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МЕТОДИЧЕСКИЕ УКАЗАНИЯ

к практическим занятиям по дисциплине
«Английский язык» для студентов IV курса
специальности «Эксплуатация судовых энергетических
установок» факультета МТС (VIII семестр)
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Методические указания к практическим занятиям по дисциплине «Английский язык» для студентов IV курса специальности «Эксплуатация судовых энергетических установок» факультета МТС (VII семестр) дневной формы обучения: в 2 Ч. / Сост. М.А. Зубкова, Н.В. Бритвина, Е.В. Михайлова. – Севастополь: Изд-во СевНТУ, 2009. – Ч. II. – 40 с.

Методические указания предназначены для практических занятий в VIII семестре по дисциплине «Английский язык» по специальности «Эксплуатация судовых энергетических установок» для студентов факультета МТС IV курса дневной формы обучения. Цель методических указаний состоит в том, чтобы расширить лексический запас студентов и совершенствовать навыки чтения, перевода и аннотирования оригинальных научно-технических статей по специальности.

Методические указания утверждены на заседании кафедры практики романских и германских языков (протокол № 11 от 18.05.09г.).

Допущено учебно-методическим центром и научно-методическим Советом СевНТУ в качестве методических указаний.

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ВВЕДЕНИЕ

Методические указания предназначены для студентов четвертого курса специальности «Эксплуатация судовых энергетических установок» дневной формы обучения факультета МТС. Данные методические указания могут быть использованы как на практических занятиях, так и для самостоятельной работы.

Цель методических указаний состоит в том, чтобы расширить лексический запас студентов, совершенствовать навыки чтения, перевода и аннотирования оригинальных научно-технических статей по специальности, развивать устную монологическую и диалогическую речь студентов.

Методические указания состоят из 6 уроков, каждый из которых содержит текст, упражнения для закрепления лексики соответствующего урока, а также упражнения, направленные на закрепление пройденных лексико-грамматических тем. Лексический материал содержит как профессионально-направленную терминологию, так и общую лексику, которые студенты смогут использовать в беседе на различные темы.

Подбирая тексты, авторы учитывали информативность, познавательную ценность текста и возможность постановки проблемных задач, соответствующих профессиональному уровню обучающихся.

Методические указания рассчитаны на 28 академических часов.

1. UNIT I. MAIN ENGINE LUBRICATING OIL PURIFIER PROBLEMS

1. Notes:

oil purifier – маслоочиститель;
 shoal of spats – стая (косяк) устриц;
 contamination – загрязнение;
 crankcase – картер (двигателя), картерный;
 sump – отстойник;
 pump suction line – приёмная магистраль;
 priming – заправка, подкачка;
 strainer – сетчатый фильтр, стрейнер;
 pump suction – приём насоса;
 ingress – проникновение извне;
 screwed plug – резьбовая заглушка;
 tape measure – мерная лента (рулетка);
 sketchpad – схема прокладки (набивки);
 ascertain – выяснять, удостоверяться, узнавать;
 slosh – хлюпать, обливаться;
 sampling – образец.

2. Read the text.

Main engine lubricating oil purifier problems

Could a shoal of spats have had something to do with a serious case of crankcase lube oil contamination by seawater? A senior marine engineer set out to investigate.

Due to hospitalization of my predecessor I received no handover advice or notes when I signed on to an eight-year old cargo vessel on a regular three to four month run.

During attempts to familiarize myself with the fuel and lubricating oil systems, I noted that although the main engine sump was at normal level, the renovating tank was 90 % full. No one on board could give a reason for this and nothing could be gleaned from the log books.

On requesting a sample to be drawn from the bottom of the sump I was informed that the pump was faulty. Instructions to check the pump suction line for damage/ loose connections resulted in being informed that all was in order. Much priming of the pump resulted in a small sample being obtained which indicated to serious problem.

A crankcase inspection after an eight-day voyage indicated serious contamination of the oil by seawater. The sampling pump again refused to draw. On recalling that on departure from the previous port the vessel had run into a shoal of sprats and the constant cleaning of seawater strainers had resulted in seawater sloshing around the tank tops, I personally checked the sampling pump suction line and found that the closing plate was missing where it passed through the tank top thus allowing water ingress to the sump. Vibration against the tank top had worn through the sampling pump suction pipe. The pipe was patched and the hole sealed.

Although the purifier had been checked and overhauled under my supervision, the analysis reports indicated that little water was being removed so as I decided to give the machine a thorough investigation.

The integral inlet and outlet passages ran horizontally the full width of the frame which allowed the external piping to be connected to either end of the passage with a screwed plug being inserted at the free end. The inlet passage was then connected to the frame cover by means of a vertically drilled hole. By means of metal tape measure and a sketch pad I ascertained that the vertically drilled hole not only connected with the outlet passage but also with the outlet passage immediately below it. A wooden plug and a supply of 'devcon' effectively directed the incoming fluid through the bowl thereby removing the contaminants.

As the company had required lube oil samples to be sent ashore for analysis on a regular basis I never did manage to figure out why the combination of the purifier problem and the missing closing plate during eight years of operation had not been detected earlier.

3. Read and translate the following active words and word combinations:

Lubricating oil, spat, fuel oil, log book, to glean, faulty, pump suction line, loose connection, closing plate, to seal, to patch, under smb's supervision, drilled hole, bowl, to detect, to overlook, to evaluate, to dimension, to type.

4. Choose the proper English equivalent:

- | | |
|-------------------------|-----------------|
| 1) обнаруживать | 1) detect |
| 2) резьбовая заглушка | 2) strainer |
| 3) приём насоса | 3) oil purifier |
| 4) сетчатый фильтр | 4) sump |
| 5) собирать факты | 5) ascertain |
| 6) заливка насоса | 6) priming |
| 7) убеждаться, узнавать | 7) ingress |

- 8) отстойник
- 9) проникать извне
- 10) маслоочиститель

- 8) screwed plug
- 9) pump suction
- 10) glean

5. Translate into Russian:

- 1) The integral inlet and outlet passages ran horizontally the full width of the frame.
- 2) Vibration against the tank top had worn through the sampling pump suction pipe.
- 3) Closing plate was missing where it passed through the tank top.
- 4) The inlet passage was then connected to the frame cover by means of a vertically drilled hole.
- 5) The vertically drilled hole connected with the outlet passage and with the outlet passage immediately below it.
- 6) Constant cleaning of seawater strainers had resulted in seawater» sloshing around the tank tops.
- 7) The external piping is connected to either end of the passage with a screwed plug being inserted at the free end.
- 8) Nothing was gleaned from the log books.

6. Translate the following words and make up sentences with them:

Машинное масло, маслоочиститель, загрязнение, картер, отстойник, собирать факты, приёмная магистраль, заливка (насоса), сделать запрос, ремонтировать, под чьим-либо контролем, выпускной канал, резьбовая заглушка, топливная система, поврежденный, заменять, убеждаться, проникать извне, обнаруживать, ознакомиться, пломбировать, отказываться, герметизировать, очищать, проверять, соединять, ломаться, заказывать, устанавливать, упаковывать, образец.

7. Answer the following questions to the text:

- 1) What did the narrator note after familiarizing himself with the fuel and lubricating oil systems?
- 2) What information did the narrator get after a sample had been drawn from the bottom of the sump?
- 3) Was the pump suction line in order?
- 4) What did a crankcase inspection show?
- 5) What was the reason of the damage?
- 6) Where was a closing plate missing?
- 7) What was the external piping connected to?



- 8) What were the integral outlet and inlet passages connected to?
- 9) What did the company require?
- 10) What did they miss to detect during the operation?

