

Event No	Time	Management (organization)	Officers(human)	Crew(Human)	Vessel(Technical)	Contributory factors
E1	3 days delay 0500 on 15 December to 2300 on 18 December	Burke Agencies Pressure to enter port for minimizing demurrage				Due to delay of unloading in the earlier ships
E2	1415			Neither the bridge team nor the pilot received the weather forecast by Clyde coastguard		Did not changed the channel to VHF
E3	14.30 on 18 December			Pilot compromised without day light		Pilot did not want to navigate the ship up river on Wednesday 02.30 to 07.00 Fog forecasted early morning
E4				Pilot considered three tugs are sufficient		Did not follow the pilotage directions and guidelines
E5			Harbourmaster Could not able to provide second pilot			Due to unavailability
E6	1600			Pilot not received sufficient weather report		He only received wind and tide information. He has not received any due information
E7			Deputy Harbourmaster has not recived information about fog			Erskine bridge operator does not have able to predict weather forecast
E8	1717			Pilot reported his position wrongly		Pilot reported as he was at Dunglass instead of Esso Bowling Jetty
E9	1719			Pilot come to know the fog		Overheard the report made by Yoker Swan to Estuary Control
E10	1750		Svitzer Mallaig's skipper reported thick fog ahead			

E11	1753			Pilot not able to see Svitzer Mallaig deck light		Due to dense fog
E12					Red Jasmine not able to turn starboard side in time	Rate of turn was not sufficient
E13				Pilot instructed to Flying Phantom to take the vessel bow to starboard		In order to increase rate of turn
E14	1755			Pilot instructed stop pulling and ordered to hard port		Due to the earlier command it turns sufficiently. To study the ship ahead
E15	1756			Dead slow ahead was order to Red Jasmine helms man		Flying Phantom and Red Jasmine entered in fog
E16	1758			Pilot ordered Flying Phantom skipper to take the Red Jasmine head to starboard		Pilot realized that he could no more able to control with Red Jasmine rudder
E17	17:58:31			Pilot instructed Flying Phantom skipper to bow needed to move further starboard		Red Jasmine was not turning sufficiently and heading towards grounding
E18	17:59:02			Pilot instructed to Flying Phantom to ease off		
E19	17:59:19			Pilot instructed crew of Flying Phantom to let go their tow line		Mate of Flying Phantom stated grounded
E20	18:00:35			Flying Phantom grounded		Towing line is not released in time. View of Towing winch is not visible – camera system has not operated.
E21				Only the Mate clambered out of the wheel house		Expected the rest of the crew will follow him
E22				Community warden raised the alarm		Heard the call of mate
E23				Those on shore not able to see the mate		Due to thick fog

Technical:

Emergency release system not operated quickly

Tug is not designed for girting

Fog detectors not available

Engine room doors sill immersed at 30deg heel

Emergency release system is not designed for girting

Tugs bride equipment – well positioned to assist them in blind operations

Organization:

Svitzer Marine Ltd:

No operation limits in tug operations -restricted visibility

No procedures - restricted visibility

Clyde Port:

Risk assessment poor

Inadequate controls in thick fog

Quality management systems –flawed

Fog detection system not purchased

UK ports:

not improved controls due to earlier accidents

Classification / Statutory bodies:

