## Appendix 1

## First GUI-iteration - The questionnaire completed by an experienced mooring master.

**Experience**:

1. How many years have you worked as a mooring master? And what training have you attended? *Courses*, *Simulators* etc.

*Answer****: Started training in Oct 2006 and after successful completion operating by myself since April 2007.
STS simulator courses at Trondheim Phases 1, 2, &3.***

1. How long have you worked with mooring Operations?

*Answer****: 39 years on tankers.***

**Planning:**

1. How do you plan the operations? Procedures? Time consumption?

*Answer****: Comply with lightering manual. Weather dependant.
Time spent approx 10 – 20 minutes.***

1. What manuals or documentation do you use? Charts, manuals etc.

*Answer****: Lightering manual, local charts, weather forecast.***

1. Communications? With who?

*Answer****: Using VHF with SS & STBL. Via internet & mobile phone with Skaugen Petrotrans. SS sends email to USCG prior to & on completions of STS operations.***

**Use of Navigations Equipment in the distant approach of the operation.** R > 1 [nm]:

1. How important is the RADAR?

*Answer****: Extremely, used for parallel indexing during approach and distance off. Also monitor for local traffic which could affect to STS operation***

1. Do you use other navigation aids? AIS, ECDIS etc. How?

*Answer****: AIS for details of STBL during approach which is backed up by verbal confirmation via VHF ECDIS is useful for checking the v/l’s position without referring to a paper chart.***

1. Do you Plan a ‘Hunting course’?

*Answer****: By a “hunting course’ I presume you mean the approach course which of course is part of the planning procedure.***

**Use of Navigations Techniques in the close approach of the operation.** R < 1 [nm]:

1. What is most importance input; from RADAR or from Visual reference?

*Answer****: Radar and visual to about 0.5 miles, then visual.***

1. Do you use something else than RADAR and Visual reference?

*Answer****: GPS handheld unit.***

1. How do you use the Visual reference to decide your action? E.g. the approach angle.

*Answer****: By observing the aspect of the STBL during final approach to adjust the course & speed of the SS.***

**The process of taking a decision.** Rudder- or engine order:

1. The step process; Observing > indentify > evaluate > decision > implementing > observing. E.g. *Visual obs. > Ship gearing > evaluate > decision > St.b. 100 >observing.*

How is your response to this step-process? Can you confirm it or do you have another approach?

*Answer****: Confirm***

1. Can you describe in detail your process of making a decision? (In step or…)

*Answer****: By constantly evaluating the approach of the SS to the STBL, which is part of the ship handling process.***

1. How does the Master (or OOW) of the ship interact in the process? (Corrections etc.)

*Answer****: Constantly monitors the operation and assists as required.***

1. How does information from the Ship to be Lightered (STBL) influence in the process?

*Answer****: STBL maintains a steady course & speed which is confirmed at intervals via VHF.***

**Possible; STS Guidance system in Lightering Operations:**

1. In your opinion, what way can a possible guidance system improve STS operations?

*Answer****: Good training of mooring masters, staff on STBL & SS require to be well trained to ensure a safe operation.***

1. What kind of input, *Range, relative speed* etc. is important for you as a mooring master to get more information about in order to improve the operation?

*Answer****: Parallel approach speed would be of assistance but the course & speed readout of my handheld GPS gives me all the information I require together with the visual aspect.***

1. In what way would you like this information to be presented?

Example: *Graphics > compared to RADAR or?*

*Answer****: Handheld devise e.g. palm as discussed during meetings this year.***

1. If you are going to make this new navigation instrument, what would you consider as the most important issues? *Reliability / trustworthiness, interface, presentation etc.*

*Answer****: All of the above but the most important being ease of setting up the equipment of the STBL & SS to avoid undue delay to the STS operation.***