Color, SRM Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	1/31 German Pilsener Malt Munich 10°L Malt Crystal 40°L Malt Cara-Pils Malt Flaked Barley	3.0 gallons 2.8 gallons 5 lbs 6 oz 2 oz 1.5 lbs 4 oz 5 5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	2.8 American Two-Row Malt Flaked Maize Flaked Barley 10 r 1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	4 oz 2.5 2.5 minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	2.8 British Pale Malt Crystal 60°L Malt Chocolate Malt Peated Malt Flaked Barley 10 1 2.38 13 20 1 0.50 14 105 1 1.0 152°-156° (154° a 2.67	3 gallons 9 lbs 1 lb 4 oz 4 oz 4 oz 4 oz 19.6 45 minutes gallons 6°-138° minutes gallons 2°-141° minutes gallons yerage) 168° gallons minutes gallons
Bottling Date Primary Fermenter Secondary Fermenter Malt Color, SRM Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Sparge Water, gallons Bolling Time Boiling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	1/31 German Pilsener Malt Munich 10°L Malt Crystal 40°L Malt Cara-Pils Malt Flaked Barley 148°-156° (1 Saaz pellets (3.0%)	1/99 3.0 gallons 2.8 gallons 5 lbs 6 oz 2 oz 1.5 lbs 4 oz 5 5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	2/1/99 3.0 2.8 American Two-Row Malt Flaked Maize Flaked Barley 10 r 1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	gallons gallons 5 lbs 1 lb 4 oz 2.5 2.5 2.5 minutes gallons 6°-142° minutes gallons correspondences gallons gallons gallons gallons gallons gallons gallons	3/14/99 3.0 2.8 British Pale Malt Crystal 60°L Malt Chocolate Malt Peated Malt Flaked Barley 10 / 2.38 13 20 / 0.50 14 1.0 152°-156° (154° a 2.67 60 / 60 /	gallons gallons 9 lbs 1 lb 4 oz 4 oz 4 oz 4 oz 19.6 45 minutes gallons 2°-141° minutes gallons gallons gallons gallons gallons gallons gallons
Primary Fermenter Secondary Fermenter Malt Color, SRM Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops Finishing Hops Finishing Hops Vater/Treatment Original Gravity Maximum	German Pilsener Malt Munich 10°L Malt Crystal 40°L Malt Cara-Pils Malt Flaked Barley 148°-156° (1 Saaz pellets (3.0%)	3.0 gallons 2.8 gallons 5 lbs 6 oz 2 oz 1.5 lbs 4 oz 5 5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	3.0 2.8 American Two-Row Malt Flaked Maize Flaked Barley 10 r 1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	gallons 5 lbs 1 lb 4 oz 2.5 2.5 2.5 minutes gallons 6°-142° minutes gallons 6°-142° minutes gallons 6°-148° gallons gallons 6°-148° gallons gallons 6°-148°	3.0 2.8 British Pale Malt Crystal 60°L Malt Chocolate Malt Peated Malt Flaked Barley 10 1 2.38 13 20 1 0.50 14 1.0 152°-156° (154° a 2.67 60 1	gallons 9 lbs 1 lb 4 oz 4 oz 4 oz 19.6 45 minutes gallons 2°-141° minutes gallons 2°-141° minutes gallons sverage) 168° gallons
Secondary Fermenter Malt Malt Color, SRM Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops Finishing Hops Finishing Hops Bolling Treatment Original Gravity Maximum	German Pilsener Malt Munich 10°L Malt Crystal 40°L Malt Cara-Pils Malt Flaked Barley 148°-156° (1 Saaz pellets (3.0%)	2.8 gallons 5 lbs 6 oz 2 oz 1.5 lbs 4 oz 5 5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	2.8 American Two-Row Malt Flaked Maize Flaked Barley 10 r 1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	gallons 5 lbs 1 lb 4 oz 2.5 2.5 2.5 minutes gallons 6°-142° minutes gallons 6°-142° minutes gallons 6°-148° gallons gallons 6°-148° gallons gallons 6°-148°	2.8 British Pale Malt Crystal 60°L Malt Chocolate Malt Peated Malt Flaked Barley 10 1 2.38 13 20 1 0.50 14 1.0 152°-156° (154° a 2.67 60 1	gallons 9 ibs 1 ib 4 oz 4 oz 4 oz 19.6 45 minutes gallons 2°-141° minutes gallons verage) 168° gallons
Secondary Fermenter Malt Malt Color, SRM Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops Finishing Hops Finishing Hops Bolling Treatment Original Gravity Maximum	German Pilsener Malt Munich 10°L Malt Crystal 40°L Malt Cara-Pils Malt Flaked Barley 148°-156° (1 Saaz pellets (3.0%)	2.8 gallons 5 lbs 6 oz 2 oz 1.5 lbs 4 oz 5 5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	American Two-Row Malt Flaked Maize Flaked Barley 10 d 1.50 20 d 0.50 14 105 d 0.55 153°-157° (153° a 3.00 70 d Hallertauer pellets (3.9%)	5 lbs 1 lb 4 oz 2.5 2.5 2.5 minutes gallons 6°-142° minutes gallons 6°-142° minutes gallons defender gallons gallons server agalons server gallons for a for a	British Pale Malt Crystal 60°L Malt Chocolate Malt Peated Malt Flaked Barley 10 1 2.38 13 20 1 0.50 14 100 1 52°-156° (154° a 2.67 60 1	9 lbs 1 lb 4 oz 4 oz 4 oz 4 oz 19.6 45 minutes gallons 2°-141° minutes gallons 2°-141° minutes gallons
Malt Color, SRM Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Boiling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	German Pilsener Malt Munich 10°L Malt Crystal 40°L Malt Cara-Pils Malt Flaked Barley 148°-156° (1 Saaz pellets (3.0%)	5 lbs 6 oz 2 oz 1.5 lbs 4 oz 5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	American Two-Row Malt Flaked Maize Flaked Barley 10 d 1.50 20 d 0.50 14 105 d 0.55 153°-157° (153° a 3.00 70 d Hallertauer pellets (3.9%)	5 lbs 1 lb 4 oz 2.5 2.5 2.5 minutes gallons 6°-142° minutes gallons 6°-142° minutes gallons defender gallons gallons server agalons server gallons for a for a	Crystal 60°L Malt Chocolate Malt Peated Malt Flaked Barley 10 r 2.38 13 20 r 0.50 14 100 r 1.0 152°-156° (154° a 2.67 60 r	1 lb 4 oz 4 oz 4 oz 19.6 45 minutes gallons 2°-141° minutes gallons gallons gallons gallons gallons gallons gallons
Color, SRM Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	Munich 10°L Malt Crystal 40°L Malt Cara-Pils Malt Flaked Barley 148°-156° (1 Saaz pellets (3.0%)	6 oz 2 oz 1.5 lbs 4 oz 5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	Flaked Maize Flaked Barley 10 ( 1.50 20 ( 0.50 14 105 ( 0.75 153°-157° (153° a 3.00 70 ( Hallertauer pellets (3.9%)	1 lb 4 oz 2.5 2.5 minutes gallons 6°-142° minutes gallons 6°-142° minutes gallons yerage) 168° gallons minutes	Crystal 60°L Malt Chocolate Malt Peated Malt Flaked Barley 10 r 2.38 13 20 r 0.50 14 100 r 1.0 152°-156° (154° a 2.67 60 r	1 lb 4 oz 4 oz 4 oz 19.6 45 minutes gallons 2°-141° minutes gallons gallons gallons gallons gallons gallons gallons
Color, SRM Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	Crystal 40°L Malt Cara-Pils Malt Flaked Barley 148°-156° (1 Saaz pellets (3.0%)	2 oz 1.5 lbs 4 oz 5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	Flaked Barley 10 ( 1.50 20 ( 0.50 14 105 ( 0.75 153°-157° (153° a 3.00 70 ( Hallertauer pellets (3.9%)	4 oz 2.5 2.5 minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	Chocolate Malt Peated Malt Flaked Barley 10 1 2.38 13 20 1 0.50 14 100 152°-156° (154° a 2.67 60 1	4 oz 4 oz 4 oz 19.6 45 minutes gallons 2°-141° minutes gallons verage) 168° gallons minutes
Color, SRM Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	Cara-Pils Malt Flaked Barley 148°-156° (1 Saaz pellets (3.0%)	1.5 lbs 4 oz 5 5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	10 f 1.50 20 f 0.50 14 105 f 0.75 153°-157° (153° a 3.00 70 f Hallertauer pellets (3.9%)	2.5 2.5 gallons 138° ninutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	Peated Malt Flaked Barley 10 ( 2.38 13 20 ( 0.50 14 105 ( 1.0 152°-156° (154° a 2.67 60 (	4 oz 4 oz 19.6 45 gallons 6°-138° minutes gallons 2°-141° minutes gallons verage) 168° gallons minutes
Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	Flaked Barley 148°-156° (1 Saaz pellets (3.0%)	4 oz 5 5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	2.5 minutes gallons 138° minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	Flaked Barley 10 / 2.38 13 20 / 0.50 14 1.0 152°-156° (154° a 2.67 60 / 60 / 60 /	4 oz 19.6 45 minutes gallons 6°-138° minutes gallons gallons yerage) 168° gallons minutes gallons
Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	148°-156° (1 Saaz pellets (3.0%)	5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	2.5 minutes gallons 138° minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	10   2.38 13 20   0.50 14 105 152°-156° (154° a 2.67 60	19.6 45 gallons 6°-138° minutes gallons gallons gallons verage 168° gallons minutes
Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	148°-156° (1 Saaz pellets (3.0%)	5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	2.5 minutes gallons 138° minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	2.38 13 20   0.50 14 105   1.0 152°-156° (154° a 2.67 60	45 minutes gallons 6°-138° minutes gallons 2°-141° minutes gallons verage) 168° gallons minutes
Color, MCU Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	5 10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	2.5 minutes gallons 138° minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	2.38 13 20   0.50 14 105   1.0 152°-156° (154° a 2.67 60	45 minutes gallons 6°-138° minutes gallons 2°-141° minutes gallons verage) 168° gallons minutes
Actual Color, SRM First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	10 minutes 1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	minutes gallons 138° minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	2.38 13 20   0.50 14 105   1.0 152°-156° (154° a 2.67 60	minutes gallons 6°-138° minutes gallons gallons verage) 168° gallons minutes
First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	gallons 138° minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	2.38 13 20   0.50 14 105   1.0 152°-156° (154° a 2.67 60	gallons 6°-138° minutes gallons 2°-141° minutes gallons verage 168° gallons minutes
First Rest Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	gallons 138° minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	2.38 13 20   0.50 14 105   1.0 152°-156° (154° a 2.67 60	gallons 6°-138° minutes gallons 2°-141° minutes gallons verage) 168° gallons minutes
Water, gallons Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	1.63 gallons 134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	1.50 20 r 0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	gallons 138° minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	2.38 13 20   0.50 14 105   1.0 152°-156° (154° a 2.67 60	gallons 6°-138° minutes gallons 2°-141° minutes gallons verage) 168° gallons minutes
Temperature Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	134°-132° 20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	20 n 0.50 14 105 n 0.75 153°-157° (153° a 3.00 70 n Hallertauer pellets (3.9%)	138° minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	13 20   0.50 14 105   1.0 152°-156° (154° a 2.67 60	6°-138° minutes gallons 2°-141° minutes gallons verage) 168° gallons minutes
Second Rest Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	20 minutes 0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	minutes gallons 6°-142° minutes gallons verage) 168° gallons minutes	20 1 0.50 14 105 1 1.0 152°-156° (154° a 2.67 60 1	minutes gallons 2°-141° minutes gallons verage) 168° gallons minutes
Water, gallons Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops IBUS Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	0.50 gallons 142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	0.50 14 105 r 0.75 153°-157° (153° a 3.00 70 r Hallertauer pellets (3.9%)	gallons 6°-142° minutes gallons verage) 168° gallons minutes	0.50 14 105 ( 1.0 152°-156° (154° a 2.67 60 (	gallons 2°-141° minutes gallons verage) 168° gallons minutes
Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	14 105 n 0.75 153°-157° (153° a 3.00 70 n Hallertauer pellets (3.9%)	6°-142° minutes gallons verage) 168° gallons minutes	14 105 ( 1.0 152°-156° (154° a 2.67 60 (	2°-141° minutes gallons verage) 168° gallons minutes
Temperature Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	142°-138° 70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	14 105 n 0.75 153°-157° (153° a 3.00 70 n Hallertauer pellets (3.9%)	6°-142° minutes gallons verage) 168° gallons minutes	14 105 ( 1.0 152°-156° (154° a 2.67 60 (	2°-141° minutes gallons verage) 168° gallons minutes
Third Rest Water, gallons Temperature Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	70 minutes 0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	105 i 0.75 153°-157° (153° a 3.00 70 i Hallertauer pellets (3.9%)	minutes gallons verage) 168° gallons minutes	105   1.0 152°-156° (154° a 2.67 60	minutes gallons verage) 168° gallons minutes
Water, gallons Temperature Mashout Temperature Sparge Water, gallons Bolling Time Boiling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	0.75 gallons 53° average) 168° 3.25 gallons 60 minutes 2.25 oz	0.75 153°-157° (153° a 3.00 70 i Hallertauer pellets (3.9%)	gallons verage) 168° gallons minutes	1.0 152°-156° (154° a 2.67 60 I	gallons verage) 168° gallons minutes
Temperature Mashout Temperature Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	53° average) 168° 3.25 gallons 60 minutes 2.25 oz	153°-157° (153° a 3.00 70 i Hallertauer pellets (3.9%)	verage) 168° gallons minutes	152°-156° (154° a 2.67 60 i	verage) 168° gallons minutes
Mashout Temperature Sparge Water, gallons Boiling Time Boiling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	168° 3.25 gallons 60 minutes 2.25 oz	3.00 70 i Hallertauer pellets (3.9%)	168° gallons ninutes	2.67	168 gallons minutes
Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum		3.25 gallons 60 minutes 2.25 oz	70 i Hallertauer pellets (3.9%)	gallons minutes	60 (	gallons minutes
Sparge Water, gallons Bolling Time Bolling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum		60 minutes 2.25 oz	70 i Hallertauer pellets (3.9%)	minutes	60 (	minutes
Bolling Time Bolling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum		60 minutes 2.25 oz	70 i Hallertauer pellets (3.9%)	minutes	60 (	minutes
Boiling Hops Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum		2.25 oz	Hallertauer pellets (3.9%)			
Finishing Hops IBUs Yeast Water/Treatment Original Gravity Maximum		04231240-222		0.75 oz	Fuggle pellets (4.3%)	1.5 OZ
IBUs Yeast Water/Treatment Original Gravity Maximum	Saaz pellets (3.0%)	0.75 oz	Hallertauer pellets (3.9%)			
Yeast Water/Treatment Original Gravity Maximum				0.25 oz		24
Yeast Water/Treatment Original Gravity Maximum						
Water/Treatment Original Gravity Maximum		36		18		30
Original Gravity Maximum	White Labs German Pilsener (WLP800) (22 o starter)	1 vial oz	White Labs German Pilsener (WLP800) (22 oz starter)	1 vial	White Labs Irish Ale (WLP004) (22 oz starter)	1 vial
Maximum	5 gal DI, 1.13 gal tap		3 gal DI, 2.75 gal tap		all tap water	
Maximum	1 tsp Irish Moss		1 tsp Irish Moss		1 tsp Irish Moss	
	1	1.068		1.063		1.106
Target	(80% extract	tion) 1.054	(80% extraction)	1.050	(80% extraction)	1.085
Measured	(0070 070 070	1.053		1.059	· · · /	1.082
	1					
Primary Gravity		1.015		1.024		1.042
Ending Gravity		1.014	(1.015 after dilution)	1.018		1.036
Extract Efficiency, %	1	78%		94%		77%
Apparent Attenuation	1	74%		69%		56%
BU/GU	1	0.68		0.31		0.37
50/60			0			_
<u> </u>		wt% vol%		vol%	wt%	vol%
Potential Alcohol, %	4.1	09% 5.12%	4.30%	5.38%	4.83%	6.04%
Lock Installed	1/	7/99	1/16/99		2/12/99	
Secondary Fermenter	-0	0/99	1/19/99		2/12/99	
Priming Sugar, cups	Corn Sugar	1/2	Corn Sugar	1/2	Corn Sugar	1/3
	Som Sugar		Soni Sugai		Som Sugar	
Water, cups		2		2		2
Number of Bottles		29		34		27
Comments						
Brewing	Boiling hops added at Finishing hops at 10 mir	nutes (1/4 oz)	Boiling hops added at 60 mi Finishing hops at 10 minu		Hops added at 50 minut	es.
	and 2 minutes (1.					
Fermentation	Fermentation beginning	j at 24 hours.	Fermentation beginning at 24 Beer diluted with 1/2 gallon of at bottling.		Fermentation active at 17 h	iours.
Beer	Silver medal (first place Pilsners at 6th AFCHB AHA NHC First Round	SC. Third at	Silver medal (first place) American Lagers at 6th AF(			
Source of Recipe						
	Custom recip	De.	Custom recipe.		Custom recipe.	

## HOMEBREW LOG

#### Lorton Brewing Company

	Vanille Frambolse	Traditional Bock (All Grain)	Scottish Heavy Ale (All Grain)
Dete	(All Grain) 2/21/99 4	(An Grain) 3/20/99 5	(An Gram) 5/2/99
Brewing Date Bottling Date	4/11/99	4/11/99	5/25/99
	3.0 gallons	3.0 gallons	3.0 gallor
Primary Fermenter	3.0 gallons	2.8 gallons	2.6 gallor
Secondary Fermenter			British Pale Malt 3.5 II
Aalt	American Tow-Row Malt 3 lbs	THE REPORT OF THE REPORT OF THE PROPERTY OF	10.000 March 10.000
		Munich 10°L Malt 1 lb	Crystal 60°L Malt 1 II
	Crystal 60°L Mait 8 oz	Crystal 40°L Mait 1 lb	Special B Malt 125°L 2 o
	Flaked Barley 8 oz	Chocolate Mait 4 oz	Peated Malt 2 o
	Vanilla Extract 1 oz	ner an erzenner en	Flaked Barley 4 o
	Frozen raspberries 3 lbs		
	1 Contraction of the second		
	Cranberry-raspberry concentrate 1 lb		
Color, SRM	10.5		18
Color, MCU	10.9	39	28
Actual Color, SRM		· · · · · · · · · · · · · · · · · · ·	
First Rest	10 minutes	10 minutes	10 minut
Water, gallons	1.63 gallons	2.10 gallons	1.25 gallo
Temperature	140°-142"	140°-136°	140°-13
and the state of the second	and the second se	5	25 minut
Second Rest	15 minutes	<ul> <li>A start of the sta</li></ul>	- monable
Water, gallons	0.50 gallons		0.50 gallo
Temperature	146°-143°	146°-142°	148°-13
Third Rest	110 minutes	65 minutes	65 minut
Water, gallons	0.75 gallons		0.75 gallo
Temperature	148°-156° (154° average)	156°-157° (156° average)	152°-157° (155° average
		168°	
Mashout Temperature	169°		17
Sparge Water, gallons	2.87 gailons		3.0 gallo
Boiling Time	60 minutes	75 minutes	60 minut
Boiling Hops	Fuggle pellets (4.2%) 0.5 oz	Hallertauer pellets (3.9%) 1.0 oz	Fuggle pellets (4.5%) 0.5
	(old, sun-baked hops)		
	(end, built builter hepe)		
Cininhing Liene		72	
Finishing Hops	-	-	-
IBUs	12	20.7	13
Yeast	White Labs California Ale (WLP001) (22 1 vial	White Labs German Lager 1 vial	White Labs Irish Ale 1 vi
Cast		-	
		(WLP830) (22 oz starter)	(WLP004) (22 oz starter)
	(#3278) (12 oz starter)		
Water/Treatment	5 gal DI, 0.75 gal tap water	all tap water	all tap water
	1 tsp Irish Moss	1 tsp Irish Moss	1 tsp Irish Moss
Original Gravity			
Maximum	1.065	1.090	1.0
Target	(80% extraction) 1.052		(80% extraction) 1.0
•			· · /
Measured	1.058		1.0
Primary Gravity			10
	1.014	1.027	1.0
Ending Gravity	1.014		
• •	1.007	1.022	1.0
Extract Efficiency, %	1.007 89%	1.022 81%	1.0 86
Extract Efficiency, % Apparent Attenuation	1.007 89% 88%	1.022 81% 70%	1.0 86 70
Ending Gravity Extract Efficiency, % Apparent Attenuation BU/GU	1.007 89% 88% 0.21	1.022 81% 70% 0.28	1.0 86 0 0.
Extract Efficiency, % Apparent Attenuation BU/GU	1.007 89% 88% 0.21 wt% vol%	1.022 81% 70% 0.28 wt% vol%	1.0 86 70 0. W1% vo
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, %	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69%	1.022 81% 70% 0.28 wt% vol%	1.0 86 70 0.0 Wt% vo
Extract Efficiency, % Apparent Attenuation BU/GU	1.007 89% 88% 0.21 wt% vol%	1.022 81% 70% 0.28 wt% vol%	1.0 86 70 0.0 Wt% vo
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69%	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69%	1.0 86 70 0. 0. wt% vo 3.15% 3.94
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99	1.0 86 70 0. wt% vo 3.15% 3.94 5/6/99
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99	3.15% 3.94 5/6/99
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99 3/28/99	1.0 86 70 0.: wt% vo 3.15% 3.94 5/6/99 5/7/99
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99 2/26/99 3/3/99	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99 3/28/99 20 20 20 20 20 20 20 20 20 20 20 20 20	1.0 86 70 0.: wt% vo 3.15% 3.94 5/6/99 5/7/99 Com Sugar 1/3
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99 3/3/99 Corn Sugar 1/2 2	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99 3/28/99 3/28/99 Com Sugar 1/2 2	1.0 86 70 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1/3 2
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99 2/26/99 3/3/99	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99 3/28/99 20 20 20 20 20 20 20 20 20 20 20 20 20	1.0 86 70 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1/3 2
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99 3/3/99 Corn Sugar 1/2 2	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99 3/28/99 3/28/99 Com Sugar 1/2 2	1.0 86 70 0.: wt% vo 3.15% 3.94 5/6/99 5/7/99 Com Sugar 1/3
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99 Corn Sugar 1/2 28	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99 3/28/99 Com Sugar 1/2 28	1.0 86 70 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Com Sugar 1// 2 28
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99 3/3/99 Corn Sugar 1/2 2	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99 3/28/99 3/28/99 Com Sugar 1/2 2	1.0 86 70 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99 Corn Sugar 1/2 28	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99 3/28/99 Com Sugar 1/2 28	1.0 86 70 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Com Sugar 1// 2 28
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99 Corn Sugar 1/2 28 Hops added at 50 minutes.	1.022 81% 70% 0.28 wt% vol% 5.35% 66.9% 3/26/99 3/28/99 Com Sugar 1/2 28 Boiling hops added at 60 minutes.	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments	1.007         89%         88%         0.21         wt% vol%         5.36% 6.69%         2/26/99         3/3/99         0         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.	1.022 81% 70% 0.28 wt% vol% 5.35% 6.69% 3/26/99 3/28/99 Com Sugar 1/2 28	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	1.007 89% 88% 0.21 wt% vol% 5.36% 6.69% 2/26/99 3/3/99 Corn Sugar 1/2 28 Hops added at 50 minutes.	1.022 81% 70% 0.28 wt% vol% 5.35% 66.9% 3/26/99 3/28/99 Com Sugar 1/2 28 Boiling hops added at 60 minutes.	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	1.007         89%         88%         0.21         wt% vol%         5.36% 6.69%         2/26/99         3/3/99         0         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.	1.022         81%           70%         0.28           wt% vol%         5.35% 6.69%           3/26/99         3/26/99           3/26/99         3/28/99           Com Sugar         1/2           28         8           Boiling hops added at 60 minutes.         7           Fermentation beginning at 24 hours.         7	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	1.007         89%         88%         0.21         wt% vol%         5.36%         6.69%         2/26/99         3/3/99         2         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic         yeast added to secondary. Lactic acid (1 oz) and	1.022         81%           70%         0.28           wt% vol%         5.35% 6.69%           3/26/99         3/26/99           3/26/99         3/28/99           Com Sugar         1/2           28         8           Boiling hops added at 60 minutes.         7           Fermentation beginning at 24 hours.         7	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	1.007         89%         88%         0.21         wt% vol%         5.36%         6.69%         2/26/99         3/3/99         2         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic         yeast added to secondary. Lactic acid (1 oz) and oak chips (1/2 oz) added during transfer to	1.022         81%           70%         0.28           wt% vol%         5.35% 6.69%           3/26/99         3/26/99           3/26/99         3/28/99           Com Sugar         1/2           28         8           Boiling hops added at 60 minutes.         7           Fermentation beginning at 24 hours.         7	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation	1.007         89%         88%         0.21         wt% vol%         5.36%         6.69%         2/26/99         3/3/99         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic         yeast added to secondary. Lactic acid (1 oz) and oak chips (1/2 oz) added during transfer to tertiary fermenter (3/26) (1,017 gravity)	1.022         81%           70%         0.28           wt% vol%         5.35% 6.69%           3/26/99         3/26/99           3/26/99         3/28/99           Com Sugar         1/2           28         8           Boiling hops added at 60 minutes.         7           Fermentation beginning at 24 hours.         7	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	1.007         89%         88%         0.21         wt%       vol%         5.36%       6.69%         2/26/99         3/3/99         Corn Sugar       1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic         yeast added to secondary. Lactic acid (1 oz) and oak chips (1/2 oz) added during transfer to tertiary fermenter (3/26) (1.017 gravity)         Second place at '99 Del Mar Fair in Lambics.	1.022         81%         70%         0.28         wt% vol%         5.35% 6,69%         3/26/99         3/28/99         Com Sugar         1/2         28         Boiling hops added at 60 minutes.         Fermentation beginning at 24 hours.	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation	1.007         89%         88%         0.21         wt% vol%         5.36%         6.69%         2/26/99         3/3/99         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic         yeast added to secondary. Lactic acid (1 oz) and oak chips (1/2 oz) added during transfer to tertiary fermenter (3/26) (1,017 gravity)	1.022         81%         70%         0.28         wt% vol%         5.35% 6,69%         3/26/99         3/28/99         Com Sugar         1/2         28         Boiling hops added at 60 minutes.         Fermentation beginning at 24 hours.	1.0 80 70 0. wt% vc 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1/ 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation	1.007         89%         88%         0.21         wt%       vol%         5.36%       6.69%         2/26/99         3/3/99         Corn Sugar       1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic         yeast added to secondary. Lactic acid (1 oz) and oak chips (1/2 oz) added during transfer to tertiary fermenter (3/26) (1.017 gravity)         Second place at '99 Del Mar Fair in Lambics.	1.022         81%         70%         0.28         wt% vol%         5.35% 6,69%         3/26/99         3/28/99         Com Sugar         1/2         28         Boiling hops added at 60 minutes.         Fermentation beginning at 24 hours.	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation	1.007         89%         88%         0.21         wt% vol%         5.36% 6.69%         2/26/99         3/3/99         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic         yeast added to secondary. Lactic acid (1 oz) and oak chips (1/2 oz) added during transfer to tertiary fermenter (3/26) (1.017 cravity)         Second place at '99 Del Mar Fair in Lambics.         First in Belgians at 1999 QUAFF Oktoberfest	1.022         81%         70%         0.28         wt% vol%         5.35% 6.69%         3/26/99         3/28/99         Com Sugar         1/2         28         Boiling hops added at 60 minutes.         Fermentation beginning at 24 hours.	1.0 86 70 0. wt% vo 3.15% 3.94 5/8/99 5/7/99 5/7/99 Com Sugar 1// 2 28
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation	1.007         89%         88%         0.21         wt% vol%         5.36% 6.69%         2/26/99         3/3/99         2/26/99         3/3/99         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic yeast added to secondary. Lactic acid (1 oz) and oak chips (1/2 oz) added during transfer to tertiary fermenter (3/26) (1.017 gravity)         Second place at '99 Del Mar Fair in Lambics.         First in Belgians at 12th SoCal Championships.         First in Belgians at 1999 QUAFF Oktoberfest (Best of Show). First in Lambics at 1999 Barley	1.022         81%         70%         0.28         wt% vol%         5.35% 6.69%         3/26/99         3/26/99         3/26/99         Com Sugar         1/2         28         Boiling hops added at 60 minutes.         Fermentation beginning at 24 hours.	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation	1.007         89%         88%         0.21         wt% vol%         5.36%         6.69%         2/26/99         3/3/99         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic         yeast added to secondary. Lactic acid (1 oz) and oak chips (1/2 oz) added during transfer to tertiarv fermenter (3/26) (1.017 gravitv)         Second place at '99 Del Mar Fair in Lambics.         First in Belgians at 12th SoCal Championships.         First in Belgians at 1999 QUAFF Oktoberfest         (Best of Show), First in Lambics at 1999 Barley         Literate Octoberfest (BOS Runner-up). Second	1.022         81%         70%         0.28         wt% vol%         5.35% 6.69%         3/26/99         3/26/99         3/26/99         Com Sugar         1/2         28         Boiling hops added at 60 minutes.         Fermentation beginning at 24 hours.	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation	1.007         89%         88%         0.21         wt% vol%         5.36% 6.69%         2/26/99         3/3/99         Corn Sugar         1/2         28         Hops added at 50 minutes.         Hops added at 50 minutes.         Second place at '99 Del Mar Fair in Lambics.         First in Belgians at 12th SoCal Championships.         First in Belgians at 1999 QUAFF Oktoberfest         (Best of Show). First in Lambics at 1999 Barley         Literate Octoberfest (BOS Runner-up). Second         In Lambics at AFC2000. Third in AHA Lambic	1.022         81%         70%         0.28         wt% vol%         5.35% 6.69%         3/26/99         3/26/99         3/26/99         Com Sugar         1/2         28         Boiling hops added at 60 minutes.         Fermentation beginning at 24 hours.	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation Beer	1.007         89%         88%         0.21         wt% vol%         5.36% 6.69%         2/26/99         3/3/99         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic yeast added to secondary. Lactic acid (1 oz) and oak chips (1/2 oz) added during transfer to tertiary fermenter (3/26) (1.017 cravity)         Second place at '99 Del Mar Fair in Lambics.         First in Belgians at 12th SoCal Championships.         First in Belgians at 12th SoCal Championships.         First in Belgians at 1999 QUAFF Oktoberfest (Best of Show). First in Lambics at 1999 Barley Literate Octoberfest (BOS Runner-up). Second in Lambics at AFC2000. Third in AHA Lambic Club-Only. First in Lambics at 2000 Del Mar	1.022         81%         70%         0.28         wt% vol%         5.35% 6,69%         3/26/99         3/28/99         Com Sugar         1/2         28         Boiling hops added at 60 minutes.         Fermentation beginning at 24 hours.	1.0 86 77 0. wt% vo 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1// 2 Corn Sugar 2 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation	1.007         89%         88%         0.21         wt% vol%         5.36% 6.69%         2/26/99         3/3/99         Corn Sugar         1/2         28         Hops added at 50 minutes.         Hops added at 50 minutes.         Second place at '99 Del Mar Fair in Lambics.         First in Belgians at 12th SoCal Championships.         First in Belgians at 1999 QUAFF Oktoberfest         (Best of Show). First in Lambics at 1999 Barley         Literate Octoberfest (BOS Runner-up). Second         In Lambics at AFC2000. Third in AHA Lambic	1.022         81%         70%         0.28         wt% vol%         5.35% 6,69%         3/26/99         3/28/99         Com Sugar         1/2         28         Boiling hops added at 60 minutes.         Fermentation beginning at 24 hours.	1.0 80 70 0. wt% vc 3.15% 3.94 5/6/99 5/7/99 5/7/99 Corn Sugar 1/ 2 Corn Sugar 2/ 28 Hops added at first wort.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % .ock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation Beer	1.007         89%         88%         0.21         wt% vol%         5.36% 6.69%         2/26/99         3/3/99         Corn Sugar         1/2         28         Hops added at 50 minutes.         Fermentation beginning at 24 hours.         Raspberries, concentrate, vanilla, and lambic yeast added to secondary. Lactic acid (1 oz) and oak chips (1/2 oz) added during transfer to tertiary fermenter (3/26) (1.017 cravity)         Second place at '99 Del Mar Fair in Lambics.         First in Belgians at 12th SoCal Championships.         First in Belgians at 12th SoCal Championships.         First in Belgians at 1999 QUAFF Oktoberfest (Best of Show). First in Lambics at 1999 Barley Literate Octoberfest (BOS Runner-up). Second in Lambics at AFC2000. Third in AHA Lambic Club-Only. First in Lambics at 2000 Del Mar	1.022         81%         70%         0.28         wt% vol%         5.35% 6,69%         3/26/99         3/28/99         Com Sugar         1/2         28         Boiling hops added at 60 minutes.         Fermentation beginning at 24 hours.	1.0 80 77 0 0 wt% vc 3.15% 3.9 5/6/99 5/7/99 5/7/99 Corn Sugar 1/ 2 Corn Sugar 2/ Hops added at first wort.

## HOMEBREW LOG

#### Lorton Brewing Company

10/22/99

	Irish Dry Stout		Bamberg Blonde (All Grain)		Weizen (All Grain)	
accentore Bud.	(All Grain)	7	(All Grain) 6/6/99	8	(All Grain) 6/13/99	1
Brewing Date Bottling Date	5/30/99 6/13/99		6/28/99	0	7/3/99	
	1157111511115	allons		gallons		gallon
Primary Fermenter		allons		gallons		gallor
Secondary Fermenter	and the second se	4 lbs	Rauchmalt	3 lbs	Wheat Malt	4 lb
Aalt	British Pale Malt		CSC - 11/2	2 lbs	German Pilsener Malt	2.5 lt
	Crystal 60°L Malt	1 lb	Munich 10°L Malt German Pilsener Malt			4 02
	Chocolate Malt	4 oz		2 lbs	Flaked Barley	4 04
	Black Malt	8 oz	Flaked Barley	2 oz		
	Roasted Barley	8 oz				
Color, SRM		42		15.6		3
Color, MCU		146		26.6		3
Actual Color, SRM						
First Rest		ninutes	1109.73	minutes	100	minut
Water, gallons		gallons		gallons		gallo
Temperature		7°-125°		7°-124°		34°-13
Second Rest	15 r	ninutes	15	minutes		minute
Water, gallons	0.75	gallons	0.75	gallons	0.75	gallo
Temperature	14	4°-142°	14	4°-140°	14	14°-14
Third Rest	65 r	ninutes	60	minutes	60	minut
Water, gallons	0.75	gallons		5 gallon		5 gall
Temperature	154°-159° (157° a		152°-159° (155° a	verage)	152°-159° (156° a	averag
Mashout Temperature		168°		172°		17
Sparge Water, gallons	3	gallons	2.80	gallons	3.0	gallo
Boiling Time		ninutes		minutes		minut
Boiling Hops	Fuggle pellets (4.3%) Styrian Golding pellets (4.0%)	1 oz	Tettnanger pellets (4.8%)		Tettnanger pellets (4.8%)	0.5 0
Finishing Hops	Styrian Golding pellets (4.0%)		Tettnanger pellets (4.8%)	0.25 oz		
BUs		39	Constant	23.6		12
Yeast	White Labs Irish Ale (WLP004) (22 oz starter)	1 vial	White Labs San Francisco Lager (WLP810) (22 oz starter)	1 vial	White Labs Hefeweizen (WLP300) (22 oz starter)	1 via
Water/Treatment	all tap water no Irish Moss		all tap water 1 tsp Irish Moss		all tap water 1 tsp Irish Moss	
Original Gravity	1					
Maximum		1.057		1.068		1.0
Target	(80% extraction)	1.046	(80% extraction)	1.055	(80% extraction)	1.0
Measured		1.050		1.057		1.0
Primary Gravity		1.020		1.022		1.0
Ending Gravity		1.018		1.020		1.0
Extract Efficiency, %		88%		84%		83
NAMES OF STREET, STREET		64%		65%		74
Apparent Attenuation BU/GU		0.78		0.41		0.
60/60	Sector .	vol%				
Detential Alexhol M	wt%			VOI%	1	VO
Potential Alcohol, %	3.36%	4.20%		4.86%	(Dec.)	
Lock Installed	6/1/99	_	6/9/99		6/16/99	
Secondary Fermenter	6/3/99		6/12/99		6/18/99	
Priming Sugar, cups	Corn Sugar	1/3	Corn Sugar	1/2	Corn Sugar	1/2
Water, cups		2		2		2
Number of Bottles		27		29		28
Comments					· · · · · · · · · · · · · · · · · · ·	
Brewing	Fuggles added at 60 minutes. Golding added at 50 and 10 m		Hops added at first wort and minutes.	115	Hops added at 50 minutes.	
Fermentation	Fermentation active at 15 h	ours.	Fermentation beginning at 24	hours.	Fermentation active at 15 hours	<b>S</b> .
Beer	Second in Stouts at 1999 B Literate Octoberfest	arley			Third in German Wheats at 1999 Q Oktoberfest. Second in German Wh 1999 Pacific Brewers Cup. First in V at 1999 Farmers Fair. Second in G	neats Whea
					and rever an information of the Ocound III O	berfe

#### Lorton Brewing Company

### HOMEBREW LOG

10/22/99

BEER STYLE	English Light Mild		English Ordinary	Bitter		Imperial Stout	
Denulas Detr	(All Grain) 7/4/99	10	(All Grain) 7/10	100	11	(All Grain) 7/17/99	12
Brewing Date Bottling Date	7/24/99	10	8/1		- 11	8/8/99	
Primary Fermenter		allons	- 7/07	3.0 gall	ons		gallons
Secondary Fermenter		allons		2.8 gall			gallons
Malt	British Pale Malt	4 lbs	British Pale Malt		bs	British Pale Malt	10 lbs
WAIL	Crystal 60°L Malt	8 oz	Crystal 40°L Malt		oz	Crystal 60°L Malt	8 oz
	Flaked Barley	2 oz	Flaked Barley		oz	Roasted Barley	8 oz
	Flaked Darley	2 02	i lancu barrey	-	~	Black Malt	8 oz
					- 1	Flaked Barley	2 oz
						r lanca Barley	2.02
Color, SRM		10.9			8.1		30
Color, MCU	1	11,5			8.1		12
Actual Color, SRM				00	(D) (Arrow)	45	and Theory of the last
First Rest	290-017	ninutes		20 min	1.225.11		minute
Water, gallons		gallons	1	1.16 gal			gallon
Temperature	1 House	0°-127°		129°-1			8°-127
Second Rest		ninutes		70 min			minute
Water, gallons		gallons		1.0 gal			0 gallo
Temperature	160°-153° (155° a	verage)	158°-150° (15	4° avera	age)		2°-140
Third Rest					1		minute
Water, gallons	1						gallon
Temperature						154°-152° (154° a	
Mashout Temperature		168°			168°		168
Sparge Water, gallons	3.1	gallons		3.3 gal		5	gallon
Boiling Time	70 1	minutes		75 min			minute
Boiling Hops	Kent Golding pellets (6.4%)	0.5 oz	Kent Golding pellets (6.4	%) 0.7	5 oz	Irish Northdown pellets (9.4%) Fuggle pellets (4.5%)	1 oz 0.5 oz
Finishing Hops			Kent Golding pellets (6.4	%) 0.2	5 oz	Fuggle pellets (4.5%)	0.5 oz
IBUs		17.6			30.4		5
Yeast	White Labs English Ale	1 vial	White Labs English Ale		cup	White Labs Irish Ale	1 vial
Teast	(WLP002) (22 oz starter)	IVIAI	(WLP002) slurry from light mild brew		up	(WLP004) (22 oz starter)	i vidi
Water/Treatment	all tap water		all tap water		_	all tap water	
	1 tsp Irish Moss		no Irish Moss			1 tsp Irish Moss	
Original Gravity	1	_					
Maximum		1.047		1	.047		1.11
Target	(80% extraction)	1.038			.037		1.09
Measured		1.043	· ·	'	.042		1.08
Primary Gravity		1.017			.015		1.03
Ending Gravity		1.015			.014		1.02
Extract Efficiency, %		91%			89%		79%
					67%		70%
Apparent Attenuation BU/GU	1	65% 0.41			0.72		0.6
00/00		0.41 vol%			101%	<b>6</b>	vol%
Potential Alashel	wt% 2.94%	VOI% 3.68%			/01% 68%		
Potential Alcohol, %	and the second s	0.00%	the second se		0070	Automatical and a second se	8.14%
Lock installed	7/8/99		7/13		_	7/20/99	
Secondary Fermenter	7/10/99	4.00	7/16		1/0	7/24/99	4.00
Priming Sugar, cups	Corn Sugar	1/3	Corn Sugar		1/3	Corn Sugar	1/3
Water, cups		2			2		2
Number of Bottles		28			29		28
Comments					_		
Brewing	Hops added at 50 minute	es.	Hops added at first w minutes.	ort and	5	Boiling hops added at 60 min Aroma hops added at 5 min	
Fermentation	Fermentation beginning at 6 and active at 15 hours.		Fermentation beginning and active at 15 h		urs,	Fermentation very active at 16	i hours
Beer			Third in English Ales at Brewers Cup. Second i 1999 Farmers F	n Bitters		First in Stouts at 1999 Farmer	rs Fair.
1					_		
Source of Recipe	Custom recipe.		Custom recipe	Ð.		Custom recipe.	

## HOMEBREW LOG

#### Lorton Brewing Company

rewing Date	(All Grain)		(All Grain)		(All Grain)	
Srewing Date	10 mm 10 m	4.0				
	8/7/99	13	8/21/99	14	9/5/99 9/26/99	18
lottling Date	8/29/99	- United	2.0.4	allene		aelless
rimary Fermenter		allons		allons		gallons
econdary Fermenter		allons		allons		gallons
lait	British Pale Malt	9 lbs			British Pale Malt	10 lbs
	Crystal 60°L Malt	1 lb	Cara-Pils Malt	4 oz	Crystal 60°L Mait	8 oz
	Munich Malt	1 lb	Flaked Barley	6 oz	Roasted Barley	8 oz
	Chocolate Malt	2 oz			Black Malt	8 oz
	Flaked Barley	2 oz	Cane sugar (added to boil)	1 lb	Flaked Barley	2 oz
			-		Hazelnut Coffee (in 10 cups)	4 oz
Color, SRM		18		5.2		4(
Color, MCU		37		5.2		13
Actual Color, SRM		_				
irst Rest	20 m	ninutes	15 (	minutes	20 1	minute
Water, gallons	2.5 g	gallons	2.08	gallons	2.62	gallon
Temperature	137	°-132°	12	7°-124°	13	6°-135
Second Rest		ninutes	15	ninutes	70	minute
Water, gallons		gallons		1 gallon		5 gallo
Temperature	154°-148° (150° av	-		144°	152°-150° (152° a	
Third Rest		singe)	80	ninutes	102 100 (102 a	Jerugo
				1 gallon		
Water, gallons		- 0				
Temperature		4770	154°-150° (151° a			400
Ashout Temperature		170°		169°		168
Sparge Water, gallons		gallons		gallons		gallon
Boiling Time		ninutes		minutes		minute
Boiling Hops	Northern Brewer pellets (8.8%)	1 oz	Styrian Golding pellets (2.7%) U.S. Saaz pellets (3.4%)	1 oz 0.5 oz	Northern Brewer pellets (8.8%)	1 oz
Finlshing Hops			U.S. Saaz pellets (3.4%)	0.5 oz		
BUs		40		19		40
Yeast	White Labs Irish Ale (WLP004) (22 oz starter)	1 vial	Wyeast Belgian Abbey (1214) (22 oz starter); White Labs Trappist (WLP500)	1 pack 1 vial	White Labs Irish Ale (WLP004) (22 oz starter)	1 vial
Water/Treatment	all tap water 1 tsp Irish Moss		6 gal DI, 0.7 gal tap 1 tsp Irish Moss		all tap water 1 tsp Irish Moss	
Ovining Oracity	T tsp Insi Woss					
Original Gravity						
Maximum		1.113		1.117		1.11
Target	(80% extraction)	1.090	(80% extraction)	1.096	· · ·	1.09
Measured		1.088		1.100		1.08
Primary Gravity		1.030		1.072		1.03
Ending Gravity		1.026		1.072		1.02
Extract Efficiency, %		78%	(81% extraction w/o sugar)	85%		719
Apparent Attenuation		70%	, , , , , , , , , , , , , , , , , , ,	28%		69%
BU/GU	1	0.45		0.19	ē	0.4
	wt%	vol%	A	vo1%	8	vol%
Potential Alashal 9/	6.51%			3.68%		
Potential Alcohol, %		0.1470		0,00%		1.017
Lock Installed	8/10/99		8/24/99		9/7/99	
Secondary Fermenter	8/13/99		8/27/99		9/11/99	
Priming Sugar, cups	Corn Sugar	1/3	Corn Sugar	1/2	Corn Sugar	1/3
Water, cups		2		2		2
Number of Bottles		28				29
Comments						
Brewing	Hops added at 50 minutes	3.	Hops added at 50 minutes a minutes.	nd 5	Hops added at 50 minutes. Br coffee added after boil (during c	
Fermentation	Fermentation very active at 16	hours.	Fermentation just beginning at 1 (37-month old Wyeasti) Prir fermentation attenuation very White Labs yeast added on 9/3. fermenter on 10/2 (1.028)	nary poor. Tertiary	Fermentation very active at 16	hours.
Beer			Termenter on Turz (1.028)		Second in Specialties at 1999 Literate Octoberfest	Barley
Source of Recipe	Custom recipe.		Custom recipe.		Custom recipe.	

# Lorton Brewing Company

	Liz's Traditional Mead Mead	1999 Holiday Beer (Titanic Ale) (All Grain)	Belgian Twit (Wipple) (All Grain)
Brewing Date			(All Grain) 10/23/99 1
Bottling Date	9/6/99 16	10/2/99 17 10/31/99	11/21/99
Primary Fermenter	3.0 gallons	3.0 gallons	3.0 gallon
Secondary Fermenter	2.8 gallons	2.8 gallons	2.8 gallon
Malt	Mountain Flower Honey 10 lbs		Belgian Pilsener Malt 5 lb:
IAI CHIL	Wouldan Flower Holley To Ibs	Crystal 40°L Malt 1 lb	Red Wheat Malt 5 lb:
	Yeast nutrients 2 tsp		Flaked Barley 2 or
	Citric acid 1 tsp	Flaked Barley 2 oz	6
			Cane sugar (added to boil) 1 lb
		Orange Blossom Honey 12 oz	
Color, SRM		16.6	4
Color, MCU		31	4
Actual Color, SRM			
First Rest	1	20 minutes	20 minut
Water, gallons		2.5 gallons	2.25 galio
Temperature		136°-135°	135°-13
Second Rest	<b> </b>	70 minutes	70 minut
Water, gallons		1.25 gallons	1.25 gallo
Temperature		157°-150° (155° average)	153°-152° (152° average
Third Rest		ion - iou (iou average)	100 -102 (102 alvolag
Water, gallons			
Temperature			
	·		
Mashout Temperature		170"	16
Sparge Water, gallons		3.0 gallons	3 gallo
Boiling Time	15 minutes		65 minut
Boiling Hops		Tettnanger pellets (4.7%) 1 oz	Styrian Golding pellets (2.7%) 0.75
			U.S. Saaz pellets (3.4%) 0.75
Finishing Hops		Tettnanger pellets (4.7%) 1 oz	Styrian Golding pellets (2.7%) 0.25
		Cinnamon sticks (3" long) 2	U.S. Saaz pellets (3.4%) 0.25
		Ginger 1.2 oz	Bitter orange peel 0.25
		1974 Sec. 1974 - 1975 -	Coriander 0.5
IBUs		26	
Yeast	Red Star Champagne Dry 2 packs	White Labs California Ale 1 vial 1	White Labs Trappist (WLP500), 1 via
	Yeast	(WLP001) (22 oz starter), White vial	White Labs Belgian Wit (WLP400) 1 via
	1 GLOL	Labs Edinburgh Ale (WLP028)	(22 oz starter)
Water/Treatment	all tap water	all tap water	5 gal DI, 1.5 gal tap
The second se	1 tsp Irish Moss	1 tsp Irish Moss	1 tsp Irish Moss
Original Gravity			
Maximum	1.107	1.116	1.1
Target	1.107	1	
Measured	1,100		(80% extraction) 1.0
Primary Gravity			1.0
	1.022	1.064	1.0
		1.030	
Ending Gravity	1.022		1.0
Extract Efficiency, %	93%	(75% without honey) 76%	(74% extraction w/o sugar) 76
Extract Efficiency, % Apparent Attenuation	93% 78%	(75% without honey) 76% 66%	(74% extraction w/o sugar) 76
Extract Efficiency, % Apparent Attenuation	93% 78% 0.00	(75% without honey) 76% 66% 0.30	(74% extraction w/o sugar) 76
Extract Efficiency, % Apparent Attenuation BU/GU	93% 78% 0.00 wt% vol%	(75% without honey) 76% 66% 0.30 wt% vol%	(74% extraction w/o sugar) 76 83 0.
Extract Efficiency, % Apparent Attenuation	93% 78% 0.00	(75% without honey) 76% 66% 0.30 wt% vol%	(74% extraction w/o sugar) 76 83 0.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, %	93% 78% 0.00 wt% vol%	(75% without honey) 76% 66% 0.30 wt% vol%	(74% extraction w/o sugar) 76 83 0. wt% vo
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed	93% 78% 0.00 wt% vol% 8.19% 10.24%	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61%	(74% extraction w/o sugar) 76 83 0. wt% vo 7.24% 9.06
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99	(74% extraction w/o sugar) 76 83 0. wt% vo 7.24% 9.06 10/27/99
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99	(74% extraction w/o sugar) 76 83 0. wt% vo 7.24% 9.06 10/27/99
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99	(74% extraction w/o sugar) 76 83 0. w1% vo 7.24% 9.06 10/27/99 11/3/99
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99	(74% extraction w/o sugar) 76 83 0. wt% vo 7.24% 9.06 10/27/99
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Suger 1/3	(74% extraction w/o sugar) 76 83 0. wi% vo 7.24% 9.06 10/27/99 11/3/99 Com Sugar 1/2
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 0 Com Sugar 1/3 2	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Corn Sugar 1/3 2	(74% extraction w/o sugar) 76 83 0. wt% vo 7.24% 9.06 10/27/99 11/3/99 Com Sugar 1// 2
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 0 Com Sugar 1/3 2	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 2 28	(74% extraction w/o sugar) 7/ 8: 0, wt% vc 7.24% 9.0( 10/27/99 11/3/99 Com Sugar 1/ 2 25
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 0 Com Sugar 1/3 2	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 2 28 Boiling hops added at 50 minutes.	(74% extraction w/o sugar) 7/ 8: 0. wt% vc 7.24% 9.0( 10/27/99 11/3/99 Com Sugar 1// 2 EVEN 25 Hops added at 50 minutes and 5 minutes
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 0 Com Sugar 1/3 2	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes	(74% extraction w/o sugar) 7/ 83 0. wi% vc 7.24% 9.00 10/27/99 11/3/99 Com Sugar 1// 2 Com Sugar 25 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 2 28 Bolling hops added at 50 minutes. Finishing hops split between 15 minutes and 2 minutes. Spices at 10 minutes.	(74% extraction w/o sugar) 76 83 0. w1% vo 7.24% 9.06 10/27/99 11/3/99 Com Sugar 1// 2 29 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28 Fermentation beginning after two	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 2 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes Starter had not started. Fermentation very	(74% extraction w/o sugar) 76 83 0. wt% vo 7.24% 9.06 10/27/99 11/3/99 Com Sugar 1// 2 29 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 2 Com Sugar 1/3 2 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes. Finishing hops split between 15 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours.	(74% extraction w/o sugar) 76 83 0. w1% vo 7.24% 9.06 10/27/99 11/3/99 Com Sugar 1// 2 29 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28 Fermentation beginning after two	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 2 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes. Finishing hops split between 15 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours. AleSmith "clearance" yeast. Edinburgh	(74% extraction w/o sugar) 7/ 8: 0. w1% vc 7.24% 9.00 10/27/99 11/3/99 Com Sugar 1// 2 Com Sugar 25 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28 Fermentation beginning after two	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 2 Com Sugar 1/3 2 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes. Finishing hops split between 15 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours.	(74% extraction w/o sugar) 7/ 8: 0. w1% vc 7.24% 9.00 10/27/99 11/3/99 Com Sugar 1// 2 Com Sugar 25 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Nater, cups Number of Bottles Comments Brewing Fermentation	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28 Fermentation beginning after two days.	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes and 2 minutes. Spices at 10 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours. AleSmith "clearance" yeast. Edinburgh Ale yeast added at secondary.	(74% extraction w/o sugar) 7/ 8; 0, w1% vc 7.24% 9.04 10/27/99 11/3/99 Com Sugar 1/ 2 Com Sugar 2 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil. Active fermentation at 17 hours.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28 Fermentation beginning after two days.	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 2 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes. Finishing hops split between 15 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours. AleSmith "clearance" yeast. Edinburgh	(74% extraction w/o sugar) 74 83 00. wt% vc 7.24% 9.00 10/27/99 11/3/99 Com Sugar 1// 2 Com Sugar 1// 2 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil. Active fermentation at 17 hours.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28 Fermentation beginning after two days.	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes and 2 minutes. Spices at 10 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours. AleSmith "clearance" yeast. Edinburgh Ale yeast added at secondary.	(74% extraction w/o sugar) 74 83 0. wt% vc 7.24% 9.00 10/27/99 11/3/99 Com Sugar 1// 2 Com Sugar 1// 2 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil. Active fermentation at 17 hours.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments Brewing Fermentation	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 Com Sugar 1/3 2 28 Third in Meads at AFC2000. Third in Traditional Meads at 2000 AHA NHC First Round. Fourth in	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes and 2 minutes. Spices at 10 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours. AleSmith "clearance" yeast. Edinburgh Ale yeast added at secondary.	(74% extraction w/o sugar) 74 83 00. wt% vc 7.24% 9.00 10/27/99 11/3/99 Com Sugar 1// 2 Com Sugar 1// 2 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil. Active fermentation at 17 hours.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Nater, cups Number of Bottles Comments Brewing Fermentation	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28 Fermentation beginning after two days.	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes and 2 minutes. Spices at 10 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours. AleSmith "clearance" yeast. Edinburgh Ale yeast added at secondary.	(74% extraction w/o sugar) 74 83 0. wt% vc 7.24% 9.00 10/27/99 11/3/99 Com Sugar 1// 2 Com Sugar 1// 2 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil. Active fermentation at 17 hours.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Nater, cups Number of Bottles Comments Brewing Fermentation	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 Com Sugar 1/3 2 28 Third in Meads at AFC2000. Third in Traditional Meads at 2000 AHA NHC First Round. Fourth in	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes and 2 minutes. Spices at 10 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours. AleSmith "clearance" yeast. Edinburgh Ale yeast added at secondary.	(74% extraction w/o sugar) 74 83 0. wt% vc 7.24% 9.00 10/27/99 11/3/99 Com Sugar 1// 2 Com Sugar 1// 2 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil. Active fermentation at 17 hours.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Nater, cups Number of Bottles Comments Brewing Fermentation	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28 Fermentation beginning after two days.	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes and 2 minutes. Spices at 10 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours. AleSmith "clearance" yeast. Edinburgh Ale yeast added at secondary.	(74% extraction w/o sugar) 74 83 0. wt% vc 7.24% 9.00 10/27/99 11/3/99 Com Sugar 1// 2 Com Sugar 1// 2 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil. Active fermentation at 17 hours.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Number of Bottles Comments Brewing Fermentation Beer	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28 Com Sugar 1/3 2 28 Third in Meads at AFC2000. Third in Traditional Meads at 2000 AHA NHC First Round. Fourth in Traditional Meads at 2000 Del Mar Fair.	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 2 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes and 2 minutes. Spices at 10 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours. AleSmith "clearance" yeast. Edinburgh Ale yeast added at secondary. Very problematic beer at bottling.	(74% extraction w/o sugar) 7/ 8: 0 wt% vc 7.24% 9.00 10/27/99 11/3/99 Com Sugar 1/ 2 Com Sugar 1/ 2 Com Sugar 2 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil. Active fermentation at 17 hours. Third in Belgian and French Ales at AFC2000. First in Belgian and French Ales at at 2000 AHA NHC First Round.
Extract Efficiency, % Apparent Attenuation BU/GU Potential Alcohol, % Lock Installed Secondary Fermenter Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Nater, cups Number of Bottles Comments Brewing Fermentation	93% 78% 0.00 wt% vol% 8.19% 10.24% 9/6/99 10/17/99 Com Sugar 1/3 2 28 Fermentation beginning after two days.	(75% without honey) 76% 66% 0.30 wt% vol% 6.09% 7.61% 10/9/99 10/11/99 Com Sugar 1/3 28 Boiling hops added at 50 minutes. Finishing hops split between 15 minutes and 2 minutes. Spices at 10 minutes. Starter had not started. Fermentation very slow to start, beginning at 39 hours. AleSmith "clearance" yeast. Edinburgh Ale yeast added at secondary.	(74% extraction w/o sugar) 7 8 0 wt% vc 7.24% 9.0 10/27/99 11/3/99 Com Sugar 1/ Com Sugar 1/ 2 Hops added at 50 minutes and 5 minute Orange peel at 15 minutes, coriander a end of boil. Active fermentation at 17 hours.

# Lorton Brewing Company

3/17/00

BEER STYLE	American Amber Ale	Millennium Barleywine	Bohemian Pilsner
	(All Grain)	(All Grain)	(All Grain)
Brewing Date	11/13/99 19	11/26/99 20	12/4/99 2*
Bottling Date Primary Fermenter	12/5/99	12/27/99	3.0 gallons
Secondary Fermenter	3.0 gallons 2.8 gallons	3.0 gallons 2.8 gallons	2.8 gallons
Malt	American Two-Row Malt 6 lbs	American Two-Row Malt 13 lbs	German Pilsener Malt 6 lbs
	Crystal 80°L Malt 1 lb	Crystal 80°L Malt 1 lb	Munich Malt 8 oz
	Flaked Barley 2 oz	Cara-Pils Malt 1 lb	CaraPils Malt 8 oz
		Flaked Barley 2 oz	Flaked Barley 6 oz
		Brown Sugar 2 lb	
Color, SRM	14.9	15.5	4.*
Color, MCU	23.6	26.3	4.
Actual Color, SRM			
First Rest	20 minutes	15 minutes	45 minute
Water, gallons	1.75 gallons	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	2.3 gallon
Temperature Second Rest	134°-130°	134"-130"	134°-124° (130° average
Water, gallons	70 minutes	WHEN A DECEMBER OF	70 minute
Temperature	1.25 gallons 156°-158° (157° average)	2.0 gallons 146°-156° (150° average)	1 1000 (1000) 1000 (1000) (1000)
Third Rest	100 - 100 (101 average)	140 -150 (150 average)	140 -100 (100 average
Water, gallons Temperature			
Mashout Temperature	170°	170°	169
Sparge Water, gallons	3.0 gallons		3.85 gallon
Boiling Time	60 minutes		60 minute
Boiling Hops	Cascade pellets (5.4%) 1 oz	Centennial pellets (9.9%) 2 oz	Czech Saaz pellets (3.8%) 2 oz
Finishing Hops	Cascade pellets (5.4%) 1 oz	Cascade pellets (5.4%) 1 oz	Czech Saaz pellets (3.8%) 1 oz
IBUs	38.9	68	4
Yeast	White Labs California Ale 1 vial		White Labs Pilsener 1 vial
	(WLP001) (22 oz starter)	(WLP001) (22 oz starter) packs	(WLP800) (22 oz starter)
		Red Star Champagne (dry)	
Water/Treatment	all tap water 1 tsp Irish Moss	all tap water	5 gal DI, 1.15 gal tap
Original Gravity		1 tsp Irish Moss	no Irish Moss (forgotten!)
Maximum	1.068	1,165	1.07
Target	(80% extraction) 1.055		
Measured	1.054		
Primary Gravity	1.020	1.052	1.04
Ending Gravity	1.018	1.030	1.02
Extract Efficiency, %	79%		
Apparent Attenuation	67%		
BU/GU	0.72		
Potential Alcohol, %	wt% vol% 3.78% 4.73%	wt% vol% 8,72% 10,89%	
Lock Installed	11/17/99	12/2/99	12/10/99
Secondary Fermenter	11/21/99	12/2/99	12/10/99
Primary Fermenter Temp	THE NOT	65°	50°-52
Secondary Fermenter Temp		65°	50°-58
Priming Sugar, cups	Com Sugar 1/2	Com Sugar 1/3	Com Sugar 1/2
Water, cups	2	2	2
Number of Bottles	29	28	28
Comments	D-West har the second		
Brewing	Boiling hops added at first wort. Finishing hops split between 15, 10, 5,	Two separate mashes. Boiling hops added at 120 minutes. Finishing hops	Double decoction. Boiling hops at 50 minutes. Finishing hops at 10 and 2
Fermentation	and 2 minutes. Fermentation beginning at 8 hours.	split between 15, 10, 5, and 2 minutes. Fermentation active at 16 hours.	minutes. Fermentation at 24 hours. Transferre
	r enteneder beginning at e nezis.	r emientatori active at 10 notis.	to secondary was too early.
Beer	Third in American Ales at AFC2000.		
Source of Recipe	Custom recipe.	Custom recipe.	Custom recipe.

23 beers in 1999 193 beers total

## HOMEBREW LOG

# Lorton Brewing Company

6/25/00

BEER STYLE	Doppelbock	Munich Dunkel	Vienna
	(All Grain)	(All Grain)	(All Grain)
Brewing Date	12/11/99 22	12/18/99 23	1/1/00
Bottling Date	3/17/00	1/16/00	1/23/00
Primary Fermenter	3.0 gallons	3.0 gallons	3.0 gallon
Secondary Fermenter	2.8 gallons	2.8 gallons	2.8 gallon
Malt	German Pilsener Malt 5 lbs	Munich Malt 6 lbs	German Pilsener Malt 4 lbs
	Munich Malt 5 lbs	American Two-Row Malt 1 lb	Munich Malt 1 lb
	CaraPils Malt 1 lb	Durst Crystal 40°L Malt 8 oz	CaraPils Malt 8 oz
	Durst Crystal 40°L Malt 1 Ib	Chocolate Malt 4 oz	Durst Crystal 40°L Mait 8 oz
	Chocolate Malt 2 oz	Flaked Wheat 2 oz	Flaked Wheat 2 oz
	Flaked Barley 6 oz		
Color, SRM	18	19.4	1
Color, MCU	38	44	10
Actual Color, SRM			
First Rest	35 minutes	30 minutes	30 minute
Water, gallons	4.1 gallons	3.0 gallons	2.35 gallo
Temperature	135°-131° (132° average)	135°-124° (130° average)	138°-130° (134° averag
Second Rest	75 minutes	60 minutes	60 minute
Water, galions	~2 gallons decoction		~1.3 gallons decoction
Temperature	156°-150° (152" average)	· · · · · · · · · · · · · · · · · · ·	154°-158° (156° averag
Third Rest	Tag - Log (Los average)	100 -100 (102 average)	104 - 100 (100 averag
Water, gallons			
Temperature			
Mashout Temperature	168°	168°	17
Sparge Water, gallons	3.5 gallons	3.35 gallons	3.65 gallo
Boiling Time	110 minutes	60 minutes	60 minut
Boiling Hops	Northern Brewer pellets (8.8%) 0.75 oz	Tettnanger pellets (4.9%) 0.9 oz	Tettnanger pellets (4.9%) 0.9
Finishing Hops		Tettnanger pellets (4.9%) 0.1 oz	Tettnanger pellets (4.9%) 0.1 (
IBUs	30	22,6	
Yeast	White Labs German Lager 1 vial	White Labs German Lager 1 vial	White Labs Maerzen 1 via
	(WLP830) (22 oz starter)	(WLP830) (22 oz starter)	(WLP820) (22 oz starter)
			(WLF020) (22 02 starter)
Water/Treatment	all tap	all tap	all tap
ridion riduarione	Irish Moss	Irish Moss	no Irish Moss
Original Gravity			no man woss
- /			
Maximum	1.120		
Target	(80% extraction) 1.090		. ,
Measured	1.103		1.0
Primary Gravity	1.072	1.025	1.0
Ending Gravity	1.041	1.022	1.0
Extract Efficiency, %	86%	95%	85
Apparent Attenuation	60%	68%	72
BU/GU	0.29	0.33	0.4
	wt% vol%	wt% vol%	
Potential Alcohol, %	6.51% 8.14%	4.93% 6.17%	w1% vo
Lock Installed			
			3.99% 4.99
Secondary Fermenter	12/18/99	12/26/99	3.99% 4.99 1/7/00
Secondary Fermenter	12/18/99 12/26/99	12/26/99 12/31/99	3.99% 4.99 1/7/00 1/9/00
Primary Fermenter Temp	12/18/99 12/26/99 48°-56°	12/26/99 12/31/99 48°-58°	3.99% 4.99 1/7/00 1/9/00
Primary Fermenter Temp Secondary Fermenter Temp	12/18/99 12/26/99 48°-56° 48°-58°	12/26/99 12/31/99 48°-58° 48°-58°	3.99% 4.99 1/7/00 1/9/00 55°-6
Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups	12/18/99 12/26/99 48°-56° 48°-58° Com Sugar 1/3	12/26/99 12/31/99 48°-58° 48°-58° Com Sugar 1/2	3.99% 4.99 1/7/00 1/9/00 55°-6 Com Sugar 1/2
Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups	12/18/99 12/26/99 48°-56° 48°-58° Com Sugar 1/3 2	12/26/99 12/31/99 48°-58° 48°-58° Com Sugar 1/2 2	3.99% 4.96 1/7/00 1/9/00 55°-6 Corn Sugar 1/2 2
Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles	12/18/99 12/26/99 48°-56° 48°-58° Com Sugar 1/3	12/26/99 12/31/99 48°-58° 48°-58° Com Sugar 1/2	3.99% 4.96 1/7/00 1/9/00 55°-6 Com Sugar 1/2
Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles Comments	12/18/99 12/26/99 48°-56° 48°-58° Com Sugar 1/3 2 29	12/26/99 12/31/99 48°-58° 48°-58° Com Sugar 1/2 2 28	3.99% 4.96 1/7/00 1/9/00 6 55°-E Com Sugar 1// 2 28
Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Water, cups Number of Bottles	12/18/99 12/26/99 48°-56° 48°-58° Com Sugar 1/3 2	12/26/99 12/31/99 48°-58° 48°-58° Com Sugar 1/2 2	3.99% 4.96 1/7/00 1/9/00 55°-€ Com Sugar 1/. 2
Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Nater, cups Number of Bottles Comments	12/18/99 12/26/99 48°-56° 48°-58° Com Sugar 1/3 2 29	12/26/99 12/31/99 48°-58° 600 Sugar 1/2 2 28 Double decoction. Hops at 50 minutes	3.99% 4.96 1/7/00 1/9/00 Com Sugar 1/ 2 Double decoction. Boiling hops at 5
Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Nater, cups Number of Bottles Comments Brewing	12/18/99         12/26/99         48°-56°         48°-58°         Corn Sugar         1/3         2         29         Double decoction. Hops at 70 minutes.         Fermentation beginning at 36 hours.         Champagne yeast pitched for tertiary	12/26/99           12/31/99           48°-58°           48°-58°           Corn Sugar           1/2           28           Double decoction. Hops at 50 minutes and 5 minutes.	3.99% 4.96 1/7/00 1/9/00 Com Sugar 1/ 2 Double decoction. Boiling hops at 5 minutes. Finishing hops at 5 minute
Primary Fermenter Temp Secondary Fermenter Temp Priming Sugar, cups Vater, cups Jumber of Bottles Somments Brewing Fermentation	12/18/99         12/26/99         48°-56°         48°-58°         Corn Sugar         1/3         2         29         Double decoction. Hops at 70 minutes.         Fermentation beginning at 36 hours.         Champagne yeast pitched for tertiary	12/26/99         12/31/99         48°-58°         48°-58°         Corn Sugar         1/2         28         Double decoction. Hops at 50 minutes and 5 minutes.         Fermentation beginning at 24 hours.         Third in German Dark Lagers at 2000	3.99%       4.94         1/7/00       1/9/00         6       55°-4         Com Sugar       1/         2       26         Double decoction. Boiling hops at 5 minute         Fermentation beginning at 17 hour         First as a German Light Lager at 20         Del Mar Fair. Fifth as an American

Brewing Date         1/8/00         2         2/13/00         3/16/00           Sorting Date         2/6/00         3/6/00         4/6/00         4/6/00           Primary Formenter         3.0 gallons         5.0 gallons         3.0 gallons         5.0 gallons         3.0 gallons         5.0 gallons         2.2 gallons         5.0 gallons         2.2 gallons         5.0 gallons         2.2 gallons         7.2 gallons         2.2 gallons         7.2 gallons         2.2 gallons         7.2 gallons	BEER STYLE	Chocolate Porter		Scottish Export		Temecula Twit	
Dotting Date         28/00         3/000         3/0000         0.3.0 galons         0.3		(All Grain)		(All Grain)		(All Grain)	
Primary Formentier         3.0.geltons         3.0.geltons         3.0.geltons         3.0.geltons         3.0.geltons           Mail         American Two-Row Mail         6 lbs         British Pale Mail         5 lbs         Belgigin Planen Mail         5 lbs           Mail         Crystal 80 PU Mait         1 lb         Crystal 80 PU Mait         1 lb         Crystal 80 PU Mait         5 lbs           Core StrM         Crystal 80 PU Mait         1 lb         Crystal 80 Pu Mait         6 or           Fielded Meat         2 or         Paeted Meat         4 or         Care sugar (added to boit)         1 lt           Color, SFM         2.0 geltons         1.3.9 geltons         2.2.8 gelton         Care sugar (added to boit)         1 lt           Color, SFM         2.0 geltons         1.3.9 geltons         1.3.9 geltons         2.2.8 gelton           Temperature         1 3.9 jettons         1.3.9 geltons         1.3.9 geltons         2.2.8 gelton           Temperature         1 46°-154' (140° awerage)         1 55'-159' (156' awerage)         1 55'-150' (150' awerage)         1 55'-120' (150' awerage)           Temperature         1 46°-154' (140° awerage)         3.0 geltons         3.0 geltons         3.0 geltons           Temperature         1 46°-154' (140° awerage)         3.0 gelton	Brewing Date		2		3		-
Second prementer         2.8 galtons         2.8 galtons         2.8 galtons         2.8 galtons           Mait         Chrectors Noc-Row Mait         1 bb         Crystal 80'L Mait         2 cz         Cry		2/6/00		3/5/00		4/16/00	
Mait         American Two-Row Mait         6 bits         Brisin Pale Mait         5 bits         Boggin Plasment Mait         5 bits           Copyet 80 CVI. Mart         1 bits         Cyale 80 CVI. Mart         1 bits         Cyale 80 CVI. Mart         5 bits         Flaked CVI. Mart         5 bits         Cane sugar (added to boli)         1 lt         Cane Sugar Sug	Primary Fermenter	3.0 g	allons	3.0	gallons	3.0	gallon
Crystal 801. Mat         1 b Chocolate Mat         Crystal 801. Mat         8 a         Badjan Wheat Mat         5 b           Chocolate Mat         1 b         Chocolate Mat         2 or Flaked Earley         6 or Flaked Earley         7 or Flake Flaked Earley         7 or Flake Flaked Earley         7 or Flake Flaked Earley         7 or Flake Flake Flake         7 or Flake	Secondary Fermenter	2.8 g	allons	2.8	gallons	2.8	gallon
Copyrate 80°L, Mat         1 b Chocolation Mat         C Cystat         8 or Plaked Mat         B or part         D or part         D or par <part< th="">         &lt;</part<>	Malt	American Two-Row Malt	6 lbs	British Pale Malt	5 lbs		5 lbs
Chocolate Matt         1 b         Chocolate Matt         4 cz         Flaked Wheat         2 cz           Cane         Flaked Wheat         3 cz         Flaked Matt         2 cz         Cane sugar (added to bol)         1 lt           Color, SRM         34.4         18		Crystal 80°L Malt	CP1 002345	Constant and the second s	1 A CONTRACTOR		5 lbs
Fielded Wheat         3 oz         Fielded Barley         6 oz         Cane sugar (added to boli)         1 it           Color, SRM         3.4.4         10         4							
Peated Mat         2 coc         Cane sugar (edded to boli)         1 It           Dolor, SNM         34.4         18         4           Color, SNM         112         37         4           Color, SNM         25 minutes         30 minutes         25 minutes           Second Reat         25 minutes         30 minutes         25 minutes           Second Reat         70 minute         60 minutes         70 minute           Temperature         146*154* (146*awrag0)         155*159* (156*awrag0)         155*140* (156*awrag0)           Temperature         146*154* (146*awrag0)         155*159* (156*awrag0)         155*140* (156*awrag0)           Temperature         166*         30 gallons         1.25 gallons         1.25 gallons           Temperature         166*         30 gallons         30 gallons         30 gallons           Soling Hops         Cascade pellets (6.2%)         0.25 cz         U.S. Sazz pellets (4.5%)         0.5           Bulo         26.2         22         22         22         22           Feast         White Labs California Ale         1 vial         W/W.PO0.0(VIDK) (22 cz starter)         1 vial           Mainum         1 pinsh Moss         1 pinsh Moss         1 pinsh Moss         1 pinsh Moss				ALC - 02 - 15		Taked Daney	2 02
Color, SRM         34,4         16         4           Color, SKM         112         37         4           Valuel Color, SKM         25 minutes         30 minutes         2.25 gallons           Temperature         1.05 gallons         1.52*(12*)         140*(13*)           Valer, galono         1.52*(14*)         152*(12*)         7440*(13*)           Temperature         1.45*(14*)         155*(15*)*(15		Flanded witheat	3 02				
Color, MCU         112         37         4           Color, MCU         112         37         4           Vetare Qelor, SNM         25 minutes         30 minutes         25 minutes         30 minutes         25 minutes         25 minutes         30 minutes         25 minutes         25 minutes         70 minutes         30 agains         30 agai				Peated Malt	2 oz	Cane sugar (added to boil)	1 ID
Color, MCU         112         37         4           Color, MCU         112         37         4           Vetare Qelor, SNM         25 minutes         30 minutes         25 minutes         30 minutes         25 minutes         25 minutes         30 minutes         25 minutes         25 minutes         70 minutes         30 agains         30 agai	Calas CDM						
Actual Color, SRM	6 (S) (S)		1 A.				4.
Fird Reat         25 minutes         30 minutes         25 minutes           Water, galons         1.56 galons         1.56 galons         2.25 galos           Temperature         1.6 galons         1.5 galons         1.25 galos           Temperature         1.46"-13         1.5 galons         1.25 galos           Temperature         1.46"-154" (148" average)         155"-159" (156" average)         155"-149" (152" average)           Third Reat         Water, galons         2.6 galons         3.0 galons         3.2 galos           Temperature         2.6 galons         3.0 galons         3.2 galos         3.3 galos           Soling Time         2.6 galons         3.0 galons         3.2 galos         3.2 galos           Soling Time         2.6 galons         3.0 galos         3.2 galos         3.2 galos           Soling Time         2.6 galons         3.2 galos         3.2 galos         3.2 galos           Soling Time         2.6 galons         7.5 galos         2.5 galos         2.5 galos           Soling Time         2.6 galons         7.5 galos         2.5 galos         2.5 galos           Soling Time         2.6 galos         0.75 galos         2.5 galos         2.5 galos           Soling Time         3.6 galos         3.			112		37		4.
Water, gallons         1.56 gallons         2.25 gallons           Temperature         130 <sup>4</sup> :134 <sup>4</sup> 132 <sup>4</sup> :127 <sup>4</sup> 140 <sup>4</sup> :136 <sup>4</sup> Second Rest         70 minutes         66 minutes         70 minutes           Temperature         1.65 gallons         1.25 gallons         125 <sup>4</sup> :159 <sup>4</sup> (156 <sup>4</sup> average)           Temperature         146 <sup>4</sup> :154 <sup>4</sup> (148 <sup>4</sup> average)         155 <sup>4</sup> :159 <sup>4</sup> (156 <sup>4</sup> average)         155 <sup>4</sup> :149 <sup>4</sup> (152 <sup>4</sup> average)           Mathout Temperature         2.6 gallons         3.0 gallons         3.0 gallons         3.0 gallons           Joing Time         Cascade pellets (6.2%)         0.75 cz         Kent Golding pellets (6.1%)         0.75 cz           Styrian Golding pellets (6.2%)         0.25 cz         Kent Golding pellets (6.1%)         0.75 cz         Styrian Golding pellets (4.5%)         0.5 f           Coinder         0.25 cz         Kent Golding pellets (6.1%)         0.25 cz         U.S. Sazz pellets (4.5%)         0.5 f           Blue         2.8.1         (WLPO01) (22 cz starter)         2.8.1         White Labs California Ale         1 vial           White Labs California Ale         1 vial         White Labs California Ale         1 vial         WLPO01) (22 cz starter)         2.8 gallo         2.9 gallo         1.0 gallon         0.1 fs gallon           <							
Temperature         130 <sup>4</sup> -134 <sup>4</sup> 132 <sup>4</sup> -127 <sup>4</sup> 140 <sup>4</sup> -13           Second Rest         70 minutes         60 minutes         70 minutes           Water, gallons         1.5 gallons         1.5 gallons         1.25 gallon           Temperature         146 <sup>5</sup> -154 <sup>4</sup> (148 <sup>4</sup> average)         155 <sup>5-159<sup>4</sup></sup> (156 <sup>4</sup> average)         155 <sup>5-149<sup>4</sup></sup> (152 <sup>4</sup> average)           Machout Temperature         166 <sup>4</sup> 60 <sup>6</sup> 177           Sparge Water, gallons         2.6 gallons         3.0 gallons         3.9 gallo           Sparge Water, gallons         2.6 gallons         3.0 gallons         3.9 gallo           Sparge Water, gallons         2.6 gallons         3.0 gallons         3.9 gallo           Sparge Water, gallons         2.6 gallons         3.0 gallons         3.0 gallons           Sparge Water, gallons         Cascade pellets (6.2%)         0.25 cat         U.S. Sazz pellets (4.5%)         0.5 fast           Finishing Hops         Cascade pellets (6.2%)         0.25 cat         U.S. Sazz pellets (4.5%)         0.5 fast           Finishing Hops         Cascade pellets (6.2%)         0.25 cat         Vite Labs Irish Ale         1 vial         White Labs Caternia Ale         1 vial         Wite Case Irishing         0.15 fast           Fiest Irishing Vite (WLPO01) (22 co starter	First Rest	25 n	ninutes	30	minutes	25 r	ninute
Temperature         136 <sup>-</sup> 134 <sup>+</sup> 132 <sup>-</sup> 127 <sup>-</sup> 140 <sup>-</sup> 13           Second Rest         70 minutes         60 minutes         70 minutes           Weter, gallons         1.5 gallons         1.5 gallons         1.25 gallon           Temperature         146 <sup>+</sup> -154 <sup>+</sup> (148 <sup>+</sup> average)         155 <sup>+-</sup> -159 <sup>+</sup> (156 <sup>+</sup> average)         155 <sup>+-</sup> -149 <sup>+</sup> (152 <sup>+</sup> average)           Standard Compendure         146 <sup>+</sup> -154 <sup>+</sup> (148 <sup>+</sup> average)         155 <sup>+-</sup> -159 <sup>+</sup> (156 <sup>+</sup> average)         155 <sup>+-</sup> -149 <sup>+</sup> (152 <sup>+</sup> average)           Standard Compendure         166 <sup>+</sup> 166 <sup>+</sup> 177         30 <sup>+</sup> 30 <sup>+</sup> Standard Compendure         2.6 gallons         3.0 gallons         3.0 gallons         3.0 gallons         3.0 gallons           Standard Compendure         Cascade pallets (6.2%)         0.25 caz         Kent Golding pallets (6.1%)         0.25 caz         U.S. Seaz pallets (4.5%)         0.5 -           Standard Compendure         all tap water         1 vial         White Labs California Ale         1 vial         WHe Pallets (0.2%)         0.25         24         24           Pease         White Labs California Ale         1 vial         WHe Pallets (6.1%)         0.25         26         26         27         26         27         26         27         26         27	Water, gallons	2.0	gallons	1.56	gallons	2.25	gallon
Second Rest         70 minutes         60 minutes         70 minutes           Water, galons         1.5 galions         1.5 galions         1.5 galions           Temperature         146"-154" (148" average)         155"-159" (156" average)         155"-149" (152" average)           Meter, galons         156" - 156" (156" average)         155"-149" (152" average)         155"-149" (152" average)           Meter, galons         2.6 galons         3.0 gallons         3.0 gallons         3.0 gallons           Joiling Time         2.6 galons (3.0 gallons)         3.0 gallons         3.0 gallons         3.0 gallons           Joiling Time         Cascade pellets (6.2%)         0.25 oz         Kent Golding pellets (6.1%)         0.25 oz         U.S. Sazz pellets (4.5%)         0.5 i.           Joiling Hops         Cascade pellets (6.2%)         0.25 oz         Kent Golding pellets (6.1%)         0.25 oz         U.S. Sazz pellets (4.5%)         0.5 i.           Bulds         262         224         Vihite Labs California Ale         1 val         White Labs California Ale         1 val         White Labs California Ale         1 val         Vihite Labs Insh Ale         1 val	Temperature				C		
Water, gallons         1.5 gallons         1.5 gallons         1.25 gallons           Tramperature         146"-154" (148" average)         155"-156" (156" average)         155"-149" (152" average)           Tramperature         166"         166"         177           Temperature         2.6 gallons         3.0 gallons         70 minutes           Soling Time         0.0 minutes         75 minutes         70 minutes           Soling Time         Cascade pellets (6.2%)         0.75 cz         Kent Golding pellets (6.1%)         0.75 cz         Stars pellets (5.1%)         0.75 cz           Soling Hops         Cascade pellets (5.2%)         0.25 cz         Kent Golding pellets (6.1%)         0.25 cz         Cascade pellets (5.2%)         0.5 c           BUS         2.8 callornia Ale         1 vial         White Labs California Ale         1 vial         White Labs Inish Ale         1 vial         White Labs California Ale         1 vial         White Labs Inish Ale         1 vial         White Labs 1 vial         No           Vater/Treatment         all tap water         1 sp linsh Moss         1 on 1rish Moss         1 on 1rish Moss           Trapel         (80% extraction)         1.062         (80% extraction)         1.052         (73% extraction w/o sugar)         1.076           Trapel			Contraction of the local division of the loc	1	and the second second second second		
Temperature India Reat Water, galons         146*-154* (148* average)         155*-156* (156* average)         155*-149* (152* average)           Water, galons         155*-156* (156* average)         155*-149* (152* average)         155*-149* (152* average)           Water, galons         2.6 galons         3.0 galons         7         3 galo           Soling Time         2.6 galons         3.0 galons         7         3 galo           Soling Time         Cascade pellets (6.2%)         0.75 cz         Kent Golding pellets (6.1%)         0.25 cz         U.S. Sazz pellets (4.5%)         0.5 c           Unsweetened chocolicate         8 cz         UN-Pool (22 cz         UN-Pool (22 cz         UN-Pool (22 cz         1 sd         White Labs California Ale         1 vial         (WI-Pool (22 cz         1 sd         WIP-Pool (22 cz         1 sd         1 vial         (WI-Pool (22 cz         1 sd         1 vial         (WI-Pool (22 cz         1 sd         1 vial         1 vial         (WI-Pool (22 cz         1 vial         1 v	CO 27 C 25 C 11 C 11 C 20 C 21	- Control -	Contraction of the		to the second		
Third Rest       Weter galons       The Deck of the Strategy			~				
Water, galions         Image and the second in Second		146°-154° (148° a	verage)	155°-159° (156° a	iverage)	155°-149° (152° a	verage
Temperature Mashout Temperature         Image: Construct on the second seco							
Visethoul Temperature         166°         166°         17           Sparge Water, galona         2.6 galons         3.0 galions         3.0 galions         3.0 galions           Soling Time         100 minutes         75 minutes         75 minutes         70 minutes           Soling Time         Cascade pellets (6.2%)         0.75 oz         Kent Golding pellets (6.1%)         0.75 oz         U.S. Saaz pellets (4.5%)         0.5 oz           Sinhing Hops         Cascade pellets (6.2%)         0.25 oz         Kent Golding pellets (6.1%)         0.25 oz         U.S. Saaz pellets (4.5%)         0.5 oz           BUs         28.1         25.2         25.2         25.2         260           BUs         28.1         25.2         262         261         27.5 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>							
Visethoul Temperature         166°         166°         17           Sparge Water, galona         2.6 galons         3.0 galions         3.0 galions         3.0 galions           Soling Time         100 minutes         75 minutes         75 minutes         70 minutes           Soling Time         Cascade pellets (6.2%)         0.75 oz         Kent Golding pellets (6.1%)         0.75 oz         U.S. Saaz pellets (4.5%)         0.5 oz           Sinhing Hops         Cascade pellets (6.2%)         0.25 oz         Kent Golding pellets (6.1%)         0.25 oz         U.S. Saaz pellets (4.5%)         0.5 oz           BUs         28.1         25.2         25.2         25.2         260           BUs         28.1         25.2         262         261         27.5 <td< td=""><td>Temperature</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Temperature						
Sparge Water, gallons         3.0 gallons         3.0 gallons         3.0 gallons           Joiling Time         100 minutes         75 minutes <td< td=""><td></td><td></td><td>166*</td><td></td><td>166*</td><td></td><td>170</td></td<>			166*		166*		170
Joiling Time         100 minutes         75 minutes         70 minut           Soiling Hops         Cascade pellets (6.2%)         0.75 cc         Styrian Golding pellets (6.1%)         0.75 cc           Tinishing Hops         Cascade pellets (6.2%)         0.25 cz         Kent Golding pellets (6.1%)         0.25 cz         U.S. Saaz pellets (4.5%)         0.5 c           Einishing Hops         Cascade pellets (6.2%)         0.25 cz         Kent Golding pellets (6.1%)         0.25 cz         U.S. Saaz pellets (4.5%)         0.5 c           BUs         28.1         25.2         23         100         20         20         20         20         20         20		28					
Boiling Hops         Cascade pellets (6.2%)         0.75 oz B oz         Kent Golding pellets (6.1%)         0.75 oz D.S. Sazz pellets (4.5%)         U.S. Sazz pellets (4.5%)         0.5 oz D.S. Sazz pelle			Station management				All states
Unsweetened chocolate         8 cz         U.S. Saaz peliets (4.5%)         0.5 i <sup>2</sup> inishing Hops         Cascade pellets (6.2%)         0.25 cz         Coriander         0.5 cz <sup>2</sup> inishing Hops         Cascade pellets (6.2%)         0.25 cz         U.S. Saaz peliets (4.5%)         0.5 cz           EUs         25.2         25.2         25.2         25.2         25.2           Feast         White Labs California Ale (WLP001) (22 oz starter)         1 vial White Labs         White Labs         1 vial Belgian WK (WLP001) (22 oz starter)         1 vial Belgian Starter)         1 vial Belgian Starter)         1 vial Belgian Starter)         1 vial starter)         1 vial Belgian Starter)	A REAL PROPERTY AND A REAL				and the second second		
Finishing Hops         Cascade pellets (6.2%)         0.25 oz         Kent Golding pellets (6.1%)         0.25 oz         U.S. Sazz pellets (4.5%)         0.5 oz           BUS         28.1         26.2         25.2         22.5         23.5         23.5	Boiling Hops		0.75 oz	Kent Golding pellets (6.1%)	0.75 oz	Styrian Golding pellets (4.0%)	0.75 (
BUs       Coriander       0.5 i         BUs       28.1       25.2       22         (reast       White Labs California Ale (WLP001) (22 oz starter)       1 vial (WLP004) (22 oz starter)       White Labs Trappist (WLP200) (22 oz starter)       1 wial (WLP200) (22 oz starter)       White Labs Trappist (WLP200) (22 oz starter)       1 wial (WLP200) (22 oz starter)       White Labs Trappist (WLP200) (22 oz starter)       1 wial (WLP200) (20 oz starter)       1 wial (20 o		Unsweetened chocolate	8 oz			U.S. Saaz pellets (4.5%)	0.5 0
Bitter orange peel         0.25           BUS         26.1         26.2         22           reast         White Labs California Ale (WLP5001) (22 oz starter)         1 vial White Labs Trappist (WLP5001) (22 oz starter)         White Labs Trappist (WLP5001) (VLP5002) (VLF5002) (VLP5002) (VLF5002)	Finishing Hops	Cascade pellets (6.2%) (	0.25 oz	Kent Golding pellets (6.1%)	0.25 oz	U.S. Saaz pellets (4.5%)	0.5 0
Bitter orange peel         0.25           BUS         26.1         26.2         22           reast         White Labs California Ale (WLP5001) (22 oz starter)         1 vial White Labs Trappist (WLP5001) (22 oz starter)         White Labs Trappist (WLP5001) (VLP5002) (VLF5002) (VLP5002) (VLF5002)						Coriander	0.5 0
BUS     28.1     26.2     25.2     25.2       reast     White Labs California Ale (WLP001) (22 oz starter)     1 vial (WLP004) (22 oz starter)     White Labs Trappist     1 vial (WLP000) (22 oz starter)       Water/Treatment     all tap water     5 gal DJ, 1.5 gal tap     1 vial       Vater/Treatment     all tap water     5 gal DJ, 1.5 gal tap     1.062       Triginal Gravity     1.076     1.082     1.016       Maximum     1.076     1.082     1.016       Triginal Gravity     1.066     1.053     1.0       Measured     1.016     1.020     1.0       Triding Gravity     1.016     1.019     1.0       Syparent Attenuation     73%     6.44%     0.0       Ordential Alcohol, %     5.04%     6.30%     3.57%     4.46%       Ordential Alcohol, %     5.04%     6.65     66       Second ary Fermenter     1/14/00     2/19/00     3/25/00       Ordential Alcohol, %     2.7     30     one 3-2gal/0       Trimary Gravity     1.160     1.0     65     665       Gravity     0.45     0.44     0.65     65       Ordential Alcohol, %     5.04%     6.82%     8.55     6.65     65       Ordential Alcohol, %     5.04%     6.55 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
feast       White Labs California Ale (WLP001) (22 oz starter)       1 vial (WLP004) (22 oz starter)       White Labs Trappist 1 vial (WLP004) (22 oz starter)       White Labs Trappist 1 vial (WLP004) (22 oz starter)       1 vial (WLP004) (22 oz starter)         Vater/Treatment       all tap water       5 gal DI, 15 gal tap no lrish Moss       1 vial (WLP004) (22 oz starter)       White Labs Trappist Wut/VLP500) (22 oz starter)       1 vial (WLP004) (22 oz starter)         Original Gravity       all tap water       5 gal DI, 15 gal tap no lrish Moss       5 gal DI, 15 gal tap no lrish Moss         Original Gravity       1.076       (80% extraction)       1.062       (80% extraction)       1.062         Primary Gravity       1.018       1.019       (73% extraction w/o sugar)       1.053       1.0         Criential Alcohol, %       5.04% extraction       0.43       0.48       0.0         Ordential Alcohol, %       5.04% extraction       3.57% 4.46%       6.82% e.52%         Scook Installed       1/14/00       2/19/00       3/25/00         Primary Gravity Fermenter Temp       655       65°       66°         Orming Sugar, cups       Corn Sugar       1/2       Corn Sugar       1/2         Orming Sugar, cups       Corn Sugar       1/2       Corn Sugar       1/2         Brewing       Hops added at 70 and 2 min						bitter orange peer	0.25 0
(WLP001) (22 oz starter)       (WLP004) (22 oz starter)       (WLP500), White Labs       1 in         Water/Treatment       all tap water       1 tap water       5 gal DI, 1 5 gal tap         Original Gravity       1 tap lrish Moss       1 obc       (80% extraction)       1.062         Maximum       1.076       (80% extraction)       1.062       (80% extraction)       1.062         Primary Gravity       1.018       1.019       1.020       1.0         Primary Gravity       1.018       1.019       1.020       1.0         Christe Efficiency, %       85%       85%       64%       0.48       0.48         Apparent Attenuation       73%       64%       0.48	BUs		26.1		25.2		25.
(WLP001) (22 oz starter)     (WLP004) (22 oz starter)     (WLP500), White Labs     1 vi       Nater/Treatment     all tap water     1 tsp lrish Moss     1 sg ling. 1.5 gal tap       Driginal Gravity     1 tsp lrish Moss     1 obs     1 obs     1.062     1.1       Maximum     1.076     (80% extraction)     1.062     (80% extraction)     1.062       Primary Gravity     1.018     1.020     1.0       Primary Gravity     1.018     1.019     1.0       Critact Efficiency, %     85%     85%     85%       Apparent Attenuation     73%     64%     72       Ortential Alcohol, %     5.04%     6.30%     3.57%     4.46%     6.82%       Ortential Alcohol, %     5.04%     6.30%     3.57%     4.46%     6.82%       Ortential Alcohol, %     5.04%     6.30%     3.57%     4.46%     6.82%       Ortential Alcohol, %     5.04%     6.5°     65°     66°       Corn Sugar     1/2     Corn Sugar     1/2     Corn Sugar     1/2       Corn Sugar     1/2     Corn Sugar     1/3     Corn Sugar     1/7       Vater, cups     2     2     2     2     2     2       Corn Sugar     1/2     Corn Sugar     1/3     Corn Suga	Yeast	White Labs California Ale	1 viai	White Labs Irish Ale	1 vial	White Labs Trappist	1 via
Vater/Treatment         Belgian Wit (WLP400) (22 oz           Vater/Treatment         all tap water         5 gal DJ, 1.5 gal tap           Original Gravity         1 tap Irish Moss         1 tap Irish Moss           Maximum         1.076         1.062           Amaximum         1.076         1.062           Original Gravity         1.066         1.053           Primary Gravity         1.018         1.020           Criginal Gravity         1.018         1.020           Scrinding Gravity         1.018         1.020           Crading Gravity         1.018         1.020           Scrinding Gravity         1.018         1.020           Scrinding Gravity         1.018         1.020           Scrinding Gravity         0.043         0.448           QuiGU         0.443         0.449           Ordential Alcohol, %         5.04%         6.30%           Scock Installed         1/14/00         2/19/00           Secondary Fermenter         1/16/00         2/19/00           Priming Sugar, cups         Corn Sugar         1/12           Gorn Sugar         1/12         Corn Sugar         1/12           Orimary Fermenter Temp         65°         65°         65					i vico		
Water/Treatment     all tap water     s g al Di, 1.5 g al tap no Irish Moss       Original Gravity     1 tap Irish Moss     no Irish Moss       Maximum     1.076     1.062       Maximum     1.076     1.062       Masimum     1.076     1.062       Measured     1.066     1.053       Original Gravity     1.018     1.020       Ching Gravity     1.018     1.019       Schort All Condensity     1.018     1.019       Extract Efficiency, %     85%     85%       Opparent Attenuation     73%     64%       Ortatial Alcohol, %     5.04%     6.30%       Octential Alcohol, %     5.04%     6.30%       Octential Alcohol, %     5.04%     6.30%       Secondary Fermenter     1/16/00     2/19/00       Secondary Fermenter Temp     65°     65°       Orting Sugar, cups     2     2       Vater, cups     2     2       Immerits     27     30       Brewing     Hops added at 70 and 2 minutes.     Fermentation beginning at 16 hours.       Fermentation     Second in Speciality at AFC2000.     Second in Scottish Alse at 2000 AHA       Fermentation     First in Porters and Best of Show at Filtyline 2000 (Tucson).     Second in Scottish Alse at 2000 AHA							1 110
1 tsp Irish Moss     1 tsp Irish Moss     1 tsp Irish Moss     1 tsp Irish Moss       Original Gravity     1.076     1.062     1.062       Maximum     1.076     1.062     (80% extraction)     1.053       Maximum     1.076     (80% extraction)     1.053     1.0       Measured     1.066     1.053     (80% extraction)     1.053       Originary Gravity     1.018     1.020     1.0       Ending Gravity     1.018     1.019     1.0       Extract Efficiency, %     85%     85%     (73% extraction w/o sugar)       Optential Alcohol, %     5.04%     3.57%     4.46%       Optential Alcohol, %     5.04%     3.57%     4.66%       Optential Alcohol, %     5.04%     6.55*     6.55*       Optential Alcohol, %     5.04%     6.55*     6.55*       Optential Alcohol, %     1.0400     2/19/00     3/25/00       Primary Fermenter Temp     65*     65*     6.5*       Decondary Fermenter Temp     6	Mater/Treatment	all tap water		all too water			
Driginal Gravity         1.076         1.062         (80% extraction)         1.050           Target         (80% extraction)         1.066         1.053         1.0           Primary Gravity         1.018         1.020         1.0           Extract Efficiency, %         85%         85%         (73% extraction w/o sugar)         76           Attract Efficiency, %         85%         64%         76         76           Attract Efficiency, %         85%         85%         (73% extraction w/o sugar)         76           Attract Efficiency, %         85%         85%         64%         76           QU/GU         0.43         0.48         0.0         76           Suract Efficiency, %         90%         wt%         wol%         76           QU/GU         0.43         0.48         0.0         76           Suract Installed         1/14/00         2/19/00         3/25/00         3/25/00           Secondary Fermenter Temp         65°         65°         65°         65°           Orming Sugar, cups         Corn Sugar         1/2         Corn Sugar         1/3         Corn Sugar         1/3           Brewing         Hops added at 70 and 2 minutes.         Fermentation beginning at	valor realifent						
Maximum         1.076         1.062         1.162           Target         (80% extraction)         1.062         (80% extraction)         1.050         (80% extraction)         1.0           Primary Gravity         1.018         1.020         1.0         1.0           Extract Efficiency, %         85%         85%         (73% extraction w/o sugar)         76           Augarent Attenuation         73%         64%         73         76           Augarent Attenuation         73%         64%         0.0         76           Optamit Attenuation         73%         64%         0.0 <td>Original Gravity</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td>	Original Gravity						-
Target Measured(80% extraction)1.062 1.066(80% extraction)1.050 1.050(80% extraction)1.050 1.050Primary Gravity Ending Gravity1.0181.0201.0Extract Efficiency, % Apparent Attenuation85% 73%85% 64%7683U/GU0.430.440.0Potential Alcohol, % Cock Installed5.04% 6.30% 1/14/003.57% 2/19/004.46% 3.57%6.82% 4.68%Secondary Fermenter Primary Fermenter1/14/002/19/003/25/00Primary Fermenter Primary Fermenter1/16/002/19/003/25/00Primary Guar, cups Vater, cupsCorn Sugar 21/2Corn Sugar 21/2BrewingHops added at 70 and 2 minutes. First in Porters and Best of Show at Flightline 2000 (Tucson).Fermentation beginning at 16 hours.Fermentation at 17 hours.BeerSecond in Speciality at AFC2000. First in Porters and Best of Show at Flightline 2000 (Tucson).Second in Scottish Ales at 2000 AHA Ales at 2000 Del Mar Fair.Active fermentation at 17 hours.	<b>.</b> ,		4.070		4 0 0 0		
Measured     1.066     1.053     1.0       Primary Gravity     1.018     1.020     1.0       Ending Gravity     1.018     1.020     1.0       Extract Efficiency, %     85%     85%     85%       Apparent Attenuation     73%     64%     76       2U/GU     0.43     0.48     0.       Potential Alcohol, %     5.04% 6.30%     3.57%     4.46%       Scock Installed     1/14/00     2/19/00     3/25/00       Secondary Fermenter     1/16/00     2/19/00     3/25/00       Secondary Fermenter Temp     65°     65°       Secondary Fermenter Temp     65°     65°       Corn Sugar     1/2     Corn Sugar     1/2       Primary Fermenter Temp     65°     65°     65°       Scondary Fermenter Temp     65°     65°     65°       Corn Sugar     1/2     Corn Sugar     1/2       Corn Sugar     1/2     30     one 3-gallon k       Scond in Specialty at AFC2000.     Fermentation beginning at 16 hours.     Active fermentation at 17 hours.    <							
Primary Gravity1.0181.0201.0Ending Gravity1.0181.0201.0Extract Efficiency, %85%85%(73% extraction w/o sugar)76Apparent Attenuation73%64%76Apparent Attenuation73%64%76AU/GU0.430.480.Potential Alcohol, %5.04%6.30%3.57%4.46%6.62%8.52Sock Installed1/14/002/19/003/25/003/25/00Primary Fermenter1/16/002/19/003/25/0065°66°Priming Sugar, cupsCorn Sugar1/2Corn Sugar1/3Vater, cups22222Number of Bottles2730one 3-gallon kminutes. Orange peak at 50 minutes and 55BrewingHops added at 70 and 2 minutes.Hops added at 50 and 2 minutes.Hops added at 50 minutes and 50 minutes and 50 minutes and 50 minutes and 51 minutes.FermentationFermentation beginning at 16 hours.Fermentation beginning at 16 hours.Active fermentation at 17 hours.BrewingSecond in Speciality at AFC2000. First in Porters and Best of Show at Flightline 2000 (Tucson).Second in Scottish Ales at 2000 AHA Ales at 2000 Del Mar Fair.Active fermentation at 17 hours.	-	(80% extraction)		(80% extraction)	1.050	(80% extraction)	1.08
Ending Gravity     1.018     1.019     1.019       Extract Efficiency, %     85%     85%     (73% extraction w/o sugar)     76       Apparent Attenuation     73%     64%     72       3U/GU     0.43     0.48     0.       Ortential Alcohol, %     5.04%     6.30%     3.57%     4.46%     6.82%     8.53       Social Installed     1/14/00     2/19/00     3/25/00     3/25/00       Secondary Fermenter     1/16/00     2/19/00     3/25/00     3/29/00       Priming Sugar, cups     Corn Sugar     1/2     Corn Sugar     1/2       Vater, cups     2     2     2     2       Jumber of Bottles     27     30     one 3-gallon k       Brewing     Hops added at 70 and 2 minutes.     Hops added at 50 and 2 minutes.     Hops added at 50 minutes and 5 minutes.       Fermentation     Fermentation beginning at 16 hours.     Second in Speciality at AFC2000.     Second in Speciality at AFC2000.       First in Porters and Best of Show at Flightline 2000 (Tucson).     Second in Speciality at AFC2000.     Second in Speciality at AFC2000.	Measured		1.066		1.053		1.08
Extract Efficiency, %       85%       85%       (73% extraction w/o sugar)       76         Apparent Attenuation       73%       64%       76         BU/GU       0.43       0.46       0.         Potential Alcohol, %       5.04% 6.30%       3.57% 4.46%       6.82% 8.55         ock Installed       1/14/00       2/19/00       3/25/00         Secondary Fermenter       1/16/00       2/19/00       3/25/00         Primary Fermenter Temp       65°       65°       65°         Secondary Fermenter Temp       65°       65°       65°         Priming Sugar, cups       Corn Sugar       1/2       Corn Sugar       1/3         Vater, cups       2       2       2       2         Vater, cups       2       2       2       2         Comments       2       2       2       2         Brewing       Hops added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 minutes and 5         Fermentation       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Active fermentation at 17 hours.         Beer       Second in Speciality at AFC2000.       Second in Scottish Ales at 2000 AHA       Ales at 2000 Del Mar Fair.       Active fermentation at 1	Primary Gravity		1.018		1.020		1.03
Extract Efficiency, %       85%       85%       (73% extraction w/o sugar)       76         Apparent Attenuation       73%       64%       76         BU/GU       0.43       0.46       0.         Potential Alcohol, %       5.04% 6.30%       3.57% 4.46%       6.82% 8.55         ock Installed       1/14/00       2/19/00       3/25/00         Secondary Fermenter       1/16/00       2/19/00       3/25/00         Primary Fermenter Temp       65°       65°       65°         Secondary Fermenter Temp       65°       65°       65°         Priming Sugar, cups       Corn Sugar       1/2       Corn Sugar       1/3         Vater, cups       2       2       2       2         Vater, cups       2       2       2       2         Comments       2       2       2       2         Brewing       Hops added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 minutes and 5         Fermentation       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Active fermentation at 17 hours.         Beer       Second in Speciality at AFC2000.       Second in Scottish Ales at 2000 AHA       Ales at 2000 Del Mar Fair.       Active fermentation at 1	Ending Gravity						1.01
Apparent Attenuation       73%       64%       76         BU/GU       0.43       0.48       0.         octential Alcohol, %       5.04%       6.30%       3.57%       4.46%       6.82%       8.53         octential Alcohol, %       5.04%       6.30%       3.57%       4.46%       6.82%       8.53         oct Installed       1/14/00       2/19/00       3/25/00       3/25/00       3/25/00       3/29/00	<b>.</b>		104			(73% extraction who average	
BU/GU       0.43       0.48       0.         Potential Alcohol, %       \$\$04% 6.30%       \$\$3.57% 4.46%       \$\$6.82% 8.55         .ock Installed       1/14/00       2/19/00       3/25/00         secondary Fermenter       1/16/00       2/19/00       3/25/00         Primary Fermenter Temp       65°       65°       65°         Secondary Fermenter Temp       65°       65°       65°         Priming Sugar, cups       Corn Sugar       1/2       Corn Sugar       1/3         Vater, cups       2       2       2       2         Jumber of Bottles       27       30       one 3-gallon k         Comments       Hops added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 minutes and 5         Fermentation       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Active fermentation at 17 hours.         Beer       Second in Specialty at AFC2000.       Second in Scottish Ales at 2000 AHA       Ales at 2000 Del Mar Fair.						(13 % extraction w/o sugar)	
Detential Alcohol, %       wt% vol%       wt% vol%       wt% vol%       wt% vol%         Detential Alcohol, %       5.04% 6.30%       3.57% 4.46%       6.82% 8.53         .ock Installed       1/14/00       2/19/00       3/25/00         Detendary Fermenter       1/16/00       2/19/00       3/25/00         Detendary Fermenter       1/16/00       2/19/00       3/29/00         Drimary Fermenter Temp       65*       65*       65*         Decondary Fermenter Temp       65*       65*       65*         Vater, cups       2       2       2       2         Vater, cups       2       30       one 3-gallon k       5         Domments       Hops added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 minutes.       Fermentation beginning at 16 hours.       Active fermentation at 17 hours.         Fermentation       Fermentation beginning at 16 hours.       Second in Scottish Ales at 2000 AHA       NHC First Round. Secon							
Potential Alcohol, %       5.04% 6.30%       3.57% 4.46%       6.82% 8.53         ock Installed       1/14/00       2/19/00       3/25/00         Becondary Fermenter       1/16/00       2/19/00       3/29/00         Primary Fermenter Temp       65°       65°       65°         Permenter Temp       65°       65°       65°         Permenter Temp       65°       65°       65°         Perming Sugar, cups       Corn Sugar       1/2       2	80/80						0.3
cock installed       1/14/00       2/19/00       3/25/00         Secondary Fermenter       1/16/00       2/19/00       3/29/00         Primary Fermenter Temp       65°       65°       65°         Secondary Fermenter Temp       65°       65°       65°         Priming Sugar, cups       Corn Sugar       1/2       Corn Sugar       1/3         Vater, cups       2       2       2       2         Number of Bottles       27       30       one 3-gallon k         Comments       Priming added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 minutes.         Fermentation       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Active fermentation at 17 hours.         Beer       Second in Specialty at AFC2000.       Second in Scottish Ales at 2000 AHA       Active fermentation at 17 hours.         First in Porters and Best of Show at Flightline 2000 (Tucson).       Ales at 2000 Del Mar Fair.       Active fermentation at 17 hours.			114				Vol
Beer       Second in Specialty at AFC2000. First in Porters and Best of Show at Flightline 2000 (Tucson).       Second in Specialty at AFC2000. Flightline 2000 (Tucson).       Second in Specialty at AFC2000. Ales at 2000 Det Mar Fair.       Second in Specialty at AFC2000. Flightline 2000 (Tucson).	and the second se	5.04%	6.30%	3.57%	4.46%	6.82%	8.53
Secondary Fermenter         1/16/00         2/19/00         3/29/00           Primary Fermenter Temp         65°         65°         65°           Secondary Fermenter Temp         65°         65°         65°           Priming Sugar, cups         Corn Sugar         1/2         Corn Sugar         1/3           Vater, cups         2         2         2         2         2           Number of Bottles         27         30         one 3-gallon k         2           Comments         2         30         one 3-gallon k         3 <td>.ock Installed</td> <td>1/14/00</td> <td></td> <td>2/19/00</td> <td>1</td> <td>3/25/00</td> <td></td>	.ock Installed	1/14/00		2/19/00	1	3/25/00	
Primary Fermenter Temp       65°       65°       65°         Secondary Fermenter Temp       65°       65°       65°         Priming Sugar, cups       Corn Sugar       1/2       Corn Sugar       1/3       Corn Sugar       1/7         Vater, cups       2       30       0       0       0       9       30       0       0       9       30       0       0       9       30       0       0       9       30       0       0       30       0       0       30       0       0       30       0       0       30       0       0       30       0       0       30       0       0       30       0       0       30       0       0       30       0	Secondary Fermenter			The second se			
Becondary Fermenter Temp       65°       65°       65°         Ortming Sugar, cups       Corn Sugar       1/2       Corn Sugar       1/3       Corn Sugar       1/3         Vater, cups       2       30       0       0       0       9       3       0       0       0       0       0       0       9       3       0 <td< td=""><td></td><td></td><td>65%</td><td>2,15/00</td><td>SE.</td><td></td><td>6</td></td<>			65%	2,15/00	SE.		6
Oriming Sugar, cups       Corn Sugar       1/2       Corn Sugar       1/3       Corn Sugar       1/3         Vater, cups       2       <							_
Vater, cups       2       2       2         Number of Bottles       27       30       one 3-gallon k         Jomments       Image: Second in Specialty at AFC2000.       Hops added at 50 and 2 minutes.       Hops added at 50 minutes and 5 minutes.         Beer       Second in Specialty at AFC2000.       First in Porters and Best of Show at Flightline 2000 (Tucson).       Second in Scottish Ales at 2000 Del Mar Fair.			_	0		0.0	6
Number of Bottles       27       30       one 3-gallon k         Comments       Image: Second in Specially at AFC2000.       Hops added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 and 2 minutes.         Beer       Second in Specially at AFC2000.       First in Porters and Best of Show at Flightline 2000 (Tucson).       Second in Scottish Ales at 2000 Del Mar Fair.       Active fermentation		Corn Sugar		Corn Sugar	1/3	Com Sugar	1/2
Comments       Hops added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 and 2 minutes.         Brewing       Hops added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 minutes.         Fermentation       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Active fermentation at 17 hours.         Beer       Second in Specialty at AFC2000.       Second in Scottish Ales at 2000 AHA       NHC First Round. Second In Scottish         Flightline 2000 (Tucson).       Ales at 2000 Del Mar Fair.       Active fermentation							2
Comments       Hops added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 and 2 minutes.         Brewing       Hops added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 minutes.         Fermentation       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Active fermentation at 17 hours.         Beer       Second in Specialty at AFC2000.       Second in Scottish Ales at 2000 AHA       NHC First Round. Second In Scottish         Flightline 2000 (Tucson).       Ales at 2000 Del Mar Fair.       Active fermentation	Number of Bottles		27		30	one 3-ga	lon ke
Brewing       Hops added at 70 and 2 minutes.       Hops added at 50 and 2 minutes.       Hops added at 50 minutes.         Fermentation       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Active fermentation at 17 hours.         Beer       Second in Specialty at AFC2000. First in Porters and Best of Show at Flightline 2000 (Tucson).       Second in Scottish Ales at 2000 AHA Ales at 2000 Del Mar Fair.       Active fermentation at 17 hours.	Comments						
Fermentation       Fermentation beginning at 16 hours.       Fermentation beginning at 16 hours.       Active fermentation at 17 hours.         Beer       Second in Specialty at AFC2000.       Second in Scottish Ales at 2000 AHA       NHC First Round. Second in Scottish         Bightline 2000 (Tucson).       Ales at 2000 Del Mar Fair.       Active fermentation at 17 hours.		Hops added at 70 and 2 min	utes.	Hops added at 50 and 2 min	utes.	minutes. Orange peel at 15 m	ninutes
Beer     Second in Specialty at AFC2000.       First in Porters and Best of Show at Flightline 2000 (Tucson).     Second in Scottish Ales at 2000 AHA NHC First Round. Second In Scottish Ales at 2000 Del Mar Fair.	Fermentation	Fermentation beginning at 16	hours,	Fermentation beginning at 16	hours.		
First in Porters and Best of Show at Flightline 2000 (Tucson), Ales at 2000 Del Mar Fair.							
Flightline 2000 (Tucson). Ales at 2000 Del Mar Fair.	Beer			Second in Scottish Ales at 200	DO AHA		
Flightline 2000 (Tucson). Ales at 2000 Del Mar Fair.		First in Porters and Best of SI	how at	NHC First Round. Second In S	Scottish		

Image: Control of the second
Bottling Date         4/16/00         6/4/00           Primary Fermenter         3.0 gallons         3.0 gallons         3.0 gallons           Secondary Fermenter         2.8 gallons         2.8 gallons         2.8 gallons           Malt         Wheat Malt         2 lbs         Christ Pale Malt         4 lbs         American Tow-Row Malt           Malt         Wheat Malt         2 lbs         Christ Pale Malt         4 lbs         Wheat Malt         4 lbs         Wheat Malt         Chocolate Malt         1 lbs         Flaked Barley         1 lb         Flaked Barley         1 lb         Flaked Barley         5 oz         Maito Malteckberries (frozen)           Color, SRM         Color, SRM         2         44         156         Marion blackberries (frozen)         Cranberry-raspberry concent           Color, SRM         18 minutes         1.5 minutes         1.6 gallons         1.6 gallons           Temperature         1.0 gallons         1.0 gallons         1.0 gallons         1.0 gallons           Temperature         160°-153° (156° average)         154°-148° (150° average)         148°-145°           Third Rest         0.0 gallons         1.0 gallons         1.0 gallons         1.0 gallons           Temperature         160°-153° (156° average)         154°-148° (150° av
Primary Fermenter         3.0 gallons         3.0 gallons         2.8 gallons           Secondary Fermenter         2.8 gallons         2.8 gallons         2.8 gallons           Matt         Wheet Malt         2 lbs         British Pale Malt         4 bs         American Tow-Row Malt           German Pilsener Malt         2 lbs         Crystal 80°L. Malt         8 oz         Wheet Malt         1 oz           Flaked Barley         4 oz         Chocolate Malt         11 oz         Crystal 80°L. Malt         Flaked Barley         Flaked Barley         Flaked Barley         5 oz         Marino Iblackberries (frozen)           Color, SRM         2         44         Flaked Barley         5 oz         Marino Iblackberries (frozen)           Color, MCU         2         44         166         15 minutes         1.3 gallons           Actual Color, SRM         11 minutes         1.17 gallons         1.63 gallons         1.0 gallons           Temperature         1.0 gallons         1.0 gallons         1.0 gallons         1.0 gallons           Temperature         160°-153° (156° average)         154°-148° (150° average)         148°-145°           Water, gallons         2.66 gallons         60 minutes         60 minutes           Boling Hops         Tettnenger pellets (4.9%)
Secondary Fermenter         2.8 gallons         2.8 gallons           Malt         Wheat Malt         2 lbs         British Pale Malt         4 lbs           German Pilsener Malt         2 lbs         Crystal 80°L Malt         8 oz           Flaked Barley         4 oz         Chocolate Malt         11 oz         Crystal 80°L Malt           Color, SRM         2         4 dz         Chocolate Malt         11 oz         Crystal 80°L Malt           Color, SRM         2         44         Chocolate Malt         11 oz         Crystal 80°L Malt           Color, SRM         2         44         Chocolate Malt         11 oz         Crystal 80°L Malt           Color, SRM         2         156         Marion blackbarries (frozen)         Cranberry-raspberry concent           Color, SRM         2         156         Malt         Chocolate Malt         10 pallons           Temperature         1.17 gallons         1.63 gallons         1.63 gallons         1.63 gallons           Temperature         180°-153° (156° average)         154°-148° (150° average)         148°-145°           Third Rest         60 minutes         60 minutes         60 minutes         60 minutes           Boiling Thops         2.66 gallons         3.18 gallons         3.18 g
Secondary Fermenter         2.8 galions         2.8 galions           Matt         Wheat Matt         2 lbs         British Pale Matt         4 lbs         American Tow-Row Matt           Matt         German Pilsener Matt         2 lbs         British Pale Matt         4 lbs         American Tow-Row Matt           Flaked Barley         4 oz         Chocolate Matt         11 oz         Crystal 60°L Matt         6 oz           Color, SRM         Chocolate Matt         11 oz         Crystal 60°L Matt         6 oz           Color, SRM         2         144         6         Chocolate Matt         11 oz           Color, SRM         2         144         6         Chocolate Matt         11 oz         Chocolate Matt         Chocolate Matt<
Mait     Wheat Mait     2 lbs     British Pale Mait     4 bs     American Tow-Row Mait       German Pilsener Mait     2 lbs     Crystal 80°L Mait     8 oz     Wheat Mait     Wheat Mait       Flaked Barley     4 oz     Chocolate Mait     11 oz     Crystal 80°L Mait     8 oz       Roasted Barley     1 b     Flaked Barley     5 oz     Mait no blackbernies (frozen)       Color, SRM     2     44       Color, NCU     2     44       Actual Color, SRM     18 minutes     1.5 minutes       First Rest     18 minutes     1.63 gallons       Temperature     1.28°-125°     1.40°-132°       Second Rest     60 minutes     75 minutes       Temperature     1.00 gallons     1.00 gallons       Temperature     160°-153° (156° average)     154°-148° (150° average)       Third Rest     Water, gallons     3.10 gallons       Temperature     2.68 gallons     3.18 gallons       Bolling Time     30 minutes     60 minutes       Bolling Hops     Tettnanger pellets (4.9%)     0.25 oz       Finishing Hops     Tettnanger pellets (4.9%)     0.25 oz       IBUs     4 gal Di, 0.65 gal tap water     1 iap water     1 gal Di, 0.55 gal tap water       Ispiret Moss     1 tap Irish Moss @ 15 minutes     1 t
German Pilsener Malt         2 lbs         Crystal 80°L Malt         8 oz         Wheet Malt           Flaked Barley         4 oz         Flaked Barley         1 b         Flaked Barley         1 b           Color, SRM         Color, SRM         5 oz         Marion blackberries (frozen) Cranbeny-raspberry concent           Color, SRM         2         44         Chockberries (frozen)         Cranbeny-raspberry concent           Color, SRM         2         44         Chockberries (frozen)         Cranbeny-raspberry concent           Color, SRM         2         44         Chockberries (frozen)         Cranbeny-raspberry concent           Color, SRM         117 gellons         1.63 gallons         165         Color, Stat (Songallons)           Temperature         117 gellons         1.63 gallons         160°-132°         140°-132°           Second Rest         000 minutes         75 minutes         154°-148° (150° average)         148°-145°           Third Rest         1.0 gallons         1.0 gallons         154°-148° (150° average)         154°-144°           Meahout Temperature         170°         169°         154°-144°         154°-144°           Boiling Imperature         30 minutes         60 minutes         60 minutes         60 minutes           Boilin
Flaked Barley       4 oz       Chocolate Malt       11 oz       Crystal 60°L Malt         Roasted Barley       1 to       Flaked Barley       5 oz       Marion blackberries (frozen)         Color, SRM       2       44         Color, MCU       2       44         Actual Color, SRM       2       44         First Rest       18 minutes       15 minutes         Meter, gallons       1.17 gellons       1.63 gallons         Temperature       120°-125'       140°-132'         Sacond Rest       60 minutes       75 minutes         Meter, gallons       1.0 gallons       1.0 gallons         Temperature       160°-153° (156° average)       154'-148° (150° average)       148'-145'         Water, gallons       2.68 gallons       3.16 gallons       154'-148''       10 gallons         Temperature       30 minutes       60 minutes       60 minutes       154'-148'' (150' average)       154'-144''         Maehout Temperature       30 minutes       60 minutes       60 minutes       154'-148'' (150''''''''''''''''''''''''''''''''''''
Roasted Barley     1 b Flaked Barley     Flaked Barley     1 b Soz     Flaked Barley     Flaked Barley     Marion blackberies (frozen) Cranbeny-raspberry concent Cranbeny-raspberry concent       Color, SRM     2     44       Color, SRM     2     166       Actual Color, SRM     2     166       First Rest     18 minutes     15 minutes       Water, galons     1.17 galons     1.63 galons       Temperature     129°-125°     140°-132°       Second Rest     60 minutes     75 minutes       Water, galons     1.0 galons     1.0 galons       Temperature     160°-153° (156° average)     154°-148° (150° average)     148°-145°       Temperature     160°-153° (156° average)     154°-148° (150° average)     148°-145°       Water, galons     1.0 galons     1.0 galons     154°-148° (150° average)     148°-145°       Sparge Water, galons     2.68 gallons     3.18 gallons     60 minutes       Boiling Time     30 minutes     60 minutes     60 minutes       Boiling Hops     Tettnanger pellets (4.9%)     0.25 oz     Irish Northdown pellets (9.4%)     1 oz       Finishing Hops     Itel in sun for a day)     (24 oz starter)     (24 oz starter)     (24 oz starter)       Water/Treatment     4 gal DI, 0.85 gal tap water     1 val     White Labs
Flaked Barley     5 oz     Marion blackberries (frozen) Cranbery-raspberry concent Color, SRM       Color, SRM     2     44       Color, SRM     2     44       Color, SRM     156       First Rest     18 minutes     15 minutes       Temperature     1.17 galions     1.63 galions       Temperature     1.02 galions     1.00 galions       Temperature     160°-153° (156° average)     154°-148° (150° average)       Third Rest     10.0 galions     1.18 galions       Temperature     160°-153° (156° average)     154°-148° (150° average)       Third Rest     00 minutes     3.18 galions       Water, galions     2.68 galions     3.18 galions       Temperature     30 minutes     60 minutes       Boiling Thops     Tettnenger pellets (4.9%)     0.25 oz       Finishing Hops     Tettnenger pellets (4.9%)     0.25 oz       IBUs     1.3.3     48       Yeast     White Labs American Hefeweizen     1 viat       Water/Treatment     4 gal DI, 0.85 gal tap water     1 tap Irish Moss @ 15 minutes       Water/Treatment     4 gal DI, 0.85 gal tap water     1 tap Irish Moss @ 15 minutes       Original Gravity     Meximum     1.044     1.060
Color, SRM         Cranbemy-raspberry concent           Color, MCU         2         44           Color, MCU         2         156           Actual Color, SRM         18 minutes         15 minutes           First Rest         18 minutes         15 minutes           Mater, gallons         1.17 gallons         1.63 gallons           Temperature         129°-125°         140°-132°           Second Rest         60 minutes         75 minutes           Water, gallons         1.0 gallons         1.0 gallons           Temperature         160°-153° (156° average)         154°-148° (150° average)         148°-145°           Third Rest         70°         169°         154°-148° (150° average)         154°-148° (150° average)           Third Rest         160°-153° (156° average)         154°-148° (150° average)         154°-144°           Water, gallons         3.18 gallons         154°-144°         154°-144°           Bolling Time         30 minutes         60 minutes         60 minutes           Bolling Hops         Tettnanger pellets (4.9%)         0.25 oz         Irish Northdown pellets (9.4%)         1 oz           Finishing Hops         Tettnanger pellets (4.9%)         0.25 oz         Irish Northdown pellets (9.4%)         1 oz <t< td=""></t<>
Color, MCU       2       156         Actual Color, SRM       18 minutes       15 minutes         First Rest       18 minutes       1.32 galons         Temperature       1.29 - 125       1.40 - 132*         Second Rest       60 minutes       75 minutes         Water, galons       1.0 galons       1.0 galons         Temperature       160*-153* (156* average)       154*-148* (150* average)         Third Rest       Water, galons       1.54*-148* (150* average)         Water, galons       1.60*-153* (156* average)       154*-148* (150* average)         Temperature       160*-153* (156* average)       154*-148* (150* average)         Second Rest       00 minutes       154*-148* (150* average)         Water, galons       1.60*-153* (156* average)       154*-148* (150* average)         Third Rest       Water, galons       154*-148* (150* average)         Water, galons       2.68 galons       3.18 galons         Temperature       170°       169*         Sparge Water, galons       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         Boiling Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         Kest       White Labs American Hefeweizen       1 vial
Actual Color, SRM       Image: color state of the state
First Rest       18 minutes       15 minutes         Water, gallons       1.17 gallons       1.63 gallons         Temperature       129°-125°       140°-132°         Second Rest       60 minutes       75 minutes         Water, gallons       1.0 gallons       1.0 gallons         Temperature       160°-153° (156° average)       154°-148° (150° average)       148°-145°         Third Rest       160°-153° (156° average)       154°-148° (150° average)       154°-144°         Water, gallons       159°       154°-148° (150° average)       154°-144°         Mashout Temperature       170°       169°       5         Sparge Water, gallons       2.66 gallons       3.18 gallons       154°-144°         Boiling Time       30 minutes       60 minutes       60 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         Finishing Hops       13.3       White Labs American Hefeweizen       1 vial       White Labs California Ale (WLP320) (22 oz starter)         Water/Treatment       4 gal DI, 0.85 gal tap water       1 lap water       5 gal DI, 0.55 gal tap water         1 tsp Irish Moss       1 tsp Irish Moss @ 15 minutes       1 tsp Irish Moss @ 15 minutes       1 tsp Irish Moss @ 15 minutes </td
Water, gallons Temperature       1.17 gallons 129°-125°       1.63 gallons 1.03 gallons         Second Rest       60 minutes       75 minutes         Water, gallons       1.0 gallons       1.0 gallons         Temperature       160°-153° (156° average)       154°-148° (150° average)       148°-145°         Third Rest       Water, gallons       154°-148° (150° average)       148°-145°         Water, gallons       2.68 gallons       3.18 gallons       154°-148°         Sparge Water, gallons       2.68 gallons       3.18 gallons       154°-144°         Boiling Time       30 minutes       60 minutes       154°-148° (150° average)       154°-144°         Boiling Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz       Perle pellets (7.3%) (old, left in sun for a day)         Finishing Hops       1       1       White Labs American Hefeweizen       1 vial (2 oz starter)       White Labs California Ale (W (22 oz starter))       2 oz starter)         Water/Treatment       4 gal Di, 0.85 gal tap water       1 all tap water       5 gal Di, 0.55 gal tap water       1 tap Irish Moss @ 15 minutes       1 tap Irish Moss @ 15 minutes         Original Gravity       Maximum       1.044       1.060       1       1
Temperature129°-125°140°-132°Second Rest60 minutes75 minutesWater, gallons1.0 gallons1.0 gallonsTemperature160°-153° (156° average)154°-148° (150° average)Third Rest160°-153° (156° average)154°-148° (150° average)Water, gallons160°-153° (156° average)154°-148° (150° average)Temperature170°168°Sparge Water, gallons2.68 gallons3.18 gallonsBoiling Time30 minutes60 minutesBoiling Time30 minutes60 minutesBoiling HopsTettnanger pellets (4.9%)0.25 ozIrish Northdown pellets (9.4%)1 ozFinishing HopsWhite Labs American Hefeweizen1 vial (VLP320) (22 oz starter)White Labs Irish Ale (WLP004)1 vial (22 oz starter)Water/Treatment4 gal DI, 0.85 gal tap water 1 tsp Irish Mossall tap water 1 tsp Irish Moss @ 15 minutes5 gal DI, 0.55 gal tap water 1 tsp Irish Moss @ 15 minutesOriginal Gravity Maximum1.0441.060
Second Rest Water, gallons       60 minutes       75 minutes         Temperature       1.0 gallons       1.0 gallons         Temperature       160°-153° (156° average)       154°-148° (150° average)       148°-145°         Mashout Temperature       170°       168°       154°-148°         Sparge Water, gallons Temperature       2.68 gallons       3.18 gallons       154°-148°         Boiling Time       30 minutes       60 minutes       60 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         IBUs       13.3       White Labs American Hefeweizen       1 vial (WLP320) (22 oz starter)       White Labs Alle (WLP004)       1 vial (22 oz starter)       White Labs California Ale (W (22 oz starter)         Water/Treetment       4 gal DI, 0.85 gal tap water 1 tsp Irish Moss @ 15 minutes       5 gal DJ, 0.55 gal tap water 1 tsp Irish Moss @ 15 minutes       5 gal DJ, 0.55 gal tap water 1 tsp Irish Moss @ 15 minutes
Water, gallons Temperature       1.0 gallons       1.0 gallons         Third Rest Water, gallons Temperature       160°-153° (156° average)       154°-148° (150° average)       148°-145°         Water, gallons Temperature       154°-148° (150° average)       154°-144°       154°-144°         Mashout Temperature       170°       169°       154°-144°         Mashout Temperature       170°       169°       154°-144°         Mashout Temperature       2.68 gallons       3.18 gallons       154°-144°         Boiling Time       30 minutes       60 minutes       60       60         Boiling Hops       Tettnenger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz       Perie pellets (7.3%) (old, left in sun for a day)         Finishing Hops       13.3       48       48       48         Yeast       White Labs American Hefeweizen       1 vial (22 oz starter)       White Labs California Ale (W (22 oz starter))       1 vial (22 oz starter)       White Labs California Ale (W (22 oz starter))       1 vial (22 oz starter)       1 vial (22 oz starter)       1 vial (22 oz starter)       1 vial (43278) (12 oz starter)       1 vial (43278) (12 oz starter)       1 vial viar viarter       1 viarter
Temperature160°-153° (156° average)154°-148° (150° average)148°-145°Third Rest Water, gallons170°169°154°-144°Mashout Temperature170°169°Sparge Water, gallons2.68 gallons3.18 gallonsBoiling Time30 minutes60 minutesBoiling HopsTettnanger pellets (4.9%)0.25 ozFinIshing HopsTettnanger pellets (4.9%)0.25 ozIBUs13.348YeastWhite Labs American Hefeweizen1 vial (WLP320) (22 oz starter)Water/Treatment4 gal DI, 0.85 gal tap water 1 tsp Irish Moss1 vial (2 oz starter)Original Gravity Meximum1.0441.060
Temperature160°-153° (156° average)154°-148° (150° average)148°-145°Third Rest Water, galons Temperature170°169°154°-144°Mashout Temperature170°169°Sparge Water, gallons2.68 gallons3.18 gallonsBoiling Time30 minutes60 minutesBoiling HopsTettnenger pellets (4.9%)0.25 ozIrish Northdown pellets (9.4%)1 ozFinishing HopsTettnenger pellets (4.9%)0.25 ozIrish Northdown pellets (9.4%)1 ozFinishing HopsWhite Labs American Hefeweizen1 vial (WLP320) (22 oz starter)White Labs Irish Ale (WLP004)1 vial (22 oz starter)Water/Treatment4 gal DI, 0.85 gal tap water 1 tsp Irish Mossall tap water 1 tsp Irish Moss @ 15 minutes5 gal Di, 0.55 gal tap water 1 tsp Irish Moss @ 15 minutes1 sofOriginal Gravity Meximum1.0441.0601.0601 oz
Third Rest Water, galions Temperature       154°-144'         Mashout Temperature       154°-144'         Mashout Temperature       154°-144'         Sparge Water, gallons       3.18 gallons         Boiling Time       30 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.25 oz         Irish Northdown pellets (9.4%)       1 oz         Perle pellets (7.3%) (old, tefl in sun for a day)         Finishing Hops       Tettnanger pellets (4.9%)         IBUs       1 stat         Yeast       White Labs American Hefeweizen       1 vial (WLP320) (22 oz starter)         Water/Treatment       4 gal DI, 0.85 gal tap water       1 lap lrish Moss @ 15 minutes         Original Gravity Meximum       1.044       1.060
Water, gallons Temperature       170°       169°         Mashout Temperature       170°       169°         Sparge Water, gallons       3.18 gallons       60 minutes         Boiling Time       30 minutes       60 minutes         Boiling Time       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         Perle pellets (7.3%) (old, left in sun for a day)       1 oz       Perle pellets (7.3%) (old, left in sun for a day)         Finishing Hops       13.3       48         Yeast       White Labs American Hefeweizen       1 vial (WLP320) (22 oz starter)       White Labs Irish Ale (WLP004)       1 vial (22 oz starter)         Water/Treatment       4 gal DI, 0.85 gal tap water       1 tap lirish Moss @ 15 minutes       5 gal DI, 0.55 gal tap water         Original Gravity       Meximum       1.044       1.060
Temperature       154°-144'         Mashout Temperature       170°       169°         Sparge Water, gallons       2.68 gallons       3.18 gallons         Boiling Time       30 minutes       60 minutes         Boiling Time       30 minutes       60 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         IBUs       13.3       48         Yeast       White Labs American Hefeweizen       1 viat (WLP320) (22 oz starter)       White Labs Irish Ale (WLP004)       1 viat (22 oz starter)         Water/Treatment       4 gal DI, 0.85 gal tap water       1 tap lirish Moss @ 15 minutes       5 gal DI, 0.55 gal tap water         Original Gravity       Meximum       1.044       1.060
Mashout Temperature       170°       169°         Sparge Water, gallons       2.68 gallons       3.18 gallons         Boiling Time       30 minutes       60 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         Builing Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz         Finishing Hops       Iss       13.3       48         Yeast       White Labs American Hefeweizen       1 vial         (WLP320) (22 oz starter)       1 vial       White Labs California Ale (W         Water/Treatment       4 gal DI, 0.85 gal tap water       all tap water       1 tsp Irish Moss @ 15 minutes         Original Gravity       Meximum       1.044       1.060
Sparge Water, gallons       2.68 gallons       3.18 gallons         Boiling Time       30 minutes       60 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz       Perle pellets (7.3%) (old, left in sun for a day)         Finishing Hops       Isish Northdown pellets (9.4%)       1 oz       Perle pellets (7.3%) (old, left in sun for a day)         IBUs       13.3       48         Yeast       White Labs American Hefeweizen       1 vial (WLP320) (22 oz starter)       White Labs Irish Ale (WLP004)       1 vial (22 oz starter)         Water/Treatment       4 gal DI, 0.85 gal tap water       all tap water       1 tsp Irish Moss @ 15 minutes       5 gal DI, 0.55 gal tap water         Original Gravity       Meximum       1.044       1.060       1.060
Boiling Time       30 minutes       60 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz       Perle pellets (7.3%) (old, left in sun for a day)         Finishing Hops       Isish Northdown pellets (9.4%)       1 oz       Perle pellets (7.3%) (old, left in sun for a day)         IBUs       13.3       48         Yeast       White Labs American Hefeweizen       1 vial (WLP320) (22 oz starter)       White Labs Irish Ale (WLP004)       1 vial (22 oz starter)         Water/Treatment       4 gal DI, 0.85 gal tap water       all tap water       5 gal DI, 0.55 gal tap water       1 tsp Irish Moss @ 15 minutes         Original Gravity       1.064       1.060       1.060       1.060
Boiling Hops       Tettnanger pellets (4.9%)       0.25 oz       Irish Northdown pellets (9.4%)       1 oz       Perle pellets (7.3%) (old, left in sun for a day)         Finishing Hops       1
FinIshing Hops       (old, left in sun for a day)         FinIshing Hops       13.3         Yeast       White Labs American Hefeweizen 1 vial (WLP320) (22 oz starter)         Water/Treatment       4 gal DI, 0.85 gal tap water 1 tsp Irish Moss         Original Gravity Meximum       1.044
IBUs     13.3     48       Yeast     White Labs American Hefeweizen (WLP320) (22 oz starter)     1 vial (22 oz starter)     White Labs California Ale (W (22 oz starter)       Water/Treatment     4 gal DI, 0.85 gal tap water 1 tsp Irish Moss     all tap water 1 tsp Irish Moss @ 15 minutes     5 gal DI, 0.55 gal tap water 1 tsp Irish Moss @ 15 minutes       Original Gravity Meximum     1.044     1.060
Yeast     White Labs American Hefeweizen (WLP320) (22 oz starter)     1 vial (WLP320) (22 oz starter)     White Labs Irish Ale (WLP004)     1 vial (22 oz starter)     White Labs California Ale (W (22 oz starter)       Water/Treatment     4 gal DI, 0.85 gal tap water 1 tsp Irish Moss     all tap water 1 tsp Irish Moss @ 15 minutes     5 gal DI, 0.55 gal tap water 1 tsp Irish Moss @ 15 minutes     5 gal DI, 0.55 gal tap water 1 tsp Irish Moss @ 15 minutes
(WLP320) (22 oz starter)     (22 oz starter)     (22 oz starter)     (22 oz starter)       Water/Treatment     4 gal DI, 0.85 gal tap water 1 tsp Irish Moss     all tap water 1 tsp Irish Moss @ 15 minutes     5 gal DI, 0.55 gal tap water 1 tsp Irish Moss @ 15 minutes       Original Gravity Meximum     1.044     1.060
Water/Treatment     4 gal DI, 0.85 gal tap water 1 tsp Irish Moss     all tap water 1 tsp Irish Moss @ 15 minutes     5 gal DI, 0.55 gal tap water 1 tsp Irish Moss @ 15 minutes       Original Gravity Meximum     1.044     1.060
Original Gravity Meximum 1.044 1.060
Measured 1.035 1.048
Primary Gravity 1.012 1.021
Ending Gravity 1.011 1.019
0070
1100
Potential Alexand W
Potential Alcohol, % 2.52% 3.15% 3.05% 3.81%
Lock Installed 3/31/00 5/17/00
Secondary Fermenter 4/1/00 5/18/00
Primary Fermenter Temp 65° 65°
Secondary Fermenter Temp 65° 65°
Priming Sugar, cups Corn Sugar 1/2 Corn Sugar 1/3 Corn Sugar
Water, cups 2 2
Number of Bottles 28 28
Comments
Brewing Hops added at 20 minutes. Hops added at 45 minutes. Hops added at 50 m
Fermentation Fermentation active at 16 hours. Fermentation beginning at 16 hours. Fermentation beginning Blackberries, concentrate, a added to secondary. Lactic
oak chips (1/2 oz) added du tertiar/fermenter (6/16) (
Beer Carterian Control

BEER STYLE	Liz's Orange Blossom Mead American Pale Ale					
	beel		(All Grain)		(All Grain)	
Brewing Date		/28/00 8		7/00 9	7/4/00	10
Bottling Date	and the second s	0/9/00	7.	/1/00	7/22/00	
Primary Fermenter		3.0 gallons		3.0 gallons		gallons
Secondary Fermenter Malt	Orenze Disserve Lineau	2.8 gallons	American True Day Math	2.8 gallons	2.8 Wheat Malt	gallons
RVT BHT	Orange Blossom Honey	12 lbs	American Two-Row Malt Cara-Pils Malt	6 lbs 1 lb	German Pilsener Malt	5 lbs 2.5 lbs
	Yeast nutrients	2 tsp	Crystal 60°L Malt	4 oz	Flaked Wheat	2.0 ID:
	Citric acld	∠ tsp 1 tsp	Flaked Barley	4 02 2 oz	LIGKOC AALIORI	2 02
		rap	Flaked Dalley	2 02		
Color, SRM Color, MCU				6.9 6.9		3.2
Actual Color, SRM				0.8		3.4
First Rest				20 minutes	25	minute
Water, gallons				1.84 gallons		galion
Temperature				138°-136°		8°-124
Second Rest				70 minutes		minute
Water, gallons				1.0 gallon	1.75	gallon
Temperature			150°-154° (	152° average)	156°-146° (152° a	verage
Third Rest						
Water, gallons Temperature						
Mashout Temperature				170°	4 ····	166
Sparge Water, gallons				3.2 gallons	2.5	gailon
Boiling Time		15 minutes		60 minutes	65 1	minute
Boiling Hops			Cascade pellets (6.2%)	1 oz	Hallertauer pellets (2.6%)	1 oz
Finishing Hops			Cascade pellets (6.2%)	1 oz		
			Cascade penels (0.276)	1 02		
IBUe				38.9		13,
Yeast	Lalvin Champagne Dry Y	east 2 packs	White Labs California Ale	1 vial	White Labs Hefeweizen	1 vial
		·	(WLP001) (22 oz starter)		(WLP300) (22 oz starter)	
Water/Treatment	all tap water		all tap water 1 tsp Irish Moss @ 15 min	utoa	all tap water 1 tap Irish Moss @ 15 minu	itee
Original Gravity	and the second se		T tap man moae @ To min	0108		
Maximum		1,128		1.070		1.07
Target		1.128	(80% extrac			
Measured		1.148	(0010 0.0.1	1.055	· · · · · · · · · · · · · · · · · · ·	1.06
Primary Gravity	5.	1.039		1.013		1.01
Ending Gravity		1.037		1.013		1.01
Extract Efficiency, %		116%		79%		90%
Apparent Attenuation		75%		76%		789
BU/GU		0.00		0.71		0.2
		wt% vol%		wt% vol%	wt%	Vol9
Potential Alcohol, %		1.66% 14.57%		41% 5.51%	5.14%	6.439
Lock Installed		28/00		1/00		
Secondary Fermenter	7	20/00	6/2	:3/00	7/10/00	
Primary Fermenter Temp				65°		65
Secondary Fermenter Temp				65°		65
Priming Sugar, cups Water, cups			Corn Sugar	1/2	Spelse	32 oz
Number of Bottles		07		2		2
Comments		27		28	and the second se	30
Brewing						
gumenta			Boiling hops added at 5 Finishing hops split betwe and 2 minutes	en 15, 10, 5,	Hops added at first wo	ort.
Fermentation	Fermentation beginning	after one day.	Fermentation beginning		Fermentation active at 16	hours.
Bær	Bottled as a still mead mention in meads at AFC				First in German Wheats a QUAFF Oktoberfest	
	2001 AHA NHC Firs Traditional Mead. 200	t Round in 1 AHA Final			GOALL OKIODAI1981	••
	Round Gold Medal. This	a in magnuonai	the second se	and the second sec	A Research of the second se	

BEER STYLE	California Common	Tripel	Russian Imperial Stout
	(All Grain)	(All Grain)	(All Grain)
Brewing Date		1 8/13/00 12	
Bottling Date	8/12/00	9/4/00	9/24/00
Primary Fermenter	3.0 gallon		3.0 gallons
Secondary Fermenter	2.8 gallon		2.8 gallons
Malt	American Two-Row Mait 5 lbs		American Two-Row Malt 9 lbs
	Cara-Pils Malt 1 lb	Flaked Wheat 4 oz	Crystal 40°L Mait 1 lb
	Crystel 40°L Mait 1 lb		Chocolate Malt 8 oz
	Flaked Barley 4 oz	White candi sugar 1 lb	Roasted Barley 8 oz
			Flaked Barley 4 oz
Color, SRM	12		
Color, MCU	13	.5 4.3	105
Actual Color, SRM			
First Rest	20 minut		
Water, gallons	1.63 gallo		
Temperature	128°-12		128°-124°
Second Rest	70 minut	es 60 minutes	55 minutes
Water, gallons	1.37 gallo	18 2.00 gallons	2.25 gallons
Temperature	150°-158" (154° averag	e) 158°-158° (154° average)	152°-158° (154° average)
Third Rest			
Water, gallons Temperature			
Mashout Temperature	16	7° 167'	166*
Sparge Water, gallons	3.0 gallo	2.8 gallons	2.5 gallons
Boiling Time	60 minut		
Boiling Hops	Northern Brewer pellets (8.8%) 0.75	oz Czech Saaz pellets (3.6%) 0.75 oz Hallertauer pellets (2.6%) 0.75 oz	
Finishing Hops	Northern Brewer pellets (8.8%) 0.25	zz Czech Saaz pellets (3.6%) 0.25 oz Hallertauer pellets (2.6%) 0.25 oz	
IBUs		11 21.3	60
Yeast	White Labs California Lager 1 via	and the second se	White Labs Irish Ale 1 vial
16650	(WLP810) (22 oz starter)	(WLP500) (22 oz starter)	(WLP004) (22 oz starter)
Water/Treatment	all tap water 1 tsp Irish Moss @ 15 minutes	6 gallons DI, 1.05 gallons tap 1 tsp Irish Moss @ 15 minutes	all tap water 1 tsp Irish Moss @ 15 minutes
Original Gravity	top men moor & to minited	The morning of the minutes	T tap mon moto ta To minutes
Maximum	1.0	1.11:	1.108
Target	(80% extraction) 1.0		
Measured	(00% 641aCtion) 1.0	12 Contract of the contract of	
Primary Gravity	1.0	201	
Ending Gravity	1.0	1.11	- 10.0797
Extract Efficiency, %		2007 T ( )	
	70		
Apparent Attenuation	67		
BU/GU	0.		
Detection Alsochel 0/	W1% V0		1004107(REDAT
Potential Alcohol, %	3.46% 4.33		Concerning of Automatical State of Concerning of Management and
Lock Installed	7/19/00	8/17/00	9/7/00
Secondary Fermenter	7/23/00	8/20/00	9/10/00
Primary Fermenter Temp		5" 70	
Secondary Fermenter Temp		5° 70'	
Priming Sugar, cups	Com Sugar 1/2		Com Sugar 1/3
Water, cups	2	2	2
Number of Bottles	29	29	29
Comments			
Brewing	Boiling hops added at first wort. Finishing hops added at 5 minutes.	Boiling hops added at 60 minutes. Finishing hops added at 5 minutes.	Boiling hops added at 60 minutes. Finishing hops split between 15 minutes and 5 minutes.
Fermentation	Fermentation active at 17 hours.	Fermentation active at 17 hours.	Fermentation active at 17 hours.
Beer		Third in Belgians at 2001 QUAFF Oktoberfest.	
Source of Recipe	Custom recipe.	Custom recipe.	Custom recipe.

BEER STYLE	Chocolate Robust Por	ter	Chocolate Cherry Vanilla S	tout	Schwarzbier	-
	(All Grain)		(All Grain)		(All Grain)	
Brewing Date	10/7/0	0 14	10/22/00	15		1
Bottling Date	10/29/0	0	11/12/00		12/17/00	
Primary Fermenter	3.0	gallons	3.0	gallons	3.0	gailons
Secondary Fermenter		8 gallons		gallons		gallons
Malt	American Two-Row Malt	6 lbs	American Two-Row Malt	7 lbs	German Pilsener Malt	6 lbs
	Crystal 80°L Malt	1 lb	Crystel 60°L Malt	1 lb	Chocolate Malt	8 oz
	Chocolate Mait	1 lb	Chocolate Mait	1 lb	Black Malt	4 oz
	Flaked Wheat	3 oz	Roasted Barley	12 oz	Flaked Oats	
	- Harrison - Printered	0.02	Flaked Barley	4 oz	riakeu Oats	2 02
			Flaked Dalley	4 02		
Color, SRM		33.2		46.7		27.4
Color, MCU	1	107		168		80.3
Actual Color, SRM						
First Rest	20	0 minutes	15	minutes		minutes
Water, gallons		.0 gallons	2.25	gallons	1.5	gallons
Temperature	1	29*-128	1:	29°-128°		9"-132
Second Rest	70	0 minutes		minutes		minutes
Water, gailons	1.7	5 gallons		) gallons		gallon
Temperature	146°-154° (148°					
Third Rest	1		101 110 (102	a renegte	100-102 (107 a	Torage
Water, gallons	1		1			
Temperature					1	
Mashout Temperature		40.00		1000		
Sparge Water, gallons		168°		168°		166
Boiling Time	2	8 gallons		5 gallons		gallons
	90	0 minutes		minutes	70 1	minutes
Boiling Hops	Cascade pellets (6.2%)	0.75 oz	Northern Brewer pellets (8.8%)	0.75 oz	Tettnanger pellets (4.9%)	1 oz
	Unsweetened chocolate	4 oz	Unsweetened chocolate	8 oz		
Finishing Hops	Cascade pellets (6.2%)	0.25 oz	Cinnamon	1 stick		
	consenter penete (ette to)	0.20 02	- Co		1	
			Cherry Extract Vanilla Extract	4 oz 1 oz		
IBUs		27		43.9		27
Yeast	White Labs California Ate	1 vial	White Labs Irish Ale (WLP004)	1 vial	White Labs German Lager	
	(WLP001) (22 oz starter)	. T. WIGH	(22 oz starter)	I VIED	(WLP830) (22 oz starter)	1 viai
Water/Treatment	all tap water		all tap water		all tap water	
	1 tsp Irish Moss		1 tsp Irish Moss		1 tsp Irish Moss @ 15 minutes	
Original Gravity				And the local division of the local division		
Maximum		1.078		1.093		1.068
Target	(80% extraction)	1.062	(80% extraction)	1.075		1.054
Measured		1.059	(oo is shindenen)	1.069	(·····)	1.054
Primary Gravity		1.019	1	1.023		
Ending Gravity		1.019				1.021
Extract Efficiency, %				1.022		1.020
Apparent Attenuation		76%		74%	1	79%
		68%		68%		63%
3U/GU		0.46		0,64		0.50
Televallet Alexandre a	wt%		wt%	vol%	wt%	vol%
Potential Alcohol, %	4.20%		4.93%	6.17%	3.57%	4.46%
ock installed	10/13/00		10/26/00	and the second second	11/22/00	and the second second
Secondary Fermenter	10/14/00	D	10/29/00		11/24/00	_
Primary Fermenter Temp		65°	1	65°		60'
Secondary Fermenter Temp		65°		65°		60
niming Sugar, cups	Corn Sugar	1/2	Com Sugar	1/3	Corn Sugar	
Vater, cups	en servit le treve 🗰 tall	2	South Oragan	1000	Com Sugar	1/2
Number of Bottles		28		2	and a second	2
Comments		20	and the second se	28		29
The second						
Brewing	Chocolate added at first wort. added at 60 and 2 minute		Chocolate added at first wort. added at 70 minutes. Cinnamor at 15 minutes.		Hops added at 50 minutes	k,
Fermentation	Fermentation beginning at 16 hours.		Fermentation beginning at 16 i Vanilla and cherry extract add secondary.		Fermentation active at 16 hours	
Beer	Third is Porter at AFC2001. Se Porters In 2001 Del Mar F	Concernance and the second	Third in Specialty at AFC20	01.	Third in National Dunkelmania Only. Second In 2001 AHA NH Round in European Dark Lagers AHA Final Round Gold Medal. German Dark Lagers at 2001 D	C First 2001 Third in
ource of Recipe	Custom recipe.		Custom recipe.		Custom recipe.	SI WOO
and the second sec			onatorn roope.	-	Gustoin recipe.	

BEER STYLE

Cream Ale (All Grain) 12/16/00

Rauchbier (All Grain) 11/24/00

19 bears in 2000 212 bears total

Scotch Ale (Wee Heavy) (All Grain) 12/23/00

	(All Grain)		(All Grain)		(All Grain)	
Brewing Date	11/24/00	17		18	12/23/00	19
Bottling Date	12/17/00	-	1/5/01		1/15/01	-
Primary Fermenter		gallona		gallons		gailons
Secondary Fermenter		gallons		gallons	and the second se	gallons
Malt			American Two-Row Malt	5 lbs	American Two-Row Malt	9 lbs
			CaraPils	1 lb	Crystal 60°L Malt	1 lb
	Munich Malt	3 lbs	Flaked Maize	1 lb	Chocolate Malt	4 oz
	Flaked Oats	4 oz			Peated Barley	5 oz
1					Flaked Barley	4 oz
Color, SRM		14.4		2.84		19.8
Color, MCU		21.5		2,84		45.1
Actual Color, SRM						
First Rest		ninutes		ninutes		minute
Water, gallons	1.75	gallons		gallons	2.5	gallon
Temperature		120°		5°-124°		128
Second Rest	1.	ninutes	2000 C C C C C C C C C C C C C C C C C C	ninutes	0.000	minute
Water, gallons		gallons		gallons		gallon
Temperature Third Rest	150°-155° (152° av	verage)	146°-152° (148° a	verage)	159°-152° (153° a	iverage
Water, gallons						
Temperature Mashout Temperature		4005		4000		100
Sparge Water, gallons	0.65	168° gallons		166° gallons		168 gallon
Boiling Time		gaions				
Boiling Hops	Tettnanger pellets (4.9%)	1 oz	and the second s	ninutes 1 oz	But and a second s	minute
boiling hops	Tennanger peliets (4.9%)	1 02	Czech Saaz pellets (3.9%)	1 02	Kent Golding pellets (6.1%)	1 oz
Finishing Hops	11 mm					
IBUs		25.6		17		29.
Yeast	White Labs German Lager (WLP830) (22 oz starter)	1 vial	White Labs California Ale (WLP001) (22 oz starter)	1 vial	White Labs Irish Ale (WLP004) (22 oz starter)	1 vial
Water/Treatment	all tap water 1 tsp Irish Moss @ 15 minutes	2	all tap water 1 tsp Irish Moss		all tap water 1 tsp Irish Moss	
Original Gravity						-
Meximum		1.072		1.069		1.10
Target	(80% extraction)	1.058	(80% extraction)	1.056	(80% extraction)	1.08
Measured		1.057	1	1.052		1.07
Primary Gravity		1.019		1.015		1.02
Ending Gravity		1.016		1.014		1.02
Extract Efficiency, %		79%		75%		699
Apparent Attenuation		72%		73%		639
BU/GU		0.45	0	0.33		0.3
Detential Alexhad or	wt%	vol%	1000000 CD000000	vol%	wt%	vol
Potential Alcohol, %	4.30%	5.38%	3.99%	4.99%	4.93%	6.179
Lock Installed Secondary Fermenter	11/29/00		12/21/00		12/30/00	_
Primary Fermenter Temp	12/3/00	009	12/23/00	0.00	12/31/00	-
Secondary Fermenter Temp		60°		65°		65
Priming Sugar, cups	Com Sugar	1/2	Com Sugar	60°	Com Sugar	60
Water, cups	out ought	2	out ouga	1/2 2	Com Sugar	1/3
Number of Bottles		29		28		2
Comments		2.0		20		29
Brewing	Hops added at 50 minutes	8.	Boling hops added at 50 an minutes. Finishing hops a		Hops added at 50 minute	85.
Fermentation	Fermentation beginning at 20 l	hours.	minutes Fermentation just beginning hours.	at 16	Fermentation beginning at 16	hours
Beer	Third in Smoked Beers at AFC Fourth in Smoked Beers at 200				Second in English and Sco Strong Ales at AFC200	
Naura of Desire	Mar Fair.					
Source of Recipe	Custom recipe.		Custom recipe.		Custom recipe.	and a
					Page	100

Page 59

BEER STYLE	Bohemian Pilsner		Scottish Export		Oatmeal Stout	
Design Design	(All Grain)		(All Grain)		(All Grain)	
Brewing Date Bottling Date		1/01 1				
	1/2	7/01	2/4/	the second second second second	2/9/01	
Primary Fermenter Secondary Fermenter		3.0 gallons		0 gallons		) gallon
Malt	Belgian Pilsener Malt	2.8 gallons		.8 gallons		3 gailon
(Wein	Munich Malt	5 lbs	British Pale Malt	4 lbs	British Pale Matt	4 lbs
	CaraPils Malt	1 lb 1 lb	Crystal 60°L Malt Chocolate Malt	1 lb	Crystal 60°L Malt	1 lb
	Flaked Oats	4 oz	Peated Barley	4 oz	Chocolate Malt Roasted Barley	B oz
	i handa olato	4 02	Flaked Barley	2 oz 2 oz	Black Malt	6 oz
			Transu Daney	2 02	Flaked Oats	4 oz 1 lb
Color, SRM		5.1		17.2		40.
Color, MCU	1	5.1	1	33.9		13
Actual Color, SRM First Rest		10				
Water, gallons		40 minutes		15 minutes		minute
Temperature	1409 4949 /4	2.75 gallons	1	.25 gallons		3 gallon
Second Rest	140°-134° (1	60 minutes		124		25°-124
Water, gallons	~1.3 cello	ns decoction		75 minutes		minute
Temperature	148°-158° (1			.25 gallons		2 gallon
Third Rest	140-150 (1	oz average/	135-132 (15)	s average)	158°-146° (154°	average
Water, gallons Temperature						
Mashout Temperature		170°		167*		168
Sparge Water, gallons		3.5 gallons		3.0 gallons	and a second sec	5 gallon
Boiling Time		60 minutes		90 minutes		minute
Boiling Hops	Saaz pellets (3.9%)		Kent Golding pellets (6.1%)	0.5 oz	and the second se	1 oz
Finishing Hops	Coor collete (2.00()	0.5				
nitoring riopa	Saaz pellets (3.9%)	0.5 oz				
BUs		37		16.6		34.0
Yeast	White Labs Czech Pilsne	the second s	White Labs Edinburgh Ale	1 vial	White Labs Irish Ale (WLP004)	
	(WLP800) (22 oz starter)		(WLP028) (22 oz starter)		(22 oz starter)	1 VIG
Water/Treatment	5 gallons DI, 1.25 gallons 1 tsp Irish Moss	a tap water	all tap water 1 tsp Irish Moss		all tap water 1 tsp Irish Moss @ 16 minutes	
Original Gravity			i top mon moos	-	Tisp mail moss @ To minutes	-
Maximum		1.070		1.050		1.06
Target	(80% extracti		(80% extraction	to the second second		
Measured		1.050		1.048	(correstingenerity)	1.05
<sup>o</sup> rimary Gravity		1.015		1.017		1.02
Ending Gravity		1.014		1.016		1.025
Extract Efficiency, %		71%		96%		84%
Apparent Attenuation		72%		67%		56%
3U/GU		0.74		0,35		0.6
		rt% vol%	wt	% vol%	wt%	
Potential Alcohol, %	A REAL PROPERTY AND A REAL	8% 4.73%	3.369	and the second se		4.20%
ock Installed secondary Fermenter	1/5		1/11/0		1/18/01	and the second se
Primary Fermenter Temp	1/9	the second se	1/14/0		1/21/01	
Secondary Fermenter Temp		60°		65°		65
riming Sugar, cups	Com Sugar	50°-55°	0	60°		65
Vater, cups	Corn Sugar		Com Sugar	1/3	Corn Sugar	1/3
lumber of Bottles		2	the second s	2		2
Comments	and the second division of the second divisio	29		27		29
Brewing	Double decoction. Boiling minutes. 1/4 oz at 15 and		Hops added at 50 minu	rtes.	Boiling hops added at 60 min Finishing hops split between 15	
Fermentation	minutes. Fermentation beginning a	at 17 hours.	Fermentation beginning at 2	4 hours.	and 5 minutes. Fermentation active at 17 ho	025500 (15 %)
Beer	Third in 2001 AHA NHC I in European Pale Lager Classic Pilseners at 200	3. Third in	Designed as a Heavy, but t extraction resulted in an E		First in Oatmeal Stouts at 2001 Fair.	Del Ma
ource of Peoles	Fair.					
ource of Recipe	Custom recipe	·	Custom recipe.		Custom recipe.	

Brewing Date         1/28/01         4         3/1001         5           Primary Fermenter         3.0. gallons         3.0. gallons         3.0. gallons           Secondary Fermenter         3.0. gallons         2.0. gallons         2.0. gallons           Matt         CaraPitel Matt         11b         Cystal 20*L Matt         4.0.2           Matt         CaraPitel Matt         1b         Cystal 20*L Matt         4.0.2           Munich Matt         8.0.2         Black Patent Matt         4.0.2         Flaked What           Golor, SRM         3.7         4.0         Flaked Cats         2.0.2           Calor, SRM         3.7         4.0         4.0         4.0           Actual Color, SRM         1.2*124/ (12/2 average)         1.20*         1.20         1.3.7           Second Real         1.5 gallons         1.00*-150* (155* average)         1.53*-144           Water, galons         1.48*-165* (152* average)         1.00*-150* (155* average)         1.53*-144           Water, galons         2.7 §gallons         3.6 gallons         5.0 gallons           Temperature         2.7 §gallons         3.6 gallons         5.0 (dd, average)           Temperature         2.7 §gallons         3.6 gallons         5.0 (dd, average)		Frambozen	sh Light Ale			Köisch	BEER STYLE
Bottling Date         37101           Primary Fermenter         3.0 gallons           Secondary Fermenter         2.8 gallons           Malt         American Two-Row Mail         4 lbs           CaraPlis Malt         1b           Munit         CaraPlis Malt         6 cz           Matt         8 cz           Matt         15 cz           Matt         15 cz           Matt         15 cz           Second Reat         85 minutes           1467-165 (152" average)         160"-160" (155" average)           160"-160" (155" average)         153"-144           Water, galons         160"-165" (155" average)           Temperature         1467"-165" (152" average)		(All Grain)	II Grain)			(All Grain)	1
Primary Fermenter         3.0 gallons         3.0 gallons           Mait         American Two-Row Mait         4 ths         Sitiss Pace Mait         3.5 hts         Belgin Pale Mait           Mait         CaraFile Mait         1 th         Cystal 20*1. Watt         4 cor         Cystal 20*1. Watt         4 cor           Munich Mat         8 oc         Black Patent Mait         4 cor         Cystal 20*1. Watt         4 cor           Color, SRM         Site         Boar         Peated Mait         4 cor         Flaked Oats           Color, SRM         3.7         16.5         Color, MCU         3.7         40           Actual Color, SRM         15 minutes         20 minutes         Cranberry-Raspberry Conc           Second Rest         85 minutes         70 minutes         Carafica 12° average)         120'           Second Rest         85 minutes         70 minutes         153'-146'           Wator, galons         1.5 galions         1.30'         160''-150'' (155'' average)         153'-146''           Temperature         146''-155'' (152'' average)         160''-150'' (155'' average)         153'-146''           Matou I Temperature         160'' minutes         3 galions         3 galions         163''-160'''(155'' average)         153'-146''' <t< td=""><td>/24/01</td><td>3/24/01</td><td>3/10/01 5</td><td>4</td><td>8/01</td><td>1/28</td><td></td></t<>	/24/01	3/24/01	3/10/01 5	4	8/01	1/28	
Secondary Fernenter         2.8 gallons         2.8 gallons           Mait         American Two-Row Mait         4 bits         3.5 bits         Belgian Pate Mait           CaraPils Mait         8 oz         Fishs Pale Mait         8 oz         Fishs Pale Mait         8 oz         Crystal SO'L. Mait           Mult         6 oz         Fisks Pale Mait         8 oz         Crystal SO'L. Mait         8 oz         Crystal SO'L. Mait           Mult         8 oz         Fisks Pale Mait         1 oz         Fisked Oats         2 oz         Raspberrides           Color, SRM         3.7         40         Actual Color, SRM         1.6 gallons         1.12 gallons         1.27 sall SO'L. Mait           Yeas         1.6 gallons         1.27 sall SO'L. Mait         1.6 gallons         1.27 sall SO'L. Mait           Water, galons         1.27 sall SO'L. Mait         1.6 gallons         1.27 sallons         1.27 sallons           Temperature         1.6 gallons         1.12 gallons         1.28 gallons         1.28 gallons           Temperature         1.46°-155'' (152' average)         160'-150'' (155' average)         153'-146''           Water, gallons         2.75 gallons         3 gallons         5 gallons         1.38 gallons           Fenterature         1.60'''''''''''''''	/11/01	5/11/01	3/31/01	1			Bottling Date
Secondary Fermenter         2.8 gallons         2.8 gallons           Mait         American Two-Row Mait         4 lbs         Crystal 20'L Mait         8 bs         Bolgian Pale Mait           Mait         CaraPils Mait         1 bs         Crystal 20'L Mait         8 cz         Fisker Mait         8 cz         Crystal 80'L Mait           Munit Oh Mait         8 cz         Fisker Mait         8 cz         Crystal 80'L Mait         CaraPise Mait         8 cz         Crystal 80'L Mait         CaraPise Mait         8 cz         Crystal 80'L Mait         CaraPise Mait         CaraPise Mait         1 6 cz         Fisker CaraPise Mait         1 6 cz         Fisker CaraPise Mait         CaraPiser Mait         1 6 cz         Fisker CaraPiser Mait <td< td=""><td>3.0 gallon</td><td>3.0</td><td>3.0 gallons</td><td>lons</td><td>3.0 (</td><td></td><td>Primary Fermenter</td></td<>	3.0 gallon	3.0	3.0 gallons	lons	3.0 (		Primary Fermenter
Malt         American Two-Row Malt         4 Iba         British Pale Malt         3.5 Iba         Belginan Pale Malt           CaraFile Mart         1 Ibb         Cystal 20"L Matt         6 oz         Flaked Wheat         6 oz         Flaked Wheat         6 oz         Flaked Wheat         6 oz         Flaked Sort         Flake Sort         Sort         Flake Sort         Flake Sort         Flake Sort         Sort         Sort	2.8 gallon		2.8 gallons				
CaraPils Mat         1 b         Crystal 302. Mait         8 oz         Example           Munich Matt         8 oz         Bick Petent Mait         4 oz         Crystal 602. Mait           White Wheat Mait         8 oz         Peated Mait         1 oz         Filaked Oats           Color, SRM         3.7         40         Cranberry-Raspberry Conc           Color, SRM         3.7         40         Cranberry-Raspberry Conc           Color, SRM         1.5 gallons         1.12 gallons         1.27           Temperature         122°-124° (122° average)         1.00°         1.00°           Scond Reat         85 minutes         70 minutes         1.00°           Water, galons         1.46°-155° (152° average)         1.60°-150° (155° average)         153°-142           Water, galons         2.75 gallons         3 gallons         1.39 gallons         153°-142           Water, galons         2.76 gallons         3 gallons         1.00°         153°-142           Water, galons         1.60°-150° (155° average)         153°-142         150°-150° (155° average)         153°-142           Printe Reat         1.46°-155° (152° average)         1.60°-150° (155° average)         153°-142         153°-142           Water, galons         2.75 gallons	3 lbs						
Munich Nait         6 oz White Wheat Mait         6 oz 6 oz         Biaket Patent Mait         4 oz Flaked Oats         Corporate GOTL Mait Raspberrites           Color, SRM         3.7         18.5         Cranberry-Raspberry Conc Color, MCU         3.7         18.5           Actual Color, SRM         15 minutes         2.00 minutes         0         0           First Reat         15 minutes         2.00 minutes         0         0           Temperature         1.5 galions         1.12 galons         0         0           Temperature         1.6 galons         1.5 galons         0         0           Temperature         146°-155° (152° averago)         160°-150° (155° averago)         153°-144           Water, galons         2.75 galons         3 galons         0         0.33 galons           Temperature         160°         160°         0.33 galons         0.37 oz         (cd, un-backd pellets)           Sparage Water, galons         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract Lactic acid (0.8%)           Boiling Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract Lactic acid (0.8%)           IBule         Vhite Labs Ko	2.5 lb			a contra da la c			
White Wheat Mait         8 oz         Peated Mait         1 oz         Fisked Oats           Color, SRM         3.7         18.5         Cranberry-Raspberry Cond           Color, SRM         3.7         40         Cranberry-Raspberry Cond           Advaid Color, SRM         15 minutes         2 oz minutes         Cranberry-Raspberry Cond           Temperature         122*-124* (122* average)         1 20*         Color, SRM         1.5 gallons           Temperature         1.22*-124* (122* average)         1 20*         Second Rest         70 minutes           Water, galons         1.5 gallons         1.50*-150* (155* average)         150*-150* (155* average)         153*-145           Temperature         146*-155* (152* average)         160*-150* (155* average)         153*-145           Water, galons         2.755 gallons         3 gallons         3 callons           Temperature         60 minutes         60 minutes         60 minutes         60 convertes           Boiling Trine         60 minutes         0.25 oz         Kent Golding pellets (6.1%)         0.3 oz         Styrian Codding pellets (6.1%)         0.21 oz           Finishing Hops         Tetinanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Respherry estract         colic acid (0.8%	2.0 m						
Flaked Oats         2 oz         Raspberries           Color, SRM         3.7         18.5           Color, MCU         3.7         40           Actual Color, SRM         15 minutes         20 minutes           Trins Real         15 minutes         20 minutes           Second Rest         85 minutes         70 minutes           Temperature         1.5 gallons         1.38 gallons           Tamperature         1.60°-150° (155° average)         153°-146           Water, galons         1.5 gallons         1.38 gallons           Temperature         146°-155° (152° average)         153°-146           Water, galons         2.75 gallons         3 gallons           Temperature         166°         960 minutes         90 minutes           Boiling Time         60 minutes         60 minutes         60 minutes           Boiling Hops         Tettnanger pellets (4.9%)         0.7 cz         2 kent Colding pellets (6.1%)         0.3 cz           Finkhing Hops         Tettnanger pellets (4.9%)         0.25 cz         Kent Golding pellets (6.1%)         0.3 cz           Resuberrive extract         1 tap water         11 tap water         1 tap water         1 cambic feed (92.9%)           Vinte Labs Koltsch (WLP029)         1 vidi							
Color, SRM         Cranberry-Raspberry Conc           Color, SRM         3.7         40           Color, SRM         3.7         40           Color, SRM         15 minutes         20 minutes           Temperature         1.22*124* (122* average)         1.20           Second Rest         85 minutes         7.0 minutes           Water, galons         1.5 galons         7.0 minutes           Temperature         146*-155* (152* average)         160*-150* (155* average)           Temperature         146*-155* (152* average)         160*-150* (155* average)           Temperature         166*         5.6 galons         3 galons           Temperature         166*         0.0 minutes         60 minutes           Boiling Time         60 minutes         60 minutes         60 minutes           Boiling Time         7 stimanger pellets (4.9%)         0.75 oz         Kent Golding pellets (6.1%)         0.33 oz           Finishing Hops         Tetmanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.33 oz           ISU         Ywhite Labs Kolsch (WLPO29)         1 vial         White Labs California Ale           (VLPO28) (22 oz starter)         Lambic Bind (M2278) (12         2 galons to           Target	8 oz					neat Mait	
Color, SRM         3.7         16.5           Color, SRM         3.7         40           Actual Color, SRM         1.5 galions         1.12 galions           First Resi         15 minutes         20 minutes           Vater, galions         1.22*-124* (122* average)         1.20*           Second Rest         85 minutes         70 minutes           Water, galions         1.5 galions         1.39 galions           Temperature         146*-155* (152* average)         160*-150* (155* average)           Temperature         146*-155* (152* average)         160*-150* (155* average)           Temperature         166*         168*           Sparge Water, galions         2.75 galions         3 galions           Boiling Hops         Tettnanger pellets (4.9%)         0.75 oz Kent Golding pellets (6.1%)         0.37 cgld, sun-baked pellets (6.1%)           Finishing Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract Lactic acid (0.8%)           IBUE         20 z starter)         1 vial         White Labs California Ale (WLP028) (22 cz starter)         Vuln028) (22 cz starter)         Larkice Blend (08.27%) (22 cz starter)           Water/Treatment         all tap water         all tap water         1 sgl rish Moss	3 lbs	Raspberries	2 oz				
Color, SRM         3.7         16.5           Color, SRM         3.7         40           Actual Color, SRM         1.5 galons         1.12 galons           First Resi         1.5 galons         1.12 galons           Temperature         122'-124' (122' average)         70 minutes           Water, galons         1.3 galons         1.30 galons           Temperature         146''-155' (152'' average)         160''-150'' (155'' average)           Temperature         146''-155'' (152'' average)         160''-150'' (155'' average)           Temperature         166''         168''           Sparge Water, galons         2.75 galons         3 galons           Boling Time         60 minutes         60 minutes           Boling Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           Boling Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Saptery (12 oz starter)           Water/Treatment         all tap water         all tap water         1 sig lish Moss         1 sig lish Moss         0 sig lish molding lish Moss           Original Gravity         1 sig lish Moss         1 sig lish Moss         1 sig lish Moss         1 sig lish Mo				- 1			
Color, MCU         3.7         40           Actual Color, SRM         15 minutes         20 minutes           First Rest         1.22*-124* (122* average)         1.20*           Second Rest         85 minutes         70 minutes           Water, gallons         1.5 gallons         1.38 gallons           Temperature         146*-155* (152* average)         160*-150* (155* average)           Temperature         146*-155* (152* average)         160*-150* (155* average)           Temperature         166*         168*           Sparge Water, gallons         3 gallons         60 minutes           Boiling Time         60 minutes         60 minutes           Boiling Hops         Tettmanger pellets (4.9%)         0.75 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           Lactic acid (0.8%)         12         Ville Labs Kolsch (WLP029)         1 vial         White Labs Calionia Ale         (WI-P028) (22 oz starter)         White Labs Calionia Ale           Water/Treatment         all tap water         all tap water         1 signish Moss         1 signish Moss         1 signish Moss           Original Cravity         1.045         (80% extraction)         1.045         (80% extraction)         1.045           Mater/Treatment         a	itrate 12 o	Cranberry-Raspberry Concentrate	1	- 1			
Color, MCU         3.7         40           Actual Color, SRM         15 minutes         20 minutes           First Rest         1.22*-124* (122* average)         1.20*           Second Rest         85 minutes         70 minutes           Water, gallons         1.5 gallons         1.38 gallons           Temperature         146*-155* (152* average)         160*-150* (155* average)           Temperature         146*-155* (152* average)         160*-150* (155* average)           Temperature         166*         168*           Sparge Water, gallons         3 gallons         60 minutes           Boiling Time         60 minutes         60 minutes           Boiling Hops         Tettmanger pellets (4.9%)         0.75 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           Lactic acid (0.8%)         12         Ville Labs Kolsch (WLP029)         1 vial         White Labs Calionia Ale         (WI-P028) (22 oz starter)         White Labs Calionia Ale           Water/Treatment         all tap water         all tap water         1 signish Moss         1 signish Moss         1 signish Moss           Original Cravity         1.045         (80% extraction)         1.045         (80% extraction)         1.045           Mater/Treatment         a				_			ats a local attention a
Actual Color, SRM         Actual Color, SRM         Actual Color, SRM           First Reat         15 minutes         20 minutes           Vator, galons         1.22*-124* (122* average)         1.12 galons           Temperature         122*-124* (122* average)         1.20*           Second Rest         86 minutes         70 minutes           Wator, galons         1.5 galons         1.38 galons           Temperature         146*-155* (152* average)         160*-150* (155* average)           Third Rest         Water, galons         3 galons           Temperature         60 minutes         60 minutes           Boiling Time         60 minutes         60 minutes           Boiling Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.3 oz           Finishing Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz           Raspberry extract         Lactic acid (0.8%)         (VLP028) (22 oz starter)         Larbic Biend (#3278) (12           Yeast         White Labs Kolsch (WLP029)         1 val         White Labs California Ale           (WLP028) (22 oz starter)         Larbic Biend (#3278) (12         Larbic Biend (#3278) (12           Water/Treatment         all tap water	11.						
First Rest         15 minutes         20 minutes           Water, gallons Temperature         1.22*.124* (122* average)         1.12 gallons           Second Rest         85 minutes         70 minutes           Water, gallons         1.38 gallons         1.38 gallons           Temperature         146*-155* (152* average)         160*-150* (155* average)         153*-142           Temperature         146*-155* (152* average)         160*-150* (155* average)         153*-142           Water, gallons         2.75 gallons         3 gallons         3 gallons           Boiling Three         60 minutes         60 minutes         60 minutes           Boiling Hops         Tettnanger pellets (4.9%)         0.75 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspbery extract Lactic act(0.8%)           Finishing Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspbery extract Lactic act(0.8%)           IBUs         22 oz starter)         1 vial         White Labs Kötsch (WLPO29)         1 vial         White Labs California Ale (WLPO28) (22 oz starter)         5 gallons D1, 0.728 (278) gallons D 1, 0.728 (210)           Yeast         White Labs Kötsch (WLPO29)         1 vial         White Labs California Ale (WLPO28) (22 oz starter)         1 Labic Bend (#0278) (10)         Lam	12.		40	3.7			CTRC MONTO AND
Water, galions         1.5 galions         1.12 galions           Temperature         122*-124* (122* average)         120*           Second Rest         86 minutes         70 minutes           Water, galions         1.5 galions         1.38 galions           Temperature         146*-155* (152* average)         180*-150* (155* average)         153*-142           Water, galions         1.5 galions         1.39 galions         153*-142           Tremperature         169*         160*-150* (155* average)         153*-142           Mashout Temperature         169*         168*         50 minutes         60 minutes           Boiling Time         60 minutes         60 minutes         60 minutes         160/19         168*           Boiling Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract Lactic acid (0.3%)           Elb/s         21.5         12         12         White Labs Kolsch (WLP029)         1 vial         (White Labs California Ale (WLP020)         1 vial (WLP03)							
Temperature         122*-124* (122* average)         120*           Second Rest         86 minutes         70 minutes           Mater, gallons         1.36 gallons         1.38 gallons           Temperature         146*-155* (152* average)         160*-150* (155* average)         153*-146           Water, gallons         146*-155* (152* average)         160*-150* (155* average)         153*-146           Water, gallons         2.75 gallons         3 gallons         3 gallons           Doiling Three         60 minutes         60 minutes         60 minutes           Boiling Hops         Tettnanger pellets (4.9%)         0.75 oz         Kent Golding pellets (6.1%)         0.33 oz         Styrian Golding pellets (6.1%)         0.17 oz           Raspberry extract         Lactic acid (0.8%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           IBUS         Tetinanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           Water/Treatment         all tap water         1 vial         (White Labs California Ale         (WLPO01) (22 oz starter)         Lactic acid (0.8%)           Water/Treatment         all tap water         1 tap Intsh Moss @ 15 minutes         no Inteh Moss         no Inteh Moss         no Inteh Mos	15 minute	15	20 minutes	utes	15 m	()	First Rest
Temperature         122*-124* (122* average)         120*           Second Rest         86 minutes         70 minutes           Mater, gallons         1.36 gallons         1.38 gallons           Temperature         146*-155* (152* average)         160*-150* (155* average)         153*-146           Water, gallons         146*-155* (152* average)         160*-150* (155* average)         153*-146           Water, gallons         2.75 gallons         3 gallons         3 gallons           Doiling Three         60 minutes         60 minutes         60 minutes           Boiling Hops         Tettnanger pellets (4.9%)         0.75 oz         Kent Golding pellets (6.1%)         0.33 oz         Styrian Golding pellets (6.1%)         0.17 oz           Raspberry extract         Lactic acid (0.8%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           IBUS         Tetinanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           Water/Treatment         all tap water         1 vial         (White Labs California Ale         (WLPO01) (22 oz starter)         Lactic acid (0.8%)           Water/Treatment         all tap water         1 tap Intsh Moss @ 15 minutes         no Inteh Moss         no Inteh Moss         no Inteh Mos	1.63 gallon	1.63	1,12 galions	ions	1.5 (		Water, gallons
Second Rest         65 minutes         70 minutes           Water, gallons         1.5 gallons         1.36 gallons           Temperature         146°-155° (152° average)         160°-150° (155° average)         153°-146           Water, gallons         160°-150° (155° average)         163°-146         153°-146           Water, gallons         2.75 gallons         3 gallons         163°           Boiling Time         60 minutes         60 minutes         60 minutes           Boiling Time         60 minutes         60 minutes         160°           Boiling Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.33 oz         Styrian Golding pellets (6.1%)           Finishing Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           Yeast         White Labs Kölsch (WLP029)         1 vial         (WLP020) (22 oz starter)         Larnbic Elend (4278) (12 oz starter) </td <td>130°-126</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	130°-126						
Water, gallons         1.5 gallons         1.38 gallons           Timperature         146°-155° (152° average)         160°-150° (155° average)         153°-146           Water, gallons         2.75 gallons         3 gallons         168°           Sparge Water, gallons         2.75 gallons         3 gallons         168°           Sparge Water, gallons         2.75 gallons         3 gallons         0         168°           Boilling Three         60 minutes         60 minutes         0         168°           Boilling Hops         Tettnanger pellets (4.9%)         0.75 oz         Kent Golding pellets (6.1%)         0.33 oz         Styrian Golding pellets (6.1%)         0.17 oz         Raspberry extract           Lactic acid (0.8%)         21.5         12	90 minute						
Temperature         146°-155° (152° average)         160°-150° (155° average)         153°-142           Third Rest         Water, gallons         160°-150° (155° average)         153°-142           Mashout Temperature         166°         168°         168°           Sparge Water, gallons         2.75 gallons         3 gallons         160°           Boiling Time         60 minutes         60 minutes         60 minutes           Boiling Time         60 minutes         0.75 oz         Kent Golding pellets (6.1%)         0.3 oz         Styrian Golding pellets (6.1%)         0.17 oz           Finishing Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           Izatic acid (0.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           Isatic acid (0.28%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract           Vater, Treatment         all tap water         1 vall         White Labs Kötsch (WLP029)         1 vall         White Moss         1 tap water         5 gallons Di, 0.76			2/02/7/01/04/9/01/2/2007/2007/9/				
Third Rest       Water, galions         Temperature       169°         Mashout Temperature       2.75 galions         Boiling Time       60 minutes         Boiling Time       60 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.75 oz         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz         Kent Golding pellets (6.1%)       0.17 oz       Raspberry extract         Lactic acid (0.8%)       21.5       12         Yeast       White Labs Kölsch (WLPO29)       1 uit       White Labs Edinburgh Ale       1 vial         BUls       21.5       12       Wite Labs Edinburgh Ale       (VI-PO28) (22 oz starter)       Umbite Blend (M3278) (12 c         Water/Treatment       all tap water       all tap water       1 tsp Irlsh Moss @ 15 minutes       no Irlsh Moss         Original Gravity       Maximun       1.046       (80% extraction)       1.045         Measured       (80% extraction)       1.045       (80% extraction)       (80% extraction)         Primary Gravity       1.012       1.016       (80% extraction)       1.045       (80% ex	1.37 gallor						
Water, galions Temporature         160°         168°           Sparge Water, galions         2.75 galions         3 galions           Boiling Time         60 minutes         60 minutes           Boiling Time         60 minutes         60 minutes           Boiling Time         60 minutes         60 minutes           Boiling Hops         Tettnanger pellets (4.9%)         0.75 oz         Kent Golding pellets (6.1%)         0.33 oz         Styrian Golding pellets (6.1%)         0.33 oz           Finishing Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract Lactic acid (0.8%)           IBUs         21.5         12         Versat         White Labs Kölsch (WLP029)         1 vial (WLP020) (22 oz starter)         White Labs California Ale (WLP020) (22 oz starter)         WIVLP001) (22 oz starter), Lambic Belm (#3278), Lambic Belm (#3278), MULP001) (22 oz starter), Lambic Belm (#360, %Er), MULP001) (22 oz starter), Lambic Belm (#360, %Er),	152" average	153°-148° (152° a	"-150" (155" average)	age)	52° av	146"-155" (152	
Temperature         169°         168°           Mashout Temperature         2.75 gallons         3 gallons           Boiling Time         60 minutes         60 minutes           Boiling Time         60 minutes         60 minutes           Boiling Hops         Tettnanger pellets (4.9%)         0.76 oz         Kent Golding pellets (6.1%)         0.33 oz         Styrian Golding pellets (6.1%)           Finishing Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (8.1%)         0.17 oz         Raspberry extract Lactic acid (0.8%)           IBUE         21.5         12         Vitie Labs Kölsch (WLP029)         1 vial         White Labs Kölsch (WLP029)         1 vial         White Labs Gallomia Ale (WLP001) (22 oz starter)         Larnic Blend (#3278) (12 ot VLP029)         22 ot starter)         Larnic Blend (#3278) (12 ot VLP029)         Larnic Blend (#3278) (12 ot VLP029)         1 tsp Irish Moss @ 15 minutes         no Irish Moss           Masimum         1 tsp Irish Moss @ 15 minutes         1 tsp Irish Moss @ 15 minutes         no Irish Moss         (80% extraction)         1.045         (80% extraction)							
Mashout Temperature       169"       168"         Sparge Water, gallons       3 gallons       3 gallons         Boiling Time       60 minutes       60 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.75 oz       Kent Golding pellets (6.1%)       0.33 oz       Styrian Golding pellets (6.1%)         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz       Kent Golding pellets (6.1%)       0.17 oz       Raspberry extract Lactic acid (0.8%)         IBUs       21.5       12       Yeast       White Labs Kölsch (WLP029)       1 vial (22 oz starter)       White Labs Edinburgh Ale (1/0.22 oz starter)       White Labs Cellifornia Ale (WLP028) (22 oz starter)       Wite Labs Cellifornia Ale (WLP028) (22 oz starter)       Wite Labs Cellifornia Ale (WLP029) (1/22 oz starter)       UNP001) (22 oz starter)       Sigallons D, 0.75 gallons t no Irish Moss         Original Gravity       all tap water       all tap water       1 tsp Irish Moss @ 15 minutes       5 gallons D, 0.75 gallons t no Irish Moss         Original Gravity       1.045       1.045       1.045       1.045         Frimary Gravity       1.045       1.037       1.046         Frimary Gravity       1.045       1.037       1.046         Evideu U       0.48       0.32       2.76%         LU/GU       0.48       0.32			1	I			
Sparge Water, gallons       2.75 gallons       3 gallons         Boiling Time       60 minutes       60 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.75 oz       Kent Golding pellets (6.1%)       0.33 oz       (old, sun-baked pellets)         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz       Kent Golding pellets (6.1%)       0.17 oz       Raspberry extract Lactic acid (0.8%)         IBUs       21.5       12       White Labs Kölsch (WLP029)       1 vial (VLP026) (22 oz starter)       White Labs California Ale (VLP026) (22 oz starter)       White Labs California Ale (WLP026) (22 oz starter)       WILP001) (22 oz starter), (WLP001) (21 oz starter), (WLP001) (21 oz starter), (WLP001) (22 oz starter), (WLP001) (21 oz starter), (WLP001) (22 oz starter), (WLP001) (20 o							
Sparge Water, gallons       3 gallons         Boiling Time       60 minutes         Boiling Time       60 minutes         Boiling Hops       Tettnanger pellets (4.9%)       0.75 oz         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz         Kent Golding pellets (6.1%)       0.17 oz         Raspberry extract       Lactic ecid (0.8%)         IBUs       21.5       12         Yeast       White Labs Kölsch (WLP029) 1 vial       White Labs Edinburgh Ale       1 vial         (VLP001) (22 oz starter)       WULP01) (22 oz starter)       WULP01) (22 oz starter), ULT010 (23 oz starter), ULT010 (20 oz start	165		168°	169°			
Boiling Time         60 minutes         60 minutes         60 minutes           Boiling Hops         Tettnanger pellets (4.9%)         0.75 oz         Kent Golding pellets (6.1%)         0.33 oz         Siyrian Golding pellets (6.1%)           Finishing Hops         Tettnanger pellets (4.9%)         0.25 oz         Kent Golding pellets (6.1%)         0.17 oz         Raspberry extract Lactic acid (0.8%)           IBUs         21.5         12         Lactic acid (0.8%)         Lactic acid (0.8%)           Yeast         White Labs Kolsch (WLP029)         1 vial (VLP028) (22 oz starter)         White Labs California Ale (WLP028) (22 oz starter)         Larbic Elend (#3278) (12 oz starter), Larbic El	2.75 gallor	2.75		lons	2.75 (	2	
Boiling Hops       Tettnanger pellets (4.9%)       0.75 oz       Kent Golding pellets (6.1%)       0.33 oz       Styrian Golding pellets (6.1%)         Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz       Kent Golding pellets (6.1%)       0.17 oz       Raspberry extract Lactic acid (0.8%)         IBUs       21.5       12         Yeast       White Labs Kölsch (WLP029)       1 vial       White Labs California Ale (WLP028) (22 oz starter)       White Labs California Ale (WLP028) (22 oz starter)         Water/Treatment       all tap water       all tap water       all tap water       5 gallons D.0.75 gallons to no 176 gallons to no 176 gallons to no 176 gallons to 1.045         Target       (80% extraction)       1.048       (80% extraction)       1.045         Primary Gravity       1.012       1.016       1.037         Primary Gravity       1.012       1.016       60% extraction)       60% extraction         BU/GU       0.48       0.32       0.32       0.32         Cork target       (80% extraction)       3.36%       2.20%       2.76%         BU/GU       0.48       0.32       0.33       0.32       0.33         Cork target       (80% extraction)       3.46%       2.00%       2.76%       0.33         BU/GU       0.48	60 minute						Boiling Time
Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz       Kent Golding pellets (6.1%)       0.17 oz       Raspberry extract Lactic acid (0.8%)         IBUs       21.5       12         Yeast       White Labs Kölsch (WLP029)       1 vial (WLP028) (22 oz starter)       (WLP028) (22 oz starter)       (WLP028) (22 oz starter)       Lambic Blend (#3278) (12 oz starter)         Water/Treatment       all tap water       all tap water       all tap water       5 gallons DI, 0.75 gallons to no Irish Moss         Original Gravity       1 tsp Irish Moss @ 15 minutes       1.045       (80% extraction) 1.048       (80% extraction) 1.036       (80% extraction) 1.036         Target       (80% extraction) 1.048       (80% extraction) 1.045       1.037       (80% extraction) 1.045       (80% extraction) 1.045         Ending Gravity       1.012       1.016       (80% extraction) 1.046       (80% extraction) 1.046         Ending Gravity       1.012       1.016       57%       82%         Apparent Attenuation       73%       52%       57%         BU/GU       0.48       0.32       0.32         Ortential Alcohol, %       3.46% 4.33%       2.20% 2.76%       57%         Secondary Fermenter Temp       60°-65°       65°       65°         Primary Fermenter Temp       60°-65° <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Finishing Hops       Tettnanger pellets (4.9%)       0.25 oz       Kent Golding pellets (8.1%)       0.17 oz       Raspberry extract Lactic acid (0.8%)         IBUs       21.5       12         Yeast       White Labs Kötsch (WLP029)       1 vial (WLP029)       White Labs Edinburgh Ale (VLP001)       1 vial (WLP001)       White Labs California Ale (WLP029)       1 vial (WLP020)       White Labs California Ale (WLP021)       1 vial (WLP021)       White Labs California Ale (WLP021)       1 vial (WLP021)       (22 oz starter)       Lambic Blend (#3278)       1 Lambic Blend (#3278)       5 gallons DI, 0.75 gailons t no Irish Moss         Original Gravity       1 tsp Irish Moss       1 tsp Irish Moss @ 15 minutes       no Irish Moss       1 outs       no Irish Moss       (80% extraction)       1.045       (80% extraction) </td <td>0.50</td> <td></td> <td>icia (0, 176) 0.55 02</td> <td>0 02</td> <td>c</td> <td>301 [201010 (-1.0.70]</td> <td>area and a second s</td>	0.50		icia (0, 176) 0.55 02	0 02	c	301 [201010 (-1.0.70]	area and a second s
IBUs       21.5       12         Yeast       White Labs Kollsch (WLP029)       1 vial (22 oz starter)       White Labs Edinburgh Ale (22 oz starter)       1 vial (WLP028) (22 oz starter)       White Labs California Ale (WLP028) (22 oz starter)         Water/Treatment       all tap water       1 sp Irish Moss       1 sp Irish Moss @ 15 minutes       5 gallons Di, 0.76 gallons t no Irish Moss         Original Gravity       1 tsp Irish Moss @ 15 minutes       1 on Irish Moss       60% extraction)       1.045         Target       (80% extraction)       1.048       (80% extraction)       1.045         Primary Gravity       1.012       1.016         Ending Gravity       1.012       1.016         Ending Gravity       0.32       57%         BU/GU       0.48       0.32         Potential Alcohol, %       3.46% 4.33%       2.20% 2.76%         Lock Installed       21501       -         Secondary Fermenter       219001       -         Primary Gravity Fermenter Temp       60°-65°       65°         Secondary Fermenter Temp       60°-65°       65°         Potential Alcohol, %       219/01       -         Secondary Fermenter Temp       60°-65°       65°         Primary Grave Gravy Fermenter Temp       60°-65°		(oid, sun-baked pellets)		- 1			
IBUs       21.5       12         Yeast       White Labs Kollsch (WLP029)       1 vial (22 oz starter)       White Labs Edinburgh Ale (22 oz starter)       1 vial (WLP028) (22 oz starter)       White Labs California Ale (WLP028) (22 oz starter)         Water/Treatment       all tap water       1 sp Irish Moss       1 sp Irish Moss @ 15 minutes       5 gallons Di, 0.76 gallons t no Irish Moss         Original Gravity       1 tsp Irish Moss @ 15 minutes       1 on Irish Moss       60% extraction)       1.045         Target       (80% extraction)       1.048       (80% extraction)       1.045         Primary Gravity       1.012       1.016         Ending Gravity       1.012       1.016         Ending Gravity       0.32       57%         BU/GU       0.48       0.32         Potential Alcohol, %       3.46% 4.33%       2.20% 2.76%         Lock Installed       21501       -         Secondary Fermenter       219001       -         Primary Gravity Fermenter Temp       60°-65°       65°         Secondary Fermenter Temp       60°-65°       65°         Potential Alcohol, %       219/01       -         Secondary Fermenter Temp       60°-65°       65°         Primary Grave Gravy Fermenter Temp       60°-65°				-			Fisher Here
IBUs       21.5       12         Yeast       White Labs Kölsch (WLP029)       1 vial (22 oz starter)       White Labs Edinburgh Ale (WLP028) (22 oz starter)       1 vial (WLP001) (22 oz starter), Lambic Blend (#3278) (12 or Lambic Blend (#3278) (12 or Lambic Blend (#3278) (12 or Stallons DI, O.75 gallons L on lrish Moss         Original Gravity       all tap water       all tap water       1 tap Irish Moss @ 15 minutes       5 gallons DI, O.75 gallons t no lrish Moss         Original Gravity       1.045       1.045       (80% extraction)       1.045       (80% extraction)       (80% extraction)       1.045       (80% extraction)       (80% extraction)       1.045       (80% extraction)       (80% extraction)       (80% extraction)       1.045       (80% extraction)	4 02	The same service of the service of t	lets (6.1%) 0.17 oz	5 OZ		jer pellets (4.9%)	Finishing Hops
Yeast       White Labs Kölsch (WLP029)       1 vial (22 oz starter)       White Labs Edinburgh Ale (WLP028) (22 oz starter)       1 vial (WLP001) (22 oz starter), V Lambic Blend (#3278) (12 of Sigilons DI, 0.75 gailons t no Irish Moss         Water/Treatment       all tap water       all tap water       5 gailons DI, 0.75 gailons t no Irish Moss         Original Gravity       1.045       1.045         Maximum       1.060       1.045         Target       (80% extraction)       1.048         Measured       1.045       1.037         Primary Gravity       1.012       1.016         Ending Gravity       1.012       1.016         Extract Efficiency, %       75%       82%         Apparent Attenuation       73%       57%         EU/GU       0.48       0.32         Potential Alcohol, %       3.46% 4.33%       2.20% 2.76%         Lock Installed       2/5/01       -         Secondary Fermenter       2/9/01       3/18/01         Primary Fermenter Temp       60°-65°       65°         Secondary Fermenter Temp       0.33       2         Water, cups       0.33       2         Number of Bottles       5       29         Comments       5       29 <td< td=""><td>8 oz</td><td>Lactic acid (0.8%)</td><td></td><td>- 1</td><td></td><td></td><td></td></td<>	8 oz	Lactic acid (0.8%)		- 1			
Yeast       White Labs Kölsch (WLP029)       1 vial (22 oz starter)       White Labs Edinburgh Ale (WLP028) (22 oz starter)       1 vial (WLP001) (22 oz starter), V Lambic Blend (#3278) (12 of Sigilons DI, 0.75 gailons t no Irish Moss         Water/Treatment       all tap water       all tap water       5 gailons DI, 0.75 gailons t no Irish Moss         Original Gravity       1.045       1.045         Maximum       1.060       1.045         Target       (80% extraction)       1.048         Measured       1.045       1.037         Primary Gravity       1.012       1.016         Ending Gravity       1.012       1.016         Extract Efficiency, %       75%       82%         Apparent Attenuation       73%       57%         EU/GU       0.48       0.32         Potential Alcohol, %       3.46% 4.33%       2.20% 2.76%         Lock Installed       2/5/01       -         Secondary Fermenter       2/9/01       3/18/01         Primary Fermenter Temp       60°-65°       65°         Secondary Fermenter Temp       0.33       2         Water, cups       0.33       2         Number of Bottles       5       29         Comments       5       29 <td< td=""><td></td><td></td><td></td><td>- 1</td><td></td><td></td><td></td></td<>				- 1			
Yeast       White Labs Kölsch (WLP029)       1 vial (22 oz starter)       White Labs Edinburgh Ale (WLP028) (22 oz starter)       1 vial (WLP001) (22 oz starter), V Lambic Blend (#3278) (12 of Sigilons DI, 0.75 gailons t no Irish Moss         Water/Treatment       all tap water       all tap water       5 gailons DI, 0.75 gailons t no Irish Moss         Original Gravity       1.045       1.045         Maximum       1.060       1.045         Target       (80% extraction)       1.048         Measured       1.045       1.037         Primary Gravity       1.012       1.016         Ending Gravity       1.012       1.016         Extract Efficiency, %       75%       82%         Apparent Attenuation       73%       57%         EU/GU       0.48       0.32         Potential Alcohol, %       3.46% 4.33%       2.20% 2.76%         Lock Installed       2/5/01       -         Secondary Fermenter       2/9/01       3/18/01         Primary Fermenter Temp       60°-65°       65°         Secondary Fermenter Temp       0.33       2         Water, cups       0.33       2         Number of Bottles       5       29         Comments       5       29 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>							
(22 oz starter)       (WLP028) (22 oz starter)       (WLP001) (22 oz starter), Lambic Blend (#3278) (12 oz starter), Lambic Blend (#3278) (12 oz starter), Lambic Blend (#3278) (12 oz starter)         Water/Treatment       all tap water       all tap water       5 gallons DJ, 0.75 gallons t         Original Gravity       1 tsp Irish Moss       1 tsp Irish Moss @ 15 minutes       no Irish Moss         Maximum       1.060       1.045       (80% extraction)       1.045         Target       (80% extraction)       1.045       (80% extraction)       1.036         Measured       1.045       1.037       (80% extraction)       1.045         Primary Gravity       1.012       1.016       (80% extraction)       60% extraction)       60% extraction)         Extract Efficiency, %       75%       82%       75%       82%         Apparent Attenuation       73%       57%       65%       65%         BU/GU       0.488       0.32       65%       65%         Cost Installed       22/5/01       -       -       -         Primary Fermenter       29/9/01       3/18/01       -       -       -         Primary Fermenter Temp       60°-65%       65°       65°       -       -       -       -       -       - <td< td=""><td>1</td><td></td><td>12</td><td></td><td></td><td></td><td>And and a supervised of the su</td></td<>	1		12				And and a supervised of the su
(22 oz starter)       (WLP028) (22 oz starter)       (WLP001) (22 oz starter), V         Water/Treatment       all tap water       all tap water       5 gallons DI, 0.75 gallons ti         Original Gravity       1 tsp Irlsh Moss       1 tsp Irlsh Moss @ 15 minutes       no Irish Moss         Original Gravity       1.045       1.045       (80% extraction)       1.045         Maximum       (80% extraction)       1.045       (80% extraction)       (80% extraction)         Primary Gravity       1.012       1.016       (80% extract Efficiency, %       (80% extraction)       60%         Apparent Attenuation       73%       57%       82%       65%       65%         BU/GU       0.48       0.32	1 via	White Labs California Ale	burgh Ale 1 vial	vial	029)	abs Kölsch (WLPO:	Yeast
Water/Treatment       all tap water       Lambic Blend (#3278) (12 of 5 gallons DI, 0.75 gallons to no Irish Moss         Original Gravity       1 tsp Irish Moss @ 15 minutes       5 gallons DI, 0.75 gallons to no Irish Moss         Maximum       1.060       1.045         Target       (80% extraction) 1.048       (80% extraction) 1.036         Measured       1.045       1.037         Primary Gravity       1.012       1.016         Ending Gravity       1.012       1.016         Extract Efficiency, %       75%       82%         Apparent Attenuation       73%       57%         BU/GU       0.48       0.32         Potential Alcohol, %       3.46% 4.33%       2.20% 2.76%         Lack Installed       2/5/01       -         Secondary Fermenter       2/9/01       3/18/01         Primary Fermenter Temp       60°-65°       65°         Secondary Fermenter Temp       60°-65°       65°         Number of Bottles       5       29					0112230	tarter)	
Water/Treatment     all tap water     all tap water     5 gallons DI, 0.75 gallons t       Original Gravity     1 tsp Irish Moss     1 tsp Irish Moss     10 Irish Moss       Maximum     1.060     1.045     1.045       Target     (80% extraction) 1.048     (80% extraction) 1.036     (80% extraction)       Measured     1.045     1.037     (80% extraction)     1.045       Primary Gravity     1.012     1.016     1.045     (80% extraction)       Ending Gravity     1.012     1.016     1.045     (80% extraction)       Extract Efficiency, %     75%     82%       Apparent Attenuation     73%     57%     1012       BU/GU     0.48     0.32     1016       Dock Installed     2/5/01     -     -       Secondary Fermenter     2/9/01     3/18/01     -       Primary Fermenter Temp     60°-65°     65°     65°       Secondary Fermenter Temp     60°-65°     65°       Secondary Fermenter Temp     50°-55°     65°       Secondary Fermenter Temp     60°-65°     65°       Secondary Fermenter			otartory	- 0			
1 tsp Irlsh Moss         1 tsp Irlsh Moss         0 Irlsh Moss         0 Irlsh Moss           Original Gravity Maximum         1.060         1.045         no Irlsh Moss           Target         (80% extraction) 1.046         1.045         1.045           Measured         1.045         1.037         1.045           Primary Gravity         1.012         1.018         1.037           Primary Gravity         1.012         1.016         1.045           Extract Efficiency, %         75%         82%           Apparent Attenuation         73%         57%           BU/GU         0.48         0.32           Potential Alcohol, %         3.46% 4.33%         2.20% 2.76%           Lock Installed         2/5/01         -           Secondary Fermenter         2/9/01         3/18/01           Primary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         0.33         2           Number of Bottles         5         29           Comments         5         29           Comments         5         29	11.00 B 10.00	Camble Biend (#5276) (12 02		-		stor	Water/Treatment
Original Gravity         1.060         1.045           Maximum         1.060         1.045           Target         (80% extraction) 1.048         (80% extraction) 1.036           Measured         1.045         1.037           Primary Gravity         1.012         1.016           Ending Gravity         1.012         1.016           Extract Efficiency, %         75%         82%           Apparent Attenuation         73%         57%           BU/GU         0.48         0.32           Potential Alcohol, %         3.46% 4.33%         2.20% 2.76%           Lock Installed         215/01         -           Secondary Fermenter         219/01         3/18/01           Primary Gravity Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         0.33         2           Water, cups         0.33         2           Wumber of Bottles         5         29           Comments         5         29           Brewing         Boiling hops added at 50 minutes,         Boiling hops added at 50         Hops added at	water		@ 15 minutes				water realment
Maximum         1.060         1.045           Target         (80% extraction)         1.045           Measured         1.045         1.037           Primary Gravity         1.012         1.018           Ending Gravity         1.012         1.018           Ending Gravity         1.012         1.018           Extract Efficiency, %         75%         82%           Apparent Attenuation         73%         57%           BU/GU         0.48         0.32           Potential Alcohol, %         3.46% 4.33%         2.20%           Lock Installed         2/5/01         -           Secondary Fermenter         2/9/01         3/18/01           Priming Sugar, cups         Corn Sugar         1/12           Water, cups         0.33         2           Number of Bottles         5         29           Comments         5         29		no man woss	@ 15 minutes	-	-	11 10000	Original Gravity
Target Measured         (80% extraction)         1.048         (80% extraction)         1.036         (80% extraction)         1.036         (80% extraction)         1.037           Primary Gravity         1.012         1.016         1.037         1.016         1.045         1.037           Ending Gravity         1.012         1.016         1.016         1.016         1.016         1.016         1.017         1.016         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.016         1.017         1.017         1.016         1.017         1.017         1.016         1.017         1.017         1.017         1.017         1.017         1.017         1.017         1.017         1.017         1.017         1.017         1.017         1.017         1.017         1.017         1.0	-1.44			000			
Measured         1.045         1.037           Primary Gravity         1.012         1.016           Ending Gravity         1.012         1.016           Extract Efficiency, %         75%         82%           Apparent Attenuation         73%         57%           BU/GU         0.48         0.32           Potential Alcohol, %         3.46% 4.33%         2.20% 2.76%           Lock Installed         2/5/01         -           Secondary Fermenter         2/9/01         3/18/01           Primary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         0.33         2           Number of Bottles         5         29           Comments         5         29	1.06						
Primary Gravity         1.012         1.013           Ending Gravity         1.012         1.016           Ending Gravity         1.012         1.016           Extract Efficiency, %         75%         82%           Apparent Attenuation         73%         57%           BU/GU         0.48         0.32           Potential Alcohol, %         3.46%         4.33%           Secondary Fermenter         2/5/01         -           Secondary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         0.33         2           Water, cups         0.33         2           Number of Bottles         5         29           Comments         5         29	action) 1.05	(80% extraction)	% extraction) 1.036		(ION)	(80% extraction	
Ending Gravity         1.012         1.016           Extract Efficiency, %         75%         82%           Apparent Attenuation         73%         57%           BU/GU         0.48         0.32           Potential Alcohol, %         3.46%         4.33%           Lock Installed         2/5/01         -           Secondary Fermenter         2/9/01         3/18/01           Primary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         60°-65°         65°           Priming Sugar, cups         0.33         2           Water, cups         0.33         2           Number of Bottles         5         29           Comments         5         29           Brewing         Boiling hops added at 50 minutes,         Boiling hops added at 50 minutes,         Hops added at 50	1.05		1.037	045			
Ending Gravity         1.012         1.016           Extract Efficiency, %         75%         82%           Apparent Attenuation         73%         57%           BU/GU         0.48         0.32           Potential Alcohol, %         3.46%         4.33%           Secondary Fermenter         2/5/01         -           Primary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         60°-65°         65°           Number of Bottles         0.33         2           Number of Bottles         5         29           Comments         Boiling hops added at 50 minutes,         Boiling hops added at 50 minutes,         Hops added at 50	1.01		1.016	012			Primary Gravity
Extract Efficiency, %         75%         82%           Apparent Attenuation         73%         57%           BU/GU         0.48         0.32           Potential Alcohol, %         3.46%         4.33%           2.00%         2.76%           Lock Installed         215/01           Secondary Fermenter         2/9/01           Primary Fermenter Temp         60°-65°           Secondary Fermenter Temp         60°-65°           Secondary Fermenter Temp         60°-65°           Values         1/12           Corn Sugar         1/12           Number of Bottles         2           Secondary Better         299           Corn Sugar         1/3           Brewing         Boiling hops added at 50 minutes,	1.01		All a state of the	012			Ending Gravity
Apparent Attenuation     73%     57%       BU/GU     0.48     0.32       Potential Alcohol, %     3.46%     4.33%       2/5/01     -       Secondary Fermenter     2/5/01       Primary Fermenter Temp     60°-65°       Secondary Fermenter Temp     60°-65°       Secondary Fermenter Temp     60°-65°       Secondary Fermenter Temp     60°-65°       Priming Sugar, cups     Corn Sugar       Matter, cups     0.33       Number of Bottles     5       Secondary     5       Brewing     Boiling hops added at 50 minutes,	84						Extract Efficiency, %
BU/GU         0.48         0.32           Potential Alcohol, %         3.46% 4.33%         2.20% 2.76%           Lock Installed         2/5/01         -           Secondary Fermenter         2/9/01         3/18/01           Primary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         50°-55°         65°           Priming Sugar, cups         Corn Sugar         1/12           Water, cups         0.33         2           Number of Bottles         5         29           Comments         Boiling hops added at 50 minutes,         Boiling hops added at 50	78						
wt%         vol%         wt%         vol%           Potential Alcohol, %         3.46%         4.33%         2.20%         2.76%           Lock Installed         215/01         -         -         -           Primary Fermenter         219/01         3/18/01         -         -           Primary Fermenter Temp         60°-65°         65°         -         -           Secondary Fermenter Temp         50°-55°         65°         -         -           Priming Sugar, cups         Corn Sugar         1/12         Corn Sugar         1/3         Corn Sugar           Number of Bottles         5         29         -         -         -         -           Brewing         Boiling hops added at 50 minutes,         Boiling hops added at 50 minutes.         Hops added at 50         -         -	0.2				-		
Potential Alcohol, %         3.46% 4.33%         2.20% 2.76%           Lock Installed         2/5/01         -           Secondary Fermenter         2/9/01         3/18/01           Primary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         60°-65°         65°           Priming Sugar, cups         Corn Sugar         1/12         Corn Sugar           Water, cups         0.33         2         2           Number of Bottles         5         29         2           Comments         Boiling hops added at 50 minutes,         Boiling hops added at 50 minutes,         Hops added at 50	the second se	- 10/			106		0.00
Lock Installed     2/5/01       Secondary Fermenter     2/9/01       Primary Fermenter Temp     60°-65°       Secondary Fermenter Temp     60°-65°       Secondary Fermenter Temp     60°-65°       Priming Sugar, cups     Corn Sugar       Vater, cups     0.33       Number of Bottles     5       Secondary Fermenter     29	wt% vol						Potential Alcohol %
Secondary Fermenter         2/9/01         3/18/01           Primary Fermenter Temp         60°-65°         65°           Secondary Fermenter Temp         50°-55°         65°           Priming Sugar, cups         Corn Sugar         1/12           Water, cups         0.33         2           Number of Bottles         5         29           Comments         Boiling hops added at 50 minutes,         Boiling hops added at 50 minutes.         Hops added at 50	4.41% 5.51		2.20% 2.76%	55%			
Primary Fermenter Temp     60°-65°     65°       Secondary Fermenter Temp     50°-55°     65°       Priming Sugar, cups     Corn Sugar     1/12       Water, cups     0.33     2       Number of Bottles     5     29       Comments     Boiling hops added at 50 minutes,     Boiling hops added at 50 minutes.     Hops added at 50		3/30/01					
Secondary Fermenter Tem;       50°-55°       65°         Priming Sugar, cups       Corn Sugar       1/12       Corn Sugar       1/3       Corn Sugar         Water, cups       0.33       2 <td< td=""><td>4/5/01</td><td>4/5/01</td><td></td><td></td><td></td><td>2/9/</td><td></td></td<>	4/5/01	4/5/01				2/9/	
Secondary Fermenter Temp       50°-55°       65°         Priming Sugar, cups       Corn Sugar       1/12       Corn Sugar       1/3       Corn Sugar         Water, cups       0.33       2       Vumber of Bottles       29       Comments       Emerginal State       Emerginal State       Emerginal State       Hops added at 50       Hops added at 50       Hops added at 50       Emerginal State	65		65°				
Priming Sugar, cups     Corn Sugar     1/12     Corn Sugar     1/3     Corn Sugar       Water, cups     0.33     2     2       Number of Bottles     5     29       Comments     5     29       Brewing     Boiling hops added at 50 minutes,     Boiling hops added at 50 minutes,     Hops added at 50	65			-55°	5		
Water, cups     0.33     2       Number of Bottles     5     29       Comments     5     29       Brewing     Boiling hops added at 50 minutes, Boiling hops added at	1/2	Corn Sugar		_		gar	Priming Sugar, cups
Number of Bottles         5         29           Comments         Brewing         Boiling hops added at 50 minutes, Boiling h	2					#2352	
Comments         Environments           Brewing         Boiling hops added at 50 minutes, Boiling hops added	29				_		
Brewing Boiling hops added at 50 minutes, Boiling hops added at 50 minutes. Hops added at 50	29		20	-			and the second
			dded at FD and a too	_	O maler	hope added at FO	
tinishing hops at 5 minutes. Finishing hops added at 2 minutes.	nutes.	Hops added at 50 minutes.		s,			brewing
			added at 2 minutes.		Inutes	sning hops at 5 mir	
			1				
Fermentation Fermentation beginning only at 72 Fermentation active at 16 hours. Fermentation starting at 20	ours Tertio	Fermentation starting at 20 hours.	active at 16 hours	72	only a	ntation beginning o	Fermentation
		fermenter on April 25 (1.014), with	and the second second				
				" II.		Socona yeasi via	
		0.8% lactic acid and 1/2 oz Frenc					1
		chips. Raspberry extract and 4 oz					
		lactic acid added at bottling.					
Beer Heavy phenolics. Beer thrown out. 5 Third in 2001 AHA NHC First Round in First in Belgians and Best	Show at 200	First in Belgians and Best of Show a	A NHC First Round in	1.5	Irown	henolics. Beer thr	Beer
		QUAFF Oktoberfest Picnic. Third a			mp	les for bad beer ex	
		San Diego County Fair.					
		call bloge obtainy r all.					1
Source of Recipe Custom recipe. Custom recipe. Custom recipe.		Custom malan	om melon	-+		Custom regime	Source of Recipe
Source of Recipe Custom recipe. Custom recipe. Custom recipe.		Custom recipe.	on recipe.		<u>.</u>	ouston reaps.	

)

	Belgian Wit		Los Angeles Extra Special Bitter		Hefeweizen (All Grain)		
Brewing Date	(All Grain) 5/12/01 7		(All Grain) 5/20/01	8	(All Grain) 5/28/01		
Bottling Date	6/3/01		6/9/01	0	6/20/01		
Primary Fermenter	3.0 gali	070		gailons		gallon	
Secondary Fermenter	2.8 call			galions		gallon	
Mait		lbs	British Pele Melt	5 lbs	German Wheat Malt	5 lbs	
UV LAUX		ibs	Crystel 60°L Melt	8 0Z	German Pilsener Malt Flaked Oats	2 lbs 4 oz	
Color, SRM Color, MCU Actual Color, SRM		3.2 3.2		11.1 11.8		3.1 3.1	
First Rest	15 minu	dee	15	minutes	15 1	minutes	
Water, gallons	1.5 gall			gallons		gallons	
Temperature		119°		20°-125°	1.00	122	
Second Rest	75 minu			minutes	75 1	minute	
Water, gallons	1.5 gall			gallons	1177.0	gallon	
Temperature	150-156° (154° avera		146°-152° (150° a		150-156° (154° a		
Third Rest	the test avoid	9.01		1.1.9.07			
Water, gallons Temperature							
Mashout Temperature		68°		164°		166	
Sparge Water, gallons	3 gell		0.70	gallons	0 75	gallon	
Boiling Time	5 gai 60 minu			minutes		minute	
Boiling Hops			Kent Golding pellets (6.4%)	0.5 oz	Tettnanger pellets (4.9%)	0.6 0	
boining rispa		JUE	Fuggles pellets (5.1%)	0.5 oz	rennenger peners (4.3%)	0.0 0.	
Finishing Hops			Kent Golding pellets (6.4%) Fuggles pellets (5.1%)	0.5 oz 0.5 oz			
IBUs		18		46		1	
Yeast	White Labs Belgian Wit 1 v (WLP400) (22 oz starter)	vial	White Labs Premium Bitter (WLP026) (22 oz starter)	40 1 vial	White Labs Hefeweizen (WLP300) (22 oz starter)	1 vial	
Water/Treatment	ali tap water 1 tsp irish Moss @ 15 minutes		all tep water 1 tep Irish Moss @ 15 minutes		all tep water 1 tsp Irish Moss @ 15 minutes		
Original Gravity		_			and the second second second		
Maximum Target Measured	(80% extraction) 1.	071 057 047	(80% extraction)	1.054 1.044 1.052	(80% extraction)	1.07 1.05 1.05	
Primary Gravity		015		1.025		1.01	
Ending Gravity		014		1.015		1.01	
Extract Efficiency, %		36%		96%		769	
Apparent Attenuation		70%		71%		709	
BU/GU		0.38		0.88		0.2	
	wt% v	01%	wt%	vol%	wt%	vol	
Potential Alcohol, %		33%	3.89%	4.86%	3.88%		
Lock Installed	-			5/24/01			
Secondary Fermenter	5/19/01			5/27/01	6/2/01		
Primary Fermenter Temp		67°		68°		70	
Secondary Fermenter Temp		67°		68°		70	
Priming Sugar, cups		/2			Speise	32 02	
Water, cups		2	and the second se				
Number of Bottles	2	27	kegged			29	
Comments							
Brewing	Hops added at 50 minutes.		Boiling hops added at 50 min Finishing hops split betwee minutes at 2 minutes.	nutes. m 15	Hops added at 50 minute	16.	
Fermentation	Fermentation beginning at 24 hour	rs.	Fermentation active at 12 h	ours.	Fermentation active at 12 h	ours.	
	QUAFF representative for Wit Clu	b-	Designed as a Best Bitter, but	l ended	Beer may have been contami	inated.	
Beer	Only. Second In Belgians at 200 QUAFF Oktoberfest.	1	up as an ESB. Taste is som cidery.	ewhat	Two bottles exploded.		

Seconday Fermenter         2.8 gailons         2.6 gailons         2.6 gailons         2.7           Mait         American Two-Row Mait         5.16 British Pale Mait         5.16 American Two-Row Mait         5.16 Crystal 20°L Mait         10 crystal 20°L Mait         Brown Sugar           Color, SRM         11.5         10.2         10.2         10.3         American Two-Row Mait         Brown Sugar           Color, SRM         11.5         10.2         10.3         Actual Color, SRM         11.5         10.2           First Rest         15 minutes         1.75 gailons         1.31 gailons         1.22° first mash, 154" sr           Water, gailons         1.75 gailons         1.35 gailons         1.25 gailons         1.25 gailons           Thrid Rest         157*-146" (152" average)         156"-149" (152" average)         156"-149" (152" average)         156"-149" (152" average)           Boiling Thor         2.86 gailons         2.85 gailons         1.32 gailons in first mash, 2.8         160"           Thrid Rest         Water, gailons         1.25 gailons         1.25 gailons         1.25 gailons         1.25 gailons           Temperature         2.65 gailons         1.02         Centennial paliets	I gallon 3 gallon 12 lb 1 lb 1 lb 1 lb 1 lb 27 5 minute per mas
Brewing Date         778/01         10         8/4/01         11         8/11/1           Primary Fermenter         3.0 galons         1.5 galons         1.22 first mash, 124* galons         1.22 first mash, 124* galons         1.22 first mash, 324* galons         1.25 galons         1.25 galons         1.5 galons         1.5 galons         1.5 galons         1.5 galons         1.5 galons         1.25 galons         1.25 galons         1.25 galons         1.25	I gallon 3 gallon 12 lb 1 lb 1 lb 1 lb 1 lb 27 5 minute per mas
Bottling Date         772001         872601         972601         972601           Primary Fermenter         3.0 galons         3.0 galons         3.0 galons         1           Secondary Fermenter         American Two-Row Mait         5.15 British Pale Mait         1 to c         Crystal 20°L Mait           Care-Plas Mait         1 to         Crystal 20°L Mait         1 to c         Crystal 20°L Mait           Color, SRM         11.5         Elaked Oats         2 oz         Crystal 30°L Mait           Color, SRM         11.5         10.2         Crystal 30°L Mait         Brown Sugar           Color, SRM         11.5         10.2         Crystal 30°L Mait         Brown Sugar           First Rest         15 minutes         10.3         Standard Standa	I gallon 3 gallon 12 lb 1 lb 1 lb 1 lb 1 lb 27 5 minute per mas
Primary Fermenter         3.0 gations         3.0 gations         3.0 gations           Matt         Care/Park Matt         5.5 lbs British Pate Matt         5 lbs British Pate Matt         1 or Crystal 97-YM att         Crystal 97-YM att         1 or Crystal 97-YM att         Crystal 97-YM att         1 or Crystal 97-YM att         1 or Crystal 97-YM att         1 or Crystal 97-YM att         Crystal 97-YM att         1 or Crystal 97-YM att <td< td=""><td>3 gallon 3 gallon 12 lb 1 lb 1 lb 1 lb 1 lb 1 lb 5 minute per mas</td></td<>	3 gallon 3 gallon 12 lb 1 lb 1 lb 1 lb 1 lb 1 lb 5 minute per mas
Secondary Fermenter         2.8 gallons         2.9 gallons         3           Mait         American Two-Row Mait         5 lbs         Crystal 20°L Mait         1 lbs         Crystal 20°L Mait         1 lbs         Crystal 20°L Mait         Bits         Crystal 20°L Mait         Crystal 20°L Mait         Bits         Crystal 20°L Mait         Bits         Crystal 20°L Mait	3 gallon 12 lb 1 lb 1 lb 1 lb 1 lb 1 lb 5 minute per mas
Meit         American Two-Row Mait         55 lise         Briten Pate Mait         10 c         State           Care/Pisk Mait         1 lb         Crystal 407L Mait         1 lb         Crystal 407L Mait         1 lo         Crystal 407L Mait         Bits         American Two-Row Mait         1 lo         Crystal 407L Mait         1 lo         Crystal 407L Mait         Bits         1 lo         Crystal 407L Mait         I lo         Crystal 407L Mait         I lo	12 lb 1 lb 1 lb 1 lb 1 lb 1 lb 15 27 5 minute per mas
Cara-Pile Mait         1 to Flaked Oats         Crystal 201-Mait         1 to Flaked Oats         Crystal 201-Mait           Color, SRM         11.5         Flaked Oats         2 oz         Crystal 601-Mait         Brown Suger           Color, SRM         11.5         10.2         Color, SRM         10.3           Cator, MCU         12.5         10.3           Actual Color, SRM         15 minutes         1.5 gallons           Temperature         12.7 5 minutes         1.31 gallons           Temperature         157"-146" (152" average)         156"-149" (152" average)           Yeast         157"-146" (152" average)         156"-149" (152" average)           Temperature         157"-146" (152" average)         156"-149" (152" average)           Yeast         2.89 gallons         2.85 gallons         2.7 gallons           Second Rest         75 minutes         60 minutes         166" 149" (152" average)           Water, gallons         2.85 gallons         2.85 gallons         2.85 gallons           Sparge Water, gallons         2.85 gallons         2.85 gallons         2.7 gallons in first mash, 2.6 gallons           Sparge Water, gallons         2.85 gallons         2.85 gallons         2.55 gallons         2.7 gallons in first mash, 2.6 gallons           Finishing Hops	1 lb 1 lb 1 lb 1 lb 15 27 5 minute per mas
Crystal 40°L Mait         1 lb         Flaked Oats         2 cz         Crystal 60°L Mait           Color, SRM         11.5         10.2         10.3           Color, SRM         11.5         10.2           Color, SRM         11.5         10.2           Catual Color, SRM         11.5         10.3           First Rest         15 minutes         15 minutes           Second Rest         75 minutes         60 minutes           Second Rest         75 minutes         60 minutes           Water, galons         1.57 galors         1.38 galons           Temperature         156°-146° (152° average)         156°-146° (152° average)           Third Rest         157°-146° (152° average)         156°-146° (152° average)           Water, galons         2.55 galons         2.74 galons in first mash, 2.6           Sparge Water, galons         2.68 galons         2.65 galons         2.74 galons in first mash, 2.6           Boling Time         75 minutes         60 minutes         100         100           Boling Hops         Northern Brewer pellets (8.6%)         1.25 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)           Boling Hops         Northern Brewer pellets (8.6%)         1.25 oz         140         <	1 lb 1 lb 15 27 5 minute per mas
Flaked Oats         2 oz         Brown Sugar           Color, SRM         11.5         10.2           Color, SRM         12.5         10.3           Actual Color, SRM         12.5         10.3           First Rest         15 minutes         1.5 gallons           Catage Color, SRM         1.75 gallons         1.31 gallons           Temperature         1.27 minutes         0.3 significations           Temperature         1.57*-146* (152* average)         156*-142* (152* average)           Water, galons         1.57*-146* (152* average)         156*-142* (152* average)           Temperature         157*-146* (152* average)         156*-142* (152* average)           Water, galons         2.85 galons         2.55 galons           Temperature         167*         167*           Mashoul Temperature         167*         167*           Boling Time         75 minutes         60 minutes           Boling Hops         Northern Brewer pellets (8.8%)         0.75 oz         Centennial pellets (9.9%)           Finishing Hops         Northern Brewer pellets (8.8%)         1.25 oz         Centennial pellets (9.9%)           Water/Treatment         all tap water         1 water         1 water           Lager (WLP810) (22 oz starter)	1 lb 15 27 5 minute per mas
Color, SRM         11.5         10.2           Color, SRM         11.5         10.3           Actual Color, SRM         15 minutes         15 minutes           First Rest         15 minutes         1.31 gallons           Color, SRM         122* (152*         10.3           Temperature         122* (152*         10.3           Second Rest         75 minutes         60 minutes           Orange Statistics         1.55 gallons         1.31 gallons           Temperature         1.57*-148° (152* average)         166*-149* (152* average)           Third Rest         Water, gallons         1.25 gallons           Temperature         156*-149* (152* average)         166*-149* (152* average)           Third Rest         2.88 gallons         2.55 gallons         2.74 gallons in first mash, 2.6           Sparge Water, gallons         2.74 gallons in first mash, 2.6         160* minutes         100           Finishing Hops         Northern Brewer pellets (8.8%)         0.75 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)           Finishing Hops         Northern Brewer pellets (8.8%)         1.25 oz         1.0 dil         1.0 dil         1.0 dil           Velast         White Labs San Francisco         1 with Mosa @ 15 minutes <td>15 27 5 minute per mas</td>	15 27 5 minute per mas
Color, MCU         12.5         10.3           First Rest         15 minutes         15 minutes         1.5 gallons           Temperature         1.27 gallons         1.31 gallons         1.5 gallons           Temperature         1.22 first mash, 1.34 set         1.22 first mash, 1.34 set         1.22 first mash, 1.34 set           Socond Rest         75 minutes         60 minutes         1.25 gallons         1.25 gallons           Temperature         157*-146* (152* average)         166*-149* (152* average)         156*-149* (152* average)           Third Rest         157*-146* (152* average)         166*-149* (152* average)         156*-149* (15           Water, gallons         2.85 gallons         2.55 gallons         2.24 gallons in first mash, 2.6           Boiling Time         76 minutes         60 minutes         60 minutes           Boiling Time         76 minutes         60 minutes         1.65* (149* (15)* average)           Finishing Hops         Northern Brewer pellets (6.8%)         1.25 callons         Centennial pellets (6.9%)           Finishing Hops         Northern Brewer pellets (6.8%)         1.26 callons         Centennial pellets (6.9%)           White Labs San Francisco         1 wite Labs English Ale         1 wite         Wite Labs California Ale           WuPoO2) (22 co starter)	27 5 minute per mas
Color, MCU         12.5         10.3           First Rest         15 minutes         15 minutes         1.5 gallons           Temperature         1.27 gallons         1.31 gallons         1.5 gallons           Temperature         1.22 first mash, 1.34 set         1.22 first mash, 1.34 set         1.22 first mash, 1.34 set           Socond Rest         75 minutes         60 minutes         1.25 gallons         1.25 gallons           Temperature         157*-146* (152* average)         166*-149* (152* average)         156*-149* (152* average)           Third Rest         157*-146* (152* average)         166*-149* (152* average)         156*-149* (15           Water, gallons         2.85 gallons         2.55 gallons         2.24 gallons in first mash, 2.6           Boiling Time         76 minutes         60 minutes         60 minutes           Boiling Time         76 minutes         60 minutes         1.65* (149* (15)* average)           Finishing Hops         Northern Brewer pellets (6.8%)         1.25 callons         Centennial pellets (6.9%)           Finishing Hops         Northern Brewer pellets (6.8%)         1.26 callons         Centennial pellets (6.9%)           White Labs San Francisco         1 wite Labs English Ale         1 wite         Wite Labs California Ale           WuPoO2) (22 co starter)	27 5 minute per mas
Color, NCU         12.5         10.3           First Rest         15 minutes         15 minutes         1.5 gallons           Temperature         122* first mash, 13* gallons         1.5 gallons         1.5 gallons           Socond Rest         75 minutes         60 minutes         1.25 gallons         1.25 gallons           Temperature         157*-148* (152* average)         166*-149* (152* average)         156*-149* (152* average)         156*-149* (152* average)           Third Rest         157*-148* (152* average)         166*-149* (152* average)         156*-149* (152* average)         156*-149* (152* average)           Temperature         157*-148* (152* average)         166*-149* (152* average)         156*-149* (15           Mashout Temperature         167*         167*         156*-149* (15           Sparge Water, gallons         2.85 gallons         2.55 gallons 2.74 gallons in first mash, 2.6           Boiling Thep         Northern Brewer pellets (8.8%)         0.75 oz         Kent Golding pellets (6.4%)         1 oz           Finishing Hops         Northern Brewer pellets (8.8%)         1.26 oz         Kent Golding pellets (6.4%)         0.5 oz           Gliga Gravity         UWhite Labs San Francisco         1 viat         White Labs California Ale         Wul-POO(2) (22 oz starter)         Wul-POO (22 cz starter)         W	27 5 minute per mas
Color, NCU         12.5         10.3           First Rest         15 minutes         15 minutes         1.5 gallons           Temperature         122* frst mash, 134* gallons         1.5 gallons         1.5 gallons           Second Rest         75 minutes         60 minutes         1.25 gallons         1.25 gallons           Temperature         157*-148* (152* average)         166*-149* (152* average)         156*-149* (152* average)         156*-149* (152* average)           Third Rest         157*-148* (152* average)         166*-149* (152* average)         156*-149* (152* average)         156*-149* (152* average)           Third Rest         157*-148* (152* average)         166*-149* (152* average)         156*-149* (15           Sparge Water, gallons         2.85 gallons         2.55 gallons         1.25 gallons           Sparge Water, gallons         2.85 gallons         2.55 gallons         2.74 gallons in first mash, 2.6           Boiling Theps         Northern Brewer pellets (8.8%)         0.75 oz         Kent Golding pellets (6.4%)         1 oz         Centennial pellets (8.9%)           Finishing Hops         Northern Brewer pellets (8.8%)         1.26 oz         40         White Labs San Francisco         1 wit           Yeaat         White Labs San Francisco         1 wit         1 wit         Wite VULPOV2) (22 cz st	27 5 minute per mas
Color, NCU         12.5         10.3           First Rest         15 minutes         15 minutes         1.5 gallons           Temperature         122" first mash, 134" gallons         1.5 gallon           Second Rest         75 minutes         60 minutes           Water, gallons         1.75 gallons         1.38 gallons           Temperature         157"-146" (152" average)         166"-149" (152" average)           Third Rest         157"-146" (152" average)         156"-149" (152" average)           Temperature         157"-146" (152" average)         156"-149" (152" average)           Mashout Temperature         157" 146" (152" average)         156"-149" (152" average)           Temperature         157" 146" (152" average)         156"-149" (152" average)           Sparge Water, gallons         2.55 gallons         2.55 gallons           Temperature         167"         167"           Boiling Time         10         2.5 gallons           Boiling Time         10 average         10 average           Boiling Time         10 average         10 average           Boiling Time         11 average         10 average           Boiling Time         11 average         10 average           Boiling Time         1 wite         White Labs Sa	27 5 minute per mas
Actual Color, SRM         Actual Color, SRM         15           First Rest         15 minutes         15 minutes         1.31 gallons         1.5 gallons           Temperature         122*, 123         124         122* first mash, 1.34 set         15           Second Rest         75 minutes         60 minutes         60 minutes         1.55 gallons         1.25 gallo	5 minute per mas
First Rest         15 minutes         15 minutes         1.5 gallons         1.5 gallons           Tamperature         1.22*-123         124*         122* first mash, 134* set         1.25 gallons         1.25 gallons           Temperature         1.27* first mash, 134* set         60 minutes         0.24*         122* first mash, 134* set           Water, gallons         1.75 gallons         1.35 gallons         1.25 gallons         1.25 gallons           Temperature         157*-146* (152* average)         166*-149* (152* average)         156*-149* (152* average)         156*-149* (152* average)           Water, gallons         2.85 gallons         2.55 gallons I.74 gallons in first mash, 2.6         50 minutes         60 minutes         167*           Sparge Water, gallons         2.88 gallons         2.55 gallons I.74 gallons in first mash, 2.6         50 minutes         60 minutes         167*           Boiling Time         75 minutes         60 minutes         10*         10*         7.6           Boiling Hops         Northern Brewer pellets (8.8%)         1.26 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)           IBUs         45         40         White Labs California Ale         (WLP01) (12 & 25 oz starter)         (WLP01) (12 & 25 oz starter)         (WLP01) (12 & 25 oz starter) <t< td=""><td>per mas</td></t<>	per mas
Water, gallons         1.75 gallons         1.31 gallons         1.5 gallons           Second Rest         75 minutes         60 minutes           Water, gallons         1.75 gallons         1.38 gallons         1.22 "first mash, 134" set           Water, gallons         1.75 gallons         1.38 gallons         1.22 "first mash, 134" set           Water, gallons         1.75 gallons         1.38 gallons         1.25 gallons           Trink Rest         157°-146" (152" average)         156°-149" (152" average)         156°-149" (152" average)           Sparge Water, gallons         2.58 gallons         2.55 gallons I.74 gallons I.75 minutes         60 minutes           Boiling Time         75 minutes         60 minutes         60 minutes           Boiling Time         75 minutes         60 minutes         60 minutes           Finishing Hops         Northern Brewer pellets (8.8%)         1.25 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)           IBUs         45         40         40         White Labs San Francisco         1 wial         White Labs California Ale           Weater/Treatment         all tap water         1 tap lrish Moss @ 15 minutes         1 tap lrish Moss @ 15 minutes         1 tap lrish Moss @ 15 minutes           Original Gravity         1.056	per mas
Temperature         122*123*         124*         122* first mash, 134* set           Second Rest         75 minutes         60 minutes         1.35 gallons         1.25 gallons           Temperature         157*-146* (152* average)         156*-149* (152* average)         156*-149* (152* average)         156*-149* (152* average)           Temperature         157*-146* (152* average)         156*-149* (152* average)         156*-149* (152* average)         156*-149* (152* average)           Mashout Temperature         167*         167*         167*         167*           Sparge Water, gallons         2.55 gallons in first mash, 2.6         60 minutes         60 minutes           Boiling Time         75 minutes         60 minutes         60         60.9%)         60           Boiling Theps         Northern Brewer pellets (8.8%)         0.75 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)         60           IBUs         45         40         White Labs San Francisco         1 vial         White Labs California Ale         (WLP001) (12 & 2 so z starter)         WUP001) (12 & 2 so z starter)         WUP001) (12 & 2 so z starter)         WUP001) (12 & 2 so z starter)         1 tsp Irish Moss @ 15 minutes         1 tsp Irish	
Second Rest         75 minutes 1.75 galons         60 minutes 1.35 galons         1.36 galons           Temperature         157°-146° (152° average)         156°-149° (152° average)         1.36 galons           Third Rest         Water, galons         157°-146° (152° average)         156°-149° (152° average)         156°-149° (152° average)           Water, galons         2.85 galons         2.74 galons in first mash, 2.6         156°-149° (152° average)         156°-149° (152° average)           Sparge Water, galons         2.85 galons         2.74 galons in first mash, 2.6         156°-149° (152° average)         156°-149° (152° average)           Boiling Time         0.75 minutes         60 minutes         2.74 galons in first mash, 2.6         156°-149° (152° average)         156°-149° (152° average)           Finishing Hops         Northern Brewer pellets (8.8%) 0.75 oz         Kent Golding pellets (6.4%)         1 oz         Centennial pellets (9.9%)           Finishing Hops         Northern Brewer pellets (8.8%) 1.26 oz         Kent Golding pellets (6.4%)         0.5 oz         Casade pellets (6.0%)           Yeast         White Labs San Francisco         1 vial         White Labs California Ale         (WLP001) (12.8 25 oz starter)         (WLP001) (12.8 25 oz starter)         1 tsp lrish Moss @ 15 minutes	
Water, gallons Temperature         1.75 gallons 157°-146° (152″ average)         1.38 gallons 156°-149° (152″ average)         1.25 gallons 156°-149° (152″ average)           Water, gallons Temperature         157°-146° (152″ average)         156°-149° (152″ average)         156°-149° (152″ average)           Mashout Temperature         167°         2.65 gallons         2.74 gallons in first mash, 2.6           Mashout Temperature         167°         2.55 gallons         2.74 gallons in first mash, 2.6           Boiling Time         75 minutes         60 minutes         60 minutes         60           Boiling Thops         Northern Brewer pellets (8.8%) 0.75 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)           Finishing Hops         Northern Brewer pellets (8.8%) 1.25 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)           IBUs         45         40         White Labs San Francisco         1 vial         White Labs California Ale           Yeast         all tap water         all tap water         all tap water         all tap water         1 tap water           1 tap water         1 tap lrish Moss @ 15 minutes         1 tap Mater         1 tap Mater         1 tap water           Target         (80% extraction)         1.054         (80% extraction)         1.046         (80	ond mar
Water, gallons         1.75 gallons         1.38 gallons         1.25 gallon           Trind Rest         157°-148° (152° average)         156°-149° (152° average)         156°-149° (152° average)         156°-149° (152° average)           Water, gallons         Temperature         167°         167°         167°           Mashout Temperature         167°         2.65 gallons         2.74 gallons in first mash, 2.6           Boiling Time         75 minutes         60 minutes         0         1 oz           Boiling Hops         Northern Brewer pellets (8.8%)         0.75 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)           Finishing Hops         Northern Brewer pellets (8.8%)         1.26 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)           IBUs         45         40         White Labs San Francisco         1 vial         White Labs California Ale           Yeast         White Labs San Francisco         1 vial         White Labs California Ale         (WLP001) (12 & 25 oz starter)         White Labs California Ale           Water/Treatment         all tap water         1 tap insh Mose @ 15 minutes         1 tap linsh Mose @ 15 minutes         1 tap linsh Mose @ 15 minutes         1 tap linsh Mose @ 15 minutes           Target         (80% extraction)	5 minute
Temperature         157°-146° (152° average)         156°-149° (152° average)         156°-149° (152° average)           Third Rest         Water, galons         157°-146° (152° average)         156°-149° (152° average)         156°-149° (152° average)           Mashout Temperature         167°         167°         167°           Sparge Water, galons         2.85 galons         2.74 galons in first mash, 2.6           Boiling Time         75 minutes         60 minutes         1           Boiling Hops         Northern Brewer pellets (8.8%)         0.75 oz         Kent Golding pellets (6.4%)         1 oz           Finishing Hops         Northern Brewer pellets (8.8%)         1.25 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)           IBUs         45         40         Ville Labs California Ale         White Labs California Ale           VuPoo1) (12 & 25 oz starter)         White Labs California Ale         White Labs California Ale           WuPoo1) (22 oz starter)         WiWuPoo2) (25 oz starter)         White Labs California Ale           Water/Treatment         all tap water         1 tsp Irish Moss @ 15 minutes         1 tsp Irish Moss @ 15 minutes           Original Gravity         1.054         (80% extraction)         1.048         (80% extraction)           Primary Gravity         1.	
Third Rest       Water, gallons       167"       167"         Temperature       167"       167"         Mashout Temperature       2.85 gallons       2.74 gallons in first mash, 2.6         Sparge Water, gallons       2.85 gallons       2.74 gallons in first mash, 2.6         Boiling Time       75 minutes       60 minutes       1         Boiling Hops       Northern Brewer pellets (8.8%)       0.75 oz       Kent Golding pellets (6.4%)       1 oz         Finishing Hops       Northern Brewer pellets (8.8%)       1.25 oz       Kent Golding pellets (6.4%)       0.5 oz       Cascade pellets (6.0%)         IBUs       45       40         Yeast       White Labs San Francisco       1 vial       (White Labs California Ale         Vulzer/Treatment       all tap water       1 tap irish Mose @ 15 minutes       1 tap water         1 tap Irish Mose @ 15 minutes       1 tap irish Mose @ 15 minutes       1 tap water       1 tap water         Target       (80% extraction)       1.054       (80% extraction)       1.046         Measured       1.052       1.043       1.045       1.045         Primary Gravity       1.016       1.014       1.044       1.044         Cord Gravity       0.87       0.83       0.45	
Water, galons Temperature       167°       167°         Mashout Temperature       167°       167°         Sparge Water, gallons       2.88 gallons       2.55 gallons       2.74 gallons in first mash, 2.6         Boiling Time       00 minutes       60 minutes       60 minutes       60         Boiling Hops       Northern Brewer pellets (8.8%)       0.75 oz       Kent Golding pellets (6.4%)       1 oz       Centennial pellets (9.9%)         Finishing Hops       Northern Brewer pellets (8.8%)       1.25 oz       Kent Golding pellets (6.4%)       0.5 oz       Cascade pellets (6.0%)         IBUs       45       40       45       40         Yeast       White Labs San Francisco       1 vial       White Labs English Ale       (WLP002) (25 oz starter)       (WLP001) (12 & 25 oz starter)         Water/Treatment       all tap water       1 tsp Irish Moss @ 15 minutes       1 tsp Irish Moss @ 15 minutes       1 tsp Irish Moss @ 15 minutes         Original Gravity       1.068       1.068       (80% extraction)       1.048       (80% extraction)       1.046       (80% extraction)         Primary Gravity       1.016       1.014       1.016       1.014       Extract Efficiency, %       67%       67%         Bull Gravity       0.67       0.93       0.93	avoidy
Temperature       167°         Mashout Temperature       167°         Sparge Water, gallons       2.55 gallons         Boiling Time       75 minutes         Boiling Time       60 minutes         Boiling Time       60 minutes         Boiling Hops       Northern Brewer pellets (8.8%)       0.75 oz         Finishing Hops       Northern Brewer pellets (8.8%)       1.25 oz         Finishing Hops       Northern Brewer pellets (8.8%)       1.25 oz         Kent Golding pellets (6.4%)       0.5 oz       Cascade pellets (6.0%)         IBUs       45       40         Yeast       White Labs San Francisco       1 vial         Lager (WLP810) (22 oz starter)       White Labs English Ale       1 vial         Water/Treatment       all tap water       1 tsp Irish Moss @ 15 minutes       1 tsp Irish Moss @ 15 minutes         Original Gravity       1.068       1.068       1.068         Target       (80% extraction)       1.054       (80% extraction)       1.048         Primary Gravity       1.017       1.016       1.043       (80% extraction)       1.048         Primary Gravity       1.016       1.014       67%       67%       67%         Bul/GQU       0.87       0.93 <td></td>	
Mashout Temperature         167 <sup>a</sup> 167 <sup>a</sup> Sparge Water, gallons         2.55 gallons         2.74 gallons in first mash, 2.6           Boiling Time         75 minutes         60 minutes           Boiling Hops         Northern Brewer pellets (8.8%)         0.75 oz         Kent Golding pellets (6.4%)         1 oz         Centennial pellets (9.9%)           Finishing Hops         Northern Brewer pellets (8.8%)         1.25 oz         Kent Golding pellets (6.4%)         0.5 oz         Cascade pellets (6.0%)           IBUs         40	
Sparge Water, gallons       2.88 gallons       2.55 gallons       2.74 gallons in first mash, 2.6         Boiling Time       75 minutes       60 minutes       60 minutes       60         Boiling Hops       Northern Brewer pellets (8.8%)       0.75 oz       Kent Golding pellets (6.4%)       1 oz       Centennial pellets (9.9%)         Finishing Hops       Northern Brewer pellets (8.8%)       1.25 oz       Kent Golding pellets (6.4%)       0.5 oz       Cascade pellets (6.0%)         IBUs       45       40         Yeast       White Labs San Francisco       1 vial       White Labs California Ale       (WLP001) (12 & 25 oz starter)       (WLP001) (12 & 25 oz starter)         Water/Treatment       all tap water       all tap water       1 tsp Irish Mose @ 15 minutes       1 tsp Irish Mose @ 15 minutes         Original Gravity       1.054       (80% extraction)       1.054       (80% extraction)       1.046         Measured       1.052       1.017       1.016       1.043       (80% extraction)       1.046         Primary Gravity       1.016       1.014       1.043       (80% extraction)       1.046       (80% extraction)       1.043         Primary Gravity       0.017       1.016       1.014       1.043       (80% extraction)       1.043       80%	
Boiling Time       75 minutes       60 minutes         Boiling Hops       Northern Brewer pellets (8.8%)       0.75 oz       Kent Golding pellets (6.4%)       1 oz       Centennial pellets (9.9%)         Finishing Hops       Northern Brewer pellets (8.8%)       1.25 oz       Kent Golding pellets (6.4%)       0.5 oz       Cascade pellets (6.0%)         IBUs       45       40         Yeast       White Labs San Francisco       1 vial       White Labs English Ale       1 vial       White Labs California Ale         Uger (WLP810) (22 oz starter)       1 vial       White Labs English Ale       1 vial       White Labs California Ale         Water/Treatment       all tap water       1 tsp Irish Moss @ 15 minutes       1 tsp Irish Moss @ 15 minutes       1 tsp Irish Moss @ 15 minutes         Target       (80% extraction)       1.054       (80% extraction)       1.046       (80% extraction)         Primary Gravity       1.016       1.014       1.014       1.014       1.014       1.014         Extract Efficiency, %       7%       7%       3.04%       3.81%       8.6'         Secondary Fermenter       7/12/01       8/12/01       8/12/01       8/13/5         Secondary Fermenter Temp       65'       68'       68'         Primary Graverty	16
Boiling Time       75 minutes       60 minutes         Boiling Hops       Northern Brewer pellets (8.8%)       0.75 oz       Kent Golding pellets (6.4%)       1 oz       Centennial pellets (9.9%)         Finishing Hops       Northern Brewer pellets (8.8%)       1.25 oz       Kent Golding pellets (6.4%)       0.5 oz       Cascade pellets (6.0%)         IBUs       45       40         Yeast       White Labs San Francisco       1 vial       White Labs English Ale       1 vial       White Labs California Ale         Uger (WLP810) (22 oz starter)       1 vial       White Labs English Ale       1 vial       White Labs California Ale         Water/Treatment       all tap water       1 tsp Irish Moss @ 15 minutes       1 tsp Irish Moss @ 15 minutes       1 tsp Irish Moss @ 15 minutes         Target       (80% extraction)       1.054       (80% extraction)       1.046       (80% extraction)         Primary Gravity       1.016       1.014       1.014       1.014       1.014       1.014         Extract Efficiency, %       7%       7%       3.04%       3.81%       8.6'         Secondary Fermenter       7/12/01       8/12/01       8/12/01       8/13/5         Secondary Fermenter Temp       65'       68'       68'         Primary Graverty	in secon
Boiling Hops       Northern Brewer pellets (8.8%)       0.75 oz       Kent Golding pellets (6.4%)       1 oz       Centennial pellets (9.9%)         Finishing Hops       Northern Brewer pellets (8.8%)       1.25 oz       Kent Golding pellets (6.4%)       0.5 oz       Cascade pellets (6.0%)         IBUs       45       40         Yeast       White Labs San Francisco       1 vial       White Labs English Ale       1 vial       White Labs California Ale         Water/Treatment       all tap water       1 vial       White Labs English Ale       1 vial       White Labs California Ale         Maximum       1 tsp Irish Moss @ 15 minutes       1 litap water       all tap water       all tap water       1 tsp Irish Moss @ 15 minutes       1 tsp Irish Moss @ 15 minutes       1 cost         Primary Gravity       1.054       (80% extraction)       1.043       (80% extraction)       1.043         Primary Gravity       1.017       1.016       1.014       1.043         Primary Gravity       1.016       1.014       1.043       80% extraction         Potential Alcohol, %       3.78%       3.04%       3.81%       8.67%         GU/GU       0.87       0.93       8.67       8.67         Cox Installed       7/12/01       8/72/01       8/19/	0 minute
Finishing Hops       Northern Brewer pellets (8.8%)       1.25 oz       Kent Golding pellets (6.4%)       0.5 oz       Cascade pellets (6.0%)         IBUs       45       40         Yeast       White Labs San Francisco       1 vial Lager (WLP810) (22 oz starter)       White Labs English Ale (WLP001) (12 & 25 oz starter)       White Labs California Ale (WLP001) (12 & 25 oz starter)         Water/Treatment       all tap water       all tap water       all tap water       all tap water         1 tsp Irish Moss @ 15 minutes       1 vial       (WLP002) (25 oz starter)       1 tsp Irish Moss @ 15 minutes         Original Gravity       1068       1.058       (80% extraction)       1 tsp Irish Moss @ 15 minutes         Measured       1.052       1.048       (80% extraction)       1.048       (80% extraction)         Primary Gravity       1.017       1.016       1.014       1.014         Extract Efficiency, %       78%       74%       65%         Apparent Attenuation       68%       67%       8.67         GU/GU       0.87       0.93       8.67         Cock Installed       7/12/01       8/12/01       8/19         Secondary Fermenter       7/15/01       8/12/01       8/19         Primary Fermenter Temp       65°       68°	2 02
IBUs       45       40         Yeast       White Labs San Francisco       1 vial       White Labs English Ale       1 vial       White Labs California Ale         Uger (WLP810) (22 oz starter)       White Labs English Ale       1 vial       White Labs California Ale         Water/Treatment       all tap water       all tap water       all tap water       1 tsp Irish Moss @ 15 minutes       all tap water         Original Gravity       1.058       1.068       1.058       1.058       1.058         Target       (80% extraction)       1.054       (80% extraction)       1.046       (80% extraction)         Measured       1.052       1.043       1.044       (80% extraction)       1.044       (80% extraction)       1.044         Ending Gravity       1.017       1.016       1.014       1.014       1.014       1.014         Extract Efficiency, %       78%       74%       0.93       96%       67%       98%	2 02
IBUs       45       40         Yeast       White Labs San Francisco       1 vial       White Labs English Ale       1 vial       White Labs California Ale         Lager (WLP810) (22 oz starter)       White Labs English Ale       1 vial       White Labs California Ale         Water/Treatment       all tap water       all tap water       all tap water       1 tsp Irish Moss @ 15 minutes       all tap water         Original Gravity       1.058       1.068       1.058       1.058         Target       (80% extraction)       1.052       1.043       (80% extraction)         Primary Gravity       1.017       1.016       (80% extraction)         Ending Gravity       1.017       1.016       (80% extraction)         Surract Efficiency, %       78%       74%         Apparent Attenuation       69%       67%         BU/GU       0.87       0.93         Potential Alcohol, %       3.78% 4.73%       3.04% 3.81%         Lock Installed       7/12/01       8/7/01       8/15/0         Secondary Fermenter Temp       65°       68°       68°         Primary Fermenter Temp       65°       68°       68°	
IBUs       45       40         Yeast       White Labs San Francisco       1 vial       White Labs English Ale       1 vial       White Labs California Ale         Lager (WLP810) (22 oz starter)       White Labs English Ale       1 vial       White Labs California Ale         Water/Treatment       all tap water       all tap water       all tap water       1 tsp Irish Moss @ 15 minutes       all tap water         Original Gravity       1.058       1.068       1.058       1.058         Target       (80% extraction)       1.052       1.043       (80% extraction)         Primary Gravity       1.017       1.016       (80% extraction)         Ending Gravity       1.017       1.016       (80% extraction)         Surract Efficiency, %       78%       74%         Apparent Attenuation       69%       67%         BU/GU       0.87       0.93         Potential Alcohol, %       3.78% 4.73%       3.04% 3.81%         Lock Installed       7/12/01       8/7/01       8/15/0         Secondary Fermenter Temp       65°       68°       68°         Primary Fermenter Temp       65°       68°       68°	
Yeast       White Labs San Francisco Lager (WLP810) (22 oz starter)       1 vial via       White Labs English Ale (WLP002) (25 oz starter)       1 vial via       White Labs California Ale (WLP001) (12 & 25 oz starter)         Water/Treatment       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes         Original Gravity Maximum Target       (80% extraction)       1.068 1.052       1.058 1.043       (80% extraction)         Primary Gravity       1.016       1.014       (80% extraction)       1.046 98%       (80% extraction)         Ending Gravity       0.017       1.016       0.017       1.015         Ending Gravity       0.016       0.014       0.03         BU/GU       0.87       0.93       0.93         Potential Alcohol, %       3.78%       4.73%       3.04%       3.81%       8.6'         Secondary Fermenter       7/15/01       8/12/01       8/15/9       7/19         Secondary Fermenter Temp       65'       68°       68°       68°         Secondary Fermenter Temp       65'       68°       68°       68°	1 oz
Yeast       White Labs San Francisco Lager (WLP810) (22 oz starter)       1 vial via       White Labs English Ale (WLP002) (25 oz starter)       1 vial via       White Labs California Ale (WLP001) (12 & 25 oz starter)         Water/Treatment       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes         Original Gravity Maximum Target       (80% extraction)       1.068 1.052       1.058 1.043       (80% extraction)         Primary Gravity       1.016       1.014       (80% extraction)       1.046 98%       (80% extraction)         Ending Gravity       0.017       1.016       0.017       1.015         Ending Gravity       0.016       0.014       0.03         BU/GU       0.87       0.93       0.93         Potential Alcohol, %       3.78%       4.73%       3.04%       3.81%       8.6'         Secondary Fermenter       7/15/01       8/12/01       8/15/9       7/19         Secondary Fermenter Temp       65'       68°       68°       68°         Secondary Fermenter Temp       65'       68°       68°       68°	
Yeast       White Labs San Francisco Lager (WLP810) (22 oz starter)       1 vial vial       White Labs English Ale (WLP002) (25 oz starter)       1 vial vial       White Labs California Ale (WLP001) (12 & 25 oz starter)         Water/Treatment       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes       all tap water 1 tsp Irish Moss @ 15 minutes         Original Gravity Maximum       1.068 (80% extraction)       1.054 1.052       (80% extraction)       1.046 (80% extraction)       (80% extraction)         Target Measured       (80% extraction)       1.054 1.052       (80% extraction)       1.046 1.017       (80% extraction)         Primary Gravity       1.016       1.016       1.014       1.014       1.014         Extract Efficiency, %       69%       67%       0.93       0.93         Potential Alcohol, %       3.78% 4.73%       3.04% 3.81%       3.81%       8.6'         Lock Installed       7/12/01       8/7/01       8/12/01       8/15/         Secondary Fermenter       7/15/01       8/12/01       8/15/       8/19/         Primary Fermenter Temp       65°       68°       68°       68°         Secondary Fermenter Temp       65°       68°       68°	
YeastWhite Labs San Francisco Lager (WLP810) (22 oz starter)1 vial vialWhite Labs English Ale (WLP002) (25 oz starter)1 vial vial (WLP001) (12 & 25 oz starter)Water/Treatmentall tap water 1 tsp Irish Moss @ 15 minutesall tap water 1 tsp Irish Moss @ 15 minutesall tap water 1 tsp Irish Moss @ 15 minutesall tap water 1 tsp Irish Moss @ 15 minutesOriginal Gravity Maximum Target (80% extraction)1.068 1.0541.058 (80% extraction)1.058 (80% extraction)1.058 (80% extraction)Primary Gravity Ending Gravity Ending Gravity1.016 1.0161.014 1.016(80% extraction)BU/GU0.87 0.930.930.93Potential Alcohol, % Secondary Fermenter Secondary Fermenter Temp7/12/01 65°8/7/01 68°8/12/01Primary Gravity Fermenter Temp Corn Sugar1/2 1/265° 68°68° 68°	
YeastWhite Labs San Francisco Lager (WLP810) (22 oz starter)1 vial vial (WLP002) (25 oz starter)White Labs California Ale (WLP001) (12 & 25 oz starter)Water/Treatmentall tap water 1 tsp Irish Moss @ 15 minutesall tap water 1 tsp Irish Moss @ 15 minutesall tap water 1 tsp Irish Moss @ 15 minutesall tap water 1 tsp Irish Moss @ 15 minutesOriginal Gravity Maximum Target (80% extraction)1.068 1.0541.058 (80% extraction)1.058 1.046Measured Primary Gravity1.017 1.0161.014 1.0161.014 1.014Ending Gravity Ending Gravity BU/GU0.87 0.930.93 0.93Potential Alcohol, % Secondary Fermenter Secondary Fermenter Temp7/12/018/7/01 0.87 0.938/7/01 0.87 0.93	8
Lager (WLP810) (22 oz starter)(WLP002) (25 oz starter)(WLP001) (12 & 25 oz starter)Water/Treatmentall tap water 1 tsp lrish Mose @ 15 minutesall tap water 1 tsp lrish Mose @ 15 minutesall tap water 1 tsp lrish Mose @ 15 minutesOriginal Gravity Maximum Target (80% extraction) 1.054 Measured1.068 (80% extraction) 1.054 (80% extraction) 1.046 (80% extraction) 1.046 (90% extraction) 1.	
Water/Treatment         all tap water         all ta	1 via
1 tsp Irish Moss @ 15 minutes           Original Gravity Maximum         1.068         1.068         1.058           Target         (80% extraction)         1.054         (80% extraction)           Measured         1.052         1.046         (80% extraction)           Primary Gravity         1.017         1.016         (80% extraction)           Ending Gravity         1.016         1.014         Extract Efficiency, %         74%           Apparent Attenuation         69%         87%         80%         87%           BU/GU         0.87         0.93         81%         8.6°           Lock Installed         7/12/01         877/01         8/15/9           Primary Fermenter         7/15/01         8/12/01         8/15/9           Primary Fermenter Temp         65°         68°         68°           Secondary Fermenter Temp         65°         68°         68°           Primary Fermenter Temp         65°         68°         68°           Primary Fermenter Temp         65°         68°         68°	)
1 tsp Irish Moss @ 15 minutes           Original Gravity Maximum         1.068         1.068         1.058         1 tsp Irish Moss @ 15 minutes           Target         (80% extraction)         1.054         (80% extraction)         1.046         (80% extraction)           Primary Gravity         1.017         1.043         (80% extraction)         1.044         (80% extraction)           Primary Gravity         1.016         1.014         1.014         (80% extraction)         1.044           Extract Efficiency, %         76%         74%         74%         74%           Apparent Attenuation         69%         87%         80%         80%           BU/GU         0.87         0.93         81%         8.67           Cock Installed         7/12/01         8/7/01         8/15/           Secondary Fermenter         7/15/01         8/12/01         8/15/           Finary Fermenter Temp         65°         68°         68°           Secondary Fermenter Temp         65°         68°         68°           Primary Fermenter Temp         65°         68°         68°	
Original Gravity         1.068         1.058           Target         (80% extraction)         1.054         (80% extraction)         1.046         (80% extraction)           Measured         1.052         1.043         1.043         1.043           Primary Gravity         1.017         1.015         1.014         1.014           Ending Gravity         1.016         1.014         1.014         1.014           Extract Efficiency, %         76%         74%         1.015         1.014           Extract Efficiency, %         78%         0.93         1.014         1.014         1.014           Extract Efficiency, %         3.78%         4.73%         3.04%         3.81%         6.67           BU/GU         0.877         0.93         0.93         0.93         0.93         0.93           Cock Installed         7/12/01         8/7/01         8/15/         8.67         0.66*         0.67*           Secondary Fermenter         7/15/01         8/12/01         8/15/         9/15/         9/15/           Secondary Fermenter Temp         65*         68*         68*         68*         68*         68*         68*         68*         68*         68*         68*         68* <td></td>	
Original Gravity         1.068         1.058           Target         (80% extraction)         1.054         (80% extraction)         1.046         (80% extraction)           Measured         1.052         1.043         1.043         1.043           Primary Gravity         1.017         1.015         1.014         1.014           Ending Gravity         1.016         1.014         1.014         1.014           Extract Efficiency, %         76%         74%         1.015         1.014           Extract Efficiency, %         78%         0.93         1.014         1.014         1.014           Extract Efficiency, %         3.78%         4.73%         3.04%         3.81%         6.67           BU/GU         0.877         0.93         0.93         0.93         0.93         0.93           Cock Installed         7/12/01         8/7/01         8/15/         8.67         0.66*         0.67*           Secondary Fermenter         7/15/01         8/12/01         8/15/         9/15/         9/15/           Secondary Fermenter Temp         65*         68*         68*         68*         68*         68*         68*         68*         68*         68*         68*         68* <td></td>	
Maximum         1.068         1.058           Target         (80% extraction)         1.054         (80% extraction)         1.046         (80% extraction)           Measured         1.052         1.043         (80% extraction)         1.046         (80% extraction)           Primary Gravity         1.017         1.015         1.043         1.014         1.015           Ending Gravity         1.016         1.014         1.014         1.014         1.014           Extract Efficiency, %         76%         74%         65%         67%         67%           BU/GU         0.87         0.93         0.93         0.93         0.93         0.93           Potential Alcohol, %         3.78%         4.73%         3.04%         3.81%         8.6*           Lock Installed         7/12/01         8/12/01         8/15/         8/15/           Secondary Fermenter         7/15/01         8/12/01         8/13/           Primary Fermenter Temp         65°         68°         68°           Secondary Fermenter Temp         65°         68°         68°           Secondary Fermenter Temp         65°         68°         68°           Secondary Fermenter Temp         65°         68°	
Target         (80% extraction)         1.054         (80% extraction)         1.046         (80% extraction)           Measured         1.052         1.043         1.043         1.043         1.043           Primary Gravity         1.017         1.015         1.043         1.043           Ending Gravity         1.016         1.014         1.015         1.043           Ending Gravity         1.016         1.014         1.015         1.043           Ending Gravity         1.016         1.014         1.015         1.043           Extract Efficiency, %         76%         74%         67%         1.014 <td>1.1</td>	1.1
Measured         1.052         1.043           Primary Gravity         1.017         1.015           Ending Gravity         1.016         1.014           Extract Efficiency, %         76%         74%           Apparent Attenuation         69%         67%           BU/GU         0.87         0.93           Potential Alcohol, %         3.78%         4.73%         3.04%         3.81%         8.6°           Secondary Fermenter         7/12/01         8/7/01         8/15/9         8/19/9           Primary Fermenter Temp         65°         68°         68°         68°           Secondary Fermenter Temp         65°         68°         68°         68°           Secondary Fermenter Temp         65°         68°         68°         68°         68°	
Primary Gravity         1.017         1.015           Ending Gravity         1.017         1.015           Ending Gravity         1.016         1.014           Extract Efficiency, %         76%         74%           Apparent Attenuation         69%         87%           BU/GU         0.87         0.93           Potential Alcohol, %         3.78%         4.73%         3.04%         3.81%         8.6°           Lock Installed         7/12/01         8/7/01         8/15/         8/19           Primary Fermenter Temp         65°         68°         68°           Secondary Fermenter Temp         65°         68°         68°           Primary Fermenter Temp         65°         68°         68°           Secondary Fermenter Temp         65°         68°         68°	
Ending Gravity         1.016         1.014           Extract Efficiency, %         76%         74%           Apparent Attenuation         69%         67%           BU/GU         0.87         0.93           Potential Alcohol, %         3.78%         4.73%           Secondary Fermenter         7/12/01         8/7/01           Primary Fermenter Temp         65°         68°           Secondary Fermenter Temp         65°         68°           Priming Sugar, cups         Corn Sugar         1/2	1.10
Extract Efficiency, %         76%         74%           Apparent Attenuation         69%         67%           BU/GU         0.87         0.93           Potential Alcohol, %         3.78%         4.73%           Jock Installed         7/12/01         8/7/01           Secondary Fermenter         7/15/01         8/12/01           Primary Fermenter Temp         65°         68°           Secondary Fermenter Temp         65°         68°           Priming Sugar, cups         Corn Sugar         1/2	1.03
Extract Efficiency, %         76%         74%           Apparent Attenuation         69%         67%           BU/GU         0.87         0.93           Potential Alcohol, %         3.78% 4.73%         3.04% 3.81%           Lock Installed         7/12/01         8/7/01           Secondary Fermenter         7/15/01         8/12/01           Primary Fermenter Temp         65°         68°           Secondary Fermenter Temp         65°         68°           Priming Sugar, cups         Corn Sugar         1/2         Corn Sugar	1.02
Apparent Attenuation         69%         67%           BU/GU         0.87         0.93           Potential Alcohol, %         3.78%         4.73%           Lock Installed         7/12/01         8/7/01           Secondary Fermenter         7/15/01         8/12/01           Primary Fermenter Temp         65°         68°           Secondary Fermenter Temp         65°         68°           Priming Sugar, cups         Corn Sugar         1/2         Corn Sugar	70
BU/GU         0.87         0.93           Potential Alcohol, %         3.78% 4.73%         3.04% 3.81%         Wt% vol%           Lock Installed         7/12/01         8/7/01         8/15/           Secondary Fermenter         7/15/01         8/12/01         8/19/           Trimary Fermenter Temp         65°         68°           Secondary Fermenter Temp         65°         68°           Priming Sugar, cups         Corn Sugar         1/2         Corn Sugar	77
wt%         vol%         wt	
Potential Alcohol, %         3.78%         4.73%         3.04%         3.81%         8.6           Lock Instailed         7/12/01         8/7/01         8/15/         8	0.8
Lock Installed         7/12/01         8/7/01         8/7/01           Secondary Fermenter         7/15/01         8/12/01         8/19/           Primary Fermenter Temp         65°         68°           Secondary Fermenter Temp         65°         68°           Priming Sugar, cups         Corn Sugar         1/2         Corn Sugar	
Secondary Fermenter         7/15/01         8/12/01         8/19/           Primary Fermenter Temp         65°         68°           Secondary Fermenter Temp         65°         68°           Priming Sugar, cups         Corn Sugar         1/2         Corn Sugar	6 10.76
Secondary Fermenter         7/15/01         8/12/01         8/19/           Primary Fermenter Temp         65°         68°         8/19/           Secondary Fermenter Temp         65°         68°         8/19/           Priming Sugar, cups         Corn Sugar         1/2         Corn Sugar         1/3         Corn Sugar	1
Primary Fermenter Temp         65°         68°           Secondary Fermenter Tem;         65°         68°           Priming Sugar, cups         Corn Sugar         1/2         Corn Sugar         1/3         Corn Sugar	A
Secondary Fermenter Tem;         65°         68°           Priming Sugar, cups         Corn Sugar         1/2         Corn Sugar         1/3         Corn Sugar	6
Priming Sugar, cups Corn Sugar 1/2 Corn Sugar 1/3 Corn Sugar	
ine form origin	6
Water, cubs	1/3
	2
Number of Bottles 28 28	28
Comments	
Brewing Hops added in 1/4 ounce increments at Bolling hops added at 50 minutes. Double mash, with sparge	om firet
end of boil. minutes at 2 minutes. First attempt for conversion of second mas	
separation of cold break. added at 60, 15, and 2 m	
Fermentation Fermentation active at 16 hours. Fermentation active at 12 hours. Fermentation very active at	5 hours
Beer QUAFF Representative for Club-Only. First in barley wines at 2001	
Third place in Mixed Styles in 2001 State Homebrew Competitio	alifornia
California State Homebrew in 2002 AHA NHC First Rou	
	Secon
	Secon I. Third a
Source of Recipe Custom recipe. Custom recipe. Custom recipe.	Secon I. Third a

BEER STYLE	Seven-Grain Imperial Stout (All Grain)		Katie's Brown Ale (Extract)		Berliner Weisse (All Grain)		
Brewing Date	(All Grain) 8/18/01	13					
Bottling Date	9/16/01	10	9/16/01	14	9/22/01	11	
And the second se							
Primary Fermenter		allons		gallons		gailon	
Secondary Fermenter		jallons		allons		gallon	
Matt	American Two-Row Malt	12 lbs	Amber Malt Extract	4 lbs	German Pilsener Malt	2 lbs	
	Crystal 40°L Malt	1 lb			German Wheat Malt	1.5 lb	
	Crystal 60°L Mait	1 lb					
	Crystal 80°L Malt	1 Ib					
	Chocolate Malt	8 oz					
	Roasted Barley	8 oz					
	Flaked Barley	4 oz					
	Brown Sugar	1 lb					
Color, SRM		40.6				3.	
Color, MCU		140				3.	
Actual Color, SRM		140				а,	
First Rest		minutes				2 hour	
Water, gallons	1.25 gailons pe	er mash			0.75 gallons with 0.75 pounds	of grai	
Temperature	122° first mash, 130°-134° secon	d mash				95°-85	
Second Rest		ninutes				minute	
Water, gallons	1.25 gallons pe						
						gallon	
Temperature	156°-148° (152° av	verage)			118-122° (120° a		
Third Rest					60 r	minute	
Water, gallons				]	1.25	gallon	
Temperature					154-156° (155° a		
Mashout Temperature		168°			101 100 [100 8	169	
Sparge Water, gallons	2.5 collons in first much 0.40 in				11.210		
	2.5 gallons in first mash, 2.12 in					gallon	
Boiling Time		ninutes		minutes		minute	
Boiling Hops	Irish Northdown pellets (9.4%)	1 oz	Cascade pellets (5.8%)	0.75 oz	Hallertauer pellets (5.8%)	0.25 c	
	Kent Golding pellets (6.1%)	1 oz			,		
				1			
Finishing Hops	Kent Golding pellets (6.1%)	1 oz	Connecto pollato (E 00/)	0.25 oz		_	
i maning riopa	Rent Golding penets (6, 1%)	1 OZ	Cascade pellets (5.8%)	0.25 OZ			
IBUs		87		30		5.4	
Yeast	White Labs Irish Ale (WLP004)	1 vial	White Labs California Ale	1 vial	White Labo Comercia		
10491		I VIAI		1 viai	White Labs German	1 vial	
	(12 & 22 oz starters)		(WLP001)		Ale/Kolsch (WLP029) (22 oz		
					starter)		
Water/Treatment	all tap water		all tap water		4 gallons DI, 0.33 gallons tap	-	
	1 tsp Irish Moss @ 15 minutes		1 tsp Irish Moss @ 15 minutes		1 tsp Irish Moss @ 10 minutes		
Original Gravity	,		top mon moto B to minates		T top men moss (g To manates		
Maximum		4 400					
		1.133		1.048		1.04	
Target	(80% extraction)	1.109		1.048	(80% extraction)	1.03	
Measured		1.092		1.048	. ,	1.03	
Primary Gravity		1.034		1.014		1.00	
Ending Gravity		1.032		1.012			
Extract Efficiency, %						1.00	
		69%		100%		75%	
Apparent Attenuation		65%		75%		739	
BU/GU		0.95		0.62		0.1	
	wt%	vol%	wt%	vol%	wt%	vol9	
Potential Alcohol, %	6.30%	7.88%		4.73%			
Lock Installed		1.00%	3.78%	4./3%	2.31%	2.89%	
the second se	8/22/01		9/7/01		9/6/01		
Secondary Fermenter	8/25/01		9/9/01		9/9/01		
Primary Fermenter Temp		68°		68°		68	
Secondary Fermenter Temp		68°		68°		68	
Priming Sugar, cups	Com Sugar	1/3	Com Sugar		Com Sugar		
Water, cups	oon ouga		Som Sugar	1/2	Corn Sugar	1/2	
		2		2		2	
Number of Bottles		29		29		27	
Comments							
Brewing	Double mash, with sparge from	first	Extract brew - Katle's firs	+	Hops added at 30 minute	9	
	mash used for protein rest and s		Evider Diew - Malle \$ 118		riops added at 50 minute	а.	
	conversion of second mash. H						
	added at 60, 15, and 2 minute						
Fermentation	Very active fermentation at 15 h		Fermentation beginning at 20 l	hours	Fermentation active at 20 ho	oure	
	, sector territoritation at 10 h		. ennonceron boginning dt 201	iours.	s onnontation active at 20 fit	oui 5.	
			1				
			1 F 2				
Beer					Third please is taken that the	0004	
Land State					Third place in wheat beers at		
					California State Homebre	w	
					Competition		
Source of Recipe	Custom recipe.	_	Custom recipe.		Custom recipe.		
	Gastorn roopo,		oustorn recipe.		Gustorii recipe.		

BEER STYLE	Link Vesille Meed	Lin's Reamborns Mond	Dusseldorf Alt
DEEK STILE	Liz's Vanilla Mead (Split Mead Batch)	Liz's Raspberry Mead (Split Mead Batch)	(All Grain)
Brewing Date	9/3/01 16		9/15/01 18
Bottling Date	12/9/01	2/3/02	10/7/01
Primary Fermenter	5.0 gailons	5.0 gallons	3.0 gallons
Secondary Fermenter	2.8 gallons	2.2 gallons	2.8 gallons
Malt	Orange Blossom Honey 13 lbs	Orange Blossom Honey 13 lbs	German Pilsener Malt 3 lbs
	Mountain Wildflower Honey 3 lbs	Mountain Wildflower Honey 3 lbs	Munich Malt 3 lbs
			Chocolate Malt 2 oz
	Yeast Nutrients 3 tsps	Yeast Nutrients 3 taps	Flaked Barley 2 oz
	Citric Acid 2 tsps	Citric Acid 2 tsps	·
		Raspberries (frozen) 3 lbs	
	A	Raspberry extract 4 oz	
Color, SRM			14.3
Color, MCU			21
Actual Color, SRM			
First Rest			15 minutes
Water, gallons			1.38
Temperature			120°
Second Rest			75 minutes
Water, gallons			1.5 gallons
Temperature Third Rest			154°-142° (148° average)
Water, gallons			
Temperature			
Mashout Temperature	l		169°
Sparge Water, gallons			2.5 gallons
Boiling Time	15 minutos	15 minutes	
Boiling Hops	15 minutes	15 minutes	
boiling hops			German Select pellets (4.4%) 2 oz
Finishing Hops	Vanilla beans 2 beans		German Select pellets (4.4%) 1 oz
r maning riops	vanina beans 2 beans		German Select pellets (4.4%) 1 oz
IBUs			56
Yeast	Dry Champagne Yeast 2 packs	Dry Champagne Yeast 2 packs	
1 Cast	Dry Champagne reast 2 packs	Dry Champagne Yeast 2 packs	
			Ale/Kolsch (WLP029) (22 oz starter)
Water/Treatment	5 gallons DI	5 gallons DI	all tap water
	1 tsp Irish Moss @ 10 minutes	1 tsp Irish Moss @ 10 minutes	1 tsp Irish Moss @ 15 minutes
Original Gravity			Top mon mode (gr to mindles
Maximum	1.130	1.130	1.062
Target	1.130		
Measured	1.130		
Primary Gravity	1.017		
Ending Gravity	1.016		
Extract Efficiency, %	100%		
Apparent Attenuation	88%		69%
BU/GU	0.00		
	wt% vol%		
Potential Alcohol, %	11.97% 14.96%		
Lock Installed	9/3/01	9/3/01	-
Secondary Fermenter	10/20/01	10/20/01	9/22/01
Primary Fermenter Temp	68°		
Secondary Fermenter Terry	68"		
Priming Sugar, cups		3	Com Sugar 1/2
Water, cups			2
Number of Bottles	27	22	28
Comments			
Brewing			Boiling hops added at 50 minutes.
·			Finishing hops split between 15
			minutes and 2 minutes.
Fermentation	Fermentation active at 18 hours.	Fermentation active at 18 hours.	Fermentation active at 20 hours.
Beer	Fifth in Herb and Spice Mead at 2002	Fourth in Fruit and Vegetable Mead at	1
	San Diego County Fair,	2002 San Diego County Fair.	
		g,,,,	
			1 A
Source of Recipe	Custom recipe.	Custom recipe.	Custom recipe.
			Constant reserves