



10303 Alaska Road
Fort St. John, BC V1J 1B1
Telephone: 250-785-1171
Fax: 250-785-5936

Invoice

Invoice Information

Invoice Number 90104332
Service Order 4025705
Invoice Date 01/27/2016
Page 1 of 3

Invoice-to Customer

Canadian Natural Resources Limited
Bag 6450
Fort St John BC V1J 4H9
Canada

Sold-to Customer 1003531

Canadian Natural Resources Limited
2500 855 2nd Street SW
Calgary AB T2P 4J8
Canada

Reference Information

Ref.Order No./Date 70024919/ 01/12/2016
PO No. AFE TA161089

PO Date 01/12/2016
Currency CAD
Telephone 403-517-6700
Fax 403 517-6700

Sales Employee
Terms of Payment Net 30 days
Inco Terms EXW Ex Works
Description Ex Works
GST 84729 1085 RT0001

Ship-to Customer

Canadian Natural Resources Limited
Boulder
D-72-G/093-O-08
--- BC V00 000
Canada

Equipment Details

Unit	:	UNIT K102	98064
Engine	:	12AT27GL	C-12666/1
Compressor	:	COMJGC-4	F-13479
Cooler	:	COOLER	985099

INSPECT / REPLACE MAIN BEARINGS
GD WORK ORDER: 4025705

ORDERED BY: DARREN ACHESON

JOB DATE: DEC 11

WORK SCOPE:

TRAVEL TO SITE, OBTAIN PERMIT AND PERFORM PJHA
PERFORM ANALYSIS ON FAILURE AND INSPECT FOR METAL IN FILTER HOUSING
PROCEED WITH REPLACING MAIN AND ROD BEARINGS
RUN UNIT AND VERIFY CORRECT OIL PRESSURE AND TEMPS
PERFORM PAPER WORK, CLEAN AREA, TRAVEL HOME

COST'S ABOVE QUOTE

: AIR FREIGHT \$339.61
: EXPEDITING FEE \$1,029.11
: CALL OUT \$150.00
: 3DT HOURS PER TECH PUMPING COLD OIL \$954.06
: SUMP DOOR O-RINGS \$1,242.77
: \$1,437.50
TOTAL: \$5,153.05

GAS DRIVE COST'S TO THE JOB

: 1 NIGHT ACCOMMODATION FOR TWO TECHS
: 3HOURS OT PER TECH FOR TRYING TO PUMP COLD OIL



Invoice
90104332

Service Order
4025705

Page 2 of 3

: 4 DAYS OF TIME (BRIAN POTTER)
: EXTRA KM AND TRAVEL TIME
: HOTSHOTS PERTAINING TO JOB
TOTAL COST OF \$4,766.50

NOTES: IT IS IMPORTANT WHEN REVIEWING INVOICE THAT QUOTE WAS DONE IN
ACCORDANCE WITH A MONDAY-FRIDAY MENTALITY.
BOTH TECHS TRAVELED ON A SUNDAY TO CHETWYND
TOTAL DOLLARS ON QUOTE FOR TRAVEL WAS \$2,786.70 CNRL WAS BILLED
\$2,623.83

WAUKESHA 12AT27GL C-12666/1
ARIEL JGC-4 F-13479
RUN HOURS: 70500

Techs: NOLAN UNRUH / BRIAN POTTER

Item	Material/Description	Quantity	Unit Price	Disc	Total
1	5500800/Field Reg	48.5 HR	101.15		4,905.78
2	5500800/Field OT 1.5	16.0 HR	136.55		2,184.80
3	5500800/Field OT Double	6.0 HR	159.01		954.06
4	5500809/Travel Expenses per DIEM	1 PD	80.00		80.00
5	5500801/Travel Reg.	2.0 HR	101.15		202.30
6	5500801/Travel OT 1.5	9.0 HR	136.55		1,228.95
7	5500801/Travel OT Double	7.5 HR	159.01		1,192.58
8	5500804/Service Truck Mileage/Kilometers	690 KMT	1.32		910.80
9	5500809/Travel Expenses per DIEM	5 PD	80.00		400.00
10	5500808/Travel Expenses	1 EA	718.75		718.75



Invoice
90104332

Service Order
4025705

Page 3 of 3

11	5500808/Travel Expenses	1 EA	718.75		718.75
12	290098:WAU/TUBULAR SEAL RING	7 EA	230.57		1,242.77
	Manual Discount			23.00-%	
13	A280110T:WAU/NBL BEARING, CONNECTING ROD	12 EA	1,574.98		14,552.82
	Manual Discount			23.00-%	
	SET OF UPPER AND LOWER				
14	A280118S:WAU/NBL BEARING,CRANKSHAFT MAIN	7 EA	1,689.69		9,107.43
	Manual Discount			23.00-%	
15	5000122/Consumables Charge	1 EA	323.68		323.68
16	5000118/Parts External Freight	1 EA	339.61		339.61
17	5000118/Parts External Freight	1 EA	1,029.11		1,029.11
18	5000125/Parts Sales Call Out Charge	1 EA	150.00		150.00

