

# LR Motor Shop Repairs

## **Job Number 101980**

Prepared for Almatis Inc/RCP Bauxite (10014)

4701 Alcoa Road Bauxite AR 72011

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AC Inspection as Found - LR Motor Shop

AC Inspection - Rev. 2

1.0





#### **AC Inspection as Found** Almatis Inc/RCP Bauxite (10014)

4701 Alcoa Road Bauxite, AR 72011

FolderID: 101980 FormID: 18130794

AC Inspection - Rev	. 2
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Location: LR Motor Shop

Serial Number:

Description:250 HP VERTICLE

Hi-Speed Job Number:	101980
Manufacturer:	US Motors/Nidec
HP/kW:	250 (HP)
RPM:	1770 (RPM)
Frame:	445TPA
Voltage:	460
Current:	283
Phase:	Three
Hz:	60 (Hz)
Service Factor:	1.15
Enclosure:	WPI
J-box Included:	None
Date Received:	10/11/2023
Repair Stage:	Final

Priorities Found: 9 - Good

#### **Overall Condition**

Report Date 11/15/2023

Nameplate Picture





Photos of all six sides of the machine.



















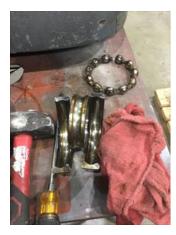












	4.	Describe the Overall Condition of the Equipment as Received  Dirty	
	5.	Distance from the end of the shaft to the Coupling/Sheave N/a	0 inches
In	itial	Mechanical/Electrical	
	6.	Does Shaft Turn Freely?	(Yes) Yes
	7.	Does Shaft Have Visible Damage?	(No) No
	8.	Assembled Shaft Runout	.000 Inches
	9.	Assembled Shaft End Play	0 inches

Air Gap Variation <10%  Lead Condition	n/a
	(P) Pass
Lead Length	18 Inches
Lead Numbers	1-2-3, 1-2-3
Stator Temperature Detector Rating and Function	
Quantity Rating	Quantity Passed
0	·
Bearing Temperature Detector Rating and Function	
Quantity Rating	Quantity Passed
0	
Frame Condition	good
Fan Condition	(N) NA
Heater Quantity, Ratings	
Quantity Volts/Watts	Pass/Fail
0	
No heater	
Broken or Missing Components	none
I Electrical Inspection	
Insulation Resistance/Megger	2000 Megohms
Winding Resistance	
1-2 1-3	2-3
.028028	.028
Perform Surge Test	(P) Pass
Number of Stator Slots	72
Stator Condition	good
Stator Thermistors/Ohms	none
Stator Overloads/Ohms	none
nanical Inspection	
Drive End Bearing Brand	SKF
Drive End Bearing Number-	29422
Drive End Bearing Qty.	1
Drive End Bearing Type	(Spherical) Spherical Roller Bearing
Drive End Lubrication Type	(Oil) Oil Lubricated
Drive End Bearing Insulation or Grounding Device?	none
Drive End Wavy Washer/Snap-Ring Other Retention Device?	N14 spanner nut and washer
Drive End Bearing Condition	normal wear
Opposite Drive End Bearing Brand	SKF
Opposite Drive End Bearing Number-	6215 2Z
Opposite Drive End Bearing Qty.	1
Opposite Drive End Bearing Type	(Ball) Ball Bearing
Opposite Drive End Lubrication Type	(Grease) Grease Lubricated
	none
Opposite Drive End Bearing Insulation or Grounding Device?	
	spacer and snap ring
Opposite Drive End Bearing Insulation or Grounding Device?	spacer and snap ring normal wear
Opposite Drive End Bearing Insulation or Grounding Device?  Opposite Drive End Wavy Washer/Snap-Ring Other Retention Device?	

