



THE YEAR **2017**



RELIABLE SERVICES IN CHALLENGING CONDITIONS

Arctia's key task is to safeguard icebreaking operations and winter navigation in the Finnish marine areas. We offer our customers reliable maritime services in challenging conditions throughout the world. In 2017, we achieved all the service targets set for us in the Baltic Sea. We also promoted Finland's unique icebreaking expertise around the world.

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01

Year 2017



Image: Tuomas Romu





Polaris starts its icebreaking duties in Finland's centenary year

Designed and built in Finland, the world's first LNG icebreaker Polaris started its icebreaking tasks in the Baltic Sea in the centenary year of Finland's independence in January 2017. The first season of the most efficient icebreaker of our fleet was full of activity. The vessel uses both liquefied natural gas (LNG) and low-sulphur diesel as fuel. The use of LNG significantly reduces the icebreaker's emissions. The EU supported the construction of Polaris with TEN-T funding.



Results of the IMOR ice management and oil recovery project are published

In March 2017, Arctia organised an ice management and oil recovery seminar in Porvoo in cooperation with Lamor. The results of the successful three-year IMOR project (Ice Management & Oil Recovery) were presented at the seminar. The objective of the project was to develop oil recovery operations in ice conditions. Understanding the dynamics of propeller flows will enable the use of an oil recovery vessel's machinery and propellers so that the oil in the ice can be collected even more efficiently into the oil recovery unit. The participants to the IMOR seminar included guests from, e.g. Canada, Russia and France.

Arctic 100 Expedition – records are broken for the second time in the Northwest Passage

Arctia's multipurpose icebreaker Nordica sailed through the Northwest Passage from Vancouver in Canada to Nuuk in Greenland during July 2017. The Northwest Passage is a sea route from the Pacific Ocean along the northern coast of North America through the Canadian Arctic Archipelago to the Atlantic Ocean. To mark the centenary of Finland's independence and the chairmanship of the Arctic Council, Arctia invited researchers from several different countries to this Arctic 100 Expedition. Representatives of the United States and Canadian Coast Guards and the indigenous peoples of North America were also invited to take part in the journey. The expedition promoted dialogue between the worlds of industry and research concerning research opportunities in the polar regions.

Finland's Arctic expertise promoted with a high profile throughout the world

Held in Reykjavik in October 2017, the Arctic Circle Assembly is the world's largest multidisciplinary international conference on the Arctic region. Arctia supported the prominence of Finland and Finnish expertise by sending the multipurpose icebreaker Nordica to Reykjavik. Several high-level meetings, debates and dinners, as well as guided tours of the icebreaker open to all were held on board Nordica. The icebreaker as a conference venue was Arctia's gift to the 100-year-old Finland. Arctia also organised, together with the secretariat of the conference, a talk on international cooperation in the use of icebreakers. The talk was open to all conference participants.

2017

Image: Patrik Barck



Employees

Total



268 / 265 / 273

Offshore personnel



237 / 233 / 237

Onshore personnel



31 / 32 / 36

Operating days

Baltic Sea



447 / 385 / 175

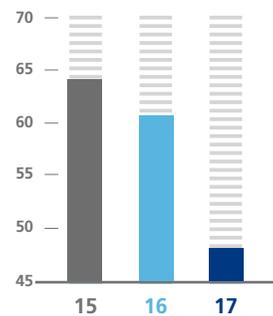
Offshore



65 / 61 / 380

Turnover

MEUR



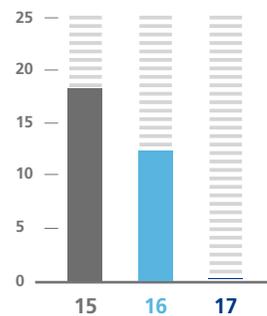
2017 / 48.9

2016 / 60.7

2015 / 64.4

Operating profit

MEUR



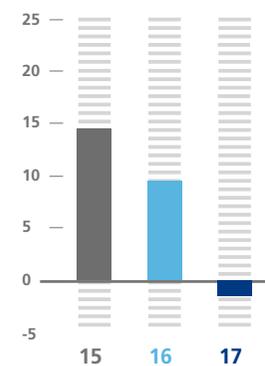
2017 / 0.1

2016 / 12.9

2015 / 18.1

Result for the financial year

MEUR



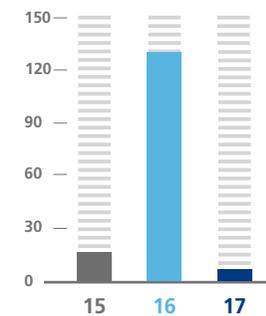
2017 / -1.4

2016 / 9.1

2015 / 14.6

Gross investment

MEUR



2017 / 5.7

2016 / 131.6*

2015 / 14.8

*Polaris

Return on capital invested

%



2017 2016 2015

CEO's review

After Finland's exports began to recover in 2017, Arctia served the needs of industry by safeguarding winter navigation in line with its service targets. In accordance with its ownership policies, fleet renewal, which was started in 2014, was continued in winter 2017 with a second new build when the world's first LNG-powered icebreaker *Polaris* joined the fleet. Sailing with the Finland 100 logo, the icebreaking efficiency of the vessel proved to be the best of the fleet already during its first winter of operation. International icebreaking cooperation in the Baltic Sea area continued successfully in the form of practical application of treaties in the Bay of Bothnia service area.

The service needs of our customers in the international market changed in 2017 when new restric-

tive measures were placed on offshore energy production in North America. Turnover fell on the previous year, and unfortunately the financial results were negative after five positive financial years. However, we successfully opened new market areas in accordance with the strategy by serving customers in the Pacific Ocean.

We continued to access new markets during the Arctic 100 Expedition when the multipurpose icebreaker *Nordica* sailed from the Pacific Ocean to Europe through the Canadian Arctic Archipelago along the Northwest Passage. During the voyage, a group of international researchers observed the development of the Arctic region while the capabilities of the ship and its crew were proven with the record-fast passage of the route. During the voyage, we raised the profile of our services in South Korea and in the United States, Canada, Greenland and Iceland.

Arctia is diversifying its operations further into new services, such as research and international fairway icebreaking. It is also supporting the polar traffic of passenger ships, increasing the utilisation rate and restoring the positive profit trend in the future. The service needs of the North American coast guards are still evident.

Finland assumed chairmanship of the Arctic Council in May 2017, and at the same time Finnish businesses took over the chair of the Arctic Economic Council for a period of two years. Removing barriers to trade in the Arctic region is part of responsible and sustainable economic development. It safeguards the availability of the best possible

expertise in all areas of the Arctic region. Regrettably, protectionism has also had an impact on the opportunities of exporting icebreaking services to both the western and eastern markets. The latest legislative changes, as well as the trade policy directions undermine the prospects of service exports.

At the turn of the year, the International Maritime Organisation IMO adopted the Polar Code that regulates maritime safety. Arctia blazes the trail in this trend, which is attested by our successful Arctic operations also in 2017.

Arctia has acted as a limited liability company since 2010. The operating model has shown its strengths: with operations as a company, international turnover has accounted for more than 40% of the Group's total turnover. This, on the other hand, has enabled us to strengthen our balance sheet position and investment capacity so that we have been able to start the new build programme without increasing the burden of shipping route fees or taxes. The remaining total burden of the company's tax footprint is considerably small.

In 2018, Arctia will focus on safeguarding the continuity of winter navigation while ensuring continued competence in a cost-effective way. The alternatives of the fleet renewal programme are investigated further on the basis of customers' expectations in accordance with the ownership policies. We will continue to develop our business operations in the polar regions in the global scale in both traditional and new service segments.

Tero Vauraste
President and CEO



Image: Lehtikuva

02

Arctia

WINTER SECURITY, ARCTIC EXPERTISE

Arctia is a specialised shipping company owned by the state of Finland. The company offers icebreaking, oil recovery and offshore services, as well as harbour towing services. The company's turnover in 2017 was EUR 48.9 million and it has about 270 employees.

STRONG AND VERSATILE FLEET OF ICEBREAKERS

Arctia's fleet includes the conventional icebreakers Voima (commissioned in 1954, refitted in 1979 and 2016), Urho (1975), and Sisu (1976). Otso (1986) was converted in 2015 to be able to operate in international tasks in addition to icebreaking in the Baltic Sea. Kontio (1987) has been converted for oil spill preparedness and response, and it still has a significant tank capacity of more than 2,000 cubic metres for oil recovery purposes. The multipurpose icebreakers Fennica (1993) and Nordica (1994) are capable of operating in all seas of the world. Ahto (2014), on the other hand, is a new-generation harbour icebreaker equipped with the latest technology to collect oil from icy waters. Designed for the most challenging conditions of the Baltic Sea, Polaris (2016) is the world's first icebreaker using liquefied natural gas, LNG, as fuel. It also has an in-built oil spill preparedness and response system.

Operating environment

UNIQUE ARCTIC EXPERTISE THROUGHOUT THE YEAR

Arctia offers icebreaking services in Finland and safeguards winter navigation which is essential to society. In addition, Arctia sells its unique Arctic competence to international customers and promotes Finnish expertise throughout the world.

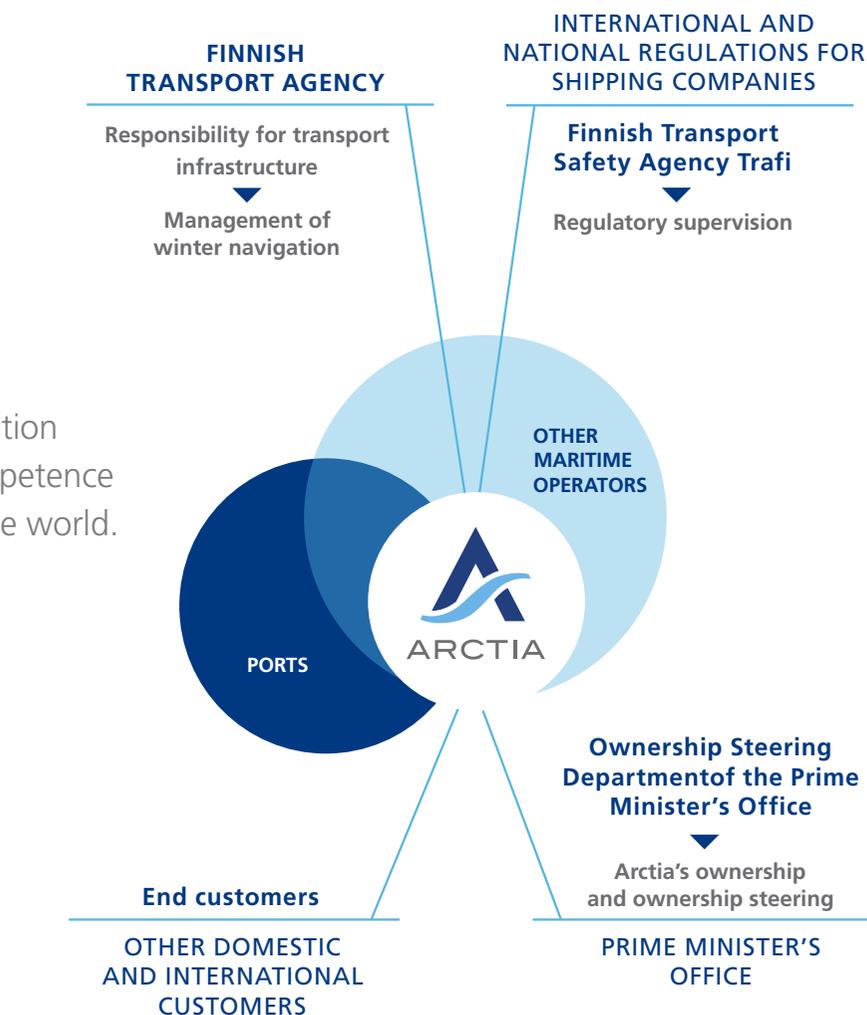
Dialogue between **STAKEHOLDERS** and Arctia helps us to succeed in service production. Our key stakeholders are customers purchasing icebreaking and other maritime services, shipping companies and shippers requiring these services, as well as the authorities and Finnish businesses in the broad sense. Transport at sea involves many participants in the wintertime. We act in cooperation with, e.g. merchant vessels sailing through ice, pilots, charterers and shipowners.

Arctia's services guarantee the functioning of Finnish society throughout the year. For more than 140 years, winter navigation services have secured Finland's export trade by sea as well as imports required by the domestic market. Together with its stakeholders, Arctia guarantees the orderly functioning of society and continues to develop win-

ter navigation to meet the needs of the future.

The **EXPECTATIONS OF STAKEHOLDERS** are taken into account in the development of services and in decision-making. Together with our stakeholders, we have influence, for example, on the overall costs of the winter navigation system and on defining the service level of icebreakers operating in the Baltic Sea. The next chapters deal with Arctia's key stakeholders and their expectations.

International customers and stakeholders are increasingly important to Arctia in ensuring viable year-round activities that are necessary for fleet renewal. In Finland's centenary year 2017, Arctia put an enormous amount of effort into sales and marketing work. Relations with potential international customers and major players in the Arctic region were



deepened. Research activities, safeguarding of passenger transport services, cable laying and the ice management needs in the Antarctica will open new international business and collaboration opportunities for Arctia.



SHIPPING COMPANIES AND MERCHANT VESSELS

Icebreaking is free to merchant vessels sailing into Finnish ports when they meet the regulations and capacity requirements. Shipping companies pay a shipping route fee to the state of Finland for their vessels arriving in Finnish ports. The amount of the fee depends on the size of the vessel and the number of annual port visits. In 2017, the unit price of the shipping route fee and its maximum amount per ship visit were halved by the decision of the government in the same way as in the previous year.

In icebreaking and winter navigation, the needs of individual vessels are taken into account as part of a whole in order to ensure maximum efficiency for all shipping operations. Systematic management of the project entity and prioritisation of

assistance ensure optimal fluency of winter navigation. Arctia gathers feedback on the delivery of operations annually in cooperation with the Finnish Transport Agency. Shipping companies and merchant vessels expect a speedy response to their requests for assistance. The icebreakers have contractual quality indicators, such as assistance efficiency and waiting time. In 2017, the expected values were realised in line with the quality indicators (see table “Winter traffic into Finnish ports”, p. 26).

FINNISH TRADE AND INDUSTRY

Icebreaking ensures year-round operations of the Finnish trade and industry. It is important to Finnish trade and industry that ships operate on time throughout the year and that the costs of winter navigation remain at a reasonable level.

Arctia engages in a dialogue with representatives of the industrial and commercial sectors alone and together with the Finnish Transport Agency. An up-to-date picture of the expectations and requirements is generated through discussion. In 2017, Arctia had frequent discussions, for example, with the Confederation of Finnish Industries and its member associations. The company's management met industry representatives from Northern Finland during the traditional road trip to the Bay of Bothnia in autumn 2017.

STATE OWNERSHIP STEERING

The Prime Minister's Office is responsible for the ownership steering of Arctia Ltd. The Prime Minister acted as the minister responsible for the State's ownership policy until the end of April 2017,

and the Minister of Economic Affairs has been responsible for the task since April. The Ownership Steering Department of the Prime Minister's Office prepares and implements the state ownership policy and steers state-owned enterprises.

The dialogue between Arctia and its owner is continuous and open. State-owned companies are expected to build their competitiveness with a long-term approach and, as the owner, the State requires its companies to carry on responsible business operations. The owner expects the company to generate a return on its investment, operate profitably and discharge its duties efficiently. Furthermore, the owner requires the company to be able to finance its own operations and investments.

In 2017, the state owner continued to emphasise corporate social responsibility as a basic value for state-owned companies. Arctia adopted the rule of procedure for corporate social responsibility. During the year, corporate social responsibility issues were also discussed on a monthly basis by the Group's Management Team, and they have been included in the Management Team's strategy work. The new minister responsible for ownership steering was invited to visit the company in June.

FINNISH TRANSPORT AGENCY

The Finnish Transport Agency is Arctia's most important customer. Arctia in turn is the most important but not the only supplier of icebreaking services to the Finnish Transport Agency. The Finnish Transport Agency is responsible for winter navigation and its organisation in Finland. This entity includes, e.g. the ice classes of vessels and the ice class rules, port-specific traffic restrictions



according to the ice conditions, launching of icebreaking operations, specifying the number of icebreakers used in traffic assistance, suspension and ending of icebreaking operations, and cooperation with the other countries around the Baltic Sea.

The Finnish Transport Agency acquires icebreaking services as multiannual service contracts and complies with the Act on Public Contracts. The structure of the contract includes icebreakers being on standby over a fixed period against payment and reimbursement for icebreaking on the basis of a daily fee. Efforts have been made to build the contract so that it enables flexible use of the icebreaking capacity in accordance with the demands of the ice conditions.

The Finnish Transport Agency expects cost-efficiency and safe, punctual and reliable operations from the service providers. Arctia engages in regular dialogue with the Finnish Transport Agency

during and after the icebreaking season. Targets have been set for Arctia regarding, e.g. ship waiting times, towing speed and the number of transit voyages. The achievement of these targets is actively monitored in cooperation with the Finnish Transport Agency during the icebreaking season. In 2017, Arctia met the targets assigned for it.

OTHER AUTHORITIES

In addition to the Winter Navigation Unit and the VTS Centres (Vessel Traffic Services) of the Finnish Transport Agency, another important authority in safeguarding winter navigation is the Finnish Transport Safety Agency Trafi, which is responsible for the safety of navigation. Trafi ensures that merchant vessels in winter navigation and their crews meet the regulatory requirements, e.g. by carrying out national port inspections. Trafi also mainly car-



ries out the classification of Arctia's vessels. It also performs audits and monitors the regulatory compliance of Arctia's shipping activities.

Trafi requires that the shipping company's vessels are safe and that the shipping company has an impeccably functioning safety management system (SMS) complying with the International Safety Management (ISM) Code. Any non-conformity identified during Trafi's audits must be corrected by the specified deadlines. In 2017, Arctia responded to Trafi's observations and non-conformities in the appropriate way and by further developing its SMS.

INTERNATIONAL CUSTOMERS

In addition to international conventions, international customers expect shipping companies to comply with the practices and rules defined by the customer. The rules set by the customer are usually stricter than the requirements of general maritime regulations. The requirements vary according to the customer concerned. They may apply to, e.g. occupational safety on the vessel, supplier management, communications and the use of social media by the operators, responsibility in the wider sense, or emissions from the vessel in a certain area.

Arctia develops its own operations in order to better fulfil the customers' requirements. Arctia's multipurpose icebreakers and the icebreaker Otso, which has been converted for open water conditions, are capable of operating in demanding conditions across the globe. During chartering, we carry out close cooperation with the customer on a daily basis. The customers direct and monitor Arctia's operations actively, e.g. through inspection rounds, working group meetings and audits.

OTHER STAKEHOLDERS

In addition to our own personnel, other key stakeholders of the Arctia Group include pilots, ports, service and material suppliers, the media, Finland's foreign affairs administration, and various participants in civic activities. Arctia engages in constant dialogue with all of its stakeholders. Arctia also aims to promote the visibility of the Finnish maritime cluster at the national and international levels.

Arctia meets regularly with its external stakeholders and also ensures that its own personnel and the interest groups representing it have sufficient information on the company's operations and future plans. Arctia listens carefully to the opinions of various stakeholders with regard to issues such as the quality, safety, responsibility and cooperation in icebreaking services.



Image: Tim Bird

Core messages and organisation

ARCTIA ENSURES SMOOTH NAVIGATION TO FINNISH PORTS ALSO IN THE WINTER

- All Finnish ports including their shipping lanes can freeze over in the winter.
- Finnish icebreaking has a solid tradition that goes back over 140 years.
- Icebreaking safeguards Finland's trade and industry and thereby Finnish welfare.

ARCTIA CONTRIBUTES TO SUSTAINABILITY AND FINLAND'S GROWTH IN THE ARCTIC

- When operating in the Baltic Sea and in other marine areas, Arctia's icebreakers contribute to the protection of fragile environments from accidents.
- Arctic oil spill preparedness and response is an area of special expertise for Arctia.
- Arctia is a global leader in icebreaker operations.
- The year-round use of multipurpose icebreakers provides cost-effectiveness for the company.
- Arctic operations help preserve existing jobs and create new opportunities.

Vision

Arctia is the leading provider of icebreaking services in the Baltic Sea and the most trusted partner in offshore and other maritime services in the polar regions.

Mission

We safeguard Finland's winter navigation efficiently in the ice winter conditions in the Baltic Sea and create growth by serving our international customers in the polar regions.



ORGANISATION

Arctia is a group of companies, and its parent company is Arctia Ltd. Arctia Ltd is the sole owner (100%) of its subsidiaries Arctia Icebreaking Ltd, Arctia Offshore Ltd and Arctia Management Services Ltd, and it owns 90% of Arctia Karhu Ltd. Arctia Management Services Ltd was established at the end of 2015, and it started actual operations as a management shipping company at the beginning of 2016. The entire share capital of the parent company Arctia Ltd is owned by the state of

Finland, and the Ownership Steering Department of the Prime Minister's Office is responsible for the company's ownership steering.

The parent company and Arctia Management Services Ltd of the subsidiaries provide administrative services for the group companies. The other subsidiaries own the fleet, liaise with the customers and sign chartering agreements with external customers. If required, the subsidiaries may also charter vessels from each other when there is free capacity. The offshore personnel are employed by the subsidiaries that operate at the customer interface.



Arctia's Board of Directors is responsible for the company's administration and appropriate organisation of operations. According to the Articles of Association, the Board consists of a minimum of three (3) and a maximum of seven (7) ordinary members. A personal deputy can be appointed for each Board member. The Chairman and the other members of the Board of Directors are elected by the Annual General Meeting. The Board may appoint a vice chairperson from amongst its members. The term of a Board member ends at the closing of the first Annual General Meeting following the election. The Board of Directors constitutes a quorum when more than half of its members are present in the meeting.

The Board of Directors has rules of procedure that specify the duties of the Board in further detail. The rules of procedure are updated annually by the Board. The Board of Directors performs an annual self-evaluation of its work and develops its activities according to the results. The Board

of Directors has established a Remuneration and Nomination Committee to support its activities. The Committee's duties are specified in further detail in its rules of procedure, which are updated on an annual basis.

The Board of Directors appoints the Chief Executive Officer of Arctia and decides on the terms of his or her employment. The CEO manages the company's day-to-day administration in accordance with the instructions and orders of the Board of Directors and ensures that the accounts of the company are in compliance with the law and that its financial affairs have been arranged in a reliable manner. The CEO is responsible for the achievement of the company's targets.

