

EO 45-1-2

ROYAL CANADIAN AIR FORCE



**SPECIFIED PETROLEUM
PRODUCTS
FOR
AIRCRAFT ENGINE COMBINATIONS**

"REVISION"

NOTICE

**LATEST REVISED PAGES
SUPERSEDE THE SAME
PAGES OF PREVIOUS DATE**

Insert revised pages into basic
publication. Destroy superseded pages.

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

15 MAR 62
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LIST OF RCAF REVISIONS

DATE	PAGE NO	DATE	PAGE NO
28 Sep 62	37		
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PART 1
**PETROLEUM PRODUCTS FOR RECIPROCATING
ENGINE AIRCRAFT COMBINATIONS**

1 Part 1 of this Engineering Order lists the Specifications and grades of petroleum products that shall be used in all RCAF reciprocating engine aircraft combinations.

2 The notes listed in the fuel column prescribe the SPECIFIED, ALTERNATE, LIMITED and EMERGENCY fuels which may be used in reciprocating engine aircraft subject to the limitations defined, ie. power restrictions, reduction of overhaul times etc.

3 SPECIFIED FUEL is the fuel on which specific aircraft engine combinations are rated and on which the aircraft attains the most useful economy and load capacity with normal engine operation. Specified fuel must be used when it is or can be made available.

4 ALTERNATE FUEL is a fuel which is, technically, fully interchangeable, with SPECIFIED fuel. ALTERNATE fuel must not be used when SPECIFIED fuel is or can be made available.

5 LIMITED FUEL is a fuel designated for continuous use in aircraft engine combinations subject to restrictions in operation as detailed for each aircraft. Limited fuel is not to be used when specified or alternate fuel is or can be made available.

6 EMERGENCY FUEL is a fuel which may be used for one flight only subject to the limitations defined for each aircraft engine combination. The period of use is restricted to one flight to enable the aircraft to reach facilities where SPECIFIED, ALTERNATE, or LIMITED fuel is available. Aircraft authorized to fly on Emergency fuel are restricted to a cumulative flying time of ten percent of the basic periodic inspection period and the cumulative flying time may include any number of flights; however, EMERGENCY fuel must not be used for successive flights. The type of Emergency fuel to be used on each type of aircraft is to be specifically entered in the Miscellaneous Data block of the L14-1C and the Data Sheet of the L14T. When Emergency fuel has been used the remarks column of the L14-3 is to be annotated as to the type of fuel used and the total number of hours flown using the Emergency fuel. Details concerning the use of the Emergency fuel are to be recorded in the L14-1B and in the change of Serviceability and Rectification Log of the L14T and then transcribed into Section 10 of the L14-7.

LIST OF REFERENCED ENGINEERING ORDERS

EO 45-1-4 US, British and NATO Equivalents of RCAF
Petroleum and Associated Products

EO 45-5A-2 Specifications, Use and Disposition of Fuels.

Description	RCAF Ref.	NATO Symbol	Approved Specification
ANTI-SEIZE			
Lubricant Graphite	34A/8030-21-801-8607	S-720	3-GP-802
Lubricant Gasoline & Oil Resistant	34A/9150-21-802-4306	G-363	3-GP-686a
Molybdenum Disulphide	34A/6810-21-802-4382	S-740	3-GP-806
Graphite	34A/9620-21-802-4080	S-732	3-GP-805
DE-ICING FLUIDS			
Alcohol Isopropyl	34A/6810-21-802-3298	S-737	3-GP-525a
Alcohol Methyl	34A/6810-21-802-2313	S-747	0-M-232d Grade
De-Icing Fluid		S-745	DTD 406A
COOLANT			
Ethylene Glycol	34A/6850-21-572-4610	S-735	3-GP-850a
FUELS			
Gasoline Grade 73 (Unleaded)	34A/9130-21-801-4670	F-13	D Eng RD2485
Gasoline Grade 80/87	34A/9130-21-000-2000	F-12	3-GP-25d
Gasoline Grade 91/96	34A/9130-11-000-2002	F-15	3-GP-25d
Gasoline Grade 100/130	34A/9130-11-000-2003	F-18	3-GP-25d
Gasoline Grade 115/145	34A/9130-21-000-2004	F-22	3-GP-25d
Turbine Fuel Type 2	34A/9130-11-000-2007	F-40	3-GP-22d
Turbine Fuel Type 1	34A/9130-11-000-2006	F-34	3-GP-23d
Turbine Fuel JP3			3-GP-21b
Turbine Fuel JP5		F-44	3-GP-24c

