

# POLAR SERVICE

Version 2021



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# BBC Ems operation deep freeze

Early 2011 the M/V BBC Ems was on a special mission helping to provide the McMurdo Station with its annual supplies. Operation Deep Freeze (OpDFrz or ODF) is the codename for a series of United States missions to Antarctica, beginning with 'Operation Deep Freeze I' in 1955-56, followed by 'Operation Deep Freeze II', 'Operation Deep Freeze III', and so on. Given the continuing and constant US presence in Antarctica since that date, 'Operation Deep Freeze' has come to be used



**as a general term for US operations in that continent, and in particular for the regular missions to resupply US Antarctic bases, coordinated by the United States military. Being part of the U.S. Antarctic program this logistical project is of vital importance securing the survival of this icy research community.**

Under the command of Capt. Mr Dieter Woite and 2nd Capt. Mr Heinrich Meyering the BBC Ems has been chartered in by the Military Sealift Command (MSC) to deliver supplies to McMurdo Station, Antarctica, in early February 2011.

McMurdo Station is a U.S. Antarctic research center located on the southern tip of Ross Island, which is in the New Zealand-claimed Ross Dependency on the shore of McMurdo Sound in Antarctica. It is operated by the

United States through the United States Antarctic Program, a branch of the National Science Foundation. The station is the largest community in Antarctica, capable of supporting up to 1,258 residents, and serves as the United States Antarctic science facility. All personnel and cargo going to or coming from Amundsen-Scott South Pole Station first passes through McMurdo. The supply voyage had to be executed during the Antarctic summer season which starts in January.

BBC Ems commenced its voyage early January 2011 in Port Hueneme, California loading about 500 containers in support of 'Operation Deep Freeze'. After being loaded in California, the vessel reached McMurdo Station on Feb. 5 and while it brought vital supplies, building material, a tractor and food, it departed with a year's worth of McMurdo's trash and recyclables. >>>



### **500 containers of vital supplies and almost 21 million liters of fuels**

BBC Ems followed MSC tanker USNS Richard G. Matthiesen, which delivered more than 5.5 million gallons of crucial diesel, gasoline and jet fuel to McMurdo Station Jan. 29 to Feb. 5.

MSC ships deliver 100 percent of the fuel and about 80 percent of the supplies that the researchers and support personnel who live and work across Antarctica need to survive and work over the course of a year.

‘Resupplying the Antarctic only happens once a year - it’s the window of opportunity,’ said John Joerger, tanker project officer at MSC headquarters in Washington, D.C. ‘If we didn’t provide the fuel and supplies, they would have to shut the station down. They need it for heat, they need it for their vehicles, helicopters and all the things they do. If they don’t have fuel, they can’t survive in the Antarctic.’

An MSC dry cargo ship and tanker have made the dangerous voyage to Antarctica since the station was established in 1955. This project delivers ‘everything you need to run a small city for a year,’ said Timothy Pickering, cargo project officer at MSC headquarters.

### **Taking back trash and ice core samples**

It took 59 Sailors from the Williamsburg, Va.-based Navy Cargo Handling Battalion One and 65 members of the New Zealand Defence Force working around-the-clock three days to offload BBC Ems’ cargo. They then loaded the empty ship with cargo to be transported off the continent, including ice core samples carried back to the United States in three 40-foot refrigerated containers. The ship also took on trash and recyclable materials for disposal.

### **Farewell to T-5 Tankers**

This year marks the final Antarctic voyage for MSC’s T-5 tanker class, of which Matthiesen is a part. Five tankers were built in the mid-1980s and chartered by MSC until 2003, when the command purchased four of the five.

‘This is the last McMurdo Station port call for a T-5 tanker, a milestone in 26 years of dedicated tanker support by MSC, the Champion-class tankers and the U.S. merchant seamen who crew them in support of Operation Deep Freeze,’ said Rear Adm. Mark H. Buzby, commander, MSC. ‘MSC will continue support to Operation Deep Freeze, but this marks the end of a proud era for the Champion-class tankers.’