Lack of standards for towing winch emergency release system

Training- blind pilotage operations

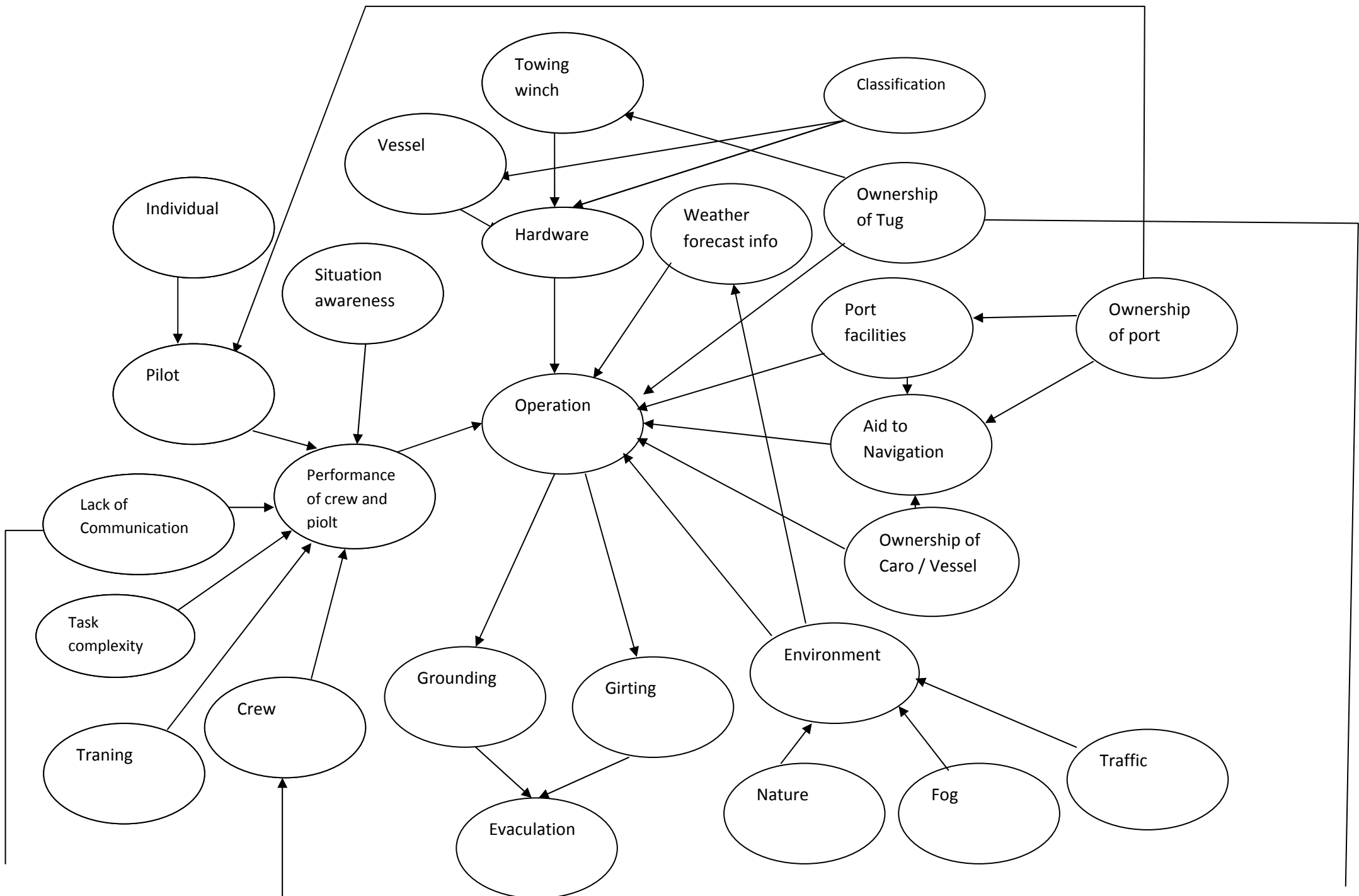
