

1500 W. Hampden Ave Suite 5F Englewood, CO 80110

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# KilnScout Maintenance Schedule

### Weekly Tasks

1. *Identify sensors being used but not transmitting.* Use the 'Find KilnScout' screen and set the highlight parameter to 7 days. Identify sensors with 'Date Last Used' as normal but 'Most Recent Transmission' is highlighted red. Ensure the sensors are on, if necessary replace the battery. Once powered up, perform a Verifiable Load Device (VLD) check to ensure it is correctly calibrated.

#### Figure 1- Sensor not transmitting

ht data older than	days		and the owner of the				
Device	Date Last Used	Kiln Last Used	Most Recent Transmission	Nost Recent Tennerature	Last Location Near Hub		
1 [02D07110]	2/14/2018 2:28 AM	Kiln 1 (N) Track 1	12/1/2017 5:20 AM	75	Kiln 1 North	1	
2.[02D06D1C]	2/13/2018 3:36 PM	Kiln 1 (S) Track 2	2/14/2018 11:20 AM	114	Kiln 1 South		
3 [02D01420]	2/14/2018 3:58 AM	Kiln 1 (N) Track 1	2/14/0010 TT.15 AM	Sensor used in kiln	1 1 North		
4 [02D0603D]	2/13/2018 8:22 AM	Kiln 1 (S) Track 2	2/14/2018 11:19 AM	but no transmission	ז 1 Middle		
5 [02D0047A]	2/11/2018 5:36 AM	Kiln 1 (N) Track 1	2/12/2018 3:02 PM	recorded from the	ו 1 South		
6 [02D05F32]	2/13/2018 7:20 PM	Kiln 1 (N) Track 1	2/14/2018 7:04 AM	-recorded from the	1 North	1	
7 [02D04D5F]	2/13/2018 11:09 AM	Kiln 1 (S) Track 2	2/14/2018 11:19 AM	system.	1 1 Middle	1	
8 [02D024EA]	2/14/2018 10:28 AM	Kiln 1 (N) Track 1	2/14/2018 11:21 AM	56	Kiln 1 North		
9 [02D05C8F]	11/27/2017 11:45 PM	Kiln 1 (N) Track 1	10/21/2017 4:42 PM	39	Kiln 1 South		
10 [02D01281]	2/13/2018 1:28 PM	Kiln 1 (S) Track 2	2/14/2018 11:24 AM	110	Kiln 1 Middle		
11 [02D03371]	2/11/2018 1:42 AM	Kiln 1 (N) Track 1	2/14/2018 11:21 AM	10	Kiln 2 North		
12 [02D04D90]	2/13/2018 4:41 PM	Kiln 1 (N) Track 1	2/14/2018 11:23 AM	111	Kiln 1 Middle		
13 [02D0212C]	11/24/2017 4:18 PM	Kiln 1 (N) Track 1	11/2/2017 4:14 AM	76	Kiln 1 South		
14 [02D07B4A]	2/13/2018 1:19 AM	Kiln 1 (N) Track 1	2/14/2018 11:20 AM	22	Kiln 1 South	9	
15 [02D00365]	2/14/2018 3:28 AM	Kiln 1 (S) Track 2	2/14/2018 11:21 AM	62	Kiln 1 South		
16 [02D033F5]	1/12/2018 2:16 AM	Kiln 1 (S) Track 2	8/2/2017 4:43 PM	36	Kiln 2 North		
17 [02D02577]	2/13/2018 7:37 AM	Kiln 1 (N) Track 1	2/14/2018 11:19 AM	68	Kiln 1 South	1	
18 [02D06E0F]	2/5/2018 5:41 AM	Kiln 1 (S) Track 2	2/14/2018 11:05 AM	15	Kiln 1 North	1	
19 [02D0616A]	1/9/2018 3:54 PM	Kiln 1 (N) Track 1	10/23/2017 8:40 PM	118	Kiln 1 South	1	
20 [02D06D3F]	2/14/2018 9:36 AM	Kiln 1 (N) Track 1	2/14/2018 8:50 AM	65	Kiln 1 North	1	
21 [02D06EA3]	2/13/2018 1:05 PM	Kiln 1 (N) Track 1	2/13/2018 8:59 PM	70	Kiln 1 North	1	
22 [02D02678]	2/13/2018 3:23 AM	Kiln 1 (N) Track 1	2/14/2018 11:20 AM	56	Kiln 1 South	1	
23 [02D06CCF]	10/13/2017 11:32 AM	Kiln 1 (S) Track 2	9/10/2017 4:59 AM	18	Kiln 2 North	1	
24 [02D07B19]	2/11/2018 4:35 PM	Kiln 1 (N) Track 1	11/3/2017 7:01 PM	112	Kiln 1 South		
25 [02D0709D]	2/13/2018 7:28 PM	Kiln 1 (S) Track 2	2/14/2018 11:20 AM	117	Kiln 1 South	1	
26 [02D0483D]	2/13/2018 9:30 PM	Kiln 1 (S) Track 2	2/14/2018 11:19 AM	119	Kiln 1 Middle		
27 [02D0606D]	2/13/2018 3:22 PM	Kiln 1 (N) Track 1	2/14/2018 10:31 AM	114	Kiln 1 Middle		
28 [02D02142]	2/14/2018 5:19 AM	Kiln 1 (S) Track 2	2/14/2018 11:23 AM	58	Kiln 1 South		
29 [02D07C27]	2/13/2018 5:37 PM	Kiln 1 (N) Track 1	2/14/2018 4:54 AM	75	Kiln 1 North		
30 [02D06DDC]	2/13/2018 12:40 PM	Kiln 1 (N) Track 1	2/14/2018 11:23 AM	114	Kiln 1 South		



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2. *Identify sensors transmitting but not used.* Use the 'Find KilnScout' screen and set the highlight parameter to 7 days. Identify sensors with 'Date Last Used' as red but 'Most Recent Transmission' is normal. Perform a VLD check and put them back into the sensor rotation.

### Figure 2 - Sensor not used in kiln

ight data older than	7.0 🔶 days								
Device	Date Last Used	Kiln Last Used	Most Recent Transmission	Most Recent Temperature	Last Location Near Hub	Mos Sigr			
1 [02D07110]	2/14/2018 2:28 AM	Kiln 1 (N) Track 1	12/1/2017 5:20 AM	75	Kiln 1 North	55			
2 [02D06D1C]	2/13/2018 3:36 PM	Kiln 1 (S) Track 2	2/14/2018 11:20 AM	114	Kiln 1 South	42			
3 [02D01420]	2/14/2018 3:58 AM	Kiln 1 (N) Track 1	2/14/2018 11:15 AM	61	Kiln 1 North	50			
4 [02D0603D]	2/13/2018 8:22 AM	Kiln 1 (S) Track 2	2/14/2018 11:19 AM	59	Kiln 1 Middle	66			
5 [02D0047A]	2/11/2018 5:36 AM	Kiln 1 (N) Track 1	2/12/2018 3:02 PM	44	Kiln 1 South	59			
6 [02D05F32]	2/13/2018 7:20 PM	Kiln 1 (N) Track 1	2/14/2018 7:04 AM	82	Kiln 1 North	53			
7 [02D04D5F]	2/13/2018 11:09 AM	Kiln 1 (S) Track 2	2/14/2018 11:19 AM	74	Kiln 1 Middle	65			
8 [02D024EA]	2/14/2018 10:28 AM	Kiln 1 (N) Track 1	2/14/2018 11:21 AM	56	Kiln 1 North	71			
9 [02D05C8F]	11/27/2017 11:45 PM	Kiln 1 (N) Track 1	10/21/2017 4:42 PM	39	Kiln 1 South	39			
10 [02D01281]	2/13/2018 1:28 PM	Kiln 1 (S) Track 2	2/14/2018 11:24 AM	110	Kiln 1 Middle	88			
11 [02D03371]	2/11/2018 1:42 AM	Kiln 1 (N) Track 1	2/14/2018 11:21 AM	10	Kiln 2 North	52			
12 [02D04D90]	2/13/2018 4:41 PM	Kiln 1 (N) Track 1	2/14/2018 11:23 AM	111	Kiln 1 Middle	62			
13 [02D0212C]	11/24/2017 4:18 PM	Kiln 1 (N) Track 1	11/2/2017 4:14 AM	76	Kiln 1 South	54			
14 [02D07B4A]	2/13/2018 1:19 AM	Kiln 1 (N) Track 1	2/14/2018 11:20 AM	22	Kiln 1 South	40			
15 [02D00365]	2/14/2018 3:28 AM	Kiln 1 (S) Track 2	2/14/2018 11:21 AM	62	Kiln 1 South	75			
16 [02D033F5]	1/12/2018 2:16 AM	Kiln 1 (S) Track 2	8/2/2017 4:43 PM	36	Kiln 2 North	64			
17 [02002577]	2/13/2018 7:37 AM	Kiln 1 (N) Track 1	2/14/2018 11:19 AM	60	Kiln 1 South	73			
18 [02D06E0F]	2/5/2018 5:41 AM	Kiln 1 (S) Track 2	2/14/2018 11:05 AM	15	Kiln 1 North	54			
19 [02D0616A]	1/3/2010 0.51 PM	10. 1 (N) Took 1	10/20/2017 8:40 PM	11°	not being used	in			
20 [02D06D3F]	2/14/2018 9:36 AM	Kiln 1 (N) Track 1	2/14/2018 8:50 AM	65 65	or 18 is not being used in				
21 [02D06EA3]	2/13/2018 1:05 PM	Kiln 1 (N) Track 1	2/13/2018 8:59 PM		in the last / da	ys,			
22 [02D02678]	2/13/2018 3:23 AM	Kiln 1 (N) Track 1	2/14/2018 11:20 AM	56 DUT IT IS ACTI	vely transmittin	g.			
23 [02D06CCF]	10/13/2017 11:32 AM	Kiln 1 (S) Track 2	9/10/2017 4:59 AM	18					
24 [02D07B19]	2/11/2018 4:35 PM	Kiln 1 (N) Track 1	11/3/2017 7:01 PM	11_	(	175			
25 [02D0709D]	2/13/2018 7:28 PM	Kiln 1 (S) Track 2	2/14/2018 11:20 AM	117	Kiln 1 South	50			
26 [02D0483D]	02D0483D] 2/13/2018 9:30 PM Kiln 1 (S) Tra		2/14/2018 11:19 AM	119	Kiln 1 Middle	80			
27 [02D0606D]	2/13/2018 3:22 PM	Kiln 1 (N) Track 1	2/14/2018 10:31 AM	114	Kiln 1 Middle	51			
28 [02D02142]	2/14/2018 5:19 AM	Kiln 1 (S) Track 2	2/14/2018 11:23 AM	58	Kiln 1 South	84			
29 [02D07C27]	2/13/2018 5:37 PM	Kiln 1 (N) Track 1	2/14/2018 4:54 AM	75	Kiln 1 North	50			
30 [02D06DDC]	2/13/2018 12:40 PM	Kiln 1 (N) Track 1	2/14/2018 11:23 AM	114	Kiln 1 South	41			



