Optimum Path Aircraft Routing System (OPARS)



Purpose



- The purpose of this presentation is to provide the student with an overview of the Optimum Path Aircraft Routing System (OPARS) for planning and executing extended range missions.
- Although follow-on Type/Model/Series training will introduce alternative fuel planning applications (e.g. JMPS, MilPlanner, PFPS), this presentation is served as an introduction to a system that can be utilized by any T/M/S.

Outline



- OPARS Overview
 - Purpose
 - Advantages/Disadvantages
 - Accessing OPARS
- OPARS Walkthrough
 - Pre-flight
 - In-flight
- Fuel Planning
- Summary

Purpose



- OPARS is a computerized flight planning network capable of forecasting the most fuel efficient altitude and flight path for a given mission.
- Tailored to meet individual mission requirements with regards to fuel, cargo, departure/arrival times, and others.
- Accessible via any CAC-enabled computer with internet access (personal computers included).



Advantages/Disadvantages

- Advantages
 - Optimum flight path
 - Proper pre-flight mission fuel planning IAW CNAF-M 3710
 - Provides Flight Information Region (FIR) / SUAS boundary crossing
 - Utilizes actual forecast winds if utilized within 72 hours of ETD, historical winds if outside of 72 hours from ETD.
- Disadvantages
 - Limited control over altitude / airspeed changes
 - Limited outputs
 - CAC required



OPARS - Access

- https://portal.fnmoc.navy.mil/oparsufs/index.html
- Link is additionally available from your flight planning springboard of choice:
 - baseops.net
 - cnatra.navy.mil/tw4/vt35 (Multi-Engine University)

Walkthrough



- The following slides will walk through a sample OPARS generation for the following aircraft/mission:
- Aircraft (T-44C):
 - Basic Operating Weight 6900lbs
 - Fuel load 2300lbs
- Mission:
 - Origin: KNGP Destination: KNPA Alternate: KPNS
 - Planned enroute diverts: KEFD, KCWF, KNEW
 - Proposed route of flight: KNGP COPAN V70 PSX J22 LCH J2 MUURY NPA KNPA
 - Departure Date/Time: 17 October 2020/1800Z
 - One instructor/one student with 50lbs personal equipment each, and 400lbs of maintenance equipment.

Walkthrough

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	By using this IS (which includes any device attached to this IS), you consent to the following conditions:	
	- The USG routinely intercepts and monitors communications on this IS for purposes including, but not limited to, penetration testing, COMSEC monitoring, network operations and defense, personnel misconduct (PM), law enforcement (LE), and counterintelligence (CI) investigations.	
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• Access OPARS using one of the links on the previous slides on a CAC-enabled computer with your card inserted. Click "Ok" on this page to proceed to the homepage.

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Homepage





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- This window should appear after you have selected "1 Standard Leg."
- All of the fields are entered here; however, we will go through what each of them are.



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- Aircraft Type: T44A
 - Self-explanatory. There is no option for T44C, because when the aircraft were converted to the "C," there were no performance characteristic changes to the aircraft.
 - You can see that the entire repository of DoD aircraft are listed in the drop-down menu for use for follow-on Type/Model/Series.
 - 10/17/2020 Update: OPARS will soon display "T44C" instead of "T44A."



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Operational Weight: 6900 (lbs)

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- This is derived from the information provided on an earlier slide. Most of the aircraft have a basic operational weight between 6800-6900 lbs, so 6900 is a conservative estimate for planning.
 - · Remember that operational weight does NOT include fuel or payload!

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- Drag Count: 0.0
 - The T-44 does not have any external equipment that increases our base drag count (or index). Items that would increase this drag count would include defensive systems, external fuel tanks, refueling pods, even matte paint!
 - Drag count modifications from zero will be published in follow-on T/M/S NATOPS flight manuals.



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RVSM – Deselected

- The T-44C is not equipped for flight in Reduced Vertical Separation Minimum (RVSM) airspace, nor are our aircrews trained for operating in such environments. Additionally, many of the aircraft may be incapable of maintaining a cabin altitude below 10,000' at or above FL290.
- For additional information on RVSM, see FAA Advisory Circular 91-85B.



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 The T-440 assumes 	conly has one published climb profile incorporate the aircrew is utilizing the cruise climb schedule of	ted into OPARS. This of:	

Sea level to 10,000 feet – 150 KIAS	All climbs made at:
10,000 to 20,000 feet – 130 KIAS	Cruise Climb Power
20,000 to 25,000 feet - 120 KIAS	
Above 25,000 feet – 110 KIAS	



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- Cruise Maximum Cruise (or Maximum Range)
 - Advantages/Disadvantages/Differences between Maximum Cruise and Maximum Range will be discussed on the next slide. For the purpose of this example OPARS, we are planning to fly the mission at Maximum Cruise.



Max Cruise vs. Max Range

- Maximum Cruise
 - The maximum engine power setting approved for cruise and is not time limited.
 - Least conservative
 - Limited by ITT/Torque
 - Advantages:
 - Arrive at destination quicker
 - Ability to "revert" (slow to) to maximum range if weather is not as forecast to land at destination with required fuel.
 - Disadvantages:
 - Not fuel efficient
 - Over time, degrades turbine life

• Maximum Range

- The engine power setting for cruising maximum distance.
 - Most conservative
 - Different IAS for changes in weight, temperature, winds, etc.
- Advantages:
 - Minimize fuel spent per nautical mile traveled over the ground.
- Disadvantages:
 - Longer enroute time
 - No cruise profile to slow to if not able to arrive at destination with required fuel.

Recommendation: Plan routes utilizing OPARS at Maximum Cruise and Maximum Range to compare fuel consumption enroute between the two, and determine which performance profile will be better suited to your mission.



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• Descent – Normal

The T-44C only has one published descent profile incorporated into OPARS. This
assumes the aircrew is utilizing the descent schedule of:

30,000 to 25,000 feet – 150 KIAS	All descents made at:
25,000 to 20,000 feet – 160 KIAS	Torque: 400 lbs. ft
20,000 to 10,000 feet – 190 KIAS	Propellers: 1900 rpm
10.000 to sea level – 200 KIAS	



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Options: Efficiency Factor – 99%

 The T-44C NATOPS flight manual does not have a published engine efficiency difference from standard. Therefore, since is impossible for our engines to be consistently operating at 100-percent efficiency, 99% is utilized as a conservative estimate.

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Cargo Change Options: Cargo Change Entered – 500 (lbs)

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 Since our sample mission included that each pilot had personal equipment weighing approximately 50lbs and maintenance equipment weighing approximately 400lbs, we incorporate that into our "Cargo Change."





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- This is the tab that should open.
- Routes are input into OPARS either fix-to-fix, fix-to-fix via an airway, or an OPARS "optimized" route.



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- Direct means directly to the next fix.

 - Connect to Jet Route will connect you from the previous fix listed, to an airway (high or low altitude) connected to that fix.
 - Optimize will utilize OPARS-derived weather information to choose the most optimal route from your origin to destination. (Using airways, fixes, and/or lat/longs).

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These are the only three options that will be covered in this brief.



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- The four options at the top represent the different points you are trying to get to on your flight plan.
 - <u>Waypoint/Navaid</u> is for fixes/NAVAIDS (e.g. JETTY, NGP, NQI)
 - to POA (Point of Arrival) is the **LAST** option you will select after inputting your entire route of flight.
 - <u>Latitude/Longitude</u> is for inputting lat/longs utilizing the degrees/minutes/tenths format. (Remember, the T-44C FMS accepts lat/longs utilizing the format degrees/minutes/decimal minutes, or DD.MM.M)
 - <u>Bearing/Range</u> is for inputting a bearing/range from a NAVAID (e.g. NGP/070/54 DME)



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- This box will display every point in the flight plan you have entered thus far.
- We will input the flight plan provided in the example:
 - KNGP COPAN V70 PSX J22 LCH J2 MUURY NPA KNPA
- To start, ensure the "Direct" option is selected, and click "Waypoint/Navaid."



