KEYS TO A SUCCESSFUL SMALL-SCALE BARREL-AGING PROGRAM

BREW YOUR OWN NANO CON 2022

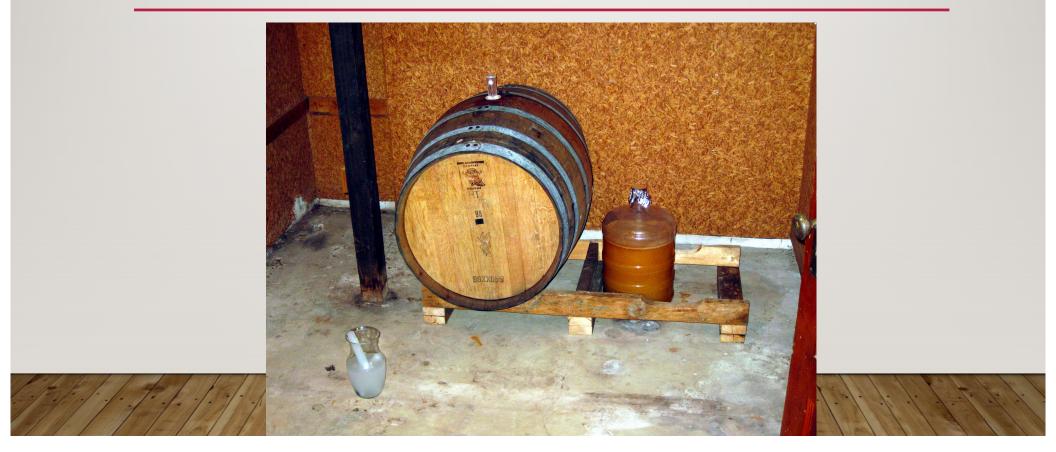
MICHAEL TONSMEIRE



AGENDA

- Barrel evaluation
- Filling and Draining
- Tracking
- Barrel maintenance
 - "Vinnie" nail installation
- Compliance

BARREL AGED BEER: HISTORY



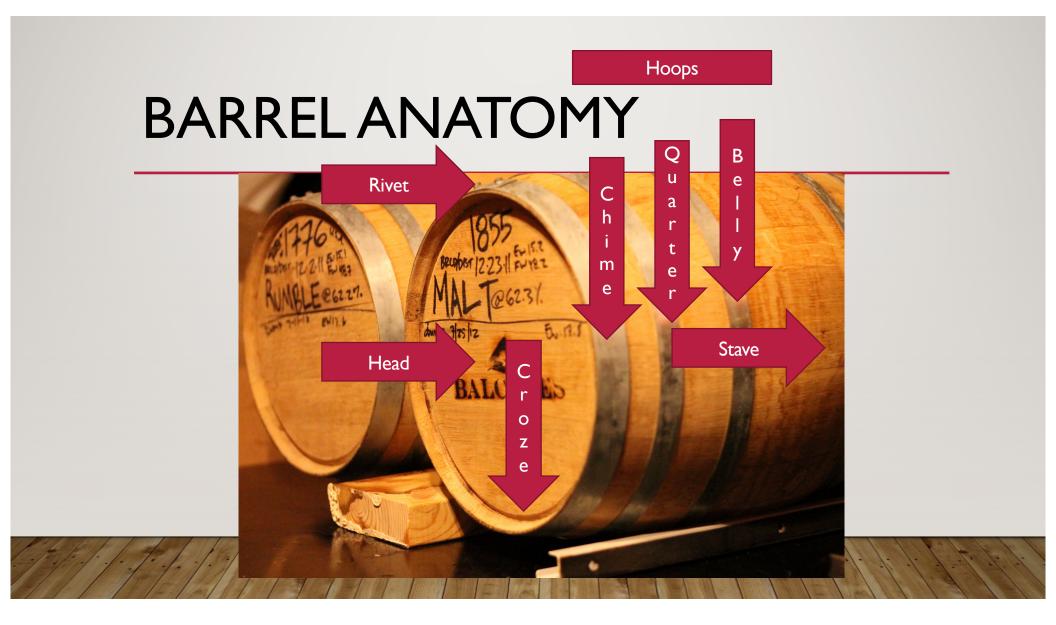


WHY OAK?

