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DOE STANDARD

CRITICALITY SAFETY PROGRAM GUIDE FOR DOE NONREACTOR NUCLEAR FACILITIES

U.S. Department of Energy
Washington, D.C. 20585

AREA SAFT

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FOREWORD

This DOE standard is approved for use by all Departments and Contractors of the U.S. Department of Energy responsible for the safety of fissionable materials.

It is DOE policy to use National and International Consensus Standards (e.g., ANSI/ANS Standards) when such standards are available to meet DOE needs. DOE Standards are comprehensive guidance documents to assist in implementation of DOE Rules and Orders through use of good practices. Their comprehensiveness precludes their full applicability to all sets of conditions, since a good practice for one set of conditions may be an unnecessary, or a poor, practice for a similar, but not identical, set of conditions.

DOE Standards generally should not be used to develop audit check-lists. This DOE Standard is not a requirements document and shall not be used as an auditing standard. It is intended only to provide guidance. Requirements for DOE nuclear criticality safety programs are found in higher level documents, e.g., Policy, Rule, Order, and Manual. These documents, e.g., the Order or the Manual, may invoke National and International Consensus Standards. Use of the word "shall" in this DOE Standard is only to maintain consistency with higher level documents.

This DOE Standard was developed, over a four-year period, by Calvin Hopper of the Oak Ridge National Laboratory under contract to the U.S. DOE, with the consensus of a representative work group of DOE Headquarters personnel and DOE site, i.e., laboratory and contractor, personnel. This development included 15 revisions, partly based on a general review and on 6 meetings with the work group. Because the work performed at the different DOE sites is diverse (viz., hands-on unshielded fissionable material operations at some sites and remote shielded operations at other sites), this DOE Standard is diverse. Hence, it is comprehensive and covers most of the areas of responsibility pertaining to conducting a nuclear criticality safety program. To this end, information in this document has been gathered eclectically, therefore it is inappropriate to use this document in its entirety for any one site or for any single application. Its intent, therefore, is to present a comprehensive text of good practices for nuclear criticality safety, and to depend on good judgment in both engineering and management to be the principal determinant for applicability of these good practices. While even a comprehensive text of good practices cannot address every need, it can serve as a source of ideas to address differing needs as they arise.

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Calvin Hopper (Oak Ridge National Laboratory)

Charles Barnett (Lawrence Livermore National Laboratory, retired)
Leslie Davenport (Battelle Pacific Northwest Laboratories, retired)
Howard Dyer (Oak Ridge National Laboratory)
Ronald Knief (Ogden Environmental and Energy Services)
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Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this document should be addressed either to Burton M. Rothleder (project manager for this standard) or to George Detsis, DOE ES&H Standards Manager, either by using the Standardization Document Improvement Proposal (DOE F 1300.X) appearing at the end of this document or by letter.

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Acronyms

AEG	Average Energy Group
ANS	American Nuclear Society
ANSI	American National Standards Institute
ASA	Annual Safety Appraisal
CAS	Criticality Accident Alarm System
CDS	Criticality Accident Detection System
CFR	Code of Federal Regulations
CPVC	Chlorinated PolyVinyl Chloride
CSO	Criticality Safety Organization
DBA	Design Basis Accident
DOE	US Department of Energy
DOT	US Department of Transportation
E&PO	Engineering and Projects Organization
EC	Emergency Coordinator
EOC	Emergency Operations Center
EPZ	Emergency Planning Zone
FEM	Fissionable Equivalent Mass
FMCA	Fissionable Material Control Area
FMEA	Failure Modes and Effects Analysis
HE	High Explosives
HEU	High Enriched Uranium
IEZ	Immediate Evacuation Zone
INCSRC	Installation Nuclear Criticality Safety Review Committee
JTA	Job/Task Analysis
LCO	Limiting Condition for Operation
LCS	Limiting Control Setting
LEU	Low Enriched Uranium
LSSS	Limiting Safety System Setting
LTB	Lower Tolerance Band
NAD	Nuclear Accident Dosimeters
NCS	Nuclear Criticality Safety
NCSA	Nuclear Criticality Safety Analysis
NCSE	Nuclear Criticality Safety Evaluation
NCSS	Nuclear Criticality Safety Specialist
NCSSST	Nuclear Criticality Safety Software System Team
NRC	US Nuclear Regulatory Commission
NTS	Nevada Test Site
OJT	On-the-Job Training
OSHA	US Occupational Safety and Health Administration
PAG	Protective Action Guide
PRA	Probabilistic Risk Analysis
PSO	Program Secretarial Office
PVC	PolyVinyl Chloride
SAR	Safety Analysis Report
SL	Safety Limit
SME	Subject Matter Expert

SNR	Software Nonconformance Report
TS	Technical Specifications
TSR	Technical Safety Requirements
USL	Upper Subcritical Limit
USQ	Unreviewed Safety Question
V&V	Verification and Validation

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