

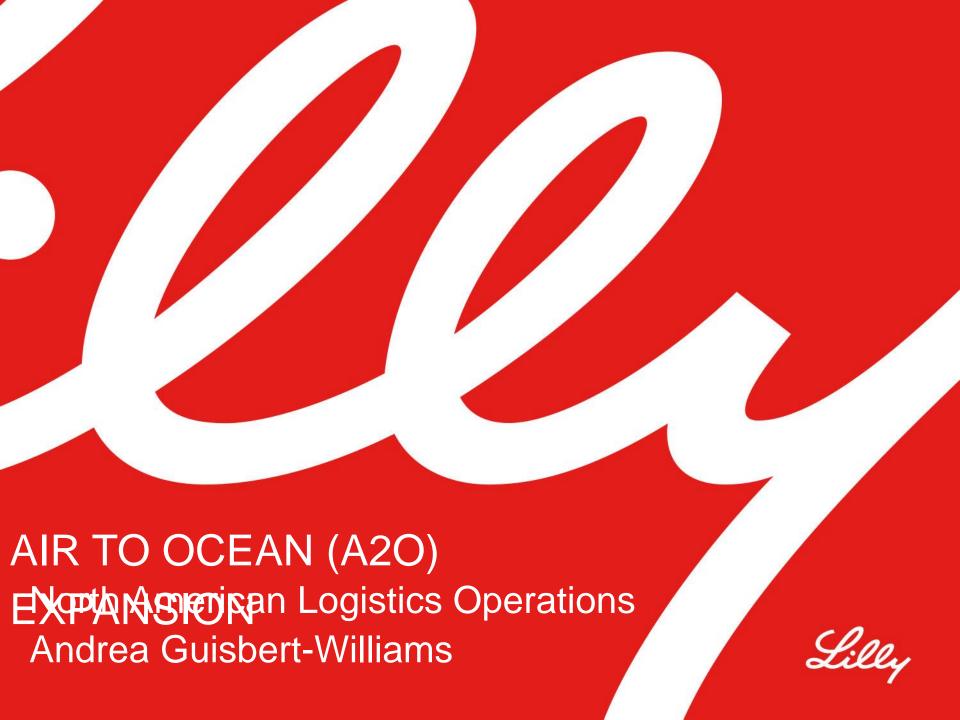
Eli Lilly and Company
NALO Logistics
Air to Ocean (A2O)
Global Growth, Biologics
Launch/Implementation and Sustainablility

Andrea Guisbert-Williams

Eli Lilly and Company

North American Logistics Operations

Ocean Study Project Manager



A20





















A20 Collaboration



Collaborative Partners:

- Lilly Entities
 - North American Logistics Operations
 - Engineering
 - Export
 - Logistics and Compliance
 - Molecule Stewards-Laboratory
 - Operations
 - Packaging
 - Quality
 - Regulatory
 - Traffic
- Modality Solutions
 - Protocol/Report preparation
- Q Products
 - Thermal Covers
- Sensitech
 - TempTales
- Kuehne + Nagel
 - Freight Forwarder

Conversion Preparation

2015 Conversion Status and Preparation

- Chamber Studies: Texas A&M
 - Ocean container temperature and vibration studies
 - Simulation of "worst case scenario" for Ocean shipment
 - 0°F
 - 115°F
 - Leaf Spring Truck
 - Air Ride Chassis
 - Sensitech temptales
 - Lansmont Saver shock recorder
 - Locustraxx GPS and Temperature Monitor

Biologic Conversion Preparation



2016/2017 Biologic Shipping Study Preparation

- Ocean Simulation Shipping Study
 - FIVE Biologic molecules varying in size and structure
 - Ocean container temperature and vibration studies
 - Simulation of "worst case scenario" for Ocean shipment
 - Ocean Voyage to Australia and back
 - Exit USA 11/1/2016
 - Return USA 1/13/2017
 - Sensitech temptales
 - Lansmont Saver shock recorder
 - Locustraxx GPS and Temperature Monitor

