You don't know what you don't know: Identifying human factors training needs for marine accident investigators

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Aims and context

Background

- To date MAIB Inspectors have had different HF training that has varied in duration, nature and specific HF concepts and tools, and human factors aspects have been inconsistently applied across cases with 67% of requests for HF support coming post Branch review.

Aim

- Determine the Human Factors (HF) training requirement for non-HF Inspectors to conduct 'basic' HF Investigation
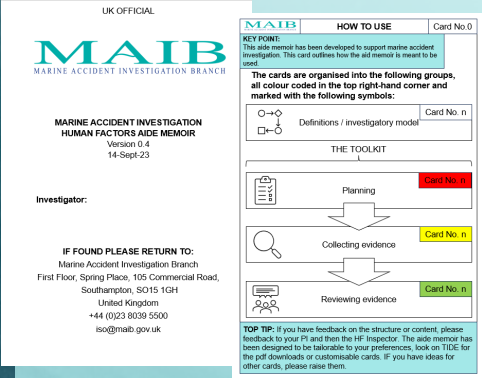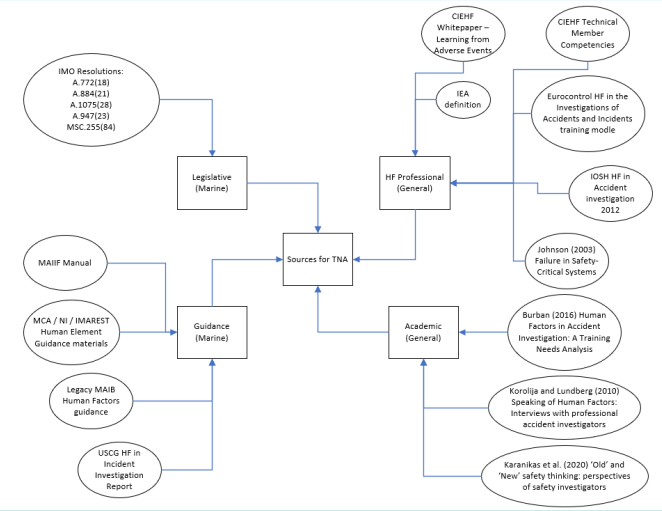 - ***All human aspects identified before returning to the office***

Scope

- Focused on HF skills and knowledge rather than analysis

- Individuals deemed competent on completion of the training

- Determine needs for ab-initio, refresher or CPD

*Investigation that does not require access to specialist internal or external human factors expertise (A.1075(28))

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MS (AI&R) – Amdt (2)
IMO Resolutions:
A.1075(28)
A.884(21)
A.947(23)
MSC.255(84)
A.772(18)

1.Define HF investigation tasks

2.Identify skills for HF investigation

Survey

3.Assess the training gap

Comparing current training
Vs
HF investigation skills needed

4. HF investigatory options

5. Training options / delivery

Outline HF investigation skills

Knowledge of
Can understand
Can do

1./2. Defining HF investigation tasks and skills

Primary HF investigation 'task' requirements:

- MS (AI&R) – Amdt (2) (2018) - contributing factors involving person-related functions

