

## **OIL ANALYSIS REPORT**

### (65630Z) Walgreens - Tractor [Walgreens - Tractor] 136A624087 Component

**Diesel Engine** 

PETRO CANADA DURON SHP 10W30 (11 GAL)

#### DIAGNOSIS

#### Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a new component breaking in.

#### Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

#### Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.



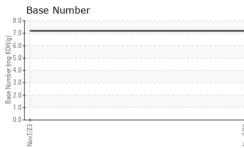


SAMPLE INFORMATION      method      limit/base      current      History1      History2        Sample Date      Client Info      07 Nov 2023          Machine Age      mis      Client Info      40926          Oil Age      mis      Client Info      40926          Oil Anged      mis      Client Info      40926          Sample Status      Client Info      40926           CONTAMINATION      method      imit/base      current      History1          Glycol      WC Method      >5      <1.0           WEAR METALS      method      imit/base      current      History1      history2        firon      ppm      ASTM 051655      >80      46          MCAR METALS      method      imit/base      current      History1         Nickel      ppm      ASTM 051655      >30      51 </th <th>- ,</th> <th></th> <th></th> <th></th> <th>Nov2023</th> <th></th> <th></th>	- ,				Nov2023		
Sample Date      Client Info      07 Nov 2023          Machine Age      mls      Client Info      40926          Oil Age      mls      Client Info      40926          Oil Changed      Client Info      Changed          Sample Status      Imit Date      Imit Date      NORMAL          CONTAMINATION      method      Imit Date      Current      history1      history2        Fuel      WC Method      >5      <1.0          Othornium      ppm      ASTM D5185m      >60      46          Chromium      ppm      ASTM D5185m      >50      4          Nickel      ppm      ASTM D5185m      >30      51          Auminum      ppm      ASTM D5185m      >30      51          Auminum      ppm      ASTM D5185m      >30      51          Auminum <t< th=""><th>SAMPLE INFORM</th><th>ATION</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></t<>	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age      mls      Client Info      40926          Oil Changed      Client Info      A0926          Oil Changed      Client Info      Changed          Sample Status      Imit/base      current      history1         Glycol      WC Method      >5      <1.0	Sample Number		Client Info		PCA0110542		
Oil Age      mis      Client Info      40926          Oil Changed      Client Info      Changed          Sample Status      Imit/base      current      history1         CONTAMINATION      method      imit/base      current      history1      history2        Fuel      WC Method      >5      <1.0	Sample Date		Client Info		07 Nov 2023		
Oil Changed      Client Info      Changed NORMAL          Sample Status      Image      current      history1      history2        CONTAMINATION      method      limit/base      current      history1      history2        Fuel      WC Method      >5      <1.0	Machine Age	mls	Client Info		40926		
Sample Status      Imit base      current      history1      history2        Fuel      WC Method      >5      <1.0	Oil Age	mls	Client Info		40926		
CONTAMINATION      method      imit/base      current      history1      history2        Fuel      WC Method      >5      <1.0	Oil Changed		Client Info		Changed		
Fuel      WC Method      >5      <1.0          Glycol      WC Method      NEG          WEAR METALS      method      limit/base      current      history1      history2        Iron      ppm      ASTM D5185m      >80      46          Ohronium      ppm      ASTM D5185m      >2      1          Nickel      ppm      ASTM D5185m      >2      1          Aluminum      ppm      ASTM D5185m      >3      <1          Qopper      ppm      ASTM D5185m      >30      <1          Cadmium      ppm      ASTM D5185m      >30      <1          Vanadium      ppm      ASTM D5185m      >30      <1          Cadmium      ppm      ASTM D5185m      0      0          Manganesium      ppm      ASTM D5185m      0      35 <td>Sample Status</td> <td></td> <td></td> <td></td> <th>NORMAL</th> <td></td> <td></td>	Sample Status				NORMAL		
Glycol      WC Method      NEG          WEAR METALS      method      limit/base      current      history1      history2        Iron      ppm      ASTM D5185m      >80      46          Nickel      ppm      ASTM D5185m      >5      4          Nickel      ppm      ASTM D5185m      >2      1          Silver      ppm      ASTM D5185m      >3      <1          Lead      ppm      ASTM D5185m      >30      51          Copper      ppm      ASTM D5185m      >30      <1          Vanadium      ppm      ASTM D5185m      >5      6          Vanadium      ppm      ASTM D5185m      0           ADDTIVES      method      limit/base      current      history1      history2        Barium      ppm      ASTM D5185m      0.0      3	CONTAMINATIO	ON	method	limit/base	current	history1	history2
WEAR METALS      method      limit/base      current      history1      history2        Iron      ppm      ASTM D5165m      >80      46          Chromium      ppm      ASTM D5165m      >5      4          Nickel      ppm      ASTM D5165m      >2      1          Titanium      ppm      ASTM D5165m      >3      <1	Fuel		WC Method	>5	<1.0		
Iron      ppm      ASTM D5185m      >80      46          Chromium      ppm      ASTM D5185m      >5      4          Nickel      ppm      ASTM D5185m      >2      1          Silver      ppm      ASTM D5185m      >3      <1	Glycol		WC Method		NEG		
Chromium      ppm      ASTM D5185m      >5      4          Nickel      ppm      ASTM D5185m      >2      1          Titanium      ppm      ASTM D5185m      >3      <1          Silver      ppm      ASTM D5185m      >3      <1          Lead      ppm      ASTM D5185m      >30      <1          Copper      ppm      ASTM D5185m      >30      <1          Copper      ppm      ASTM D5185m      >5      6          Cadmium      ppm      ASTM D5185m      >5      6          ADDITIVES      method      limit/base      current      histony1      history2        Boron      ppm      ASTM D5185m      0      0          Magnese      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      0      595	WEAR METALS		method	limit/base	current	history1	history2