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4.5	DE Classic Bassins Inside Discussion		
45.	DE Sleeve Bearing Inside Diameter	400 1	0.40
	0 degrees	120 degrees	240 degrees
	0	0	0
46.	DE Sleeve Bearing Outside Diameter		
	0 degrees	120 degrees	240 degrees
		0	0
47.	DE Sleeve Bearing Housing Inside Dia		
	0 degrees	120 degrees	240 degrees
	0	0	0
48.	DE Sleeve Bearing to Housing Cleara	nce	
	0 degrees	120 degrees	240 degrees
	0	0	0
49.	ODE Sleeve Bearing Inside Diameter		
	0 degrees	120 degrees	240 degrees
	0	0	0
50.	ODE Sleeve Bearing Outside Diameter	er	
	0 degrees	120 degrees	240 degrees
	0	0	0
51.	ODE Sleeve Bearing Housing Inside I	Diameter	
	0 degrees	120 degrees	240 degrees
	0	0	0
52.	ODE Sleeve Bearing to Housing Clea	rance	
	0 degrees	120 degrees	240 degrees
	0	0	0
Rotor	Inspection		
	Rotor Type/Material		(Squirrel Aluminum) Squirrel
	,,		Cage Aluminum Die Cast
54.	Growler Test		(Pass) Pass
55.	Number of Rotor Bars		56
56.	Rotor Condition		good
57.	List the Parts needed for the Repair B	elow	
	29422 bearing, 6215 2Z bearing, N14 nu	t, W14 washer	
58.	Signature of Technician that Disassen	nbled Motor	David Maclin
	, /		
,	// // 4		
Moch	anical Fits- Rotor		
	Shaft Runout		0 inches
	Rotor Runout		o mones
00.		Potor Rody	Opposite Drive End Regging
	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
64	Ocupling Fit Classet to Regging Housi	0	0
61.	1 0		400 Danie
	0 Degrees	90 Degrees	120 Degrees
	0	0	0

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		0 15 500 11 11 11 11	01. 6		
6	52.	Coupling Fit Closest to the end of the			
		0 Degrees	60 Degrees	120 Degrees	
		0	0	0	
6	3.	Drive End Bearing Shaft Fit			
		0 Degrees	60 Degrees	120 Degrees	
		4.3314	4.3312	4.3313	
• 6	64.	Drive End Bearing Shaft Fit Condition			(P) Pass
6	65.	Opposite Drive End Bearing Shaft Fit			
		0 Degrees	60 Degrees	120 Degrees	
		2.9532	2.9533	2.9533	
6	6.	Opposite Drive End Bearing Shaft Fit	Condition		(P) Pass
6	67.	Shaft Air Seal Fits			
		Drive End Air Seal	Opposite Drive End Air Seal		
		ok	ok		
Med	cha	anical Fits- Bearing Housings			
6	8.	Drive End - Endbell Bearing Fit			
		0 Degrees	60 Degrees	120 Degrees	
		0	0	0	
6	9.	Drive End - Endbell Bearing Fit Condi	tion		(P) Pass
7	0.	Opposite Drive End - Endbell Bearing	Fit		
		0 Degrees	60 Degrees	120 Degrees	
		5.1186	5.1186	5.1185	
• 7	'1.	Opposite Drive End - Endbell Bearing	Fit Condition		(P) Pass
7	2.	Bearing Cap Condition			
		Drive End Bearing Cap	Opposite Drive End Bearing Cap		
		none	good		
7	'3.	End Bell Air Seal Fits			
		Drive End Air Seal	Opposite Drive End Air Seal		
		good	good		
7	<b>'</b> 4.	List Machine Work Needed Below			
		None			
7	'5.	Technician			David Maclin
Dum	a a r	nic Balance Report	7		
Dyl	ıaı	inc parance ivehour			

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77. Initial Balance Readings		
Drive End	Opposite Drive End	
2.39	0.34	
78. Final Balance Readings		
Drive End	Opposite Drive End	
0.51	0.43	
79. Technician		David Maclin

Rewind	

8	80.	Core Test Results - Watts loss per Po	und
		Pre-Burnout	Post Burnout
		0	0
8	31.	Core Hot Spot Test	

Pre-Burnout	Post-Burnout
0	0

82	Post Rewind Electrical Test- Insulation Resistance	2000 Megonms
83	Post Rewind Polarization Index	0 Polarization Index
84	Post Rewind Winding Resistance	

