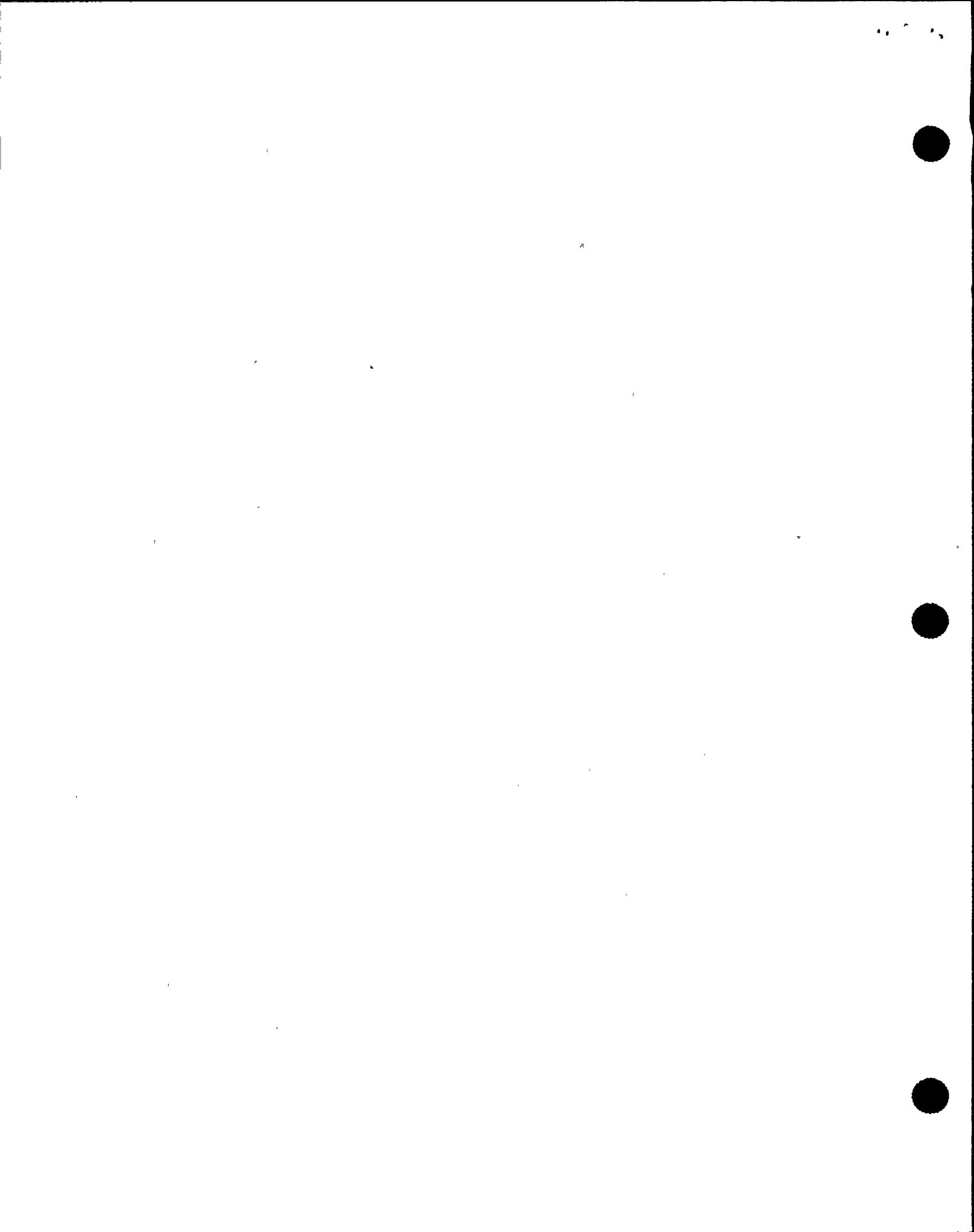
9 Is that identified well enough to the industry
10 that we know that every plant thoroughly understands what
11 important to safety is, both the I&E --

12 MR. ED JORDAN: You're mixing important to safety
13 and safety-related, I think.

14 MR. MIKE JORDAN: But I'm saying, even the safety-
15 related equipment, is that well-identified by us enough so
16 that an AE that builds one plant would apply the same rules
17 and have the same equipment in one plant and the next plant
18 the same equipment as safety-related?