Crew / Operator / Human error:

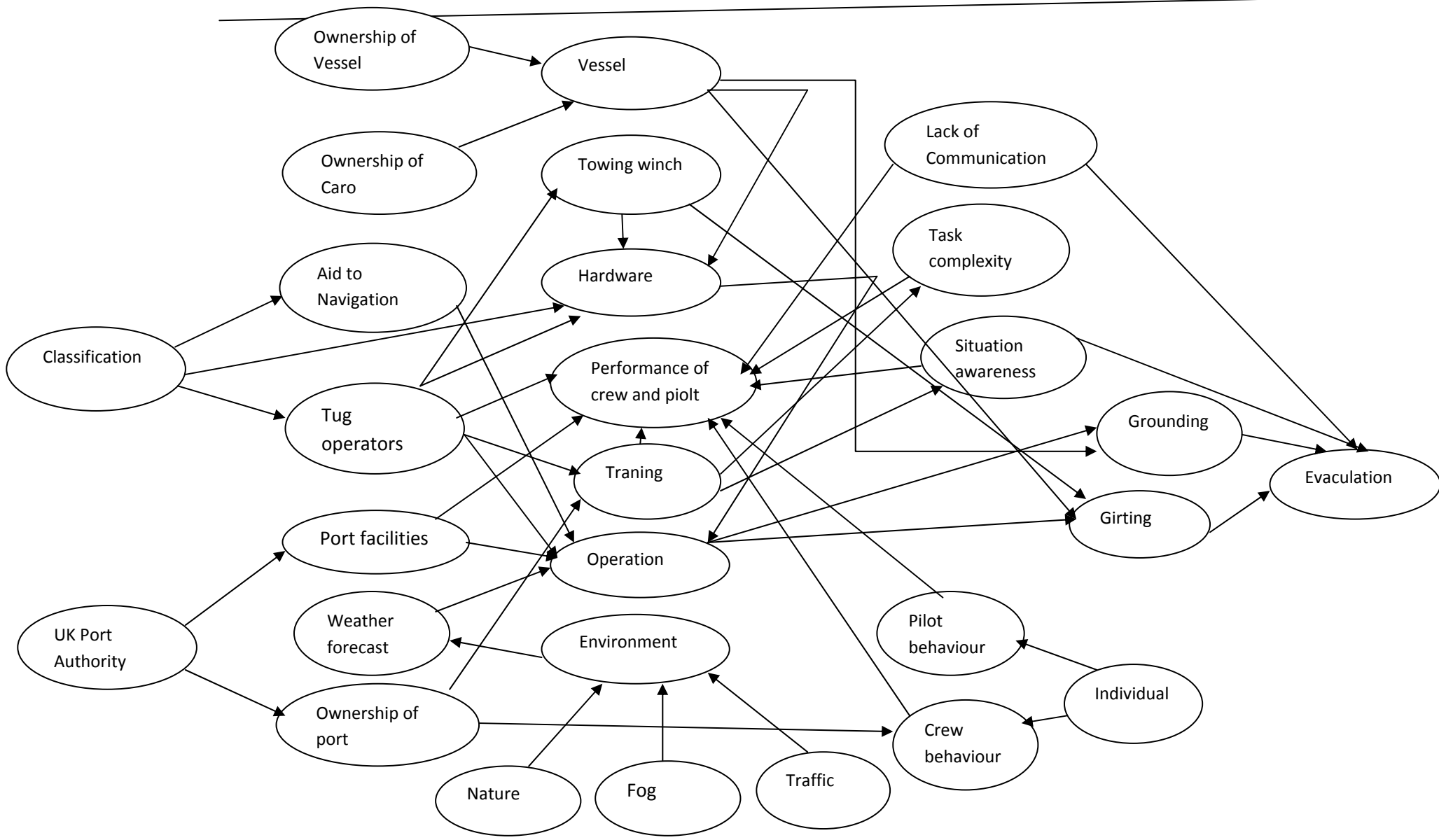
Routine observation prior to tow- ineffective

