

ELECTRICAL TESTING DOCUMENTS

Incorporated		Lytle Tunnels - Glenwood Electric
Engineered Fire Protection Systems		316 Pike Street
8686 Southwest Parkway • Harrison, OH 45030 812-656-8045 • Fax 812-656-8545		Cincinnati Ohio 45202
812-656-8045 • Fax 812-656-8545		Heath Weddle
		513-284-2328
	DATE OF SERVICE:	
	HAZARD BEING PROTECTED:	
		Honeywell Carbon Monoxide
	TECHNICIANS:	Scott Evans
	SYSTEM SUMMARY	,
	OPEN ISSUES	
None		
	RECOMMENDATION	S
None		
	REPAIRS MADE	
None		
	NOTES	
1. All Carbon Monoxide Detectors were calibrate		re verified signals were verified by Heath Weddle.
		<u> </u>

LIMITATION OF LIABILITY CLAUSE

This report indicates that this fire protection system has been serviced by a professional in the manner required by the manufacturers guidelines and in accordance with the latest publication of the NFPA regulations that is applicable. 3S Incorporated does not assume any liability or responsibility for the system failing to operate, suppress or extinguish a fire for the reason that such failures may be due to causes beyond our control, including but not limited to, malicious tampering, accidents, failure to perform required modifications, enclosure changes, lack of required maintenance by the owner, etc. This system has been placed back in service in operational condition as of the date of the service. From such date thereafter, the owner is responsible for keeping the system in operational condition. 3S Incorporated's liability for any damages or loss arising out of, or in connection in any way with the service performed shall be limited to that which is stated in its Service Report and/or Inspection and Maintenance Agreement.

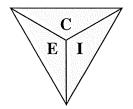


8686 Southwest Parkway • Harrison, OH 45030 812-656-8045 • Fax 812-656-8545

CUSTOMER: Lytle Tunnels - Glenwood Electric ADDRESS: 316 Pike Street CITY, STATE ZIP: Cincinnati Ohio 45202 CONTACT: Heath Weddle PHONE: 513-284-2328 DATE OF SERVICE: March 31, 2023 HAZARD BEING PROTECTED: Lytle Tunnels SYSTEM: Honeywell Carbon Monoxide TECHNICIANS: Scott Evans

GAS DETECTION TEST RESULTS

DETECTOR	DETECTOR	DETECTOR MFG./TYPE	1ST2ND	2ND ALARM	ZERO	CALIBRATION TEST GAS	PASS/FAIL	DETECTOR FULL
NUMBER	LOCATION		ALARM	SETTING	CALIBRATE	USED		SCALE
COER1	ELECTRICAL RM	HONEYWELL - SENSEPOIT XCD	25 ppm	120 ppm	ZERO AIR	CO 500 ppm	PASS	300 ppm
COFP1	PLENUM RM	HONEYWELL - SENSEPOIT XCD	25 ppm	120 ppm	ZERO AIR	CO 500 ppm	PASS	300 ppm
	NORTH TUNNEL S.DET	HONEYWELL - SENSEPOIT XCD	25 ppm	120 ppm	ZERO AIR	CO 500 ppm	PASS	300 ppm
	NORTH TUNNEL N. DET	HONEYWELL - SENSEPOIT XCD	25 ppm	120 ppm	ZERO AIR	CO 500 ppm	PASS	300 ppm
COSB1	SOUTH TUNNEL S. DET	HONEYWELL - SENSEPOIT XCD	25 ppm	120 ppm	ZERO AIR	CO 500 ppm	PASS	300 ppm
COSB2	SOUTH TUNNEL N. DET	HONEYWELL - SENSEPOIT XCD	25 ppm	120 ppm	ZERO AIR	CO 500 ppm	PASS	300 ppm
COSR1	SOUTH RAMP S. DET	HONEYWELL - SENSEPOIT XCD	25 ppm	120 ppm	ZERO AIR	CO 500 ppm	PASS	300 ppm
COSR2	SOUTH RAMP N. DET	HONEYWELL - SENSEPOIT XCD	25 ppm	120 ppm	ZERO AIR	CO 500 ppm	PASS	300 ppm
REMARKS:	1	1		I	I	I	I	
							•	



P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

Report Summary 2023-206 Date: April 6, 2023

Heath Weddle Glenwood Electric

Re:Lytle TunnelSubject:Infrared Inspection

Mr. Weddle,

I have enclosed the results of the infrared inspection conducted at the Lytle Tunnel, Cincinnati, <u>OH</u>. Great care was taken to provide you a report with problems and recommendations that are well defined and logically explained and easy to locate. Priority codes are included for common equipment, to help you to determine if you wish to repair or replace existing parts. Thermal graphic images are provided for each problem area found. Thermal graphic images are not provided for those items viewed, operating within normal temperatures.

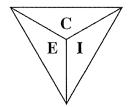
If for any reason the results are unclear, uncertain or simply not adequately explained for your determination of what corrective actions are necessary, please call at (513) 662-7500. If the results can't be completely clarified by phone, we will return at your request (at no charge) to provide additional information necessary to ensure that the information was derived correctly, logically and was adequately explained to include re-inspection of the item in question. We can't guarantee that a clerical or inspection error will never be made, but we can guarantee our diligence in providing you complete satisfaction.

Please refer to the provided CRITERIA FORMS to demonstrate why the priority code (highlighted temperature blocks on your report) have been chosen. These have been provided in an attempt to further quantify the identified problems and assist your determination of corrective action. Also included is a section on CORRECTIVE ACTION that has been found to be helpful to better describe some of the more common corrective actions and their unique requirements.

Electrical Certification Incorporated appreciates the opportunity to provide our services to you. If we can be of any assistance to you in correcting any of the reported problems, please call any time for prompt professional service.

