ACCIDENTAL DISCHARGE OF SOOT IN INERT GAS SYSTEM OVERBOARD

ANY PROHIBITED DISCHARGE FROM A SHIP INTO THE SURROUNDING WATER CAN HAVE SERIOUS CONSEQUENCES. WHEN AN INERT GAS SYSTEM IS IN USE, THERE IS A DANGER OF SOOT BEING PRESENT IN THE OVERBOARD DISCHARGE. THIS SITUATION CAN RESULT IN FINES OR EVEN THE ARREST OF THE SHIP, DEPENDING UPON THE SPECIFIC LAWS AND JURISDICTION OF THE AREA.

JOBIN MATHEW, ASSISTANT LOSS PREVENTION MANAGER, BRITANNIA P&I

INERT GAS SYSTEMS AND SCRUBBERS

An Inert Gas plant (IG plant) or an Inert Gas Generator (IGG) are two systems used to produce inert gas on a ship. These systems produce inert gas for supply to the ship's cargo system. The source of the gas in these systems is either flue gas from the ship's boilers or fuel burned in an IGG.

In both systems, the inert gas is cleaned and cooled in a scrubber, by direct contact with large quantities of seawater, before being delivered to the cargo system. This washing action occurs whenever the IG plant or IGG is running. The wash water is then continuously discharged overboard. In an IG plant, this scrubbing happens in a tall scrubber tower where hot flue gas from the boiler, which may contain some soot as well, is cleaned and cooled. The IGG system has a much smaller scrubber, but it works in a similar way. Any carryover of soot in the scrubber's overboard water can discolour the water around the ship.

WHY SOOT IS GENERATED AND CARRIED OVER?

Poorly-maintained scrubbers where soot has been allowed to build up can lead to soot being carried overboard in scrubber wash water. In addition, an improper fuel-to-oxygen mixture or imperfect combustion can produce excessive soot. A sudden drop in the oxygen content of the inert gas, caused by a malfunctioning oxygen sensor or a clogged sample line, can overload the system, causing soot to be produced and carried overboard. This is the most common type of accidental soot discharge. A low flow of the scrubber wash water can also affect how well the inert gas is cleaned and cooled, leading to soot carryover.

BEST PRACTICES TO PREVENT SOOT OVERBOARD

- Crew responsible for testing and operating the IG plant or IGG must fully familiarise themselves with the systems.
- Follow the manufacturer's guidelines and service letters strictly.
- A senior engineer officer should verify the system's readiness before putting it into operation.
- Monitor the system and its parameters vigilantly during operation.
- Maintain the scrubber system regularly to prevent soot buildup.
- During pre-arrival tests, check all alarms and trips on the IG plant and IGG to ensure they function correctly.
- Test the IG system before arriving at port. Flush the scrubber with cooling water long enough both before and after operating the IG plant. Keep the scrubber pump running sufficiently in advance of the ship's arrival in port. Start the IGG before the ship berths to allow the system to stabilise.
- Calibrate the oxygen sensor and check the scrubber system for leaks that could let outside air in. Test the sample line and cock to confirm they are free and working properly. These steps help avoid the possibility of the IG plant or IGG overloading due to incorrect oxygen readings.