Figure 1-1 (Sheet 1 of 4) Petroleum and Associated Products

Description	RCAF Ref.	NATO Symbol	Approved Specification
GREASES			
Grease Helicopter	34A/9150-21-578-2230	G-366	3-GP-687
Extreme Pressure	34A/9150-21-802-4318	G-354	3-GP-606
General Purpose	34A/9150-21-802-4309	G-382	3-GP-682a
Low & High Temperature Low Volatility (Synthetic)	34A/9150-21-802-4311	G-350	3-GP-683b
Graphited	34A/9150-21-802-2935	G-355	3-GP-641a
Low & High Temperature	34A/9150-21-802-4300	G-359	3-GP-690a
Automotive and Artillery	34A/9150-21-802-4319	G-403	3-GP-685b
Lubricating Pneumatic System	34A/9150-21-802-4316	G-392	3-GP-605
High Temperature Electric Motor Ball & Roller Bearings (DC44)			MIL-L-15719A
Extreme Low Temperature	34A/9150-21-801-4106	G-352	MIL-G-7421A
Ball & Roller Bearing Wide Temperature Range	34A/9150-21-802-5354	G-361	3-GP-689
Insulation Grease (DC4)	33G/49		MIL-I-8660
HYDRAULIC FLUIDS			
Petroleum Base Anti-Freeze	34A/9150-21-578-7501	H-515	3-GP-26b
Vegetable Base Lockheed 22	34A/9150-21-802-4374	H-534	DTD 900/4081
Petroleum Base Buffer	34A/9150-21-802-4303	0-134	3-GP-38a

Figure 1-1 (Sheet 2 of 4) Petroleum and Associated Products

Description	RCAF Ref.	NATO Symbol	Approved Specification
LUBRICANTS			
Universal SAE80	34A/9150-21-802-4297		3-GP-360B
Universal SAE75	34A/9150-21-802-4312	Q-186	3-GP-340a Am 1
OILS LUBRICATING			
Light Grade 65	34A/9150-21-802-4291	0-113	3-GP-60a
Medium Grade 80	34A/9150-21-802-4288	0-115	3-GP-80a
Heavy Grade 100	34A/9150-21-802-4289	0-117	3-GP-100b
General Purpose	34A/9150-21-802-2923	0-142	3-GP-335a
Low Temperature	34A/9150-21-802-4301	0-155	MIL-L-6086B Grade M
Instrument Low Volatility	34A/9150-21-802-4315	0-147	MIL-L-6085A
Dow Corning DC200	34A/9150-21-802-4314		
Aeroshell W80	34A/NIC		
PRESERVATIVES			
Jelly Mineral Petrolatum	34A/9150-21-802-4305	S-743	3-GP-665a
Hyd. Fl. Pet. Base Preservative	34A/9150-00-265-9413	C-635	MIL-H-6083B Type 1
Oil, Engine, Preservative (SAE30)	34A/9150-21-802-2924	C-642	3-GP-367A
THRUST AUGMENTATION FLUIDS			
Methanol Mixture (power boost)	34A/6810-21-802-4037	(Ready mix) Consisting of 60 parts alcohol (Spec. 0-M-232D, Grade "A") RCAF Sect. Ref. 34A/6810-21-802-2313. NATO Symbol S-747, and 40 parts demineralized water, 1% water soluble corrosion inhibitor.	

Figure 1-1 (Sheet 3 of 4) Petroleum and Associated Products

Description	RCAF Ref.	NATO Symbol	Approved Specification
TURBINE OILS			
Turbine Oil (UK)	34A/9150-21-802-2925	0-149	3-GP-905 (UK D Eng RD2487)
Grade 1005	34A/9150-21-578-2559	0-132	3-GP-900 (1005) Am 1
Grade 1010	34A/9150-21-802-2927	0-133	3-GP-901 (1010) Am 1
Turbine Oil (US)	34A/9150-00-270-0056	0-148	3-GP-904 (US MIL-L-7808D)
Oil Aeroshell 1 AC			

