FOREST AND WILDLIFE RESEARCH CENTER

DEPARTMENT OF SUSTAINABLE BIOPRODUCTS

Seventh Annual Evaluation of Phase II MSU/RTA Alternative Preservative Study

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This report covers the 7th annual evaluation of the full length crossties exposed as part of the MSU/RTA Phase II alternative preservative study. A visual evaluation of the exposed top surface was conducted for all ties at both exposure sites. Random ties from each treatment group, at both sites, were selected to be examined on all four surfaces and cross-cut for interior evaluation..

General Observations:

No unexpected results were found. As noted in previous reports, Site 2 ties appeared to be a drier probably due to more direct sunlight exposure allowing for more checking. However, an increase in Formosan termite activity was noted.

Ties at Site 1 appeared to be more moist/wet due to the increased shade and leaf litter at this site and thus more signs of decay were noted at this site.

General photographs documenting the condition of the sites can be seen below (Figures A &B). The tie number denotes the position of exposure as recorded on the plot-maps and inspection forms. Copies of the inspection forms and photographs of the segmented ties are included in the appendix.

Figure A - Site 1 (MSU Dorman Lake Test Site) at the time of inspection.

Figure B - Site 2 (MSU Formosan Termite Research Facility) at the time of inspection.

APPENDIX:

Site 1 – Dorman Lake Test Site

Figure 1 - Tie #2 white oak/borate/creosote 6# (Koppers).

Figure 2 - Tie #2 white oak/borate/creosote 6# (Koppers).

Figure 3 - Tie #12 red oak/borate/creosote 7lbs (Koppers).

Figure 4 - Tie #12 red oak/borate/creosote 7lbs (Koppers).

Figure 5 – Tie #22 failed untreated red oak with heavy decay and termite damage.

Figure 6 – Tie #22 untreated red oak with extensive decay.

Figure 7 - Tie #32 red oak/creosote 7lbs (Koppers).

Figure 8 - Tie #32 red oak/creosote 7lbs (Koppers).

Figure 9 - Tie #42 white oak/borate/creosote 7lbs (Koppers).

Figure 10 - Tie #42 white oak/borate/creosote 7lbs (Koppers).

Figure 11 - Tie #52 red oak/borate/creosote 6lbs (Koppers).

Figure 12 - Tie #52 red oak/borate/creosote 6lbs (Koppers).

Figure 13 - Tie #62 red oak/1 step creosote borate (Stella Jones).

Figure 14 - Tie #62 red oak/1 step creosote borate (Stella Jones).

Figure 15 - Tie #72 white oak/creosote (Stella Jones).

Figure 16 - Tie #72 white oak/creosote (Stella Jones).

Figure 17 - Tie #82 white oak/one step creosote borate (Stella Jones).

Figure 18 - Tie #82 white oak/one step creosote borate (Stella Jones).

Figure 19 – Tie # 92 untreated white oak.

Figure 20 – Tie #92 untreated white oak with decay visible.

Figure 21 – Tie #102 untreated Douglas fir with decay and active termites (Reticulitermes).

Figure 22 - Tie #102 untreated Douglas fir.

Figure 23 – Tie #112 Douglas fir/DOT/ACZA (Lonza).

Figure 24 - Tie #112 Douglas fir/DOT/ACZA (Lonza).

Figure 25 – Tie #122 red oak/DOT/ACZA/oil (Lonza).

Figure 26 - Tie #122 red oak/DOT/ACZA/oil (Lonza).

Figure 27 – Tie #132 red oak/ACZA/oil (Lonza).

Figure 28 - Tie #132 red oak/ACZA/oil (Lonza).

Figure 29 – Tie #137 white oak/ACZA/oil (Lonza).

Figure 30 - Tie #137 white oak/ACZA/oil (Lonza).

Figure 31 – Tie #142 white oak/DOT/ACZA/oil (Lonza).

Figure 32 - Tie #142 white oak/DOT/ACZA/oil (Lonza).

