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Pure Car Truck Carrier (PCTC) Fires – Application of Current Knowledge and Next Steps

Torben Stadtaus, 28.06.2023

General point of view

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- ➢ Mixing topics should be avoided- cars on PCTC are not Li-Ion cells on heating plates, RoRo is not Container
- ➢ Discussions should be precise regarding source, scenario and solution (tactic)- “EV on fire” means car or battery or both
- ➢ “Red herrings” should be identified and unmasked- no known case of “overcharging”, mechanical damage turns to “vibration”

- ✓ EVs do not present a higher risk regarding likelihood or scenario
- ✓ All traditional methods of firefighting are effective
- ✓ It is not necessary to stop the thermal runaway
- ✓ On PCTC “**fixed first**” should be the preferred tactic

Design, resources and equipment must be taken into account

Current knowledge

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All traditional methods are effective regardless the drive trains

- Fixed CO2 system successfully tested by Volkswagen Konzernlogistik (not published)
- Drencher system successfully tested by LASHFIRE (published)
- Foam system successfully tested by Kashiwa Tech (published, IMO SSE9-Inf.4)
- Manual firefighting successfully tested by e.g. LASHFIRE, IBK (Germany)...

BUT:

Design, resources, equipment and circumstances have to be taken into account

- Design: e.g. Fire zones (resistance of divisions), fixed system and response ways
- Resources: e.g. number of crew and level of training/knowledge (fixed system and general)
- Equipment: e.g. firemen suits and number of BA
- Circumstances: e.g. nighttime, middle of NA, 6m waves and deck with lashed cargo

Quintessence

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Response time is more important than the drivetrain

Detection and confirmation should be immediately and simultaneously

Crews must be aware of vessel's resources and limitations

… and some more work to do…

Next steps

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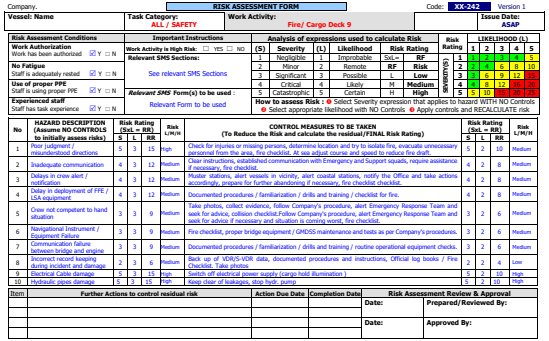
Short term actions:

- **Stop “laissez - faire”** (“…ah, you know how it’s in practice”) regarding attitude, maintenance, training…
- **“Individual risk assessments”** and **tactics** for each single vessel
- **Fleet campaigns** (information and best practice)


Company RISK ASSESSMENT FORM Code: XX-242 Version 1
Vessel: Name | Task Category: ALL / SAFETY | Work Activity: Fire/ Cargo Deck 9 | Issue Date: ASAP
Risk Assessment Conditions: Work Authorization — Work has been authorized ☑ Y ☐ N; No Fatigue — Staff is adequately rested ☑ Y ☐ N; Use of proper PPE — Staff is using proper PPE ☑ Y ☐ N; Experienced staff — Staff has task experience ☑ Y ☐ N
Important Instructions: Work Activity is High Risk: ☐ YES ☐ NO; Relevant SMS Sections: See relevant SMS Sections; Relevant SMS Form(s) to be used: Relevant Form to be used
Analysis of expressions used to calculate Risk

(S)	Severity	(L)	Likelihood	Risk Rating
1	Negligible	1	Improbable	Sxl.= RF
2	Minor	2	Remote	RF Risk
3	Significant	3	Possible	L Low
4	Critical	4	Likely	M Medium
5	Catastrophic	5	Certain	H High

Risk Rating — LIKELIHOOD (L) / SEVERITY (S)

S \ L	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

How to assess Risk ❶ Select Severity expression that applies to hazard WITH NO Controls ❷ Select appropriate likelihood with NO Controls ❸ Apply controls and RECALCULATE risk

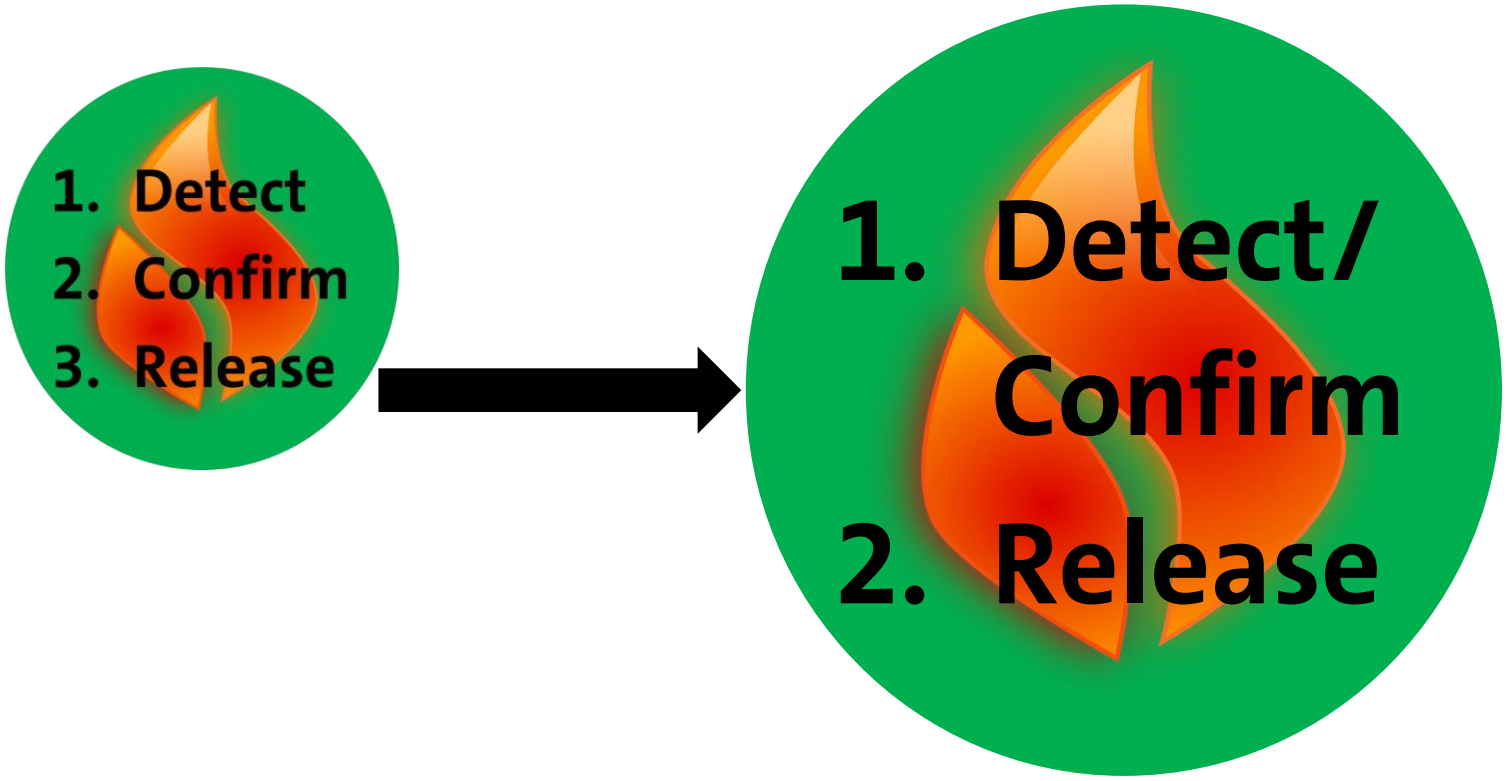
No	HAZARD DESCRIPTION (Assume NO CONTROLS to initially assess risks)	Risk Rating (Sxl. = RR) S	L	RR	Risk L/M/H	CONTROL MEASURES TO BE TAKEN (To Reduce the Risk and calculate the residual/FINAL Risk Rating)	Risk Rating (Sxl. = RR) S	L	RR	Risk L/M/H
1	Poor judgment / misunderstood directions	5	3	15	High	Check for injuries or missing persons, determine location and try to isolate fire, evacuate unnecessary personnel from the area, fire checklist. At sea adjust course and speed to reduce fire draft.	5	2	10	Medium
2	Inadequate communication	4	3	12	Medium	Clear instructions, established communication with Emergency and Support squads, require assistance if necessary, fire checklist.	4	2	8	Medium
3	Delays in crew alert / notification	4	3	12	Medium	Muster stations, alert vessels in vicinity, alert coastal stations, notify the Office and take actions accordingly, prepare for further abandoning if necessary, fire checklist checklist.	4	2	8	Medium
4	Delay in deployment of FFE / LSA equipment	4	3	12	Medium	Documented procedures / familiarization / drills and training / checklist for fire.	4	2	8	Medium
5	Crew not competent to hand situation	3	3	9	Medium	Take photos, collect evidence, follow Company's procedure, alert Emergency Response Team and seek for advice, collision checklist.Follow Company's procedure, alert Emergency Response Team and seek for advice if necessary and situation is coming worst, fire checklist.	3	2	6	Medium
6	Navigational Instrument / Equipment Failure	3	3	9	Medium	Fire checklist, proper bridge equipment / GMDSS maintenance and tests as per Company's procedures.	3	2	6	Medium
7	Communication failure between bridge and engine	3	3	9	Medium	Documented procedures / familiarization / drills and training / routine operational equipment checks.	3	2	6	Medium
8	Incorrect record keeping during incident and damage	2	3	6	Medium	Back up of VDR/S-VDR data, documented procedures and instructions, Official log books / Fire Checklist. Take photos	2	2	4	Low
9	Electrical Cable damage	5	3	15	High	Switch off electrical power supply (cargo hold illumination)	5	2	10	High
10	Hydraulic pipes damage	5	3	15	High	Keep clear of leakages, stop hydr. pump	5	2	10	High

Item	Further Actions to control residual risk	Action Due Date	Completion Date	Risk Assessment Review & Approval
				Date: Prepared/Reviewed By:
				Date: Approved By:

Medium/long term actions:

- Improvements on “**Port of Refuge**” process
- Improvements on **sea/shore cooperation (firefighting)**
- International regulation for **Maritime Fire Assistance** (shore support - analogous medical assistance?)
- **Holistic approach** on **emergency response** regarding design, resources, equipment and training
- **Scientific approach** and support regarding **regulations**
- **Design/construction**: back up system, “safe island”, response ways, safe return to port for PCTC ?…?…?…

… in less than 10min??? …



… in less than 10min!!! …