How I Learn to Train Marine Engineers

I started sailing in 1969 as an engine cadet when there were still 38 men onboard and ships were still manned. My formative years as a cadet and then junior engineer are the ones I remembered most. Engineers were told to use all their 5 senses during their service onboard. Unlike today where you use computers to do trend analysis as a form of preventive maintenance, we learned to smell, taste, hear, see and touch as a way to predict or anticipate problems. It was like a wild animal on the prowl! How sensitive our senses are determined how good an engineer we have become. You are a useless engineer if you cannot hear the engine knocking or a pump bearing overheated. You would go to the extent of putting a torch or a screw driver against the crankcase door and pressing your ear at the opposite end to listen out for abnormal sound. Most of us used our ears so well that we became partially deaf by our forties. That is going an extra mile for the sake of the career. You could tell a good engineer by the roughness of his hands. Only sissies used gloves in those days. And the more hours you put into the engine room, you were named as the best engineer onboard. We had never heard of the term 'sufficient rest hours'. Some even sleep in their overalls.

Because the engine room was manned in those days, there was always a senior engineer on each watch, partnered with a junior engineer or cadet. It is the junior's job to wake up the incoming duty engineers half an hour before the end of his watch. The in-coming junior was required to go into the engine room 15mins before time to do his round (checking that the overall condition of the engine and machinery) before taking over the watch. The senior usually came down on the dot. There would be a proper handling over of watch where the one junior who was going off duty would tell the junior taking over what happened during his watch and if something was of concern. There was a standard protocol that level of tanks, boiler water and oil sumps had to be topped up before handing over the watch. The generator rocker arms would be hand lubricated and bilges must be emptied. The junior was also tasked to keep the engine room clean (wiped the crankcase doors and dirty floor plates and washed the coffee cups at the end of his watch).

During the watch, we were seldom idle. We helped in the overhauling of fuel injectors, generator cylinder head valves, compressors, purifiers, pumps etc. There was always a senior coaching me and imparting his knowledge and skill. Some of the practical things I learned from my seniors were:

1. When you open the flange of a steam pipe, always loosen the bolts on the opposite side first. In case there was steam or hot water released under pressure from the breaking of the flange, it will not scald you.
2. When overhauling a valve, always unscrew the spindle fully so that when you tighten the valve top half of the valve to the bottom half, it will sit tightly without the valve lid jamming against the valve seat.
3. When you tighten or loosen a bolt or nut, the tightening direction should preferably be away from you. If it slips, you will not harm yourself in your face or body.
4. When opening a filter for cleaning (especially fuel oil hot filter), make sure the valves or cocks are shut correctly and tight, release by the pressure inside (by air cock, or loosening the nuts on the opposite side gently) before removing all the nuts on the cover. (Many engineers have been burned by hot oil when they loosen the filter covers rapidly because the valves or changeover cock may be leaking)
5. When annealing a copper washer, do it with low flame to avoid melting it inadvertently.
6. To avoid bruising your knuckles when opening corroded or worn nuts, split them with a chisel instead.
7. When opening a gate valve to full open position, always shut a few turns after it had reached its max. As the valve can get seized over time, you can work them free by turning both ways with a bit of anti rust solvent.

8. When unlocking a lock nut of a critical component (like a cam or bottom end nut), it is useful to put a mark before loosening. When you put the component back, the mark serves as a guide that you have tighten to the right place or have assembled the component correctly.

One of my best teacher/coach was Mr SC Kan. He was my 3rd Engineer when I was a cadet. He also taught me to drink beer after work.

He coached over 8 hours days 7 days a week until my 18 month sea time was up. And then it was my turn to coach others. It was through this that I realised **– A good engineer becomes better if you show them how to. Better engineers make my job easier.** They can anticipate a problem before it happens, and if there was a problem, they can also solve it themselves. These two principles shaped the way I conduct myself when I became a senior engineer.

1. I read all the instruction manuals onboard every ship that I sailed on, and then taught my engineers what I discovered. For example, the Sulzer fuel timing is probably the most difficult to understand. I conducted a demonstration for my engineers when the vessel was in port and let them tried it out. Similarly, I would teach them the air starting system in my office, and showed them the physical location of the various components like the automatic valve or turning gear interlock. Teaching forced me to understand what I read.
2. Before a piece of equipment is due for maintenance, I would pass the instruction manual to the engineer responsible and encourage him to read beforehand. The chance of making a mistake would be small and he learns from the exercise.
3. On ships that I worked on as a 2nd Engineer or Chief Engineer, I would prepare a guide for taking over watch, the route to take for walks in the engine room, what to check and why they need to be checked. For example, upon entry to the engine room, the junior would first check the water level in the freshwater expansion tank. If the level drops, it means that there is a leak somewhere. If there is steam, it is possible that a liner could be crack. This makes watch keeping more interesting. All newly joined junior or cadet would be brought through this route by me.

After coming ashore, I continued this passion of imparting knowledge and skills to sea staff. In the 1990s, NSSPL had probably the most innovative way of conducting our sea staff seminars. We focussed on mentoring and coaching skills for our staff. We implemented a mentoring system onboard all of our vessels. The emphasis was on soft skills which was way ahead of its time. The way I shaped the lives of others was how others shaped mine. And I hope more will follow this example.

Lim Tau Kok
28 November 2014

Lim Tau Kok graduated from the Singapore Polytechnic with a Diploma in Marine Engineering in 1972. He was under the old scheme when the course was 5 years instead of 4 (and this was subsequently shortened to 3 in compliance with the STCW Convention). He then joined NOL, clocked his sea time and within 2 years got his 2nd Engineer "ticket" and served as 2nd Engineer till 1975 before he had to disrupt his sea career to fulfil his National Service obligation. He then resumed his sea career with NOL, clocked his sea time and got his Chief "ticket" and was appointed Chief Engineer before his 27th birthday. When one reads how he trained himself and then others, one would not be surprised if he holds the record of being the youngest Singaporean Chief Engineer!

After 10 years at sea, Tau Kok continued his career with NOL ashore as a technical superintendent. He was upgraded with a degree in Naval Architecture in 1986. That new found expertise was not put to use for he was promoted to general management instead of being assigned to technical positions.

The short time he needed to transform himself from country side school boy to Chief Engineer reflected his brilliant mind and capacity for learning. NOL was quick to recognise his potential and had capitalised on his talent. He would have has been a valuable asset, however, a regime change triggered his departure from NOL to PACC in 2006. He is till at PACC and is currently a Director of the company. Fortunately for all of us, Tau Kok has not stopped sharing what he knows and is fondly referred to as coach instead of boss!

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