INTRODUCTION
The harmonized Rules for Fleet in Service published by DNV GL on the 2nd of November 2014 apply to all vessels in the DNV GL common production system NPS. These were published as an integral part of the DNV GL merger and from the synergy derived from the technical and systematic perspectives in legacy DNV and GL rules.

The contents are located in Pt. 7, Ch. 1 of the legacy DNV Rules and Part I-0, Sec. 5 of the legacy GL rules.

Tail shaft survey requirements for oil lubricated arrangements, a critical survey scheme from a DNV GL classification perspective, have been revised in conjunction with the harmonized Rules for Fleet in Service. They retain a strong technical base to achieve multiple survey options for ship owners and the desired classification objectives. Due diligence on risks associated with withdrawal of tail shafts during routine surveys were provided during formulation of the survey schemes.

This newsletter details the aspects relevant to the tail shaft surveys for oil lubricated tail shafts from both technical and systematic perspectives and with special focus on how ship managers and owners may derive the optimum benefits from them.

In addition, the prominent changes made to legacy DNV and GL rules which applied before November 2014 are highlighted for the benefit of the owners.
OPTIMUM UTILIZATION OF SURVEY METHODS FOR OIL LUBRICATED TAIL SHAFTS

The basic survey interval for oil lubricated tail shafts fitted with an approved sealing device remains at 5 years.

The timeline illustrates possible options available to the ship owners to carry out oil lubricated tail shaft surveys over a period of operational time using one or a combination of:

- A complete survey every 5 years (full scope)
- A reduced scope survey in lieu of a full scope complete survey
- A partial scope survey to gain an additional interval of 2.5 years (not in succession)

TAIL SHAFT SURVEYS FOR OIL LUBRICATED SHAFTS

The most significant changes/aspects are:

For legacy DNV ships
- Shaft withdrawal may be avoided indefinitely by carrying out a satisfactory reduced scope survey every 5 years
- Partial scope tail shaft survey may be utilized to gain an additional interval of 2.5 years (cannot be used in succession)
- Outboard seal renewal is mandatory for reduced scope surveys

Legacy GL ships
In the harmonised Fleet in Service rules the propeller shaft survey is split into two separate surveys:
- the shaft survey itself and
- the propeller connection survey

The propeller connection survey is scheduled
- For keyed propeller connections every 5 years (NDT required)
- For keyless propeller connections every 15 years (NDT required)
- For flanged propeller connections every 15 years (NDT may be dispensed with)

For legacy GL this survey previously had to be carried out every 10 years for keyless and flanged propeller connections. It may be noted that the propeller connection survey remains applicable for ships with class notation CM-PS (and TMON).

The shaft survey may be carried out with different scopes as described below:

For a full scope complete shaft survey (5 years) the propeller shaft has to be withdrawn. This corresponds to legacy GL’s normal shaft survey SWN with withdrawal of the shaft.

For a reduced scope shaft survey (every 5 years) the withdrawal of the shaft may be exempted if the pre-requisites are met satisfactorily. This corresponds to legacy GL’s normal shaft survey SWN without shaft withdrawal and modified survey SWM.

The partial scope corresponds to legacy GL’s partial shaft survey SWP.

TECHNICAL BACKGROUND

The scope of 5-yearly oil lubricated tail shaft surveys includes the verification of the acceptable condition of the shaft, bearings and the sealing arrangement in conjunction with supporting documents (as applicable) which reveal their operational history.

The critical aspects which form a part of the acceptance criteria are:
- The extent of shaft corrosion and the impact it may have on fatigue life
- Bearing condition
- Factors affecting the above

The alternative survey method, a reduced scope survey with a similar interval of 5 years, has an increased focus on the integrity of the outboard seals (renewal of seals every 5 years) to provide a greater level of security against sea water contamination.

It is useful to note that most of the seal makers provide retrofits which allow in-place replacement of the seals to minimise the scope of removing the propeller and/or shaft in the dock.

Partial scope tail shaft surveys allow a shorter interval (2.5 years) compared to the full scope and reduced scope methods. However, the partial tail shaft surveys may be used to give an additional interval should this be deemed required (e.g. alignment with a dry dock) if the requirements are satisfactorily met.

Historical oil analysis results and trends are critical in supporting the alternative survey methods.

CONCLUSION

Good planning, coupled with technically sound operating procedures and prompt trending of oil analysis and associated documentation will assist owners in deriving the best benefits from the tail shaft surveys schemes offered by DNV GL.

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