

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

Fax: 250-785-5936

Invoice

Invoice Information

Invoice Number Service Order 90104332 4025705 01/27/2016

Invoice Date 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 Inco Terms

Net 30 days EXW Ex Works

Description

Ex Works

GST

84729 1085 RT0001

Ship-to Customer

Canadian Natural Resources Limited

Boulder

D-72-G/093-O-08

Canada

Equipment Details

Unit

UNIT K102

98064

Engine

12AT27GL

C-12666/1

Compressor

COMJGC-4

F-13479 985099

Cooler : COOL
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





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





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	23.00-%	1,242.77
	Manual Discount			23.00-70	
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
		Additional	oss Value Discount Sub-total GST		47,680.75 7,438.56 40,242.19 2,012.11
Labou Materi Other:	al: 24,903.02	ר	Fotal Tax		2,012.11
		Total	Amount		42,254.30
		Amour	nt to pay	42,2	54.30 CAD
Gas Dr .ockbo PO Box	Remit To: ive Global LP x #C3184 t 9187, Station M r, AB, T2P 5E1				

O)			EMPI	SERV	5	S.T.			
Job Card	201			IN: 1530	OUT: 1730	IN:	OUT:	HOURS	TO TO .	SUPERVISORBIGNATURE
gas drive	- Constant	BRANCH: D.30	FINITOYEE INAMIE: Nolah Unruh	EMPLOYEE NOMBER: 6695	SERVICE ORDER NO.: 402,5705	CUSTOMER NAME: GAS DRIVE GLOBAL	S.T. 0.T. D.T. N.P.	FUNCTION	Load up AT Tooling, Load up parts, go through parts, Travel to Chetwynd, check into hotel.	EMPLYZE SIGNATURE SUI

Job Card	DATE	IN:	OUT:	IN:	OUT:	:«I	out:	HOURS	TO TS									SUPERVISOR SIGNATURE
gas drive		BRANCH:	EMPLOYEE NAME:	EMPLOYEE NUMBER:	SERVICE ORDER NO.:	CUSTOMER NAME:	S.T. 0.T. D.T. N.P.	FUNCTION				4	A STATE OF THE STA	200 A CA				EMPLOYEE SIGNATURE



[055)#05144						ASSISTANTTI	ECHNICIAN			1		
SERVICEMAN	Les Pal	Lor				Nola		nik-				
JOB DESCRIF	TION	100				, , , ,						
Ch	inge n	rain b	earings	W/O #			LOCATION		DAT	E S	u)	
CUSTOMER	Ne i		9	1 0 0 / 0 #	02570		Book	der		Decl	3/15	
L.S.D. #			CUSTOMER UI	NIT#		MFGR.			UNIT#	3110	71	
D-72-	G/93	0-0-8					FX		SOOC RUN HRS.	1049	6	
ENG. MODEL	2761	13	SERIAL#	7666	.//	SPEC.			NON HIII.			
COMP/GEN. I	MODEL			2000		SERIAL#	2.1-0-		INT. MFLD V	AC/PRESS	S	
Arie	1 150	J-4				F-13	3479					
WORK PE	RFORMED											
Load	tool	ng B	parts	, Tr	avel -	to O	hetwy	and o				
								NTERED				
							DI	EC 1 7 2015				
TUNE-UP	ENGINE									TRUCK U	JNIT#	
			LABOUR				T	RAVEL LABOUI	3			
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KIVI
						_	What I	The same of the sa				
							12	14			20	
							**				ONLY	
								TOTAL			20	
	TOTAL					090		IUIAL			9:0	
SPECIALT	YTOOLING	G RATES	CDF	CIAITVTOO	LING RATES PE	R LISAGE EEE	ECTIVE MAY 1	. 2010			F March	
	IO ALLONIO	F (0F00A)	SPEC	GIALIT TOO	\$ 250.00			ORQUING EQU	JIPMENT (SI	E QTE)	\$ 25	0.00
	IC ALIGNMEN											00.00
AT SULZER	HYDRAULICT	ORQUING EQU			\$ 250.00 - PRICES ARE S			BARRING DEVI	CE (SEGBD)		φ 10	3.00
	7		751 6(451	AUE EVINA	- FRICES ARE	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			DATE			
OLIOTO ASS	10 al	- trie	eser			Jule	ha	S				
CUSTOMER -	, ,	PLEASE					SIGNATURE		EMPL	#		
	Z	01	1-00		1	-	1	-	EIVIPL	3175	2	
SERVICETECH	Da	V 107	SE PRINT			-00	SIGNATURE					