Figure 33 - Tie # 152 red oak/DOT/ACZA/oil (Lonza).

Figure 34 - Tie # 152 red oak/DOT/ACZA/oil (Lonza).

Figure 35 – Tie #162 red oak/ACZA (Lonza).

Figure 36 - Tie #162 red oak/ACZA (Lonza).

Figure 37 – Tie #172 white oak/ACZA (Lonza).

Figure 38 - Tie #172 white oak/ACZA (Lonza).

Figure 39 – Tie #182 Douglas fir/P2 creosote (Lonza).

Figure 40 - Tie #182 Douglas fir/P2 creosote (Lonza).

Figure 41 – Tie #192 white oak/ACZA/ET (Lonza).

Figure 42- Tie #192 white oak/ACZA/ET (Lonza).

Figure 43 – Tie #202 Douglas fir/ACZA/DOT/ET (Lonza).

Figure 44 - Tie #202 Douglas fir/ACZA/DOT/ET (Lonza).

Figure 45 – Tie #212 red oak/ACZA/ET (Lonza).

Figure 46 – Tie #212 red oak/ACZA/ET (Lonza).

Figure 47 – Tie #222 white oak/ACZA/DOT (Lonza).

Figure 48 - Tie #222 white oak/ACZA/DOT (Lonza).

Figure 49 – Tie # 232 white oak/DOT/ACZA/ET (Lonza).

Figure 50 - Tie # 232 white oak/DOT/ACZA/ET (Lonza).

Figure 51 – Tie #242 red oak/ACZA/DOT/ET (Lonza).

Figure 52 - Tie #242 red oak/ACZA/DOT/ET (Lonza).

Site #2 FTRF Site

Figure 53 – Tie #3 white oak/creosote (Stella Jones).

Figure 54 - Tie #3 white oak/creosote (Stella Jones).

Figure 55 – Tie #12 red oak/one step creosote borate (Stella jones).

Figure 56 - Tie #12 red oak/one step creosote borate (Stella jones).

Figure 57 – Tie #22 white oak/one step creosote borate (Stella Jones).

Figure 58 - Tie #22 white oak/one step creosote borate (Stella Jones).

Figure 59 – Tie #32 untreated white oak with decay and beetle damage.

Figure 60 - Tie #32 untreated white oak with extensive decay.

Figure 61 – Tie #42 white oak/DOT/ACZA/ET (Lonza).

Figure 62 - Tie #42 white oak/DOT/ACZA/ET (Lonza).

Figure 63 – Tie #52 red oak/DOT/ACZA/ET (Lonza).

Figure 64 - Tie #52 red oak/DOT/ACZA/ET (Lonza).

Figure 65 – Tie #62 Douglas fir/DOT/ACZA/ET (Lonza).

Figure 66 - Tie #62 Douglas fir/DOT/ACZA/ET (Lonza).

Figure 67 – Tie #72 white oak/ACZA/ET (Lonza).

Figure 68 - Tie #72 white oak/ACZA/ET (Lonza).

Figure 69 – Tie #82 red oak/ACZA/ET (Lonza).

Figure 70 - Tie #82 red oak/ACZA/ET (Lonza).

Figure 71 – Tie #92 Douglas fir/DOT/ACZA (Lonza).

Figure 72 - Tie #92 Douglas fir/DOT/ACZA (Lonza).

Figure 73 – Tie #102 untreated Douglas fir with decay.

Figure 74 - Tie #102 untreated Douglas fir.

Figure 75 – Tie #112 white oak/ACZA (Lonza).

Figure 76 - Tie #112 white oak/ACZA (Lonza).

Figure 77 – Tie #122 red oak/ACZA (Lonza).

Figure 78 – Tie #122 red oak/ACZA (Lonza).

Figure 79 – Tie #132 white oak/ACZA/DOT (Lonza).

Figure 80 - Tie #132 white oak/ACZA/DOT (Lonza).

Figure 81 – Tie #142 red oak/DOT/ACZA/oil (Lonza).

