Priority List

	TDUC (turn down & undercut)	Rebuild Brush Rig	Remove End-Bell/ Clean Commutator	ReplaceField Coils	Rebuild Interpoles	Replace Bearings	Replace Sheave Liners
Tower 1 High Rise							
5	3	2	2	5	-	2	5
6	2	2	2	5	-	2	5
7	1	2	2	5	-	5	5
8	3	2	2	5	-	5	5
Tower 2 Low Rise							
1	3	3	3	5	-	5	5
2	1	1	1	5	-	OOS	5
3	2	2	2	5	-	5	5
4	1	2	2	5	-	5	5
5	3	2	2	5	-	5	5
Tower 2 Hi Rise							
6	2	2	5	5	5	3	1
7	2	2	2	5	5	3	
8	3	1	3	5	5	OOS	1
9	3	3	3	3	1	OOS	1

Notes:

- **Tower 2 – Car #2:** The armature remained below acceptable limits. Disassembly and additional cleaning are recommended. If further cleaning does not correct the issue, a complete armature rewind may be required.
- **OSS (Out of Service):** The car was unable to operate; therefore, bearing analysis could not be completed.
- **Brake Pads:** The brake pads are currently within acceptable tolerances. However, Otis may require replacement with "*Green Gripper Pads*".
- **Field Coils nCar 9:** The Field Voltage Drop Test results were at the upper acceptable limit of 14%.

Priority Summary Scale

1. Priority 1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority 2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority 3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority 4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority 5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **5** Otis 131HT
Observations / Recommendations / Priority

Commutator

- **Observation**
  The commutator indicates brush surface wear.
  While this level of wear is not significant it does confirm that wear is present.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority # 3**

Brush Rig/Front of Commutator

- **Observation**
  Excessive grease application has resulted in grease migrating past the inner seal and contaminating the lower sections of the brush rigging, as well as the face of the commutator.
  Although electrical test readings for the affected components are currently within acceptable limits, the presence of grease in this area presents a significant risk. During normal operation, carbon dust will accumulate and adhere to the contaminated surfaces, potentially creating conductive paths that could lead to a critical failure.

- **Recommendation**
  Remove end bell, Rebuild/Sand Blast brush rigging & thoroughly clean the commutator face.
  Priority # 2

Bearings

- **Observation**
  The drive-side bearing exhibited acoustical noise during operation.
- **Recommendation**
  This is indicative of wear within the bearing and suggests the potential for future failure. Therefore, I recommend taking advantage of the modernization project to proactively replace the bearing.
- **Priority # 2**

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**5**
Contact	Larry Oliver	**Date:**	March 3rd 2026
Site Address	Williams Center Tower 1 West 3Rd Street		Hi-Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	In Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP32
Type	131HT	**Volts**	145
Frame		**Field Volts**	
RPM	141	**Amps**	180

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Visible Wear/Excessive Grease
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Quiet & Smooth	-
Sheave Side	Noticeable Acoustic Noise	-
Break Linkage & Pins	Acceptable	

Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	.4 MΩ	1 MΩ	5 MΩ	-
Brush Rig A1	.4 MΩ	1 MΩ	4 MΩ	-
Brush Rig A2	.3 MΩ	.7 MΩ	1.5 MΩ	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

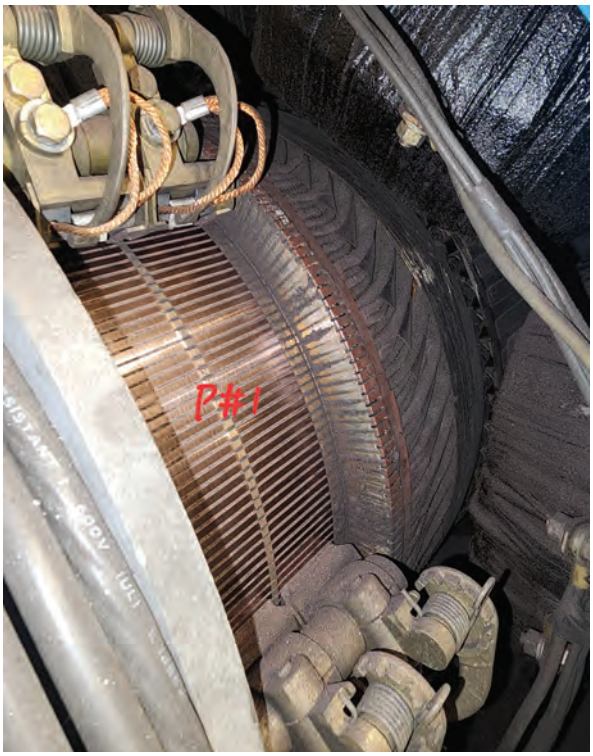
Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	1 MΩ	5 MΩ	20 MΩ	-
Brush Rig A1	1 MΩ	3 MΩ	6 MΩ	-
Brush Rig A2	0.6	1	4	2.4 Ω
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.2V	20.6V	20.7V	20.7V	20.6V	20.5V		

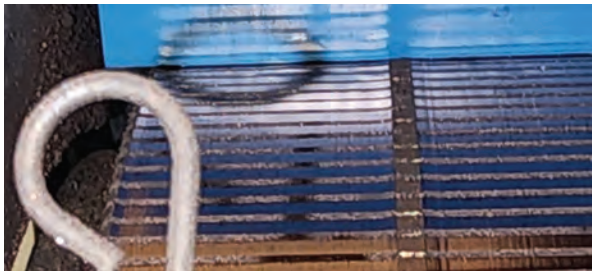
Line 123.0V

Lowest Fields	20.2V	Result	2%
Highest Field	20.6V		

Commutator Wear



Commutator Wear



Commutator Wear

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **6** Otis 131HT
Observations / Recommendations / Priority

Commutator

- **Observation** The commutator indicates excessive brush surface wear and damage due to low brush contact.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority # 2**

Brush Rig/Front of Commutator

- **Observation**
  Excessive grease application has resulted in grease migrating past the inner seal contaminating the lower sections of the brush rigging, as well as the face and surface of the commutator.
  Test readings for the affected components (Brush Rig Circuit A1) are currently below acceptable limits. The presence of grease in this area presents a significant risk. During normal operation, carbon dust will accumulate and adhere to the contaminated surfaces, potentially creating conductive paths that could lead to a critical failure.
- **Recommendation**
  Remove end bell, Rebuild/Sand Blast brush rigging & thoroughly clean the affected areas.
  Priority # 2