Distributor Gas Engines

WHITE - ENGINE FILE

YELLOW - INVOICE GREEN - BILLING

PINK - CASH

BLUE - CUSTOMER

WHITE - BRANCH



SERVICEMAN			ASSISTANT	TECHNICIAN						
Nolan Unruh			Brian Potter							
JOB DESCRIPTION										
Inspect unit for failur	e as well as Ch	ange out mai	n bearings	3						
CUSTOMER		W/O #		LOCATION		DATE YON				
CNRL	4025705		Boulder		December 14 2015					
L.S.D. #	CUSTOMER UN	T #	MFGR.	·	UNIT#					
D-72-G/93-O-8	Sales		Enerfle	X						
ENG. MODEL	SERIAL#		SPEC.		RUN H	RS.				
12AT27GL	C-12666/									
COMP/GEN. MODEL			SERIAL#		INT. MF	LD VAC/PRESS				
Ariel JGC-4			F-13479)						
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.

UNE-UP EN	IGINE							RAVEL LABOU		3104		
			LABOUR									
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				4						
12.5	19.0	2	2.5							B	City	
							19.0	20.0		.5	.8	70
									14			-
	TOTAL	8	2.5			OPD		TOTAL		1.5	8	140
SPECIALTY T	OOLING	G RATES	10.5							2.	00	
			SPEC	CIALTYTOO	LING RATES PER	USAGE EFFEC	CTIVE MAY 1,	2010		1		
LASER OPTIC A	LIGNMENT	Γ (SEQOA)			\$ 250.00	CAT 3600 HY	YDRAULIC TO	ORQUING EQU	JIPMENT (SI	E QTE)	\$ 25	50.00
275 / AT HYDRA	ULICTORO	UING EQUIPN	MENT (SEQTE)		\$ 250.00	AIR OPERAT	ED ENGINE B	CE (SEQBD)	\$ 100.00			
OTHER (PAM-SE	EQ OTHER)				\$	OTHER (PAM-SEQ OTHER) \$						
			PST & GST	ARE EXTRA	- PRICES ARE S	UBJECT TO CH	ANGE WITHO	OUT NOTICE	Re I To	1453		
									DATE			
USTOMER Dale	e friesen	PLEASE	E PRINT			Dal	IGNATURE					
									EMPL			
ERVICETECH. No	olan Unru						VV		669	5		
		PLEA	SE PRINT			S	IGNATURE		P	4		





SERVICEMAN			ASSISTANTTECHNICIAN						
Nolan Unruh			Brian Potter						
JOB DESCRIPTION									
Inspect unit for failure as	well as Cha	ange out main	bearings						
CUSTOMER		W/O #		LOCATION		DATE TILOS			
CNRL	4025705		Boulder		December 15 2015				
L.S.D. #	CUSTOMER UNIT	T#	MFGR.		UNIT#				
D-72-G/93-O-8	Sales		Enerflex	(
ENG. MODEL	SERIAL#		SPEC.		RUN HE	RS.			
12AT27GL	C-12666/1			2					
COMP/GEN. MODEL Ariel JGC-4					INT. MF	LD VAC/PRESS			
Allei JGC-4			F-13479						

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

USED AT TOOLING

DEC. 1 7 2015

TUNE-UP	JNE-UP ENGINE LABOUR TRAVEL LABOUR TRAVEL LABOUR											
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START				OT 2.0	KIVI
							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

SPECIALTY TOOLING RATES PER USAGE EFFECTIVE MAY 1, 2010									
\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00							
\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00							
\$ 250.00	OTHER (PAM-SEQ OTHER)	\$							
	\$ 250.00 \$ 250.00	\$ 250.00 CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE) \$ 250.00 AIR OPERATED ENGINE BARRING DEVICE (SEQBD)							

