

Draft 1
CKBeck:alp
12/23/58

Site: Reactor Criteria

Control Systems:

1. There must be instruments, equipped with automatic level and rate rise trips, capable of responding to the neutron flux in the start-up range.
2. There must never be less than 2, preferably 3, independent flux monitoring channels.
3. If normal instruments at any range are all similar, it is desirable that these be backed up by a scrambling mechanism of another type.
4. On reactors having power levels of 1 Mw or less, both flux level and period scram protection must be employed at all times.
5. On reactors above 1 Mw, flux level scram protections must be employed at all levels. Period scram is not mandatory in the operating range.
6. Arrangement for a scram only on trip coincidence from 2 channels may only be employed if there are at least independent 3 channels from which the coincidence trips can originate.
7. During start-up or operation at levels substantially below nominal maximum power, at least one level scram (neutron, gamma, temperature) must ride down in the near vicinity of actual level at any time, and be advanced as necessary as the power increases.
8. There must be periodic check by appropriate signal input or mock up source of the actual response of each safety channel over the whole response range, including activation of the alarm, trip or scram device.
9. Insofar as possible all safety channels must be so constructed that their failure will cause shutdown.

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10. In any flux detector there must be an interlock which will cause reactor scram if the high voltage supply to the chamber deviates substantially from the proper value.
11. Interlocks of all sorts should be chosen with great care. It is essential that the necessary ones be provided, but it is hazardous to provide more than are needed. Once chosen, a safety interlock must never be by-passed or deactivated by the operating staff.
12. Safety interlock must be so arranged that range changes of indicators do not deactivate or move the position of the alarm, trip, or scram point.
12. After any maintenance or alteration of a safety channel, a complete recheck of response must be made, including interlock activation by an appropriate impressed signal.
14. An automatic power level control system may not have capability of both a rapid delta k insertion and a large delta k insertion. In any case, the excess reactivity which may be inserted automatically may not exceed the equivalent value of β (beta) except in ~~some~~ special circumstances.
15. When an automatically operated control rod of appropriate value reaches its limit of travel it may not automatically invoke shim withdrawal.

Allied Chem & Dye Corp

November 18, 1958

Professor Leslie Silverman
55 Shattuck Street
Boston 15, Mass.

Re: ACRS Subcommittee Meeting
Site Criteria

Dear Professor Silverman:

This will confirm arrangements to hold a Site Criteria Subcommittee Meeting at 9:00 A.M., on Wednesday, November 26, 1958, at the Atomic Energy Commission's New York Operations Office, 70 Columbus Avenue, New York City.

Rogers McCullough and Will Conner have been invited to participate. Jim Graham is making the necessary arrangements for the meeting and has agreed to act as secretary.

Hal Price, who is so vitally interested in this subject, hopes to be on hand. Cliff Beck and John Newell are scheduled to represent the Hazards Evaluation Branch.

Yours sincerely,

Original Signed
K. R. Osborn

K. R. Osborn
Subcommittee Chairman

KRO:C

cc: Dr. C. R. McCullough
Dr. Willard P. Conner
Mr. H. L. Price
Mr. C. K. Beck
Mr. J. B. Graham



Handwritten notes:
11-27-58
Site A-1