The group has a Management Team that includes the President and CEO; the Senior Vice Presidents (Icebreaking and Offshore); the CFO; the Senior Vice President, Technical Services; the Senior Vice President, Human Resources; the Senior Vice President, Security & HSSE; as well as the

Communications Manager. The Management Team meets on a weekly basis. The Management Team is tasked with the implementation of the company's operations in line with the strategy and policies specified by the Board of Directors and the steering of the President and CEO. The duties of the Management Team are specified in further detail in its rules of procedure. The rules of procedure are updated annually.

Long-term business objectives and policies are defined in Arctia's strategy, which is reviewed and updated regularly on an annual basis. The company specifies the measures required to achieve the targets set out in the strategy and the indicators for monitoring the achievement of these targets. Each business and administrative unit is issued with its own targets and indicators in accordance with those outlined in the strategy. The Board of Directors and the Management Team regularly monitor the achievement of strategic targets, the progress of defined measures, and the indicator trends.



Board of Directors

Päivi Söderholm

member of the Board
Senior Project Manager,
Centre for Maritime Studies,
University of Turku
Member of the Board since 2010
Year of birth: 1958
Education: Master Mariner

Antti Pankakoski

member of the Board
Member of the Board since 2012
Year of birth: 1954
Education: L.L.M.

Pertti Saarela

Chairman of the Board
CEO, Finrail Ltd
Member of the Board since 2017
Year of birth: 1957
Education: L.L.M.

Ilpo Nuutinen

Deputy Chairman of the Board
Senior Government Counsellor,
Prime Minister's Office
Member of the Board since 2013
Year of birth: 1964
Education: L.L.M., LL.Lic., M.Sc. (Econ.)

Hanna Masala

member of the Board
Vice President, Strategy,
Fortum City Solutions
Member of the Board since 2017
Year of birth: 1976
Education: M.Sc. (Econ.)



Management Team

Eero Hokkanen
*Communications
Manager*

Member of the
Management Team
since 2015
Year of birth: 1985
Education: M.Soc.
Sc. (IR)

Pia Broumand
Chief Security Officer

Member of the
Management Team
since 2016
Year of birth: 1975

Tom Ekegren
*Senior Vice President,
Icebreaking*

Member of the
Management Team
since 2016
Year of birth: 1971
Education: Master
Mariner

Tero Vauraste
President and CEO

Member of the
Management Team
since 2010
Year of birth: 1967
Education: Naval
Officer, M.Sc.

Petri Mikola
*Senior Vice President,
Technical Services*

Member of the
Management Team
since 2017
Year of birth: 1966
Education: M.Sc.
(Tech.)

Sari Näkki
*Senior Vice President,
Human Resources*

Member of the
Management Team
since 2017
Year of birth: 1971
Education: M.Sc.
(Econ.)

Kim Höjjer
*Senior Vice President,
CFO*

Member of the
Management Team
since 2018
Year of birth: 1967
Education: M.Sc.
(Econ.), MBA

Corporate social responsibility management

CORPORATE SOCIAL RESPONSIBILITY AS PART OF EVERY DECISION

Arctia's values are reflected in the management and everyday work of the icebreakers. The company's values have become an established part of the shipping company's culture, having remained unchanged since 2009.

Arctia guarantees the functioning of Finnish society and industry throughout the year by enabling winter navigation. This forms the hard core of Arctia's responsibility, around which the other stakeholder requirements are built. At Arctia, responsibility management means an excellent and responsible administrative culture and a debate on what is responsible conduct in different situations. Through the management of responsibility, we have been able to develop the quality of our daily activities and our sustainable operating methods.

The Management Team is responsible for the management and development of corporate social responsibility, and it monitors the implementation of responsible operations on a monthly basis. In addition to the regularity of our own operations, the requirements of responsibility are also based on the expectations of our stakeholders.

The tools in the development of responsibility include the policies on safety, environment and sustainable development, good corporate governance, leadership practices, and more widely the entire safety management system. The system also includes the ethical guidelines and the equality plan, which support our daily activities.

Reporting on the implementation of responsibility in the Management Team every month and in the Board of Directors on a regular basis is also part of our corporate social responsibility management. In 2017, we also introduced a rule of procedure for corporate social responsibility, and responsibility gave direction to the strategy update work. Arctia reports extensively on the implementation and targets of corporate social responsibility each year in connection with the annual report in accordance with the guidelines of the Prime Minister's Office (Government's decision-in-principle on state

Values

COMPETENT

We want to learn new things and share our expertise with our colleagues. Competence and commitment to goals are a requirement for our success.

HELPFUL

Cooperation with our clients forms the foundation of our operations. We aim to satisfy our customers; their needs guide our actions. We always provide good service to our clients and are proud of doing so.

EFFICIENT

We create a good working atmosphere by valuing our own work and that of others. We perform our duties professionally, safely and effectively. This guarantees the continuity of our operations.

ownership policy of 3 November 2011, Appendix 3). More detailed information about reporting and the reporting principles is presented at the end of the annual report.

MATERIAL ASPECTS OF CORPORATE SOCIAL RESPONSIBILITY have been identified in the workshops of Arctia's Management Team. The feedback received and the changes that have been identified in the operating environment in relation to Arctia's sphere of influence have been used as a basis for materiality. Issues closest to Arctia's services have been identified as having the highest priority. The Management Team carried out monthly reporting on issues raised on the basis of the materiality analysis and their indicators for the first time in 2017.

We seek to mitigate direct environmental impacts of operations by improving the safety and operation of our vessels and by carrying out technical updates on the current vessels. A good example of this is Polaris, the most environmentally friendly icebreaker in the world. Arctia's oil spill preparedness and response services, on the other hand, contribute to reducing the risks involved in maritime transport. Operations in fragile marine areas and the related direct and indirect environmental risks also raise questions with regard to responsibility. That is when Arctia's strengths come to the fore: the technical capabilities of Polar-class vessels and the expertise of Arctia's competent and constantly improving personnel.

The risks related to Arctia's long-term operations and, consequently, responsibility include the national transport policy and other outlines related to the use of icebreakers. Operations in Arctic marine areas are subject to various interests

both nationally and internationally. Rapidly changing environmental regulations also pose their own challenges to the company's long-term operations, applying equally to Arctia's vessels and the ships assisted by them.

The traditional challenge in the implementation of corporate social responsibility in icebreaking has been the seasonal nature of the work. Expanding Arctia's service provision and continuous development of operations into year-round services have substantial economic and social consequences for Arctia, its personnel and the entire Finnish maritime industry. Success will depend on the market development and the ability to respond to the needs of a rapidly changing operating environment.

PROCEDURES OF THE BOARD OF DIRECTORS AND SENIOR MANAGEMENT FOR OVERSEEING CORPORATE SOCIAL RESPONSIBILITY MANAGEMENT

In 2017, Arctia introduced a rule of procedure for corporate social responsibility that defines the structures of our responsibility work. The monitoring and reporting of material aspects were developed. All entities highlighted in the materiality analysis are examined with the aid of indicators each month by the Management Team.

The selection of material aspects has taken place in workshops, focusing on the core issues of Arctia's responsibilities and the concerns of stakeholders. The most significant concerns raised by our stakeholders have also been brought to the fore and targets and indicators have been set for them. In 2017, Arctia's management of corporate social responsibility focused on strategy work with active consid-

The following aspects were identified as material in the corporate responsibility workshop:

ICEBREAKER/FLEET AVAILABILITY AND ITS SAFEGUARDING

[More information in section](#) **Icebreaking services**

FOCUS AND RESPONSIBILITY OF OPERATIONS

[More information in section](#) **Service areas**

EXPANSION OF OUR CUSTOMER PORTFOLIO AND CUSTOMER SATISFACTION

[More information in section](#) **CEO's review**

COMPETITIVENESS/COST-EFFICIENCY

[More information in section](#) **Service areas**

TRUST AND COOPERATION WITH STAKEHOLDERS

[More information in section](#) **Operating environment**

LEADERSHIP

[More information in section](#) **Personnel and governance**

RISK MANAGEMENT

[More information in section](#) **Occupational health and safety**



eration of issues related to operational security and the customer portfolio, which were raised in the materiality analyses. The materiality analysis will be updated in 2018 in connection with the project on the quality management system.

The rule of procedure for corporate social responsibility defines the principles of the management of corporate social responsibility, the methods for maintaining a situation report, as well as its monitoring and reporting. New areas were included in monthly reporting in 2017 in accordance with the rule of procedure for corporate social responsibility: concerns raised by stakeholders and deviations from corporate social responsibility. Indicators describing these include, e.g. environmental damage, errors in risk management, significant deviations in the quality or availability of services, and

direct contacts by stakeholders in relation to the company's operations. During 2018, Arctia aims to introduce a quality management system that provides support for taking stakeholder feedback into account and for maintaining a situational picture on responsibility.

In 2017, the Management Team addressed the whistle blowing system and its possible introduction as part of the strategy work. The system protects the identity of a person wishing to report a misdemeanour or a suspected misdemeanour in the company. It was decided that the preparation of the system introduction will be incorporated as part of the development work on good corporate governance. Arctia is also developing channels of internal innovation and development work for the personnel. These channels include centralised pro-

cessing of invention reports, innovation proposals and theses.

The Board of Directors discusses Arctia's success in CSR operations and the implementation of its material responsibilities in connection with the Board meetings. The President and CEO and the members of the Management Team are responsible for presenting the corporate social responsibility issues to the Board of Directors according to their areas of responsibility.

EXTERNAL INITIATIVES

In 2017, Arctia continued its active participation in the work of the Arctic Economic Council (AEC). The Council facilitates Arctic business-to-business activities and responsible economic development.

In May 2017, AEC appointed Arctia's President and CEO Tero Vauraste as its Chairman for the two-year period of 2017–2019. During this chairmanship of Finnish industry, the objective is to create new business opportunities and to promote predictable regulation and infrastructure investments that are important in terms of the Arctic business operations of Finnish companies. The five overarching themes during the period of chairmanship are:

- Establishing strong market connections between the Arctic states
- Encouraging public-private partnerships for infrastructure investments
- Promoting stable and predictable regulatory frameworks
- Facilitating knowledge and data exchange between industry and academia, and
- Taking traditional indigenous knowledge, sustainable development and small and local businesses into account in all operations.

As a Finnish company with strong Arctic competence, Arctia is also a member of Team Arctic Finland. The team has a total of 19 members including the Finnish Meteorological Institute and the Finnish Institute of Occupational Health. Team Arctic primarily acts in support of the sales of its member companies and organisations. It seeks growth opportunities and new customers for its members over a period of 1–3 years. Sustainable business operations and new Finnish turnkey solutions for the needs of demanding conditions are developed in cooperation with the members. In 2017, the

overall concepts were presented to a number of important investors, decision-makers and key companies in various sectors and countries. The team acts in close cooperation with the Finnish Marine Industries.

As a member of the Finnish Marine Industries, Arctia is committed to the shipping companies' target of reducing emissions in shipping by 50% by 2050. Finnish shipping companies are also committed to reducing nitrogen emissions.

ARCTIA'S MEMBERSHIPS OF ASSOCIATIONS

Finland:

- Finnish Shipowners' Association
- Suomen Erikaisalusten työnantajaliitto ry
- Finnish Maritime Society
- Kotka Maritime Research Centre (Merikotka)
- Apprentice Mill
- Registered Association Finnish-Russian Chamber of Commerce (FRCC)
- Team Arctic Finland

International:

- Arctic Economic Council (AEC)
- World Ocean Council
- Association of Arctic Expedition Cruise Operators, AECO
- European Community Shipowners' Associations, ECSA (through Finnish Shipowners' Association)

RISK MANAGEMENT is an integral part of shipping operations. Arctia carries out risk assessments ensuring that they also include risk evaluations pertaining to corporate social responsibility. The Group's risk review was updated in November 2017.

Short-term risks in icebreaking are related to, for example, damage to vessels. Longer-term risks, on the other hand, are related to, e.g. relatively rapid and radical changes in the winter fleet and its service needs, as well as in the development of local weather conditions. Arctia manages these risks with good shipping operations and active monitoring of changes.

The key risks in the market of offshore services in the polar regions are related to the challenging situation in the global economy and to operations in sensitive sea areas. Efforts are made to manage market risks with active market monitoring, by expanding the service portfolio and through cooperation with customers, the authorities and other stakeholders. Other operational risks are managed by monitoring expenses and through extensive insurance cover. The technical capabilities of Arctia's Polar-class vessels and the expertise of our competent personnel who are constantly improving their skills play a key part in the management of environmental risks.

Arctia's most important operational risk is the ageing of the fleet. The technical reliability of the Group's vessels is maintained by carrying out service and maintenance tasks in accordance with the long-term service plan and through new technological solutions. Scheduled maintenance of Kontio was



Image: David Goldman

carried out in summer 2017 and the docking of Fenica was implemented towards the end of the year.

The icebreaker Polaris passed its first season with flying colours, and it is the most efficient icebreaker of the fleet. Polaris was docked in June to carry out warranty repairs after the first winter of operation.

Development of the polar market as a whole presents both risks and opportunities to the company. The progress of Arctic and Sub-Arctic energy projects is highly dependent on the global market prices of oil and gas, political decisions and the development of international relations. In addition to oil and gas projects, Arctia has experience, for example, in the construction of offshore wind power and the provision of marine services needed in the laying of submarine cables.

Research in the Arctic region and in Antarctica is active and plays an increasingly important role, for example, in understanding climate change. Cruise tourism is also expected to increase in these areas. In addition to various offshore services and the research and tourism sectors, state actors also have a need for icebreaking services.

Arctia manages market risks as a whole through alternative customer and service forms. A diverse fleet is a considerable strength.

Key business risks in harbour icebreaking and escort tug services consist of the fluctuation of demand due to changeable winter conditions and the variation in towing needs, particularly in the summer season. These variations have a significant impact on the company's finances. The risks are managed through appropriate contract structures and cost management.



Image: Essi Haapaniemi

KEY CONCERNS RAISED THROUGH STAKEHOLDER ENGAGEMENT

was introduced as its own item on the regular agenda in the monthly reporting of corporate social responsibility in 2017. The concerns were taken into account when planning responsible operations. The concerns raised by stakeholders in connection with the materiality analysis were complemented with feedback received from customers and government ownership steering. We performed a materiality analysis of this data to identify the factors most significant for Arctia and its strategy, on which Arctia also has a realistic chance of influencing.

That way, the concerns raised by stakeholders are also directly visible in the responsibility priorities, which are listed in the above table 'Material areas of corporate social responsibility'. In many respects, these priorities are central to Arctia's daily operations. However, we will make an effort to increasingly consolidate the role of these elements in our strategy and, above all, to discuss them even more actively with our stakeholders.

Financial responsibility

ICEBREAKERS GUARANTEE YEAR-ROUND MARITIME LINKS THAT ARE NECESSARY FOR EXPORT TRADE

Arctia's task is to provide icebreaking services in an effective and profitable way. Our icebreakers safeguard Finnish exports and imports in the winter season and guarantee economic viability also for the country's northern ports and business.

The Arctia Group's primary **FINANCIAL TARGETS** are the profitability of business operations, a positive operational cash flow, and covering the cost of maintenance investments with the company's own cash flow. Increasing the utilisation rate of Arctia's fleet is also one of the company's most important goals with regard to long-term profitability. Financial targets are set separately for each business unit, and their realisation is monitored on a monthly basis. The most important financial indicators are turnover, operating profit, operating margin and cash flow, along with the return on equity, return on investment and solvency. The realised figures for these indicators are presented in the financial statements.

Arctia achieved its financial targets only in part in 2017. The operations at the Group level were profitable up until the operating result, but the net result showed a loss. The Group's cash flow from operations remained positive. Maintenance investments amounted to EUR 5.2 million, which was met with the cash flow from operating activities and cash assets. During the period under review, the Arctia Group did not raise new bank loan, and it repaid EUR 2.9 million of the existing loan. A dividend of EUR 1.5 million was paid for the financial year 2017. The balance sheet and financial position did not change materially during the year.

The significance of cash flow management and long-term planning of investments will continue to

grow. Raising the utilisation rate of stock especially in the offshore business is key in order to improve profitability.

Performance reviews must be up-to-date and reliable so that the company can make the required business decisions based on the results. The development of forecasting financial figures was continued during the financial year 2017 by establishing a forecasting team that convenes every month. Particular attention was paid to the monitoring of cash flow and cash management. Arctia focused on improving the efficiency of investments and acquisitions by preparing for the introduction of the new enterprise resource planning system. Actual transition to operational production will take place in stages during the current year.

The deployment of the new purchase invoice processing system was continued in 2017, and the system to only accept online invoices from Finnish suppliers was put in place. In the 2018 budgeting, the ships' crew members were included in, e.g. the drawing up of maintenance plans more than before, and the new enterprise resource planning system also supports this.

Focus areas for 2018 include the creation and monitoring of operational efficiency indicators that combine financial and operational data, as well as the staged adoption of rolling 12-month profit forecasting. Efforts will also be made to improve the speed of circulation of working capital and longer-term planning in the life-span investments of ships.

The company must have sufficient solvency to enable investments in the fleet. Gross investment in 2017 totalled approximately EUR 5.7 million, of which maintenance investments accounted for EUR 5.2 million. The equity ratio remained at a healthy



Image: Mika Lehtonen

50 per cent. Relative net gearing increased slightly, which was mainly due to the reduction in cash in hand even though new external financing was not raised during the financial year.

Arctia does not receive financial subsidies from the government. The state owner requires future investments to be financed with equity and loan capital obtained by the company itself.

Arctia's most significant financial impact, particularly in the northern regions of Finland, is securing the continuity of business by keeping the shipping lanes open and safe during the winter season. A major part of Finland's imports and exports is transported by sea, which makes safeguarding the smooth flow of marine traffic round the year vital to the continuity of commerce.

CHARITY AND SPONSORSHIP

A decision in principle made in 2013 specifies that Arctia does not support or sponsor sports or sign cooperation agreements related to sports. Arctia does not support religious organisations or polit-

CASH FLOWS TO STAKEHOLDERS, MEUR

	2017	2016	2015
CUSTOMERS			
Operating income	49.0	60.8	68.5
Turnover	48.9	60.7	62.1
Other operating income	0.1	0.1	6.4
GOODS AND SERVICE SUPPLIERS			
Material and service acquisitions	16.1	14.3	19.3
Other operating costs	8.2	7.0	9.2
EMPLOYEES			
Personnel expenses	7.9	7.3	10.1
PUBLIC SECTOR			
Taxes (income tax)	20.8	21.3	20.5
	20.8	21.3	20.5
NON-PROFIT ORGANISATIONS			
Sponsorship and donations	0.3	1.4	2.0
	0.3	1.4	2.0
SHAREHOLDERS			
Dividends paid to owners	0.0	0.0	0.0
	0.01	0.01	0.01
FINANCERS			
Financing costs (net)	4.6	7.5	7.9
	4.6	7.5	7.9
FUNDS RETAINED FOR THE DEVELOPMENT OF THE COMPANY'S OPERATIONS			
	1.2	1.4	0.8
	1.2	1.4	0.8
INVESTMENT			
	-1.5	14.8	17.9
	5.6	131.6	14.8

The figures are reported according to the company's accrual accounting in millions of euros.

ical parties. In 2017, Arctia donated Christmas gift funds to Suomen merimuseon tukiryhmä for the restoration of the monument that commemorates those who lost their lives on the icebreaker Tarmo, located in Kotka.

CHARITY AND SPONSORSHIP, EUR

	2017	2016	2015
Children and youth	550	0	200
Science, research and education	7,500	12,500	11,044
Arts	0	0	0
Sports and exercise	0	0	0
Political subsidies	0	0	0
Civic and environmental organisations	1,700	1,000	1,100

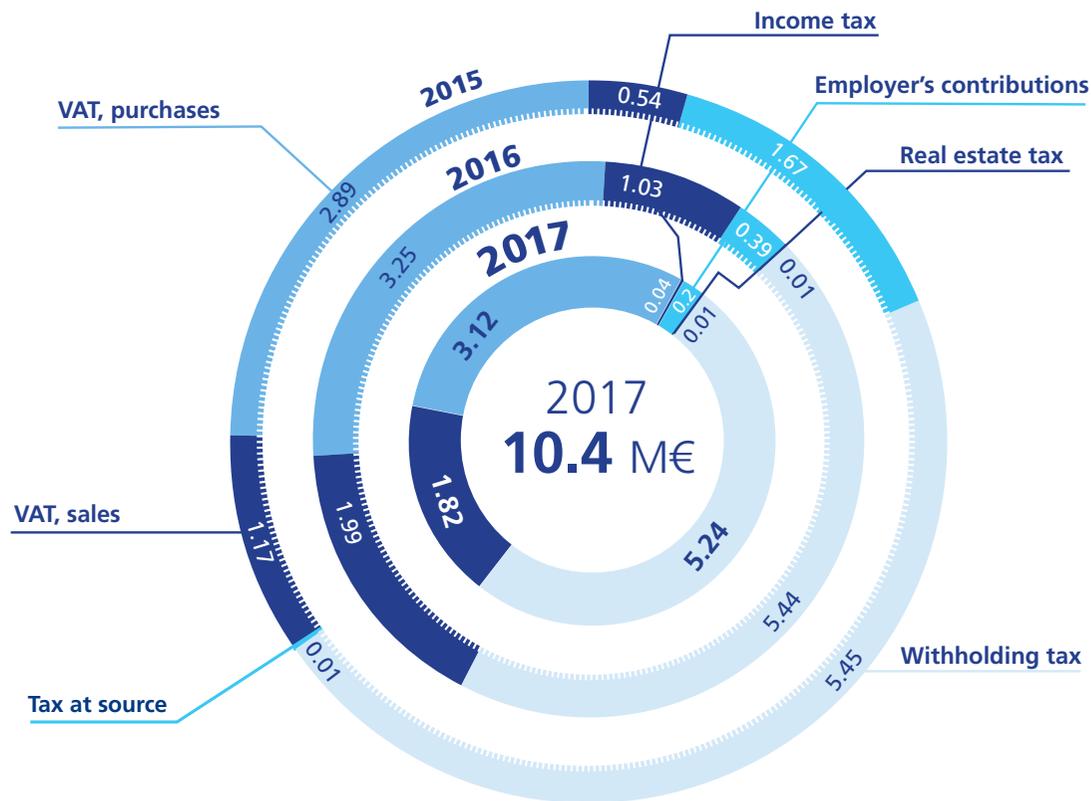
TAX FOOTPRINT IN 2017

The tax footprint refers to the taxes and equivalent fees received by society from a company's operations. Arctia's tax footprint was EUR 10.4 million in 2017. The greatest part, EUR 5.4 million, resulted from withholding tax and employer's contributions.

The appropriate and timely management of matters related to taxation is of key importance to Arctia. As a rule, tax planning is carried out and the declarations and reports related to taxes are drawn up by the company's financial unit. External taxation specialists are consulted when necessary. Arctia engages in tax planning within the limits

permitted by the Business Tax Act. The planning related to the depreciation of fixed assets is carried out with the aim of balancing taxable income over different fiscal periods. The payment of tax is based on the principle that taxes are paid to the country where the tax liability has arisen.

All Arctia Group companies are incorporated in Finland and pay their taxes primarily to Finland. Arctia has no branches in any other countries. During 2017, services were also sold to Russia, but according to local tax legislation the sale of services did not entail any tax consequences to be paid to Russia because the service provider did not have a fixed place of business in Russia.



Society and human rights

RELIABLE SERVICES TO THE NORTH

Winter navigation operates along the entire coast of Finland in collaboration with ports and other local operators. Arctia strengthens its competence through research and training cooperation and with strategic partnerships, and it contributes to building a sustainable future in the northern regions.



To Arctia, **LOCAL COMMUNITIES** mean, above all, the residents of the Arc or Bothnia and the other coastal areas in Finland. Arctia promotes Finland's Arctic expertise and its own perspectives on the development of the Arctic region in both Finland and abroad.

The Arctic Economic Council appointed Arctia's President and CEO Tero Vauraste as its Chairman for the two-year period of 2017–2019. Taking into account traditional indigenous knowledge, sustainable development and small and local businesses in all operations is among the main themes of the period of chairmanship. Vauraste also kept these themes on the agenda in 2017 in his role as Lapland Ambassador, i.e. a partner of House of Lapland, which is Lapland's joint marketing and communications house.

In Helsinki, Arctia acts locally in partnership with its neighbour, the Ministry for Foreign Affairs, and Visit Helsinki, the Helsinki tourist information office. In summer 2017, Arctia installed a sign in Katajanokka with information about icebreaking and icebreakers in Finnish, Swedish and English. The sign had been requested by the residents of the Katajanokka district and by visitors and tour guides. In 2018, there is also a plan to put up signs in Tervasaari and Korkeasaari from where there is a clear view of the icebreaker pier.

Arctia notifies of any exceptional noises and lights coming from the icebreaker base on its website and also reports them directly to the Katajanokka Society. At the beginning and the end of the icebreaking season, ordinary noises coming from harbour activities are not usually notified

separately. Arctia Karhu Ltd is domiciled in Kemi, and the company carries on cooperation especially with the Emergency Service of Lapland.

Arctia trains new mariners through the Harjoittelumylly Association. Arctia established Harjoittelumylly together with the Finnish Shipowners' Association and nine maritime institutes. The purpose of Harjoittelumylly is to coordinate and promote the efficient use of trainee posts on vessels. This supports Finnish maritime education through practical training on ships. In 2017, Arctia had a total of 86 (93 in 2016) trainees on its vessels.

Arctia also contributes to the future of Finnish navigation through research cooperation with universities of applied sciences, universities, and other organisations. International research cooperation and the dialogue between academia and industry

140 years of winter navigation in 100-year-old Finland

The start of operation of the first Finnish ice-strengthened steamship *S/S Express II* between Hanko and Stockholm on 15 December 1877 can be regarded as the birth of winter navigation in Finland. Arctia celebrated the anniversary of winter navigation by inviting representatives of all of the organisations that were actively involved in the early stages of Finnish winter navigation or those continuing their tradition to an anniversary event on icebreaker *Sisu* on 15 December 2017.

During 2017, Arctia remembered the history of winter navigation in many different ways. For example, the company paid for the restoration of the memorial to the fallen who were serving on the icebreaker *Tarmo* in Kotka. It also signed a cooperation agreement with the Maritime Museum of Finland concerning the recording of cultural heritage related to icebreaking. Arctia also held an event for all retired seamen who were serving on icebreakers, and together with cooperation partners it organised a lecture on the history of icebreaking at the Science Forum.

were developed in 2017, for example, with the Arctic 100 Expedition through the Northwest Passage.

Arctia pays attention to the **PREVENTION OF BRIBERY AND CORRUPTION**. The Arctia Group's Ethical Guidelines define the anti-bribery and anti-corruption principles applying to all Group personnel.

Arctia complies with national and international **REGULATIONS ON COMPETITION**. Arctia's Ethical Guidelines define procedures for matters such as the handling of confidential information.

COMPLIANCE WITH LEGISLATION AND REGULATIONS is monitored by the effective management, ships' masters and other supervisors. The Group's auditors monitor its compliance with legislation related to financial administration, such as the Accounting Act and Ordinance and the Limited Liability Companies Act. The authorities perform an audit on Arctia as an enterprise and shipping company each year.

The success of service performance, realisation of the standard of services and the entity formed by these two have an impact on **CUSTOMER SATISFACTION**. In the long term, the replacement of fleet and keeping its maintenance and utilisation rate at a good level will improve customer satisfaction and the customers' confidence in the availability of services.

The Finnish Transport Agency has a direct agreement on icebreaking services with Arctia. From Arctia's viewpoint, the shipping companies that sail to and from Finland, including their crews, are also Arctia's direct customers. Arctia's end customers in

Finland are the country's overseas trade and industry and therefore, in a broader sense, the entire Finnish society. Our direct overseas customers are our international contract customers.

Arctia's performance in service provision is monitored in cooperation with the Finnish Transport Agency, which organises an annual stakeholder survey to assess the smooth operation of the winter navigation system. Arctia's service production is also monitored for each vessel in terms of every assistance, towing and transit task on a monthly basis.

Feedback on the quality of services is also received from customers and stakeholders in the annual closing meetings of icebreaking and harbour icebreaking, where a high number of stakeholders are present. Due to the small number of direct customers, Arctia communicates with its customers and receives feedback from them on a daily basis during operation seasons. In terms of its most important customers, Arctia's key indicators are the waiting times for icebreakers.

In 2017, Arctia met all of its service level requirements and received a high rating in the stakeholder survey, which is consistent with its objectives. Also direct feedback from international customers was mainly excellent.

WINTER TRAFFIC INTO FINNISH PORTS*

	2017	2016	2015
Percentage of vessels that entered port without waiting (%)	93	98	97
Number of vessels waiting	295	211	111
Average waiting time/vessel (h)	3.91	3.42	4.97

*Total performance data for all icebreakers chartered by the Finnish Transport Agency



SERVICE SAFETY, and maritime safety in general, is the most important area of responsibility to Arctia. The safety of services is monitored as part of ship safety. Arctia continuously maintains and develops the safety management system of its ships and the entire shipping company.

The entire shipping company uses a safety management system (SMS), which is ensured with audits on the ships and in the offices. Training related to the system was started on the ships and in the offices.

The Finnish Transport Safety Agency Trafi has audited the shipping company's safety management system and granted a five-year certificate for the shipping company. The operation of the latest icebreaker *Polaris* was still under warranty in 2017. Matters subject to warranty were related to structural occupational safety regulations and various faults in a vessel that utilises the latest technology, as well as the minimisation of environmental harm, suspension of operations and financial losses resulting from them. Preparations were made for the commissioning and safety of a new type of vessel with extensive training.

Trafi carries out an inspection on Arctia's vessels each year. Action and repair plans have been drawn up on the basis of the observations made during the audits and inspections, and the plans have been implemented in accordance with the requirements. No serious non-conformities were identified in audits or inspections in 2017.

Work on the classification of Arctia's ships to meet the requirements of the Polar Code of the

International Maritime Organization IMO was started in 2017. The Polar Code is an internationally binding legal instrument that imposes stricter regulations on safety and environmental protection for ships navigating in the most northern and southern sea areas of the world in order to minimise maritime risks. The safety and environmental requirements of the Polar Code entered into force already on 1 January 2017, and the qualification and training requirements for the crew in accordance with the Code will become effective in July 2018.

In 2018, Arctia will become one of the first shipping companies in the world to have several ships in its fleet that are classified in accordance with the requirements of the Polar Code. Compliance of safety and environmental regulations that are stricter than those for other shipping is regarded by Arctia as not only responsible conduct, but also as a significant competition factor in the market for maritime services.

Arctia has carried out an in-house safety campaign in order to raise safety awareness among its personnel. The number of occupational accidents has been successfully reduced during 2017. In future, attention will be paid especially on the planning of non-standard situations, such as transit voyages or special port visits, and the procedures during such situations.

When *Nordica* visited Reykjavík in October 2017, the life of a visitor to the ship, who had a heart attack on the bridge, was saved by the swift and professional conduct of the crew. Crew members

took part in the emergency first aid were rewarded with the shipping company's own safety award.

The Arctia Group considers the environment in all its operations and complies with the regulations of the International Maritime Organization's (IMO) Internal Safety Management Code (ISM Code) and the International Convention for the Prevention of Pollution from Ships (MARPOL Convention), along with the national guidelines and regulations. The frequent changes to the international and national guidelines and regulations involve a lot of work for the personnel at sea and on land.

Arctia respects **HUMAN RIGHTS** and takes them into consideration in its operations. Arctia has in place a sustainability policy, which clearly indicates the company's commitment to human rights. Arctia also has Ethical Guidelines that address human rights.

Arctia conducts a dialogue with representatives of indigenous peoples when navigating in areas where the ice conditions have an impact on the livelihood or other habitat of the indigenous peoples. For example, when Nordica sailed through the Northwest Passage in July 2017, cooperation was carried out with the Nunavut Impact Review Board and the Nunavut Fisheries and Marine Training Consortium. The representatives of the latter organisation also travelled on the ship to observe the operations.

Arctia takes the rights of children into account, for example, by supporting family leave among personnel. Each year, Arctia organises a family

day open to the family members of all of Arctia's employees.

FAMILY LEAVE

	2017		2016		2015	
	persons	days	persons	days	persons	days
Men	14	395	13	341	10	235
Women	2	273	2	438	3	642

SUPPLY CHAIN MANAGEMENT was developed and the **PROCUREMENT PRINCIPLES** were complied with in 2017. In 2017, all of the company's procurement were transferred to an electronic enterprise resource planning system together with the service and maintenance department.

As a rule, Arctia performs its actual services itself and does not outsource these kinds of tasks. Specified subcontractors are used for carrying out repair and maintenance tasks and work requiring specialist expertise. All key subcontractors have been audited. The development of subcontractor audits is continued.

Arctia seeks to prevent further outsourcing of services in the selection of suppliers and service providers and in the contract bases. A mandatory non-conformity report is required of any injuries to suppliers' personnel, and particular attention is paid to the supervision of subcontractors' work. Work permits, site meetings and work plans used at Arctia also apply to the subcontractors working on the vessel to provide for occupational safety of all those working on Arctia's ships.

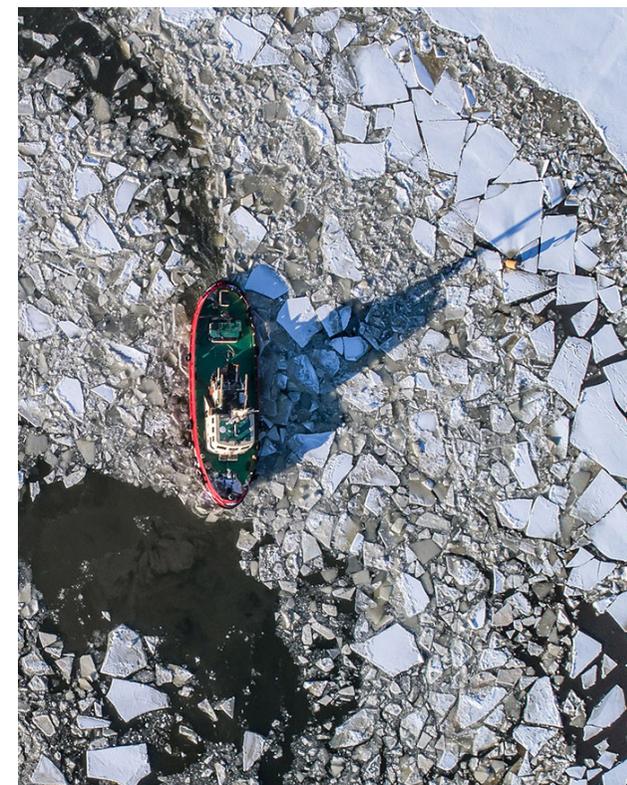


Image: Teemu Kiiskinen

Arctia supports its suppliers and subcontractors by opening up its requirements and providing guidance. We require that the suppliers and contractors are registered in the tilaajavastuu.fi service. Arctia also has a procurement policy in place, specifying aspects such as procurement thresholds.

Environment

TOWARDS SUSTAINABLE REGIONAL EQUALITY THROUGH THE ICE

Operations without permanent harm to the ecosystem or local damage and with an equal opportunity for the mobility of both cargo and people have been specified as the cornerstones of responsible maritime transport.

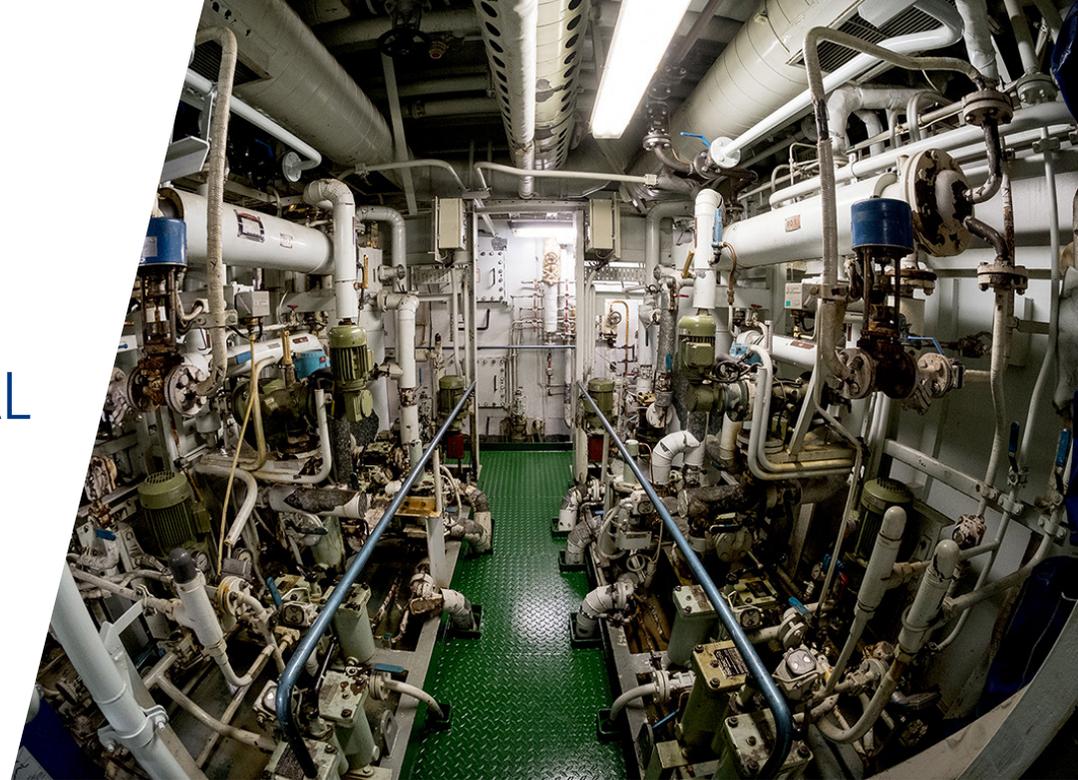
Arctia has promoted switching to increasingly cleaner fuels in shipping by being one of the first shipping companies in the world to introduce LNG as fuel and by operating the world's first and currently the only LNG icebreaker Polaris. This trend has a significant impact on both the Finnish maritime cluster and the national and international climate targets.

Arctia is involved in the protection of local environment from possible damage in Helsinki and the Bothnian Arc alike. The oil recovery system of icebreaker Polaris maintained by Arctia in 2017 wholly at its own expense enables the use of the vessel in oil recovery measures in the Baltic Sea if the situation so requires. The partnership agreement on oil recovery readiness between Arctia

Karhu Oy and the Emergency Service of Lapland was continued in 2017. Arctia enables equal economic performance reward throughout Finland by providing icebreaking services along the entire coast of Finland.

In 2017, Arctia continued its work on the reorientation of spending in order to minimise spending in the summer season. The icebreaking efficiency of vessels was improved by life span extensions. Energy-saving work on the ships is directed by the SEEMP plans (Ship Energy Efficiency Management Plan), which are extensive guidelines for optimising the operational efficiency of the ships. We have gained excellent results in this work with sister ships competing with one another: the best examples of this are Nordica and Fennica.

When the icebreakers are docked at the icebreaker base in Katajanokka, they are connected to municipal utilities. During such periods, the icebreakers obtain their water, district heat and electricity from the shore and discharge their sewage into the municipal network. The icebreaker Polaris also uses the overflow of its LNG system for heating. When at pier, the harbour icebreaker Ahto and the other tugs are connected to shore power and their waste water is discharged into a collection vehicle. In addition to the MARPOL Convention (International Convention for the Prevention of Pollution from Ships), Arctia complies with the national guidelines and regulations on ship emissions.



Environmental targets for 2018

1. Arctia will draw up an emissions monitoring and reporting plan for each ship during 2018 in accordance with the EU MRV regulation and start emissions reduction on their basis. Year 1990 will be set as the base year for emissions, and the target is a 20 per cent saving during the first four years.
2. The use of tank water for drinking (tank water quality) will be promoted and bottled water will be phased out.
3. The oil of equipment that may leak into the water will be switched to biodegradable oils recommended by the appliance manufacturer in accordance with the maintenance programme.

The emissions generated by fuel consumption during the operational period are the most significant **ENVIRONMENTAL IMPACTS** of Arctia's operations. However, it can be considered that the indirect positive environmental impacts of icebreaking outweigh the direct impacts when environmentally friendly maritime transport is secured also in the winter. The shipping industry in Finland corresponds to about 90 per cent of all transportation, but only 2.6 per cent of all emissions.

The **ENVIRONMENTAL TARGETS** for 2018 are the same as for the previous year. In 2017, we carried out work towards our targets, and this work will be continued during 2018. In 2018, we will launch quarterly reporting on consumption and emissions. Success in achieving the targets will be reported in the 2018 annual report.

ELECTRICITY

During the maintenance period in the summer months, the conventional icebreakers are connected to the electricity network of the City of Helsinki and their engines are stopped to avoid emissions and noise. Correspondingly, the multipurpose icebreakers relied on shore power in Rauma, as did the tugs in Kemi and Tornio.

SHORE POWER USE (MWH)	2017	2016	2015
Katajanokka	3,734.25	2,810.85	2,700.36

DISTRICT HEAT

When the ships are moored at the icebreaker dock in Katajanokka, they are heated from the City of

Helsinki's district heating network. When ships arrive in port, they are connected to district heating and their boilers are shut down.

WEATHER-ADJUSTED ENERGY CONSUMPTION (MWH)	2017	2016	2015
	5,151	4,911	5,808

Reporting of **FUEL CONSUMPTION** was developed in cooperation with the Finnish Transport Agency with the IBNext management system, which was introduced in 2017 and in which the fuel data is also recorded on a regular basis. The multipurpose icebreakers Fennica and Nordica operated on eco-efficient ultra-light fuel.

In 2014, the Arctia Group's icebreakers stopped using heavy fuel oil altogether, which decreased the company's sulphur emissions by a considerable degree. In accordance with its environmental pledge, Arctia started to develop the monitoring of its fuel consumption in 2017, and it will set itself numerical fuel saving targets in future. The SEEMP plans of the vessels were also updated in connection with the work.

The emissions of the LNG consumption of our latest icebreaker Polaris are not included in the following figures.

FUEL OIL CONSUMPTION, TONNES	2017	2016	2015
Ultra-light	5,384.42	1,293.14	8,722.90
Light	7,822.76	7,967.73	4,194.24
Heavy	0	0	0
LNG	5,5082.00	81.2	0

CARBON DIOXIDE EMISSIONS FROM FUEL COMBUSTION (tonnes)

	2017	2016	2015
	36,498.56	44,947.91	42,044.25

*calculated according to IMO MEPC/Circ.471, LNG is not included in the figures

AERIAL EMISSIONS

OTHER AERIAL EMISSIONS (tonnes)

	2017	2016	2015
CO ₂	59.6	42.1	59.6
HC	23.8	16.8	23.8
NO _x	834.2	589.3	662.7
Particulates	17.9	12.6	16.6
CH ₄	3.0	2.1	3.0
N ₂ O	1.0	0.7	1.0

Attention is given to the moderate consumption of fresh **WATER**. The environmental targets set in 2015 addressed the use of drinking water in particular. The quality of tank water is improved and the use of bottled water is being phased out. The results presented in the following table are based on the ships' own consumption monitoring, which does not give a fully comprehensive report on water use while moored in Katajanokka.

WATER CONSUMPTION (m³)

	2017	2016	2015
Multipurpose icebreakers	5,767.00	3,464.60	6,787.20
Conventional icebreakers	5,131.90	5,546.00*	4,660.00

* incl. tugs

WASTE is collected and sorted on board Arctia's vessels. When ships arrive in port, they dispose of their waste into the collection containers provided by

ports, and the port then collects the waste for recycling or delivers it to the landfill. In order to maintain the target level for waste sorting, Arctia's vessels have commissioned the collection of bio-waste when necessary. When vessels are operating outside specially protected areas, solid waste can be incinerated in the on-board incinerator within the limits of environmental legislation, where necessary.

Refrigerants

The refrigerants most commonly used in on-board refrigeration equipment are potent greenhouse gases that are harmful to the ozone layer. Arctia has given up the use of such gases and switched to alternative refrigerants. Arctia's refrigeration equipment is maintained by authorised maintenance companies.

Waste management training and plans

New employees are introduced to the shipping company's waste management system during their general orientation.

When ships are at sea, solid waste is sorted into the following dedicated receptacles:

- energy waste
- biowaste
- paper and cardboard
- mixed waste
- glass
- metal
- hazardous waste (paint pots, fluorescent lights, oily waste, etc.)
- PVC
- batteries.