Figure 82 – Tie #142 red oak/DOT/ACZA/oil (Lonza).

Figure 83 – Tie #152 red oak/ACZA/oil (Lonza).

Figure 84 - Tie #152 red oak/ACZA/oil (Lonza).

Figure 85 – Tie #157 white oak/ACZA/oil (Lonza).

Figure 86 – Tie #157 white oak ACZA/oil (Lonza).

Figure 87 – Tie #162 red oak/DOT/ACZA/oil (Lonza).

Figure 88 - Tie #162 red oak/DOT/ACZA/oil (Lonza).

Figure 89 – Tie #172 white oak/DOT/ACZA/oil (Lonza).

Figure 90 – Tie #172 white oak/DOT/ACZA/oil (Lonza).

Figure 91 – Tie #182 Douglas fir/P2 (Lonza).

Figure 92 - Tie #182 Douglas fir/P2 (Lonza).

Figure 93 – Tie #192 white oak/borate/creosote/6lbs (Koppers).

Figure 94 - Tie #192 white oak/borate/creosote 6lbs (Koppers).

Figure 95 – Tie #202 white oak/borate/creosote 7lbs (Koppers).

Figure 96 - Tie #202 white oak/borate/creosote 7lbs (Koppers).

Figure 97 – Tie #212 red oak/borate/creosote 7lbs (Koppers).

Figure 98 - Tie #212 red oak/borate/creosote 7lbs (Koppers).

Figure 99 – Tie #222 red oak/borate/creosote 6lbs (Koppers).

Figure 100 - Tie #222 red oak/borate/creosote 6lbs (Koppers).

Figure 101 – Tie #232 red oak/creosote 7lbs (Koppers).

Figure 102 - Tie #232 red oak/creosote 7lbs (Koppers).

Figure 103 – Tie #242 untreated red oak with heavy decay and Formosan termites.

Figure 104 - Tie #242 untreated red oak with heavy decay and termite damage.

Plot Map RTA Phase II Ties (Dorman Lake Site 1)

Position Row 1 runs West -East (Northern most row)

				May-19				
				Decay	Termite	Decay	Termite	Comments
Koppers	1	T6	WO-Bor-6#	x	x	x	x	cut 2016
	2	T6		10	10	x	x	cut 2019
	3	T6		10	10			CK
	4	T6		10	10			
	5	T6		10	10			
	6	T6		10	10			CK
	7	T6		10	10			
	8	T6		10	10			
	9	T6		10	10			
	10	T6		10	10			CK
	11	T70	RO-Bor-7#	x	x	x	x	cut 2016
	12	T70		10	10	x	x	cut 2019
	13	T70		10	10			
	14	T70		10	10			
	15	T70		10	10			loose plate/ck
	16	T70		10	10			
	17	T70		10	10			
	18	T70		10	10			
	19	T70		10	10			CK
	20	T70		10	10			CK/LP
	21	blank tag	Unt. RO	x	x	x	x	cut 2016
	22	blank tag		9	10	x	x	cut 2019
	23	blank tag		8	10			CK
	24	blank tag		8	10			
	25	blank tag		8	10			
	26	blank tag		7	9.5			
	27	blank tag		9	10			
	28	blank tag		8	10			
	29	blank tag		7	10			
	30	blank tag		7	10			CK
	31	T10	RO-Creo-7#	x	x	x	x	cut 2016
	32	T10		10	10	x	x	cut 2019
	33	T10		10	10			
	34	T10		10	10			CK
	35	T10		10	10			CK
	36	T10		10	10			CK
	37	T10		10	10			
	38	T10		10	10			
	39	T10		10	10			split
	40	T10		10	10			CK
	41	T7	WO-Bor-7#	x	x	x	x	cut 2016
	42	T7		10	10	x	x	cut 2019
	43	T7		10	10			CK
	44	T7		10	10			CK
	45	T7		10	10			CK
	46	T7		10	10			CK
	47	T7		10	10			CK
	48	T7		10	10			
	49	T7		10	10			
	50	T7		10	10			CK
	51	T60	RO-Bor-6#	x	x	x	x	cut 2016
	52	T60		10	10	x	x	cut 2019
	53	T60		10	10			

