BREWSHEET v1.0 (2010-02-26)

Batch			
Brew Name:	Modus Hoperandi Clone		
Estimated OG:	1.068	Actual OG:	1.061
Estimated FG:	1.016	Actual FG:	1.012
Estimated IBU:	93.0	Actual IBU:	82.9
Estimated SRM:	12.1	Actual SRM:	10.7
Brew Date:	05/26/10	Collected (gal):	6.50
Rack Date:	06/07/10	Racked (gal):	5.60
Bottle Date:	06/15/10	Bottled (gal):	4.90

BJCP Style Guideline	
Style:	American IPA
Code:	14B
OG:	1.056-1.075
FG:	1.010-1.018
IBU:	40.0-70.0
SRM:	6.0-15.0
ABV:	5.5-7.5%
CO2:	1.5-2.3

Efficiency	
Brewhouse Efficiency:	72%
Efficiency (on Batch Size):	64%
Efficiency into Boiler:	99%
Efficiency into Fermenter:	77%

Grain	Pounds	Potential	Color	% Bill
Pale Malt (2-Row) US	12.75	1.036	2.0	87.93%
Caramel/Crystal 90L	1.00	1.034	90.0	6.90%
Red Wheat	0.75	1.039	1.5	5.17%

Hop	Alpha %	Ounces	Boil Time	IBU
Centennial	9.2%	1.75	90	45.9
Cascade	7.5%	1.25	30	19.2
Centennial	9.2%	0.75	30	14.1
Cascade	7.5%	1.25	5	5.0
Columbus	13.2%	1.25	5	8.8
Cascade	7.5%	2.00	0	0.0
Columbus	13.2%	1.00	0	0.0
Cascade	5.4%	3.00	dry	0.0
Columbus	13.2%	1.50	dry	0.0

Gravity		Collections	
Potential OG:	1.095	First Runnings (gal):	5.75
OG:	1.059	SG of First Runnings:	1.050
OG Temperature (F):	76	SG Temperature (F):	144
Corrected OG:	1.061	Corrected SG:	1.067
SG at Racking:	1.015	Second Runnings (gal):	4.50
SG Temperature (F):	71	SG of Second Runnings:	1.015
Corrected SG:	1.016	SG Temperature (F):	151
FG:	1.010	Corrected SG:	1.034
FG Temperature (F):	74	Preboil Volume (gal):	10.25
Corrected FG:	1.012	SG of Preboil Volume:	1.027
Potential ABV:	9.0%	SG Temperature (F):	164
Actual ABV:	6.5%	Corrected SG:	1.050

Brewing			
Batch Size (gal):	5.50	Desired Sparge Temperature (F):	168
Total Grain Weight (lbs):	14.50	Sparge Water (gal):	4.44
Grain Temperature (F):	77	Sparge Water Temperature (F):	186
Mash Ratio (qts/lb):	1.25	Estimated Preboil Volume (gal):	9.04
Mash/Lauter Deadspace (gal):	0.25	Boil Time (min):	90
Total Water Needed (gal):	11.10	Evaporation Rate (%):	18%
Desired Mash Temperature (F):	151	Estimated Evaporation Loss (gal):	2.44
Strike Water (gal):	4.53	Trub Loss (gal):	1.10
Strike Temperature (F):	165	Volume Left in Kettle (gal):	0.10
Grain Absorption (gal):	1.81	Actual Evaporation Rate (%):	17%
Mash-out Temperature (F):	151	Actual Evaporation Loss (gal):	2.55
Mash-out Water (gal):	2.13		
Estimated First Runnings (gal):	4.60		

Yeast Strain	
Yeast Strain:	White Labs WLP001
Type:	California Ale
Attenuation:	73-80%
Fermentation Temp:	68-73F
Flocculation:	medium

Yeast Required	
Cell Count (billions):	259
Vials (White Labs/Wyeast):	2.2
Dry Yeast (g):	13
Starter Volume (mL):	3000
DME Required (oz)	10.50
Vials Required (w/ Starter):	1.1

User Variables	
Calories per Pint:	200
12 oz. Bottles Required:	51.2
DME for Carbonation (oz.):	3.92
Estimated Preboil SG:	1.053
Actual Attenuation (%):	80.81%
Bottle Top Code:	M

Carbonation	
CO2 Volume:	1.90
Bottling Temperature (F):	70
Priming Sugar (oz):	2.80
Forced Carbonation (lbs):	19.2

Inventory	
Bottles Remaining:	48
Gallons Remaining:	4.50
Date Checked:	06/15/10

Diacetyl Rest	
Target Fermentation Completion:	75%
Target SG for Diacetyl Rest:	1.026

BREW DAY

Single Infusion Mash (with Mash-out) and Batch Sparge Brew Schedule

Heat 4.53 gallons of mash water to 165F
Add grain and mash at 151F for 60 minutes
At T-40 to mash-out, heat 2.13 gallons of mash-out water on the stove to 210F
At T-25 to mash-out, heat 4.44 gallons of sparge water in the kettle to 186F
Mash-out with 2.13 gallons, mix and hold for 10 minutes
Vorlauf and collect first runnings (approx. 4.6 gallons)
Add 4.44 gallons to lauter tun, mix, hold for 10 minutes, and sparge
Vorlauf and collect second runnings (approx. 4.44 gallons)
Boil for a total of 90 minutes with the following hop schedule:
- 1.75 oz. Centennial @90 minute(s)
- 1.25 oz. Cascade @30 minute(s)
- 0.75 oz. Centennial @30 minute(s)
- 1.25 oz. Cascade @5 minute(s)
- 1.25 oz. Columbus @5 minute(s)
- 2 oz. Cascade @0 minute(s)
- 1 oz. Columbus @0 minute(s)

Notes

ABV: 6.8%; IBU: 65; SRM: 7
Larger 1st collection probably due to humidity and less grain absorption.
First time cooling the starter to let the yeast settle and decanting.
Low OG due to less evaporation and increased volume.
Should have boiled for 15 minutes or so prior to 90 minute hop addition.
But this puts the IBUs in a closer range to the real Modus Hoperandi.
Gave 1 gal to a friend; will dry hop with 0.5 oz Cascade and 0.25 oz Columbus.