Figure 1-1 (Sheet 4 of 4) Petroleum and Associated Products

ALBATROSS CSR-110

Engine: Wright R1820-82

Fuel Grade			Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	Limited	3-GP-100b Hamilton Standard Propeller use 34A/9150-00-265-9413 ready mix fluid	Windshield 3-GP-525a	Main System 3-GP-26b Brake System 3-GP-26b 3-GP-26b Shock Struts	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b
115/145		100/130 108/135				
<p>NOTE: Power restrictions for limited fuels as follows Take off (5 min. max.) - 2800 RPM, 53MP, 1425 BHP - at sea level Normal - continuous - 2500 RPM, 47.5 MP, 1275BHP - at sea level</p>						

ARGUS CP 107

Engine: Wright R3350 Ea. 1

Fuel Grade				Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	Limited	Emergency	3-GP-100b Constant Speed Drive 3-GP-904 (US MIL-L-7808D)	Water/Alcohol Injection System Sec./Ref. 34A/6810-21-802-4037 (Ready Mix) consisting of 60 parts alcohol 0-M-232d Grade A 40 parts demineralized water 1% water soluble corrosion inhibitor	34A/9150-21-578-7501 3-GP-26b (US MIL-H-5606A) NATO - H-515	Refer to EO 05-120A-2 Part 2, pages 44-46 for greases
115/145							

BELL HELICOPTER: H-13G

Engine: Franklin 6V-335A and B

Fuel Grade		Oil	Grease	Hydraulic Fluid
Specified	Alternate	Summer 3-GP-100b Winter 3-GP-60a	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b	Stabilizer Bar Dampers Part A13965, 3-GP-26b
100/130	Limited			
	Emergency			
	80/87			

BRISTOL FREIGHTER

Engines: Hercules 734

Fuel Grade			Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	Limited	Summer 3-GP-100b Winter 3-GP-80a	Propellers DTD406A Windscreen 3-GP-525a Airfoils DTD406A	Main System 3-GP-26b Shock struts 3-GP-26b De-Icer Pump gear boxes 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accesories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b
100/130 Note 1	108/135	115/145 Note 2				
<p><u>NOTE 1:</u> Aircraft operating out of 1 Air Division Units are authorized to use 115/145 Avgas as a specified fuel.</p> <p><u>NOTE 2:</u> Continuous Use of limited fuel not to exceed time limit of one periodic with:</p> <p>(a) Subsequent use of specified fuel</p> <p>or</p> <p>(b) Engine inspection at periodic for leading and general cylinder condition with continued use on limited fuel.</p>						

CANSO 2F and 2SR:

Engines: Pratt & Whitney R1830-92

Fuel Grade			Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	Limited	3-GP-100b	Propellers 3-GP-525a	Main System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b	Wheels Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b
100/130	108/135 115/145	91/98 Note				
<p><u>NOTE:</u> Limited to power settings as follows:-</p> <p>Take-off (5 mins) - 2700 RPM 43 MP 1100 BHP at sea level. Max Climb Cont - 2550 RPM 38.5 MP 950 BHP at 7500 ft. Max level Cont - 2550 RPM 38.5 MP 950 BHP, Auto Rich only.</p>						

CARIBOU

Engine: Pratt and Whitney R2000-7M2-13

Fuel Grade		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	3-GP-100b 34A/9150-21- 802-4289	Propeller: 3-GP-525a 34A/6810-21-802- 3298	3-GP-26b 34A/9150- 21-578-7501	Wheel Bearings 3-GP-690a 34A/9150- 21-802-4300 Undercarriage up- lock and cam as- sembly 3-GP-805 34A/9620-21-802- 4080 95% 3-GP-682a 34A/9150- 21-802-4309 5% Stabilizer screw jacks and ramp door jacks 3-GP-606 34A/9150- 21-802-4318 Teleflex cables: 3-GP-805 34A/9620- 21-802-4080 Control Bearings: 3-GP-683b 34A/9150- 21-802-4311
Limited	Emergency				
3-GP-25d 100/130 34A/9130- 11-000- 2003 Note 1					

CARIBOU (Cont'd)

Engine: Pratt and Whitney R2000-7M2-13

Fuel Grade	Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified				Engine Accessories 3-GP-690a 34A/9150- 21-802-4300
Alternate				Undercarriage Structure 3-GP- 683b 34A/9150- 21-802-4311
Limited				
Emergency				
<p><u>NOTE 1:</u> Aircraft operating out of 1 Air Division Units are authorized to use 115/145 Avgas as a specified fuel.</p>				

CESSNA L19:

Engine: Continental O-470-11

Fuel Grade		Oil	Hydraulic Fluid	Grease
Specified	Alternate	Summer 3-GP-100b Winter 3-GP-60a	Brake System 3-GP-26b	Wheel Bearings 3-GP-690a Engine Acces- sories 3-GP-690a Tail Under- carriage 3-GP-690a Control Bearings 3-GP-683b
80/87	91/96			
	Limited			
	Emergency			

CHIPMUNK:

Mk. 1, Engine: Gypsy Major 1C CIG-7G-10MK1-3

Mk. 2, Engine: Gypsy Major 10 MK 1-3-7G-CIG

Fuel Grade		Oil	Hydraulic Fluid	Grease
Specified	Alternate			
80/87		Summer 3-GP-100b Winter 3-GP-80a	Brake System 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b

DAKOTA:

Engines: Pratt & Whitney R1830-90C R1830-92 R1830-90D

Fuel Grade		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	3-GP-100b General Lubrication Use 3-GP-335a	Propellers 3-GP-525a Windscreen 3-GP-525a	Main System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b CSU Speeder Rack Bushing 3-GP-685b
100/130 Note 1	Limited Emergency				
108/135 115/145 Note 2					

NOTE 1: Aircraft operating out of 1 Air Division Units are authorized to use 115/145 Avgas as a specified fuel.

NOTE 2: Limited to power settings as follows:

Take-off (5 mins) - 2700 RPM, 43 MP 1100 BHP at sea level.
Max. Climb Cont. - 2550 RPM, 38.5 MP 950 BHP at 7500 ft.
Max. Level Cont - 2550 RPM, 38.5 MP 950 BHP Auto Rich only.

EXPEDITOR:

Engines: Pratt & Whitney R985-AN14B

Fuel Grade		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	3-GP-100b Landing gear motor gearbox MIL-L-6086B. Am 1 Grade M For General Lubrication 3-GP-335a	Propellers 3-GP-525a	Brake System 3-GP-26b Shock Struts 3-GP-26b	Refer to EO 05-45B-2 Part 1, Section 2
80/87 Note 1	Limited				
	Emergency				
	91/98	115/145			
	100/130				
	108/135				
	Note 2	Note 2			
<p><u>NOTE 1</u> Aircraft operating out of 1 Air Division Units are authorized to use 115/145 Avgas as a specified fuel.</p> <p><u>NOTE 2</u> Power restrictions for limited and emergency fuels as follows:</p> <p>Operate at 1900 RPM or greater at 280 - 296 BHP, or 31.3" hg manifold pressure at sea level and decrease 1" hg manifold pressure for every 3000 ft.</p>					

HARVARD

Engine: Pratt & Whitney R1340-AN1, R1340-S3H1

Fuel Grade		Oil	Hydraulic Fluid	Grease
Specified	Alternate	3-GP-100b Undercarriage Lock Mechanism Brake Mechanism Control Cable Shackles bolt pivots General lubrication use 3-GP-335a	Main System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b
80/87	Limited			
	Emergency			
	115/145			
	91/98			
	100/130			
	108/135			
	Note			

NOTE: Continuous use of limited fuel not to exceed time limit of one periodic with:

(a) subsequent use of specified fuel.

OR

(b) engine inspection at periodic for leading and general cylinder conditions with continued use on limited fuel.

HILLER HELICOPTER CH-112

Engine: Lycoming VC 540 BID

Fuel Grade		Oil	Grease	Hydraulic Fluid
Specified		Aeroshell W80 Esso Aviation Oil E-80 Engine Control Quadrant Door Hinges Landing Gear Strut and Rod End Bearings 3-GP-335a. Tail Rotor Flapping Hinge Bearings (a) Use 3-GP-390b (Grade 90) for ambient temps above 0 °F. (b) Use 3-GP-340a (Grade 75) for temps below 0 °F. Tail Rotor Speed Decreaser MIL-L-6086B (a) Use Grade M for ambient temps above 0 °F. (b) Use Grade L at or below 0 °F.	General Purpose 3-GP-687 Gear and Actuator Screw 3-GP-606 Intermediate Shaft Splines Main Drive Clutch Bearings 3-GP-690a	Rotor Brake Control Rotor Bearings 3-GP-26b
Alternate				
Limited				
Emergency				
80/87		91/96		
		100/130		

NOTE: Engine Oil is utilized to lubricate the helicopter transmission.