WASTE

Sorted solid waste

	2017	2016	2015
	m ³ *	m ³ *	t
Biowaste	70.56	36.9	11.49
Plastic	72.80	37.7	5.52
Glass	4.10	5	1.36
Cardboard	50.20	73.5	3.20
Metal	29.10	54	60.06
Paper	92.60	39.2	5.60
Other	12.10	18.377	17.58
Mixed waste	446.25	450.75	41.67

Hazardous waste

Oily waste (m ³)	5.60	15.46	2.73
Batteries (pcs)	829	580	2 432
Lightbulbs, etc. (pcs)	950	584	1 275
Other (pcs)	105	110	550

Hazardous waste, liquid

Oil (m ³ **)(l) (l)	2.00	89.86	277.000
Paint (kg)	2.39	105.17	284
Coolants (kg)	0.26	0	0
Refrigerants (kg)	101	661	0
Other (kg)	0	65	270.50

Liquid waste (m³)

Processed bilge water and other oily water	517.70	480.34	1,107.85
Toilet waste water	1,441.12	3558.74	1,961.45
Other	0.00	2435.67	4,107.75

*NB. The unit is changed to cubic metres in 2015.

Arctia achieved its **COMPLIANCE** targets in 2017 and kept **ENVIRONMENTAL COSTS** at a reasonable level. Arctia did not cause any particular environmental damage in 2017. However, two incidents must be noted: one was a refrigerant leak and the other a minor oil leak observed during the operation of the icebreaker Polaris. Remedial measures were carried out on both of them.

The requirements resulting from new legislation concerning the handling of ballast waters or handing over of cargo waste to shore do not have a significant impact on Arctia's operations. Vessels complying with the new Energy Efficiency Design Index (EEDI) are not yet sailing in the northern waters to any significant degree, and therefore for the time being the impacts of this amendment to environmental legislation are not in evidence in the operation of icebreakers.

The environmental impacts of the **TRANSPORT AND TRAVEL** required by Arctia's operations is minor in comparison to, for example, the carbon dioxide emissions released from the ships' fuel. Arctia nevertheless seeks to reduce unnecessary transport. The spare part situation of Arctia's vessels is monitored continuously, and the ships aim to carry a sufficient number of spare parts on board.

The travel resulting from the rotation of sea personnel contributes to the other carbon dioxide emissions caused by Arctia's operations. The number and length of rotation trips depend on the vessel's operating area and the number of annual operating days. Air travel and consequent carbon dioxide emissions in 2017 were lower than in the previous year.

AIR TRAVEL

All flights (kg CO₂)

2017	2016	2015
433,130	175,559	862,360

The **MATERIALS** used by Arctia for service provision are primarily related to the maintenance, servicing and repairs of the ships. We use, for example, paints, solvents, detergents and cleaning agents each year. Material consumption has only been monitored at the cost centre level.

The development and introduction of the vessel maintenance programme made progress in 2017. A purchasing programme that provides extra tools for the monitoring of material consumption will be introduced in 2018. The environmental targets that were updated in late 2016 now include the aim to upgrade the deck engines for biodegradable oil in areas with a risk of oil entering the sea with the equipment supplier's authorisation.

PREPARING FOR ENVIRONMENTAL RISKS is an increasingly important factor in all responsible operations, particularly in the maritime sector. The Baltic Sea and the Arctic areas have a sensitive ecosystem. Arctia's expertise contributes to ensuring the sustainable development and exploitation of these sensitive areas.

The safety management system of every Arctia vessel includes an environmental section. The environmental section defines the most significant risks to the environment and includes instructions in case of environmental damage. The risk management frameworks of the safety management system also make sure that environmental risks are taken into account in the planning and exe-



Image: Scott Joblin

cution of work. Arctia has safeguarded its operations with contractual arrangements based on risk assessments and with comprehensive insurance cover.

Oil spill preparedness and response in the Bay of Bothnia continued without interruption with the harbour icebreaker Ahto and the harbour tug Jääsalo. Ahto took part in the development work of oil spill preparedness and response in icy conditions within the Ice Management & Oil Recovery (IMOR) project. In this Tekes project, Arctia develops oil spill preparedness and response in icy conditions in cooperation with Lamor. Arctia's task in the project was to focus on so-called ice management operations, i.e. active manipulation of ice, ice cover, the size and pressure of ice floes and the water flow to enable oil recovery in ice-covered waters.



The icebreaker Polaris was a significant addition to Arctia's oil recovery fleet. In addition to Ahto, Polaris is the second operational oil spill response vessel at Arctia. The icebreaker Kontio has the tank capacity, but it does not currently carry oil recovery equipment. IB Polaris is the first icebreaker in the world with an in-built oil recovery system. The equipment also includes a so-called storm boom. Polaris therefore significantly increases Arctia's ability to operate efficiently in oil recovery tasks also in more demanding weather conditions in the open sea. Polaris is also equipped for emergency towing, which further enhances Arctia's rescue abilities.

Image: Tuomas Romu

03

SERVICES

POLAR AND SUBPOLAR REGIONS

The average utilisation rate of conventional icebreakers in the Baltic Sea is about 30 per cent, while that of multipurpose icebreakers may exceed 80 per cent as a result of international tasks. Utilisation of the excellence of multipurpose icebreakers on a global scale provides considerable support for Arctia's economically efficient operations and enables completion of the investment and refurbishment programme of the icebreakers.



OIL SPILL PREPAREDNESS AND RESPONSE, AND OTHER MARITIME SERVICES

IB Polaris is the first icebreaker in the world with an in-built oil recovery system. Arctia is also capable of equipping its other icebreakers as oil recovery vessels. This would be sensible in order to safeguard a sufficient level of oil recovery readiness in the Gulf of Finland and in the northern parts of the Baltic Sea.

THE BALTIC SEA

The conditions and the extent of ice cover in the Baltic Sea vary from year to year. Finland's industry and commerce require regular and reliable shipping also in winter. Arctia's icebreakers assist merchant vessels in a diverse manner, ensuring the smooth flow of winter navigation in every respect.

Arctia offers harbour icebreaking services in the Bothnian Arc. The company's vessels operating in this area consist of the new-generation icebreaker Ahto and the harbour tugs Ulla and Jääsalo. Ahto is also fitted with modern oil recovery equipment.

Image: Sami Kettunen

Services in the Baltic

CHALLENGING ICE WINTER IN THE BAY OF BOTHNIA

Ice winter 2016–2017 was mild as was the previous winter, but it was by no means easy. There was plenty of work for the icebreakers especially in the challenging conditions of the Bay of Bothnia. During the season, merchant vessels were assisted by Otso, Kontio, Polaris and Sisu in the Bay of Bothnia and by Voima in the Gulf of Finland.

The icebreaking season 2016–2017 started on 8 December 2016 when the icebreaker Otso set off from Katajanokka towards the Bay of Bothnia. Despite the warm autumn and early part of the winter, ice started to rapidly accumulate at the upper end of the Bay of Bothnia in late December, and the first icebreaker of the season took off at almost the usual time.

Kontio followed Otso to the Bay of Bothnia on 16 December as the second icebreaker of the season. The latest icebreaker of the fleet, the world's most environmentally friendly diesel-electric icebreaker Polaris, started its icebreaking tasks on 9 January 2017.

In terms of the Finnish icebreakers, the icebreaking season ended on 28 May 2017 when the ice-

breaker Otso returned from its duties in the Bay of Bothnia. Otso's sister ship Kontio returned to Katajanokka already on 2 May. Assistance was required until the end of the month due to the moving ice masses resulting from the delayed spring.

During the season, especially brash ice barriers and hard ridged ice hampered shipping in the Bay of Bothnia. Arctia's icebreakers provided assistance about 1,200 times in total in the 2016–2017 season. In 2017, there were a total of 447 operating days in icebreaking. Offhire days due to technical reasons totalled 46. During the icebreaking season, about 93 per cent of vessels did not have to wait for assistance as specified in the quality target, and the average waiting time target of less than four hours was met for those that did have to wait.



Image: Niko Nurminen

PROGRESS MADE ON THE FLEET MODERNISATION AND REPLACEMENT PROGRAMME

The world's first LNG icebreaker Polaris, which joined Arctia's fleet in September 2016, started operations in January 2017. Polaris returned from its first icebreaking season in May 2017. During the season, the vessel was found to be extremely efficient with a high level of performance. Typical of a new vessel, the first season also involved fine-tuning of technical issues. For this reason, Polaris was docked twice during the year: the first docking was the warranty docking at the shipbuilder's shipyard and the other focused on improving the equipment supplier's products.



Image: Teemu Laine

The five-year docking of both the icebreaker Kontio and the multipurpose icebreaker Fennica also took place in 2017. Planned replacement investments and various maintenance tasks were carried out on the ships. In addition, tasks were carried out on the tanks on Fennica to contribute to extending the life span of the ship. The repair work on the 160-tonne crane on the multipurpose icebreaker Nordica was among the biggest tasks during the season.

The first season for icebreaker Voima after its major life span extension in 2016 was completed at the end of March 2017. Voima is the world's oldest icebreaker still carrying out icebreaking duties. Work on the hull was performed with particular care, increasing Voima's functioning capacity. The ship's deck officers welcomed the arrangements carried out on the bridge and the new navigation

equipment. The ship's messroom and offices were also refitted in the life span extension, and they have been found to be spacious and light. The life span extension is part of the WINMOS II project, and it received part-financing from the European Union's Connecting Europe Facility (CER).



Co-financed by the European Union
Trans-European Transport Network (TEN-T)

The satellite communication systems of icebreakers underwent a renewal in 2017. The multipurpose icebreakers Fennica and Nordica were equipped with 2.4-metre satellite antennae, which are capable of using global C and Ku bands. In comparison with the previous antennae, the equipment is now capable of automatically switching from one frequency band to the other when only one of them is available.

Of the conventional icebreakers, Urho, Sisu and Kontio were equipped with new satellite antennae using the Ku band. The leasing contracts for the antennae on Otso and Voima are still effective, and therefore there were no changes in the satellite communication system of these ships. The satellite antenna of the icebreaker Polaris is at the beginning of its operational life span.

As a result of the renewal of equipment, the operator of the multipurpose icebreakers' satellite capacity changed. In the same context, the speed of the satellite system data communications was increased on the multipurpose icebreakers to three megabytes per second and on the conventional icebreakers to 2+2 megabytes per second. Half of the capacity on conventional icebreakers is guaranteed capacity and half is shared capacity.

A mild but by no means easy ice winter 2016–2017

Ice winter 2016–2017 was mild, peaking on 12 February when the ice covered an area of 88,000 km². In the Bay of Bothnia and in the northern part of the Bothnian Sea, the duration of ice winter was close to average, but in the southern part of the Bothnian Sea and in the Gulf of Finland the number of ice days was clearly smaller than average.

In the early part of November, a north-easterly air current that was exceptionally cold for the time of year prevailed in Finland. This started off ice formation in the inlets of the northern parts of the Bay of Bothnia and in Lake Saimaa. At the end of the month, a mild south-westerly current prevailed in Finland and the ice formation stopped.

December was clearly milder than the long-term average, and the amount of ice increased slowly. The first icebreaker started operations in the Bay of Bothnia on 10 December when the frozen area extended to 10,000 km². There was a brief cold spell in early January, which resulted in a rapid increase of ice. The weather turned milder again soon after that, and there was a mild south-west-

erly current for the major part of the month, with no increase in the ice extent. Furthermore, southerly winds packed the ice field in the northern parts of the Bay of Bothnia.

Finland was under the influence of an extensive high-pressure area again in early February, and the weather was mainly dry and occasionally fairly cold. There were spells of extremely cold weather in most parts of the country especially on 6–9 February. At the time, the extent of the frozen area grew rapidly, and the ice cover was at its widest on 12 February. Ice covered an area of 88,000 km², on the basis of which, statistically, the winter was mild.

After that, in mid-February, high pressure gave way to a west-southwesterly air current which gained strength over the entire country, bringing dry and warm föhn wind over the Scandinavian Mountains. The weather in the most part of the country was sunny and unseasonably warm. In the Bay of Bothnia, the ice field packed into the north-easterly part of the Bay of Bothnia, and almost all ships needed assistance in the Oulu, Kemi and Tornio operations. The frozen area extended to 77,000 km² at the end of February.

The temperature continued to fluctuate in March. New ice was formed as a result of brief periods of frost, followed by mild and windy spells. This compacted the ice, forming a pack ice field in

the northeastern part of the Bay of Bothnia and creating an obstacle for shipping. At the end of March, there was fast ice all along the coast of Finland, but in the open sea there was ice only in the northern part of the Bay of Bothnia north of the line between Kokkola and Luleå and in the easternmost part of the Gulf of Finland. In the difficult ice conditions in the Bay of Bothnia, a total of nine icebreakers provided assistance to ships in early April.

The mild March was followed by a cold April, and the ice extent decreased very slowly over a period of three weeks. It was not until in the last week of April when the winds made the ice field spread and the ice melted in the open sea. May was also colder than normal, and the ice melted slowly. The last of the icebreakers left the Bay of Bothnia on 25 May, and the last ice chart of the winter was drawn on the first day of June when the Baltic Sea was practically free of ice.



Jouni Vainio
Ice Expert
Finnish Meteorological
Institute

Services in the polar and subpolar regions

SECOND JOURNEY THROUGH THE NORTHWEST PASSAGE

After a successful international chartering operation, Nordica sailed home via the Northwest Passage and two Arctic conferences. The vessel now holds the records for the earliest and the latest navigation through the Northwest Passage.

Multipurpose icebreaker Nordica departed for the chartering services of an international shipping company in the Sea of Okhotsk in December 2016. The vessel delivered icebreaking services for an offshore project, safeguarding the production units in the ice conditions of the area. Despite the fact that Nordica was away from home in the winter season, the number of Finnish icebreakers used in icebreaking in the Baltic Sea was the same as in the previous winter as a result of Polaris joining the fleet.

Work in the Sea of Okhotsk continued until the end of April and the beginning of May when the vessel was transferred to Busan in South Korea. In Busan, Nordica and the Finnish icebreaking expertise were presented to the distinguished guests of the International Conference on Port and Ocean Engineering under Arctic Conditions (POAC 2017) and to the partners of Arctia and the Finnish maritime cluster.

During 2017, the number of operating days in offshore tasks totalled 65 (61 in 2016). The Arctic 100 Expedition from Vancouver in Canada to Nuuk in Greenland took 24 days. On returning from the Northwest Passage, Nordica stayed in Denmark where the vessel underwent maintenance and repair tasks in accordance with advance plans. The vessel had a seven-day stopover in the Reykjavík harbour in October.

Arctia's vessels are capable of performing many kinds of maritime services in challenging conditions. For example, Nordica assisted in the installation of a wind farm in the Irish Sea in 2011. Arctia is constantly seeking new opportunities for the multipurpose icebreakers to operate in different sectors of maritime services. In 2017, Arctia continued to investigate the service needs of especially cruise and travel operators and operators carrying out scientific research in the Polar regions or those interested in

doing so. In addition to finding new service sectors, Arctia focused especially on the presentation of the capabilities of the multipurpose icebreakers and the experience of the crew throughout the world.

ARCTIC 100 EXPEDITION PROMOTED DIALOGUE ON CLOSER INTERNATIONAL COOPERATION IN ARCTIC RESEARCH

In summer 2017, the Arctic 100 Expedition carried out on Arctia's multipurpose icebreaker Nordica was a historic event because international expeditions in other than special research vessels are very rare. The purpose of the expedition was to gather new scientific knowledge and to deepen international cooperation in Arctic research with a Finnish knowledge base. The project was supported by the Ministry for Foreign Affairs and the Ministry of Education and Culture.



Research of both the Arctic and Antarctica is important in order to address the climate change and other global challenges. Nevertheless, the states and research institutes that are interested in polar research do not have the necessary facilities required for research in these areas. Arctia wants to offer a new operating model for the utilisation of its facilities and expertise in international polar research.

The Arctic 100 Expedition is one example of an operating model where international research in the polar areas can be exploited by all icebreakers in the world and not only by a few national research vessels that are capable of operating in these areas. In addition to bringing more researchers along to the transit voyages of the vessels, shipping companies could charter the vessels in a flexible way for the shared needs of international research institutes in the future. As a result of the Arctic 100 Expedition, Arctia is among the first shipping companies to support this kind of an operating model, i.e. shared use of icebreakers.

During the Arctic 100 Expedition, the ship's crew and the accompanying experts and representatives of indigenous peoples studied the ice conditions of the Northwest Passage and made contacts with the world of research, the maritime industry and indigenous peoples. The voyage was carried out in cooperation with the Canadian Coast Guard, the Arctic Centre of the University of Lapland, Mar-tech Polar, the Nunavut Impact Review Board, and the Nunavut Fisheries and Marine Training Consortium. A team from the news agency Associated Press was also on board, spreading information about Finnish icebreaking competence through its photographs and news reports.

Arctia and the Finnish Meteorological Institute developed a new kind of ice forecast service during the expedition. During the voyage, the Finnish Meteorological Institute sent to Nordica 3-5-day weather, ice and sea forecasts compiled by a marine expert three days a week while sailing from the Bering Strait to Nuuk. Nordica, on the other hand, reported weather and ice observations from the area, as well as feedback on the forecasts. Meteorological cooperation covering the Arctic region is one of the key themes of the Arctic Council during Finland's chairmanship in 2017–2019.

Arctia continues the debate with the scientific community in order to tackle the challenges of combining practical shipping operations and polar research for the time being. According to Finland's Strategy for the Arctic Region, "Finland's ambition is to set an example as an Arctic expert both in research and in the responsible commercial exploitation of such expertise" (p. 17, Finland's Strategy for the Arctic Region 2013, Government resolution on 23 August 2013). To support this objective, Arctia offers its multipurpose vessels that are well suited for various research tasks in the polar regions.

ICEBREAKER AS A MEETING VENUE IN THE WORLD'S LARGEST ARCTIC EVENT

After the successful transit through the Northwest Passage and the Arctic 100 Expedition, Nordica was presented in Nuuk in Greenland. In October 2017, the vessel sailed to Reykjavík in Iceland to provide a meeting venue at an Arctic event. Held in Reykjavík in October each year, the Arctic Circle Assembly is the world's largest multidisciplinary international conference on the Arctic. Having recently

taken over the chairmanship of the Arctic Council and celebrating its hundred years of independence, Finland was more prominently presented in the conference than usual in 2017.

Arctia supported the visibility of Finland and Finnish knowhow in this key forum by sending the multipurpose icebreaker Nordica to Reykjavík Old Harbour next to the conference centre Harpa. During the conference, several high-level meetings, debates and dinners were held on the vessel. The ship's facilities were offered as a meeting venue for Finnish and overseas organisations taking part in the conference. Guided tours open to all were held on the icebreaker on every day of the conference. Finnish artist Hanna Kanto together with her Icelandic colleague Katrín I. Jónsdóttir Hjördísardóttir also implemented a video montage on the side of the icebreaker.

The Finnish icebreaker was invited to Reykjavík by the Chairman of the Board of Directors of the Arctic Circle, former President of Iceland Ólafur Ragnar Grímsson. Several ministers and senior officials, as well as researchers from different parts of the Arctic region visited the vessel during the event. In addition to the programme on Nordica, Arctia also organised, together with the secretariat of the conference, a talk on international icebreaking cooperation in the polar regions of the world. The talk was open to all conference participants.

An icebreaker as a conference venue in the world's biggest event on the Arctic region was Arctia's gift to the 100-year-old Finland. The project was part of the programme of Finland's centenary of independence. The events on the icebreaker were organised in cooperation with Finland's Embassy in Reykjavík, the secretariat of the Arctic Circle and other partners.

Oil spill preparedness and response

NEW STRENGTH AND SKILLS FOR OIL SPILL PREPAREDNESS AND RESPONSE

The IMOR project generated new operational capabilities in oil spill preparedness and response. Arctia continues the development work of oil spill preparedness and response in icy conditions together with its partners.

Arctia regards oil spill preparedness and response as an important part of its service provision. All of Arctia's icebreakers can be fitted out for oil recovery tasks in a cost-effective way, if required. In winter, icebreakers work at hubs for merchant vessel traffic, and equipping them to operate as oil recovery vessels would significantly enhance the current level of preparedness in oil spill response. The icebreaker pier in Katajanokka, Helsinki, is situated close to the most significant oil transport lanes in the Baltic Sea.

The first icebreaking season of the LNG icebreaker *Polaris* proved that oil spill preparedness and the use of LNG are well suited. LNG as a means of propulsion supports slow speeds that are essential for successful oil recovery operations in the open sea. The recovery speed in the open sea varies between 1.5 and 3 knots. The technical solutions required by LNG also support year-round oil spill preparedness and response, as well as the use of the vessel.

The results of the IMOR (Ice Management & Oil Recovery) project were presented in March 2017. The end result of the project was a number of operational means to navigate the vessel in icy conditions in an oil recovery situation. In connection with the tests, it was discovered that the natural drift under ice and the perception of its direction are very important in successful oil recovery. It was also stated in the project that the vessel's equipment can be used for drawing oil from even further than 60 metres from the ship's bow. The impact of the vessel on the oil when passing by or even sailing over it was smaller than predicted.

During 2017, oil spill preparedness and response in open seas was also improved locally in the Bay of Bothnia. Currently, the harbour icebreakers *Jääsalo* and *Ahto* can be equipped with a separate skimmer built for offshore oil recovery, if necessary. This will improve oil spill preparedness and recovery in the Bay of Bothnia in the summer. In the Gulf of Finland and elsewhere in the Baltic Sea, Arctia is still capable of using the tank capacity of *Kontio*, i.e. its reception and discharge capacity, in emergency oil recovery.



Harbour icebreaking

ESCORT TUG AND HARBOUR ICEBREAKING SERVICES IN THE BALTIC SEA

Arctia Karhu offers harbour icebreaking services in the Bothnian Arc as well as elsewhere in the Baltic Sea. In November 2017, the vessels of Arctia Karhu assisted the first LNG tanker to the largest liquefied natural gas terminal in the Nordic countries in Röyttä in Tornio.

Arctia Karhu Ltd is an enterprise jointly owned by Arctia (90%) and the Port of Kemi (10%). The company's field of operations includes harbour icebreaking, towing and assisting ships, cargo transport and other functions in support of navigation in Finland and abroad. Arctia Karhu Ltd offers harbour icebreaking services over the wide expanse of the Bothnian Arc and in the entire area of the Baltic Sea.

In 2017, Arctia Karhu's harbour icebreaker Ahto assisted ships in the Röyttä harbour in Tornio and the harbour icebreaker Jääsalo provided assistance to ships in Ajos in Kemi. The harbour icebreaker Ulla served as a backup vessel. During the year, exten-

sive maintenance was carried out on the engine room of Jääsalo.

