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September 15, 1980

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Region V
U. S. Nuclear Regulatory Commission
1990 North California Boulevard
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Walnut Creek, California 94596

A012.

Re: Docket No. 50-275
Docket No. 50-323

Dear Mr. Engelken:

This concerns I.E. Bulletin No. 80-16 dealing with Rosemount pressure transmitters. Diablo Canyon has 24 of the subject transmitters installed in safety-related applications. The attached PGandE response to I.E. Bulletin No. 80-16 summarizes our analysis and evaluations and describes our corrective program.

To answer your request for an estimate of the man-hours associated with this bulletin, the breakdown is as follows:

- Review and preparation of report: 75 hours
- Implementation of corrective actions: 500 hours.

Very truly yours,

Philip A. Groves

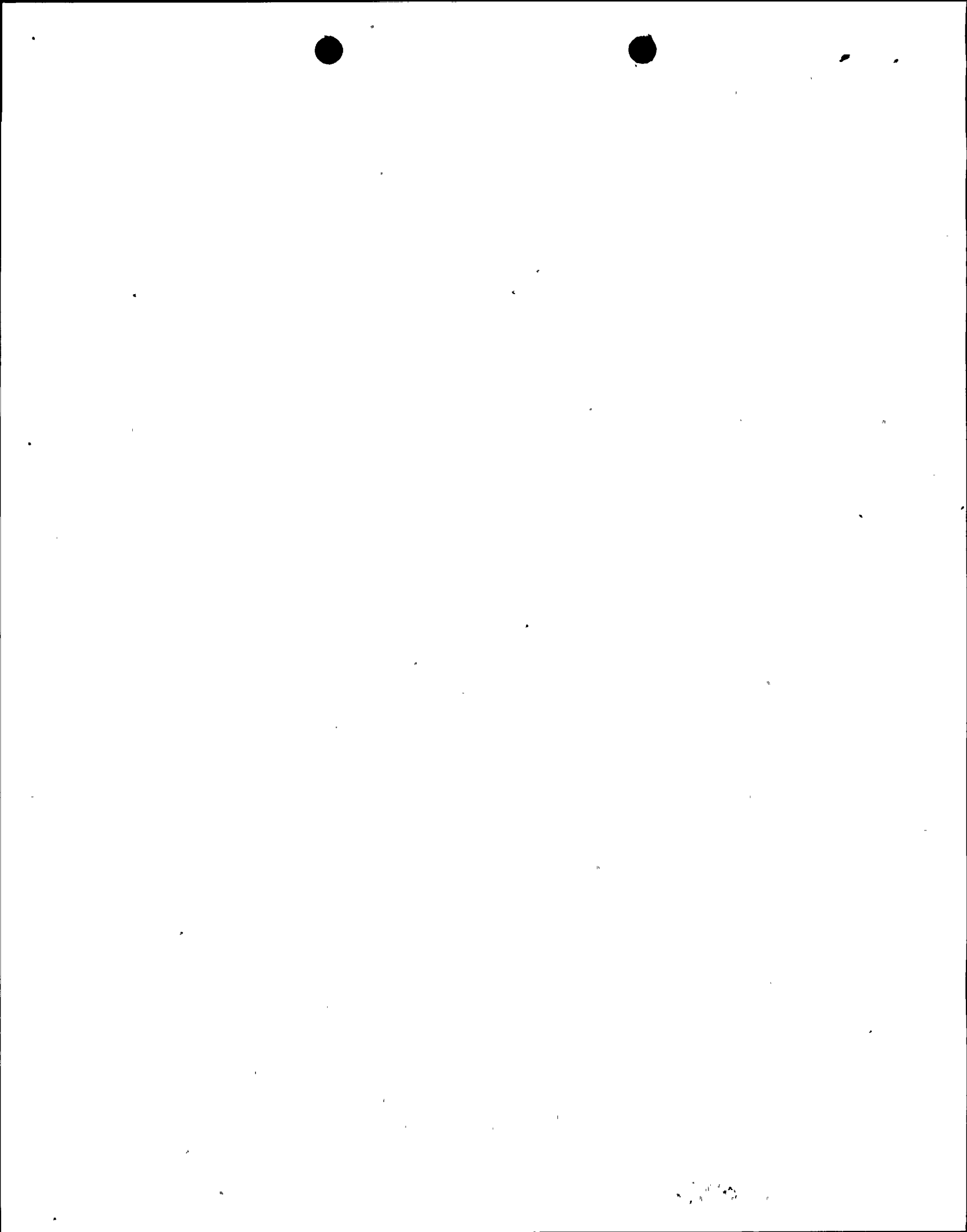
Attachment

CC w/attachment: Director
Office of Inspection and Enforcement
Division of Reactor Construction Inspection