8. Translate from Russian into English using Enclosures:

- 1) Компания запросила образцы машинного смазочного масла для анализа.
- 2) Мне сообщили, что приемная линия насоса была без повреждений, а насос поврежден.
- 3) Осмотр картера после 6-дневного рейса указывал на серьезное загрязнение масла морской водой.
- 4) Резьбовая заглушка вставляется в свободный конец канала, который подсоединен к внешнему трубопроводу.
- 5) Замыкающая пластина отсутствовала в верхней части отсека, вследствие чего вода поступала в отстойник.
- 6) Международная конвенция по предотвращению загрязнения моря нефтью 1954 г. – первый многосторонний акт, заключенный с первоочередной целью защиты окружающей среды.
- 7) Международный Морской Комитет (ММК) – неправительственная организация, содействующая унификации морского и коммерческого права. Занимается разработкой норм международного частного морского права и имеет консультативный статус в ИМО.
- 8) Международная Ассоциация Классификационных Обществ (МАКО) – неправительственная организация, объединившая в 1968 г. ряд крупных национальных классификационных обществ в целях развития сотрудничества между ними в области технического надзора за судами для обеспечения безопасности мореплавания.
- 9) В случае утраты Свидетельства о праве собственности на судно орган, осуществляющий государственную регистрацию судна, может выдать дубликат указанного документа по заявлению собственника судна с приложением правоустанавливающих документов.
- 10) Грузовая декларация - документ, содержащий необходимые для таможи сведения относительно груза, перевозимого коммерческими средствами транспорта, составляется по образцу.

9. Sum up the information and represent the annotation.

2. UNIT II. REDUCING MARINE DIESEL ENGINE MAINTENANCE COSTS

1. Notes:

coke pocketing – сокращение свободной поверхности из-за коксования;
 span – промежуток времени; период времени;
 obtainable – достижимый, доступный;
 blow-by – просачивание газов, газопропуск;
 melting point – температура [точка] плавления;
 valve rotator – механизм поворота клапана;
 life expectancy – ожидаемый срок службы;
 angular – угольный; угловой;
 free-wheel – муфта свободного хода;
 valve wing – направляющее ребро клапана;
 spiral groove – винтовая канавка; винтовой паз;
 spring plate – рессорный лист;
 valve spindle – стержень клапана;
 spindle speed – скорость вращения шпинделя;
 idle speed – скорость/частота вращения холостого хода;
 seat face – поверхность седла;
 ball bearing – шариковый подшипник;
 enhancement – улучшение, совершенствование.

2. Read the text.

Reducing marine diesel engine maintenance costs

Economics have motivated more supply vessel operators to use high-viscosity fuels in marine diesel engines.

Under such conditions, the service life of exhaust valves may reach only 30 per cent of that obtainable using marine diesel oils. The exhaust valve's short life span is largely due to coke pocketing, corrosion of the seat faces, and the formation of blow-by.

Depending on the fuel used, the time between overhauls (TBO) of exhaust valves may even fall below 2,000 operating hours – the average working time of the main engine amounts to about 5,000 hours/year.

A new exhaust valve rotator developed by Markisches Werk Haiver (MWH) called Turnomat has increased the TBO by 100 per cent to 400 per cent.

The main parameters which influence the lifetime of exhaust valves are fuel quality (content of sulphur, vanadium, sodium, etc); valve temperature, sealing of the valve seat, and material compatibility.

Asymmetric temperature distribution within the valve head causes thermal de-formation which results in a poor sealing of the valve seat, and thus leads to a very high temperature – close to the melting point in some spots.

The new valve rotator is able to control these factors and extend the life expectancy of the valve through the following design enhancements:

- The temperature difference within the valve head is reduced. During rotation of the valve, the heat is transferred from the hot side to the cool side. This equalizes and reduces the valve head temperature, and thus reduces thermal stress and seat deformation.
- The valve closes at a different angular position so that carbon particles stuck on the seat don't beat the same spot repeatedly.
- Valve head rotation at the time of closing with high rotation speed ensures a polishing of the seat. Therefore, the deposits are rubbed off and blown away ensuring clean surfaces which allow for a more efficient heat exchange.

The Turnomat's rotating cylinder can rotate only in one direction as the free-wheel avoids its rotation in the other direction. The rotating cylinder is connected to the spiral parts with balls which run in a spiral groove machined in the spiral part.

Each valve stroke will lead to an angular rotation. The bigger this angular rotation is, the higher the rotation speed will be. However, some construction limits have to be taken into consideration.

The valve springs are disconnected from the spring plate through a ball bearing so they won't rotate. Valve spindle rotation speed depends on the spiral groove angle, the strike frequency, the moment of inertia of the rotating parts, and the coefficient of friction of the respective moving parts. In order to calculate the expected rotation speed, MWH has developed a special computer program.

The design offers a number of advantages. Valve rotation speed is relatively high, even at idle speed, and steady and reliable rotation is achieved. Moreover, as most of the Turnomat's weight is firmly fixed on the cylinder head, the mass to be accelerated is minimized, thus reducing inertia.

A number of comparison tests have been performed on the Turnomat. Under similar conditions, valves without rotators, with rotating wings, and equipped with other rotators were tested.

The Turnomat was found to achieve a very accurate repetitiveness rotation of the valve spindle through the full speed range (low dispersion).

A number of field experiences have backed up the test results, showing that application of Tumomats has increased the TBO of the exhaust valves 2 to 5 times compared to conventional valves.

3. Read and translate the following active words and word combinations:

Service life, sulphur, vanadium, sodium, maintenance cost, sealing, material compatibility, asymmetric temperature distribution, thermal deformation, thermal stress, angular position, carbon particles struck, rotating cylinder, stroke, valve spring, ball bearing, average working time, full speed, spiral.

4. Translate into English:

Диапазон скоростей, предельная скорость, шариковый подшипник, стержень клапана, рессорный лист, головка клапана, период времени, стоимость технического обслуживания, механизм поворота клапана, вращающийся цилиндр, термическое напряжение, высоковязкий.

5. Choose the proper English equivalent:

- | | |
|-----------------------------|------------------------------|
| 1) thermal stress | 1) механизм поворота клапана |
| 2) temperature distribution | 2) стержень клапана |
| 3) rotating cylinder | 3) распределение температуры |
| 4) spring plate | 4) пружина клапана |
| 5) cylinder head | 5) головка цилиндра |
| 6) valve rotator | 6) шариковый подшипник |
| 7) valve spring | 7) термическое напряжение |
| 8) ball bearing | 8) вращающийся цилиндр |
| 9) valve spindle | 9) рессорный лист |

6. Translate the following verbs and make up sentences using these verbs:

To cause, to amount to, to result in, to allow, to reach, to ensure, to reduce, to equalize, to rub off, to blow away.

7. Translate into Russian:

- 1) The exhaust valve's short life span is largely due to coke pocketing, corrosion of the seat faces, and the formation of blow-by.

- 2) The main parameters which influence the lifetime of exhaust valves are fuel quality, valve temperature, sealing of the valve seat, and material compatibility.
- 3) The deposits are rubbed off and blown away ensuring clean surfaces which allow for a more efficient heat exchange.
- 4) The rotating cylinder is connected to the spiral parts with balls which run in a spiral groove machined in the spiral part.
- 5) The bigger this angular rotation is, the higher the rotation speed will be.
- 6) The valve springs are disconnected from the spring plate through a ball bearing so they won't rotate.
- 7) Valve spindle rotation speed depends on the spiral groove angle, the strike frequency, the moment of inertia of the rotating parts, and the coefficient of friction of the respective moving parts.
- 8) The Turnomat was found to achieve a very accurate repetitiveness rotation of the valve spindle through the full speed range.
- 9) As most of the Turnomat's weight is firmly fixed on the cylinder head, the mass to be accelerated is minimized.
- 10) A number of comparison tests have been performed on the Turnomat.