In 2017, Arctia Karhu signed a new framework agreement on transporting technical personnel between the Ajos harbour and the wind farm islands in the early and late months of the winter. The agreement had a positive impact on the company's turnover and the utilisation rate of Ulla.

During the year, the new-generation harbour icebreaker Ahto carried out nine escort tug assistances in the port of Luleå in accordance with the agreement signed with the port in 2016. A new agreement concerning the 2018 open water season was signed in December 2017.

Liquefied natural gas (LNG) was delivered for the first time by ship to the LNG import terminal in Röyttä in Tornio in November 2017. The first LNG tanker arrived in the largest liquefied natural gas terminal in the Nordic countries assisted by Arctia Karhu's vessels. On completion in summer 2018, the LNG terminal in Tornio will serve the entire Bay of Bothnia and the industry, mines, shipping and heavy transport of the northern regions of Finland, Sweden and Norway. The terminal is expected to increase the utilisation rate of Arctia Karhu's vessels during 2019 at the latest, by which time it will be in full production.

Arctia Events

MEMORABLE EVENTS HELD ON AN ICEBREAKER

The icebreaker pier in Katajanokka provides possibly the most unique venue in the whole of Helsinki. The icebreakers Urho and Sisu offer a fantastic setting for meetings, dinners and functions almost throughout the year.

A visit to an icebreaker is a unique and memorable experience. Meetings, parties and various other functions held on the icebreaker are very popular. Two to five events were held on board the icebreaker Sisu each week in 2017. In addition, several ministerial and VIP visits were organised in cooperation with the Ministry for Foreign Affairs and public administration bodies. Arctia's operations, icebreaking and Finland's Arctic expertise were presented extensively in connection with the visits.

A large number of press delegations from near and far were also introduced to icebreaking and Finnish specialist expertise in 2017. Icebreakers are not only a part of Finland's country image and the cityscape of Helsinki, but also an important part of our material cultural heritage. Therefore, presentation of the fleet and expertise to both international visitors and Helsinki residents is an important part of Arctia's corporate social responsibility.





GALA MARQUEE GATHERED GUESTS ON THE DECK OF SISU

In addition to meetings and dinners, the versatile facilities of the icebreakers are also an excellent setting for other events. Various product launches are particularly popular: the unique environment of the icebreakers makes the events even more interesting and, in itself, attracts media representatives.

For September 2017, a gala marquee was erected on the helicopter deck of Sisua to hold several high-profile events. The lit-up marquee in the early-autumn evening made a great impression especially on the international guests.

WORKPLACE VISITS ON FAMILY DAY

One of Arctia's most popular events is the Family Day, which is an open day for all Arctia's employees and their family members. During the day, employees get to give a guided tour of their workplace and its operation to their nearest and dearest.

The traditional Family Day was held in December 2017 on the icebreaker Sisua. The Christmas menu prepared by Sisua's catering staff and Santa Claus who visited the event gathered together almost a hundred Arctia employees with their family members.

Finland's 100 years of independence was celebrated on the icebreakers

The centenary year of Finland's independence was also seen on the icebreakers. A key part of the festivities was the Finland 100 menu offered on the Events ships. The icebreaker fleet's flagship Polaris sailed throughout the year 2017 with a reminder of the centenary year to the assisted vessels and harbours: the bow of Polaris was prominently decorated with the Finland 100 logo.

To mark the centenary of Finnish independence, Arctia took part in the spectacular nationwide festive lighting of key landmarks by lighting up Polaris and Kontio with blue and white colours on 5–7 December. Arctia also organised and took part in the organisation of various events related to the history, present day and future of icebreaking in the spirit of Finland 100.

04

PERSONNEL AND GOVERNANCE



Image: Patrik Barck

PERSONNEL AND GOVERNANCE

SUCCESS IS BASED ON COMPETENT PEOPLE

Behind Arctia's operations, corporate culture and general attitude is a competent and motivated personnel committed to the common values. Arctia offers its employees a safe work environment and an opportunity to nurture their well-being and professional skills.

HUMAN RESOURCE MANAGEMENT

Maintenance and development of the competence and good working conditions of its employees play a strategically important role at Arctia. Investing in the competence of personnel is at least as important as investing in the fleet. Investing in the fleet also requires a relatively equal investment in the development of the competence of personnel.

During 2017, Arctia continued its leadership and supervisor training programme. About 40 current and potential future managers who play a key part in resolving situations that put a burden on the

personnel took part in two more extensive supervisor training courses. In addition to the training events, supervisory work is also supported by the model of early intervention and cooperation with occupational health care partners.

The development of occupational wellbeing and reduction of sick days through occupational wellbeing has for long been a key target at Arctia. In 2017, we saw signs of positive development when, e.g. with a reduction in the number of total absences. Training in bringing up concerns and Terveystori (Health Market) organised in connection with staff events were among the most visible

measures in the development of wellbeing during the year. The objective of training in bringing up concerns is to develop the managers' leadership skills and to clarify the managers' responsibilities and obligations in the management of occupational wellbeing.

Two major personnel events, i.e. Shipping Company Days, were held in 2017. A total of 154 persons took part in them, 64 in the spring and 90 in the autumn. The Shipping Company Days dealt with matters related to the company's strategy and operational activities. Internal communications and the changes in the operating environment,



Image: Tim Bird

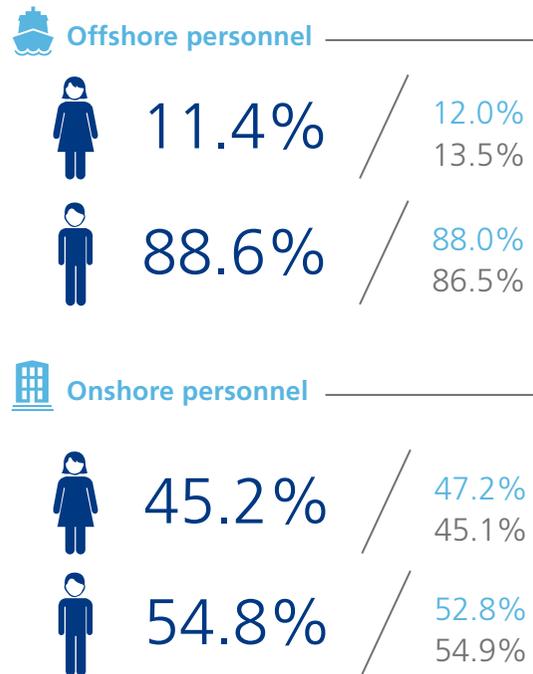


which have an impact on the demand for Arctia's services, were also among the topics of the Shipping Company Days.

Arctia's employee cooperation committee convened regularly once a month in 2017. The management team as well as managers and experts mainly took part in the meetings to represent the employer. Shop stewards and members of the occupational safety and health organisation took part in the committee as employee representatives. The meetings dealt with topical issues of the shipping company.

The personnel survey has traditionally been carried out every other year at the end of August and the beginning of September. According to this scheduling, the survey would have been implemented in 2017. However, a decision was made to change the scheduling in order to obtain sampling that is as representative as possible. The next sur-

GENDER DISTRIBUTION



Board of Directors gender distribution

Women	2	Men	3
	2		3
	2		3

Gender distribution in senior management (Management Team)

Women	2	Men	4
	2		6
	1		6



vey will be implemented in early 2018 during the icebreaking season. Changes in the methods of implementing the survey aim for improved motivation in taking part in the personnel survey and the handling of the results.

In May 2017, Arctia took part in the corporate marathon relay in Helsinki for the third time. During the year, human resources administration also participated in two trade fairs, in the Åland Islands and in Turku, presenting Arctia as an employer.

The indicators on the NUMBER AND STRUCTURE OF PERSONNEL are presented in the annual report

(p. XX). All personnel employed by Arctia in 2017 were Finnish nationals.

EQUALITY

In its operations, Arctia follows an equality plan approved by the Ombudsman for Equality. No issues have been detected by the Ombudsman that would suggest unjustified differences between men and women. The equality plan was updated in early 2017. A non-discrimination plan has been included in the plan to provide support in moni-

toring the implementation of equality and non-discrimination.

Arctia monitors the structure and salaries of its employees. At the end of 2017, a total of 11.4 per cent of offshore personnel (237 persons in total) were women, while the corresponding figure in onshore personnel (31 persons in total) was 45.2 per cent. The ratio between the genders has remained at roughly the same level for the past few years. The salaries of sea personnel are based on collective bargaining agreements and the job title and salary categories defined in the agreements.

REORGANISATION AND DISMISSALS

A total of 75 employment contracts ended at Arctia in 2017, and the number of new permanent employment contracts signed was 28. A new chartering manager was appointed from within the Group. All personnel with the exception of management are covered by collective bargaining agreements. Arctia applies the Seafarers' Employment Contracts Act, based on the International Labour Organisation ILO's convention on maritime work, to sea personnel and the Employment Contracts Act to office personnel. Arctia's interest group, the Federation of Finnish Special-Purpose Ship Employers, has company-specific collective agreements with the trade unions representing sea personnel. No co-operation procedures were carried out during the year.

A new collective agreement that is valid until 28 February 2019 was signed with the Finnish Engineers' Association. Wage settlement mainly com-

plies with the Competitiveness Pact, but the agreement also includes some factors that will raise costs.

THE FOLLOWING COLLECTIVE AGREEMENTS WERE IN FORCE IN 2017:

1. The collective agreement applying to the deck, engine and catering personnel of the Arctia Group
2. The collective agreement applying to the engineering officers of the Arctia Group's conventional icebreakers
3. The collective agreement applying to the engineering officers of the Arctia Group's multi-purpose icebreakers
4. The collective agreement applying to the deck officers of the Arctia Group's conventional icebreakers
5. The collective agreement applying to the deck officers of the Arctia Group's multipurpose icebreakers
6. The collective agreement applying to the officers of harbour icebreakers
7. The collective agreement applying to the crews of harbour icebreakers
8. The collective agreement applying to the salaried employees of the Arctia Group.

REMUNERATION SYSTEM AND PERFORMANCE BONUSES

OBJECTIVE AND PRINCIPLES

The objective of the performance bonus system is to commit the company's key personnel to improving Arctia's profitability and to keep the compa-

ny's remuneration model competitive with those applied to comparable management personnel in other companies.

According to the remuneration guidelines for state-owned enterprises (Statement of the Cabinet Committee on Economic Policy issued on 13 August 2012), 'performance bonuses normally consist of one-year bonus programmes and long-term incentive programmes with a duration of no less than three years.' Arctia's model consists of the one-year bonus programme specified in the guidelines.

STRUCTURE OF THE PERFORMANCE BONUS SYSTEM

In the 2017 fiscal period, the remuneration bonus programme applied to the CEO, Management Team and key personnel reporting to the CEO or a member of the Management Team as follows:

'GOOD PERFORMANCE' IN ACCORDANCE WITH THE REMUNERATION GUIDELINES	Maximum bonus	Number of personnel
President and CEO	3.6 kk	1
Management Team member	2 kk	5
Other key personnel reporting to the CEO	1–2 kk	1–5

'EXCEPTIONAL PERFORMANCE' IN ACCORDANCE WITH THE REMUNERATION GUIDELINES	Maximum bonus	Number of personnel
Bonus in addition to the 'good performance' bonus		
President and CEO	2.4 kk	1
Management Team member	1 kk	5
Other key personnel reporting to the CEO	0.5–1 kk	1–5

The performance bonus is tied to business targets defined on the basis of the strategy and budget (in the 2017 fiscal period EBIT excluding extraordinary items such as business acquisitions or divestments, or profits or losses from the sale of ships) and personal key targets derived from these.

The calculation basis for personal bonuses consists of the total value of the person's monthly salary and taxable perquisites (excl. IT equipment and connections) during the fiscal period. If these earnings change during the fiscal period, the monthly salary, which the personal bonus is based on, will be calculated by dividing the total annual salary income by 12.

The bonus will be paid if the operating profit (EBIT) of the Group is positive. If the Group makes a loss, no bonuses will be paid.

Personnel may also become subject to the system in the middle of a fiscal period, such as when a new person is hired or a person with a previous employment relationship is transferred to a position covered by the system, provided that a minimum of four (4) months remain in the fiscal period. In such cases, the amount of bonus paid will correspond to the ratio of the person's eligibility to the duration of the fiscal period. A month in which the person has been employed by Arctia for at least fourteen (14) working days or days equivalent to time at work is considered as a working month. Unpaid leave is not considered as a period of eligibility. Bonuses will not be paid for time spent on parental leave.

The achievement of targets is reviewed during the first quarter of 2018. The right to a performance bonus is created once the financial state-

ments have been approved, achievement of personal targets have been reviewed with the person's immediate superior and his or her superior, and the Board of Directors of the Arctia Group has authorised the payment of the bonus. Depending on the approval date of the financial statements and unless otherwise decided by the Board of Directors, the bonus will be paid in connection with the salary of February or March. It is a condition for the payment of the performance bonus that the person is employed by Arctia with an employment contract valid until further notice and that they have not resigned or are not working through their period of notice at the time of payment.

If a person within the scope of the system has his or her employment terminated or is dismissed due to negligence, misdemeanours or other comparable reasons before the payment of the bonus, the payment will be cancelled.

If a person within the scope of the system retires, dies, becomes incapable to work or is dismissed (or his or her executive employment contract is terminated) due to reasons other than those stated above, his or her bonus will be paid in proportion to actual working time (e.g. 8/12 of the annual level of bonus after working for 8 months), provided that his or her employment lasted a minimum of four (4) months during the fiscal period.

If a person changes duties in the middle of a fiscal period, his or her performance bonus will be calculated with regard to one (if one of the positions is not covered by the system) or both positions in proportion to the time of employment in each. In such cases, the person must have served

for a minimum of four (4) months in a position eligible for a performance bonus.

Any changes in the Group's structure during the review period will be taken into consideration in the definition of performance bonus criteria. Such changes can include the sale or termination of a business area, consolidations, mergers or other organisational arrangements.

In addition to the system described above, the Board of Directors may, at the proposal of the CEO, decide on a separate performance bonus for an exceptional work performance. The amount of the bonus may not exceed the amount of the person's bonus under this system.

The Board of Directors of the Arctia Group has approved these guidelines on 16 February 2016 acting on the Remuneration and Nomination Committee. The Board of Directors is free to make changes to these guidelines or discontinue the system at any time.

KEY PERSONNEL REMUNERATION SYSTEM	2017	2016	2015
Key personnel subject to the remuneration system, percentage of total personnel	4.1%	5.4%	5.2%
Performance bonuses paid*			
CEO (EUR)	22,433	0	36,634
rest of the Management Team (EUR)	23,304	0	40,117
others (EUR)	15,777	17,009	22,575
Performance bonuses including indirect costs	75,057	20,635	123,116

*performance bonuses are paid in the year following the accumulation year

Competence and expertise

UNIQUE ARCTIC EXPERTISE MUST BE MAINTAINED

Icebreaking is not learnt from books, but through practical work. Therefore Arctia plays a key role in maintaining and developing expertise in Finland's icebreaking operations.

Arctia's personnel had a total of 812 training days in 2017 (1,395 in 2016). During 2017, offshore personnel underwent refresher training related to, e.g. maintaining professional qualifications and other requirements. During the autumn, all deck officers were trained in accordance with the requirements of the IMO Polar Code in anticipation of the future qualification requirements.

During 2017, Arctia was involved in the development of a training package related to icebreaking expertise. Participation in the development of an ice simulator used in the training of seafarers was an important part of this package and safeguarding of professional skills.

PERFORMANCE REVIEWS

The performance review form and guidelines were updated in 2017, and they were introduced for all members of staff. The separate competence assessment system for sea personnel was withdrawn at the same time. The reform took place at the same time as the updates to the guidelines for the electronic system in May, and therefore the new practice will not be in full use until during 2018. The performance reviews of office personnel are conducted by their supervisors and those of ships' masters by the vice presidents of business units. The reviews are conducted at least once per year.



Image: Tim Bird

	2017	2016	2015
TRAINING			
Outside training days	812	1,395	1,133
EUR/person spent on training	1,205	1,205	1,194
Educational background of personnel			
Vocational studies	57	55	54
Bachelor's degree	38	41	43
Master's degree	5	4	4

PERSONNEL SATISFACTION

Arctia carries out a personnel survey every other year. The last such survey was conducted in 2015 and the next will be carried out in February 2018. The time of the survey will be during the icebreaking season when the offshore personnel will be at work.

Activity lists to be implemented the next year are drawn up on the basis of the survey. The implementation of the activity list drawn up on the basis of the previous survey has been continued systematically. In 2017, Arctia focused especially on leadership and the development of managers.

A well-being group was established in 2014 to support the overall well-being of Arctia's personnel. The group includes representatives of the employer and employees. The group convenes on a regular basis and has implemented, e.g. Terveyystori (Health Market) events and well-being programmes for personnel in cooperation with outside experts.

A survey on internal communications within Arctia was also conducted in early 2016. A new intranet system was introduced on the basis of the survey in 2017. The system is more in line with the needs of mobile personnel. The responsibility for keeping its data up-to-date has been given to the ships' deck officers and in the office to the employees with a communications responsibility within the departments. The objective of the development of internal communications is that, in future, every Arctia employee takes responsi-

bility for passing on, updating and verifying the validity of information and for making sure that information reaches all parts of the organisation in an efficient way.

To mark the centenary of Finland's independence, Arctia invited all those who have retired from Arctia and its predecessor organisation in the joint "Niin murtoivat jäät" event in November 2017. Arctia served lunch and provided a programme related to the history of icebreaking and a guided tour of the shipping company's latest icebreaker Polaris. About 150 pensioners took part in the much appreciated event.

OCCUPATIONAL HEALTH AND SAFETY

A total of five occupational accidents resulting in absence from work occurred in 2017 (seven in 2016). The two-year campaign on safety communications drew to a close at the end of the year. The objective of the campaign was to develop project safety thinking and the safety management skills of managers. Arctia also continued active communications on safety issues and the handing out of safety awards.

Trafi audited Arctia's safety and management documentation in 2017. Arctia received a certificate for the safety management system, which is valid until April 2022.

At the end of the year, a safety day for the entire personnel was built together with the Centre for Occupational Safety. The training will be implemented in early 2018.

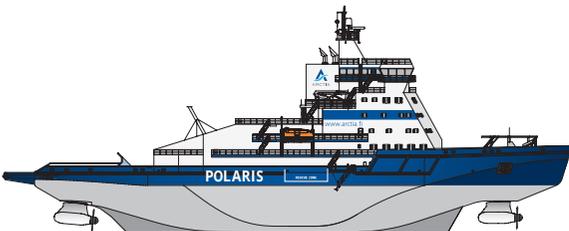
In addition to statutory preventative occupational health care, Arctia offers its employees general practitioner-level medical care, including treatment by occupational physicians and nurses, the required laboratory tests and imaging examinations, and consultation by occupational health care experts and specialists. The Hoitoturva Extra health insurance policy taken out by the company for its employees complements the occupational health care services.

Arctia supports its employees' leisure activities with sports and arts vouchers. Every Arctia employee is entitled to receive vouchers worth 200 euros each year.

	2017	2016	2015
NUMBER OF ACCIDENTS			
Accidents resulting in absence from work	5	7	12
Other accidents	9	4	16
Accident frequency / million working hours	24.07	24.71	23.54
ABSENCE DUE TO SICKNESS			
Absence rate due to illness, all personnel			
Short-term (%)	6.0	8.9	7.5
Including long-term absences (%)	9.1	13.6	10.4
Number of suspected cases of occupational illness	1	2	0

ICEBREAKERS AND MULTIPURPOSE ICEBREAKERS

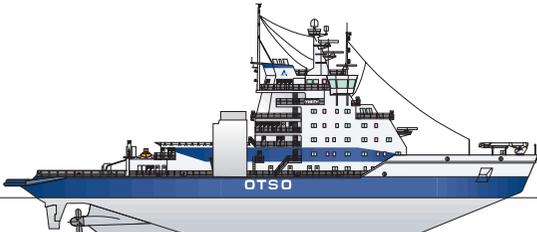
Length, m / Beam, m / Draught, m / Power, kW



IB POLARIS 110 / 24 / 8.0 / 22,000



IB KONTIO 98.6 / 24.2 / 8.0 / 15,000



IB OTSO 98.6 / 24.2 / 8.0 / 15,000



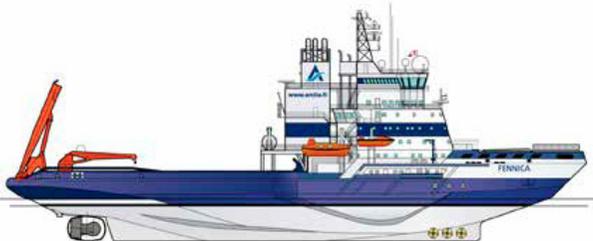
IB SISU 106.6 / 23.8 / 8.3 / 16,200



IB URHO 106.6 / 23.8 / 8.3 / 16,200



IB VOIMA 83.5 / 19.4 / 7.0 / 10,200



MSV FENNICA 116.0 / 26.0 / 8.4 / 15,000



MSV NORDICA 116.0 / 26.0 / 8.4 / 15,000



HIB AHTO 40.0 / 12.8 / 5.5 / 3,600

05

FINANCIAL STATEMENTS 2017



Image: Sampo Tammiala

Arctia Ltd.

ANNUAL REPORT FOR THE PERIOD 1 JAN. – 31 DEC. 2017

MARKET DEVELOPMENT

The development outlook for the markets in the Baltic Sea area is positive as a result of economic growth. Investments in infrastructure are increasing and the volume of traffic is growing. International cooperation in the region is expanding, and there is a need to renew the icebreaking resources throughout the region due to the ageing fleet.

Activities in the North American market have decreased considerably as a result of energy and climate policy decisions in the United States and Canada. However, the latest statements by the current US administration and the rising price trend of crude oil may alter the situation in the next few years. Projects by the Coast Guards to renew their icebreaking capacity are making progress

and passenger ship transport is on the increase. Seismic research is expected to continue in Greenland. Due to the above, demand in the area will be strengthened.

Energy production in the Arctic and Sub-Arctic regions of Russia continued to grow, increasing traffic in the Northeast Passage. For this reason, demand for support services in the region also increased. As Arctic research in Asian countries and Central Europe increases, the research organisations will need icebreaking and research ship services. The sanctions do not restrict icebreaking services, but they do partly limit other possible service forms.