DATE Dale friesen CUSTOMER

EMPL. # 6695 SERVICETECH. Nolan Unruh

PLEASE PRINT

KeyForms (403) 543-6060



DAILY FIELD SERVICE REPORT

SERVICEMAN			ASSISTANT	FECHNICIAN					
Nolan Unruh			Brian Potter						
JOB DESCRIPTION				7					
Inspect unit for failure as	well as Cha	ange out main	bearings						
CUSTOMER		W/O #		LOCATION		DATE Weel.			
CNRL	4025705		Boulder		December 16 2015				
L.S.D. #	CUSTOMER UNIT	#	MFGR.		UNIT#				
D-72-G/93-O-8	K-103		Enerflex	<					
ENG. MODEL	SERIAL#		SPEC.		RUN H	RS.			
12AT27GL	C-12666/1								
COMP/GEN. MODEL			SERIAL#		INT. MF	LD VAC/PRESS			
Ariel JGC-4			F-13479						

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 2 2 2015

TUNE-UP	ENGINE									TRUCK U		
			TR	31046								
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KIVI
							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

SPECIALT	YTOOLING RATES P	ER USAGE EFFECTIVE MAY 1, 2010	
LASER OPTIC ALIGNMENT (SEQOA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
275 / AT HYDRAULICTORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
OTHER (PAM-SEQ OTHER)	\$ 250.00	OTHER (PAM-SEQ OTHER)	\$

CUSTOMER Dale friesen PLEASE PRINT

> EMPL. # 6695

SERVICETECH. Nolan Unruh

PLEASE PRINT



DATE



SERVICEMAN				TECHNICIAN					
Nolan Unruh			Brian Potter						
JOB DESCRIPTION									
Inspect unit for failur	re as well as Cha	ange out mai	in bearings	<u> </u>					
CUSTOMER		W/O #		LOCATION		DATE Thurs_			
CNRL		4025705		Boulder		December 17 2015			
L.S.D. #	CUSTOMER UNIT	Γ#	MFGR.		UNIT #				
D-72-G/93-O-8	K-102		Enerfle	X					
ENG. MODEL	SERIAL#		SPEC.		RUN HE	RS.			
12AT27GL	C-12666/1					_			
COMP/GEN. MODEL			SERIAL#		INT. MF	LD VAC/PRESS			
Ariel JGC-4			F-13479						
WORK PERFORMED				n Y					
Pick up tooling from For	t St John office, trave	I to location, revi	iew work perm	nit, write up jsa, di	scuss work to	be performed for the day,			
set up AT tooling, rotate er	naine over until numb	er 1 left bank cor	n rod cap can	be removed, insta	all hydraulic r	ams onto con rod studs,			
hook up lines, turn rams a	II the way in, release	rams 1/4 turn, pr	essure up ran	ns with pump to 5	50 BAR, loos	en nuts from con rod cap,			

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

TUNE-UP ENGINE TRUCK UNIT #

	LABOUR							AVEL LABOU	R	31046		
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								-1140	
							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	10		OPD		TOTAL	20	.5	1.0	2600

SPECIALTY TOOLING RATES 10.5

SPECIALT	YTOOLING RATES PI	ER USAGE EFFECTIVE MAY 1, 2010	
LASER OPTIC ALIGNMENT (SEQOA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
275 / AT HYDRAULICTORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
OTHER (PAM-SEQ OTHER)	\$ 250.00	OTHER (PAM-SEQ OTHER)	\$