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○ Connect to Jet Route ○ ○ Confluctuos Jet Routes - SR ○ ○ Optimize Information: Search Types: ○ North Attantic: Rhumb Line ○ Rhumb Line Ø Direct to Waypoint/ Navaid Ø Optimize North Attantic ○ Rhumb Line Ø Direct to Waypoint/ Navaid Ø Current OPARS Route Ø Direct to Waypoint/ Navaid Ø Commod Line Ø Birdet States Ø O Mel Search Country Code Comma delimited) Find		Direct	Waypoint / Navaid	to POA (Point of Arrival)	nt (select button) Latitude / Longitude	Bearing / Range	
		2onnet to Jet Route 2ontinuous Jet Routes - \$J Dn//off Jet Routes - \$R Optimize vorth Atlantic Rhumb Line Current OPARS Route ct to Waypoint / Navaid	Waypoint/Navaid Information: 1 Id [COPAN 1 Name (COPAN 1 Latitude [28.06N 1 Longitude [97.2W 1 Type [intersection 1 Country [United States 1 ICAO [KZ 1 Level LOW 1	Jearch Types: Intersection VOR VORTAC VORTAC VORTAC VORTAC NOB-DME NOB-DME DMB-DME Search Country Code COPAN Intersection COPAN Inters	ypoints: Show Find POD FOA Ctry Name ection US COPAN	v Waypoints near List Map List Map	

- Select the fix that you are searching for. Note the country and description of the fixes that appear, since some fixes appear more than once throughout the world (e.g. CORAL appears in numerous countries).
- Click, "Select" at the bottom right to add this point to your flight plan.



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			Manual Routing			
	-		-			
	Route Type (select radio)	KNGP - COR	Destination Poin	t (select button)		
	Direct	Waypoint / Navaid	to POA (Point of Arrival)	Latitude / Longitude	Bearing / Range	
	Connect to Jet Route					
	On/Off Jet Routes - \$B					
	O Optimize					
	O North Altantic					
	Rhumb Line					
	Current OPARS Route					
	D,COPAN D,COPAN					
	Clear All Clear Last					
	Show Route					
		Cancel		Done		
	L					

- OPARS will send you back to the main route page, with COPAN now added in the current OPARS route.
- Next, we'll add the airway to connect us to the next fix of PSX. To do this, click "Connect to Jet Route."

INCLASSIE



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			UNCLASSIFIED				
			Manual Routing				
		KNGP - COF	PUS CHRISTINAS to KNPA - PE	NSACOLA NAS			
	Route Type (select radio)		Destination Point	(select button)			
	O Direct	Waypoint / Navaid	to POA (Point of Arrival)	Latitude / Longiti	ude Be	aring / Range	
	Connect to Jet Route Continuous Jet Routes - \$J	Connect to a Jet Route		-11	0W-105W-100W -95W -90V	V -85W -80W -75W	
	 On/Off Jet Routes - \$R Optimize 	2 Jet Routes w/ COPAN Selected	Jet Route: V70 Selected ments: MTY-ACREW V Jet Route	Values V70-EW-L		40N 35N	
	O North Altantic	Direction	O Unner Alt Exiting	PSX.KZ.US.2		CONT DE	
	O Rhumb Line	Level	LOW Lower Alt. W		Participant and a second se	30N	
	Current OPARS Route	Select an Exit Waypoint (62 Waypoint	ts on V70) Waypoint Entering	Exiting	0 8	25N	
	Connect to Jet Route	COPAN 0 KZ US COPAN BETZY 0 KZ US BETZY	Ident COPAN P	X			
	DICOPAN	BOINT 0 KZ US BOINT	Name COPAN P	LACIOS		20N	
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		ECHOE 0 KZ US ECHOE	Country United States U	ited States			
		DELVE 0 KZ US DELVE	Code Intersection V	ORTAC			
		BOLOS 0 KZ US BOLOS	Lat 28.06N 28	.76N			
			Lon 97.20W 96	.31W			
				_			
	Clear All Clear Last	Cancel	Select				
	Show Route			97.			

- This window will appear after selecting "Connect to Jet Route."
- Click the airway you are trying to connect to (V70) followed by an exit waypoint (PSX).
- Once you are done, click "Select."



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		UNCLASSIFIED			
		Manual Routing			
	KNGP - CORE	PUSCHRISTINAS to KNPA P	ENSACOLANAS		
Route Type (select radio)	inter octi	Destination Poin	t (select button)		
Direct	Waypoint / Navaid	to POA (Point of Arrival)	Latitude / Longitude	Bearing / Range	
O Connect to Jet Route					
Continuous Jet Routes - \$J					
On/Off Jet Routes - \$R					
O Optimize					
O North Altantic					
O Rhumb Line					
Current OPARS Route					
V70,PSX					
D,COPAN					
V70,PSX					
Clear All Clear Last					
Show Route					
Language and the second se					

- Once again you'll be taken back to the main routing screen.
- Input the remainder of your route, followed by clicking the option "to POA (Point of Arrival)" at the top. Click "Done" to be taken back to OPARS.

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∼ (U) OPARS (UNCLASSIFIED) × []		
	UNCLASSIFIED surging with server	
OPARS Optimum Path Aircraft Routing System	Symony with Server	User ID: ODGERS.MATTHEW.MILTON.1388066675 & Time: Thu, 16 Jul 2020 17:56:34 UTC
File Requests Flight Plans Utilities Links Help		
General Standardien 1	Flight Plan Request s	Utilifes: Airports Waypoints Jet Routes Airspace ave Flight Plan Run Flight Plan Reset Form
Aircraft Routing Fuel Divert Altitude Help	1	
Point of Departure (POD) Point of Arrival (POA)	a 	
Airport ICAO Search: Airport ICAO Search:		
Airport Lat/Lon Airport Lat/Lon		
Navaid Rng/Brng Navaid Rng/Brng		
Airport: KNGP - CORPUS CHRISTI NAS Show Airport: KNPA - PENSACOLA NAS Show		
Manual Graphic Canned Keyboard Flight Date and Time Delay at (POA) Route: D_cOpAt V70 PAR 122,4UUSY D_NPA Canned Keyboard O Arrival Hours Save As Canned Show Route GMT Time (hhmm) set		
You'll be taken bac OPARS with your r left. Click on "Fuel"	k to the original "Routing" page on oute of flight now displayed in the bottor ' to proceed.	n
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~ (U) OPARS (UNCLASSIFIED) × []		
	UNCLASSIFIED	
COPARS Optimum Path Aircraft Routing System	syncing with server	User ID: ODGERS.MATTHEW.MILTON.1388066675 OPARS Server Date & Time: Thu, 16 Jul 2020 18:28:05 UTC
File Requests Flight Plans Utilities Links Help		
Canard Standard Leg 1	Flight Plan Request	Utilites: Airports Waypoints Jet Routes Airspace Save Flight Plan Run Flight Plan Reset Form
Aircraft Routing Fuel Divert Altitude		
Help		
Arrival Alternate and Divert Airports		
Enter ICAO Search Database		
Get Alternate Alternate Airport: KPNS - PENSACOLA INTL Clear		
Get Divert #1 Divert Airport #1: KEFD - ELLINGTON Clear		
Get Divert #2 Divert Airport #2: KCWF - CHENNAULT INTL Clear		
Get Divert #3 Divert Airport #3: KNEW - LAKEFRONT Clear		

- Input your alternate ICAO, and click outside of the box. The name of the airport should populate in the field.
- Next, you can input up to three divert airfields along your route of flight. This is more pertinent for oceanic flights where you do not have airports along your entire route of flight, but can still be utilized for situational awareness here.
- Click "Altitude" to proceed.

Altitude

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U) OPARS (UNCLASSIFIED) 🗙 🎦	_		UNCLASSIFIED	
~ODAD C			syncing with server	User ID: ODGERS.MATTHEW.MILTON.13880666
OPARS Optimum	n Path Aircraft Rou	liste Holp		OPARS Server Date & Time: Thu, 16 Jul 2020 18:28:55 UTC
File Requests Flight Pla	ans Utilitles	сшку пер	Flight Plan Request	Utilites: Airpor 2 Waypoints Je: Routes Airspace
General Standard Leg 1				Save Flight Plan Run Flight Plan Reset Form
Aircraft Routing Fuel Dive	Altitude			
Altitude		Weather		
Upper 23000 (ft)	Initial Cruise	(ft) Wind Factor (knots)		
Lower (ft)	Arrival	(ft) Temperature Deviation (°C) from Standard		
Pressure Loss (ff)				
	•	OPARS allows you to input	t various options for altitude selecti	ons,
		out this brief will only cover	r two:	
		······································		
		 Upper: Allows you to set an upper-lim 	it altitude for the aircraft to fly the route at.	
		 Lower: Allows you to set a lower-limit 	altitude for the aircraft to fly the route at.	
	•	Recommendation: Only set an '	"Upper" altitude of something the aircraft	t would
		be able to maintain based on la	ist reported maximum pressure differenti	al, and
		OPARS will select the most opt	imum altitude based on temperature, wir	nds, and
		aircraft performance from sea le	evel up to and including the upper altitud	e.
		•		
		Once complete, click "Run Fligh	nt Plan" at the top right.	