A2O Biologic Validation

-Biologic Products Evaluation In Process

- Physical analysis
 - -Appearance
 - -Clarity
 - -Color
 - -Particulates
- Bioanalytical assay
 - -Potency
 - -Purity
 - -Robustness
 - -Stability
 - -Uniformity

Biologic Australia Trip Report



Container # TCLU 1	038734						
Location	Time Of Arrival	Time Of Departure		Excursions (Air	Temperatures)		
Lilly NALO	N/A	01 Nov 2016	Date	Location	Time above 8°C	Max recorded temperature	
Port: Oakland	02 Nov 2016 14:36		Container Loa	aded on <u>CAP CORRI</u>	ENTES.		
Port: Oakland		03 Nov 2016 10:24	03 Nov 2016	Wilmington CA	4 hours	15.6°C	
Long Beach	04 Nov 2016 21:12	06 Nov 2016 18:12					
Auckland	21 Nov 2016 12:48	22 Nov 2016 06:48					
Melbourne	26 Nov 2016 20:30	27 Nov 2016 07:00					
	29 Nov 2016 06:00	Container Loaded on GUENTHER SCULTE					
Sydney		14 Dec 2016 06:14	12 Dec 2016	Botany, Australia	3 hours	13.3°C	
Tauranga	17 Dec 2016 23:54	18 Dec 2016 17:41					
Papeete	23 Dec 2016 06:07	23 Dec 2016 21:17	23 Dec 2016	French Polynesia	2 hours	9.4°C	
Oakland	04 Jan 2017 18:42	05 Jan 2017 13:13					
	07 Jan 2017 13:37	Offload Container	7 Jan 2017	Wilmington, CA	5 hours	10.8°C	
Long Booch	09 Jan 2017 13:37	Load on Truck- (failed)	9 Jan 2017	Wilmington, CA	5 hours	10.9°C	
Long Beach	10 Jan 2017 13:37	n 2017 13:37 Load on Truck-		Wilmington, CA	5 hours	10.3°C	
		10 Jan 2017 14:12					
NALO	13 Jan 2017 06:21						

Summary of container movement during the study. All times are recorded as local times. Temperature data was provided by K-N. The recording unit was located at the rear door of the container near the top of the door.

Biologic Australia Trip Report

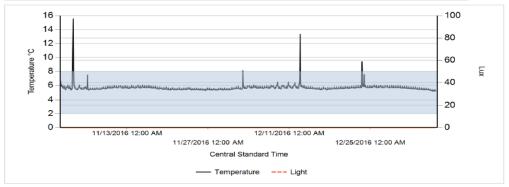


Serial Number	DEVBJ006K0
Product	2-8 C
Origin	Plainfield IN
Destination	Open
Order Number	Test Front
Carrier	
Departure (Central Time)	11/1/2016 11:37:37 AM
Planned Arrival (Central Time)	
Actual Arrival (Central Time)	
Notes	Test Front
Current Lat / Long	37.78756, -122.30641
Fix Type	CELL_NETWORK
Address	2 W Midway Ave, Alameda, CA 94501, USA
Most Recent Time (Central Time)	1/5/2017 8:36:19 AM



Mean °C	Std Deviation	Min °C	Max °C	Hours <2.0°C	Hours >8.0°C	Length (hours)
5.6	0.5	5.2	15.6	0.0	10.0	1,558.0

Alarm Nar	ne Triggered Central Time	Status	Ack By	Ack On Central Time	Acknowledgement Notes
High 15 m Continuo		NEW			



Biologic Australia Trip Report



Trip Report

Serial Number	DEVBJ006K0
Product	2-8 C
Origin	Plainfield IN
Destination	Open
Order Number	Test Front
Carrier	
Departure (Central Time)	11/1/2016 11:37:37 AM
Planned Arrival (Central Time)	
Actual Arrival (Central Time)	
Notes	Test Front
Current Lat / Long	36.02914, -96.09913
Fix Type	CELL_NETWORK
Address	9577 Ridgeview St, Tulsa, OK 74131, USA
Most Recent Time (Central Time)	1/12/2017 7:36:52 AM