Nickel      ppm      ASTM D5185m      >2      1          Titanium      ppm      ASTM D5185m      >3      <1	Iron	ppm	ASTM D5185m	>80	46		
Titanium      ppm      ASTM D5185m      0          Silver      ppm      ASTM D5185m      >30      51          Aluminum      ppm      ASTM D5185m      >30      51          Lead      ppm      ASTM D5185m      >30      <1	Chromium	ppm	ASTM D5185m	>5	4		
Silver      ppm      ASTM D5185m      >3      <1          Aluminum      ppm      ASTM D5185m      >30      51          Lead      ppm      ASTM D5185m      >30      <1	Nickel	ppm	ASTM D5185m	>2	1		
Aluminum      ppm      ASTM D5185m      >30      51          Lead      ppm      ASTM D5185m      >30      <1	Titanium	ppm	ASTM D5185m		0		
Lead      ppm      ASTM D5185m      >30      <1          Copper      ppm      ASTM D5185m      >150      136          Tin      ppm      ASTM D5185m      >5      6          Vanadium      ppm      ASTM D5185m      0          Cadmium      ppm      ASTM D5185m      0      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      0      0          Molybdenum      ppm      ASTM D5185m      0      3          Maganese      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      950      595          Sulfur      ppm      ASTM D5185m      950      1935          Sulfur      ppm      ASTM D5185m      2600	Silver	ppm	ASTM D5185m	>3	<1		
Copper      ppm      ASTM D5185m      >15.0      136          Tin      ppm      ASTM D5185m      >5.5      6          Vanadium      ppm      ASTM D5185m      0          Cadmium      ppm      ASTM D5185m      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      0      0          Malpdenum      ppm      ASTM D5185m      0      46          Marganese      ppm      ASTM D5185m      0      3          Galcium      ppm      ASTM D5185m      0      3          Calcium      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      2600      1935	Aluminum	ppm	ASTM D5185m	>30	51		
Tin      ppm      ASTM D5185m      >5      6          Vanadium      ppm      ASTM D5185m      0          Cadmium      ppm      ASTM D5185m      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      2      26          Molybdenum      ppm      ASTM D5185m      0      0          Magnese      ppm      ASTM D5185m      50      46          Magnesium      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      950      595          Magnesium      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      950      1800          Sulfur      ppm      ASTM D5185m      200      1935 <td>Lead</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;30</td> <th>&lt;1</th> <td></td> <td></td>	Lead	ppm	ASTM D5185m	>30	<1		
Vanadium      ppm      ASTM D5185m      0          Cadmium      ppm      ASTM D5185m      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      2      26          Barium      ppm      ASTM D5185m      0      0          Molybdenum      ppm      ASTM D5185m      0      46          Magnese      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      0      3          Calcium      ppm      ASTM D5185m      1050      1600          Sulfar      ppm      ASTM D5185m      260      1935	Copper	ppm	ASTM D5185m	>150	136		
Cadmium      ppm      ASTM D5185m      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      2      26          Barium      ppm      ASTM D5185m      0      0          Molybdenum      ppm      ASTM D5185m      0      46          Magnesium      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      950      1600          Calcium      ppm      ASTM D5185m      955      743          Sulfur      ppm      ASTM D5185m      2600      1935          Sulfur      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20		ppm	ASTM D5185m	>5	6		
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m226BariumppmASTM D5185m00MolybdenumppmASTM D5185m5046MagneseppmASTM D5185m03MagnesiumppmASTM D5185m950595CalciumppmASTM D5185m10501600PhosphorusppmASTM D5185m995743ZincppmASTM D5185m26001935SulfurppmASTM D5185m26001935SulfurppmASTM D5185m207SodiumppmASTM D5185m>207INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.7NitrationAbs/.mm*ASTM D744>3023.4FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.lmm*ASTM D744>2523.9	Vanadium	ppm	ASTM D5185m		0		
Boron      ppm      ASTM D5185m      2      26          Barium      ppm      ASTM D5185m      0      0          Molybdenum      ppm      ASTM D5185m      50      46          Manganese      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      1050      1600          Calcium      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      2600      1935          Sulfur      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      2	Cadmium	ppm	ASTM D5185m		0		
Barium      ppm      ASTM D5185m      0      0          Molybdenum      ppm      ASTM D5185m      50      46          Manganese      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      1050      1600          Phosphorus      ppm      ASTM D5185m      1050      1600          Zinc      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      2600      1935          Sulfur      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      126          INFRA-RED      method	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum      ppm      ASTM D5185m      50      46          Manganese      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      1050      1600          Phosphorus      ppm      ASTM D5185m      1050      1600          Zinc      ppm      ASTM D5185m      1180      935          Sulfur      ppm      ASTM D5185m      2600      1935          Solicon      ppm      ASTM D5185m      2600      1935          Solicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      126          INFRA-RED      method      limit/base      current      history1      history2        Soot %      % <td< td=""><td>Boron</td><td>ppm</td><td>ASTM D5185m</td><td>2</td><th>26</th><td></td><td></td></td<>	Boron	ppm	ASTM D5185m	2	26		
