

DMP2 Sample Exercises

1. Grounded Tanker 35 NM Offshore

During the hours of darkness, an oil tanker runs aground and releases an unknown quantity of oil. Skimming resources are enroute to the scene and since the oil is determined to be dispersable, a Beechcraft King Air 90A is mobilized and is standing by. Dispersant application approval consultations have been initiated. At first light, an overflight reveals a slick extending about a mile from the vessel. The release at the tanker is controlled and an estimated 2500 bbl of product (after evaporation and natural dispersion) remains on the water. Dispersant application is approved by the FOSC and the Beechcraft is ordered to fly. The staging airfield is about 60 NM from the spill area which is 35 NM offshore. The Beechcraft is loaded with fuel and dispersant at the staging airfield and has about 9 hours remaining in the day to operate. The latest overflight estimate of the slick size is about 2.5 NM long and about a half mile wide with about 75 % coverage. A spotter aircraft is in place. Spraying is in both directions and the Beechcraft will be loading dispersant and fuel simultaneously. Answer the following questions using the DMP2:

- What is the nominal optimum dosage for this slick at a DOR of 1:20?
- Using the default configuration for the Beechcraft, what is the computed pump rate to achieve the desired dosage?
- Approximately how much oil could be treated with dispersant?

An alternate staging airport 48 NM from the spill location has been located that has a runway length of 4,600 feet.

- Can the Beechcraft operate from this alternate staging airport?
- If so, about how much oil could be treated in the 9 hours available from this alternate staging airport?

It is determined that with this oil and dispersant combination, a more effective DOR is 1:10.

- What is the new nominal optimum dosage?
- What is the calculated pump rate for the Beechcraft to achieve this dosage?
- Can the Beechcraft deliver the calculated pump rate?

Discussion

Use Option 2 on the Dosage Page. Entering the estimated volume of 2500 barrels, the estimated area of 1.25 square nautical miles (2.5 NM long x .5 NM wide), and the estimated coverage of 75%, the nominal dosage to treat this slick is 6.6 gallons of dispersant for each acre of slick (61.7 liters per hectare).

Exit DMP2 **Dosage Page** **Conversions** **Documentation**
Slick/Dosage Parameters **Useful Links**
Print Page
Slick/Dosage Discussion

1 Select a Dispersant-to-Oil Ratio (DOR) 1: (1:20 is the default)

2 **Option 1 - Input Dosage directly**
 - Specify a Desired Dosage Value
 - This corresponds to a treatment of ...
 - A nominal oil slick Thickness of: Inches Millimeters
 - An oil slick concentration of: Gallons/Acre Barrels/Acre
 Cubic Meters/Sq Km Cubic Meters/Hectare
 - A slick Description of: **Clear Option 1**

2 **Option 2 - Estimate Dosage from slick description**
 Est. Volume of oil spilled: Estimate the % coverage:
 Est. Area of the oil slick:
 - Calculated Thickness & Dosage at a DOR of 1: 20
 Thickness: 0.0049 Inches 0.123 Millimeters
 Dosage: 6.6 Gallons/Acre 61.7 Liters/Hectare **Clear Option 2**

3 Select Desired Dosage from Option 1 or Option 2 above Option 1 Option 2

4 Select Platform Type Aircraft Vessel **5** **Go To Calculation**

On the Aircraft Calculation Page, 1) enter the 60 NM Transit Distance, the 9 hour UT, the 2.5 NM Average Pass Length, and 2) select the Beechcraft KingAir 90A. The Calculated Pump Rate is 173 gallons per minute. Click on the Calculate button to obtain an estimate of the Oil Treated as 1417 barrels (225.3 cubic meters).

Exit DMP2 **Aircraft Calculation Page** **Print Page** **Documentation**

1 **Specify Scenario (UT, Transit Distance, Pass Length) Using a DOR of 1: 20**
 Desired dispersant **Dosage** 6.6 Gallons/Acre (46.8 Liters/Hectare) Utilization Time (UT): Hours
 One Way Transit Distance: Average Pass Length:

2 **Specify Platform**
 Edit
Double click to view Platform Reference **Add**
Delete

	Max	Min
Pump Rate: (Calculated) GPM	180	20
Swath Width: <input type="text" value="75"/> Ft	85	60
Application Speed: <input type="text" value="150"/> Kts	175	130
Transit Speed: <input type="text" value="185"/> Kts	200	150

Reposition Speed: Kts

U Turn Time: Min

Approach: NM

Departure: NM

Dispersant Load: Min

Fuel Load Time: Min

Max Op Time: Hr

Payload: Gal

Taxi, Land, Depart: Min

Always Refuel?:

Resulting Platform/Scenario Values

Theoretical Dosage Range: 0.6 to 9.9 Gallons/Acre
 5.4 to 92.8 Liters/Hectare

Calculated Pump Rate: 173 GPM
 One-way Transit Time: 19 Min
 Areal Coverage Rate: 26.2 Acres/Min 10.6 Hectares/Min
 Time On Station/Sortie: 16.0 Min
 Spray Time/Sortie: 2.5 Min
 Spray Time/Pass: 1.0 Min
 # of Passes per Sortie: 2.5

3 **If Cascading, Specify Mobilization Time and Cascade Distance**
 Hr
 With Payload No Payload
 Adjusted Utilization Time: Hr
 Range (No Payload): 796 NM
 Range (With Payload): 222 NM
 Taxi Time (Takeoff): 3 Min
 Taxi Time (Landing): 3 Min
 Cascade Transit Speed: 185 Kts
 Staging Area Briefing: 45 Min **Clear Cascade**

4 **Calculate Performance**
 Bidirectional Unidirectional Loading of fuel and dispersant:
 Simultaneous Separate
Set EDAC **Calculate** **Pie Chart**

Max Transit Distance	76 Nautical Miles
Time Per Sortie	1.0 Hr
Payload deliveries/UT	7.00
Dispersant Applied	2975 Gal 11260 Liters
Oil Treated	1417 BBL 225.3 Cu M
Total Area Covered	451 Acres 182 Hectares

To determine if the Beechcraft can operate from the 4,600 foot runway, double click on the button for the Platform Reference. You will probably want to set the zoom factor to at least 100% to make this pdf document readable. Scroll towards the bottom of the document to find details on runway limitations for this platform. The minimum runway length is 4,200 feet. Assume the other criteria fall within the acceptable bounds for this exercise.

Exit DMP2
Aircraft Calculation Page
Print Page
Documentation

1 Specify Scenario (UT, Transit Distance, Pass Length) Using a DOR of 1:20

Desired dispersant **Dosage** 6.6 Gallons/Acre (46.8 Liters/Hectare) Utilization Time (UT): 9 Hours

One Way Transit Distance: 48 Nautical Miles Average Pass Length: 2.5 Nautical Miles

2 Specify Platform

Beechcraft King Air 90A (BE-90A) Edit

Double click to view Platform Reference Add

Delete

	Max	Min
Pump Rate: (Calculated) GPM	180	20
Swath Width: 75 Ft	85	60
Application Speed: 150 Kts	175	130
Transit Speed: 185 Kts	200	150
Reposition Speed: 150 Kts		
U Turn Time: 1 Min		
Approach: .75 NM		
Departure: .75 NM		
Dispersant Load: 10 Min		
Fuel Load Time: 12 Min		
Max Op Time: 1.2 Hr		
Payload: 425 Gal		
Taxi, Land, Depart: 6 Min		
Always Refuel?: Yes		

Resulting Platform/Scenario Values

Theoretical Dosage Range:
0.6 to 9.9 Gallons/Acre
5.4 to 92.8 Liters/Hectare

Calculated Pump Rate: 173 GPM
One-way Transit Time: 16 Min
Areal Coverage Rate:
26.2 Acres/Min 10.6 Hectares/Min
Time On Station/Sortie: 16.0 Min
Spray Time/Sortie: 2.5 Min
Spray Time/Pass: 1.0 Min
of Passes per Sortie: 2.5

3 If Cascading, Specify Mobilization Time and Cascade Distance

Adjusted Utilization Time: Hr

Range (No Payload): 796 NM With Payload No Payload

Range (With Payload): 222 NM

Taxi Time (Takeoff): 3 Min Clear Cascade

Taxi Time (Landing): 3 Min

Cascade Transit Speed: 185 Kts

Staging Area Briefing: 45 Min

4 Calculate Performance

Bidirectional Loading of fuel and dispersant
 Unidirectional Simultaneous Separate

Set EDAC Calculate Pie Chart

Max Transit Distance 76 Nautical Miles

Time Per Sortie 0.9 Hr

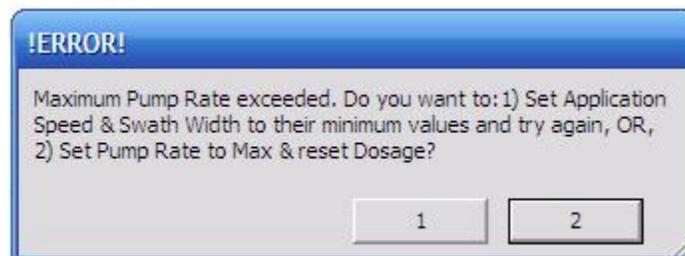
Payload deliveries/UT 8.00

Dispersant Applied 3400 Gal 12869 Liters

Oil Treated 1619 BBL 257.4 Cu M

Total Area Covered 515 Acres 208 Hectares

Go back to the Dosage Page to set the DOR to 1:10 and navigate back to the Aircraft Calculation Page. Note that the Platform data will need to be reset by selecting the Beechcraft King Air again. With the new DOR, the calculated pump rate to achieve the new Dosage of 13.2 gallons per acre is 345 gallons per minute. Clicking the Calculate button brings up the following error window as the maximum pump rate for this platform is 180 gallons per minute. The two choices now are to set the Application Speed and Swath Width to their minimum values and try again (button 1), or, set the Pump Rate to its maximum and reset the Dosage to what can be achieved with the maximum pump rate (button 2).



Clicking on button 2 sets the Dosage to 6.8 gallons per acre and calculates the Oil Treated as an estimated 810 barrels. Note that the calculated pump rate is 178 gpm and not the expected 180 gpm due to rounding in the calculations.

2. Blowout in the Gulf of Mexico

Company X is a member of both CGA and MSRC. While overhauling the subsea blowout preventers on a platform, the crew experiences a problem which causes the uncontrolled discharge from the well of approximately 1,000 bbls of crude oil per hour. The location of the platform is: 27° 16' 56.8" N, 088° 19' 38" W.

The spill occurs at 0600 on 1 March 2007.

Both MSRC and CGA assets are activated as follows:

0700	MSRC	C130	Coolidge Municipal Airport	mobilization - 4 hours
0700	MSRC	King Air	Stennis International Airport	mobilization - 4 hours
0700	CGA	DC4	Houma Airport	mobilization - 2 hours
0700	CGA	DC3	Houma Airport	mobilization - 6 hours

The MSRC C130 aircraft will fly to Stennis Airport fully loaded with 3250 gallons of dispersant.

The MSRC aircraft will operate from Stennis International Airport.

The CGA aircraft will operate from Houma Airport.

- How much dispersant can each aircraft apply to the slick on Day1? On Day 2?
- How much dispersant will be needed to keep the aircraft fully operational for an estimated 4 day period the spill will last before being shut in?

Discussion of Day 1

Start with the CGA DC-4 staging from Houma. The distance from Houma is about 212 NM to the spill site (I used Google Earth, your result may vary somewhat depending on which tool/method you use). No wind speed or direction has been specified. If the slick is moving offshore at this distance from land, there may be no net environmental benefit to disperse this oil slick. Again with no weather specified, assume VFR conditions and optimal wind to mix the dispersant with the oil.

With notification at 0700, start taxi at 0900, and sunset at about 1800 the Utilization Time (UT) for the DC-4 is about 9 hours for day 1. Transit Time to the spill is about 85 min using DMP2. "Theoretical" dosage for the DC-4 ranges from .7 to 28.7 gallons per acre. What should be used for a Dosage? What about the Average Pass Length? Start out with 5 gallons per acre, Pass Lengths of 2, 3, and 5 NM. Using the same Pass Lengths increase the dosage to 10 gallons per acre, and finally 20 gallons per acre. The results

using the DMP2 are in the following table showing variation in platform performance with different pass lengths and dosages.

DC-4 Day 1	Dosage	Calc Pump Rate	Pass Lgth	Time per Sortie	Passes	Payloads	Disp used	Oil Treated	Area Cov
UT=9 Hr	5 gpa	262 gpm	2 NM	3.9 hr	9.6	2	4000 gal	1905 bbl	800 acres
Transit - 85 min	5 gpa	262 gpm	3 NM	3.8 hr	6.4	2	4000 gal	1905 bbl	800 acres
	5 gpa	262 gpm	5 NM	3.7 hr	3.8	2	4000 gal	1905 bbl	800 acres
	10 gpa	523 gpm	2 NM	3.7 hr	4.8	2	4000 gal	1905 bbl	400 acres
	10 gpa	523 gpm	3 NM	3.7 hr	3.2	2	4000 gal	1905 bbl	400 acres
	10 gpa	523 gpm	5 NM	3.6 hr	1.9	2	4000 gal	1905 bbl	400 acres
	11.4 gpa*	597 gpm	2 NM	3.7 hr	4.2	2	4000 gal	1905 bbl	351 acres
	11.4 gpa*	597 gpm	3 NM	3.6 hr	2.8	2	4000 gal	1905 bbl	351 acres
	11.4 gpa*	597 gpm	5 NM	3.6 hr	1.7	2	4000 gal	1905 bbl	351 acres

