First edition
2009-02-15

Nuclear criticality safety — Analysis of a postulated criticality accident

Sûreté-criticité — Analyse d'un hypothétique accident de criticité

Reference number
ISO 27467:2009(E)

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Published in Switzerland

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Foreword

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ISO 27467 was prepared by Technical Committee ISO/TC 85, *Nuclear energy*, Subcommittee SC 5, *Nuclear fuel technology*.

Introduction

In nuclear facilities processing or storing fissile material, provisions are made to avert the risk of criticality. The purpose of a criticality safety analysis is to ensure that the measures taken are adequate to prevent criticality accidents. The risk contributions associated with a criticality accident arise from direct radiation from the fission events, the presence of fission products, as well as from possible airborne radioactive gases and particulates.

Worldwide criticality-accident experience shows that these are very rare events, yet the risk associated with future occurrences cannot be completely eliminated. It is difficult to contemplate all the scenarios whose conditions can lead to a criticality accident, and even more so to avoid them, particularly with solution media where many of the past accidents have occurred. For this reason, an analysis based on postulated accident scenarios, in any facility where a potential risk of criticality can still be extant, can be the vehicle to understand the expected consequences and provide for the appropriate provisions and protective actions.