CUSTOMER Dale friesen

DUG

SIGNATURE

SERVICETECH. Nolan Unruh

SERVICETECH. SIGNATURE

EMPL. #
6695



REV. 12, 02/13



OED) (IOEA (A)	NI.					ASSISTANTT	ECHNICIAN					
SERVICEMAN	2 Pott	er				Nolan	Vor	de				
JOB DESCRI	PTION											
CUSTOMER	ring 5	wap		W/O #			LOCATION	1	DAT		hurs	1
CN	RL	,			2570	5	Bould	ler	UNIT#	Dec	111	15
L.S.D. #	G/az-	M-9	CUSTOMER U	NIT#		MFGR.	$=\chi$		ONIT#			
ENG. MODE	L	0 0	SERIAL#		1.	SPEC.			RUN HRS.	500		
(2AT)	279L		C-12	1666	/ \	SERIAL#			INT. MFLD V			
Arie	1 TGC	-4				F-1	3479		-			
00011121	RFORMED	3 + 1/2										
THE	& Pic	k up	tool	ing f	TSA ing, (and t	ran 2	ruck	at s	hop	Tr	wel
toc	ite s	Dlain It	· FI	ll out	TSA	, Sw	and co	borne	bear	ings	LB	# 1-
388	\$5-6	Par	ck up	tool	ing (lean	up bu	Ilding,	Sign	004	T	ravel
to F	Shetw	aund.		,	3,		1		J		•	
		2										
												\cap
									1	ENTER	RED (
									-	TEC 27	2015	
									1	AFO L		
			m.		171		79					
			80	305L	171	FT	77					
TUNE-UP	ENGINE			3054	171	FT	77	RAVEL LABOU	R	TRUCK	JNIT #	
The Park		REGULAR	LABOUR		ACCOMMODATIONS	SUBSISTENCE	TI	RAVEL LABOU	R REGULAR	TRUCK I	JNIT #	KIVI
START	FINISH	REGULAR	LABOUR OT 1.5	OT 2.0			A CONTRACTOR OF THE CONTRACTOR					KM
START		REGULAR	LABOUR			SUBSISTENCE OPD	START	FINISH	REGULAR			KM
START 6	FINISH		LABOUR OT 1.5				START	FINISH		OT 1.5	OT 2.0	KM
START 6	7.5	2.0	LABOUR OT 1.5	OT 2.0			START	FINISH	REGULAR	OT 1.5	OT 2.0	KIM
START 6	FINISH		LABOUR OT 1.5				START START	FINISH	REGULAR	OT 1.5	BC ONLY	KM
START 6	7.5 12 19.5	2.0	LABOUR OT 1.5	OT 2.0			START	FINISH	REGULAR	OT 1.5	OT 2.0	KM
START 6	7.5 12 19.5	2.0	LABOUR OT 1.5 1 . 5	OT 2.0			START START	FINISH 10	REGULAR	OT 1.5	BC ONLY	KIM
START 6	7.5 12 19.5	2.0	LABOUR OT 1.5 1.5	OT 2.0		OPDV	START	FINISH 10	REGULAR	OT 1.5	BC ONLY	KM
START 6 10 12.5 SPECIALT	7.5 12 19.5	2.0 4.0 6.0 G RATES	LABOUR OT 1.5 1.5	OT 2.0	ACCOMMODATIONS	OPDV	START S 7.5	FINISH 10	REGULAR	OT 1.5	BC ONLY	KM 50.00
START 6 10 12.5 SPECIALT	TOTAL	2.0 4.0 GRATES	LABOUR OT 1.5 1 . 5 2 . 5 SPE UIPMENT (SEO	OT 2.0	ACCOMMODATIONS LING RATES PE \$ 250.00 \$ 250.00	CAT 3600 AIR OPERA	START TO START	ZO.5 TOTAL ,2010 CORQUING EQ	REGULAR 2.0 UIPMENT (S	OT 1.5	OT 2.0 BC ONLY	*
START 6 10 12.5 SPECIALT	TOTAL TYTOOLING	2.0 4.0 GRATES	LABOUR OT 1.5 1 . 5 2 . 5 SPE UIPMENT (SEO	OT 2.0	ACCOMMODATIONS LING RATES PE \$ 250.00	CAT 3600 AIR OPERA	START TO START	ZO.5 TOTAL ,2010 CORQUING EQ	REGULAR 2.0 UIPMENT (S ICE (SEQBD)	OT 1.5	OT 2.0 BC ONLY	50.00
START 6 10 12.5 SPECIALT	TOTAL TYTOOLING	G RATES T (SEQOA) TORQUING EQ	LABOUR OT 1.5 1 . 5 2 . 5 C SPE UIPMENT (SEO PST & GST	OT 2.0	ACCOMMODATIONS LING RATES PE \$ 250.00 \$ 250.00	CAT 3600 AIR OPERA	START TO START	ZO.5 TOTAL ,2010 CORQUING EQ	REGULAR 2.0 UIPMENT (S	OT 1.5	OT 2.0 BC ONLY	50.00
START 6 10 12.5 SPECIALT	TOTAL TYTOOLING	GRATES T (SEQOA) TORQUING EQ	LABOUR OT 1.5 1 . 5 2 . 5 SPE UIPMENT (SEO	OT 2.0	ACCOMMODATIONS LING RATES PE \$ 250.00 \$ 250.00	CAT 3600 AIR OPERA	START TO START	ZO.5 TOTAL ,2010 CORQUING EQ	UIPMENT (S	OT 1.5	OT 2.0 BC ONLY	50.00
START 6 10 12.5 SPECIALT LASER OPT AT SULZER	TOTAL TYTOOLING	GRATES T (SEQOA) TORQUING EQ	LABOUR OT 1.5 1 . 5 2 . 5 SPE UIPMENT (SEO PST & GST	OT 2.0	ACCOMMODATIONS LING RATES PE \$ 250.00 \$ 250.00	CAT 3600 AIR OPERA	START 3 7.5 19.5 ECTIVE MAY 1 HYDRAULIC T ATED ENGINE	ZO.5 TOTAL ,2010 CORQUING EQ	REGULAR 2.0 UIPMENT (S ICE (SEQBD)	OT 1.5	OT 2.0 BC ONLY	50.00

