Olena Tyron

TECHNICAL ENGLISH FOR SHIP ENGINEERS

STUDENT'S BOOK
Part 2

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Рекомендовано до друку кафедрою іноземних мов за професійним спрямуванням Державного університету інфраструктури та технологій Протокол №11 від 21.06.2021

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Тирон Олена

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Посібник «Technical English for nautical engineers. Student's book, part 2» – друга частина повного курсу технічної англійської мови професійного спрямування для судномеханіків. Мета посібника– формувати іншомовну професійну компетентність.

Посібник може використовуватися на практичних заняттях з англійської мови у навчальних закладах для спеціальності 271 « Річковий та морський транспорт» освітньої програми «Експлуатація технічних систем на водному транспорті».

Посібник корисний для підготовки до вступних іспитів на магістерську програму навчання.

Посібник також може використовуватися індивідуально для вивчення технічної англійської мови та підготовки до професійної діяльності на міжнародних суднах.

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CONTENT

UNIT 1. SHIPBOARD TRAINING REPORT

A sailor eating alphabet soup found the seven C's.

Read these questions that a crewing office manager is asking a seafarer during an interview. Decide which tense is needed. Write the questions in full.

1. (how long /be a seafarer?) _____
2. (what year student/be you?)_____
3. (work / present job / a long time?)_____
4. (what type of vessels / work on?) _____
5. (what training / do so far?)_____
6. (what / the most recent course / do?)_____
7. (what / do before this job?)_____
8. (why / apply for this position?)_____

Make up a dialogue and dramatize it with your partner.

You are looking for an employment on a foreign-flag ship. You are trying to get agent … on the phone in Genova (Italy) - phone number is 394-33-756, extension 32. You have a the 3rd Class Engineer Certificate

1. After hearing the phrase "Speaking" coming from the other end of the line, clear up whether you are connected to the right phone number.
   _____
   _____
2. Introduce yourself (tell the interlocutor your name and other particulars).
   _____
   _____
3. Tell whom you would like to speak and ask if that person is available.
   _____
   _____
4. After learning that Mr. Sarconi is out, ask whether you can leave a message for him.
   _____
   _____

5. Ask which time would be the best to call back later.

_____

_____

Respond to the questions coming from the other end of the line:

6. Who's calling, please?

_____

7. I'm sorry. I didn't catch your name. Will you spell it, please?

_____

8. Is there any message?

_____

9. What number are you calling from?

_____

Translate the words into Ukrainian:

word	**translation**	**word**	**translation**
safety precautions		to perform	
operating characteristics		extinguishing agents	
a gauge		to identify	
to explain		an emergency	
to define		to summarize	
to report data		evaporator steam coils	

Reading

I. As an Engine Cadet we were expected to:

1. label maritime hand tools and fasteners; identify safety precautions associated with different shipboard tools;
2. explain the operating characteristics of gauges such as manometer, pyrometer, liquid-in-glass, hydrometer, tachometer, etc.;
3. define and report data from gauges and use scales of measurement to identify proper operating parameters; replace faulty gauges and test for functionality;
4. summarize the functional characteristics of shipboard valves;
5. perform valve maintenance including lubrication, cycling, visual inspection, and testing;

6. identify proper material for shipboard piping and tubing systems.

II. The Engine Cadet evaluates aspects of damage control, firefighting, and shipboard emergencies. We were expected to:

1. demonstrate proper use of damage control equipment;
2. practice extinguishing a fire using portable extinguishers and agents;
3. identify potential fire hazards aboard ship;
4. explain evacuation procedures in an emergency.

III. We were expected to:

1. summarize fuel system components including fuel tanks, fuel hoses, fuel hose connections, fuel filters, fuel pumps, pressure vacuum fuel pumps, and mechanical fuel pumps;
2. determine cooling system requirements including flow path, hose routing, and water flow diagramming.