Port side Engine room door opened. This is reduced the range of stability

Mate was expecting others will follow him

Lack of situation awareness





Performance shaping factors : The following parameters are influencing on the performance of crew in navigation of ship in the channel. The reliability of the crew/ pilot is depends on the PSF. Those are listed below:

Available time

Experience and Training in fog

Stress and Stressors

Task complexity

Situation awareness

Ergonomics (Human machine interaction)

Environmental factors

Procedures and Guidelines

Insufficient information about vessel position in fog

Insufficient information about fog

Changing the ship (Tug crew)

Water Way

Weather &
Seastate

Fair ways

Motion

Pilotage
pattern

Severity

Accident



Step Diagram: refer 372

What is a Scenario?

The scenario could be based on known accidents or incidents. The scenarios should be selected on the basis of the following criteria:

- The scenarios should be realistic. It should cover all the parties involved in the accident.
- It should have a potential of major losses.

STEP (Sequentially Timed Events Plotting diagram) diagram has a proven method for describing the accidental scenario. A STEP diagram illustrates the actors and events in a time-line diagram. STEP diagram for Flying Phantom has included below. This methodology can be used for STEP improved communication and understanding situation. The Scenario Analysis addresses alternative sequences, i.e. “what could have happened if “..

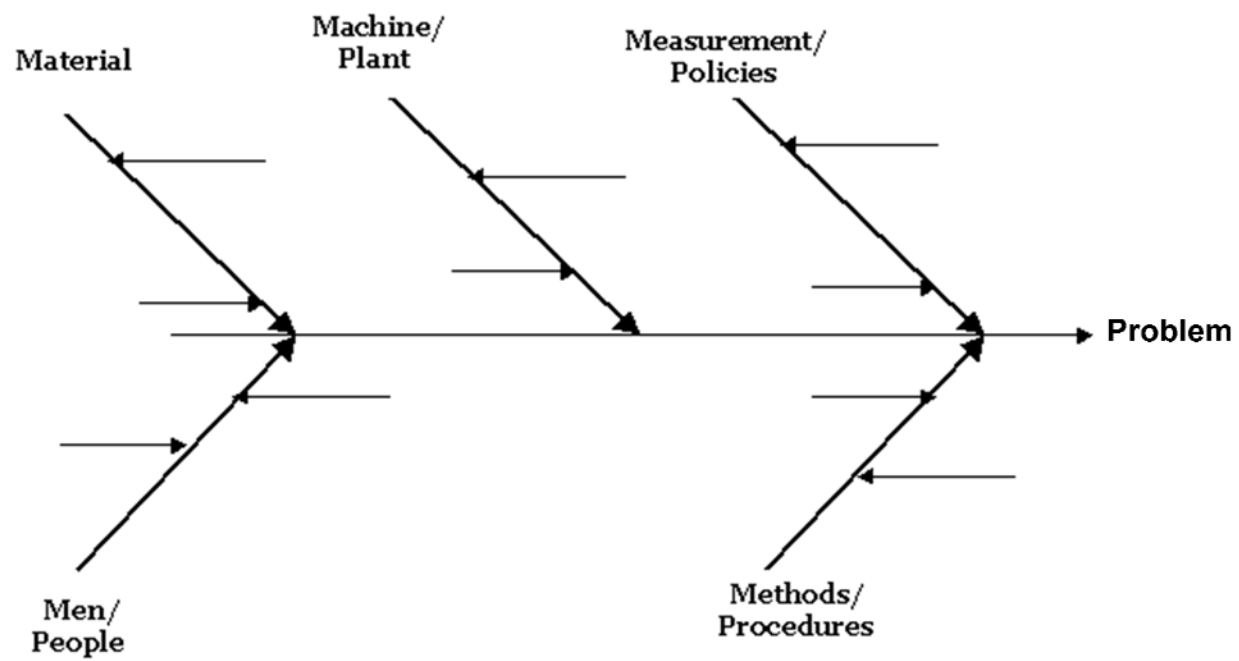
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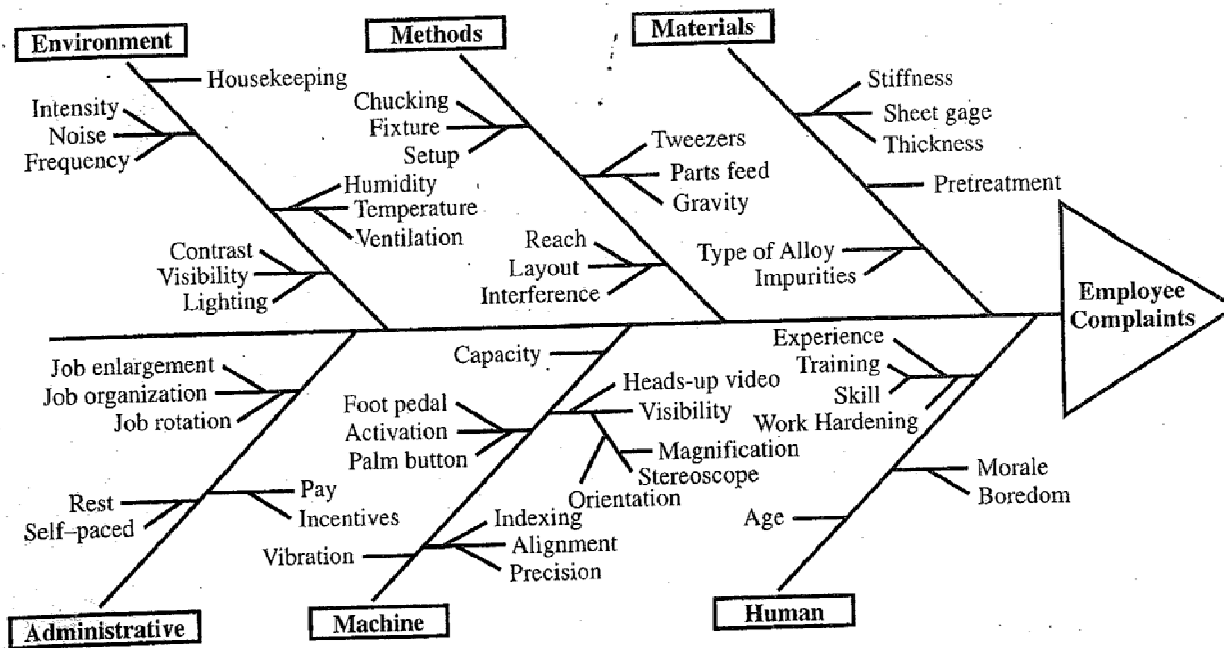
Flow charts of events: refer 375

http://www.sciencedirect.com/science?_ob=ArticleListURL&_method=list&_ArticleListID=927853783&_sort=d&view=c&_acct=C000030078&_version=1&_urlVersion=0&_userid=586462&md5=59256ec3a8900d55d37219c21bb930c5

Fishbone diagram:

- Also known as cause-effect-diagrams
- Developed by Ishikawa in the early 1950s (Kawasaki Company)
- The method consists of defining an occurrence of a typically undesirable event or problem (fish head)
- Identifying contributing factors “causes” or fish bones





Investigation technique:

Fault Tree Analysis (FTA):

Fault Tree Analysis (FTA) is a logic diagram showing all the potential causes of an accident or other undesired event. FTA involves these steps:

1. Define the undesired event to study.
2. Obtain an understanding of the system.
3. Construct the fault tree.
4. Evaluate the fault tree.
5. Control the hazards identified.

This information determines the most probable sequence of events leading to the accident.

Another investigation technique would be a Job Safety Analysis (JSA). A JSA is based on the following steps:

1. Select the job to be analyzed.
2. Separate the job into its basic steps.
3. Identify the hazards associated with each step.
4. Control each hazard.