Renewable energy projects in ice-covered sea areas may bring new kinds of service needs. Wind, wave and tidal power solutions will form the basis for local energy production in the Arctic region.

MAJOR EVENTS DURING THE FISCAL PERIOD

Winter 2017 was fairly mild, but the ice situation in the Bay of Bothnia was difficult when the wind packed the ice into a ridged ice zone that was very difficult to force. For that reason, the number of vessels taking part in icebreaking was higher than in the previous year. The number of icebreaking days also increased. Our new vessel Polaris has proven to be an extremely efficient icebreaker although there were plenty of technical problems in the initial stage, which also had an impact on the company's performance. We carry out close cooperation with Polaris's equipment suppliers in order to develop the vessel's equipment and to improve reliability. The number of offshore days was higher than before, but we were able to tackle the problems in the main, and the service level was high throughout the icebreaking season.

The multipurpose icebreaker Nordica was released from its icebreaking duties in the Baltic Sea in mutual understanding with the Finnish Transport Agency to start chartering in Russia at the end of 2016. The chartering continued until the end of April. In July, Nordica returned to Europe through the Northwest Passage during the Arctic 100 Expedition. Researchers, journalists and other stakeholder representatives from several different countries accompanied the expedition. The voyage was a resounding success. On the return journey, the vessel stayed in Denmark for pre-agreed maintenance work. The icebreaker Kontio and the multipurpose icebreaker Fennica also underwent scheduled docking during the year.

FINANCIAL KEY FIGURES DESCRIBING THE OPERATIONS OF THE ARCTIA GROUP

	2017	2016	2015	2014	2013
Turnover, MEUR	48.9	60.7	64.4	61.7	63.7
Operating profit/loss, MEUR	0.1	12.9	18.1	16.8	17.5
% of turnover	0.3	21.2	28.1	27.2	27.5
Profit/loss for the fiscal period, MEUR	-1.4	9.1	14.6	12.9	13.4
% of turnover	-2.1	15.1	22.7	20.9	21.0
Equity, MEUR	137.2	143.2	141.6	134.8	121.4
Equity ratio, %	50.1	49.9	73.4	72.7	70.7
Gearing, %	70.4	62.5	-16.9	-15.6	-12.0
Interest-bearing liabilities, MEUR	121.4	124.2	36.1	34.7	33.2
Return on capital invested, %	0.1	5.7	11.8	11.3	12.5
Return on equity (ROE), %	-1.0	6.4	10.6	10.0	11.7
Gross investment, MEUR	5.7	131.6	14.8	15.6	17.8
% of turnover	11.6	216.9	23.0	25.3	27.9
Balance sheet total, MEUR	274.5	287.4	193.9	185.7	175.6

GROUP PERFORMANCE AND FINANCIAL KEY FIGURES

Arctia Group's turnover for the period under review was lower than last year, standing at EUR 48.9 million (EUR 60.7 million). Operating profit amounted to EUR 0.1 million (EUR 12.9 million). Loss for the financial period came to EUR -1.4 million (EUR 9.1 million). The key factor in the decline in the financial performance was the smaller portfolio of international business contracts. Investments remained much lower than in the previous year while the level of investments in the previous year was high as a result of the acquisition of icebreaker Polaris in 2016 (EUR 121.8 million). The company's liquidity and solvency remained at the previous year's level.

ICEBREAKING

Winter 2017 was mild, but the conditions especially in the Bay of Bothnia were demanding. Icebreakers Voima, Sisuv, Kontio, Otso and Polaris assisted merchant shipping. IB Urho was on standby in Katajanokka throughout the review period and the multipurpose icebreaker Fennica was in Rauma. The multipurpose icebreaker Nordica was released from icebreaking duties in accordance with the agreement with the Finnish Transport Agency as the ship was chartered to Russia to carry out ice management tasks. In 2017, there were a total of 447 (385) operating days and 46 (0) offhire days in the period from 1 January to 8 May and from 7 December to 31 December.

The turnover of icebreaking amounted to EUR 36.2 million (EUR 39.0 million) and operating profit EUR 7.0 million (EUR 6.3 million). Arctia has separate icebreaking service agreements with the Finnish Transport Agency on the so-called conventional icebreakers, multipurpose icebreakers and the new icebreaker Polaris. The drop in turnover on the previous year is due to releasing Nordica from icebreaking readiness and the offhire days of Polaris. The increased operating profit, on the other hand, is attributable especially to the lower costs of leasing the vessel and crew than in the previous year as Nordica is released for offshore duties.

OFFSHORE

The multipurpose icebreaker Nordica was released from icebreaking duties in the Baltic Sea in mutual understanding with the Finnish Transport Agency, and it started chartering in Russia at the end of 2016. After the customer had redeemed the options in the contract, chartering continued until the end of April. After its operating duties, IB Nordica stayed in South Korea in the Busan international maritime conference, from where it transferred to Canada in late June. The Arctic 100 Expedition via the Northwest Passage to Europe took place in the summer. Researchers from several different countries, journalists, research scientists from the coast guards of United States and Canada, and representatives of indigenous peoples accompanied the expedition. The voyage was a resounding success. On the return journey, the vessel stayed in Denmark for pre-agreed maintenance work. In October, IB Nordica took part in the Arctic Circle event

in Reykjavik. During the conference, the President of Iceland and a number of ministers from Arctic states attended a guided tour of the ship in order to strengthen international icebreaking cooperation.

The multipurpose icebreaker Fennica was in Rauma throughout the review period, undergoing maintenance and life span extension tasks.

The number of operating days totalled 65 (61).

The turnover of Offshore amounted to EUR 13.6 million (EUR 28.3 million) and operating profit EUR -7.2 million (EUR 5.9 million). The 2016 turnover includes the sum agreed on the termination of the Alaska chartering contract with Shell, EUR 18.4 million. The operating costs remained unchanged from one reference year to the other.

HARBOUR ICEBREAKING

During 2017, harbour icebreaking was carried out in the ports of Tornio and Kemi with the harbour icebreakers Ahto and Jääsalo. Harbour icebreaker Ulla served as a backup vessel. IB Jääsalo and IB Ulla were chartered from Port of Kemi Ltd.

Arctia Karhu Ltd participated in Arctia's development work on oil spill preparedness and response under the IMOR project as in the previous year. The three-year project started in summer 2015 and ended in spring 2017. The project aimed to improve oil recovery in icy conditions by focusing especially on the ship's operation in ice management during an oil spill response situation.

In the open water season, the vessels of Arctia Karhu Ltd carried out several harbour towing operations and some longer chartering operations in Finland and Sweden.

The turnover of harbour icebreaking totalled EUR 2.3 million (EUR 2.3 million) and the operating profit stood at EUR 0.2 million (EUR 0.2 million).

EMPLOYEES

Safeguarding professional expertise in icebreaking played a key role in 2017. Arctia was involved in the development of a training package related to icebreaking expertise. During the autumn, all deck officers were trained in accordance with the requirements of the IMO Polar Code in anticipation of the future qualification requirements. In addition, during the year, offshore personnel underwent refresher training related to maintaining professional qualifications and other requirements.

Arctia continued to invest in leadership and supervisor training during the year. The objective of the training was to develop the leadership skills of supervisors and to clarify the responsibilities and obligations of supervisors, e.g. in the management of occupational wellbeing.

We saw a positive trend in occupational wellbeing during 2017, which was reflected, e.g. in the reduction of sick leave. Absence due to sickness fell to 6.0 per cent from the previous year's 8.9 per cent.

During the year, employees were recruited to ensure professional competence and to prepare for future retirements. In the Management Team, Sari Näkki commenced her new duties as Senior Vice President, Human Resources, in December and Kim Höijer as Senior Vice President, CFO, from the beginning of 2018.

FINANCING

The Group's cash assets at end of year totalled EUR 24.6 million (EUR 34.5 million). The most significant areas of spending the cash assets were the repayment of loans, investments and the payment of dividends. The majority of cash assets were invested in low-risk bond funds. Cash assets are maintained in preparation for the maintenance of Arctia's ageing fleet, renovation investments, and for extensive future replacement investments across the entire fleet.

At the end of the year, the Group had EUR 118.6 million of long-term interest-bearing debt (EUR 121.4 million) wholly acquired from external financial institutions. The Group had EUR 2.8 million (EUR 2.8 million) of short-term debt from financial institutions. No new debt was raised during the financial period. The loan terms do not include covenants relating to profitability or solvency. The interest rates of the loan are tied to market rates. Changes in the market rates and exchange rates were hedged against with derivative contracts, which matured during the review period. The cash flow impact of the hedging instruments has been recorded through profit and loss according to the outturns. The Group also has a total of EUR 43.0 million in interest rate derivatives hedging the capital, and their cash flow impact will start in 2019. At the balance sheet date, the market value of the interest rate derivatives was EUR -0.1 million, which is shown in the notes to the balance sheet.

KEY FIGURES, GROUP PERSONNEL

	2017	2016	2015	2014	2013
AVERAGE NUMBER OF PERSONNEL DURING THE FISCAL PERIOD					
	278	272	270	273	278
Icebreaking	150	141	138	141	147
Offshore	86	86	90	94	98
Harbour icebreaking	11	11	9	8	2
Onshore personnel	31	34	33	30	32
NUMBER OF PERSONNEL (31 DEC.)					
Onshore personnel	31	32	36	31	31
Offshore personnel	237	233	237	230	236
EMPLOYMENT CONTRACT DISTRIBUTION (31 DEC.)					
Onshore personnel, permanent	29	29	33	31	31
Offshore personnel, permanent	217	209	213	204	220
Temporary	22	27	27	26	16
SHARE OF FULL-TIME AND PART-TIME EMPLOYMENT CONTRACTS (%)					
Onshore personnel, part-time	3.2	8.7	2.8	6.5	6.5
Offshore personnel, part-time	0	0	0.4	0.4	0.4
LEAVING RATE					
Total personnel / leaving and part-time employees (%)					
Onshore personnel	28.1	13.9	9.7	6.5	18
Offshore personnel	27.4	11.8	14.5	23.3	35

	2017	2016	2015	2014	2013
AVERAGE LENGTH OF EMPLOYMENT CONTRACT / YEARS (31 DEC.)					
All employees	12.5	13.5	13.9	15.3	16.4
AVERAGE AGE OF PERSONNEL / YEARS (31 DEC.)					
All employees	48.1	49	48.3	47.5	48.5
Offshore personnel, men	48.4	49.3	49	48.5	48.2
Offshore personnel, women	47	47.5	46.4	48.5	47.7
Onshore personnel	46.3	46	45.2	46	46.7
Retired employees	11	12	14	10	15
Average age of retirement (years)	60.3	61.5	60.5	60.5	60.6
GENDER DISTRIBUTION OF PERSONNEL (31 DEC.)					
Women, offshore personnel	11.4	12.0	13.5	14.8	14.8
Women, onshore personnel	45.2	46.9	47.2	45.1	45.4
BOARD OF DIRECTORS GENDER DISTRIBUTION					
Women	2 *	2 *	2 *	2	2
Men	3 *	3 *	3 *	3	2
GENDER DISTRIBUTION IN SENIOR MANAGEMENT (MANAGEMENT TEAM)					
Women	2 *	2 *	1 *	1	1
Men	4 *	6 *	6 *	5	5

* members at the turn of the year

INVESTMENT

The Group's gross investments in 2017 totalled EUR 5.7 million (EUR 131.6 million), with maintenance investments representing EUR 5.2 million (EUR 3.5 million) of the total. The high gross investments in the comparison year were especially due to the acquisition of the icebreaker Polaris.

The most significant investments were the docking of the icebreaker Kontio and the docking and life span extension of the multipurpose icebreaker Fennica, as well as the renovation of the crane of the multipurpose icebreaker Nordica.

Actual investments were clearly below the level of depreciation according to plan. This was partly attributable to the fact that the planned maintenance investments were carried forward to future financial periods.

SAFETY

Ship safety is monitored by the Group through regular internal audits. The Finnish Transport Safety Agency Trafi inspects Arctia's vessels each year. Action and repair plans have been drawn up on the basis of the observations made during the audits and inspections, and the plans have been carried through. No serious non-conformities were identified in audits or inspections during the fiscal period.

The operation of the shipping company's new icebreaker Polaris is still under warranty. Matters subject to warranty have been related to structural occupational safety regulations and various faults in a vessel that utilises the latest technology, as well as the minimisation of environmen-

tal harm, suspension of operations and financial losses resulting from them. Preparations have been made for the commissioning and safety of a new type of vessel with extensive training.

At the end of last year, a project to refit Urho, Sisu and Voima to meet the requirements of international transport was started. The vessels were inspected in terms of their safety and rescue equipment. The sick bays required for the vessels will be built in connection with future dockings.

A total of 5 (7) occupational accidents occurred in the Group in 2017. Occupational safety campaigns have continued with quarterly changing themes. Arctia also continued active communications on safety issues and the presenting of safety awards.

At the end of the year, Arctia's safety day for the entire Arctia personnel was built together with the Centre for Occupational Safety. All employees will take part in the training during 2018.

The new software for the safety management system was successfully introduced during the year. The new software enables improved instructions and reporting of the vessels both on the ships and in the safety department.

The work of the Polar Code project was continued. The rating of the vessels for the new Polar class will begin this year.

The Arctia Group takes account of the environment in all its operations and complies with the regulations of the International Maritime Organization's (IMO) Internal Safety Management Code (ISM Code) and the International Convention for the Prevention of Pollution from Ships (MARPOL Convention), along with the national guidelines and regulations.

DEVELOPMENT WORK AND RESEARCH

The company's first TEKES project was concluded at the turn of 2017–2018. The IMOR project aimed to develop a way of operating the vessel and the oil recovery equipment together to improve the collection capacity of the equipment through ice management. In other respects, Arctia Ltd took part in the operation of the research committee of Kotka Maritime Research Centre (Merikotka) and the Finnish Marine Industries, and in the steering group activities of some other research projects.

The company decided to introduce a quality system that will contribute to supporting the development work and the consideration of stakeholders in the future. The company's internal invention regulations progressed to deployment readiness during the year.

CORPORATE SOCIAL RESPONSIBILITY

Corporate social responsibility was given a significant role in the company's strategy work last year. The updating strategy now provides even better answers to both financial and environmental responsibility issues. The company also extensively monitors its taxes and tax-like payments, which are presented in the annual report.

In 2017, a special rule of procedure for corporate social responsibility was introduced, defining the principles of the management of corporate social responsibility, the methods for maintaining a situation report, as well as monitoring and reporting. Monitoring and reporting were also improved by including concerns raised by stake-

holders and deviations from the rules of corporate social responsibility in monthly reporting. Environmental damage, errors in risk management, significant deviations in the quality or availability of services, and direct contacts by stakeholders in relation to the company's operations were specified as deviations from the rules of corporate social responsibility. Two incidents that come under the new areas were dealt with by the management team during the year: one was a refrigerant leak and the other was a minor oil leak detected during the operation of IB Polaris. Remedial measures have been carried out on both of them.

ENVIRONMENT

Oil spill preparedness and response in the Bay of Bothnia continued without interruption with the harbour icebreaker Ahto and the Jääsalo. The use of the option in the contract was agreed with the customer. The fact that the responsibility for oil spill preparedness and response was transferred to the Finnish Border Guard had no impact on the contract, which was signed with the Emergency Service of Lapland.

Monitoring of legislation has improved primarily through the active information and lobbying work of the Finnish Marine Industries. The responsible authorities have also given due consideration to Arctia Ltd in the legislative consultation rounds. On the whole, future legislative changes are monitored closely. Based on the monitoring, we will assess the impacts of international agreements and national regulations on the Group's guidelines and fleet. During the review period, the International Convention for the Control and Management of Ships' Ballast Water and Sediments became effec-

tive, however, it did not bring about considerable costs during the year under review. During the transition period, it is expected that the equipment prices will fall, the range will expand and the operating reliability will improve.

COMPANY ORGANISATION, MANAGEMENT AND AUDITORS

The corporate structure of the Arctia Group was unchanged throughout the financial year 2017. The Group's parent company was Arctia Ltd that manages, e.g. the Group's financial administration, ICT functions and communications. The subsidiary Arctia Management Services Ltd produces management shipping company services related to, e.g. human resources management, safety, technology and manning. The Group's operational activities are divided between the three subsidiaries. Arctia Icebreaking Ltd delivers conventional icebreaking services in the Baltic Sea, Arctia Offshore Ltd offers offshore services also outside the Baltic Sea in addition to conventional ice-breaking, and Arctia Karhu Ltd provides harbour icebreaking services in the Baltic Sea. The Group also includes other subsidiaries and associated companies, the operation of which has not been significant.

The Annual General Meeting of 3 April 2017 appointed Pertti Saarela as Chairman of the Board of Directors of Arctia Ltd, and Hanna Masala, Ilpo Nuutinen, Antti Pankakoski and Päivi Söderholm as members of the Board of Directors. The Board of Directors elected Ilpo Nuutinen as Vice-Chairman. The Board of Directors convened 8 times in 2017, with an attendance rate of 100.0 per cent. The remuneration of the Board of Directors remained unchanged.

In its meeting on 24 April 2017, the Board of Directors elected Pertti Saarela as the Chairman of the Remuneration and Nomination Committee and Antti Pankakoski and Ilpo Nuutinen as members of the Committee. The Committee convened three times (3) in 2017, with an attendance rate of 100.0 per cent.

The auditor of the Arctia Group was Ernst & Young Ltd, Corporation of Certified Public Accountants, with Mikko Ryttilähti, Authorised Public Accountant, Chartered Public Finance Auditor, as chief auditor.

The President and CEO of Arctia Ltd was Tero Vauraste. In addition to the President and CEO, the following persons were members of the Group Management Team during the fiscal period:

- Pia Broumand, Chief Security Officer
- Tom Ekegren, Senior Vice President, Icebreaking
- Hannu Ylärinne, Senior Vice President, Offshore, until 21 July 2017
- Eero Hokkanen, Communications Manager
- Heli Lehtonen, Senior Vice President, CFO, until 15 December 2017
- David Lindström, Senior Vice President, Human Resources
- Petri Mikola, Senior Vice President, Technical Services
- Sari Näkki, Senior Vice President, Human Resources, as from 14 December 2017

SHARES

	2017	2016
Share capital , EUR	18,700,000.00	18,700,000.00
Nominal value of share, EUR	25.00	25.00
Number of shares	748,000	748,000

The entire share capital of the parent company is owned by the Finnish State.

ESTIMATE OF KEY RISKS AND UNCERTAINTIES

The ageing of the company's fleet increases the risk of technical problems and a rise in maintenance costs. The risk of non-availability of spare parts for old vessels is also growing. Technical reliability plays a significant role during operations in demanding conditions. Arctia seeks to manage this risk through long-term maintenance programmes and annual maintenance plans.

In order to ensure undisturbed operations when operating in distant areas, particular attention is paid to the serviceability, spare parts needs and crew rotation of vessels, along with the availability of maintenance.

Increasing requirements are being set for operating in Arctic regions, particularly with regard to safety and environmental conservation. Arctia's vessels ensure the safety of operations in these regions. Operators in the Arctic marine areas need an appropriately equipped fleet and specialist expertise in shipping and on Arctic conditions. The principal criteria for vessels are eco-efficiency and a sufficient polar ice class.

The development of the Arctic market constitutes a business environment risk to Arctia. The progress of Arctic projects largely depends on developments in environmental legislation and other official regulations and on the global market prices for oil. Environmental regulation also increases the risk of growing operating costs. Arctia hedges against these risks through insurance and contractual arrangements.

RISKS RELATED TO PERSONNEL

The Arctia Group will experience a large turnover in personnel in the next few years due to ageing. This turnover increases the risk of a fall in the professional competence level. Arctia seeks to mitigate this risk through pre-emptive staff planning and sufficient training.

FINANCIAL AND ACCIDENT RISKS

The risks related to the Group's chartering and financing are mitigated through contractual arrangements and, if necessary, currency and interest rate derivatives. For the management of interest risks, the company uses interest rate swaps for converting variable interest rates into fixed rates. More detailed information on derivatives is provided in the notes to the financial statements.

Credit-loss risks involved in chartering are managed by determining the credit ratings of customers and the use of payment terms based on the customer's credit rating and, possibly, sufficient securities. Arctia has protected itself against property damage and disruptions of business through extensive insurance cover.

BOARD OF DIRECTORS' PROPOSAL ON THE USE OF RETAINED EARNINGS

The company's distributable assets total EUR 92,498,744.48, of which EUR 4,807,296.40 consists of the operating profit for the fiscal period. The Board of Directors proposes the payment of a dividend of EUR 2.01 per share, EUR 1,503,480.00 in total. The payment of dividend will not jeopardise the company's solvency.

SIGNIFICANT EVENTS AFTER THE FINANCIAL PERIOD AND THE OUTLOOK FOR FUTURE DEVELOPMENT

The company does not know of any significant events diverging from normal business operations after the financial period by the time of approving the financial statements.

Utilisation of natural resources in the Arctic and Sub-Arctic regions and the exploration of unutilised resources are expected to continue at a moderate level in the same way as in the previous year, albeit the rise in oil prices has increased both financial and political interest in the subject. Research in the polar regions is estimated to increase. The replacement of national icebreakers and the need for additional capacity will create demand in North America. Arctia believes that the increased growth in passenger transport services and the demand for ice management and other maritime services will create new business opportunities.