The T-5s have been replaced for most Department of Defense fuel transport missions by two newly built tankers that came under charter to MSC in late 2010 and early 2011- MT Evergreen State and MT Empire State. Because these ships are not ice-strengthened, MSC will charter tankers on the commercial market to fill future ice missions.

### **Ice breakers blaze the trail**

A Swedish ice breaker was employed for this year’s mission, so both vessels could reach the station safely. Bridging this part is traditionally one of the most demanding navigational challenges of the voyage. Ships docking at the McMurdo Station ice pier rely upon icebreakers opening a ship channel from Upper McMurdo Sound to Winter Quarters Bay. One or more icebreakers, depending upon seasonal conditions, will typically open a channel from eight to 50 miles (80 km) long.

The ice pier is a man-made structure. It is constructed by pumping seawater into a contained area and allowing the water to freeze. By repeating this procedure several times, additional layers are built up. The final structure is



many meters in thickness, and strong enough to support container trucks. Operation Deep Freeze personnel constructed the first floating ice pier at Antarctica's southernmost sea port at McMurdo Station in 1973. Ice piers have been in use each summer season since, at McMurdo's natural harbor at Winter Quarters Bay located at 77°50 S 166°40 E. The harbor is positioned on the southern tip of Ross Island.

### Accessing McMurdo

U.S. ships discharged cargo at temporary ice-ports in McMurdo Sound prior to the invention of the ice pier. Ships during that time moored alongside seasonal pack ice where military longshoremen offloaded cargo onto large snow sleds. Equipment operators then used snow cats and tractors to tow the freight over ice to McMurdo, a difficult and potentially dangerous operation. Tankers arriving with oil, diesel fuel, and gasoline were forced to dock as far away as ten miles (16 km) from the harbor and pump their fuel ashore.

It was only in 1964, when icebreakers started opening a ship channel to Winter Quarters Bay where ships tied off to fast ice, a form of sea ice attached to the coast or ice wall such as Antarctica's Ross Ice Shelf. However, mooring to fast ice produced undesirable results. Warm water discharged from ships eroded ice at the rate of some three square kilometers every year.

### Ice Piers are a challenge on its own

Consequently, port authorities built a steel dock in 1972, which was destroyed by waves from a storm soon after. Builders came up with an alternative that same season. They constructed a block of ice, covered it with matting and straw and used it as a fender for a tanker that docked at the harbor in fall 1973. The ice fender became the forerunner to the contemporary ice pier.

Maintenance on the ice pier begins at the end of the austral summer. Equipment operators remove the gravel and store it for the next season. Removing the gravel prevents the gravel's insulating qualities from inhibiting further thickening of the ice during winter. Winter operations include plowing insulating snow from the dock and flooding the pier with seawater to help sustain the ice strength.

Ice pier operations at the world's most southern port have not been without mishap. The principal threat is onshore winds with accompanying high seas and ocean swells, which can severely damage the ice pier. For example in 1993, high winds and heavy swells caused major cracks in the wharf. Rough seas produced movements of several feet between individual sections of the pier, according to a National Science Foundation (NSF) report. The resulting damage prevented vehicles from traveling onto the pier for repairs. 10 years earlier, the ice pier had been in use four seasons in 1983 when the freighter USNS Southern Cross docked at Winter Quarters Bay. Operation Deep Freeze officials pressed the pier into extended service in order for the freighter to make an unprecedented two supply runs in one season from Port Lyttelton, New Zealand, to McMurdo. However, efforts to extend the ice pier's lifespan resulted in a cargo truck breaking through the ice. The driver of the truck standing atop the container leapt to safety, receiving minor injuries.

### Abandoning an ice pier

However, when the pier is no longer usable, a permit from the Antarctic Conservation Act allows for an icebreaker to tow the ice pier out to McMurdo Sound and cast it adrift. Preparations for dumping include the removing of the pumice surface, the removing of all equipment, material, and debris, and the cutting off of wood poles. After release at sea, currents and southerly winds drive the ice pier north towards the Ross Sea and into the >>>



circumpolar currents of the Southern Ocean. A beacon mounted on the pier allows for tracking and serves as a warning to ships. The pier mixes with pack ice and eventually melts. This process can take years, according to NSF estimates. Consequently, some 21,000 feet (6,400 m) of 1-inch (25 mm) steel cable and 650 feet (200 m) of 2-inch (51 mm) pipe used in its construction sink to the ocean floor. However, U.S. government reports vary regarding the fate of the untreated wooden bollards used in the ice pier. The wood in some instances is reported as weighted so as to sink.

