

TURBINE MACHINISTS

It is not often that an article on the Soviet Navy appears in the pages of this Journal. The following quaintly worded translation of an article by Captain 3d Rank V. Voronetskiy, which appeared in Voyenniye Znaniya, No. 12, Moscow, December, 1960, was forwarded by Commander J. C. Hodges, R.N., as a leaven of light relief without which no good technical journal can really thrive.

On the slightly more serious side it would seem that, Titov and Gargarin notwithstanding, even the Soviets have the occasional technical problem and mishap!

Plunging headlong into the waves the vessel was moving rapidly ahead. The ship's crew received an assignment to destroy an 'enemy' submarine, and everyone was intent on fulfilling that assignment under any circumstances.

The commander of the vessel called on the sailors to be vigilant on watch and to get the maximum use out of technology. He referred particularly to the machinists. Success in 'combat' depended to a great degree on coordination and efficiency of their work of skilfully servicing the main engines. It was possible to overtake the 'enemy' submarine only at maximum speed.

It is hot and stifling in the engine compartment. The noise of the engines muffles the voices. The pitching tosses people from side to side. It is necessary to be not only a skilful specialist but also to be capable of endurance, in order to be able to service the machinery and to conserve one's strength under stormy conditions. Who knows how long it will be necessary to remain at sea, or what the circumstances will be?

Vladimir Karmanov, a senior seaman, is at the main turbine reducing gear unit. He attentively watches the equipment to prevent the bearings from overheating. Each machine and piece of equipment must be under constant surveillance.

During a very recent voyage when the vessel was travelling at full speed, Karmanov noticed a barely perceptible vibration of a coupling in the turbine oil pump. After examining the mechanism the sailor saw that one of the nuts was loose and became displaced. If the sailor had failed to notice it the supply of oil to the main engine could have been cut off.

Today, however, the units are working like clockwork.

Soon the sonar personnel discover the enemy submarine. The attack begins. Orders changing the vessel's course are coming in from the bridge continuously. During these decisive minutes particular alertness and precise action is required of the turbine machinists. Senior seamen Karmanov, Medyskovskiy, Leont'yev and other sailors did not take their eyes off the instruments, and made the necessary adjustments in time.

The vessel ploughed through the ocean all day and conducted several training attacks.

Towards evening the crew received happy news : the mission was completed in an outstanding manner. The sailors worked very well on this cruise. Among those who distinguished themselves were those who stood watch in the very 'heart' of the ship in the engine compartment—the turbine machinists.

Special small units of turbine machinists are found on every vessel for servicing machinery and equipment.

This speciality is considered to be a responsible and respected one in the navy. In order to be able to handle his duties well the turbine machinist must study the machinery under his jurisdiction in minute detail ; he must be familiar with the construction of the turbines, of the auxiliary machinery and of the instruments as well as the rules for operating them. He must remember the typical breakdowns that may occur and methods of repair. It is necessary that he know how to repair the machinery while under way, and if necessary to overhaul it.

The basic knowledge in this speciality is acquired by turbine machinists at the naval training units. There they study the structure of the turbines, various pumps and other machinery and learn to service them. The more a young sailor applies himself at the training unit the easier it will be for him on board ship, and he will be able to prepare himself for independent handling of the equipment under his jurisdiction that much faster and better, which is the most important thing that a young specialist should strive for. But regardless of how profound and thorough the training of the turbine machinists, their real training begins on board ship. They, as well as other specialists, are allowed a month's time to study the equipment in their jurisdiction, as well as the organization of the work, and the way of life. Only after the expiration of that term and a special examination, is the young machinist permitted to handle the machinery by himself.

During shipboard training the turbine machinists acquire practical experience in the handling and care of the machinery and instruments through prolonged and continuous training. A combat situation always abounds in moments when success is assured only through fast action and an ability to operate the machinery under the most adverse conditions ; in darkness, and with damage to certain parts. Therefore the turbine machinist must perfect each of his movements in the operation of the control mechanisms to a point where they become automatic. When the seaman standing watch by the manœuvring valve receives an order for 'full ahead' he does not have time to think about what has to be done. He must immediately move the handle of the engine telegraph, confirming the order and right after that turn the flywheel in order to assure the proper number of revolutions.

Here are some examples of outstanding deeds of the turbine machinists during the peace-time training of the sailors.

At one time a vessel was engaged in artillery fire. The jolts were felt in the

engine compartment. The first, second, third one. . . . The artillerymen were firing at the ' enemy '. Duvin, a young sailor who was servicing the circulation pump, kept his eyes glued to the instruments. Suddenly his young face, flushed from the heat, turned pale : the tachometer needle was rapidly moving towards zero. A swarm of thought flashed through his mind. It was necessary to act fast and decisively. The least delay, error or indecision could affect the successful completion of the mission. The sailor then saw the valve. Yes, so it is. There was the cause of the trouble. Subsequent actions of seaman Duvin differed little from those of an experienced sailor under similar circumstances. With a turn of the flywheel he quickly cocked the spring and replaced the valve to its former position. The tachometer needle started to creep back up. The sailor heaved a sigh of relief : the deficiency was corrected. Now he felt a sharp pain in the palms of his hands. When making the repairs, Duvin did not get a chance to put on his protective mittens, and his scalded palms were now rapidly turning red. Surmounting the pain he continued to stand watch. In handling the machinery on his own for the first time the sailor managed all his duties in a splendid manner, and not only managed his duties, but showed resourcefulness and real courage. This was brought about by determined training, and studies under more experienced specialists.

Once a valve closed automatically at specialist Savoskin's battle station. Every second of delay could lead to unpleasant consequences. It was necessary to determine the cause of this deficiency and to act immediately. Savoskin understood what had happened right away. Without waiting for orders he brought the valve back to its operating position in a few seconds. Due to the speed with which that deficiency was eliminated, the ship did not lose any speed.

It is very important that the turbine machinists comply with the proper servicing requirements for the machinery, just as it is for any ship's specialist. Neglect of these requirements will not lead to any good. Here is one example : in preparing the equipment under his control for a voyage—the evaporator installation—seaman Ivanov failed to check the blower system of the evaporator housing, as required by the instructions. He was satisfied with an inspection on the eve of departure. Meanwhile another sailor, engaged in a training exercise, switched on the blower system. Ivanov's non-compliance with instructions resulted in the clogging of the evaporators a few hours after sailing. It was necessary to clear them. Many tons of boiler feed water, in the preparation of which a considerable amount of fuel was burned, had to be used for a purpose other than what it was intended for.

An outstanding knowledge of technology, a high degree of discipline, resourcefulness, speed and endurance in surmounting the difficulties of life at sea—those are the qualities that every turbine machinist should have.