- MSC.255(84) – investigatory requirements

- A.884(21) – knowledge and application requirements

- A.1075(28) – information and specialist support requirements

- A.947(23) – human factors principles

- A.772(18) – fatigue requirements
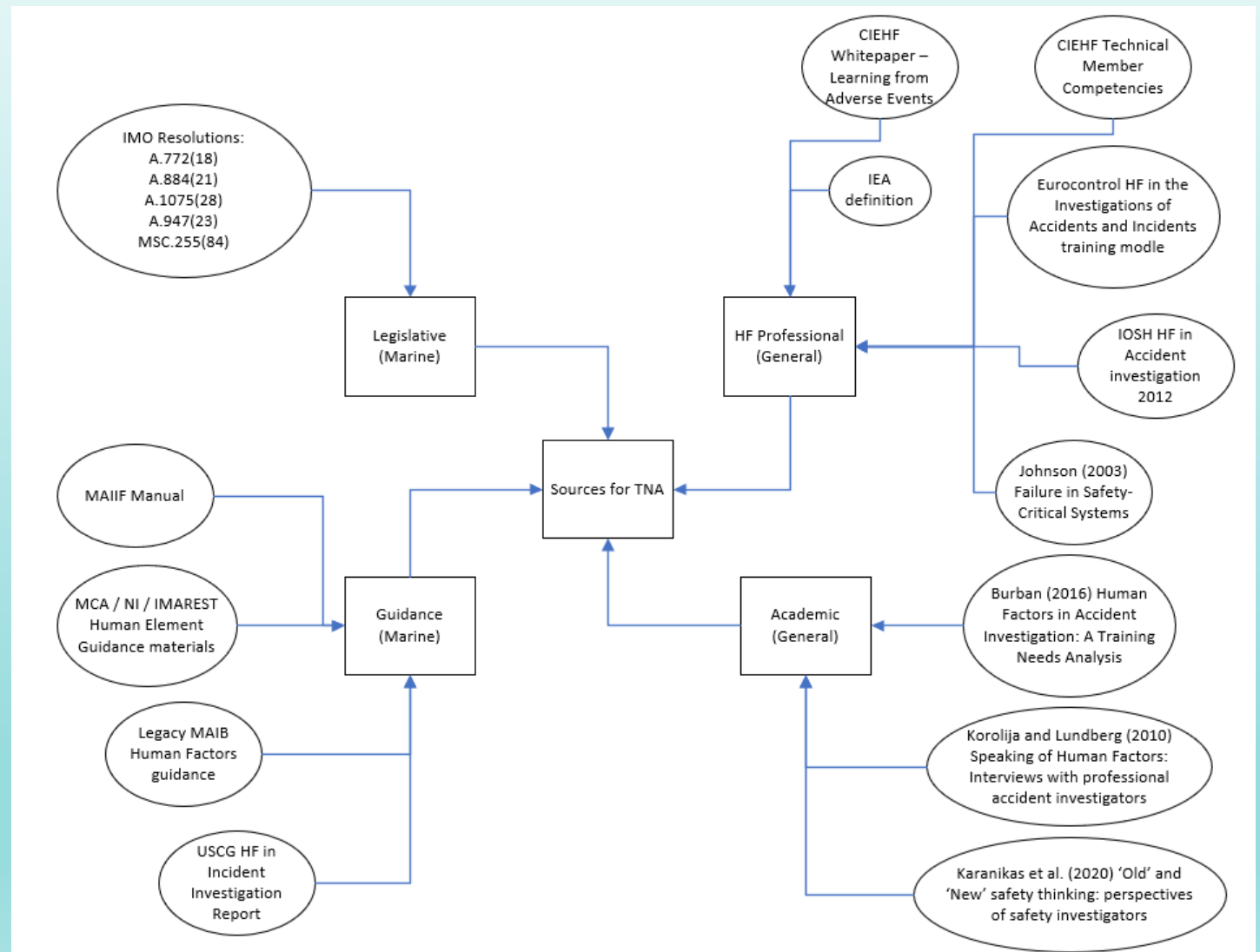
3. Gaps in regulatory guidance (CIC / A.1075)

- Required knowledge of human performance is not specified
  - Utility of the SHEL model for marine investigation questioned

- Need to highlight significant performance shaping factors reflected in contributory factors – little to support investigators