Gross Value	47,680.75
Additional Discount	7,438.56-
Sub-total	40,242.19
GST	2,012.11

Total Tax 2,012.11


Labour: 10,668.47
Material: 24,903.02
Other: 4,670.70

Total Amount 42,254.30

Amount to pay 42,254.30 CAD

Please Remit To:
Gas Drive Global LP
Lockbox #C3184
PO Box 9187, Station M
Calgary, AB, T2P 5E1

[illegible]



Job Card

DUPLICATE

S.T.

O.T.

D.T.

N.P.

BRANCH:

EMPLOYEE NAME:

EMPLOYEE NUMBER:

SERVICE ORDER NO.:

CUSTOMER NAME:

DATE:

IN:

OUT:

IN:

OUT:

IN:

OUT:

EMERGED

11/11/2019

ST

OT

DT

FUNCTION

HOURS

EMPLOYEE SIGNATURE

SUPERVISOR SIGNATURE

SERVICEMAN Brian Potter		ASSISTANT TECHNICIAN Nolan Unruh	
JOB DESCRIPTION Change main bearings			
CUSTOMER CNRL	W/O # 4025705	LOCATION Boulder	DATE Sun Dec 13/15
L.S.D. # D-72-G/93-008	CUSTOMER UNIT #	MFGR. EFX	UNIT # 500004926
ENG. MODEL 12AT27GL	SERIAL # C-12666/1	SPEC. —	RUN HRS.
COMP/GEN. MODEL Ariel JFC-4	SERIAL # F-13479	INT. MFLD VAC/PRESS —	

WORK PERFORMED

Load tooling & parts, Travel to Chetwynd.

ENTERED

DEC 17 2015

TUNE-UP ENGINE

LABOUR							TRAVEL LABOUR			TRUCK UNIT #		
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KM
							12	14				
							12	14			20	
											ONLY	
TOTAL						OPD	TOTAL				20	

SPECIALTY TOOLING RATES

SPECIALTY TOOLING RATES PER USAGE EFFECTIVE MAY 1, 2010

LASER OPTIC ALIGNMENT (SEQOA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
AT SULZER HYDRAULIC TORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
PST & GST ARE EXTRA - PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE			

CUSTOMER Dale Friesen PLEASE PRINT	SIGNATURE Dale Friesen	DATE
SERVICE TECH. Brian Potter PLEASE PRINT	SIGNATURE B-Potter	EMPL. # 8178 SK





DAILY FIELD SERVICE REPORT

SERVICE MAN Nolan Unruh		ASSISTANT TECHNICIAN Brian Potter	
JOB DESCRIPTION Inspect unit for failure as well as Change out main bearings			
CUSTOMER CNRL	W/O # 4025705	LOCATION Boulder	DATE Mon December 14 2015
L.S.D. # D-72-G/93-O-8	CUSTOMER UNIT # Sales	MFGR. Enerflex	UNIT #
ENG. MODEL 12AT27GL	SERIAL # C-12666/1	SPEC.	RUN HRS.
COMP/GEN. MODEL Ariel JGC-4		SERIAL # F-13479	INT. MFLD VAC/PRESS

WORK PERFORMED

Travel to location, obtain work permit, write up jsa, discuss work to be performed for the day, move to unit, bring AT tooling into building as well as parts, side doors were already removed from unit, inspect crank case for any debris found that the sump looked to be in good condition inspect gear train in the front and they looked good as well, remove cross tie bolts from side block, assemble tooling for main bearings, installed rams onto both of number 1 main studs, hook up hydraulic lines, suck up rams and squeeze residual oil in rams back into pump back rams off 1/4 of a turn, pressurize pump to 685 BAR, loosen nuts from main bearing cap, relieve pressure to rams, remove both hoses from rams, remove rams from main studs, remove nuts and lower main cap to sump, remove bearing from cap, roll out upper main bearing, inspect crank shaft, the crank looked to have normal wear on it, remove new mains from box double check part numbers, confirm new bearing were right, roll new bearing into block install new bearing into cap, we used lubriplate on bearing surfaces, lift main cap back up into place, tighten nuts with a tommy bar until cap was snug, install hydraulic rams onto studs, hook up both hoses, squeeze residual oil back into pump, back rams off 1/4 of a turn, pressurize pump to 180 BAR tighten nuts with tommy bar, nuts with paint marker, pressurize ram to 675 BAR, tighten nuts with tommy bar, release pressure to rams, remove both hoses and rams, verify markings on nuts were roughly 56 degrees turned from the initial point of 180 BAR, repeat procedure to main number four, we had to polish number four journal, the journal looked like it had bearing transfer onto crank shaft, clean material off crank until smooth, clean up building and tools, travel to Chetwynd.