### Founding of McMurdo Station

The station owes its designation to nearby McMurdo Sound, named after Lieutenant Archibald McMurdo of H.M.S. Terror, which first charted the area in 1841 under the command of British explorer James Clark Ross. British explorer Robert Falcon Scott first established a base close to this spot in 1902 and built Discovery Hut, still standing adjacent to the harbor at Hut Point. The rock of the site is the southernmost bare ground accessible by ship in the Antarctic. The United States officially opened its first station at McMurdo on Feb. 16, 1956. Founders initially called the station Naval Air Facility McMurdo.

McMurdo became the centre of scientific and logistical operation during the International Geophysical Year, an international scientific effort that lasted from July 1, 1957, to Dec. 31, 1958. The Antarctic Treaty, now signed by over forty-five governments, regulates intergovernmental relations with respect to Antarctica and governs the conduct of daily life at McMurdo for United States Antarctic Program (U.S.A.P.) participants. The Antarctic Treaty and related agreements, collectively called the Antarctic Treaty System, A.T.S., was opened for signature on Dec. 1, 1959, and officially entered into force on June 23, 1961.

### Contemporary McMurdo

Today, McMurdo Station is Antarctica's largest community and a functional, modern day science station,

which includes a harbor, three airfields (two seasonal), a heliport and more than 100 buildings, including the Albert P. Crary Science and Engineering Center. The station is also home to the continent's only ATM, provided by Wells Fargo Bank. The primary focus of the work done at McMurdo Station is science, but most of the residents (more than 1,000 in the summer and fewer than 200 in the winter) are not scientists, but station personnel who are there to provide support for operations, logistics, information technology, construction, and maintenance.

McMurdo has attempted to improve environmental management and waste removal over the past decade in order to adhere to the Protocol on Environmental Protection to the Antarctic Treaty, which was signed Oct. 4, 1991 and entered into force Jan. 14, 1998. This agreement prevents development and provides for the protection of the Antarctic environment through five specific annexes on marine pollution, fauna, and flora, environmental impact assessments, waste management, and protected areas. It prohibits all activities relating to mineral resources except scientific engagements. A new waste treatment facility was built at McMurdo in 2003 that greatly exceeds the requirements of the treaty. McMurdo (nicknamed 'Mac-Town' by its residents) continues to operate as the hub for American activities on the Antarctic continent.

McMurdo Station briefly gained global notice when an anti-war protest was held on Feb. 15, 2003. During the rally, about 50 scientists and station personnel gathered to protest the coming invasion of Iraq by the United States. McMurdo Station was the only Antarctic location to hold such a rally.

The MSC, that is regularly executing the mission to McMurdo, operates approximately 110 non-combatant, civilian-crewed ships that replenish U.S. Navy ships. They also conduct specialized missions and strategically preposition combat cargo at sea around the world and move military cargo and supplies used by deployed U.S. forces and coalition partners. Sourcing its chartered in capacity via various channels, this assignment on the BBC Ems was supported by Washington based brokers Charrier, Gibson & Associates. *rf*

# on difficult routes

## A quality preparation for an Antarctic mission with BBC Danube

It is not a usual shipping job when you are asked to send a ship to the Antarctic, a region mostly home to research-type vessels and usually out-of-scope for the commercial merchant shipping world. Nevertheless, it happened last year when BBC Chartering was asked to bring equipment to South Korea's research station, Jang Bogo, at Terra Nova Bay before it opened its doors for scientific operation early this year.

As Korea's second research facility on the South Pole, Jang Bogo is one of the largest year-round bases on the continent. The newly built complex consists of 16 buildings, 24 observatory facilities, and residences that can accommodate up to 60 people. It is designed to endure temperatures dropping to  $-40^{\circ}\text{C}$ , and to withstand wind speeds of up to 65 meters per second ( $\approx 234\text{km/h}$ ). Hyundai Engineering & Construction built the aerodynamically designed triple arm complex that will provide sufficient resistance to the elements and extreme conditions.

