Recipe :

Anti-Hero (American IPA - Midwest)

(5 gallons (Finished Beer) / 19 L - All Grain

Specs :

O.G. = 16 P or 1.065
T.G. = 3.7 P or 1.014
ABV% = 6.7 %
IBUs = 60
Color = 7 SRM

Ingredients :

Malt :

10 lbs. (4.5 kg.) Rahr Pale Ale Malt (3.5 Lov)
2 lbs. (.91 kg.) Weyermann Munich Light (6-7 Lov)
10 oz. (283 g) Briess Carapils (1.7 Lov)
9 oz. (255 g) Rahr Red Wheat Malt (3.3 Lov)
2 oz. (57 g) Simpsons Naked Golden Oats (6 Lov)

Water Treatment (For Mashing) :

Lake Michigan Water. For Reference (See Chicago Water Profile)
Carbon Filtration
Food Grade Gypsum (.24 oz. / 6.8 g)
Calcium Chloride (.24 oz. / 6.8 g)

Hops :

Apollo Hop Pellets (80 min.)[At Boil Start](.5 oz. / 14 g at 17 % Alpha Acid)
Centennial Hop Pellets (30 min.)(.7 oz. / 20 g) at 13.1% Alpha Acid)
Cascade Hop Pellets (10 min.)(1 oz. / 28 g) at 6% Alpha Acid
Centennial Hop Pellets (Whirlpool)(1 oz. / 28 g) at 13.1% Alpha Acid
Chinook Hop Pellets (Whirlpool)(1 oz. / 28 g) at 11.4% Alpha Acid

Dry Hop :

Centennial Hop Pellets (2 oz. / 57 g)

Cascade Hop Pellets (.5 oz. / 14 g)
Chinook Hop Pellets (.5 oz. / 14 g)
Citra Hop Pellets (.5 oz. / 14 g)
Crystal Hop Pellets (.5 oz. / 14 g)

Yeast :

Wyeast 1968 - London ESB ALE

Finings :

Gusmer Kick (Carrageenan) or Whirlfloc G [Kettle Finings] : .09 oz. / 2.6 g
Nalco or Boifine Clear (Silica based fining agent in liquid form) : 1 fluid oz. (30 ml.)

Anti Foam :

Fermcap S

Used in the Brew Kettle to avoid Boil Overs! (.21 fluid oz. / 6.2 ml.)
Used in the fermentation vessel to prevent foaming. (.17 fluid oz. / 5 ml.)

Note : Reducing foaming all throughout the process in the brewhouse to package will help the foam stability of your finished product!

Mashing :

Pre-Heat Mash / Lauter Tun prior to mashing in.
We will perform a Single Infusion mash at a ratio of (3:1) so for every 3 lbs (1.4 kg) of malt we need 1 gallon (3.785 L) of Hot Water (Liquor).
Add 4.3 gall (16.2 L) of Hot Liquor at 163 F (73.3 C) to the Mash / Lauter Tun and stir in the Gypsum and Calcium Chloride.
Immediately mash in grains targeting a temperature of 153 F (67.2 C).
Rest at 153 F (67.2 C) for 40 min.

Lautering Procedure :

Vorlauf or recirculate wort for 10 min to clarify before running to brew kettle.
Take a sample to confirm starch conversion is complete.
Collect first runnings in the Brewkettle (Take a 1st Wort Gravity and pH).

When the grain bed is beginning to become exposed start sparging 170 F (77 C) with Hot Liquor.
Begin heating wort in the kettle to avoid a long delay coming up to boil.
While sparging try to maintain a constant ¼ inch of clear hot water above your grain bed.
Fill your kettle to 7 gallons (26.5 L) of wort cutting your sparge at about 6 gallons (in Kettle) (23 L) to allow sparge water to pull through the grain bed.
Collect a Last Wort Gravity and pH.

Tip : Don't run off your wort too quickly! Overly fast runoffs can lead to a reduction of lauter efficiency and you can come up short on your desired O.G. Depending on your grain bill they can also cause a stuck runoff or pull grain into the Brewkettle.

Kettle Program :

Note : Realistically for most of us brewing at home the Brew Kettle acts as a combination Kettle and Whirlpool.

At Kettle Full Volume Add : Fermcap S (Anti-foam) .21 fluid oz. (6.2 ml)
When you have a good rolling boil collect a Kettle Full Gravity and pH.
Add Apollo Hop Pellets (80 min)[At Boil Start](.5 oz. / 14 g at 17% Alpha Acid)
At 30 min from Boil End add Centennial Hop Pellets (.5 oz. / 14 g at 13.1% Alpha Acid)
At 10 min from Boil End add Cascade Hop Pellets (1 oz. / 28 g at 6% Alpha Acid)
At 10 min from Boil End add Kettle Finings (Kick Carrageenan) Granulated : (.09 oz. / 2.6 g)

Note : At this point it is good to take another wort sample to see where you are with your gravity in case you might need to boost it with some liquid malt extract (LME) or dextrose. If you are running high you can make a hot liquor addition to bring your gravity down.

Tip : During your 80 min boil this is a great time to make sure that your fermentation vessel is cleaned and sanitized. Pitch your slurry of Wyeast 1968 London ESB Ale as close to your transfer of wort to the fermentation tank as possible. At Revolution for brewing Anti-Hero we target a pitch rate of 1 mill cells / milliliter / Degree Plato! It is very helpful to have a healthy active yeast pitch going into fermentation and a yeast propagation before brewing this beer can be extremely beneficial! Also, this is where you want to add your 2nd addition of Fermcap S of (.17 fluid oz. / 5 ml) in right before cooling wort into the fermenter.

Whirlpool Program :

At Boil End :

Add Chinook Hop Pellets (Whirlpool)(1 oz. / 28 g at 12% Alpha Acid)
Add Centennial Hop Pellets (Whirlpool)(1 oz / 28 g at 13.1% Alpha Acid)

Use a spoon or paddle to get your wort spinning and break up all of your hop pellets.
Once you are done stirring your wort, start a 20 minute timer.
During this 20 min rest while you are allowing your trub pile to form heat sanitize your wort line from your Brewkettle / Whirlpool through your heat exchanger & aeration unit all the way to the fermentation tank if possible.
Take a sample of wort from your Brewkettle / Whirlpool (This is your O.G.) and record starting gravity and pH.

Wort Transfer :

After your 20 min rest begin cool-in of wort through your heat exchanger to the fermentation tank targeting 66 F (19 C).
If you have an oxygen tank and regulator we target our oxygen flow rate at 8 L / min during the entire transfer of wort to the fermentation tank.
Transfer as much clean wort away from your trub pile as possible to maximize the volume you are sending to the fermentation tank.
Set the Fermentation tank to 68 F (20 C) if you have the capability to regulate temperature.
Set up a blowoff hose that is submerged in water with a splash of iodine to allow CO2 to vent during primary fermentation.

Fermentation :

Day 1-3 : Monitor fermentation temperature and gravity over the first 3 days trying to maintain as close to 68 F (20 C) as possible.

Day 4 : Check gravity. If it is .5 - 1 P (1.002 - 1.004) above Terminal Gravity, harvest or dump thick yeast that has settled to the bottom of the fermenting vessel or rack to another carboy and add your Dry Hop Blend (Listed Above). This is also the time we want to raise the temperature to 70 F (21 C) to begin the diacetyl rest.

Note : It is important to dryhop when there is still fermentation activity to help break up the hop pellets and interact with the yeast and extract the cleanest aromatics from your hops as possible.

Day 5-8 : Monitor fermentation temperature and gravity.

Day 8 : Monitor temperature, confirm that you have a stable T.G. (Terminal Gravity) and check for VDK to confirm no diacetyl is detected. (Heat Test will most likely apply for at home testing).

Dump thick yeast / hops that have settled to the bottom of your fermenter or rack to another carboy. Set temperature to 32 F (0 C) to further drop yeast and hop matter.

Day 10 : Dump solid yeast / hop matter. When you are at 32 F or as close to it as possible, add 1 fluid oz. (30 ml.) of Nalco (finings) and gently CO2 rouse your tank from the bottom (optimally if you have a conical tank) to ensure good mixing. After fining your beer it should take a few days to see a major improvement in clarity.

Day 12 : Dump thick yeast / hops and transfer your clear beer to a cornelius keg that has been cleaned, sanitized and CO2 purged and keep the temperature at or as close to 32 F (0 C) as possible. Keep constant CO2 pressure on the headspace of the corny (8-10 psi) to gently force carbonate up to 2.5 - 2.6 volumes of CO2 for serving via draft or bottling!

Tips For Success :

As in brewing or bread making, the health and viability of your yeast strain is extremely important for the quality of your finished beer!
You will have to overshoot your IBU calculation on paper to achieve a reading of 60 in your finished beer. You will have to know based on your process how much to overshoot to compensate for the loss during fermentation, yeast dumping, dry hopping and packaging.
Dry Hop at the correct time .5 - 1 P (1.002 - 1.004) above terminal gravity and at 70 F (21.1 C) to get the cleanest, citrus and pine aromatics.
Try to use unopened bags of the varieties for your dryhop. Partial bags or previously opened bags of hops are better suited for brewhouse additions.
Removing yeast / hops 3-4 days after the initial dryhop is crucial to retain the clean hop aromatics so the yeast doesn't autolyze and the vegetal hop matter doesn't begin to break down.
Keeping CO2 pressure in the headspace of your beer when the fermentation and dryhop are complete will help preserve hop aromatics which is important here. Gently carbonating your beer to prevent foaming will also aid in your foam stability and let those hop aromatics you worked so hard to extract shine in your finished beer!

Cheers and Happy Brewing!!

Jim Cibak