ENTERED

DEC 17 2015

TUNE-UP ENGINE

LABOUR							TRAVEL LABOUR			TRUCK UNIT # 31046			
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KM	
							7.0	8.0		1.0		70	
8.0	12.0	4											
12.5	19.0	4	2.5									12.5	
							19.0	20.0		.5	.5	70	
TOTAL		8	2.5				TOTAL			1.5	.5	140	

SPECIALTY TOOLING RATES

SPECIALTY TOOLING RATES PER USAGE EFFECTIVE MAY 1, 2010			
LASER OPTIC ALIGNMENT (SEQOA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
275 / AT HYDRAULIC TORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
OTHER (PAM-SEQ OTHER)	\$ _____	OTHER (PAM-SEQ OTHER)	\$ _____
PST & GST ARE EXTRA - PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE			

CUSTOMER **Dale friesen**

PLEASE PRINT

SIGNATURE

DATE

SERVICE TECH. **Nolan Unruh**

PLEASE PRINT

SIGNATURE

EMPL. #
6695Distributor
Gas Engines

WHITE - ENGINE FILE

YELLOW - INVOICE

GREEN - BILLING

PINK - CASH

BLUE - CUSTOMER

WHITE - BRANCH

REV. 12, 02/13



DAILY FIELD SERVICE REPORT

SERVICE MAN Nolan Unruh		ASSISTANT TECHNICIAN Brian Potter	
JOB DESCRIPTION Inspect unit for failure as well as Change out main bearings			
CUSTOMER CNRL	W/O # 4025705	LOCATION Boulder	DATE <i>Tues</i> December 15 2015
L.S.D. # D-72-G/93-O-8	CUSTOMER UNIT # Sales	MFGR. Enerflex	UNIT #
ENG. MODEL 12AT27GL	SERIAL # C-12666/1	SPEC.	RUN HRS.
COMP/GEN. MODEL Ariel JGC-4		SERIAL # F-13479	INT. MFLD VAC/PRESS

WORK PERFORMED

Travel to site from Chetwynd, installed rams onto both of number 5 main studs, hook up hydraulic lines, suck up rams and squeeze residual oil in rams back into pump back rams off 1/4 of a turn, pressurize pump to 685 BAR, loosen nuts from main bearing cap, relieve pressure to rams, remove both hoses from rams, remove rams from main studs, remove nuts and lower main cap to sump, remove bearing from cap, roll out upper main bearing, inspect crank shaft, the crank looked to have normal wear on it, remove new mains from box double check part numbers, confirm new bearing were right, roll new bearing into block install new bearing into cap, we used lubriplate on bearing surfaces, lift main cap back up into place, tighten nuts with a tommy bar until cap was snug, install hydraulic rams onto studs, hook up both hoses, squeeze residual oil back into pump, back rams off 1/4 of a turn, pressurize pump to 180 BAR tighten nuts with tommy bar, nuts with paint marker, pressurize ram to 675 BAR, tighten nuts with tommy bar, release pressure to rams, remove both hoses and rams, verify markings on nuts were roughly 56 degrees turned from the initial point of 180 BAR, repeat procedure to main number 7, we had to polish journals 5 and 6 the journal had a couple high spots, remove high spots with emery clothe, found that some of the main caps were pretty tight to get back into block, used porta power to spread block and lift main bearing caps up into place. clean up building and tools, travel to chetwynd.

ENTERED

DEC 17 2015

USED AT TOOLING

TUNE-UP ENGINE

LABOUR							TRAVEL LABOUR			TRUCK UNIT #		
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KM
							7.0	8.0		1.0		70
8.0	12.0	4										
12.5	19.0	4	2.5									
							19.0	20.0		.5	.5	70
TOTAL		8	2.5			OPD	TOTAL			1.5	.5	140

SPECIALTY TOOLING RATES

10.5

2.0

SPECIALTY TOOLING RATES PER USAGE EFFECTIVE MAY 1, 2010			
LASER OPTIC ALIGNMENT (SEQOA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
275 / AT HYDRAULIC TORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
OTHER (PAM-SEQ OTHER)	\$ 250.00	OTHER (PAM-SEQ OTHER)	\$ _____
PST & GST ARE EXTRA - PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE			