19 MR. ED JORDAN: As far as I'm concerned, there is
20 not much argument about where safety-related lines are
21 drawn.

22 I think that both regulator and industry know,
23 when -- when one uses those terms, that there is a fairly
24 sharp distinction in the equipment that's included, and of
25 course, TMI actions identified and fuzzed some of those



1 areas.

2 SPDS is a perfect example. We said we are not
3 going to require SPDS to be safety-related with gold-
4 plating, etcetera, but it's damned important, and we expect
5 it to be functional most of the time.

6 So, that -- maybe that kind of a thing that came
7 out of the TMI actions helped explain some of the important-
8 to-safety aspects. Even though it didn't use those words,
9 there was a gradient.

10 MR. MIKE JORDAN: But you're saying, in the area
11 of safety-related, you think we've got it well-enough
12 identified that that's not a gray area to the industry.

13 MR. ED JORDAN: Well, I spent a lot of time
14 inspecting plants up to 1977 and -- and reviewing diagnostic
15 evaluations and IITs, and there didn't seem to be any
16 arguments about where safety-related was, and if you look
17 back at enforcement history, there just aren't many
18 arguments about what is safety-related and what is not.

19 Those seem to be fairly sharply drawn.

20 MR. ROSENTHAL: Let's move on to maintenance.

21 I can read the words in the maintenance rule, but
22 I'm still confused on what they mean.

23 The maintenance rule says that the scope is for
24 safety-related, and then it goes on, non-safety-related
25 structures, systems, or components that will either mitigate



1 an accident or transient or used in emergency operating
2 procedures, EOPs, or -- it goes on.

3 Please help me with my understanding.

4 MR. ED JORDAN: That's safety-related and other
5 important stuff.

6 MR. ROSENTHAL: So, the SPDS, the control room rod
7 position indication, annunciators in the control room which
8 are clearly used in the EOPs would be examples of non-
9 safety-related structures which would be covered by this.

10 MR. ED JORDAN: Yes.

11 MR. ROSENTHAL: When I read the rule and the
12 statement of considerations, it looks like the concept is to
13 monitor performance and then adjust programs accordingly.

14 Is that a fair characterization?

15 MR. ED JORDAN: I guess it's not my understanding.

16 The -- the understanding I have is that licensees
17 are expected to have programs for their evolved maintenance
18 and procedures and -- and to follow them and that the NRC,
19 rather than putting its emphasis on programs, would put its
20 emphasis on looking at the performance, and so, I see the
21 performance-based as putting the NRC's attention on
22 performance, but it wasn't, in my view, intended to shift
23 the licensee's attention from the necessary programs and
24 procedures and training and skilled personnel to merely
25 looking at performance.



1 There is, of course, a reliability-based
2 maintenance scheme that some utilities have adopted, and I
3 don't believe that this was intended to cause all utilities
4 to universally go to a reliability-centered maintenance
5 program.

6 MR. ROSENTHAL: If you're watching a feedwater
7 pump that's always running, you can figure out what its
8 reliability is and decide whether you want to do more or
9 less in preventive or corrective maintenance or whatever
10 you're doing.

11 What would the licensee do with respect to
12 something that's a non-revealing fault?

13 MR. ED JORDAN: You're ignoring the answer,
14 because I expect licensees to continue to have preventive
15 maintenance, to continue to do testing, to continue to,
16 during outages, rebuild and refurbish equipment on a
17 schedule that is appropriate for the amount of wear that
18 they incur and -- and not to wait until the -- the pump
19 shows degradation.

20 So, I think there must be a misunderstanding about
21 what the Commission intended with the terminology
22 "performance-based."

23 It's what the Commission is going to be focusing
24 its attention on and emphasizing for its own understanding
25 of whether maintenance is working at a plant, and the



1 example would be that we would be looking across industry at
2 diesel generator reliability and we would also look at
3 plant-specific diesel generator reliability, but we expect
4 the utilities each to continue to do maintenance on their
5 diesels, depending on the -- the wear, age, and
6 characteristics of the individual diesels, not -- not to
7 rely on a performance index as -- as when they do
8 maintenance.

9 MR. ROSENTHAL: That expectation is based on other
10 regulations or based on the most recently published 50.65
11 July 10, '91. Well, we always expected people to maintain
12 their plants, whether we ever had this rule or not.

13 MR. ED JORDAN: Let me back-up. When the NRC went
14 into considerations for rulemaking on maintenance, we
15 examined maintenance at a number of plants, and we came up
16 with views, in terms of programs and implementation. The
17 determination was that there were programs out there and
18 that implementation, in most cases, was fairly good, but
19 there were more problems with implementation than there were
20 with programs.

21 Looking at programs, in terms of how many people,
22 what the organization is, what the maintenance schedule is,
23 and what the procedures are for maintenance, is in I think
24 many people's mind, an inefficient way to regulate a
25 particular activity such as maintenance. So, the regulator



1 perhaps should step back a bit more and look at overall
2 system equipment performance at a plant, and if you have
3 equipment performance problems over a long period of time,
4 then you go back and you look at programs, the training of
5 personnel, the procedures, the maintenance schedules, in
6 order to affect improvements at the plant.

7 But I certainly never anticipated and would be
8 upset if that was misinterpreted by industry to say, hey, we
9 don't have to mess around with the programs anymore. All we
10 have to do is monitor how many times the RHR fails to start.
11 That would be a mistake.

12 MR. ROSENTHAL: There are five specific UPS's that
13 are very much of interest to this IIT. They ran for five
14 years, and although they may have flipped from their normal
15 source of their maintenance source, they continue to provide
16 AC power for five continuous years times five units. So,
17 that's pretty reliable -- pretty good equipment. And, prior
18 to this event, you would have judged the reliability very
19 high. And they were pulling maintenance on this equipment.
20 One could argue about whether it was enough maintenance or
21 not, they were pulling some.

22 So, if you have a performance-based rule, and one
23 would judge that would not want -- would not one judge that
24 performance adequate?

25 MR. ED JORDAN: Absolutely not. That would be too



1 narrow of-a look. When you're looking at performance-based
2 considerations of maintenance, you look across the plant.
3 So, you look at the overall equipment performance. If you
4 have problems in the plant, then you go back to the
5 licensee's program. Because -- and I think, frankly, it's
6 up to you to recommend as to whether there was, in fact, an
7 overall maintenance problem at this plant, or whether this
8 was a narrow, one of a kind failure because of the
9 complexity of the equipment and poor manuals or whatever
10 reason for this particular failure.

11 So, I think you're misreading or misunderstanding
12 performance-based, if you would use the argument that, on a
13 performance-based -- look, this equipment is great, because
14 you have to look across the plant and ascertain whether the
15 maintenance program effectiveness, looking at equipment
16 performance, was good or bad at this plant.

17 MR. ROSENTHAL: Now, I can see where in terms of
18 NRC's actions, it's going to look big picture, overall
19 performance. What are the expectations of the utility? I
20 think you said that before. Could you just repeat that?

21 MR. ED JORDAN: The expectations of the utility
22 are that they, in fact, have established and implemented a
23 program and INPO has provided some very fine guidance for an
24 effective maintenance program. They can adopt that and, in
25 fact, the Commission informally said that's good guidance.



1. That gives them an overall program.

2 Now, utilities, in some cases, have developed a
3 reliability-centered maintenance program and that program
4 has, as one of its features, looking at individual
5 components and adjusting the frequency and intensity of
6 maintenance, based on its failure history. And that has, as
7 an element of it, living with -- I'll give it a failure
8 rate. Some people are uncomfortable with it.

9 In order for it to be effective, in my view, one
10 has to look across a lot more equipment than an individual
11 plant. So, I think it is fundamentally flawed to apply a
12 reliability-centered maintenance program, looking only at
13 one reactor unit, and the small numbers of equipment that
14 are installed there; one ought to have a bigger statistical
15 base on which to determine frequency of maintenance.

16 MR. ROSENTHAL: The expectations of licensees that
17 you spoke to. Some of that I can see in the statement of
18 considerations to the rule, but not in the rule itself. Are
19 there other places where those expectations are made clear?

20 MR. ED JORDAN: Not in a regulatory fashion. I
21 don't know of any other places. If it doesn't stay on your
22 shelf, then it's not useful for utilities. So, unless it is
23 in the regulation, in the regulatory guide that will
24 accompany it, or the statements of considerations or a NUREG
25 that might expand on this activity, it will fall of the



1 people's shelf.

2 So, I'm sure that there were expressions that were
3 compiled and there were discussions with industry, at the
4 regulatory -- annual regulatory meetings, and the special
5 maintenance conference that was held with industry. But
6 those are off-the-shelf, in terms of having a long-term
7 effect.

8 MR. ROSENTHAL: Now there are plans for Reg Guides
9 to be developed to accompany this rule.

10 MR. ED JORDAN: When you label your bookcase and
11 have maintenance as one of the labels, it's equipment that
12 stays on the shelf. The reference is that it stayed on the
13 shelf, that one has to rely on.