Sincerely,

Jeffrey Jones General Manager



P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

Report Summary 2023-206 Date: April 6, 2023

Heath Weddle Glenwood Electric

Re: Lytle Tunnel – Cincinnati, Ohio Subject: 2023 Preventative Maintenance

Mr. Weddle,

Electrical Certification Incorporated performed inspection, calibration, cleaning, and testing on the switchgears and associated equipment. Inspection, calibration, and testing was performed in accordance with specified requirements, the Manufacturers maintenance guide lines, and NFPA 70B Electrical Equipment Maintenance where applicable. The following is a list of the equipment included in this project.

Equipment List

<u>Left Service Switchgear</u> (6) 480V Draw-Out Circuit Breakers

<u>*Right Service Switchgear*</u> (4) 480V Draw-Out Circuit Breakers (2) 480V Dry-Type Transformers

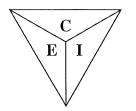
All inspection and test data was recorded on numbered test sheets identified as items 23-206-01 thru 23-206-14 and are enclosed for your review and records. All the equipment tested was found to be within the manufacturers acceptable tolerances.

Summary

Electrical Certification Incorporated appreciates the opportunity to perform this project. If you have any questions concerning this report, or require additional assistance, please call any time for prompt professional service.

Sincerely,

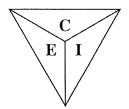
Jeffrey Jones General Manager



*P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com*

Transformer Inspection

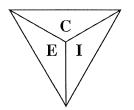
Custo	mei	•	Gle	nwo	od Ele	ectr	ic	· · · · · · · · · · · · · · · · · · ·							220 MAR 2010 Mar 1			Job	#	2023	3-20	16
Locati	ion		Lyt	le T	unnel													Dat	e	03/3	0/2	023
Identi	fica	tion	Tra	nsfo	rmer -	- L]	P 1													П		
			L																			
Mfg	Sq	uare I)				KV	A '	75					Phase	e	3			He	rtz	60)
SN 0)065	50016	5319		Туре		SO			Fo	rm			Class	S	AA			Ris	e	15	50 °C
Pri Vo	lt	480			Δ	I	γ	Am	ps	90.	2			%Z		5.2			Bus	shing		
Sec Vo	olt	208/	120		$\overline{\Delta}$		Ŷ	Am	ps	208	3.2			%Z					Bus	shing		
Coola	nt	Dry			Gallo	ns				EP. Lal				PCB Clt					We	ight	62	,6
No Lo:	ad J	Cap V	olts	1	503		2	491		3	480)	4 4	69	5	458		6	44	3	7	431
Field	Insj											-		1								
Oil Level		°(P	ressure	e			Re	egula	tor			LTC	Cou	nter			G	round		
Oil		°C			[ax Oil		°C			indiı	ıg	°C		Max V		ling	°C	1	R	eset A	11	
Temp Fan				0	emp il	-				emp eak E	xpla	natior		Temp			1					
Contro	ol			L	eaks																	
Comn	nen	ts																				
	-	· Al	l con	nect	ions c	hec	ked -	- ok.														
Techn	nicia	ın I	Ken I	ow	ell																	



P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

Insulation Resistance

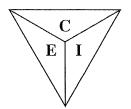
Customer	Glenwood Electric		Job #	2023-206
Location	Lytle Tunnel		Date	03/30/2023
Identification	Transformer – LP 1			
Values listed are in $M\Omega$	Primary – Ground	Primary – Secondary	Seco	ondary - Ground
Test Volt Time in Min	1,000 VDC	1,000 VDC		VDC
0.50	45,600	60,000		
1.00				
2.00				
3.00				
4.00				
5.00				
6.00				
7.00				
8.00				
9.00				
10.00				
PI 10 / 1 =				
PI 1 / .50 =	1.69	1.63		
Comments				
Technician Ke	en Powell			



P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

Transformer Inspection

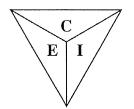
Customer	•	Gler	ıwo	od Elect	tric			21								Job	#	2023	3-20	6
Location		Lytl	e Tu	unnel						-]	Dat	e	03/3	0/2)23
Identifica	tion	Trar	nsfo	rmer – I	LP 2													I		
Mfg Sq	uare I)			KV	A	75					Phase	e	3			Her	rtz	60	
SN 0065	50016	5318		Туре	SO			Fo	rm			Class	5	AA			Ris	e	15	0 °C
Pri Volt	480			$\underline{\Delta}$	γ	An	ıps	90.	.2			%Z		5.2			Bus	hing		
Sec Volt	208/	120		$\overline{\Delta}$	γ	An	ıps	20	8.2			%Z					Bus	shing		
Coolant	Dry			Gallons	3			EP. Lal				PCB Clt					We	ight	62	,6
No Load 7	[ap V	olts	1	503	2	491		3	480		4 4	169	5	458		6	44	3	7	431
Field Ins	pectio	n														•				u
Oil Level	°(1	Pı	ressure			Re	gula	tor			LTC C	Cour	nter			G	round	-	
Oil	°C			ax Oil	°C			indiı	ng	°C		Max V	Vinc	ling	°C		R	eset A	11	
Temp Fan				emp il				emp eak F	xpla	l 1atio	n	Temp								
Control				eaks							-					-				
~																				
Commen	ts																			
Technicia	an H	Ken P	owe	ell																



P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

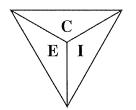
Insulation Resistance

Customer	Glenwood Electric		Job #	2023-206
Location	Lytle Tunnel		Date	03/30/2023
Identification	Transformer – LP 2		1	
	I			
Values listed are in $M\Omega$	Primary – Ground	Primary – Secondary	Seco	ondary - Ground
Test Volt Time in Min	1,000 VDC	1,000 VDC		VDC
0.50	22,000	33,000		
1.00				
2.00				
3.00				
4.00				
5.00				
6.00				
7.00				
8.00				
9.00				
10.00				
PI 10 / 1 =				
PI 1 / .50 =	1.62	1.57		
Comments				
Technician Ke	n Powell			



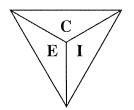
*P.O. Box 53368 * Cincinnati, Ohio 45253* Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

	Glenwo	ood Elec	etric						Job #	2023	-206
Location	Lytle T	Tunnel							Date	03/3	0/2023
Identificatio	n Main 1	(Left B	us)								
Mfg Squ	are D	Туре	Maste	rpact	Style	NW 32H1	Vo	ltage	480	ASY	M 65
Serial 085	325377502		Frame	3000	OC	ML 6.0P	Co	il 30)00	Plug	3000
						<u> </u>		4 - T - 4	c,	4	
	<u>ettings</u>		A	<u>vailable</u>		As Found		<u>1s Lef</u>		<u>As</u>	<u>Tested</u>
Long Time I						2					
Long Time Short Time						2 6		6			4
Short Time						0.4 I ² T Off		U			4
Ground Fau						J					
Ground Fat	A					0.4 I ² T Off					
Instantaneo	-					6					
		an an tao an									
Circuit Brea	iker Test		<u>Test</u> mps	% Setting	<u>5</u>	<u>A Phase</u>	B	Phas	<u>se</u>	<u>C</u>	<u>Phase</u>
Long Time			000			7.421					
Short Time		1:	5000			0.414					
Ground Fau	ılt	2	400			0.403					
Instantaneo	us	22	2500	90% - 75%		0.036					
Instantaneo				110%-125%				.,			·
Insulation F		@ 1KV	DC		A-0		B-Gr			C-Gr	
Across Ope	1 Pole				A-F	i	B-C			A-C	
		A (P-Trip	Unit	A		B			C	
	istance (ul	Ω)				16		14			17
Contact Res	Istance (µ										
Comments		a n occo d									
Comments	ll function:	s passed									
Comments		s passed									
Comments		s passed									
Comments		s passed									



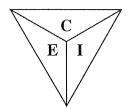
*P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com*

Custon	ıer	Glenwo	od Elec	etric					Je	ob #	2023-2	206
Locatio)n	Lytle T	unnel						D	ate	03/30/	2023
Identifi	ication	Panel D	P-E									
Mfg	Square	e D	Туре	Maste	rpact	Style	NW 08H1	Vol	tage 48	80	ASYM	65
Serial	08532:	5378002		Frame	800	OC	ML 6.0P	Coi	I 800		Plug	600
									-	<u> </u>		
T T		<u>ings</u>			<u>vailable</u>		<u>As Found</u>		<u>s Left</u>		<u>As 1</u>	<u>ested</u>
	lime Pic						0.83					
	lime De						<u>12</u> 6		6			(
	lime Pie						-		6			6
	<u>fime De</u>	Pick-up					0 I ² T Off J					
	d Fault	A					0.2 I ² T Off					
Instant		Delay					8					
T T	•			<u>mps</u>			20.205					
Long T	lime			167			20.305					
Short 7	Гіте		3	900			0.045					
	d Fault			200			0.159				-	
	taneous		6	000	90% - 75%		0.043					
Instant					110%-125							
		istance (a) 1KV.	DC		A-0		B-Gr			C-Gr	
Across	Open F	ole		D T	T Turit	A-H	3	B-C			A-C	
				P-Trip	Unit	A	18	B	16	(19
Cantag	+ Dealat	·))				18		10		-	19
Contac	et Resist	ance (µI	2)									
Contac Comm	ents					I						
Comm	ents	functions				1						
Comm	ents											
Comm	ents											
Comm	ents											
Comm	ents											
Comm	ents - All :	functions										



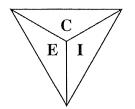
*P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com*

Custom	ler	Glenwo	od Elec	ctric						Job #	2023-	
Locatio		Lytle T	unnel							Date	03/30	/2023
Identifi	cation	Vent Fa	un #1									
	11			-1								
Mfg	Square	e D	Туре	Maste	rpact	Style	NW 08H1	Vo	ltage	480	ASYM	65
Serial	085325	5377103		Frame	800	OC	ML 6.0P	Co	il 8(0	Plug	800
		<u>ings</u>		<u>A</u>	<u>vailable</u>		<u>As Found</u>	1	<u> 1s Le</u>	<u>ft</u>	<u>As</u>	<u>Tested</u>
Long T							1					
Long T							12					
Short T							10		10			6
Short T							0.4 I ² T Off					
		Pick-up					J					
Ground		Delay					$0.2 I^2 T Off$					
Instant	aneous						10					
n an		Tost	,	Tast	% Satting				Dha	5.4	C	Dhasa
<u>Circuit</u>	Breake	er Test	A	<u>Test</u> <u>mps</u>	% Setting	<u>'S</u>	<u>A Phase</u>	<u></u>	Pha.	<u>se</u>	<u>C1</u>	Phase
<u>Circuit</u> Long T	Breake	er Test	<u>A</u> 3	<u>mps</u> 467	% Setting	<u>'S</u>	<u>A Phase</u> 19.779	<u><u> </u></u>	Pha.	<u>se</u>	<u>C1</u>	<u>Phase</u>
<u>Circuit</u> Long T Short T	Breake Time	er Test	<u>A</u> 3	<u>mps</u> 467 6400	% Setting	<u>s</u>	<u>A Phase</u> 19.779 0.419	<u> </u>	Pha.	<u>se</u>	<u>C1</u>	Phase
<u>Circuit</u> Long T Short T Ground	Breake Time Time I Fault	er Test	A 3 6 1	mps 467 6400 600	<u>% Setting</u> 90% - 75%		<u>A Phase</u> 19.779 0.419 0.159		S Pha	<u>se</u>	<u>C1</u>	Phase
<u>Circuit</u> Long T Short T	Breake Time Time d Fault aneous	er Test	A 3 6 1	<u>mps</u> 467 6400			<u>A Phase</u> 19.779 0.419		Pha.	<u>se</u>	<u>C1</u>	Phase
<u>Circuit</u> Long T Short T Ground Instant Instant	Breake Time Time d Fault aneous aneous		<u>A</u> 3 6 1	mps 467 5400 600 00000	90% - 75%		<u>A Phase</u> 19.779 0.419 0.159 0.042	<u><u> </u></u>	Pha.		<u><i>C1</i></u> C-Gr	Phase
Circuit Long T Short T Ground Instant Instant	Breake Time Time d Fault aneous aneous ion Res	istance (<u>A</u> 3 6 1	mps 467 5400 600 00000	90% - 75% 110%-1259		<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr		B Pha			Phase
<u>Circuit</u> Long T Short T Ground Instant Instant Insulat	Breake Time Time d Fault aneous aneous ion Res	istance (<u>A</u> 3 6 1	<u>mps</u> 467 600 0000 DC	90% - 75% 110%-1259 4S		<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr	B-Gr	8 Pha.		C-Gr	Phase
Circuit Long T Short T Ground Instant Instant Insulat Across	Breake Time Time d Fault aneous aneous ion Res Open P	istance (<u>A</u> 3 6 1 10 2 a 1KV	<u>mps</u> 467 6400 600 0000 DC ERM	90% - 75% 110%-1259 4S	- /0 A-E	<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr	B-Gr B-C	8 Pha.		C-Gr A-C	Phase
Circuit Long T Short T Ground Instant Instant Insulat Across	Breake Time Time d Fault aneous aneous ion Res Open P	istance (Pole	<u>A</u> 3 6 1 10 2 a 1KV	<u>mps</u> 467 6400 600 0000 DC ERM	90% - 75% 110%-1259 4S	- /0 A-E	<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr	B-Gr B-C	8 Pha.		C-Gr A-C	Phase
<u>Circuit</u> Long T Short T Ground Instant Instant Insulat Across	Breake Time Time d Fault aneous aneous ion Res Open P t Resist ents	istance ('ole ance (μΩ	A 3 6 1 10 a) 1KV a) 1KV	<u>mps</u> 467 600 0000 DC ERM P-Trip	90% - 75% 110%-1259 4S	- /0 A-E	<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr	B-Gr B-C	8 Pha.		C-Gr A-C	Phase
Circuit Long T Short T Ground Instant Instant Insulat Across Contac	Breake Time Time d Fault aneous aneous ion Res Open P t Resist ents - All	istance (ole ance (μΩ functions	A 3 6 1 10 a) 1KV b) c) c)	<u>mps</u> 467 600 0000 DC ERN P-Trip	90% - 75% 110%-1259 AS Unit		<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr B	B-Gr B-C B			C-Gr A-C C	
Circuit Long T Short T Ground Instant Instant Insulat Across Contac	Breake Time Time d Fault aneous aneous ion Res Open P t Resist ents - All	istance (ole ance (μΩ functions	A 3 6 1 10 a) 1KV b) c) c)	<u>mps</u> 467 600 0000 DC ERN P-Trip	90% - 75% 110%-1259 AS Unit		<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr	B-Gr B-C B			C-Gr A-C C	
Circuit Long T Short T Ground Instant Instant Insulat Across Contac	Breake Time Time d Fault aneous aneous ion Res Open P t Resist ents - All	istance (ole ance (μΩ functions	A 3 6 1 10 a) 1KV b) c) c)	<u>mps</u> 467 600 0000 DC ERN P-Trip	90% - 75% 110%-1259 AS Unit		<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr B	B-Gr B-C B			C-Gr A-C C	
Circuit Long T Short T Ground Instant Instant Insulat Across Contac	Breake Time Time d Fault aneous aneous ion Res Open P t Resist ents - All	istance (ole ance (μΩ functions	A 3 6 1 10 a) 1KV b) c) c)	<u>mps</u> 467 600 0000 DC ERN P-Trip	90% - 75% 110%-1259 AS Unit		<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr B	B-Gr B-C B			C-Gr A-C C	
Circuit Long T Short T Ground Instant Instant Insulat Across Contac	Breake Time Time d Fault aneous aneous ion Res Open P t Resist ents - All	istance (ole ance (μΩ functions	A 3 6 1 10 a) 1KV b) c) c)	<u>mps</u> 467 600 0000 DC ERN P-Trip	90% - 75% 110%-1259 AS Unit		<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr B	B-Gr B-C B			C-Gr A-C C	
Circuit Long T Short T Ground Instant Instant Insulat Across Contac	Breake ime ime d Fault aneous aneous ion Res Open P t Resist ents - All: - Trip	istance (Pole ance (μΩ functions	A 3 6 1 10 a) 1KV b) c) c)	<u>mps</u> 467 600 0000 DC ERN P-Trip	90% - 75% 110%-1259 AS Unit		<u>A Phase</u> 19.779 0.419 0.159 0.042 Sr B	B-Gr B-C B			C-Gr A-C C	



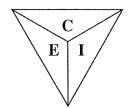
*P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com*

Custom	ner	Glenwo	od Elec	etric						Job #	2023-	206
Locatio	n	Lytle T	unnel							Date	03/30	/2023
Identifi	ication	Vent Fa	un #2									
Mfg	Square	e D	Туре	Maste	erpact	Style	NW 08H1	V	oltage	480	ASYN	1 65
Serial	08532:	5377101		Frame	800	OC	ML 6.0P	C	oil 8(00	Plug	800
				<u>.</u>								
		<u>ings</u>		<u>A</u>	<u>vailable</u>		<u>As Found</u>		<u>As Le</u>	<u>ft</u>	As	<u>Tested</u>
Long T							1					
Long T				-			12		10			
Short T							$\frac{10}{0.4 r^2 T O C}$		10			6
	l E e la						0.4 I ² T Off					
		Pick-up					J 0.3 I ² T Off					
Ground	d Fault	Delay					$\frac{0.3 121 \text{ Off}}{10}$					
Circuit	Breake	er Test		<u>Fest</u> mps	% Setting	25	<u>A Phase</u>		B Pha	<u>se</u>	<u>C</u>]	Phase
Long T	lime			467			19.995					
Short T			6	400			0.420					
Ground	d Fault		1	600			0.265					
Instant	aneous		10	0000	90% - 759	%	0.042					
Instant	aneous				110%-125	%						
Insulat	ion Res	istance (a) 1KV	DC		A-(Gr	B-Gr			C-Gr	
Across	Open F	Pole				A-I	3	B-C			A-C	
				P-Trip	Unit	Α		B			C	
Contac	t Resist	ance (µl	2)				24		22			27
		·								<u>_</u>		
Comm												
		functions	passed									
		functions	passed									
		functions	passed									
		functions	passed									
		functions	passed									
	- All		passed									



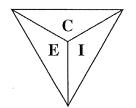
*P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com*

Custom	er	Glenwo	od Elec	etric						Job #	2023-	206
Locatio	n	Lytle T	unnel							Date	03/30	/2023
Identifi	cation	Panel L	P-DP									
Mfg	Square	e D	Туре	Maste	rpact	Style	NW 08H1	V	oltage	480	ASYM	65
Serial	085327	017701		Frame	800	OC	ML 6.0P	0	Coil 8	00	Plug	400
	C						Ag Found		4 - 1 -	<u>c</u>	4	Tagéad
LongT	<u>Setti</u> im a Bial	and the second			<u>vailable</u>		As Found		<u>As Le</u>		AS	<u> Tested</u>
Long T Long T							1 2					
Long T Short T							6		6			4
Short T		A					$0 I^2 T Off$		0			4
Ground				-			J					
Ground		A					0.3 I ² T Off					
Instant		c viu j					6					
	Breake		Ā	<u>rest</u> <u>mps</u>	<u>% Setting</u>		<u>A Phase</u>		<u>B Pha</u>			<u>Phase</u>
Long T				200			7.030					
Short T				000			0.047					
Ground				800	000/ 750	/	0.263					
Instant	aneous		1 4				Λ Λ Λ Λ			1		
Instant	onoous			000	90% - 75%		0.044					
		istance (90% - 75%	%		B-G	r		C-Gr	
	ion Resi	istance (ole					Fr	B-G B-C			C-Gr A-C	
	ion Resi				110%-125	% A-C	Fr					
Insulati Across	ion Resi Open P		a) 1KV	DC	110%-125	% A-C A-I	Fr	B-C			A-C C	19
Insulati Across Contac	ion Resi Open P t Resist:	ole	a) 1KV	DC	110%-125	% A-C A-I	Gr 3	B-C			A-C C	19
Insulati Across	ion Resi Open P t Resista ents	ole ance (µC	a) 1KV 2)	DC P-Trip	110%-125	% A-C A-I	Gr 3	B-C			A-C C	19
Insulati Across Contac	ion Resi Open P t Resista ents	ole	a) 1KV 2)	DC P-Trip	110%-125	% A-C A-I	Gr 3	B-C			A-C C	19
Insulati Across Contac	ion Resi Open P t Resista ents	ole ance (µC	a) 1KV 2)	DC P-Trip	110%-125	% A-C A-I	Gr 3	B-C			A-C C	19
Insulati Across Contac	ion Resi Open P t Resista ents	ole ance (µC	a) 1KV 2)	DC P-Trip	110%-125	% A-C A-I	Gr 3	B-C			A-C C	19
Insulati Across Contac	ion Resi Open P t Resista ents	ole ance (µC	a) 1KV 2)	DC P-Trip	110%-125	% A-C A-I	Gr 3	B-C			A-C C	19
Insulati Across Contac	ion Resi Open P t Resista ents	ole ance (µC	a) 1KV 2)	DC P-Trip	110%-125	% A-C A-I	Gr 3	B-C			A-C C	19
Insulat Across Contac	ion Resi Open P t Resista ents - All f	ole ance (µs	a) 1KV 2)	DC P-Trip	110%-125	% A-C A-I	Gr 3	B-C			A-C C	19



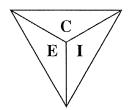
P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

Custom	er	Glenwo	ood Elec	etric						Job #	2023-	-206
Locatio	n	Lytle T	unnel							Date	03/30)/2023
Identifi	cation	Tie										
Mfg	Square	e D	Туре	Maste	erpact	Style	NW 32H1	Vo	ltage	480	ASYN	1 65
Serial	085325	5377701		Frame	3200	OC	ML 6.0P	Co	il		Plug	3000
						T	, 					
		<u>ings</u>			<u>vailable</u>		<u>As Found</u>	<u>F</u>	1s Lef		As	<u>Tested</u>
Long T							1					
Long T							2					4
<u>Short T</u> Short T							6 0.4 I ² T Off		6			4
		Pick-up					<u> </u>					
Ground							$\frac{J}{0.4 \text{ I}^2 \text{T Off}}$					
Instant		Delay					6					
		er Test		<u>Fest</u> mps	<u>% Setting</u>	25	<u>A Phase</u>	B	Phas	<u>e</u>	<u>C</u> .	<u>Phase</u>
Long T	ime	er Test	<u>A</u> 9	<u>mps</u> 000	<u>% Setting</u>	25	7.272	B	Phas	<u>e</u>	<u>C</u> _	<u>Phase</u>
Long T Short T	ime `ime	er Test	<u>A</u> 9	<u>mps</u> 000 5000	<u>% Setting</u>	25	7.272	<u>B</u>	Phas		<u>C</u> .	<u>Phase</u>
Long T Short T Ground	ime `ime I Fault	er Test	<u>A</u> 9 1: 2	<u>mps</u> 000 5000 400			7.272 0.413 0.403	<u>B</u>	Phas	<u>se</u>	<u>C</u> .	<u>Phase</u>
Long T Short T Ground Instant	ime `ime I Fault aneous	er Test	<u>A</u> 9 1: 2	<u>mps</u> 000 5000	90% - 759		7.272		Phas		<u>C</u> .	<u>Phase</u>
Long T Short T Ground Instant Instant	ime `ime I Fault aneous aneous		<u>A</u> 9 1: 2 22	<u>mps</u> 000 5000 400 2500		//o 9%0	7.272 0.413 0.403 0.036		Phas			<u>Phase</u>
Long T Short T Ground Instant Instant Instant	ime `ime I Fault aneous aneous ion Res	istance (<u>A</u> 9 1: 2 22	<u>mps</u> 000 5000 400 2500	90% - 759		7.272 0.413 0.403 0.036	B-Gr	Phas		C-Gr	<u>Phase</u>
Circuit Long T Short T Ground Instant Instant Insulat Across	ime `ime I Fault aneous aneous ion Res	istance (<u>A</u> 9 1: 2 22	<u>mps</u> 000 5000 400 2500	90% - 759	% % A-0 A-1	7.272 0.413 0.403 0.036	B-Gr B-C	Phas		C-Gr A-C	Phase
Long T Short T Ground Instant Instant Insulat Across	ime `ime I Fault aneous aneous ion Res Open P	istance (Pole	<u>A</u> 9 1: 2 22 22 a 1KV	<u>mps</u> 000 5000 400 2500	90% - 759		7.272 0.413 0.403 0.036	B-Gr			C-Gr	
Long T Short T Ground Instant Instant Insulat Across	ime `ime I Fault aneous aneous ion Res Open P	istance (<u>A</u> 9 1: 2 22 22 a 1KV	<u>mps</u> 000 5000 400 2500	90% - 759	% % A-0 A-1	7.272 0.413 0.403 0.036	B-Gr B-C	2 Phas		C-Gr A-C	<u>Phase</u>
Long T Short T Ground Instant Instant Insulat Across Contac	ime Time I Fault aneous aneous ion Res Open F t Resist	istance (Pole	<u>A</u> 9 1: 2 22 22 a 1KV	<u>mps</u> 000 5000 400 2500	90% - 759	% % A-0 A-1	7.272 0.413 0.403 0.036	B-Gr B-C			C-Gr A-C	
Long T Short T Ground Instant Instant Insulat Across Contac	ime Time I Fault aneous aneous ion Res Open F t Resist ents	istance (Pole	A 9 1: 2 2: 2: 0 1KV	<u>mps</u> 000 5000 400 2500 DC	90% - 759	% % A-0 A-1	7.272 0.413 0.403 0.036	B-Gr B-C			C-Gr A-C	
Long T Short T Ground Instant Instant Insulat Across Contac	ime Time I Fault aneous aneous ion Res Open F t Resist ents	istance (Pole	A 9 1: 2 2: 2: 0 1KV	<u>mps</u> 000 5000 400 2500 DC	90% - 759	% % A-0 A-1	7.272 0.413 0.403 0.036	B-Gr B-C			C-Gr A-C	
Long T Short T Ground Instant Instant Insulat Across	ime Time I Fault aneous aneous ion Res Open F t Resist ents	istance (Pole	A 9 1: 2 2: 2: 0 1KV	<u>mps</u> 000 5000 400 2500 DC	90% - 759	% % A-0 A-1	7.272 0.413 0.403 0.036	B-Gr B-C			C-Gr A-C	
Long T Short T Ground Instant Instant Insulat Across Contac	ime Time I Fault aneous aneous ion Res Open F t Resist ents	istance (Pole	A 9 1: 2 2: 2: 0 1KV	<u>mps</u> 000 5000 400 2500 DC	90% - 759	% % A-0 A-1	7.272 0.413 0.403 0.036	B-Gr B-C			C-Gr A-C	
Long T Short T Ground Instant Instant Insulat Across Contac	ime Time I Fault aneous aneous ion Res Open F t Resist ents	istance (Pole	A 9 1: 2 2: 2: 0 1KV	<u>mps</u> 000 5000 400 2500 DC	90% - 759	% % A-0 A-1	7.272 0.413 0.403 0.036	B-Gr B-C			C-Gr A-C	



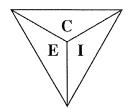
*P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com*