Manganese      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      1050      1600          Phosphorus      ppm      ASTM D5185m      995      743          Zinc      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      2600      1935          Sulfur      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      126          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844 <td< td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th>0</th><td></td><td></td></td<>	Barium	ppm	ASTM D5185m	0	0		
Magnesium      ppm      ASTM D5185m      950      595          Calcium      ppm      ASTM D5185m      1050      16000          Phosphorus      ppm      ASTM D5185m      995      743          Zinc      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      995      743          Sulfur      ppm      ASTM D5185m      2600      1935          CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      126          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844	Molybdenum	ppm	ASTM D5185m	50	46		
Calcium      ppm      ASTM D5185m      1050      1600          Phosphorus      ppm      ASTM D5185m      995      743          Zinc      ppm      ASTM D5185m      995      743          Zinc      ppm      ASTM D5185m      1180      935          Sulfur      ppm      ASTM D5185m      2600      1935          CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      7          Potassium      ppm      ASTM D5185m      >20      126          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      >3      0.7          Nitration      Abs/rm< *ASTM D7624	Manganese	ppm	ASTM D5185m	0	3		
Phosphorus      ppm      ASTM D5185m      995      743          Zinc      ppm      ASTM D5185m      1180      935          Sulfur      ppm      ASTM D5185m      2600      1935          CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      126          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7624      >20      10.2          Sulfation      Abs/.mm      *ASTM D7415      >30      23.4          FLUID DEGRADATION      method      limit/base<	Magnesium	ppm	ASTM D5185m	950	595		
Zinc      ppm      ASTM D5185m      1180      935          Sulfur      ppm      ASTM D5185m      2600      1935          CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      126          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      >3      0.7          Nitration      Abs/cm      *ASTM D7624      >20      10.2          Sulfation      Abs/.1mm      *ASTM D7415      >30      23.4          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D	Calcium	ppm	ASTM D5185m	1050	1600		
SulfurppmASTM D5185m26001935CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>207SodiumppmASTM D5185m>207PotassiumppmASTM D5185m>20126INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.7NitrationAbs/cm*ASTM D7624>2010.2SulfationAbs/.tmm*ASTM D7415>3023.4FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.tmm*ASTM D7414>2523.9	Phosphorus	ppm	ASTM D5185m	995	743		
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>207SodiumppmASTM D5185m5PotassiumppmASTM D5185m>20126INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.7NitrationAbs/cm*ASTM D7624>2010.2SulfationAbs/.tmm*ASTM D7415>3023.4FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.tmm*ASTM D7414>2523.9	Zinc	ppm	ASTM D5185m	1180	935		
Silicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      5           Potassium      ppm      ASTM D5185m      >20      126          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7624      >20      10.2          Nitration      Abs/cm      *ASTM D7624      >20      10.2          Sulfation      Abs/.1mm      *ASTM D7624      >20      23.4          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      23.9	Sulfur	ppm	ASTM D5185m	2600	1935		
Sodium      ppm      ASTM D5185m      5          Potassium      ppm      ASTM D5185m      >20      126          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      >3      0.7          Nitration      Abs/cm      *ASTM D7624      >20      10.2          Sulfation      Abs/.1mm      *ASTM D7415      >30      23.4          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      23.9	CONTAMINANT	S	method	limit/base	current	history1	history2
Potassium      ppm      ASTM D5185m      >20      126          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      >3      0.7          Nitration      Abs/cm      *ASTM D7624      >20      10.2          Sulfation      Abs/.1mm      *ASTM D715      >30      23.4          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      23.9	Silicon	ppm	ASTM D5185m	>20	7		
INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      >3      0.7          Nitration      Abs/cm      *ASTM D7624      >20      10.2          Sulfation      Abs/.1mm      *ASTM D7415      >30      23.4          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      23.9		ppm			5		
Soot %      %      *ASTM D7844      >3      0.7          Nitration      Abs/cm      *ASTM D7624      >20      10.2          Sulfation      Abs/.1mm      *ASTM D7415      >30      23.4          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      23.9	Potassium	ppm	ASTM D5185m	>20	126		
Nitration      Abs/cm      *ASTM D7624      >20      10.2          Sulfation      Abs/.1mm      *ASTM D7415      >30      23.4          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      23.9	INFRA-RED		method	limit/base	current	history1	history2
SulfationAbs/.1mm*ASTM D7415>3023.4FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2523.9	Soot %	%	*ASTM D7844	>3	0.7		
FLUID DEGRADATION  method  limit/base  current  history1  history2    Oxidation  Abs/.1mm  *ASTM D7414  >25  23.9	Nitration	Abs/cm	*ASTM D7624	>20	10.2		
Oxidation Abs/.1mm *ASTM D7414 >25 23.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	23.4		
Base Number (BN)      mg KOH/g      ASTM D2896      7.2		ATION	method	limit/base	current	history1	history2
	FLUID DEGRADA						



