



Status of SFR SDC and SDG

Shigenobu Kubo
SDC TF Chair

*13th GIF-IAEA Interface Meeting,
IAEA Headquarters, Vienna, 18-19 March 2019*

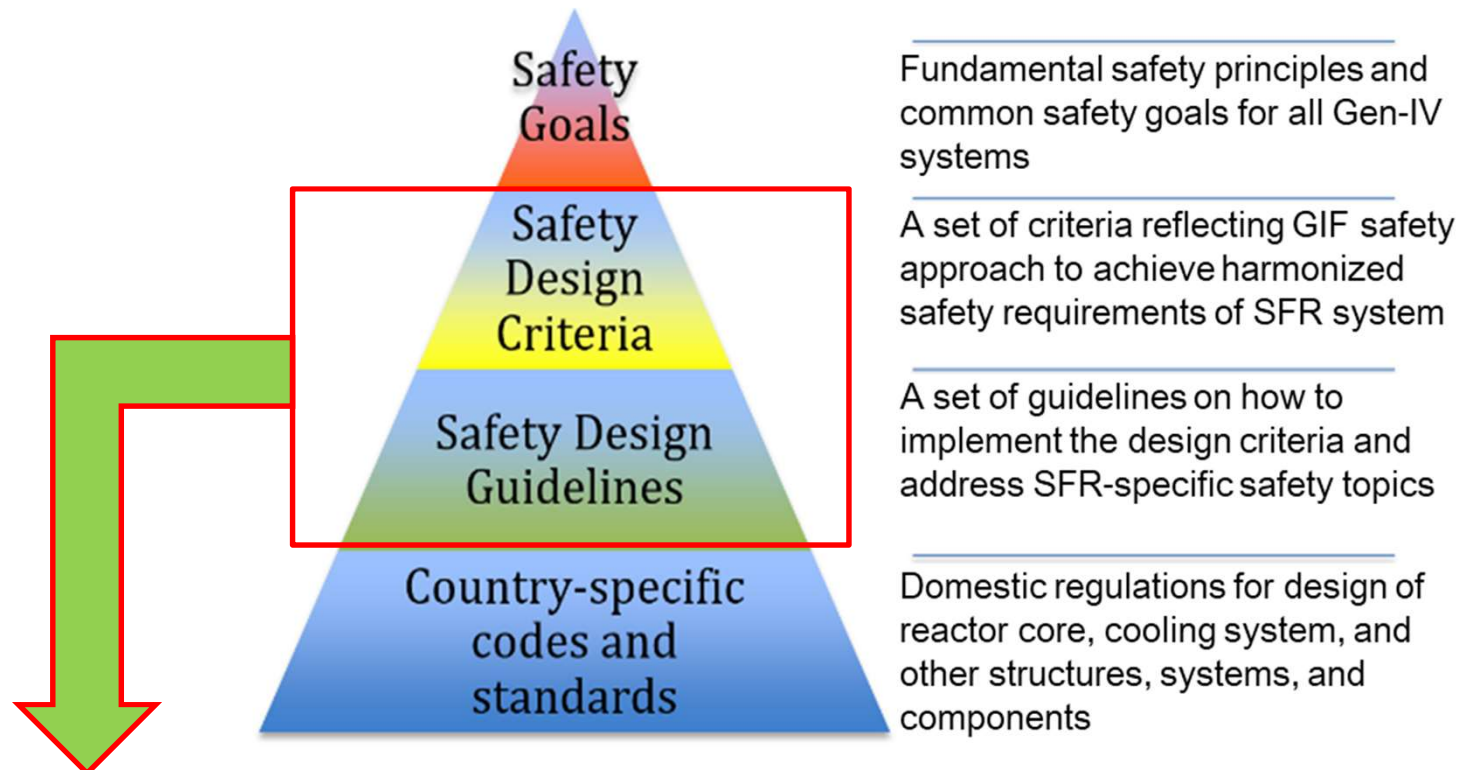
Contents

- ***Introduction***
- ***Status of Safety Design Criteria (SDC) and Safety Design Guidelines (SDGs) Development***
- ***Interaction with IAEA***
- ***New Proposal of GIF SFR SDC/SDG standardization activity in IAEA***

