

Online Survey: Occurrence possibilities of basic events that might occur during LNG bunkering SIMOPs

* Required

If you have concerns or complaints about the conduct of this study, you can contact the Executive Officer of the HERC (Tasmania) Network on +61 3 6226 2975 or email SS.Ethics@utas.edu.au (mailto:SS.Ethics@utas.edu.au).

Information and consent

1. Invitation

You are invited to participate in a research study examining the safety and risks of LNG bunkering simultaneous operations (SIMOPs).

2. What is the purpose of this study?

The primary focus of the study is to improve the safety of the LNG bunkering SIMOPs through better understanding of the risks involved and development of a risk-based algorithm in quantifying such risks.

3. Why have I been invited to participate?

You have been invited to participate in this study because of your expertise in LNG bunkering operations or safety management. Your perspectives will be of considerable value to this research.

Your participation is voluntary. While we would be pleased to have your participation, we respect your choice to either take part or not. There will be no consequence for declining this invitation.

4. What will I be asked to do?

You are invited to complete a web-based online survey to collect your opinions on safety and risk related questions on LNG bunkering SIMOPs.

5. Are there any possible benefits from participation in this study?

You will receive no direct benefits from participating in this research study. However, your responses help us to improve the safety of the LNG bunkering SIMOPs through better understanding of the risks involved and development of a risk-based algorithm in quantifying such risks. There is a separate link at the end of this survey for you to specify an email address if you wish to receive the report.

6. Are there any possible risks from participation in this study?

There are no foreseeable risks involved in participating in this study other than those encountered in day-to-day life.

7. What if I change my mind during or after the study?

You are free to withdraw your consent at any time before the survey completion. However, once you submit the survey, your data will be included in the analysis but remains anonymous.

8. What will happen to the data when this study is over?

The data will be kept in password protected UTAS registered computers and/or locked cabinets within the Newnham campus, which is separated from other data and can only be accessed by the researchers. All participants will be assured that their responses will be kept strictly confidential and will not be accessed by any other individuals or organisations. The findings and results will not be disclosed to any third parties.

On completion, all materials will be stored on a USB storage device and handed in to the UTAS administration for a mandatory storage period of 5 years. At this point, the researchers will shred all hard copies and erase all soft copies data from their computers.

9. How will the results of the study be published?

The results from this research will be published in the form of a Doctor of Philosophy dissertation. It is also our intention to provide a report of findings to participants and to publish research articles in academic journals and conferences.

10. What if I have questions about this study?

If you have any queries, concerns or issues with this study, please feel free to contact us.

11. How can I agree to be involved?

You can agree to participating in this survey by submitting the completed survey.

Thank you for your time. Please click "Next" to begin the survey.

Glossary

LNG bunkering :

LNG bunkering is transfer of LNG to any vessel requiring LNG as fuel for use within gas- or dual-fueled engines. LNG bunkering requires specialized infrastructure for supply, storage, and delivery to vessels. LNG bunkering scenarios could be Ship to Ship (STS); Floating Bunkering Unit to Ship (FBUTS); Onshore Terminal to Ship (OTTS); Truck to Ship (TTS); Potable Fuel Tanks Switching (PFTS).

LNG bunkering simultaneous operations (SIMOPs):

LNG bunkering plus one or more other activity and/or operation conducted simultaneously in close proximity where these interactions may increase the risks of the activities/operations or create new risks that adversely impact such concerns as safety, environment, assets, schedule, commercial, and financial.

Participant's information

The information of each participant's role, service time and education will be used to calculate the positive weights to each participant.

1. Your professional field *

- ☐ Shipping company
- ☐ Energy company
- ☐ Maritime administration
- ☐ Port authority
- ☐ Classification society
- ☐ Ship design company
- ☐ Shipyard
- ☐ Equipment manufacturer
- ☐ Academia
- ☐ Other []

2. Your professional role *

- ☐ Senior manager
- ☐ Junior manager
- ☐ Engineer
- ☐ Technician
- ☐ Worker
- ☐ Other []

3. Your service time *

- ☐ ≥ 30 years
- ☐ 20 - 29 years
- ☐ 10 - 19 years
- ☐ 6 - 9 years
- ☐ ≤ 5 years

4. Your education level *

- ☐ PhD
- ☐ Master
- ☐ Bachelor
- ☐ Vocational education
- ☐ High school
- ☐ Other []

5. Please provide an email address that allow you have the opportunity to access research outcomes.

Note: To ensure the anonymity of the survey, please do not provide a private email address.

Possibilities of events that might occur during LNG bunkering SIMOPs

Instructions:

The questions in this part are about the possibilities of events that might be involved in LNG bunkering SIMOPs.

Please express your opinions on the possibilities of events that might be involved in LNG bunkering SIMOPs.

Please choose one of the seven options, 1~7 available.

Option 1~7 represents:

- 1: Very Low (VL);
- 2: Low (L) ;
- 3: Fairly Low (FL);
- 4: Medium (M);
- 5: Fairly High (FH);
- 6: High (H) ;
- 7: Very High (VH).

The questions are divided into 7 sections (G1~G7), namely:

- G1 Common basic events that might occur during LNG bunkering SIMOPs
- G2 Basic events that might occur during LNG bunkering for container ships
- G3 Basic events that might occur during LNG bunkering for bulk carriers
- G4 Basic events that might occur during LNG bunkering for general cargo ships
- G5 Basic events that might occur during LNG bunkering for tankers
- G6 Basic events that might occur during LNG bunkering for cruise ships
- G7 Basic events that might occur during LNG bunkering for offshore service vessels

The answers in section G1 are "required", however, the answers in section in G2~G7 are "not mandatory", you may answer the questions in the sections G2~G7 which you are familiar with.

G1: Common basic events might occur during LNG bunkering SIMOPs.

BE1: Excessive ship motion due to operation of ship stabilizing system during cargo loading/unloading. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE2: Failure of mooring lines. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE3: Failure of LNG bunkering breakaway couplings. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE4: Failure of LNG bunkering dry-disconnect/connect couplings. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE5: Gasket failure of the flanges of the LNG bunkering manifolds. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE6: Failure of water curtain protection system in the bunkering manifold area. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE7: Failure of LNG drip tray in the bunkering manifold area. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE8: Failure of water spray system. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE9: Failure of high expansion foam system (if applicable). *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE10: Failure of LNG bunkering ESD (Emergency Shutdown) system. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE11: Failure of gas detectors. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE12: Sparks/heat (hot work) from maintenance and inspection. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE13: Sparks from lifeboat drill or test. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE14: Sparks from local generators on shore. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE15: Sparks from vehicle movements on shore. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE16: Sparks due to failure of onboard (LNG receiving vessel) electrical lighting. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE17: Sparks due to failure of onshore electrical lighting. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE18: Failure of the mooring lines caused by waves created by the passing vessel. *

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

G2: Basic events that might occur during LNG bunkering for container ships

BE19: Containers dropping during cargo operation.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE20: Sparks from dropping containers.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE21: Sparks from refrigerated containers (not be intrinsically safe).

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE22: Sparks from port cranes and stacker/tractor-trailer units (not be intrinsically safe).

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE23: Dropping objects during stores loading/waste removal.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE24: Sparks from dropping objects during stores loading/waste removal.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE25: Sparks/heat from using electric motors-driven rolling hatch covers.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

G3: Basic events that might occur during LNG bunkering for bulk carriers

BE26: Sparks/heat from using electric motors-driven rolling hatch covers.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE27: Sparks from port cranes and stacker/tractor-trailer units (not be intrinsically safe).

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE28: Sparks from using cargo conveyer belts.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE29: Dropping large items of cargo during operation.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE30: Sparks from dropping large items of cargo during operation.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE31: Sparks from using mechanical equipment to redistribute cargo.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

G4: Basic events that might occur during LNG bunkering for general cargo ships

BE32: Sparks/heat from using electric motors-driven rolling hatch covers.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE33: Sparks from cargo delivery vehicles movements.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

G5: Basic events that might occur during LNG bunkering for tankers

BE34: Failure of the cargo transfer hose (hoses).

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE35: Ignition of the flammable cargo/cargoes.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

G6: Basic events that might occur during LNG bunkering for cruise ships

BE36: Sparks from passenger/crew embarkation/disembarkation.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE37: Sparks from passenger/crew safety drill.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE38: Sparks from passenger's vehicle movements on shore.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

G7: Basic events that might occur during LNG bunkering for offshore service vessels

BE39: Sparks from loading/back loading the rear decks with containerized and noncontainerized cargo.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE40: Sparks from dangerous goods, refrigerated containers (not be intrinsically safe) on the back deck.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BE41: Sparks from vehicles movements on shore.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>