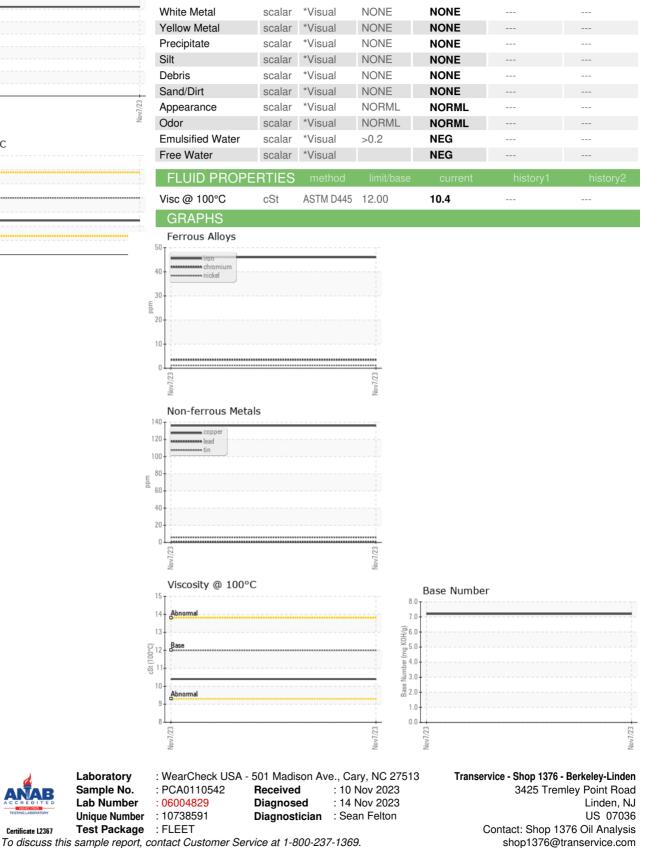
# **OIL ANALYSIS REPORT**

VISUAL









Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) Report Id: TSV1376 [WUSCAR] 06004829 (Generated: 11/15/2023 20:40:19) Rev: 1

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Certificate L2367

T:

F: