

BREWSHEET v2.0 (2010-06-17)

| Batch | | | |
|------------------|------------------|--------------------|-------|
| Brew Name: | Harpoon IPA v2.0 | | |
| Bottle Top Code: | H | Calories per Pint: | 204 |
| Estimated OG: | 1.061 | Actual OG: | 1.061 |
| Estimated FG: | 1.014 | Actual FG: | 1.016 |
| Estimated IBU: | 46 | Actual IBU: | 45 |
| Estimated SRM: | 8 | Actual SRM: | 8 |
| Brew Date: | 06/10/10 | Collected (gal): | 5.75 |
| Rack Date: | 06/25/10 | Racked (gal): | 5.00 |
| Bottle Date: | 07/03/10 | Bottled (gal): | 4.75 |

| BJCP Style Guidelines | |
|-----------------------|--------------|
| 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 |

| Inventory | |
|---------------|----------|
| Bottles: | 49 |
| Gallons: | 4.59 |
| Date Checked: | 07/03/10 |

| Efficiency | |
|-----------------|-----|
| Brewhouse: | 72% |
| Batch Size: | 72% |
| Into Boiler: | 86% |
| Into Fermenter: | 74% |

| Yeast Strain | |
|-------------------------|-------------------|
| Yeast Strain: | White Labs WLP001 |
| Type: | California Ale |
| Attenuation (%): | 73-80% |
| Actual Attenuation (%): | 74% |
| Fermentation Temp (F): | 68-73F |
| Flocculation: | medium |

| Summary | |
|---|--|
| Harpoon IPA v2.0 | |
| ----- | |
| Batch Size: 5.50 gal (7.78 gal preboil) | |
| Estimated OG: 1.061 SG | |
| Estimated FG: 1.014 SG | |
| Estimated IBUs: 46 | |
| Estimated Color: 8 SRM | |
| Brewhouse Efficiency: 72% | |
| Boil Time: 70 minutes | |

| Grain | Pounds | Potential | SG Share | Color | % Bill |
|----------------------|--------|-----------|----------|-------|--------|
| Pale Malt (2-Row) US | 12.00 | 1.036 | 0.057 | 2.0 | 92.31% |
| Caramel/Crystal 60L | 0.50 | 1.034 | 0.002 | 60.0 | 3.85% |
| Victory Malt | 0.50 | 1.034 | 0.002 | 25.0 | 3.85% |

| Brewing | | | |
|-------------------------------|-------|-----------------------------------|-------|
| Batch Size (gal): | 5.50 | Estimated First Runnings (gal): | 4.21 |
| Total Grain Weight (lbs): | 13.00 | Desired Sparge Temperature (F): | 168 |
| Grain Temperature (F): | 81 | Sparge Water (gal): | 3.57 |
| Mash Rate (qts/lb): | 1.25 | Sparge Water Temperature (F): | 181 |
| Mash/Lauter Deadspace (gal): | 0.25 | Estimated Preboil Volume (gal): | 7.78 |
| Total Water Needed (gal): | 9.66 | Boil Time (min): | 70 |
| Desired Mash Temperature (F): | 151 | Evaporation Rate (%): | 13% |
| Strike Water (gal): | 4.06 | Estimated Evaporation Loss (gal): | 1.16 |
| Strike Temperature (F): | 165 | Trub Loss (gal): | 1.10 |
| Grain Absorption (gal): | 1.63 | Volume Left in Kettle (gal): | -0.15 |
| Mash-out Temperature (F): | 150 | Actual Evaporation Rate (%): | 12% |
| Mash-out Water (gal): | 2.02 | Actual Evaporation Loss (gal): | 1.10 |

| Hop | Alpha % | Ounces | Boil Time | IBU | % Bill |
|-------------|---------|--------|-----------|------|--------|
| Cluster | 5.0% | 2.50 | 60 | 35.6 | 37.04% |
| Fuggie (US) | 5.1% | 0.50 | 15 | 3.6 | 7.41% |
| Cascade | 5.4% | 0.50 | 15 | 3.8 | 7.41% |
| Fuggie (US) | 5.1% | 1.00 | 2 | 1.2 | 14.81% |
| Cascade | 5.4% | 1.00 | 2 | 1.3 | 14.81% |
| Fuggie (US) | 5.1% | 0.50 | dry | 0.0 | 7.41% |
| Cascade | 5.4% | 0.75 | dry | 0.0 | 11.11% |

| Gravity | | Collections | |
|-----------------------|-------|------------------------|-------|
| Potential OG: | 1.085 | First Runnings (gal): | 4.25 |
| OG: | 1.059 | SG of First Runnings: | 1.050 |
| OG Temperature (F): | 79 | SG Temperature (F): | 146 |
| Corrected OG: | 1.061 | Corrected SG: | 1.068 |
| SG at Racking: | 1.016 | Second Runnings (gal): | 3.45 |
| SG Temperature (F): | 70 | SG of Second Runnings: | 1.016 |
| Corrected SG: | 1.017 | SG Temperature (F): | 150 |
| FG: | 1.014 | Corrected SG: | 1.035 |
| FG Temperature (F): | 75 | Estimated Preboil SG: | 1.053 |
| Corrected FG: | 1.016 | Preboil Volume (gal): | 7.80 |
| Potential ABV (%): | 8.0% | SG of Preboil Volume: | 1.033 |
| Actual ABV (%): | 6.0% | SG Temperature (F): | 149 |
| IBU to Gravity Ratio: | 0.73 | Corrected SG: | 1.052 |

| Diacetyl Rest | | Carbonation | |
|---------------------------------------|--------|---------------------------|------|
| Target Fermentation Completion: | 75% | CO2 Volume: | 2.00 |
| Target SG for Diacetyl Rest: | 1.026 | Bottling Temperature (F): | 72 |
| | | Priming Sugar (oz): | 3.03 |
| | | DME (oz): | 4.24 |
| CO2 Released During Fermentation (g): | 978.93 | Forced Carbonation (lbs): | 21.8 |

| Yeast Amounts | |
|------------------------------|------|
| Cell Count (billions): | 233 |
| Vials (White Labs/Wyeast): | 2.0 |
| Dry Yeast (g): | 12 |
| Starter Volume (mL): | 2500 |
| DME Required (oz): | 8.75 |
| Vials Required (w/ Starter): | 1.1 |

| ON BREW DAY | |
|---|--|
| Heat 4.06 gallons of strike water to 165F | |
| Add grain and mash at 151F for 60 minutes | |
| Mash-out with 2.02 gallons at 210F, mix and hold for 10 minutes | |
| Vorlauf and collect first runnings (approx. 4.21 gallons) | |
| Add 3.57 gallons at 181F to lautur tun and sparge | |
| Vorlauf and collect second runnings (approx. 3.57 gallons) | |
| Boil for a total of 70 minutes with the following hop schedule: | |
| 2.50 oz Cluster @60 minute(s) | |
| 0.50 oz Fuggie (US) @15 minute(s) | |
| 0.50 oz Cascade @15 minute(s) | |
| 1 oz Fuggie (US) @2 minute(s) | |
| 1 oz Cascade @2 minute(s) | |

| Grains: | |
|--------------------------------------|--|
| 12.00# Pale Malt (2-Row) US (92.31%) | |
| 0.50# Caramel/Crystal 60L (3.85%) | |
| 0.50# Victory Malt (3.85%) | |

| Hops: | |
|--------------------------------------|--|
| 2.50 oz Cluster (5.0%) @60 min | |
| 0.50 oz Fuggie (US) (5.1%) @15 min | |
| 0.50 oz Cascade (5.4%) @15 min | |
| 1.00 oz Fuggie (US) (5.1%) @2 min | |
| 1.00 oz Cascade (5.4%) @2 min | |
| 0.50 oz Fuggie (US) (5.1%) (dry hop) | |
| 0.75 oz Cascade (5.4%) (dry hop) | |

| Notes | |
|---|--|
| Used yeast harvested from Hopfully IPA v2.0. | 7/24: first bottle sample; slight hop aroma and flavor, nice bitterness. |
| 48 hours on stir plate and about 6 days at 31F. | Dry hop had some effect, but not much. |
| Used tap water; we'll see... | This brew may be like v1.0 after a few months in the bottle, which is fine. |
| 75 minute boil for good 15 minute hot break prior to adding hops. | Nice malt aroma and flavor that subsides when the bitterness kicks in. |
| Actually did a 70 minute boil after collections done. | So it might be better to have 35-40 IBUs next time to provide a little more emphasis on maltiness. |
| Next time, collect 5.5 gal no matter what. | Next time, try dry hopping with 1.5 oz. Cascade only. |
| Amount racked is using accurate volume measurements in secondary. | Maybe try increasing Victory and crystal malts to 5% and keep bitterness at ~40 IBUs. |
| | I prefer the flavor of Victory malt to crystal malts. |

| Extra Variables | |
|--------------------------|----|
| 12 oz. Bottles Required: | 49 |

| Yeast: | |
|------------------------------------|--|
| White Labs WLP001 (California Ale) | |

| Mash/Sparge Schedule: | |
|--|--|
| Single Infusion, 151F; Batch Sparge | |
| Mash for 60 min at 151F w/ 4.06 gal of water at 165F | |
| Mashout w/ 2.02 gal of water at 210F; hold for 10 min | |
| Batch sparge w/ 3.57 gal of water at 181F; hold for 10 min | |