	54	T60			10		10			LP
	55	T60			10		10			
	56	T60			10		10			
	57	T60			10		10			LP
	58	T60			10		10			
	59	T60			10		10			
	60	T60			10		10			
Stella-Jones	61	RO-1 step		x		x		x	x	cut 2016
	62	RO-1 step			10		10	x	x	cut 2019
	63	RO-1 step			10		10			CK
	64	RO-1 step			10		10			
	65	RO-1 step			10		10			
	66	RO-1 step			10		10			
	67	RO-1 step			10		10			
	68	RO-1 step			10		10			
	69	RO-1 step			10		10			
	70	RO-1 step			10		10			
	71	WO-Creo		x		x		x	x	cut 2016
	72	WO-Creo			10		10	x	x	cut 2019
	73	WO-Creo			10		10			
	74	WO-Creo			10		10			
	75	WO-Creo			10		10			
	76	WO-Creo			10		10			
	77	WO-Creo			10		10			
	78	WO-Creo			10		10			CK
	79	WO-Creo			10		10			
	80	WO-Creo			10		10			CK
	81	WO-1 step		x		x		x	x	cut 2016
	82	WO-1 step			10		10	x	x	cut 2019
	83	WO-1 step			10		10			CK
	84	WO-1 step			10		10			
	85	WO-1 step			10		10			
	86	WO-1 step			10		10			
	87	WO-1 step			10		10			
	88	WO-1 step			10		10			
	89	WO-1 step			10		10			
	90	WO-1 step			10		10			
	91	WO-Unt		x		x		x	x	cut 2016
	92	WO-Unt			8		10	x	x	cut 2019
	93	WO-Unt			8		10			
	94	WO-Unt			7		10			CK
	95	WO-Unt			8		10			
	96	WO-Unt			8		10			
	97	WO-Unt			8		10			
	98	WO-Unt			8		10			CK
	99	WO-Unt			8		10			FB
	100	WO-Unt			8		10			FB
Lonza	101	784	DF-Unt.	x		x		x	x	cut 2016
	102	783			6		9	x	x	cut 2019
	103	782			6		9			
	104	781			8		9.5			FB/CK
	105	789			9		9			
	106	788			9		9			
	107	787			9		9			
	108	786			8		9			FB
	109	785			9		9			
	110	790			8		9			LP

111	684	DF-DOT-ACZA	x		x		x	x	cut 2016
112	683			10		10	x	x	cut 2019
113	682			10		10			
114	681			10		10			
115	689			10		10			CK
116	688			10		10			
117	687			10		10			
118	686			10		10			
119	685			10		10			CK
120	690			10		10			
121	581	RO-DOT-ACZA-Oil	x		x		x	x	cut 2016
122	586			10		10	x	x	cut 2019
123	587			10		10			CK
124	584			10		10			
125	583			10		10			CK
126	582			10		10			CK/LP
127	585			10		10			CK
128	590			10		10			CK
129	589			10		10			CK
130	588			10		10			CK
131	735	RO-ACZA-Oil	x		x		x	x	cut 2016
132	734			10		10	x	x	cut 2019
133	732			10		10			CK
134	733			10		10			CK
135	731			10		10			CK
136	775	WO-ACZA-Oil	x		x		x	x	cut 2016
137	774			10		10	x	x	cut 2019
138	773			10		10			
139	772			10		10			
140	771			10		10			
141	524	WO-DOT-ACZA-Oil	x		x		x	x	cut 2016
142	523			10		10			
143	522			10		10			loose plate/CK
144	521			10		10			loose plate/CK
145	529			10		10			
146	528			10		10			
147	527			10		10			CK
148	526			10		10			
149	530			10		10			
150	525			10		10			CK
151	641	RO-DOT-ACZA-Oil	x		x		x	x	cut 2016
152	646			10		10	x	x	cut 2019
153	642			10		10			
154	643			10		10			CK
155	644			10		10			CK
156	645			10		10			CK
157	647			10		10			CK/LP
158	648			10		10			CK
159	649			10		10			CK
160	650			10		10			CK
161	702	RO-ACZA	x		x		x	x	cut 2016
162	703			10		10	x	x	cut 2019
163	704			10		10			
164	705			10		10			
165	709			10		10			CK
166	708			10		10			
167	707			10		10			CK