MITCHELL:

Engines: Wright R2600

Fuel Grade		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	3-GP-100b	Propellers 3-GP-525a Windscreen 3-GP-525a	Main System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b
100/130	Limited				
115/145	Emergency				
108/135					

NEPTUNE:

Engines: Wright R3350-32W and Westinghouse J34-WE-36

Fuel Grade		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	R3350-32W, 3-GP-100b J34-WE-36 3-GP-901 34A/9150- 21-802-2927 Grade 1010	Carburetors 3-GP-525A Windscreens 3-GP-525A Water/Alcohol Injection System Sec/Ref. 34A/6810- 21-802-4037 (Ready Mix) con- sisting of 60 parts alcohol O-M-232d Grade "A" 40 parts demineralized water 1% water soluble corrosion inhibitor	Main System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b
115/145	Limited "Grade 100/130" 108/135				

NOTE: When using limited fuel reference is to be made to EO 05-110A-1A for performance restrictions.

NORTH STAR:

Engines: Rolls Royce Merlin 622

Fuel Grade			Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	Emergency	3-GP-100b Gear Box 3-GP-38a	Propellers 3-GP-525A Windscreen 3-GP-525A	Main System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b
100/130	115/145	91/98				
	108/135	Note	Engine Coolant 3-GP-850A			
<p><u>NOTE:</u> Limited fuel to be used for cruise conditions only, subject to following power restrictions:</p> <p>34 in. Hg. MP at 2500 RPM</p>						

NORTH STAR C5:

Engine: Pratt & Whitney R2800-CA15

Fuel Grade				Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	Limited	Emergency				
100/130	108/135			3-GP-100b		Main System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b
	115/145				Carburettor 3-GP-525A		

PACKET C119 G

Engine: Wright R3350-89A

Fuel Grade				Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	Limited	Emergency				
115/145		100/130		Engine 3-GP-100b Aero products propeller use 34A/9150-00- 265-9413 Type 1 ready mix fluid.	Water/alcohol injection system Sec./Ref. 34A/6810- 21-802-4037 (ready mix) consisting of 60 parts alcohol 0-M-232d grade "A" 40 parts demineralized water 1% water soluble corrosion inhibitor	Main system 3-GP-26b Brake system 3-GP-26b Shock Struts 3-GP-26b	Wheel Bearings 3-GP-690a Engine acces- sories 3-GP-690a Control Bearings 3-GP-690a Undercarriage Structure 3-GP-683b
		108/135					
		Note					

NOTE: When using limited fuel, reference is to be made to EO 05-90A-1 for performance restrictions.

SIKORSKY HELICOPTER H5:

Engine: Pratt & Whitney R985-AN5

Fuel Grade				Oil	Hydraulic Fluid	Grease
Specified	Alternate	Limited	Emergency	3-GP-100b	Main System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b Miscellaneous Bearings 3-GP-682a
80/87		91/98				
		100/130				
		108/135				
		Note				
<p><u>NOTE:</u> Power restrictions for limited fuels as follows: Operate at 1900 RPM or greater at 280-296 BHP</p>						

SIKORSKY HELICOPTER H34A

Engine: Wright R1820-84

Fuel Grade			Oil	Hydraulic Fluid	Grease
Specified	Alternate	Limited	3-GP-100b 3-GP-904 (US MIL-L-7808D)	Servo System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b Hydro Mechanical Clutch 3-GP-26b Rotor Dampers 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b Emergency Releases 3-GP-641a Hydro Mechanical Clutch Specification 3-GP-360b Tail Rotor Spindle winter specification 3-GP-685b
115/145	100/130 108/135	Emergency			
<p>NOTE: Power restrictions for limited fuels as follows:</p> <p>Take off (5 mins max) - 2800 RPM, 53 MP, 1425 BHP - at sea level</p> <p>Normal - continuous - 2500 RPM, 47.5 MP, 1275 BHP - at sea level</p> <p>GEAR BOXES (main, intermediate and tail) - SUMMER, transmission oil Spec. 3-GP-367a, RCAF Ref. 34A/9150-21-802-2924. WINTER (intermediate and tail) use 3-GP-904, RCAF Ref. 34A/9150-00-270-0056. WINTER (main) Spec. 3-GP-367a, RCAF Ref. 34A/9150-21-802-2924 (with application of heat).</p>					