- Lack of clarity on:
  - Human contributory factors as a causal influence – investigative reasoning
  - Human factors principles / method
  - Contributory factors and modern HF practices / knowledge
    - Use of 'error' terminology
    - Lack of reference to performance shaping factors
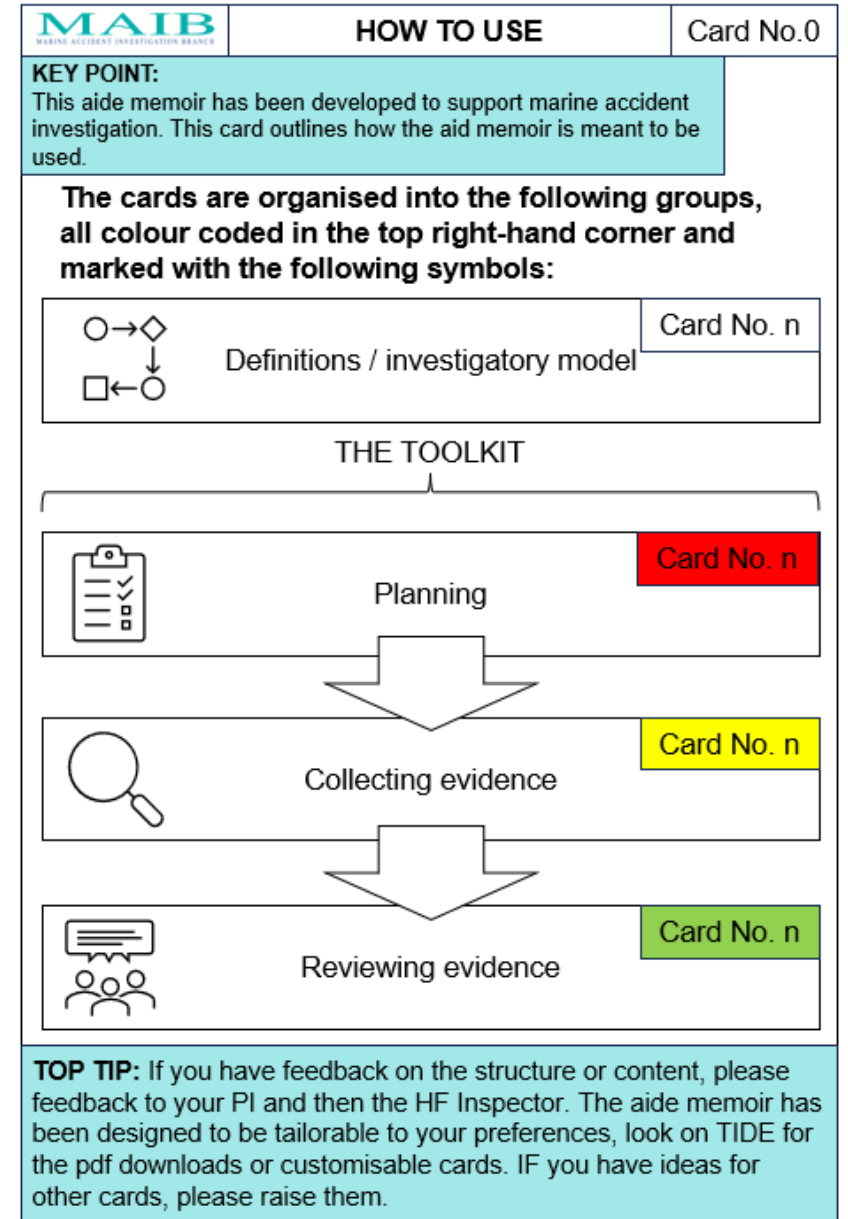   - Focus on safety learning

Contemporary human factors practice:

- Knowledge of human performance and behaviours
- Focused on systematic learning rather than defensive reasoning
- 'Error' concepts broadly regarded as un-useful / useless
- Use of validated methods and practices

In summary, evidence of a practice gap

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5. Determine training options / delivery

- Scenario based training intervention

- Focused on practical investigative issues

- Prioritise 'common' accidents

- Uses HF principles to link to better practices in safety investigation

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**MARINE ACCIDENT INVESTIGATION
HUMAN FACTORS AIDE MEMOIR**
Version 0.4
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Investigator:

IF FOUND PLEASE RETURN TO:
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MAIB MARINE ACCIDENT INVESTIGATION BRANCH | HOW TO USE | Card No.0

KEY POINT:
This aide memoir has been developed to support marine accident investigation. This card outlines how the aid memoir is meant to be used.

The cards are organised into the following groups, all colour coded in the top right-hand corner and marked with the following symbols:

Definitions / investigatory model — Card No. n

THE TOOLKIT

Planning — Card No. n

Collecting evidence — Card No. n

Reviewing evidence — Card No. n

TOP TIP: If you have feedback on the structure or content, please feedback to your PI and then the HF Inspector. The aide memoir has been designed to be tailorable to your preferences, look on TIDE for the pdf downloads or customisable cards. IF you have ideas for other cards, please raise them.

Training pathway for basic HF investigation skills and knowledge

HF Inspector (deep specialist)

Years 6>

CIEHF Technical Member → HF graduate study → Mentored practice (3-4 years), including placements → Chartered Human Factors Practitioner (CIEHF)

Basic HF Investigation CPD
Years 2>

Tiredness and Fatigue → Organisational factors → Safety improvement → CPD / Specialist courses

CPD / Specialist courses →
- Critical thinking
- Cranfield IHP course
- Other courses

Early Career (Accreditation baseline) Basic HF Investigation
Years 1-2

Cranfield Applied Marine ← HF evidence collection

We are here
Training material developed
Evaluation system developed – formative and summative
Pilot study conducted

Cranfield Fundamentals → Introduction to human factors investigation → Cognitive interviewing

Key

| Can remember | Can understand | Can apply |

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Conclusions

- Possible to determine human factors training requirements
- New investigatory model required to address training gap
  - Including use of performance shaping factors concepts
- Misalignment of current regulations against contemporary human factors practice
  - CIC could be improved to make human factors investigation requirements clearer
  - A.1075 aligned with contemporary understanding of human contributions to accidents
- Potential requirement to update MAIIF human factors guidance
  - Limited utility in the SHEL model

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Thank you