*The Calculated Pump Rate at a Dosage of 20 gpa is 1047 gpm which exceeds the Max Pump Rate of 600 gpm. DMP2 can 1), Recalculate the Pump Rate at Min Swath and Min App Speed OR 2), Recalculate Dosage at default Swath and App Speed. Option 2 yields a Dosage of 11.4 gpa.

DC-4 from Houma on Day 1: Note that because of the distance offshore, the maximum number of sorties is 2 regardless of the specified Dosages or Pass Lengths. This points out the importance of the spotter aircraft and dispersant effectiveness monitoring. With unspecified wind and current the configuration of the slick is unknown. The dispersant should be applied to the freshest oil possible (thickest) which may indicate higher Dosages. Whatever Dosage (i.e. Pump Rate) is applied on the first sortie, the spotter aircraft/effectiveness monitoring can possibly provide information for changes to the dosage on the second sortie. Another option to explore is Unidirectional or “Race Track” spraying. The above data were derived using Bidirectional spraying, i.e., spraying in both directions. Unidirectional spraying still allows for 2 sorties and gives the DC-4 flight crew, the spotter plane, and the monitoring program more time to evaluate effectiveness. The bottom line for the DC-4 from Houma on day 1 is: 2 Payloads or 4000 gallons applied to the spill to treat about 1900 bbl of oil. Depending upon the accuracy of the release estimate of 1000 bbl/hour, at the end of daylight (1800), about 12,000 bbl of crude is released and the DC-4 could treat about 15% of it at a DOR of 1:20.

DC-3 from Houma (Transit distance - 212 nautical miles): Start taxi at 1300 gives a UT of about 3 hours, enough for just one sortie on Day 1. Transit Time is 98 minutes, calculated Pump Rate for 5 gallons per acre is 209 gpm, calculated Pump Rate for 10

gallons per acre is 419 gpm. A dosage of 20 gallons per acre requires a Pump Rate of 837 gpm for the default Swath and Application Speed which is over the Max Pump Rate of 600 gpm. Resetting the Pump Rate to its Max with the default Swath and Application speed yields a dosage of 14.3 gallons per acre. The DC-4 discussion above regarding various dosages also applies to the DC-3. The DC-3 is able to make only one sortie on Day 1 applying 1200 gallons of dispersant to treat about 570 bbl of oil at a DOR of 1:20. Area covered is about 240 acres at 5 gallons per acre, about 120 acres at 10 gallons per acre, and about 84 acres at 14.3 gallons per acre.

C130A with internal tank from Coolidge: Note that all times are for the spill site in Louisiana (Central Time Zone). The C130A will cascade from Coolidge Municipal Airport to Stennis International Airport, a distance of 1131 NM (www.airnav.com, Microsoft Streets & Trips, and Google Earth are helpful tools). The C130A has a range with payload of 1400 NM so can make the cascade trip from home base to the staging airfield in one hop. Start taxi time is 1100 (0700 + 4) giving an adjusted UT of 2 hours on Day 1 (DMP2 Cascading assumes a 45 minute briefing at the staging site which also allows the C130A to refuel). The adjusted UT of 2 hours for the C130A will allow for 1 sortie on Day 1 with various possible dosages as discussed above. The Payload of 3250 gallons of dispersant will treat somewhat less than 1550 bbl of oil at a DOR of 1:20.

King Air from Stennis International: The spill site is beyond the range of the King Air in its normal configuration. However, Other Comments # 17 in the Beechcraft King Air 90A (BE-90A) Platform Reference specifies that the aircraft can carry a payload of 1955 lbs of dispersant with a maximum fuel load of 370 gallons and retain the same range and speeds as for no payload. Assuming a dispersant weight of 8.5 lbs/gallon gives a volume of 230 gallons. Start taxi time is 1100 which indicates a UT of about 7 hours. At a dosage of 5 gpa the King Air can deliver 2 payloads (460 gallons) within the UT. At the default Application Speed and Swath the maximum dosage is 6.8 gallons per acre and the total payloads within the UT remains 2.

Day 1 Summary. With 4 aircraft applying dispersant on the spill, there may be significant air control issues. One solution could be to stagger the arrival of the aircraft so that only one is on station at a time. Another possible solution is to fly race track patterns with 2 aircraft on station at a time – one spraying upwind while the other repositions on the opposite side of the race track pattern.

Dispersant used on Day 1:

C130A	–	3250	gallons from Coolidge
King Air	–	460	gallons from Stennis
DC-4	-	4000	gallons from Houma
DC-3	-	<u>1200</u>	gallons from Houma
Total		8910	gallons

For Day 2 and subsequent days, sunrise is at about 0630 and sunset is at about 1800. Each platform can have a different UT depending on the transit distance to the spill site and their respective transit speeds. Each could take off at a different time to check in with spotter aircraft at the spill site at sunrise. The following results assume the spill area

is of sufficient size so that each aircraft can operate independently on a separate section of the spill. Assume a pass length of 3 NM, a dosage of 5 gallons per acre, and bi-directional application. Working backwards from sunrise, subtract the taxi, takeoff time (Taxi, Land, Depart/2) and the transit time for each aircraft for the start of UT (start taxi time).

Platform	Taxi, Takeoff	Transit Time	Start Taxi Time	UT	Payloads	Gallons
DC-4	15 minutes	85 minutes	4:48 am	13.2 hr	3	6000
DC-3	15 minutes	98 minutes	4:35 am	13.5 hr	3	3600
C130A	15 minutes	45 minutes	5:28 am	12.6 hr	4	13000
King Air	3 minutes	72 minutes	5:13 am	12.8 hr	4	1400*

* See King Air Loading Chart - Payload of 350 gallons of Corexit 9500 at VFR
Endurance of 2.86 hr (time per sortie of 2.8 hr)

The total dispersant delivered each day for Day 2 and beyond is 24000 gallons. The total dispersant needed to keep all the aircraft fully operational for a 4 day period is 80,910 gallons.

3. Add EDAC Platform

You are an OSRO and wish to add a platform to DMP2. The following platform data have been verified and have been approved by the Coast Guard:

Pump Rate Maximum – 500 gallons per minute

Pump Rate Minimum – 40 gallons per minute

Swath Width – 65 feet

Swath Width Maximum – 80 feet

Swath Width Minimum – 50 feet

Application Speed – 150 knots

Application Speed Maximum – 150 knots

Application Speed Minimum – 150 knots

Transit Speed – 315 knots

Transit Speed Maximum – 315 knots

Transit Speed Minimum – 160 knots

Reposition Speed – 160 knots

U-Turn Time – 1 minute

Approach – 1 nautical mile

Departure – 1 nautical mile

Dispersant Load – 15 minutes

Fuel Load Time – 10 minutes

Max Op Time – 2.5 hours

Payload – 880 gallons

Taxi, Land, Depart – 20 minutes

Always Refuel? – Yes

Simultaneous loading of fuel and dispersant allowed

Cascade Parameters:

Range (No Payload) – 2000 nautical miles
 Range (With Payload) – 800 nautical miles
 Taxi Time (Takeoff) – 10 minutes
 Taxi Time (Landing) – 10 minutes
 Cascade Transit Speed – 315 knots
 Staging Area Briefing – 45 minutes

Platform	E120			<input type="button" value="Return"/>
	Max	Min		<input type="button" value="Print Platform"/>
Pump Rate	<input type="text" value="500"/>	<input type="text" value="40"/>	Gallons per Minute	<input type="button" value="Clear & Exit"/>
Swath Width	<input type="text" value="65"/>	<input type="text" value="80"/>	Feet	
Application Speed	<input type="text" value="150"/>	<input type="text" value="150"/>	Knots	Cascade Parameters
Transit Speed	<input type="text" value="315"/>	<input type="text" value="160"/>	Knots	Max Flight Range No Payload <input type="text" value="2000"/> Nautical Miles
Reposition Speed	<input type="text" value="160"/>		Knots	Max Flight Range With Payload <input type="text" value="800"/> Nautical Miles
UTurn Time	<input type="text" value="1"/>		Minutes	Taxi Time Landing <input type="text" value="10"/> Minutes
Approach	<input type="text" value="1"/>		Nautical Miles	Taxi Time Takeoff <input type="text" value="10"/> Minutes
Departure	<input type="text" value="1"/>		Nautical Miles	Cascade Transit Speed <input type="text" value="315"/> Knots
Dispersant Load Time	<input type="text" value="15"/>		Minutes	Staging Area Briefing <input type="text" value="45"/> Minutes
Fuel Load Time	<input type="text" value="10"/>		Minutes	
Max Operating Time	<input type="text" value="2.5"/>		Hours	Entries for the Cascade Parameters above are necessary if performing the optional Cascading computation
Payload	<input type="text" value="880"/>		Gallons	
Taxi, Land, & Depart	<input type="text" value="20"/>		Minutes	
Always Refuel?	<input type="text" value="Yes"/>		Yes or No	
All the above fields require an entry				

Name this platform “E120” and add to the DMP2. Calculate the EDAC for this platform within the COTP San Francisco zone using the Sonoma County Airport as the primary dispersant staging point. The EDAC is 3195 barrels.

<input type="button" value="Exit DMP2"/>	Aircraft Calculation Page	<input type="button" value="Print Page"/>	<input type="button" value="Documentation"/>
① Specify Scenario (UT, Transit Distance, Pass Length) Using a DOR of 1: 10			
Desired dispersant <input type="text" value="Dosage"/>	5.0 Gallons/Acre (46.8 Liters/Hectare)	Utilization Time (UT):	<input type="text" value="12"/> Hours
One Way Transit Distance:	<input type="text" value="94"/> Nautical Miles	Average Pass Length:	<input type="text" value="4"/> Nautical Miles
② Specify Platform			
E120 <input type="button" value="Edit"/>			
<input type="button" value="Double click to view Platform Reference"/>			
<input type="button" value="Add"/> <input type="button" value="Delete"/>			
Pump Rate: (Calculated) GPM	Max 500 Min 40		
Swath Width: <input type="text" value="65"/> Ft	----- 80 50		
Application Speed: <input type="text" value="150"/> Kts	----- 150 150		
Transit Speed: <input type="text" value="315"/> Kts	----- 315 160		
Reposition Speed: <input type="text" value="160"/> Kts			
U Turn Time: <input type="text" value="1"/> Min	Theoretical Dosage Range:		
Approach: <input type="text" value="1"/> NM	1.4 to 28.7 Gallons/Acre		
Departure: <input type="text" value="1"/> NM	13.4 to 268.1 Liters/Hectare		
Dispersant Load: <input type="text" value="15"/> Min	Calculated Pump Rate: 113 GPM		
Fuel Load Time: <input type="text" value="10"/> Min	One-way Transit Time: 18 Min		
Max Op Time: <input type="text" value="2.5"/> Hr	Areal Coverage Rate:		
Payload: <input type="text" value="880"/> Gal	22.7 Acres/Min 9.2 Hectares/Min		
Taxi, Land, Depart: <input type="text" value="20"/> Min	Time On Station/Sortie: 25.1 Min		
Always Refuel?: <input type="text" value="yes"/>	Spray Time/Sortie: 7.8 Min		
	Spray Time/Pass: 1.6 Min		
	# of Passes per Sortie: 4.9		
③ If Cascading, Specify Mobilization Time and Cascade Distance			
<input type="text" value=""/> Hr <input type="text" value=""/> <input type="text" value=""/>			
Adjusted Utilization Time:	<input type="text" value=""/> Hr	<input type="radio"/> With Payload	<input type="radio"/> No Payload
Range (No Payload):	2000 NM		
Range (With Payload):	800 NM		
Taxi Time (Takeoff):	10 Min	<input type="button" value="Clear"/>	
Taxi Time (Landing):	10 Min	<input type="button" value="Cascade"/>	
Cascade Transit Speed:	315 Kts		
Staging Area Briefing:	45 Min		
④ Calculate Performance			
<input checked="" type="radio"/> Bidirectional Loading of fuel and dispersant: <input type="radio"/> Unidirectional <input checked="" type="radio"/> Simultaneous <input type="radio"/> Separate			
<input type="button" value="Set EDAC"/> <input type="button" value="Calculate"/> <input type="button" value="Pie Chart"/>			
Max Transit Distance	274 Nautical Miles		
Time Per Sortie	1.3 Hr		
Payload deliveries/UT	7.62		
Dispersant Applied	6709 Gal 25394 Liters		
Oil Treated	1597 BBL 254.0 Cu M		
Total Area Covered	1342 Acres 543 Hectares		