84. Post Rewind Winding Resistance	
1-2 1-3 2-3	
0 0	
85. Post Rewind Surge Test	(Pass) Pass

86.	Post Rewind Hi-Pot	0 micro-amps
87.	Technician	<b>David Maclin</b>

#### **Root Cause of Failure**

88.			
	Failure locations		
	Na		
89.	Root cause of failure		
	Moisture		
	anical Fits- Rotor - Post Repa	ir	
	Shaft Runout Post Repair		0 inches
91.	Rotor Runout Post Repair		
	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
	0	0	0
92.	Coupling Fit Closest to Bearing H		
	0 Degrees	90 Degrees	120 Degrees
	0	0	0
93.	Coupling Fit Closest to the end of		
	0 Degrees	60 Degrees	120 Degrees
	0	0	0
94.	Drive End Bearing Shaft Fit Post		
	0 Degrees	60 Degrees	120 Degrees
	0	0	0
95.	Opposite Drive End Bearing Shafe		
	0 Degrees	60 Degrees	120 Degrees
	0	0	0
96.	Shaft Air Seal Fits Post Repair		
	Drive End Air Seal	Opposite Drive End Air Seal	
	ok	ok	
97.	Shaft Repair Sign-off		David Maclin
		)	
		7	
Mech	anical Fits- Bearing Housings	- Post Repair	
	anical Fits- Bearing Housings Drive End - Endbell Bearing Fit Po	-	
		-	120 Degrees
98.	Drive End - Endbell Bearing Fit Po 0 Degrees 0	ost Repair 60 Degrees 0	120 Degrees 0
98.	Drive End - Endbell Bearing Fit Po 0 Degrees	ost Repair 60 Degrees 0	
98.	Drive End - Endbell Bearing Fit Po 0 Degrees 0	ost Repair 60 Degrees 0	
98.	Drive End - Endbell Bearing Fit Po 0 Degrees 0 Opposite Drive End - Endbell Bea 0 Degrees 0	ost Repair 60 Degrees  ouring Fit Post Repair 60 Degrees  our	0
98.	Drive End - Endbell Bearing Fit Po  0 Degrees  0 Opposite Drive End - Endbell Bea  0 Degrees	ost Repair 60 Degrees  ouring Fit Post Repair 60 Degrees  our	0 120 Degrees
98.	Drive End - Endbell Bearing Fit Po 0 Degrees 0 Opposite Drive End - Endbell Bea 0 Degrees 0	ost Repair 60 Degrees  ouring Fit Post Repair 60 Degrees  our	0 120 Degrees
98. 99.	Drive End - Endbell Bearing Fit Po  0 Degrees  0 Opposite Drive End - Endbell Bear  0 Degrees  0 Bearing Cap Condition Post Repair  Drive End Bearing Cap  0	ost Repair 60 Degrees 0 aring Fit Post Repair 60 Degrees 0 air Opposite Drive End Bearing Cap 0	0 120 Degrees
98. 99.	Drive End - Endbell Bearing Fit Po  0 Degrees  0 Opposite Drive End - Endbell Bear  0 Degrees  0 Bearing Cap Condition Post Repair  Drive End Bearing Cap	ost Repair 60 Degrees 0 aring Fit Post Repair 60 Degrees 0 air Opposite Drive End Bearing Cap 0	0 120 Degrees
98. 99.	Drive End - Endbell Bearing Fit Po  0 Degrees  0 Opposite Drive End - Endbell Bear  0 Degrees  0 Bearing Cap Condition Post Repair  Drive End Bearing Cap  0	ost Repair 60 Degrees 0 aring Fit Post Repair 60 Degrees 0 air Opposite Drive End Bearing Cap 0	0 120 Degrees
98. 99.	Drive End - Endbell Bearing Fit Po  0 Degrees  0 Opposite Drive End - Endbell Bear  0 Degrees  0 Bearing Cap Condition Post Repair  Drive End Bearing Cap  0 End Bell Air Seal Fits Post Repair	ost Repair 60 Degrees 0 ring Fit Post Repair 60 Degrees 0 air Opposite Drive End Bearing Cap 0	0 120 Degrees
98. 99. 100.	Drive End - Endbell Bearing Fit Po  0 Degrees  0 Opposite Drive End - Endbell Bear  0 Degrees  0 Bearing Cap Condition Post Repair  Drive End Bearing Cap  0 End Bell Air Seal Fits Post Repair  Drive End Air Seal	ost Repair 60 Degrees 0  uring Fit Post Repair 60 Degrees 0  nir Opposite Drive End Bearing Cap 0 Opposite Drive End Air Seal ok	0 120 Degrees
98. 99. 100.	Drive End - Endbell Bearing Fit Po  0 Degrees  0 Opposite Drive End - Endbell Bear  0 Degrees  0 Bearing Cap Condition Post Repair  Drive End Bearing Cap  0 End Bell Air Seal Fits Post Repair  Drive End Air Seal  ok	ost Repair 60 Degrees 0  uring Fit Post Repair 60 Degrees 0  nir Opposite Drive End Bearing Cap 0 Opposite Drive End Air Seal ok	0 120 Degrees
98. 99. 100.	Drive End - Endbell Bearing Fit Po  0 Degrees  0 Opposite Drive End - Endbell Bear  0 Degrees  0 Bearing Cap Condition Post Repair  Drive End Bearing Cap  0 End Bell Air Seal Fits Post Repair  Drive End Air Seal  ok  DE Sleeve Bearing Inside ID Post	ost Repair 60 Degrees 0 uring Fit Post Repair 60 Degrees 0 uir Opposite Drive End Bearing Cap 0 Opposite Drive End Air Seal ok t Repair	120 Degrees 0

