The Human Element from a systemic point of view

In an organization like that of a shipping company, the human element is relevant in the overall system. The overview shows the various areas in which the human factor should be taken into account, as well as the most important aspects that are of particular importance. From a systemic point of view, any negligence of these human element aspects does not only reduce the working atmosphere, but rather the effectiveness of the employees or crew and thus represents a potential danger for the system as a whole.

Dienststelle Schiffssicherheit
BG Verkehr

Human Resources | Organization | Safety at sea | Human factors engineering | Team & Leadership

Recruiting

- Recruitment criteria
- Adequate competences
- Sufficient experience
- Working conditions
- Nationality of the crew
- Working language
- Psychological & mental stress
- Medical certificate (STCW)

Organizational structur

- Corporate structure
- Corporate principles (policy)
- Organization culture
- Active reflection on values
- Communication & availability
- Lively error culture
- Transparent compliance process
- Clear disciplinary process

Prevention

- Fire prevention
- Operational readiness of LSA
- Cargo securing
- Emergency escape routes & exits
- Proactive maintenance
- Active repair policy
- Inspection of equipment and facilities

Controllability

- Workplace layout
- Computer & desktop design
- Direct & peripheral view
- Dealing with glare, reflection, lighting conditions
- Workflow, workload
- Degree of automation
- alarm structure

Working methods

- Guidelines & trainings / exercises
- Communication style
- Controlled exchange of information
- Reporting policy
- Understandable work instructions and processes
- Agility of leadership styles
- Role clarity & encouragement to Assertiviness and Advocacy

Manning

- Minimum manning for safe operations
- Tasks, duties, responsibilities
- Watch keeping & automation
- Working and rest hours
- Dealing with fatigue
- Sufficient hand over time

Milieu & social environment

- Religious, cultural freedom
- Needs for privacy
- Good sanitary facilities
- Pleasant crew mess rooms
- Appropriate rest areas
- Contact with relatives
- Need for daylight
- Sports & leisure opportunities

Emergency management

- Organization & muster list
- Available personnel & redundancy
- Practice of plans and roles
- Communication guidelines
- Reflective action
- Cyber risk management

Safety of the system

- Knowledge of potential errors
- Errors in risk analysis
- Error factor in risk determination
- Shared situational awareness
- Awareness of human and organizational failure
- Training & routine building
- Fixed briefing & debriefing process

Team cohesion

- Trust & team spirit
- Morals, values, loyalty
- Respect for individuality and personality
- Shared risk awareness
- Awareness of physical and mental health and wellbeing
- Resilience building

Training

- Skills required
- Briefing and familiarization
- International rules (STCW)
- Safety drills
- Advanced on board training
- Access to distance learning
- Personal development
- System & type specific training

Health protection

- Occupational health and safety
- Mindfulness for mental health
- Short and long term health hazards
- Safety & protective gear
- Accident investigation and logging

**WE CANNOT CHANGE THE HUMAN CONDITION.
BUT WE CAN CHANGE THE CONDITIONS UNDER WHICH HUMANS WORK.**

James T. Reason

Manoeuvrability

- Potential weather conditions
- Speed of manoeuvring
- System configuration
- Critical system redundancy
- Available port service
- Bridge Team Management
- Pilot communication (exchange)
- Standards briefing & debriefing

Workflow & capacity

- Distribution of tasks
- Team strength
- External and internal stressors
- Availability of superiors
- Awareness of distractions such as noise, poor posture, underuse
- Awareness of negative Groupthink effects

Quelle: Jürgen Neff, Hamburg 2021

Development, improvement and monitoring of human factors competence

Dienststelle Schiffssicherheit
BG Verkehr

Personal

Individual education
Personality
Language
(Self) motivation
Mental and psychic strength
Values

HF - COMPETENCES

ABILITY
KNOWLEDGE
PROCEDURES
EXPERIENCE

SYSTEMS OF THE SHIP

Specific type of ship
Individual control systems
Crew structure
Cultural differences
Monitoring strategy
System strengths and weaknesses

SKILLS

Awareness/Attention
Communication
Awareness of errors
Inner attitude
Assertiveness
Advocacy
Teamwork

TOOLS

Automatic route planner
ARPA
ECDIS / electronic charts
Logbook
Bunker control
Decision making software
Checklists

METHODS

Process control
Information management
Decision making
Leadership

EDUCATION

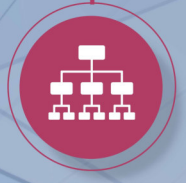
Development and advanced training of subject-specific knowledge, routines and skills via instructions, on-the-job training, mentoring, onboard refresher, etc.

NONTECH TRAINING

Development and enhancement of non-technical skills through training outside of the usual work environment and routine

SPEZIFIC TRAINING

System and task-specific training such as simulations or computer-aided training as well as regular emergency exercises for various scenarios



ORGANISATION

Systematic structuring via specifications, operating and service instructions, standards and control of the ship's documentation