168	706			10		10			
169	710			10		10			CK
170	701			10		10			
171	747	WO-ACZA	x		x		x	x	cut 2016
172	746			10		10	x	x	cut 2019
173	742			9.5		10			
174	741			10		10			CK
175	744			10		10			
176	749			10		10			
177	748			10		10			CK/LP
178	743			10		10			
179	745			10		10			
180	750			10		10			
181	803	DF-P2	x		x		x	x	cut 2016
182	802			10		10	x	x	cut 2019
183	806			10		10			CK
184	808			10		10			
185	807			10		10			CK
186	805			10		10			CK
187	804			10		10			CK
188	810			10		10			
189	809			10		10			
190	801			10		10			CK
191	544	WO-ACZA-ET	x		x		x	x	cut 2016
192	543			10		10	x	x	cut 2019
193	542			10		10			CK
194	541			10		10			
195	549			10		10			
196	548			10		10			CK
197	547			10		10			CK
198	546			10		10			CK
199	545			10		10			CK
200	550			10		10			CK
201	664	DF-ACZA-DOT-ET	x		x		x	x	cut 2016
202	663			10		10	x	x	cut 2019
203	662			10		10			CK
204	661			10		10			CK
205	669			10		10			CK
206	668			10		10			CK
207	667			10		10			
208	666			10		10			
209	665			10		10			CK
210	670			10		10			
211	627	RO-ACZA-ET	x		x		x	x	cut 2016
212	628			10		10	x	x	cut 2019
213	629			10		10			CK
214	630			10		10			
215	622			10		10			CK
216	623			10		10			CK
217	624			10		10			CK
218	625			10		10			CK
219	626			10		10			
220	621			10		10			split
221	502	WO-ACZA-DOT	x		x		x	x	cut 2016
222	503			10		10	x	x	cut 2019
223	504			10		10			CK/LP
224	505			10		10			CK

225	507			10		10	_____	_____
226	508			10		10	_____	_____
227	509			10		10	_____	_____ CK
228	510			10		10	_____	_____ CK
229	501			10		10	_____	_____ CK
230	506			10		10	_____	_____ CK
231	564	WO-DOT-ACZA-ET	x		x		x	x cut 2016
232	563			10		10	x	x cut 2019
233	562			9.5		10	_____	_____
234	561			10		10	_____	_____ CK

Position Row 2 runs West -East (Southern most row)

			May-19				
			Decay	Termite	Decay	Termite	Comments
235	569		10	10	_____	_____	
236	568		10	10	_____	_____	
237	567		10	10	_____	_____	
238	566		10	10	_____	_____	LP
239	565		10	10	_____	_____	CK
240	570		10	10	_____	_____	CK/LP
241	604	RO-DOT-ACZA-ET	x	x	x	x	cut 2016
242	603		10	10	x	x	cut 2019
243	602		10	10	_____	_____	LP
244	601		10	10	_____	_____	CK
245	609		10	10	_____	_____	LP
246	608		10	10	_____	_____	CK/LP
247	607		10	10	_____	_____	
248	606		10	10	_____	_____	CK
249	605		10	10	_____	_____	
250	610		10	10	_____	_____	CK/LP

CK=check
FB=fruiting body
LP=loose plate

Plot Map RTA Phase II Ties (McNeill Site 2)

Position Row 1 runs East - West (Southern most row)

