

Sales & Service Information Letter

VGP 2013 requirements

Enforced since December 19th 2013

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1	Introduction	3
2	Oil-to-sea interfaces versus non-oil-to sea interfaces	3
2.1	Oil-to-sea interfaces	3
2.2	Non-oil-to-sea interfaces	4
2.3	Overview: How to comply with VGP 2013	5
3	Simplex seal solutions - Status July 2014: Materials & Applications	5
3.1	Sealing ring material Viton Pod.....	5
3.2	Sealing ring material Viton Bio.....	6
3.3	Use of EALs in combination with Simplex seals.....	6
4	Technical evaluation	7
4.1	Handling of existing vessels.....	7
4.1.1	Vessels with standard seal system (Non-Airspace)	7
4.1.2	Vessels with Simplex Airspace seal systems.....	8
4.2	Handling of new-build vessels	9
5	Outlook	9
6	SKF Fin Stabilizers	9
6.1	Technical evaluation	9
6.1.1	Handling of existing vessels	9
6.1.2	Handling of new-build vessels.....	10
7	Cathodic protection/sacrificial anodes.....	10
8	Bilge water separator effluent	10

1 Introduction

On December 19th, 2013, the revised Vessel General Permit (VGP) issued by the US Environmental Protection Agency (EPA) came into force.

The VGP covers 27 discharges from all merchant vessels of 79 feet or longer that are sailing in the US coastal and inland waters. Recreational vessels are excluded, but not if the yacht is in commercial use or carries paying passengers.

The rule covers all vessels with a keel-laying date after December 19th 2013. In addition, the new VGP applies to vessels when they dry-dock as scheduled after the same date.

A copy of the final 2013 VGP can be found on the webpage of the [Environmental Protection Agency](#).

SKF Marine products are affected by the following discharges:

1. Oil-to-sea interfaces at oil-lubricated SIMPLEX seals and stabilizers
2. Cathodic protection at SIMPLEX seals and SKF stabilizers
3. TURBULO bilge water separator effluent

2 Oil-to-sea interfaces versus non-oil-to sea interfaces

2.1 Oil-to-sea interfaces

With the new VGP 2013, **it becomes mandatory to use Environmental Acceptable Lubricants, EALs**, in systems such as stern tubes, thrusters, pod drives, controllable pitch propellers and stabilizers - **unless technically infeasible**.

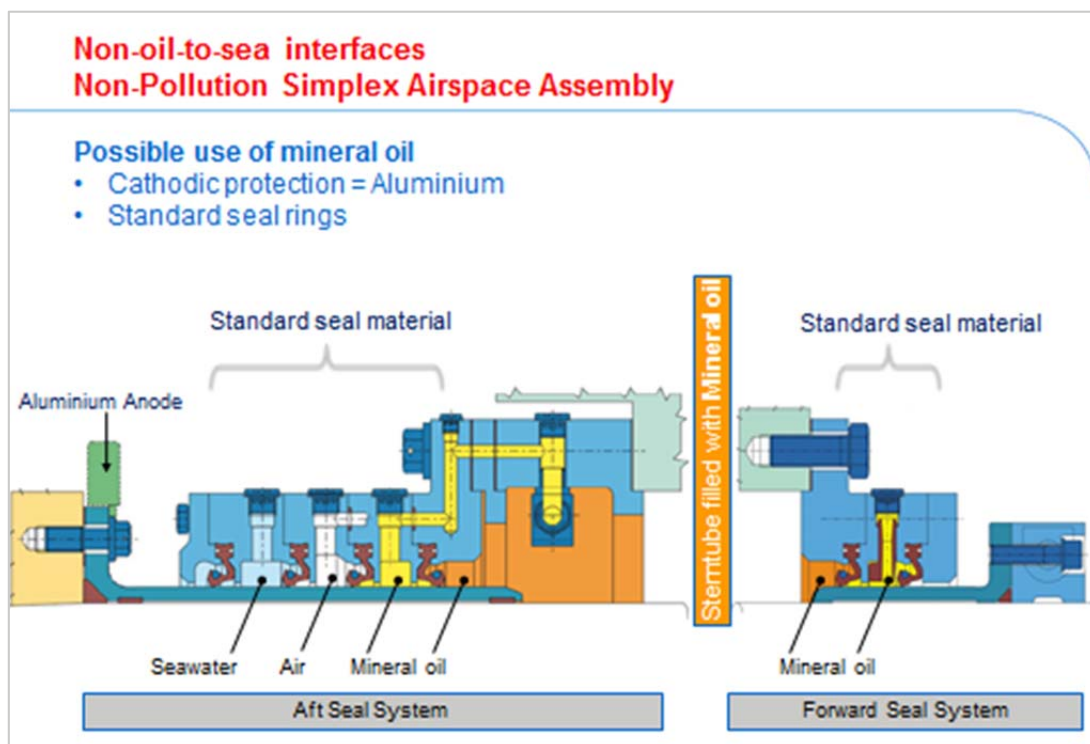
EAL means lubricants that are biodegradable, non-bio accumulative, and minimally toxic.

