



## H2020 – Coordination and Support Action



**BE-OI**

**BEYOND EPICA – OLDEST ICE**

Grant Agreement No : 730258

**Deliverable No 1.4**

**Mini Traverse in DC region**

## Submission of Deliverable

Work Package	WP1		
Deliverable No	D1.4		
Deliverable title	Mini Traverse in DC region		
Version	1		
Status	<i>Final</i>		
Dissemination level	<i>Public</i>		
Lead Beneficiary	ENEA		
Contributors	<input type="checkbox"/> 1 – AWI	<input checked="" type="checkbox"/> 2 – IPEV	<input checked="" type="checkbox"/> 3 - ENEA
	<input type="checkbox"/> 4 – CNRS	<input type="checkbox"/> 5 – NERC-BAS	<input type="checkbox"/> 6 – UU-IMAU
	<input type="checkbox"/> 7 – NPI	<input type="checkbox"/> 8 – SU	<input type="checkbox"/> 9 - UBERN
	<input type="checkbox"/> 10 – UNIBO	<input type="checkbox"/> 11 – UCAM	<input type="checkbox"/> 12 - UCPH
	<input type="checkbox"/> 13 – ULB	<input type="checkbox"/> 14 – ULUND	
Due Date	31.12.2017 (Month 15)		
Delivery Date	09.04.2018		

**Table of Contents**

EXECUTIVE SUMMARY ..... 4

1. Introduction ..... 4

2. Methodology..... 4

3. Results and Discussion ..... 4

4. Conclusion and Outlook..... 5

Annex 1 – Cargo vessel “L’Astrolabe” ..... 6

## EXECUTIVE SUMMARY

This report describes the Antarctic logistic activities to transfer field equipment from the border of the Antarctic continent by aircraft and by vessel/traverse to the field camp of Little Dome C area, as well as support to the SUBGLACIOR (WP3) additional tests conducted at Concordia Station.

### 1. Introduction

Fuel and equipment have been transported to Antarctica by sea or airplane and been unloaded at Dumont d'Urville (DdU) or Mario Zucchelli Station (MZS) Stations, respectively, and then they were transported by oversnow traverse (for heavy equipment) or/and airplane. Aircrafts have been used to rapidly transport personnel and/or scientific equipment to DC, thus ensuring an optimal use of the time available in the field.

### 2. Methodology

The needful materials, scientific equipment and fuel for the supply of the Little Dome C field camp as well as for the SUBGLACIOR tests at Concordia was transported to Antarctica from Hobart Australia by sea (ASTROLABE cargo vessel, 6-10 days travel time) to Dumont d'Urville, and then transported by traverse vehicles (about 15 days travel time) to Concordia Station. Part of the equipment was carried by airplane from Christchurch NZ (Lockheed Hercules L-100/30, 8-9 h travel time) and then unloaded at Mario Zucchelli Station, to finally be transported by airplane (ski-equipped Basler or Twin-Otter, 4-6 h travel time). From Concordia Station the required equipment was transported to Little Dome C camp by surface traverse (3 h travel time) using 3 vehicles (PB300 polar, PB330 and Caterpillar Challenger 65C) pulling 4 modules (Living, Generation, Storage and Drill) on sledges as well as a fuel tank.

### 3. Results and Discussion

During the 2017-18 field season, personnel of CSA BE-OI working at LDC have been transported from Christchurch to MZS by Hercules L-110 on November 10th, and then to Concordia by Basler on November 12th and 16th, 2017. The return from Concordia to Christchurch of 4 LDC pax occurred from December 30th, 2017 to January 4th, 2018 via MZS and McMurdo station (McM) using TwinOtter and Hercules. The other two LDC pax returned to the coast and then to civilization using TwinOtter and Astrolabe via DdU on February 12th, 2018 and via MZS and McM using Hercules. Personnel for the SUBGLACIOR tests at Concordia were transferred from the coast to Concordia either through Casey Station or through McM on December 6<sup>th</sup> and December 9<sup>th</sup>, 2017. Their return took place either through Casey on January 31<sup>st</sup>, 2018 or through DdU on February 6<sup>th</sup>, 2018.

Scientific instruments were transported by NZ using Hercules and Basler/TO, whereas fuel, drill fluid and heavy material/equipment were transported from Australia by

Astrolabe (see Annex 1) /traverse via DdU. The Astrolabe cargo vessel carried material, fuel and pax 5 times from Hobart to DdU from October 28th, 2017 to March 9th, 2018. Logistic traverse from DdU to Concordia carried material and fuel through two logistic traverses from December 9th, 2017 to February 9th, 2018. A mini traverse was conducted from Concordia to Little Dome C on November 22nd, 2017 up to site RAID 2 selected on the base of decisions from T2.1.5. At the end of the field work, the vehicles, module and tank were retrograded to Concordia Station on January 5th, 2018. All the vehicles and module saw local maintenance and were prepared at Concordia Station at the start of the field season from November 12th to 19th, and then for winterover from January 6th to February 6th 2018, with important support of the Concordia Station crew and using the Station facility.

The total continental air support for the BE-OI field season has been:

☒ KBO Twin Otter DHC-6: 6:55 h

☒ VKB Basler BT-67: 20:0 h

The support provided by IPEV for the BE-OI field season covered:

12 m3 of fuel used at LDC and delivered by the vessel L'Astrolabe and by the logistic traverse from Hobart and from DdU

The purchase of new PEHD casing tubings for the SUBGLACIOR tests

The airborne transfer of SUBGLACIOR equipment from France to Christchurch

The overall handling of pax transfer and logistical means in the Concordia system, required for the correct deployment of BE-OI activities at Concordia and at LDC.

#### **4. Conclusion and Outlook**

During the 2017-18 field season, in total 11 pax and about 25 tons of material, fuel and equipment were transported by aircraft or by L'Astrolabe/traverse. Overall the logistic operations were a full success and provided optimal working conditions for WP2 and WP3 activities.

Due to the need to use the alternative 2018/2019 field season for additional work in the frame of BE-OI, ENEA/PNRA and IPEV plan to deploy again similar logistic means next year.

## Annex 1 – Cargo vessel “L’Astrolabe”



The new cargo vessel “L’Astrolabe” is an icebreaker (IB5 Polar Code) built in 2017 as part of a partnership between the Terres australes et antarctiques françaises (TAAF), l’Institut polaire français Paul-Emile Victor (IPEV) and the Ministry of defense (French Navy). Operated at all times by the French Navy, the vessel has two types of mission: Support of the Antarctic Logistics Mission of IPEV: transport of freight and passengers between Australia (Hobart, Tasmania) and Dumont d’Urville station, Adelie land, for 120 days (Southern summer). Defence missions: missions of sovereignty in the South of the Indian Ocean the rest of the year.