Introduction

- ***Safety Design Criteria (SDC) development for Generation-IV systems was proposed at GIF Policy Group meeting in October 2010***
 - » ***SDC “harmonization” is increasingly important for:***
 - ***Realization of enhanced safety designs common to SFR systems,***
 - ***Preparation for the forthcoming licensing in the near future***
 - ***SFR system was selected as the initial application since it represents one of the more mature next generation nuclear energy concepts***
- ***SDC Task Force (TF) started work in 2011***
 - ***Members: CIAE (China), CEA (France), JAEA (Japan), KAERI, KINS (Republic of Korea), IPPE (Russia), ANL, INL, ORNL (United States of America), EC and IAEA.***

Safety Design Guidelines Development



- ***SDC (Phase I report, updated in 2018)***
- ***SDG on Safety Approach and Design Conditions***
- ***SDG on Key Structures, Systems and Components***

SDC Update

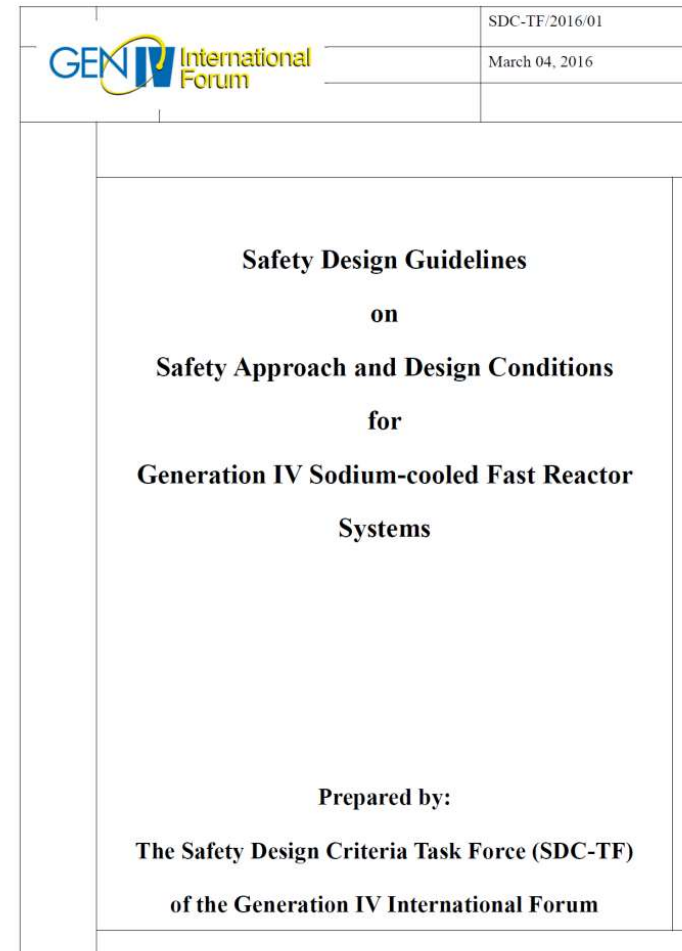
» ***The revised SDC report (Rev.1) was approved in 39th EG and published on GIF web site.***

(https://www.gen-4.org/gif/jcms/c_93020/safety-design-criteria)

- ✓ ***The original SDC report was delivered to external entities for review such as national nuclear regulators and international organization in 2013.***
- ✓ ***The SDC TF received the comments from China's NNSA, USNRC, IAEA and IRSN. SDC TF has produced the revision of SDC as well as the resolution documents that include the response to the comment.***
- ✓ ***The revised SDC also reflects the revision of IAEA SSR 2/1.***

SDG Development Status (1/3)

