

SOUTHERN CALIFORNIA EDISON, SAN ONOFRE
NUCLEAR GENERATING STATION 2 (SONGS 2)

DOCKETS 50-361

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Revision 01-NP

SONGS-2 CPC AND CEAC
DATA BASE LISTING

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ABSTRACT

This document provides the data base constants for the Core Protection Calculator System consistent with the functional design described in the CPC Functional Design Specification (Reference 1), the CEAC Functional Design Specification (Reference 2), the certified CPC FORTRAN Simulation Code, the CPC/CEAC software Modification for SONGS Units 2 and 3 (Reference 3) and the CPC/CEAC Software Modification for System 80 (Reference 4). The data base constants are contained in data files in Section 3.1. These files use nomenclature and vector location numbers consistent with the CPC FORTRAN Simulation Code. Section 3.2 contains a cross-reference table which correlates the CPC FORTRAN Simulation Code nomenclature to the CPC and CEAC Functional Design Specification nomenclature. In addition to the data base constants, initialization criteria are contained in Section 3.3.

The constants contained in this document are applicable to the Revision 03 to the SONGS-2 CPC/CEAC System Software. This revision is applicable to SONGS-2 Cycle 2.

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this document is:

- (1) To specify the CPC and CEAC data base constants applicable to the SONGS-2 Rev. 03 software described by References 1, the CPC Functional Design Specification, Reference 2, the CEA Calculator Functional Design Specification, Reference 3 and 4 the CPC/CEAC software Modification for, SONGS 2 and 3 and System 80.
- (2) To serve as the design interface document between C-E engineering groups responsible for the specification and implementation respectively, of the CPC/CEAC design.

1.2 SCOPE

The CPC/CEAC system, as functionally described in References 1, 2 and as modified by References 3 and 4, is implemented in assembly language and also exists as a FORTRAN simulation. This document provides:

- (1) Data base values for the protection system algorithm constants denoted by References 1, 2, 3 and 4, for use in the assembly language implementation and
- (2) Selected data base values for those protection system algorithm and simulation associated constants required by the FORTRAN Simulation Code, and
- (3) Initialization criteria required by the system implementation group and specified in References 1, Section 3.6.

1.3 APPLICABILITY

The data base constants specified by this document are applicable to:

- (1) the CPC and CEAC protection systems described in References 1, 2, 3 and 4.
- (2) the SONGS-2 CPC FORTRAN Simulation Code.

1.4 REFERENCES

- 1.4.1 Functional Design Specification For a Core Protection Calculator, CEN-147(S)-NP, January, 1981.
- 1.4.2 Functional Design Specification for a Control Element Assembly Calculator, CEN-148(S)-NP, January, 1981.
- 1.4.3 CPC/CEAC Software Modifications for San Onofre Nuclear Generation Station Units No. 2 and 3, CEN-281 (s)-NP, Revision 01, November 1984.
- 1.4.4 Dockets STN-50-470F, Enclosure 1-NP to LD-82-039, CPC/CEAC Software Modifications for System 80, March, 1982.

This document contains a compilation of CPC and CEAC constants. These constants are applicable to SONGS-2 operation. The sources of these constants and their bases are included in the References section. These References reside in the CPC design file.