8. Translate from Russian into English using Enclosures:

- 1) Ассиметричное распределение температуры внутри головки клапана приводит к температурной деформации (*использовать 2 варианта перевода выражения "приводит к чему-либо"*).
- 2) Для того чтобы рассчитать скорость вращения, была разработана компьютерная программа.
- 3) Новый выпускной клапан способен продлить срок службы благодаря некоторым совершенствованиям в конструкции.
- 4) Вращение стержня клапана зависит от угла винтового паза, от частоты удара, от трения движущихся частей и момента инерции вращающихся частей.
- 5) Во время вращения клапана, тепло передается от горячей стороны к холодной.
- 6) Деятельность Международной Ассоциации Классификационных Обществ (МАКО) направлена на унификацию национальных правил классификации, обмера, постройки, эксплуатации и ремонта морских судов, используемых в судостроении материалов, снабжения морских судов техническими средствами (спасательными, противопожарными и т.п.).

- 7) Международная торговая палата выработала и опубликовала свод международных правил толкования торговых терминов (Incoterms), применяемых при заключении торговых сделок.
- 8) По данным Международной палаты судоходства (МПС), сомалийские пираты не ограничиваются грабежами, а практикуют угон судов, захват экипажей в качестве заложников и требование денежных выкупов.
- 9) Международная Федерация Судовладельцев занимается исследованием проблем морской торговли для охраны интересов ее членов, оказывает финансовую помощь судовладельцам в случае забастовок.
- 10) Каждое судно должно иметь Регистровую книгу судовых грузоподъемных устройств и соответствующие свидетельства, сертификаты, инструкции.

9. Answer the following questions to the text:

- 1) What is the main idea of the text?
- 2) What causes valve's short life span?
- 3) What is the average working time of the main engine?
- 4) What parameters influence the lifetime of the exhaust valve?
- 5) What does asymmetric temperature distribution cause?
- 6) What design enhancements have led to extension of the life expectancy?
- 7) Why were valve springs disconnected?
- 8) What equalizes and reduces the valve head temperature?
- 9) What can lead to an angular rotation?
- 10) What was a special computer program developed for?

10. Sum up the information and represent the annotation.

3. UNIT III. MACHINERY SPACE NEW RTA60C RUNS RO-ROS FASTER

1. Notes:

camshaft – кулачковый вал;
 dispense with – обходиться без, избегать;
 injection pump – топливный насос;
 withdrawing piston – удаленный поршень;
 tuning – регулировка;
 combustion space – камера сгорания;
 exhaust gas – отработавший газ;

piston crown – головка поршня;
 film – тонкая пленка;
 flange – фланец, закрин, выступ;
 crankcase – картер;
 cylinder head – головка цилиндра;
 inherent – свойственный;
 turbocharging – турбонаддув.

2. Read the text.

Machinery space new RTA60C runs Ro-Ros faster (perhaps without camshaft)

Why a 60C? According to the engine designer the bore size and revolutions offers 'the right powers and speeds for a wide range of faster ship types, such as medium-sized containerships (typically 1200-2700TEU), car carriers, ro-ros and reefers.

What is perhaps even more interesting is that it has been designed so that Sulzer's technological development which is hi the pipeline – the RT-flex system – can be incorporated. This uses the common rail system to give a fully electronically-controlled engine that dispenses with the camshaft and its individual fuel pumps.

Running at 91 – 114 re v/min, the new engine, with a stroke of 2250 mm, has a maximum continuous output of 2360kW/cyl and is available with five to eight cylinders covering an overall power range of 8250-18 880 kW (11 200-25 680 bhp).

It benefits from more compact dimensions – the six-cylinder engine is just 7620 mm long – and lighter weight for a given power than other engines in its class. For the maintenance-minded, notable is its height – just 8.52 m tall above the shaft centerline – requiring a hook height of only 10.4 m for withdrawing pistons. Even lower piston-withdrawal heights for vessels such as car carriers can be achieved using special tools.

Of course, all the best design features of the RTA-series engines are retained, such as the robust structure with box-type columns, double-valve controlled fuel injection pumps, electronically-regulated variable injection timing (VIT), fully bore-cooled combustion space components, and an exhaust-gas system designed for maximum energy conservation. Naturally, it is fully compliant with the IMO NOx emission regulations.

And the best operational features are inherent, such as low piston crown temperatures offered by well-adapted jet-shaker cooling, cylinder liners with

sufficient hard phase and fully-honed running surface, multi-level cylinder lubrication, etc.

However, piston running behaviour is further improved by the use of anti-polishing rings at the top of the cylinder liner. They have already been tested in existing RTA engines with good results.

As in the Wartsila four-stroke engines, the anti-polishing ring has a slightly smaller bore than the cylinder liner so that it helps keep clean the top land of the piston. This stops deposits on the top land doing any damage to the liner running surface and its lubrication film. Keeping the top land clean also ensures a good spread of lubricant over the liner surface, while using lower cylinder oil feed rate.

The four stud arrangement which hold down each of the cylinder covers allows for compactness and has helped contribute to the shorter engine length. It also simplifies manufacture while a more rigid cylinder cover still ensures a uniform holding-down pressure. Simplification in this area extends to the use of cylinder liners that are self-supporting and do not need the additional support ring used in existing RTA engines.

There is just a simple water jacket to provide the necessary cooling for the portion of the liner length immediately below the bore-cooled top flange of the cylinder liner.

3. Read and translate the following active words and word combinations:

Oil filter, cover, power range, output, rail system, overall, withdrawing piston, variable injection timing, oil feed, lubrication.

4. Translate into English:

Крышка, ремонт, головка поршня, отработавший газ, размер, обходиться без, ход поршня, камера сгорания, трубопровод, кулачковый вал, крепкая структура, противопалировальное кольцо, водяная рубашка.

5. Translate into Russian according to the translation pattern.

- 1) We are to test the engine.
- 2) The quantity of oil feed to each point can be regulated by means of
- 3) The four stud arrangement which hold down each of the cylinder covers allows for compactness.
- 4) There is just a simple water jacket to provide the necessary cooling for the portion of the liner length.
- 5) We had to reduce the oil pressure.

- 6) Clearances between the injection pump plunger and bush had to be enlarged.
- 7) This mechanism is provided with special devices for the whole system to function automatically.
- 8) The best operational features are inherent, such as low piston crown temperatures offered by well adapted jet shaker coding.
- 9) To increase the output of a diesel engine the engine is connected with one or more exhaust gas turbine driven compressors and our coolers: an arrangement known as turbocharging.
- 10) Cylinder liner wear should be periodically checked.

6. Answer the following questions to the text:

- 1) What does the engine designer offer?
- 2) For what kinds of vessels does the engine designer offer the bore size?
- 3) What is the length and weight of the six-cylinder engine?
- 4) In what way can the lower piston withdrawal heights for vessels be achieved?
- 5) What kind of the RTA – series engines are retained?
- 6) What can influence on the behaviour of piston running?
- 7) What helps them to keep clean the top land of the piston?
- 8) What is a simple water jacket? What does it provide?
- 9) What stops deposits on the top land?
- 10) What ensures a good spread of lubricant?