For BBC Chartering, this meant that a suitable vessel needed to be mobilized that was able to safely navigate Terra Nova Bay during the Antarctic summer. This is why the shipping assignment started early in October 2013; ensuring a proper preparation process of vessel and crew so the valuable research equipment would arrive before the opening of the station.

Intense cooperation with vessel owner and operator was required to manage the preparedness of the BBC Danube for this difficult voyage. We took this opportunity to talk to Sylvia Weiss, designated project manager of Briese Schifffahrt, about the experiences made on this extraordinary voyage...

**Sylvia, thanks for taking the time to talk to us. What were the requirements for the BBC Danube to carry out this mission?**



*Sylvia Weiss*

Classification-wise we needed a vessel with high ice class and the BBC Danube meets the required "E3" classification standards. However, flag-state and classification requirements were not entirely postulated. This required an intense clarification process with both bodies to make sure all critical requirements would surface before the mission commenced and respective insurance coverage for the mission could be attained.

Fuel was also an issue. MARPOL states which fuel is allowed to be burned in engines and which fuel is allowed to be carried in Antarctic waters (south of  $60^{\circ}$  South) in regards to density and viscosity. There are also requirements from the technical side in regards to the fuel which shall be burned in the main engine and auxiliary engines.

Eventually we found a fuel which satisfied MARPOL and technical requirements, and could be used to ensure a safe and environmentally conscious operation under extreme Antarctic conditions. Of course a detailed test run of all engines was conducted with this "special fuel" before entering Antarctic waters.



TRITON

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NO. 1



**Where there any specific features of the ship that needed to be adapted for this project? What were the factors that made the ship appropriate for the task?**

Both the cargo capacity and loading gear of the BBC Danube needed to match the project's requirements set forth for cargo volumes to be shipped and loading operations to be executed. We also needed to install extra navigation equipment to allow for improved accuracy. Some specific communication equipment was required as well to ensure sufficient polar communication through the Iridium Satellite; the existing communication system, beyond the vessel's planned maximum latitude position, could have become insufficient.

Also, we needed to organize extra storage and cooling space to manage sufficient canteen provisions for the crew over an extended period (>100 days) without further supply possibilities. We designed log sheets and inventory tables for all critical consumer goods like fuel, fresh water, lubrication oil, and provision to control the stock.

**Where there any challenges, if so what were they and how were they overcome?**

Due to the extreme remoteness of the mission's destination, sufficient spare parts needed to be available in store on a preventive basis. We needed to ensure the vessel's full performance throughout the entire duration of the project. Parts and spares were ordered, and an extra container with 16,5mt of material was loaded onto the BBC Danube prior to departure in Hobart, New Zealand.

**What are your thoughts regarding lifting operations here, and the challenges faced by heavy-lift cargo projects operating in the Arctic in general?**

The vessel's gear was sufficient and could be safely operated to unload the heaviest pieces. This included, for example, two barges and a small tug boat. However, we also arranged for spare wires for the crane just in case.

Temperature variations may lead to fast ice melting. In our case, a large ice shelf (that also served as ice pier) collapsed while the vessel was positioned there. Cargo,



vessel, and crew were always in safe conditions; however, a new berthing needed to be found. One can imagine that collisions with ice cannot always be avoided in such situations.

**What would you say are main lessons learned from carrying out such a project?**

We always increase our knowledge on such missions. Previous Antarctic missions were made to the US Research Base McMurdo Station, the German Neumeyer Station, and the Spanish Juan Carlos I Base.

In general, my advice would be to always take quality time for proper preparation! It's a bit like a seaborne Himalaya mission – you can't avoid the risk, but you will never forgive yourself if you are not prepared for what could happen. We know how difficult it is to stay calm, but understand that we can only master critical situations if we face them with a cool head. In this respect, we are grateful to our crew, for adequately responding to any challenge and for managing such a highly demanding mission.