IV. The Engine Cadet distinguishes among shipboard auxiliary equipment. The cadet is expected to:

1. identify air compressor components and functions;
2. explain safety precautions for an air compressor;
3. perform maintenance on an air compressor in accordance with manufacturer's guidelines such as cleaning cooling fins, adjusting belts, servicing intake filters, checking and changing oil, and conducting operational tests.

V. The Engine Cadet describes the shipboard hydraulic systems. The cadets are expected to:

1. identify what determines the pressure created in a hydraulic system;
2. consider how different sized pistons are used to increases force;
3. explain the purpose of evaporator steam coils.

VI. The student differentiates among the properties of different hydraulic fluids. The student is expected to:

1. express how a confined liquid can be used to produce work;
2. explain the function and purpose of shipboard water distillation equipment;
3. describe the operations of a distillate condenser;
4. compare the theories regarding changing sea water to drinking water equipment.

Give general information about the ship where you were having your shipboard training

Name of the ship _____

Port of call _____

Type of the ship _____

Type of engine _____

Captain's name and nationality _____

Fuels used _____

Number of crew members _____

Number of holds _____

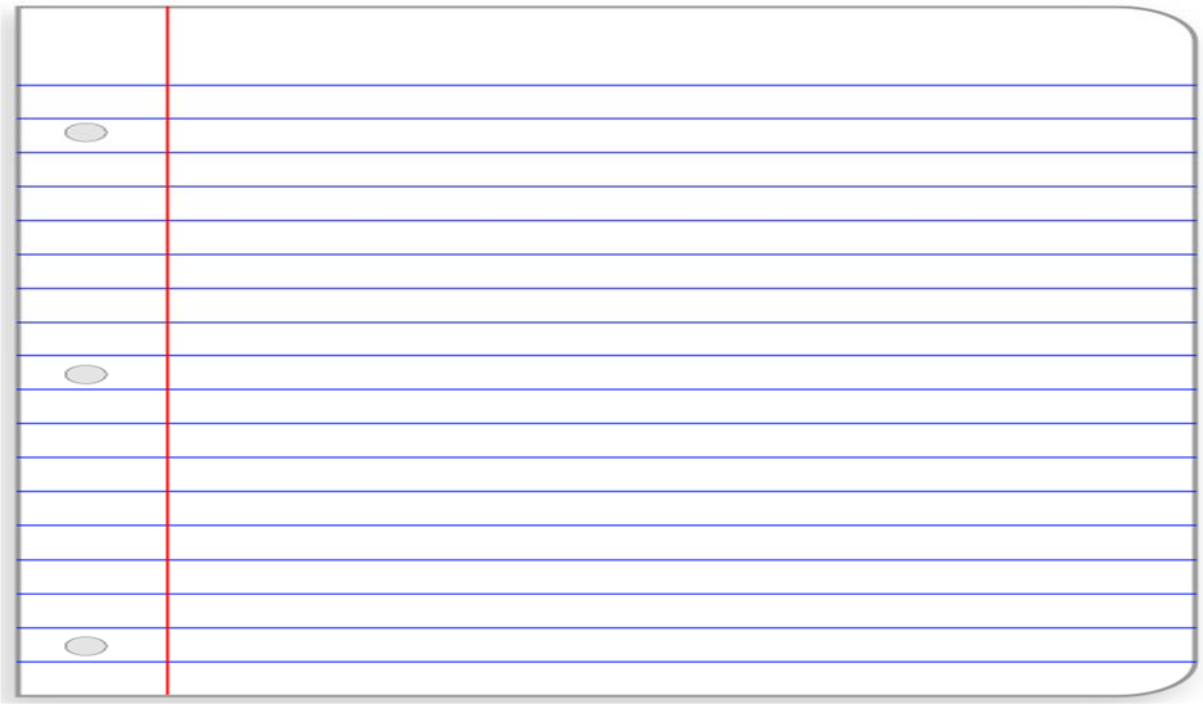
Give principal characteristics of your ship

1	Length overall		5	designed displacement	
2	breadth		6	loaded displacement	
3	designed sea speed		7	registered tonnage	
4	full load draft		8	gross register tonnage	

Name the engine department personnel

№	Position	Name /Surname	Main duties
1.			
2.			

Describe your duties on the ship in which you have taken part



Make a list of spare parts ordered during your shipboard training

1.

2.

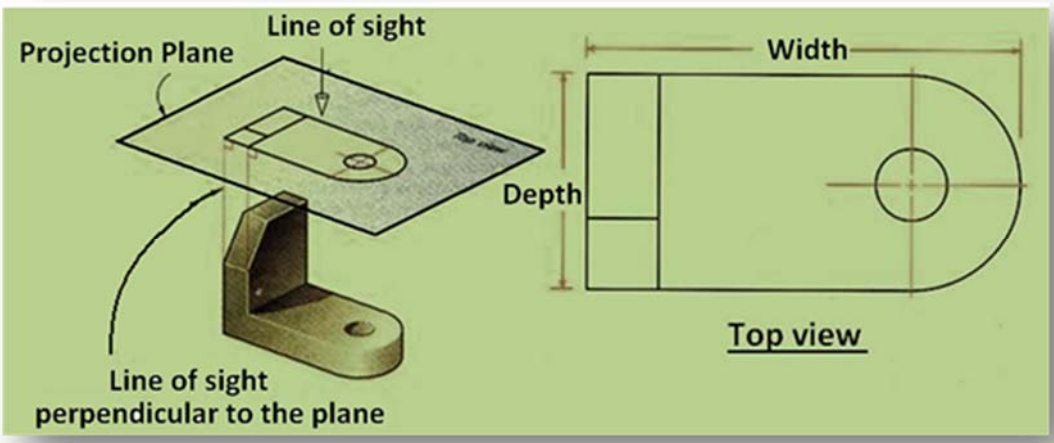
3.

…

Reading

Projection theory

In engineering, 3-dimensonal objects and structures are represented graphically on a 2-dimensional media. The act of obtaining the image of an object is termed “projection”. The image obtained by projection is known as a “view”. A simple projection system is shown in figure .



All projection theory are based on two variables:

- Line of sight
- Plane of projection.

Plane of Projection

A plane of projection (i.e, an image or picture plane) is an imaginary flat plane upon which the image created by the line of sight is projected. The image is produced by connecting the points where the lines of sight pierce the projection plane. In effect, 3-D object is transformed into a 2-D representation, also called projections. The paper or computer screen on which a drawing is created is a plane of projection.

DRAWING

Sketch a cross section of any portable fire extinguisher in the engine room and state which kind of fires each extinguisher is suitable for.

Grammar review

You are a seaman returning home after completing a 7-month long contract on a foreign-flag ship. Make a telephone call to the information center of the airport and find out:

1. what flights from Dakar to Madrid are available;

_____

2. whether you will have to change planes;

_____

3. whether there is a bus service from the centre of the city to the airport and how often the bus leaves;

_____

4. the quantity of kilograms of luggage you are allowed to carry without additional pay;

_____

5. the gate through which you will have to procced to your plane;

_____

Test your knowledge of engineering

1. Which of the pipework coloured green carries

a) lubricating oil
b) sea water
c) fresh water for main engine cooling
d) fresh water for drinking

2. Compressed air lines are colour coded

a) silver
b) white
c) pink
d) black

Radio Conversation

This is the actual transcript of a radio conversation between a British Navy ship and the Irish Coastguard, off the coast of Kerry:

Irish. Please divert your course 15 degrees to the south, to avoid collision

British. Recommend you divert your course 15 degrees to the north, to avoid collision

Irish. Negative. You will have to divert your course 15 degrees to the south ' to avoid collision.

British. This is the Captain of a British Navy Ship. I say again, divert YOUR course.

Irish. Negative. I say again, you will have to divert YOUR course

British. This is the largest ship I the British fleet. We are accompanied by 3 destroyers, 3 cruisers and numerous support ships. I demand that you change your course 15 degrees to the North or countermeasures will be undertaken to ensure the safety of this flotilla.

Irish. This is a lighthouse… Your call!

UNIT 2. MARINE BOILERS

The journey of a thousand miles begins with

a broken main halyard and a leaky toilet valve.

Translate the following sentences into Ukrainian, paying attention to the Passive Voice:

1. When cleaning *is done* the boiler *must be boiled out*.

2. When boiler pressure *has been raised*, the drains on the inlet superheater header *must be opened* wide.

3. In a number of cases, air heaters and economizers *were washed* with water to remove the slag accumulations.

4. The tube thickness *must be chosen* in accordance with the rules.

Underline the suffixes in the following words and translate the words into Ukrainian:

chamber, possibility, combustion, structure, continuous, burner, quality, explosion, feature, hazardous, header, variety, expansion, rupture, serious, relatively.

Translate the following sentences into Ukrainian, paying attention to the Comparative construction:

1. **The** more of the heat is transmitted, **the greater** will be the production of steam.

2. **The simpler** the design, **the better.**

3. **The greater** number of fire tubes used, **the greater** the proportionate amount of heating surface added to a boiler.

4. **The lower** the water level falls in the boiler drum, **the greater** is the length of inner generating tube transmitting heat to the jacket.

Translate the following groups of words into Ukrainian:

word	**translation**	**word**	**translation**
power plant work		oiler-system pressure	
water-circulation system		steam-generating unit	

flue-gas tempera-ture		marine fire-tube boiler	
bent-tube boiler type		single-drum water-tube boiler	
lateral-drum water-tube boiler		double-end type boiler	
Cross-drum water-tube boiler		single-end type boiler	

Give synonyms to the following words:

word	**synonym**	**word**	**synonym**
power		to transfer	
to occur		surface	
to combust		to decrease	
due to		complete	

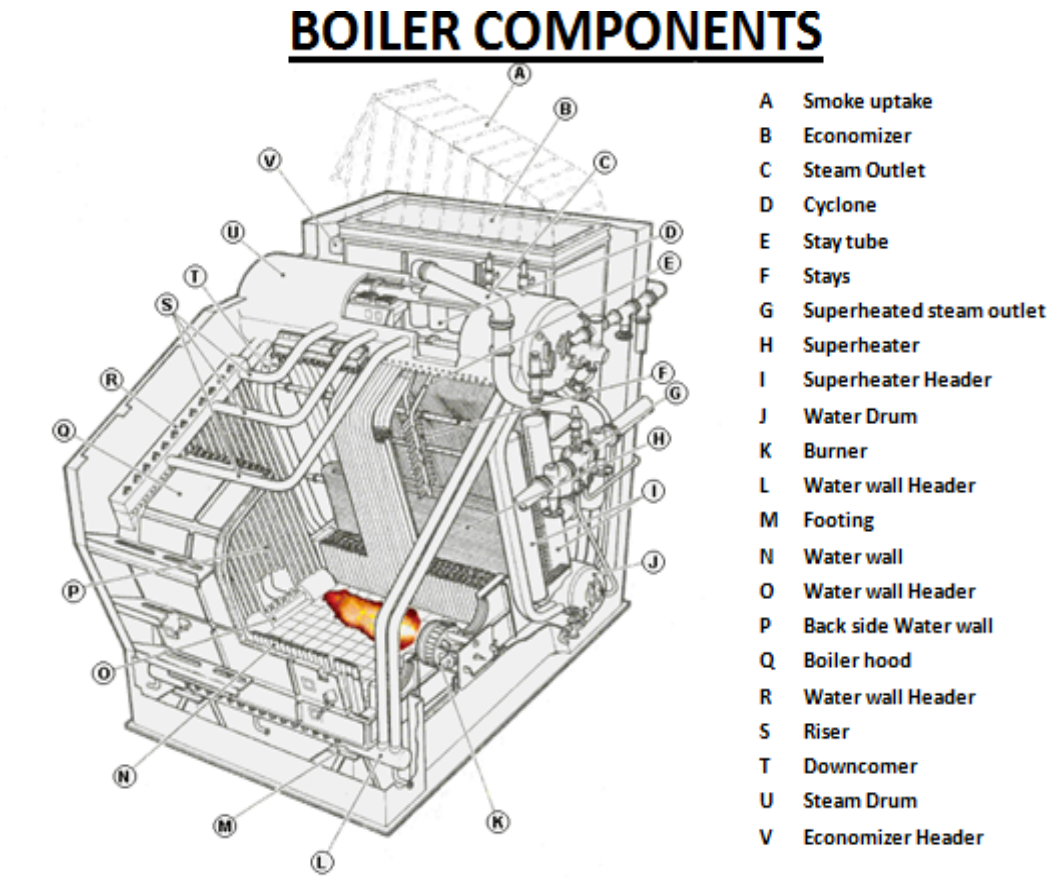
Give opposites to the following words:

word	**antonym**	**word**	**antonym**
hot		to decrease	
complex		impossible	
high		safety	
to leave		safe	

Two basically different types of boiler exist, namely the watertube and the firetube. In the watertube the feedwater is passed through the tubes and the hot gases pass over them. In the firetube boiler the hot gases pass through the tubes and the feedwater surrounds them. The watertube boiler is employed for high-pressure, high-temperature, high-capacity steam applications, e.g. providing steam for main propulsion turbines or cargo pump turbines. Firetube boilers are used for auxiliary purposes to provide smaller quantities of low-pressure steam on diesel engine powered ships.

Answer the following questions:

1. What is the function of a steam boiler?
2. What parts does a steam boiler consist of?
3. How many types of boilers do you know?
4. What is a fire-tube boiler?
5. What does a fire-tube boiler consist of?
6. What advantages has the fire-tube boiler?
7. What are the weak points of the fire-tube boiler?



https://youtu.be/BRKXItzDajo

SCAN ME

CONSTRUCTION OF BOILERS

The formation of steam from feed water occurs in the steam boiler. The function of steam boiler is to effect an efficient flow of heat from the products of combustion to the water and steam.

The structural features of the steam boiler are such that heat-transfer surfaces are being dispersed throughout the path of gas flow. The simplest structural arrangement consists of one or more steel drums and boiler tubes.

As steam turbines need superheated steam, the steam boiler incorporates a superheater, which is a heat-transfer surface, to form superheated steam from saturated steam.

Waterwalls are boiler tubes tied in to the water-circulation system. The theoretical limit to which flue-gas temperature may drop is the temperature of the saturated steam. With higher boiler-steam pressures a further extension to the heating surface is made in the form of an economizer. Here feed water is heated by the flue gases as they leave the boiler surface. The economizer also sets a limit to which the temperature of the flue gases may drop.

The elementary drums and tubes of the steam boiler, when added to in the form of waterwalls, superheater, economizer, air preheater and possibly other heating surfaces, give us the steamgenerating unit.

In addition to the heating surface, the steamgenerating unit includes the furnace, combustion and draft equipment, and a variety of auxiliary equipment for cotrolling combustion and steam formation.

Several accessories for safety and maintenance are also part of the complete unit.

Auxiliary Steam Plant System

The auxiliary steam installation provided in modern diesel powered tankers usually uses an exhaust gas heat exchanger at the base of the funnel and one or perhaps two water-tube boilers.

Saturated or superheated steam may be obtained from the auxiliary boiler. At sea it acts as a steam receiver for the exhaust-gas heat exchanger, which is circulated through it. In port it is oil-fired in the usual way.

Exhaust Gas Boilers

Auxiliary boilers on diesel main propulsion ships, other than tankers, are usually of composite form, enabling steam generation using oil firing or the