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103.	DE Sleeve Bearing Outside ID Post R	epair		
	Measure 1	Measure 2	Measure 3	
	0	0	0	
104.	DE Sleeve Bearing Inside OD Post Re	epair		
	Measure 1	Measure 2	Measure 3	
	0	0	0	
105.	DE Sleeve Bearing Outside OD Post F	Repair		
	Measure 1	Measure 2	Measure 3	
	0	0	0	
106.	End Bell Repair Sign-off			David Maclin
/				
107.	ODE Sleeve Bearing Inside ID Post R	epair		
	Measure 1	Measure 2	Measure 3	
	0	0	0	
108.	ODE Sleeve Bearing Outside ID Post	Repair		
	Measure 1	Measure 2	Measure 3	
	0	0	0	
109.	ODE Sleeve Bearing Inside OD Post F	Repair		
	Measure 1	Measure 2	Measure 3	
	0	0	0	
110.	ODE Sleeve Bearing Outside OD Pos	t Repair		
	Measure 1	Measure 2	Measure 3	
	0	0	0	
Assen	nbly			
111.	QC Check All Parts for Cleanliness Pr	ior to Assembly		David Maclin
	_			
		$\sim$		
112	Photograph All Major Components pri	or to assembly		

























113.	Final Insulation Resistance Test		2000 Megohms
114.	Assembled Shaft Endplay		0.004 inches
115.	Assembled Shaft Runout		0 inches
116.	Test Run Voltage		
	Volts	Volts	Volts
	461	461	461
-	Witness by C Wiley		



117. Test Run Amperage		
Amps	Amps	Amps

	78.5999999999999	78.5	77.5999999999999
118.	Drive End Vibration Readings - Inches	Per Second	
	Horizontal	Vertical	Axial
	0.0734000000000001	0.0429	0.0327
119.	Opposite Drive End Vibration Reading	s - Inches Per Second	
	Horizontal	Vertical	Axial
	0.0453	0.0218	0.0178
120.	Ambient Temperature - Fahrenheit		0
121.	Drive End Bearing Temps - Fahrenhei	t	
	5 Minutes	10 Minutes	15 Minutes
	0	0	0
122.	Drive End Bearing Temps - Fahrenhei	t 20-30 Minutes	
	20 Minutes	25 Minutes	30 Minutes
	0	0	0
123.	Drive End Bearing Temps - Fahrenhei	t 35-45 Minutes	
	35 Minutes	40 Minutes	45 Minutes
	0	0	0
124.	Drive End Bearing Temps - Fahrenhei	t 50-60 Minutes	
	50 Minutes	55 Minutes	60 Minutes
	0	0	0
125.	Opposite Drive End Bearing Temps -	Fahrenheit	
	5 Minutes	10 Minutes	15 Minutes
	0	0	0
126.	Opposite Drive End Bearing Temps -	Fahrenheit 20-30 Minutes	
	20 Minutes	25 Minutes	30 Minutes
	0	0	0
127.	Opposite Drive End Bearing Temps -	Fahrenheit 35-45 Minutes	
	35 Minutes	40 Minutes	45 Minutes
	0	0	0
128.	Opposite Drive End Bearing Temps -	Fahrenheit 50-60 Minutes	
	50 Minutes	55 Minutes	60 Minutes
	0	0	0
129.	Stator Temperatures- Fahrenheit		
	5 Minutes	10 Minutes	15 Minutes
	0	0	0
130.	Stator Temperatures- Fahrenheit 20-3	0 Minutes	
	20 Minutes	25 Minutes	30 Minutes
	0	0	0
131.	Stator Temperatures- Fahrenheit 35-4	5 Minutes	
	35 Minutes	40 Minutes	45 Minutes
	0	0	0
132.	Stator Temperatures- Fahrenheit 50-6	0 Minutes	
	50 Minutes	55 Minutes	60 Minutes
	0	0	0
133.	Document Final Condition with Picture	es after paint	looks clean