# Mission possible

## BBC completes NSR voyage

*August / September 2015* – The m/v BBC Louisiana just completed a project with a special trading requirement. Supporting the expansion of the Antipinsky Refinery in Tyumen, Russia (Western Siberia), BBC Chartering was contracted to deliver the engineered transport of the refineries' continuous catalyst regeneration (CCR) modules. These had to be shipped from Mokpo, South Korea to Novyy Port, at the mouth of River Ob in the Arctic sea; some additional equipment and containers had to be shipped to Vladivostok, Russia for the same project.

A project of this type requires special preparation, diligent planning of cargo and vessel related items, and the compliance with the special destination's administrative requirements. Eventually all work led to

a smooth passage, a safe voyage and high quality cargo transactions. Loading operations were accomplished by the End of July in South Korea, and the discharge of the four up to 230mt heavy CCR modules was accomplished by the end of August onto river barges. The assigned project carrier m/v BBC Louisiana is one of thirteen 12,780 dwt vessel which possess both a high ice class and a lifting capacity of up to 300mt. With this BBC Chartering successfully completed another assignment which displays the carrier's ability to respond to very specific transport requirements. Adding to BBC Chartering's special destination mission track record, the project conveys that all required processes and resources are in place to respond to any port and cargo constellation. This ensures customers the best possible delivery of project specific technical and commercial solutions.

# Special destination service for `Hope Bay`



November 2015 - The Hope Bay Project is one of the most prospective undeveloped greenstone belts in the world, located in the Nunavut Territory, approximately 685 km northwest of Yellowknife, and 125 km southwest of Cambridge Bay. 'Hope Bay' is an 80 kilometer district in the Canadian Arctic in the Kitikmeot Region of Canada.

BBC Chartering was the assigned carrier to deliver a transport solution responding to the destination's special requirements in the Canadian Arctic in September 2015.

The cargo consisted of building material and equipment for the Hope

Bay gold mine and it was delivered safely and within schedule by the m/v BBC Brisbane. The project successfully demonstrated BBC Chartering's ability to prepare and perform on special destination projects and adds to the carrier's extensive Arctic and Ant-Arctic project track record.

The deployed BBC Brisbane is a 2012 built 8,000dwt multipurpose and general cargo ship. She provides a high ice class and a maximum lifting capacity of 160mt. BBC Chartering currently operates six vessels of this type.