PROFIT AND LOSS ACCOUNT (EUR)

	Appendix	GROUP		PARENT COMPANY	
		2017	2016	2017	2016
TURNOVER	1	48,874,413.17	60,693,627.62	2,699,755.51	2,970,527.99
OTHER OPERATING INCOME	2	139,084.47	83,607.08	91,945.24	1,519.55
Materials and services					
Raw materials, consumables and supplies					
Purchases		-4,117,359.89	-2,137,383.36	-652.33	-169.51
Inventories, increase (-) or decrease (+)		229,988.20	-858,645.89	0.00	0.00
External services		-4,293,895.45	-3,963,955.69	-11,100.00	-28,991.01
Materials and services, total		-8,181,267.14	-6,959,984.94	-11,752.33	-29,160.52
Personnel expenses	3				
Wages and salaries		-17,282,912.85	-17,135,697.84	-827,609.65	-923,894.39
Social security expenses					
Pension costs		-2,877,089.72	-3,119,034.15	-123,174.82	-104,718.63
Other indirect employee costs		-610,668.53	-1,004,952.01	-28,005.79	-30,984.38
Personnel expenses, total		-20,770,671.10	-21,259,684.00	-978,790.26	-1,059,597.40
Depreciation and reduction in value					
Depreciation according to plan		-12,019,706.69	-12,376,443.82	-340,886.22	-358,494.74
Depreciation and reduction in value, total		-12,019,706.69	-12,376,443.82	-340,886.22	-358,494.74
Other operating expenses		-7,899,038.55	-7,302,468.74	-1,365,826.27	-1,459,398.53
OPERATING PROFIT (LOSS)		142,814.16	12,878,653.20	94,445.67	65,396.35
Financial income and expenses					
Other interest and financial income					
From group companies		0.00	0.00	1,120,892.87	364,999.04
Short-term, from other sources		3,459.95	64,016.97	0.00	63,205.86
Reduction in value of non-current asset investments		0.00	-5,000.00	0.00	0.00
Interest and other financial expenses					
To others		-1,194,023.53	-1,492,858.84	-1,038,619.12	-1,102,941.92
Financial income and expenses, total		-1,190,563.58	-1,433,841.87	82,273.75	-674,737.02
PROFIT (LOSS) BEFORE APPROPRIATIONS AND TAXES		-1,047,749.42	11,444,811.33	176,719.42	-609,340.67
Appropriations					
Increase (-) / decrease (+) in depreciation difference		0.00	0.00	50,000.00	0.00
Group contribution		0.00	0.00	5,800,000.00	5,500,000.00
Appropriations, total		0.00	0.00	5,850,000.00	5,500,000.00
Income tax					
Taxes during the fiscal period		-1,229,119.65	-1,028,573.03	-1,219,423.02	-986,495.40
Deferred taxes		870,000.00	-1,291,808.17	0.00	0.00
Income taxes, total		-359,119.65	-2,320,381.20	-1,219,423.02	-986,495.40
Minority interest		-5,536.80	15,297.77	0.00	0.00
PROFIT (LOSS) FOR THE FINANCIAL PERIOD		-1,412,405.87	9,139,727.90	4,807,296.40	3,904,163.93

BALANCE SHEET (EUR)

	Appendix	GROUP		PARENT COMPANY	
		31/12/2017	31/12/2016	31/12/2017	31/12/2016
ASSETS					
NON-CURRENT ASSETS					
Intangible assets	7				
Intangible rights		149,264.45	215,799.41	137,483.10	196,877.82
Other capitalised long-term expenditure		371,005.78	167,110.86	0.00	0.00
Intangible assets, total		520,270.23	382,910.27	137,483.10	196,877.82
Tangible assets					
Land and waters		169,480.95	175,535.71	169,480.95	175,535.71
Buildings		3,796,917.81	4,006,809.03	3,796,917.81	4,006,809.03
Vessels		222,993,589.00	232,237,129.27	0.00	0.00
Other plants and machinery		2,199,469.86	2,559,463.62	404,271.59	475,871.87
Other tangible assets		86,386.67	86,386.67	86,386.67	86,386.67
Advance payments and construction in progress		4,196,120.47	848,779.52	0.00	0.00
Total tangible assets		233,441,964.76	239,914,103.82	4,457,057.02	4,744,603.28
Investments					
Shares in group companies		0.00	0.00	81,897,048.40	81,897,048.40
Other unquoted shares		0.00	0.00	0.00	0.00
Shares in associated companies		3,200.00	3,200.00	0.00	0.00
Total investments		3,200.00	3,200.00	81,897,048.40	81,897,048.40
TOTAL NON-CURRENT ASSETS		233,965,434.99	240,300,214.09	86,491,588.52	86,838,529.50
CURRENT ASSETS					
Stocks					
Raw materials and consumables		1,243,744.03	1,013,755.83	0.00	0.00
Inventories, total		1,243,744.03	1,013,755.83	0.00	0.00
Long-term receivables					
Receivables from group companies		0.00	0.00	115,550,000.00	118,050,000.00
Deferred tax assets		30,595.54	30,595.54	0.00	0.00
Long-term receivables, total		30,595.54	30,595.54	115,550,000.00	118,050,000.00
Short-term receivables					
Sales receivables		7,621,329.20	9,169,032.14	0.00	1,619.14
Receivables from group companies	8	0.00	0.00	15,327,247.99	14,896,632.14
Other receivables		2,951,154.84	475,427.97	0.00	397.30
Prepayments and accrued income	9	4,066,345.44	1,874,100.40	650,164.73	616,287.61
Short-term receivables, total		14,638,829.48	11,518,560.51	15,977,412.72	15,514,936.19
Financial securities	10				
Other securities		18,088,279.39	18,088,279.39	18,088,279.39	18,088,279.39
Financial securities, total		18,088,279.39	18,088,279.39	18,088,279.39	18,088,279.39
Cash in hand and at banks		6,512,844.01	16,414,759.42	6,512,843.86	16,414,759.36
TOTAL CURRENT ASSETS		40,514,292.45	47,065,950.69	156,128,535.97	168,067,974.94
TOTAL ASSETS		274,479,727.44	287,366,164.78	242,620,124.49	254,906,504.44

BALANCE SHEET (EUR)

	Appendix	GROUP		PARENT COMPANY	
		31/12/2017	31/12/2016	31/12/2017	31/12/2016
EQUITY AND LIABILITIES					
CAPITAL AND RESERVES					
Share capital	7	18,700,000.00	18,700,000.00	18,700,000.00	18,700,000.00
Other reserves		66,780,736.91	66,780,736.91	66,780,736.91	66,780,736.91
Retained earnings from previous years		53,149,468.46	48,609,940.56	20,910,711.17	21,606,747.24
Profit (loss) for the fiscal period		-1,412,405.87	9,139,727.90	4,807,296.40	3,904,163.93
TOTAL CAPITAL AND RESERVES		137,217,799.50	143,230,405.37	111,198,744.48	110,991,648.08
MINORITY INTEREST		179,802.47	174,265.67	0.00	0.00
APPROPRIATIONS					
Depreciation difference		0.00	0.00	240,966.30	290,966.30
LIABILITIES					
Long-term liabilities					
Loans from financial institutions		118,583,138.85	121,386,159.03	107,500,000.00	110,000,000.00
Deferred tax liabilities		7,031,363.78	7,901,363.78	0.00	0.00
Long-term liabilities, total		125,614,502.63	129,287,522.81	107,500,000.00	110,000,000.00
Short-term liabilities					
Loans from financial institutions		2,800,000.00	2,800,000.00	2,500,000.00	2,500,000.00
Advance payments received		7,384.00	0.00	0.00	0.00
Payables	8	2,214,811.48	1,650,224.41	36,943.16	54,954.32
Liabilities to group companies		0.00	0.00	19,759,167.29	30,469,892.62
Other liabilities		701,722.48	1,283,971.91	86,604.67	349,318.44
Accruals	9	5,743,704.88	8,939,774.61	1,297,698.59	249,724.68
Short-term liabilities, total		11,467,622.84	14,673,970.93	23,680,413.71	33,623,890.06
TOTAL LIABILITIES		137,082,125.47	143,961,493.74	131,180,413.71	143,623,890.06
TOTAL EQUITY AND LIABILITIES		274,479,727.44	287,366,164.78	242,620,124.49	254,906,504.44

CASH FLOW STATEMENT (EUR)

	GROUP		PARENT COMPANY	
	2017	2016	2017	2016
CASH FLOW FROM OPERATING ACTIVITIES				
Profit/loss for the fiscal period	-1,412,405.87	9,139,727.90	4,807,296.40	3,904,163.93
Adjustments				
Depreciation according to plan	12,019,706.69	12,376,443.82	340,886.22	358,494.74
Capital gains (-) and losses (+) on fixed assets	-91,945.24	0.00	-91,945.24	0.00
Financial income and expenses	1,190,563.58	1,433,841.87	-82,273.75	674,737.02
Group contributions	0.00	0.00	-5,800,000.00	-5,500,000.00
Income tax	359,119.65	2,320,381.20	1,219,423.02	986,495.40
Appropriations	0.00	0.00	-50,000.00	0.00
Change in provisions	0.00	-293,401.20	0.00	0.00
Minority share	5,536.80	-15,297.77	0.00	0.00
Cash flow before change in working capital	12,070,575.61	24,961,695.82	343,386.65	423,891.09
Change in working capital				
Increase (-) / decrease (+) in inventories	-229,988.20	858,645.89	0.00	0.00
Increase (-) / decrease (+) in non-interest-bearing receivables	-3,193,034.90	-4,583,510.10	17,523.47	-6,752,049.89
Increase (+) / decrease (-) in non-interest-bearing loans	-4,197,173.68	3,620,749.80	-356,366.67	-225,410.64
Operational cash flow before financial items and taxes	4,450,378.83	24,857,581.41	4,543.45	-6,553,569.44
Interest paid and payments for other financial expenses	-1,301,368.02	-1,612,265.95	-1,038,619.12	-1,343,354.74
Interest received	3,459.95	504.44	1,120,892.87	365,028.83
Other financial income	-15,250.39	0.00	0.00	0.00
Direct taxes paid	-42,933.25	-1,839,156.30	-105,549.77	-1,695,260.52
Loans granted	0.00	0.00	-180,000.00	-112,500,000.00
Repayments of loan receivables	0.00	0.00	2,500,000.00	0.00
CASH FLOW FROM OPERATING ACTIVITIES	3,094,287.12	21,406,663.60	2,301,267.43	-121,727,155.87
Cash flow from investments				
Investments in material and immaterial goods	-5,690,982.35	-131,617,589.60	0.00	15,193.54
Proceeds from sale of tangible and intangible assets	98,000.00	0.00	98,000.00	0.00
CASH FLOW FROM INVESTMENTS	-5,592,982.35	-131,617,589.60	98,000.00	15,193.54
Cash flow from financing activities				
Repayments of short-term loans	0.00	-20,191,320.14	-10,700,982.93	-20,254,124.78
Withdrawals of long-term loans	0.00	112,500,000.00	0.00	112,500,000.00
Withdrawals of long-term loans, bank account limit	133,138.85	136,159.03	0.00	0.00
Repayments of long-term loans	-2,936,159.03	-300,000.00	-2,500,000.00	0.00
Dividends paid	-4,600,200.00	-7,480,000.00	-4,600,200.00	-7,480,000.00
Group contributions received and paid	0.00	0.00	5,500,000.00	11,400,000.00
CASH FLOW FROM FINANCING ACTIVITIES	-7,403,220.18	84,664,838.89	-12,301,182.93	96,165,875.22
CHANGE IN CASH AND CASH EQUIVALENTS	-9,901,915.41	-25,546,087.11	-9,901,915.50	-25,546,087.11
Available assets at the beginning of the fiscal period	34,503,038.81	60,049,125.92	34,503,038.75	60,049,125.86
Available assets at end of the fiscal period	24,601,123.40	34,503,038.81	24,601,123.25	34,503,038.75

Accounting principles

1. ACCOUNTING PRINCIPLES

1.1 VALUATION PRINCIPLES

ITEMS IN FOREIGN CURRENCIES

Receivables and debts in foreign currencies have been converted into euros using the currency rate on the date of the drawing up of the financial statements.

STOCKS

Inventories include the fuel and lubricant stocks of vessels. Inventories are valued at acquisition expenses or at lower net realisable value.

NON-CURRENT ASSETS

Intangible and tangible assets are marked as acquisition expenses on the balance sheet with depreciation according to plan. Depreciations according to plan are calculated as straight line depreciations based on the target's economic duration. Depreciations are calculated from the month of the asset's application.

Depreciation times:	Years
Intangible assets	3–5
Buildings	10–20
Vessel stock	
Icebreakers	30–50
Docking of vessels	5
Communications and navigation equipment	3–5
Computers and related devices	3
Other plants and machinery	5–15

Fleet depreciation plans have been reviewed in the Group and the depreciation times have been reassessed. The vessels are in good technical condition and the lifetime can also be extended with life span extensions. The depreciation times of icebreakers Kontio and Otso have been extended by ten years from forty years to fifty years. The depreciations times of multipurpose icebreakers Fennica and Nordica have been

extended by ten years from thirty years to forty years. The depreciable acquisition cost according to the old plan has been deferred to be depreciated during the new service life. The change has been made from the beginning of 2017.

The depreciation time of the icebreaker Polaris is 50 years.

Expenses from repair and maintenance during vessel docking are capitalised and entered as expenses according to the economic working life of the docking (5 years). Residual value has been taken into account in the fleet depreciation plan. Repair and maintenance expenses with effects of less than three years and a maximum sum of EUR 50,000 of are entered as annual expenses.

1.2 DEFERRED TAXES

The imputed tax liability and receivable have been calculated for the temporary differences between taxation and the financial statements, using the tax rate valid at the time of drawing up the financial statements. The entire imputed tax liability and receivable are included in the balance. Deferred tax liabilities are related to the depreciation differences recorded for subsidiaries. These differences have been divided into equity and imputed tax liability in the consolidated financial statements. The imputed tax receivable is connected to the confirmed loss of a subsidiary.

1.3 PENSIONS

The statutory pension schemes for personnel are managed by external insurance companies. Pension costs are entered as expenses for the year during which they were incurred.

1.4 ASSETS

Cash assets invested in low-risk bond funds have been included in the assets. The bond fund investments can be realised at short notice.

1.5 ACCOUNTING POLICIES OF THE CONSOLIDATED FINANCIAL STATEMENTS

The consolidated financial statements have been drawn up using the acquisition cost method. All subsidiary companies have been founded independently. Business transactions, receivables and debts between group companies have been eliminated. Minority shares have been separated from group equity and the profit for the fiscal period, and are presented as their own item. The Group has a consolidated account system in place. Changes to the consolidated account are presented in the financing cash flow items of the individual companies' financial statements.

1.6 MEASUREMENT OF FINANCIAL INSTRUMENTS AND DERIVATIVES

Measurement in accordance with chapter 4, section 2 of the Accounting Act shall be applied in the accounting of financial instruments.

Securities held as financial assets and other similar financing reserves are valued at the acquisition expense or, if their probable fair market price is lower on the balance sheet date, at that value.

The company's derivatives include the interest rate swap. The interest rate swap enters into force on 2 January 2019. The company deals with derivatives according to the fair value principle and enters negative value changes in the profit and loss account. Variable interest rates of the company's loan have been converted to fixed rates with the interest rate swap. The company has hedged 1/3 of the loans.

The current values of the interest rate derivatives are presented in section 6 of the notes to the financial statements.

2. NOTES ON THE PROFIT AND LOSS ACCOUNT (EUR)

2.1 TURNOVER BY MARKET AREA AND LINE OF BUSINESS	Appendix 1	GROUP		PARENT COMPANY	
		2017	2016	2017	2016
BY MARKET AREA					
Finland		38,212,551.80	38,450,016.70	2,699,755.51	2,970,527.99
EU countries		220,878.72	432,209.89	0.00	0.00
Countries outside the EU		10,440,982.65	21,811,401.03	0.00	0.00
		48,874,413.17	60,693,627.62	2,699,755.51	2,970,527.99
BY LINE OF BUSINESS					
Icebreaking		38,383,430.52	38,688,738.79	0.00	0.00
Offshore		10,440,982.65	21,818,601.03	0.00	0.00
Oil spill preparedness and response		50,000.00	186,287.80	0.00	0.00
Internal administration services		0.00	0.00	2,699,755.51	2,970,527.99
		48,874,413.17	60,693,627.62	2,699,755.51	2,970,527.99
2.2 OTHER INCOME FROM BUSINESS OPERATIONS					
Profit from sale of fixed assets	2	91,945.24	0.00	91,945.24	0.00
Other		47,139.23	83,607.08	0.00	1,519.55
Total		139,084.47	83,607.08	91,945.24	1,519.55
2.3 NOTES ON PERSONNEL					
AVERAGE NUMBER OF PERSONNEL DURING FISCAL PERIOD					
Clerical employees		30.6	34.0	9.6	10.3
Offshore personnel		246.9	237.5	0.0	0.0
Total		277.5	271.5	9.6	10.3
MANAGEMENT SALARIES AND REMUNERATIONS					
President and CEO		227,070.94	285,684.12	227,070.94	285,684.12
Board members		109,275.00	100,200.00	100,275.00	91,200.00
Rest of the Group management team		700,901.64	730,625.08	0.00	0.00
		1,037,247.58	1,116,509.20	327,345.94	376,884.12

The salaries of the President and CEO and the Group management team represent total remuneration including company car and telephone benefits. The salaries paid to the Group management team in 2016 include EUR 128,940.39 of performance bonuses. No performance bonuses were paid to the Group management team in 2017.

Management's pension commitments

The President and CEO's retirement age is 63. Pension benefits are provided by the statutory TyEL pension insurance. The company's President and CEO and members of the management team and the Board of Directors do not have discretionary pension benefits paid by the company.

2.4 OTHER OPERATING COSTS	Appendix 4	GROUP		PARENT COMPANY	
		2017	2016	2017	2016
OTHER OPERATING COSTS					
Voluntary personnel costs		1,853,947.03	2,072,606.47	87,541.86	56,017.38
Rents		19,354.79	33,396.70	0.00	0.00
Telephone, IT, vehicle and office expenses		1,625,170.80	1,445,929.44	377,866.36	532,574.72
Marketing costs		65,906.98	108,466.86	34,711.67	49,971.36
Other research and product development costs		59,740.60	109,827.07	21,706.60	14,421.57
Travel expenses		1,089,134.73	776,806.70	67,589.25	76,542.27
Administrative expenses		3,149,759.17	2,667,426.86	599,897.28	581,580.38
Other operating costs, intra-group		0.00	0.00	165,445.99	127,941.72
Other operating costs		36,024.45	88,008.64	11,067.26	20,349.13
Other operating costs, total		7,899,038.55	7,302,468.74	1,365,826.27	1,459,398.53
AUDITORS' FEES					
Audit		54,875.00	50,600.00	21,550.00	21,583.10
Taxation advice		41,816.00	7,542.00	10,700.00	7,542.00
2.5 FINANCIAL INCOME AND EXPENSES	5				
Other interest income					
From group companies		0.00	0.00	1,120,892.87	364,999.04
From other sources		3,459.95	504.44	0.00	29.79
Interest income, total		3,459.95	504.44	1,120,892.87	365,028.83
Other financial income					
From other sources		0.00	63,512.53	0.00	63,176.07
Other financial income, total		0.00	63,512.53	0.00	63,176.07
Financial income, total		3,459.95	64,016.97	1,120,892.87	428,204.90
Reduction in value of non-current asset investments		0.00	5,000.00	0.00	0.00
Interest expenses					
To others		1,178,773.14	1,242,503.22	1,038,619.12	852,786.92
Interest expenses, total		1,178,773.14	1,242,503.22	1,038,619.12	852,786.92
Other financial expenses					
To others		15,250.39	250,355.62	0.00	250,155.00
Other financial expenses, total		15,250.39	250,355.62	0.00	250,155.00
Financial expenses, total		1,194,023.53	1,497,858.84	1,038,619.12	1,102,941.92
Financial income and expenses, total		-1,190,563.58	-1,433,841.87	82,273.75	-674,737.02
2.6 APPROPRIATIONS	6				
Group contribution		0.00	0.00	5,800,000.00	5,500,000.00
		0.00	0.00	5,800,000.00	5,500,000.00

3. NOTES ON BALANCE SHEET ASSETS (EUR)

3.1 FIXED ASSETS

Appendix

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INTANGIBLE ASSETS 2017	Intellectual property rights	Other intangible assets	Total
Acquisition costs 1 Jan.	534,815.73	223,047.36	757,863.09
Increases	0.00	326,606.50	326,606.50
Decreases	0.00	0.00	0.00
Transfers between items	0.00	0.00	0.00
Acquisition costs 31 Dec.	534,815.73	549,653.86	1,084,469.59
Accumulated depreciations 1 Jan.	-319,016.32	-55,936.50	-374,952.82
Transfers between items	0.00	0.00	0.00
Depreciations for the fiscal period	-66,534.96	-122,711.58	-189,246.54
Accumulated depreciations 31 Dec.	-385,551.28	-178,648.08	-564,199.36
Book value 31 Dec.	149,264.45	371,005.78	520,270.23

TANGIBLE ASSETS 2017	Land and water areas	Buildings and structures	Vessels	Other plants and machinery	Other tangible assets	Advance payments and acquisitions in progress	Total
Acquisition costs 1 Jan.	175,535.71	4,658,714.57	353,245,863.69	6,662,114.88	86,386.67	848,779.52	365,677,395.04
Increases	0.00	0.00	2,017,034.90	0.00	0.00	3,347,340.95	5,364,375.85
Decreases	-6,054.76	0.00	0.00	0.00	0.00	0.00	-6,054.76
Transfers between items	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acquisition costs 31 Dec.	169,480.95	4,658,714.57	355,262,898.59	6,662,114.88	86,386.67	4,196,120.47	371,035,716.13
Accumulated depreciations 1 Jan.	0.00	-651,905.54	-121,008,734.42	-4,102,651.26	0.00	0.00	-125,763,291.22
Depreciations for the fiscal period	0.00	-209,891.22	-11,260,575.17	-359,993.76	0.00	0.00	-11,830,460.15
Accumulated depreciations 31 Dec.	0.00	-861,796.76	-132,269,309.59	-4,462,645.02	0.00	0.00	-137,593,751.37
Book value 31 Dec.	169,480.95	3,796,917.81	222,993,589.00	2,199,469.86	86,386.67	4,196,120.47	233,441,964.76

3.1 FIXED ASSETS

INTANGIBLE ASSETS 2016	Intellectual property rights	Other intangible assets	Total
Acquisition costs 1 Jan.	513,394.92	0.00	513,394.92
Increases	21,420.81	223,047.36	244,468.17
Decreases	0.00	0.00	0.00
Transfers between items	0.00	0.00	0.00
Acquisition costs 31 Dec.	534,815.73	223,047.36	757,863.09
Accumulated depreciations 1 Jan.	-246,162.08	0.00	-246,162.08
Transfers between items	0.00	0.00	0.00
Depreciations for the fiscal period	-72,854.24	-55,936.50	-128,790.74
Accumulated depreciations 31 Dec.	-319,016.32	-55,936.50	-374,952.82
Book value 31 Dec.	215,799.41	167,110.86	382,910.27

