CRUDE OIL TRANSFER SAFETY ANALYSIS
AND OIL SPILLS PREVENTION
IN PORT OIL TERMINAL

PRESENTATION AT HAZARD WORKSHOP ORGANIZED BY PSRA ON 15.02.2019 IN GDYNIA.

WP4 RISK ASSESSMENT AND ANALYSIS
4.1 RISK ASSESSMENT METHODS & MODELS
4.2 IMPROVED USE OF RISK ASSESSMENT METHODS
CRUDE OIL TRANSFER SAFETY ANALYSIS AND OIL SPILLS PREVENTION IN PORT OIL TERMINAL

KEYWORDS:
OIL PORT TERMINAL, OIL TRANSFER, OPERATION PROCESS, SYSTEM RELIABILITY, OIL SPILL, HUMAN FACTOR, PRESSURE UPSURGE, SAFETY PROCEDURES, ESD SYSTEM, LCH SIMULATOR

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CONTENTS

1. Introduction
2. Operation process of the crude oil transfer inside the pipeline system and its statistical identification
   2.1. Description of processes related to the crude oil transfer inside the pipeline system
   2.2. Statistical identification of the system operation process
3. Scenarios and classification of accidents during crude oil transfer process
4. Oil spill threats related to crude oil transfer in the terminal
5. The crude oil transfer process in port terminal – Analysis of the technical system
   5.1. Reliability analysis of the system and its components
   5.2. Availability analysis of the system and its components
CONTENTS

6.  The crude oil transfer process in port terminal – Analysis including the human factor
   6.1. Fault Tree Analysis
   6.2. Human factors analysis and classification

7.  Prevention of oil spill during crude oil transfer in port terminal
   7.1. Technical solutions used in oil terminals
   7.2. Prevention of pressure upsurge inside the pipelines
   7.3. Solutions related to human factor (procedures and training courses)

8.  Conclusions

References
Appendix A – Glossary
Appendix B – Courses on the LCH Simulator
Safety analysis of crude oil transfer

Operation process analysis

Technical system analysis

Human factor analysis
Safety analysis of crude oil transfer operation

- Operational states description
- Statistical identification
- Operation process analysis
- Technical system analysis
- Availability analysis
- Reliability analysis
- FTA (possible scenarios of oil spill)
- Human factor classification
- Human factor analysis
**THREATS**
- Technical condition of terminal infrastructure
- Technical condition of systems on tanker
- Human error (procedures, competence and training)

**SITUATION AWARENESS**
- Attention
- Detection and perception
- Memory
- Interpretation
- Decision making
- Response execution

**ACTION ERROR**
- Omission
- Timing
- Sequence
- Quality
- Communication error
- Rule violation

**ACCIDENT**
- Oil leakage
- Oil overflow
- Oil spill

**Direction of causation**
(possible scenarios and potential causes of oil spill in port oil terminal, identification of threats)
Prevention of oil spill during crude oil transfer

Technical solutions
- Uniform requirements in terminals and on tankers

Solutions related to human factor
- ES, ESD, ERS, Surge relief Systems
- Regulation and safety procedures
- Training and courses on the LCH Simulator
Prevention of oil spill during crude oil transfer

Technical solutions
- Uniform requirements in terminals and on tankers
- ES, ESD, ERS, Surge relief Systems

Solutions related to human factor
- Regulation and safety procedures
- Training and courses on the LCH Simulator