	No.	Comments or Questions from reviewers	Response from authors
Reviewer 1:	1	This paper on the evaluation of the Source Term evaluation for SFR developed by S/NRA/R is quite interesting. As underlined in the paper, the literature on this topic is rather limited.	
	2	The Japanese approach in the source evaluation is based on the use of the various calculation tools for a ULOF scenario. A future paper on this subject could be interested to make.	
	3	Finally, this methodology to evaluate the source term can be used to design the prevention and mitigation devices. No information is given on this item, it is regrettable that you do not. In conclusion, this paper is of high quality with an interesting approach to the subject.	Applying to the design of prevention and mitigation devices is not considered in our study since findings from this methodology is utilized to confirm effectiveness of the design suggested by licensees in terms of our position as regulatory body.
	4	The description in the paper is focused on the Cs behaviour. Iodine is excluded from this study because “most of iodine is captured by sodium in form of NaI”. It is written “iodine is rarely transported to cover gas”. Nevertheless, in energetic scenario, iodine can be largely released in CDA bubble to cover gas because the contact between iodine and sodium in this situation is limited.	Thank you for your comment. From results of reactor scale analyses in energetic scenario, CDA bubble is not expanded to cover gas and is condensed by sodium. Thus, the authors think that all fission products released from core region including iodine are contacted sodium.
	5	Besides, in this paper, there are many acronyms. It would be useful to have a list (in Table) with definition of acronyms.	Thank you for your comment. Acronyms list is added.
	6	In chapter 3, an overview of the methodology is provided by relying on illustration in Figure 5. However, it is difficult to understand the course of phenomena associated with each calculation tools. In particular, the interface between each calculation tools is hardly described. An example of calculation could be useful (provided) to understand this methodology.	Description of calculation scheme is added at the end of chapter 3.1. Fig. 6 is also added in the chapter. It is difficult to show an example of calculation in the paper since the development of the methodology is just started and verification of the analytical models is ongoing. I would like to publish calculation results by the methodology in future paper.
Reviewer 2:	7	This paper presents the methodological concept and development status of the evaluation of source term migration behavior in reactor vessels during ULOF events. The content of the paper suggests the direction in which Japanese regulatory authorities are planning to proceed with future safety reviews for fast reactors. The assessment covers not only the scenario of transition to core expansion phase as a result of energetic events in ULOF, but also the conventional PAMR and PAHR, and the methodologies for each phase are presented. The reviewer would like the following to be considered in the final paper :	Thank you for comments. The views expressed in this paper are those of the authors and do not reflect the views of the Nuclear Regulation Authority, Japan. Answers to your comments are shown as follows.
	8	1) (Section 3.2) In the core expansion phase, the time to slug impact is expected to be very short, for example, about 200 ms. In addition, CDA bubbles are expected to develop to the size of several meters during this extremely short time. Please explain why it is necessary to model the diffusion behavior of cesium due to concentration gradients on such a time and spatial scale.	I agree with your comment and understand that transport by diffusion phenomena is slow compared to other phenomena. It would be not necessary to model the phenomena in the core expansion phase. On the other hand, findings on understanding transport phenomena of cesium during the core expansion phase are limited. The reason why diffusion is addressed is that to understand phenomena contributing to transport of cesium exhaustively as a first step of this analytical study.
	9	2) (Chapter 1) Since ACTOR, AZORES and ASTERIA-SFR are mentioned for the first time, please specify the references for these codes here.	References are specified at where each codes are mentioned in Chapter 1.
	10	3) "Kyusyu University" in the acknowledgments should be corrected to "Kyushu University".	Thank you for your comment. The university name is corrected.
Reviewer 3:	11	This article introduces the in-vessel source term evaluation method for ULOF event in sodium-cooled fast reactors and show several codes and their coupling. It will be better if there is a table or sketch to show us how the codes couple along with the ULOF progress.	Please see the newly added Figure 6 and its description.
	12	Are the method and coupling codes used in the ULOF analysis? How does it work?	Yes. The computer codes mentioned in the paper are used for not only source term evaluation but also severe accident analysis for ULOF event. Please see the newly added Figure 6 and its description.
Overall:	13	Please upload revised paper addressing above comments.	