Southern California Edison
WODUP A.13-10-020

DATA REQUEST SET A.13-10-020 WODUP ED-SCE-13

To: ENERGY DIVISION
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Title: Project Engineer
Dated: 02/12/2015

Question ALT-24:

ALT-24 Follow-up to SCE response on ALT-18c.

Based on the present maximum normal and emergency operating temperatures that are in place for the existing 220 kV circuits on the existing double circuit towers that are using 1033.5 ACSR please add these temperature values to the SAG/Ten tables provided in response to ALT-18c.

Response to Question ALT-24:

The requested Sag/Ten table for single-conductor 1033.5 kcmil ACSR is attached. This report was prepared assuming new conductor to be installed and includes information regarding the 201 F temperature values.

Southwire SAG10™

2/23/2015

SCE

DATA REQUEST 13-ALT-24
SAG/TENSION TABLE - CURLEW 1033.5 kcmil ACSR
(NEW SINGLE-CONDUCTOR)
NOTE: THIS REPORT IS NOT FOR THE EXISTING SINGLE-CONDUCTOR

Conductor: 1033.5 Kcmil 54/ 7 Stranding ACSR "CURLEW"

Area = 0.9163 Sq. in Diameter = 1.244 in Weight = 1.330 lb/ft RTS = 36600 lb
Data from Chart No. 1-838
English Units
Limits and Outputs in Average Tensions.

Span = 1165.0 Feet Special Load Zone
Creep is NOT a Factor Rolled Rod

Design Points				Final			Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	21.16	12585	21.16	12585
25.0	0.00	0.00	0.00	1.330	19.62	11512	19.29	11712*
60.0	0.00	0.00	0.00	1.330	22.27	10145 !	21.32	10596
201.0	0.00	0.00	0.00	1.330	32.80	6901	30.54	7409

* Design Condition

Span = 1428.0 Feet Special Load Zone
Creep IS a Factor Rolled Rod

Design Points				Final			Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	31.52	12702	31.31	12784
25.0	0.00	0.00	0.00	1.330	29.70	11433	28.99	11712*
60.0	0.00	0.00	0.00	1.330	32.79	10362 !	31.46	10797
201.0	0.00	0.00	0.00	1.330	44.62	7627	41.97	8106

* Design Condition

Span = 4119.0 Feet Special Load Zone
Creep IS a Factor Rolled Rod

Design Points				Final			Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	267.29	12646	263.75	12810*
25.0	0.00	0.00	0.00	1.330	264.77	10829	260.02	11021
60.0	0.00	0.00	0.00	1.330	269.07	10662 !	263.97	10861
201.0	0.00	0.00	0.00	1.330	285.83	10059	279.68	10271

* Design Condition

Span = 1656.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp	Ice	Wind	K	Weight	Sag	Tension	Sag	Tension
°F	in	psf	lb/ft	lb/ft	Ft	lb	Ft	lb
25.0	0.00	8.00	0.00	1.567	42.69	12620	42.05	12810*
25.0	0.00	0.00	0.00	1.330	40.71	11225	39.43	11590
60.0	0.00	0.00	0.00	1.330	44.08	10372 !	42.21	10829
201.0	0.00	0.00	0.00	1.330	56.80	8065	53.66	8532

* Design Condition

Span = 1384.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp	Ice	Wind	K	Weight	Sag	Tension	Sag	Tension
°F	in	psf	lb/ft	lb/ft	Ft	lb	Ft	lb
25.0	0.00	8.00	0.00	1.567	29.60	12700	29.48	12753
25.0	0.00	0.00	0.00	1.330	27.83	11461	27.23	11712*
60.0	0.00	0.00	0.00	1.330	30.85	10343 !	29.63	10766
201.0	0.00	0.00	0.00	1.330	42.49	7523	39.94	8000

* Design Condition

Span = 1263.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp	Ice	Wind	K	Weight	Sag	Tension	Sag	Tension
°F	in	psf	lb/ft	lb/ft	Ft	lb	Ft	lb
25.0	0.00	8.00	0.00	1.567	24.72	12663	24.72	12663
25.0	0.00	0.00	0.00	1.330	23.07	11512	22.67	11712*
60.0	0.00	0.00	0.00	1.330	25.89	10259 !	24.88	10676
201.0	0.00	0.00	0.00	1.330	36.94	7203	34.60	7687

* Design Condition

Span = 1434.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp	Ice	Wind	K	Weight	Sag	Tension	Sag	Tension
°F	in	psf	lb/ft	lb/ft	Ft	lb	Ft	lb
25.0	0.00	8.00	0.00	1.567	31.78	12702	31.57	12788
25.0	0.00	0.00	0.00	1.330	29.96	11430	29.24	11712*
60.0	0.00	0.00	0.00	1.330	33.06	10364 !	31.71	10801
201.0	0.00	0.00	0.00	1.330	44.92	7641	42.25	8120