DATE

CUSTOMER Dale friesen

PLEASE PRINT

SIGNATURE

SERVICE TECH. Nolan Unruh

PLEASE PRINT

SIGNATURE

EMPL. #
6695Distributor
Gas Engines

WHITE - ENGINE FILE

YELLOW - INVOICE

GREEN - BILLING

PINK - CASH

BLUE - CUSTOMER

WHITE - BRANCH

REV. 12, 02/13



DAILY FIELD SERVICE REPORT

SERVICEMAN Nolan Unruh		ASSISTANT TECHNICIAN Brian Potter	
JOB DESCRIPTION Inspect unit for failure as well as Change out main bearings			
CUSTOMER CNRL	W/O # 4025705	LOCATION Boulder	DATE <i>Wed.</i> December 16 2015
L.S.D. # D-72-G/93-O-8	CUSTOMER UNIT # K-103	MFGR. Enerflex	UNIT #
ENG. MODEL 12AT27GL	SERIAL # C-12666/1	SPEC.	RUN HRS.
COMP/GEN. MODEL Ariel JGC-4	SERIAL # F-13479	INT. MFLD VAC/PRESS	

WORK PERFORMED

Drive to Groundbirch meet hotshot load up bearings into service truck, travel to location review work permit, write up jsa, discuss work to be performed for the day, Torque down cross ties, 37 FT/LBS plus 60 degrees, clean out crankcase, install hydraulic ram onto con rod stud and found that we had the wrong tooling, go to office make calls, organize for right tooling to arrive in Fort St John For December 17 2015, clean up building and tools, travel to Fort St John.

ENTERED
DEC 22 2015

TUNE-UP ENGINE

LABOUR							TRAVEL LABOUR			TRUCK UNIT #		
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KM
							7.0	9.5	1.5	1.0		120
9.5	12.0	2.5										
12.5	14.5	2.0										
							14.5	17.0	2.0	1.5		70
TOTAL		4.5					TOTAL		3.5	1.5		190

SPECIALTY TOOLING RATES

SPECIALTY TOOLING RATES PER USAGE EFFECTIVE MAY 1, 2010			
LASER OPTIC ALIGNMENT (SEQOA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
275 / AT HYDRAULIC TORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
OTHER (PAM-SEQ OTHER)	\$ 250.00	OTHER (PAM-SEQ OTHER)	\$ _____
PST & GST ARE EXTRA - PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE			

CUSTOMER Dale friesen

PLEASE PRINT

Dale
SIGNATURE

DATE

SERVICE TECH. Nolan Unruh

PLEASE PRINT

NU
SIGNATURE

EMPL. #
6695



Distributor
Gas Engines

WHITE - ENGINE FILE

YELLOW - INVOICE

GREEN - BILLING

PINK - CASH

BLUE - CUSTOMER

WHITE - BRANCH

REV. 12, 02/13



DAILY FIELD SERVICE REPORT

SERVICE MAN Nolan Unruh		ASSISTANT TECHNICIAN Brian Potter	
JOB DESCRIPTION Inspect unit for failure as well as Change out main bearings			
CUSTOMER CNRL	W/O # 4025705	LOCATION Boulder	DATE Thurs December 17 2015
L.S.D. # D-72-G/93-O-8	CUSTOMER UNIT # K-102	MFGR. Enerflex	UNIT #
ENG. MODEL 12AT27GL	SERIAL # C-12666/1	SPEC.	RUN HRS.
COMP/GEN. MODEL Ariel JGC-4	SERIAL # F-13479	INT. MFLD VAC/PRESS	

WORK PERFORMED

Pick up tooling from Fort St John office, travel to location, review work permit, write up jsa, discuss work to be performed for the day, set up AT tooling, rotate engine over until number 1 left bank con rod cap can be removed, install hydraulic rams onto con rod studs, hook up lines, turn rams all the way in, release rams 1/4 turn, pressure up rams with pump to 550 BAR, loosen nuts from con rod cap, release pressure from rams, remove lines and rams from studs, remove bottom nut from con rod cap as well as stud, remove top nut, remove cap from crank case, install bottle jack into crank case, lift up bottom of con rod, remove bottom bearing, rotate upper bearing, inspect crank shaft, found a couple of high spots, used emery clothe to remove high spots, clean crank journal, rotate new bearings, into place, the bearings used were both none grooved due to service bulletin update, the use of grooved con rod bearings can cause main bearings to cavitate, I used type T bearings, I used lubriplate for bearing installation, install tool onto lower bearing and rotate bearing up until tool was lined up with con rod, set con rod down from bottle jack, verify bearing alignment, remove tool, wipe off back side of bearings, clean connecting rod cap, install cap onto con rod stud, install bottom stud and nut, bring cap up evenly, snug nuts with tommy bar, make sure bearing and big end alignment is cosier, install hydraulic rams onto studs, hook up lines, tighten ram down, back ram out 1/4 turn, pressurize pump to 180 BAR, tighten nuts with tommy bar, mark nuts with felt pen, pressurize pump to 530 BAR, fasten nuts, release pressure to rams, remove lines and rams from studs, check mark on nut verify degrees turned is 56 degrees, check con rod for side play move repeat procedure through con rods one to six left bank and con rods number five and six right bank, clean up building and tools, travel to Chetwynd.