- Non-porous
 - Xylem structure
- Positive flavor contribution
- Widely available



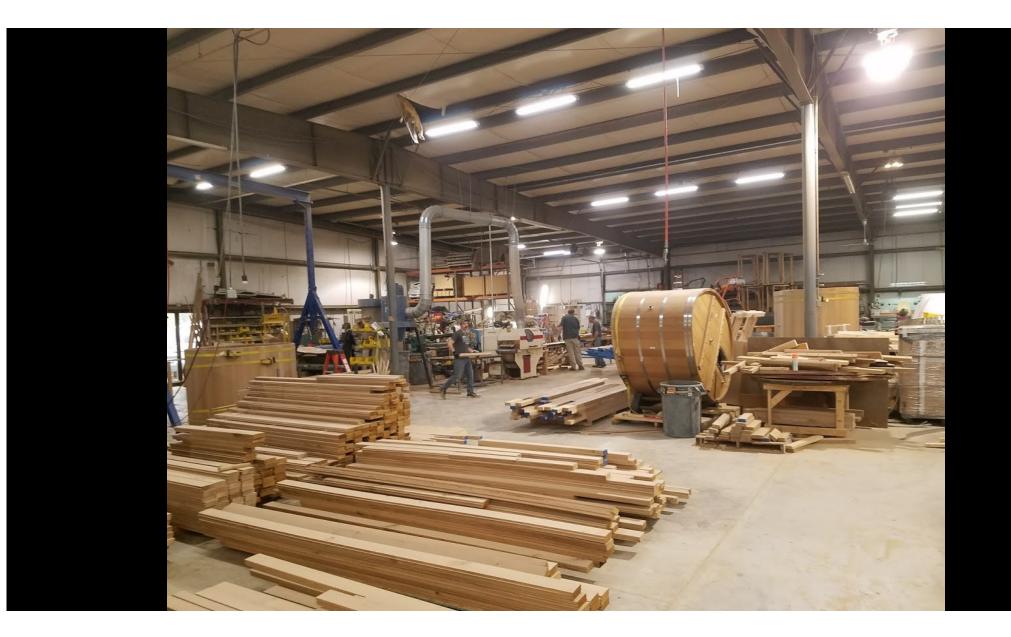


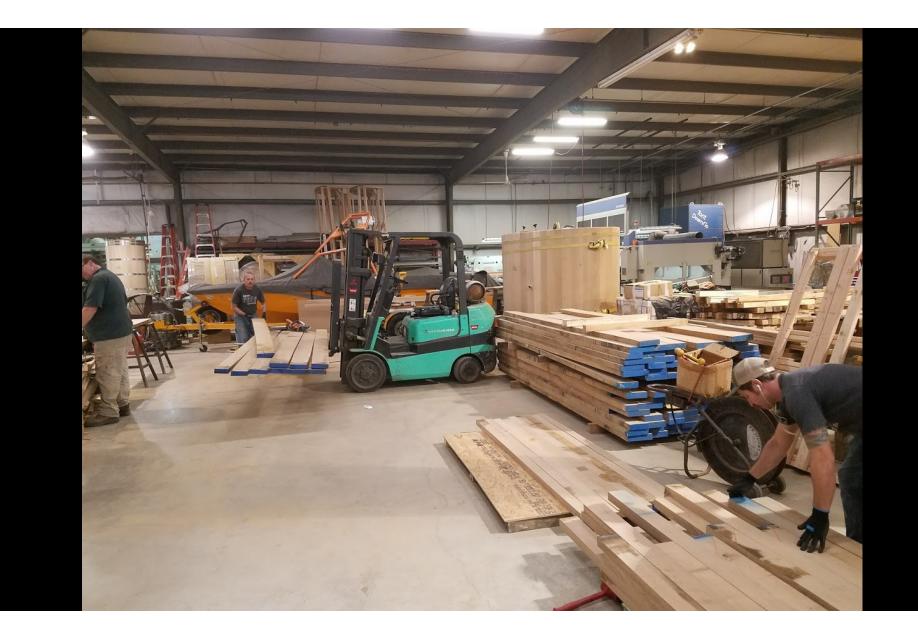


BARREL SIZE

- Smaller barrel means more wood and oxygen
- Surface-to-Volume halved with each 10X Volume Increase
- 20L (5.3 gallons)
 - Surface-area per volume 195 cm²/L
- 200L (53 gallons)
 - Surface-area per volume 90 cm²/L
- Foeders











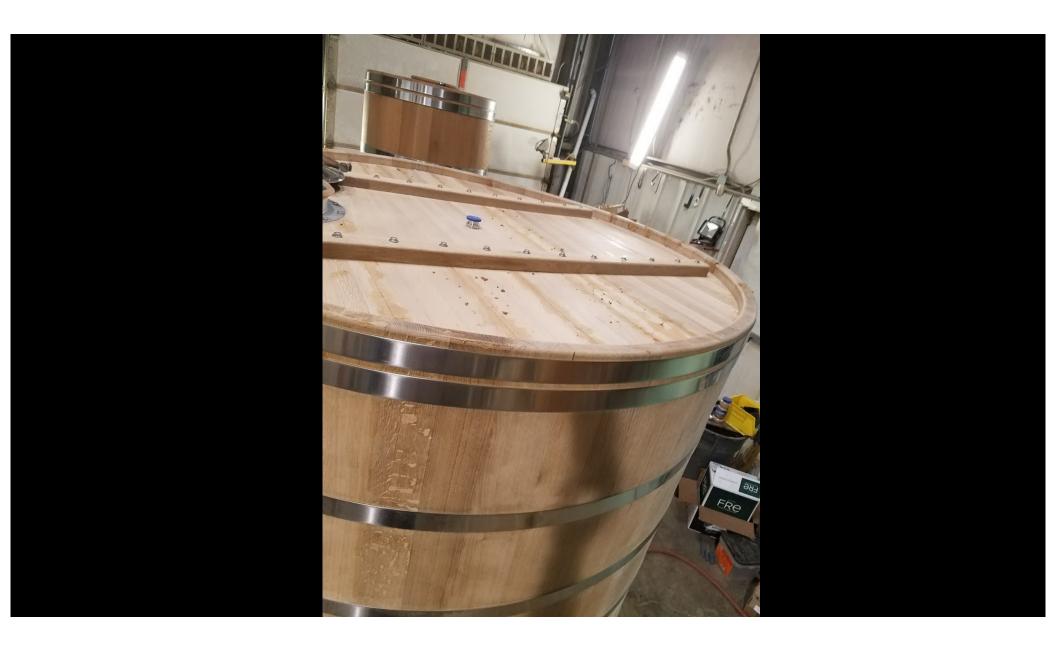








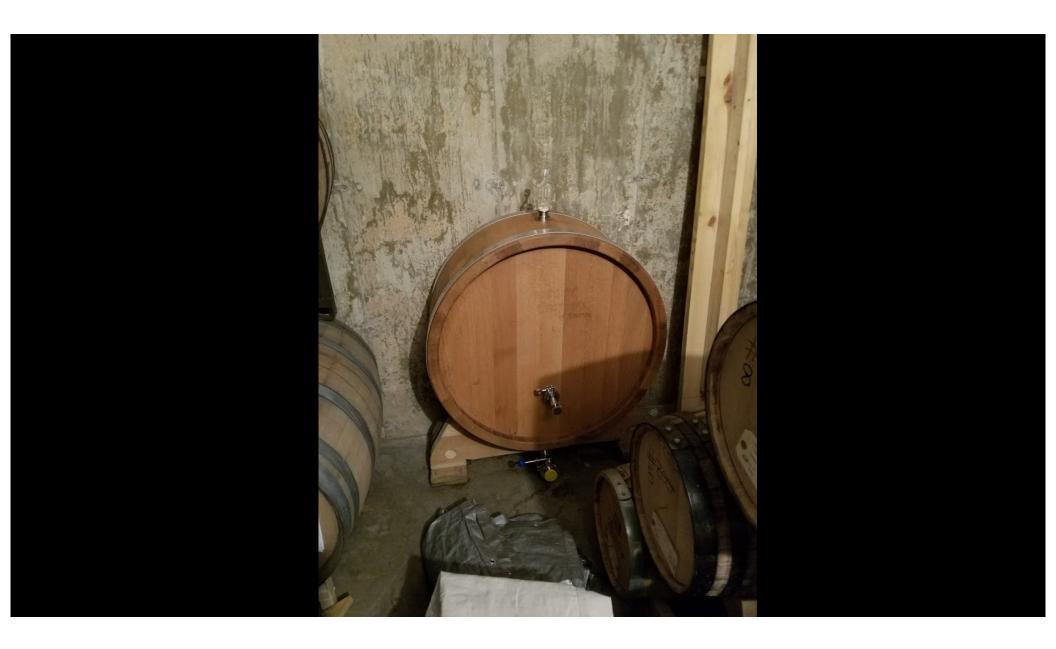












SOURCING

- New (Cooper)
 - Too oaky unless blending
- Original Owner (Winery/Distillery)
 - Easy accessibility
- Broker
 - Questionable History
- Brewery
 - Questionable treatment and storage

PREVIOUS RESIDENT

- Wine (Cabernet Sauvignon, Pinot Noir)
- Fortified Wine (Port, Sherry)
- Spirits (Bourbon, Rum, Tequila, Brandy)
- Beer

BARREL INSPECTION

- Information
- Exterior
- Interior
- Hydration
- See checklist

Source/Location: Identifier: OakSource: English French Phungarian Other: OakSource: English French Phungarian Other: Tosst: Orkew Uight Modum Mediume Pherovos Tosst: Orkew Uight Modum Mediume Pherovos Number of Uses:		Inspection Date:/_	_/			
Valume:		Source/Location:		_		
Oak Source: English Errench Hungarlan Other: Teast: DRAw Ulight Medium Mediume Meary Ocharra Teast: DRAw Dilay DRaw Dilay Draw Draw Previous Resident: Draw DBaardy Unknown Other		Identifier:				
Toatt: Diant Diant Diant Diant Diant Provious Realisent: Dise Diant Diant Diant Diant Number of Use:		Volume:				
Previous Resident: New Baer Red Wine White Wine Number of Uses:		Oak Source: DEngl	ish 🛛 Fren	ich 🛛 Hun	garian 🛛 Oth	er:
Brum Blourbon Scotch Blandy Unknown Other		Toast: 🛛 Raw 🗖 Li	ght 🛛 Med	fium 🖬 Med	lium+ 🛛 Hea	vy Charren
Number of Use:		Previous Resident:	DNew .	Beer	Red Wine	White Wine
Emplied: Storage: Disone Disorage Solution Disulfured Purged Nothin Exterior Storage: Disone Disorage Solution Disulfured Purged Nothin Hoops: DiRust Moved Purcop nails Differer Head: Diaulged Tool marks Dichine Intact Dicher; Head Disorad Dirock Dicher; Modification: DNail Displat Dicher; Interior Visual: Dicean Direast/Less Disorts Mold Dither; Smell: Diceat: Dichyl Acetse DMold Direct Dither; hydratin: Watering:: Dires DNo		Rum Bourbon	Scotch	Brandy	Unknown	Other
Storage: Disorage Solution Disultured Purged Nothin Exterior Image: Disorack Prinholes DOther: Hoops: Disorack Drinholes DOther: Image: Disorack DOther: Hoop: Disorack Drinholes DOther: Image: Disorack DOther: Head: Disulged Troil marks Droiter: Image: Disorack DOther: Bunglole: Disorack DOther: Image: Disorack DOther: Image: Disorack Modification: Disinget Disorack DOther: Image: Disorack DOther: Interior Valuat: Disorack Disorack Dother: Image: Dother: Smell: Dacetic DEthyl Acetste DMold Brett DOther: Watertight: Dres No Holds S FSI: Dres DNo		Number of Uses:				
Exterior Sever: DSap Leak Crack Prinholes Other: Hogs: DAust DMoved Hoop nails DRivets Other: Had: Daliged Tool marks Dother: Bunghole: Dauned Crack Other: Modification: DNai Dispot Other: Interior Visual: DCean Difest/Lees Inserts Moid Other: Smell: DAcetic DEthyl Acetse DMoid DBrett Other: Hydration: Watertight: D're IN0 Holds 5 PS: D'res IN0		Emptied://				
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Hoops: DRuit DNoved Hoop nails DRivets Other: Head: DBulged Drool marks Chime Intact DOther: Bunghole: DBurned DCreck DOther: Modification: DNail DSpipot DOther: Interior Visuat: DClean D'least/Less Dinserts DMold DBrett Smill: DAtetic Ditthyl Acetate DMold DBrett DOther: Hydration Watertight: D'res DNo Holds 5 PSI: D'res DNo	Exterio	or				
Head: DBulged DTool marks DChime Intact DCher; Bunghole: DBurned DTrack DCher; Modification: DNail DSpiget DCher; Interior Visuat: DChan Dreast/Lees Dinserts DMold DCher; Smel: DAcetic DEthyl Acetste DMold DBrett DCher; Hydration Watertight: D'res DNo		Staves: Gap	Leak	Crack	Pinholes	Other:
Bunghole: Burned Crack Other: Modification: DNail Display: Other: Interior Visual: Dicean Dreat/Lees Interins Mold Other: Smell: Diceat: Dichyl Acetse DMold Birett Other: Hydration: Waterlight: Dice IN0 Holds 5 PSI: Dice IN0		Hoops: Rust	Moved	Hoop nails	Rivets	Other:
Modification: DNail Displat Other Interior Visual: DClean DYeaty/Lees Dinserts DMold Other Smell: DAcetic Dithyl Acetate DMold Brett DOther Hydration Watertight: DYes DNo Holds 5 PSI: DYes DNo		Head: Bulged	Tool marks	Chime Intac	Other:	
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· Watertight: □Yes □No Holds 5 PSI: □Yes □No		Smell: 🛛 Acetic 🖂	Ethyl Acetate	Mold	Brett	Other:
Holds 5 PSI: Tyes INo	Hydrat	tion				
		Watertight: 🛛 Yes	□No			
Notes		Holds 5 PSI: Yes	□No			
	Notes					

BREWING BARREL TEA

- 5% volume of I 50°F/66°C water
- Roll around
- Wait 10 minutes
- Taste

CLEANING A BARREL

- Not usually necessary for spirit barrels
- Water
 - Hot vs. Cold
- Chemicals
 - Barrel Kleen
 - Soda ash

MAKE A PLAN

- Beer ready
 - I-2 month for 5 gallon
 - 4-48 months for 60 gallon
- Same yeast ideally
 - Or less attenuative strain first
- Two or three clean
 - Then sour/funky

RECIPE CHARACTERISTICS

- First Fill
 - Stronger
 - Darker
 - Richer

- Subsequent
 - Lighter
 - Paler
 - Drier



"VINNIE" SAMPLING NAIL

- 7/64" drill bit
- Head of the barrel, center stave
- McMaster-Carr® Type 316 stainless steel nails:
 - 4D size, 1.5 in. long (#97990A102)
 - 6D size, 2 in. long (#97990A104)



BARREL MAGIC

- Evaporation concentrated flavor in wood
- Soak alternatives to replicate?
 - Dose in spirits or wine to taste
- Micro-oxidation
 - "Positive" oxidation
 - Beneficial to some microbes

WATERTIGHT TESTING

- Cool water
- Fill completely
- Partial-fill and rotate
- Pressurize at 5 PSI...



BARREL LOCATION

- Permanence
- Temperature
 - 35-80°F
- Humidity
 - 60-75%
- Aromas

FILLING

- Sanitize Rig
- Purge for 20 minutes
- Gentle



BARREL TRANSFER TOOLS

Use <5 PSI of CO₂ Pressure

- MoreFlavor! Gas Transfer Tool (\$230)
- Bulldog Barrel Transfer Tube (\$475)
- Rack-it-teer (\$1,300)

BARREL STORAGE

- Commercial double metal racks (~\$100/each)
- Homemade from pallet
- Chocks
 - Isosceles triangle, sides: long 5", short 3", and 2" thick
- Sitting on the floor









CLOSURE

- I0.5 Stopper with Airlock
- Alasco Dalco Duall Complete



TOPPING OFF

- Reduce excess head space
 - Reduce oxidation
- Store extra beer in a keg
- Timing
 - Temperature and humidity

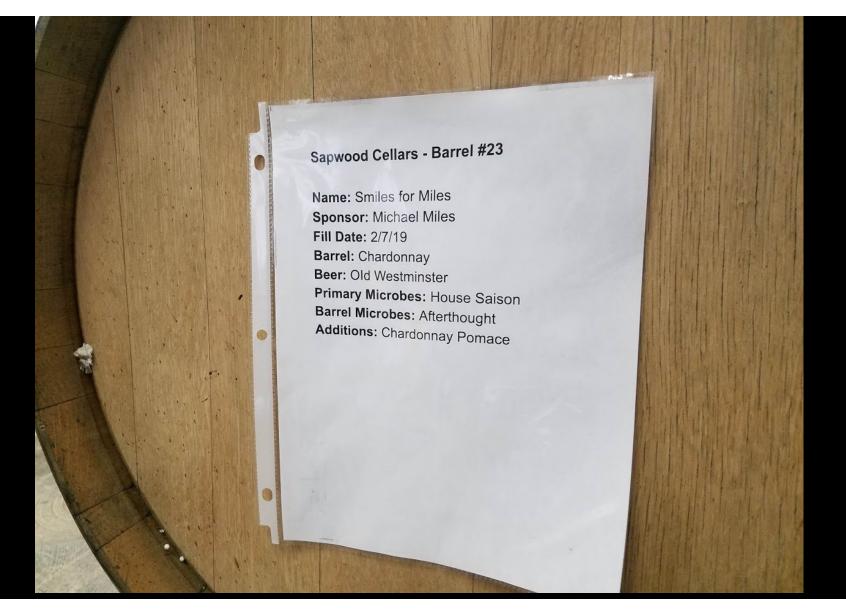
DRAINING A BARREL

- CO₂ Pressure
- Peristaltic or Diaphragm pump
- Centrifugal pump
- Russian River's solution
 - 15/16" hole, 15/16" tubing, and a Belgian cork



KEEPING TRACK

- Affixed to barrel
 - Fill date, beer, microbes, barrel type
- Spreadsheet
 - All of the details, history, treatment, notes



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	A B	С	D	E	F	G	Н	I	L	К		
E	Barrel # च Base Beer च	Fill # \Xi	Fill Date =	Empty Date =	Release	₩ Winery/Distillery =	Source	Original =	Microbe Primary			
L	38 Flanders RED	3	1/7/20	1/11/21	Bestagon	Koval	Northeast Barrel Co.	Gin	Order to Chaos Microbes	30 gallons Ame		
	38 Belgian Pale #2	4	1/11/21	4/10/22	Neologism	Koval	Northeast Barrel Co.	Gin	71B	30 gallons Ame		
	39 Porter	1	7/25/19	10/1/19	Barrel Cured	Elijah Craig	Cured	Bourbon	RVA Manchester	53 gallons Ame		
	39 Belgian Pale	2	10/1/19	4/28/21		Elijah Craig	Cured	Bourbon	T-58	53 gallons Ame		
	40 RAR Collab	1	7/25/19	1/7/20	365.24	McClintock	Cured	Gin (Maderia)	House Saison	61 gallons Fren		
	40 Flanders RED	2	1/7/20	1/11/21	Bestagon	McClintock	Cured	Gin (Maderia)	Order to Chaos Microbes	61 gallons Fren		
	36 Shadows Blacker	2	5/28/21	6/24/22	Cherries Blacker	?	Northeast Barrel Co.	Pinot Noir	WLP833	59 gallons MTL-		
	36 Marylambic #7	3	6/27/22			?	Northeast Barrel Co.	Pinot Noir	T-58	59 gallons MTL-		
	41 Marylambic #3	1	8/12/19	8/10/20	Stallion Cover	?	Northeast Barrel Co.	Merlot	East Coast Yeast Senne Valley	Fren		
	37 Rings of Beauty	1	5/15/19	6/14/19	Gin Spin	Koval	Northeast Barrel Co.	Gin	RVA Manchester	30 gallons Ame		
	40 Belgian Pale #2	3	1/11/21	5/4/22	Neologism	McClintock	Cured	Gin (Maderia)	71B	61 gallons Fren		
	40 Marylambic #7	4	5/4/22			McClintock	Cured	Gin (Maderia)	T58	61 gallons Fren		
	41 Golden Strong #2	2	8/10/20	8/13/21	Growing Season Plum	?	Northeast Barrel Co.	Merlot	58W3 + Marylambic #4	Fren		
	41 Marylambic #6	2	8/13/21			?	Northeast Barrel Co.	Merlot	58W3 + Marylambic #4	Fren		
	45 Marylambic #3	1	8/12/19	8/10/20	Stallion Cover	?	Northeast Barrel Co.	Cabernet	East Coast Yeast Senne Valley	Fren		
	42 Marylambic #3	1	8/12/19			?	Northeast Barrel Co.	Merlot	East Coast Yeast Senne Valley	Fren		
	46 Courage RIS	1	8/20/19	4/22/20	Sir Rupert Barrelton	Sagamore	Sagamore	Cognac (Rémy Martin)	RVA Manchester	80 gallons Fren		
	46 Big Funky Ale	2	4/22/20	8/12/21	Single Barrel Still Bottling!	Sagamore	Sagamore	Cognac (Rémy Martin)	S-04	80 gallons Fren		
	47 Courage RIS	1	8/20/19	4/22/20	Sir Rupert Barrelton	Sagamore	Sagamore	Cognac (Rémy Martin)	RVA Manchester	80 gallons Fren		
	47 Big Funky Ale	2	4/22/20	8/12/21	Pomegranate	Sagamore	Sagamore	Cognac (Rémy Martin)	S-04	80 gallons Fren		
	43 Marylambic #3	1	8/12/19			?	Northeast Barrel Co.	Merlot	East Coast Yeast Senne Valley	Fren		
	49 Disadulations	1	11/21/19	4/22/20	Weaponized Nonsense	Maker's Mark	Northeast Barrel Co.	Bourbon	S-04	53 gallons Ame		
	44 Marylambic #3	1	8/12/19			?	Northeast Barrel Co.	Cabernet	East Coast Yeast Senne Valley	Fren		
	50 Disadulations	1	11/21/19	4/22/20	Weaponized Nonsense	Buffalo Trace	Northeast Barrel Co.	Bourbon	S-04	53 gallons Ame		
	45 Golden Strong #2	2	8/10/20			?	Northeast Barrel Co.	Cabernet	58W3 + Marylambic #4	Fren		

Barrels 👻 Blends 👻

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Explore

BETWEEN BATCHES

- Ideally: Refill immediately
- Rinse (or not)
- Purge with CO₂
- Steam/Ozone
- Holding Solution
 - 0.25 oz/gal (2 g/L) of potassium metabisulfite
 - 0.15 oz/gal (1 g/L) of citric acid

SULFURING A BARREL

- Never in a Fresh Spirit Barrel
- Reduces oxygen and creates SO₂
- Equipment
 - Sulfur burner
 - Sulfur wick
 - Fire
- Potential off-flavors?

LEAK REPAIR GEAR

- Barrel wax (gate tallow)
- Beeswax
- Awl
 - Spile
- Chisel
 - Wedge

ESSENTIAL TOOLS

- Cooper's hoop hammer (small sledge)
- Rubber/plastic mallet
- Hoop driver
- Head puller
- Head hammer



COMPLIANCE

• As accurate as it is specific:

Ale Aged in Oak Barrels

Vs

• Ale Aged in Bourbon Barrels for 2 Years

RESOURCES

- Wood & Beer: A Brewer's Guide
- American Sour Beers
- <u>http://barrelbuilders.com/</u>
- <u>http://www.mcmaster.com/</u>