Customer Glenwood Electric					ic						2023-206		
Locatio	n	Lytle T	unnel							Date	03/30/	03/30/2023	
ldentifi	ication	Main 2	(Right	Bus)									
Mfg	Square	e D	Туре	Maste	erpact	Style	NW 32H1	V	oltage	480	ASYM	65	
Serial	085325	5377501		Frame	3200	OC	ML 6.0P	C	oil 3	000	Plug	3000	
		<u>ings</u>		A	l <i>vailable</i>		<u>As Found</u>		<u>As Le</u>	<u>ft</u>	<u>As 7</u>	<u><i>Tested</i></u>	
	'ime Pic						1						
	ime De						2						
	lime Pio						6		6			4	
	<u>[ime De</u>						0.1 I ² T Off						
		Pick-up					J						
	d Fault	Delay					0.4 I ² T Off						
Instant	aneous						6						
<u>Circuit</u>	Breake	er Test		<u>Test</u> mps	<u>% Settin</u>	<u>gs</u>	<u>A Phase</u>		<u>B Pha</u>	<u>se</u>	<u>C</u> P	<u>Phase</u>	
Long T	lime			0000			7.361						
Short]	ſime		1:	5000			0.111						
Groun	d Fault			2400			0.403						
Instant	taneous		2	2500	90% - 75		0.043						
	taneous				110%-125						II		
		istance (a) 1KV	DC		A-0		B-Gr	•		C-Gr		
Across	Open P	Pole				A-I	3	B-C			A-C		
~				P-Trip	o Unit	<u> </u>		B			C		
Contac	et Resist	ance (µ	2)				16		18			20	
Comm		functions	s passed	[
Comm	- All												
Comm	- All												
	- All :												
	- All :												
	- All :												
Comm		Vor	Powell										



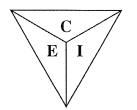
*P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com*

Custom		Glenwo		etric						Job #	2023-206	
Location Lytle Tunnel										Date	03/30	/2023
ldentifi	dentification Vent Fan #3											
Mfg	Square	e D	Туре	Maste	erpact	Style	NW 08H1	V	oltage	480	ASYN	65
Serial	085325	5377102		Frame	800	OC	ML 6.0P	C	oil		Plug	800
									· -			
	<u>Sett</u>	PROPERTY AND INCOMENDATION.		<u>A</u>	<u>vailable</u>		<u>As Found</u>		<u>As Le</u>	<u>ft</u>	As	<u>Tested</u>
Long T							1	-				<u> </u>
Long T							12					
Short Time Pick-up						10		10			6	
Short T							0.4 I ² T Off					
		Pick-up					J					
Ground		Delay					$0.2 I^2 T Off$					
Instant	aneous						10					
		·										
Circuit	Breake	er Test		Test	% Setting	'S	A Phase		B Pha	se	<u> </u>	Phase
		•		mps						_		******
Long T	ime		3	467			19.939					
Short T			6	5400			0.419					
Ground	d Fault		1	600			0.160					
Instant	aneous		1(0000	90% - 75%	6	0.043					
Instant	aneous				110%-1259	%						
Insulati	ion Res	istance (a) 1KV	DC		A-0	Gr	B-G	r		C-Gr	
Across	Open P	ole				A-I	3	B-C			A-C	
				P-Trip	Unit	A		B			C	
Contact Resistance (μΩ)						19		18			19	
Comme												
•	- All t	functions	s passed									
Technie			Powell									



P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

Custom	ner	Glenwo	ood Elec	etric				Job #	Job # 2023-206			
Locatio	n	Lytle T	unnel					Date	03/30/2023			
Identifi	cation	Panel I	DP-W									
Mfg	Square	e D	Туре	Maste	rpact	Style	NW 08H1		Voltage	480	ASYM	65
Serial	085325	5378001		Frame	800	OC	ML 6.0P		Coil		Plug	600
<u>Settings</u>			A	<u>vailable</u>		<u>As Found</u>		<u>As Le</u>	<u>ft</u>	<u>As '</u>	<u> Tested</u>	
Long T							0.83					
Long T							12					
Short T				_			6					
Short T		Y					0 I ² T Off					
Ground Fault Pick-up						J						
	d Fault	Delay					0.2 I ² T Off					
Instant	aneous				n engander		8					
Circuit	Breake	er Test		Test	% Setting	S	<u>A Phase</u>		B Pha	se	CI	Phase
				mps	<u>,</u>	-						
Long T	ime			167			20.181					
Short T	ſime		3	900			0.045					
Ground	d Fault		1	200			0.160					
Instant	aneous		6	000	90% - 75%		0.043					
Instant					110%-1259							
		istance (a 1KV	DC		A-0		B-G			C-Gr	
Across	Open P	ole				A-I	3	B-C	2		A-C	
				P-Trip	Unit	A		B			C	
Contact Resistance (μΩ)						20		22			21	
~												
Comm												
	- All :	functions	s passed									
				<u></u>								
Techni	aian	Var	Douvo ¹¹									
recnni	cian	<u> </u>	Powell									



P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

Custom	ler	Glenwo	ood Elec	etric				Job #	b # 2023-206				
Locatio	n	Lytle T	'unnel					Date	03/30/2023				
Identification Panel LP-PP									,				
Mfg	Square	e D	Туре	Maste	erpact	Style	NW 08H1		Voltage	480	ASYN	M 65	
Serial	085325	5378101		Frame	800	OC	ML 6.0P		Coil	-	Plug	400	
				T			Distance in the second s						
<u>Settings</u>				<u>vailable</u>		<u>As Found</u>		<u>As Le</u>	<u>eft</u>	As	<u>Tested</u>		
Long T							1						
Long T							8						
Short T							8		8		4		
Short T							0 I ² T Off						
Ground		Pick-up					J 0.3 I ² T Off						
Instant		Delay											
	alleous		an a				8					10	
<u>Circuit</u>	Breake	<u>r Test</u>		<u>est</u>	<u>% Setting</u>	<u>85</u>	<u>A Phase</u>		<u>B Pha</u>	<u>ise</u>	\underline{C}	<u>Phase</u>	
LongT	ima			<u>mps</u> 200			29.704						
Long T Short T				400			<u>28.704</u> 0.044						
Ground				300			0.263						
Instant				000	90% - 75%	/0	0.203						
Instanta			_	000	110%-125		0.044						
		istance (\overline{a} 1KV			A-0	r	B-C	Gr		C-Gr		
Across						A-B		B-C			A-C		
				P-Trip	Unit	A		B			C		
Contact	t Resist	ance (µ	2)	1			23		21		- 1	25	
						<u>_</u>		L					
Comme	ents												
-	- All f	functions	s passed										
. <u></u>													
Technic			Powell										



P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

Severity Code Descriptions

The images and temperatures depicted in this report determine the severity of each anomaly found during the inspection. The temperature rise determines the severity of each hot spot.

Severity:

Level 0

- Corrective action required at next scheduled outage.
 - Temperature Rise = 1° C to 7° C
 - Will not be highlighted, but noted in the Severity column

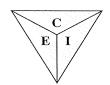
Level 1

- Corrective action required as soon as possible.
 - Temperature Rise = 8° C to 15° C
 - Will be noted in the Severity column, and highlighted in <u>YELLOW</u>.

Level 2

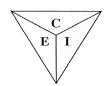
- Corrective action required IMMEDIATELY.
 - Temperature Rise = $16^{\circ}C$ + (and higher)
 - Will be noted in the Severity column, and highlighted in **RED**.

The intention of this report is to assist your company in reducing the possibility of loss to property by bringing to your attention hazards and lack of protection. It is not intended to imply that all other hazards and conditions are under control at time of inspection. No liability is assumed by reason of this report or the inspection upon which it is based as it is only advisory in nature and you must make the final decision.



Electrical Certification Incorporated P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

Customer: Glenwood Electric	Location: Lytle Tunnel - Cincinnati, OH					
Image # Location	Equipment Inspected	Job # 2023-206 <u>Severity</u>				
Lytle Tunnel	Main 1A	No Issues				
Lytle Tunnel	Panel DP-E	No Issues				
Lytle Tunnel	Vent Fan #2	No Issues				
Lytle Tunnel	Vent Fan #1	No Issues				
Lytle Tunnel	Panel LP-DP	No Issues				
Lytle Tunnel	TIE	No Issues				
Lytle Tunnel	Vent Fan #3	No Issues				
Lytle Tunnel	Panel DP-W	No Issues				
Lytle Tunnel	Panel LP-PP	No Issues				
Lytle Tunnel	Main 2B	No Issues				
Lytle Tunnel	120 VAC UPS	No Issues				
Lytle Tunnel	LP-1	No Issues				
Lytle Tunnel	LP-PP	No Issues				
Lytle Tunnel	480 VAC UPS	No Issues				
Lytle Tunnel	LP1 Transformer	No Issues				
Lytle Tunnel	SW-LP2	No Issues				
Lytle Tunnel	SW-LP1	No Issues				
Lytle Tunnel	SW-DN	No Issues				
Lytle Tunnel	RW-LP2	No Issues				
Lytle Tunnel	RW-LP1	No Issues				
Lytle Tunnel	RW-DN	No Issues				
Lytle Tunnel	NW-LP2	No Issues				
Lytle Tunnel	NW-LP1	No Issues				
Lytle Tunnel	NW-DN	No Issues				
Lytle Tunnel	DP-W	No Issues				
Lytle Tunnel	Contactor NW-C1	No Issues				
Lytle Tunnel	Contactor NW-C2	No Issues				
Lytle Tunnel	Contactor RW-C1	No Issues				
Lytle Tunnel	Contactor RW-C2	No Issues				
Lytle Tunnel	Contactor SW-C1	No Issues				
Lytle Tunnel	Contactor SW-C2	No Issues				
Lytle Tunnel	LP-2	No Issues				
Lytle Tunnel	LP-2 Transformer	No Issues				
Lytle Tunnel	LP	No Issues				
Lytle Tunnel	Contactor SE-C2	No Issues				
Lytle Tunnel	Contactor SE-C1	No Issues				
Lytle Tunnel	Contactor RE-C2	No Issues				
Lytle Tunnel	Contactor RE-C1	No Issues				
Lytle Tunnel	Contactor NE-C2	No Issues				
Lytle Tunnel	Contactor NE-C1	No Issues				



Electrical Certification Incorporated P.O. Box 53368 * Cincinnati, Ohio 45253 Office: (513) 662-7500 * Fax: (513) 662-6610 Cell: (513) 604-2431 * Email: ECInc@cinci.rr.com

Custom	er: Glenwood Electric	Location: Lytle Tunnel - Cincinnati, OH					
Image #	Location	Equipment Inspected	Job # 2023-206 <u>Severity</u>				
	Lytle Tunnel	DP-E	No Issues				
	Lytle Tunnel	NE-DN	No Issues				
	Lytle Tunnel	NE-LP1	No Issues				
	Lytle Tunnel	NE-LP2	No Issues				
	Lytle Tunnel	RE-DN	No Issues				
	Lytle Tunnel	RE-LP1	No Issues				
	Lytle Tunnel	RE-LP2	No Issues				
	Lytle Tunnel	SE-DN	No Issues				
	Lytle Tunnel	SE-LP1	No Issues				
	Lytle Tunnel	SE-LP2	No Issues				
	Lytle Tunnel	N-EM	No Issues				
	Lytle Tunnel	R-EM	No Issues				
	Lytle Tunnel	S-EM	No Issues				
	Lytle Tunnel	LP-DP	No Issues				