7. Translate into English using the active vocabulary of this unit:

- 1) Работа поршневого хода в дальнейшем улучшается при использовании противопалировальных колец, расположенных на вершине головки цилиндра.
- 2) Камера сгорания крепится в головке цилиндра.
- 3) Камера сгорания и водяные рубашки изолируются от картера.
- 4) Втулка цилиндра вставляется в картер.
- 5) Картер образует кулачковый вал.
- 6) Поршни и цилиндровые втулки имеют простую конструкцию.
- 7) Картер снабжен водяными рубашками и гнездами для втулок цилиндров.
- 8) Втулки цилиндров вставлены в картер.
- 9) Камера сгорания и водяные рубашки геометрически изолированы от картера металлической уплотнительной прокладкой.

10) Камера сгорания крепится в головке цилиндра посредством зажимной гайки.

8. Sum up the information and represent the annotation.

4. UNIT IV. ADDITIVES ADDITIVES VITAL IN SOLVING PROBLEMS

1. Notes:

additive – присадка к маслу;

lube oil – смазочное масло;

test engine – испытательный двигатель;

anti-wear – износостойкий, износоустойчивый; противоизносный;

adhesive – связывающий;

cylinder lubrication – цилиндровая смазка;

piston ring – колесо поршня;

crosshead – крейцкопф, ползун;

abrasive – шлифовальный материал;

alkaline – щелочной;

scuffing – заедание;

asperity – шероховатость.

2. Read the text.

Additives

Additives vital in solving problems

Most lube oil companies use additives consisting of sulphonates and phenates but Shell Marine has exploited salicylate technology in the development of its Argina range over the past 20 years to secure 'excellent engine cleanliness'.

US-based Oronite, which claims to be the world's largest supplier of marine lubricant additives, exploits a variety of R&D facilities including a new four-cylinder Wartsila 20 test engine, a Bolnes crosshead laboratory engine and two crude earners outfitted for field trials.

A new Singapore manufacturing plant is reportedly the only world-scale additive production facility in Asia, promising regional marine customers supply security, shorter delivery times, lower inventory costs and a wider product choice.

An example of how an anti-wear additive can help reduce adhesive wear by up to 50 % is provided by Castrol International Marine.

Cylinder lubricants are an essential component in the control of liner and piston ring wear in low speed crosshead diesel engines. High wear rates can be caused by corrosive, abrasive and adhesive wear, the conditions prevailing in the combustion space being the key influence on the type of wear experienced.

In older engine designs the wear was predominantly corrosive but wear in the latest engines is now largely adhesive, Castrol reports.

Traditionally, cylinder oils had high alkalinity to provide protection against corrosive wear: a base number (BN) of 70 was the industry norm, with higher BN oils available to provide even greater protection. The increase in engine performance, and in particular the rise in cylinder liner temperature, has effectively engineered out high corrosive wear.

Engines designed and built in the late 1980s and early 1990s had liner temperatures sufficiently high enough to prevent corrosive wear; and the use of a 70 BN lubricant was often the most economical means of aiding cylinder lubrication and protection.

Once liner temperatures are increased above about 250° C the performance of standard cylinder oils becomes marginal in providing protection against increased liner and ring wear. Under these conditions, says Castrol, the type of wear is largely adhesive and the performance of cylinder oils has to be assessed by their ability to minimize such wear.

Adhesive wear (or 'scuffing') occurs when the surface asperities on the liner and piston ring have metal-to-metal contact. Local welding and metal deformation result, the amount of contact determining the rate of wear. The rougher the surfaces, the greater the likelihood of adhere wear taking place (which is why it is usually experienced during the engine running-in period).

Adhesive wear and its control are identified as major issues in two-stroke engine cylinder lubrication. The only way to control the wear rate is to limit local welding and deformation of the asperities, Castrol reports, and this can be achieved by using high temperature high performance additives.

Special tests were conducted on a modified research engine in which the liner temperatures were raised to almost 300°C. Under these conditions, severe adhesive wear resulted within 100 hours using standard 70 BN cylinder oil. Using 80 BN oil incorporating high temperature anti-wear additives, however, minimized the amount of adhesive wear. Other tests showed that this combination of high BN and anti-wear additive can reduce adhesive wear by up to 50%.



3. Read and translate the following active words and word combinations:

Additive, lubrication, adhesive wear, corrosive, piston ring, crosshead, alkaline, industry norm, to assess, asperity, local welding.

4. Find the proper English equivalent to the words (word-combinations) given in brackets. Translate the sentences without a dictionary:

- 1) (*Цилиндровая смазка*) are an essential component in the control of (*втулка*).
- 2) (*Присадка к маслу*) determines the quality and performance of (*смазочное масло*) formulated for different roles.
- 3) The conditions prevailing in (*камера сгорания*) being the key influence on the type of wear experienced.
- 4) The only way to control (*уровень износа*) is to limit local (*сварка*) and deformation of шероховатости.
- 5) (*Заедание*) occurs when the surface (*шероховатость*) on the liner и (*поршневое кольцо*) have metal-to-metal contact.

5. Translate the word combinations:

Shorter delivery times, regional marine customer, two-stroke engine cylinder lubrication, cylinder liner temperature.

6. Translate into English:

Выпускной клапан, фильтр, мощный распределитель, ход поршня, присадка к маслу, подача масла, трубопровод, поршень, втулка, крайний, опыт, износ.

7. Answer the following questions to the text:

- 1) What does the quality and performance of lube oils determine?
- 2) Where can you buy additives?
- 3) What are the main components of additives?
- 4) Who is the largest supplier of marine lubricant additives in the world?
- 5) What is an essential component in the control of liner?
- 6) What can high wear rates cause?
- 7) What did cylinder oils have? For what purposes?
- 8) What was the temperature of engines, which was built and designed in the late 1980s?
- 9) What is the maximum liner temperature?
- 10) When does scuffing occur?
- 11) What can minimize the amount of adhesive wear?



8. Translate into English using the active vocabulary of this unit:

- 1) При замене смазочного масла необходимо одновременно прочищать фильтр.
- 2) Температуру масла необходимо контролировать.
- 3) Цилиндровые головки, втулки и детали с водяными рубашками должны содержаться в чистоте и быть свободными от коррозии.
- 4) Цилиндровое масло имеет высокий щелочной состав обеспечивающий защиту от коррозии.
- 5) Заедание возникает при шероховатости поверхности втулки.
- 6) Цилиндровые втулки вставляются в рубашки цилиндра.
- 7) Поршни охлаждаются маслом.
- 8) Смазочное масло подается между двумя крышками подшипника.
- 9) Лубрикатор состоит из группы небольших насосов с возвратно-поступательным ходом поршней.
- 10) Необходимо проверить систему трубопроводов перед запуском двигателя.

9. Sum up the information and represent the annotation.

5. UNIT V. LUBRICATION IMPROVING THE EFFECTIVENESS OF CYLINDER OILS

1. Notes:

expenditure – расход;
 overhaul – переборка, капитальный ремонт;
 to neutralize – нейтрализовать;
 scuff – истирание, срабатывание, царапина, заедание;
 solenoid – соленоид;
 scavenge – продувать;
 volatile – летучий, испаряемый;
 viscosity – вязкость, внутреннее трение;
 coke – кокс;
 detergency – очищение;
 test-bed – испытательный стенд;
 humidity – влажность, сырость, степень влажности;
 target – мишень;
 quill – пустотелый вал;
 adjacent – смежный.



2. Read the text.

Lubrication

Improving the effectiveness of cylinder oils

Investigations of many engines in service indicated some differences in the behaviour of cylinder oils, and that this might significantly influence cylinder condition.

In general, MAN B&W Diesel, explains, the task of cylinder oil is to lubricate, to neutralize acids from the combustion process, and to wash away particles. Engines operating with certain cylinder oils, however, have revealed an unsatisfactory cylinder condition, with high wear and scuffing tendencies. They also exhibited a very low drainage amount from the scavenge air space.

Examinations showed that these cylinder oils seemed to contain volatile compounds that evaporate at lower temperatures than others. Naturally, such oils – owing to the increased viscosity after evaporation of the volatile compounds – created more coke and were not able properly to lubricate the lower part of the cylinder liner or to wash particles away.

Investigations of various cylinder oils were undertaken by MAN B&W Diesel in close co-operation with lube oil companies to assess their ability to fulfill their purpose.

Cylinder oil behaviour also depends on the temperature of the liner, piston crown and piston rings. The introduction of a high topland piston leads to a higher margin against differences in the properties of the oils.

In today's cylinder oils, the detergency and total base number (TBN) are closely connected. This has an adverse effect, especially during testbed trials when the detergency is needed during running-in and when the TBN additives are not neutralized due to the use of light fuel with low sulphur content.

Increased coke deposits are provoked, most probably accelerated when humidity is high. In service, this could occur if there is a change from fuel oil to diesel or gas oil with low sulphur content, the maximum allowable sulphur content might be reduced. One development target for lube oil companies, MAN B&W Diesel suggests, should thus be to introduce cylinder oil with high detergency and thermal stability, independent of the desired TBN.

Cylinder oil must be injected into the cylinder at the exact position and time for optimum effect. MAN B&W Diesel therefore initiated development of a new electronic cylinder lubrication system.

The new system is based on an injector which injects a specific volume of oil into each cylinder for each (or every second third, etc) revolution; the oil to the injector is pressurized by a pump or pumps. It is controlled by a computer

in such a way that the oil can be introduced to the individual cylinder at any piston position (but preferably when the piston rings are adjacent to the lubricating quills).

The computer synchronizes itself at each revolution when the piston for cylinder No. 1 is at top dead centre. The injection function is controlled by the computer sending an on/off signal to a solenoid valve.

Oil dosage can be adjusted by an adjustment screw which limits the stroke of the main lubricator piston. After a predetermined time interval the computer transmits an off signal to the solenoid valve which shuts off the system pressure and opens the return oil system.

The amount of oil injected can be increased as required; for example, at load changes, start/stop or higher engine load. Alternatively, the dosage of oil fed to the individual cylinders can be adjusted by injecting a calibrated amount of oil a number of times at a given number of engine revolutions. A combination of these two systems can also be used.

In the event of a malfunctioning solenoid valve or transducer the oil dosage will automatically be increased to the maximum volume. If the oil pressure fails the computer will start a standby pump, close down the faulty pump and set off the alarm.

MAN B&W Diesel's electronic cylinder lubrication system was fine tuned on its 4T50MX research engine, operated with good results on a 6S35MC engine, and tested on a K90MC engine. The key benefit over a traditional system is more accurate timing, making it possible to secure lower oil consumption without compromising cylinder condition. The outcome of more prolonged tests on different engines will determine whether the system is adopted as a standard solution for MC engines.

3. Read and translate the following active words and word-combinations:

Consumption, expenditure, to inject, volatile compound, viscosity, to evaporate, solenoid valve, lubrication system, detergency, optimum effect, Intelligent Engine, to be in service, filter body.

4. Translate into English:

Смазка, испытательный стенд, внутреннее трение, переборка, обработка, мишень, смежный, кокс, пустотелый вал, продувать, очищение, дозировка масла, регулировка, присадка к валу.



5. Choose the proper English equivalent:

- | | |
|---------------------|---------------------|
| 1) выпускной клапан | 1) amount |
| 2) очищение | 2) cylinder head |
| 3) пустотелый вал | 3) combustion space |
| 4) водяная рубашка | 4) design |
| 5) количество | 5) liner |
| 6) подача масла | 6) exhaust value |
| 7) головка цилиндра | 7) quill |
| 8) камера сгорания | 8) detergency |
| 9) втулка | 9) oil feed |
| 10) конструкция | 10) water jacket |

6. Translate the following verbs:

Продувать, регулировать, нейтрализовать, удалять, содержать, впрыскивать, наполнить, испарять, оценивать, настраивать, очищать.

7. Translate into Russian:

- 1) The quantity of oil feed to each point can be regulated by means of a screw.
- 2) The amount of oil injected can be increased as required.
- 3) Cylinder oil behaviour also depends on the temperature of the liner.
- 4) The oil can be introduced to the individual cylinder at any piston position.
- 5) Diesel in close co-operation with lube oil companies to assess their ability to fulfill their purpose.
- 6) Once a year the engine must be given a thorough cleaning.
- 7) Cylinder liner wear should be periodically checked.
- 8) Before starting the engine it is necessary to test the piping.

8. Answer the following questions to the text:

- 1) What does cylinder lube oil consumption represent?
- 2) What is cylinder lubrication?
- 3) What does cylinder oil contain?
- 4) What does cylinder oil behaviour depend upon?
- 5) What can you say about today's cylinder oil?
- 6) What is necessary to do with cylinder oil in order to obtain optimum effect?
- 7) In what way can you characterize the new system?
- 8) When does the computer synchronize?
- 9) Where does the computer send signals?
- 10) For what purpose do you use an adjustment screw?

- 11) What is the behaviour of the computer, after a predetermined time interval?
- 12) In what cases does the oil dosage increase?
- 13) What will the computer start if the oil pressure fails?

9. Translate into English:

- 1) Дозу масла можно наладить регулировочным винтом, который ограничивает ход масляного поршня.
- 2) При любом методе охлаждения температура поршня очень высокая.
- 3) Насосы подают определенное количество масла при каждом ходе двигателя.
- 4) Потребление цилиндрического смазочного масла составляет значительный расход для низкоскоростных двухходовых двигателей.
- 5) Кажется, что цилиндрические масла содержат летучую смесь, которая испаряется при низкой температуре.
- 6) Цилиндрические втулки изготовлены из износостойкого чугуна.
- 7) При капитальном ремонте насоса необходимо нейтрализовать кислоты.
- 8) Международный союз морского страхования - объединение национальных организаций и отдельных страховых компаний, проводящих страхование морских судов, грузов и фрахта.
- 9) Погрузочный ордер - первичный документ, сопровождающий груз при передаче на судно, вручается грузовому помощнику капитана судна в двух экземплярах до начала погрузки судна.
- 10) Каждое судно, перевозящее опасные грузы или загрязнители моря, должно иметь специальный реестр или манифест с указанием опасных грузов и их размещения на судне.

10. Sum up the information and represent the annotation.

6. UNIT V. SLUDGE: IN THE TANK OR IN THE ENGINE

1. Notes:

judgement – взгляд, мнение;
 back flushing – частота обратной промывки;
 homogenizer – гомогенизатор;
 sludge – густая грязь; отстой, осадок;
 treatment – (технологическая) обработка, очистка;
 abrasive grit – шлифованный, абразивный песок;
 feed pump – подающий насос; питательный насос;
 displacement pump – объемный насос;
 settling tank – отстойный резервуар, отстойник;
 prior to – прежде чем, перед;
 throttling – дросселирование, регулирование расхода (жидкости или газа) с помощью дросселя;
 fine filter – мелкопористый фильтр, фильтр тонкой очистки;
 centrifugal separator – центробежный сепаратор, центрифуга;
 asphaltenes – асфальтены;
 clogging – засорение, загрязнение;
 coalesce – объединяться, сливаться;
 water droplet – капля водяная;
 entrap – улавливать, захватывать; задерживать;
 back flushing – очистка противотоком;
 hazardous – опасный, рискованный.

2. Read the text.

Sludge: in the tank or in the engine

The primary purpose of fuel treatment is not to produce sludge, but to remove those compounds present in the fuel oil that could cause excessive wear in the engine. These compounds are generally accepted to be water, catalyst fines, abrasive grit and sodium from seawater. Judgements on the suitability of a fuel oil treatment system should not therefore be based on the amount of sludge produced, but on the ability of the system to remove compounds that can cause excess engine wear.

Alfa Laval has followed the changes that have taken place in the quality of the fuel oils being used and the effects this has on the separation system. In 1980 the company published a Technical Information bulletin where it gave recommendations for the pre-treatment and cleaning of heavy fuel oils



including the pumping system that should be used. This suggested the use of constant flow positive displacement feed pumps placed close to the fuel oil settling tank, and that throttling of the oil flow prior to cleaning should be avoided. These are designed to reduce the breaking up of particle agglomerates and to minimize the formation of emulsions, as both are known to seriously reduce separation efficiency.

Recently the use of homogenizers has been given a lot of publicity. Some producers of these systems claim that a homogenizer in combination with a fine (10 micron) filter can replace the centrifugal separator. They also claim that passing the fuel oil through a homogenizer prior to separation will reduce the volume of sludge produced by the centrifuge. The argument from homogenizer suppliers is that by breaking down the size of the asphaltenes in the fuel oil to about 5 microns, these will not be separated but will be burnt in the engine, thus increasing the amount of burnable fuel. Equally these very small particles will be difficult to remove in a separator and hence the volume of sludge produced will be less.

With regard to the first claim Alfa Laval can quote data from an independent source. This compared the treatment of a heavy fuel oil using an Alfa Laval centrifugal separator with treatment using the combination of a homogenizer and a fine filter. The results show that a homogenizer/filter system cannot replace a separator for efficient particle removal.

This data is further supported by Prof. H. Meier-Peter of the Flensburg Institute für Schiffsbetriebsforschung who states that a homogenizer/filter combination normally removes 20-30 per cent of the particles. He further states that, because of clogging resulting from the very small particle size, the back flushing frequency on the filter increases to the degree that more than 30 per cent of the fuel oil will end up in the sludge tank. These statements would seem to place considerable doubt on the suitability of the homogenizer/filter combination for cleaning fuel oil.

Catalyst fines and their removal from fuel oil was the subject of a paper from Exxon in 1985. The paper showed that the amount of catalyst fines removed in a laboratory centrifugal separator did not agree with the amount that should be removed, according to theoretical calculations. The reason was that catalyst fines are hydrophilic, and most are entrapped in small water droplets within the oil. As the density of the combined catalyst/water droplet is close to the density of the fuel oil, separation by centrifugal force is virtually impossible.

The fact that the size distribution of the particles remaining after separation was virtually the same as the size distribution in the original fuel sample



showed that the ability of the centrifuge to remove very small solid particles was not in question. This was further confirmed by drying fuel oil samples in the laboratory to remove the water droplets which allowed the centrifuge to approach theoretical efficiency levels for catalyst removal.

They were also able to show that catalyst removal was greatly improved by adding surface-active agents that allowed the water to coalesce into larger droplets. This infers that, since the bulk of the catalyst particles are entrapped in water, efficient water removal will also provide efficient catalyst removal and that increasing the size of the water droplets will improve separation efficiency.

Since these requirements of efficient water removal and maximum water droplet size are in direct contrast to the aims of homogenization, one can assume that homogenizing fuel oil prior to separation will reduce separation and allow most of the catalyst fines to go forward to the fuel injection system.

Over the last few years Alfa Laval has taken samples from vessels that are using homogenizers and have also carried out its own tests. These show that the levels of water, particles and catalyst fines left in the homogenized oil after separation are far higher than the levels obtained by separating non-homogenized fuel oil.

All the engine builders Alfa Laval contacted have been negative to the use of homogenizers prior to the separator.

It is probably correct that a homogenizer can reduce the amount of sludge produced, but the negative side is that hazardous contaminants will not be removed by the cleaning process and will therefore reach the engine. Alfa Laval's recommendation is: "If you are really concerned about protecting your engine, then separate the sludge do not homogenize it".

3. Read and translate the following active words and word combinations:

Excessive engine wear, catalyst fines, sodium, suitability, separation system, Technical Information bulletin, pumping system, constant flow positive displacement feed pumps, fuel oil settling tank, burnable fuel, solid particle, density, back flushing frequency, surface-active agent, separator.

4. Translate into English:

Катализатор, натрий, топливная система, тяжелая нефть, агломерат, эмульсия, степень очистки, дросселирование, микрон, центробежный сепаратор, воспламеняемый, отстойник (2 варианта), загрязнение (2 варианта), капля водяная, пригодность, питательный насос.

5. Choose the proper English equivalent:

- | | |
|--------------------------|-------------------------------|
| 1) sludge | 1) объемный насос |
| 2) feed pump | 2) степень очистки |
| 3) clogging | 3) опасный, рискованный |
| 4) displacement pump | 4) плотный, твёрдый |
| 5) hazardous | 5) образец |
| 6) entrap | 6) подающий/питательный насос |
| 7) separation efficiency | 7) осадок |
| 8) coalesce | 8) засорение, загрязнение |
| 9) solid | 9) захватывать; задерживать |
| 10) sample | 10) объединяться, сливаться |

6. Translate the following verbs and make up sentences using these words:

to infer, to remove, to improve, to claim, to reduce, to state, to quote, to entrap, to confirm, to allow, to assume, to coalesce.

5. Translate into Russian:

- 1) These compounds are generally accepted to be water, catalyst fines, abrasive grit and sodium from seawater.
- 2) This suggested the use of constant flow positive displacement feed pumps placed close to the fuel oil settling tank, and that throttling of the oil flow prior to cleaning should be avoided.
- 3) Constant flow positive displacement feed pumps are placed close to the fuel oil settling tank and throttling of the oil flow prior to cleaning is avoided.
- 4) As the density of the combined catalyst/water droplet is close to the density of the fuel oil, separation by centrifugal force is virtually impossible.
- 5) Because of clogging resulting from the very small particle size, the back flushing frequency on the filter increases to the degree that more than 30 per cent of the fuel oil will end up in the sludge tank.

- 6) The levels of water, particles and catalyst fines left in the homogenized oil after separation are far higher than the levels obtained by separating non-homogenized fuel oil.
- 7) If you are really concerned about protecting your engine, then separate the sludge do not homogenize it.

6. Answer the following questions to the text:

- 1) What is the primary purpose of a fuel treatment system?
- 2) What is a Technical Information bulletin published in 1980 by Alfa Laval about?
- 3) What do homogenizer producers think on homogenizer systems?
- 4) What does the professor from Flensburg Institute state concerning this problem?
- 5) What does the paper from Exxon show?
- 6) What do drying fuel oil samples show?
- 7) What does Alva Laval advise?
- 8) Why is the separation by centrifugal force virtually impossible?
- 9) The use of homogenizers was given a lot of publicity, wasn't it?
- 10) What can influence on volume of sludge produced?

7. Translate from Russian into English using Enclosures:

- 1) Изготовители гомогенизаторов утверждают, что пропуск топливной нефти через гомогенизатор перед очисткой уменьшает количество собранной грязи.
- 2) Так как плотность капель водяных с частицами катализатора близка к плотности нефти, очистка благодаря центробежной силе практически невозможна.
- 3) Мелкие частицы удаляются с трудом в очистителе, поэтому количество собранной грязи меньше.
- 4) Увеличение размера капель повышает степень очистки.
- 5) Если вы хотите защитить свой двигатель, не используйте гомогенизаторы во время очистки нефти.
- 6) Для судов, совершающих заграничные плавания, международными соглашениями предусмотрено дополнительно иметь: свидетельство о безопасности пассажирского судна, свидетельство о безопасности грузового судна по оборудованию и снабжению, радиотелеграфное свидетельство о безопасности грузового судна, если имеется радиотелефонная установка, и др.

- 7) Люковая записка - опись грузов, размещаемых в каждом грузовом помещении судна, составляется администрацией судна с целью облегчения розыска размещенных в трюмах грузов и поконосаментной их выгрузки в порту назначения.
- 8) Таможенная очистка - выполнение необходимых формальностей, возникающих в связи с перемещением через таможенную границу товаров и транспортных средств.
- 9) После выполнения портовых формальностей, при прибытии в порт судну выдается “Сертификат свободной практики” судна.
- 10) При расчёте остойчивости судна и определении условного кренящего момента угол условного смещения зерна в заполненном отсеке принимается равным 15° и 25° в частично затопленном отсеке.

8. Sum up the information and represent the annotation.

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ENCLOSURE A

INTERNATIONAL ORGANIZATIONS IN SPHERE OF SHIPPING МЕЖДУНАРОДНЫЕ ОРГАНИЗАЦИИ В СФЕРЕ СУДОХОДСТВА

1. AAA – Association of Average Adjusters – Ассоциация диспашеров по общей аварии
2. ACOPS – Advisory Committee on Pollution of the Sea – Консультативный Комитет по предотвращению загрязнения моря нефтью
3. ALAMAR – Association Latinoamericana de Armadores (LASA – Latin American Shipowners' Association) – Ассоциация латиноамериканских судовладельцев (АЛАМАР)
4. BIMCO – Baltic and International Maritime Council – Балтийский и международный Морской Совет (БИМКО)
5. BINSА – Black Sea International Shipowners' Association – Международная Ассоциация судовладельцев Черноморского региона (БИНСА)
6. CCC – Customs Cooperation Council – Совет по сотрудничеству Таможен
7. CD – Commission du Danube – Дунайская Комиссия (ДК)
8. CENSA – Council of European and Japanese National Shipowners' Association – Совет национальных ассоциаций судовладельцев Европы и Японии
9. CIRM – Committee International Radio-Maritime (International Maritime Radio Association) – Международный Комитет (Ассоциация) морской радиосвязи (МКМР)
10. CMI – Committee Maritime International – Международный Морской Комитет (ММК)
11. ECSA – European Community Shipowners' Associations – Объединение ассоциаций судовладельцев Европейского Сообщества
12. FIATA – International Federation of Forwarding Agents' Associations (International Federation of Freight Forwarding Agents' Associations) – Международная Федерация ассоциаций экспедиторов (ФИАТА)

13. FONASBA – Federation of National Associations of Shipbrokers and Agents – Федерация национальных ассоциаций судовых брокеров и агентов (ФОНАСБА)
14. IACS – International Association of Classification Societies – Международная Ассоциация Классификационных Обществ (МАКО)
15. IALA – International Association of Lighthouse Authorities – Международная Ассоциация маячных служб (МАМС)
16. IAPH – International Association of Ports and Harbours – Международная Ассоциация портов и гаваней (МАСПОГ)
17. ICC – International Chamber of Commerce – Международная Торговая Палата (МТП)
18. ICHCA – International Cargo Handling Co-ordination Association – Международная Ассоциация по рационализации транспортно-грузовых операций (МАРТГО)
19. ICS – International Chamber of Shipping – Международная Палата Судоходства (МПС)
20. IFSMA – International Federation of Shipmasters' Association – Международная Федерация Ассоциаций морских капитанов (МФАКБ ИФСМА)
21. ИНО – International Hydrographic Organization (International Hydrographic Bureau) - Международная гидрографическая организация (МГО)
22. ICL – Institute of International Container Lessors – Институт фирм, сдающих в аренду контейнеры для международных перевозок
23. ИМС – International Institute of Marine Surveyors (Institute International des Experts Maritimes) – Международный Институт морских сюрвейеров
24. ИЛА – International Law Association – Ассоциация международного права
25. ИЛАМА – International Lifesaving Appliances Manufacturers' Association – Международная Ассоциация производителей спасательных средств
26. ИЛУ – Institute of London Underwriters – Институт Лондонских Страховщиков
27. ИЛО – International Labour Organization – Международная Организация труда (МОТ)

28. ImarE – Institute of Marine Engineers – Институт морских инженеров Великобритании
29. IMIF – International Maritime Industries Forum – Международный Форум Морских отраслей промышленности
30. IMLA – International /maritime Lecturers' Association – Международная Ассоциация морских лекторов
31. IMO – International Maritime Organization – Международная морская организация (ММО, ИМО)
32. IMPA – International Maritime Pilots' Association – Международная Ассоциация морских лоцманов
33. INMARSAT – International Maritime Satellite Organization – Международная организация морской спутниковой связи (ИНМАРСАТ)
34. INTERCARGO – International Association of Dry Cargo Shipowners – Международная Ассоциация владельцев сухогрузных судов (ИНТЕРКАРГО)
35. INTERTANKO – International Association of Independent Tanker Owners – Международная Ассоциация независимых владельцев танкеров (ИНТЕРТАНКО)
36. International Group of P&I Clubs – Международная группа ассоциаций (клубов) взаимного страхования
37. IOPS Fund – International Oil Pollution Compensation Fund – Международная фонд для компенсации при загрязнении нефтью
38. ISF – International Shipping Federation - Международная Федерация Судовладельцев (МФС)
39. ISMA – International Ship Managers' Association – Международная Ассоциация судовых менеджеров (ИСМА)
40. ISOA – International Support Vessel Owners' Association – Международная Ассоциация владельцев судов-снабженсов
41. ISO – International Organization for Standardization – Международная организация по стандартизации (ИСО)
42. ISSA – International Ship Suppliers Association - Международная Ассоциация судовых поставщиков
43. ISU – International Salvage Union – Международный Спасательный Союз (МСС)
44. ITF – International Transport Workers' Federation - Международная Федерация работников транспорта (транспортных рабочих) (МФТ)

45. ITU – International Telecommunication Union - Международный Союз электросвязи (МСЭ)
46. ITOFF – International Tanker Owners' Pollution Federation Ltd. – Международная Федерация владельцев танкеров по предотвращению загрязнения
47. IUMI – International Union of Marine Insurance – Международный Союз морского страхования (МСОМС)
48. MAIIF – Marine Accident Investigators International Forum – Международный Форум расследования морских происшествий
49. NI – Nautical Institute, London – Лондонский Морской Институт
50. OCIMF – Oil Companies International Marine Forum – Международный морской Форум нефтяных компаний (ОКИМФ)
51. OECD – Organization for Economic Cooperation and Development – Организация по экономическому сотрудничеству и развитию (ОЭСР)
52. ОПЕК – Organization of the Petroleum Exporting Countries – Организация стран – экспортеров нефти (ОПЕК)
53. PIANC – Permanent International Association on Navigation Congress – Постоянная международная Ассоциация конгресса по судоходству (ПИМАКС)
54. SIGTTO – Society of International Gas Tanker & Terminal Operators – Международное общество операторов газовозов и терминалов
55. TT Club – Through Transport Club – Клуб страховых компаний по страхованию транспортировки грузов
56. UNCTAD – United Nations Conference on Trade and Development – Конференция ООН по торговле и развитию (ЮНКТАД)
57. WHO – World Health Organization – Всемирная организация Здравоохранения (ВОЗ)
58. WMO – World Meteorological Organization – Всемирная Метеорологическая Организация (ВМО)
59. WMU – World Maritime University – Всемирный Морской университет (ВМУ)