X

Submit Page

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(-) (-) 🚯 https://portal.fnmoc.navy.mil/opars-ufs/cgi-bin/requests/verify_request.cgi			- ≞ ¢	Search	P- 份 ☆ 戀 🥴
			UNCLASSIFIED		
		Veri	fy and Submit Flight Plan Request		
			Flight Plan Parameters		
			legS01 - Routing		
Route	Input: D,WP,COPAN,KZ,U	Point of Depart S,0,0 V70-EW-L,WP,PSX,KZ,US,2,0	ture: AP,KNGP,,,, Point of Arriva: AP,KNPA,,, 0 J22-EW-H,WP,LCH,KZ,US,2,0 J2-EW-H,WP,MUURY,KZ,US,0,0 D,WP,NPA,KZ,US,3	3,0 D,ENDROUTE	
			Input Parameters		
	Tag	Description	Value		
	useridopars	User Id	ODGERS.MATTHEW.MILTON.1388066675		
	sid		80c0e3f3f597af86		
	userid		ODGERS.MATTHEW.MILTON.1388066675		
	real_userid		ODGERS.MATTHEW.MILTON.1388066675		
	pilot	*Pilot Name	MOONSHOES		
	email_address	*Email Address	EMAIL@NAVY.MIL		
	unit_name	*Unit Name	VT-35		
	acft_call_sign	*Aircraft Call Sign	STGRY36		
	num_legs	Number of Flight Legs	1	~	
	format	*Output Format	NFP		
	Confirm:	Submit Flight Plan	Reconsider: Edit Current Request		
			LINCLASSIFIED		

 Click "Submit Flight Plan" to proceed. Remember, OPARS is a selfcontained system, so you are not actually submitting a flight plan to ATC. You will still need to file a DD-1801 flight plan with base operations.



Results







- (U) OPARS (UNCLASSIFIED) (in OPARS - Flight Plan List 🛛 🕹 📑			
	UNCLASSIFIED		
	Display Text Flight Plan Output		
For ○ €)	NEP File: 20201017161824.sml: 17 OCT 2020: KNGP-KNPA: MCONSHOES u2020109014637.xml: 09 OCT 2020: KNGP-KNPA: MCONSHOES u2020109014637.xml: 09 OCT 2020: KNGP-KNPA: MCONSHOES u2020109014157.xml: 09 OCT 2020: KNGP-KNPA: MCONSHOES u2020109014157.xml: 09 OCT 2020: KNGP-KNPA: MCONSHOES u2020109014157.xml: 09 OCT 2020: KNGP-KNPA: MCONSHOES u2020109014157.xml: 09 OCT 2020: KNGP-KNPA: MCONSHOES u2020005210901.xml: 13 AUG 2020: KNGP-KNPA: MCONSHOES u2020091132012.1xml: 13 AUG 2020: KNGP-KNPA: MCONSHOES u2020090513120112.xml: 13 AUG 2020: KNGP-KNPA: MCONSHOES u2020090513120812.xml: 06 AUG 2020: KNGP-KNPA: MCONSHOES u2020090513120812.xml: 06 AUG 2020: KNGP-KNPA: MCONSHOES u2020090513120812.xml: 06 AUG 2020: KNGP-KNPA: MCONSHOES u2020090513120812.xml: 06 AUG 2020: KNGP-KNPA: MCONSHOES u20200905132081.xml: 06 AUG 2020: KNGP-KNPA: MCONSHOES u20200905132081.xml: 06 AUG 2020: KNGP-KNPA: MCONSHOES u20200905132018.xml: 06 AUG 2020: KNGP-KNPA: MCONSHOES u20200905132018.xml: 06 AUG 2020: KNGP-KNPA: MCONSHOES u20200905132018.xml: 06 AUG 2020: MGP-KNPA: MCONSHOES	Output Style: KC130) Overwater Log Print Ammy Fixed Wing - Prince/Russell Ammy Fixed Wing Print - Price/Russell Ammy Fixed Wing Print - Price/Russell Receiver STBATRAC Card KC130) Origine Ext Flight Log Print Single Engine Let Flight Log Print Indef Engine Let Flight Log Print T-44C Fue Log Print Print Plan	

T-44C Fuel Log

UNCLASSIF FLIGHT PLA BASED UPC BASED UPC I FG 01 - ST ACFT TYPE CRUISE TYPE CRUISE TYPE DESCENT T NON-RVSM PLANNED F	IED IN FOI IN IN ANDA : T44A PE: E: YPE: AUTH OR FI	R MOO 2020 0800 RD KN TNF MA NO NO IORIZE	NSHO 101706 T2020 GP TC XIMUN RMAL RMAL CD AIR	ES 5 WEAT 9 - 04NO 9 KNPA M CRUISE CRAFT	THER DA	CO ATA AEI :0 EFI	MPUTED RONAUTI 17 F: 99 FU SE FUGH	17OCT20 ICAL DATA OCT2020 JEL: JP-5	20 1618Z		
	FUEL	TIME	DIST	ARRIVE	RAMP	LAND	CARGO	OPNLWT			
									TIME AND FUEL ANALYSIS	TIME	Ī
POA	1280	02/30	586	2030Z	9600	8320	500	6800	1. ENROUTE	02/30	1
									2. RESERVE (10%)	00/15	1
									3. ENROUTE + RESERVE (1+2)	2/45	1
									4. ALTERNATE (+10%)	00/03	T
ALT-KPNS	29	00/03	10	20347					5. HOLDING (20MIN, 125#)		1
ALINANO	25	00/03	10	20342					6. APPROACH and LANDING	00/10	1
									7. IDENTIFIED EXTRA FUEL		Ī
RES	991	01/22							8. TOTAL FLAPS UP (3+4+5+6+7)	2	I
									9. TAXI and RUNUP		1
									10. PLANNED RAMP (8+9)		1
									11. ACTUAL TAKEOFF	TIME 02/30 00/15 VE 2/45 00/03 579 00/10 +9) TRA RA	
тот	2300	03/56							12. UNIDENTIFIED EXTRA (8-11)		Ī
									13. RECOVERY FUEL (4+5+60r530#)		
FUEL BIAS:	60	DBIAS	: 0 /	ABIAS: 0	IBIAS	: 0					

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- All of your previously ran OPARS flight plans will display starting from most recent at the top of the window on the left. On the right side, you can select from various output styles. For this brief, we will use the T-44C Fuel Log format.
 - You can select T-44C Fuel Log to view the output in the OPARS window, or select T-44C Fuel Log Print to display a printer-friendly version.
 - Once you have selected an output style, click "Display Plan."

STINGRAYS

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)) OPARS (UNCLASSIFIED) × ~ OPARS - Flight Plan List × 📑			
	UNCLASSIF	IED	
	Display Text Flight P	Plan Output	
	Format: NFP File: 02021017151824.sml; 17 OCT 2020: KNGP-KNPA: MOONSHOES 02021009014637.xml; 09 OCT 2020: KNGP-KNPA: MOONSHOES 02021009014637.xml; 09 OCT 2020: KNGP-KNPA: MOONSHOES 02021009014637.xml; 09 OCT 2020: KNGP-KNPA: MOONSHOES 02021009014555.xml; 26 AUG 2020: KNGP-KNPA: MOONSHOES 020200051255.xml; 25 AUG 2020: KNGP-KNPA: MOONSHOES 020200812555.xml; 26 AUG 2020: KNGP-KNPA: MOONSHOES 020200812121.xml; 13 AUG 2020: KNGP-KNPA: MOONSHOES 0202008012121.xml; 13 AUG 2020: KNGP-KNPA: MOONSHOES 0202008012555.xml; 26 AUG 2020: KNGP-KNPA: MOONSHOES 020200802121.xml; 13 AUG 2020: KNGP-KNPA: MOONSHOES 02020080212255.xml; 26 AUG 2020: KNGP-KNPA: MOONSHOES 0202008061320121.xml; 16 AUG 2020: KNGP-KNPA: MOONSHOES 02020080613201300.xml; 66 AUG 2020: KNGP-KNPA: MOONSHOES 020200806132018.xml; 66 AUG 2020: KNGP-KNPA: MPA: MOONSHOES	Output Style: KC1301 Overnater Log KC1301 Overnater Log Print Army Fixed Wing - Price/Russell KC1301 STRATRAC Tanker Card Receiver STRATRAC Card Print Receiver STRATRAC Card Print Single Engine Jet Flight Log Single Engine Jet Flight Log Print Fride Vind Print Remove Plan Print Plan	
	NFP FLIGHT PLAN	I OUTPUT	
	T-44C Fuel Log Print	^	
	UNCLASSIFIED FLIGHT PLAN FOR MOONSHOES COMPUTED 170CT2020 AT 16182 BASED UPON 0220101706 VEATHER DATA BASED UPON 080CT3020 - 04N0V2020 AEBONAUTCAL DATA LEGOI - STANDARDE, NEMED TO KIPA OI TACTOT200		
	ACFT TYDE TAATNIF DORAG 10 EFF; 99 FUEL JP-5 CRUISE: MAXIMUK OKUISE CLIMB : NORMAL DESCENT: NORMAL DESCENT: NORMAL NOI-KVSM 4JTHORIZED JRCCAAFT NOI-KVSM 4JTHORIZED JRCCAAFT FUEL THE DIST ARRIVE RAMP LAND CARGO OWN.WT PUEL THE DIST ARRIVE RAMP		
	FUEL BLASS TO DEBLASS TO ABLASS TO BBLASS TO ROUTING USED FOR THIS LEG KINGP COPAN V70 PSX 322 LCH 32 MUURY NPA KNPA	,	
	Download / Print	>	
• Tł	nis is what the "T-44C Fuel Lo	g Print" will display. To print a	