Distributor Gas Engines REV. 11, 07/14



SERVICEMAN Nolan Unruh			ASSISTANT TECHNICIAN Brian Potter					
JOB DESCRIPTION Change out Con rod b	earings, inspe	ct crank						
CUSTOMER		w/o # 4025705		Boulder		December 18 2015		
L.S.D. # D-72-G/93-O-8	K-102	- #	MFGR. Enerfle:	X	UNIT#			
ENG. MODEL 12 AT27GL	SERIAL # C-12666/1		SPEC.		7050	00		
COMP/GEN. MODEL Ariel JGC-4			F-13479		INT. MF	FLD 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

TRUCK UNIT # **TUNE-UP ENGINE** 31046 TRAVEL LABOUR LABOUR REGULAR OT 1.5 FINISH OT 2.0 KM OT 2.0 ACCOMMODATIONS SUBSISTENCE START FINISH REGULAR OT 1.5 START 70 7.0 8.0 12.0 L 8.0 4 12.5 22.5 3.0 3.0 22.5 23.5 70 OPD TOTAL 0 140 1.0

DECLALTY TOOLING PATES

TOTAL

PECIALI Y TOOLING RATES 19.0 SPECIALT	Y TOOLING RATES P	ER USAGE EFFECTIVE MAY 1, 2010	
LASER OPTIC ALIGNMENT (SEQOA)	\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
275 / AT HYDRAULICTORQUING EQUIPMENT (SEQTE)	\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
OTHER (PAM-SEQ OTHER)	\$	OTHER (PAM-SEQ OTHER)	\$

3.0

Dale friesen CUSTOMER

3.0

EMPL. # 6695

DATE

FNTERED

Distributor
Gas Engines

SERVICETECH. Nolan Unruh

16

PLEASE PRINT



SERVICEMA	N					ASSISTANT	TECHNICIAN					
Brian	Pott	er				Nolar	Vivis	Jh.				
JOB DESCRI	_	•					,					
CUSTOMER	ring 5	map		W/O #			LOCATION		DA	TE FR	211	
CNI	RL			40	2570)5	Boul	der		Decl	8/18	5
L.S.D. #	-G/92	-1-8	CUSTOMER	JNIT#		MFGR.	FV		UNIT#			
ENG. MODE	L 0/ 13		SERIAL#		<u>'</u>	SPEC.	N N		RUN HRS.			
1ZAT	279		C-12	666/		CEDIAL #			INT. MFLD	500 (AC/BBES		
COMP/GEN.	A FIC	-4				SERIAL#	13479	7	IIVI. IVII ED	ACTILO		
WORK PE	RFORMED)							•			
Trav	el to	site.	Sign	in,	Fill o	x 55	A, 5	wap r	ed be	early	95 R	B#1.
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ROVE	100	ecessi		emp	, Trae		1	Will	e mo	OVU. (1	1, 10
90	toolar	9,	Clean	- UP	Sign	- out	1/150	wer	to (he	twy	nd
TUNE-UP	ENGINE	<u> </u>	8005	471	FT	77		DAVEL LABOUR		TRUCK	UNIT#	J
START	FINISH	REGULAR	OT 1.5	OT 2.0	ACCOMMODATIONS	SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KIVI
SIAIT	TIMOIT	HEGOLAN	01 1.5	01 2.0	Accommodations	OPD	7	8		1.0		
8	12	4				010	1	0	-	1.0	BC	
12 5	775	W	2 5	3 0							ONLY	
10.5	22.0	7	3.0	3.0			22.5	23.5	-		10	
							LLI	23.3			1.0	
	TOTAL	6.	20	2 0		DOON V		TOTAL			1.0	
SPECIALT	YTOOLING	RATES	3.0	3.0		OPV		TOTAL		1.0	1.0	
OI ECIALI	TTOOLING	JIAILO	1 1	CIALTY TOOL	ING RATES PE	R USAGE EFFE	ECTIVE MAY 1	, 2010				
LASER OPT	TIC ALIGNMENT	Γ (SEQOA)			\$ 250.00	CAT 3600 F	HYDRAULIC T	ORQUING EQU	JIPMENT (SI	QTE)	\$ 25	50.00
AT SULZER	HYDRAULICT	ORQUING EQ	JIPMENT (SEQ	!TE)	\$ 250.00	AIR OPERA	TED ENGINE I	BARRING DEVI	CE (SEQBD)		\$ 10	00.00
			PST & GST	ARE EXTRA	- PRICES ARE S	SUBJECT TO C	HANGE WITH	OUT NOTICE		EN	TERLI	
CUSTOMER -	D.	de F	HESC			Dal	Fr		DATE	DEC	2 2 20	1517
		PLEAS	E PRINT				SIGNATURE		EMPL	#		
SERVICETECH	BA	an P	Her		13	-17			EIVIPL	317	8	
OLIVICE IECE		PLEA	SE PRINT				SIGNATURE			Das		

Distributor Gas Engines

REV. 11, 07/14



SERVICEMAN			ASSISTANTTECHNICIAN						
Nolan Unruh	Nolan Unruh			Brian Potter					
JOB DESCRIPTION									
Travel to Fort St Joh	n								
CUSTOMER		W/O #		LOCATION		DATE SAT			
CNRL		4025705		Boulder		December 19 2015			
L.S.D. #	CUSTOMER UNI	T #	MFGR.		UNIT#				
D-72-G/93-O-8	K-103		Enerfle	X					
ENG. MODEL	SERIAL#		SPEC.		RUN H	RS.			
12AT27GL	C-12666/1								
COMP/GEN. MODEL			SERIAL#		INT. MF	LD VAC/PRESS			
Ariel JGC-4			F-13479						
WORK PERFORMED									

-					
	Travel to	Fort S	St John	from	chetwynd.

									TRUCK UNIT # 31046			
START FINISH		REGULAR OT 1.		OT 2.0 ACCOMMODATION		SUBSISTENCE	START	FINISH	REGULAR	OT 1.5	OT 2.0	KM
			W	74			8.0	9.5		1.5		100
										B		
			e.							(G)		
	TOTAL							TOTAL		1.5		100

SPECIALTY TOOLING RATES

\$ 250.00	CAT 3600 HYDRAULIC TORQUING EQUIPMENT (SE QTE)	\$ 250.00
\$ 250.00	AIR OPERATED ENGINE BARRING DEVICE (SEQBD)	\$ 100.00
\$ 250.00	OTHER (PAM-SEQ OTHER)	\$
	\$ 250.00	\$ 250.00 AIR OPERATED ENGINE BARRING DEVICE (SEQBD)

		DATE
USTOMER		
PLEASE PRINT	SIGNATURE	

SERVICETECH. Nolan Unruh

PLEASE PRINT

NW

EMPL.# 6695



REV. 12, 02/13



ENGINE REPAIR SUMMARY

CUSTOMERCnrl	WO#	4025	705			
LOCATIONBoulder	L.S.D.	D	-72-G/93	-O-8		
UNIT#	DESIG	MATION	S	ales IIn	it	
COMPRESSOR MFG.	MODE	L#	12AT	27GL		
TYPE OF GAS: SWEET xx SOUR	CUST	OMER C	ONTACT	Joe K	eithlev	
COMPRESSOR MFG. TYPE OF GAS: SWEETxx SOUR PHONE250-785-1171 FAX	UNIT	HRS		_	,	
						-
REASON FOR ATTENDING SITE:						
1. EQUIPMENT FAILURE XX	<u></u>					
2. SCHEDULED OVERHAUL						
3. COMPLETE REPLACEMENT						
4. ROUTINE INSPECITON						
REPORTS ATTACHED:						
ITEMIZED ENGINE REPAIR SUMMARY COMPLET	ED		YES _	xx	NO _	
2. ENGINE SETTINGS REPORT			YES _		_ NO _	_xx
3. ENGINE ALIGNMENT REPORT			YES _		_ NO _	xx
4. MACHINE SHOP RECORDS FLUIDS:			YES _		_ NO _	xx
1. ENGINE COOLANT INSTALLED			VEC	****	NO	
2. ENGINE OIL INSTALLED			VES _	xx	NO-	
3. DAY TANK FILLED			VES _	xx	NO-	
4. ENGINE OIL FILTER REPLACED			YES _	^^_	-NO -	
5. ENGINE OIL STRAINER CLEANED			YES	xx	NO_	
UNIT RESTARTED BY: CUSTOMERxxOTHER PROBLEMS EXPERIENCED? YESxxNO_ The biggest issue experienced was filling the engine with oil the process of filling the engine.			BRIEFLY the oil wa	DESCR	IBE: old and m	ade it a long
						1
ENGINE COMPRESSION CHECK PERFORMED: YES		NO	xx	- 3		
#1 #2	#3	#4	#5	#6	#7	#8
RIGHT BANK CYLINDERS						
LEFT BANK CYLINDERS					r	
SERVICE TECHNICIAN:Nolan Unruh		DATE			40 0045	



ENGINE REPAIR SUMMARY

ENGINE MAKE: _	Waukesha	MODEL:12AT27GL ARRANGEMENT:
SERIAL #:	C-12666/1	ARRANGEWENT.

ITEM	INSPECT	REUSE	RECON.	REPLACE	REPLACE	TORQUE VALUE	SETTING	CLEARANCE BKLASH/END
IIEM	YES N		ORIGINAL	NEW	EXCHANGE	VALUE		PLAY
CRANKSHAFT	XX	XXX				L		
CRANKSHAFT COUNTERWEIGHTS	XX	XX	فنسط					
MAIN BEARINGS	XX			XX				
VIBRATION DAMPOENER	x	х					de les e	
CYLINDER HEADS	х	х						
LIST LOCATION OF NEW HEADS	X	х						
ROCKER ARMS/SHAFTS	х	x						
HYD/STD PUSH RODS	Х	X						
PISTONS	Х	X				Jan Sand S		
PISTON RINGS	Х	x		(
PISTON PINS	Х	X		1				
CON ROD BUSHINGS	Х	x						
CONNECTING RODS	Х	x						
LIST LOCATION OF NEW RODS		x						
CON ROD BEARINGS	xx		F	XX				
CAM SHAFT		x					التناف بنيان	
CAMSHAFT BEARINGS		x	100		ننب كيك بال			
CAMSHAFT FOLLOWERS	_	x						
CAMSHAFT GEARS(S)		x	P 1 7 1 7 15				ATT VINE	
CRANKSHAFT GEAR		x		A TOTAL				
IDLER GEARS		x						
ACCESSORY DRIVE		x						
GOVENOR		x				100		
		x						
CARBURATOR(S)		x						
THROTTLE BODY(S)		X						
CRANKSHAFT SEAL(S)		X X						
OIL PUMP				xx				
OIL FILTER	XX	N/		AA				
OIL COOLER		X		_				
OIL THERMOSTAT)				The state of			
GLYCOL COOLANT THERMOSTAT		XX				10 1 5 4	7	
TURBO CHARGER		CX						
WASTEGATES		(X						
INTERCOOLER		CX	-1.				THE PERSON	
COUPLING		(X	رونا ال					
COUPLING SHIM PACKS		(X	-	-				
PRE-LUBE PUMP		(X	-					
POST-COOLING PUMP		(X	-					
BREATHER/CRANKCASE		(X				Harry H		
MAGNETO		(X		-	-			
AIR FILTER/OIL BATH		(X		4	A-1-1			
SPARK PLUGS	XX	XX						
COIL EXTENSION/LEADS	XX	XX	135-14					
IGNITION COILS	XX	XX						
HARNESS MAIN		¢χ						
DRIVE DISC		ΚX						
MODULE		κx						
PICKUP-HALL EFFECT		κx				·		party have
GL ENGINE ADMISSION VALVES		ΚX						



ENGINE REPAIR SUMMARY

ITEM	CHEC YES	NO NO		SETTING		COMN	MENTS	
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	H20					
IGNITION TIMING		xx	BTDC					
VALVE CLEARANCE		xx	INT	EXH				
GL ENGINE 02 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 ALIGN	ED:
	FRONT	
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