VERTOL HELICOPTER H21A - H21B

Engine: Wright 1820-103

Fuel Grade				Oil	Hydraulic Fluid	Grease
Specified	Alternate	Limited	Emergency			
100/130	115/145			Engine 3-GP-100b Gearboxes, Pitch Bearing Housings Winter 3-GP-904 (US MIL-L-7808D) Summer 3-GP-100b	Hydraulic Systems 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b

PART 2

PETROLEUM PRODUCTS FOR TURBINE ENGINE AIRCRAFT

- 1 Part 2 of this Engineering Order lists the specifications and grades of petroleum products that shall be used in all RCAF turbine engine aircraft combinations.
- 2 The notes listed in the fuel column prescribe the SPECIFIED, ALTERNATE, LIMITED and EMERGENCY fuels which may be used in turbine engine aircraft subject to the limitations defined, i. e. power restrictions reduction of overhaul times etc.
- 3 Specified Fuel is the fuel on which specific aircraft engine combinations are rated and on which the aircraft attains the most useful economy and load capacity with normal engine operation. Specified fuel must be used when it is or can be made available.
- 4 Alternate fuel is a fuel which is technically, fully interchangeable with specified fuel. Alternate fuel must not be used when Specified fuel is or can be made available.
- 5 Limited Fuel is a fuel designated for continuous use in aircraft engine combinations subject to restrictions in operation as detailed for each aircraft. Limited fuel is not to be used when specified or alternate fuel is or can be made available.
- 6 For the use of Emergency Fuel for specific aircraft engine types refer to the applicable Engineering Orders. The type of Emergency Fuel to be used on each type of aircraft is to be entered in the Miscellaneous Data Block of the L14-1C and the data Sheet of the L14T. When Emergency Fuel has been used the remarks column of the L14-3 is to be annotated as to the type of fuel used and the total number of hours flown using the Emergency Fuel. Details concerning the use of the Emergency Fuel are to be recorded in the L14-1B and the the Change of Serviceability and Rectification Log of the L14T and then transcribed into Section 10 of the L14-7.



Flowmeters are calibrated for aviation turbine fuel 3-GP-22d. When operating the aircraft on aviation gasoline 3-GP-25d add ten percent to the flowmeter reading. When operating on Type 1 turbine fuel 3-GP-23d subtract five percent from the flowmeter reading. When using aviation gasoline the range of the aircraft is reduced approximately five percent under that obtained with aviation turbine fuels.

CANUCK (CF-100)

Engine: Orenda 8, 9, 11, 17

Fuel		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	3-GP-901 Am. 1 Grade 1010 Below -30 °C (-22 °F) 3-GP-900 Am. 1 Grade 1005	Engine De-Icer 3-GP-525a	Main System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b
3-GP-22d Type 2	3-GP-23d Type 1				
	Emergency				
	Limited				
	3-GP-25d Avgas Note 2				

NOTE 1: In all cases refer to the applicable Description and Maintenance Instructions of the mark of the aircraft concerned.

NOTE 2: Refer to Part 2 of Applicable engine D and M.I.

CF-101B (VOODOO)

Engines: J57 Model P/F55

Fuel Grade			Oil	Hydraulic Fluid	Grease
Specified	Alternate	Limited	Turbine Lubricating Oil 3-GP-904 (U.S. MIL-L-7808D) NATO Symbol 0-148 Colloidal Graphite in Oil MIL-L-3572 3-GP-335a 34A/9150-21-802-2923	Aircraft Hydraulic Fluid Petroleum Base 3-GP-26b NATO Symbol H515	DGF 123 34A/9150-00-282-7407 3-GP-682a 3-GP-683b 3-GP-805 Molykote M88 34A/9150-21-805-3726 MIL-L-25681 Dow Corning 50/50 MIL-G-7421B 34A/9150-21-801-4106 3-GP-641a 34A/9150-21-802-2935 3-GP-605 34A/9150-21-802-4316 3-GP-665A 34A/9150-21-802-4305 3-GP-689 34A/9150-21-802-5354 DC200 34A/9150-21-802-4314 3-GP-688 (U.S. MIL-G-21164A)
Turbine Fuel Type 2 3-GP-22d NATO Symbol F-40	Turbine Fuel JP 5 3-GP-24c NATO Symbol F-42	Avgas 3-GP-25d Note 1 Emergency			
<p>NOTE 1: Use lowest grade available. Operation restricted to below 35,000 feet.</p>					

CF104 - CF104D (Starfighter) (Cont'd)

NOTE 1 - Special #2 3-GP-683b with 50% by weight MIL-L-6085A.