# BBC MARYLAND

## Sailing Arctic and Antarctic waters within same year

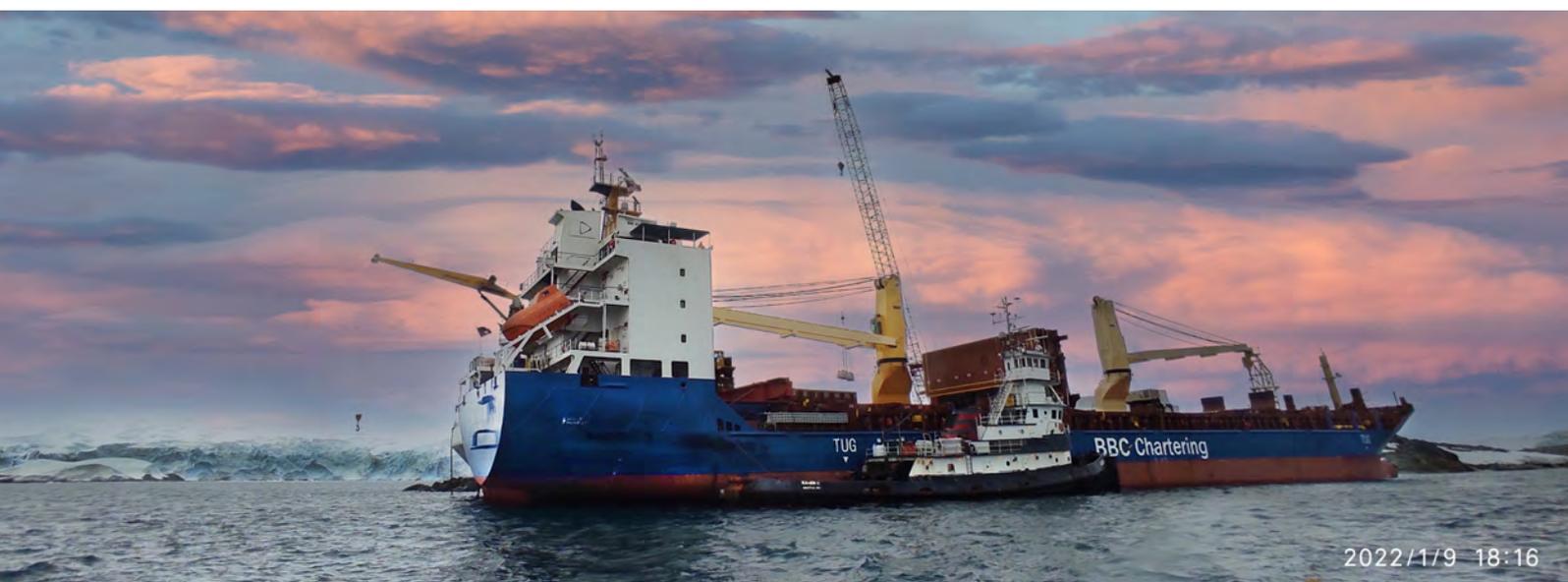
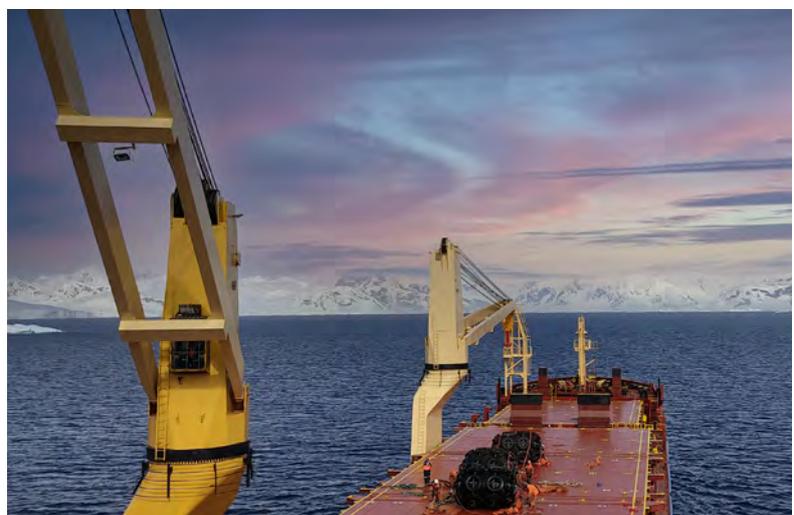
2021 was again a tough year after the world was hit by the Covid19 pandemic. In those times we are even more proud, to see the great results from hard working crews and office teams and the good relationships between us, our headowners and partners.

In 2021 one of the remarkable stories was the one of BBC Maryland. 8 voyages with 33 port calls (bunker calls etc excluded). Even this is a very good performance, this is not the outstanding fact. BBC Maryland and her crew managed to sail Arctic and Antarctic waters within same year.

In summer BBC Maryland has been sent to Russian Arctic port Gydan (Sabetta area) to deliver project cargo for a local gas project. Prior this

call the vessel has been upgraded in Germany to Polar Code standards. After this successful voyage BBC planned BBC Maryland for a sailing to the Palmer Research station in Antarctic waters. After some intermediate voyages in South America to meet our clients laycan prior Christmas in Punta Arenas, the vessel was ready to sail Antarctic waters. Due to some delays on site BBC Maryland was asked to wait and finally missed the our own "target" to reach the Palmer Station within 2021 by 3 days, but at the project was a success and left a happy client.

We like to thank the office team of Delft shipping and the crew(s) of BBC Maryland for their efforts and performance. Always safe and always professional!



# BBC Chartering® Polar track record

BBC Singapore - Year 2006  
Engaged for the Alfred Wegener  
Institute - The BBC Anglia and BBC  
Ukraine are sister vessels to that ship.



Langeness - Year 2010 - Delivery of the new Juan Carlos Station



BBC Ems - Year 2011 - t/c Military Sealift Command - Trip to the Mc Murdo Station



BBC Danube - Year 2013 / 2014 -  
Delivery of equipment for the new Korean Jang Bogo Station



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