Used AT tooling

ENTERED

DEC 22 2015

TUNE-UP ENGINE

LABOUR							TRAVEL LABOUR			TRUCK UNIT #		
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KM
6.0	7.5		1.5									
							7.5	10.0	2.0	.5		190
10.0	12.0	2.0										
12.5	19.5	4.0	2.0	1.0								
							19.5	20.5			1.0	70
TOTAL		6.0	3.5	1.0		OPD	TOTAL		2.0	.5	1.0	260

SPECIALTY TOOLING RATES

SPECIALTY TOOLING RATES PER USAGE EFFECTIVE MAY 1, 2010			
LASER OPTIC ALIGNMENT (SEQQA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
275 / AT HYDRAULIC TORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
OTHER (PAM-SEQ OTHER)	\$ 250.00	OTHER (PAM-SEQ OTHER)	\$ _____
PST & GST ARE EXTRA - PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE			

CUSTOMER **Dale friesen**

PLEASE PRINT

SIGNATURE

DATE

SERVICE TECH. **Nolan Unruh**

PLEASE PRINT

SIGNATURE

EMPL. #
6695Distributor
Gas Engines

WHITE - ENGINE FILE

YELLOW - INVOICE

GREEN - BILLING

PINK - CASH

BLUE - CUSTOMER

WHITE - BRANCH

REV. 12, 02/13

SERVICEMAN Brian Potter		ASSISTANT TECHNICIAN Nolan Unruh	
JOB DESCRIPTION Bearing Swap			
CUSTOMER CNRL	W/O # 4025705	LOCATION Boulder	DATE 1 Thurs Dec 17/15
L.S.D. # D-72G/93-0-8	CUSTOMER UNIT # K-102	MFGR. EFX	UNIT #
ENG. MODEL 12AT27GL	SERIAL # C-12666/1	SPEC. —	RUN HRS. 70500
COMP/GEN. MODEL Ariel JGC-4	SERIAL # F-13479	INT. MFLD VAC/PRESS —	

WORK PERFORMED

~~Travel~~ Pick up tooling from Landtran truck at shop. Travel to site, Sign in, Fill out JSA, Swap con rod bearings LB#1-6 & RB#5-6, Pack up tooling, Clean up building, Sign out, Travel to Chetwynd.

ENTERED
DEC 22 2015

8005471 F777

TUNE-UP ENGINE

LABOUR							TRAVEL LABOUR			TRUCK UNIT #		
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KM
6	7.5		1.5			OPD	7.5	10	2.0	.5	BC ONLY	
10	12	2.0										
12.5	19.5	4.0	2.0	1.0			19.5	20.5			1.0	
TOTAL		6.0	3.5	1.0		OPDV	TOTAL		2.0	.5	1.0	

SPECIALTY TOOLING RATES

SPECIALTY TOOLING RATES PER USAGE EFFECTIVE MAY 1, 2010

LASER OPTIC ALIGNMENT (SEQOA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
AT SULZER HYDRAULIC TORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00

PST & GST ARE EXTRA - PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

CUSTOMER Dale Friesen PLEASE PRINT	SIGNATURE Dale Friesen	DATE
SERVICE TECH. Brian Potter PLEASE PRINT	SIGNATURE B. Potter	EMPL. # 8178





DAILY FIELD SERVICE REPORT

SERVICEMAN Nolan Unruh		ASSISTANT TECHNICIAN Brian Potter	
JOB DESCRIPTION Change out Con rod bearings, inspect crank			
CUSTOMER CNRL	W/O # 4025705	LOCATION Boulder	DATE FRI December 18 2015
L.S.D. # D-72-G/93-O-8	CUSTOMER UNIT # K-102	MFGR. Enerflex	UNIT #
ENG. MODEL 12 AT27GL	SERIAL # C-12666/1	SPEC.	RUN HRS. 70500
COMP/GEN. MODEL Ariel JGC-4	SERIAL # F-13479	INT. MFLD VAC/PRESS	

