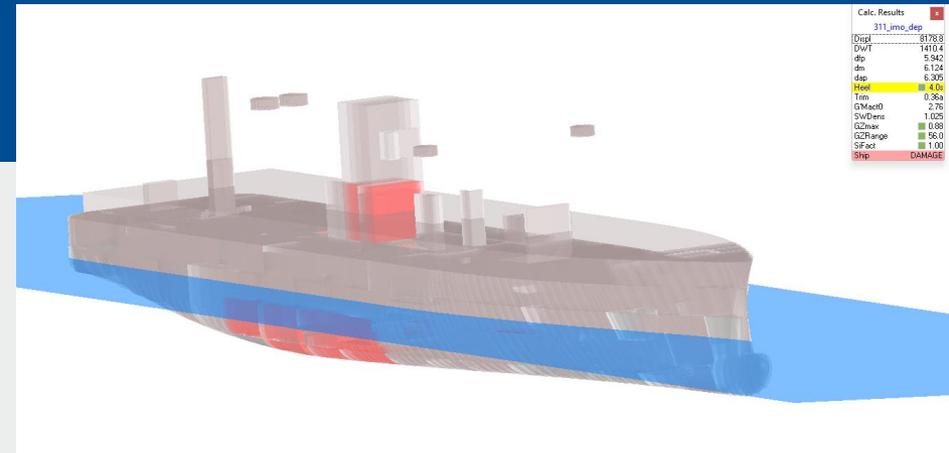


# The LOADMASTER X5-SRtP Loading Computer



Presented by: Kjell Teepen  
Kockumation AB

# KOCKUMATION GROUP



Kockum Sonics



POLARMARINE

Texon

# Why is a SRtP-compliant Loading Computer needed?



The Safe Return to Port regulations were implemented by SOLAS due to:

- A history of incidents on passenger ships with severe consequences
- Increasing size of vessels and number of passengers
- More remote and exposed operational patterns
- The risks associated with lifeboat evacuation

# The regulation that started it all

## SOLAS Reg. II-1 / 8-1.3

For the purpose of providing operational information to the Master for safe return to port after a flooding casualty,

- Passenger ships constructed (keel laid) **after 1 January 2014** shall have:
  - **Onboard Stability computer; OR**
  - **Shore-based support**

based on guidelines in MSC Circulars 1400, 1532

Passenger ships constructed **before** 1 January 2014 shall comply with above not later than the first renewal survey after 1 January 2025



# What's the best choice?

Regulations state that Shore Based Support (ERS) must be operational within **1 hour**

The safe & reliable solution:

- A **SRtP-compliant Onboard Loading Computer** for instant access to stability evaluation and for additional guidance from experts
- **Emergency Response Service**, utilizing the latest stability data from the loading computer



- 3D model of hull and all compartments
- Accurate calculation based on any condition and combination of damaged compartments
- “Open to Sea” or “Fixed Volume” damage
- Possible to input damage description manually or with imported data from flooding detection system

The screenshot displays the LOADMASTER X5 - SRtP software interface. The main window is titled "Online Options" and contains a table of tank data. The table has columns for Name, Code, Sounding, Density, and Flow. The data is as follows:

Name	Code	Sounding	Density	Flow
☑ WB 182-197	T001-1	0.265	1.0130	0.0
☐ WB 182-197 backup	T001-2	0.430	1.0780	0.0
☑ WB 161-166	T005-1	0.266	1.0140	0.0
☐ WB 161-166 backup	T005-2	0.431	1.0790	0.0
☑ WB 143-159	T102-1	0.270	1.0180	0.0
☐ WB 143-159 backup	T102-2	0.435	1.0830	0.0
☑ WB 128-139	T202-1	0.285	1.0330	0.0
☐ WB 128-139 backup	T202-2	0.450	1.0980	0.0
☑ WB 106-114	T302-1	0.291	1.0390	0.0
☐ WB 106-114 backup	T302-2	0.456	1.0040	0.0
☑ WB 83-94	T402-1	0.301	1.0490	0.0
☐ WB 83-94 backup	T402-2	0.466	1.0140	0.0
☑ WB 58-67	T502-1	0.306	1.0540	0.0
☐ WB 58-67 backup	T502-2	0.471	1.0190	0.0
☑ WB 48-58	T603-1	0.307	1.0550	0.0
☐ WB 48-58 backup	T603-2	0.472	1.0200	0.0
☑ WB 25-33	T606-1	0.314	1.0620	0.0
☐ WB 25-33 backup	T606-2	0.479	1.0270	0.0
☑ DRY TANK 0-13	T702-1	0.315	1.0630	0.0
☐ DRY TANK 0-13 backup	T702-2	0.480	1.0280	0.0
☑ WB -9-4	T802-1	0.316	1.0640	0.0
☐ WB -9-4 backup	T802-2	0.481	1.0290	0.0
☑ WB 73-83	T413-1	0.303	1.0510	0.0
☐ WB 73-83 backup	T413-2	0.468	1.0160	0.0
☑ WB 58-71	T511-1	0.309	1.0570	0.0
☐ WB 58-71 backup	T511-2	0.474	1.0220	0.0
☑ WB 58-71	T512-1	0.310	1.0580	0.0
☐ WB 58-71 backup	T512-2	0.475	1.0230	0.0
☑ WB 46-58	T513-1	0.311	1.0590	0.0
☐ WB 46-58 backup	T513-2	0.476	1.0240	0.0
☑ WB 46-58	T514-1	0.312	1.0600	0.0
☐ WB 46-58 backup	T514-2	0.477	1.0250	0.0
☑ WB71-81	T414-1	0.304	1.0520	0.0
☐ WB71-81 backup	T414-2	0.469	1.0170	0.0

Other interface elements include:

- Ship Picture:** A 3D model of the ship's hull.
- OnLine Monitor:** A graph showing volume percentage (Vol. %) over time, with a red line indicating "SP reached".
- Store Tanks:** A table listing tanks and their maximum volume (Max. Vol. m3):
 

All	Filling	Max. Vol. m3
T001		87.40
T005		15.30
T102		42.30
T202		51.40
T302		67.70
T402		101.40
T502		80.20
T503		90.70
T603		90.50
T604		90.50
T606		78.10
T702		72.70
- Calc. Results:** A summary of calculations for "Lightship", including Displ (7074.8), DWT (324.8), dfp (4.483), dm (4.576), dap (4.669), Heel (0.2p), Trim (0.19a), G'Mact0 (0.75), G'Mcur (1-MinGM C...), SWDens (1.025), and WeatherCr (0.04).
- Rate of update:** Set to 60 seconds.
- Buttons:** OK, Cancel, Update, Print, All, Properties, Help.

# The LOADMASTER X5 - SRtP

- Effects of open/closed Watertight doors included in calculations
- Status of all Emergency escape routes
- All internal connections defined for progressive flooding

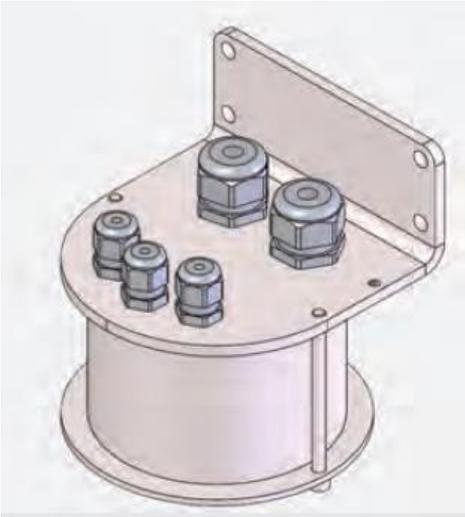
The screenshot displays the software interface for 'Watertight Doors' and 'Ship Picture'. The 'Watertight Doors' table lists the status and coordinates for various doors. The 'Ship Picture' shows a deck plan with rooms and corridors, with some areas highlighted in red to indicate flooding. A 'Calc. Results' window is also visible, showing various ship parameters and a 'Ship DAMAGE' status.

