TIC

PACIFIC GAS AND ELECTRIC COMPANY

PG&E 77 BEALE STREET, 31ST FLOOR • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211

JOHN C. MORRISSEY
VICE PRESIDENT AND GENERAL COUNSEL

MALCOLM H. FURBUSH
ASSOCIATE GENERAL COUNSEL

CHARLES T. VAN DEUSEN
PHILIP A. CRANE, JR.
HENRY J. LaPLANTE
RICHARD A. CLARKE
JOHN B. GIBSON
ARTHUR L. HILLMAN, JR.
ROBERT OHLBACH
CHARLES W. THISSELL

GILBERT L. HARRICK
C. ENN REST, JR.
DAN CRAWFORD LUBBOCK
JACK F. FALVEY, JR.
BERNARD J. DELLASANTA

EDWARD J. McDANIVEY
DANIEL E. GIBSON
JOSEPH T. KELLY
HOWARD V. GOSS
JAMES C. LOGSDON

SENIOR COUNSEL

JOSHUA BARLEY
ROBERT L. BOBSON
LEON S. CASSIDY
BRIAN B. DENTON
GARY P. ENGINAS
DONALD ERICKSON
CAL. J. E. GILBERT
ANNETTE GREEN
ROBERT L. HARRIS
KERMIT B. KUNTZ
THEODORE L. LINDBERG, JR.
RICHARD F. LOCKE
ROBERT G. MCLENNAN
RICHARD H. MOSS
ROBERT J. PETERS
ROBERT R. RICKETT
STANLEY A. SANDERSON
JACK W. SHUCK
STANLEY A. WOO

J. PETER BAUMGARTNER
STEVEN P. BUNCE
PAMELA CHAPPELLE
WILLIAM H. EDWARDS
JOSEPH S. ENGLERT, JR.
JOHN N. FRYE
PATRICK G. GOLDEN
PETER W. HANSCHEN
JUAN M. JAVO
F. RONALD LAUPHEIMER
MEDEA E. LIPSON
HARRY W. LONG, JR.
RICHARD L. MEISS
DOUGLAS A. OGILBY
J. MICHAEL PEIDENBACH
IVOR E. SAMSON
SUE ANN LEVIN SCHIFF
DAVID J. WILLIAMSON
BRUCE R. WORTHINGTON

ATTORNEYS

July 30, 1979

Mr. R. H. Engelken, Director
Office of Inspection and Enforcement
Region V
U. S. Nuclear Regulatory Commission
1990 N. California Boulevard
Walnut Creek Plaza, Suite 202
Walnut Creek, California 94596

Re: Docket No. 50-133
License No. DPR-7

Dear Mr. Engelken:

Enclosed as Attachment A is our response to your letter dated May 31, 1979, which transmitted IE Bulletin No. 79-12 concerning short period scrams at BWR facilities.

Very truly yours,

Philip A. Crane, Jr.

Attachment

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

PACIFIC GAS AND ELECTRIC COMPANY

HUMBOLDT BAY POWER PLANT UNIT NO. 3
DOCKET NO. 50-133
LICENSE NO. DPR-7
ATTACHMENT A

RESPONSE TO IE BULLETIN NO. 79-12 DATED MAY 31, 1979

IE Bulletin 79-12, concerning short period scrams at BWR facilities, requested that we describe our actions taken, or to be taken in response to each of the following:

1. "Review and revise, as necessary, your operating procedures to ensure that an estimate of the critical rod pattern be made prior to each approach to critical. The method of estimating critical rod patterns should take into account all important reactivity variables (e.g., core xenon, moderator temperature, etc.)."

   The required review has been completed and indicates that our practices are satisfactory. Our procedures and check lists require that an estimate of the critical rod pattern be made prior to each approach to criticality. The procedure for estimating critical rod pattern takes into account all important reactivity variables. A memorandum was issued in 1971 which specifies the allowable error permitted in a critical prediction and the administrative controls applicable if this allowable prediction error is reached. Extensive training was conducted for all Senior Licensed personnel concerning these requirements. The memorandum will be incorporated into our procedures and check lists and additional training will be conducted prior to the time the Unit returns to operation.

2. "Where inaccuracies in critical rod pattern estimates are anticipated due to unusual conditions, such as high xenon, procedures should require that notch-step withdrawal be used well before the estimated critical position is reached and all SRM channel indicators are monitored so as to permit selection of the most significant data."

   Our existing control rod withdrawal procedure requires that control rods being withdrawn after the first two and one half groups (eight of the thirty-two control rods) be notch withdrawn. Notch withdrawals are not required for the first two and one half groups since insufficient rod coupling exists to allow the reactor to go critical prior to this point. Only the Nuclear Engineer with concurrence from the Shift Foreman can authorize notch override withdrawals. Our procedures and training have stressed response of the nuclear instrumentation (both period and power level change) as the indicators of approach to critical. The nuclear instrumentation has been extremely sensitive to control rod movement throughout the core due to its relatively small size.

3. "Review and evaluate your control rod withdrawal sequences to assure that they minimize the notch worth of individual control rods, especially those withdrawn immediately at the point of criticality. Your review should ensure that the following related criteria are also satisfied:

   a. Special rod sequences should be considered for peak xenon conditions.

   b. Provide cautions to the operators on situations which can result in high notch worth (e.g., first rod in a new group will usually exhibit high rod worth)."

   During thirteen years of reactor operation, the reactor has been brought critical under a wide variety of conditions using a vendor developed rod sequence including critical approaches during peak xenon, maximum xenon decay, high (but normal) rates of pressure decay, thus maximizing control rod worths. The Nuclear Engineer is authorized to make minor deviations in the pattern to minimize control rod worth but special patterns or sequences have never been required. Due to the relatively small size of the core and the small number of control rods, variations in rod sequence have not been shown to be practical since a change in one part of the sequence generally causes an undesirable effect at a later point in the sequence.

   The procedures for reactor startup do not contain specific precautions regarding situations leading to high notch worths. The procedures will be revised to include these precautions, which are presently included in detail in the operator training programs as discussed in the response to item 5 below.

4. "Review and evaluate the operability of your 'emergency rod in' switch to perform its function under prolonged severe use."

   There is no "emergency rod in" switch on this Unit.

5. "Provide a description of how your reactor operator training program covers the considerations above (i.e., items 1 thru 3)."

   The reactor operator training program (both initial license training and licensed operator requalification) includes study assignments, lectures and discussions about the factors and variables that can affect reactivity during an approach to critical. The procedure used by the Nuclear Engineers to predict criticality is discussed in detail to familiarize the operators with the conditions considered and the variables involved. Expected nuclear instrument responses and the general guidelines used during an approach to critical are discussed. Special operating conditions that could lead to high control rod worths are discussed along with the expected operator response to those conditions. In addition, all

prospective license candidates are required to observe and participate in actual reactor startups to become familiar with the actual plant response and what factors affect this response.

Administrative controls applicable to critical approaches are discussed. These include check lists for startup, the permissible error in critical prediction before an evaluation is required and the requirements for control rod withdrawal.