Mean °C	Std Deviation	Min °C	Max °C	Hours <2.0°C	Hours >8.0°C	Length (hours)
5.7	0.6	5.0	15.6	0.0	24.0	1,725.0
Alarm Name	Triggered Central Time	Status	Ack By	Ack On Central Til		edgement Notes
High 15 min Continuous	11/3/2016 1:37:4 PM	7 NEW				
16 14 12 0, europeantine 8 6 4 2	le Vandania de la constante de	MANAGARA SALAHARA SA	and the second s	W. W	and the second second	- 20
61	11/13/2016 12:	00 AM 11/27/2016			1/8/ /2016 12:00 AM	2017 12:00 AM

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CONFIDENTIAL

Report executed 1/12/2017 3:01 PM UTC/GMT

Q Product Pallet Covers



Q Product Pallet Cover Specs





Product Specification Sheet

Document Type:	Product Number:	Effective Date:	Revision
Product/Shipping Specification	69000450	July 23, 2015	0

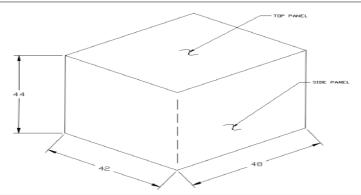
Product Name

PQBC, 42 x 48 x 44 - Pallet Quilt, Breathable Cover

Product Description

Thermal Pallet Quilt used to insulate a skid of product measuring: 42 x 48 x 44. Quilt has breathable fabric on the sides with a reflective top.

- 1. Side panel has inner and outer lining made of breathable material
- 2. Top panel has inner and outer lining made of of reflective metalized material
- 3. Standard ultra thick insulation
- Product Features
- 4. 4 corners closed5. Identification tag with serial number
- Est. Wt. = 15 lbs



Product Drawing

Shipping Contents

- 1. 69000450, PQDC, 42x48x44 5 per box
- Rubber Pallet Band 5 per box
- Packaging Description
- 1. Skid size 48 inch x 48 inch
- 2. Carton, 48 x 48 x 36
- Estimated Weight: 1 Box / Skid is 130 pounds or 2 Boxes / Skid is 210 pounds
 Shipment Envelope: Min- 48x48x42 to Max- 48x48x80 (2 Boxes/Skid)
- Shipping Classification

NMFC 103300 sub 3 - Insulating Material Felt H.T.C code 6310.90.

Silverskin Pallet Covers



Temperature Excursions

Excursion	Outside 2-8°C >0°C <20°C	4 hours	Email	Email <u>:</u> NALO Project Leader NALO Management Global Logistics Representative NALO Quality Representative	
Low Temperature	<0°C	Immediate	Email and Phone Contact	Email: NALO Project Leader NALO Management Global Logistics Representative NALO Quality Representative	Phone: NALO Project Leader NALO Management Global Logistics Representative NALO Quality Representative
High Temperature	>20°C	Immediate	Email and Phone Contact	Email: NALO Project Leader NALO Management Global Logistics Representative NALO Quality Representative	Phone: NALO Project Leader NALO Management Global Logistics Representative NALO Quality Representative
Light	any	Immediate	Email and Phone Contact	Email: NALO Project Leader NALO Management Global Logistics Representative NALO Quality Representative	Phone: NALO Project Leader NALO Management Global Logistics Representative NALO Quality Representative

Lansmont Saver Unit





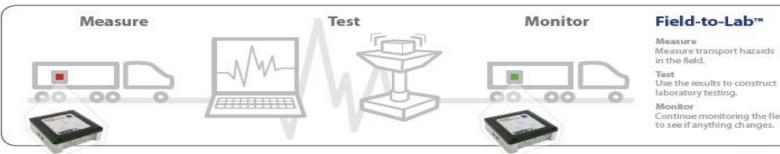
SAVER™ 9X30







The SAVER™ 9X30 is a self-powered field data recorder with an internal triaxial accelerometer, and six externally configurable channels. The 9X30 is provided with temperature, humidity and atmospheric pressure sensors and can be optionally configured with onboard GPS logging capability. Powered with 9V lithium batteries, the instrument and will operate continuously for up to 30 days.



Field-to-Lab™

laboratory testing.

Continue monitoring the field to see if anything changes.

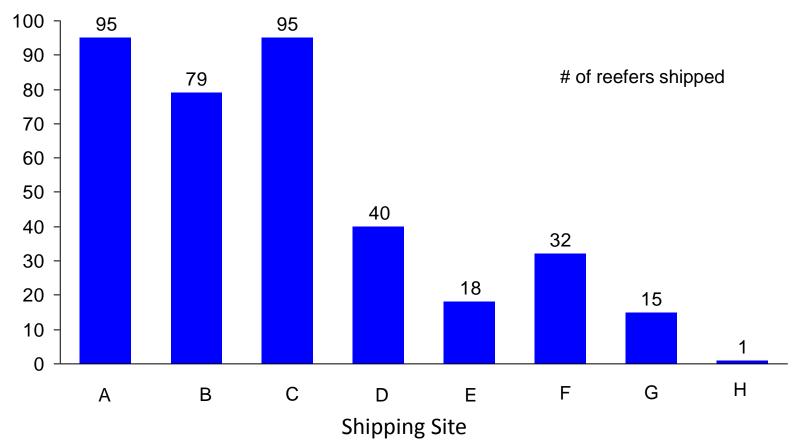
Test Equipment | Instruments | Support Services

17 Mandeville Court, Monterey, California 93940 | 831.655.6600 | Iansmont.com



2017 Ocean shipments

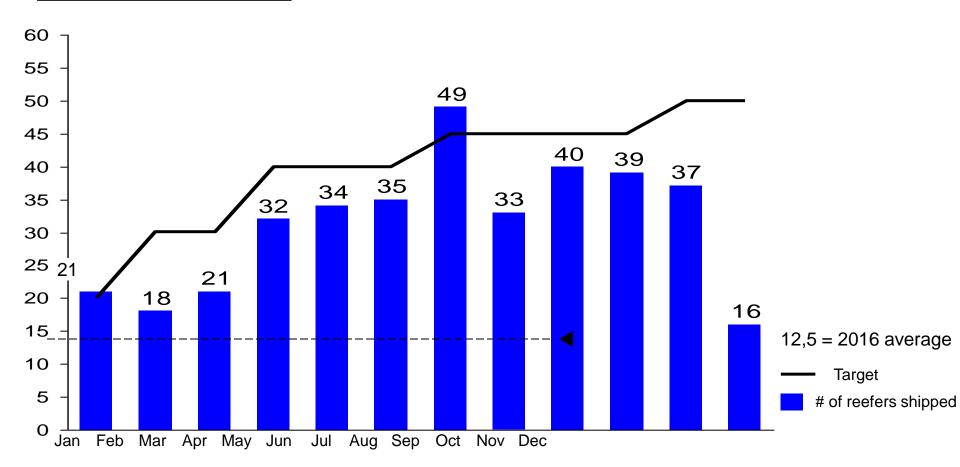
A total of 375 refrigerated containers shipped in 2017



2017 Targets



Implementation status



Shipment Summary

- Through 2016 the number of shipments increased consistently as we implemented additional lanes
- In 2017, the number of shipments to increase to the range of approximately 40 per month
- In 2017 total number of pallets shipped by Ocean freight were approximately 10,000
- Prior to A2O launch, in 2014, we shipped approximately 33,000 pallets by air
- 2017 target of 8 million USD exceeded!

A2O Additional Benefit

Shipment of Cold Chain Products via Ocean Vs. Air

- Continued 80%+ COST SAVINGS via Ocean
- Decreased carbon footprint via Ocean
- Decreased personnel requirement Ocean Pick/Pack
- Decreased storage demand employing Ocean
 - Product
 - Secondary Packaging
- Decreased packing supply requirements for Ocean
- Decreased vibration and shock to materials on Ocean

A2O Launch



Countries

1

3

7

Launch Date

2015

2016

2017

2017 Implementation

Month	Lanes Implemented
Jan	16
Feb	17
March	17
April	19
May	19
June	20
July	22
August	23
September	23
October	23
November	25
December	25



February 26 - March 1, 2019 // Toronto, ON www.coldchainpharm.com



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