	Status	Elevation AWL m	Im.Heel SB deg	X m	Y m	Z m
WT1.31	Closed	-4.71	0.0	69.60f	3.20s	1.50
WT1.51	Closed	-3.63	0.0	42.60f	3.40p	1.50
WT2.21	Closed	-0.19	0.0	84.60f	0.00	5.20
WT2.31	Closed	0.31	0.0	69.60f	3.20p	5.20
WT2.32	Closed	-1.11	0.0	69.60f	3.20s	5.20
WT2.33	Closed	-1.37	0.0	59.10f	3.70s	5.20
WT2.34	Closed	-2.42	0.0	59.49f	8.49s	5.20
WT2.41	Closed	0.37	0.0	57.60f	4.20p	5.20
WT2.42	Closed	-0.48	0.0	51.30f	0.80p	5.20
WT2.51	Closed	0.09	0.0	42.60f	3.90p	5.20
WT2.52	Closed	-0.62	0.0	33.30f	1.30p	5.20
WT2.71	Closed	-1.29	0.0	5.70f	0.00	5.20
WT3.21	Closed	2.74	60.0	84.60f	0.00	8.20
WT3.31	Closed	3.24	60.0	69.60f	3.20p	8.20
WT3.32	Closed	1.82	60.0	69.60f	3.20s	8.20
WT3.41	Open	3.23	60.0	57.60f	3.90p	8.20
WT3.51	Open	3.15	60.0	42.60f	4.50p	8.20
WT3.61	Open	2.92	60.0	27.60f	4.40p	8.20
WT3.62	Closed	3.51	60.0	9.60f	8.20p	8.20
WT3.63	Closed	3.03	60.0	10.20f	6.00p	8.20
WT3.64	Closed	0.36	16.5	10.20f	6.00s	8.20
WT3.65	Closed	-0.13	11.9	9.60f	8.20s	8.20
WT3.71	Closed	2.70	60.0	9.00f	4.60p	8.20
WT3.72	Closed	1.15	60.0	7.80f	2.30s	8.20
WT3.81	Closed	2.02	60.0	1.80a	2.20p	8.20

**Calc. Results**  
331\_imo\_maxd\_dep

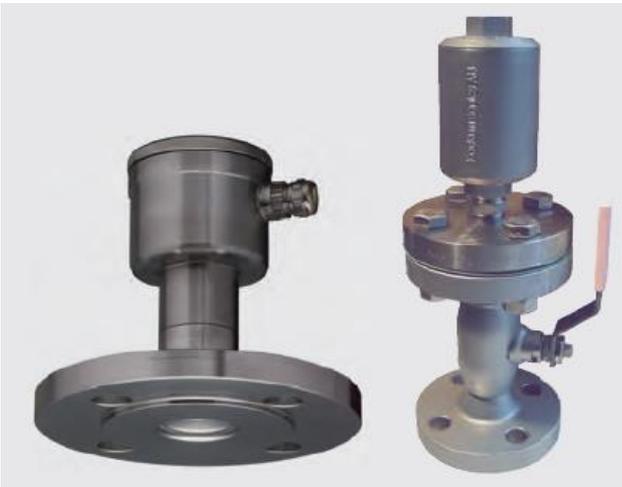
Displ	8410.2
DWT	1641.8
dip	4.965
dm	5.792
dap	6.619
Heel	12.9s
Trim	1.65a
G'Mact0	1.50
SWDens	1.025
GZmax	0.94
GZRange	47.1
SiFact	0.52
Ship	DAMAGE