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134. Final Pics and QC Review

**David Maclin** 

Witness by THall



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- 10. <u>SEVERABILITY.</u> The partial or complete invalidity of any provision of these Standard Terms and Conditions shall not affect the enforceability of the remainder of these Standard Terms and Conditions. If any provision is found to be invalid or unenforceable, that portion shall be modified to make it enforceable or shall be stricken and the remainder of these Standard Terms and Conditions shall enforced.
- 11. **GOVERNING LAW AND JURISDICTION.** Any controversy arising out of any quotation, the purchase order, the goods sold or delivered, repair or replacement thereof, or any services provided pursuant to any quotation or any purchase order, or these Standard Terms and Conditions shall be governed by the laws of the state of Tennessee without regard to any choice of law provisions and any cause of action related in any manner thereto shall be brought only in the state or federal courts of Shelby County, Tennessee.
- 12. ABANDONED EQUIPMENT. Hi-Speed requires that Buyer promptly pick up or provide shipment instructions for Buyer equipment or other Buyer property in Hi-Speed's possession. If equipment or other Buyer property is left with Hi-Speed and not picked up within six (6) months after Hi-Speed's final action related to the applicable property (e.g. evaluation, teardown, estimate, completion of services), Hi-Speed will consider such property abandoned and may dispose of it in accordance with applicable law. Buyer agrees to hold Hi-Speed harmless for any damage or claim for such abandoned property and acknowledges that Hi-Speed may discard or recycle it at Hi-Speed's sole and absolute discretion. Specifically, Hi-Speed may sell Buyer's abandoned property at a private or public sale and retain the proceeds to offset Hi-Speed's storage, inspection and servicing costs. For the avoidance of doubt, Hi-Speed reserves its statutory and other lawful liens for unpaid charges related to abandoned property.
- 13. FORCE MAJEURE. Neither party shall be responsible for any delay or failure in performance of any party of the quotation, purchase order or these Standard Terms and Conditions to the extent that such delays or failures are caused by fire, flood, earth quake, explosion, war, embargo, government requirement, civil or military authority, acts of God, or any other circumstances beyond its reasonable control and not involving any fault or negligence on the party affected ("Condition"). If any such Condition occurs, the party delayed or unable to perform shall promptly give written notice to the other party and, if such Condition remains at the end of thirty (30) days, the party affected by the other party's delay and inability to perform may elect to (i) terminate such order or part thereof, or (ii) suspend the order for the duration of the Condition, if the Buyer is the suspending party, buy elsewhere comparable material to be sold under the order and apply to any commitment the purchase price of such purchase, and resume performance of the order once the Condition ceases, with an option in the affected party to extend the period of this order up to the length of the time the Condition endures.
- 14. <u>NONWAIVER.</u> No course of dealing or failure of either party to strictly enforce any term, right, or condition of these Standard Terms and Conditions will be construed as a waiver of such term, right or condition. Any waiver by Hi-Speed will only be in writing and will waive no succeeding breach of a term, right or condition.
- 15. **ASSIGNMENT.** The rights and obligations of the parties shall neither be assigned nor delegated without the prior written consent of the other party. However, any party may assign or delegate its respective rights and obligations, in whole or in part, (i) to any subsidiary, (ii) pursuant to other financing, merger or reorganization or (iii) pursuant to any sale or transfer of substantially all of the assets of the assigning party. These Standard Terms and Conditions shall bind the heirs, successors and assigns of the parties hereto.
- 16. NO INDIVIDUAL LIABILITY. Notwithstanding any other agreement to the contrary, the Buyer agrees that in no event will the Buyer hold and HI-Speed owner, director, officer or employee personally liable for unintentional tortious conduct or conduct that constitutes the breach of any contract between HI-Speed and the Buyer, even if the HI-Speed owner, director, officer or employee is or could be construed to be a party to such contract.