- **SDG on Safety Approach and Design Conditions**
 - **Focus on Prevention and Mitigation of Severe Accidents, and Use of Inherent/Passive Safety Features**
 - **Approved for External Review by PG on March, 2016**
 - **Delivered the SDG report on Safety Approach and Design Conditions to **GSAR** and **IAEA** for External Review on April 4, 2016**
 - **The SDG on Safety Approach report is available on the GIF web site.**



GSAR: OECD/NEA Joint CNRA/CSNI Ad-hoc Group on the Safety of Advanced Reactors

SDG Development Status (2/3)

- ***SDG on Key Structures, Systems and Components (Second SDG report)***
 - » ***SDG on reactor core, reactor coolant system and containment system for Gen-IV SFR referring to IAEA NSG series***
 - » ***To provide detailed guidelines for SFR designers to support the practical application of the SDC in design process to ensure the highest level of safety in SFR design.***
 - » ***To show recommendations and guidance to comply with the SDC Report and the Safety Approach SDG with examples, which can be applied to Gen-IV SFR systems in general.***

SDG Development Status (3/3)

- ***SDG on Key Structures, Systems and Components (Second SDG report)***
 - » ***First draft report of SDG on SSC was confirmed by SDC TF, and got approval for external review by WGSAR and IAEA.***
 - » ***An invitation letter to IAEA Department of Nuclear Energy was sent in 13th March 2019.***
 - » ***Presentation will be made in the 8th Joint IAEA-GIF Workshop on LMFR Safety held in 20-22 March 2019***

Interaction with IAEA (1/2)

- ***IAEA had already been contributing significantly to the GIF efforts on the SDC/SDG development***
 - ✓ ***IAEA expert of Department of Nuclear Safety and Security has been a member of GIF Task Force in charge of developing SDC/SDG***
 - ✓ ***IAEA Department of Nuclear Energy, jointly with the GIF, a yearly Workshop of safety of SFR and specifically on SDC/SDG***
- ***IAEA Department of Nuclear Energy provided the comments on SDC in the letter, dated 28 April 2014, to the GIF Chair.***
- ***Progress of IAEA's review was presented at 6th GIF-IAEA Joint Workshop on SFR Safety on November 2016. Comments received on 22nd March 2018***

Interaction with IAEA (2/2)

- ***7th Joint IAEA-GIF Workshop on LMFR Safety was held on 27-29 March 2018***
 - ✓ ***Background on GIF SDC TF, outline of SDG on Safety Approach report and development status of the second SDG report on SFR systems, structures and components***
 - ✓ ***GSAR and IAEA comments on the SDG on Safety Approach report***
- ***8th Joint IAEA-GIF Workshop on LMFR Safety is planned 20-22 March 2019***

New Proposal of GIF SFR SDC/SDG standardization activity in IAEA (1/2)

- ***GIF recognizes development of international safety standards for Gen-IV reactors is one of important activities. For that purpose, GIF thinks that standardization in IAEA is important.***
- ***GIF SDC TF would like to propose IAEA to launch a TECDOC project for SFR safety design criteria or requirements, for which SDC/SDGs developed by GIF SDC-TF will be served as fundamental information.***

New Proposal of GIF SFR SDC/SDG standardization activity in IAEA (2/2)

[1] Organization

- ***GIF asks IAEA to form a joint team of Department of Nuclear Energy and Department of Nuclear Safety and Security for promoting the TECDOC project.***
- ***GIF SDC-TF will provide related information and draft document***

[2] How to implement

- ***Drafting TECDOC: GIF SFR SDC/SDG or a new document based on essence extracted from GIF SFR SDC/SDG***
- ***GIF SDC-TF member can serve draft document and related information to a review meeting organized by international experts***
- ***Approval process of TECDOC***

[3] Outputs and Outcomes

- ***IAEA Safety TECDOC***
- ***Standardized SFR requirements and guidelines***
- ***Harmonization on SFR safety among regulatory bodies, SFR design organizations, and International agencies (IAEA)***

[4] Duration of the project

- ***2 or 3 years***
- ***Semi-annual review meeting will be held at IAEA***

*Thank you
for your attention !!*