TANGIBLE ASSETS 2016	Land and water areas	Buildings and structures	Vessels	Other plants and machinery	Other tangible assets	Advance payments and acquisitions in progress	Total
Acquisition costs 1 Jan.	175,535.71	4,485,673.90	222,113,226.65	6,620,114.88	86,386.67	815,835.80	234,296,773.61
Increases	0.00	173,040.67	131,132,637.04	42,000.00	0.00	32,943.72	131,380,621.43
Decreases	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transfers between items	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acquisition costs 31 Dec.	175,535.71	4,658,714.57	353,245,863.69	6,662,114.88	86,386.67	848,779.52	365,677,395.04
Accumulated depreciations 1 Jan.	0.00	-444,904.06	-109,338,685.44	-3,732,048.64	0.00	0.00	-113,515,638.14
Depreciations for the fiscal period	0.00	-207,001.48	-11,670,048.98	-370,602.62	0.00	0.00	-12,247,653.08
Accumulated depreciations 31 Dec.	0.00	-651,905.54	-121,008,734.42	-4,102,651.26	0.00	0.00	-125,763,291.22
Book value 31 Dec.	175,535.71	4,006,809.03	232,237,129.27	2,559,463.62	86,386.67	848,779.52	239,914,103.82

3.1 FIXED ASSETS, ARCTIA LTD

INTANGIBLE ASSETS 2017	Intellectual property rights	Total
Acquisition costs 1 Jan.	505,862.92	505,862.92
Increases	0.00	0.00
Transfers between items	0.00	0.00
Acquisition costs 31 Dec.	505,862.92	505,862.92
Accumulated depreciations 1 Jan.	-308,985.10	-308,985.10
Depreciations for the fiscal period	-59,394.72	-59,394.72
Accumulated depreciations 31 Dec.	-368,379.82	-368,379.82
Book value 31 Dec.	137,483.10	137,483.10

TANGIBLE ASSETS 2017	Land and water areas	Buildings and structures	Other plants and machinery	Other tangible assets	Advance payments and acquisitions in progress	Total
Acquisition costs 1 Jan.	175,535.71	4,658,714.57	933,683.83	86,386.67	0.00	5,854,320.78
Increases	0.00	0.00	0.00	0.00	0.00	0.00
Decreases	-6,054.76	0.00	0.00	0.00	0.00	-6,054.76
Transfers between items	0.00	0.00	0.00	0.00	0.00	0.00
Acquisition costs 31 Dec.	169,480.95	4,658,714.57	933,683.83	86,386.67	0.00	5,848,266.02
Accumulated depreciations 1 Jan.	0.00	-651,905.54	-457,811.96	0.00	0.00	-1,109,717.50
Depreciations for the fiscal period	0.00	-209,891.22	-71,600.28	0.00	0.00	-281,491.50
Accumulated depreciations 31 Dec.	0.00	-861,796.76	-529,412.24	0.00	0.00	-1,391,209.00
Book value 31 Dec.	169,480.95	3,796,917.81	404,271.59	86,386.67	0.00	4,457,057.02

INVESTMENTS 2017	Shares in group companies	Total
Acquisition costs 1 Jan.	81,897,048.40	81,897,048.40
Increases	0.00	0.00
Decreases	0.00	0.00
Revaluation (net)	0.00	0.00
Transfers between items	0.00	0.00
Acquisition costs 31 Dec.	81,897,048.40	81,897,048.40
Book value 31 Dec.	81,897,048.40	81,897,048.40

3.1 FIXED ASSETS, ARCTIA LTD

INTANGIBLE ASSETS 2016	Intellectual property rights	Total
Acquisition costs 1 Jan.	505,862.92	505,862.92
Increases	0.00	0.00
Transfers between items	0.00	0.00
Acquisition costs 31 Dec.	505,862.92	505,862.92
Accumulated depreciations 1 Jan.	-239,700.98	-239,700.98
Depreciations for the fiscal period	-69,284.12	-69,284.12
Accumulated depreciations 31 Dec.	-308,985.10	-308,985.10
Book value 31 Dec.	196,877.82	196,877.82

TANGIBLE ASSETS 2016	Land and water areas	Buildings and structures	Other plants and machinery	Other tangible assets	Advance payments and acquisitions in progress	Total
Acquisition costs 1 Jan.	175,535.71	4,485,673.90	941,183.83	86,386.67	180,734.21	5,869,514.32
Increases	0.00	173,040.67	0.00	0.00	0.00	173,040.67
Decreases	0.00	0.00	-7,500.00	0.00	-180,734.21	-188,234.21
Transfers between items	0.00	0.00	0.00	0.00	0.00	0.00
Acquisition costs 31 Dec.	175,535.71	4,658,714.57	933,683.83	86,386.67	0.00	5,854,320.78
Accumulated depreciations 1 Jan.	0.00	-444,904.06	-375,602.82	0.00	0.00	-820,506.88
Depreciations for the fiscal period	0.00	-207,001.48	-82,209.14	0.00	0.00	-289,210.62
Accumulated depreciations 31 Dec.	0.00	-651,905.54	-457,811.96	0.00	0.00	-1,109,717.50
Book value 31 Dec.	175,535.71	4,006,809.03	475,871.87	86,386.67	0.00	4,744,603.28

INVESTMENTS 2016	Shares in group companies	Total
Acquisition costs 1 Jan.	81,897,048.40	81,897,048.40
Increases	0.00	0.00
Decreases	0.00	0.00
Revaluation (net)	0.00	0.00
Transfers between items	0.00	0.00
Acquisition costs 31 Dec.	81,897,048.40	81,897,048.40
Book value 31 Dec.	81,897,048.40	81,897,048.40

Appendix

	GROUP		PARENT COMPANY	
	2017	2016	2017	2016
3.1.2 GROUP SUBSIDIARIES			Share of ownership	Share of ownership
Arctia Icebreaking Ltd			100%	100%
JM Voima Ltd			100%	100%
Arctia Offshore Ltd			100%	100%
Arctia Karhu Ltd			90%	90%
Arctia Management Services Ltd			100%	100%
Arctia Icebreaking Investment Ltd			100%	100%
Arctia Offshore Investment Ltd			100%	100%
3.1.3 ASSOCIATED COMPANIES				
Ice Advisors Ltd, Helsinki				
Share of ownership	40%	40%		
Equity 31.12.2016 (31.12.2015)	55,912.12	67,083.48		
Profit for the fiscal period 31.12.2016 (31.12.2015)	-11,171.36	-6,338.95		
3.2 SHORT-TERM RECEIVABLES				
3.2.1 RECEIVABLES FROM GROUP COMPANIES	8			
Loan receivables			2,680,000.00	2,500,000.00
Group account receivables			6,847,247.99	6,896,632.14
Group contribution receivables			5,800,000.00	5,500,000.00
			15,327,247.99	14,896,632.14
3.2.2 RELEVANT ITEMS IN DEFERRED RECEIVABLES	9			
Tax receivable	46,325.23	119,091.16	0.00	0.00
Personnel expenditure	828,632.34	790,493.93	632,499.01	610,619.38
Other deferred receivables, from sales	2,635,429.00	0.00	0.00	0.00
Other deferred receivables, from expenses	555,958.87	964,515.31	17,665.72	5,668.23
	4,066,345.44	1,874,100.40	650,164.73	616,287.61
3.2.3 FINANCIAL SECURITIES	10			
Book value	18,088,279.39	18,088,279.39	18,088,279.39	18,088,279.39
Market value	18,105,121.36	18,222,287.00	18,105,121.36	18,222,287.00

4. NOTES ON BALANCE SHEET LIABILITIES (EUR)

4.1 EQUITY INCREASE AND DECREASE

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	GROUP		PARENT COMPANY	
	2017	2016	2017	2016
Restricted equity				
Share capital 1 Jan.	18,700,000.00	18,700,000.00	18,700,000.00	18,700,000.00
Share capital 31 Dec.	18,700,000.00	18,700,000.00	18,700,000.00	18,700,000.00
Unrestricted equity				
Reserve for invested unrestricted equity				
Reserve for invested unrestricted equity 1 Jan.	66,780,736.91	66,780,736.91	66,780,736.91	66,780,736.91
Reserve for invested unrestricted equity 31 Dec.	66,780,736.91	66,780,736.91	66,780,736.91	66,780,736.91
Profit from previous fiscal periods 1 Jan.	57,749,668.46	56,089,940.55	25,510,911.17	29,086,747.24
Payment of dividends	-4,600,200.00	-7,480,000.00	-4,600,200.00	-7,480,000.00
Adjustment of the profit/loss from previous fiscal periods	0.00	0.00	0.00	0.00
Profit from previous fiscal periods 31 Dec.	53,149,468.46	48,609,940.55	20,910,711.17	21,606,747.24
Profit for fiscal period	-1,412,405.87	9,139,727.90	4,807,296.40	3,904,163.93
Unrestricted equity, total	118,517,799.50	124,530,405.36	92,498,744.48	92,291,648.08
Equity, total	137,217,799.50	143,230,405.36	111,198,744.48	110,991,648.08
Distributable assets	118,517,799.50	124,530,405.36	92,498,744.48	92,291,648.08
4.2 IMPUTED TAX LIABILITIES AND RECEIVABLES				
Imputed tax receivables				
For confirmed losses	30,595.54	30,595.54	0.00	0.00
Imputed tax liabilities				
For depreciation differences	7,031,363.78	7,901,363.78	0.00	0.00

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In the consolidated financial statements, the depreciation difference has been divided into a part comparable to equity and imputed tax liability.

		GROUP		PARENT COMPANY	
		2017	2016	2017	2016
4.3 LONG-TERM LIABILITIES	14				
Loans from financial institutions		118,583,138.85	121,386,159.03	107,500,000.00	110,000,000.00
		118,583,138.85	121,386,159.03	107,500,000.00	110,000,000.00
4.4 SHORT-TERM LIABILITIES	15				
Loans from financial institutions		2,800,000.00	2,800,000.00	2,500,000.00	2,500,000.00
		2,800,000.00	2,800,000.00	2,500,000.00	2,500,000.00
4.4.1 LIABILITIES TO GROUP COMPANIES	16				
Accounts payable				4,421.06	14,163.46
Group account liabilities				19,754,746.23	30,455,729.16
				19,759,167.29	30,469,892.62
4.4.2 RELEVANT ITEMS INCLUDED IN DEFERRED LIABILITIES	17				
Personnel expenditure		4,548,848.13	5,251,884.77	102,841.84	168,741.18
Income tax		1,194,856.75	81,436.28	1,194,856.75	80,983.50
Interest liabilities		0.00	122,594.88	0.00	0.00
Other deferred liabilities		0.00	3,483,858.68	0.00	0.00
		5,743,704.88	8,939,774.61	1,297,698.59	249,724.68

5. NOTES ON SECURITIES AND CONTINGENT LIABILITIES

	GROUP		PARENT COMPANY	
	2017	2016	2017	2016
RENT/LEASING AGREEMENTS				
To be paid during subsequent fiscal period				
Leasing agreements	111,417.72	66,625.21	5,784.71	12,470.04
Rent liabilities	302,064.00	302,064.00	0.00	0.00
	413,481.72	368,689.21	5,784.71	12,470.04
Due at a later date				
Leasing agreements	327,665.93	60,907.67	0.00	5,784.71
Rent liabilities	377,580.00	679,644.00	0.00	0.00
	705,245.93	740,551.67	0.00	5,784.71
Total	1,118,727.65	1,109,240.88	5,784.71	18,254.75
The sums are presented with VAT included.				
CONTINGENT LIABILITIES				
GUARANTEES				
For group companies	10,800,000.00	10,800,000.00	10,800,000.00	10,800,000.00
Together with Port of Kemi Ltd, the parent company has issued an absolute joint and several guarantee of EUR 10,800,000.00 to Nordea Bank AB, Finnish branch, for the bank loan of Arctia Karhu Ltd. On 31 December 2017, the loan capital was EUR 11,250,000.				
Issued on behalf of the parent company	110,000,000.00	0.00	110,000,000.00	0.00
OTHER CONTINGENT LIABILITIES				
The group account receivables act as a general guarantee to the bank for all loan balances, interest, penal interest, costs and remunerations on valid group accounts linked to the Group Accounts Agreement, as well as for the bank's debt-collection costs.				
CUSTOMS GUARANTEE	8,400.00	8,400.00	0.00	0.00
INVESTMENT COMMITMENTS				
In the next fiscal period	6,324,623.00	670,000.00	0.00	0.00

6. DERIVATIVES (EUR)

OPEN

Interest rate swaps

Value of underlying commodities

Market value of agreements

The interest rate swaps have been made to hedge a long-term parent company and subsidiary loan.

Current account facilities

Total amount of the facility

In use

GROUP		PARENT COMPANY	
2017	2016	2017	2016
42,975,000.00	10,800,000.00	37,500,000.00	0.00
-116,099.00	-120,718.00	-104,058.00	0.00
250,000.00	250,000.00	0.00	0.00
133,138.85	136,159.03	0.00	0.00

VAT refund liabilities

The VAT refund liability on real estates in 2017 totalled EUR 485,586.81 (EUR 582,704.17 in 2016).

SIGNATURES TO THE FINANCIAL STATEMENTS AND ANNUAL REPORT

Helsinki, 15 February 2018

Pertti Saarela
Chairman of the Board of Directors

Tero Vauraste
President and CEO

Hanna Masala

Ilpo Nuutinen
Vice Chairman

Antti Pankakoski

Päivi Söderholm

AUDITORS' REPORT

A report on the audit of accounts has been issued today.

Helsinki, February 2018

Ernst & Young Ltd
Authorised Public Accountants

Mikko Rytilahti
Authorised Public Accountant, Chartered Public Finance Auditor

LIST OF ACCOUNTING BOOKS, RECORD TYPES AND STORAGE MEDIA

Balance sheet book	Bound separately
Daybook and general ledger	on CD
Purchase invoices	In electronic format
Payment receipts	In electronic format
Sales invoices	In electronic format
Transaction receipts	In electronic format
Bank receipts	In electronic format
Memo receipts	In electronic format
Payroll accounting receipts	In electronic format
Intangible asset transactions	In electronic format
Cash vouchers	In electronic format
Travel expense receipts	In electronic format
Notes vouchers	In electronic format

AUDITOR'S REPORT

To the Annual General Meeting of Arctia Ltd

REPORT ON THE AUDIT OF FINANCIAL STATEMENTS

OPINION

We have audited the financial statements of Arctia Oy (business identity code 2302573-7) for the year ended 31 December, 2017. The financial statements comprise the balance sheets, the income statements, cash flow statements and notes for the group as well as for the parent company.

In our opinion, the financial statements give a true and fair view of the group's and the company's financial performance and financial position in accordance with the laws and regulations governing the preparation of financial statements in Finland and comply with statutory requirements.

BASIS FOR OPINION

We conducted our audit in accordance with good auditing practice in Finland. Our responsibilities under good auditing practice are further described in the Auditor's Responsibilities for the Audit of Financial Statements section of our report. We are independent of the parent company and of the group companies in accordance with the ethical requirements that are applicable in Finland and are relevant to our audit, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

RESPONSIBILITIES OF THE BOARD OF DIRECTORS AND THE MANAGING DIRECTOR FOR THE FINANCIAL STATEMENTS

The Board of Directors and the Managing Director are responsible for the preparation of financial statements that give a true and fair view in accordance with the laws and regulations governing the preparation of financial statements in Finland and comply with statutory requirements. The Board of Directors and the Managing Director are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board of Directors and the Managing Director are responsible for assessing the parent company's and the group's ability to continue as going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting. The financial statements are prepared using the going concern basis of accounting unless there is an intention to liquidate the parent company or the group or cease operations, or there is no realistic alternative but to do so.

AUDITOR'S RESPONSIBILITIES FOR THE AUDIT OF FINANCIAL STATEMENTS

Our objectives are to obtain reasonable assurance on whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with good auditing practice will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with good auditing practice, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the parent company's or the group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of the Board of Directors' and the Managing Director's use of the going concern basis of accounting and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the parent company's or the group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events so that the financial statements give a true and fair view.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

OTHER REPORTING REQUIREMENTS

OTHER INFORMATION

The Board of Directors and the Managing Director are responsible for the other information. The other information comprises the report of the Board of Directors.

Our opinion on the financial statements does not cover the other information.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. Our responsibility also includes considering whether the report of the Board of Directors

has been prepared in accordance with the applicable laws and regulations.

In our opinion, the information in the report of the Board of Directors is consistent with the information in the financial statements and the report of the Board of Directors has been prepared in accordance with the applicable laws and regulations.

If, based on the work we have performed, we conclude that there is a material misstatement of the report of the Board of Directors, we are required to report that fact. We have nothing to report in this regard.

OTHER OPINIONS

We support the adoption of the financial statements. The proposal by the Board of Directors regarding the treatment of distributable funds is in compliance with the Limited Liability Companies Act. We support that the Board of Directors of the parent company and the President and CEO be discharged from liability for the financial period audited by us.

Helsinki 15.2.2018

Ernst & Young Ltd
Authorized Public Accountant Firm

Mikko Ryttilahti
Authorized Public Accountant,
Certified Public Finance Auditor

Principles of CSR reporting

This corporate social responsibility report included in the annual report has been drawn up in accordance with the applicable guidelines provided in Appendix 3 'Corporate responsibility reporting model for state-owned enterprises' to the Government decision-in-principle (3 November 2011) on state ownership policy. In order to avoid interruptions in reporting, this corporate responsibility report also includes all sections of the Climate Policy Report (ILPO) previously required by the Ministry of Transport and Communications. The contents of the human resources accounts are also discussed in this corporate social responsibility report. The annual report includes and replaces these earlier reports.

Arctia's Communications Manager was responsible for compiling the annual report, and the Chief Financial Officer was responsible for the financial statements and annual report. Arctia's Development Manager was responsible for the compilation and coordination of the sections on corporate social responsibility.

Each part of the Group delivered the monitored indicator data to Arctia's Development Manager, who then compiled and edited the sections of the report. In practice, this means that the ships mostly monitor and report on environmental aspects such as consumption and waste amounts. Annual reports of these figures are delivered to the Development Manager. Aerial emissions are calculated from the fuel consumption of vessels by the technology and maintenance management of the shore organisation.

Financial figures are reported by financial management and are generated in the same process as the annual report and financial statement information. The HR department constantly monitors

the personnel situation and work-related travel. The data in the report represent the situation on a certain day (31 December 2016). The Safety Manager produces the information related to occupational safety and environmental damage. Senior management then supplements the report where required.

The corporate social responsibility report integrated into the annual report is discussed by Arctia's Management Team and Board of Directors. The report is published on Arctia's website.

PERSONNEL INDICATORS

The reported figures represent the situation on the indicated date (31 December 2016). The total number of personnel also includes part-time employees and fixed-term employees with valid employment contracts on the day in question.

ACCIDENT FREQUENCY

All accidents resulting in a minimum of one day of inability to work have been included in the number of workplace accidents. The accident frequency was calculated by dividing the above-mentioned number of Lost-Time Injuries (LTI) by the working hours and multiplying the result by one million. A daily working time of eight hours was used in the formula. Accidents sustained by both shore and sea personnel are included in occupational accidents, and the total number of working hours in the organisation was used as the basis of division. The international term for this accident frequency calculation principle is lost-time injury frequency (LTIF).

CARBON DIOXIDE EMISSIONS

The carbon dioxide emissions of Arctia's vessels have been calculated according to the formula presented in the IMO publication *MEPC/Circ.471, 29 July 2005; 'INTERIM GUIDELINES FOR VOLUNTARY SHIP CO2 EMISSION INDEXING FOR USE IN TRIALS.'* The carbon dioxide emissions of air traffic have been calculated on the basis of flight kilometres, using the following coefficients:

- less than 950 km 0.15 kg CO₂/km
- more than 950 km 0.11 kg CO₂/km.

PARTICULATE EMISSIONS

The particulate emissions of icebreakers were calculated using the emission coefficients presented in VTT's research report (VTT-R-08702-09) Calculation system for Finnish waterway traffic emissions MEERI 2008. However, the research report has defined the engines of icebreakers as slow two-stroke engines [sic] instead of four-stroke engines (p. 11 of the report).

WASTE AMOUNTS

The vessels monitor waste amounts by volume, whereas the receivers of waste charge for the services by weight. By way of departure from the statutory monitoring of the waste generated by ships (waste and oil logs), waste amounts have been reported by weight in earlier reports. In connection with the development of reporting, Arctia decided to standardise the reporting of waste amounts. In earlier years, the amounts reported by ships had to be converted to weights using coefficients such as those provided in the Waste Tax Act (495/1996).

Key stakeholders and their expectations

STAKEHOLDER		EXPECTATIONS	STAKEHOLDER		EXPECTATIONS
OWNER	Government Ownership Steering Department	Investment capacity, meeting qualitative icebreaking targets	TOWING OPERATORS	Port of Kemi	Information flow, cooperation, development
DIRECT CUSTOMERS	Finnish Transport Agency / Ministry of Transport and Communications Oil and energy industry operators Offshore construction companies European Maritime Safety Agency (EMSA) Towing and marine rescue customers The Port of Oulu Ice Advisors customers Events customers The Ports of Kemi, Tornio and Luleå Cruise and passenger ship companies Research communities and companies	High-quality services corresponding to service descriptions and agreements, responsible operations, cost-effective pricing	OIL SPILL RESPONSE AND THE ENVIRONMENT	Ministry of the Environment Finnish Environment Institute SYKE Lamor	Information flow, cooperation, development
END CUSTOMERS	Finland's export and import trades Industry Shipping companies	Quick, reliable and high-quality service	MARITIME AUTHORITIES, INTERNATIONAL ORGANISATIONS	Finnish Transport Safety Agency IMO IMCA HELCOM EMSA Police of Finland Finnish Border Guard Finnish Shipowners' Association The European Community Shipowners' Associations, ECSA	Responsibility, information flow, cooperation, development
OWN PERSONNEL	Office personnel Sea personnel	Solvency, long-term and high-quality HR policy	ARCTIC STAKEHOLDERS	Ministry for Foreign Affairs Arctic Council Finnish Meteorological Institute Arctic Economic Council	Solvency, responsibility, information flow, cooperation, development
OTHER STAKEHOLDERS	Winter navigation operators Veeteede Amet (EMA) Sjöfartsverket Rosmorport Ministry of Transport of the Russian Federation Finnpilot VTS Regional operators Ports Local authorities	Information flow, cooperation, maintenance of own service level Understanding of regional operations, cooperation, maintenance of own service level, development	OTHER STAKEHOLDERS	Journalists, teachers, scientists Dockyards Suppliers and service providers Trade unions and other labour market organisations Maritime colleges Maritime research institutes Classification societies Insurance companies Financiers, banks	Solvency, responsibility, information flow, cooperation, development

List of requirements for CSR reporting

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