				Apr-19				
				Decay	Termite	Decay	Termite	Comments
Stella Jones	1	WO-Creo		10	10			check/bowed
	2	WO-Creo		x	x	x	x	cut 2016
	3	WO-Creo		10	10	x	x	cut 2019
	4	WO-Creo		10	10			check
	5	WO-Creo		10	10			check
	6	WO-Creo		10	10			check
	7	WO-Creo		10	10			check
	8	WO-Creo		10	10			check
	9	WO-Creo		10	10			split
	10	WO-Creo		10	10			split
	11	1-Step-RO		x	x	x	x	cut 2016
	12	1-Step-RO		10	10	x	x	cut 2019
	13	1-Step-RO		10	10			split
	14	1-Step-RO		10	10			check
	15	1-Step-RO		10	10			check
	16	1-Step-RO		10	10			check
	17	1-Step-RO		9.5	10			defect top South end/DK top
	18	1-Step-RO		10	10			check
	19	1-Step-RO		10	10			check
	20	1-Step-RO		10	10			check
	21	1-Step-WO		x	x	x	x	cut 2016
	22	1-Step-WO		10	10	x	x	cut 2019
	23	1-Step-WO		10	10			check
	24	1-Step-WO		10	10			check
	25	1-Step-WO		10	10			check
	26	1-Step-WO		10	10			check
	27	1-Step-WO		10	10			
	28	1-Step-WO		10	10			check
	29	1-Step-WO		10	10			check
	30	1-Step-WO		10	10			
	31	Unt. - WO		x	x	x	x	cut 2016
	32	Unt. - WO		4	9	x	x	cut 2019
	33	Unt. - WO		8	10			FB
	34	Unt. - WO		8	9.5			DK top S end/retics
	35	Unt. - WO		10	10			check
	36	Unt. - WO		10	10			check
	37	Unt. - WO		8	10			
	38	Unt. - WO		9	10			
	39	Unt. - WO		9	9.5			DK top S end/FB
	40	Unt. - WO		8	10			FB/beetle dmg
Lonza	41	572	WO-DOT-ACZA-ET	x	x	x	x	cut 2016
	42	573		10	10	x	x	cut 2019
	43	574		10	10			check
	44	575		10	10			check
	45	576		10	10			check
	46	577		10	10			
	47	578		10	10			
	48	579		10	10			check
	49	580		10	10			check
	50	571		10	10			

51	611	RO-DOT-ACZA-ET	x		x		x	x	cut 2016
52	612			10		10	x	x	cut 2019
53	613			9.5		10			check/LP/Edge DK
54	614			9.5		10			check/LP/Edge DK
55	615			10		10			check/LP
56	617			10		10			check/LP
57	618			10		10			check/LP
58	619			10		10			LP
59	620			10		10			check/LP
60	616			10		10			LP
61	675	DF-DOT-ACZA-ET	x		x		x	x	cut 2016
62	674			10		10	x	x	cut 2019
63	673			10		10			check/LP
64	672			10		10			split
65	671			10		10			check/LP
66	679			10		10			split
67	678			10		10			
68	677			10		10			
69	676			10		10			check/LP
70	680			10		10			
71	555	WO-ACZA-ET	x		x		x	x	cut 2016
72	554			10		10	x	x	cut 2019
73	553			10		10			
74	552			10		10			split
75	551			10		10			LP
76	560			10		10			LP
77	559			10		10			check/LP
78	558			9.5		10			
79	557			10		10			LP
80	556			10		10			
81	640	RO-ACZA-ET	x		x		x	x	cut 2016
82	639			10		10	x	x	cut 2019
83	638			10		10			check/LP
84	637			10		10			LP
85	636			10		10			LP
86	635			10		10			check/LP/S-end plate off
87	634			10		10			check/LP
88	633			10		10			check
89	632			10		10			check/LP/S-end plate loose
90	631			10		10			
91	695	DF-DOT-ACZA	x		x		x	x	cut 2016
92	694			10		10	x	x	cut 2019
93	693			10		10			check/end plat corroded/LP
94	692			10		10			end plate corroded/check
95	691			10		10			end plate corroded
96	699			10		10			end plate corroded/check
97	698			10		10			end plate corroded/check
98	697			10		10			end plate corroded/check/LP