They must meet the EPA's EAL definition respectively be approved by labelling programmes like Blue Angel, European Ecolabel, Nordic Swan, the Swedish Standards SS 155434 and 155470, OSPAR and the EPA's DfE. It is the responsibility of the oil product manufacturer to meet the EPA's EAL criteria. Vessel operators have to note that **not every bio-oil is an EAL**.

2.2 Non-oil-to-sea interfaces

Alternative seals can be used with mineral oils instead of EAL when the system eliminates the discharge of oil into the sea. "The sterntube or equipment ceases being an oil-to-sea interface."

We were the first supplier of an air seal system which has been recognized as non-oil-to-sea-interface. Since summer 2013 we have been in continuous contact with EPA and DNV GL. On February 14th, 2014, we have been invited to present our **Simplex Airspace** as **non-oil-to-sea interface** during an EPA public webinar. The EPA stated that under normal operation the air seal with its void chamber ceases being an oil-to-sea interface and fully eliminates oil drips or leakage. Consequently, **no EAL is needed!** The reason is that our Simplex Airspace separates oil and sea water by the pressure controlled air chamber which is continuously monitored and regularly flushed inboards. There is no contamination of the seawater by stern tube oil. This means that the Simplex Airspace is an environmental friendly shaft seal.

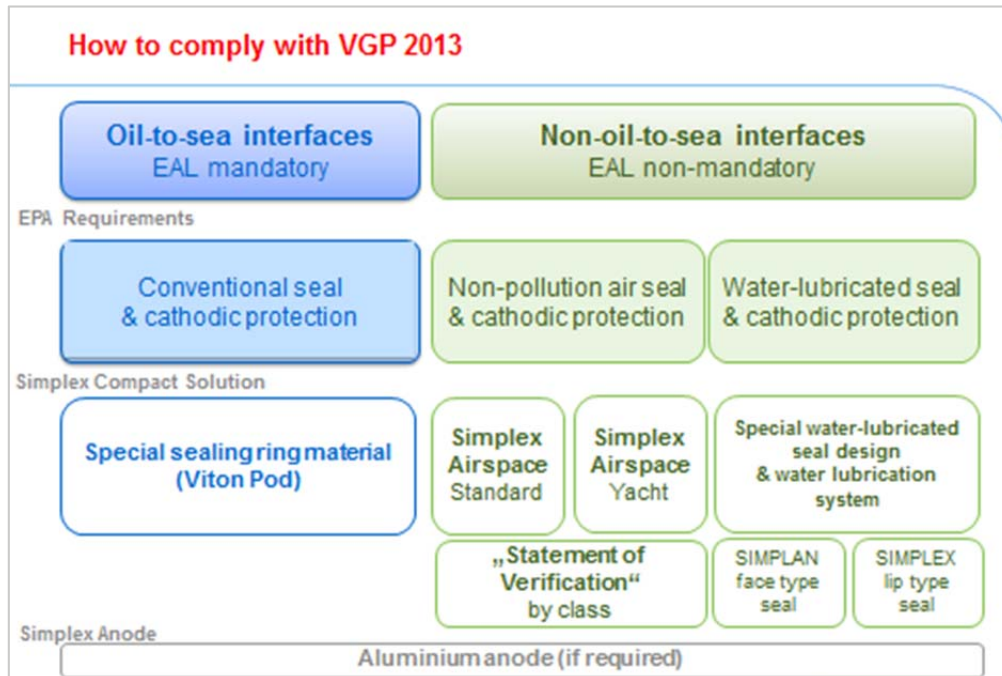


The ship owner must report the use of a non-EAL to EPA. We provide our customers the necessary documents including a "Verification of Compliance" issued by DNV Germanischer Lloyd, <mailto:vqp2013@skf-marine.com>.

For further information, please visit also the EPA's FAQ website, Section 2: [Environmentally Acceptable Lubricants \(EALs\)](#).

2.3 Overview: How to comply with VGP 2013

With SKF Marine as a reliable partner vessel owners have several possibilities to comply with VGP 2013:



Please note the following EPA statement “If a vessel operator utilizes an air seal system and elects not to use an EAL, and that air seal system fails in normal operation, then any leakage of a non EAL lubricant might be a permit violation and must be reported in the Annual Report.”

3 Simplex seal solutions - Status July 2014: Materials & Applications

VGP 2013 affects our standard oil-lubricated seal systems as oil-to-sea-interfaces. **Special applications require special seal solutions.**

3.1 Sealing ring material Viton Pod

Viton Pod has originally been developed for (Azi-) Pod drives with high temperature loads in combination with synthetic gear oils. It has a proven track of performance since its market introduction in 2004.

We deliver Viton Pod for all ships in service which operate with biodegradable oil / EAL.

3.2 Sealing ring material Viton Bio

Especially for ester based EALs we have developed a special seal material called **Viton Bio**. Our next seal generation SC3 will be available with Viton Bio starting from 2015 onwards.

The biggest advantage for the ship-operator is that there are **no special operational limits** to be followed **under normal operation with SC3**. First bio-oils / EALs are successfully tested.

	Viton Pod	Viton Bio (with SC3)
Fwd. seal temperature	60°C	None under normal operation
Aft bearing temperature	55°C	None under normal operation
Water in oil	1%	5%

3.3 Use of EALs in combination with Simplex seals

The number of oils that are EAL-compliant is increasing. Oils which fulfil the VGP requirements and are approved by SKF Marine for use on Simplex sealing rings will be updated continuously and can be checked on our [website](#).

Biodegradable lubricants in combination with SIMPLEX lip ring seals require the use of Viton Pod or Viton Bio as sealing ring material.

Simplex seals can be operated up to 5 years, depending on the installation arrangement and operational conditions. For detailed information, please contact us directly or <mailto:vgp2013@skf-marine.com>.

EALs can chemically affect the sealing rings by hydrolysis. Especially when emulsions are built up in the oil chamber of the sealing system or in the stern tube itself, these bio-oils interact with the water present and tend to break down. The lifetime of any lip-type sealing system can decrease due to this aggressive mixture. Please note that this effect is beyond SKF Marine control. Compared to other materials the newly developed Viton Bio seal material is developed for a better performance and longer lifetime.

4 Technical evaluation

4.1 Handling of existing vessels

4.1.1 Vessels with standard seal system (Non-Airspace)

As the changeover of the stern tube from mineral oil to EAL operation should be done in dry dock, SKF Marine issues a statement that the existing SIMPLEX seal system is technically infeasible with the use of EAL. The **“statement of technical infeasibility”** allows the vessel to continue mineral oil operation until the next scheduled dry dock. Then, the vessel is obliged to switch to EAL.

Before applying an EAL, it is necessary to replace the sealing rings with Viton Pod rings and the stern tube has to be flushed sufficiently.

In addition, it is important to **check all Non-Airspace seals regarding our life time recommendations:**

- SIMPLEX aft seals with two oil connections to the aft seal oil chamber have a recommended life time of the seal rings of 5 years during operation with EALs. First, the design allows a refreshing of the oil in the oil chamber while the vessel is afloat. Secondly, the oil in the oil chamber can be maintained at high quality and low water content to avoid hydrolysis.

Viton Pod seal rings always have to be used at the aft and forward seal. Also, the mineral oil has to be removed as far as possible from the stern tube and the connected lub oil systems.

- All SIMPLEX aft seals with only one oil pipe connection to the aft seal oil chamber II have a recommended seal ring life time of only 2.5 years. The reason is that the oil inside the aft seal oil chamber cannot be exchanged when the vessel is afloat. If an emulsion builds up in the oil chamber, hydrolysis may occur, resulting in a chemical attack on the seal rings.

According to latest EPA statements, the use of EAL can be considered as technically infeasible if the operational life time of a seal decreases significantly. We issue a statement for the technical infeasibility of 5 year operation with EALs upon request. [Mailto:vgp2013@skf-marine.com](mailto:vgp2013@skf-marine.com).

Further information can be found under “FAQ” on the EPA website on <http://water.epa.gov/polwaste/npdes/vessels/Vessels-FAQs.cfm#faqTitle2>

The “statement of technical infeasibility” must be kept on board starting from December 19th, 2013 onwards. It remains valid unless any changes

on the seal system have been made. In addition, the vessel must report the use of a non-environmentally acceptable lubricant in its Annual Report to the EPA. If there is a technical solution available at the time of the next scheduled dry-docking, the vessel must switch to EAL in order to fulfil the VGP requirements.

Of course we would be pleased to offer a **seal conversion** to the environmental friendly **Simplex Airspace** stern tube seal. Afterwards, the vessel can continue using mineral oil instead of EAL, since this solution fulfils VGP 2013.

SIMPLEX seals that are equipped with Viton Pod sealing rings can be generally used with EALs whenever they are approved and recorded in our lubrication oil list. However, Viton Pod sealing rings that have been operated with mineral oils must be replaced by new spares when changing to an EAL.

Exchange of the mineral oil: Before using EALs, the existing mineral stern tube lubricants have to be fully drained out of the stern tube, seals, pumps, pipes, coolers and tanks. This is very important in order to avoid intermixing different oil types because this may result in unpredictable chemical effects on the seal material and the oils.

For vessels that are equipped with standard SIMPLEX sealing ring materials, such as Perbunan, Viton Plain or Viton Superlip, SKF Marine does not recommend the use of biodegradable lubricants or EALs.

Please contact the SKF Marine service team for assistance or <mailto:vgp2013@skf-marine.com>.

4.1.2 Vessels with Simplex Airspace seal systems

For vessels that are equipped with SIMPLEX Airspace seal systems no changes have to be made. The SIMPLEX Airspace complies with the requirements and can be operated with mineral oil.

Upon request, we issue a document that our Simplex Airspace is installed on the respective vessels – together with a statement of verification by class.

During the next dry-docking we recommend to replace the existing zinc anodes by aluminium anodes.

Please contact the SKF Marine sales team for assistance or <mailto:vgp2013@skf-marine.com>

4.2 Handling of new-build vessels

EAL is mandatory to be used in oil-to-sea interfaces for vessels sailing in US waters with a keel-laying date after December 19th, 2013.

SKF Marine recommends the Simplex Airspace as seal solution which complies with VGP 2013 by not being an oil-to sea interface. Hence, no EAL would be required.

Of course you can choose between different seal solutions, such as conventional SIMPLEX seals with Viton Pod or Viton Bio material when you prefer sailing with EAL or water-lubricated seal solutions, to meet the VGP2013 regulations.

Please contact the SKF Marine sales team for an individual sealing solution.

5 Outlook

SKF Marine is continuously testing further EALs to prove the compatibility with SIMPLEX seals and to ensure their products meet VGP standards.

New-builds can be equipped with an optimum solution in respect of material, design and working principle to combine VGP standards and lifetime requirements

We will keep you posted with further technical developments.

6 SKF Fin Stabilizers

Today several lubricant manufacturers offer biodegradable products certified as an EAL. SKF fin stabilizers can be operated with a wide variety of such oils and greases. For further information please see the list of approved biodegradable lubricants that is included in the manual and can be provided on request.

For the operation of the SKF fin stabilizers with biodegradable lubricants the system needs to be modified properly. Please contact SKF stabilizers-service to receive an individual proposal which is optimized for the special needs of each vessel.

6.1 Technical evaluation

6.1.1 Handling of existing vessels

For existing vessels most of the stabilizer system can be modified for the use of EAL during dry docking. Due to the different types of fin stabilizer

over the decades we have different solutions for each type. In general we insist that all seals at the EAL-seawater interface are replaced with FKM (Viton) seals. Furthermore, we strongly recommend that all seals that come into contact with EALs (e.g. those in the hydraulic power unit) are replaced with FKM seals in order to ensure reliable operation. Only EALs approved by SKF Marine are permitted. A list of approved lubricants can be provided on request.

Aluminium anodes are also available for the stabilizers. In every case please contact the SKF fin stabilizer service.

6.1.2 Handling of new-build vessels

New-builds can be ordered in an EAL-compatible version to meet the requirements of the new VGP. This includes the use of FKM seals, additional equipment to monitor the condition of the EAL, the use of EALs approved by SKF Marine and aluminium as an anode material.

7 Cathodic protection/sacrificial anodes

Please note that the new requirement also covers the cathodic protection. Vessels have to change from zinc to aluminium or magnesium anodes as less toxic metals when feasible. The material selection depends on the main area of operation; mostly in salt water (aluminium) or fresh water (magnesium). SKF Marine provides aluminium anodes.

If the vessel is unable to use anodes made from magnesium or aluminium after the first dry-docking after December 19th, 2013 then the ship must document the "reasons and retain those records just to be clear that such a determination was made". A statement of infeasibility is not required.

8 Bilge water separator effluent

All vessels must minimise the discharge of bilge water within three miles of shore. The use of dispersants, detergents, emulsifiers or chemicals to remove oil or sheen from bilge water is prohibited.

The EPA retained the 15ppm limit but is working on future plans with 5ppm limits.

New-build vessels with a keel-laying date after December 19th, 2013 and larger than 400 GT must monitor their discharges annually for oil and grease.

If the monitoring results show less than 5 ppm for two consecutive years and

- the vessel has installed an oily water separator that meets a 5 ppm oil and grease limit or has a 5 ppm bilge alarm
- the crew calibrates the oily water separator at least annually
- the oily water separator has no readings above 5 ppm

then no additional monitoring is required until the permit expires.

SKF Marine can provide the vessel with a TURBULO bilge water separator with a bilge alarm unit adjustable to 15ppm or 5ppm. Both options comply with the VGP requirements.

For further queries, please contact the sales team.

With best regards

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