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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RESPONSE TO NRC I&E BULLETIN NO. 80-16

POTENTIAL MISAPPLICATION OF ROSEMOUNT INC. MODELS 1151 AND 1152
PRESSURE TRANSMITTERS WITH EITHER "A" OR "D" OUTPUT CODES

The bulletin states that a potential problem exists with the referenced transmitters if the input pressure (or differential pressure) exceeds 140% of maximum range or drops to a reverse pressure condition. In both cases, the transmitter output should be off scale, but has been found to erroneously drift on scale in a limited number of samples. The resulting anomalous signals could adversely affect the safety functions..

Pacific Gas and Electric Company has 24 Rosemount Model 1152 transmitters installed in safety-related applications at the Diablo Canyon Power Plant. There are four transmitters measuring pressurizer pressure and eight transmitters measuring main steam line flow installed in each of the two units.

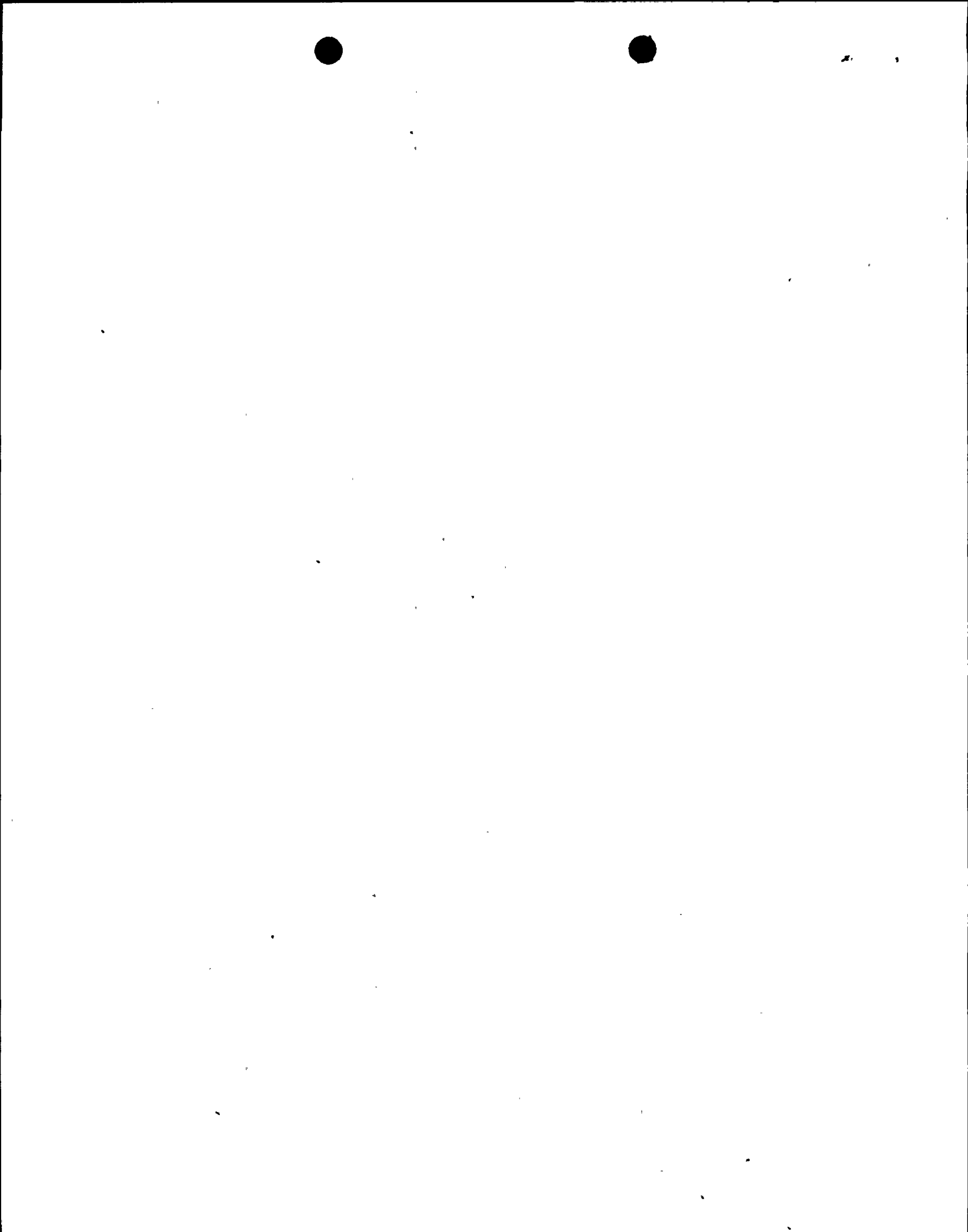
We have analyzed these two applications and present here our conclusions:

PRESSURIZER PRESSURE

The input pressure to the pressurizer pressure transmitter is normally 2235 psig. The maximum pressure transient is postulated to occur during the ATWS scenario, resulting in a 4000 psig spike. The maximum range of the transmitters is 0-3000 psig, so that 140% of maximum range is 4200 psig, which is higher than the maximum postulated. No negative pressures are postulated for these transmitters. We, therefore, conclude that these transmitters are adequate.

TRANSMITTER DATA

- a) Model Number: 1152GP9A92PB
- b) Range limits: 0-500/3000 psig
- c) Range setting: 1250-2500 psig



- d) Process range: 1) Normal: 1700-2235 psig
2) Accident: 0-4000 psig
- e) Anomalous region: None
- f) Service/Function: Pressurizer pressure (reactor trip, safety injection - not used for post accident monitoring)

MAIN STEAM FLOW

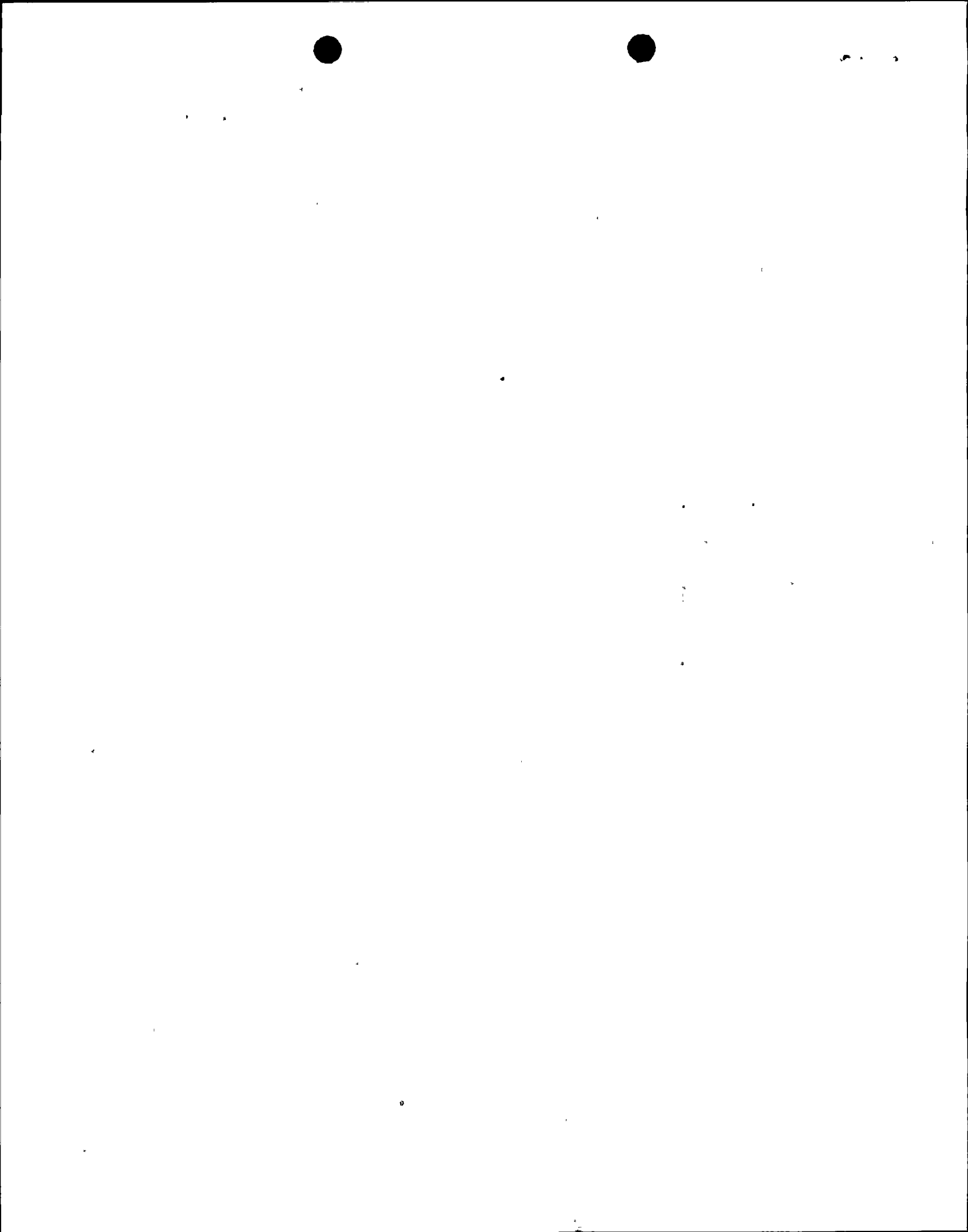
The transmitters measuring main steam flow will normally receive differential pressure inputs of 103" H₂O. The range limits are 0 - 125/750" H₂O, so that 140% of maximum range is 1050" H₂O or approximately 38 psid. The maximum postulated differential pressure during a Main Steam Line Break Accident is 460psid. Therefore, in this transient condition, the transmitters could give anomalous signals.

No negative differential pressures are postulated, so that no problems exist on the low end.

In order to delete the possibility of anomalous indications under main steam line break conditions, we have decided to replace the main steam flow transmitters as soon as possible. Since the delivery for qualified replacements is approximately one year, we will replace Unit 1 transmitters prior to first refueling, and Unit 2 transmitters before fuel loading.

We have discussed this issue with Rosemount, and have been informed that:

- 1) The anomalous signals occur in about 5% of the transmitters, and
- 2) The anomaly (or lack of anomaly) is continuously repeatable.



Therefore, we are testing all of our Unit 1 and Unit 2 main steam flow transmitters up to rated differential pressure overpressure rating. We will select eight transmitters which do not have an anomaly for use in Unit 1 until replacement transmitters can be installed.

It should be noted that this problem only occurs on a major main steam line break downstream of the flow restrictor. If the break is outside containment, no adverse environment is present at the transmitter. If the break is inside containment, and is large enough to provide the required differential pressure to produce errors, the safeguards function will be provided by the containment pressure transmitters. Therefore, anomalous signals in adverse environments will not compromise the safeguards function. We, therefore, conclude that the tested transmitters will be acceptable for operation until replacements are delivered.

TRANSMITTER DATA

- a) Model Number: 1152DPSA92PB
- b) Range Limits: 0-125/750" H₂O
- c) Range Setting: 0-195" H₂O
- d) Process Range 1) Normal: 0-103" H₂O
2) Accident: 0-460 psid
- e) Anomalous Region: 40-460 psid
- f) Service/Function: Main steam flow (main steam isolation, safety injection)