	99	696			10		10	_____	_____	end plate corroded _____
	100	700			10		10	_____	_____	end plate corroded _____
	101	795	DF-Unt.	x		x		x	x	cut 2016
	102	794			7		10	x	x	cut 2019
	103	793			9.5		10	_____	_____	check/IS/FB_____
	104	792			8		10	_____	_____	check/IS_____
	105	791			10		10	_____	_____	check/IS_____
	106	800			9		10	_____	_____	FB/IS_____
	107	799			10		10	_____	_____	check/IS_____
	108	798			10		10	_____	_____	FB/check/IS_____
	109	797			9		10	_____	_____	check/IS_____
	110	796			8		9.5	_____	_____	check/LP_____
	111	755	WO-ACZA	x		x		x	x	cut 2016
	112	754			10		10	x	x	cut 2019
	113	753			10		10	_____	_____	end plate corroded _____
	114	752			10		10	_____	_____	end plate corroded/check/LP____
	115	751			10		10	_____	_____	end plate corroded _____
	116	760			10		10	_____	_____	Knot/burl under plate area N end_
	117	759			10		10	_____	_____	end plate corroded _____
	118	758			10		10	_____	_____	check/end plat corroded_____
	119	757			10		10	_____	_____	check/end plat corroded_____
	120	756			10		10	_____	_____	end plate corroded _____
	121	712	RO-ACZA	x		x		x	x	cut 2016
	122	713			10		10	x	x	cut 2019
	123	714			10		10	_____	_____	end plate corroded/check_____
	124	715			10		10	_____	_____	end plate corroded _____
	125	717			10		10	_____	_____	end plate corroded/check_____
	126	718			10		10	_____	_____	end plate corroded/check_____
	127	719			10		10	_____	_____	end plate corroded _____
	128	720			10		10	_____	_____	end plate corroded/check_____
	129	716			10		10	_____	_____	end plate corroded/LP_____
	130	711			10		10	_____	_____	end plate corroded 7 loose/check_
	131	511	WO-ACZA-DOT	x		x		x	x	cut 2016
	132	512			10		10	x	x	cut 2019
	133	513			10		10	_____	_____	end plate corroded/check_____
	134	514			10		10	_____	_____	end plate corroded/check/LP____
	135	515			10		10	_____	_____	end plate corroded/check_____
	136	516			10		10	_____	_____	end plate corroded _____
	137	517			10		10	_____	_____	end plate corroded _____
	138	518			10		10	_____	_____	end plate corroded _____
	139	519			10		10	_____	_____	end plate corroded _____
	140	520			10		10	_____	_____	end plate corroded/check_____
		Row 2 runs East - West (middle row)								
Lonza	141	595	RO-DOT-ACZA-Oil	x		x		x	x	cut 2016
	142	594			10		10	x	x	cut 2019
	143	593			10		10	_____	_____	check/LP_____
	144	592			10		10	_____	_____	check/LP_____
	145	600			10		10	_____	_____	check_____
	146	599			10		10	_____	_____	check/LP_____
	147	598			10		10	_____	_____	check_____
	148	597			10		10	_____	_____	check/LP_____