14 MR. MIKE JORDAN: One direction we have given to
15 people for developing the Reg Guide, the philosophy that you
16 expounded; do you know if that's identified someplace in the
17 process for the Reg Guide development that we could look at?

18 MR. ED JORDAN: No, I don't.

19 MR. ROSENTHAL: That's being developed by Research
20 now.

21 MR. ED JORDAN: Yes.

22 MR. ROSENTHAL: You would end up, in your CRGR
23 role, getting involved in far later down the road, I take
24 it?

25 MR. ED JORDAN: Right.



1 MR. ROSENTHAL: Was the maintenance rule, 50.65,
2 July '91, meant to be an umbrella type rule unto which one
3 or more Reg Guides would ultimately be developed, and that
4 would become the umbrella for explaining NRC's expectations
5 of maintenance to licensees?

6 MR. ED JORDAN: It's certainly my understanding,
7 yes.

8 MR. ROSENTHAL: That that would be called the big
9 umbrella?

10 MR. ED JORDAN: Yes. In the absence of it, about
11 the only place that maintenance appears in the entire 10 CFR
12 50 series is in Appendix B, a couple of times.

13 MR. ROSENTHAL: Appendix B is clearly for safety
14 related, as I understand it.

15 MR. ED JORDAN: Right.

16 MR. CONTE: On even reviews, the AEOD's function,
17 is there any thought or thinking into relooking at power --
18 non-safety related power supplies in light of the 1988
19 events? There were three events with Calvert, Beaver and
20 Rancho Seco where the enunciator system was lost.

21 MR. ED JORDAN: I think it's an inappropriate
22 question at this time. Once this investigation is done,
23 then there will be actions that will be derived and we'll
24 decide whether we need to reexamine, based on what we
25 learned in this event.



1 MR. CONTE: Prior to the Nine Mile, there's no
2 case study on this type of event as a result of Millstone,
3 for example, which was about a month ago, the same problem,
4 loss of enunciators.

5 MR. ED JORDAN: A similar problem.

6 MR. CONTE: Yes.

7 MR. ED JORDAN: I'll maintain the same answer. To
8 try to develop what actions are going to be taken, based on
9 what we've just learned, is inappropriate.

10 MR. ROSENTHAL: Premature?

11 MR. ED JORDAN: Yes. Inappropriate for this
12 report. I mean, this report identifies, you know, what
13 problems and the relevance to previous problems, and
14 certainly would indicate that there isn't a case study that
15 fits that's been done in the past. But it's not appropriate
16 to ask, are you going to do one?

17 MR. ROSENTHAL: This report will have findings and
18 conclusions?

19 MR. ED JORDAN: Right.

20 MR. ROSENTHAL: Then recommendations will be
21 developed by the AEOD, based on the findings and conclusions
22 in the report.

23 MR. ED JORDAN: Correct.

24 MR. ROSENTHAL: That will be clear.

25 MR. CONTE: Is there a pretty substantial record



1 on any of the -- in pursuing issues in the non-safety
2 related world? Persistent failures, closing a number of
3 significant events?

4 MR. ED JORDAN: There's a bookshelf full, for
5 example, air systems.

6 MR. CONTE: Instrument air is a good example?

7 MR. ED JORDAN: It's one that was pursued for
8 years by AEOD and ultimately resulted in a generic letter as
9 a non-safety system. We've said a couple of times, at some
10 point, you guys are going to have to have me in that chair
11 and interview me.

12 MR. CONTE: Towards the end of your --

13 MR. MIKE JORDAN: I have to hit the maintenance
14 rules. When I -- I think we've hit that enough, and
15 important to safety. I think we've --

16 MR. ROSENTHAL: I would like to give Ed the last
17 word. Are there questions that --

18 MR. ED JORDAN: Yes. I'm trying to be careful not
19 to steer you, so I won't at this point.

20 MR. ROSENTHAL: You want to maintain the
21 independence of the team?

22 MR. ED JORDAN: Yes.

23 MR. ROSENTHAL: I'd like to thank you for coming.

24 MR. ED JORDAN: Well, I appreciate the free
25 coffee.



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25

[Laughter.]

[Whereupon, at 10:16, the interview was
concluded.]



REPORTER'S CERTIFICATE

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

in the matter of:

NAME OF PROCEEDING: Ed Jordan

DOCKET NUMBER:

PLACE OF PROCEEDING: Bethesda, Maryland

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

Marilynn Estep

Official Reporter
Ann Riley & Associates, Ltd.

