BREWSHEET v3.4 (2014-12-14)

user input
calculated

Brew			
Name:	Smoke Your Ass		
Brew Date:	2015 April 18	Collected (gal):	10.00
Rack Date:		Racked (gal):	
Keg/Bottle Date:	2015 May 30	Kegged/Bottled (gal):	10.00

Estimated		Actual	
ABV (%):	4.6%	ABV (%):	4.3%
OG (SG):	1.050	OG (SG):	1.051
FG (SG):	1.015	FG (SG):	1.018
IBU:	21.2	IBU:	23.1
SRM:	23.3	SRM:	24.9
IBU/Gravity Ratio:	0.42	IBU/Gravity Ratio:	0.45

Grain	Pounds	Potential	SG Share	Color	% Bill
Rauch malt	13.50	1.037	0.032	4.0	61.36%
Munich Malt 10L	4.00	1.035	0.009	10.0	18.18%
Vienna Malt	1.75	1.036	0.004	3.5	7.95%
Caramel/Crystal 60L	1.75	1.034	0.004	60.0	7.95%
German carafa	1.00	1.030	0.002	400.0	4.55%

Hop	Type	Ounces	Boil Time	Alpha %	IBU	% Bill
Hallertauer (GR)	P	5.00	60	2.7%	21.2	100.00%

Design Notes

Pitch dry yeast in 10x its weight of sterile water at ~70F.
Let sit for ~15 min; then put on stir plate for ~30 min.
Ferment at 52F until 70% fermentation done.
Increase temp to 64F by 5F every 12 hours until fermentation is done.
Reduce temp to 32F by 5F every 12 hours; keep at 32F for 3 days before kegging and lagering.

Batch Variables and Calculations	
Batch Size (gal):	11.00
Grain Temperature (F):	74
Total Grain Weight (lbs):	22.00
Mash	
Mash Time (min):	60
Desired Mash Temperature (F):	154
Strike Water (gal):	9.50
Strike Temperature (F):	170
Mash Ratio (qts/lb):	1.73
Grain Absorption (gal):	2.75
Mash Volume (gal):	11.26
Mash-out Temperature (F):	168
Estimated First Runnings (gal):	6.61
First Runnings (gal):	6.70
First Runnings Gravity (Brix):	17.50
First Runnings Gravity (SG):	1.068
Sparge	
Desired Sparge Temperature (F):	168
Sparge Water (gal):	6.14
Sparge Water Temperature (F):	172
Estimated Second Runnings (gal):	6.61
Second Runnings (gal):	6.55
Second Runnings Gravity (Brix):	7.50
Second Runnings Gravity (SG):	1.029
Estimated Preboil Volume (gal):	13.22
Estimated Preboil Gravity (Brix):	12.56
Preboil Volume (gal):	13.25
Preboil Gravity (Brix):	11.20
Preboil Gravity (SG):	1.043
Extraction Efficiency (%):	73%
Boil	
Boil Time (min):	60
Estimated Evaporation Loss (gal):	1.05
Hop Absorption (gal):	0.13
Volume Left in Kettle (gal):	0.00
Actual Evaporation Rate (gal/hr):	2.13
Actual Evaporation Loss (gal):	2.13
Original Gravity (Brix):	13.15
Batch Size Efficiency (%):	71%
Actual Efficiency (%):	64%
Fermentation	
Primary Fermentation (days):	14
Primary Fermentation Temperature (F):	52
Gravity After Primary Fermentation (SG):	
Temperature of Reading (F):	
Corrected SG:	
Secondary Fermentation (days):	3
Secondary Fermentation Temperature (F):	64
Gravity After Secondary Fermentation (SG):	
Temperature of Reading (F):	
Corrected SG:	
Tertiary Fermentation (days):	30
Tertiary Fermentation Temperature (F):	32
Final Gravity (SG):	1.018
Temperature of Reading (F):	39
Corrected SG:	1.019
Target Fermentation for Diacetyl Rest (%):	70%
Target Gravity for Diacetyl Rest (SG):	1.026
Calories per Pint:	172
12 oz. Bottles Required:	102
Carbonation	
Bottling Temperature (F):	
Volumes of CO2:	2.40
Priming Sugar (oz):	
DME (oz):	
Forced Carbonation (lbs):	

System Variables	
Brewhouse Efficiency (%):	70%
Volume in Hoses (gal):	0.22
Volume in Wort Chiller (gal):	0.19
Volume in HERMS Coil (gal):	0.25
Mash/Lauter Tun Deadspace (gal):	0.14
Strike to Sparge Volume Ratio (%):	50%
Trub Loss (gal):	0.16
FWH IBU Factor (%):	10%
Strike Temperature Factor (F):	7
Sparge Temperature Factor (F):	4
Estimated Evaporation Rate (gal/hr):	1.05
Leaf Hop Absorption Ratio (qts/oz):	0.40
Pellet Hop Absorption Ratio (qts/ oz):	0.10
Cooling Losses (%):	4%
Hydrometer Correction (SG):	0.001

BJCP Style Guidelines	
Style:	Classic Rauchbier
Code:	22A
OG:	1.050-1.057
FG:	1.012-1.016
IBU:	20.0-30.0
SRM:	12.0-22.0
ABV:	4.8-6.0%
CO2:	2.2-2.6

Yeast Strain	
Yeast Strain:	Fermentis Saflager S-23 (Dry Lager)
Type:	Dry Lager
Attenuation (%):	65-75%
Actual Attenuation (%):	65%
Fermentation Temp (F):	48-59F
Flocculation:	high

Required Amounts	
Cell Count (billions):	776
Vials (White Labs/Wyeast):	
Dry Yeast (g):	38.9
Yeast Starter/Slurry	
Vials (White Labs/Wyeast):	
Date Yeast Produced:	
Yeast Viability (%):	
Yeast Growth Rate:	
Yeast Innoculation Rate (million/ml):	
Starter Volume Required (ml);	
DME Required (oz):	
Yeast slurry concentration (billion/ml):	2.5
Non-yeast Percentage (%):	20%
Yeast Slurry Required (ml):	

User Variables

Brewing Notes

4/18: mash started at 148.5F; went up to 156F in ~5 mins; down to 154F ~5 mins after that.
12.45 brix (1.048 SG) after 30 mins of the boil.
Planned the following:
A yeast packet is 11.5g = 0.41oz; 10x its weight in water is 4.1oz * 2 = 8.2oz.
Boil 8.25oz water for ~5 mins then let cool to ~70F.
Pitch at the beginning of the boil; let sit for 15min; then on stir plate until ready to pitch
But ended up just sprinkling one packet per fermenter.
4/21: first batch: 1.031 SG; second: 1.035 SG; check again in 12 hours.
Aroma is slight diacetyl with nice smoke; same with flavor.
4/23: increased temp to 57F.
4/26: increased temp to 62F.
4/27: increased temp to 64F; 12 hours later, 1.015 SG for both batches; aroma is smoke and malt with no hint of diacetyl; flavor is smoke, malt, and slight roast and a hint of sweetness (perception). No noticeable diacetyl in the flavor; good finish of smoke and roast. Plan to start reducing temps to cold crash temp in 12-24 hours.
5/1: started reducing temps at 5F per 12 hours – to 32F (for at least 3 days).
5/30: kegged.
First batch is 1.020 FG (4.1% ABV); aroma is crisp, clean, malty, and smoky; flavor is smoky with hints of roast, and for 1.020 is actually quite dry and pleasant.

Second batch is 1.016 FG (4.6% ABV); aroma and flavor profile is the same as the first batch, but perhaps a bit cleaner and more crisp.
Average FG is 1.018 (4.3% ABV).

Batch Scaling				
Desired OG:	1.050	Total Weight (lbs):		21.84
Batch Size (gal):	11.00	Total Bill:		100.00%
Brewhouse Efficiency (%):	70%			
Grain	**Pounds**	**Potential**	**Color**	**% Bill**
Rauch malt	13.32	1.037	4.0	61.00%
Munich Malt 10L	3.93	1.035	10.0	18.00%
Vienna Malt	1.75	1.036	3.5	8.00%
Caramel/Crystal 60L	1.75	1.034	60.0	8.00%
German carafa	1.09	1.030	400.0	5.00%

Poundage		
Goal (lbs):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
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Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Needed (lbs | oz.f_oz):		

Hydrometer Correction		
SG:	1.049	
Temperature (F):	68	
Corrected SG:	1.051	

Gravity Calculator			
Brix:	12.45	13.15	
Specific Gravity:	1.048	1.051	
Degrees Plato:	11.94	12.57	

Brix Ethanol Correction	
Original Brix:	
Current Brix:	
SG:	