* Design Condition

Span = 1630.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	41.32	12629	40.74	12810*
25.0	0.00	0.00	0.00	1.330	39.37	11247	38.14	11606
60.0	0.00	0.00	0.00	1.330	42.70	10372 !	40.89	10829
201.0	0.00	0.00	0.00	1.330	55.33	8020	52.24	8489

* Design Condition

Span = 1596.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	39.57	12642	39.05	12810*
25.0	0.00	0.00	0.00	1.330	37.64	11276	36.50	11627
60.0	0.00	0.00	0.00	1.330	40.94	10372 !	39.21	10827
201.0	0.00	0.00	0.00	1.330	53.44	7960	50.42	8432

* Design Condition

Span = 1568.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	38.16	12654	37.69	12810*
25.0	0.00	0.00	0.00	1.330	36.24	11303	35.17	11644
60.0	0.00	0.00	0.00	1.330	39.51	10372 !	37.84	10826
201.0	0.00	0.00	0.00	1.330	51.91	7909	48.95	8383

* Design Condition

Span = 1286.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	25.59	12681	25.59	12681
25.0	0.00	0.00	0.00	1.330	23.92	11512	23.51	11712*
60.0	0.00	0.00	0.00	1.330	26.78	10284 !	25.75	10694
201.0	0.00	0.00	0.00	1.330	37.95	7271	35.59	7749

* Design Condition

Span = 1328.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	27.25	12701	27.23	12712
25.0	0.00	0.00	0.00	1.330	25.53	11501	25.07	11712*
60.0	0.00	0.00	0.00	1.330	28.46	10320 !	27.38	10726
201.0	0.00	0.00	0.00	1.330	39.84	7386	37.43	7859

* Design Condition

Span = 1557.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	37.61	12659	37.16	12810*
25.0	0.00	0.00	0.00	1.330	35.70	11314	34.66	11651
60.0	0.00	0.00	0.00	1.330	38.95	10373 !	37.31	10826
201.0	0.00	0.00	0.00	1.330	51.31	7889	48.37	8364

* Design Condition

Span = 1544.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	36.96	12665	36.54	12810*
25.0	0.00	0.00	0.00	1.330	35.06	11327	34.06	11660
60.0	0.00	0.00	0.00	1.330	38.30	10373 !	36.69	10826
201.0	0.00	0.00	0.00	1.330	50.61	7865	47.70	8340

* Design Condition

Span = 1823.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	51.93	12578	50.99	12810*
25.0	0.00	0.00	0.00	1.330	49.88	11111	48.18	11499
60.0	0.00	0.00	0.00	1.330	53.40	10383 !	51.16	10834
201.0	0.00	0.00	0.00	1.330	66.66	8332	63.20	8785

* Design Condition

Span = 1792.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	50.15	12584	49.26	12810*
25.0	0.00	0.00	0.00	1.330	48.11	11129	46.49	11515
60.0	0.00	0.00	0.00	1.330	51.60	10380 !	49.43	10834
201.0	0.00	0.00	0.00	1.330	64.77	8285	61.37	8741

* Design Condition

Span = 1868.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	54.57	12570	53.54	12810*
25.0	0.00	0.00	0.00	1.330	52.49	11086	50.69	11477
60.0	0.00	0.00	0.00	1.330	56.05	10387 !	53.72	10836
201.0	0.00	0.00	0.00	1.330	69.45	8399	65.90	8847

* Design Condition

Span = 1874.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	54.93	12569	53.89	12810*
25.0	0.00	0.00	0.00	1.330	52.85	11083	51.03	11474
60.0	0.00	0.00	0.00	1.330	56.41	10388 !	54.06	10836
201.0	0.00	0.00	0.00	1.330	69.83	8408	66.27	8855

* Design Condition

Span = 1609.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	40.24	12637	39.69	12810*
25.0	0.00	0.00	0.00	1.330	38.29	11265	37.12	11619
60.0	0.00	0.00	0.00	1.330	41.61	10372 !	39.85	10828
201.0	0.00	0.00	0.00	1.330	54.16	7983	51.12	8454

* Design Condition

Span = 527.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	4.54	11998	4.54	11998
25.0	0.00	0.00	0.00	1.330	3.98	11601	3.94	11712*
60.0	0.00	0.00	0.00	1.330	5.05	9141	4.64	9945
201.0	0.00	0.00	0.00	1.330	11.00	4204	9.60	4817

* Design Condition

Span = 1477.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	33.73	12699	33.43	12810*
25.0	0.00	0.00	0.00	1.330	31.87	11400	31.04	11705
60.0	0.00	0.00	0.00	1.330	35.03	10378 !	33.58	10823
201.0	0.00	0.00	0.00	1.330	47.07	7736	44.30	8216

* Design Condition

Span = 853.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	11.59	12308	11.59	12308
25.0	0.00	0.00	0.00	1.330	10.50	11532	10.33	11712*
60.0	0.00	0.00	0.00	1.330	12.47	9710 !	11.75	10301
201.0	0.00	0.00	0.00	1.330	21.07	5756	19.12	6340