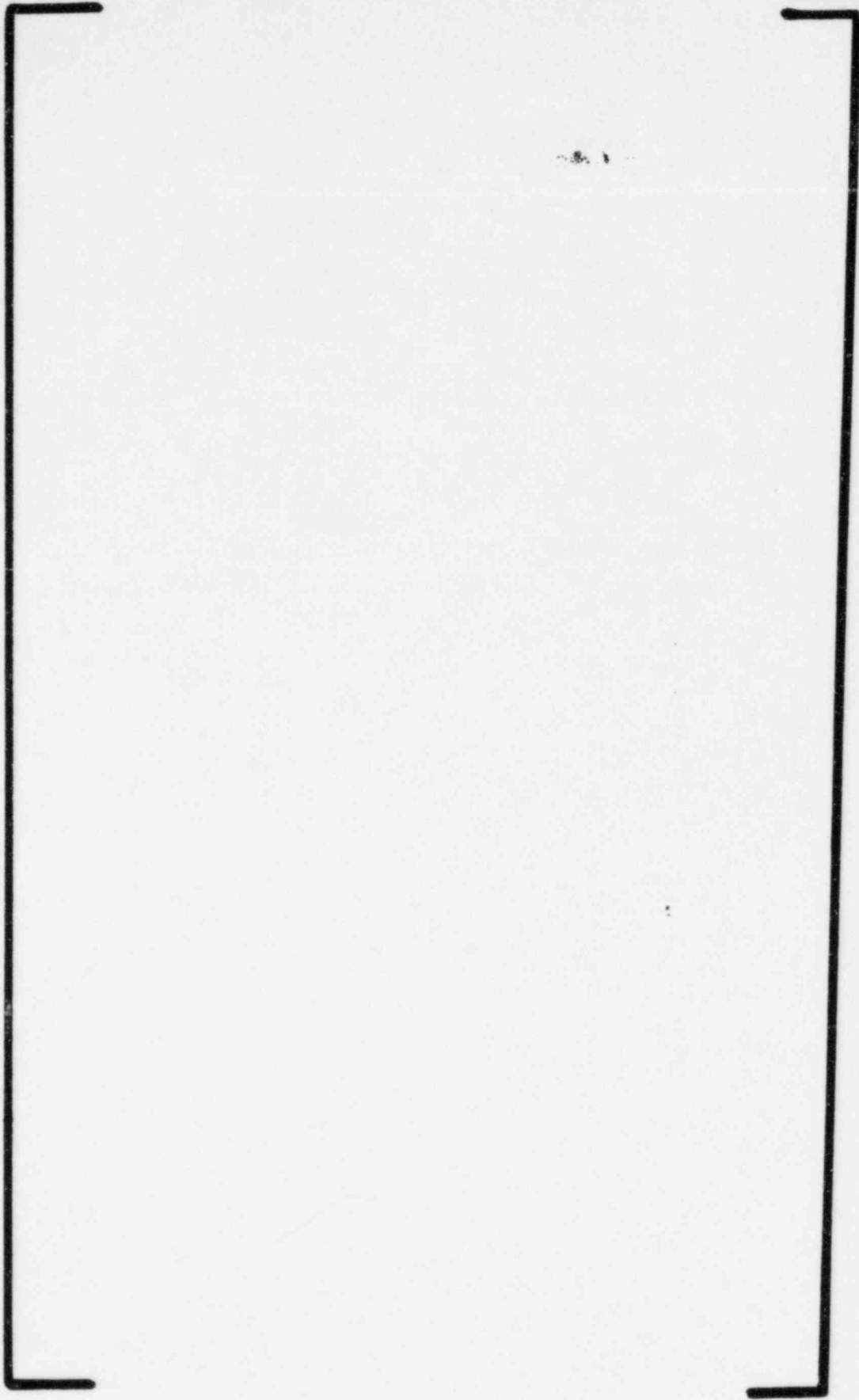
The data base constants contained within this section define a FORTRAN data file []. In some cases, data arrays in the data file exceed the dimensions specified by References 1, 2, 3 and 4. This is done to allow for possible expansion of some data constants at a future date.

Section 3.2 contains a cross-reference list. This list is provided to assure consistency between the system functional design nomenclature and the FORTRAN Simulation Code nomenclature. The left hand column contains FORTRAN constant names as found in the data file in Section 3.1. The middle column contains the vector location associated with the FORTRAN file. The right hand column contains the corresponding constant name as found in the functional design specifications, References 1, 2 and as modified by References 3 and 4.

It is noted that the CPC FORTRAN Simulation Code requires additional constants to simulate certain hardware and executive system features. Corresponding constants are not required by the CPC and CEAC functional design specifications. This is reflected in the data base listing. The only constants which are relevant to the protection system algorithms, as described by References 1, 2, 3 and 4, are the constants which have a symbolic name in the right hand column of Section 3.2.

SONGS PLANT SCE UNIT 1 INITIAL CORE
CPC/CEAC CONSTANTS (OCTOBER 5, 1984)

[illegible]



Section 3.6 of Reference 1 defines initialization and initialization criteria. The values for the initialization constants are:

[]

During initialization, the variables to which the above constants apply always approach steady-state from the conservative direction.