WORK PERFORMED

install hydraulic rams onto con rod studs, hook up lines, turn rams all the way in, release rams 1/4 turn, pressure up rams with pump to 550 BAR, loosen nuts from con rod cap, release pressure from rams, remove lines and rams from studs, remove bottom nut from con rod cap as well as stud, remove top nut, remove cap from crank case, install bottle jack into crank case, lift up bottom of con rod, remove bottom bearing, rotate upper bearing, inspect crank shaft, found a couple of high spots, used emery clothe to remove high spots, found high spots on journals right bank one and four, clean crank journal, rotate new bearings, into place, the bearings used were both none grooved due to service bulletin update, the use of grooved con rod bearings can cause main bearings to cavitate, I used type T bearings, I used lubriplate for bearing installation, install tool onto lower bearing and rotate bearing up until tool was lined up with con rod, set con rod down from bottle jack, verify bearing alignment, remove tool, wipe off back side of bearings, clean connecting rod cap, install cap onto con rod stud, install bottom stud and nut, bring cap up evenly, snug nuts with tommy bar, make sure bearing and big end alignment is cosier, install hydraulic rams onto studs, hook up lines, tighten ram down, back ram out 1/4 turn, pressurize pump to 180 BAR, tighten nuts with tommy bar, mark nuts with felt pen, pressurize pump to 530 BAR, fasten nuts, release pressure to rams, remove lines and rams from studs, check mark on nut verify degrees turned is 56 degrees, check con rod for side play move repeat procedure through con rods one to four right bank, swab out crank case, (It took over six hours to fill sump using bulk fill as well as both day tanks to fill sump of engine) installed new o rings in side doors, installed side doors onto engine, hook up breather piping, install spark plugs, spark plug extensions, coils and leads, prelube unit till unit was bled, go for a start on unit. check oil pressure on unit, oil pressure was at 480 at the beginning, oil differential pressure was at 90 PSI, monitor unit, check fluids, do Waukesha start up procedure, start and ran unit for 10 minutes at low idle, stopped unit, removed side doors, checked bearing temps the mains were at 50 degrees to 53 degrees as well as the con rods, we did use cold oil, install side doors back onto unit, start unit up slowly ramp up unit, until full load, monitor unit clean up all tooling and building, write up time for the day, travel to Chetwynd.

Used AT tooling

ENTERED

DEC 22 2015

TUNE-UP ENGINE

LABOUR							TRAVEL LABOUR			TRUCK UNIT #		
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KM
							7.0	8.0		1.0		70
8.0	12.0	4										
12.5	22.5	4	3.0	3.0								
							22.5	23.5			1.0	70
TOTAL		8	3.0	3.0		OPD	TOTAL			1.0	1.0	140

SPECIALTY TOOLING RATES

SPECIALTY TOOLING RATES PER USAGE EFFECTIVE MAY 1, 2010			
LASER OPTIC ALIGNMENT (SEQOQA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
275 / AT HYDRAULIC TORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
OTHER (PAM-SEQ OTHER)	\$ _____	OTHER (PAM-SEQ OTHER)	\$ _____
PST & GST ARE EXTRA - PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE			

CUSTOMER **Dale friesen**

PLEASE PRINT

SIGNATURE

DATE

SERVICE TECH. **Nolan Unruh**

PLEASE PRINT

SIGNATURE
EMPL. #
6695Distributor
Gas Engines

WHITE - ENGINE FILE

YELLOW - INVOICE

GREEN - BILLING

PINK - CASH

BLUE - CUSTOMER

WHITE - BRANCH

REV. 12, 02/13

SERVICEMAN Brian Potter		ASSISTANT TECHNICIAN Nolan Unruh	
JOB DESCRIPTION Bearing Swap			
CUSTOMER CNRL	W/O # 4025705	LOCATION Boulder	DATE FRI Dec 18/15
L.S.D. # D-72-G/930-8	CUSTOMER UNIT # K-102	MFGR. EFX	UNIT #
ENG. MODEL 12AT27GL	SERIAL # C-12666/1	SPEC. -	RUN HRS. 70500
COMP/GEN. MODEL Ariel JEC-4	SERIAL # F-13479	INT. MFLD VAC/PRESS -	

WORK PERFORMED

Travel to site, Sign in, Fill out JSA, Swap rod bearings RB#1-4, Attach steps, Swab crankcase, Begin filling oil, Change side door o-rings, Attach side doors, Install plugs/extensions & coils, Hook up breather piping, Clean up building, Stand by waiting for oil to pump which took excessive time due to cold bulk storage supply, Start unit, Run 10 min, Shut down unit, Check bearing temps, Top up oil, Put side doors back on, Start unit, Run to necessary temp, Gradually load while monitoring, Pick up tooling, Clean up. Sign out, Travel to Chetwynd

TUNE-UP ENGINE

LABOUR							TRAVEL LABOUR						TRUCK UNIT #	
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KM		
						OPD	7	8		1.0				
8	12	4												
12.5	22.5	4	3.0	3.0										
							22.5	23.5			1.0			
TOTAL		8	3.0	3.0		OPD ✓	TOTAL			1.0	1.0			

SPECIALTY TOOLING RATES

SPECIALTY TOOLING RATES PER USAGE EFFECTIVE MAY 1, 2010			
LASER OPTIC ALIGNMENT (SEQOA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
AT SULZER HYDRAULIC TORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
PST & GST ARE EXTRA - PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE			

CUSTOMER Dale Friesen PLEASE PRINT	SIGNATURE Dale Friesen	DATE DEC 22 2015
SERVICE TECH. Brian Potter PLEASE PRINT	SIGNATURE B. Potter	EMPL. # 8178





DAILY FIELD SERVICE REPORT

SERVICEMAN Nolan Unruh		ASSISTANT TECHNICIAN Brian Potter	
JOB DESCRIPTION Travel to Fort St John			
CUSTOMER CNRL	W/O # 4025705	LOCATION Boulder	DATE SAT December 19 2015
L.S.D. # D-72-G/93-O-8	CUSTOMER UNIT # K-103	MFGR. Enerflex	UNIT #
ENG. MODEL 12AT27GL	SERIAL # C-12666/1	SPEC.	RUN HRS.
COMP/GEN. MODEL Ariel JGC-4		SERIAL # F-13479	INT. MFLD VAC/PRESS

WORK PERFORMED

Travel to Fort St John from chetwynd.

ENTERED
DEC 22 2015

TUNE-UP ENGINE

LABOUR							TRAVEL LABOUR			TRUCK UNIT # 31046			
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KM	
							8.0	9.5		1.5		110	
TOTAL							TOTAL			1.5		100	

SPECIALTY TOOLING RATES

SPECIALTY TOOLING RATES PER USAGE EFFECTIVE MAY 1, 2010			
LASER OPTIC ALIGNMENT (SEQOA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
275 / AT HYDRAULIC TORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
OTHER (PAM-SEQ OTHER)	\$ 250.00	OTHER (PAM-SEQ OTHER)	\$ _____
PST & GST ARE EXTRA - PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE			

CUSTOMER _____ PLEASE PRINT	SIGNATURE _____	DATE _____
SERVICE TECH. Nolan Unruh PLEASE PRINT	SIGNATURE	EMPL. # 6695





ENGINE REPAIR SUMMARY

CUSTOMER Cnrl WO# 4025705
LOCATION Boulder L.S.D. D-72-G/93-O-8
UNIT # _____ DESIGNATION Sales Unit
COMPRESSOR MFG. _____ MODEL # 12AT27GL
TYPE OF GAS: SWEET xx SOUR _____ CUSTOMER CONTACT Joe Keithley
PHONE 250-785-1171 FAX _____ UNIT HRS _____

REASON FOR ATTENDING SITE:

1. EQUIPMENT FAILURE xx
2. SCHEDULED OVERHAUL _____
3. COMPLETE REPLACEMENT _____
4. ROUTINE INSPECITON _____

REPORTS ATTACHED:

- | | | |
|---|---------------|--------------|
| 1. ITEMIZED ENGINE REPAIR SUMMARY COMPLETED | YES <u>xx</u> | NO _____ |
| 2. ENGINE SETTINGS REPORT | YES _____ | NO <u>xx</u> |
| 3. ENGINE ALIGNMENT REPORT | YES _____ | NO <u>xx</u> |
| 4. MACHINE SHOP RECORDS | YES _____ | NO <u>xx</u> |

FLUIDS:

- | | | |
|--------------------------------|---------------|----------|
| 1. ENGINE COOLANT INSTALLED | YES <u>xx</u> | NO _____ |
| 2. ENGINE OIL INSTALLED | YES <u>xx</u> | NO _____ |
| 3. DAY TANK FILLED | YES <u>xx</u> | NO _____ |
| 4. ENGINE OIL FILTER REPLACED | YES <u>xx</u> | NO _____ |
| 5. ENGINE OIL STRAINER CLEANED | YES <u>xx</u> | NO _____ |

UNIT RESTARTED BY: CUSTOMER xx OTHER _____

PROBLEMS EXPERIENCED? YES xx NO _____ IF YES, BRIEFLY DESCRIBE:

The biggest issue experienced was filling the engine with oil through the bulk fill, the oil war very cold and made it a long proccess of filling the engine.

ENGINE COMPRESSION CHECK PERFORMED: YES _____ NO xx

#1	#2	#3	#4	#5	#6	#7	#8
----	----	----	----	----	----	----	----

RIGHT BANK CYLINDERS

LEFT BANK CYLINDERS

SERVICE TECHNICIAN: Nolan Unruh DATE: December 18 2015



ENGINE REPAIR SUMMARY

ENGINE MAKE: Waukesha
SERIAL #: C-12666/1

MODEL: 12AT27GL
ARRANGEMENT: _____

ITEM	INSPECTED		REUSE ORIGINAL	RECON. ORIGINAL	REPLACE NEW	REPLACE EXCHANGE	TORQUE VALUE	SETTING	CLEARANCE BKLASH/END PLAY
	YES	NO							
CRANKSHAFT	XX		XXX						
CRANKSHAFT COUNTERWEIGHTS	XX		XX						
MAIN BEARINGS	XX				XX				
VIBRATION DAMPOENER		XX							
CYLINDER HEADS		XX							
LIST LOCATION OF NEW HEADS		XX							
ROCKER ARMS/SHAFTS		XX							
HYD/STD PUSH RODS		XX							
PISTONS		XX							
PISTON RINGS		XX							
PISTON PINS		XX							
CON ROD BUSHINGS		XX							
CONNECTING RODS		XX							
LIST LOCATION OF NEW RODS		XX							
CON ROD BEARINGS	XX				XX				
CAM SHAFT		XX							
CAMSHAFT BEARINGS		XX							
CAMSHAFT FOLLOWERS		XX							
CAMSHAFT GEARS(S)		XX							
CRANKSHAFT GEAR		XX							
IDLER GEARS		XX							
ACCESSORY DRIVE		XX							
GOVENOR		XX							
CARBURATOR(S)		XX							
THROTTLE BODY(S)		XX							
CRANKSHAFT SEAL(S)		XX							
OIL PUMP		XX							
OIL FILTER	XX				XX				
OIL COOLER		XX							
OIL THERMOSTAT		X							
GLYCOL COOLANT THERMOSTAT		XX							
TURBO CHARGER		XX							
WASTEGATES		XX							
INTERCOOLER		XX							
COUPLING		XX							
COUPLING SHIM PACKS		XX							
PRE-LUBE PUMP		XX							
POST-COOLING PUMP		XX							
BREATHER/CRANKCASE		XX							
MAGNETO		XX							
AIR FILTER/OIL BATH		XX							
SPARK PLUGS	XX		XX						
COIL EXTENSION/LEADS	XX		XX						
IGNITION COILS	XX		XX						
HARNESS MAIN		XX							
DRIVE DISC		XX							
MODULE		XX							
PICKUP-HALL EFFECT		XX							
GL ENGINE ADMISSION VALVES		XX							

ITEM	CHECKED		SETTING		COMMENTS			
	YES	NO						
FUEL PRESSURE	xxx		RB	LB				
GAS OVER AIR PRESSURE		xx	RB	LB				
OIL PRESSURE	xx		P.S.I.	475 KPA				
CRANKCASE PRESSURE		xx	H2O					
BOOST/VACUUM		x	RB	LB				
EXHAUST TEMPERATURE		xx	RB	LB	Exhaust probes do not work			
EXHAUST BACK PRESSURE		xx	H2O					
IGNITION TIMING		xx	BTDC					
VALVE CLEARANCE		xx	INT	EXH				
GL ENGINE O2 LEVEL		xx	RB	LB				
OVER SPEED		xx	RPM					
JACKET WATER TEMP.	xx		DEGREE	78				
OIL TEMPERATURE	xx		DEGREE	75				
MANIFOLD TEMPERATURE		xx	DEGREE					

ENGINE MFG: _____ ARRANG#: _____ SERIAL #: _____
 SIGNED: _____ DATE: _____
 LASER ALIGNED: _____ DIAL ALIGNED: _____

FRONT

0. _____" <- 0. _____" <-	X-<PULL DOWNS-> x	0. _____" <- 0. _____" <-
0. _____" <- 0. _____" <-	X-<PULL DOWNS-> x	0. _____" <- 0. _____" <-
0. _____" <- 0. _____" <-	X-<PULL DOWNS-> x	0. _____" <- 0. _____" <-

FINAL READING

0 _____"

0 _____"

CRANK END PLAY

0 _____"

FACE

0 _____"

0 _____"

RIM

0 _____"

0 _____"

0 _____"

0 _____”