* Design Condition

Span = 1199.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	22.36	12613	22.36	12613
25.0	0.00	0.00	0.00	1.330	20.79	11511	20.43	11712*
60.0	0.00	0.00	0.00	1.330	23.50	10186 !	22.53	10625
201.0	0.00	0.00	0.00	1.330	34.21	7009	31.92	7508

* Design Condition

Span = 2222.0 Feet
Creep IS a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp	Ice	Wind	K	Weight	Sag	Tension	Sag	Tension
°F	in	psf	lb/ft	lb/ft	Ft	lb	Ft	lb
25.0	0.00	8.00	0.00	1.567	77.49	12544	75.87	12810*
25.0	0.00	0.00	0.00	1.330	75.28	10954	72.73	11334
60.0	0.00	0.00	0.00	1.330	79.07	10433 !	76.05	10844
201.0	0.00	0.00	0.00	1.330	93.39	8851	89.23	9259

* Design Condition

Span = 1045.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp	Ice	Wind	K	Weight	Sag	Tension	Sag	Tension
°F	in	psf	lb/ft	lb/ft	Ft	lb	Ft	lb
25.0	0.00	8.00	0.00	1.567	17.16	12483	17.16	12483
25.0	0.00	0.00	0.00	1.330	15.78	11515	15.51	11712*
60.0	0.00	0.00	0.00	1.330	18.19	9991 !	17.33	10490
201.0	0.00	0.00	0.00	1.330	28.03	6496	25.88	7033

* Design Condition

Span = 1313.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp	Ice	Wind	K	Weight	Sag	Tension	Sag	Tension
°F	in	psf	lb/ft	lb/ft	Ft	lb	Ft	lb
25.0	0.00	8.00	0.00	1.567	26.64	12701	26.64	12701
25.0	0.00	0.00	0.00	1.330	24.93	11512	24.51	11712*
60.0	0.00	0.00	0.00	1.330	27.84	10313 !	26.79	10714
201.0	0.00	0.00	0.00	1.330	39.14	7348	36.77	7820

* Design Condition

Span = 665.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp	Ice	Wind	K	Weight	Sag	Tension	Sag	Tension
°F	in	psf	lb/ft	lb/ft	Ft	lb	Ft	lb
25.0	0.00	8.00	0.00	1.567	7.15	12128	7.15	12128
25.0	0.00	0.00	0.00	1.330	6.36	11566	6.28	11712*
60.0	0.00	0.00	0.00	1.330	7.83	9394 !	7.28	10098
201.0	0.00	0.00	0.00	1.330	15.04	4898	13.33	5525

* Design Condition

Span = 1145.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	20.46	12569	20.46	12569
25.0	0.00	0.00	0.00	1.330	18.95	11512	18.63	11712*
60.0	0.00	0.00	0.00	1.330	21.57	10121 !	20.63	10579
201.0	0.00	0.00	0.00	1.330	31.98	6837	29.74	7349

* Design Condition

Span = 972.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	14.92	12418	14.92	12418
25.0	0.00	0.00	0.00	1.330	13.65	11520	13.42	11712*
60.0	0.00	0.00	0.00	1.330	15.90	9890 !	15.09	10421
201.0	0.00	0.00	0.00	1.330	25.28	6229	23.21	6784

* Design Condition

Span = 972.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	14.92	12418	14.92	12418
25.0	0.00	0.00	0.00	1.330	13.65	11520	13.42	11712*
60.0	0.00	0.00	0.00	1.330	15.90	9890 !	15.09	10421
201.0	0.00	0.00	0.00	1.330	25.28	6229	23.21	6784

* Design Condition

Span = 962.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	14.62	12409	14.62	12409
25.0	0.00	0.00	0.00	1.330	13.36	11521	13.15	11712*
60.0	0.00	0.00	0.00	1.330	15.60	9875 !	14.79	10411
201.0	0.00	0.00	0.00	1.330	24.92	6191	22.85	6749

* Design Condition

Span = 674.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	7.34	12137	7.34	12137
25.0	0.00	0.00	0.00	1.330	6.53	11564	6.45	11712*
60.0	0.00	0.00	0.00	1.330	8.03	9410 !	7.48	10108
201.0	0.00	0.00	0.00	1.330	15.31	4942	13.59	5568

* Design Condition

Span = 356.0 Feet
Creep is NOT a Factor

Special Load Zone
Rolled Rod

Design Points					Final		Initial	
Temp °F	Ice in	Wind psf	K lb/ft	Weight lb/ft	Sag Ft	Tension lb	Sag Ft	Tension lb
25.0	0.00	8.00	0.00	1.567	2.09	11856	2.09	11856
25.0	0.00	0.00	0.00	1.330	1.81	11650	1.80	11712*
60.0	0.00	0.00	0.00	1.330	2.39	8824	2.16	9770
201.0	0.00	0.00	0.00	1.330	6.18	3411	5.60	3767

* Design Condition