3.4 ADDITIONAL COMMENTS

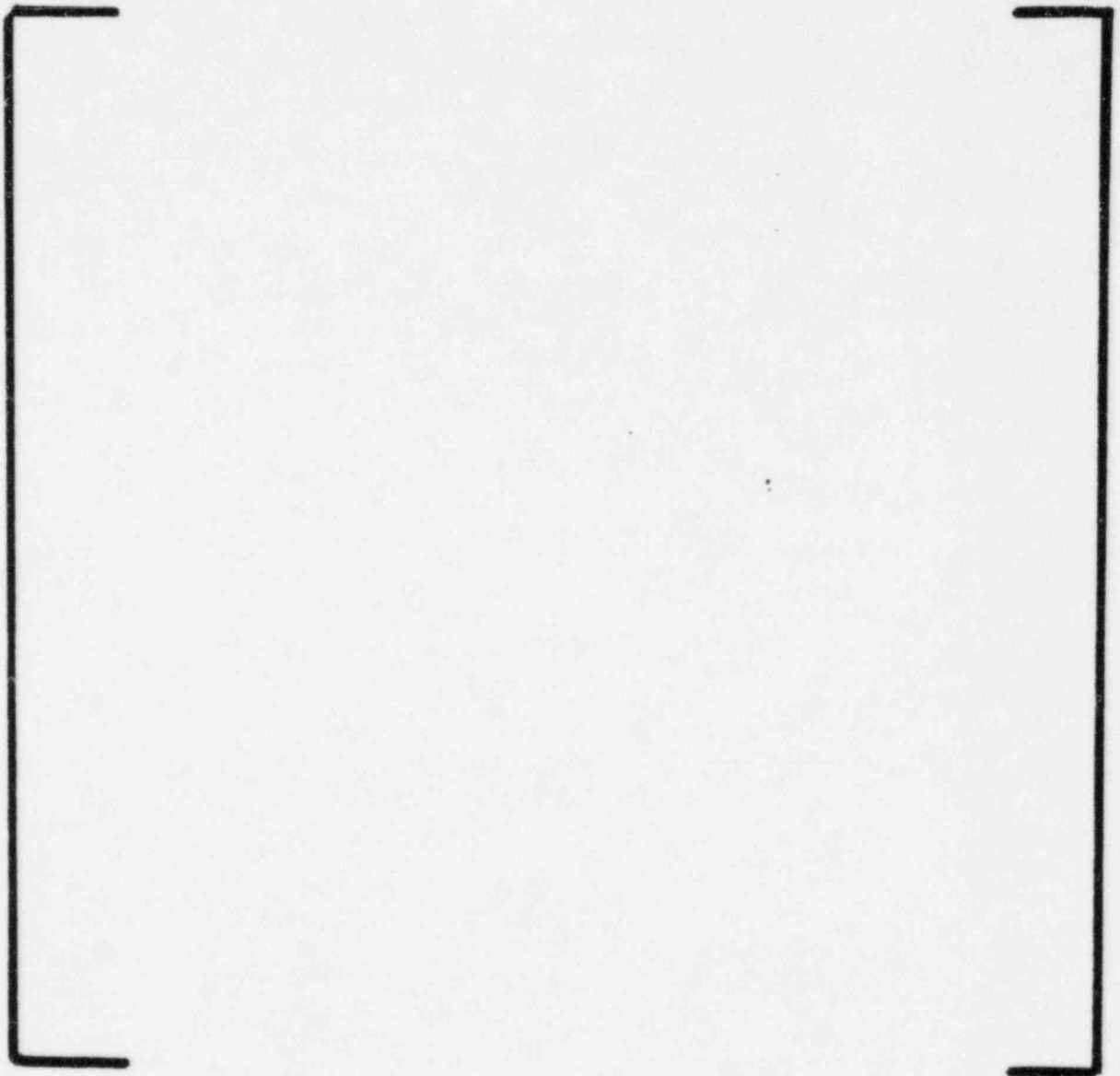
3.4.1 Determination of Constants

The constants contained in Section 3.1 have been prepared in accordance with Quality Assurance of Design Procedures with the exception of:

(1) Part-Loop Pump Dependent Constants

Constant

Vector Location



3.4.2 Conversion Factors

Certain constants are required for execution of the CPC FORTRAN Simulation Code. These constants are not required for input to the CPC Software Design implementation process, but are quality assured within the scope of this document.

<u>Constant</u>	<u>Vector Location</u>

3.4.3 Multiply - Defined Constants

Several constants are specified in more than one data base location. These constants either use the same variable name and memory location, or have different variable names and memory locations due to individual program usage. These constants are listed below, so that if one of these constants is changed, all locations using this constants will be corrected.

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