INCLASS



https://portal.fnmoc.navy.mil/opars-ufs/dynamic/ODGERS.MATTHEW.MILTON.1388066675/flightpl... × T-44C Fuel Log Print UNCLASSIFIED FLIGHT PLAN FOR MOONSHOES COMPUTED 170CT2020 AT 1618Z BASED UPON 2020101706 WEATHER DATA BASED UPON 080CT2020 - 04NOV2020 AERONAUTICAL DATA LEG01 - STANDARD: KNGP TO KNPA ON 170CT2020 ACFT TYPE T44ATNF DRAG: 0 EFF: 99 FUEL: JP-5 CRUISE : MAXIMUM CRUISE CLIMB : NORMAL DESCENT: NORMAL NON-RVSM AUTHORIZED AIRCRAFT PLANNED FOR ETD 1800Z INITIAL CRUISE FLIGHT LEVEL 170 FUEL TIME DIST ARRIVE RAMP LAND CARGO OPNLWT 1280 02/30 586 2030Z 9600 8320 500 POA 6800 ALT-KPNS 29 00/03 10 2034Z RES 991 01/22 TOT 2300 03/56 FUEL BIAS: 60 DBIAS: 0 ABIAS: 0 IBIAS: 0 ROUTING USED FOR THIS LEG KNGP .. COPAN V70 PSX J22 LCH J2 MUURY .. NPA .. KNPA CARGO WEIGHT: 500 TIME AND FUEL ANALYSIS TIME FUEL | 1. ENROUTE 02/30 1280 | 2. RESERVE (10%) 00/15 128 <

This window will appear after clicking "Download/Print." Right click anywhere inside the window, and select "Print Preview"



• On the print preview window, click on the settings icon.



Paper Options	Margins	(inches)	
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Change fort			

 Change the settings to reflect the image above in order to condense the information onto a kneeboard-sized sheet of paper. Click "Ok" when finished.



Print Preview	×
A A A A A A A A A A A A A A A A A A A	0
+	* +
FLIGHT FLAN FOR MOONSHOES COMPUTED 170CT2020 AT 16182 BASED UPON 2020101706 WEATHER DATA BASED UPON 2020101706 WEATHER DATA LEGGI - STANDARD: KNGP TO KNFA ON 170CT2020	
ACTT TIPE TAGRINE DEAL: 0 EFF: 95 FUEL: JF-5 CRUISE : MORMAL DESCENT: NORMAL NON-RVSM AUTHORIZED AIRCRAFT FLANNED FOR ETD 1800Z INITIAL CRUISE FLIGHT LEVEL 170	
FUEL TIME DIST LRAIVE RAMP LAND CLRGO OPNINT FOA 1280 02/30 586 20302 9600 8320 500 6800 LIT-KENS 25 00/03 10 20342 820 500 6800 RES 991 01/22 10 20342 100 10	
FUEL BIAS: 60 DBIAS: 0 ABIAS: 0 IBIAS: 0 ROUTING USED FOR THIS LEG HNGF COFAN V70 FSX J22 LCH J2 MUURY NFA KNFA	
TINE AND FUEL ANALYSIS TIME FUEL	
1. ENROUTE 02/30 1280 2. RESERVE (104) 00/15 128 3. ENROUTE + RESERVE (1+2) 02/45 1408 4. ALTERNATE (+104) 00/03 32 5. HOLDING (20MIN, 1234) 5.0000 128	
10. AFFAGAR AGD SANDAG 10/10 123 17. IDENTIFIED EXTRA FUEL 123 18. TOTAL FLAPS UP (3+473+677) 13 19. TAXI AND RUNUP	
(13. RECOVERY FUEL (4+5+6or530#)	
P <u>ag</u> e 1 of 3	

• Your form will now look like this. Lastly, change the scale of the form from "Shrink To Fit" to "70%"





 Now the form will be small enough to print on half of an 8.5x11" sheet of paper for use on a kneeboard.



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T-44C Fuel Log Print

UNCLASSIFIED FLIGHT PLAN FOR MOONSHOES COMPUTED 170CT2020 AT 1618Z

BASED UPON 2020101706 WEATHER DATA BASED UPON 080CT2020 - 04NOV2020 AERONAUTICAL DATA LEG01 - STANDARD: KNGP TO KNPA ON 170CT2020

ACFT TYPE T44ATNF DRAG: 0 EFF: 99 FUEL: JP-5 CRUISE : MAXIMUM CRUISE CLIME : NORMAL DESCENT: NORMAL NON-RVSM AUTHORIZED AIRCRAFT PLANNED FOR ETD 1800Z INITIAL CRUISE FLIGHT LEVEL 170

FUEL TIME DIST ARRIVE RAMP LAND CARGO OPNLWT POA 1280 02/30 586 2030Z 9600 8320 500 6800 ALT-KPNS 29 00/03 10 2034Z RES 991 01/22 TOT 2300 03/56

FUEL BIAS: 60 DBIAS: 0 ABIAS: 0 IBIAS: 0

ROUTING USED FOR THIS LEG KNGP .. COPAN V70 PSX J22 LCH J2 MUURY .. NPA .. KNPA

CARGO WEIGHT: 500		
TIME AND FUEL ANALYSIS	TIME	FUEL
1. ENROUTE	02/30	1280
2. RESERVE (10%)	00/15	128
3. ENROUTE + RESERVE (1+2)	02/45	1408
4. ALTERNATE (+10%)	00/03	32
5. HOLDING (20MIN, 125#)	1 1	
6. APPROACH AND LANDING	00/10	125
7. IDENTIFIED EXTRA FUEL	1 1	
8. TOTAL FLAPS UP (3+4+5+6+7)	1 1	
9. TAXI AND RUNUP		60
10. PLANNED RAMP (8+9)		
11. ACTUAL TAKEOFF]	
12. UNIDENTIFIED EXTRA (8-11)		
13. RECOVERY FUEL (4+5+6or530#)		530
	1	

This is the output of the T-44C Fuel Log form.

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T-44C Fuel Log Print			
UNCLASSIFIED FLIGHT PLAN FOR MOONSHOES COM	IPUTED 170CT20	20 AT 1618Z	
BASED UPON 2020101706 WEATHER DATA BASED UPON 080CT2020 - 04NOV2020 A LEG01 - STANDARD: KNGP TO KNPA ON	A AERONAUTICAL D N 170CT2020	ATA	
ACFT TYPE T44ATNF DRAG: 0 CRUISE : MAXIMUM CRUISE CLIME : NORMAL DESCENT: NORMAL NON-RVSM AUTHORIZED AIRCRAFT PLANNED FOR ETD 18002 INITIA	EFF: 99 AL CRUISE FLIG	FUEL: JP-5 HT LEVEL 170	
FUEL TIME DIST A POA 1280 02/30 586 ALT-KPNS 29 00/03 10 RES 991 01/22 10 TOT 2300 03/56 10	ARRIVE RAMP 2030Z 9600 2034Z	LAND CA 8320	RGO OPNLWT 500 6800
FUEL BIAS: 60 DBIAS: 0 ABIAS: ROUTING USED FOR THIS LEG KNGP COPAN V70 PSX J22 LCH J2 M	0 IBIAS: 0 MUURY NPA .	. KNPA	
CARGO WEIGHT: 500		1	
TIME AND FUEL ANALYSIS	TIME	FUEL	
1. ENROUTE 2. RESERVE (10%) 3. ENROUTE + RESERVE (1+2) 4. ALTERNATE (+10%) 5. HOLDING (20MIN.125#)	02/30 00/15 02/45 00/03	1280 128 1408 32	
6. APPROACH AND LANDING 7. IDENTIFIED EXTRA FUEL 8. TOTAL FLAPS UP (3+4+5+6+7)	00/10	125	
9. TAXI AND RUNUP 10. PLANNED RAMP (8+9) 11. ACTUAL TAKEOFF 12. UNIDENTIFIED EXTRA (8-11)	i i	60 	
13. RECOVERY FUEL (4+5+6or530#)_		530	

- This is the output of the T-44C Fuel Log form.
- This is all of the information we entered into the first few windows of OPARS.



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🖉 https://portal.fnmoc.navy.mil/opars-ufs/dynamic/ODGERS.MATTHEW.MILTON.1388066675/flightplans/u2 - I... 🦳 🗌

T-44C Fuel Log Print

UNCLASSIFIED FLIGHT PLAN FOR MOONSHOES COMPUTED 170CT2020 AT 1618Z

BASED UPON 2020101706 WEATHER DATA BASED UPON 080CT2020 - 04NOV2020 AERONAUTICAL DATA LEG01 - STANDARD: KNGP TO KNPA ON 170CT2020

ACFT TYPE T44ATNF DRAG: 0 EFF: 99 FUEL: JP-5 CRUISE : MAXIMUM CRUISE CLIMB : NORMAL DESCENT: NORMAL NON-RVSM AUTHORIZED AIRCRAFT PLANNED FOR ETD 18002 INITIAL CRUISE FLIGHT LEVEL 170

	FUEL	TIME	DIST	ARRIVE	RAMP	LAND	CARGO	OPNLWT
POA	1280	02/30	586	2030Z	9600	8320	500	6800
ALT-KPNS	29	00/03	10	2034Z				
RES	991	01/22						
TOT	2300	03/56						

FUEL BIAS: 60 DBIAS: 0 ABIAS: 0 IBIAS: 0

ROUTING USED FOR THIS LEG KNGP .. COPAN V70 PSX J22 LCH J2 MUURY .. NPA .. KNPA

CARGO WEIGHT: 500			
TIME AND FUEL ANALYSIS	TIME	FUEL	
1. ENROUTE	02/30	1280	-
2. RESERVE (10%)	00/15	128	
3. ENROUTE + RESERVE (1+2)	02/45	1408	
4. ALTERNATE (+10%)	00/03	32	
5. HOLDING (20MIN,125#)	1 1		
6. APPROACH AND LANDING	00/10	125	
7. IDENTIFIED EXTRA FUEL	1 1		
8. TOTAL FLAPS UP (3+4+5+6+7)	1		
9. TAXI AND RUNUP		60	
10. PLANNED RAMP (8+9)			
11. ACTUAL TAKEOFF			
12. UNIDENTIFIED EXTRA (8-11)			
13. RECOVERY FUEL (4+5+6or530#)	_!1	530	
- S	4.0		

- This is the output of the T-44C Fuel Log form.
- This is all of the information we entered into the first few windows of OPARS.
 - This is an overall snapshot of time/fuel/distance to your point of arrival (POA or destination), alternate, and the reserve that you will have remaining overhead your alternate.



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🖉 https://portal.fnmoc.navy.mil/opars-ufs/dynamic/ODGERS.MATTHEW.MILTON.1388066675/flightplans/u2 - I... 🦳 🗌

T-44C Fuel Log Print

UNCLASSIFIED FLIGHT PLAN FOR MOONSHOES COMPUTED 170CT2020 AT 1618Z

BASED UPON 2020101706 WEATHER DATA BASED UPON 080CT2020 - 04NOV2020 AERONAUTICAL DATA LEG01 - STANDARD: KNGP TO KNPA ON 170CT2020

ACFT TYPE T44ATNF DRAG: 0 EFF: 99 FUEL: JP-5 CRUISE : MAXIMUM CRUISE CLIMB : NORMAL DESCENT: NORMAL NON-RVSM AUTHORIZED AIRCRAFT PLANNED FOR ETD 18002 INITIAL CRUISE FLIGHT LEVEL 170

FUEL TIME DIST ARRIVE LAND CARGO OPNLWT RAMP 1280 02/30 586 2030Z 9600 8320 500 6800 POA ALT-KPNS 29 00/03 10 2034Z RES 991 01/22 TOT 2300 03/56

FUEL BIAS: 60 DBIAS: 0 ABIAS: 0 IBIAS: 0

ROUTING USED FOR THIS LEG KNGP .. COPAN V70 PSX J22 LCH J2 MUURY .. NPA .. KNPA

	LOGT
1 02/30 1	1280
i 00/15 i	128
02/45	1408
00/03 1	32
i i	
00/10	125
i i	
1	
	60
]i	
	530
	_ 02/30 00/15 02/45 00/03 00/10

- This is the output of the T-44C Fuel Log form.
- This is all of the information we entered into the first few windows of OPARS.
- This is an overall snapshot of time/fuel/distance to your point of arrival (POA or destination), alternate, and the reserve that you will have remaining overhead your alternate.
- This box, you can use during the preflight planning stage to determine if you meet the CNAF-M 3710 and SOP required fuel minimums for the performance profile you have calculated.



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TO	ALT	WIND	T/C	TAS	LEG TIME	IND E	FUEL-L	PLAN RMNG	PLAN FF	TIME RMNG	REMARKS
TIME	SAT	DFT	M/C	G/S	LEG DIST	IND E	TUEL-R	TOT RMNG	TOT FF	DIST RMNG	
KNGP	10	00000	***	***	00/01			2240	*****	02/29	
00/01	013	00	***	***	1				2 99	_ 586	
COPAN	125	19511	12	170	00/07			2154	697	02/22	
00/08	006	00	9	184	23	3. 		8		563	
TOC	170	21510	54	166	00/04	8	15	2112	574	02/17	
00/13	-03	00	51	174	13	<u>.</u>	0	6		550	
BETZY	170	22010	54	237	00/01	~		2097	594	02/16	
00/14	-03	00	51	247	6					544	
BOINT	170	22510	46	237	00/07			2029	594	02/09	
00/21	-03	00	43	247	28	<u> </u>		<u> </u>	12	516	
PSX	170	23510	46	237	00/04		10	1990	594	02/05	
00/25	-04	00	43	247	16		6	6	19 5	500	
HEIGH	210	28017	63	217	00/31			1732	506	01/35	
00/56	-13	R01	55	233	118	er E			-	382	
LCH	230	28024	64	214	00/18			1596	466	01/17	
01/13	-18	R02	63	233	68	<u> </u>		8	72	313	
LSU	230	24024	78	226	00/23	22		1415	468	00/54	
01/36	-18	00	71	249	96	<u>.</u>		÷	() //	217	
SJI	230	22026	85	227	00/37			1127	468	00/17	
02/13	-19	L02	79	247	152				-	65	
SDP	230	22025	86	228	00/04			1099	468	00/13	
02/17	-19	L02	81	246	15	8		8	12	50	
MUURY	173	21519	86	240	00/04		10	1077	306	00/09	
02/21	-04	L02	88	240	17				())	_ 33	
NPA	0	06513	138	223	00/09			1021	378	00/00	
02/30	019	R01	141	223	33	20 20				0	
KNPA	0	06513	195	220	00/00			1020	777	00/00	
02/30	019	R01	194	228	0	<u> </u>		8	74	0	
KPNS	30	07509	43	226	00/03	12		991	751	00/00	
02/34	019	LO1	46	218	10			040436 60	-214733	0	

The next section displays your entire route of flight broken down by each leg with the following information:



le https	://porta	l.fnmoc.navy.	mil/op	ars-ufs/	dynamic/ODGE	RS.MATTHEW.MIL	TON.1388066675/	flightplans/u	2 - Int —	
TO TIME	ALT SAT	WIND DFT	T/C M/C	TAS G/S	LEG TIME LEG DIST	IND FUEL-L IND FUEL-R	PLAN RMNG TOT RMNG	PLAN FF TOT FF	TIME RMNG DIST RMNG	REMARKS
KNGP 00/01	10 013	00000	*** ***	*** ***	00/01 1		2240	****	02/29 586	
COPAN 00/08	125 006	19511 00	12 9	170 184	00/07 23		2154	697	02/22 563	
TOC 00/13	170 -03	21510 00	54 51	166 174	00/04 13	<u></u>	2112	574	02/17 550	
BETZY 00/14	170 -03	22010 00	54 51	237 247	00/01 6		2097	594	02/16 544	
BOINT 00/21	170 -03	22510 00	46 43	237 247	00/07 28		2029	594	02/09 516	
PSX 00/25	170 -04	23510 00	46 43	237 247	00/04 16		1990	594	02/05 500	
HEIGH 00/56	210 -13	28017 R01	63 55	217 233	00/31 118		1732	506	01/35 382	
LCH 01/13	230 -18	28024 R02	64 63	214 233	00/18 68		1596	466	01/17 313	
LSU 01/36	230 -18	24024 00	78 71	226 249	00/23 96	·	1415	468	00/54 217	
SJI 02/13	230 -19	22026 L02	85 79	227 247	00/37 152	;	1127	468	00/17 65	
SDP 02/17	230 -19	22025 L02	86 81	228 246	00/04 15		1099	468	00/13 50	
MUURY 02/21	173 -04	21519 L02	86 88	240 240	00/04 17		1077	306	00/09 33	
NPA 02/30	0 019	06513 R01	138 141	223 223	00/09 33	;	1021	378	00/00	
KNPA 02/30	0 019	06513 R01	195 194	220 228	00/00 0		1020	777	00/00	
KPNS 02/34	30 019	07509 L01	43 46	226 218	00/03 10	s	991	751	00/00	
KNGP	N274	16W097174	с	OPAN	N28036W09	7121 *TOC	* N28112W0	97002		

- TO: The fix you are traveling to.
- TIME: The estimated time enroute (ETE) that you are expected to cross the fix.
- ALT: The altitude or flight level that OPARS calculates that it will be most optimal to be at.
- SAT: Static air temperature.

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- WIND: Wind vector/velocity derived from winds aloft
 - 06028 represents winds from 060° (true) at 28 knots.
- DFT: Estimated drift left/right from true course due to winds.
- T/C: True Course
- M/C: Magnetic Course
- TAS: True Airspeed
- G/S: Groundspeed
- LEG TIME: Time in hours/minutes from the previous fix to the current fix.
- LEG DIST: Distance in nautical miles from the previous fix to the current fix.



TIME	ALT SAT	WIND DFT	T/C M/C	TAS G/S	LEG TIME LEG DIST	IND FUEL-L IND FUEL-R	PLAN RMNG TOT RMNG	PLAN FF TOT FF	TIME RMNG DIST RMNG	REMARK:
KNGP 00/01	10 013	00000	*** ***	*** ***	00/01 1		2240	****	02/29 586	
COPAN 00/08	125 006	19511 00	12 9	170 184	00/07 23		2154	697	02/22 563	
TOC	170 -03	21510	54 51	166 174	00/04	15. IS	2112	574	02/17	
BETZY	170	22010	54	237	00/01		2097	594	02/16	
BOINT	170	22510	46	237	00/07		2029	594	02/09	
PSX	170	23510	46	237	00/04		1990	594	02/05	
HEIGH	210	28017	43 63	217	00/31		1732	506	01/35	
LCH	230	28024	64	233	00/18		1596	466	01/17	
LSU	230	24024	78	225	00/23		1415	468	00/54	
SJI	230	22026	85	213	00/37		1127	468	00/17	
SDP	230	22025	86	247	00/04		1099	468	- 65	
MUURY	173	21519	81	246	00/04		1077	306	00/09	
NPA	-04	06513	138	240	00/09		1021	378	- 33	
KNPA	019	R01 06513	191	223	33		1020	777	- 00/00	
KPNS	019 30	R01 07509	194 43	228 226	0 00/03	· · · · · · · · · · · · · · · · · · ·	991	751	_ 0 00/00	

- IND FUEL-L/R: A field where you can record the aircraft's left/right total indicated fuel quantities to compare against the OPARS' calculated planned remaining fuel.
- PLAN RMNG: OPARS-calculated estimated fuel remaining at your present fix.
- TOT RMNG: A field where you can record the sum of the L/R total fuel quantities to compare against "PLAN RMNG" fuel.
- PLAN FF: OPARS-calculated estimated fuel flow at your present fix.
 - TOT FF: A field where you can record the sum of the L/R engine indicated fuel flows to compare against the "PLAN FF".
 - TIME RMNG: Time remaining in hours/minutes until arriving at your destination.

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- DIST RMNG: Distance remaining in nautical miles until arriving at your destination.
- REMARKS: A field where you can record any other pertinent information.



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TO TIME	ALT SAT	WIND DFT	Т/С M/С	TAS G/S	LEG TIME LEG DIST	IND FUEL-L IND FUEL-R	PLAN RMNG TOT RMNG	PLAN FF TOT FF	TIME RMNG DIST RMNG	REMARKS
KNGP 00/01	10 013	00000	*** ***	*** ***	00/01 1		2240	****	02/29 586	
COPAN 00/08	125 006	19511 00	12 9	170 184	00/07 23		2154	697	02/22 563	
TOC 00/13	170 -03	21510 00	54 51	166 174	00/04 13		2112	574	02/17 550	
BETZY 00/14	170 -03	22010 00	54 51	237 247	00/01 6		2097	594	02/16 544	
BOINT 00/21	170 -03	22510 00	46 43	237 247	00/07 28		2029	594	02/09 516	
PSX 00/25	170 -04	23510 00	46 43	237 247	00/04 16	·	1990	594	02/05	
HEIGH 00/56	210 -13	28017 R01	63 55	217 233	00/31 118		1732	506	01/35 	
LCH 01/13	230 -18	28024 R02	64 63	214 233	00/18 68		1596	466	01/17 313	
LSU 01/36	230 -18	24024 00	78 71	226 249	00/23 96	·	1415	468	00/54 217	
SJI 02/13	230 -19	22026 L02	85 79	227 247	00/37 152	;	1127	468	00/17 65	
SDP 02/17	230 -19	22025 L02	86 81	228 246	00/04 15		1099	468	00/13 50	
MUURY 02/21	173 -04	21519 L02	86 88	240 240	00/04 17		1077	306	00/09 33	
NPA 02/30	0 019	06513 R01	138 141	223 223	00/09 33		1021	378	00/00	
KNPA 02/30	0 019	06513 R01	195 194	220 228	00/00 0		1020	777	00/00	
KPNS 02/34	30 019	07509 L01	43 46	226 218	00/03 10	·	991	751	00/00	
KNGP	N274	16W097174		OPAN	N28036W09	7121 *TOC	* N28112W0	97002		

OPARS has optimized our altitude based on the "Upper" altitude that we set on an earlier tab. As you can see, FL230 is not the most optimum altitude for the entire route of flight, most likely due to changing winds/temperature/aircraft performance.



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TIME	ALT SAT	WIND DFT	Т/С М/С	TAS G/S	LEG TIME LEG DIST	IND FUEL-L IND FUEL-R	PLAN RMNG TOT RMNG	PLAN FF TOT FF	TIME RMNG DIST RMNG	REMARKS
WNCD	10	00000			00/01		2240	•••••	02/20	
00/01	013	00000	***	***	1				586	
COPAN	125	19511	12	170	00/07		2154	697	02/22	
00/08	006	00	9	184	23	<u> </u>	<u> </u>	8	563	
TOC	170	21510	54	166 174	00/04	<u>s </u>	2112	574	02/17	
00/10	00	00	51	÷	10	<u>.</u>	······································			
BETZY 00/14	170 -03	22010 00	54 51	237 247	00/01 6		2097	594	02/16	
BOINT	170	22510	46	237	00/07		2029	594	02/09	
00/21	-03	00	43	247	28		<u> </u>	8	516	
PSX	170	23510	46	237	00/04	<u></u>	1990	594	02/05	
00/25	-04	00	45	21/	10	<u></u>	<u>1)</u>	<u>.</u>		
HEIGH 00/56	210 -13	28017 R01	63 55	217 233	00/31 118		1732	506	01/35 	
LCH	230	28024	64	214	00/18		1596	466	01/17	
01/13	-18	R02	63	233	68	<u> </u>	<u> </u>	8	313	
LSU 01/36	230	24024	78 71	226 249	00/23 96	<u></u>	1415	468	00/54 217	
			00	<u>.</u>		31 0				
SJI 02/13	230 -19	22026 L02	85 79	227 247	00/37 152		1127	468	65	
SDP	230	22025	86	228	00/04		1099	468	00/13	
02/17	-19	L02	81	246	15		<u></u>	8	50	
MUURY	173	21519	86	240	00/04		1077	306	00/09	
02/21	-01	LUZ	00	210	- /	8		\$		
NPA 02/30	0 019	06513 R01	138 141	223 223	00/09 33		1021	378	00/00	
KNPA	0	06513	195	220	00/00	- FS	1020	777	00/00	
02/30	019	R01	194	228	0			anana S	0	
KPNS	30	07509	43	226	00/03		991	751	00/00	

- OPARS has optimized our altitude based on the "Upper" altitude that we set on an earlier tab. As you can see, FL230 is not the most optimum altitude for the entire route of flight, most likely due to changing winds/temperature/aircraft performance.
- Since we planned this route to be flown at Maximum Cruise, we are not as concerned with flying at the published true airspeeds provided; however, if we were planning the route at maximum range, this is where we would derive the true airspeed to fly at to most closely mimic a maximum range profile.
 - Note: True Airspeed can only be viewed from the PROGRESS page of the T-44C FMS.



TO TIME	ALT SAT	WIND DFT	т/с м/с	TAS G/S	LEG TIME LEG DIST	IND FUEL-L IND FUEL-R	PLAN I TOT I	RMNG RMNG	PLAN FF TOT FF	TIME RMNG DIST RMNG	REMARK
KNGP 00/01	10 013	00000 00	*** ***	*** ***	00/01 1		3	2240	****	02/29 586	
COPAN 00/08	125 006	19511 00	12 9	170 184	00/07 23			2154	697	02/22 563	
TOC	170 -03	21510 00	54 51	166 174	00/04 13			2112	574	02/17 550	
BETZY	170 -03	22010	54 51	237 247	00/01			2097	594	- 02/16 544	
BOINT	170	22510	46	237	00/07			2029	594	02/09	
PSX	170	23510	46	237	00/04		1	1990	594	02/05	
HEIGH	210	28017 801	63 55	217	00/31		e d	1732	506	01/35	
LCH	230	28024 802	64 63	214	00/18			1596	466	01/17	
LSU 01/36	230	24024	78 71	226	00/23		1	1415	468	00/54	
3JI	230	22026 1.02	85	227	00/37		-	1127	468	00/17	
SDP*	230	22025 1.02	86	228	00/04			1099	468	00/13	
1UURY	173 -04	21519 L02	86 88	240 240	00/04			1077	306	00/09	
IPA)2/30	0	06513 R01	138 141	223	00/09		-	1021	378	00/00	
NPA 02/30	0	06513 R01	195 194	220	00/00			1020	777	00/00	
(PNS)2/34	30 019	07509 L01	43	226	00/03		<u></u>	991	751	00/00	

- A comparison between the IND FUEL-L/R, TOT RMNG, and PLAN RMNG columns can be monitored inflight to ensure that we are crossing each fix with the planned remaining amount of fuel in order to determine if our flight profile will allow us to arrive at our destination with our required fuel minimums.
- If actual fuel onboard the aircraft is consistently higher than your planned remaining, than most likely you have a more efficient aircraft, or weather is not forecast as published in your favor. (i.e. stronger tailwinds, lower static air temperature).
- If actual fuel is consistently LOWER than your planned remaining, then you may need to consider reverting to a maximum range profile if you're forecast to land at your destination without the required minimums. Or, the possibility of a fuel leak exists.
- The FMS PROGRESS page can be utilized as a planning tool to assist with fuel calculations, but should not be the only form of in-flight fuel monitoring utilized!

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KNGP	N27416W097174	COPAN	N28036W097121	*TOC*	N28112W097002		
BETZY	N28148W096546	BOINT	N28345W096316	PSX	N28459W096184		
HEIGH	N29388W094171	LCH	N30085W093063	LSU	N30291W091176		
SJI	N30436W088216	*SDP*	N30447W088044	MUURY	N30459W087445		
NPA	N30215W087190	KNPA	N30212W087191	KPNS	N30284W087112		

TOC = TOP OF CLIMB *SDP* = START DESCENT POINT

FOLLOWING S	PECIAL USE AR	EAS PENE	TRATED	
A632B	0 -	18000 F	I CORPUS CHRISTI,	TX
ALERT	: CONT 13	00-0600Z	++	
A381	0 -	2000 F	I GULF COAST, GUL	F OF MEXICO
ALERT	: SR-SS D	LY		
A292	0 -	3000 F	I PENSACOLA, FL	
ALERT	: MON-FRI	SR-0700	Z++ SAT SR-SS	
MOA US 0186	7 10000 -	17999 F	I PENSACOLA SOUTH	MOA, FL
MILITA	RY : MON-SAT	SR-0600	Z++ CTC FSS	
		TIME	POSITION	ALTITUDE
LEAVING : A	632B	00+06	N27564,W097138	8697 FT
ENTERING: A	381	00+45	N29201,W095000	19589 FT
LEAVING : A	381	01+08	N30000, W093266	22429 FT
ENTERING: A	292	02+19	N30452, W087552	20335 FT
ENTERING: M END SUA	OA US 01867	02+23	N30417, W087401	14277 FT

ADDITIONAL ALTITUDE DATA FL/FUEL/ETE (250/ 1300/02+34) (210/ 1400/02+29) (190/ 1400/02+27) MINIMUM TIME DIVERT - (CRUISE ALTITUDE) CUMD CUMD DIVERT FIELD 0 81 KNGP 82 211 KEFD 212 348 KCWF 349 495 KNEW 496 587 KNPA

For general situational awareness, OPARS provides any special use areas (alert/warning/prohibited/restrict ed areas or MOAs) that are penetrated along your route of flight, and when you are expected to enter them.



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🦉 https://p	portal.fnmoc.navy.mil/o	opars-ufs/o	dynamic/ODGERS.MATTH	IEW.MILTO	N.1388066675/flightplans/u2 - Int	8 <u>—</u> 8	
KNGP N	127416W097174	COPAN	N28036W097121	*TOC*	N28112W097002		
BETZY N	V28148W096546	BOINT	N28345W096316	PSX	N28459W096184		
HEIGH N	129388W094171	LCH	N30085W093063	LSU	N30291W091176		
SJI N	130436W088216	*SDP*	N30447W088044	MUURY	N30459W087445		
NPA N	N30215W087190	KNPA	N30212W087191	KPNS	N30284W087112		
TOC *SDP*	= TOP OF CLIMB = START DESCENT	I POINT					
FOLLOWIN A632B ALE	IG SPECIAL USE AN 0 - ERT : CONT 1	REAS PE 18000 300-060	NETRATED FT CORFUS CHRIS 0Z++	TI, TX			
A381 ALE	0 - ERT : SR-SS I	2000 DLY	FT GULF COAST,	GULF OF	MEXICO		
A292 ALE	0 - ERT : MON-FR	3000 I SR-07	FT PENSACOLA, F 00Z++ SAT SR-SS	L			
MOA US 0 MIL)1867 10000 - .ITARY : MON-SA	17999 I SR-06	FT PENSACOLA SO 00Z++ CTC FSS	UTH MOA	, FL		
LEAVING ENTERING LEAVING ENTERING ENTERING END SUA	: A632B : A381 : A381 : A381 : A292 : MOA US 01867	TIME 00+06 00+45 01+08 02+19 02+23	FOSITION N27564,W09713 N29201,W09500 N30000,W09326 N30452,W08755 N30417,W08740	AL 8 86 0 19 6 22 2 20 1 14	TITUDE 97 FT 589 FT 429 FT 335 FT 277 FT		
TOTAL WI	IND FACTOR 16KTS						
ADDITION FL/FUEL/ MINIMU	NAL ALTITUDE DAT. 'ETE (250/ 1300, JM TIME DIVERT -	A /02+34) (CRUIS	(210/ 1400/02+2 E ALTITUDE)	9) (19	0/ 1400/02+27)		
	CUMD CUMD 0 81 82 211 212 348 349 495	DIVERT KNGP KEFD KCWF KNEW	FIELD				

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587

KNPA

For general situational awareness, OPARS provides any special use areas (alert/warning/prohibited/restrict ed areas or MOAs) that are penetrated along your route of flight, and when you are expected to enter them.

 Total wind factor is utilized to determine if on average, you'll have a headwind or tailwind for the majority of your route. A negative number corresponds to a headwind, and a positive corresponds to a tailwind.



X

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https://portal.fnmoc.navy.mil/opars-ufs/dynamic/ODGERS.MATTHEW.MILTON.1388066675/flightplans/u2 - Int	
KNGP N27416W097174 COPAN N28036W097121 *TOC* N28112W097002	
BETZY N28148W096546 BOINT N28345W096316 PSX N28459W096184	
HEIGH N29388W094171 LCH N30085W093063 LSU N30291W091176	
SJI N30436W088216 *SDP* N30447W088044 MUURY N30459W087445	
NPA N30215W087190 KNPA N30212W087191 KPNS N30284W087112	
TOC = TOP OF CLIMB *SDP* = START DESCENT POINT	
FOLLOWING SPECIAL USE AREAS PENETRATED A632B 0 - 18000 FT CORPUS CHRISTI, TX ALERT : CONT 1300-0600Z++	
A381 0 - 2000 FT GULF COAST, GULF OF MEXICO ALERT : SR-SS DLY	
A292 0 - 3000 FT PENSACOLA, FL ALERT : MON-FRI SR-0700Z++ SAT SR-SS	
MOA US 01867 10000 - 17999 FT PENSACOLA SOUTH MOA, FL MILITARY : MON-SAT SR-0600Z++ CTC FSS	
TIME POSITION ALTITUDE LEAVING: A632B 00+06 N27564,W097138 8697 FT ENTERING: A381 00+45 N29201,W095000 19589 FT LEAVING: A381 01+08 N30000,W093266 22429 FT ENTERING: A292 02+19 N30452,W087552 20335 FT ENTERING: MOA US 01867 02+23 N30417,W087401 14277 FT END SUA SUA SUA SUA SUA SUA	
TOTAL WIND FACTOR 16KTS	
ADDITIONAL ALTITUDE DATA FL/FUEL/ETE (250/ 1300/02+34) (210/ 1400/02+29) (190/ 1400/02+27)	
MINIMUM TIME DIVERT - (CRUISE ALTITUDE)	
CUMD CUMD DIVERT FIELD 0 81 KNGP	

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211

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495

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KEFD

KCWF

KNEW

KNPA

For general situational awareness, OPARS provides any special use areas (alert/warning/prohibited/restrict ed areas or MOAs) that are penetrated along your route of flight, and when you are expected to enter them.

- Total wind factor is utilized to determine if on average, you'll have a headwind or tailwind for the majority of your route. A negative number corresponds to a headwind, and a positive corresponds to a tailwind.
 - Additional altitude data is utilized as a rough estimate of fuel consumption and estimated time enroute for different, constant altitudes for your route of flight.



🎯 https://portal.fnmoc.navy.mil/opars-ufs/dynamic/ODGERS.MATTHEW.MILTON.1388066675/flightplans/u2 - Int 🚽 🗌					
KNGP N27416W097174 COPAN N28036W097121 *TOC* N28112W097002					
BETZY N28148W096546 BOINT N28345W096316 PSX N28459W096184					
HEIGH N29388W094171 LCH N30085W093063 LSU N30291W091176					
SJI N30436W088216 *SDP* N30447W088044 MUURY N30459W087445					
NPA N30215W087190 KNPA N30212W087191 KPNS N30284W087112					
TOC = TOP OF CLIMB *SDP* = START DESCENT POINT					
FOLLOWING SPECIAL USE AREAS PENETRATED A632B 0 - 18000 FT CORPUS CHRISTI, TX ALERT : CONT 1300-06002++					
A381 0 - 2000 FT GULF COAST, GULF OF MEXICO ALERT : SR-SS DLY					
A292 0 - 3000 FT PENSACOLA, FL ALERT : MON-FRI SR-0700Z++ SAT SR-SS					
MOA US 01867 10000 - 17999 FT PENSACOLA SOUTH MOA, FL MILITARY : MON-SAT SR-0600Z++ CTC FSS					
TIMEPOSITIONALTITUDELEAVING : A632B00+06N27564,W0971388697 FTENTERING: A38100+45N29201,W09500019589 FTLEAVING : A38101+08N30000,W09326622429 FTENTERING: A29202+19N30452,W08755220335 FTENTERING: MOA US 0186702+23N30417,W08740114277 FTEND SUASuaSuaSuaSua					
TOTAL WIND FACTOR 16KTS					
ADDITIONAL ALTITUDE DATA FL/FUEL/ETE (250/ 1300/02+34) (210/ 1400/02+29) (190/ 1400/02+27)					
MINIMUM TIME DIVERT - (CRUISE ALTITUDE					
CUMD CUMD DIVERT FIELD 0 81 KNGP 82 211 KEFD 212 348 KCWF					

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495

587

KNEW

KNPA

Lastly, divert information is listed at the bottom of the printout. From the diverts that we entered in OPARS, it provides a cumulative distance traveled, and which airport would be your closest divert during that portion of the flight. For example, from 82 nautical miles traveled up to and including 211 nautical miles traveled, our closest divert airport would be Ellington (KEFD).

This is mainly used for oceanic flying where you do not have multiple other divert fields along your route of flight.

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Other OPARS Information

- Other OPARS forms can calculate additional information:
 - Equal Time Point (ETP)
 - The point at which the aircraft can continue to destination or return to departure location in the same amount of time accounting for winds.
 - Point of Safe Return (PSR)
 - The point along the planned route at which the aircraft can return to the departure airfield and arrive with no more and no less than required fuel.
 - Point of No Return (PNR)
 - PNR is the point along the planned route at which the aircraft can return to the departure airfield and land with zero fuel. If the aircraft were to proceed beyond PNR and attempt to return to the departure airfield, it would run out of fuel prior to arrival.



• In accordance with CNAF M-3710.7:

4.8.5.1 Fuel Planning

All aircraft shall carry sufficient usable fuel, considering all meteorological factors and mission requirements as computed below:

- If alternate is not required, fuel to fly from takeoff to destination airfield, plus a reserve of 10 percent of planned fuel requirements.
- 2. If alternate is required, fuel to fly from takeoff to the approach fix serving destination and thence to an alternate airfield, plus a reserve of 10 percent of planned fuel requirements.
- 3. In no case shall the planned fuel reserve after final landing at destination or alternate airfield, if one is required, be less than that needed for 20 minutes of flight, computed as follows:
 - Reciprocating engine-driven aircraft. Compute fuel consumption based on maximum endurance operation at normal cruise altitudes.
 - b. Turbine-powered fixed-wing/tiltrotor aircraft. Compute fuel consumption based on maximum endurance operation at 10,000 feet.
 - c. Turbine-powered helicopters. Compute fuel consumption based on operation at planned flight altitude.
- Minimum fuel reserve requirements for specific model aircraft shall be contained in the appropriate NATOPS manual.



• In accordance with CNAF M-3710.7:

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All aircraft shall carry sufficient usable fuel, considering all meteorological factors and mission requirements as computed below:

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- If alternate is required, fuel to fly from takeoff to the approach fix serving destination and thence to an alternate airfield, plus a reserve of 10 percent of plan
 Even though an alternate is
- In no case shall the planned fuel reserve after final required, be less than that needed for 20 minutes of f
 - Reciprocating engine-driven aircraft. Compute operation at normal cruise altitudes.
 - b. Turbine-powered fixed-wing/tiltrotor aircraft. endurance operation at 10,000 feet.
- Even though an alternate is always required (and recommended!) in CNATRA, still have an understanding of fuel planning when an alternate is not required.
- c. Turbine-powered helicopters. Compute fuel consumption based on operation at planned flight altitude.
- Minimum fuel reserve requirements for specific model aircraft shall be contained in the appropriate NATOPS manual.



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All aircraft shall carry sufficient usable fuel, considering all meteorological factors and mission requirements as computed below:

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 - c. Turbine-powered helicopters. Compute fuel consumption based on operation at planned flight altitude.
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4.8.5.1 Fuel Planning

All aircraft shall carry sufficient usable fuel, considering all meteorological factors and mission requirements as computed below:

 If alternate is not required, fuel to fly from takeoff to destination airfield, plus a reserve of 10 percent of planned fuel requirements.

2.	If alternate is required, alternate airfield, plus a	TRAWING 4 SOP requires crew to be on deck with no less than	destination and the	nce to an
3.	In no case shall the plat required, be less than the	265lbs per side.	or alternate airfield, ows:	if one is
	a. F 1. <u>General Procedures</u> . Fuel Requirements. The minimum on deck fuel requirement is 265 c pounds per side (yellow arc). Cross-feed should not be used routinely to balance fuel loads. U			
	b. I normal conditions transfer pumps should not be operated in the "override" position to fill nacelle tanks prior to landing.			naximum

c. Turbine-powered helicopters. Compute fuel consumption based on operation at planned flight altitude.

 Minimum fuel reserve requirements for specific model aircraft shall be contained in the appropriate NATOPS manual.

Summary



- OPARS should be introduced in the cross-country stage of training to emphasize proper pre-flight fuel planning, and provide basic instruction for a system that can be utilized in a later T/M/S that a student could find themselves qualified in.
 - For example, although you use JMPS in your MV-22 squadron, if a follow-on billet in your career is to be a station C-12 pilot, you won't have JMPS there to perform this type of planning!
- Fuel planning happens prior to walking to the aircraft; utilizing the FMS solely as a calculator in-flight could cause you to find yourself in an embarrassing situation of having to divert due to poor planning!
- While cross-country flights do not contain as many back-toback instrument approaches as earlier stages of training, they are equally as task-saturating keeping track of your fuel state.