	149	596			10		10	_____	_____	check/LP_____
	150	591			10		10	_____	_____	check_____
	151	740	RO-ACZA-Oil	x		x		x	x	cut 2016
	152	739			10		10	x	x	cut 2019
	153	738			10		10	_____	_____	severe check/LP_____
	154	737			10		10	_____	_____	severe check_____
	155	736			10		10	_____	_____	check/LP_____
	156	779	WO-ACZA-Oil	x		x		x	x	cut 2016
	157	780			10		10	x	x	cut 2019
	158	777			10		10	_____	_____	LP_____
	159	778			10		10	_____	_____	LP_____
	160	776			10		10	_____	_____	_____
	161	655	RO-DOT-ACZA-Oil	x		x		x	x	cut 2016
	162	654			10		10	x	x	cut 2019
	163	653			10		10	_____	_____	check_____
	164	652			10		10	_____	_____	split_____
	165	660			10		10	_____	_____	check_____
	166	659			10		10	_____	_____	check_____
	167	658			10		10	_____	_____	split_____
	168	657			10		10	_____	_____	split_____
	169	651			10		10	_____	_____	check_____
	170	656			10		10	_____	_____	check_____
	171	531	WO-DOT-ACZA-Oil	x		x		x	x	cut 2016
	172	532			10		10	x	x	cut 2019
	173	533			10		10	_____	_____	check_____
	174	534			10		10	_____	_____	check/LP_____
	175	536			10		10	_____	_____	_____
	176	537			10		10	_____	_____	check_____
	177	538			10		10	_____	_____	check_____
	178	539			10		10	_____	_____	sever check - holding water ____
	179	540			10		10	_____	_____	_____
	180	535			10		10	_____	_____	sever check - holding water/LP___
	181	820	DF-P2	x		x		x	x	cut 2016
	182	817			10		10	x	x	cut 2019
	183	819			10		10	_____	_____	check_____
	184	811			10		10	_____	_____	bleeding/check_____
	185	815			10		10	_____	_____	check_____
	186	816			10		10	_____	_____	_____
	187	814			10		10	_____	_____	bleeding_____
	188	813			10		10	_____	_____	_____
	189	818			10		10	_____	_____	check_____
	190	812			10		10	_____	_____	_____
Koppers	191	T6	WO-Bor-6#	x		x		x	x	cut 2016
	192	T6			10		10	x	x	cut 2019
	193	T6			10		10	_____	_____	check/LP_____
	194	T6			10		10	_____	_____	split_____
	195	T6			10		10	_____	_____	LP_____
	196	T6			10		10	_____	_____	_____
	197	T6			10		10	_____	_____	check_____
	198	T6			10		10	_____	_____	_____
	199	T6			10		10	_____	_____	check_____

200	T6			10		10			check/LP
201	T7	WO-Bor-7#	x		x		x	x	cut 2016
202	T7			10		10	x	x	cut 2019
203	T7			10		10			
204	T7			10		10			check
205	T7			10		10			check
206	T7			10		10			
207	T7			10		10			check
208	T7			10		10			check
209	T7			10		10			
210	T7			10		10			severe check/bad tie
211	T70	RO-Bor-7#	x		x		x	x	cut 2016
212	T70			10		10	x	x	cut 2019
213	T70			10		10			
214	T70			10		10			check
215	T70			10		10			check
216	T70			10		10			bleeding
217	T70			10		10			check
218	T70			10		10			check
219	T70			10		10			
220	T70			10		10			check
221	T60	RO-Bor-6#	x		x		x	x	cut 2016
222	T60			10		10	x	x	cut 2019
223	T60			10		10			check
224	T60			10		10			bleeding
225	T60			10		10			check
226	T60			10		10			check
227	T60			10		10			LP
228	T60			10		10			check
229	T60			10		10			bleeding
230	T60			10		10			bleeding
231	T10	RO-Creo-7#	x		x		x	x	cut 2016
232	T10			10		10	x	x	cut 2019
233	T10			10		10			check
234	T10			10		10			check
235	T10			10		10			check
236	T10			10		10			check
237	T10			10		10			check/LP
238	T10			10		10			check
239	T10			10		10			check
240	T10			10		10			check
241	blank tag	Unt. RO	x		x		x	x	cut 2016
242	blank tag			4		8	x	x	cut 2019
243	blank tag			8		10			FB/split
244	blank tag			7		10			FB
245	blank tag			9		10			
246	blank tag			7		10			
247	blank tag			0		9.5	0	0	Failed
248	blank tag			7		10			FB
249	blank tag			0		10	0	0	Failed
250	blank tag			6		9			

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Applicable Standards:
None: