h W(OOD-FIRIN	g ti	EMPLA	<u>TE (6-7</u>	<u>Apr 2023</u>	<u>) - I</u>	HILLSBOR	ROUGH "BU	IDHEACHA	<mark>s" wood</mark>	<u>KILN</u>	
				Actual	ctual Temp F.		Dampers			Aiı	r	
	<u>Time of</u> <u>Day</u>	AC	Target Temp E	LOWER	T2 TOP RIGHT	REDUCT	AD	<u>PD 5</u> Bricks	Primary	<u>2nd</u>	<u>Hearth</u>	<u>Remarks</u>
<u>)</u>)		<u>.</u>				<u></u>						DAY 1
MING	1:00 PM	1	59				Open	Closed	Closed	Closed	Open Center Fully	Start fire outside center hearth air port - use propane burner in chimney base to enhance the draft if needed
WAR	2:00 PM	1	110				Open	0-3	Closed	Closed	Open Center Fully	Burn large knotty pieces while the front hearth air port is open; push fire to one brick in front of the exterior face of firebox. Keep passive dampers open will slow up draw of chimney and allow ash to settle on pots in upper part of ware chamber
	<u>Time</u>		Temp			<u></u>	AD	<u>PD</u>	Primary	2nd Air	Hearth Air	
AST	3:00 PM	2	177				Open	Closed	Closed	Closed	Open Center Fully	Push fire flush with front wall of firebox. Keep passive dampers open to fascilitate ash accumulation in upper portion of ware chamber
T0/	4:00 PM	2	226			ļļ	Open	0-3	Closed	Closed	30%	Push fire 4.5" inside front wall of firebox
	5:00 PM	2	277	<u> </u>			Open	Closed	Closed	Closed	30%	Open mouseholes - continue stoking large knotty pine pieces through the center hearth air port
	<u>Time</u>)	<u>Temp</u>				AD	<u>PD</u>	Primary	<u>2nd Air</u>	<u>Hearth Air</u>	
0 ATTACK	6:00 PM	3	310				Open	0-3	Closed	Open	30%	Push fire inside exterior face of firebox. Keeping passive dampers open will slow up draw of chimney and allow ash to settle on p in upper part of ware chamber. Suspend longer pieces of wood into firebox through secondary air ports and let the ends ignite across from the throat openings to facilitate ash transmission to warechamber
VG T	7:00 PM	3	372				Open	Closed	Closed	Open	30%	
RMIN	8:00PM	3	424		<u>.</u>		Open	0-3	Closed	Open	30%	
WA	9:00PM	3	457		<u>.</u>	h	Closed	All Open	Closed	Closed	Closed	Open 5 passive damper bricks; leave mouseholes closed; set center hearth air opening a crack before heading off to bed
												DAY 2
	<u>Time</u>		Temp				AD	<u>PD</u>	Primary	2nd Air	<u>Hearth Air</u>	
AST	5:00 AM	2	272				Open	Closed	Closed	Closed	Center Open Fully	Start fire outside center hearth air port. Once started, move to 4.5" in front of firebox exterior face.
T0/	6:00 AM	2	373				Open	0-3	Closed	Closed	30%	Burn large knotty pieces while the front hearth air port is open; push fire inside exterior face of firebox . Keeping passive dam open will slow up draw of chimney and allow ash to settle on pots in upper part of ware chamber
ļ	<u>Time</u>	ļ,	Temp			ĻĻ	<u>AD</u>	<u>PD</u>	Primary	2nd Air	<u>Hearth Air</u>	
Ж	7:00 AM	3	564				Open	All Closed	Closed	Open	30%	Open mouseholes and start feeding wood through secondary air ports; Adjust passive damper settings to balance heat gain betw top and bottom
LTAC	8:00 AM	3	826			ļļ	Open	All Closed	Closed	Open	20%	Rattle the ember bed to create increased ash flow through ware chamber
VING TO A	9:00 AM	3	1015			·····	Open	All Closed	1/2"	1/2"	20% - Center and 50% Side	START SIDE STOKING two thin strips @ 1000 F; open primary air 1/2" - continue front/side stoking alternatively for about minutes; adjust secondary air for gradual temp rise through quartz inversion at 1,063 deg F where silica molecules expand at graphic proportion than other materials (creates stresses) and all water is removed from clay.
ARM												Quartz inversion at 1,022 - 1,063 deg F (silica molecules expand or contract out of proportion with surrounding materials)
W,	10:00 AM	3	1321				Open	All Closed	50%	1/2"	30% All 3 Ports	Heat, oxygen and fuel. If you aren't achieving peak temperature, you have an imbalance of oxygen and fuel. If the firebox full above the arches and the temperature is not increasing, try adding more air through the primary or secondary air p See note # 15 below under "Firing".
	<u>Time</u>		Temp				AD	<u>PD</u>	Primary	2nd Air	<u>Hearth Air</u>	
	11:00 AM	3	1567			ļļ	Open	All Closed	50%	1/2"	30% All 3 Ports	DULL RED HEAT - Look for dark red color in wares.
CK	11:30AM	4	1582			R	Close 3"	0-4	1/2"	Closed	30% All 3 Ports	Body REDUCTION at 1576 to 1582 to improve Shino glazes for about 60 minutes

HE	00 PM 3 1675	I	R Close 3"	0-4	1/2"	Closed	30% All 3 Ports	CHERRY RED HEAT
É 1:00	0 PM 3 1909		Open	All Closed	Fully Open	1/2"	50%	ORANGE HEAT - Consider opening primary air ports fully for more rapid temperature rise and fire in oxidation; open hearth air ports to 50% to control ember build-up and use side cleanout ports if necessary
Ti	ime <u>Temp</u>		AD	PD	Primary	2nd Air	<u>Hearth Air</u>	
2:0/	0PM 4 2020	The second s	Open	0-3	50%	1/2"	50%	YELLOW -ORANGE HEAT
3:01	0PM 4 2158		Open	All Closed	Fully Open	Closed	50%	For quicker temperature rise, stoke more frequently with fewer/smaller pieces of wood (oxidation) but keep hobs fully covered. Open primary air fully to lower reduction. Prepare for temperature stall around 1,900 to 2,000 deg F.
SUS								YELLOW HEAT - Look for cone 5 to drop around now
4:00	0PM 4 2214		Open	0-2	50%	1/2"	50%	YELLOW WHITE HEAT
5:0	0PM 4 2286		Open	All Closed	Fully	Closed	50%	Open primary air ports fully to lower reduction and increase oxidation.
Ti	ime <u>Temp</u>		AD	PD	Open Primarv	2nd Air	<u>Hearth Air</u>	
×	0PM 4 2345		Open	0-3	50%	Closed	50%	Start one hour soak; open passive dampers
90 YK	0PM 5 2345		Open	All Closed	50%	Closed	Closed	FINISHED! After one-hour soak Let the wood on top of the firebox arches burn away . Close air ports starting from bottom to to Close active dampers and passive dampers below active damper. Open passive damper bricks above active damper. Let kiln coo naturally.
Ti	ime <u>Temp</u>		AD	<u>PD</u>	Primary	2nd Air	<u>Hearth Air</u>	
ral:				}				
			d huild un	ember bed ov			oke with several la	rge logs at end of preheat and close up port leaving adequate air for slow burn (pyrometer about 400 at close up);
ne packs	Start fire in center he s: 012(1582), 02(20			0(2345) and	11(2361).			
ne packs ing:	s: 012(1582), 02(20	14), 5(2167), 9	9(2300), 1(]			o moist may cause j	posts/shelves to shift).
ne packs ing: e 3" brick dding foi	s: 012(1582), 02(20 k under bottom shelv or pots: steel cut oats o	14), 5(2167), 9 res. Use firm wa or rice hulls, alu	9 (2300), 10 adding mix Imina, EPK	to separate sl & fire clay in	helves from equal amo	n posts (too		posts/shelves to shift). shelves/posts - alumina, kaolin (or fire clay) & silica in equal amounts.
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Secondary Air:
1. Can open to 1/2" once primary air ports are in use to keep in oxidation.
2. Controls temperature rise. Keeping open results in oxidized firing. Closing down results in reduced firing.
Dampers:
1. Any adjustments to active damper should be gradual - 1" increments at 15 minute intervals.
2. Passive dampers - allows cold air to flow into chimney (once kiln is operating), decreasing the amount of primary air that will enter the system - use @ reduction or to slow temperature rise. Open passive damper if flame appears at top of
chimney. Opening passive damper will cut draft by up to 30% and result in slower flame & encourage ash accumulation on wares; use to adjust length of flame; wide open dampers will create reduced atmosphere within kiln.
3. If windy conditions, close up passive dampers to reduce back pressure.
4. Open passive dampers during "soak" to keep internal pressure and hot part of flame within the kiln. Open passive dampers (to slow draw of chimney during cooling) and close active dampers at end of firing. 5. Use dampers to reduce smoke from chimney (open active - close passive).
6. Use passive dampers to keep chamber pressurized and keep heat/flame inside kiln; passive damper is excellent tool to regulate flame speed; alternate flame speed in stages 4 and 5; fast results in distinct line at transition (side) while slow speed results in ash/flame wrapping around pottery.
Close passive dampars after ten cones as down to draw heat /flame to BOTTOM rear of kiln
8. At the end of the firing, close the active dampers and open all passive damper bricks above the active damper and then close up all air ports from the bottom up.
Reduction:
1. Reduction is characterized by a "murky" atmosphere inside the firebox as viewed through the primary/secondary air holes, and by black smoke at the chimney. At temperatures below 1,582 deg F it is unlikely to effect ash glaze color.
2. During reduction phase, stoke heavier and cut down the air supply. Can also pull PD bricks.
3. Reduction amplifies effect of any irons in clay bodies if done lightly as scheduled above - over reduction early in firing could cause bloating in iron rich clay bodies. Close down secondary air and open passive dampers when in reduction.
4. Smoke not essential in reduction. Temperature rise of 50 - 100 deg F still possible/desirable
5. Reduction period of about 4 hours is required to achieve green colors in natural ash deposits.
6. Reduction under 1920 deg F has little effect on glazes except Shinos.
Wood:
1. Hardwood ash is heavier and grittier requiring more time and heat to melt. Increase use of sawmill wood toward the end of the firing.
2. Moisture content of wood should be 25% maximum. Season for 6-9 months.
3. Estimate 1 cord of wood per firing
4. At side stoking, if possible use mix of hardwood and pine in early part of firing and exclusively pine toward the end of firing to benefit from its fine ash.
5. The cambium layer (bark) contains the greatest concentration and diversity of minerals.
6. BTU content (million btu/cord): Red oak - 22.1; white oak 24.2; yellow pine 20.5; poplar 15.9; white pine 13.3; osage orange 30.0; black locust 23.2; white ash 21.6
7. Green wood can be used when kiln temperature reaches 1.832 deg F.
Finish:
1. Consider re-oxidizing kiln before shutting it up. Reduction cooling may spoil iron glazes. After final soak, crash cool to 1850 deg F if desired (shiny glazes).
2. Crash cooling (down to 1850 deg F in about 25 minutes) will result in glossy jewel green natural ash glaze on pieces near front of kiln. Slow cooling with some reduction (2 hours) near finish will result in colorful matte finishes.
3. Reduction cooling; two options, either: a) add 3 pounds of charcoal at 2050 deg F and again at 1800 deg F. with all ports closed and all passive damper bricks open OR b) fill firebox with thin pieces of pine then shut down all ports and open all
passive damper bricks - when firebox clears, stoke one or two thin pieces of wood at every 25 degree drop in temperature until 1900 deg F then stop.
4. For Crash Cooling, stop stoking and open all primary and secondary air ports. Let temperature drop to 1850 deg F (over 20-30 minute period) and then close up all ports and all passive dampers. Will result in crisper colors and glossier
surfaces. It also minimizes crystal growth in glazes
5. Open kiln on the 4th day after the firing