

DISPERSANT AIRCRAFT CAPABILITY FORM

PLATFORM

**LOCKHEED
HERCULES
L-382 (L100 Series)
& C-130 B, E & G
with ADDS PACK***

Operator: Lynden Air Cargo
Safair
U.S. Coast Guard

OSRO: Alyeska Pipeline Corp.
Oil Spill Response, Ltd
East Asia Response, Ltd.



* Aerial Dispersant Delivery System Package (ADDS Pack)

DATA SOURCE LEGEND

- 1. (Black):** Indicates the data are based on documented field trials or is a fixed design value
- 2. (Blue):** Indicates the data are based on limited field observations or operator's stated practice or stated value (little or no documentation)
- 3. (Red):** Indicates the data are based on reasonable calculations or performance of comparable systems

		Unit	U.S. Regulatory Calculation Values	Data Source 1-2-3	Range	Reference(s)
AIRCRAFT PARAMETERS						
1	Swath Width	feet	150	2	100-200	See Other Comments 1*
	a. Application (gallons per acre)	gpa	5	2	1-12	See Other Comments 1*
	b. Altitude	feet	50	1	50-125	See Other Comments 1*
	c. Application Speed	knots	145	1	140-150	See Other Comments 1*
	d. Pump Rate (gallons per minute)	gpm	-----	1	51-612	See Other Comments 1*
	e. Boom Pressure (pounds/square inch)	psi	-----	1	12-45	See Other Comments 1*
2	Transit Speed at Altitude From Base to Staging Airport	knots feet	300 20,000	2	250-300 20,000	Lynden Air Cargo & SAFAIR operators
3	Transit Speed at Altitude Staging Airport to/from spill	knots feet	250 <10,000	2	250-300 <10,000	Lynden Air Cargo & SAFAIR operators
4	Dispersant Spraying Reposition Speed	knots	150	2	140-150	Lynden Air Cargo and SAFAIR operators

5*	Time to Fully Load Dispersant Tank	min	45	2	30-90	Lynden Air Cargo and SAFAIR operators
6*	Time to Fully Load Fuel Tanks	min	30	2	30-90	Lynden Air Cargo and SAFAIR operators
7	Load Dispersant & Fuel simultaneously (Yes/No)	-----	Yes	1	Yes	Lynden Air Cargo operator. See Other Comments 5*-6*
8	Time to Make U-turn (Turn 180 degrees)	min	1.75	2	1.25-2.0	USAFR, USCG, Lynden Air Cargo, and SAFAIR operators
9	Dispersant Payload Maximum	gal	5,000	1	5,000	Lynden Air Cargo and SAFAIR operators
10	Fuel with maximum dispersant payload	lbs	28,000	2	28,000	Lynden Air Cargo and SAFAIR operators
11	Approach Distance for spraying	nm	1.0	2	1.0-2.0	Lynden Air Cargo and SAFAIR operators
12	Departure Distance for spraying	nm	1.0	2	1.0-1.5	Lynden Air Cargo and SAFAIR operators
13	Taxi Time Take-Off	min	15	2	10-30	Exercise observation C-130, Lynden Air Cargo and SAFAIR
14	Taxi Time Landing	min	15	2	10-30	Exercise observation C-130, Lynden Air Cargo and SAFAIR
15	On-site Check-In/Safety Time	min	10	2	5-15	Exercise observation
CASCADE PARAMETERS*						
16	Take-off with Maximum Payload and Maximum Take-off Weight (assume no wind and VFR fuel reserve)					
	a. Maximum Flight Time	hours	4.0	2	4.0-4.5	Lynden Air Cargo and SAFAIR operators
	b. Maximum Flight Range	nm	1,200	2	1,200-1,350	Lynden Air Cargo and SAFAIR operators
	c. Optimal Altitude	feet	20,000	2	20,000-21,000	Lynden Air Cargo and SAFAIR operators
	d. True Air Speed	knots	300	2	275-300	Lynden Air Cargo and SAFAIR operators
	e. Fuel Consumption	lbs/hour	5,000	2	4,541-5,000	Lynden Air Cargo and SAFAIR operators
17	Take-Off with Maximum Fuel and No Payload (assume no wind and VFR fuel reserve)					
	a. Maximum Flight Time	hours	9	2	9-12	Lynden Air Cargo and SAFAIR operators. 12 hours is with external fuel tanks.
	b. Maximum Flight Range	nm	2,700	2	2,700-3,600	Lynden Air Cargo and SAFAIR operators
	c. Optimal Altitude	feet	24,000	2	22,000-27,000	Lynden Air Cargo and SAFAIR operators
	d. True Air Speed	knots	300	2	275-300	Lynden Air Cargo and SAFAIR operators

	e. Fuel Consumption	lbs/ hour		2	3,500- 5,000	Lynden Air Cargo and SAFAIR operators
18	Staging area briefing	min	45	2	30-60	Exercise observation
AIRPORT PARAMETERS						
19	Runway length - Minimum (For take-off at maximum gross weight assuming sea level, 90° F, no wind using a balanced field concept, i.e., go, no go speed)	feet	7,050	2	6,820- 7,050	Lynden Air Cargo and SAFAIR operators
20	Runway weight restrictions for maximum aircraft weight	lbs	155,000	1	155,000	Lynden Air Cargo and SAFAIR operators
OTHER COMMENTS						
1*	The swath width is dependent upon the altitude of spraying, the aircraft spray speed and the pump rate of the system. For the ADDS Pack which is designed to produce 300 micron Volume Median Droplets (VMD) the parameters mentioned above are also dependent upon the number of nozzles inserted into the ADDS Pack booms. Specific information for setting up the ADDS Pack for a specific dosage is attached.					
1*	References: 1. Lindblom, G.P., 1987. "Measurement and Prediction of Depositional Accuracy in Dispersant from Large Airplanes," Proceedings of the 1987 International Oil Spill Conference (IOSC) 2. Jefferies, James, O'Neal, Jerry; 1982. "Demonstration, Evaluation and Physical Characterization of a Self-Contained Dispersant Spray System," American Petroleum Institute (API) project report					
1c*	C-130 is limited to a flight speed of no more than 150 knots when operating with the ramp door opened which is required for ADDS Pack operations.					
5*- 6*	The time to load dispersants and fuel are stand alone times independent of each other. If item 7 indicates that fuel and dispersants can be loaded simultaneously, then the longer of fuel or dispersant load time is used in the capability calculations. If item 7 indicates fuel and dispersants can NOT be loaded simultaneously, then the times are added together to calculate the aircrafts capability. To load simultaneously depends upon the airport, aircraft, and support crew. The loading times depend upon the loading system i.e., 5000 tank truck, 55 gallon drums or other means and the pumping system used. The time shown in items 5 and 6 is for loading from a tank truck which is standing by ready to commence loading when the aircraft comes to a stop in the loading area, i.e. the fastest loading time possible.					
*	Cascade Parameters: The aircraft's calculated capability when cascading uses the same fuel loading and taxi times for dispersant operations as listed in items 6, 13 and 14.					

ADDS PACK SPRAY SETTING CHARTS*

L-382 L100 SERIES/C-130 B, E &G ADDS PACK OIL SPILL SETTINGS		
SPEED ----- 145 KNOTS		
SPRAY HEIGHT ----- 50 TO 75 FEET		
WORK RATE ----- 51 ACRES PER MINUTE		
SWATH WIDTH ----- 150 FEET		
GALLONS/ACRE	NO. OF NOZZLES	FLOW RATE (GPM) U.S.
1	7	51
2	15	102
3	22	153
4	29	204
5	36	255
6	44	306
7	51	357
8	58	408
9	66	459
10	73	510
11	80	561
12	87	612

* Provided by James Jefferies, Farwest Aviation Services, LLC, Chandler, AZ. Data is based on the field tests of the ADDS Pack conducted in Chandler, AZ in 1982 as referenced in the Other Comments section above under 1* References.

ADDS PACK SPRAY SETTING CHARTS*

L-382 L100 SERIES/C-130 B, E, & G ADDS PACK OIL SPILL SETTINGS		
SPEED ----- 145 KNOTS		
SPRAY HEIGHT ----- 76 TO 100 FEET		
WORK RATE ----- 67 ACRES PER MINUTE		
SWATH WIDTH ----- 200 FEET		
GALLONS/ACRE	NO. OF NOZZLES	FLOW RATE (GPM) U.S.
1	10	67
2	19	134
3	29	201
4	38	268
5	48	335
6	57	402
7	67	469
8	77	536
9	86	603
10		
11		
12		

L-382 L100 SERIES/C-130 B, E & G ADDS PACK OIL SPILL SETTINGS		
SPEED ----- 145 KNOTS		
SPRAY HEIGHT ----- 100 TO 125 FEET		
WORK RATE ----- 84 ACRES PER MINUTE		
SWATH WIDTH ----- 250 FEET		
GALLONS/ACRE	NO. OF NOZZLES	FLOW RATE (GPM) U.S.
1	12	84
2	23	168
3	35	252
4	47	336
5	58	420
6	70	504
7	82	588
8		
9		
10		
11		
12		

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