NOTE 2 - Special #1 MIL-G-7421B with 6% by weight 3-GP-806
Reference for use CF104 - EO 05-165A-1 or TO 1F-140A-2-1
EO 05-165A-2 TO 1F-140A2-2
CF104D EO 05-165B-1
EO 05-165B-2

NOTE 3 - The main and after burner fuel controls must be adjusted for specific gravity when emergency fuel is to be used. Engine operation limited to 5 hour duration. No inspection or purge run is necessary before continuing operation on normal fuel.

NOTE 4 - Grease may be used for various applications as outlined in the Aircraft EO.

COMET

Engine: DeHavilland Ghost 50 Mk. 1

Fuel Grade		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	3-GP-905 (U.K. D Eng RD2489) Aviation Turbine Oil 34A/9150-21-802- 2925 NATO Symbol 0-149	Engine De-Icer DTD 406A Specification DTD406a for windscreen	Main System DTD900/4081 Lockheed 22 Brake System DTD900/4081 Lockheed 22 Shock Struts DTD900/4081 Lockheed 22	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b
3-GP-22d Type 2	Limited				
3-GP-23d Type 1	Emergency				

COSMOPOLITAN

Engine: Napier Eland

Fuel Grade				Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	Limited	Emergency				
3-GP-22d Type 2 34A/9130- 11-000- 2007	3-GP-23d Type 1 34A/9130- 11-000- 2006	3-GP-25d Avgas 115/145 Note 1	3-GP-905 (U. K. D Eng RD2487) 34A/9150-21-802- 2925 Aircraft Cabin Supercharger Aeroshell Fluid 1-AC 3-GP-335a 34A/9150-21-802- 2923		3-GP-26b 34A/9150-21-578- 7501	3-GP-683b 34A/9150- 21-802-4311 3-GP-682a 34A/9150-21- 802-4309 3-GP-641a 34A/9150- 21-802-2935 3-GP-805 34A/9620-21- 802-4080 3-GP-606 34A/9150-21- 802-4318 3-GP-690a 34A/9150-21- 802-4300	

NOTE 1 Limited to 25 hours.

CH113 AND CH113A (VERTOL 107)

Engine: GE T58-8

Fuel Grade				Oil	Hydraulic Fluid	Grease
Specified	Alternate	Limited	Emergency			
3-GP-22d JP4 Type 2		3-GP-24c JP5		<p>ENGINES MIL-L-7808d 34A/9150-00-270-0056 3-GP-904 Lubricating Oil (Synthetic)</p> <p>TRANSMISSIONS MIL-L-7808d 34A/9150-00-270-0056 3-GP-904 Lubricating Oil (Synthetic)</p> <p>ROTOR HUB ASSEMBLY 3-GP-390 34A/49 MIL-L-002105 Oil Lubricating Grade 140.</p>	<p>3-GP-26a 34A/9150-21-578-7501 MIL-H-5606 Hydraulic Fluid (Petroleum base)</p>	<p>3-GP-683b 34A/9150-21-802-4311 MIL-G-3278 Grease High and Low Temperature (Synthetic)</p>

KD4

Engine: J44-R20B

Fuel Grade		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	3-GP-901 34A/9150-21- 802-2927 Grade 1010			3-GP-606 34A/9150-21- 802-4318 See EO 05-145A-2 for locations Dow Corning #4 33G/49 See EO 05-145A-2 for locations
3-GP-22d Type 2 MIL-J- 5624E NATO Symbol F-40	3-GP-25d				

Lockheed C-130B
Engine: Allison T56-A-7

Fuel Grade			Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	Limited	Emergency			
3-GP-22d Type 2 NATO Symbol F-40	3-GP-23d Type 1 NATO Symbol F-34	3-GP-25d Avgas 80/87 91/96 100/130 115/145	3-GP-904 (U.S. MIL-L-7808D) Note 7 NATO 0-148 3-GP-335a NATO-0-142 MIL-H-6083B Type 1 34A/9150-00-265-9413 Note 7 NATO C-635		3-GP-26b NATO H-515	3-GP-683b NATO G-350 3-GP-682a NATO G-382 3-GP-641a NATO G-355 3-GP-689 NATO G-361 3-GP-806 NATO S-740
	3-GP-21b JP-3 D Eng RD2488 NATO Symbol F-42 3-GP-24c NATO Symbol F-44, JP-5					

Lockheed C-130B (Cont'd)

NOTE 1 - Automotive gasoline is not acceptable in these engines due to common use of the tri-cetyl-phosphate (TCP) as an additive in this fuel.