ENCLOSURE B
SHIP'S DOCUMENTS
СУДОВЫЕ ДОКУМЕНТЫ
Permanent
Постоянные

1. Passenger Ship Safety Certificate – Свидетельство о безопасности пассажирского судна
2. Cargo Ship Safety Construction Certificate – Свидетельство о безопасности грузового судна по конструкции
3. Cargo Ship Safety Equipment Certificate – Свидетельство о безопасности грузового судна по оборудованию и снабжению
4. Cargo Ship Safety Radiotelegraphy Certificate – Свидетельство о безопасности грузового судна по радиотелеграфии
5. Cargo Ship Safety Radiotelephony Certificate – Свидетельство о безопасности грузового судна по радиотелефонии
6. Nuclear Passenger Ship Safety Certificate – Свидетельство о безопасности ядерного пассажирского судна
7. Nuclear Cargo Ship Safety Certificate – Свидетельство о безопасности ядерного грузового судна
8. Classification Certificate – Классификационное свидетельство
9. International Load Line Certificate – Международное свидетельство о грузовой марке
10. International Tonnage Certificate – Международное мерительное свидетельство
11. Certificate of Navigation under the Flag of the ... – Свидетельство о праве плавания под флагом...
12. Ship's Certificate (Certificate of Ownership) – Свидетельство о праве собственности на судно (Судовой патент)
13. Certificate of Seaworthiness – Свидетельство о годности к плаванию
14. Certificate of Minimum Safe Manning – Свидетельство о минимальном составе экипажа, обеспечивающем безопасность
15. Register of Ship's Cargo Handling Machinery and Gear – Регистровая книга судовых грузоподъемных устройств
16. Certificate of Test and Examination of Cranes or Hoists and Their Accessory Gear – Свидетельство об испытании и освидетельствовании кранов или подъемников с деталями перед вводом их в эксплуатацию
17. Certificate of Test and Examination of Winches, Derricks and Accessory Gear Before Being Taken into Use – Свидетельство об испытании и освидетельствовании лебедок и стрел с деталями перед вводом их в эксплуатацию

18. Certificate of Test and Examination of Chains, Hooks, Shackles, Swivels, Pulley blocks and other Loose Gear – Свидетельство об испытании и освидетельствовании цепей, гаков, скоб, вертлюгов, блоков и других деталей
19. Certificate of Test and Examination of Wire Ropes Before Being Taken Into Use – Свидетельство об испытании и освидетельствовании стальных тросов перед вводом их в эксплуатацию
20. Certificate of Test and Examination of Lifts Before Being Taken into Use – Свидетельство об испытании и освидетельствовании лифтов перед вводом их в эксплуатацию
21. International Oil Pollution Prevention Certificate (IOPP Cert.) – Международное свидетельство о предотвращении загрязнения нефтью
22. Supplement to the International Oil Pollution Prevention Certificate – Дополнение к международному свидетельству о предотвращении загрязнения нефтью
23. International Sewage Pollution Prevention Certificate – Международное свидетельство о предотвращении загрязнения сточными водами
24. Garbage Pollution Prevention Certificate – Свидетельство о предотвращении загрязнения мусором
25. Certificate of Type (Standard) Test for Sewage Treatment Plants – Свидетельство о типовом испытании установки для обработки сточных вод
26. Report of Marine Safety and Pollution Survey – Акт освидетельствования судна с целью проверки и обеспечения безопасности на море и предотвращения загрязнения
27. Certificate of Financial Responsibility (Water Pollution) USA – Свидетельство о финансовой ответственности по загрязнению вод США
28. Derating Exemption Certificate – Свидетельство об освобождении от дератизации
29. Certificate of Equipments – Свидетельство на оборудование и снабжение
30. Certificate of Life Saving Appliances – Свидетельство на спасательные средства
31. Suez Canal Tonnage Certificate – Специальное мерительное свидетельство Суэцкого канала
32. Panama Canal Tonnage Certificate – Мерительное свидетельство Панамского канала

ENCLOSURE C

SHIP'S DOCUMENTS СУДОВЫЕ ДОКУМЕНТЫ

Voyage Рейсовые

1. General Declaration – Общая декларация
2. Customs Declaration – Таможенная декларация
3. Cargo Declaration – Грузовая декларация
4. Ship's Stores Declaration – Декларация о судовых запасах
5. Crew's Effects Declaration – Декларация о личных вещах экипажа
6. Certificate of Free Pratique – Сертификат свободной практики
7. Maritime Declaration of Health – Морская санитарная декларация
8. Cargo Manifest – Грузовой манифест
9. Dangerous Cargo Manifest – Манифест на опасные грузы
10. Shipping Order – Погрузочный ордер
11. Mate's Receipt – Штурманская расписка
12. Hatch List – Люковая записка
13. Tallysheet – Тальманский лист
14. Bill of Lading – Коносамент
15. Through Bill of Lading – Коносамент сквозной
16. Liner Bill of Lading – Коносамент линейный
17. Charter Party – Чартер
18. Cargo Plan – Грузовой план
19. Outturn Report – Генакт (аутторн рипот)
20. Timesheet / Statement of Facts – Акт стояночного времени (таймшит)
21. Notice – Извещение капитана (ноутис)
22. Certificate of Origin – Свидетельство о происхождении груза
23. Ship's Stability Calculation – Расчет остойчивости судна
24. Grain Stability Calculation – Расчет зерновой остойчивости
25. Crew List – Судовая роль
26. Passenger List – Список пассажиров
27. Clearance – Таможенная очистка (разрешение на отход)
28. Radiotelephone communication at Sea – Радиотелефонная связь на море
29. Phonetical alphabet and numerical code – Фонетический алфавит и цифровой код для международной радиотелефонной связи

ENCLOSURE D

RADIOTELEPHONE COMMUNICATION AT SEA РАДИОТЕЛЕФОННАЯ СВЯЗЬ НА МОРЕ

Phonetic alphabet and numerical code Фонетический алфавит и цифровой код для международной радиотелефонной связи

A	Alfa	АЛФА
B	Bravo	БРАВО
C	Charlie	ЧАРЛИ
D	Delta	ДЭЛЬТА
E	Echo	ЭКО
F	Foxtrot	ФОКСТРОТ
G	Golf	ГОЛФ
H	Hotel	ХОТЭЛ
I	India	ИНДИА
J	Juliet	ДЖУЛИЭТ
K	Kilo	КИЛО
L	Lima	ЛИМА
M	Mike	МАЙК
N	November	НОВЭМБЭР
O	Oscar	ОСКА
P	Papa	ПАПА
Q	Quebec	КЭБЭК
R	Romeo	РОУМИО
S	Sierra	СИЭРА
T	Tango	ТАНГОУ
U	Uniform	ЮНИФОРМ
V	Victor	ВИКТА
W	Whisky	УИСКИ
X	X-ray	ЭКСРЭЙ
Y	Yankee	ЯНКИ
Z	Zulu	ЗУЛУ

0	Nadazero	НАДАЗЭРО
1	Unaone	УНАУАН
2	Bissotwo	БИССОТУ
3	Terrathree	ТЭРАТРИ
4	Kartefour	КАРТЭФОУР
5	Pantafive	ПАНТАФАЙВ
6	Soxisix	СОКСИСИКС
7	Setteseven	СЭТЭСЭВН
8	Oktoeight	ОКТОЭЙТ
9	Novenine	НОУВЭНАЙН

Decimal point-Decimal		ДЕЦИМАЛ
Full stop - Stop		СТОП

Заказ № от «___» _____ 2009
Изд-во СевНТУ

Тираж