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- 3. *Identify all sensors with open and/or short warnings on KilnScout.* Replace leads and perform VLD check. Place back into the rotation.
- 4. *Identify units requiring new batteries.* Use the Notification screen to determine which KilnScout devices have low battery warnings.

# Monthly Tasks

1. Perform VLD check once a month per sensor/lead combination.

### Tasks at Kiln Shutdown

- 1. Inspect antenna plates and antenna inside the kiln. Replace the antenna as needed.
- 2. Inspect hub boxes for water ingress. Repair as needed.

## Calibration Check Procedure using VLDs

- 1. Using the KilnScout software, click 'Status' then 'Hub Network' menu items.
- After the hub status is displayed, select hub to listen for radio packets. e.g. 'Kiln 2 South'
- 3. Click the 'Diagnostics' button. A new screen will show ALL radio packets received by that hub card. IMPORTANT: do not leave this screen open or other hubs will not receive any data.
- 4. Connect leads from the KilnScout device to a VLD. Do not touch the metal on the leads, then press the 'Mode' button on the KilnScout. This will perform an immediate read and transmit of the VLD device.
- 5. Wait for a packet to display on the screen. Confirm the data packet has the 'Manual Read' checked AND the 'Alias Name' matches the KilnScout being checked. This ensures the correct device is being tested.
- 6. Ensure the 'Adj. C' and 'Adj. R' values are within range of the acceptable values on the VLD device.



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### Figure 3- Calibration Check

Cor	munication	Diagnostics Hub	: 0193F/	4E9 - K	iln 2 South																			E			X
X													_			_			_		_						
Clear																											
	Device Type	Device ID	Alias Name	Sequence ID	Date	Adi. C (pF)	Adi. R (k0hm)	Raw C (pF)	Raw R (kOhm)	C Meas Err (%)	Temperature (*C)	Battery (VDC)	Humidity Int. (%)	Signal Strength (%)	Manual Read	Low Battery	Invalid Calibration		High Temperature	High-High Temperature		Z Measurement	Z Calibration	Firmware Version	Sample Rate	Frequency	Amplitude Gain
	Impedance	02D0034A	32	101	2/14/2018 11:43 AM	20.77	635055.37	20.77	635055. <mark>3</mark> 7	0.01	9	6.01	0	57	Ā	0	0	0	0	0	96	(2, 38)	(12432, -187)	v4.07	Slow	Low	High
	Impedance	000000	22	101	2/14/2018 11:43 AM	20.77	635055.37	20.77	635055.37	0.01	9	6.01	Cor	nfirm	mai	nual	read		0	9	9 6	(2, 38)	(12432, -187)	v4.07	Slow	Low	High
	Impedance	Confirm all	Infirm alias name T4/2018 11:43 AM Values read by KilnScout.						635055.37	0.01	9	6.01	box	box checked to						0	9 6	(2, 38)	(12432, -187)	v4.07	Slow	Low	High
	Impedance	matches Ki	Insco	ut	'14/2018 11:42 AM The	se numbe	ers should n	natch	635055.37	1.01	10	6.16	con	firm	read	d wa	S	1	A	0	9 8	(3312, 1439)	(12513, -190)	v4.07	Slow	Low	High
	Impedance	tested 14/2018 11:42 AM readings on the VLD test						635055.37	1.01	10	6.16	init	iated	by	the	user.		A	0	9 8	(3312, 1439)	(12513, -190)	v4.07	Slow	Low	High	
	Impedance	02D00F05	44	90	2/14/2018 11:42 AM bloc	ck.			635055.37	1.01	10	6.16	0	53		1	0	9	A	9	9 8	(3312, 1439)	(12513, -190)	v4.07	Slow	Low	High
	Impedance	02D02616	40	206	2/14/2018 11:41 AM	2191.79	191.08	20.77	635055.37	0.26	17	6.61	0	51	V	0	0	0	0	0	0	(1132, 3815)	(12358, -181)	v4.07	Slow	Low	High
	Impedance	02D02616	40	206	2/14/2018 11-41 AM	2101 70	101.00	20.77	C25055 37	0.26	17	6.61	0	47	V	0	0	0	0	0	0	(1132, 3815)	(12358, -181)	v4.07	Slow	Low	High
	mpedance	02D02616	40	206	2/14/2018 11:41 AM	2191.79	191.08	20.77	635055.37	0.26	17	6.61	0	49	V	V	9 (	0	0	0	0	(1132, 3815)	(12358, -181)	v4.07	Slow	Low	High
	Impedance	020/02616	40	203	2/14/2010 11.10 10	2102.02	101.20	20,77	005059:07	0.20	10	0.01	U	53	V	0	0		0	9	0	(1133, 3827)	(12358, -181)	v4.07	Slow	Low	High
	Impedance	02D02616	40	adio	nacket with infor	nation re	arding the	value	e read		3.		0	51		0	0	0	0	9	<b>)</b> 0	(1133, 3827)	(12358, -181)	v4.07	Slow	Low	High
	Impedance	02D02616	40	laulo	packet with mon	nation re	sarung the	value	Sicau,				0	51	V	0	0	0	9	0	0	(1133, 3827)	(12358, -181)	v4.07	Slow	Low	High
	Impedance	02D06E0F	18	103	2/ 14/ 2010 11.30 MM	J.20	040010.04	40.11	033033.37	U.UJ	IU	0.07	0	46		0	0	0	0	0	9 6	(0, 6)	(12459, -190)	v4.07	Slow	Low	High
	Impedance	02D02616	40	204	2/14/2018 11:38 AM	18.68	263440.1	20.77	635055.37	0.03	15	6.63	0	54	7	0	0	0	0	9	96	(1, 34)	(12358, -181)	v4.07	Slow	Low	High
	Impedance	02D02616	40	204	2/14/2018 11:38 AM	18.68	263440.1	20.77	635055.37	0.03	15	6.63	0	54		0	0	0	0	0	9 6	(1, 34)	(12358, -181)	v4.07	Slow	Low	High
•	Impedance	02D02616	40	204	2/14/2018 11:38 AM	18.68	263440.1	20.77	635055.37	0.03	15	6.63	0	45	Ø	9	0		9	9	<u>و</u> و	(1, 34)	(12358, -181)	v4.07	Slow	Low	High
				-				-		-		-		-											-	-	
Hub re	ady.											_	_				_	_									- 2