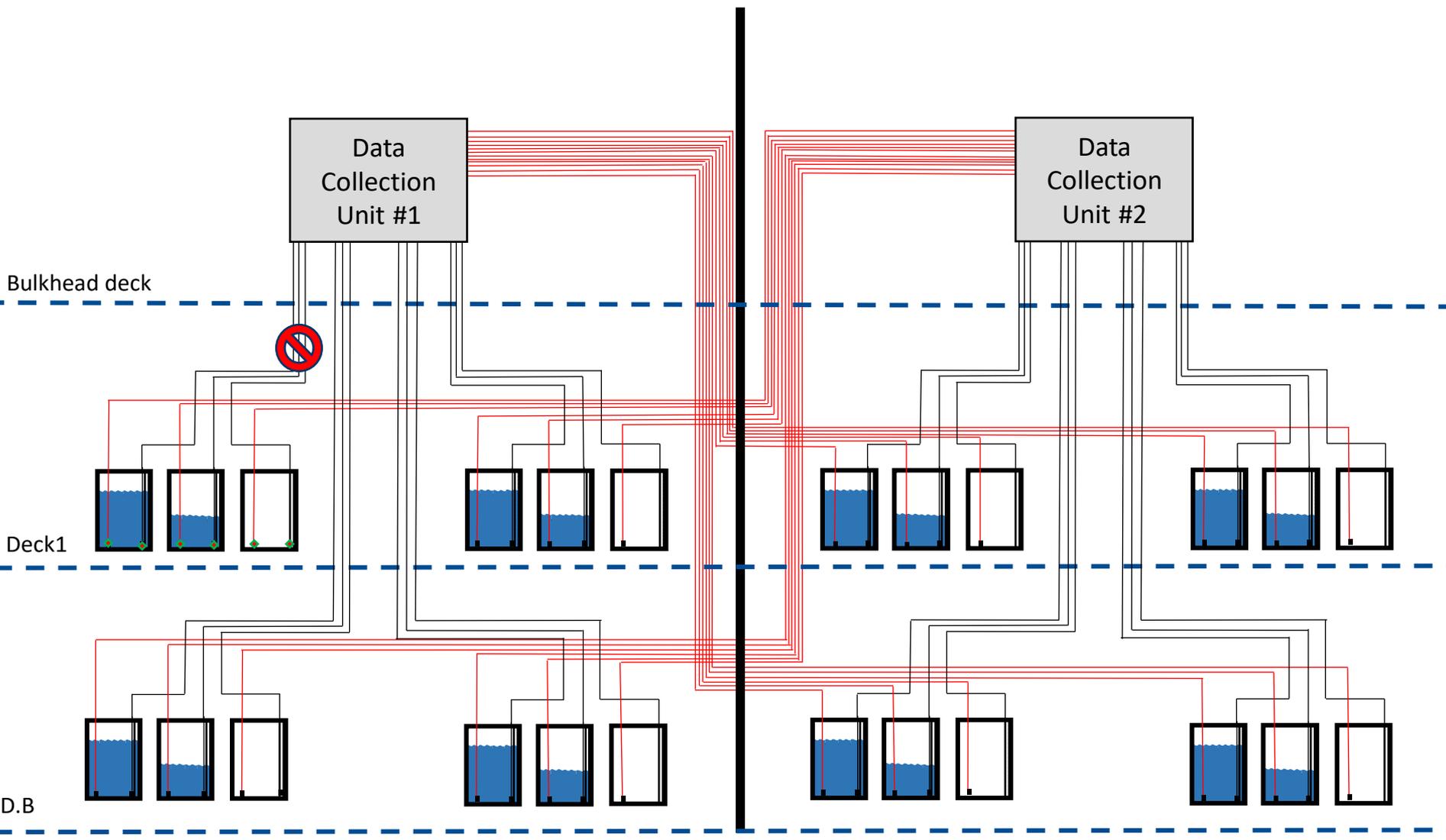
# Solving the challenges of SRtP regulations for the **Flooding Detection System**

- Flooding detection system may only be lost in spaces directly affected by fire or other damage. All other detectors shall remain operational.
- This means that each sensor needs to be connected to two different PLCs above bulkhead deck, dramatically increasing amount of wiring.
- Combining the **LevelMaster SRtP Box** and **Kockumation sensors** reduces the required amount of wiring by ~95% compared with conventional methods.



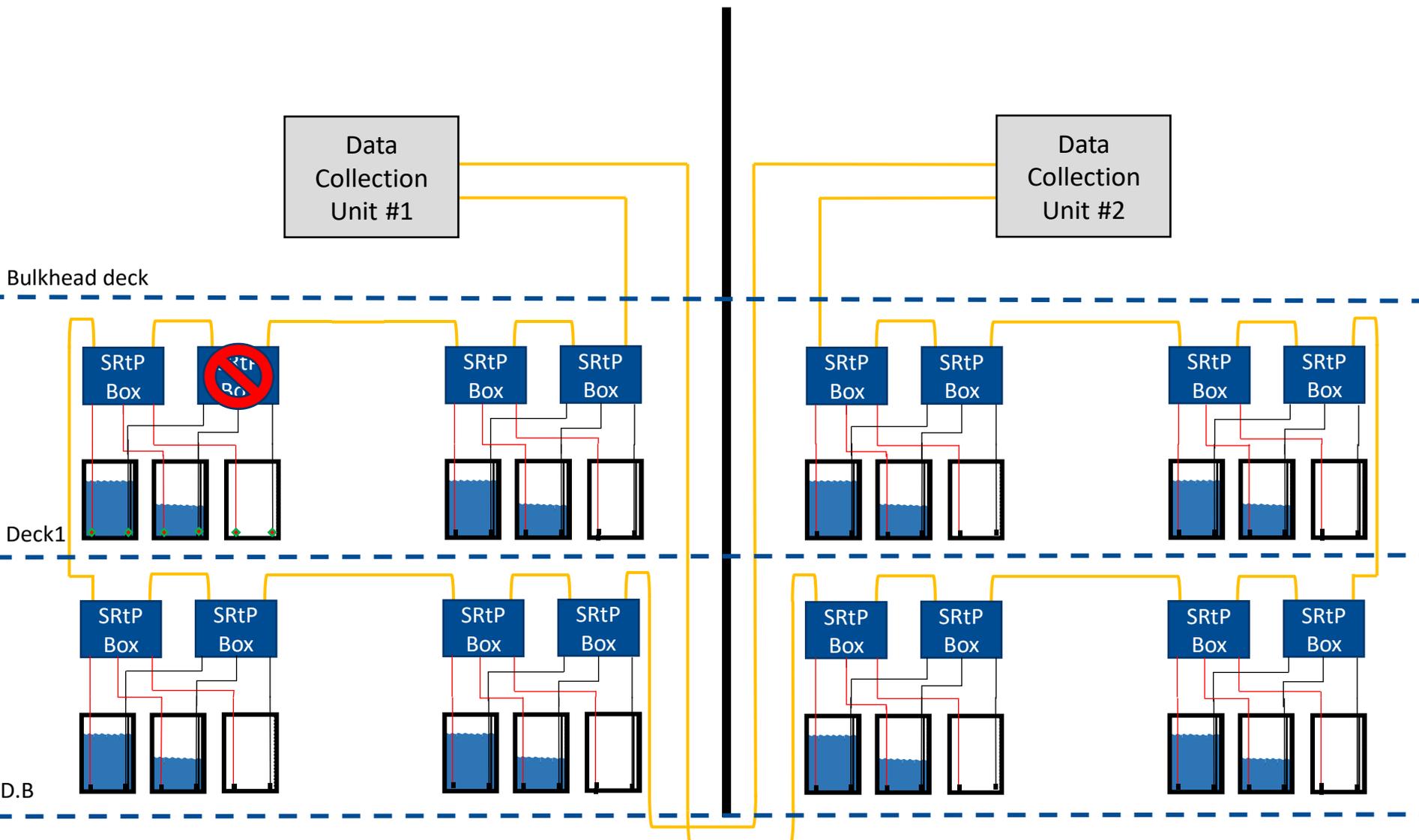
## Main Vertical Fire Zone A

## Main Vertical Fire Zone B



## Main Vertical Fire Zone A

## Main Vertical Fire Zone B



Thank you!

[Loadmaster.SRTP@kockumation.com](mailto:Loadmaster.SRTP@kockumation.com)

**KOCKUMATION** GROUP

 Kockum Sonics  POLARMARINE *Texon*