NOTE 2 - The use of aviation gasoline containing tetraethyl lead is to be held to an absolute minimum due to lead deposits in the turbine section. Inspect blades for overheat damage when engines are operated for 50 hours with leaded gasoline. Use lowest octane Avgas available.

NOTE 3 - NATO fuel F-42 should not be used when operating in temperatures below - 30 °F.

NOTE 4 - NATO fuels F-34 and F-44 should not be used when operating in temperatures below - 40 °F.

NOTE 5 - Refer EO 05-175A-1 for effects of fuels during high rates of climb and for range.

NOTE 6 - Oil level in starter is at 11 using 3-GP-904 (U.S. MIL-L-7808D). See EO 05-175A-2B.

NOTE 7 - Propeller reservoir is serviced with MIL-H-6083B Type 1 (34A/9150-00-265-9413).

NOTE 8 - Greases may be used for various applications as outlined in the Aircraft EO.

SABRE

Engine: Orenda 10, 14

Fuel Grade		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate				
3-GP-22d Type 2	3-GP-23d Type 1	3-GP-901 Grade 1010 34A/9150-21-802-2927 General Lubrication 3-GP-335a 34A/9150-21-802-2923 for locations See EO 05-5E-2 DC200, 34A/9150-21-802-4314 for locations see EO 05-5E-2 MIL-L-6085A 34A/9150-21-802-4315 for gun charger compressor		3-GP-26b 34A/9150-21-578-7501	3-GP 683b, 34A/9150-21-802-4311 for locations see EO 05-5E-2 and EO 10B-10-2 3-GP-802, 34A/8030-21-801-8607 for locations see EO 10B-10-2 3-GP-686a, 34A/9150-21-802-4306 for locations see EO 10B-10-2 3-GP-806, 34A/6810-21-802-4382 for locations see EO 10B-10-2 3-GP-641a, 34A/9150-21-802-2935 for locations see EO 05-5E-2 3-GP-335a, 34A/9150-21-802-2923 for locations see EO 05-5E-2 3-GP-606, 34A/9150-21-802-4318 for locations see EO 05-5E-2 3-GP-690a, 34A/9150-21-802-4300 undercarriage wheel bearings 3-GP-665a, 34A/9150-21-802-4305 Drop tank Plugs, battery terminals, main fuel line disconnect
3-GP-25d Note 1	Emergency				

NOTE 1 - Refer Part 2 of applicable engine D & MI.

TRAINER T33 Mk 3

Engine: Rolls Royce Nene 10

Fuel Grade		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	3-GP-901 Grade 1010 For general lubrication Spec. 3-GP-335a	Fuel filter low pressure 3-GP-525A, 34A/6810-21-802-3298	Main System 3-GP-26b Brake System 3-GP-26b Shock Struts 3-GP-26b 34A/9150-21-578-7501	Wheel Bearings 3-GP-690a Engine Accessories 3-GP-690a Control Bearings 3-GP-683b Undercarriage Structure 3-GP-683b Specification 3-GP-641a 34A/9150-21-802-2935 for application refer EO 05-50C-2
3-GP-22d Type 2	3-GP-23d Type 1				
	Limited				
	Emergency				

YUKON

Engine: Rolls Royce Tyne

Fuel Grade		Oil	De-Icing Fluid	Hydraulic Fluid	Grease
Specified	Alternate	Engine 3-GP-905 (U. K. D Eng RD2487) 34A/9150-21-802-2925 Engine Gear Box 3-GP-905 (U. K. D Eng RD2487) 34A/9150-21-802-2925 Constant Speed Unit 3-GP-904 (U. S. MIL-L-7808D) 34A/9150-00-270-0056		3-GP-26b 34A/9150-21-578-7501	3-GP-683b 34A/9150-21-802-4311 Refer to EO 05-155A-2
	Limited				
	Emergency				
3-GP-22d Type 2 34A/9130-11-000-2007	3-GP-23d Type 1 34A/9130-11-000-2006				

