BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Authorization to Enter into a Contract with a Third-Party for Utilization of Fiber Optic Capacity Not Currently Utilized for Electric Operations	))))))	**File No. EM-2025-0243**

STAFF RECOMMENDATION

COMES NOW the Staff of the Missouri Public Service Commission ("Staff"), by and through counsel, and states as follows:

1. On March 4, 2025, Union Electric Company d/b/a Ameren Missouri ("Ameren") filed an application seeking authority to lease two fiber pairs of optic strands over an approximately 15-mile portion of Ameren's Clark-Galena transmission line and a waiver request of the 60-day notice requirement contained in Commission Rule 20 CSR 4240-4.017 (the "Application").

2. On March 5, 2025, the Commission issued its *Order Directing Notice, Setting Deadline for Intervention Requests, and Directing Staff Recommendation*, which set a March 20, 2025, deadline for applications to intervene and which set an April 7, 2025, deadline for Staff to file a Recommendation regarding the Application or a request for additional time. On April 7, 2025, Staff submitted a *Request for Additional Time*, requesting until May 7, 2025, to file its recommendation; the Commission granted the request.

3. No applications to intervene were filed on or by March 20, 2025.

4. Section 393.190.1, RSMo requires a utility under the Commission's jurisdiction to receive Commission approval before leasing part of its system which is used in service to the public. The Commission may not withhold approval of the lease unless it is detrimental to the public interest.[1]

5. In its Application, Ameren requests Commission approval to lease to M & A Electric Power Cooperative ("M & A") two (2) fiber pairs of optic strands contained within an Optical Ground Wire Cable ("OPGW") over an approximately 15-mile portion of Ameren's Clark-Galena transmission line. These strands are not activated or "lit" – they are dark fibers.

6. In its Application, Ameren states that the lease term is 10 years, which may be extended up to four (4) additional five (5) year extension terms. The lease provides that ** [redacted] .[2] ** Ameren will record lease revenues to FERC Account 454, and they will offset Ameren's rate case revenue requirement.[3]

7. Ameren's Application states that it can terminate the lease under certain circumstances as provided in the lease.[4]

8. Ameren represents that this lease will have no impact on its operations or interfere with its ability to provide safe and adequate service to its customers.

[1] *Fee Fee Trunk Sewer Co. v. Litz*, 596 S.W.2d 466, 468 (Mo. App., W.D. 1980) (citing *State ex rel. City of St. Louis v. Public Service Commission of Missouri*, 73 S.W.2d 393, 400 (Mo banc 1934).
[2] *Fiber Lease Agreement By and Between the Ameren and M & A Electric Power Cooperative*, ¶4, attached as Exhibit A-C to Ameren's Application.
[3] *Verified Application to Lease Fiber Capacity*, ¶4.
[4] *Id*. at ¶3.

Ameren indicated in response to a Staff Data Request that signal separation, isolation, and integrity is achieved and can be maintained between these stands to be leased to M & A and those strands that are utilized by Ameren in its electrical operations.[5]

9. In the attached Staff memorandum, marked as Exhibit A, Staff recommends the Commission approve the lease. Staff finds the lease is not detrimental to the public interest, because (a) the OPGW line has excess capacity, (b) signal integrity can be maintained and isolated, and (c) M & A's use of the line(s) will not interfere with Ameren's use for utility purposes. Staff agrees with Ameren's proposed accounting treatment of the lease and maintenance payments it receives from M & A.

10. Staff further recommends that the Commission order Ameren to notify the Commission if it intends to terminate, suspend, or modify the lease. And lastly, Staff requests the Commission note in its order that it makes no ratemaking determination regarding this lease.

WHEREFORE, Staff respectfully submits this Staff Recommendation, and recommends that the Commission issue an order approving the Application, and for such other and further relief as the Commission considers just and reasonable under the circumstances.

[5] *Id.* at ¶5 and Response to Staff Data Request No. 2.

Respectfully Submitted,

/s/ Alexandra Klaus
Alexandra Klaus
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Missouri Public Service Commission
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Attorney for the Staff of the
Missouri Public Service Commission

CERTIFICATE OF SERVICE

I hereby certify that true and correct copies of the foregoing were mailed, electronically mailed, or hand-delivered to all counsel of record on this 24th day of April, 2025.

/s/ Alexandra Klaus

MEMORANDUM

TO: Missouri Public Service Commission Official Case File
Case No. EM-2025-0243

FROM: Karen Lyons, Utility Regulatory Manager, Auditing Department
Alan J. Bax, Associate Engineer, Engineering Analysis Department

/s/ Alan Bax April 24, 2025
Engineering Analysis Dept. / Date

SUBJECT: Staff Memorandum Recommending Approval of Ameren Missouri's Request for Authorization to Enter into a Contract with a Third-Party for Utilization of Fiber Optic Capacity Not Currently Utilized For Electric Operations

DATE: April 24, 2025

STAFF RECOMMENDATION

Staff of the Missouri Public Service Commission ("Staff") recommends that the Missouri Public Service Commission ("Commission") approve the Application of Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri") that requests authorization to enter into a contract with a third-party for leasing available capacity on a fiber optic conductor bundle not currently used for electric operations, concluding that the Application is not detrimental to the public interest pursuant to Section 393.190.1, RSMo, and 20 CSR 4240-10.105(1)(D). The Application meets the filing requirements contained in 20 CSR 4240-2.060 and 20 CSR 4240-10.105. In addition, Staff recommends Ameren Missouri's Request for Waiver from the 60-day notification requirements contained in 20 CSR 4240-4.017(1)(D) be approved for good cause shown.

OVERVIEW

On March 4, 2025, Ameren Missouri filed its Application, along with an accompanying waiver request regarding the 60-day notification requirement of its intention

to file said Application per 20 CSR 4240-4.017(1). The waiver request was supported by a verified declaration providing good cause under 20 CSR 4240-4.017(1)(D). In its Application, Ameren Missouri included its plan to lease fiber optic strands contained within an Optical Ground Wire Cable ("OPGW"), which has been installed and will be maintained and operated by Ameren Missouri and utilized in its provision of electric service, to M & A Electric Power Cooperative ("M & A"). A copy of the *Fiber License Agreement* ("Lease Agreement") between Ameren Missouri and M & A was included in the Application as required by 20 CSR 4240-10.105(1)(B). Ameren Missouri contends that leasing such available capacity in exchange for fees received will result in revenues that will be applied to its revenue requirement and reduce customer rates.

Ameren Missouri is an electrical corporation subject to the jurisdiction of the Commission as specified, in part, by Chapters 386 and 393, RSMo. More particularly for this case, Ameren Missouri is subject to the jurisdiction of the Commission under Section 393.190.1, RSMo. Ameren Missouri is current on its filing of annual reports and payments of its assessment dues. Staff is currently not aware of any unsatisfied judgments or decisions against Ameren Missouri in any state or federal agency or court involving customer service or rates within the last three years that would have bearing on the immediate case.

DISCUSSION

Ameren Missouri recently upgraded an approximately 15-mile section of its Clark-Galena transmission line, which included updating the terminal equipment and transmission structures at and/or near its Clark and Fletcher substations. As a part of this project, Ameren Missouri installed an OPGW cable. A specification sheet describing this

OPGW cable, along with a cross-sectional drawing, was included in Ameren Missouri's Response to Staff Data Request No. 1.[1] OPGW cable is designed to provide a means of shielding the transmission line from the effects associated with lightning strikes, as it replaces the typical aluminum static wire utilized in transmission line installations. Moreover, OPGW cable has up to 144 fiber optic strands[2] that can be used in providing a telecommunication path that can be utilized by an electric utility and also enable "third-party" communication. Ameren Missouri indicates it plans to use the OPGW cable in operating its Supervisory Control and Data Acquisition ("SCADA") system, as well as enabling/enhancing the operation of such devices as line differential relays[3] and synchrophasors.[4] Ameren Missouri reports that it installed an OPGW cable with 72 strands. Optical fibers can also be used by third-party communication providers in offering such services as internet, for example. Ameren Missouri states that its current utilization plans of the OPGW cable leaves excess capacity available on these fiber strands. Therefore, Ameren Missouri is seeking to lease a portion of this available capacity on its OPGW cable to M & A.

As required by 20 CSR 4240-10.105(1)(B), a Lease Agreement was included with the Application. The initial term of said Lease Agreement is ten (10) years, with provisions to extend up to four additional five-year periods if desired. The property to be leased is

[1] Attached to this Staff Recommendation as Schedule AJB-1
[2] Ameren Missouri reports a typical fiber optic cable included within OPGW installed today generally consists of 72 to 96 strands.
[3] Differential Relays are devices that track and respond to differences between electrical parameters (such as voltages and currents) in detecting faults. These relays will activate within their "zone of protection" upon sensing any deviations in voltages and currents ensuring accurate fault detection.
[4] A phasor is a complex number that is representative of magnitude and phase angle of a sine-wave. Phasor Measurements Units ("PMUs") measure voltages and currents at various points on the grid simultaneously. These simultaneous measurements are considered to be "time-synchronized" and the associated PMUs are called synchrophasors.

two pairs of fiber strands that are "unlit" (i.e. not activated) for use in Ameren Missouri's provision of electric service and are thus labeled as "dark fiber strands", with clearly defined access points. Access points refer to any service point locations, such as splices or other points of demarcations (such as in cabinets and handholds) in which M &A will have operational control. Other than these access points, as identified by Ameren Missouri, M & A will be unable to utilize and/or effect any other portion of Ameren Missouri's facilities. Therefore, as indicated in the Response to Staff Data Request No. 2, signal separation, isolation, and integrity is achieved and can be maintained between these strands to be leased by M & A and those strands that are utilized by Ameren Missouri in its electrical operations. Additionally, there is a provision in the Lease Agreement prohibiting M & A from interfering with or impairing the non-leased strands. In other words, Ameren Missouri's lease of the excess fiber capacity will not pose a risk to its electrical operations.

The Lease Agreement details the annual payments that Ameren Missouri will receive over the period of the lease. ** [redacted] . ** Revenues from these annual payments will offset Ameren Missouri's revenue requirement in each of its future electric rate cases. The lease revenues will be recorded in FERC Account 454 and its anticipated that a normal annualized level of the associated revenues will be included in the revenue requirement with the corresponding rate case. Ameren Missouri claims that since this is

an existing cable route that Ameren Missouri already operates and maintains, additional operations and maintenance costs are not expected as part of this lease.[5] Moreover, the cost associated with enabling M & A to lease fiber strands at access points will be borne by M & A per the Lease Agreement.

CONCLUSION

Staff recommends that the Commission authorize Ameren Missouri to enter into a Lease Agreement with M & A as sought in the Application, as Staff concludes that the request is not detrimental to the public interest as required by 20 CSR 4240-10.105(1)(D). The Application meets the requirements specified in 393.190.1, RSMo, as well as those included in 20 CSR 4240-2.060 and 20 CSR 4240-10.105. Ameren Missouri has completed a project that improved its existing Clark to Galena transmission line, which included the installation of an OPGW cable. In addition to replacing the existing static wire, the OPGW cable includes fiber optic strands that will be utilized by Ameren Missouri in operating its SCADA system as well as enhancing the operation of such equipment as line differential relays and synchrophasors. Because there will be excess capacity available on these fiber strands, Ameren Missouri is seeking to lease a portion of this available capacity to M & A. Ameren Missouri asserts that signal integrity can be maintained and be isolated from the differing uses of the available fiber in conjunction with Ameren Missouri's needs regarding the operation of its electrical system and M & A anticipated usage. Staff has reviewed and agrees with Ameren Missouri's proposed methods of accounting for the revenues and expenses in conjunction with the terms of the

[5] Ameren Missouri response to Staff Data Request No. 0006.

lease. Staff also recommends the Commission approve Ameren Missouri's variance request from providing a sixty-day notice of filing this Application per 20 CSR 4240-4.017(1)(D) for illustrating good cause per the regulation.

In recommending approval of this request, Staff recommends the Commission note in its order that no ratemaking determinations are being made as a part of this case relative to Ameren Missouri leasing a portion of its property over the period of the lease transaction. Moreover, if Ameren Missouri decides to suspend, terminate or otherwise modify the Lease Agreement, the Staff recommends the Commission order Ameren Missouri to file a notice with the Commission as soon as practical upon such a decision. Such notice should include a detailed explanation as to the purpose of suspending, terminating, or otherwise modifying the Lease Agreement.

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AFFIDAVIT OF KAREN LYONS

STATE OF MISSOURI)
) ss
COUNTY OF Jackson)

COMES NOW, KAREN LYONS, and on her oath declares that she is of sound mind and lawful age; that she contributed to the attached *Staff Recommendation in Memorandum form*; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Karen Lyons
KAREN LYONS

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Jackson, State of Missouri, at my office in Kansas City, on this 17th day of April 2025.

CHERYL LEVERETTE
MY COMMISSION EXPIRES
9-7-2027
NOTARY SEAL
#01404338
JACKSON COUNTY
NOTARY PUBLIC, STATE OF MISSOURI

Cheryl Leverette
Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of the Union Electric Company d/b/a Ameren Missouri for Authorization to Enter into a Contract with a Third-Party for Utilization of Fiber Optic Capacity Not Currently Utilized for Electric Operations	))))))	**File No. EM-2025-0243**

AFFIDAVIT OF ALAN J. BAX

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

COMES NOW, **ALAN J. BAX**, and on his oath declares that he is of sound mind and lawful age; that he contributed to the attached *Staff Recommendation in Memorandum form*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

ALAN J. BAX

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 17th day of April 2025.

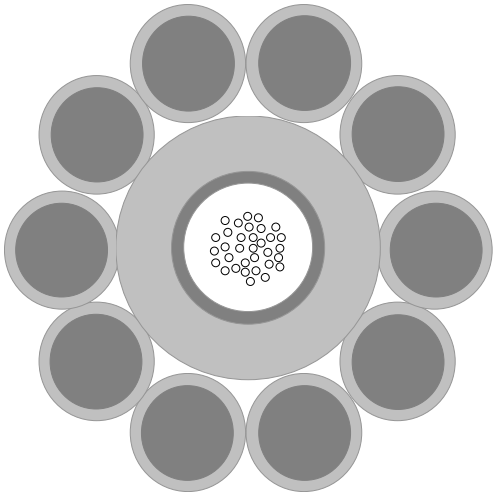
DIANNA L. VAUGHT
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: July 18, 2027
Commission Number: 15207377

Notary Public

PO Box 3127
Spartanburg, SC 29304
Tel: 1 800 235 3423
Fax: 1 864 433 5560

Specification DNO-11706

CentraCore Optical Ground Wire



CC-68/508

72 Singlemode

Component Details					
Component	**#**	**OD**		**Area**	
CENTER					
Aluminum Pipe	1	7.00 mm	0.2756 in	26.23 mm²	0.0407 in²
Stainless Steel Tube	1	3.80 mm	0.1496 in	2.26 mm²	0.0035 in²
LAYER 1 - LEFT HAND LAY					
Aluminum Clad Steel (20.3% IACS)	10	2.95 mm	0.1161 in	68.35 mm²	0.1059 in²
* - Cross Section drawing shown is representative.					

Standards	
Designed and Manufactured in accordance with the following:	
Fiber	. *Single-mode: ITU-T G.652D/G.657.A1*
Cable	. *IEEE 1138, IEC 60794-4*
Color Code	. *ANSI/EIA 359-A, TIA 598-C, IEC 60304*
Stainless Steel Tubes	. *ASTM A240, ASTM A632*
Aluminum Clad Steel Wires	. *ASTM B415*

Schedule AJB-1
Page 1 of 5

Specification DNO-11706

Mechanical / Electrical Details				
Calculated Breaking Load	8,870	kg	19,555	lbs
Maximum Cable Design Tension	5,481	kg	12,083	lbs
Approximate Cable Diameter	12.90	mm	0.508	in
Total Cross-Sectional Area	96.84	mm^2	0.1501	in^2
Approximate Cable Weight	557	kg/km	1,975	lbs/mile
Modulus of Elasticity	13,470	kg/mm^2	19,158	kpsi
Coefficient of Linear Expansion	1.42E-05	1/°C	7.87E-06	1/°F
Sag10™ Chart Number	1-1421		1-1421	
Calculated DC Resistance (20°C)	0.5951	Ohms/km	0.9577	Ohms/mile
Short Circuit Rating	63	$(kA)^2$•sec	63	$(kA)^2$•sec
Short Circuit Ambient Temperature	40	°C	104	°F
Short Circuit Duration 1 sec	7.9	kA	7.9	kA

Optical Details

Attenuation Characteristics for Singlemode Fiber

Max Individual

0.40 dB/km 1310 nm
0.30 dB/km 1550 nm

3.8mm Stainless Steel Tube Design		
Unit	**Fiber Type**	**Fiber Count**
Tube 1	Singlemode	72
	Total Fiber Count	72

Standard Fiber Color Code

Fiber	1	2	3	4	5	6	7	8	9	10	11	12
Color	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Rose	Aqua

Designs with more than 12 fibers per tube will use the standard color code and binders for identification of the fibers.

Installation and Handling Recommendations

Installation and cable preparation procedures are outlined in the AFL documents listed below. Contact AFL to request copies.

Recommended Installation Procedures for Composite Optical Ground Wire

Installation Instructions for Installing Optical Ground Wire in an AFL Splice Enclosure

Fiber Optic Cable Receiving, Handling and Storage. Document ACS-WI-809

Specification DNO-11706

Quick Reference Installation Notes				
Approximate Cable Diameter	12.90	mm	0.508	in
Maximum Stringing Tension (at tensioner)*	1,774	kg	3,911	lbs
Minimum Bull Wheel Diameter	91	cm	36	in
Stringing Sheave Diameter**	52	cm	21	in
Minimum Bending Radius				
Cable				
Static (No load)	20	cm	8	in
Dynamic (under tension)	26	cm	11	in
Fiber				
Static (No load)	3.8	cm	1.5	in
Stainless Steel Tube				
Static (No load)	17.1	cm	6.8	in

* - The stringing tension is always measured at the tensioner side. In general the maximum stringing tension should be approximately half of the maximum sagging tension and should never exceed 20% RBS of the OPT-GW.

** - The value indicated is for the first and last structures of the pull and is based on 40 times the diameter of the OPT-GW. Smaller diameters can be used at tangent structures. Reference AFL's installation instructions for more details.

Reference AFL's "Recommended Installation Procedures for Composite Optical Ground Wire" for detailed installation instructions.

Shipping Reels

Reel Type	*FL*	*TR*	*DR*	*OW*	*Tare*	*FL*	*TR*	*DR*	*OW*	*Tare*	*Capacity*	
	(cm)				*(kgs)*	*(in)*				*(lbs)*	*(meters)*	*(feet)*
Wood	152	91	91	107	245	60	36	36	42	540	5,490	18,010
Wood	168	91	91	107	260	66	36	36	42	573	6,510	21,350
Wood	183	91	91	107	300	72	36	36	42	662	6,510	21,350
Wood	213	86	89	104	385	84	34	35	41	849	6,510	21,350
Steel	152	81	81	97	156	60	32	32	38	344	5,180	16,990
Steel	183	91	102	107	245	72	36	40	42	540	7,000	22,960
Steel	213	114	107	130	351	84	45	42	51	774	7,000	22,960

FL - Flange Diameter; TR - Inside Traverse Width; DR - Drum Diameter; OW - Outside Overall Width

Minimum Arbor Hole Diameter: Wood: 3-1/8in (7.9cm)
Steel: 3-1/4in (8.2cm)

Maximum lengths shown are the longest lengths that AFL offers. Longer lengths may be possible.

Ordered lengths should include a distribution of lengths, i.e., all reels cannot be ordered at the maximum. A typical reel length distribution is as follows:

6000m – 7000m ~ 15% of reels
4500m – 6000m ~ 55% of reels
2500m – 4500m ~ 25% of reels
<2500m ~ 5% of reels

Wood reels with flex-wrap covering are standard. Non-returnable steel reels and/or wood lagging are available upon request. Additional reel sizes may be available upon request.

Steel reels are recommended for long term storage. Reference AFL's "Fiber Optic Cable Receiving, Handling and Storage" document for additional information.

Reel dimensions are typical and subject to availability at the time of shipment.

Specification DNO-11706

Electrical Characteristics

Composite DC Resistance	[20°C]	0.5951	Ohms/km	0.9577	Ohms/mile
Geometric Mean Radius		0.50	cm	0.0165	feet
Inductive Reactance	[60 Hz frequency]	0.3096	Ohms/km	0.4982	Ohms/mile
[one foot (0.3048 meter) spacing]					
	[50 Hz frequency]	0.2580	Ohms/km	0.4152	Ohms/mile
Capacitive Reactance	[60 Hz frequency]	0.1841	MOhms·km	0.1144	MOhms·mile
[one foot (0.3048 meter) spacing]					
	[50 Hz frequency]	0.2209	MOhms·km	0.1372	MOhms·mile

Composite Coefficient of Thermal Resistance 0.00366 (1/°C)

Temperature		DC Resistance		AC Resistance	
(°C)	(°F)	(Ohms/km)	(Ohms/mile)	(Ohms/km)	(Ohms/mile)
20	68	0.5951	0.9577	0.6070	0.9768
25	77	0.6060	0.9752	0.6181	0.9947
30	86	0.6169	0.9927	0.6292	1.0126
35	95	0.6277	1.0103	0.6403	1.0305
40	104	0.6386	1.0278	0.6514	1.0484
45	113	0.6495	1.0453	0.6625	1.0662
50	122	0.6604	1.0629	0.6736	1.0841
55	131	0.6713	1.0804	0.6848	1.1020
60	140	0.6822	1.0979	0.6959	1.1199
65	149	0.6931	1.1155	0.7070	1.1378
70	158	0.7040	1.1330	0.7181	1.1557
75	167	0.7149	1.1506	0.7292	1.1736
80	176	0.7258	1.1681	0.7403	1.1914
85	185	0.7367	1.1856	0.7514	1.2093
90	194	0.7476	1.2032	0.7626	1.2272
95	203	0.7585	1.2207	0.7737	1.2451
100	212	0.7694	1.2382	0.7848	1.2630
105	221	0.7803	1.2558	0.7959	1.2809
110	230	0.7912	1.2733	0.8070	1.2988
115	239	0.8021	1.2908	0.8181	1.3167
120	248	0.8130	1.3084	0.8292	1.3345
125	257	0.8239	1.3259	0.8404	1.3524
130	266	0.8348	1.3434	0.8515	1.3703
135	275	0.8457	1.3610	0.8626	1.3882
140	284	0.8566	1.3785	0.8737	1.4061
145	293	0.8675	1.3961	0.8848	1.4240
150	302	0.8784	1.4136	0.8959	1.4419

Specification DNO-11706

PLS-CADD Inputs

☐ Use simplified elastic cable model (no creep, no coefficient)

Name					
Description	AFL OPGW DNO-11706 CC-68/508				
Cross section area	(in^2) 0.1501	Unit weight	(lbs/ft) 0.374	Number of independent wires	1
Outside diameter	(in) 0.508	Ultimate tension	(lbs) 19,555	(above should be 1 unless cables are separated by spacers)	
Temperature at which strand data below obtained	(deg F) 69				

Outer Strands

Final Modulus of elasticity (psi/100) 219000

Thermal expansion coeff. (/100 deg F) 0.000770

Polynomial coefficients (all strains in %)

	A0	A1	A2	A3	A4
Stress-strain	1858.4	206767.2	-90266.5	164569	-175825
Creep	-724.4	177904.7	-127940.5	224903	-155601

Core Strands (if different from outer strands)

Final Modulus of elasticity (psi/100)

Thermal expansion coeff. (/100 deg F)

Polynomial coefficients (all strains in %)

	A0	A1	A2	A3	A4
Stress-strain					
Creep					

Thermal Rating Properties

Resistance at two different temperatures

Resistance (Ohms/mile) 0.9752 at (deg F) 77

Resistance (Ohms/mile) 1.1506 at (deg F) 167

Emissivity coefficient 0.5

Solar absorption coefficient 0.5

✱ Outer strands heat capacity (Watt-s/ft-deg F)

✱ Core heat capacity (Watt-s/ft-deg F)

Generate Coefficients from points on stress-strain

OK Cancel

✱ These two fields do not need to be entered for OPGW - intentionally left blank.