Bearings

- **Observation**
  The commutator and drive-side bearings exhibit acoustical noise during operation.
- **Recommendation**
  This indicative of wear within the bearing and suggests the potential for future failure. Therefore, I recommend taking advantage of the modernization project to proactively replace both bearings
- **Priority # 2**

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**6**
Contact	Larry Oliver	**Date:**	March 3nd 2026
Site Address	Williams Center Tower 1 West 3Rd Street		Tower 1 Hi-Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	In Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP32
Type	131HT	**Volts**	135
Frame		**Field Volts**	
RPM	141	**Amps**	180

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Moderate Wear Visible/Excessive Grease
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Noticeable Acoustic Noise	-
Sheave Side	Noticeable Acoustic Noise	-
Break Linkage & Pins	Acceptable	

Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	2 MΩ	5 MΩ	15 MΩ	-
Brush Rig A1	1 MΩ	3 MΩ	10 MΩ	-
Brush Rig A2	2 MΩ	5 MΩ	15 MΩ	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

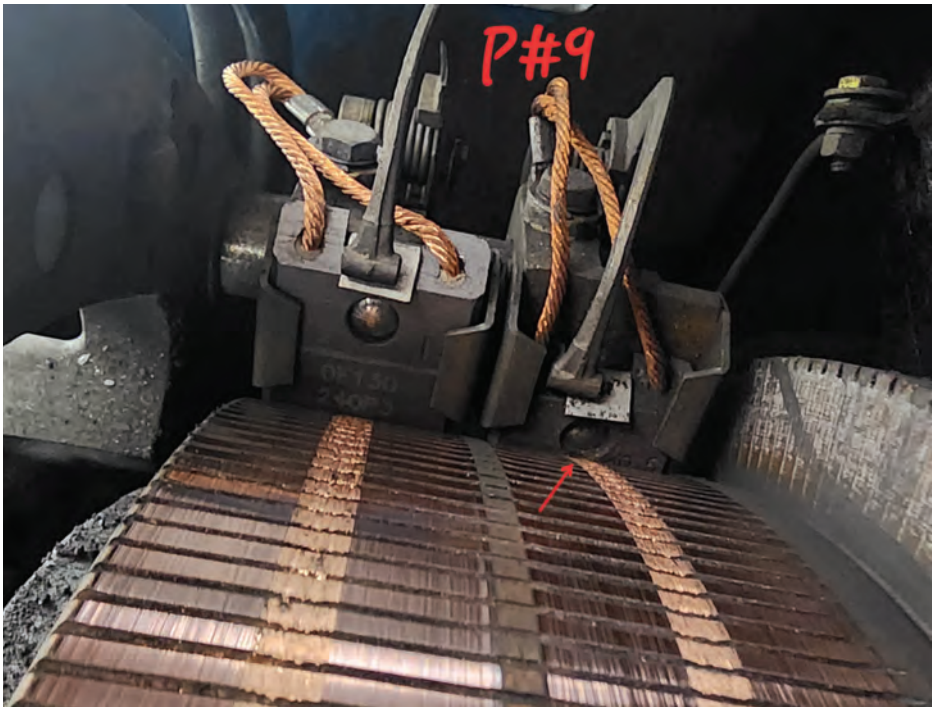
Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	2 MΩ	7 MΩ	19 MΩ	-
Brush Rig A1	1 MΩ	4 MΩ	10 MΩ	-
Brush Rig A2	2	6	19	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.2V	20.5V	20.9V	20.9V	20.4V	20.3V		

Line 123.0V

Lowest Fields	20.2V	Result	4%
Highest Field	20.9V		

Excessive Grease



Commutator Damage

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **7** Otis 131HT
Observations / Recommendations / Priority

Commutator

- **Observation Commutator**
  The commutator shows signs of significant brush-related damage. One brush wore down to the point that the pigtail made contact with the commutator surface. Evidence of arcing is present during both acceleration and deceleration.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority# 1**

Brush Rig/Front of Commutator

- **Observation**
  Excessive grease application has resulted in grease migrating past the inner seal and contaminating the lower sections of the brush rigging, as well as the face of the commutator.
  Although electrical test readings for the affected components are currently within acceptable limits, the presence of grease in this area presents a significant risk. During normal operation, carbon dust will accumulate and adhere to the contaminated surfaces, potentially creating conductive paths that could lead to a critical failure.

- **Recommendation**
  Remove end bell, Rebuild/Sand Blast brush rigging & thoroughly clean the commutator face.
  Priority # 2

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**7**
Contact	Larry Oliver	**Date:**	March 2nd 2026
Site Address	Williams Center Tower 1 West 3Rd Street		Tower 1 Hi-Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	In Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP32
Type	131HT	**Volts**	145
Frame		**Field Volts**	
RPM	141	**Amps**	180

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact
	Commutator	Brush Surface Damage/Excessive Grease
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Quiet & Smooth	
Sheave Side	Quiet & Smooth	
Break Linkage & Pins	Acceptable	

Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	5 MΩ	15 MΩ	100 MΩ	-
Brush Rig A1	4 MΩ	17 MΩ	100 MΩ	-
Brush Rig A2	5 MΩ	17 MΩ	100 MΩ	-
Field Coils	∞	∞	∞	
Interpoles	-	-	-	
Brake Coil	∞	∞	∞	-

Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	∞	∞	∞	-
Brush Rig A1	∞	∞	∞	-
Brush Rig A2	20 MΩ	50 MΩ	200 MΩ	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

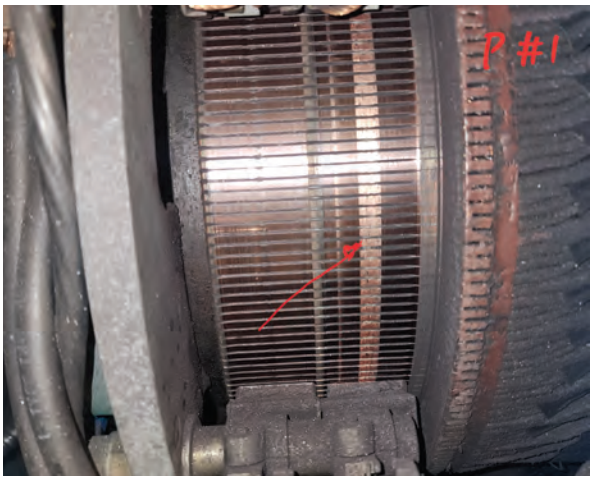
Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.8V	21.0V	21.0V	20.9V	20.4V	20.3V		

Line 124.5V

Lowest Fields	20.3V	Result	4%
Highest Field	21.0V		

Commutator Damage

Commutator Wear



TDUC Required

Ropes Acceptable

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **8** Otis 131HT
Observations / Recommendations / Priority

Commutator

- **Observation**
  The commutator indicates brush surface wear.
  While this level of wear is not significant it does confirm that wear is present.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority # 3**

Brush Rig/Front of Commutator

- **Observation**
  Excessive grease application has resulted in grease migrating past the inner seal and contaminating the lower sections of the brush rigging, as well as the face of the commutator.
  Although electrical test readings for the affected components are currently within acceptable limits, the presence of grease in this area presents a significant risk. During normal operation, carbon dust will accumulate and adhere to the contaminated surfaces, potentially creating conductive paths that could lead to a critical failure.

- **Recommendation**
  Remove end bell, Rebuild/Sand Blast brush rigging & thoroughly clean the commutator face.
  Priority # 2

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**8**
Contact	Larry Oliver	**Date:**	March 2nd 2026
Site Address	Williams Center Tower 1 West 3Rd Street		Tower 1 Hi-Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	In Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP32
Type	131HT	**Volts**	145
Frame		**Field Volts**	
RPM	141	**Amps**	180

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Minor Wear Visible/Excessive Grease
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Quiet & Smooth	-
Sheave Side	Quiet & Smooth	-
Break Linkage & Pins	Acceptable	

Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	50 MΩ	200 MΩ	∞	-
Brush Rig A1	50 MΩ	200 MΩ	∞	-
Brush Rig A2	50 MΩ	100 MΩ	200 MΩ	-
Field Coils	∞	∞	∞	
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

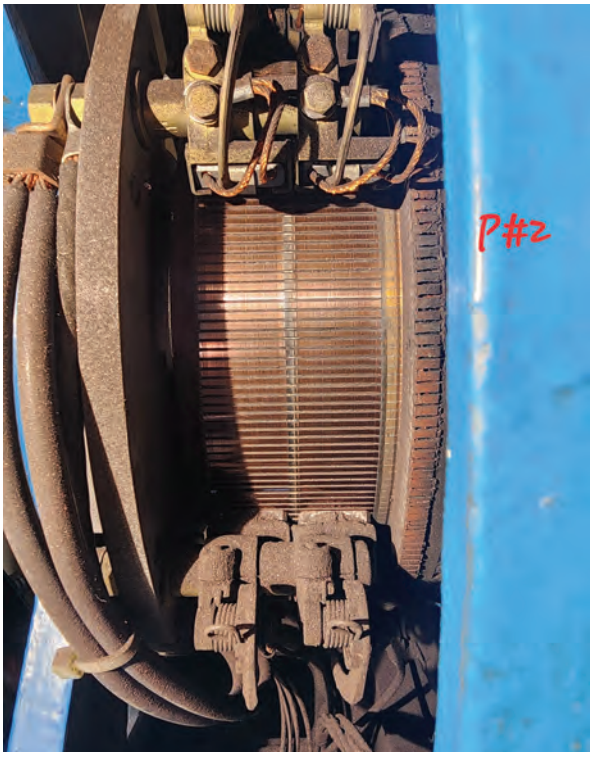
Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	50 MΩ	200 MΩ	∞	-
Brush Rig A1	50 MΩ	200 MΩ	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.1V	20.3V	20.6V	20.7V	20.5V	20.2V		

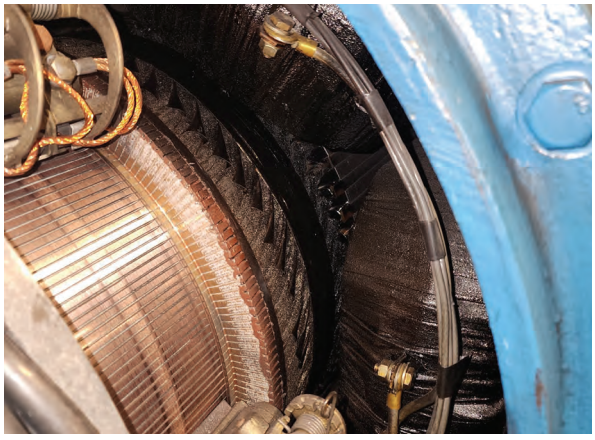
Line 123.0V

Lowest Fields	20.1V	Result	3%
Highest Field	20.7V		

Commutator Wear



Commutator Wear



MMTR Services LLC

McIntosh Motor Testing & Repair

Car **6** Otis 139HT
Observations / Recommendations / Priority

Commutator

- **Observation Commutator**
  The commutator indicates significant brush surface wear.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority # 2**

Bearings

Bearings

- **Observation**
  The commutator and drive-side bearings exhibit a slight acoustical noise during operation.
- **Recommendation**
  Although the noise is minimal, it is indicative of wear within the bearing and suggests the potential for future failure. Therefore, I recommend taking advantage of the modernization project to proactively replace both bearings
- **Priority # 3**

Sheave & Liners

- **Observation**
  Sheave liners exhibit significant wear.
- **Recommendation**
  Replace liners to maintain proper operation.
- **Priority - # 1**

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**6**
Contact	Larry Oliver	**Date:**	March 7th 2026
Site Address	Williams Center Tower 2		Tower 2 - Hi Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	In Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP50
Type	139HT	**Volts**	210
Frame		**Field Volts**	
RPM	223	**Amps**	190

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Significant Wear Visible
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Minor Acoustic Noise	-
Sheave Side	Minor Acoustic Noise	-
Break Linkage & Pins	Acceptable	

Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	15 MΩ	50 MΩ	100 MΩ	-
Brush Rig A1	15 MΩ	100 MΩ	200 MΩ	-
Brush Rig A2	100 MΩ	200 MΩ	∞	-
Field Coils	4MΩ	12 MΩ	50 MΩ	-
Interpoles	∞	∞	∞	-
Brake Coil	∞	∞	∞	-

Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	20 MΩ	100 MΩ	200 MΩ	-
Brush Rig A1	∞	∞	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	30 MΩ	100 MΩ	∞	-
Interpoles	∞	∞	∞	-
Brake Coil	∞	∞	∞	-

Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.5V	20.2V	20.2V	20.7V	20.8V	21.2V		

Line 123.5V

Lowest Fields	20.2V	Result	5%
Highest Field	21.2V		

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **8** Otis 139HT
Observations / Recommendations / Priority

Commutator

- **Observation**
  The commutator indicates moderate brush surface wear.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority # 3**

Brush Rig

- **Observation**
  Brushes Extremely Low
- **Recommendation**
  New brushes should be installed, properly seated, quartered, and neutral set to ensure optimal performance.
- **Priority # 1**

Sheave & Liners

- **Observation**
  Sheave liners exhibit significant wear.
- **Recommendation**
  Replace liners to maintain proper operation.
- **Priority - # 1**

Bearings

- **Observation**
  Car 2 was out of service therefore acoustic bearing wear could not be tested.
- **Recommendation**
  Return car to service and complete bearing analysis.
- **Priority # 3**

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**8**
Contact	Larry Oliver	**Date:**	March 6th 2026
Site Address	Williams Center Tower 2		Tower 2 - Hi Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	Out Of Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP50
Type	139HT	**Volts**	210
Frame		**Field Volts**	
RPM	223	**Amps**	190

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Moderate Wear Visible
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Car Out Of Service	-
Sheave Side	Car Out Of Service	-
Break Linkage & Pins	Acceptable	

Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	30 MΩ	60 MΩ	200 MΩ	-
Brush Rig A1	20 MΩ	50 MΩ	100 MΩ	-
Brush Rig A2	50 MΩ	100 MΩ	200 MΩ	-
Field Coils	4MΩ	12 MΩ	50 MΩ	-
Interpoles	200 MΩ	∞	∞	-
Brake Coil	∞	∞	∞	-

Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	20 MΩ	100 MΩ	200 MΩ	-
Brush Rig A1	∞	∞	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	30 MΩ	100 MΩ	∞	-
Interpoles	∞	∞	∞	-
Brake Coil	∞	∞	∞	-

Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
19.9V	20.7V	20.6V	21.0V	20.8V	19.7V		

Line 122.9V

Lowest Fields	19.7V	Result	6%
Highest Field	21.0V		

Moderate Commutator Wear

Worn Inserts/Low Rope

Extremely Low Brushes

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **9** Otis 139HT
Observations / Recommendations / Priority

Commutator

- **Observation**
  The commutator indicates brush surface wear.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority # 3**

Bearings

- **Observation**
  Car 2 was out of service therefore acoustic bearing test could not be completed.
- **Recommendation**
  Return car to service and complete bearing analysis.
- **Priority # 3**
-

Interpoles

- **Observation**
  Interpole Circuit indicates grounded Interpoles
- **Recommendation**
  Replace Interpoles
- **Priority - # 1**

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**9**
Contact	Larry Oliver	**Date:**	March 6th 2026
Site Address	Williams Center Tower 2		Tower 2 - Hi Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	Out Of Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP50
Type	139HT	**Volts**	210
Frame		**Field Volts**	
RPM	223	**Amps**	190

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Moderate Wear Visible
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Car Out Of Service	-
Sheave Side	Car Out Of Service	-
Break Linkage & Pins	Acceptable	

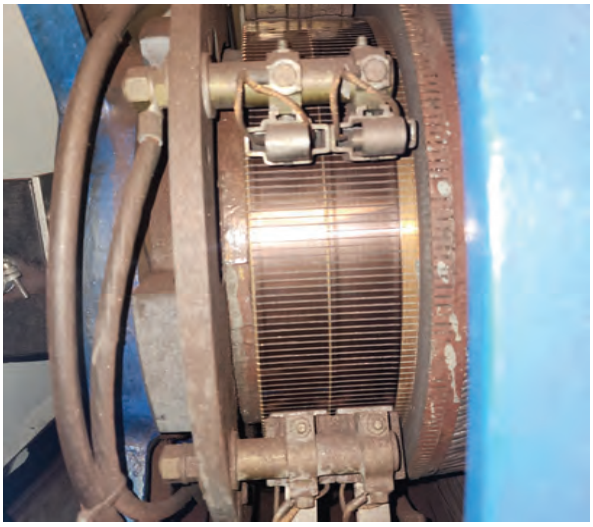
Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	200 MΩ	∞	∞	-
Brush Rig A1	∞	∞	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	∞	∞	∞	-
Interpoles	.50MΩ	.10MΩ	.20MΩ	-
Brake Coil	∞	∞	∞	-

Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	∞	∞	∞	-
Brush Rig A1	∞	∞	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	∞	∞	∞	-
Interpoles	.50MΩ	.50MΩ	.50MΩ	-
Brake Coil	∞	∞	∞	-

Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.0V	19.0V	21.6V	22.0V	20.0V	20.3V		

Line 122.9V

Lowest Fields	19.0V	Result	14%
Highest Field	22.0V		



Commutator Wear

Worn Inserts

Significant Carbon/Brush Dust

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **7** Otis 139HT
Observations / Recommendations / Priority

Commutator

- **Observation**
  The commutator indicates moderate brush surface wear.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority # 2**

Bearings

Bearings

- **Observation**
  The commutator and drive-side bearings exhibit a slight acoustical noise during operation.
- **Recommendation**
  Although the noise is minimal, it is indicative of wear within the bearing and suggests the potential for future failure. Therefore, I recommend taking advantage of the modernization project to proactively replace both bearings
- **Priority # 3**

Brush Rig/Front of Commutator

- **Observation**
  Excessive grease application has resulted in grease migrating past the inner seal and contaminating the lower sections of the brush rigging, as well as the face of the commutator.
  Although electrical test readings for the affected components are currently within acceptable limits, the presence of grease in this area presents a significant risk. During normal operation, carbon dust will accumulate and adhere to the contaminated surfaces, potentially creating conductive paths that could lead to a critical failure.

- **Recommendation**
  Remove end bell, Rebuild/Sand Blast brush rigging & thoroughly clean the commutator face.
  Priority # 2

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**6**
Contact	Larry Oliver	**Date:**	March 7th 2026
Site Address	Williams Center Tower 2		Tower 2 - Hi Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	In Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP50
Type	139HT	**Volts**	210
Frame		**Field Volts**	
RPM	223	**Amps**	190

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Significant Wear Visible
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Minor Acoustic Noise	-
Sheave Side	Minor Acoustic Noise	-
Break Linkage & Pins	Acceptable	

Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	15 MΩ	50 MΩ	100 MΩ	-
Brush Rig A1	15 MΩ	100 MΩ	200 MΩ	-
Brush Rig A2	100 MΩ	200 MΩ	∞	-
Field Coils	4MΩ	12 MΩ	50 MΩ	-
Interpoles	∞	∞	∞	-
Brake Coil	∞	∞	∞	-

Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	20 MΩ	100 MΩ	200 MΩ	-
Brush Rig A1	∞	∞	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	30 MΩ	100 MΩ	∞	-
Interpoles	∞	∞	∞	-
Brake Coil	∞	∞	∞	-

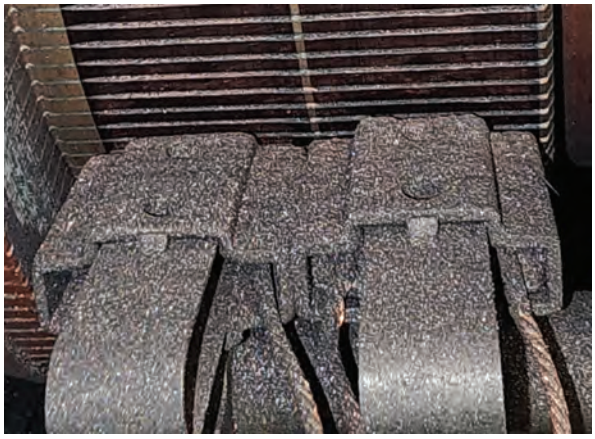
Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.5V	20.2V	20.2V	20.7V	20.8V	21.2V		

Line 123.5V

Lowest Fields	20.2V	Result	5%
Highest Field	21.2V		

Worn Commutator/Center Ridge

Low Brushes/Carbon Buildup



Excessive Carbon Buildup

Extremely low Ropes

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **2** Otis 131HT
Observations / Recommendations / Priority

Commutator

- **Observation** The commutator indicates moderate brush surface wear and excessive grease penetration as well as MegOhm readings below acceptable limits. After completing the Nitrogen cleaning process, the readings did not improve. Disassembly of the commutator side of the machine, turning the commutator as well as point cleaning that can only be done after disassembly is recommended.
- **Recommendation**
  TDUC (Turn Down & Undercut) & Cleaning
- **Priority # 1**

Brush Rig/Front of Commutator

- **Observation**
  Excessive grease application has resulted in grease migrating past the inner seal contaminating the lower sections of the brush rigging, as well as the face and surface of the commutator.
  Test readings for the affected components (Brush Rig Circuit A1&A2) increased to acceptable limits after the Nitrogen Cleaning Process.
  The presence of grease in and around the Commutator has presents a significant risk. After the Nitrogen Cleaning process the MegOhm readings on the armature circuit remained below acceptable limits.
- **Recommendation**
  Remove end bell allowing complete access to the commutator. Clean & re-test in attempt to increase reading to an acceptable level.
  Priority # 1

Bearings

- **Observation**
  Car 2 was out of service therefore acoustic bearing wear could not be tested.
- **Recommendation**
  Return car to service and complete bearing analysis.
- **Priority # 3**

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**2**
Contact	Larry Oliver	**Date:**	March 2nd 2026
Site Address	Williams Tower 2 west 2nd Street		Tower 2 Mid-Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	Out Of Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP32
Type	131HT	**Volts**	135
Frame		**Field Volts**	
RPM	141	**Amps**	180

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Commutator Wear Visible
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Car Out Of Service	-
Sheave Side	Car Out Of Service	-
Break Linkage & Pins	Acceptable	

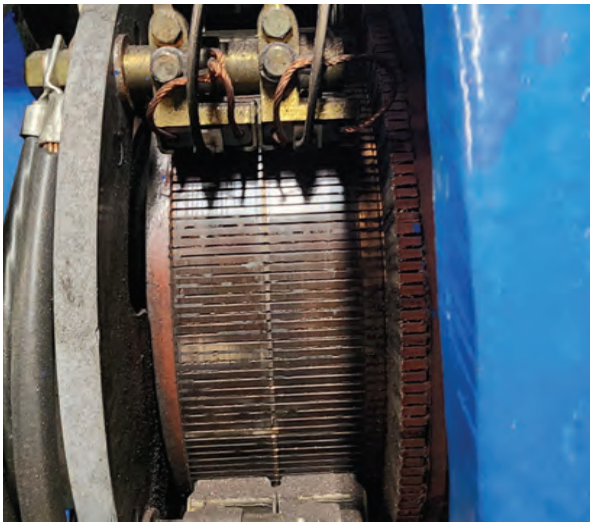
Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	.1 MΩ	.4 MΩ	10MΩ	-
Brush Rig A1	.5 MΩ	.1 MΩ	.2 MΩ	-
Brush Rig A2	.5 MΩ	.1 MΩ	.2 MΩ	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	.1 MΩ	.4 MΩ	10MΩ	-
Brush Rig A1	50 MΩ	∞	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

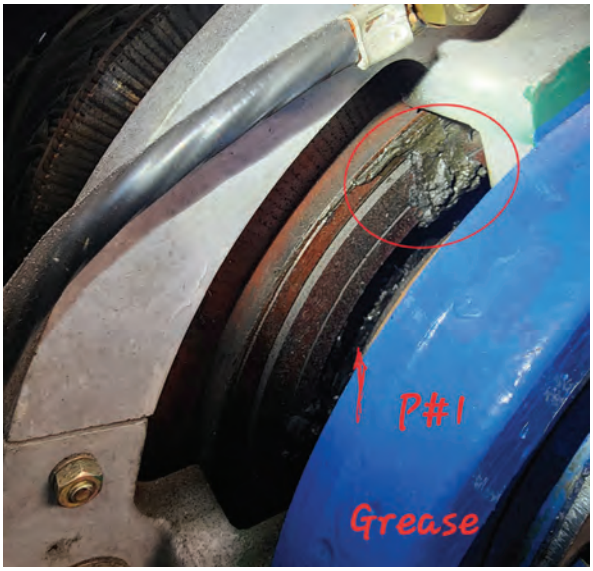
Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
19.9V	20.1V	20.6V	20.8V	20.2V	20.3V		

Line 123.3V

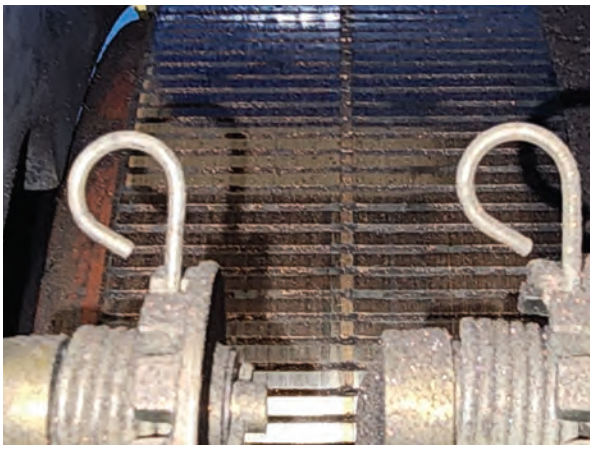
Lowest Fields	19.9V	Result	4%
Highest Field	20.8V		



Carbon & Grease Packed Mica



Excessive Grease



Worn & Grease Packed Commutator

Caption

Excessive Carbon

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **3** Otis 131HT
Observations / Recommendations / Priority

Commutator

- **Observation Commutator**
  The commutator indicates moderate brush surface wear, grease and carbon packed mica.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority # 2**

Brush Rig/Front of Commutator

- **Observation**
  Excessive grease application has resulted in grease migrating past the inner seal and contaminating the lower sections of the brush rigging, as well as the face of the commutator.
  Although electrical test readings for the affected components are currently within acceptable limits, the presence of grease in this area presents a significant risk. During normal operation, carbon dust will accumulate and adhere to the contaminated surfaces, potentially creating conductive paths that could lead to a critical failure.

- **Recommendation**
  Remove end bell, Rebuild/Sand Blast brush rigging & thoroughly clean the commutator face.
  Priority # 2

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**3**
Contact	Larry Oliver	**Date:**	March 2nd 2026
Site Address	Williams Tower 2 West 2nd Street		Tower 2 Low-Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	In Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP32
Type	131HT	**Volts**	135
Frame		**Field Volts**	
RPM	141	**Amps**	180

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Significant Wear Visible/Grease Soaked Mica
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Quiet & Smooth	-
Sheave Side	Quiet & Smooth	-
Break Linkage & Pins	Acceptable	

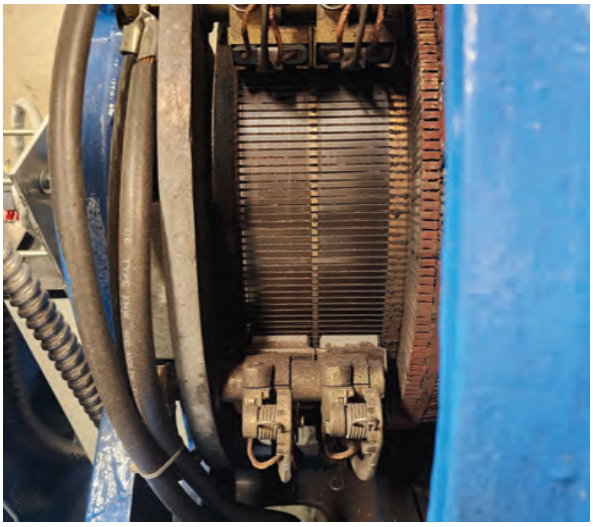
Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	∞	∞	∞	-
Brush Rig A1	200 MΩ	∞	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	∞	∞	∞	
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	∞	∞	∞	-
Brush Rig A1	200 MΩ	∞	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.0V	20.2V	20.6V	20.7V	20.4V	20.2V		

Line 122.2V

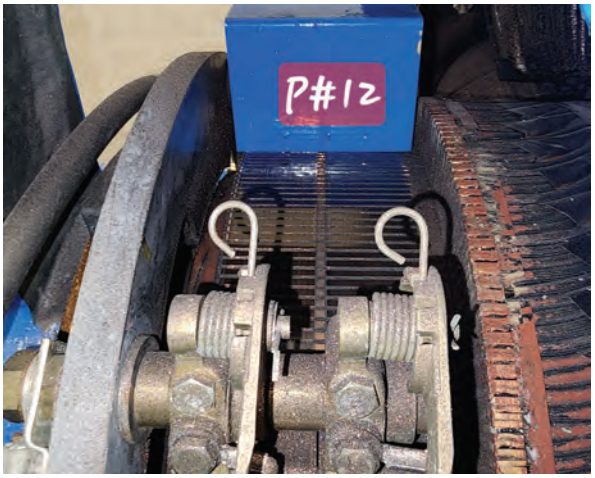
Lowest Fields	20.0V	Result	3%
Highest Field	20.7V		



Commutator Wear

Grease

Excessive Grease



Carbon Packed Undercutting

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **4** Otis 131HT
Observations / Recommendations / Priority

Commutator

- **Observation**
  The commutator indicates severe wear.
  Recommendation
  TDUC (Turn Down & Undercut)
- **Priority # 2**

Brush Rig/Front of Commutator

- **Observation**
  Excessive grease application has resulted in grease migrating past the inner seal and contaminating the lower sections of the brush rigging, as well as the face of the commutator.
  Although electrical test readings for the affected components are currently within acceptable limits, the presence of grease in this area presents a significant risk. During normal operation, carbon dust will accumulate and adhere to the contaminated surfaces, potentially creating conductive paths that could lead to a critical failure.

- **Recommendation**
  Remove end bell, Rebuild/Sand Blast brush rigging & thoroughly clean the commutator face.
  Priority # 2

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**4**
Contact	Larry Oliver	**Date:**	March 5th 2026
Site Address	Williams Center Tower 2		Tower 2 -Low Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	In Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP32
Type	131HT	**Volts**	135
Frame		**Field Volts**	
RPM	141	**Amps**	180

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Severe Wear Visible/Mica Grease Filled
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Quiet & Smooth	-
Sheave Side	Quiet & Smooth	-
Break Linkage & Pins	Acceptable	

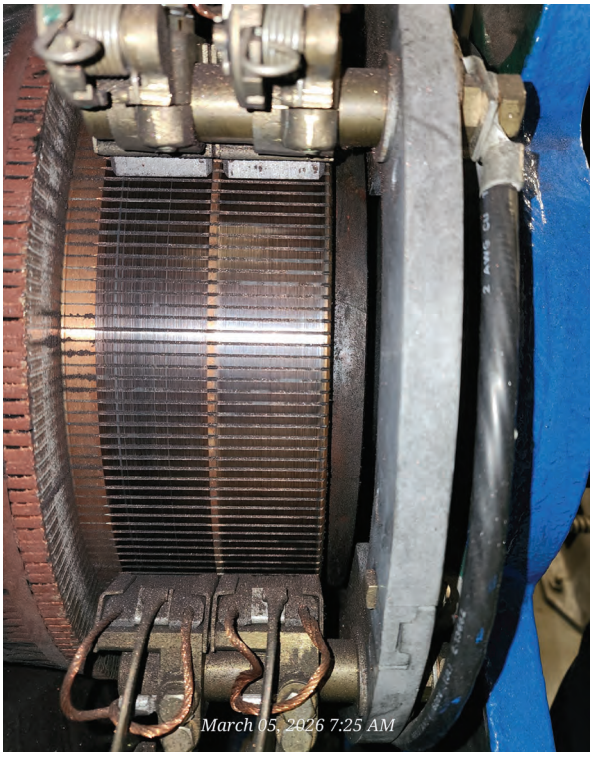
Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	2 MΩ	6 MΩ	15 MΩ	-
Brush Rig A1	5 MΩ	8 MΩ	21 MΩ	-
Brush Rig A2	3 MΩ	12 MΩ	30 MΩ	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	2 MΩ	6 MΩ	15 MΩ	-
Brush Rig A1	8 MΩ	15 MΩ	30	-
Brush Rig A2	15 MΩ	20 MΩ	33 MΩ	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

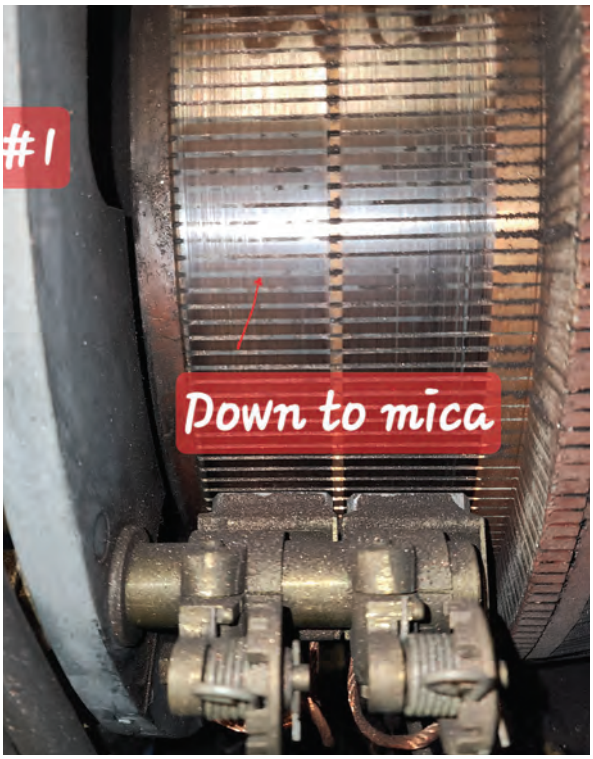
Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.0V	20.7V	20.1V	20.1V	20.1V	20.6V		

Line 122.1V

Lowest Fields	20.0V	Result	3%
Highest Field	20.7V		



Commutator Wear



Severe Wear

Severe Grease Inside Commutator

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **5** Otis 131HT
Observations / Recommendations / Priority

Commutator

- **Observation**
  The commutator indicates moderate brush surface wear.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority # 3**

Brush Rig/Front of Commutator

- **Observation**
  Excessive grease application has resulted in grease migrating past the inner seal and contaminating the lower sections of the brush rigging, as well as the face of the commutator.
  Although electrical test readings for the affected components are currently within acceptable limits, the presence of grease in this area presents a significant risk. During normal operation, carbon dust will accumulate and adhere to the contaminated surfaces, potentially creating conductive paths that could lead to a critical failure.

- **Recommendation**
  Remove end bell, Rebuild/Sand Blast brush rigging & thoroughly clean the commutator face.
  Priority # 2

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**5**
Contact	Larry Oliver	**Date:**	March 5th 2026
Site Address	Williams Center Tower 2		Tower 2 - Low Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	In Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP32
Type	131HT	**Volts**	135
Frame		**Field Volts**	
RPM	141	**Amps**	180

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Moderate Wear Visible
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Quiet & Smooth	-
Sheave Side	Quiet & Smooth	-
Break Linkage & Pins	Acceptable	

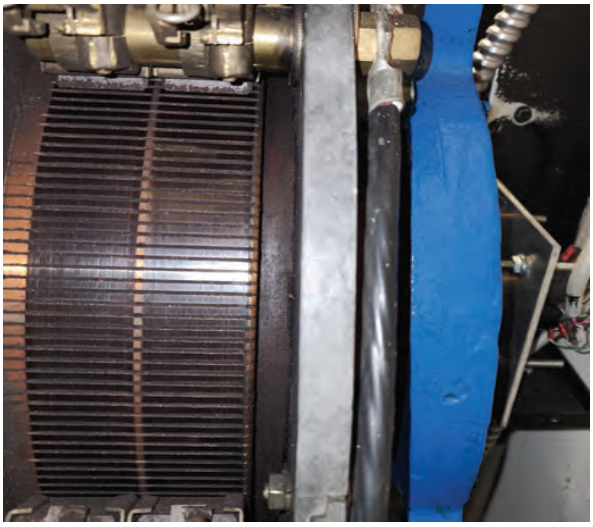
Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	100 MΩ	200 MΩ	∞	-
Brush Rig A1	40 MΩ	100 MΩ	200 MΩ	-
Brush Rig A2	20 MΩ	50 MΩ	100 MΩ	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	100 MΩ	∞	∞	-
Brush Rig A1	50 MΩ	100 MΩ	∞	-
Brush Rig A2	30 MΩ	80 MΩ	100 MΩ	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

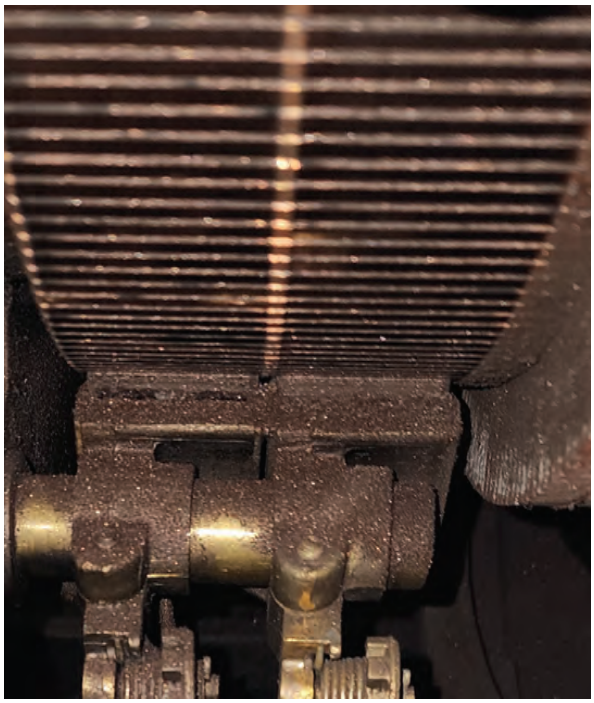
Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.0V	20.6V	21.0V	20.7V	19.8V	19.7V		

Line 122.2V

Lowest Fields	19.7V	Result	6%
Highest Field	21.0V		

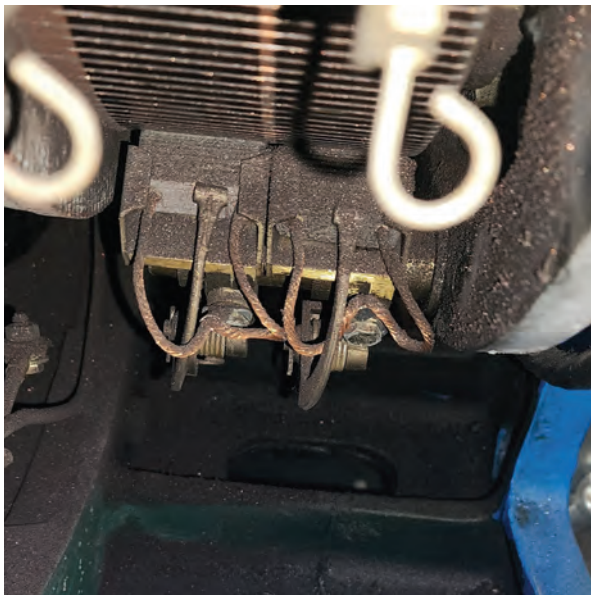


Commutator Wear



Commutator Wear

Excessive Grease



Low brushes

MMTR Services LLC

McIntosh Motor Testing & Repair

Car **1** Otis 131HT
Observations / Recommendations / Priority

Commutator

- **Observation**
  The commutator indicates brush surface wear.
  While this level of wear is not significant it does confirm that wear is present.
- **Recommendation**
  TDUC (Turn Down & Undercut)
- **Priority # 3**

Priority Scale

1. Priority #1 – **Urgent**
   Immediate attention required. **Continuous operation may result in additional damage or failure**.

2. Priority #2 – **High**
   Repair as soon as possible. **Continuous monitoring is required to prevent escalation.**

3. Priority #3 – **Moderate**
   Issue is present but not critical. **Scheduling for repair is recommended within the normal maintenance cycle or durning the modernization project**.

4. Priority #4 – **Low**
   Minor concern. **No immediate action needed, but monitor for changes during routine inspections**.

5. Priority #5 – **Acceptable**
   Machine condition is acceptable. **No repair or action required at this time.**

MMTR Services LLC

McIntosh Motor Testing & Repair

General Information			
Company	CNB Global	**Car #**	**1**
Contact	Larry Oliver	**Date:**	March 2nd 2026
Site Address	Williams Tower 2 west 2nd Street		Tower 2 Mid Rise

Service Condition	
1. In Service **2. Out Of Service** **3. Inspection Speed Only**	In Service

Data Tag Info			
Mfr.	Otis	**HP/KW**	HP32
Type	131HT	**Volts**	145
Frame		**Field Volts**	
RPM	141	**Amps**	180

Pre - Nitrogen Cleaning Electrical Readings		
Armature	**Winding/Banding**	Intact/Acceptable
	Commutator	Moderate Wear Visible
Field Coils	**Wrap**	Acceptable
	Winding	Acceptable

Bearings	**Condition(Roller Bearing)**	**Clearance**(Babbitt Bearing)
Commutator Side	Quiet & Smooth	-
Sheave Side	Quiet & Smooth	-
Break Linkage & Pins	Acceptable	

Pre - Nitrogen Cleaning Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	∞	∞	∞	-
Brush Rig A1	200 MΩ	∞	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	100 MΩ	200 MΩ	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

Post - Electrical Readings				
Ground Fault Meg/Ohm Test	1000 Volts	500 Volts	250 Volts	Ohms
Armature	∞	∞	∞	-
Brush Rig A1	∞	∞	∞	-
Brush Rig A2	∞	∞	∞	-
Field Coils	∞	∞	∞	-
Interpoles	-	-	-	-
Brake Coil	∞	∞	∞	-

Field Voltage Drop Test							
F1	F2	F3	F4	F5	F6	F7	F8
20.2V	20.6V	20.5V	20.3V	20.4V	19.9V		

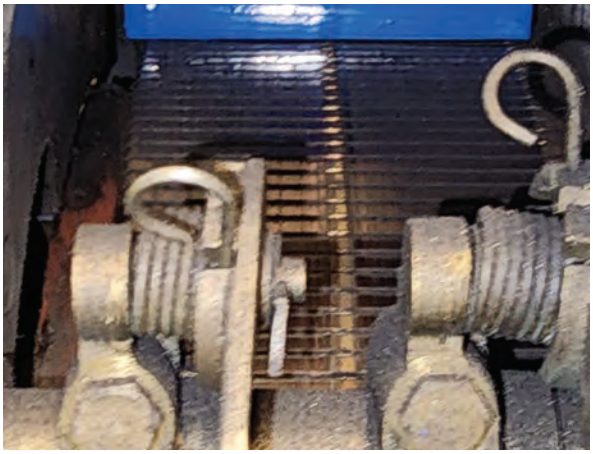
Line 122.2.0V

Lowest Fields	19.9V	Result	3%
Highest Field	20.6V		

Commutator Surface wear

Grease

Low Brushes



Commutator Wear