

**ENVIRONMENTAL AND NUTRITIONAL EFFECTS ON
BEEF TENDERNESS IN TEXAS**

A Thesis

by

JODY LYNEA PEACH

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE

August 2003

Major Subject: Nutrition

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ABSTRACT

Environmental and Nutritional Effects on
Beef Tenderness in Texas. (August 2003)

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Effects of three environments and their native or rye pasture forage systems on subsequent carcass characteristics, composition, and meat palatability were examined following grain feeding. Calves (F2 Angus x *Bos indicus*) with similar pre-weaning management and genetics were randomly assigned to one of eight treatments (McGregor-Calf; McGregor-Low; Uvalde-Low; Uvalde-High; Overton-Low, Rotational; Overton-Low, Continuous; Overton-High, Rotational; and Overton-High, Continuous). After approximately five months of grazing, cattle in forage groups were transported to McGregor and finished on a corn-milo ration to visually assessed 10 mm fat thickness. Longissimus muscle sections were randomly assigned into aging periods of 1, 7, 14, 21, 28, or 35 days and two-2.54 cm steaks were removed per section for Warner-Bratzler shear force and trained sensory analysis. After grazing, steers fed diets designed to produce higher rates of gain weighed more than steers at the same location fed diets designed for lower rates of gain. Within the high nutrition treatments, Uvalde-High steers had a lower average daily gain than steers in the Overton-High treatments. Differences in environment and nutritional treatments induced differences in rate of gain during the stocker

phase. All forage treatment groups increased average daily gain in the feedlot phase. After the feedlot phase, steers varied in live weight due to treatment. Nutritional/environmental treatments affected ribeye area; kidney, pelvic and heart fat; and hot carcass weight, but not final yield grade. Treatment had minimal affects on quality grade characteristics. There was no affect by treatment on Warner-Bratzler shear force or sensory panel perception of myofibrillar tenderness, connective tissue amount, overall tenderness, or overall flavor intensity. Storage day affected shear force; steaks were toughest at 1 and 7 days of storage with shear force values decreasing after 7 days of storage. There was no interaction between environmental/nutritional treatment and storage day. Juiciness and cook loss were affected by treatment ($P=0.0001$). Overall, environment and nutrition had little impact on eating quality. Despite differences in average daily gain, it appears that steers may be fed forage diets followed by grain feeding to a similar fat thickness endpoint and produce steaks that are similar in palatability to grain-fed steers.

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CHAPTER I

INTRODUCTION

Beef production systems in Texas typically use a combination of forage- and grain-based diets to produce market cattle. The quality and maturation level of the forage, stocking rate during grazing, and environmental conditions during grazing also influence the effects of forage-based diets on carcass characteristics and tenderness. These factors affect live animal growth during grazing and they can impact carcass characteristics and beef tenderness. The state of Texas is very diverse in the type of forages that can be produced and the environmental conditions during grazing. However, cattle grazed on different forages, varying stocking rates and from different geographical locations are combined and fed a high-concentrate diet during the feedlot phase of beef production. Beef from the southern United States, including Texas, has been implicated to be more variable in tenderness than beef from the northern regions of the United States (Morgan et al., 1991).

Predominantly, the use of *Bos indicus*-influenced cattle in Texas beef production systems has been hypothesized to contribute the existence of more variation in carcass quality (Crouse et al., 1989; Wheeler et al., 1990). Additionally, the diversity of forage systems and stocking rates across Texas induce different rates of gains and the effect of hot, more severe environments (south Texas) versus more moderate climates (east or central Texas) could also impact how cattle grow and the subsequent effect of growth on carcass

This thesis follows the style of the Journal of Animal Science.

characteristics and beef tenderness. While some studies have tried to address this issue (Bowling et al., 1977; Bowling et al., 1978), few studies have been conducted where cattle of similar genetic-type are fed in different environments at different rates of gain induced either by altering stocking rate or by altering forage availability and then feeding those cattle on high grain-based diets to a constant fat endpoint. Comparing these cattle to grain-fed cattle immediately post-weaning, or calf-fed controls also slaughtered at the same fatness for carcass characteristics and beef tenderness may assist the Texas beef industry in understanding factors contributing to variation in Texas beef tenderness.

The objective of this project was to examine the effects of three different environments and their native or rye pasture forage systems on subsequent carcass characteristics and composition and meat palatability following a period of grain feeding.

CHAPTER II

LITERATURE REVIEW

Numerous studies have been conducted to examine the effects of pre-slaughter nutrition on subsequent growth, production efficiency, carcass characteristics, carcass quality, and meat palatability of growing cattle fed grain-based diets. Many of these studies have compared the effects of forage-based and grain-based feeding systems. The source of dietary energy, such as lower-energy forage diets as compared to higher-energy grain diets, has been shown to have an effect on meat quality. Early research suggested that grain feeding produced more positive effects on meat quality and palatability than forage feeding; however, other results have been contradictory.

In support of a positive effect of feeding high-energy based diets on beef tenderness, many researchers have shown that forage-fed cattle produced steaks with higher shear force values (Bowling et al., 1977; Leander et al., 1978; Schroeder et al., 1980; Aberle et al., 1981; Davis et al., 1981; Dolezal et al., 1982; Hedrick et al., 1983; Larick et al., 1987; May et al., 1992; Bennett et al., 1995), and others have shown increased sensory tenderness in steaks from grain-fed beef (Bowling et al., 1977; Schroeder et al., 1980; Aberle et al., 1981; Davis et al., 1981; Dolezal et al., 1982; Berry et al., 1988; Mitchell et al., 1991; May et al., 1992; Bennett et al., 1995; Vestergaard et al., 2000). Generally in these studies, grain- and forage-fed cattle were fed to an equal number of days on feed such that forage-fed cattle were significantly leaner than grain-fed cattle at slaughter.

While these studies generally agree, they have not explained why beef tenderness is improved when cattle are fed grain-based diets. Aberle et al. (1981) placed steers (Hereford-Angus crossbred and Charolais x Angus-Milking Shorthorn) into four different feeding groups. Treatment 1 received a high-energy diet for 210 days; treatment 2 received a low energy diet for 77 days, followed by a high-energy diet for 140 days; treatment 3 received a low energy diet for 153 days, followed by a high-energy diet for 70 days; treatment 4 received a low energy diet for 230 days. Each group was approximately the same age at slaughter, but they differed in the number of days on a high concentrate grain diet. Animals in treatments 3 and 4 (i.e. low energy diet for longer periods) had lower slaughter weights, less carcass fat, lower yield grade, smaller ribeye area, lower marbling score, lower quality grade, and darker *longissimus* color than those fed higher energy diets. Steaks from treatment 4 (low energy diet for the entire feeding period) had higher shear force values, lower taste panel tenderness scores, lower flavor scores, and lower juiciness scores than treatments 1, 2, and 3 (Aberle et al., 1981). This research strongly supported that feeding high energy density diets for at least 70 days improved carcass characteristics and meat tenderness.

Similarly, Bennett et al. (1995) compared performance, carcass yield, and carcass quality of steers fed tropical grass pasture or concentrate diet for an equal number of days on feed. The forage-finished steers had lower average daily gains, less fat over the ribeye, lighter hot carcass weights, and smaller *longissimus* muscle areas. Yield grade was not different, but quality grade was higher in concentrate-finished steers. Forage-finished steers had significantly

higher shear force values than the concentrate-finished steers (Bennett et al., 1995).

In a comparison of forage- and grain-finished steers fed to an equal body weight (same maturity and carcass scores, different external fatness), grain-finished steers were significantly ($P < 0.05$) more tender and higher in overall palatability (Bowling et al., 1977). The grain-finished steers also had higher fat thickness and higher carcass conformation scores, lower shear force values, and greater muscle fiber tenderness (Bowling et al., 1977).

In a study including 100 Santa Gertrudis steers that were fed on one of 10 management systems including grass alone, grain on grass, or dry-lot feeding, Bowling et al. (1978) found that feeding grain-based diets impacted carcass characteristics and meat tenderness. Steers were slaughtered as calves, yearlings, long yearlings, or two-year-olds. Animals that consumed grain as part of their diet reached slaughter weight and graded sooner and were higher in USDA quality grade. Long yearling steers finished on grass or grain on grass were less tender ($P < 0.05$) as evaluated by a trained sensory panel than animals fed on other management systems. Yearlings that were drylot-fed a grain-based diet for 255 days had the lowest shear force values (Bowling et al. 1978).

Despite this supporting evidence, other researchers have found no differences in tenderness between forage- and grain-fed cattle. Many of the differences found in tenderness between forage- and grain-fed cattle when comparisons were made after an equal number of days on feed were due to differences in body weight and fat thickness. When animals were fed to similar

body weight and/or fat thickness, there were fewer differences in tenderness between forage- and grain-fed cattle (Bowling et al., 1978; Harrison et al., 1978; Crouse et al., 1984; Bidner et al., 1985; Fortin et al., 1985; Bidner et al., 1986; Mandell et al., 1997).

Many researchers found that shear force values were not affected by forage versus grain feeding (Bowling et al., 1978; Dinius and Cross, 1978; Harrison et al., 1978; Skelley et al., 1978; Smith et al., 1979; Bidner et al., 1981; Wu et al., 1981; Crouse et al., 1984; Crouse and Seideman, 1984; Bidner et al., 1985; Bidner et al., 1986; Berry et al., 1988; Schaake et al., 1993; Coleman et al., 1995; McCaughey and Cliplef, 1996; Mandell et al., 1998; Myers et al., 1999). Also, researchers found no difference in sensory perception of tenderness due to diet (Reagan et al., 1977; Dinius and Cross, 1978; Skelley et al., 1978; Westerling and Hedrick, 1979; Wu et al., 1981; Crouse et al., 1984; Crouse and Seideman, 1984; Bidner et al., 1985; Fortin et al., 1985; Bidner et al., 1986; Dikeman et al., 1986; Schaake et al., 1993; Coleman et al., 1995; McCaughey and Cliplef, 1996; Xiong et al., 1996; Mandell et al., 1997; Mandell et al., 1998; Myers et al., 1999; French et al., 2000). Consumer taste panels found no difference in tenderness of steaks from grain-fed or forage-fed steers (Bidner et al., 1981; Bidner et al., 1986). It is obvious that feeding grain- or forage-based diets and their subsequent impact on carcass characteristics and tenderness is not a simple issue.

Growth Traits

Growth Path. Growth is an increase in mass, which includes cell multiplication (hyperplasia) and cell enlargement (hypertrophy) and can be

defined mathematically as a function of mature body weight, growth deceleration rate, and age (Owens et al., 1993). Amount of muscle hypertrophy (muscle protein accretion) is determined by the balance between amount of muscle protein synthesized and amount of muscle protein degraded (Koochmaraie et al., 2002).

Average daily gain, a measurement of growth rate, of grazing cattle is influenced by the stocking rate and amount of forage available for consumption. Differences in stocking rates have been shown to induce differences in average daily gain (Jones and Sandland, 1974; Hart et al., 1988; Coleman and Forbes, 1998; Ackerman et al., 2001; Brigman, 2001). Hart et al. (1976) reported average daily gains of steers grazing coastal bermudagrass were strongly and negatively correlated with grazing pressure (animal days/metric ton).

Additionally, daily gains of steers during grazing have been shown to increase with increased herbage mass (Coleman and Forbes, 1998) and to decrease as amount of available forage decreased (Guerrero et al., 1984). Similarly, Lippke et al. (2000) reported that average daily gain of steers grazing on wheat pasture decreased as herbage mass decreased below 850 kg/ha. French et al. (2001b) found that an increased grass allowance increased final live weight and live weight gain. Doble et al. (1971) reported that average daily gain was significantly correlated with available forage when dry-matter digestibility was relatively uniform. As forage quality (measured as *in vitro* dry-matter digestibility) decreased, maximum average daily gain decreased (Doble et al., 1971).

Cattle fed low quantity or quality diets during their background program typically experience accelerated growth after changing to a high-grain diet. This period of accelerated growth after realimentation is referred to as compensatory growth (Carstens, 1995). Meyer et al. (1965) investigated compensatory growth in steers fed either a high, medium or low energy ration (period one). Steers receiving a high-energy ration were slaughtered after reaching a low Choice-finish. The remaining medium and low steers were then randomly assigned to a high, liberal, medium, or low intake. Once the steers receiving high energy in the second period reached low Choice-finish and were slaughtered, the remaining steers all received high-energy nutrition. Steers fed a low plane of nutrition in period one experienced compensatory growth during period two as they gained at a faster daily rate than those receiving medium nutrition in period one. Marbling score, fat thickness, and ribeye area improved for all levels of energy intake after period two. By period three, all animals reached similar marbling scores and fat thickness as the original group fed a high-energy ration during period one (Meyer et al., 1965).

The differences in meat tenderness between forage- and grain-fed cattle may be affected by differences in growth path. Allingham et al. (1998) grazed thirty-six Brahman-cross steers on tropical pastures for 60 days with a growth rate of 0.05 kg/day. The steers were then split into three groups. One group was grazed uninterrupted on improved tropical pasture for 257 days. The other two groups received a diet of low-quality grass hay for 100 days and lost 0.35 kg/day on average. After 100 days, one group was finished on a high-energy feedlot diet for 157 days. The other group was finished on improved tropical

pasture for 157 days. Growth rates were different in the grain-finished group (1.22 kg/day) and pasture-finished group (0.76 kg/day) during the regrowth phase and different from the uninterrupted group (0.55 kg/day). Slaughter weight of the pasture-finished group was lower than that of the uninterrupted and grain-finished group. Fat thickness was the greatest in the grain-finished group with no difference between the uninterrupted group and pasture-finished group. Shear force was not different between groups when samples were cooked at 70° C for one hour. However, shear force measurements after pressure-heat treatment (60° C, 1500 psi for one hour) showed the grain-finished group to be the most tender, with no difference between the uninterrupted and pasture-finished group (Allingham et al., 1998).

Bruce et al. (1991) examined the effects of compensatory growth on meat tenderness of beef steers. Thirty-six animals were fed one of three diets including alfalfa/grass silage, alfalfa/grass silage supplemented with corn gluten and bloodmeal, or corn silage supplemented with soybean meal. All animals were fed their respective diets for 124 days and then six animals from each treatment were slaughtered. The remaining 18 cattle were finished for 51 days on a high-grain diet and then slaughtered. The unsupplemented alfalfa/grass silage-fed cattle had lower growth rates than cattle on the other diets during the growth phase, but faster growth rates than other cattle during the first 14 days of the finishing phase. Unsupplemented alfalfa/grass silage-fed steers slaughtered after 124 days had lower empty body weights than corn silage-fed cattle but the same empty body weight after 175 days. Shear force values of meat from corn silage-fed cattle were lower than meat from either

group of alfalfa/grass-fed cattle after 124 days of feeding; however, shear force values for the unsupplemented alfalfa/grass group and corn silage group were not different after feeding for 175 days. Shear force values for meat from steers fed alfalfa/grass diets were similar in tenderness suggesting that shear force was affected by dietary energy level, but not protein supplementation.

Researchers concluded differences in body composition and meat tenderness were due to dietary energy intake rather than rate of growth (Bruce et al., 1991).

Coleman et al. (1995) examined the growth and carcass quality of Angus steers fed either a silage-based diet or limit-fed a grain-based diet to produce similar rates of gain during a 145-day growing phase. During the finishing phase, steers were given ad libitum access to a grain diet for 0, 45, 75, or 105 days. There were differences due to diet as indicated in differences in intercepts ($P < 0.10$) for shear force values, perceived connective tissue, and beef flavor intensity. There were no differences in sensory panel perception of tenderness, juiciness, off-flavor, or ease of fragmentation. Overall, steers fed grain were more tender, but differences between the two groups diminished after 105 days on the finishing diet. Based on scatter plots of the data, researchers concluded differences in shear force and flavor intensity were due to diet, rather than rate of gain (Coleman et al., 1995).

Carcass Characteristics

Carcass Quality Grade. It is generally recognized that grain feeding increases quality grade (Reagan et al., 1977; Bowling et al., 1978; Leander et al., 1978; Skelley et al., 1978; Schroeder et al., 1980; Aberle et al., 1981; Davis

et al., 1981; Wu et al., 1981; Hedrick et al., 1983; Crouse et al., 1984; Bidner et al., 1985; Bidner et al., 1986; Larick et al., 1987; Schaake et al., 1993; Bennett et al., 1995). However, Young and Kauffman (1978) did not find a difference in quality grade. This may be attributed to the forage-fed Hereford steers being fed to similar fat thickness as the grain-fed controls; also, marbling score did not differ between treatments (Young and Kauffman, 1978).

Harrison et al. (1978) fed crossbred steers one of four diets: grass-fed (2.18 Mcal ME/kg); short-fed, same as grass-fed followed by 49 days in drylot on high grain diet (3.11 Mcal ME/kg); long-fed, same as short-fed except fed 98 days on high grain diet; or forage-fed, same as grass-fed followed by 98 days in drylot on high forage diet (2.84 Mcal ME/kg). Quality grade of the long-fed carcasses was similar to that of the forage-fed carcasses and significantly higher than that of the grass-fed and short-fed carcasses (Harrison et al., 1978).

Carcass Yield Grade. Yield grade has been shown to increase with grain feeding (Schroeder et al., 1980; Aberle et al., 1981; Davis et al., 1981; Wu et al., 1981; Bidner et al., 1985; Bidner et al., 1986). Larick et al. (1987) did not find a difference in yield grade between cattle fed forage only and those fed grain for 56 days, but yield grade was significantly different as days on feed increased to 84 and 112 days. May et al. (1992) also found yield grade of grain-fed cattle did not improve over forage-fed cattle until after 84 days of feeding. Yield grade was higher for grain-fed cattle as compared to those cattle fed corn silage or 50% haylage/50% corn silage to the same visually assessed fat thickness (Young and Kauffman, 1978).

Others did not find a difference in yield grade (Dinius and Cross, 1978; Bowling et al., 1977; Bennett et al., 1995; Myers et al., 1999). Yield grade was not different for early-weaned steers who received a high concentrate diet or grown on pasture prior to finishing on a high concentrate diet fed to the same external fat thickness (Myers et al., 1999).

Carcass Weight. Mandell et al. (1997) found no differences due to diet in hot carcass weight of Charolais-cross steers fed either a 97% alfalfa silage ration or 68% high moisture corn ration to either a 4, 7, or 10 mm ultrasound fat thickness. Young and Kauffman (1978) found similar results after feeding grain, corn silage, or 50% haylage/50% corn silage ration to similar fat thickness. When animals were fed for an equal number of days, grain-fed cattle had a higher carcass weight (Aberle et al., 1981; Davis et al., 1981; Wu et al., 1981; Crouse et al., 1984; Crouse and Seideman, 1984; Bidner et al., 1985; Xiong et al., 1996; French et al., 2001).

Fat Thickness. Many studies have reported fat thickness over the 12th rib to be greater with grain feeding (Utley et al., 1975; Bowling et al., 1977; Bowling et al., 1978; Dinius and Cross, 1978; Harrison et al., 1978; Young and Kauffman, 1978; Schroeder et al., 1980; Aberle et al., 1981; Davis et al., 1981; Wu et al., 1981; Bidner et al., 1985; Bidner et al., 1986; Larick et al., 1987; May et al., 1992; Bennett et al., 1995; McCaughey and Cliplef, 1996).

Harrison et al. (1978) found the fat thickness of crossbred steers fed grain (3.11 Mcal ME/kg) for 98 days to be similar to that of steers finished on a high forage ration (2.84 Mcal ME/kg) for the same length of time. Steers fed

grass (2.18 Mcal ME/kg) or grain (3.11 Mcal ME/kg) for only 49 days had lower fat thickness (Harrison et al., 1978).

Marbling Score. Marbling score and intramuscular fat content has been shown to increase with grain feeding (Utley et al., 1975; Reagan et al., 1977; Dinius and Cross, 1978; Skelley et al., 1978; Schroeder et al., 1980; Aberle et al., 1981; Davis et al., 1981; Wu et al., 1981; Crouse et al., 1984; Crouse and Seideman, 1984; Bidner et al., 1985; Bidner et al., 1986; Schaake et al., 1993; Bennett et al., 1995). Marbling score also increased as days on feed increased (Dinius and Cross, 1978; Harrison et al., 1978; Aberle et al., 1981; Larick et al., 1987). May et al. (1992) observed that marbling score of grain-fed cattle was higher than that of forage-fed cattle only after 84 days on feed. Others found marbling score was not different for grain-fed or forage-fed cattle when fed to similar fat thickness (Young and Kauffman, 1978; Myers et al., 1999). In other studies of forage versus grain feeding there was no affect on intramuscular fat content (Oltjen et al., 1971; Reagan et al., 1977; Vestergaard et al., 2000).

Longissimus Muscle Area. Grain feeding typically increases ribeye area (Bowling et al., 1977; Bowling et al., 1978; Schroeder et al., 1980; Aberle et al., 1981; Wu et al., 1981; Crouse et al., 1984; Larick et al., 1987; McCaughey and Cliplef, 1996). Ribeye area was greater for short-fed (49 days), long-fed (98 days), and higher-energy forage-fed (98 days) steers over those steers slaughtered directly off grass feeding (Harrison et al., 1978). Others (Dinius and Cross, 1978; Skelley et al., 1978; Bidner et al., 1986; Myers et al., 1999) did not observe any difference in ribeye area.

Dressing Percentage. Grain feeding increased dressing percentage (Utley et al., 1975; Dinius and Cross, 1978; Young and Kauffman, 1978; Schroeder et al., 1980; Aberle et al., 1981; Davis et al., 1981; Bidner et al., 1986; Bennett et al., 1995; Xiong et al., 1996). Whereas, Fortin et al. (1985) and Myers et al. (1999) saw no difference in dressing percentage.

Postmortem Tenderness Traits

Beef carcass composition, carcass quality, and meat palatability are all used to determine the value of the animal. Changes in these attributes are controlled by changes in biochemical and physiological components during growth. There are several biochemical factors that affect beef tenderness such as marbling, muscle degradation by endogenous proteases, connective tissue components, and the contractile state of the muscle.

Collagen. Connective tissue is one factor that contributes to the toughness of meat. Hill (1966) found that the effect of collagen on tenderness is due to the amount of soluble collagen. Soluble collagen decreases as an animal increases in age; strength of cross-linking between intramuscular collagen increases as the animal increases in age (Hill, 1966). Cross et al. (1973) determined the effects of intramuscular collagen and elastin on meat tenderness. They found that percent soluble collagen was significantly related to contribution of connective tissue to toughness as determined by a sensory panel. Total concentration of connective tissue components was not related to muscle fiber tenderness or amount of connective tissue, while elastin was not related to tenderness variations. Differences in tenderness among muscles in various anatomical locations were due to variation in myofibrillar and

connective tissue (Cross et al., 1973).

Miller et al. (1983) compared collagen solubility and palatability of beef from youthful and mature carcasses. Crossbred steers ages 2-5 years were maintained on a low energy pasture and finished on a high-energy diet for 185 days before slaughter. Samples were analyzed for total amount and percent soluble collagen. Steers had different maturity indicators (youthful and mature) but similar levels of intramuscular and subcutaneous fat. Total collagen content was higher for mature carcasses, but percent soluble collagen was not different in mature and youthful carcasses (Miller et al., 1983). The high-energy diet allowed for rapid growth of muscle that produced more soluble collagen, despite age and maturity differences. A pre-slaughter diet high in energy may have more of an effect on soluble collagen than age of animal.

Wu et al. (1981) determined the effects of nutrition on beef collagen characteristics and palatability. Three groups of Hereford steers were slaughtered after being fed a pasture diet (19-20 months old), high-energy diet for 120 days (19-20 months old), or pasture diet followed by a high-energy diet for 126 days (23-24 months old). Longissimus steaks from animals fed a high-energy diet had a significantly ($P < 0.05$) higher percentage of salt soluble collagen than pasture-fed animals. Total collagen content did not differ. Authors hypothesized that collagen solubility increased in grain-fed animals (higher plane of nutrition) due to an increase in the rate of collagen biosynthesis or a decrease in the rate of collagen cross-link formation (Wu et al., 1981). Despite the difference in percentage of salt soluble collagen, there was no difference between nutritional treatments for sensory panel overall tenderness

or shear force values of steaks from the longissimus muscle. However, panel members did perceive a greater amount of connective tissue in the pasture-fed group than the pasture-fed group finished on a high concentrate diet (Wu et al., 1981).

Similarly, Crouse et al. (1985a) observed Angus and Simmental intact and castrated males fed a high-energy diet had a greater amount of soluble collagen than those animals fed a low energy diet. Insoluble collagen and total amount of collagen did not differ between dietary treatment group (Crouse et al., 1985a). Mandell et al. (1997) also saw that soluble collagen content of grain-fed Charolais-cross steers tended to be higher ($P=0.09$) than alfalfa silage-fed steers.

Other researchers (Aberle et al., 1981; Hall and Hunt, 1982; Dikeman et al., 1986; Mandell et al., 1998) found that collagen solubility was not affected by diet. Aberle et al. (1981) observed some differences in collagen solubility due to diet, but results were inconsistent. Hereford x Angus steers and Charolais x Angus-Milking Shorthorn steers that were fed a high-energy diet for 70 days had a higher percentage of soluble collagen than steers fed a low-energy diet. However, soluble collagen content from steers fed a high-energy diet for 140 and 210 days did not differ significantly from those steers only fed a low-energy diet. Amount of total collagen did not differ significantly, although steers fed a high-energy diet for 70 days or less tended to have more total collagen. Steers fed a high-energy diet for at least 70 days had the lowest shear force values and the most tender scores as evaluated by the sensory taste panel. Authors suggested the higher growth rate of the steers fed a high energy diet elevated

the protein synthesis rate and produced newly synthesized collagen which would be less stable and more soluble (Aberle et al., 1981).

Hall and Hunt (1982) found that dietary regimen had small and inconsistent effects on the amount of total collagen and collagen solubility when crossbred steers were fed either a concentrate or roughage diet to a constant body weight endpoint. Dikeman et al. (1986) and Mandell et al. (1998) also saw no difference in soluble collagen content of animals fed lower or higher energy diets.

The weakening of connective tissue during aging has been studied. Stanton and Light (1987, 1988, 1990) found evidence of proteolytic damage of collagen after conditioning. Nishimura et al. (1995, 1996, 1998) studied structural changes of collagen during conditioning using a scanning electron microscope. Effects of conditioning were minimal before ten days of aging, but obvious after 14 days (Nishimura et al., 1995). Degradation of proteoglycans was the main factor in weakening of intramuscular connective tissue. The weakening was due to the separation of collagen fibrils and fibers from the perimysium and endomysium, which resulted in partial tenderization of beef during the aging process (Nishimura et al., 1996).

Endogenous proteases. Proteolysis of muscle by endogenous proteases during postmortem aging has been shown to influence meat tenderness (Koohmaraie et al., 1988). Endogenous proteases of the calpain system appear to be primarily responsible for this affect on tenderness. The calpain system consists of calcium-dependent proteases, u-calpain and m-calpain, and an inhibitor, calpastatin (Koohmaraie, 1988). Researchers have established a

relationship between calpastatin activity at 24-h postmortem and beef tenderness (Whipple et al., 1990; Shackelford et al., 1991b; Sherbeck et al., 1996).

Researchers (Crouse et al., 1989; Johnson et al., 1990a; Wheeler et al., 1990; Sherbeck et al., 1995) have noted that as percentage of *Bos indicus* breeding increased, taste panel tenderness decreased and shear force values increased. Steers with Brahman breeding had a higher incidence of steaks with unacceptable (≥ 3.9 kg) shear force values than steaks from purebred Hereford cattle (Sherbeck et al., 1995).

Whipple et al. (1990) identified differences in calpastatin activity at 24-h postmortem as a cause for differences in beef tenderness between *Bos indicus* and *Bos taurus* breeds of cattle. In support, Shackelford et al. (1991a) reported that calpastatin activity and shear force values were higher in meat obtained from 5/8 Brahman crossbred heifers than Angus-Hereford crossbred heifers. Similarly, O'Connor et al. (1997) observed that 3/8 *Bos indicus* steers had higher 24-h longissimus calpastatin activity than *Bos taurus* steers. Also, steaks from carcasses of 3/8 *Bos indicus* steers received lower tenderness ratings from the trained sensory panel (O'Connor et al., 1997).

Johnson et al. (1990b) found calpastatin activity was significantly correlated to day one Warner-Bratzler shear force values. Shackelford et al. (1994) and Wulf et al. (1996) demonstrated that calpastatin activity at 24-h postmortem was highly heritable and accounted for a major portion of genetic variation in shear force values within a breed. Wulf et al. (1996) found that calpastatin activity explained 79% of variation in sire means for shear force

within Charolais-sired steers and heifers and 73% of variation in shear force within Limousin-sired steers and heifers.

Lower levels of calcium-dependent protease I activity (now known as u-calpain) could result in decreased proteolysis (i.e. less breakdown of muscle) and, therefore, decreased initial tenderness (Wheeler et al., 1990). Other researchers have noted no difference in the activities of u-calpain and m-calpain obtained from animals with *Bos taurus* or *Bos indicus* breeding (Shackelford et al., 1991a).

Calkins and Seideman (1988) suggested animals slaughtered during a period of rapid growth and increased protein turnover might exhibit increased muscle proteolysis and therefore, increased tenderness. They proposed that manipulation of live animal growth rate might dictate meat tenderness through the action of proteolytic enzymes (Calkins and Seideman, 1988). Aberle et al. (1981) suggested this to be the case when they observed cattle growing at a higher growth rate at the time of slaughter were found to produce more tender steaks than those cattle that were growing at a lower rate. In support of this theory, Shackelford et al. (1994) found that calpastatin activity at 24-h postmortem was negatively associated with average daily gain, indicating that calpastatin activity would be lower following a period of increased growth rate.

Cooked Beef Palatability

Shear Force. Forage feeding of cattle is traditionally thought to increase shear force values, indicating decreased tenderness (Bowling et al., 1977; Leander et al., 1978; Schroeder et al., 1980; Aberle et al., 1981; Davis et al., 1981; Dolezal et al., 1982; Hedrick et al., 1983; Larick et al., 1987; May et al.,

1992; Bennett et al., 1995). However, in many of these studies there existed significant differences between either carcass weight or 12th rib fat thickness of grain-fed and forage-fed cattle (Bowling et al., 1977; Schroeder et al., 1980; Aberle et al., 1981; Davis et al., 1981; Dolezal et al., 1982; Hedrick et al., 1983; Larick et al., 1987; May et al., 1992; Bennett et al., 1995).

Other studies have found shear force was not different (Bowling et al., 1978; Dinius and Cross, 1978; Harrison et al., 1978; Skelley et al., 1978; Smith et al., 1979; Bidner et al., 1981; Wu et al., 1981; Crouse et al., 1984; Crouse and Seideman, 1984; Bidner et al., 1985; Bidner et al., 1986; Berry et al., 1988; Schaake et al., 1993; McCaughey and Cliplef, 1996; Mandell et al., 1998; Myers et al., 1999; French et al., 2001a). When comparing forage- and grain-fed bulls, Vestergaard et al. (2000) only found a difference in shear force values for *M. semitendinosus*, but not for *M. longissimus* or *M. supraspinatus*.

Muscle mass and fat thickness differences can cause changes in the rate of chilling of the carcass and also the amount of muscle contraction during the onset of rigor mortis. Adequate muscle mass and fat covering are necessary to slow the rate of chill of the carcass. Rapid chilling of the carcass can cause a phenomenon known as cold shortening, in which muscle toughening occurs (Bowling et al., 1978). Bowling et al. (1977) observed that increases in fat thickness from 1.3 mm to 9 mm were associated with higher sensory panel tenderness ratings, lower shear force values, and increased sarcomere length. Similarly, Bowling et al. (1978) found that increasing subcutaneous fat thickness from 1 mm to 7 mm was associated with increases in sensory panel tenderness ratings and decreases in shear force values. Increasing fat

thickness to greater than 7 mm to 9 mm did not appear to be associated with increased tenderness (Bowling et al., 1978). Tatum et al. (1982) proposed that carcasses need at least 7.6 mm to 10.2 mm of subcutaneous fat over the 12th rib for greater assurance of desirable palatability.

In studies where cattle were fed to a constant weight endpoint or to a constant fat thickness, researchers found that shear force values were not affected by forage versus grain feeding (Bidner et al., 1981; Crouse et al., 1984; Crouse and Seideman, 1984; Bidner et al., 1986; Myers et al., 1999). As long as a minimum fat thickness of 7 mm was reached, there was no difference in shear force values from steaks of forage-fed and grain-fed cattle (Dinius and Cross, 1978; Skelley et al., 1978; Crouse et al., 1984; Crouse and Seideman, 1984; McCaughey and Cliplef, 1996; Myers et al., 1999).

Tenderness. Increased tenderness was reported with grain-fed beef when evaluated by a trained sensory panel (Bowling et al., 1977; Schroeder et al., 1980; Aberle et al., 1981; Davis et al., 1981; Dolezal et al., 1982; Berry et al., 1988; Mitchell et al., 1991; May et al., 1992; Bennett et al., 1995; Vestergaard et al., 2000). However, other researchers found no difference in tenderness due to diet (Reagan et al., 1977; Dinius and Cross, 1978; Skelley et al., 1978; Westerling and Hedrick, 1979; Wu et al., 1981; Crouse et al., 1984; Crouse and Seideman, 1984; Bidner et al., 1985; Fortin et al., 1985; Bidner et al., 1986; Dikeman et al., 1986; Schaake et al., 1993; Coleman et al., 1995; McCaughey and Cliplef, 1996; Xiong et al., 1996; Mandell et al., 1997; Mandell et al., 1998; Myers et al., 1999; French et al., 2000; French et al., 2001a). Crouse and Seideman (1984) reported differences in ease of fragmentation scores with

grass-fed beef requiring greater difficulty in fragmentation. They also found grass-fed beef to have more abundant connective tissue; however, there was no significant difference in tenderness as evaluated by a trained sensory panel (Crouse and Seideman, 1984). Consumer taste panels found no difference in tenderness of steaks from grain-fed or forage-fed steers (Bidner et al., 1981; Bidner et al., 1986).

May et al. (1992) found steaks from Angus x Hereford steers fed grain 28 days or less to be less tender and requiring greater difficulty in fragmentation than those fed grain for at least 56 days. Peak taste panel tenderness, ease in fragmentation, and shear force values were obtained after 112 days on feed (May et al., 1992).

Crouse et al. (1984) fed Hereford x Angus crossbred heifers either a grass or grain diet until they reached 0.96 cm 12th rib fat thickness. Trained sensory panelists found steaks from grain-fed and grass-fed heifers to be similar in tenderness scores. There was no difference between dietary treatments for shear force values (Crouse et al., 1984). Similarly, Myers et al. (1999) fed $\frac{3}{4}$ Angus x $\frac{1}{4}$ Simmental, $\frac{3}{4}$ Simmental x $\frac{1}{4}$ Angus, and $\frac{1}{2}$ Wagyu x $\frac{1}{4}$ Simmental x $\frac{1}{4}$ Angus steers an ad libitum high concentrate diet or pasture for 82 days followed by a high concentrate diet until they reached a constant fat thickness endpoint. Researchers observed no difference in sensory tenderness or shear force between the constant grain-fed group and the pasture-fed group (Myers et al., 1999).

In contrast, Young and Kauffman (1978) and Crouse et al. (1985a) found forage-fed cattle to be more tender than grain-fed cattle.

Juiciness. Forage feeding has been found to decrease juiciness of meat (Schroeder et al., 1980; Davis et al., 1981; Berry et al., 1988; Bennett et al., 1995). Many other researchers found no difference in trained sensory evaluation of juiciness of forage- or grain-fed animals (Bowling et al., 1977; Reagan et al., 1977; Dinius and Cross, 1978; Westerling and Hedrick, 1979; Aberle et al., 1981; Wu et al., 1981; Dolezal et al., 1982; Crouse et al., 1984; Crouse and Seideman, 1984; Bidner et al., 1985; Crouse et al., 1985; Dikeman et al., 1986; Mitchell et al., 1991; May et al., 1992; Schaake et al., 1993; McCaughey and Clipflef, 1996; Xiong et al., 1996; Mandell et al., 1998; Myers et al., 1999; French et al., 2000; Vestergaard et al., 2000; French et al., 2001a). Consumer panels also found no difference in juiciness (Bidner et al., 1981; Bidner et al., 1986). Two researchers (Young and Kauffman, 1978; Bidner et al., 1986) found increased juiciness in forage-fed animals when evaluated by a trained panel.

Greater juiciness ratings in steaks from grain-fed beef may be partially explained by differences in lipid content. Owens and Gardner (1999) did a stepwise regression of multiple studies comparing forage versus grain feeding and found that higher marbling scores were associated with greater sensory panel juiciness. In support, Mandell et al. (1997) observed that steaks with higher intramuscular fat content also received higher juiciness ratings than steaks with lower intramuscular fat content. Dikeman et al. (1986) saw that carcasses from bulls receiving lower marbling scores and containing lower separable fat percentage produced steaks with lower juiciness ratings as compared to steers with higher marbling scores and separable fat amount.

Those studies in which forage feeding was found to decrease juiciness (Schroeder et al., 1980; Berry et al., 1988; Bennett et al., 1995) also observed a greater marbling score in carcasses from grain-fed beef (Schroeder et al., 1980; Rumsey et al., 1987; Bennett et al., 1995). Similarly, studies in which juiciness was not found to be different also did not observe a difference in marbling score or chemical analysis of lipid content (Crouse et al., 1985a; Crouse et al., 1985b; McCaughey and Cliplef, 1996; Xiong et al., 1996; Myers et al., 1999; French et al., 2000).

However, differences in marbling do not totally account for differences in juiciness ratings as evidenced in other studies. In many studies sensory panel juiciness ratings did not differ despite differences in marbling score or chemical analysis of lipid content (Reagan et al., 1977; Dinius and Cross, 1978; Aberle et al., 1981; Dolezal et al., 1982; Crouse et al., 1984; Crouse and Seideman, 1984; Bidner et al., 1985; Dikeman et al., 1986; May et al., 1992; Schaaake et al., 1993)

Flavor. Forage-fed cattle have been reported to have less desirable flavor and/or increased off-flavors as compared to grain-fed cattle (Bowling et al., 1977; Reagan et al., 1977; Bowling et al., 1978; Skelley et al., 1978; Brown et al., 1979; Westerling and Hedrick, 1979; Schroeder et al., 1980; Davis et al., 1981; Dolezal et al., 1982; Melton et al., 1982; Hedrick et al., 1983; Larick et al., 1987; Mitchell et al., 1991; Bennett et al., 1995; Mandell et al., 1997; Mandell et al., 1998; Vestergaard et al., 2000). The effect of forage feeding on flavor varies with the type of forage utilized (Melton, 1983). Aberle et al. (1981)

observed less flavor intensity in steaks from cattle fed a corn silage/ground-corn-cob diet than those fed a corn silage/corn diet.

Other researchers found no difference in flavor (Crouse et al., 1984; Crouse et al., 1985a; Coleman et al., 1995; McCaughey and Cliplef, 1996; Myers et al., 1999; French et al., 2000) or flavor intensity (Bowling et al., 1977; Young and Kauffman, 1978; Wu et al., 1981; Crouse and Seideman, 1984; Bidner et al., 1985; Dikeman et al., 1986; May et al., 1992) when evaluated by a trained sensory panel or by consumer panel (Bidner et al., 1981; Bidner et al., 1986). Crouse et al. (1985a) found cattle fed a low-energy diet had a more intense flavor than cattle fed a high-energy diet. Grain-fed cattle have increased beefy flavor (Melton et al., 1982; Berry et al., 1988; Schaake et al., 1993; Bennett et al., 1995; Coleman et al., 1995; Mandell et al., 1997; Mandell et al., 1998). Xiong et al. (1996) found no difference in beefy flavor.

Brown et al. (1979) investigated the effects of energy intake and feed source on the flavor of ground beef. These researchers fed animals either a low-energy grass diet, a low-energy grain diet, or a high-energy grain diet. Trained sensory panelists gave lower flavor scores to ground beef from grass-fed cattle and found it to be lower ($P < 0.001$) than ground beef from limited-grain fed animals. Comments by the panelists suggested that lower flavor scores were due to off-flavors in the grass-fed beef. The off-flavors were described as “grassy, milky, or fishy” (Brown et al., 1979). Similarly, Westerling and Hedrick (1979) found grass-fed beef to be the least desirable in flavor. They also found that animals fed a concentrate diet for 112 days were more desirable in flavor

than beef from animals fed the same diet for only 56 days (Westerling and Hedrick, 1979).

Melton et al. (1982) found ground beef from steers finished on fescue pasture to give the least desirable flavor when evaluated by an untrained sensory panel. The ground beef from the grass-fed cattle was less desirable because of a less intense beef fat flavor and more intense dairy or milky flavor, soured dairy flavors, and other off-flavors (Melton et al., 1982). The flavor difference between grass-fed and grain-fed beef may be due to differences in fatty acid composition, as indicated by a correlation between flavor score and specific fatty acids. The most desirable flavor of ground beef had lower amounts of C14:1, C18:0, and C18:3; increased amounts of C18:1 in the neutral lipids; and lower amounts of C18:0, C18:3, and unknown fatty acids (likely polyunsaturated) in the polar lipids (Melton et al., 1982). Off flavors in beef produced by grass diets are probably due to increased concentrations of C18:3, C20:3, C20:4, and C22:5 in phospholipids of the beef (Melton, 1983).

Overall Palatability. Several researchers have compared palatability in forage and grain fed animals but results may be confounded due to large differences in fat thickness (Bowling et al., 1977; Bowling et al., 1978; Schroeder et al., 1980; Aberle et al., 1981; Davis et al., 1981; Hedrick et al., 1983). Others found no difference in overall palatability (French et al., 2000) or acceptability (McCaughey and Cliplef, 1996; Xiong et al., 1996; French et al., 2001a). Dolezal et al. (1982) observed that overall palatability of grain-fed steers and heifers did not increase until after 90 days on a concentrate ration. Young and Kauffman (1978) found forage-fed cattle to be similar to grain-fed

cattle in overall desirability when fed to the same visually assessed fat thickness endpoint.

Smith et al. (1977) found reduced palatability in steers slaughtered directly from a grass diet, but differences tended to disappear after 49 days of feeding. Differences in taste panel traits were considered “unimportant” ($P > 0.05$) once results were adjusted to either constant weight or longissimus muscle fat (Smith et al., 1977).

CHAPTER III

MATERIALS AND METHODS

Project Protocol

Ninety-two F2 Angus x *Bos indicus* steers (Angus x Brahman or Nelore mated with Angus x Brahman or Nelore) were selected from the Texas A&M University Agricultural Research Center in McGregor, Texas, to evaluate carcass and tenderness traits. The genetically similar calves had similar pre-weaning management. Calves were from cows that were artificially inseminated and raised in the same pasture. Calves 6-8 months old were weaned on October 27, 1999, and fed sorghum Sudan and coastal hay ad lib and Acu-Ration (up to 2.27 kg per head per day) prior to the initiation of the study on November 23, 1999. The steers were randomly assigned to one of eight environmental/nutritional treatments as defined in Figure 1.

Group One (McGregor-Calf). One group of steers (n=15) was fed a high concentrate corn-milo finishing ration (Table 1) at the Texas A&M University Agricultural Research Center in McGregor immediately post-weaning until slaughter.

Group Two (McGregor-Low). A second group of steers (n=18) was fed sorghum Sudan and coastal hay ad lib and 2.27 kg per head per day of Acu-Ration at McGregor during the winter for approximately 5 months immediately post-weaning until April 12, 2000. Steers were then placed in feedlot at McGregor and fed a corn-milo finishing ration (Table 1).

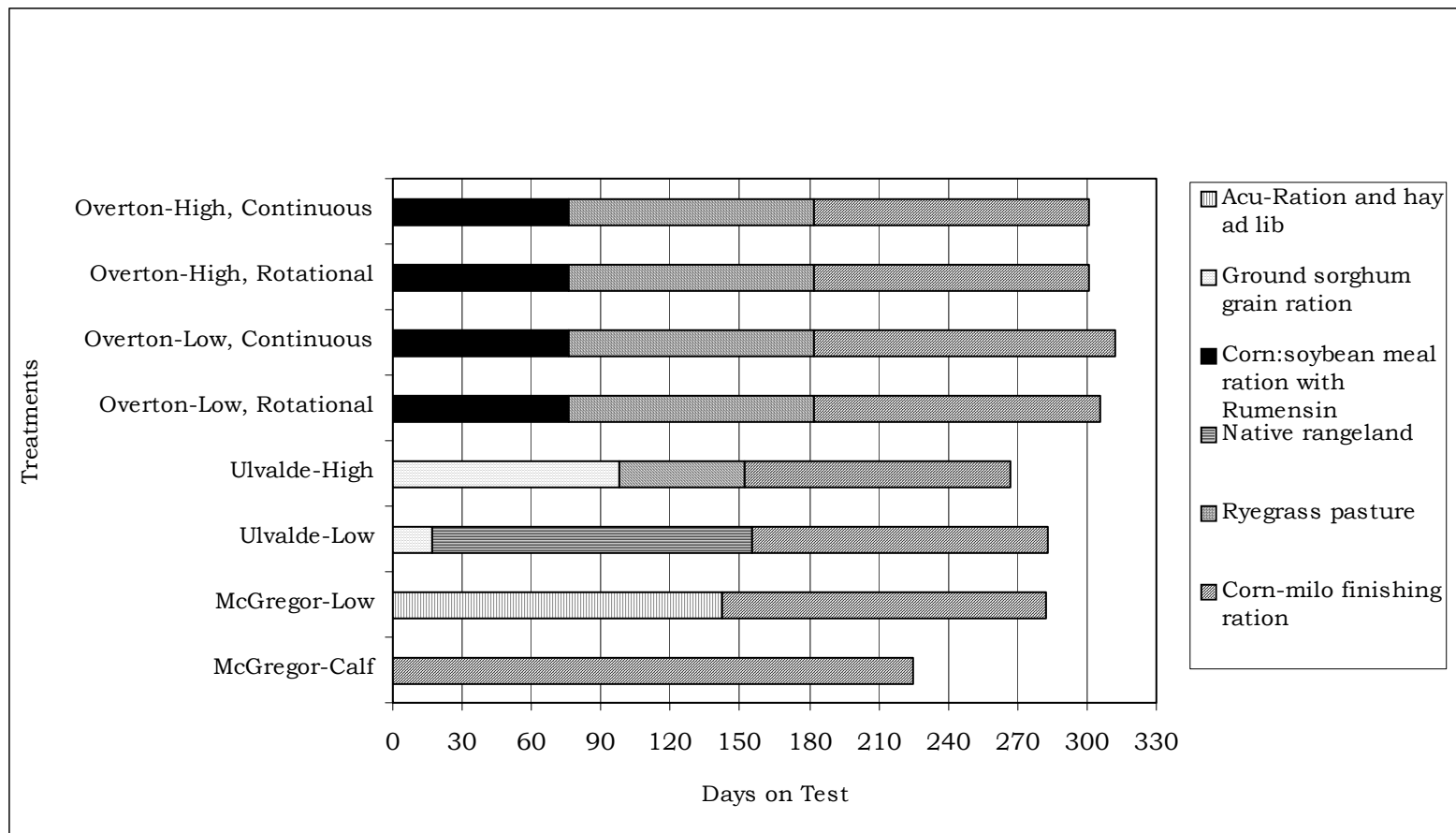


Figure 1. Feeding regime by environmental/nutritional treatment from initiation of the study on 11/23/99 until end of study

Table 1. Composition of corn-milo finishing ration on an as fed basis

Item	% As Fed Basis
Ground corn	43.29
Ground milo	25.00
Cottonseed hulls	15.00
Molasses	6.00
Cottonseed meal	5.00
Ammonium sulphate	2.50
R-1500 ^a	1.20
Limestone	1.00
Trace mineralized salt ^b	0.70
Potassium chloride	0.20
Vitamin Premix ^c	0.10
Zinc oxide	0.01
Dry matter	88.4
Crude protein	10.7
Acid detergent fiber	14.5
Calcium	0.47
Phosphorus	0.27
ME (Mcal/kg)	1.23

^a R-1500 contains 1.65 g monensin sodium (Rumensin™) per kg.

^b Trace mineralized salt contains NaCl, 98%; Zn, 0.35%; Mn, 0.28%; Fe, 0.175%; Cu, 0.035%; I, 0.007%; Co, 0.007%.

^c Vitamin Premix contains vitamin A, 2,200,000 IU/kg; vitamin D, 1,100,000 IU/kg; vitamin E, 2,200 IU/kg.

Group Three (Uvalde-Low). A third group of steers (n=10) was fed an ad libitum amount of a diet composed of ground sorghum grain (47.57%), peanut hulls (28.54%), cottonseed hulls (14.27%), cottonseed meal (9.51%), and vitamin A premix (0.01%) until they were placed on native rangeland on December 10, 1999, at the Texas A&M University Agricultural Research and Extension Center at Uvalde until April 25, 2000, and then transported to feedlot facilities in McGregor. While grazing on native range, cattle had free choice access to a 12% calcium and 12% phosphorus mineral supplement. This treatment was designed to induce a low rate of gain in a southern Texas climate.

Group Four (Uvalde-High). A fourth group of steers (n=16) was fed the same diet as the Uvalde-Low steers until February 28, 2000, when TAM-90 annual ryegrass (*Lolium multiflorum* L.) pasture was available at the Uvalde Center. These steers grazed ryegrass pasture until April 21, 2000, and then were transported to feedlot facilities in McGregor. While grazing on ryegrass pasture, cattle had free choice access to a 12% calcium and 12% phosphorus mineral supplement. This treatment was designed to induce a higher rate of gain during pre-finishing and to simulate a higher rate of gain in a southern Texas climate.

Group Five (Overton-Low, Rotational). A fifth group of steers (n=8) received 0.91 kg per head per day of a 1:1 corn:soybean meal ration with Rumensin until February 7, 2000. They were then placed on Manton rye (*Secale creale*) and TAM-90 ryegrass pasture at the Texas A&M University Agricultural Research and Extension Center at Overton until May 22, 2000, at a

high stocking rate to induce a lower rate of gain. Steers were then transported to feedlot facilities in McGregor. During the rye-ryegrass period these steers were rotationally stocked on an 8-paddock (3.1 head/acre) or 16-paddock system (3.5 head/acre). Data were not different between the 8-paddock and 16-paddock system, so results were pooled together during analysis. All paddocks assigned to rotationally stocked treatments were grazed for about two days with about a 14-d rest period. During grazing at Overton, cattle had access to a free choice mineral supplement that was 12% calcium and 12% phosphorus.

Group Six (Overton-Low, Continuous). A sixth group of steers (n=7) received 0.91 kg per head per day of a 1:1 corn:soybean meal ration with Rumensin until February 7, 2000. The steers then were placed on Maton rye and TAM-90 ryegrass pastures at the Overton Research Center until May 22, 2000. Thereafter, steers were transported to feedlot facilities in McGregor. This group of steers grazed on pastures at a high stocking rate (3.2 head/acre) to induce a lower rate of gain during backgrounding in an east Texas climate. During the ryegrass period, steers were assigned to a continuous stocking system and had access to a free choice mineral supplement that was 12% calcium and 12% phosphorus.

Group Seven (Overton-High, Rotational). A seventh group of steers (n=6) grazed rye-ryegrass pastures and was rotationally stocked at a low stocking rate at the Overton Center. Steers were stocked at a lower stocking rate to induce a higher rate of gain during pre-finishing in an east Texas climate. During the rye-ryegrass period these steers were rotationally stocked on an 8-paddock (1.6 head/acre) or 16-paddock system (1.7 head/acre). Data were not different

between the 8-paddock and 16-paddock system, so results were pooled together during analysis. All paddocks assigned to rotationally stocked treatments were grazed for about two days with about a 14-d rest period. During grazing at Overton, cattle had access to a free choice mineral supplement that was 12% calcium and 12% phosphorus. At completion of the grazing period, steers were transported to feedlot facilities at McGregor.

Group Eight (Overton-High, Continuous). An eighth group of steers (n=9) was continuously stocked on rye-ryegrass pastures at a low stocking rate. Steers were placed on pasture at a lower stocking rate (1.65 head/acre) to induce a higher rate of gain during pre-finishing in an east Texas climate. During grazing at Overton, cattle had access to a free choice mineral supplement that was 12% calcium and 12% phosphorus. At completion of the grazing period, steers were transported to feedlot facilities at McGregor.

All steers pastured at the Overton Center remained on pastures until May 22, 2000, when steers were transported to the Texas A&M University Agricultural Research Center in McGregor for feedlot finishing.

Steers in the environment treatment groups grazed approximately 5 months on pasture and were then transported to McGregor, TX. The steers were fed a high concentrate corn-milo finishing ration (Table 1) until reaching a visually assessed fat constant endpoint of 10 mm of external fat over the 12th rib within a pen treatment group (Figure 1).

Once reaching the visual fat endpoint, steers were transported to Sam Kane Beef Processors in Corpus Christi, TX, and harvested. Carcasses received electrical stimulation with three bars, 27 seconds each. The first stimulation

was 150 V at 1.9 amps. The second and third stimulation delivered 300 V at 3.0 amps. Carcasses were chilled for 36 hours at 1° C. United States Department of Agriculture quality and yield characteristics (USDA, 1997) were obtained by trained personnel from Texas A&M University. Data collected included fat thickness; longissimus muscle area; percentage of kidney, heart, and pelvic fat; preliminary yield grade; marbling score; and maturity score. Skeletal maturity a measurement by ossification of the cartilaginous tips of the thoracic vertebrae and lean maturity was a measurement of the color of longissimus muscle at the 12th rib as defined by the USDA (1997). Overall maturity was the average of skeletal and lean maturity scores as dark cutters were not present (USDA, 1997).

The carcasses were commercially fabricated and strip loins (IMPS 180A) (USDA, 1996) were obtained from both carcass sides. The strip loins were vacuum-packaged and shipped to the Texas A&M University Rosenthal Meat Science and Technology Center in College Station, TX. Strip loins were fabricated into 6 sections, 8 cm thick. The sections were randomly assigned into aging periods of 1, 7, 14, 21, 28, or 35 days. From each section two-2.54 cm steaks were cut with the first anterior steak being used for Warner-Bratzler shear force determination and the next adjacent, posterior steak used for trained meat descriptive attribute sensory evaluation. The remainder of each section was reserved. The steaks were individually vacuum-packaged using an Ultravac machine (model 2100-D, Koch Supplies, Inc., Kansas City, MO). The steaks were stored at 1° C for their designated aging time (1, 7, 14, 21, 28, or

35 days). After appropriate aging, the steaks were frozen at -10° C until analysis.

Analytical Techniques

Warner-Bratzler Shear Force. After aging for 1, 7, 14, 21, 28, or 35 days and freezing, steaks were thawed at 2-4° C overnight and then broiled on a Farberware Open Hearth grill (model 450N, Kidde, Inc., Broncs, NY) according to AMSA (1995) to an overall internal temperature of 70° C. After reaching an internal temperature of 35° C, steaks were turned once during cooking. Internal temperature of the steaks was detected by copper constantan thermocouples connected to a strip chart recorder (model RD4031, Omega Engineering, Inc., Stamford, CT). Raw weight, cooked weight, temperature on and off, and cook time were recorded. Steaks were cooled to room temperature (25° C) for approximately four hours after cooking. Six-2.54 cm cores were removed using a machine corer from each steak at a predetermined location parallel to the longitudinal orientation of the muscle fibers. Cores were sheared using a United Testing System machine (model SSTM-500, United Calibration Corp., Huntington Beach, CA) with a Warner-Bratzler shear attachment. Crosshead speed was 200 mm/min. Maximum force was recorded in kilograms as a mean of the six cores.

Sensory Evaluation. Steaks aged 1, 7, 14, 21, 28, and 35 days were thawed as previously described for Warner-Bratzler shear force analysis and broiled on a Farberware Open Hearth grill (model 450N, Kidde, Inc., Broncs, NY) according to AMSA (1995) to an overall internal temperature of 70° C, turning once after reaching 35° C. Internal temperature of the steaks was

detected by copper constantan thermocouples connected to a strip chart recorder (model RD4031, Omega Engineering, Inc., Stamford, CT). Raw weight, cooked weight, temperature on and off, and cook time were recorded. Cooked steaks were cut into 1.27 cm x 1.27 cm x 2.54-cm cubes and served warm to an eight-member trained sensory panel. Panel members were selected and trained according to AMSA (1995). Panelists were seated in individual booths with red filtered lights to mask color variation in samples (AMSA, 1995). They received 12 samples per day, two pieces per sample, approximately two samples per treatment, in a randomized order using three digit identification codes. Samples were served at approximately four-minute intervals and after the evaluation of six samples, panelists were provided a 20-30 minute rest period. Each sample was evaluated on an 8-point scale for juiciness (8=extremely juicy, 1=extremely dry), muscle fiber tenderness (8=extremely tender, 1=extremely tough), connective tissue amount (8=none, 1=abundant), overall tenderness (8=extremely tender, 1=extremely tough), overall flavor intensity (8=extremely intense, 1=extremely bland), and off-flavor characteristics where the specific off-flavor attribute was described and then rated for intensity level (8=extremely intense, 1=extremely bland). Panelists received double distilled de-ionized water, ricotta cheese, and salt-free saltine crackers for cleansing of their pallets between samples.

Statistical Analysis

Data was analyzed by analysis of variance (ANOVA) using the general linear model (GLM) procedure from SAS (1991). The significant level was predetermined at $P < 0.05$. All data, except for the live animal growth data

reported in Table 1 and carcass adjusted fat thickness reported in Table 2, were adjusted to a constant fat thickness by covariate analysis to remove the effect of varying fat thickness at the point of slaughter. A main effect for slaughter day within treatment was included in the model to account for variation due to differences in slaughter days across treatments. The main effect of treatment (McGregor-Calf; McGregor-Low; Uvalde-Low; Uvalde-High; Overton-Low, Rotational; Overton-Low, Continuous; Overton-High, Rotational; Overton-High, Continuous) was included in the model for carcass characteristics. The main effect of aging time and the interaction of aging time by treatment were included in the model for Warner-Bratzler shear force data. The main effect of panelist was also included in the model for sensory evaluation data to account for panelist effect in additions to the aforementioned effects. Least squared means were calculated and when ANOVA indicated significance ($P < 0.05$), mean separations were performed using the standard error pdiff function of SAS (1991).

To further understand the relationship between treatment and storage day for Warner-Bratzler shear force, linear regression within an animal was performed using Excel (Microsoft Office, Microsoft Corp., 2001). Warner-Bratzler shear force was the dependent variable and storage days (1, 7, 14, 21, 28, and 35) were the independent variable. The linear regression equation intercept and slope were reported. The intercept and slope were then analyzed by ANOVA using SAS (1991) with a significance level of $P < 0.05$. Data were adjusted to a constant adjusted fat thickness using covariate analyses. The main effects of slaughter day within treatment and treatment were included in

the model. Least squared means were calculated and differences between means were determined using the standard error pdiff function of SAS (1991).

Simple correlation coefficients were calculated to understand general relationships between live animal growth traits and Warner-Bratzler shear force determinations using the Proc Cor function of SAS (1991).

CHAPTER IV

RESULTS AND DISCUSSION

Environmental and Nutritional Effects

Live Animal Production Characteristics. Steers did not differ in weight at the beginning of the trial (Table 2). By the end of the stocker phase, steers fed diets designed to produce higher rates of gain weighed more than steers at the same location fed diets designed to produce lower rates of gain. Steers in the Uvalde-Low and Overton-Low, Rotational treatments had the lowest average daily gains during the stocker phase and weighed less than steers in the McGregor-Low and Overton-Low, Continuous groups. Within the high plane of nutrition treatments, Uvalde-High steers had a lower average daily gain than steers in the Overton-High, Continuous and Overton-High, Rotational treatments. Average daily gains during the stocker phase show that differences in location/environment and nutritional treatments were able to induce differences in rate of gain during the stocker phase as defined by the experimental design. Stocking rates have been shown to induce differences in average daily gain (Jones and Sandland, 1974; Hart et al., 1988; Coleman and Forbes, 1998; Ackerman et al., 2001; Brigman, 2001). Daily gains of steers during grazing have been shown to increase with increased herbage mass (Coleman and Forbes, 1998) and to decrease as amount of available forage decreased (Guerrero et al., 1984).

Steers in the McGregor-Calf treatment had the lowest average daily gain during the feedlot phase and were fed a high concentrate diet for the longest

Table 2. Least squared means for average daily gain and live weight characteristics

Nutrition/ Environmental Treatment	Beginning Test Weight, kg	End Weight Stocker Phase, kg	Average Daily Gain Stocker Phase, kg/day	Average Daily Gain Feedlot Phase, kg/day	Length of Time Fed A High Concentrate Diet	End Weight Feedlot Phase, kg
	0.93 ^a	0.0001	0.0001	0.0001	0.0001	0.0001
McGregor-Calf	284.8	--	--	0.83 ^c	225.0 ^e	479.9 ^c
McGregor-Low	280.5	353.8 ^d	0.63 ^d	1.41 ^d	139.5 ^d	546.9 ^{de}
Uvalde-Low	281.5	322.0 ^c	0.25 ^c	1.74 ^{ef}	128.0 ^{cd}	515.8 ^{cd}
Uvalde-High	287.3	380.3 ^{ef}	0.68 ^d	1.57 ^{de}	114.8 ^c	544.3 ^{de}
Overton-Low, Rotational	291.7	334.0 ^{cd}	0.36 ^c	2.09 ^g	124.0 ^c	569.9 ^{ef}
Overton-Low, Continuous	287.7	354.6 ^{de}	0.65 ^d	1.87 ^{fg}	130.0 ^{cd}	566.2 ^{ef}
Overton-High, Rotational	278.6	382.0 ^{ef}	0.92 ^e	1.55 ^{de}	119.3 ^c	547.0 ^{def}
Overton-High, Continuous	294.6	406.9 ^f	1.04 ^e	1.87 ^{fg}	119.3 ^c	596.0 ^f
Root Mean Square Error ^b	29.77	33.07	0.170	0.289	17.79	47.70

^a P-value from analysis of variance table.

^b From analysis of variance table.

^{cdefg} Mean values within a column and followed by the same letter are not significantly different ($P > 0.05$).

amount of time (Table 2). Myers et al. (1999) reported that steers fed a high concentrate diet (77% dry corn) had a greater average daily gain than steers fed on pasture for 82 days. The pasture-fed steers were then finished on the high concentrate diet and compensated with a higher average daily gain than the continuous-fed group, but the overall average daily gain for the entire trial was still higher for the steers that were fed a high concentrate diet the entire trial. Similarly, Oltjen et al. (1971) reported that steers fed a high concentrate diet (90.6% cracked corn) for the entire trial had a higher overall average daily gain compared to those fed a forage diet for 77 days followed by a high concentrate diet for 77 days. Daily gain of the forage-fed steers was increased during high concentrate feeding, but not enough to out-gain the constant concentrate-fed group (Oltjen et al., 1971).

All forage treatment groups experienced an increase in average daily gain in the feedlot phase (Table 2). Steers in the Overton-Low, Rotational; Overton-Low, Continuous; and Overton-High, Continuous all had higher rates of gain during the feedlot phase than the steers in the McGregor-Calf and McGregor-Low treatments. This is consistent with finding of Myers et al. (1999) who observed that steers fed a pasture diet followed by a high concentrate diet gained more on the high concentrate diet than the steers continuously receiving a high concentrate diet.

By the end of the feedlot phase, steers varied in live weight due to treatment (Table 2). Steers in the Overton-Low, Rotational; Overton-Low, Continuous; and Overton-High, Continuous treatments weighed more than the steers in the McGregor-Calf and Uvalde-Low treatments.

The management systems used in this study induced treatment differences in the number of days fed a high concentrate diet to a constant fat thickness (Table 2). The McGregor-Calf treatment group received a high concentrate diet in the feedlot longer than all other treatment groups (225.0 days). The Uvalde-High; Overton-Low, Rotational; Overton-High, Rotational; and Overton-High, Continuous treatment groups required fewer days on feed than both the McGregor-Calf and McGregor-Low treatment groups to reach a similar fat thickness endpoint. Number of days on feed required to reach a similar fat thickness was not different for the McGregor-Low; Uvalde-Low; and Overton-Low, Continuous treatments. The amount of time required for genetically similar cattle to reach a constant fat thickness endpoint was expected to be different due to differences in growth induced during post-weaning by the environmental/nutritional treatments.

Other researchers (Oltjen et al., 1971; Bowling et al., 1978; Young and Kauffman, 1978; Bidner et al., 1981; Bidner et al., 1986; Mandell et al., 1997; Myers et al., 1999) have shown that steers fed grain reached slaughter weight sooner than steers fed combinations of forage and grain diets. As would be expected in our study, steers fed higher quality feed sources or that were supplied a continuous supply, gained at higher rates and subsequently weighed more or reached a constant fat endpoint more rapidly. Steers fed in south Texas with a warmer climate that most likely induced less quantity of available forage (Warrington et al., 1999) affected growth during the stocker phase.

Carcass Characteristics. Treatments affected carcass yield grade characteristics (Table 3). Treatment did not have an effect on adjusted fat

thickness as would be expected as the experiment was designed to slaughter steers at a constant fat endpoint. Nutritional/environmental treatments affected ribeye area; kidney, pelvic and heart fat; and hot carcass weight, but did not influence final yield grade.

Overall, carcasses from the Uvalde-Low steers had the smallest ribeye area (Table 3). Carcasses from the Uvalde-Low and McGregor-Low steers had carcasses with smaller ribeye areas than carcasses from steers from Overton-Low, Continuous and Overton-High, Continuous. While not statistically significant, a difference of 7.7 cm in ribeye area existed between carcasses from the Uvalde-Low (73.94 cm²) and Overton-Low, Rotational (81.66 cm²) treatments. Kidney, pelvic and heart fat (KPH) percentage was affected by treatment (Table 3). Uvalde-High carcasses had the highest percentage of KPH fat, but were not different from Overton-High, Continuous and McGregor-Low carcasses. McGregor-Calf and Overton-Low, Rotational carcasses had lower KPH fat than McGregor-Low; Uvalde-Low; Uvalde-High; and Overton-High, Continuous carcasses.

Hot carcass weights were also affected by nutrition/environmental treatments (Table 3). Carcasses from steers in the McGregor-Calf, McGregor-Low, and Uvalde-Low treatments were lighter than carcasses from the Overton-Low, Rotational; Overton-Low, Continuous; and Overton-High, Continuous treatments. Carcasses from the Uvalde-High treatment were lighter, but not

Table 3. Least squared means for carcass yield grade traits

Effect	Adjusted Fat Thickness, mm	Ribeye Area, cm ²	Kidney, Pelvic, and Heart Fat, %	Hot Carcass Weight, kg	Yield Grade
Kill (Treat) ^a	0.39	0.97	0.0003	0.91	0.55
Fat Thickness ^a		0.33	0.0001	0.0001	0.0001
<u>Treatment</u> ^a	0.39	0.04	0.0005	0.0017	0.37
McGregor-Calf	9.96	79.50 ^{cd}	1.89 ^c	310.5 ^c	2.83
McGregor-Low	14.62	77.10 ^c	2.45 ^{de}	314.4 ^c	3.09
Uvalde-Low	13.09	73.94 ^c	2.31 ^d	303.5 ^c	3.13
Uvalde-High	10.14	76.80 ^{cd}	2.78 ^e	322.7 ^{cd}	3.24
Overton-Low, Rotational	13.34	81.66 ^{cde}	1.93 ^c	344.9 ^d	3.02
Overton-Low, Continuous	13.72	87.73 ^{de}	2.18 ^{cd}	351.9 ^d	2.82
Overton-High, Rotational	12.70	79.86 ^{cde}	2.14 ^{cd}	333.2 ^{cd}	3.05
Overton-High, Continuous	13.63	88.08 ^e	2.36 ^{de}	359.5 ^d	2.90
Root Mean Square Error ^b	5.083	9.113	0.380	30.862	0.389

^a P-value from analysis of variance tables.

^b From analysis of variance table.

^{cde} Mean values within a column and followed by the same letter are not significantly different (P > 0.05).

statistically different, than carcasses from any of the Overton treatments. This implies that environment or location did impact hot carcass weights.

Treatment had minimal effects on carcass quality grade characteristics (Table 4). Marbling, lean maturity, overall maturity, and quality grade were not affected by treatment. All treatment groups graded A maturity for lean maturity, skeletal maturity, and overall maturity. Skeletal maturity was affected by treatment with carcasses from the Overton-High, Continuous group having higher skeletal maturity than carcasses from either the Uvalde or McGregor treatments. Within Overton treatment groups, the Overton-High, Continuous group had carcasses with higher skeletal maturity than carcasses from either Rotational Group. While differences were significant, all carcasses were within the A maturity classification.

Marbling score varied from Slight⁸² to Small⁷²; however, there were no significant differences due to treatment ($P=0.38$). Lack of significance was likely due to high amount of variation within treatments and the low number of animals per treatment.

Myers et al. (1999) reported no difference in marbling score in early-weaned steers that were either fed a high concentrate diet or a pasture diet followed by a high concentrate diet until they reached a constant fat thickness endpoint. Harrison et al. (1978) observed that marbling score improved with increased feeding. Crossbred steers that were grass-fed followed by 49 days on a high concentrate diet (short-fed, 3.11 Mcal ME/kg) had lower marbling scores than those grass-fed followed by 98 days on a high concentrate diet (long-fed, 3.11 Mcal ME/kg). Steers that were grass-fed followed by 98 days on a high

Table 4. Least squared means for carcass quality grade traits

Effect	Marbling ^b	Lean Maturity ^c	Skeletal Maturity ^c	Overall Maturity ^c	Quality Grade ^d
Kill (Treat) ^a	0.58	0.94	0.008	0.75	0.76
Fat Thickness ^a	0.0001	0.09	0.01	0.43	0.0001
<u>Treatment</u> ^a	0.38	0.54	0.0001	0.38	0.47
McGregor-Calf	540	166	153 ^g	159	393
McGregor-Low	572	162	143 ^f	153	404
Uvalde-Low	482	155	138 ^f	147	368
Uvalde-High	551	164	148 ^{fg}	156	416
Overton-Low, Rotational	547	144	152 ^g	148	415
Overton-Low, Continuous	524	147	156 ^{gh}	152	398
Overton-High, Rotational	501	172	153 ^g	162	380
Overton-High, Continuous	521	155	164 ^h	160	400
Root Mean Square Error ^e	79.4	27.62	9.02	15.47	45.01

^a P-value from analysis of variance tables.

^b Marbling: 400=slight, 500=small.

^c Maturity: 100=A, 200=B.

^d Quality Grade: 200=Standard, 300=Select, 400=Choice.

^e From analysis of variance table.

^{fgh} Mean values within a column and followed by the same letter are not significantly different (P > 0.05).

forage diet (forage-fed, 2.84 Mcal ME/kg) had similar marbling scores to the long-fed group (Harrison et al., 1978). While not statistically different from the short-fed group, the marbling score differed from SI⁵⁶ in the short-fed group to Sm⁴⁹ in the forage-fed group (Harrison et al., 1978).

Overall, carcass yield grade and quality grade were not affected by environment/nutrition treatments; however, there were significant effects on the components of yield grade determination including ribeye area, KPH fat, and hot carcass weight. Genetically similar cattle fed to a constant fat thickness endpoint should have realigned to a similar fat deposition and amount of muscling while receiving a high concentrate diet. Location and nutritional management during the stocker phase affected grade factors as evidenced by larger ribeye areas and heavier carcass weights in carcasses from steers in the Overton treatment groups as compared to carcasses from steers in the McGregor and Uvalde treatment groups. Despite lack of statistical difference, the lower marbling scores in carcasses from the Uvalde-Low treatment group also suggest that these steers were unable to reach similar fat deposition.

Warner-Bratzler Shear Force and Sensory Evaluation. There was no significant affect by treatment on Warner-Bratzler shear force (Table 5). These results are consistent with the findings in other research where cattle were fed to a constant weight endpoint or to a constant fat thickness (Bidner et al., 1981; Crouse et al., 1984; Crouse and Seideman, 1984; Bidner et al., 1986; Myers et al., 1999).

Table 5. Least squared means for Warner-Bratzler shear force values

Effect	Shear Force, kg
Kill (Treat) ^a	0.0001
Fat Thickness ^a	0.09
<u>Treatment</u> ^a	0.25
McGregor-Calf	4.67
McGregor-Low	4.21
Uvalde-Low	4.46
Uvalde-High	4.17
Overton-Low, Rotational	4.33
Overton-Low, Continuous	4.42
Overton-High, Rotational	4.33
Overton-High, Continuous	4.38
<u>Storage Day</u> ^a	0.0001
1	4.82 ^{de}
7	4.95 ^e
14	4.01 ^c
21	4.49 ^d
28	4.07 ^c
35	3.88 ^c
Treatment x Storage Day ^a	0.15
Root Mean Square Error ^b	1.03

^a P-value from analysis of variance tables.

^b From analysis of variance table.

^{cde} Mean values within a column and followed by the same letter are not significantly different ($P > 0.05$).

Smith et al. (1976) reported that lamb carcasses with greater quantities of subcutaneous and intramuscular fat chilled more slowly and produced more tender meat than lamb carcasses with limited amounts of fat. Bowling et al. (1978) found that increasing subcutaneous fat thickness from 1 mm to 7 mm was associated with decreases in shear force values. Tatum et al. (1982) proposed that carcasses need at least 7.6 mm to 10.2 mm of 12th rib subcutaneous fat for greater assurance of palatability. In other research where at least a minimum fat thickness of 7 mm was reached, there was no difference in shear force values of steaks from carcasses of either forage- or grain-fed animals (Dinius and Cross, 1978; Skelley et al., 1978; Crouse et al., 1984; Crouse and Seideman, 1984; McCaughey and Clipflef, 1996; Myers et al., 1999). All treatment groups in this study exceeded the minimum recommended fat thickness of 7 mm (Table 3).

Storage day affected shear force values (Table 5). Warner-Bratzler shear force decreased as length of storage increased. Steaks were toughest at 1 and 7 days of storage with Warner-Bratzler shear force values decreasing after 7 days of storage (Figure 2). Decreased Warner-Bratzler shear force values with increased storage have been extensively documented (Koochmaraie, 1988). This phenomenon has been defined as meat aging and these results were as expected based on past literature (Calkins and Seideman, 1988; French et al., 2001a). Our hypothesis was that nutrition/environment treatments might affect the rate of meat aging. Therefore, we tested the interaction of treatment by storage (Table 5). This interaction was not significant ($P=0.15$). Similarly, French et al. (2001a) reported no interaction between dietary treatment and

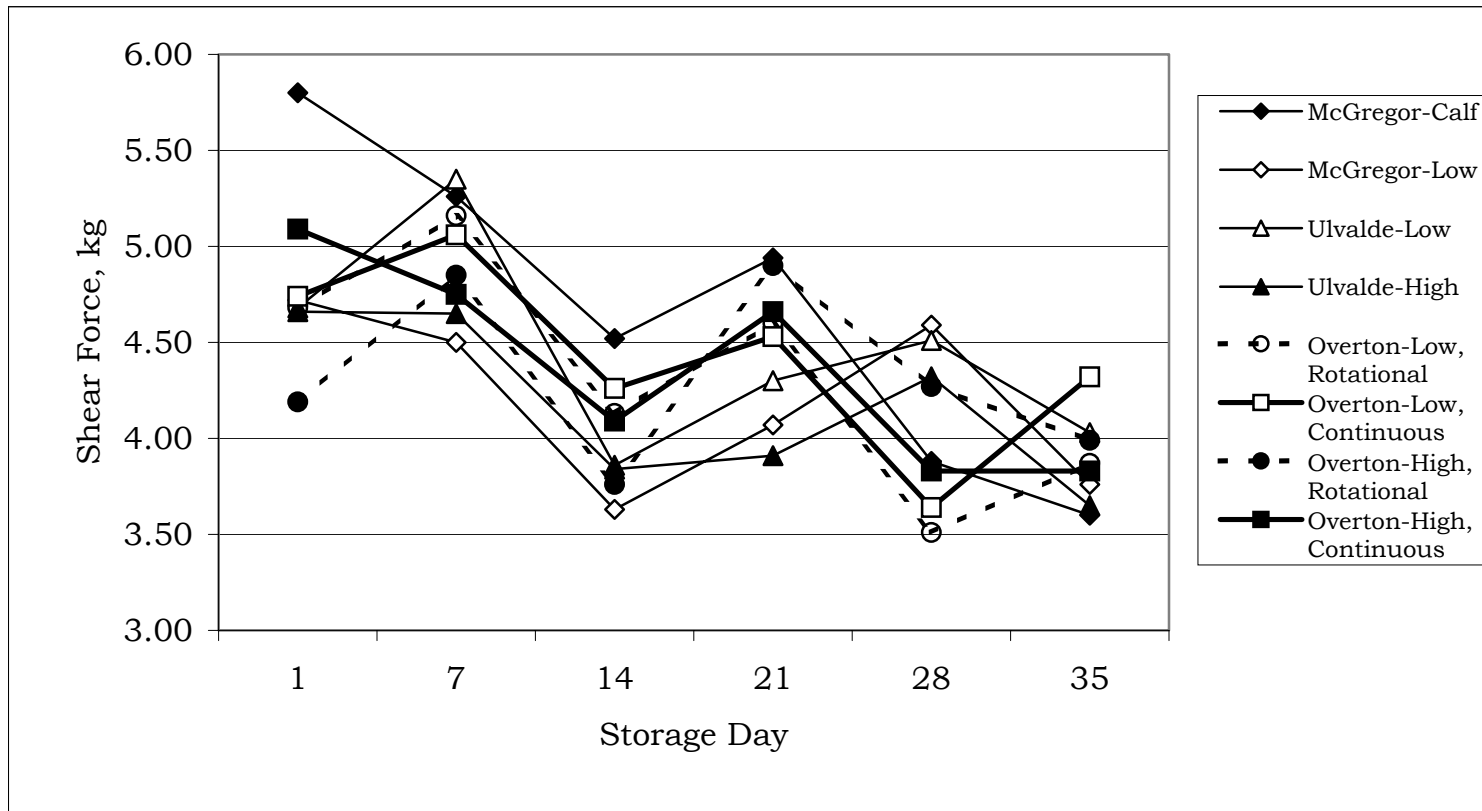


Figure 2. Least squared means for storage day by treatment interaction of Warner-Bratzler shear force (P=0.15)

aging time postmortem for Warner-Bratzler shear force values. Linear regression analysis indicated steaks from the McGregor-Calf treatment tended to have higher intercepts suggesting steaks from this group tended to be tougher at 1 day aging time (Table 6). Slopes of shear force values were affected by treatment ($P=0.02$) with steaks from the McGregor-Calf treatment having a more negative overall slope indicating a greater response to aging.

Nutritional/environmental treatment did not affect sensory panel perception of myofibrillar tenderness, connective tissue amount, overall tenderness, or overall flavor intensity (Table 7). Juiciness was affected by treatment ($P=0.0001$). Steaks from steers fed in the Uvalde-High, Uvalde-Low, and McGregor-Calf treatments were perceived to be more juicy than steaks from steers fed in the McGregor-Low; Overton-Low, Continuous; Overton-High, Rotational; and Overton-High, Continuous treatments.

Percentage of cook loss was also affected by treatment ($P=0.0001$). Steaks from steers in the Uvalde-High treatment had the highest overall amount of cook loss. Steaks from the steers in the McGregor-Calf; Overton-Low, Rotational; Overton-High, Rotational; and Overton-High, Continuous treatments had less cook loss than steaks from steers in the McGregor-Low; Overton-Low, Continuous; and Uvalde-High treatments.

Cooked beefy/brothy, cooked beef fat, serum/bloody off-flavor, sour off-flavor, browned off-flavor, and chemical off-flavor sensory flavor attributes were affected by environmental/nutritional treatments (Table 8). Steaks from the Overton-Low, Continuous and Overton-High, Rotational steers had less cooked beefy/brothy flavor than steaks from McGregor-Calf, McGregor-Low, and

Table 6. Regression coefficients for Warner-Bratzler shear force values for steaks stored 1, 7, 14, 21, 28, and 35 days

Effect	Intercept	Slope
Kill(Treat) ^a	0.19	0.55
Fat Thickness ^a	0.10	0.10
<u>Treatment</u> ^a	0.20	0.02
McGregor-Calf	5.68 ^d	-0.06 ^d
McGregor-Low	4.47 ^c	-0.02 ^c
Uvalde-Low	5.22 ^{cd}	-0.03 ^c
Uvalde-High	4.86 ^{cd}	-0.04 ^c
Overton-Low, Rotational	4.84 ^{cd}	-0.03 ^c
Overton-Low, Continuous	5.19 ^{cd}	-0.04 ^c
Overton-High, Rotational	4.52 ^c	-0.01 ^c
Overton-High, Continuous	4.98 ^{cd}	-0.04 ^c
Root Mean Square Error ^b	1.03	0.03

^a P-value from analysis of variance tables.

^b From analysis of variance table.

^{cd} Means within a column and followed by the same letter are not significantly different (P > 0.05).

Table 7. Least squared means for sensory attributes of juiciness, myofibrillar tenderness, connective tissue, overall tenderness, overall flavor intensity, and cook loss

Effect	Juiciness ^c	Myofibrillar Tenderness ^c	Connective Tissue Tissue, % ^c	Overall Tenderness ^c	Overall Flavor Intensity ^c	Cook Loss
Kill (Treat) ^a	0.0001	0.0001	0.0003	0.0001	0.46	0.0001
Fat Thickness ^a	0.74	0.54	0.58	0.57	0.16	0.77
<u>Treatment</u> ^a	0.0001	0.14	0.10	0.11	0.17	0.0001
McGregor-Calf	5.4 ^{fg}	6.1	6.8	6.2	5.0	11.61 ^e
McGregor-Low	4.7 ^d	5.8	6.5	5.8	5.1	14.20 ^g
Uvalde-Low	5.3 ^{fg}	6.4	6.9	6.3	5.3	11.82 ^{ef}
Uvalde-High	5.5 ^g	6.6	7.2	6.6	5.2	16.83 ^h
Overton-Low, Rotational	5.2 ^{efg}	6.2	6.7	6.2	5.1	11.30 ^e
Overton-Low, Continuous	5.0 ^{def}	5.9	6.7	5.9	5.1	13.52 ^{fg}
Overton-High, Rotational	4.9 ^{de}	6.4	7.0	6.4	5.3	10.50 ^{de}
Overton-High, Continuous	5.0 ^{de}	6.0	6.6	6.0	5.1	9.48 ^d
<u>Storage Day</u> ^a	0.88	0.87	0.34	0.87	0.10	0.80
1	5.1	6.1	6.7	6.2	5.2	13.23
7	5.2	6.2	6.9	6.2	5.4	12.15
14	5.1	6.2	6.7	6.2	5.0	11.92
21	5.1	6.0	6.7	6.0	5.0	12.19
28	5.1	6.2	6.8	6.2	5.0	12.03
35	5.0	6.3	7.1	6.3	5.2	12.92
Treatment x Storage Day ^a	0.89	0.99	0.96	0.99	0.44	1.00
Root Mean Square Error ^b	0.83	1.21	1.00	1.20	0.65	4.394

^a P-value from analysis of variance tables.

^b From analysis of variance table.

^c Sample evaluated on an 8-point scale for myofibrillar tenderness (8=extremely tender, 1=extremely tough), juiciness (8=extremely juicy, 1=extremely tough), connective tissue amount (8=none, 1=abundant), overall tenderness (8=extremely tender, 1=extremely tough), and overall flavor intensity (8=extremely intense, 1=extremely bland).

^{defg} Means within a column and followed by the same letter are not significantly different (P > 0.05).

Table 8. Least squared means for cooked beefy/brothy flavor, cooked beef fat flavor, bitter off-flavor, metallic off-flavor, serum/bloody off-flavor, sour off-flavor, browned off-flavor, and chemical off-flavor sensory flavor attributes

Effect	Cooked Beefy/ Brothy ^c	Cooked Beef Fat ^c	Bitter Off-flavor ^c	Metallic Off-flavor ^c	Serum/ Bloody Off-flavor ^c	Sour Off-flavor ^c	Browned Off-flavor ^c	Chemical Off-flavor ^c
Kill (Treat) ^a	0.01	0.09	0.89	0.69	0.49	0.002	0.74	0.003
Fat Thickness ^a	0.07	0.17	0.99	0.19	0.96	0.45	0.85	0.92
<u>Treatment</u> ^a	0.05	0.003	0.50	0.86	0.03	0.0007	0.05	0.001
McGregor-Calf	4.2 ^e	1.4 ^{ef}	0.5	1.7	1.1 ^{ef}	0.9 ^d	0.4 ^{ef}	0.0 ^d
McGregor-Low	4.1 ^e	1.2 ^{de}	0.5	1.8	0.8 ^{de}	1.1 ^{de}	0.5 ^f	0.3 ^{de}
Uvalde-Low	4.1 ^{de}	1.6 ^f	0.5	1.7	1.1 ^{ef}	1.5 ^e	0.1 ^d	0.3 ^{de}
Uvalde-High	4.2 ^e	1.3 ^{de}	0.8	1.7	1.0 ^{def}	1.3 ^{de}	0.3 ^{def}	0.3 ^{de}
Overton-Low, Rotational	4.0 ^{de}	1.2 ^{de}	0.6	1.6	1.1 ^{ef}	1.5 ^e	0.3 ^{def}	0.5 ^{ef}
Overton-Low, Continuous	3.7 ^d	1.1 ^d	0.6	1.6	0.9 ^{def}	1.2 ^{de}	0.1 ^{de}	0.4 ^e
Overton-High, Rotational	3.7 ^d	1.2 ^{de}	0.7	1.8	0.6 ^d	1.6 ^e	0.5 ^{ef}	0.8 ^f
Overton-High, Continuous	4.0 ^{de}	1.3 ^{de}	0.4	1.7	1.2 ^f	0.9 ^d	0.3 ^{def}	0.3 ^{de}
<u>Storage Day</u> ^a	0.43	0.0003	0.92	0.14	0.37	0.84	0.79	0.55
1	4.1	1.4 ^{ef}	0.6	1.8	0.8	1.3	0.2	0.3
7	4.2	1.6 ^f	0.6	1.6	1.1	1.3	0.3	0.4
14	3.9	1.2 ^{de}	0.5	1.8	1.1	1.3	0.4	0.4
21	3.8	1.1 ^d	0.5	1.5	0.8	1.2	0.2	0.6
28	4.0	1.0 ^d	0.6	1.6	0.9	1.2	0.4	0.3
35	4.0	1.4 ^{ef}	0.5	1.7	1.1	1.1	0.3	0.2
Treatment x Storage Day ^a	0.84	0.53	0.77	0.87	0.67	0.87	0.82	0.37
Root Mean Square Error ^b	0.84	0.61	0.72	0.65	0.83	0.99	0.75	0.88

^a P-value from analysis of variance tables.

^b From analysis of variance table.

^c Sample evaluated on an 8-point scale for flavor intensity (8=extremely intense, 1=extremely bland).

^{defg} Mean values within a column and followed by the same letter are not significantly different (P > 0.05).

Uvalde-High steers. Steaks from Overton-Low, Continuous steers had less cooked beef fat flavor than McGregor-Calf and Uvalde-Low steers.

There was no difference due to treatment for perception of bitter and metallic off-flavors. Highest perception of serum/bloody off-flavor was found in steaks from the Overton-High, Continuous treatment and was greater than that found in steaks from McGregor-Low and Overton-High, Rotational steers. Sour off-flavor in steaks from the Uvalde-Low; Overton-Low, Rotational; and Overton-High, Rotational treatments was greater than in steaks from McGregor-Calf and Overton-High, Continuous steers. Brownded off-flavor in steaks from the McGregor-Low treatment was greater than in steaks from Uvalde-Low and Overton-Low, Continuous treatments. Chemical off-flavor was highest in steaks from the Overton-Low, Rotational treatment, but not different than steaks from the Overton-High, Rotational treatment. Flavor characteristics of longissimus steaks were affected by environmental and nutritional factors; however, there is no obvious trend across sensory attributes in differences between treatments. Off-flavors were low in steaks from steers in the study and treatments did not impact off-flavors in a negative way. However, the McGregor calf-fed steers tended to not have higher levels of any of the off-flavors and for some flavor attributes, steers fed in Overton were slightly higher. These data suggest that nutritional/environmental treatments did not impact beef flavor.

Forage feeding of cattle has been shown to negatively impact flavor of meat as compared to grain-fed beef (Bowling et al., 1977; Reagan et al., 1977; Bowling et al., 1978; Skelley et al., 1978; Brown et al., 1979; Westerling and Hedrick, 1979; Schroeder et al., 1980; Davis et al., 1981; Dolezal et al., 1982;

Melton et al., 1982; Hedrick et al., 1983; Larick et al., 1987; Mitchell et al., 1991; Bennett et al., 1995; Mandell et al., 1997; Mandell et al., 1998; Vestergaard et al., 2000). However, forage feeding followed by feeding a high concentrate diet for 60-100 days has been shown to increase flavor desirability and decrease incidence of off-flavors (Harrison et al., 1978; Westerling and Hedrick, 1979; Schroeder et al., 1980; Larick et al., 1987; Vestergaard et al., 2000). Schroeder et al. (1980) noted that steaks from steers fed two different combinations of native grass, forage sorghum, and crested wheatgrass followed by 104 days of a high concentrate diet had improved flavor desirability over steaks from steers that were only fed a forage diet. Myers et al. (1999) observed no difference in off-flavor between steaks from steers fed 82 days on pasture followed by 222 days of a grain diet as compared to steaks from steers that were continuously fed a grain diet for 265 days.

Overall, environment and nutrition had little impact on eating quality. Treatment group did not affect Warner-Bratzler shear force values and sensory panel tenderness scores. It appears that steers may be fed forage diets followed by grain feeding to a similar fat thickness endpoint and produce steaks that are similar in palatability to grain-fed steers.

Simple correlation coefficients between variables were calculated and are presented in Tables 9, 10, 11, 12, and 13. There were few significant correlations between Warner-Bratzler shear force and live animal, carcass quality, and carcass yield characteristics with the exception of shear force values after 28 days aging. Shear force of steaks after 28 days aging was related to stocker phase average daily gain (0.25); adjusted fat thickness (0.24);

Table 9. Simple correlation coefficients between Warner-Bratzler shear force and live animal average daily gains

Warner-Bratzler Shear Force by Storage Day	Average Daily Gain Stocker Phase, kg/day	Average Daily Gain Feedlot Phase, kg/day
Shear force at 1 day	0.14	-0.15
Shear force at 7 days	-0.04	0.11
Shear force at 14 days	0.17	-0.10
Shear force at 21 days	0.10	0.09
Shear force at 28 days	0.25 ^a	0.09
Shear force at 35 days	0.06	0.19

^a Significantly different from 0.00 at P<0.05.

Table 10. Simple correlation coefficients between Warner-Bratzler shear force and carcass yield grade traits

Warner-Bratzler Shear Force by Storage Day	Adjusted Fat Thickness, mm	Ribeye Area, cm ²	Hot Carcass Weight, kg	Kidney, Pelvic, Heart Fat, %	Yield Grade
Shear force at 1 day	-0.13	0.05	-0.20	0.01	-0.19
Shear force at 7 days	-0.08	0.01	0.00	0.11	-0.04
Shear force at 14 days	0.02	0.01	-0.09	-0.00	-0.03
Shear force at 21 days	0.07	0.09	-0.06	0.10	-0.02
Shear force at 28 days	0.24 ^a	-0.19	-0.04	0.49 ^a	0.32 ^a
Shear force at 35 days	0.08	-0.07	0.05	0.23 ^a	0.14

^a Significantly different from 0.00 at P<0.05.

Table 11. Simple correlation coefficients between Warner-Bratzler shear force and carcass quality grade traits

Warner-Bratzler Shear Force by Storage Day	Marbling	Lean Maturity	Skeletal Maturity	Overall Maturity	Quality Grade
Shear force at 1 day	-0.20	0.23 ^a	-0.13	0.15	-0.24 ^a
Shear force at 7 days	-0.15	-0.07	-0.14	-0.12	-0.12
Shear force at 14 days	-0.22 ^a	0.10	-0.06	0.07	-0.19
Shear force at 21 days	0.02	0.15	0.01	0.13	0.02
Shear force at 28 days	-0.10	0.19	-0.35 ^a	0.03	-0.14
Shear force at 35 days	-0.17	0.19	-0.15	0.10	-0.14

^a Significantly different from 0.00 at P<0.05.

Table 12. Simple correlation coefficients between Warner-Bratzler shear force and sensory attributes

Warner-Bratzler Shear Force by Storage Day	Juiciness	Myofibrillar Tenderness	Connective Tissue Amount	Overall Tenderness	Overall Flavor Intensity
Shear force at 1 day	-0.45 ^a	-0.69 ^a	-0.66 ^a	-0.68 ^a	-0.50 ^a
Shear force at 7 days	-0.09	-0.43 ^a	-0.52 ^a	-0.63 ^a	-0.22 ^a
Shear force at 14 days	-0.11	-0.36 ^a	-0.32 ^a	-0.35 ^a	-0.07
Shear force at 21 days	-0.09	-0.51 ^a	-0.52 ^a	-0.51 ^a	-0.34 ^a
Shear force at 28 days	-0.19	-0.41 ^a	-0.36 ^a	-0.41 ^a	-0.40 ^a
Shear force at 35 days	-0.14	-0.57 ^a	-0.58 ^a	-0.58 ^a	-0.11

^a Significantly different from 0.00 at P<0.05.

Table 13. Simple correlation coefficients between adjusted fat thickness; ribeye area (REA); kidney, pelvic, heart fat (KPH); hot carcass weight (HCW); yield grade (YG); marbling (Marb); lean maturity (LM); skeletal maturity (SM); overall maturity (OM); quality grade (QG); and live animal average daily gains(ADG)

Trait	Adjusted Fat Thickness	REA, cm ²	KPH, %	HCW, kg	YG	Marb	LM	SM	OM	QG	Stocker ADG kg/day	Feedlot ADG kg/day
Adjusted Fat Thickness	--											
Ribeye Area, cm ²	0.09	--										
KPH, %	0.52 ^a	0.03	--									
Hot Carcass Weight, kg	0.48 ^a	0.54 ^a	0.31 ^a	--								
Yield Grade	0.86 ^a	-0.32 ^a	0.60 ^a	0.44 ^a	--							
Marbling	0.53 ^a	0.20	0.27 ^a	0.40 ^a	0.42 ^a	--						
Lean Maturity	-0.20	-0.10	-0.10	-0.22 ^a	-0.17	-0.25 ^a	--					
Skeletal Maturity	0.00	0.36 ^a	-0.34 ^a	0.32 ^a	-0.14	0.09	0.07	--				
Overall Maturity	-0.17	0.05	-0.22 ^a	-0.06	-0.20	-0.19	0.91 ^a	0.47 ^a	--			
Quality Grade	0.54 ^a	0.25 ^a	0.31 ^a	0.48 ^a	0.44 ^a	0.93 ^a	-0.41 ^a	0.14	-0.31 ^a	--		
Stocker ADG kg/day	0.26 ^a	0.10	0.38 ^a	0.25 ^a	0.27 ^a	0.22	0.28 ^a	0.02	0.23 ^a	0.22	--	
Feedlot ADG kg/day	0.38 ^a	0.26 ^a	0.37 ^a	0.61 ^a	0.38 ^a	0.14	-0.32 ^a	-0.03	-0.29 ^a	0.25 ^a	-0.18	--

^a Significantly different from 0.00 at P<.05.

kidney, pelvic, and heart fat percentage (0.49); yield grade (0.32); and skeletal maturity (-0.35). The positive correlation between shear force and stocker average daily gain was surprising because it indicated that steers that grew faster in the stocker phase had higher shear force values at day 28 of aging. Of note, marbling was not significantly correlated with Warner-Bratzler shear force except for shear force after 14 days aging (Table 11).

Predictably, shear force values were negatively related to sensory perception of myofibrillar tenderness, connective tissue amount, and overall tenderness (Table 12). Overall flavor intensity was also negatively related to shear force after 1, 7, 21, and 28 days of aging. Shear force values after one day aging were correlated (-0.45) with juiciness.

Average Daily Gain

Average daily gain, a measurement of growth rate, has been shown to effect carcass characteristics and meat palatability (Aberle et al., 1981; Wu et al., 1981; Miller et al., 1983; Fishell et al., 1985; Allingham et al., 1998). It has been hypothesized that rate of gain post-weaning and prior to feedlot feeding may impact carcass characteristics and meat palatability (Miller et al., 1987). Cattle that grow faster during pre-finishing have larger ribeye areas, heavier carcasses, and more subcutaneous fat and produce more tender meat (Miller et al., 1987). Additionally, average daily gain during feedlot feeding prior to slaughter has been shown to also impact carcass characteristics and meat palatability (Aberle et al., 1981). Treatments in this study induced varying rates of gain post-weaning during the stocker phase and feedlot phase.

To determine if average daily gain affected carcass characteristics and meat palatability, data were analyzed for variables where average daily gain was included as a covariate. Average daily gain during the stocker phase was a significant ($P < 0.05$) covariate in the model for kidney, pelvic, heart fat and juiciness. Average daily gain during the feedlot phase was a significant ($P < 0.05$) covariate in the model for ribeye area, hot carcass weight, myofibrillar tenderness, and overall tenderness.

Regression coefficients were determined between average daily gain and significant carcass characteristics and sensory traits (Table 14). Percentage of kidney, pelvic, and heart fat was negatively related to average daily gain in the stocker phase. Steers that had lower average daily gain during the stocker phase produced carcasses with higher KPH values. Juiciness was positively related to the average daily gain during the stocker phase.

Ribeye area and hot carcass weight were positively related to average daily gain during the feedlot phase; i.e. steers with higher daily gains during feedlot feeding produced carcasses with larger ribeye areas and higher hot carcass weights. Myofibrillar tenderness and overall tenderness as rated by a sensory panel were negatively related to average daily gain during the feedlot phase or steers with higher daily gains during the feedlot phase had lower myofibrillar and overall tenderness scores. Least squared means with average daily gain included as a covariate are presented in Table 15.

Previous research has documented that cattle with higher average daily gains prior to slaughter produce heavier carcasses with larger ribeye areas (Aberle et al., 1981; Fishell et al., 1985). However, it was surprising that in this

Table 14. Regression coefficients between stocker phase average daily gain; feedlot phase average daily gain; kidney, pelvic, and heart fat; ribeye area; hot carcass weight; juiciness; myofibrillar tenderness; and overall tenderness.

Dependent Variable	Independent Variable	Intercept	Beta-Value
Stocker Phase Average Daily Gain	Kidney, Pelvic, Heart Fat %	2.50	-0.301
Stocker Phase Average Daily Gain	Juiciness	3.74	0.29
Feedlot Phase Average Daily Gain	Ribeye Area	64.39	5.437
Feedlot Phase Average Daily Gain	Hot Carcass Weight	177.45	40.102
Feedlot Phase Average Daily Gain	Myofibrillar Tenderness	7.24	-0.314
Feedlot Phase Average Daily Gain	Overall Tenderness	7.13	-0.299

Table 15. Least squared means for juiciness; myofibrillar tenderness; overall tenderness; kidney, pelvic, heart fat; ribeye area; and hot carcass weight with either stocker average daily gain or feedlot average daily gain included in the model as a covariate.

Effect	Juiciness ^c	Myofibrillar Tenderness ^c	Overall Tenderness ^c	Kidney, Pelvic Heart Fat, %	Ribeye Area, cm ²	Hot Carcass Weight, kg
Kill (Treat) ^a	0.0002	0.0005	0.0008	0.0001	0.80	0.02
Fat Thickness ^a	0.37	0.18	0.21	0.0001	0.92	0.0006
Stocker Phase ADG	0.02	--	--	0.02	--	--
Feedlot Phase ADG	--	0.01	0.01	--	0.01	0.0001
<u>Treatment</u> ^a	0.0001	0.04	0.03	0.0006	0.054	0.0004
McGregor-Calf	--	5.7 ^{de}	5.7 ^d	--	87.33	368.3 ^f
McGregor-Low	4.8 ^d	5.6 ^d	5.6 ^d	2.43 ^f	80.84	342.0 ^e
Uvalde-Low	5.6 ^f	6.4 ^f	6.4 ^e	2.07 ^{de}	73.32	299.0 ^d
Uvalde-High	5.4 ^{ef}	6.4 ^f	6.4 ^e	2.88 ^g	79.26	340.8 ^{ef}
Overton-Low, Rotational	5.4 ^{ef}	6.6 ^f	6.6 ^e	1.77 ^d	75.00	295.8 ^d
Overton-Low, Continuous	5.0 ^{de}	6.1 ^{def}	6.1 ^{de}	2.24 ^{ef}	83.08	317.7 ^{de}
Overton-High, Rotational	4.7 ^d	6.4 ^f	6.4 ^e	2.35 ^{ef}	80.02	334.4 ^e
Overton-High, Continuous	4.7 ^d	6.2 ^{ef}	6.2 ^{de}	2.65 ^{fg}	84.65	334.2 ^e
<u>Storage Day</u> ^a	0.0001	0.56	0.60			
1	4.8 ^d	6.1	6.1			
7	5.4 ^f	6.2	6.2			
14	5.3 ^{ef}	6.1	6.1			
21	5.2 ^{ef}	6.1	6.1			
28	5.0 ^{de}	6.3	6.3			
35	4.8 ^d	6.4	6.4			
Treatment x Storage Day ^a	0.76	1.00	1.00			
Root Mean Square Error ^b	0.80	1.22	1.21	0.34	8.79	24.24

^a P-value from analysis of variance tables.

^b From analysis of variance table.

^c Sample evaluated on an 8-point scale for myofibrillar tenderness (8=extremely tender, 1=extremely tough), juiciness (8=extremely juicy, 1=extremely tough), and overall tenderness (8=extremely tender, 1=extremely tough).

^{defg} Means within a column and followed by the same letter are not significantly different (P > 0.05).

study steers with higher feedlot average daily gains had slightly tougher meat. Previous research has reported the reverse relationship (Aberle et al., 1981; Fishell et al., 1985). French et al. (2001a) reported carcass growth rate to be negatively correlated with ($P < 0.05$) Warner-Bratzler shear force (-0.31). Feedlot average daily gains would expectantly be related to stocker average gains; however, the simple correlation coefficient between stocker and feedlot average daily gain was -0.18 ($P = 0.08$). Brigman (2001) also reported a low correlation of -0.14 ($P > 0.05$) between average daily gain during pasture feeding and during subsequent feedlot feeding.

In other studies, steers varying in average daily gain during the stocker phase were not also placed in different environments (Aberle et al., 1981; Fishell et al., 1985). As our study induced varying rates of gain through nutritional and environmental effects, it can be hypothesized that adaptation to environmental and nutritional stress during the rapid growth phase that coincided with the stocker phase may have impacted how steers adjusted or compensated for growth during the feedlot phase. This adjustment during the stocker phase may have reduced the steers' ability to compensate for lower rates of gain during the stocker phase when they were subsequently placed on high-energy diets during the feedlot phase. As steers in this study were of the same biological type and managed similarly until weaning, these results imply that nutritional and environmental stress during the stocker phase may change the traditional relationship in compensatory growth during feedlot feeding.

CHAPTER V

CONCLUSIONS

Diverse environmental/nutritional conditions during pre-finishing affected growth rate in the stocker and feedlot phase. After finishing steers on a high concentrate diet to a constant fat thickness endpoint in the feedlot, steers varied in live weight. Environmental/nutritional treatments affected ribeye area; kidney, pelvic, and heart fat; and hot carcass weight, but did not influence final yield grade. Treatment had minimal effects on quality grade characteristics. Genetically similar cattle fed to a constant fat thickness endpoint should have realigned to a similar fat deposition and amount of muscling while receiving a high concentrate ration. Despite lack of statistical significance, lower marbling scores and smaller ribeye areas in the Uvalde-Low carcasses suggest that environmental or nutritional stress during the stocker phase may have reduced the steers' ability to compensate in the feedlot phase.

There was no significant affect by treatment on Warner-Bratzler shear force values or sensory perception of myofibrillar tenderness, overall tenderness, connective tissue amount, or overall flavor intensity. Storage day affected shear force values, but the interaction between treatment and storage day was not significant ($P=0.15$). Juiciness and cook loss were affected by treatment ($P=0.0001$). Despite differences in average daily gain during the stocker and feedlot phase, it appears that steers may be fed to a similar fat thickness endpoint and produce steaks similar in palatability for grain-fed steers.

LITERATURE CITED

- Aberle, E.D., E.S. Reeves, M.D. Judge, R.E. Hunsley, and T.W. Perry. 1981. Palatability and muscle characteristics of cattle with controlled weight gain: time on a high-energy diet. *J. Anim. Sci.* 52(4): 757-763.
- Ackerman, C.J., H.T. Purvis, II, G.W. Horn, S.I. Paisley, R.R. Reuter, and T.N. Bodine. 2001. Performance of light vs heavy steers grazing plains old world bluestem at three stocking rates. *J. Anim. Sci.* 79: 493-499.
- Allingham, P.G., G.S. Harper, and R.A. Hunter. 1998. Effect of growth path on the tenderness of the *semitendinosus* muscle of the Brahman-cross steers. *Meat Sci.* 48: 65-73.
- AMSA. 1995. Guidelines for cookery and sensory evaluation of meat. American Meat Science Association, Chicago, IL.
- Bennett, L.L., A.C. Hammond, M.J. Williams, W.E. Kunkle, D.D. Johnson, R.L. Preston, and M.F. Miller. 1995. Performance, carcass yield, and carcass quality characteristics of steers finished on rhizoma peanut (*Arachis glabrata*)-tropical grass pasture or concentrate. *J. Anim. Sci.* 73: 1881-1887.
- Berry, B.W., K.F. Leddy, J. Bond, T.S. Rumsey, and A.C. Hammond. 1988. Effects of silage diets and electrical stimulation on the palatability, cooking and pH characteristics of beef loin steaks. *J. Anim. Sci.* 66: 892-900.
- Bidner, T.D., R.E. Montgomery, C.P. Bagley, and K.W. McMillin. 1985. Influence of electrical stimulation, blade tenderization and postmortem

- vacuum aging upon the acceptability of beef finished on forage or grain. *J. Anim. Sci.* 61(3): 584-589.
- Bidner, T.D., A.R. Schupp, A.B. Mohamad, N.C. Rumore, R.E. Montgomery, C.P. Bagley, and K.W. McMillin. 1986. Acceptability of beef from Angus-Hereford or Angus-Hereford-Brahman steers finished on all-forage or a high-energy diet. *J. Anim. Sci.* 62: 381-387.
- Bidner, T.D., A.R. Schupp, R.E. Montgomery, and J.C. Carpenter, Jr. 1981. Acceptability of beef finished in all-forage, forage-plus-grain, or high energy diets. *J. Anim. Sci.* 53(5): 1183-1187.
- Bowling, R.A., J.K. Riggs, G.C. Smith, Z.L. Carpenter, R.L. Reddish, and O.D. Butler. 1978. Production, carcass, and palatability characteristics of steers produced by different management systems. *J. Anim. Sci.* 46 (2): 333-340.
- Bowling, R.A., G.C. Smith, Z.L. Carpenter, T.R. Dutson, and W.M. Oliver. 1977. Comparison of forage-finished and grain-finished carcasses. *J. Anim. Sci.* 45 (2): 209-215.
- Brigman, I.T. 2001. Effects of pre-feedlot growth rate on carcass composition and meat tenderness. M.S. Thesis, Texas A&M University, College Station.
- Brown, H.G., S.L. Melton, M.J. Riemann, and W.R. Backus. 1979. Effects of energy intake and feed source on chemical changes and flavor of ground beef during frozen storage. *J. Anim. Sci.* 48(2): 338-347.

- Bruce, H.L., R.O. Ball, and D.N. Mowat. 1991. Effects of compensatory growth on protein metabolism and meat tenderness of beef steers. *Can. J. Anim. Sci.* 71: 659-668.
- Calkins, C.R., and S.C. Seideman. 1988. Relationships among calcium-dependent protease, cathepsins B and H, meat tenderness and the response of muscle to aging. *J. Anim. Sci.* 66: 1186-1193.
- Carstens, G.E. 1995. Compensatory growth in beef cattle. Oklahoma Agricultural Experiment Station. Symposium: Intake by Feedlot Cattle. p. 70-84.
- Coleman, S.W., and T.D.A. Forbes. 1998. Herbage characteristics and performance of steers grazing old world bluestem. *J. Range Manage.* 51(4): 399-407.
- Coleman, S.W., R.H. Gallavan, C.B. Williams, W.A. Phillips, J.D. Volesky, S. Rodriguez, and G.L. Bennett. 1995. Silage or limit-fed grain growing diets for steers: I. Growth and carcass quality. *J. Anim. Sci.* 73: 2609-2620.
- Crouse, J.D., H.R. Cross, and S.C. Seideman. 1984. Effects of a grass or grain diet on the quality of three beef muscles. *J. Anim. Sci.* 58(3): 619-625.
- Crouse, J.D., H.R. Cross, and S.C. Seideman. 1985a. Effects of sex condition, genotype, diet and carcass electrical stimulation on the collagen content and palatability to two bovine muscles. *J. Anim. Sci.* 60(5): 1228-1234.
- Crouse, J.D., L.V. Cundiff, R.M. Koch, M. Koohmaraie, and S.C. Seideman. 1989. Comparisons of *Bos indicus* and *Bos taurus* inheritance for

- carcass beef characteristics and meat palatability. *J. Anim. Sci.* 67: 2661-2668.
- Crouse, J.D., C.L. Ferrell, and L.V. Cundiff. 1985b. Effects of sex condition, genotype and diet on bovine growth and carcass characteristics. *J. Anim. Sci.* 60(5): 1219-1227.
- Crouse, J.D., and S.C. Seideman. 1984. Effect of high temperature conditioning on beef from grass or grain fed cattle. *Journal of Food Science.* 49: 157-160.
- Davis, G.W., A.B. Cole, Jr., W.R. Backus, and S.L. Melton. 1981. Effect of electrical stimulation on carcass quality and meat palatability of beef from forage- and grain-finished steers. *J. Anim. Sci.* 53(3): 651-657.
- Dikeman, M.E., G.B. Reddy, V.H. Arthaud, H.J. Tuma, R.W. Koch, R.W. Mandigo, and J.B. Axe. 1986. Longissimus muscle quality, palatability and connective tissue histological characteristics of bulls and steers fed different energy levels and slaughtered at four ages. *J. Anim. Sci.* 63:92-101.
- Dinius, D.A., and H.R. Cross. 1978. Feedlot performance, carcass characteristics and meat palatability of steers fed concentrate for short periods. *J. Anim. Sci.* 47(5): 1109-1113.
- Dolezal, H.G., G.C. Smith, J.W. Savell, and Z.L. Carpenter. 1982. Effect of time-on-feed on the palatability of rib steaks from steers and heifers. *Journal of Food Science.* 47: 368-373.

- Duble, R.L., J.A. Lancaster, and E.C. Holt. 1971. Forage characteristics limiting animal performance on warm-season perennial grasses. *Agron. J.* 63: 795-798.
- Fishell, V.K., E.D. Aberle, M.D. Judge, and T.W. Perry. 1985. Palatability and muscle properties of beef as influenced by preslaughter growth rate. *J. Anim. Sci.* 61(1): 151-157.
- Fortin, A., D.M. Veira, D.A. Froehlich, G. Butler, and J.G. Proulx. 1985. Carcass characteristics and sensory properties of Hereford x Shorthorn bulls and steers fed different levels of grass silage and high moisture barley. *J. Anim. Sci.* 60(6): 1403-1411.
- French, P., E.G. O'Riordan, F.J. Monahan, P.J. Caffrey, M.T. Mooney, D.J. Troy, and A.P. Moloney. 2001a. The eating quality of meat of steers fed grass and/or concentrates. *Meat Sci.* 57: 379-386.
- French, P., E.G. O'Riordan, F.J. Monahan, P.J. Caffrey, M. Vidal, M.T. Mooney, D.J. Troy, and A.P. Moloney. 2000. Meat quality of steers finished on autumn grass, grass silage or concentrate-based diets. *Meat Sci.* 56: 173-180.
- French, P., E.G. O'Riordan, P. O'Kiely, P.J. Caffrey, and A.P. Moloney. 2001b. Intake and growth of steers offered different allowances of autumn grass and concentrates. *Animal Science.* 72: 129-138.
- Guerrero, J.N., B.E. Conrad, E.C. Holt, and H. Wu. 1984. Prediction of animal performance on bermudagrass pasture from available forage. *Agron. J.* 76: 577-580.

- Hall, J.B., and M.C. Hunt. 1982. Collagen solubility of A-maturity bovine longissimus muscle as affected by nutritional regimen. *J. Anim. Sci.* 55(2): 321-328.
- Harrison, A.R., M.E. Smith, D.M. Allen, M.C. Hunt, C.L. Kastner, and D.H. Kropf. 1978. Nutritional regime effects on quality and yield characteristics of beef. *J. Anim. Sci.* 47(2): 383-388.
- Hart, R.H., W.H. Marchant, J.L. Butler, R.E. Hellwig, W.C. McCormick, B.L. Southwell, and G.W. Burton. 1976. Steer gains under six systems of coastal bermudagrass utilization. *J. Range Manage.* 29(5): 372-375.
- Hart, R.H., M.J. Samuel, P.S. Test, and M.A. Smith. 1988. Cattle, vegetation, and economic responses to grazing systems and grazing pressure. *J. Range Manage.* 41(4): 282-286.
- Hedrick, H.B., J.A. Paterson, A.G. Matches, J.D. Thomas, R.E. Morrow, W.C. Stringer, and R.J. Lipsey. 1983. Carcass and palatability characteristics of beef produced on pasture, corn silage and corn grain. *J. Anim. Sci.* 54(4): 791-801.
- Hill, F. 1966. The solubility of intramuscular collagen in meat animals of various ages. *Journal of Food Science.* 31: 161-166.
- Johnson, D.D., R.D. Huffman, S.E. Williams, and D.D. Hargrove. 1990a. Effects of percentage Brahman and Angus breeding, age-season of feeding and slaughter end point on meat palatability and muscle characteristics. *J. Anim. Sci.* 68: 1980-1986.
- Johnson, M.H., C.R. Calkins, R.D. Huffman, D.D. Johnson, and D.D. Hargrove. 1990b. Differences in cathepsin B + L and calcium-dependent protease

- activities among breed type and their relationship to beef tenderness. *J. Anim. Sci.* 68: 2371-2379.
- Jones, R.J., and R.L. Sandland. 1974. The relation between animal gain and stocking rate. *J. Agric. Sci.* 83: 335-342.
- Koohmaraie, M. 1988. The role of endogenous proteases in meat tenderness. *Proceedings of the Reciprocal Meat Conference.* 41: 89-100.
- Koohmaraie, M., A.S. Babiker, A.L. Schroeder, R.A. Merkel, and T.R. Dutson. 1988. Acceleration of postmortem tenderness in ovine carcasses through activation of Ca²⁺-dependent proteases. *Journal of Food Science.* 53(6): 1638-1641.
- Koohmaraie, M., M.P. Kent, S.D. Shackelford, E. Veiseth, and T.L. Wheeler. 2002. Meat tenderness and muscle growth: is there any relationship? *Meat Sci.* 62: 345-352.
- Larick, D.K., H.B. Hedrick, M.E. Bailey, J.E. Williams, D.L. Hancock, G.B. Garner, and R.E. Morrow. 1987. Flavor constituents of beef as influenced by forage- and grain-feeding. *Journal of Food Science.* 52(2): 245-251.
- Leander, R.C., H.B. Hedrick, W.C. Stringer, J.C. Clark, G.B. Thompson, and A.G. Matches. 1978. Characteristics of bovine *longissimus* and *semitendinosus* muscles from grass and grain-fed animals. *J. Anim. Sci.* 46(4): 965-970.
- Lippke, H., T.D.A. Forbes, and W.C. Ellis. 2000. Effects of supplements on growth and forage intake by stocker steers grazing wheat pasture. *J. Anim. Sci.* 78: 1625-1635.

- Mandell, I.B., J.G. Buchanan-Smith, and C.P. Campbell. 1998. Effects of forage vs grain feeding on carcass characteristics, fatty acid composition, and beef quality in Limousin-cross steers when time on feed is controlled. *J. Anim. Sci.* 76: 2619-2630.
- Mandell, I.B., E.A. Gullett, J.G. Buchanan-Smith, and C.P. Campbell. 1997. Effects of diet and slaughter endpoint on carcass composition and beef quality on Charolais cross steers. *Can. J. Anim. Sci.* 77: 403-414.
- May, S.G., H.G. Dolezal, D.R. Gill, F.K. Ray, and D.S. Buchanan. 1992. Effects of days fed, carcass grade traits, and subcutaneous fat removal on postmortem muscle characteristics and beef palatability. *J. Anim. Sci.* 70: 444-453.
- McCaughey, W.P., and R.L. Cliplef. 1996. Carcass and organoleptic characteristics of meat from steers grazed on alfalfa/grass pastures and finished on grain. *Can. J. Anim. Sci.* 76: 149-152.
- Melton, S.L. 1983. Effect of forage feeding on beef flavor. *Food Technol.* 37: 239-248.
- Melton, S.L., M. Amiri, G.W. Davis, and W.R. Backus. 1982. Flavor and chemical characteristics of ground beef from grass-, forage-grain- and grain-finished steers. *J. Anim. Sci.* 55(1): 77-87.
- Meyer, J.H., J.L. Hull, W.H. Weitkamp, and S. Bonilla. 1965. Compensatory growth responses of fattening steers following various low energy intake regimes on hay or irrigated pasture. *J. Anim. Sci.* 24: 29-37.

- Miller, R.K., H.R. Cross, J.D. Crouse, and J.D. Tatum. 1987. The influence of diet and time on feed on carcass traits and quality. *Meat Sci.* 19: 303-313.
- Miller, R.K., J.D. Tatum, H.R. Cross, R.A. Bowling, and R.P. Clayton. 1983. Effects of carcass maturity on collagen solubility and palatability of beef from grain-finished steers. *Journal of Food Science.* 48: 484-486.
- Mitchell, G.E., A.W. Reed, and S.A. Rogers. 1991. Influence of feeding regimen on the sensory qualities and fatty acid contents of beef steaks. *Journal of Food Science.* 56(4): 1102-1103.
- Morgan, J.B., J.W. Savell, D.S. Hale, R.K. Miller, D.B. Griffin, H.R. Cross, and S.D. Shackelford. 1991. National beef tenderness survey. *J. Anim. Sci.* 69: 3274-3283.
- Myers, S.E., D.B. Faulkner, T.G. Nash, L.L. Berger, D.F. Parrett, and F.K. McKeith. 1999. Performance and carcass traits of early-weaned steers receiving either a pasture growing period or a finishing diet at weaning. *J. Anim. Sci.* 77: 311-322.
- Nishimura, T., A. Hattori, and K. Takahashi. 1995. Structural weakening of intramuscular connective tissue during conditioning of beef. *Meat Sci.* 39: 127-133.
- Nishimura, T., A. Hattori, and K. Takahashi. 1996. Relationship between degradation of proteoglycans and weakening of the intramuscular connective tissue during postmortem aging of beef. *Meat Sci.* 42: 251-260.

- Nishimura, T., A. Hattori, and K. Takahashi. 1998. Changes in mechanical strength of intramuscular connective tissue during postmortem aging of beef. *J. Anim. Sci.* 76: 528-532.
- O'Connor, S.F., J.D. Tatum, D.M. Wulf, R.D. Green, and G.C. Smith. 1997. Genetic effects on beef tenderness in *Bos indicus* composite and *Bos taurus* cattle. *J. Anim. Sci.* 75: 1822-1830.
- Oltjen, R.R., T.S. Rumsey, and P.A. Putnam. 1971. All-forage diets for finishing beef cattle. *J. Anim. Sci.* 32(2): 327-333.
- Owens, F.N., P. Dubeski, and C.F. Hanson. 1993. Factors that alter the growth and development of ruminants. *J. Anim. Sci.* 71: 3138-3150.
- Owens, F.N., and B.A. Gardner. 1999. Ruminant nutrition and meat quality. *Effects of Nutrition on Meat Quality. Proceedings of the Reciprocal Meat Conference.* 52: 25-36.
- Reagan, J.O., J.A. Carpenter, F.T. Bauer, and R.S. Lowrey. 1977. Packaging and palatability characteristics of grass and grass-grain fed beef. *J. Anim. Sci.* 45(4): 716-721.
- Rumsey, T.S., J. Bond, J.W. Berry, A.C. Hammond, and D.A. Dinius. 1987. Performance and carcass characteristics of feedlot steers fed all silage diets. *Nutr. Rep. Int.* 35(4): 847-863.
- SAS. 1991. *SAS User Guide: Statistics* (4th ed.) SAS Inst. Inc., Cary, NC.
- Schaake, S.L., G.C. Skelley, E. Halpin, L.W. Grimes, R.B. Brown, D.L. Cross, and C.E. Thompson. 1993. Carcass and meat sensory traits of steers finished on fescue and clover, summer forage, or for different periods in drylot. *J. Anim. Sci.* 71: 3199-3205.

- Schroeder, J.W., D.A. Cramer, R.A. Bowling, and C.W. Cook. 1980. Palatability, shelflife and chemical differences between forage- and grain-finished beef. *J. Anim. Sci.* 50(5): 852-859.
- Shackelford, S.D., M. Koohmaraie, L.V. Cundiff, K.E. Gregory, G.A. Rohrer, and J.W. Savell. 1994. Heritabilities and phenotypic and genetic correlations for bovine postrigor calpastatin activity, intramuscular fat content, Warner-Bratzler shear force, retail product yield, and growth rate. *J. Anim. Sci.* 72: 857-863.
- Shackelford, S.D., M. Koohmaraie, M.F. Miller, J.D. Crouse, and J.O. Reagan. 1991a. An evaluation of tenderness of the longissimus muscle of Angus by Hereford versus Brahman crossbred heifers. *J. Anim. Sci.* 69: 171-177.
- Shackelford, S.D., M. Koohmaraie, G. Whipple, T.L. Wheeler, M.F. Miller, J.D. Crouse, and J.O. Reagan. 1991b. Predictors of beef tenderness: development and verification. *Journal of Food Science.* 56(5): 1130-1135, 1140.
- Sherbeck, J.A., J.D. Tatum, T.G. Field, J.B. Morgan, and G.C. Smith. 1995. Feedlot performance, carcass traits, and palatability traits of Hereford and Hereford x Brahman steers. *J. Anim. Sci.* 73: 3613-3620.
- Skelley, G.C., R.L. Edwards, F.B. Wardlaw, and A.K. Torrence. 1978. Selected high forage rations and their relationship to beef quality, fatty acids and amino acids. *J. Anim. Sci.* 47(5): 1102-1108.

- Smith, G.C., T.R. Dutson, R.L. Hostetler, and Z.L. Carpenter. 1976. Fatness, rate of chilling and tenderness of lamb. *Journal of Food Science*. 41: 748-756.
- Smith, G.M., J.D. Crouse, R.W. Mandigo, and K.L. Neer. 1977. Influence of feeding regime and biological type on growth, composition and palatability of steers. *J. Anim. Sci.* 45(2): 236-253.
- Stanton, C., and N. Light. 1987. The effects of conditioning on meat collagen: part 1-Evidence for gross *in situ* proteolysis. *Meat Sci.* 21: 249-265.
- Stanton, C., and N. Light. 1988. The effects of conditioning on meat collagen: part 2-Direct biochemical evidence for proteolytic damage in insoluble collagen after conditioning. *Meat Sci.* 21: 179-199.
- Stanton, C., and N. Light. 1990. The effects of conditioning on meat collagen: part 3-Evidence for proteolytic damage to endomysial collagen after conditioning. *Meat Sci.* 21: 249-265.
- Tatum, J.D., G.C. Smith, and Z.L. Carpenter. 1982. Interrelationships between marbling, subcutaneous fat thickness and cooked beef palatability. *J. Anim. Sci.* 54(4): 777-784.
- USDA. 1996. Institutional meat purchasing specifications for fresh beef products. Agriculture Marketing Service, USDA, Washington, DC.
- USDA. 1997. Official United States standards for grades of carcass beef. Agriculture Marketing Service, USDA, Washington, DC.
- Utley, P.R., R.E. Hellwig, and W.C. McCormick. 1975. Finishing beef cattle for slaughter on all-forage diets. *J. Anim. Sci.* 40(6): 1034-1038.

- Vestergaard, M., M. Therkildsen, P. Henckel, L.R. Jensen, H.R. Anderson, and K. Sejrsen. 2000. Influence of feeding intensity, grazing and finishing feeding on meat and eating quality of young bulls and the relationship between muscle fibre characteristics, fibre fragmentation and meat tenderness. *Meat Sci.* 54: 187-195.
- Warrington, B.G., J.W. Holloway, F.M. Rouquette, Jr., and C.R. Long. 1999. Mexican steer performance in south and east Texas. TAES BL-L2. Texas A&M Research and Extension Center, Uvalde.
- Westerling, D.B., and H.B. Hedrick. 1979. Fatty acid composition of bovine lipids as influenced by diet, sex, and anatomical location and relationship to sensory characteristics. *J. Anim. Sci.* 48(6): 1343-1348.
- Wheeler, T.L., J.W. Savell, H.R. Cross, D.K. Lunt, and S.B. Smith. 1990. Mechanisms associated with the variation in tenderness of meat from Brahman and Hereford cattle. *J. Anim. Sci.* 68: 4206-4220.
- Whipple, G., M. Koohmaraie, M.E. Dikeman, J.D. Crouse, M.C. Hunt, and R.D. Klemm. 1990. Evaluation of attributes that affect longissimus muscle tenderness in *Bos taurus* and *Bos indicus* cattle. *J. Anim. Sci.* 68: 2716-2768.
- Wu, J.J., C.L. Kastner, M.C. Hunt, D.H. Kropf, and D.M. Allen. 1981. Nutritional effects on beef collagen characteristics and palatability. *J. Anim. Sci.* 53(5): 1256-1261.
- Wulf, D.M., J.D. Tatum, R.D. Green, J.B. Morgan, B.L. Golden, and G.C. Smith. 1996. Genetic influences on beef longissimus palatability in Charolais- and Limousin-sired steers and heifers. *J. Anim. Sci.* 74: 2394-2405.

Xiong, Y.L., W.G. Moody, S.P. Blanchard, G. Liu, and W.R. Burris. 1996. Post-mortem proteolytic and organoleptic changes in hot-boned muscle from grass- and grain-fed and zeranol-implanted cattle. *Food Research International*. 29: 27-34.

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Appendix 1. ANOVA table for beginning study live weight, kg

Source	DF	Sum of Squares	Mean Square		
Model	8	6539.01107084	817.37638386		
Error	83	69964.54624141	842.94634026		
Corrected Total	91	76503.55731225			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	4456.51010124	4456.51010124	5.29	0.0240
PTREAT	7	2743.83877516	391.97696788	0.47	0.8572

Appendix 2. ANOVA table for stocker phase end weight, kg

Source	DF	Sum of Squares	Mean Square		
Model	7	63148.39501368	9021.19928767		
Error	69	64080.69696871	928.70575317		
Corrected Total	76	127229.09198240			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	12454.87187333	12454.87187333	13.41	0.0005
PTREAT	6	52244.76661695	8707.46110283	9.38	0.0001

Appendix 3. ANOVA table for stocker phase average daily gain, kg/day

Source	DF	Sum of Squares	Mean Square		
Model	7	4.28107026	0.61158147		
Error	69	1.82588584	0.02646211		
Corrected Total	76	6.10695610			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	0.20577666	0.20577666	7.78	0.0068
PTREAT	6	4.10945765	0.68490961	25.88	0.0001

Appendix 4. ANOVA table for feedlot phase starting weight, kg

Source	DF	Sum of Squares	Mean Square		
Model	8	100383.77405695	12547.97175712		
Error	83	94587.21947521	1139.60505392		
Corrected Total	91	194970.99353216			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	16510.70721135	16510.70721135	14.49	0.0003
PTREAT	7	68179.45079908	9739.92154273	8.55	0.0001

Appendix 5. ANOVA table for feedlot phase end weight, kg

Source	DF	Sum of Squares	Mean Square		
Model	8	144592.08510007	18074.01063751		
Error	83	148244.95002390	1786.08373523		
Corrected Total	91	292837.03512398			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	42880.98635631	42880.98635631	24.01	0.0001
PTREAT	7	77111.89191915	11015.98455988	6.17	0.0001

Appendix 6. ANOVA table for feedlot phase average daily gain, kg/day

Source	DF	Sum of Squares	Mean Square		
Model	8	13.65620756	1.70702594		
Error	83	5.80934670	0.06999213		
Corrected Total	91	19.46555426			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	1.18898986	1.18898986	16.99	0.0001
PTREAT	7	10.76367941	1.53766849	21.97	0.0001

Appendix 7. ANOVA table for days on feed

Source	DF	Sum of Squares	Mean Square		
Model	8	132697.57886391	16587.19735799		
Error	83	24599.67113609	296.38157995		
Corrected Total	91	157297.25000000			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	1980.63295748	1980.63295748	6.68	0.0115
PTREAT	7	114736.22511885	16390.88930269	55.30	0.0001

Appendix 8. ANOVA table for adjusted backfat thickness, mm

Source	DF	Sum of Squares	Mean Square		
Model	12	3028.21509562	252.35125797		
Error	544	11534.26692779	21.20269656		
Corrected Total	556	14562.48202341			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
KILL(TREAT)	7	1627.90790202	232.55827172	10.97	0.0001
TREAT	5	963.10225714	192.62045143	9.08	0.0001

Appendix 9. ANOVA table for ribeye area, cm²

Source	DF	Sum of Squares	Mean Square		
Model	12	9883.48155710	823.62346309		
Error	544	41060.73559143	75.47929337		
Corrected Total	556	50944.21714852			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
KILL(TREAT)	7	817.83613373	116.83373339	1.55	0.1486
TREAT	5	6533.77571853	1306.75514371	17.31	0.0001

Appendix 10. ANOVA table for hot carcass weight, kg

Source	DF	Sum of Squares	Mean Square		
Model	12	197486.49275988	16457.20772999		
Error	544	599183.84716602	1101.44089553		
Corrected Total	556	796670.33992591			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
KILL(TREAT)	7	27444.34996208	3920.62142315	3.56	0.0009
TREAT	5	173521.03051404	34704.20610281	31.51	0.0001

Appendix 11. ANOVA table for kidney, pelvic, and heart fat, %

Source	DF	Sum of Squares	Mean Square		
Model	12	150.86666504	12.57222209		
Error	544	86.77312850	0.15950943		
Corrected Total	556	237.63979354			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
KILL(TREAT)	7	48.23576334	6.89082333	43.20	0.0001
TREAT	5	30.60243186	6.12048637	38.37	0.0001

Appendix 12. ANOVA table for yield grade

Source	DF	Sum of Squares	Mean Square		
Model	12	102.51612217	8.54301018		
Error	544	252.60375046	0.46434513		
Corrected Total	556	355.11987263			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
KILL(TREAT)	7	35.65921487	5.09417355	10.97	0.0001
TREAT	5	27.99812003	5.59962401	12.06	0.0001

Appendix 13. ANOVA table for marbling

Source	DF	Sum of Squares	Mean Square		
Model	12	558766.64531316	46563.88710943		
Error	543	4150065.54893144	7642.84631479		
Corrected Total	555	4708832.19424459			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
KILL(TREAT)	7	186629.73644733	26661.39092105	3.49	0.0011
TREAT	5	293984.21919885	58796.84383977	7.69	0.0001

Appendix 14. ANOVA table for lean maturity

Source	DF	Sum of Squares	Mean Square		
Model	12	67614.93440489	5634.57786707		
Error	544	360664.77834197	662.98672489		
Corrected Total	556	428279.71274686			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
KILL(TREAT)	7	15754.64515176	2250.66359311	3.39	0.0015
TREAT	5	29731.92781126	5946.38556225	8.97	0.0001

Appendix 15. ANOVA table for skeletal maturity

Source	DF	Sum of Squares	Mean Square		
Model	12	48374.97110949	4031.24759246		
Error	544	43243.34127830	79.49143617		
Corrected Total	556	91618.31238779			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
KILL(TREAT)	7	10400.66257240	1485.80893891	18.69	0.0001
TREAT	5	17176.58358568	3435.31671714	43.22	0.0001

Appendix 16. ANOVA table for overall maturity

Source	DF	Sum of Squares	Mean Square		
Model	12	27029.96688753	2252.49724063		
Error	544	109138.07620044	200.62146360		
Corrected Total	556	136168.04308797			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
KILL(TREAT)	7	8813.68820904	1259.09831558	6.28	0.0001
TREAT	5	11533.92261252	2306.78452250	11.50	0.0001

Appendix 17. ANOVA table for quality grade

Source	DF	Sum of Squares	Mean Square		
Model	12	163113.90763008	13592.82563584		
Error	543	1343518.91485231	2474.25214522		
Corrected Total	555	1506632.82248239			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
KILL(TREAT)	7	52985.12300000	7569.30328571	3.06	0.0036
TREAT	5	95917.57211148	19183.51442230	7.75	0.0001

Appendix 18. ANOVA table for Warner-Bratzler shear force, kg

Source	DF	Sum of Squares	Mean Square		
Model	57	217.71729678	3.81960170		
Error	462	493.97178254	1.06920299		
Corrected Total	519	711.68907932			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	3.09630595	3.09630595	2.90	0.0895
KILL(PTREAT)	9	60.85069996	6.76118888	6.32	0.0001
PTREAT	7	9.70774594	1.38682085	1.30	0.2498
STOREDAY	5	74.66025962	14.93205192	13.97	0.0001
STOREDAY*PTREAT	35	47.10297483	1.34579928	1.26	0.1519

Appendix 19. ANOVA table for juiciness

Source	DF	Sum of Squares	Mean Square		
Model	49	315.30335057	6.43476226		
Error	3104	4991.79018145	1.60817983		
Corrected Total	3153	5307.09353202			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	21.67745509	21.67745509	13.48	0.0002
KILL(TREAT)	7	33.65432583	4.80776083	2.99	0.0040
PANEL	6	156.40509960	26.06751660	16.21	0.0001
TREAT	5	27.94983871	5.58996774	3.48	0.0039
STOREDAY	5	8.89253704	1.77850741	1.11	0.3550
STOREDAY*TREAT	25	32.49347335	1.29973893	0.81	0.7355

Appendix 20. ANOVA table for myofibrillar tenderness

Source	DF	Sum of Squares	Mean Square		
Model	49	440.09706041	8.98157266		
Error	3104	5438.86457561	1.75221153		
Corrected Total	3153	5878.96163602			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	28.21709706	28.21709706	16.10	0.0001
KILL(TREAT)	7	137.50171116	19.64310159	11.21	0.0001
PANEL	6	203.10986977	33.85164496	19.32	0.0001
TREAT	5	11.38261158	2.27652232	1.30	0.2612
STOREDAY	5	6.14170328	1.22834066	0.70	0.6227
STOREDAY*TREAT	25	33.01589381	1.32063575	0.75	0.8040

Appendix 21. ANOVA table for connective tissue amount

Source	DF	Sum of Squares	Mean Square		
Model	49	1197.51818250	24.43914658		
Error	3104	2810.05727724	0.90530196		
Corrected Total	3153	4007.57545973			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	3.27859333	3.27859333	3.62	0.0571
KILL(TREAT)	7	65.50838957	9.35834137	10.34	0.0001
PANEL	6	1025.80898924	170.96816487	188.85	0.0001
TREAT	5	8.08049996	1.61609999	1.79	0.1124
STOREDAY	5	4.09850581	0.81970116	0.91	0.4764
STOREDAY*TREAT	25	21.09230001	0.84369200	0.93	0.5602

Appendix 22. ANOVA table for overall tenderness

Source	DF	Sum of Squares	Mean Square		
Model	49	412.72506172	8.42296044		
Error	3104	3773.31583873	1.21563010		
Corrected Total	3153	4186.04090044			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	13.33523935	13.33523935	10.97	0.0009
KILL(TREAT)	7	119.22475138	17.03210734	14.01	0.0001
PANEL	6	199.18876815	33.19812803	27.31	0.0001
TREAT	5	10.64333760	2.12866752	1.75	0.1196
STOREDAY	5	5.24122167	1.04824433	0.86	0.5056
STOREDAY*TREAT	25	29.62497764	1.18499911	0.97	0.4984

Appendix 23. ANOVA table for overall flavor intensity

Source	DF	Sum of Squares	Mean Square
Model	49	942.69821205	19.23873902
Error	3104	1458.81637260	0.46997950
Corrected Total	3153	2401.51458465	

Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	2.97185011	2.97185011	6.32	0.0120
KILL(TREAT)	7	33.39592257	4.77084608	10.15	0.0001
PANEL	6	798.75280230	133.12546705	283.26	0.0001
TREAT	5	3.	0.72416261	1.54	0.1737
STOREDAY	5	3.67945688	0.73589138	1.57	0.1663
STOREDAY*TREAT	25	12.25548752	0.49021950	1.04	0.4042

Appendix 24. ANOVA table for cook loss, %

Source	DF	Sum of Squares	Mean Square
Model	63	8807.07067628	139.79477264
Error	474	9154.54615142	19.31338851
Corrected Total	537	17961.61682770	

Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	1.01748673	1.01748673	0.05	0.8186
KILL(PTREAT)	9	3713.69820483	412.63313387	21.37	0.0001
PANEL	6	64.20169005	10.70028167	0.55	0.7669
PTREAT	7	1391.21196164	198.74456595	10.29	0.0001
STOREDAY	5	26.91898694	5.38379739	0.28	0.9247
STOREDAY*PTREAT	35	136.34112185	3.89546062	0.20	1.0000

Appendix 25. ANOVA table for cooked beefy/brothy flavor

Source	DF	Sum of Squares	Mean Square
Model	49	449.15945177	9.16651942
Error	3104	2121.01936878	0.68331810
Corrected Total	3153	2570.17882055	

Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	5.54643347	5.5464334	8.12	0.0044
KILL(TREAT)	7	41.98912495	5.99844642	8.78	0.0001
PANEL	6	296.87581532	49.47930255	72.41	0.0001
TREAT	5	14.39146861	2.87829372	4.21	0.0008
STOREDAY	5	3.20672593	0.64134519	0.94	0.4547
STOREDAY*TREAT	25	17.26180558	0.69047222	1.01	0.4483

Appendix 26. ANOVA table for cooked beef fat flavor

Source	DF	Sum of Squares	Mean Square
Model	49	347.75936134	7.09712982
Error	3104	1258.16613010	0.40533703
Corrected Total	3153	1605.92549144	

Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	9.60201894	9.60201894	23.69	0.0001
KILL(TREAT)	7	18.42703611	2.63243373	6.49	0.0001
PANEL	6	271.69192107	45.28198684	111.71	0.0001
TREAT	5	10.01705399	2.00341080	4.94	0.0002
STOREDAY	5	4.82944425	0.96588885	2.38	0.0362
STOREDAY*TREAT	25	12.56863463	0.50274539	1.24	0.1901

Appendix 27. ANOVA table for bitter off-flavor

Source	DF	Sum of Squares	Mean Square		
Model	49	924.65178685	18.87044463		
Error	3108	1818.01699086	0.58494755		
Corrected Total	3157	2742.66877771			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	1.71919714	1.71919714	2.94	0.0866
KILL(TREAT)	7	2.81511208	0.40215887	0.69	0.6828
PANEL	6	845.06417115	140.84402853	240.78	0.0001
TREAT	5	0.55593380	0.11118676	0.19	0.9664
STOREDAY	5	0.79524868	0.15904974	0.27	0.9287
STOREDAY*TREAT	25	8.06515806	0.32260632	0.55	0.9650

Appendix 28. ANOVA table for metallic off-flavor

Source	DF	Sum of Squares	Mean Square		
Model	49	1142.71011138	23.32061452		
Error	3108	1422.04638007	0.45754388		
Corrected Total	3157	2564.75649145			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	0.32454265	0.32454265	0.71	0.3997
KILL(TREAT)	7	4.06007708	0.58001101	1.27	0.2623
PANEL	6	1055.06252031	175.84375338	384.32	0.0001
TREAT	5	1.59883629	0.31976726	0.70	0.6243
STOREDAY	5	2.28855501	0.45771100	1.00	0.4159
STOREDAY*TREAT	25	6.87878404	0.27515136	0.60	0.9401

Appendix 29. ANOVA table for serum/bloody off-flavor

Source	DF	Sum of Squares	Mean Square		
Model	49	1335.56863294	27.25650271		
Error	3108	2263.51211437	0.72828575		
Corrected Total	3157	3599.08074731			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	1.57288731	1.57288731	2.16	0.1418
KILL(TREAT)	7	15.35059679	2.19294240	3.01	0.0037
PANEL	6	1180.21044918	196.70174153	270.09	0.0001
TREAT	5	4.61228542	0.92245708	1.27	0.2754
STOREDAY	5	2.87453605	0.57490721	0.79	0.5572
STOREDAY*TREAT	25	19.00672637	0.76026905	1.04	0.4031

Appendix 30. ANOVA table for sour off-flavor

Source	DF	Sum of Squares	Mean Square		
Model	49	1231.77768239	25.13832005		
Error	3108	3618.32523085	1.16419731		
Corrected Total	3157	4850.10291324			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	0.63386163	0.63386163	0.54	0.4606
KILL(TREAT)	7	112.03873406	16.00553344	13.75	0.0001
PANEL	6	952.52158393	158.75359732	136.36	0.0001
TREAT	5	14.75291820	2.95058364	2.53	0.0269
STOREDAY	5	2.25398982	0.45079796	0.39	0.8579
STOREDAY*TREAT	25	19.05528147	0.76221126	0.65	0.9029

Appendix 31. ANOVA table for browned off-flavor

Source	DF	Sum of Squares	Mean Square		
Model	49	187.41922476	3.82488214		
Error	3108	1641.05449278	0.52800981		
Corrected Total	3157	1828.47371754			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	0.24876912	0.24876912	0.47	0.4925
KILL(TREAT)	7	7.29778408	1.04254058	1.97	0.0548
PANEL	6	141.43670025	23.57278337	44.64	0.0001
TREAT	5	8.18168261	1.63633652	3.10	0.0086
STOREDAY	5	1.44112009	0.28822402	0.55	0.7416
STOREDAY*TREAT	25	13.97064263	0.55882571	1.06	0.3842

Appendix 32. ANOVA table for chemical off-flavor

Source	DF	Sum of Squares	Mean Square		
Model	49	268.85888030	5.48691592		
Error	3107	2623.47561447	0.84437580		
Corrected Total	3156	2892.33449477			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	2.48652663	2.48652663	2.94	0.0863
KILL(TREAT)	7	53.05615630	7.57945090	8.98	0.0001
PANEL	6	130.37776959	21.72962827	25.73	0.0001
TREAT	5	20.31449465	4.06289893	4.81	0.0002
STOREDAY	5	4.83710101	0.96742020	1.15	0.3338
STOREDAY*TREAT	25	22.97205021	0.91888201	1.09	0.3466

Appendix 33. ANOVA table for juiciness with stocker phase average daily gain included as a covariate

Source	DF	Sum of Squares	Mean Square		
Model	52	87.28755146	1.67860676		
Error	398	257.33772570	0.64657720		
Corrected Total	450	344.62527716			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
STADG	1	3.85713572	3.85713572	5.97	0.0150
MADJFAT	1	0.52722942	0.52722942	0.82	0.3671
KILL(PTREAT)	9	21.37217998	2.37468666	3.67	0.0002
PTREAT	6	21.23970829	3.53995138	5.47	0.0001
STOREDAY	5	20.81956221	4.16391244	6.44	0.0001
STOREDAY*PTREAT	30	15.66914357	0.52230479	0.81	0.7563

Appendix 34. ANOVA table for myofibrillar tenderness with feedlot phase average daily gain included as a covariate

Source	DF	Sum of Squares	Mean Square		
Model	58	133.83604648	2.30751804		
Error	484	719.16211190	1.48587213		
Corrected Total	542	852.99815838			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
FLADG	1	9.80289388	9.80289388	6.60	0.0105
MADJFAT	1	2.66778770	2.66778770	1.80	0.1809
KILL(PTREAT)	9	44.75516405	4.97279601	3.35	0.0005
PTREAT	7	22.62817602	3.23259657	2.18	0.0351
STOREDAY	5	5.79612503	1.15922501	0.78	0.5643
STOREDAY*PTREAT	35	20.53507304	0.58671637	0.39	0.9994

Appendix 35. ANOVA table for overall tenderness with feedlot phase average
daily gain included as a covariate

Source	DF	Sum of Squares	Mean Square		
Model	58	127.72552280	2.20216419		
Error	484	704.24501127	1.45505168		
Corrected Total	542	831.97053407			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
FLADG	1	8.90705723	8.90705723	6.12	0.0137
MADJFAT	1	2.30116790	2.30116790	1.58	0.2092
KILL(PTREAT)	9	42.58712919	4.73190324	3.25	0.0008
PTREAT	7	22.65869399	3.23695628	2.22	0.0311
STOREDAY	5	5.33988089	1.06797618	0.73	0.5982
STOREDAY*PTREAT	35	20.34758408	0.58135955	0.40	0.9993

Appendix 36. ANOVA table for kidney, pelvic, and heart fat with stocker phase
average daily gain included as a covariate

Source	DF	Sum of Squares	Mean Square		
Model	17	19.18702046	1.12864826		
Error	59	6.71090162	0.11374410		
Corrected Total	76	25.89792208			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
STADG	1	0.70753236	0.70753236	6.22	0.0155
MADJFAT	1	2.19150188	2.19150188	19.27	0.0001
KILL(PTREAT)	9	5.62231542	0.62470171	5.49	0.0001
PTREAT	6	3.19826066	0.53304344	4.69	0.0006

Appendix 37. ANOVA table for ribeye area, cm², with feedlot phase average daily gain included as a covariate

Source	DF	Sum of Squares	Mean Square		
Model	18	2668.32172356	148.24009575		
Error	73	5639.63943440	77.25533472		
Corrected Total	91	8307.96115796			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
FLADG	1	507.05280460	507.05280460	6.56	0.0125
MADJFAT	1	0.83072135	0.83072135	0.01	0.9177
KILL(PTREAT)	9	415.41932559	46.15770284	0.60	0.7951
PTREAT	7	1134.06115480	162.00873640	2.10	0.0544

Appendix 38. ANOVA table for hot carcass weight, kg, with feedlot phase average daily gain included as a covariate

Source	DF	Sum of Squares	Mean Square		
Model	18	89355.43858492	4964.19103250		
Error	73	42900.30330782	587.67538778		
Corrected Total	91	132255.74189274			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
FLADG	1	27582.64090978	27582.64090978	46.94	0.0001
MADJFAT	1	7487.53343009	7487.53343009	12.74	0.0006
KILL(PTREAT)	9	12202.34470685	1355.81607854	2.31	0.0242
PTREAT	7	18046.46550361	2578.06650052	4.39	0.0004

Appendix 39. ANOVA table for intercept of linear regression for
Warner-Bratzler shear force, kg

Source	DF	Sum of Squares	Mean Square		
Model	17	28.79916272	1.69406840		
Error	72	76.94899225	1.06873600		
Corrected Total	89	105.74815496			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	3.05661983	3.05661983	2.86	0.0951
KILL(PTREAT)	9	13.89431426	1.54381270	1.44	0.1857
PTREAT	7	10.86864539	1.55266363	1.45	0.1981

Appendix 40. ANOVA table for slope of linear regression for
Warner-Bratzler shear force, kg

Source	DF	Sum of Squares	Mean Square		
Model	17	0.03582079	0.00210711		
Error	72	0.06095462	0.00084659		
Corrected Total	89	0.09677541			
Source	DF	Type III SS	Mean Square	F Value	Pr > F
MADJFAT	1	0.00240017	0.00240017	2.84	0.0966
KILL(PTREAT)	9	0.00670864	0.00074540	0.88	0.5467
PTREAT	7	0.01466424	0.00209489	2.47	0.0247

Appendix 41. Treatment code raw data for the study

Anim	Loc	LocCode	Feed	FeedCode	Breed	Anim	Loc	LocCode	Feed	FeedCode	Breed
69	McGregor	1	Calf	1	AxB	556	McGregor	1	Calf	1	AxB
75	Over	3	Hi	2	AxB	560	McGregor	1	Lo	3	AxB
76	McGregor	1	Calf	1	AxB	573	McGregor	1	Calf	1	AxB
81	Over	3	Lo	3	AxB	575	McGregor	1	Calf	1	AxB
82	McGregor	1	Lo	3	AxB	592	Ulvalde	2	Lo	3	AxB
83	Ulvalde	2	Hi	2	AxB	596	Over	3	Hi	2	AxB
91	McGregor	1	Calf	1	AxB	603	Over	3	Lo	3	AxB
109	Ulvalde	2	Hi	2	AxB	608	Ulvalde	2	Hi	2	AxB
114	Ulvalde	2	Lo	3	AxB	619	Ulvalde	2	Lo	3	AxB
138	McGregor	1	Lo	3	AxB	620	McGregor	1	Calf	1	AxB
141	McGregor	1	Lo	3	AxB	626	Over	3	Lo	3	AxB
156	McGregor	1	Calf	1	AxB	634	Over	3	Lo	3	AxB
176	McGregor	1	Calf	1	AxB	635	Ulvalde	2	Hi	2	AxB
178	Over	3	Lo	3	AxB	646	McGregor	1	Lo	3	AxB
186	Over	3	Hi	2	AxB	654	McGregor	1	Lo	3	AxB
206	Over	3	Hi	2	AxB	657	McGregor	1	Lo	3	AxB
219	Ulvalde	2	Hi	2	AxB	668	Over	3	Lo	3	AxB
225	Ulvalde	2	Hi	2	AxB	681	Over	3	Hi	2	AxB
227	McGregor	1	Lo	3	AxB	683	Over	3	Hi	2	AxB
234	Over	3	Hi	2	AxB	684	Ulvalde	2	Lo	3	AxB
236	Ulvalde	2	Hi	2	AxB	688	Ulvalde	2	Lo	3	AxB
265	Over	3	Lo	3	AxB	699	Ulvalde	2	Hi	2	AxB
274	Over	3	Hi	2	AxB	705	Over	3	Lo	3	AxB
275	Over	3	Lo	3	AxB	718	Over	3	Hi	2	AxB
276	Ulvalde	2	Hi	2	AxB	726	McGregor	1	Calf	1	AxB
282	McGregor	1	Lo	3	AxB	731	Ulvalde	2	Lo	3	AxB
301	Ulvalde	2	Hi	2	AxB	738	McGregor	1	Lo	3	AxB
303	McGregor	1	Calf	1	AxB	749	Over	3	Lo	3	AxB
314	McGregor	1	Calf	1	AxB	751	Ulvalde	2	Hi	2	AxB
328	Ulvalde	2	Hi	2	AxB	757	McGregor	1	Lo	3	AxB
350	Over	3	Hi	2	AxB	771	Ulvalde	2	Lo	3	AxB
353	Over	3	Hi	2	AxB	786	Over	3	Lo	3	AxB
363	McGregor	1	Lo	3	AxB	798	Ulvalde	2	Hi	2	AxB
364	Ulvalde	2	Lo	3	AxB	807	Over	3	Hi	2	AxB
368	Over	3	Lo	3	AxB	832	McGregor	1	Lo	3	Bn
372	Ulvalde	2	Hi	2	AxB	855	McGregor	1	Lo	3	Bn
393	McGregor	1	Calf	1	AxB	863	McGregor	1	Lo	3	Bn
395	Over	3	Hi	2	AxB	875	McGregor	1	Lo	3	BN
398	McGregor	1	Calf	1	AxB	876	Over	3	Lo	3	AxB
404	Ulvalde	2	Lo	3	AxB	884	McGregor	1	Lo	3	BN
414	Ulvalde	2	Hi	2	AxB	891	McGregor	1	Lo	3	BN
434	Over	3	Hi	2	AxB	892	McGregor	1	Lo	3	BN
447	McGregor	1	Lo	3	AxB	900	McGregor	1	Lo	3	AxB
470	Over	3	Lo	3	AxB	902	McGregor	1	Lo	3	Bn
481	McGregor	1	Calf	1	AxB	911	McGregor	1	Lo	3	Bn
484	Ulvalde	2	Hi	2	AxB	917	McGregor	1	Lo	3	Bn
486	McGregor	1	Lo	3	AxB	921	McGregor	1	Lo	3	Bn
494	Over	3	Lo	3	AxB	922	McGregor	1	Lo	3	Bn
496	Ulvalde	2	Hi	2	AxB	923	McGregor	1	Lo	3	Bn
502	Ulvalde	2	Lo	3	AxB	926	Ulvalde	2	Hi	2	AxB
521	Ulvalde	2	Hi	2	AxB	931	Over	3	Hi	2	AxB

Appendix 42. Weaning weight raw data for the study

Anim	LocA	BirthDate	WeanDate	WeanWt	BegWt
069	McGregor	2/21/99	10/27/99	606	656
070	Uvalde	2/21/99	10/27/99	616	678
075	Overton	2/22/99	10/05/99	554	632
076	McGregor	2/22/99	10/26/99	548	580
081	Overton	2/22/99	10/27/99	658	696
082	McGregor	2/22/99	10/27/99	594	616
083	Uvalde	2/22/99	10/13/99	594	680
091	McGregor	2/23/99	10/5/99	496	636
109	Uvalde	2/24/99	10/26/99	592	628
114	Uvalde	2/25/99	10/26/99	604	678
138	McGregor	2/26/99	10/5/99	664	772
141	McGregor	2/25/99	10/26/99	504	570
156	McGregor	2/27/99	10/20/99	618	698
176	McGregor	2/28/99	10/26/99	644	694
178	Overton	2/28/99	10/26/99	606	676
186	Overton	2/28/99	10/26/99	550	634
206	Overton	3/1/99	10/20/99	564	634
219	Uvalde	3/2/99	10/26/99	530	566
225	Uvalde	3/1/99	10/5/99	554	638
227	McGregor	3/1/99	10/5/99	524	634
234	Overton	3/2/99	10/27/99	598	638
236	Uvalde	3/2/99	10/27/99	656	708
265	Overton	3/3/99	10/27/99	596	656
274	Overton	3/4/99	10/20/99	642	724
275	Overton	3/4/99	10/20/99	654	722
276	Uvalde	3/4/99	10/5/99	588	752
282	McGregor	3/4/99	10/13/99	638	718
301	Uvalde	3/5/99	10/13/99	674	734
303	McGregor	3/5/99	10/27/99	628	686
314	McGregor	3/6/99	10/20/99	592	682
328	Uvalde	3/6/99	10/5/99	554	658
350	Overton	3/7/99	10/27/99	632	666
353	Overton	3/7/99	10/26/99	594	664
363	McGregor	3/8/99	10/20/99	606	674
364	Uvalde	3/7/99	10/20/99	632	732
368	Overton	3/8/99	10/5/99	502	626
372	Uvalde	3/8/99	10/13/99	528	622
393	McGregor	3/9/99	10/5/99	538	634
395	Overton	3/9/99	10/5/99	500	626
398	McGregor	3/9/99	10/27/99	594	640
404	Uvalde	3/9/99	10/27/99	598	668
414	Uvalde	3/10/99	10/20/99	622	718
434	Overton	3/10/99	10/26/99	494	552
447	McGregor	3/12/99	10/26/99	536	564
470	Overton	3/13/99	10/13/99	616	738
481	McGregor	3/13/99	10/20/99	554	628
484	Uvalde	3/14/99	10/20/99	605	686
486	McGregor	3/14/99	10/20/99	502	594
494	Overton	3/14/99	10/26/99	566	636
496	Uvalde	3/13/99	10/26/99	474	524

Appendix 42. Continued

Anim	LocA	BirthDate	WeanDate	WeanWt	BegWt
502	Uvalde	3/14/99	10/20/99	504	596
521	Uvalde	3/16/99	10/26/99	524	566
556	McGregor	3/16/99	10/26/99	498	556
560	McGregor	3/18/99	10/20/99	560	654
573	McGregor	3/18/99	10/26/99	438	464
575	McGregor	3/19/99	10/13/99	514	610
592	Uvalde	3/21/99	10/26/99	574	624
596	Overton	3/20/99	10/5/99	484	562
603	Overton	3/22/99	10/20/99	552	612
608	Uvalde	3/22/99	10/26/99	470	526
619	Uvalde	3/23/99	10/5/99	468	594
620	McGregor	3/22/99	10/5/99	516	616
626	Overton	3/24/99	10/26/99	574	618
634	Overton	3/25/99	10/20/99	578	684
635	Uvalde	3/25/99	10/20/99	506	594
646	McGregor	3/26/99	10/13/99	602	686
654	McGregor	3/27/99	10/20/99	594	702
657	McGregor	3/27/99	10/5/99	490	612
668	Overton	3/28/99	10/5/99	486	566
681	Overton	3/29/99	10/26/99	466	538
683	Overton	3/28/99	10/13/99	514	618
684	Uvalde	3/29/99	10/13/99	442	524
688	Uvalde	3/30/99	10/26/99	476	530
699	Uvalde	3/30/99	10/20/99	522	606
705	Overton	3/30/99	10/13/99	506	576
718	Overton	3/31/99	10/13/99	608	678
726	McGregor	4/2/99	10/6/99	492	598
731	Uvalde	4/2/99	10/13/99	524	608
738	McGregor	4/3/99	10/13/99	546	622
749	Overton	4/5/99	10/6/99	518	642
751	Uvalde	4/4/99	10/20/99	532	624
757	McGregor	4/4/99	10/13/99	520	598
771	Uvalde	4/6/99	10/13/99	566	638
786	Overton	4/7/99	10/13/99	494	588
798	Uvalde	4/9/99	10/13/99	556	622
807	Overton	4/10/99	10/6/99	522	678
832	McGregor	4/13/99	10/6/99	366	482
855	McGregor	4/16/99	10/6/99	388	516
863	McGregor	4/17/99	10/6/99	414	524
875	McGregor	4/20/99	10/6/99	376	498
876	Overton	4/20/99	10/13/99	464	528
884	McGregor	4/21/99	10/6/99	394	508
891	McGregor	4/23/99	10/6/99	384	504
892	McGregor	4/23/99	10/6/99	388	504
900	McGregor	4/26/99	10/13/99	442	508
902	McGregor	4/27/99	10/6/99	412	530
911	McGregor	4/29/99	10/6/99	446	616
917	McGregor	4/30/99	10/6/99	404	514
921	McGregor	5/3/99	10/6/99	376	498
922	McGregor	5/3/99	10/6/99	366	458
923	McGregor	5/3/99	10/6/99	386	522
926	Uvalde	5/3/99	10/13/99	456	556
931	Overton	5/4/99	10/27/99	574	668

Appendix 43. Live animal raw data for the study

Animal	Breed	STLoc	STBegDt	STBegWt	TG	StEndDt	StendWt	GRZM	StADG	FLonDate	FLonWt	FoffDate	FoffWt	FLADG	KillDate
82	1X2/2X3	MCG	19991027	594	.	20000412	754	.	0.95	20000412	754	20000917	1110	2.25	20000918
138	BANH	MCG	19991005	664	.	20000412	864	.	1.05	20000412	864	20000816	1320	3.62	20000817
141	2X1/2X1-2X1	MCG	19991026	504	.	20000412	794	.	1.72	20000412	794	20000816	1100	2.43	20000817
227	BANH	MCG	19991005	524	.	20000412	760	.	1.24	20000412	760	20000816	1140	3.02	20000817
282	2X1/2X1	MCG	19991013	638	.	20000412	784	.	0.8	20000412	784	20000816	1200	3.3	20000817
363	NE/AN	MCG	19991020	606	.	20000412	832	.	1.29	20000412	832	20000816	1275	3.52	20000817
447	BANH	MCG	19991026	536	.	20000412	704	.	0.99	20000412	704	20001015	1185	2.59	20001016
486	NE/AN	MCG	19991020	502	.	20000412	738	.	1.35	20000412	738	20000917	1105	2.32	20000918
560	NE/AN	MCG	19991020	560	.	20000412	904	.	1.97	20000412	904	20000816	1290	3.06	20000817
646	2X1/2X1	MCG	19991013	602	.	20000412	874	.	1.49	20000412	874	20000816	1334	3.65	20000817
654	NE/AN	MCG	19991020	594	.	20000412	882	.	1.65	20000412	882	20000816	1350	3.71	20000817
657	BANH	MCG	19991005	490	.	20000412	828	.	1.78	20000412	828	20000816	1266	3.48	20000817
738	2X1/2X1	MCG	19991013	546	.	20000412	704	.	0.87	20000412	704	20000816	1150	3.54	20000817
757	2X1/2X1	MCG	19991013	520	.	20000412	786	.	1.46	20000412	786	20000816	1110	2.57	20000817
900	2X1/2X1	MCG	19991013	442	.	20000412	604	.	0.89	20000412	604	20001015	1010	2.18	20001016
832	BNCL/AN	MCG	19991006	366	.	20000412	656	.	1.53	20000412	656	20000816	1040	3.05	20000817
855	BNCL/AN	MCG	19991006	388	.	20000412	666	.	1.47	20000412	666	20000816	1020	2.81	20000817
863	BNCL/AN	MCG	19991006	414	.	20000412	722	.	1.63	20000412	722	20000816	1146	3.37	20000817
875	BNCL/AN	MCG	19991006	376	.	20000412	662	.	1.51	20000412	662	20001015	1140	2.57	20001016
884	BNCL/AN	MCG	19991006	394	.	20000412	712	.	1.68	20000412	712	20001015	1255	2.92	20001016
891	BNCL/AN	MCG	19991006	384	.	20000412	686	.	1.6	20000412	686	20001015	1110	2.28	20001016
892	BNCL/AN	MCG	19991006	388	.	20000412	706	.	1.68	20000412	706	20001015	1195	2.63	20001016
902	BNCL/AN	MCG	19991006	412	.	20000412	736	.	1.71	20000412	736	20000816	1136	3.17	20000817
911	BNCL/AN	MCG	19991006	446	.	20000412	804	.	1.89	20000412	804	20000816	1350	4.33	20000817
917	BNCL/AN	MCG	19991006	404	.	20000412	742	.	1.79	20000412	742	20000816	1222	3.81	20000817
921	BNCL/AN	MCG	19991006	376	.	20000412	684	.	1.63	20000412	684	20000816	1100	3.3	20000817
922	BNCL/AN	MCG	19991006	366	.	20000412	684	.	1.68	20000412	684	20000816	1108	3.37	20000817
923	BNCL/AN	MCG	19991006	386	.	20000412	746	.	1.9	20000412	746	20000816	1130	3.05	20000817
275	NE/AN	OVT	20000207	741	T	20000522	934	C	1.84	20000530	878	20000917	1425	4.97	20000918
470	2X1/2X1	OVT	20000207	717	T	20000522	876	C	1.51	20000530	796	20001015	1435	4.63	20001016
494	2X1/2X1	OVT	20000207	658	T	20000522	841	C	1.74	20000530	766	20001015	1190	3.07	20001016
603	NE/AN	OVT	20000207	598	T	20000522	767	C	1.61	20000530	704	20000917	1160	4.15	20000918
626	BANH	OVT	20000207	602	T	20000522	707	C	1	20000530	648	20001015	1270	4.51	20001016
705	2X1/2X1	OVT	20000207	557	T	20000522	694	C	1.3	20000530	618	20001015	1105	3.53	20001016
876	2X1/2X1	OVT	20000207	529	T	20000522	642	C	1.08	20000530	592	20001015	1135	3.93	20001016
81	1X2/2X3	OVT	20000207	717	T	20000522	773	R	0.53	20000530	722	20000917	1255	4.85	20000918
178	BANH	OVT	20000207	691	T	20000522	796	R	1	20000530	746	20001015	1380	4.59	20001016
265	1X2/2X1	OVT	20000207	694	T	20000522	753	R	0.56	20000530	716	20001015	1265	3.98	20001016
368	BANH	OVT	20000207	605	T	20000522	662	R	0.54	20000530	626	20000917	1160	4.85	20000918
634	NE/AN	OVT	20000207	718	T	20000522	842	R	1.18	20000530	796	20000917	1370	5.22	20000918
	NEAN/3X2-3X2														
668	NEAN/3X2-3X2	OVT	20000207	579	T	20000522	664	R	0.81	20000530	614	20001015	1140	3.81	20001016
749	NE/AN	OVT	20000207	643	T	20000522	746	R	0.98	20000530	688	20000917	1250	5.11	20000918
786	2X1/2X1	OVT	20000207	567	T	20000522	643	R	0.72	20000530	598	20001015	1210	4.43	20001016

75	BANH	OVT	20000207	611	T	20000522	874	C	2.5	20000530	786	20001015	1290	3.65	20001016
186	NE/AN	OVT	20000207	634	T	20000522	860	C	2.15	20000530	806	20001015	1340	3.87	20001016
274	NE/AN	OVT	20000207	737	T	20000522	980	C	2.31	20000530	904	20000917	1440	4.87	20000918
353	BANH	OVT	20000207	651	T	20000522	922	C	2.58	20000530	844	20000917	1230	3.51	20000918
681	2X1/2X1	OVT	20000207	583	T	20000522	833	C	2.38	20000530	764	20001015	1285	3.78	20001016
683	2X1/2X1	OVT	20000207	615	T	20000522	884	C	2.56	20000530	834	20000917	1240	3.69	20000918
718	2X1/2X1	OVT	20000207	720	T	20000522	878	C	1.5	20000530	838	20000917	1270	3.93	20000918
807	NE/AN	OVT	20000207	695	T	20000522	924	C	2.18	20000530	840	20000917	1325	4.41	20000918
931	1X2/2X1	OVT	20000207	654	T	20000522	902	C	2.36	20000530	804	20000917	1380	5.24	20000918
206	NE/AN	OVT	20000207	641	T	20000522	837	R	1.87	20000530	766	20000917	1220	4.13	20000918
234	1X2/2X1	OVT	20000207	655	T	20000522	852	R	1.88	20000530	822	20001015	1260	3.17	20001016
350	1X2/2X3	OVT	20000207	638	T	20000522	834	R	1.87	20000530	826	20001015	1235	2.96	20001016
395	NEAN/3X2-3X2	OVT	20000207	637	T	20000522	908	R	2.58	20000530	872	20000917	1195	2.94	20000918
434	2X1/2X1	OVT	20000207	606	T	20000522	808	R	1.92	20000530	746	20000917	1170	3.85	20000918
596	NEAN/3X2-3X2	OVT	20000207	590	T	20000522	804	R	2.04	20000530	762	20000917	1140	3.44	20000918
114	NE/AN	UVA	19991210	675	R	20000425	800	.	0.91	20000428	734	20000816	1230	4.51	20000817
364	NE/AN	UVA	19991210	750	R	20000425	840	.	0.66	20000428	766	20000816	1350	5.31	20000817
502	NE/AN	UVA	19991210	620	R	20000425	710	.	0.66	20000428	676	20000816	1180	4.58	20000817
592	BANH	UVA	19991210	635	R	20000425	715	.	0.58	20000428	682	20000816	1050	3.35	20000817
619	NEAN/2X3-2X3	UVA	19991210	625	R	20000425	740	.	0.84	20000428	682	20000816	1140	4.16	20000817
731	2X1/2X1	UVA	19991210	620	R	20000425	685	.	0.47	20000428	642	20000816	1166	4.76	20000817
771	2X1/2X1	UVA	19991210	645	R	20000425	695	.	0.36	20000428	658	20000816	1082	3.85	20000817
404	1X2/2X4	UVA	19991210	685	R	20000425	710	.	0.18	20000428	692	20001015	1120	2.52	20001016
684	2X1/2X1	UVA	19991210	535	R	20000425	580	.	0.33	20000428	554	20001015	970	2.45	20001016
688	BANH	UVA	19991210	540	R	20000425	610	.	0.51	20000428	574	20001015	1060	2.86	20001016
83	2X1/2X1	UVA	20000228	815	T	20000421	822	C	0.13	20000428	794	20000816	1044	2.27	20000817
109	2X1/2X1	UVA	20000228	735	T	20000421	815	C	1.51	20000428	792	20000816	1090	2.71	20000817
219	BANH	UVA	20000228	690	T	20000421	815	C	2.36	20000428	774	20000816	1200	3.87	20000817
225	BANH	UVA	20000228	770	T	20000421	832	C	1.17	20000428	808	20000816	1240	3.93	20000817
236	1X2/2X1	UVA	20000228	855	T	20000421	934	C	1.49	20000428	904	20000816	1310	3.69	20000817
276	BANH	UVA	20000228	860	T	20000421	974	C	2.15	20000428	954	20000816	1390	3.96	20000817
301	2X1/2X1	UVA	20000228	855	T	20000421	921	C	1.25	20000428	902	20000816	1296	3.58	20000817
328	BANH	UVA	20000228	745	T	20000421	839	C	1.77	20000428	786	20000816	1200	3.76	20000817
372	2X1/2X1	UVA	20000228	715	T	20000421	796	C	1.53	20000428	764	20000816	1102	3.07	20000817
414	NE/AN	UVA	20000228	850	T	20000421	929	C	1.49	20000428	904	20000816	1356	4.11	20000817
484	NE/AN	UVA	20000228	810	T	20000421	898	C	1.66	20000428	884	20000816	1340	4.15	20000817
608	2X1/2X1	UVA	20000228	660	T	20000421	770	C	2.08	20000428	726	20000816	1160	3.95	20000817
635	NE/AN	UVA	20000228	765	T	20000421	836	C	1.34	20000428	774	20000816	1150	3.42	20000817
699	NE/AN	UVA	20000228	735	T	20000421	819	C	1.58	20000428	794	20000816	1230	3.96	20000817
751	NE/AN	UVA	20000228	805	T	20000421	861	C	1.06	20000428	824	20000816	1270	4.05	20000817
798	2X1/2X1	UVA	20000228	720	T	20000421	794	C	1.4	20000428	752	20000816	1120	3.35	20000817
926	2X1/2X1	UVA	20000228	665	T	20000421	718	C	1	20000428	680	20000816	1020	3.09	20000817
496	2X1/2X1-2X1	UVA	20000228	630	T	20000421	744	C	2.15	20000428	722	20000917	1070	2.45	20000918
521	BANH	UVA	20000228	710	T	20000421	779	C	1.3	20000428	752	20001015	1165	2.43	20001016
69	1X2/2X1	.	.	656	.	.	.	.	.	19991123	656	20000705	1052	1.76	20000706
76	2X1/2X1	.	.	580	.	.	.	.	.	19991123	580	20000705	880	1.33	20000706

91	NEAN/3X2- 3X2	.	.	636	.	.	.	.	.	19991123	636	20000705	1116	2.13	20000706
156	NE/AN	.	.	698	.	.	.	.	.	19991123	698	20000705	1160	2.05	20000706
176	BANH	.	.	694	.	.	.	.	.	19991123	694	20000705	1204	2.27	20000706
303	1X2/2X1	.	.	986	.	.	.	.	.	19991123	986	20000705	1174	0.84	20000706
314	NE/AN	.	.	682	.	.	.	.	.	19991123	682	20000705	1140	2.04	20000706
393	BANH	.	.	634	.	.	.	.	.	19991123	634	20000705	1130	2.2	20000706
398	1X2/2X3	.	.	640	.	.	.	.	.	19991123	640	20000705	860	0.98	20000706
481	NE/AN	.	.	628	.	.	.	.	.	19991123	628	20000705	1170	2.41	20000706
556	2X1/2X1	.	.	556	.	.	.	.	.	19991123	556	20000705	1050	2.2	20000706
573	2X1/2X1	.	.	464	.	.	.	.	.	19991123	464	20000705	824	1.6	20000706
575	2X1/2X1	.	.	610	.	.	.	.	.	19991123	610	20000705	966	1.58	20000706
620	BANH	.	.	616	.	.	.	.	.	19991123	616	20000705	1108	2.19	20000706
726	NE/AN	.	.	598	.	.	.	.	.	19991123	598	20000705	1002	1.8	20000706

Appendix 44. Carcass raw data for the study

KillID	GradeD	Seq	Anim	BK	Gain	Feedlot	Breed	Sex	LiveQt	HCW	Fat	PYG	AdjPYG	REA	KPH	AdjFat	YG
10/15/96	10/16/96	810	470	Over	Lo	McGregor	AxB	S	1335	905	0.52	3.3	3.3	14.9	2.5	0.52	2.971
7/5/96	7/6/96	243	156	McGregor	Calf	McGregor	AxB	S	.	758.5	0.6	3.5	3.4	13.4	2	0.56	2.894
8/16/96	8/17/96	434	363	McGregor	Lo	McGregor	AxB	S	.	757.5	0.5	3.9	3.9	12.9	3	0.76	3.751
7/5/96	7/6/96	244	303	McGregor	Calf	McGregor	AxB	S	.	720	0.52	3.3	3.5	10.2	1.5	0.6	3.772
8/16/96	8/17/96	426	926	Ulvalde	Hi	McGregor	AxB	S	.	635	0.6	3.5	3.5	10.9	3	0.6	3.525
8/16/96	8/17/96	406	619	Ulvalde	Lo	McGregor	AxB	S	.	675.5	0.7	3.8	3.9	12.9	2.5	0.76	3.339
9/17/96	9/18/96	715	206	Over	Hi	McGregor	AxB	S	1200	758	0.45	3.12	3.2	12.8	2.5	0.48	2.984
8/16/96	8/17/96	453	502	Ulvalde	Lo	McGregor	AxB	S	.	687.5	1.15	5.1	4.7	9	3	1.08	5.533
8/16/96	8/17/96	442	608	Ulvalde	Hi	McGregor	AxB	S	.	713	0.42	3	3.2	11.6	2.5	0.48	3.197
8/16/96	8/17/96	409	646	McGregor	Lo	McGregor	AxB	S	.	786	0.9	4.3	4.4	13.2	3.2	0.96	4.303
8/16/96	8/17/96	408	141	McGregor	Lo	McGregor	AxB	S	.	641.5	0.35	2.9	3	12.4	2.25	0.4	2.42
8/16/96	8/17/96	404	560	McGregor	Lo	McGregor	AxB	S	.	791.5	0.8	3.75	3.9	12.5	3.75	0.76	4.158
8/16/96	8/17/96	429	657	McGregor	Lo	McGregor	AxB	S	.	737	0.3	2.7	2.9	12.9	3	0.36	2.673
10/15/96	10/16/96	834	447	McGregor	Lo	McGregor	AxB	S	1085	725.5	0.25	2.6	2.6	11.5	1.5	0.24	2.477
8/16/96	8/17/96	410	109	Ulvalde	Hi	McGregor	AxB	S	.	671.5	0.25	2.7	2.6	12	2.5	0.24	2.312
10/15/96	10/16/96	822	684	Ulvalde	Lo	McGregor	AxB	S	875	586	0.38	2.9	3.1	11.4	1.5	0.44	2.479
10/15/96	10/16/96	802	350	Over	Hi	McGregor	AxB	S	1080	761	0.55	3.4	3.3	13.9	2	0.52	2.644
8/16/96	8/17/96	437	301	Ulvalde	Hi	McGregor	AxB	S	.	753	0.35	2.9	3.2	10.6	2.75	0.48	3.719
10/15/96	10/16/96	839	900	McGregor	Lo	McGregor	AxB	S	960	622	0.4	3	3	12.3	2	0.4	2.328
8/16/96	8/17/96	416	484	Ulvalde	Hi	McGregor	AxB	S	.	836	0.6	3.5	3.7	12.2	3	0.68	4.073
7/5/96	7/6/96	239	69	McGregor	Calf	McGregor	AxB	S	.	618	0.35	2.9	2.8	10.3	1.5	0.32	2.652
10/15/96	10/16/96	818	688	Ulvalde	Lo	McGregor	AxB	S	975	663.5	0.4	3	3	11.3	2.5	0.4	2.905
8/16/96	8/17/96	427	276	Ulvalde	Hi	McGregor	AxB	S	.	839	0.55	3.3	3.4	14.7	2.75	0.56	2.934
8/16/96	8/17/96	412	699	Ulvalde	Hi	McGregor	AxB	S	.	740	0.55	3.4	3.5	11.1	3	0.6	3.86
10/15/96	10/16/96	828	876	Over	Lo	McGregor	AxB	S	1070	700	0.6	3.5	3.4	12.9	2	0.56	2.832
10/15/96	10/16/96	829	75	Over	Hi	McGregor	AxB	S	1105	750.5	0.6	3.5	3.4	13.6	2	0.56	2.8
8/16/96	8/17/96	415	364	Ulvalde	Lo	McGregor	AxB	S	.	800	0.85	4	4	11.6	3	0.8	4.428
7/5/96	7/6/96	233	91	McGregor	Calf	McGregor	AxB	S	.	730	0.12	2.3	2.4	16.6	1.5	0.16	0.662
9/17/96	9/18/96	735	82	McGregor	Lo	McGregor	AxB	S	1090	646	0.2	2.5	2.6	10.9	2	0.24	2.467
10/15/96	10/16/96	803	234	Over	Hi	McGregor	AxB	S	1140	707.5	0.3	2.7	2.7	10.8	1.5	0.28	2.733
8/16/96	8/17/96	432	83	Ulvalde	Hi	McGregor	AxB	S	.	640	0.35	2.9	2.8	11.9	3.5	0.32	2.624
9/17/96	9/18/96	710	603	Over	Lo	McGregor	AxB	S	1130	738	0.5	3.25	3.4	14.4	2.5	0.56	2.596
7/5/96	7/6/96	245	393	McGregor	Calf	McGregor	AxB	S	.	713	0.25	2.7	2.8	12.7	2	0.32	2.345
10/15/96	10/16/96	840	521	Ulvalde	Hi	McGregor	AxB	S	1035	714	0.38	2.9	2.7	11.9	3	0.28	2.705
10/15/96	10/16/96	817	705	Over	Lo	McGregor	AxB	S	935	670.5	0.45	3.1	2.9	13.8	2	0.36	1.932
8/16/96	8/17/96	420	114	Ulvalde	Lo	McGregor	AxB	S	.	729	0.5	3.3	3.4	11.8	2.75	0.56	3.444
9/17/96	9/18/96	731	683	Over	Hi	McGregor	AxB	S	1215	747	0.6	3.5	3.6	13.7	2.5	0.64	3.055
8/16/96	8/17/96	405	654	McGregor	Lo	McGregor	AxB	S	.	839.5	0.9	4.2	4.2	10.9	3.25	0.88	5.052
8/16/96	8/17/96	444	219	Ulvalde	Hi	McGregor	AxB	S	.	663	0.9	4.5	3.8	11.4	3	0.72	3.771
9/17/96	9/18/96	718	353	Over	Hi	McGregor	AxB	S	1205	735	0.4	3	3.2	15	2	0.48	2.093
8/16/96	8/17/96	418	282	McGregor	Lo	McGregor	AxB	S	.	718.5	0.45	3.1	3.2	10.8	2.75	0.48	3.524
8/16/96	8/17/96	419	372	Ulvalde	Hi	McGregor	AxB	S	.	650	0.45	3.1	3.2	12.8	3.25	0.48	2.724
9/17/96	9/18/96	705	434	Over	Hi	McGregor	AxB	S	1110	701	0.6	3.5	3.8	11.1	2.5	0.72	3.912
10/15/96	10/16/96	841	884	McGregor	Lo	McGregor	BN/CL/AN	S	1105	738	1	4.5	4.2	13.2	2.5	0.88	3.78

9/17/96	9/18/96	740	486	McGregor	Lo	McGregor	AxB	S	1105	717	1	4.5	4.5	12.7	3	1	4.261
7/5/96	7/6/96	234	726	McGregor	Calf	McGregor	AxB	S	.	619.5	0.35	2.9	3	13.5	2.5	0.4	2.034
10/15/96	10/16/96	815	404	Ulvalde	Lo	McGregor	AxB	S	1100	692.5	0.38	2.9	3	12.1	1.5	0.4	2.56
8/16/96	8/17/96	402	798	Ulvalde	Hi	McGregor	AxB	S	.	652.5	0.4	3	3	10.7	2.75	0.4	3.106
8/16/96	8/17/96	414	635	Ulvalde	Hi	McGregor	AxB	S	.	695.5	0.5	3.4	3.5	11.2	3	0.6	3.659
9/17/96	9/18/96	701	807	Over	Hi	McGregor	AxB	S	1305	848	0.8	4	4.1	13	2.5	0.84	4.162
8/16/96	8/17/96	428	227	McGregor	Lo	McGregor	AxB	S	.	701	0.25	2.8	3	12.5	3	0.4	2.764
10/15/96	10/16/96	808	265	Over	Lo	McGregor	AxB	S	1125	778.5	0.4	3	3.3	12.2	1.5	0.52	3.154
7/5/96	7/6/96	235	620	McGregor	Calf	McGregor	AxB	S	.	711.5	0.25	3.7	3.7	13.3	2	0.68	3.048
7/5/96	7/6/96	236	575	McGregor	Calf	McGregor	AxB	S	.	612	0.72	3.8	4	11.5	1.5	0.8	3.446
9/17/96	9/18/96	742	718	Over	Hi	McGregor	AxB	S	1240	763	0.4	3	3.1	12.9	3	0.44	2.971
9/17/96	9/18/96	734	368	Over	Lo	McGregor	AxB	S	1110	660	0.4	3	3.1	11.6	2	0.44	2.796
10/15/96	10/16/96	832	668	Over	Lo	McGregor	AxB	S	1050	739	0.45	3.1	2.9	11.6	1.5	0.36	2.796
9/17/96	9/18/96	725	274	Over	Hi	McGregor	AxB	S	1400	925	0.45	3.12	3.1	16.2	2.5	0.44	2.431
9/17/96	9/18/96	713	596	Over	Hi	McGregor	AxB	S	1145	725	0.5	3.25	3.2	14.6	2.5	0.48	2.283
7/5/96	7/6/96	246	556	McGregor	Calf	McGregor	AxB	S	.	690.5	0.5	3.2	3.2	11.1	2.5	0.48	3.272
8/16/96	8/17/96	433	328	Ulvalde	Hi	McGregor	AxB	S	.	744.5	0.4	3	3.2	13.2	2.75	0.48	2.855
7/5/96	7/6/96	232	481	McGregor	Calf	McGregor	AxB	S	.	739.5	0.45	3.1	2.9	11.3	1.5	0.36	2.894
9/17/96	9/18/96	726	931	Over	Hi	McGregor	AxB	S	1350	813	0.5	3.25	3.2	14	2	0.48	2.709
9/17/96	9/18/96	721	81	Over	Lo	McGregor	AxB	S	1170	723	0.6	3.5	3.7	13.4	2.5	0.68	3.159
8/16/96	8/17/96	448	911	McGregor	Lo	McGregor	Bn/CL/AN	S	.	800	0.65	3.6	3.6	11.1	2.5	0.64	4.088
9/17/96	9/18/96	720	275	Over	Lo	McGregor	AxB	S	1385	889	0.7	3.75	4	13.9	2.5	0.8	3.93
9/17/96	9/18/96	729	395	Over	Hi	McGregor	AxB	S	1175	714	0.7	3.75	3.8	11	2.5	0.72	3.993
10/15/96	10/16/96	816	626	Over	Lo	McGregor	AxB	S	1090	768.5	0.25	2.8	2.6	13.1	1.5	0.24	2.128
7/5/96	7/6/96	241	176	McGregor	Calf	McGregor	AxB	S	.	772	0.63	3.6	3.5	15.4	2.5	0.6	2.506
9/17/96	9/18/96	723	496	Ulvalde	Hi	McGregor	AxB	S	1080	617	0.35	2.83	2.9	11.6	2	0.36	2.433
7/5/96	7/6/96	237	314	McGregor	Calf	McGregor	AxB	S	.	742	0.4	3	3	12.8	2.5	0.4	2.724
10/15/96	10/16/96	836	786	Over	Lo	McGregor	AxB	S	1050	704.5	0.45	3.1	3.3	12.3	1.5	0.52	2.841
10/15/96	10/16/96	804	494	Over	Lo	McGregor	AxB	S	1090	671	0.25	2.7	2.8	10.7	1.5	0.32	2.726
8/16/96	8/17/96	401	414	Ulvalde	Hi	McGregor	AxB	S	.	866	0.85	4.3	4.4	13.2	3	0.96	4.567
8/16/96	8/17/96	441	731	Ulvalde	Lo	McGregor	AxB	S	.	688.5	0.5	2.2	3.1	12.4	3.5	0.44	2.948
10/15/96	10/16/96	833	681	Over	Hi	McGregor	AxB	S	1170	777	0.4	3	3.3	12.5	2	0.52	3.153
8/16/96	8/17/96	430	225	Ulvalde	Hi	McGregor	AxB	S	.	737	0.5	3.2	3.4	11.8	3.5	0.56	3.625
9/17/96	9/18/96	709	634	Over	Lo	McGregor	AxB	S	1315	833	0.5	3.25	3.3	13.7	2	0.52	2.981
9/17/96	9/18/96	719	749	Over	Lo	McGregor	AxB	S	1215	776	0.5	3.25	3.4	13.9	2.5	0.56	2.901
8/16/96	8/17/96	452	757	McGregor	Lo	McGregor	AxB	S	.	667	0.5	3.25	3.6	10.9	3.5	0.64	3.847
8/16/96	8/17/96	413	236	Ulvalde	Hi	McGregor	AxB	S	.	771.5	0.55	3.3	3.6	10.6	3.5	0.64	4.34
8/16/96	8/17/96	438	751	Ulvalde	Hi	McGregor	AxB	S	.	796	0.7	3.6	3.7	12.8	3	0.68	3.729
10/15/96	10/16/96	826	178	Over	Lo	McGregor	AxB	S	1240	865.5	0.7	3.7	3.5	12.6	2	0.6	3.657
8/16/96	8/17/96	421	922	McGregor	Lo	McGregor	Bn/Cl/An	S	.	650	0.4	3	3.2	11.1	2.75	0.48	3.168
8/16/96	8/17/96	411	138	McGregor	Lo	McGregor	AxB	S	.	773	0.45	3.1	3.3	12.7	3	0.52	3.273
10/15/96	10/16/96	835	186	Over	Hi	McGregor	AxB	S	1235	822.5	0.55	3.4	3.2	13.5	3	0.48	3.106
7/5/96	7/6/96	242	398	McGregor	Calf	McGregor	AxB	S	.	462.5	0.05	2.1	2.1	7.8	1	0.04	2.062
7/5/96	7/6/96	240	76	McGregor	Calf	McGregor	AxB	S	.	545	0.12	2.3	2.3	12.8	1	0.12	0.975
7/5/96	7/6/96	238	573	McGregor	Calf	McGregor	AxB	S	.	447	0.05	2.1	2.1	10.6	1	0.04	1.107
8/16/96	8/17/96	417	771	Ulvalde	Lo	McGregor	AxB	S	.	622	0.2	2.5	2.6	11.3	2	0.24	2.248
8/16/96	8/17/96	425	592	Ulvalde	Lo	McGregor	AxB	S	.	603.5	0.4	3	3.1	10.2	2.75	0.44	3.179
8/16/96	8/17/96	424	738	McGregor	Lo	McGregor	AxB	S	.	636	0.4	3.2	3.3	10.2	3.25	0.52	3.603

Seq	Anim	BK	Gain	Feedlot	Breed	LMColde	LM	SMCode	SM	OM	MarbLet	Marb	QGum	QG
810	470	Over	Lo	McGregor	AxB	A40	140	A70	170	155	Md10	710	470	470
243	156	McGregor	Calf	McGregor	AxB	A40	140	A60	160	150	Md20	720	.	473.3
434	363	McGregor	Lo	McGregor	AxB	A80	180	A40	140	160	MD30	730	.	476.7
244	303	McGregor	Calf	McGregor	AxB	A40	140	A50	150	145	Md40	740	.	480
426	926	Ulvalde	Hi	McGregor	AxB	A60	160	A30	130	145	MT10	610	.	436.7
406	619	Ulvalde	Lo	McGregor	AxB	A40	140	A30	130	135	Mt10	610	.	436.7
715	206	Over	Hi	McGregor	AxB	A60	160	A60	160	160	Mt20	620	.	440
453	502	Ulvalde	Lo	McGregor	AxB	A40	140	A40	140	140	MT20	620	.	440
442	608	Ulvalde	Hi	McGregor	AxB	A80	180	A30	130	155	MT30	630	.	443.3
409	646	McGregor	Lo	McGregor	AxB	A60	160	A40	140	150	Mt40	640	.	446.7
408	141	McGregor	Lo	McGregor	AxB	A70	170	A30	130	150	Mt70	670	.	456.7
404	560	McGregor	Lo	McGregor	AxB	A60	160	A40	140	150	Mt90	690	.	463.3
429	657	McGregor	Lo	McGregor	AxB	A70	170	A40	140	155	SI00	400	300	300
834	447	McGregor	Lo	McGregor	AxB	A60	160	A50	150	155	sl20	420	.	320
410	109	Ulvalde	Hi	McGregor	AxB	A80	180	A40	140	160	SI20	420	.	320
822	684	Ulvalde	Lo	McGregor	AxB	A60	160	A40	140	150	SI20	420	320	320
802	350	Over	Hi	McGregor	AxB	A70	170	A50	150	160	SI30	430	.	330
437	301	Ulvalde	Hi	McGregor	AxB	A90	190	A30	130	160	SL50	450	.	350
839	900	McGregor	Lo	McGregor	AxB	A90	190	A50	150	170	SI50	450	.	350
416	484	Ulvalde	Hi	McGregor	AxB	A60	160	A40	140	150	SI50	450	.	350
239	69	McGregor	Calf	McGregor	AxB	DC.67	290	A50	150	220	SI60	460	.	293
818	688	Ulvalde	Lo	McGregor	AxB	A80	180	A60	160	170	SI60	460	.	360
427	276	Ulvalde	Hi	McGregor	AxB	A90	190	A40	140	165	SI60	460	.	360
412	699	Ulvalde	Hi	McGregor	AxB	A60	160	A30	130	145	SI60	460	.	360
828	876	Over	Lo	McGregor	AxB	A20	120	A50	150	135	SI60	460	.	360
829	75	Over	Hi	McGregor	AxB	A80	180	A70	170	175	SI60	460	.	360
415	364	Ulvalde	Lo	McGregor	AxB	A50	150	A30	130	140	SI60	460	.	360
233	91	McGregor	Calf	McGregor	AxB	A70	170	A50	150	160	SI70	470	.	370
735	82	McGregor	Lo	McGregor	AxB	A50	150	A50	150	150	SI70	470	.	370
803	234	Over	Hi	McGregor	AxB	A60	160	A50	150	155	SI70	470	.	370
432	83	Ulvalde	Hi	McGregor	AxB	A90	190	A40	140	165	SI70	470	.	370
710	603	Over	Lo	McGregor	AxB	A50	150	A60	160	155	SI70	470	.	370
245	393	McGregor	Calf	McGregor	AxB	A40	140	A60	160	150	SI80	480	.	380
840	521	Ulvalde	Hi	McGregor	AxB	A80	180	A50	150	165	SI80	480	.	380
817	705	Over	Lo	McGregor	AxB	A60	160	A50	150	155	SI80	480	.	380
420	114	Ulvalde	Lo	McGregor	AxB	A60	160	A40	140	150	SI80	480	.	380
731	683	Over	Hi	McGregor	AxB	A50	150	A50	150	150	SI80	480	.	380
405	654	McGregor	Lo	McGregor	AxB	A70	170	A40	140	155	SI80	480	.	380
444	219	Ulvalde	Hi	McGregor	AxB	A70	170	A40	140	155	SL80	480	.	380
718	353	Over	Hi	McGregor	AxB	A60	160	A70	170	165	SI90	490	.	390
418	282	McGregor	Lo	McGregor	AxB	A60	160	A30	130	145	SI90	490	.	390
419	372	Ulvalde	Hi	McGregor	AxB	A60	160	A30	130	145	SI90	490	.	390
705	434	Over	Hi	McGregor	AxB	A50	150	A50	150	150	SI90	490	.	390
841	884	McGregor	Lo	McGregor	BN/CL/AN	A50	150	A40	140	145	Slab0	800	.	500
740	486	McGregor	Lo	McGregor	AxB	A50	150	A50	150	150	SIAb20	820	.	506.7

234	726	McGregor	Calf	McGregor	AxB	A50	150	A40	140	145	Sm0	500	.	400
815	404	Ulvalde	Lo	McGregor	AxB	A60	160	A40	140	150	Sm0	500	.	400
402	798	Ulvalde	Hi	McGregor	AxB	A90	190	A40	140	165	Sm00	500	.	400
414	635	Ulvalde	Hi	McGregor	AxB	A50	150	A40	140	145	Sm00	500	.	400
701	807	Over	Hi	McGregor	AxB	A50	150	A70	170	160	Sm00	500	.	400
428	227	McGregor	Lo	McGregor	AxB	A90	190	A40	140	165	Sm10	510	.	403.3
808	265	Over	Lo	McGregor	AxB	A50	150	A50	150	150	Sm10	510	.	403.3
235	620	McGregor	Calf	McGregor	AxB	A60	160	A50	150	155	Sm10	510	.	403.3
236	575	McGregor	Calf	McGregor	AxB	A40	140	A50	150	145	Sm10	510	.	403.3
742	718	Over	Hi	McGregor	AxB	A30	130	A40	140	135	Sm20	520	.	406.7
734	368	Over	Lo	McGregor	AxB	A40	140	A50	150	145	Sm20	520	.	406.7
832	668	Over	Lo	McGregor	AxB	A60	160	A50	150	155	sm20	520	.	406.7
725	274	Over	Hi	McGregor	AxB	A60	160	A60	160	160	Sm20	520	.	406.7
713	596	Over	Hi	McGregor	AxB	A50	150	A50	150	150	Sm20	520	.	406.7
246	556	McGregor	Calf	McGregor	AxB	A40	140	A50	150	145	Sm30	530	.	410
433	328	Ulvalde	Hi	McGregor	AxB	A90	190	A40	140	165	SM40	540	.	413.3
232	481	McGregor	Calf	McGregor	AxB	A50	150	A50	150	150	Sm40	540	.	413.3
726	931	Over	Hi	McGregor	AxB	A50	150	A60	160	155	Sm40	540	.	413.3
721	81	Over	Lo	McGregor	AxB	A30	130	A40	140	135	Sm40	540	.	413.3
448	911	McGregor	Lo	McGregor	Bn/CL/AN	A40	140	A30	130	135	SM40	540	.	413.3
720	275	Over	Lo	McGregor	AxB	A40	140	A50	150	145	Sm40	540	.	413.3
729	395	Over	Hi	McGregor	AxB	DC.33	260	A60	160	210	Sm40	540	.	380
816	626	Over	Lo	McGregor	AxB	A70	170	A60	160	165	Sm50	550	.	416.7
241	176	McGregor	Calf	McGregor	AxB	A50	150	A60	160	155	Sm50	550	.	416.7
723	496	Ulvalde	Hi	McGregor	AxB	A50	150	A50	150	150	Sm60	560	.	420
237	314	McGregor	Calf	McGregor	AxB	A40	140	A60	160	150	Sm60	560	.	420
836	786	Over	Lo	McGregor	AxB	A50	150	A60	160	155	Sm60	560	.	420
804	494	Over	Lo	McGregor	AxB	A50	150	A60	160	155	Sm70	570	.	423.3
401	414	Ulvalde	Hi	McGregor	AxB	B20	220	A90	190	205	Sm70	570	.	423.3
441	731	Ulvalde	Lo	McGregor	AxB	A40	140	A20	120	130	SM80	580	.	426.7
833	681	Over	Hi	McGregor	AxB	A50	150	A60	160	155	Sm80	580	.	426.7
430	225	Ulvalde	Hi	McGregor	AxB	A40	140	A40	140	140	Sm80	580	.	426.7
709	634	Over	Lo	McGregor	AxB	A40	140	A50	150	145	Sm80	580	.	426.7
719	749	Over	Lo	McGregor	AxB	A50	150	A60	160	155	Sm80	580	.	426.7
452	757	McGregor	Lo	McGregor	AxB	A60	160	A40	140	150	SM80	580	.	426.7
413	236	Ulvalde	Hi	McGregor	AxB	A60	160	A30	130	145	Sm80	580	.	426.7
438	751	Ulvalde	Hi	McGregor	AxB	A40	140	A40	140	140	SM80	580	.	426.7
826	178	Over	Lo	McGregor	AxB	A30	130	A60	160	145	Sm80	580	.	426.7
421	922	McGregor	Lo	McGregor	Bn/Cl/An	A60	160	A30	130	145	Sm90	590	.	430
411	138	McGregor	Lo	McGregor	AxB	A60	160	A40	140	150	Sm90	590	.	430
835	186	Over	Hi	McGregor	AxB	A50	150	A80	180	165	sm90	590	.	430
242	398	McGregor	Calf	McGregor	AxB	A80	180	A60	160	170	Tr20	320	.	260
240	76	McGregor	Calf	McGregor	AxB	DC.67	290	A40	140	215	Tr40	340	.	203
238	573	McGregor	Calf	McGregor	AxB	A60	160	A40	140	150	Tr50	350	.	275
417	771	Ulvalde	Lo	McGregor	AxB	A30	130	A20	120	125	Tr80	380	.	290
425	592	Ulvalde	Lo	McGregor	AxB	A40	140	A30	130	135	TR80	380	.	290
424	738	McGregor	Lo	McGregor	AxB	A50	150	A30	130	140	TR90	390	.	295

Appendix 45. Warner-Bratzler shear raw data for the study

Date	Sample	Anim	Dump	StoreDay	SeTmOff	SeTmOn	SeTTime	SeTpOff	SeTpOn	SeRawWt	SeCkWt	SeCkLoss	Shear1	Shear2	Shear3	Shear4	Shear5	Shear6
08/22/2001	26	626	1	28	10:14	9:45	0:29	71.1	-1.3	323.3	253.7	69.6	1.952	1.365	2.272	4.974	1.686	3.05
03/06/2001	28	620	.	35	9:25	8:57	0:28	70.3	5.3	224.2	162.1	62.1	2.947	1.632	3.23	2.335	4.35	3.238
03/06/2001	26	398	.	35	9:14	8:56	0:18	72.6	7.2	129.7	104.3	25.4	3.154	1.713	1.947	3.215	3.232	2.6
03/06/2001	32	303	.	35	9:14	8:58	0:16	72.6	7.3	134.2	90.8	43.4	2.186	1.861	1.713	2.01	2.797	2.856
03/08/2001	23	681	.	28	9:21	8:53	0:28	71.5	7.8	290.3	228.7	61.6	2.03	1.924	1.762	2.307	1.967	1.586
08/22/2001	25	404	1	35	10:12	9:42	0:30	70.2	-1.6	295.9	222.9	73	3.897	2.077	3.993	2.926	3.333	3.669
03/09/2001	21	303	.	14	9:36	9:20	0:16	72.1	12	164.5	134.1	30.4	2.659	2.081	1.941	3.276	2.223	4.078
08/22/2001	12	619	1	35	9:16	8:54	0:22	70	-0.5	183	138.6	44.4	2.533	2.111	1.948	2.835	1.786	4.038
08/22/2001	1	393	1	14	9:12	8:48	0:24	70.3	-1.4	243.8	201.2	42.6	3.065	2.162	4.502	2.371	2.682	4.865
03/08/2001	26	688	.	28	.	9:36	.	70.8	9.3	189.7	141.5	48.2	2.202	2.213	2.931	2.456	2.083	3.582
03/07/2001	27	368	.	35	9:39	9:15	0:24	70	9.8	181.6	140	41.6	2.499	2.234	2.396	3.933	4.043	3.395
03/06/2001	18	611	.	35	8:50	8:30	0:20	71.1	9.5	199.4	148.5	50.9	2.425	2.236	3.206	3.942	3.757	5.021
03/08/2001	18	494	.	28	9:22	8:51	0:31	71	7.5	249	182.8	66.2	2.376	2.263	2.845	2.86	2.61	3.48
03/29/2001	35	634	.	28	9:59	9:44	0:15	70	6.6	254.5	212.2	42.3	3.834	2.268	3.001	3.395	5.062	4.111
03/06/2001	29	393	.	35	9:27	8:57	0:30	70	5.7	227.1	163.3	63.8	4.621	2.275	3.062	4.41	4.92	5.631
03/06/2001	7	276	.	35	8:52	8:28	0:24	70.1	7.3	254.5	179.5	75	2.806	2.291	3.327	4.004	4.748	3.678
03/07/2001	15	496	.	35	9:03	8:34	0:29	70.2	8.2	264.1	202.5	61.6	4.907	2.313	2.508	3.886	2.648	3.801
03/09/2001	22	69	.	14	9:39	9:21	0:18	70.3	10.8	154.1	134.4	19.7	2.595	2.342	2.921	3.676	3.963	2.718
03/29/2001	34	303	.	28	10:06	9:43	0:23	70	2.6	182.8	152.6	30.2	2.141	2.352	2.511	2.254	2.798	2.206
08/23/2001	1	626	1	14	9:17	8:45	0:32	70	-1.2	335.9	230.7	105.2	3.471	2.359	3.547	2.701	2.795	3.674
03/08/2001	2	206	.	14	9:12	8:43	0:29	70.8	4.7	294.9	216.1	78.8	3.875	2.376	4.039	4.606	3.733	4.769
03/28/2001	2	138	.	14	8:53	8:32	0:21	71.9	-0.3	181.2	144	37.2	2.637	2.395	2.921	3.112	3.843	3.899
03/08/2001	7	496	.	14	9:03	8:46	0:17	70.1	4	204.3	172.5	31.8	3.11	2.443	2.575	2.215	3.527	3.584
03/06/2001	10	363	.	35	8:48	8:28	0:20	70.9	9.8	104.7	68.1	36.6	3.212	2.455	5.294	5.033	4.457	3.771
03/06/2001	11	699	.	35	8:48	8:29	0:19	73.1	10.5	211.4	165.1	46.3	3.375	2.458	3.428	2.646	3.275	4.634
04/02/2001	9	470	.	35	9:23	8:50	0:33	71.3	-1.4	396.5	262.3	134.2	2.487	2.469	2.801	3.304	3.591	2.784
03/08/2001	11	350	.	28	9:16	8:49	0:27	70.2	4.1	306.2	234	72.2	2.789	2.47	2.577	2.143	2.883	4.619
04/02/2001	14	494	.	35	9:59	9:27	0:32	70.2	-1.5	238	172.3	65.7	3.477	2.489	3.344	3.055	2.189	2.955
03/06/2001	38	481	.	35	9:15	9:01	0:14	72.4	7.4	139	111.1	27.9	2.542	2.503	3.184	3.63	5.175	3.144
03/29/2001	1	470	1	14	9:16	8:25	0:51	70	-1.3	419.2	315.4	103.8	2.467	2.511	2.665	2.269	2.092	3.814
03/28/2001	9	619	.	14	9:15	8:56	0:19	71.1	1.3	186.7	152.7	34	2.765	2.514	2.442	2.781	3.718	3.007
04/02/2001	18	470	.	1	10:15	9:29	0:46	70.2	-1.2	434	325	109	2.6	2.529	2.266	2.665	2.638	2.099
03/05/2001	26	219	.	7	9:58	9:34	0:24	70.3	6.7	151.7	126.3	25.4	3.385	2.532	4.926	4.751	3.975	3.881
03/08/2001	14	274	.	14	9:22	8:50	0:32	70.2	-0.2	352.8	275.9	76.9	3.106	2.533	2.74	3.388	3.569	4.956
03/08/2001	13	749	.	14	9:22	8:50	0:32	70	10.6	212.3	156.7	55.6	3.106	2.533	2.74	3.388	3.569	4.956
03/29/2001	36	176	.	28	10:08	9:45	0:23	71.5	3.5	224.9	166.4	58.5	2.786	2.547	3.461	3.01	2.917	2.845
03/29/2001	24	398	.	28	9:19	9:01	0:18	70.6	4.6	149.8	125.9	23.9	1.933	2.578	2.391	2.29	2.596	4.069
08/22/2001	24	314	1	14	10:00	9:32	0:28	70.1	-0.9	186.5	145.5	41	3.131	2.578	3.512	3.038	3.283	3.256
03/28/2001	16	236	.	14	9:37	9:16	0:21	70	3.6	165.7	133	32.7	2.653	2.6	3.473	2.466	2.433	2.69
03/06/2001	25	176	.	35	9:19	8:56	0:23	73.2	5	211.8	153	58.8	2.661	2.653	2.327	3.472	4.239	4.13
03/08/2001	10	470	.	28	9:18	8:49	0:29	70.3	8.4	376.2	300.7	75.5	2.499	2.662	3.037	1.661	3.393	3.515
03/28/2001	36	138	.	14	10:18	9:59	0:19	70.1	3.6	196.2	157	39.2	2.87	2.669	2.201	3.001	2.794	3.573

03/08/2001	22	434	.	14	9:12	8:52	0:20	70.6	10.5	198.4	156.1	42.3	2.941	2.679	3.536	2.813	3.268	3.624
03/30/2001	11	688	.	21	8:45	8:13	0:32	70.5	-1.3	200.1	142.4	57.7	2.36	2.686	3.232	4.11	3.748	3.016
03/06/2001	5	592	.	35	8:51	8:27	0:24	70.1	9	174.3	114.3	60	4.366	2.688	3.594	3.379	2.982	4.476
03/07/2001	23	683	.	35	9:35	9:10	0:25	70.6	11.8	293.1	221.8	71.3	2.691	2.744	3.128	3.665	5.208	4.36
08/22/2001	8	521	1	28	9:18	8:51	0:27	70.3	-1.2	272.2	192.2	80	2.85	2.747	2.963	4.305	3.252	2.82
03/06/2001	37	76	.	35	9:21	9:00	0:21	70	8	156.9	118.5	38.4	4.158	2.748	3.909	3.44	3.877	3.63
04/02/2001	10	681	.	35	9:26	8:51	0:35	70.2	-0.9	310.4	213.5	96.9	2.64	2.766	2.976	4.456	4.53	3.936
08/22/2001	23	738	1	21	9:48	9:29	0:19	71.2	0.2	142.6	112.2	30.4	2.611	2.782	2.135	2.926	3.219	2.92
03/09/2001	26	688	.	14	9:41	9:24	0:17	72.2	9.8	209.8	178.5	31.3	2.653	2.792	2.42	2.955	2.45	2.182
02/27/2001	40	560	.	1	9:31	9:10	0:21	70	15.6	172.2	124.7	47.5	3.254	2.809	5.92	5.788	.	.
03/05/2001	34	83	.	35	10:09	9:42	0:27	70.5	-2.7	215.8	172.7	43.1	4.011	2.817	4.172	3.031	4.125	3.726
03/09/2001	20	447	.	14	9:43	9:19	0:24	71.5	2	267.2	213.2	54	2.643	2.818	2.944	2.977	3.734	3.442
03/06/2001	17	141	.	35	8:52	8:30	0:22	72.7	9	152.6	112.1	40.5	2.618	2.844	2.96	2.576	3.227	4.411
03/08/2001	35	176	.	1	10:16	9:37	0:39	70	-0.3	252.9	168.4	84.5	4.619	2.844	4.1	4.076	3.694	4.356
03/26/2001	4	69	.	7	8:42	8:18	0:24	72	-0.8	183	144.1	38.9	3.057	2.861	4.382	3.697	5.146	5.105
03/26/2001	16	681	.	7	8:49	8:23	0:26	70.6	-1	283.9	207.7	76.2	2.683	2.865	4.356	3.864	5.451	3.631
03/01/2001	24	502	.	21	10:19	10:01	0:18	70.4	8.8	128.7	97.2	31.5	3.261	2.872	4.413	3.884	3.558	3.574
03/29/2001	7	620	.	28	8:54	8:28	0:26	70	-1.1	229.5	167.5	62	3.543	2.886	3.702	2.815	2.642	3.675
03/05/2001	40	138	.	35	8:58	8:31	0:27	70.5	0.9	221.3	177.1	44.2	3.664	2.887	2.359	2.831	3.009	2.394
03/06/2001	8	372	.	35	8:48	8:28	0:20	72.1	10.7	146.6	92.4	54.2	2.45	2.895	2.665	4.011	3.075	2.47
03/28/2001	37	608	.	14	10:16	10:00	0:16	70.1	4.5	196.8	152.6	44.2	3.022	2.896	4.029	3.856	4.344	4.518
03/07/2001	26	718	.	35	9:41	9:13	0:28	70.1	9.1	287.2	202.7	84.5	3.29	2.943	3.83	3.145	3.728	3.259
03/29/2001	20	931	.	28	9:26	8:52	0:34	70	2.2	300.7	224.8	75.9	2.303	2.949	2.379	3.672	4.48	3.167
03/08/2001	40	234	.	28	10:31	10:04	0:27	70.1	8.8	269.4	203.4	66	2.736	2.958	2.508	3.218	2.67	2.625
03/28/2001	18	234	.	14	9:49	9:17	0:32	70	-1.3	275.8	200.1	75.7	4.075	2.966	3.761	3.492	3.673	5.118
03/23/2001	34	398	.	21	10:21	9:45	0:36	70.1	-1.4	179.6	136.2	43.4	3.67	2.97	3.88	3.14	3.86	6.78
03/29/2001	2	494	.	14	9:03	8:25	0:38	70	-1.1	212.1	155.7	56.4	2.997	2.975	3.175	3.811	4.011	3.23
03/05/2001	41	414	.	35	8:58	8:31	0:27	71	1.2	216.1	168.9	47.2	3.866	2.98	3.436	3.55	4.291	3.491
03/28/2001	19	900	.	14	9:44	9:22	0:22	70.1	6	224.7	177.1	47.6	2.875	2.981	3.091	2.295	2.982	3.445
03/30/2001	14	900	.	35	9:27	8:55	0:32	70.9	-1.4	262.7	189.4	73.3	2.642	2.987	4.546	2.93	3.497	4.221
03/07/2001	2	81	.	7	8:57	8:25	0:32	70	-0.4	311.3	234.1	77.2	4.276	2.988	4.231	3.738	3.408	.
02/28/2001	10	227	.	21	9:31	9:09	0:22	70.5	12.2	204.6	166.1	38.5	3.683	2.988	4.248	2.234	4.916	3.538
03/01/2001	35	141	.	14	10:46	10:22	0:24	70.1	1.8	145	116.5	28.5	3.651	2.99	3.616	4.587	4.472	3.897
03/30/2001	30	447	.	21	10:16	9:48	0:28	70	-0.7	272	194.8	77.2	2.762	2.999	3.527	2.735	3.72	4.703
03/06/2001	33	900	.	7	9:23	8:58	0:25	70.3	1.8	265	213.7	51.3	3.562	3.013	3.615	3.748	2.478	3.246
03/05/2001	12	109	.	7	9:31	9:03	0:28	70.4	1.5	252.1	201	51.1	3.176	3.04	3.052	4.033	4.448	2.955
03/30/2001	24	350	.	21	10:03	9:30	0:33	70	-1.4	270.2	174.6	95.6	3.294	3.041	3.405	3.885	4.268	2.704
03/08/2001	25	676	.	28	10:27	9:36	0:51	73.5	0.6	300.7	185.7	115	2.938	3.049	2.548	3.166	3.264	2.632
02/28/2001	13	619	.	21	9:37	9:10	0:27	70.7	12.5	213.7	162.2	51.5	3.621	3.052	3.666	5.437	4.192	4.119
03/08/2001	8	900	.	28	9:10	8:46	0:24	70.8	6.7	224.6	170.6	54	3.62	3.057	2.88	2.956	4.132	6.14
02/28/2001	35	141	.	1	10:05	9:42	0:23	70	9.4	159.2	127.8	31.4	4.424	3.059	3.646	2.842	3.821	3.319
03/05/2001	42	502	.	35	9:00	8:31	0:29	75.1	5.3	113	73	40	4.498	3.064	3.425	4.42	4.334	3.419
03/28/2001	4	560	.	14	8:51	8:32	0:19	70.5	-0.6	162.7	134.4	28.3	3.82	3.069	4.428	4.398	4.089	4.237
03/06/2001	14	608	.	35	8:49	8:29	0:20	71.1	0.5	233.6	184.1	49.5	2.146	3.071	2.675	3.947	2.537	2.618
03/06/2001	6	225	.	35	8:53	8:27	0:26	71.4	-1.3	128.4	87.7	40.7	4.498	3.076	6.654	5.244	6.646	8.477
03/30/2001	29	494	.	21	10:21	9:48	0:33	70.6	-1	215.3	150	65.3	3.022	3.084	3.484	3.869	3.492	3.305

03/29/2001	4	876	.	14	8:52	8:25	0:27	70.2	0	228.6	161.2	67.4	3.249	3.106	4.049	2.062	3.917	4.566
08/22/2001	6	363	1	28	9:13	8:51	0:22	71.8	-1.1	104.9	73.9	31	3.946	3.106	3.965	4.227	4.301	4.724
03/30/2001	26	521	.	21	10:01	9:30	0:31	70.1	-1.1	253.4	196.9	56.5	3.171	3.117	3.266	2.763	3.68	3.37
03/28/2001	17	738	.	14	9:34	9:16	0:18	70	8.5	128.9	103.5	25.4	3.055	3.12	3.429	4.19	3.216	3.278
03/07/2001	22	596	.	35	9:42	9:09	0:33	70.7	12.1	351.1	274.1	77	3.707	3.134	2.841	3.577	3.354	3.344
03/30/2001	20	876	.	21	9:32	8:59	0:33	70	-1.1	240.5	164.7	75.8	4.288	3.15	3.274	3.479	2.956	3.6
03/05/2001	18	141	.	7	9:35	9:05	0:30	70.5	8.1	159.9	109.7	50.2	2.078	3.164	3.763	2.897	2.861	3.587
03/26/2001	11	303	.	7	8:48	8:21	0:27	70.1	-0.6	196.3	144.2	52.1	3.831	3.166	4.47	3.6	3.199	3.941
03/26/2001	5	494	.	7	8:50	8:20	0:30	70.2	-1.3	271.8	193.1	78.7	3.089	3.167	3.648	3.382	4.558	4.589
03/28/2001	35	798	.	14	10:13	9:59	0:14	70.4	7.5	142.6	115.4	27.2	3.219	3.169	3.03	5.516	6.736	7.34
03/07/2001	17	206	.	35	9:25	8:45	0:40	70	9.3	300.9	204.6	96.3	2.853	3.175	3.594	3.343	3.175	3.761
04/02/2001	8	265	.	35	9:17	8:50	0:27	70	-1.2	225	148.9	76.1	2.433	3.176	4.201	3.966	5.243	3.64
02/27/2001	10	138	.	1	9:50	9:38	0:12	70	12.2	130.2	103.1	27.1	3.408	3.178	2.981	3.206	3.129	2.902
04/02/2001	20	494	.	1	10:08	9:30	0:38	70	-1.1	280.2	214.9	65.3	2.285	3.18	3.437	2.844	3.17	2.671
03/06/2001	23	314	.	35	9:16	8:46	0:30	73.1	7.7	184.8	135.8	49	4.423	3.184	3.06	2.889	3.851	4.739
04/02/2001	40	206	.	1	11:27	10:50	0:37	70	-1	297.6	202.5	95.1	3.95	3.186	5.057	3.171	3.919	4.869
03/28/2001	3	926	.	14	8:52	8:32	0:20	71.4	-0.3	163.2	127.8	35.4	3.474	3.186	2.721	4.4	4.961	3.623
08/22/2001	22	688	1	1	9:49	9:28	0:21	71.4	-1.2	245.1	189.8	55.3	2.248	3.202	4.171	3.133	3.056	3.754
02/28/2001	9	771	.	21	9:06	8:46	0:20	70	11	206.1	160.9	45.2	3.736	3.202	3.179	4.373	4.12	4.5
03/08/2001	20	368	.	14	9:20	8:52	0:28	71.4	0.5	194.5	145.9	48.6	2.862	3.208	3.056	3.276	3.456	3.868
03/21/2001	30	353	.	14	10:29	10:04	0:25	70.3	-1.8	372.5	325.8	46.7	2.877	3.208	2.758	3.908	3.712	3.734
03/30/2001	21	447	.	35	9:58	9:02	0:56	70.4	-1.5	265.5	169.1	96.4	3.036	3.217	3.742	3.041	3.297	3.4
03/23/2001	5	596	.	21	8:54	8:24	0:30	72.3	-1.4	343.3	261.1	82.2	5.299	3.218	3.585	3.587	4.538	4.474
03/26/2001	24	234	.	7	9:33	8:57	0:36	71.3	-0.8	270.2	204.5	65.7	3.824	3.224	4.376	3.155	4.572	3.502
03/08/2001	3	683	.	14	9:07	8:43	0:24	71.9	8.9	272.1	222.3	49.8	3.568	3.227	2.467	2.573	3.468	4.422
03/29/2001	5	350	.	14	8:55	8:28	0:27	71.7	4	281.3	194.5	86.8	3.984	3.248	2.949	3.548	3.424	3.969
02/28/2001	22	364	.	1	9:48	9:33	0:15	70.4	9.2	209.3	176.5	32.8	4.871	3.255	4.354	3.952	4.025	4.717
03/05/2001	10	646	.	7	9:29	8:57	0:32	70.3	-0.3	230.7	167.8	62.9	3.683	3.263	3.797	3.414	3.524	3.868
03/29/2001	12	353	.	28	9:03	8:28	0:35	71.2	-1	209.2	150.5	58.7	3.637	3.265	3	3.416	5.6662	2.986
03/29/2001	27	206	.	28	9:39	9:09	0:30	70	2.5	261.5	180.1	81.4	4.174	3.277	3.046	3.605	4.68	3.122
03/08/2001	17	876	.	28	9:25	8:51	0:34	70.1	7.5	261.2	177	84.2	2.951	3.279	3.04	2.283	3.998	3.524
03/08/2001	16	786	.	28	9:22	8:51	0:31	70.9	5.5	290.1	240.8	49.3	2.966	3.28	2.251	2.989	3.549	2.542
03/09/2001	12	398	.	1	9:17	8:59	0:18	70.7	6.8	112.3	80.5	31.8	5.099	3.28	4.038	4.284	3.649	4.005
04/02/2001	15	668	.	1	10:02	9:27	0:35	73.9	-1.5	278.1	199.3	78.8	3.53	3.281	3.594	4.542	4.927	4.039
03/07/2001	1	718	.	7	8:49	8:25	0:24	70.6	0.1	304.6	252.4	52.2	4.939	3.305	3.372	6.216	4.544	5.201
03/26/2001	9	109	.	14	8:48	8:21	0:27	71.3	-0.8	167.7	118.9	48.8	5.492	3.305	4.191	4.793	4.906	6.204
04/02/2001	12	350	.	35	9:37	8:51	0:46	70.9	-1.5	404	263.6	140.4	4.367	3.308	3.5	3.235	3.631	4.674
03/08/2001	6	684	.	28	9:15	8:45	0:30	71.3	9.9	227.3	171	56.3	3.309	3.312	3.74	3.465	2.857	2.786
03/07/2001	48	274	.	14	10:22	9:57	0:25	70.5	4	397.7	322.7	75	4.139	3.314	3.146	4.268	3.368	2.627
03/30/2001	4	626	.	21	8:56	8:10	0:46	70	-1.7	384	278.2	105.8	2.556	3.316	3.605	2.64	3.341	3.25
03/28/2001	29	502	.	14	10:09	9:51	0:18	70.7	7.5	146.6	107.1	39.5	3.683	3.318	4.224	4.33	4.843	4.983
03/08/2001	4	521	.	28	9:15	8:45	0:30	72.5	6.3	234.8	171.9	62.9	3.122	3.34	3.078	2.296	2.965	3.662
03/28/2001	11	363	.	14	9:16	8:56	0:20	70.8	-0.1	127.6	100.5	27.1	4.552	3.343	4.042	3.54	3.614	3.605
03/06/2001	22	575	.	35	9:07	8:46	0:21	71.1	9.3	147.7	111.6	36.1	3.003	3.346	3.743	4.465	3.865	3.884
03/09/2001	8	900	.	1	8:55	8:38	0:17	70.5	7	233.1	181.8	51.3	2.579	3.352	4.533	4.324	3.798	3.808
03/28/2001	27	219	.	14	10:05	9:48	0:17	71.1	7.1	203	170.8	32.2	3.046	3.357	1.873	3.985	3.642	3.532

08/22/2001	13	75	1	21	9:42	9:17	0:25	70.1	-0.9	298.4	223.9	74.5	3.71	3.36	4.399	2.845	4.016	3.248
03/05/2001	22	109	.	35	9:37	9:10	0:27	70.4	6.5	181.2	136.4	44.8	3.077	3.361	3.73	3.138	2.804	2.722
02/27/2001	24	619	.	1	9:28	9:10	0:18	70	16.5	172.7	131	41.7	2.581	3.364	3.928	4.003	5.101	5.403
03/29/2001	18	718	.	28	9:32	8:56	0:36	70.1	-1.2	341.4	246.7	94.7	4.379	3.368	3.495	3.704	2.88	3.058
03/07/2001	44	870	.	14	10:07	9:44	0:23	70	11.4	284.7	234.6	50.1	3.987	3.371	5.096	5.503	2.833	1.987
03/23/2001	11	156	.	21	8:52	8:24	0:28	70	-0.9	231.6	175.6	56	3.019	3.371	3.634	6.091	5.197	6.064
03/09/2001	17	676	.	14	9:36	9:13	0:23	71.9	9.4	302	255.8	46.2	3.259	3.373	2.139	2.492	2.285	2.389
02/28/2001	15	699	.	21	9:36	9:10	0:26	76	12.1	215.2	158.9	56.3	2.897	3.39	3.621	3.639	3.733	3.937
03/29/2001	23	807	.	28	9:34	8:59	0:35	71.4	-1.5	363.1	262.3	100.8	3.514	3.39	3.893	4.564	4.212	4.934
08/23/2001	2	470	1	14	9:31	8:53	0:38	70	-1.2	324.5	213.5	111	2.541	3.394	3.266	3.524	3.192	3.104
03/09/2001	25	573	.	14	9:41	9:23	0:18	72	12.8	122.9	104.4	18.5	3.524	3.394	5.214	5.015	4.848	4.28
03/09/2001	27	688	.	1	9:49	9:30	0:19	70.5	10	242.6	190.5	52.1	4.215	3.398	3.553	3.497	3.478	4.356
03/06/2001	39	156	.	35	9:26	9:02	0:24	71.3	6.7	159.7	115.8	43.9	3.134	3.403	4.231	2.825	5.681	4.355
03/23/2001	21	82	.	21	9:42	9:05	0:37	70	-1.2	215.7	165	50.7	3.637	3.404	3.523	4.459	4.22	4.208
03/05/2001	7	276	.	7	9:18	8:52	0:26	70.1	0.1	195.9	149.1	46.8	4.345	3.409	3.482	3.496	3.039	4.256
03/07/2001	10	683	.	7	9:02	8:30	0:32	70.3	1.8	253.9	227.1	26.8	2.364	3.426	4.494	6.563	4.381	5.277
03/07/2001	34	931	.	35	9:35	9:24	0:11	71	13.3	350.4	291.2	59.2	3.622	3.427	5.575	4.638	3.587	4.411
03/26/2001	1	404	.	7	8:59	8:18	0:41	70	-1.1	289.9	200.2	89.7	4.638	3.438	5.157	5.793	6.85	5.346
03/09/2001	16	186	.	1	9:44	9:12	0:32	70.2	4.2	289.8	198.2	91.6	4.601	3.44	4.41	4.897	5.224	6.159
04/02/2001	6	688	.	35	9:23	8:48	0:35	70.9	-1.5	273	179.2	93.8	3.369	3.453	3.986	3.828	3.993	3.913
02/27/2001	12	654	.	1	9:56	9:39	0:17	71	11.8	174.4	136.8	37.6	4.037	3.456	4.48	4.421	4.219	4.133
03/09/2001	30	91	.	14	10:02	9:39	0:23	70	10.6	243.1	205	38.1	4.841	3.457	4.569	5.707	6.066	4.99
02/28/2001	32	236	.	21	10:03	9:41	0:22	70	9.7	243.2	125.4	117.8	3.74	3.474	3.041	4.789	3.645	3.236
03/26/2001	10	771	.	14	8:39	8:21	0:18	70	-0.5	102.2	76.3	25.9	4.914	3.486	4.801	4.923	7.402	8.803
03/08/2001	15	668	.	28	9:17	8:50	0:27	72.9	8	225.3	176.8	48.5	2.489	3.489	2.697	2.237	3.146	4.317
03/29/2001	3	705	.	14	9:01	8:25	0:36	70	-0.9	340.9	253.6	87.3	3.385	3.497	4.105	4.865	4.717	3.427
03/08/2001	9	486	.	14	9:15	8:46	0:29	72.6	7.8	226.6	181.7	44.9	4.123	3.502	4.469	4.951	3.584	3.883
03/06/2001	13	114	.	35	8:50	8:29	0:21	70.2	9.7	114.5	80.3	34.2	4.752	3.502	4.498	5.711	3.83	4.521
03/23/2001	18	69	.	21	9:21	8:56	0:25	70.1	-1	175.8	136.4	39.4	4.147	3.504	3.429	3.415	3.453	4.93
03/29/2001	33	91	.	28	10:00	9:39	0:21	70	3.8	234.7	193.4	41.3	6.649	3.524	3.032	5.846	2.691	3.894
03/30/2001	16	186	.	35	9:29	8:55	0:34	71.2	-1.4	247.7	168.3	79.4	4.233	3.533	3.389	4.415	3.455	3.932
03/29/2001	15	156	.	28	9:05	8:30	0:35	73.5	-0.9	183.7	118.2	65.5	4.041	3.54	3.527	3.01	3.347	3.846
03/06/2001	3	771	.	35	8:44	8:26	0:18	71.2	5.2	153.9	103.8	50.1	4.966	3.542	7.268	4.766	4.94	7.61
03/07/2001	14	634	.	35	8:56	8:35	0:21	71.2	10.5	176.6	117	59.6	3.87	3.543	3.771	4.5	5.009	3.971
03/05/2001	3	738	.	7	9:01	8:34	0:27	70.1	-0.3	166.3	125.4	4.1	4.052	3.548	2.831	3.103	3.982	3.253
03/30/2001	25	684	.	35	10:06	9:30	0:36	70	-1.1	264.1	168.9	95.2	5.534	3.55	3.725	5.967	6.194	4.321
03/30/2001	2	265	.	21	8:43	8:10	0:33	70.1	-1.6	273.8	190.1	83.7	2.815	3.558	5.102	3.654	2.96	4.081
03/26/2001	31	75	.	7	9:38	9:03	0:35	70	-1.4	321.4	219.1	102.3	3.671	3.573	6.45	4.171	5.645	5.261
03/05/2001	25	83	.	7	9:35	9:11	0:24	70.5	1.5	160.5	128.5	32	3.677	3.584	4.331	3.163	3.837	4.991
03/01/2001	37	372	.	21	10:49	10:27	0:22	71.3	9.6	180.5	141.8	38.7	4.72	3.586	3.249	3.538	5.792	4.324
03/07/2001	24	434	.	35	9:37	9:10	0:27	70.4	11.8	250.8	182	68.8	3.985	3.588	3.598	3.372	3.925	3.668
03/28/2001	22	265	.	14	10:00	9:29	0:31	72.7	1	249.2	173.4	75.8	3.061	3.59	3.487	3.305	4.809	5.14
02/28/2001	2	225	.	21	9:05	8:43	0:22	71.7	12	177.6	130.9	46.7	4.237	3.59	4.417	4.481	5.861	4.847
03/29/2001	26	486	.	28	9:41	9:03	0:38	70.1	-0.4	260.2	189.6	70.6	2.967	3.595	3.995	4.513	4.356	5.258
04/02/2001	13	234	.	35	10:02	9:27	0:35	70.1	-1.4	278.2	196	82.2	3.788	3.603	4.109	3.605	3.348	3.659
03/07/2001	50	368	.	14	10:32	9:57	0:35	70.2	6.9	272.1	210.1	62	3.064	3.616	3.183	3.45	3.062	2.919

02/27/2001	16	276	.	1	10:18	9:57	0:21	71	14.1	198	148.3	49.7	3.603	3.619	4.973	3.251	4.114	3.993
03/28/2001	12	83	.	14	9:21	8:56	0:25	70	-0.8	148.5	114.5	34	3.433	3.623	3.697	3.194	2.794	3.055
03/28/2001	6	646	.	14	8:59	8:37	0:22	70	-0.8	189.6	141.9	47.7	5.568	3.631	3.193	4.081	4.164	4.587
03/06/2001	34	573	.	35	9:21	8:59	0:22	71.7	2.7	141.5	100.2	41.3	5.243	3.643	4.311	5.282	5.342	5.186
08/22/2001	4	726	1	28	9:15	8:48	0:27	72.4	-1.3	211.8	160.3	51.5	3.164	3.644	4.018	3.684	3.333	4.645
03/23/2001	12	393	.	21	8:51	8:24	0:27	70	-0.9	253.5	194.9	58.6	2.583	3.655	3.256	4.206	4.561	4.525
03/29/2001	22	81	.	28	9:33	8:50	0:43	70	-1.5	305.9	225.1	80.8	3.114	3.656	4.398	3.148	1.86	5.055
03/01/2001	38	301	.	21	10:52	10:29	0:23	70.2	7.3	206.4	153.4	53	4.445	3.666	5.097	4.199	4.662	3.54
03/06/2001	19	227	.	35	9:06	8:30	0:36	70	9.1	135	88	47	4.633	3.668	5.418	5.485	6.062	2.676
04/02/2001	27	681	.	1	10:49	10:07	0:42	70.7	-1	314.1	217.9	96.2	4.977	3.672	4.32	3.619	4.556	5
03/08/2001	29	404	.	28	10:10	9:37	0:33	71.4	1	307.3	212.2	95.1	3.878	3.678	3.822	3.455	3.852	4.86
02/27/2001	3	301	.	1	9:54	9:38	0:16	72	12.5	127.2	103.5	23.7	3.787	3.691	4.573	4.122	3.295	5.486
03/06/2001	15	282	.	35	8:49	8:29	0:20	70.8	10.5	220.3	162.8	57.5	3.369	3.693	3.503	3.557	4.01	4.13
03/08/2001	24	447	.	28	10:12	9:36	0:36	70.7	8.9	214.3	143.9	70.4	4.145	3.696	4.35	4.278	4.979	4.882
03/28/2001	28	654	.	14	10:10	9:51	0:19	72	1.3	186.7	151.3	35.4	4.09	3.719	3.509	3.583	3.172	4.261
03/28/2001	31	484	.	14	10:13	9:51	0:22	71.7	-0.3	196.1	153.6	42.5	4.987	3.72	4.75	3.402	4.236	4.3
03/06/2001	21	186	.	7	9:12	8:46	0:26	72.2	6.3	249.8	188.2	61.6	2.917	3.747	5.123	5.521	6.826	9.011
03/30/2001	5	684	.	21	8:42	8:11	0:31	70.8	-1.1	238.1	159.2	78.9	3.523	3.757	4.496	3.799	6.519	4.384
03/01/2001	22	276	.	21	10:35	10:01	0:34	70.1	0	157.5	107.1	50.4	3.791	3.764	4.45	4.828	4.093	6.198
03/28/2001	33	372	.	14	10:23	9:59	0:24	71.8	0.2	199.2	157.1	42.1	3.29	3.765	3.111	3.662	7.106	3.826
03/07/2001	12	749	.	7	9:06	8:30	0:36	70.1	-0.3	360.9	261.6	99.3	5.293	3.767	4.437	4.747	5.729	3.359
03/21/2001	9	186	.	14	9:52	9:19	0:33	74.1	-1.7	183.8	126.6	57.2	5.297	3.779	3.946	3.664	3.849	4.187
03/21/2001	8	646	.	28	9:17	8:48	0:29	72.2	-1.7	183.8	126.6	57.2	5.297	3.779	3.964	3.664	3.849	4.187
03/07/2001	16	807	.	35	9:25	8:44	0:41	70.6	5.4	330	247.6	82.4	2.432	3.78	2.666	3.63	3.139	4.455
03/30/2001	10	234	.	21	8:48	8:13	0:35	73.6	-1.5	243.8	164	79.8	3.314	3.785	3.349	3.271	3.05	3.26
08/22/2001	2	654	.	35	9:13	8:48	0:25	71.7	-1.4	187.8	134.9	52.9	4.578	3.789	4.106	4.972	5.049	4.113
03/23/2001	6	353	.	21	9:00	8:24	0:36	70	-1.1	277.7	209.2	68.5	3.058	3.791	3.915	3.879	4.788	4.619
03/08/2001	28	265	.	28	10:15	9:37	0:38	70.4	6.1	247.3	156.4	90.9	2.73	3.795	3.788	3.478	2.801	2.533
04/02/2001	34	81	.	1	10:55	10:13	0:42	70.1	-1.1	332.4	246	86.4	4.896	3.802	3.75	3.619	4.694	3.681
04/06/2001	22	372	.	28	9:31	9:09	0:22	70	-0.8	144.1	103.8	40.3	3.439	3.803	2.635	2.748	3.655	4.615
03/26/2001	39	626	.	7	10:20	9:32	0:48	70	-1.6	409.9	273.8	136.1	5.68	3.82	4.228	6.508	5.99	7.095
03/26/2001	36	470	.	7	9:50	9:23	0:27	70	-1.4	357.4	252.1	105.3	3.028	3.823	3.856	5.067	4.914	4.649
03/09/2001	4	314	.	1	9:08	8:37	0:31	70	7.5	189.8	125.5	64.3	6.836	3.828	5.139	3.955	4.599	5.174
03/23/2001	23	176	.	21	9:39	9:05	0:34	72.2	-1.2	256.2	198	58.2	3.881	3.832	4.392	3.488	5.351	4.393
03/29/2001	38	575	.	28	10:23	9:48	0:35	70	6.3	165.2	113.1	52.1	4.501	3.835	4.446	3.949	4.644	3.882
04/02/2001	33	626	.	1	10:59	10:12	0:47	70.1	-1	380.9	261	119.9	3.961	3.845	4.702	4.324	4.18	4.083
03/01/2001	19	502	.	7	9:33	9:15	0:18	71.5	4.6	107.7	85.2	22.5	3.243	3.846	3.981	5.429	3.596	3.636
03/07/2001	30	596	.	14	9:48	9:23	0:25	70.2	12	280.3	220.3	60	4.45	3.847	3.301	4.415	4.559	5.116
02/27/2001	25	646	.	1	9:33	9:10	0:23	70	15.8	168.6	118.4	50.2	3.851	3.855	4.312	5.32	5.092	4.95
03/23/2001	31	368	.	21	9:50	9:19	0:31	70.5	-1.1	278.3	208.7	69.6	5.84	3.86	4	5.52	4.94	5.31
03/26/2001	23	314	.	7	9:20	8:52	0:28	70.8	-1	225.1	165.1	60	4.346	3.862	4.285	5.736	5.177	5.231
02/28/2001	19	219	.	21	9:48	9:31	0:17	70	12.9	152.3	124.3	28	3.995	3.864	3.873	3.359	3.848	.
03/28/2001	30	282	.	14	10:20	9:51	0:29	70.7	1.2	195.1	154.4	40.7	4.15	3.869	3.559	3.362	3.325	3.952
08/23/2001	4	876	1	14	9:22	8:57	0:25	70	0.1	246.3	167.9	78.4	3.229	3.882	4.877	4.138	4.718	5.891
03/28/2001	20	681	.	14	9:58	9:22	0:36	70	-1.2	291.2	216.5	74.7	2.454	3.885	3.107	2.421	3.638	3.391
03/23/2001	24	303	.	21	9:37	9:11	0:26	70	-1.3	169	129.2	39.8	4.605	3.886	3.235	3.573	4.613	4.635

03/21/2001	35	81	.	14	10:51	10:13	0:38	70.8	-1.3	334.6	256.6	78	.	3.886	4.439	4.604	4.755	4.212
04/02/2001	37	596	.	1	11:31	10:48	0:43	70.1	-1.2	439.9	327.8	112.1	4.681	3.889	2.692	3.62	3.381	2.752
03/23/2001	46	926	.	28	10:28	10:01	0:27	71.5	-0.2	144.6	96.2	48.4	3.835	3.902	6.261	6.366	8.36	5.166
03/28/2001	21	404	.	14	9:57	9:28	0:29	70	1.1	318.8	246.2	72.6	3.76	3.903	4.572	3.436	3.432	4.177
03/21/2001	24	314	.	14	10:23	9:47	0:36	70	-0.8	299.5	224.9	74.6	4.478	3.904	5.499	5.209	3.742	3.77
03/07/2001	42	486	.	35	10:09	9:43	0:26	70.1	9.6	266.1	217.2	48.9	2.697	3.905	2.756	2.971	2.715	3.346
02/27/2001	17	731	.	1	10:21	9:57	0:24	70	13.4	211.8	158.1	53.7	5.808	3.905	7.256	7.072	5.155	6.684
03/07/2001	4	486	.	7	8:54	8:28	0:26	71.1	3.2	211.6	156.5	55.1	4.974	3.922	3.44	6.183	6.592	4.276
03/06/2001	36	876	.	7	9:28	8:59	0:29	73.3	3.6	166.7	111.5	55.2	3.477	3.925	4.192	3.757	5.807	4.071
03/23/2001	15	314	.	21	9:06	8:33	0:33	70	-1.1	249.8	184.7	65.1	3.665	3.933	4.141	3.09	3.213	.
03/23/2001	16	931	.	21	9:20	8:33	0:47	70	-1.5	456.6	340.1	116.5	2.722	3.934	3.623	3.501	5.787	3.369
03/01/2001	34	654	.	21	10:43	10:20	0:23	70.3	8.9	149.4	112.3	37.1	3.849	3.935	4.347	3.357	3.658	4.778
03/01/2001	13	109	.	21	9:47	9:14	0:33	74	9.9	198.2	133.7	64.5	4.008	3.943	4.043	4.951	4.636	4.067
03/26/2001	32	265	.	7	9:35	9:03	0:32	70.7	-1.2	318.9	237.3	81.6	4.289	3.946	4.383	4.275	3.851	3.478
04/02/2001	1	876	.	35	9:25	8:47	0:38	70.2	-1.3	306.6	196.4	110.2	4.526	3.953	3.451	3.661	3.986	3.998
03/09/2001	28	481	.	14	9:56	9:37	0:19	70	14.1	183.8	150.7	33.1	3.772	3.955	3.374	4.425	4.17	4.626
02/27/2001	2	282	.	1	9:54	9:38	0:16	72	12.1	197.3	165.7	31.6	5.005	3.958	4.347	4.086	4.437	3.665
04/02/2001	4	521	.	35	9:21	8:48	0:33	70.1	-1.2	253.5	168.7	84.8	3.356	3.964	3.104	4.164	4.199	3.945
03/23/2001	37	141	.	28	10:27	9:48	0:39	72	-1.1	131	85.9	45.1	4.34	3.97	4.56	3.75	3.12	2.92
03/21/2001	29	931	.	14	10:33	9:58	0:35	70.5	-1.8	431.7	334.9	96.8	3.158	3.974	4.709	4.083	4.045	4.746
03/05/2001	32	646	.	35	10:14	9:41	0:33	72.3	0	220.9	152.8	68.1	4.356	3.981	2.914	4.51	4.498	4.376
03/23/2001	30	81	.	21	9:56	9:19	0:37	70	-1.2	312.4	227.5	84.9	4.22	3.99	4.13	3.6	4.22	4.7
03/01/2001	27	646	.	21	10:27	10:05	0:22	70	7.2	193	134.9	58.1	4.01	4	3.95	3.64	3.27	4.77
03/07/2001	20	81	.	35	9:24	8:59	0:25	70	12.8	250.9	185.7	65.2	4.933	4.005	4.674	3.227	4.839	4.054
04/06/2001	1	573	.	28	8:58	8:29	0:29	70.1	4.2	137.6	103.2	34.4	6.748	4.012	5.336	4.399	4.31	4.382
03/26/2001	25	620	.	7	9:31	8:58	0:33	70.2	-1.1	206.5	149.4	57.1	3.762	4.021	5.444	5.692	3.659	.
03/26/2001	40	931	.	7	10:16	9:33	0:43	72	-1.5	354.2	252	102.2	3.516	4.03	4.169	3.617	4.25	4.108
03/26/2001	17	353	.	7	9:15	8:43	0:32	70	-0.8	284.2	204.3	79.9	4.754	4.0354	5.259	5.986	4.809	5.051
03/23/2001	7	620	.	21	9:04	8:24	0:40	72.7	-1.1	233.4	165.7	67.7	3.455	4.038	4.59	3.601	5.093	6.081
03/07/2001	47	634	.	14	10:16	9:46	0:30	70	0.4	309	246.8	62.2	3.277	4.039	3.248	2.601	3.394	2.901
03/23/2001	20	749	.	21	9:46	9:05	0:41	70.1	-1.4	332	249.6	82.4	4.384	4.046	4.806	5.604	5.311	7.3
03/23/2001	25	301	.	28	9:39	9:11	0:28	70	-1.3	191.7	138.5	53.2	4.56	4.058	5.968	5.085	5.069	4.226
03/23/2001	22	282	.	28	9:42	9:05	0:37	70	-1.1	230.6	155.9	74.7	4.591	4.065	3.993	5.405	4.582	4.923
04/02/2001	16	447	.	1	10:12	9:29	0:43	70.2	-1.4	298	210.8	87.2	4.212	4.069	4.086	4.115	3.196	3.915
03/23/2001	36	434	.	21	10:20	9:45	0:35	70.2	-1.3	240.8	162.1	78.7	5.33	4.08	4.65	4.71	5.08	5.24
03/30/2001	15	705	.	35	9:28	8:55	0:33	70	-1.7	319.6	223.8	95.8	3.164	4.089	4.474	3.64	4.194	5.449
03/01/2001	28	738	.	21	10:28	10:05	0:23	70.2	6.3	159.9	101.7	58.2	5.41	4.09	5.46	6.22	5.34	4.7
03/28/2001	10	699	.	14	9:20	8:56	0:24	70.5	-0.3	170.6	131.3	39.3	3.085	4.108	3.087	3.689	4.492	3.835
03/29/2001	19	496	.	28	9:24	8:57	0:27	70	3.5	234.1	182.4	51.7	5.081	4.116	3.046	3.202	2.244	3.252
02/28/2001	21	372	.	1	9:54	9:33	0:21	70	9.6	262.3	212.4	49.9	5.048	4.118	3.31	3.916	4.721	5.64
02/28/2001	8	364	.	21	9:09	8:46	0:23	70.7	11.5	197.5	148.6	48.9	4.615	4.119	4.215	3.975	4.25	5.305
03/07/2001	25	749	.	35	9:40	9:13	0:27	70.7	11.8	240.1	168.7	71.4	3.227	4.125	4.402	4.063	4.076	4.578
08/22/2001	27	684	1	1	10:13	9:46	0:27	70	-1	298.8	238.5	60.3	4.973	4.128	5.001	5.86	5.827	4.53
03/26/2001	7	398	.	7	8:40	8:20	0:20	70.2	-0.8	145.5	105.7	39.8	4.141	4.129	4.856	4.495	5.743	4.529
03/29/2001	17	556	.	28	9:36	8:56	0:40	70	0	223.3	166.5	56.8	5.638	4.143	4.955	2.658	4.217	5.445
03/06/2001	12	738	.	35	8:49	8:29	0:20	72.9	8.5	142.9	106.6	36.3	3.585	4.144	3.111	3.677	2.553	3.52

03/28/2001	32	592	.	14	10:12	9:51	0:21	71.4	3.1	150.5	101.1	49.4	4.035	4.147	4.113	3.745	3.65	.
03/26/2001	34	447	.	7	9:40	9:16	0:24	70.9	-1.6	238.4	174.7	63.7	3.717	4.149	4.092	5.515	6.808	5.894
03/28/2001	34	276	.	14	10:22	9:59	0:23	72.1	5.7	180.1	134.7	45.4	5.433	4.15	3.343	4.055	3.001	4.151
03/28/2001	1	225	.	14	9:01	8:32	0:29	70	-0.8	159.8	115.3	44.5	5.116	4.15	4.545	4.494	4.418	4.003
03/09/2001	24	786	.	1	10:07	9:22	0:45	70.2	-1.3	341.6	246.8	94.8	3.954	4.162	4.461	4.203	4.095	4.793
03/30/2001	22	900	.	21	9:43	9:19	0:24	70	-1.4	257.3	185	72.3	3.755	4.164	4.209	3.591	5.264	5.1
08/22/2001	11	749	1	28	9:27	8:55	0:32	71.7	-0.8	295.1	222.7	72.4	2.769	4.165	3.824	6.095	4.615	4.038
03/26/2001	13	575	.	7	9:02	8:23	0:39	70.3	-0.8	197.5	150.2	47.3	5.089	4.172	3.663	4.008	4.563	4.951
03/26/2001	2	156	.	7	8:52	8:18	0:34	72	-0.8	201	128.1	72.9	5.229	4.175	6.531	4.627	4.184	7.26
03/29/2001	6	314	.	28	8:56	8:28	0:28	70.1	-0.9	203.9	148	55.9	5.33	4.175	3.389	5.524	4.969	4.228
03/23/2001	17	496	.	21	9:37	8:56	0:41	70	-1.5	287.6	212.2	75.4	4.536	4.176	4.413	5.074	4.608	4.595
08/22/2001	9	275	1	28	9:26	8:52	0:34	70.1	-1.2	355.7	260.7	95	4.31	4.185	3.573	3.584	3.864	2.559
04/02/2001	46	368	.	1	11:29	10:55	0:34	70.2	-0.8	260.2	195.1	65.1	5.424	4.192	4.542	5.369	4.032	4.999
03/26/2001	22	82	.	7	9:25	8:52	0:33	70	-1.3	350.4	268.5	81.9	4.907	4.2	4.652	3.805	3.452	3.946
03/01/2001	40	141	.	21	10:53	10:32	0:21	70	11.8	173.9	132.7	41.2	4.104	4.203	3.611	4.3	3.162	3.504
03/29/2001	25	274	.	28	9:35	9:02	0:33	70.3	-0.8	233.9	171.4	62.5	3.669	4.208	2.949	3.902	3.803	3.152
03/21/2001	37	786	.	14	10:51	10:16	0:35	72.8	-1.3	311	220.8	90.2	4.493	4.212	4.126	6.463	4.636	4.659
03/07/2001	19	603	.	35	9:33	8:58	0:35	70	10.8	344.6	251.4	93.2	5.133	4.214	4.389	5.391	5.23	6.14
04/02/2001	5	786	.	35	9:24	8:48	0:36	70.3	-1.3	308.9	200.6	108.3	4.925	4.232	4.308	4.152	4.282	3.115
03/01/2001	3	699	.	7	9:37	9:14	0:23	70.2	9.4	143.2	98	45.2	4.365	4.239	4.574	3.722	5.851	3.59
03/23/2001	26	114	.	28	9:40	9:11	0:29	70.6	-1.2	207.5	152.7	54.8	4.909	4.24	5.206	3.933	4.677	6.051
04/02/2001	31	931	.	1	10:43	10:09	0:34	70.1	-0.8	294.1	210.5	83.6	4.368	4.246	4.751	5.274	4.269	4.966
03/29/2001	39	368	.	28	10:24	9:48	0:36	70	-0.1	296.5	205.5	91	4.216	4.25	4.985	3.321	3.785	4.202
03/28/2001	26	227	.	14	10:08	9:44	0:24	72	1.1	185.6	143.3	42.3	5.409	4.256	3.932	3.991	4.376	3.947
03/05/2001	39	363	.	35	8:56	8:31	0:25	70.3	3.6	96.5	64.6	31.9	3.66	4.257	3.973	3.671	3.995	4.72
03/07/2001	11	807	.	7	9:11	8:30	0:41	70.2	-0.5	359.9	242.2	117.7	6.532	4.272	4.378	7.183	5.79	4.837
03/06/2001	35	705	.	7	9:32	8:59	0:33	70.2	-3.2	369.6	286.1	83.5	3.785	4.286	3.463	4.695	4.107	3.549
08/23/2001	5	718	1	14	9:32	8:59	0:33	70.7	-0.8	260.7	175.2	85.5	7.31	4.293	6.227	6.765	6.158	4.422
03/23/2001	9	206	.	21	9:01	8:24	0:37	70	-1.5	259.6	181.6	78	4.948	4.298	3.809	4.772	4.341	4.848
03/21/2001	3	109	.	28	9:10	8:46	0:24	71.5	-1	158	101.9	56.1	4.928	4.298	5.627	5.06	4.654	5.732
08/22/2001	10	275	.	28	9:30	8:52	0:38	70	-1.6	272.1	190.1	82	5.015	4.299	3.941	2.785	3.953	4.088
03/29/2001	32	82	.	28	10:10	9:28	0:42	70	-0.6	326.9	255.7	71.2	2.158	4.3	3.408	4.015	5.219	3.786
03/29/2001	11	69	.	28	8:58	8:28	0:30	70.6	-0.9	178.8	123.8	55	4.637	4.301	3.674	4.46	4.156	4.596
03/30/2001	17	75	.	35	9:16	8:55	0:21	70	-6	242.3	164.7	77.6	5.106	4.302	4.207	3.921	5.561	4.637
03/28/2001	25	75	.	14	10:10	9:38	0:32	70.1	3.1	263.2	182.3	80.9	5.531	4.31	5.561	5.355	5.964	4.705
03/29/2001	28	434	.	28	9:43	9:05	0:38	70.1	-1.3	243.3	159.9	83.4	4.403	4.312	4.655	5.115	3.982	4.693
04/02/2001	23	395	.	1	10:13	9:39	0:34	70.7	-0.8	272.7	207.6	65.1	8.082	4.315	5.62	6.781	9.822	7.089
03/30/2001	1	681	.	21	8:52	8:10	0:42	74.8	-1.6	278	172	106	3.815	4.34	3.261	3.363	3.07	3.67
03/23/2001	40	486	.	21	10:34	9:48	0:46	70.5	-1.3	280.9	206.1	74.8	5.046	4.341	5.06	5.628	5.827	4.913
03/23/2001	43	276	.	28	10:33	9:58	0:35	71.1	-1	197.3	127.3	70	3.64	4.35	4.21	3.83	4.59	4.29
03/09/2001	1	350	.	1	8:58	8:18	0:40	71.2	-0.8	359.3	260.2	99.1	3.346	4.356	3.165	3.195	3.615	3.677
03/05/2001	49	328	.	35	9:01	8:31	0:30	71.5	-1	117.5	81.7	35.8	4.602	4.356	4.155	5.547	4.729	5.074
02/28/2001	36	608	.	21	10:10	9:42	0:28	70	9.7	284.4	204.2	80.2	3.156	4.358	2.998	3.156	4.11	4.431
04/02/2001	22	434	.	1	10:03	9:30	0:33	71.8	-1.1	287.3	211.7	75.6	3.483	4.359	3.466	4.561	4.49	4.192
03/05/2001	8	328	.	7	9:20	8:53	0:27	70	0.3	188.8	141.1	47.7	6.775	4.369	5.351	5.097	3.917	5.481
03/26/2001	15	176	.	7	8:59	8:23	0:36	72.2	-0.8	330	229.4	100.6	3.987	4.378	4.206	3.879	4.251	4.351

03/05/2001	36	236	.	35	10:12	9:43	0:29	71.5	-3.3	210	146.8	63.2	3.962	4.389	5.132	2.887	4.487	5.303
08/22/2001	3	393	1	1	9:20	8:48	0:32	71.3	-1.2	202.2	147	55.2	4.759	4.39	2.859	2.979	3.104	4.593
03/05/2001	50	219	.	35	8:49	8:31	0:18	70.9	7.6	61.3	47.5	13.8	2.039	4.399	.	2.58	2.65	.
03/26/2001	29	688	.	7	9:28	9:01	0:27	70.6	-1.4	233.9	163.5	70.4	4.557	4.42	4.057	4.096	4.269	4.845
03/21/2001	32	227	.	28	10:26	10:05	0:21	70.7	-1.3	155.6	130.4	25.2	3.991	4.42	3.635	4.955	4.342	4.001
03/29/2001	13	596	.	28	8:58	8:58	0:00	70.1	-1	304.1	197.7	106.4	6.977	4.422	5.081	4.647	4.519	6.426
02/27/2001	37	926	.	1	9:27	9:10	0:17	70	15.7	92	65.8	26.2	5.079	4.427	4.477	6.884	6.962	5.375
04/02/2001	17	603	.	1	10:00	9:29	0:31	70.1	-1.1	296.3	216.7	79.6	5.75	4.428	4.856	6.658	6.283	6.941
03/06/2001	2	69	.	35	8:44	8:26	0:18	71.3	1.7	149.2	105.7	43.5	4.64	4.429	4.267	3.422	2.814	4.144
03/01/2001	36	114	.	21	10:46	10:26	0:20	73	3.3	135.4	100.4	35	5.142	4.431	6.21	6.447	4.501	5.991
03/30/2001	7	786	.	21	8:50	8:11	0:39	70	-1.6	298.7	218.6	80.1	3.62	4.432	3.449	6.224	4.999	5.001
03/06/2001	4	731	.	35	8:53	8:27	0:26	73.1	9	160	103.6	56.4	4.248	4.433	3.483	4.67	5.367	3.904
02/28/2001	14	282	.	21	9:33	9:10	0:23	70.2	12.5	225	176.4	48.6	4.267	4.442	5.382	5.03	6.289	5.018
03/05/2001	15	225	.	7	9:27	9:04	0:23	70	6.7	170.3	132.6	37.7	4.768	4.443	4.967	5.086	5.709	5.598
03/23/2001	47	699	.	28	10:32	10:01	0:31	70	-0.7	159.8	90.7	69.1	4.774	4.449	4.315	4.877	4.731	4.951
03/05/2001	30	484	.	35	10:03	9:40	0:23	74.8	9.2	135.9	92.4	43.5	3.726	4.45	4.313	3.855	4.111	2.804
04/02/2001	25	486	.	1	10:50	10:06	0:44	70.4	-0.7	315.9	226.1	89.8	3.414	4.453	6.327	3.749	3.743	5.054
04/02/2001	35	234	.	1	10:47	10:14	0:33	70	-1	289.2	213.8	75.4	3.714	4.457	4.828	5.185	4.242	3.535
03/06/2001	40	726	.	35	9:20	9:02	0:18	70.2	10.6	138.7	103.9	34.8	4.381	4.469	3.929	2.938	3.42	2.486
03/30/2001	23	404	.	21	10:07	9:30	0:37	70.3	-1.1	328.3	208.6	119.7	3.699	4.471	4.388	3.96	4.705	3.425
03/28/2001	24	521	.	14	10:14	9:35	0:39	71.3	1.6	298.7	218.6	80.1	3.928	4.475	4.142	4.955	5.583	4.922
03/05/2001	37	757	.	35	10:16	9:43	0:33	70.2	-3.1	178.7	124.3	54.4	9.784	4.485	5.028	7.176	4.188	4.163
03/09/2001	10	481	.	1	9:19	8:50	0:29	70.6	7.2	192.6	136.3	56.3	5.359	4.495	3.806	6.178	7.193	5.624
04/02/2001	7	404	.	35	9:22	8:50	0:32	70.1	-1.2	287.4	181.3	106.1	3.665	4.497	4.269	4.682	4.442	3.405
03/21/2001	6	619	.	28	9:17	8:48	0:29	72.8	-1.4	180.9	111.7	69.2	3.662	4.499	4.499	3.463	4.568	4.065
02/27/2001	14	657	.	1	10:07	9:51	0:16	70.6	14.8	123	94.2	28.8	5.421	4.499	4.476	7.096	8.778	8.942
02/27/2001	22	502	.	1	9:28	9:10	0:18	70	15.6	93.3	63.9	29.4	3.956	4.504	4.314	3.232	4.048	4.989
03/06/2001	31	91	.	35	9:28	8:58	0:30	70	-1.3	207.7	153.6	54.1	5.804	4.508	6.048	4.06	4.495	3.025
04/06/2001	19	731	.	28	9:37	9:06	0:31	70.6	-0.9	164.7	116.1	48.6	4.757	4.509	3.448	3.362	4.205	3.647
03/28/2001	40	114	.	14	10:20	10:02	0:18	70.8	-0.4	191.5	151.2	40.3	4.15	4.51	5.455	5.11	5.286	5.239
03/09/2001	2	303	.	1	8:53	8:18	0:35	70	-0.5	236.7	169.4	67.3	3.009	4.518	3.016	2.526	2.787	4.395
03/23/2001	49	502	.	28	11:00	10:29	0:31	70.1	-0.8	196.3	135.4	60.9	3.253	4.521	4.818	4.888	5.731	4.673
03/26/2001	3	393	.	7	8:56	8:18	0:38	70	-0.8	183.1	133.4	49.7	4.64	4.531	3.961	4.522	5.557	6.905
03/21/2001	22	398	.	14	10:05	9:41	0:24	72.3	-0.8	157.5	119.4	38.1	3.718	4.548	3.355	3.566	4.966	.
03/28/2001	8	757	.	14	8:56	8:37	0:19	70.1	-0.8	157.7	120.9	36.8	6.533	4.555	6.542	8.049	4.387	6.997
04/02/2001	19	668	.	35	10:06	9:30	0:36	72	-1	231.1	151.3	79.8	4.849	4.555	5.39	4.3	5.384	.
02/28/2001	3	657	.	21	9:01	8:43	0:18	70	11.3	133.4	101.5	31.9	6.2	4.556	4.736	5.419	.	.
03/06/2001	24	786	.	7	9:29	8:55	0:34	71.6	2	303.6	209.2	94.4	4.362	4.559	4.987	4.994	6.056	5.823
03/21/2001	16	82	.	14	10:03	9:19	0:44	73.6	-2	301.8	220.8	81	4.718	4.561	4.711	4.001	5.421	4.377
03/06/2001	30	556	.	35	9:31	8:57	0:34	70	4.6	217.1	163.3	53.8	5.02	4.57	3.924	4.006	3.53	4.172
03/23/2001	3	807	.	21	9:11	8:24	0:47	70	-1.5	402.3	283.8	118.5	4.806	4.572	4.801	4.302	4.461	4.629
03/26/2001	8	91	.	7	8:56	8:20	0:36	70	-0.9	254.1	164.6	89.5	5.235	4.589	6.706	6.773	6.123	7.114
02/27/2001	29	699	.	1	9:25	9:10	0:15	70	15.1	168.9	125	43.9	3.654	4.6	4.336	4.967	3.618	.
03/23/2001	4	275	.	21	8:57	8:24	0:33	70.6	-1.5	370.7	267.4	103.3	5.919	4.621	4.542	4.976	4.464	4.489
03/30/2001	3	470	.	21	8:53	8:10	0:43	70.2	-1.9	364	239.3	124.7	2.842	4.646	4.166	2.646	3.538	2.699
03/01/2001	26	138	.	21	10:38	10:05	0:33	70	8	219	149.3	69.7	3.203	4.649	3.884	3.858	3.748	3.774

03/08/2001	27	705	.	28	10:29	9:36	0:53	70.5	0.1	298.3	189.9	108.4	3.809	4.663	4.524	3.435	3.487	5.057
04/02/2001	43	265	.	1	11:11	10:53	0:18	70.1	-0.8	205.1	138	67.1	3.043	4.667	4.132	5.491	6.028	5.702
03/07/2001	21	275	.	35	9:26	8:59	0:27	70.2	12.7	269.5	196.4	73.1	4.687	4.668	4.246	5.036	4.909	3.58
03/26/2001	14	496	.	7	9:01	8:23	0:38	70.2	-1	272.6	209.9	62.7	4.649	4.673	4.438	4.572	4.973	4.132
03/08/2001	5	718	.	14	9:10	8:45	0:25	71.2	6.1	251.8	193.6	58.2	2.62	4.674	4.994	4.075	3.699	4.476
03/09/2001	13	620	.	1	9:38	9:00	0:38	70	6.9	251.2	187.6	63.6	4.4	4.687	3.877	5.216	4.175	3.572
03/05/2001	47	560	.	35	9:00	8:31	0:29	73.9	-0.7	215.8	150.7	65.1	3.997	4.689	3.708	4.203	4.536	4.325
03/08/2001	39	186	.	28	10:29	9:57	0:32	70.2	9.2	235.2	159	76.2	2.708	4.695	3.697	4.222	3.13	2.868
03/28/2001	39	364	.	14	10:24	10:00	0:24	70.1	4.8	172.5	137.6	34.9	2.46	4.703	5.186	3.976	4.361	3.987
02/27/2001	20	83	.	1	10:13	9:58	0:15	72	14.6	109.3	85.6	23.7	3.631	4.715	5.044	4.607	3.656	4.403
03/07/2001	5	206	.	7	9:04	8:28	0:36	70.3	-0.5	324.7	216.9	107.8	6.436	4.723	4.769	6.752	6.893	4.542
02/28/2001	25	484	.	1	9:59	9:35	0:24	70.2	9	243.3	190.4	52.9	7.307	4.725	5.083	5.883	3.59	4.903
03/21/2001	33	726	.	14	10:41	10:07	0:34	70.8	-0.9	230.9	178.9	52	5.75	4.729	6.41	4.12	5.116	6.318
03/23/2001	44	372	.	28	10:23	9:58	0:25	71.2	-0.8	165.7	102.5	63.2	4.388	4.731	4.626	3.712	5.587	6.404
03/28/2001	5	83	.	14	8:58	8:37	0:21	70	-0.8	113.2	86.8	26.4	3.65	4.732	4.281	4.293	3.622	3.281
03/28/2001	14	328	.	14	9:28	8:58	0:30	70	-1.1	236.6	166.2	70.4	4.339	4.736	7.613	4.97	5.1	7.04
03/21/2001	26	620	.	14	10:11	9:47	0:24	70	-0.7	222.8	168	54.8	3.53	4.738	4.77	5.237	6.832	5.173
04/02/2001	38	496	.	1	11:32	10:48	0:44	74.2	-1.1	322.1	234.4	87.7	3.585	4.739	3.803	4.081	4.506	3.956
03/05/2001	4	225	.	7	9:07	8:34	0:33	72.6	-0.6	191.7	135.2	56.5	6.715	4.745	6.07	6.819	5.759	4.502
03/05/2001	2	560	.	7	9:07	8:34	0:33	70.4	-0.6	198.1	136.6	61.5	4.575	4.746	4.199	6.857	3.917	4.795
03/21/2001	2	414	.	28	9:14	8:46	0:28	70.6	-1	186	121.6	64.4	5.34	4.749	5.019	7.13	6.028	5.27
03/23/2001	39	738	.	28	10:14	9:48	0:26	70.3	-1	129	88.8	40.2	5.46	4.75	5.01	4.85	5.1	.
03/09/2001	11	876	.	1	9:21	8:55	0:26	70	4.9	324.9	257.9	67	1.911	4.753	3.588	2.109	4.841	3.314
02/27/2001	33	236	.	1	9:32	9:10	0:22	70	16.2	169.7	117.5	52.2	3.416	4.76	5.818	5.524	5.49	5.92
04/02/2001	42	634	.	1	11:24	10:52	0:32	70	-0.8	233.8	57.7	176.1	4.369	4.763	5.067	7.587	6.891	6.241
03/21/2001	18	328	.	28	10:03	9:30	0:33	78.6	-0.6	236.8	159.2	77.6	4.709	4.766	4.757	5.528	5.585	5.43
03/21/2001	25	176	.	14	10:14	9:47	0:27	72.7	-1	250	190.6	59.4	4.051	4.783	4.703	5.14	4.303	4.42
03/06/2001	20	657	.	35	8:47	8:30	0:17	72.7	10.3	109.8	84.1	25.7	5.366	4.793	5.036	5.258	4.965	3.782
03/29/2001	31	608	.	28	9:46	9:07	0:39	71.1	-1.8	489	315	174	5.282	4.8	5.261	5.073	3.874	4.709
03/28/2001	7	301	.	14	8:54	8:37	0:17	70.8	-0.2	120.3	86.1	34.2	4.786	4.805	5.025	3.492	4.859	4.337
03/21/2001	39	634	.	14	10:45	10:23	0:22	70.8	-1.3	223.9	185	38.9	5.837	4.816	4.706	4.687	5.743	6.954
02/28/2001	28	592	.	1	9:56	9:36	0:20	71.8	8.8	170.3	136	34.3	4.69	4.816	6.086	3.193	7.646	.
03/09/2001	29	689	.	14	9:55	9:38	0:17	70.1	15.1	259.5	217.3	42.2	3.659	4.826	3.786	3.626	3.241	3.749
03/01/2001	9	757	.	7	9:46	9:14	0:32	70.8	11.2	161.6	103.7	57.9	5.676	4.827	10.751	7.625	9.267	7.961
03/01/2001	21	619	.	7	9:42	9:15	0:27	72	7	214.9	159.4	55.5	3.57	4.84	4.101	5.482	4.83	3.691
03/01/2001	32	592	.	21	10:42	10:09	0:33	70	0.5	142	94.8	47.2	4.219	4.854	3.877	4.895	6.369	6.162
03/01/2001	16	363	.	7	9:43	9:14	0:29	70.1	10.8	145	106.7	38.3	5.049	4.92	4.779	4.927	4.429	4.972
02/28/2001	18	731	.	21	9:37	9:14	0:23	70	13.4	145.6	114.3	31.3	4.356	4.935	3.526	3.28	3.94	4.056
04/02/2001	32	718	.	1	10:51	10:10	0:41	70.4	-1	264.6	187.1	77.5	5.489	4.938	5.976	4.371	6.783	6.073
04/02/2001	41	353	.	1	11:30	10:50	0:40	70.7	-1	257.3	182.1	75.2	4.667	4.948	3.317	4.996	3.547	5.279
03/09/2001	7	575	.	1	9:09	8:38	0:31	70.6	1.5	223.8	155.1	68.7	3.722	4.949	7.19	5.529	5.817	6.842
03/29/2001	10	76	.	28	8:59	8:28	0:31	70.1	-1.1	195.2	131.5	63.7	5.148	4.956	4.282	5.05	5.028	3.823
03/23/2001	27	556	.	21	9:46	9:11	0:35	70	-1.1	243.3	183.6	59.7	5.13	4.98	7.16	4.98	6.64	7.06
08/22/2001	5	654	1	35	9:14	8:50	0:24	70.1	-1	175.2	114.8	60.4	5.351	4.983	3.454	6.331	6.577	4.681
03/05/2001	13	301	.	7	9:26	9:04	0:22	70.1	6.3	115.7	90	25.7	5.47	5	5.336	6.46	5.207	4.881
03/23/2001	48	608	.	28	11:01	10:29	0:32	71.5	0.2	131.9	92	39.9	3.962	5.001	4.265	4.186	4.237	4.221

03/26/2001	19	668	.	7	9:12	8:43	0:29	71.7	-1.2	280.9	207	73.9	4.735	5.006	5.122	3.97	6.98	4.71
03/09/2001	23	521	.	1	10:00	9:21	0:39	70.2	1.1	293.8	223.7	70.1	4.759	5.025	7.855	4.903	5.423	5.104
03/26/2001	27	368	.	7	9:42	9:01	0:41	70.8	-1.1	299.6	216.3	83.3	6.001	5.035	5.394	4.152	3.784	4.228
03/26/2001	35	684	.	7	9:51	9:22	0:29	70.1	-1.6	289	216.3	72.7	6.414	5.042	4.92	5.597	4.463	4.197
04/02/2001	44	82	.	1	11:34	10:53	0:41	73.2	-1.1	306.4	212.9	93.5	5.116	5.043	4.073	5.476	.	4.402
03/01/2001	33	83	.	21	10:34	10:09	0:25	70	9.6	187.7	127.3	60.4	5.127	5.044	3.975	3.81	6.149	4.556
03/23/2001	29	138	.	28	9:54	9:19	0:35	70.1	-1.1	222.2	152.7	69.5	4.32	5.05	3.96	5.34	5.2	3.28
03/01/2001	23	414	.	21	10:26	10:01	0:25	70.1	5	197.4	143.2	54.2	5.487	5.058	5.516	5.498	5.911	4.683
02/28/2001	37	363	.	21	10:09	9:42	0:27	70.1	9.7	146.7	102.3	44.4	5.868	5.066	4.916	4.044	3.948	.
03/07/2001	39	82	.	35	10:04	9:36	0:28	70	8.3	283.2	216.2	67	4.158	5.087	5.031	2.486	2.821	4.415
03/07/2001	32	603	.	14	9:47	9:23	0:24	70.6	12.8	286.4	218.9	67.5	4.719	5.09	4.554	4.935	4.254	4.296
03/30/2001	19	668	.	21	9:41	8:58	0:43	70.1	-1.5	280.6	202.9	77.7	3.228	5.099	3.194	2.526	4.267	3.68
03/08/2001	34	76	.	1	10:01	9:37	0:24	70	2.1	215.6	163.5	52.1	6.16	5.103	6.439	6.243	6.204	6.975
03/07/2001	13	275	.	7	9:17	8:31	0:46	70.1	-0.1	394	268.8	125.2	7.341	5.111	5.689	5.753	4.515	6.386
03/05/2001	5	282	.	7	9:06	8:34	0:32	70.3	-0.6	212.7	152.6	60.1	4.771	5.124	4.085	4.314	4.209	5.221
03/21/2001	15	798	.	28	9:45	9:19	0:26	70.6	1.5	138.4	92.9	45.5	5.284	5.143	4.387	4.318	5.73	5.173
02/28/2001	29	608	.	1	9:55	9:40	0:15	72	10.1	163.4	133.9	29.5	4.432	5.143	6.067	6.184	6.223	4.3
03/08/2001	30	75	.	28	10:05	9:37	0:28	75.1	1.2	259.6	179.1	80.5	6.238	5.165	5.218	6.676	5.827	7.062
03/01/2001	31	560	.	21	10:29	10:09	0:20	70.6	1.2	200.1	132.2	67.9	5.052	5.174	4.292	4.318	5.696	5.597
03/01/2001	4	364	.	7	9:42	9:14	0:28	74.8	10.3	208.1	145.5	62.6	7.86	5.18	5.75	5.901	5.795	4.821
03/07/2001	45	353	.	35	10:25	9:49	0:36	70.2	11.4	314.6	224.6	90	4.372	5.19	3.837	4.428	2.657	4.434
02/27/2001	26	363	.	1	9:33	9:10	0:23	70	16	102.1	69.6	32.5	7.331	5.194	6.548	5.333	6.801	7.579
02/28/2001	39	328	.	21	10:11	9:49	0:22	70	11.1	242.2	188.5	53.7	4.256	5.212	3.658	5.051	4.166	4.672
03/26/2001	12	76	.	7	8:44	8:21	0:23	72.5	-0.3	168.6	117.4	51.2	5.915	5.212	4.466	5.237	5.988	5.587
03/07/2001	9	274	.	7	8:51	8:29	0:22	70.5	8.9	242.8	158.4	84.4	5.716	5.218	6.447	5.361	8.138	.
03/01/2001	5	372	.	7	9:42	9:14	0:28	70.6	12.3	147.7	103.1	44.6	4.442	5.224	5.471	4.776	6.678	6.111
03/21/2001	4	771	.	28	9:18	8:48	0:30	73.9	-1.2	199.3	143.9	55.4	5.598	5.241	4.76	4.81	4.798	4.204
03/09/2001	9	339	.	1	9:13	8:38	0:35	70.6	-0.6	215.7	141.4	74.3	5.512	5.242	6.78	5.848	4.776	7.821
02/27/2001	32	109	.	1	9:32	9:10	0:22	70	16.5	156.6	116.1	40.5	4.065	5.244	5.795	5.482	4.3	4.462
03/28/2001	15	414	.	14	9:23	8:59	0:24	70	-1	201.5	146.1	55.4	6.891	5.248	4.208	5.869	4.677	4.582
03/07/2001	8	274	.	7	8:52	8:29	0:23	70	7.3	267.8	198.1	69.7	5.208	5.285	5.352	6.434	5.295	4.492
02/28/2001	16	757	.	21	9:38	9:10	0:28	70.1	12.3	238.1	178.8	59.3	5.375	5.314	5.745	4.742	7.241	9.095
03/21/2001	40	575	.	14	10:50	10:24	0:26	70.4	-1.1	184.3	141.1	43.2	6.068	5.345	4.71	5.969	5.235	5.286
03/21/2001	23	393	.	14	10:17	9:47	0:30	70	-0.4	221.9	167.7	54.2	5.002	5.381	6.332	5.669	5.774	6.359
03/21/2001	7	236	.	28	9:16	8:48	0:28	70	-1.5	227.7	162.2	65.5	3.928	5.386	5.814	5.003	4.667	4.619
03/05/2001	17	138	.	7	9:30	9:05	0:25	71.7	6.9	160.8	110.8	50	3.533	5.391	3.827	3.718	4.771	4.984
03/09/2001	18	689	.	1	9:45	9:14	0:31	71.1	-1.7	290.6	205.7	84.9	4.87	5.439	6.159	7.621	5.293	4.024
03/23/2001	28	76	.	21	9:56	9:19	0:37	70	-0.9	220.9	159.9	61	4.26	5.44	5.3	5.35	4.83	4.89
03/01/2001	1	926	.	21	9:41	9:14	0:27	72.4	9.5	136.3	99.9	36.4	3.815	5.447	4.529	6.06	5.18	5.432
08/23/2001	3	807	1	14	9:45	8:56	0:49	70	-1	405.9	280.2	125.7	6.418	5.463	4.092	4.332	6.041	5.79
03/01/2001	7	635	.	7	9:43	9:14	0:29	70	4	177	116.6	60.4	4.666	5.473	5.88	5.295	6.438	6.067
03/28/2001	23	657	.	14	9:47	9:29	0:18	70	7.2	129.4	107.8	21.6	5.459	5.497	4.269	4.752	3.542	3.438
03/29/2001	21	393	.	28	9:21	8:58	0:23	70.5	6.2	147	96.8	50.2	4.909	5.513	3.351	4.191	3.733	3.499
03/05/2001	48	798	.	35	9:00	8:31	0:29	71.4	-0.5	166	113.3	52.7	4.457	5.519	5.006	4.683	5.835	4.097
03/06/2001	9	731	.	35	8:52	8:28	0:24	70.1	6.5	209.3	145.6	63.7	3.855	5.539	4.753	4.38	4.271	6.203
02/27/2001	9	771	.	1	9:56	9:38	0:18	73	11.7	134.7	96.5	38.2	4.675	5.539	4.969	5.974	7.622	7.244

03/29/2001	29	683	.	28	9:45	9:06	0:39	70	-1.5	288.5	206.1	82.4	5.699	5.546	6.025	4.405	4.324	4.523
03/26/2001	6	556	.	7	8:47	8:20	0:27	70	-1	202.8	137.3	65.5	5.35	5.553	6.507	7.944	7.292	6.467
02/28/2001	17	635	.	21	9:37	9:10	0:27	70	12.6	188.4	142.7	45.7	3.085	5.554	5.127	4.86	3.484	4.233
02/27/2001	13	114	.	1	10:10	9:51	0:19	70	13.6	195.1	157.4	37.7	6.345	5.557	5.15	7.221	6.395	6.469
03/21/2001	12	657	.	28	9:50	9:19	0:31	71.6	-1.9	156.7	101.6	55.1	6.39	5.559	5.884	5.937	6.858	6.408
03/05/2001	33	364	.	35	10:11	9:42	0:29	73.3	1.9	184.9	129.2	55.7	5.072	5.565	4.266	4.401	5.263	6.326
03/23/2001	13	634	.	21	9:02	8:33	0:29	70	-0.8	246.1	175.8	70.3	6.078	5.569	4.602	7.606	5.645	7.138
03/21/2001	1	484	.	28	9:15	8:46	0:29	70.1	2.2	179	117.1	61.9	6.889	5.583	5.452	6.289	4.62	5.408
03/30/2001	12	175	.	21	9:01	8:13	0:48	70	-1.7	366.2	231.8	134.4	6.275	5.588	5.37	4.554	5.298	6.165
03/29/2001	16	481	.	28	9:06	8:31	0:35	71.3	-1	238.1	169.7	68.4	4.221	5.619	3.377	5.972	5.595	3.973
02/28/2001	5	484	.	21	9:13	8:44	0:29	70	10.4	207.9	148.3	59.6	5.918	5.622	4.642	4.036	3.641	.
03/07/2001	7	596	.	7	9:05	8:29	0:36	71.2	-0.5	363.7	256.4	107.3	4.701	5.649	4.175	3.774	3.905	4.085
03/28/2001	13	275	.	14	9:28	8:57	0:31	70	-1.1	338.5	248.4	90.1	7.662	5.651	4.45	6.038	5.006	5.106
03/26/2001	37	350	.	7	10:15	9:29	0:46	71.4	-1.5	338.5	229.5	109	4.118	5.704	5.813	5.522	5	5.53
02/28/2001	38	798	.	21	10:08	9:42	0:26	70	9.9	213.7	167.3	46.4	4.985	5.706	4.011	4.739	6.194	4.998
03/08/2001	33	481	.	1	10:10	9:37	0:33	70.8	7.7	222.7	161.8	60.9	3.447	5.72	5.538	6.539	5.63	6.06
02/28/2001	24	219	.	1	9:54	9:34	0:20	70.5	9.2	211.2	173.6	37.6	5.482	5.726	4.913	6.724	8.185	.
03/23/2001	14	481	.	21	9:09	8:33	0:36	70	-1	238.1	166.3	71.8	4.77	5.738	7.435	4.981	4.51	4.015
04/02/2001	39	404	.	1	11:32	10:49	0:43	71.1	-1	294.2	198.1	96.1	6.059	5.753	5.424	4.348	4.271	4.475
03/29/2001	9	668	.	14	9:05	8:28	0:37	72.5	-1	271.2	170.6	100.6	6.407	5.754	5.233	7.035	7.104	5.718
04/02/2001	45	807	.	1	11:35	10:54	0:41	70.1	-1.1	308.3	233	75.3	6.545	5.755	4.118	5.296	5.718	6.159
03/05/2001	35	926	.	35	10:17	9:43	0:34	70	4.4	252.6	96.7	155.9	2.483	5.77	3.274	4.24	5.257	6.3
03/21/2001	38	560	.	28	10:49	10:18	0:31	73.3	-1.5	199.3	135.8	63.5	7.246	5.781	6.096	6.723	7.134	4.596
02/27/2001	35	798	.	1	9:29	9:10	0:19	70	15.8	132.4	92.5	39.9	.	5.817	4.573	6.241	.	.
03/26/2001	38	521	.	7	10:14	9:31	0:43	71.5	-1.6	285.7	196.9	88.8	6.027	5.823	4.861	6.967	4.483	5.413
03/21/2001	28	556	.	14	10:23	9:56	0:27	70.5	-1.5	204.9	154.9	50	7.045	5.843	4.723	5.273	5.813	5.224
03/23/2001	35	726	.	21	10:18	9:45	0:33	70	-1.3	201.1	143.6	57.5	5.72	5.86	5.79	5.21	6.67	8.34
03/30/2001	28	705	.	21	10:19	9:42	0:37	70	-0.2	312.7	233.4	79.3	5.616	5.874	4.907	6.08	5.02	4.888
03/23/2001	1	575	.	21	8:59	8:24	0:35	70	-1.3	210	151.4	58.6	4.322	5.883	6.879	6.346	4.196	5.151
03/23/2001	19	603	.	21	9:33	8:56	0:37	70	-1.3	320.4	216.8	103.6	5.593	5.89	5.345	7.244	5.441	5.94
03/09/2001	6	69	.	1	9:05	8:37	0:28	70.8	6.4	168.4	113.3	55.1	4.789	5.894	6.394	9.819	7.068	6.184
03/01/2001	17	414	.	7	9:41	9:14	0:27	70.1	11.5	191.4	130.4	61	8.37	5.898	4.869	5.413	6.956	5.973
03/21/2001	14	219	.	28	9:31	9:19	0:12	70.3	8.4	72.7	53.1	19.6	5.545	5.909	4.912	6.045	.	.
03/23/2001	8	718	.	21	9:01	8:24	0:37	70.1	-1.3	298.7	195.7	103	6.543	5.935	6.344	4.611	5.32	5.799
04/02/2001	26	275	.	1	10:51	10:06	0:45	70.1	-0.9	360.3	248.2	112.1	4.816	5.937	6.529	6.129	6.026	4.879
08/22/2001	7	395	1	7	9:26	8:51	0:35	71.6	-1.1	308.5	242.6	65.9	4.606	5.989	5.322	6.714	5.608	4.815
03/01/2001	12	798	.	7	9:47	9:14	0:33	73.6	0	199.1	142.6	56.5	5.527	5.994	5.441	6.618	5.047	6.713
03/01/2001	2	114	.	7	9:40	9:14	0:26	71	11.5	145.5	95.2	50.3	6.433	6.044	4.775	7.46	5.56	7.842
03/01/2001	11	236	.	7	9:44	9:14	0:30	70	0.5	189.7	119.6	70.1	5.863	6.064	6.568	7.714	6.951	4.818
03/05/2001	38	635	.	35	10:03	9:44	0:19	70	4.2	134.8	102.4	32.4	3.478	6.069	5.236	4.474	3.832	7.118
03/21/2001	10	364	.	28	9:44	9:19	0:25	70	-1.8	200.5	146.5	54	4.833	6.074	6.078	5.88	4.993	5.003
03/21/2001	21	225	.	28	10:05	9:38	0:27	72.1	7.3	176.4	117.3	59.1	5.043	6.123	6.325	6.836	5.465	5.97
03/21/2001	13	83	.	28	9:42	9:19	0:23	70	-2.2	90.7	60.6	30.1	6.639	6.152	4.891	5.039	.	.
03/23/2001	2	274	.	21	8:59	8:24	0:35	70.1	-1.3	265.3	183.4	81.9	6.841	6.214	6.448	7.502	6.635	7.828
03/05/2001	16	227	.	7	9:30	9:04	0:26	70	9.5	105.7	74.8	30.9	5.039	6.231	5.519	5.903	4.59	4.964
03/01/2001	15	484	.	7	9:40	9:14	0:26	70.5	1.3	166.9	119.3	47.6	7.638	6.236	5.307	8.313	6.586	5.69

03/01/2001	18	608	.	7	9:46	9:14	0:32	71.3	12.3	233.2	145.9	87.3	3.85	6.277	4.402	4.843	4.92	4.67
03/23/2001	38	654	.	28	10:25	9:48	0:37	71	-1	217.3	145.5	71.8	8.06	6.28	6.64	6.71	5.18	6.17
03/05/2001	20	592	.	7	9:38	9:09	0:29	70.6	6.5	157.6	119.2	38.4	5.36	6.302	5.322	4.263	4.144	2.943
02/27/2001	18	255	.	14	10:14	9:57	0:17	70.1	13.7	123.3	95.9	27.4	4.541	6.302	7.688	6.574	6.374	6.681
02/27/2001	34	751	.	14	9:27	9:10	0:17	70	15.6	174.4	124.8	49.6	5.384	6.326	5.895	5.511	6.153	5.781
04/02/2001	29	749	.	1	10:54	10:09	0:45	71.9	-7.7	295.9	201.5	94.4	4.181	6.334	5.347	5.674	3.686	5.797
03/05/2001	19	731	.	7	9:39	9:09	0:30	70	7.4	127.8	97.5	30.3	6.774	6.339	5.643	5.358	7.628	6.432
02/27/2001	39	328	.	1	9:35	9:10	0:25	70	14.2	163.9	119.8	44.1	8.249	6.365	4.26	7.245	6.508	6.792
03/05/2001	24	657	.	7	9:33	9:10	0:23	70.3	6.1	108.4	79.6	28.8	6.896	6.417	7.401	6.093	7.766	6.234
03/21/2001	27	76	.	14	10:13	9:47	0:26	70.1	-1.1	237.2	180.9	56.3	7.107	6.482	6.266	6.335	6.18	7.672
03/09/2001	5	75	.	1	9:06	8:37	0:29	70.5	1.4	339	244.7	94.3	5.328	6.483	4.625	6.923	5.361	4.363
03/23/2001	32	91	.	21	10:16	9:45	0:31	70	-1.3	217	143.4	73.6	5.33	6.54	7.15	5.54	4.95	4.75
03/05/2001	29	731	.	7	10:08	9:40	0:28	70.2	7.2	232.2	173.2	59	6.191	6.555	5.345	6.613	6.273	5.279
03/01/2001	29	731	.	21	10:37	10:05	0:32	70.1	8.6	161.9	114.1	47.8	5.001	6.616	6.531	9.609	9.076	9.435
03/09/2001	14	156	.	1	9:41	9:12	0:29	70.1	5.4	227.9	159.3	68.6	6.686	6.617	6.553	5.94	6.647	6.203
03/08/2001	38	726	.	1	10:23	9:57	0:26	70	4.7	174.7	109.1	65.6	6.648	6.62	7.248	7.212	6.705	7.783
03/01/2001	6	654	.	7	9:39	9:14	0:25	70	12.6	146	100.9	45.1	5.321	6.65	5.84	4.108	5.212	4.87
03/26/2001	26	481	.	7	9:30	8:58	0:32	71.9	-1	194.8	136.9	57.9	5.028	6.697	4.204	4.838	6.919	5.351
03/23/2001	33	683	.	21	10:30	9:45	0:45	70	-1.3	347	266.7	80.3	6.33	6.7	3.18	3.83	4.69	4.77
03/05/2001	44	301	.	35	8:58	8:31	0:27	74.4	-1.1	163	108.8	54.2	5.044	6.759	6.596	6	5.787	8.203
02/27/2001	30	738	.	1	9:29	9:10	0:19	70	15.2	137.8	87.9	49.9	6.444	6.761	8.168	7.212	8.238	7.54
03/07/2001	3	434	.	7	8:51	8:25	0:26	70.3	0.8	200.8	148.8	52	3.316	6.765	5.204	6.249	5.059	8.165
03/07/2001	6	603	.	7	9:04	8:28	0:36	70.2	-0.1	352.5	247	105.5	5.18	6.789	6.73	5.315	4.664	5.303
03/07/2001	29	395	.	14	9:51	9:23	0:28	70.2	11.5	227.7	170.1	57.6	3.954	6.808	5.448	5.734	4.42	4.59
02/27/2001	27	414	.	1	9:33	9:10	0:23	70	16	182.2	123.4	58.8	5.838	6.874	7.066	6.859	5.909	7.33
03/07/2001	18	395	.	35	9:21	8:45	0:36	70	8	282.2	209.4	72.8	7.631	6.887	9.38	9.425	6.04	5.297
03/29/2001	14	395	.	28	9:04	8:29	0:35	71.3	-1.2	294.5	225.7	68.8	6.873	6.898	7.746	8.113	8.175	8.339
03/21/2001	36	165	.	14	10:40	10:14	0:26	70	3.1	245	191.8	53.2	4.012	6.932	4.632	5.202	5.845	5.207
02/27/2001	5	757	.	1	9:55	9:38	0:17	70.4	11.5	166.1	131.4	34.7	5.53	6.947	4.374	7.268	5.945	4.458
04/02/2001	28	683	.	1	10:52	10:07	0:45	70.2	-1	306.3	248	58.3	5.093	7.001	5.025	6.57	6.55	4.673
03/26/2001	21	726	.	7	9:31	8:52	0:39	70.1	-1.3	265.6	192.1	73.5	8.571	7.046	7.043	8.092	6.164	5.417
03/30/2001	6	186	.	21	8:53	8:00	0:53	71.8	-1.3	334.9	212.2	122.7	3.342	7.076	4.581	3.956	5.913	4.616
02/27/2001	28	635	.	1	9:33	9:10	0:23	70	15.8	176.7	126.5	50.2	5.004	7.106	4.719	6.394	4.996	3.929
03/21/2001	20	635	.	28	10:06	9:31	0:35	71.3	-1	220.8	156.3	64.5	5.811	7.122	6.466	5.996	6.987	5.399
03/28/2001	38	635	.	14	10:19	10:00	0:19	71.8	4.1	140.3	94.6	45.7	5.479	7.379	6.869	4.703	6.558	6.699
03/26/2001	28	573	.	7	9:29	9:01	0:28	70.1	1.7	136.3	94.5	41.8	7.436	7.571	7.589	8.438	8.74	6.979
04/02/2001	21	705	.	1	10:10	9:30	0:40	71.3	-1.2	321.5	225.4	96.1	4.494	7.652	6.511	6.39	6.387	7.002
03/05/2001	11	926	.	7	9:29	9:03	0:26	71.8	9.9	118.2	89.7	28.5	4.685	7.831	6.097	5.144	3.353	3.841
02/28/2001	26	227	.	1	9:56	9:35	0:21	70.2	7.8	171.2	130.8	40.4	5.718	8.063	6.141	6.988	8.087	5.304
04/02/2001	36	274	.	1	10:39	10:17	0:22	70.2	-0.3	267.1	192.1	75	5.698	8.153	.	.	.	4.09
03/26/2001	20	634	.	7	9:21	8:52	0:29	70.8	-0.5	213.8	139.2	74.6	6.319	8.2	7.751	7.282	7.253	7.703
03/08/2001	36	573	.	1	10:26	9:57	0:29	70	6.3	155	106.1	48.9	11.82	8.352	8.588	8.613	9.5	8.584
03/23/2001	50	731	.	28	10:57	10:29	0:28	70.2	0	189.2	123.3	65.9	6.392	8.608	5.788	5.942	7.561	8.616
03/08/2001	37	556	.	1	10:26	9:57	0:29	70.1	8.5	178.3	111.4	66.9	9.461	8.64	6.211	6.955	10.219	5.136
03/23/2001	42	592	.	28	10:20	9:52	0:28	71.6	-0.6	203.4	145.1	58.3	8.43	8.79	10.11	6.16	5.42	4.61
03/23/2001	41	573	.	21	10:24	9:52	0:32	71.7	-1	149.6	111.8	37.8	8.428	8.798	10.113	6.161	5.419	4.61

03/23/2001	45	757	.	28	10:25	9:58	0:27	70.8	-0.8	181.6	131	50.6	4.679	8.888	10.128	7.024	6.726	6.448
03/09/2001	3	91	.	1	8:47	8:18	0:29	72.2	5.6	232.4	157	75.4	8.765	10.847	9.455	7.592	8.255	10.42
03/01/2001	10	771	.	7	9:45	9:14	0:31	74	8.5	153.6	92.1	61.5	7.277	10.991	8.95	7.432	8.31	10.6
03/23/2001	10	395	.	21	9:03	8:24	0:39	70.2	-1.5	239.4	164.5	74.9	7.768	11.976	9.332	9.782	12.291	11.53
04/02/2001	3	626	.	35	9:33	8:47	0:46	70.3	-1.5	345.3	219.5	125.8	4.5	4.227	3.589	4.825	4.814	4.933

Appendix 46. Sensory raw data for the study

Date	Code	Panel	Juice	MTend	CT	Otend	Oflav	CkBeef	CkFat	A	B	C	CH	CO	F	L	M	SA	SB	S	SW	Br	Old	Sour	Putr
08/10/2001	0	Ouren	4	6	8	6	6	4	0	3	0	0	1	0	0	0	2	0	1	1	0	0	0	0	0
08/10/2001	0	EHiggins	5	5	6	5	6	4	2	2	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
08/10/2001	0	PHiggins	5	4	5	4	4	4	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
08/10/2001	0	Inglis	4	6	7	6	5	4	1	0	1	0	0	0	0	0	2	0	2	2	0	0	0	0	0
08/10/2001	0	Gray	5	6	6	6	5	4	1	3	3	0	3	0	0	3	0	3	3	0	0	3	0	0	0
07/10/2001	2	Ouren	4	6	7	6	6	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
07/10/2001	2	EHiggins	6	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
07/10/2001	2	PHiggins	5	6	7	6	4	4	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
07/10/2001	2	Mason	5	6	7	6	5	4	2	2	2	0	1	0	0	0	2	0	0	2	0	0	2	0	0
07/10/2001	2	Gray	6	6	6	6	5	5	2	2	0	0	2	0	0	0	2	0	3	2	0	0	0	0	0
05/17/2001	3	Ouren	5	7	7	7	5	4	1	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
05/17/2001	3	EHiggins	6	8	8	8	6	5	2	2	0	0	0	0	0	2	2	0	0	1	0	0	2	0	0
05/17/2001	3	PHiggins	6	7	8	7	4	3	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
05/17/2001	3	Mason	5	7	7	7	5	3	2	3	2	0	0	0	0	0	2	0	2	0	0	0	0	2	0
05/17/2001	3	Inglis	5	6	7	6	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
05/17/2001	3	Ron	5	7	8	7	5	4	1	1	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0
05/22/2001	3	Ouren	4	5	7	5	6	4	1	1	1	0	0	0	0	0	1	0	0	0	0	2	0	0	0
05/22/2001	3	PHiggins	4	7	7	7	4	4	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
05/22/2001	3	Mason	6	6	7	6	6	5	2	2	2	0	0	0	0	0	2	2	0	1	0	2	0	0	0
05/22/2001	3	EHiggins	6	6	7	6	5	4	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/22/2001	3	Gray	4	6	7	6	6	5	2	0	2	0	0	0	0	0	2	0	0	0	0	2	0	0	0
05/22/2001	3	Inglis	5	6	8	6	6	5	1	0	2	0	0	0	0	0	2	1	2	0	0	2	0	0	0
05/22/2001	3	Ron	5	6	7	6	5	4	1	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
03/28/2001	4	Ouren	5	3	7	3	6	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/28/2001	4	EHiggins	4	5	6	5	4	3	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
03/28/2001	4	PHiggins	3	2	2	2	2	2	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0
03/28/2001	4	Gray	5	6	6	6	5	5	2	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
03/28/2001	4	Inglis	4	6	6	6	5	4	1	2	0	0	0	0	0	2	2	0	0	2	0	0	0	0	0
03/28/2001	4	Ron	5	4	7	4	5	4	1	3	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0
08/01/2001	4	Ouren	4	6	7	6	5	4	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
08/01/2001	4	EHiggins	4	5	6	5	4	4	1	1	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0
08/01/2001	4	PHiggins	4	4	4	4	4	4	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
08/01/2001	4	Inglis	5	7	8	7	5	4	2	0	2	0	0	0	0	0	2	0	2	3	0	0	0	0	0
08/01/2001	4	Ron	5	7	8	7	4	2	0	2	1	0	0	2	1	0	2	0	0	0	0	0	0	0	0
06/01/2001	5	Ouren	4	4	7	4	6	4	0	1	1	0	0	0	0	0	1	0	0	0	0	2	1	0	0
06/01/2001	5	EHiggins	5	6	7	6	5	5	1	2	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0
06/01/2001	5	PHiggins	4	6	7	6	4	4	1	1	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0
06/01/2001	5	Mason	4	6	7	6	5	2	1	3	0	0	0	0	0	0	2	0	0	3	0	1	2	0	0
06/01/2001	5	Ron	4	6	7	6	6	5	1	2	0	0	0	0	0	0	2	0	2	2	0	2	0	0	0
05/30/2001	6	Ouren	4	7	7	7	6	4	0	3	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0
05/30/2001	6	EHiggins	5	7	8	7	5	4	0	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0
05/30/2001	6	PHiggins	5	7	7	7	4	4	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
05/30/2001	6	Mason	5	6	7	6	5	3	1	3	2	0	0	0	0	0	2	0	0	3	0	0	2	0	0
05/30/2001	6	Gray	4	6	6	6	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/31/2001	6	Ouren	5	7	7	7	6	4	0	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
05/31/2001	6	EHiggins	5	6	7	6	5	5	1	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
05/31/2001	6	PHiggins	5	7	7	7	4	4	1	0	0	0	2	0	0	0	2	0	2	0	2	0	0	0	0
05/31/2001	6	Mason	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	1	0	0	0	2	1	0
05/31/2001	6	Gray	5	7	7	7	5	4	1	3	2	0	0	0	0	0	3	0	3	3	0	0	0	0	0
05/31/2001	6	Ron	5	6	7	6	5	3	0	3	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/25/2001	9	Ouren	6	6	7	6	6	4	0	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
05/25/2001	9	EHiggins	6	7	8	7	4	3	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
05/25/2001	9	PHiggins	5	4	5	4	4	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/25/2001	9	Mason	6	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0
05/25/2001	9	Gray	5	5	5	5	4	4	1	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0
05/25/2001	9	Inglis	6	6	8	6	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/25/2001	9	Ron	6	5	6	5	5	3	0	2	0	2	0	0	0	0	3	0	3	2	0	0	0	0	0
05/30/2001	10	Ouren	5	6	7	6	6	5	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
05/30/2001	10	EHiggins	7	8	8	8	6	6	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
05/30/2001	10	PHiggins	8	8	8	8	4	4	1	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0
05/30/2001	10	Mason	7	7	8	7	5	5	3	2	2	0	0	0	0	0	2	0	3	2	0	0	0	0	0
05/30/2001	10	Gray	7	7	8	7	5	4	2	3	0	0	2	0	0	0	3	0	3	3	0	0	0	0	0
05/31/2001	10	Ouren	4	7	8	7	6	4	0	1	0	2	2	0	0	0	1	0	0	1	0	0	0	0	0
05/31/2001	10	EHiggins	6	8	8	8	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/31/2001	10	PHiggins	6	6	6	6	5	5	1	1	0	0	1	0	0	0	2	0	1	0	0	0	0	0	0
05/31/2001	10	Mason	5	7	8	7	5	3	1	2	2	0	0	0	0	0	1	2	0	0	0	0	2	2	0
05/31/2001	10	Gray	4	7	7	7	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/31/2001	10	Ron	5	7	8	7	6	4	0	3	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0
06/06/2001	11	Ouren	3	4	7	4	6	4	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
06/06/2001	11	EHiggins	5	5	6	5	5	4	2	2	0	0	1	0	0	0	1	0	0	2	0	0	0	0	0
06/06/2001	11	Mason	4	4	7	4	6	3	1	3	2	0	2	0	0	0	2	0							

06/06/2001	11	Gray	4	6	6	6	4	2	1	2	0	0	2	0	0	0	3	0	2	3	0	0	0	0	0
06/06/2001	11	Ron	4	5	7	5	6	3	0	3	0	0	0	0	0	0	3	0	2	3	0	0	0	0	0
06/14/2001	12	Ouren	4	7	8	7	5	4	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0
06/14/2001	12	EHiggins	6	7	8	7	6	5	2	2	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0
06/14/2001	12	PHiggins	5	4	3	4	4	4	1	0	0	0	2	0	0	0	1	0	0	2	0	2	0	0	0
06/14/2001	12	Gray	5	4	5	4	6	5	1	2	2	0	0	0	0	0	2	0	2	2	0	2	2	0	0
06/14/2001	12	Ron	5	5	6	5	5	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0
06/19/2001	12	Ouren	5	7	8	7	6	4	1	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0
06/19/2001	12	EHiggins	6	7	7	7	6	5	2	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
06/19/2001	12	PHiggins	7	6	6	6	5	5	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
06/19/2001	12	Inglis	5	6	7	6	4	3	1	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0
06/19/2001	12	Ron	6	7	7	7	5	3	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/30/2001	13	Ouren	5	7	7	7	5	4	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
05/30/2001	13	EHiggins	5	6	7	6	6	5	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/30/2001	13	PHiggins	4	8	7	8	3	3	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
05/30/2001	13	Mason	5	7	8	7	5	4	1	2	2	0	0	0	0	0	1	2	0	1	0	0	0	0	0
05/30/2001	13	Gray	5	7	6	7	5	4	1	2	0	0	0	0	0	3	3	0	0	2	0	0	0	0	0
05/31/2001	13	Ouren	5	5	7	5	6	5	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
05/31/2001	13	EHiggins	5	6	6	6	4	3	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
05/31/2001	13	PHiggins	5	5	6	5	5	5	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/31/2001	13	Mason	5	6	7	6	5	3	1	2	3	0	0	0	0	2	2	0	2	2	0	0	2	0	0
05/31/2001	13	Gray	6	5	5	5	6	5	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/31/2001	13	Ron	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
03/29/2001	16	Ouren	5	6	8	6	6	4	1	2	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0
03/29/2001	16	EHiggins	5	6	7	6	5	4	1	2	0	0	3	0	0	0	0	0	0	0	0	0	2	0	0
03/29/2001	16	PHiggins	4	7	6	7	5	5	1	1	0	0	0	0	0	0	2	2	0	0	0	2	0	0	0
03/29/2001	16	Mason	6	7	8	7	5	4	2	3	2	0	2	0	0	0	2	0	1	3	0	0	0	0	0
03/29/2001	16	Gray	5	6	6	6	5	4	2	3	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0
03/29/2001	16	Inglis	4	7	8	7	5	4	2	2	0	0	0	0	0	0	2	1	0	0	0	2	0	0	0
03/29/2001	16	Ron	4	7	8	7	7	4	1	3	0	0	0	0	0	0	2	0	0	3	0	3	0	0	0
05/08/2001	18	Ouren	4	4	7	4	5	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/08/2001	18	EHiggins	3	3	4	3	5	2	1	2	1	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/08/2001	18	PHiggins	3	3	4	3	4	4	1	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0
05/08/2001	18	Gray	4	2	3	2	4	4	1	0	0	0	0	0	0	3	0	2	0	0	0	3	0	0	0
05/08/2001	18	Inglis	3	5	6	5	4	4	0	2	2	0	0	0	0	0	2	2	0	0	0	2	0	0	0
05/08/2001	18	Ron	3	4	5	4	4	4	1	2	2	0	0	0	0	0	2	0	0	0	0	2	0	0	0
04/04/2001	19	Ouren	5	6	6	6	6	4	1	3	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0
04/04/2001	19	EHiggins	5	7	8	7	5	4	1	2	0	0	3	0	0	0	0	0	2	0	0	0	0	0	0
04/04/2001	19	PHiggins	5	8	7	8	4	4	1	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0
04/04/2001	19	Mason	6	7	8	7	6	3	2	3	3	0	3	0	0	0	2	0	2	3	0	2	0	0	0
04/04/2001	19	Gray	6	8	8	8	4	3	2	4	3	0	0	0	0	0	3	0	3	5	0	0	0	0	0
04/04/2001	19	Inglis	5	7	8	7	5	3	1	0	0	0	0	0	0	0	0	0	2	2	0	0	0	2	0
05/04/2001	20	Ouren	4	4	7	4	7	4	0	3	0	1	2	0	0	0	2	0	0	2	0	0	0	0	0
05/04/2001	20	Inglis	5	7	7	7	5	3	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	2	0
05/04/2001	20	Ron	4	5	7	5	6	3	1	3	0	0	0	0	0	0	2	0	0	3	0	0	0	3	0
05/04/2001	20	PHiggins	5	6	7	6	4	4	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
05/04/2001	20	EHiggins	5	5	6	5	4	4	0	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0
06/29/2001	22	Ouren	4	6	8	6	5	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/29/2001	22	EHiggins	6	8	8	8	6	5	2	2	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0
06/29/2001	22	Mason	5	7	7	7	5	5	2	2	2	0	0	0	0	0	2	0	2	1	0	1	0	0	0
06/29/2001	22	Inglis	5	7	8	7	4	3	1	2	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0
06/29/2001	22	Ron	5	7	7	7	4	3	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
04/17/2001	23	Ouren	4	5	6	5	5	5	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/17/2001	23	EHiggins	5	5	6	5	5	4	2	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
04/17/2001	23	PHiggins	5	4	5	4	4	4	1	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0
04/17/2001	23	Mason	5	5	7	5	5	4	2	2	2	0	0	0	0	0	2	0	2	0	0	2	0	0	0
04/17/2001	23	Inglis	5	6	6	6	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	2	0	0	0
06/06/2001	24	Ouren	5	5	7	5	6	4	1	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
06/06/2001	24	EHiggins	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
06/06/2001	24	Mason	5	5	7	5	5	4	2	2	0	0	0	0	0	0	1	2	0	2	1	0	2	2	0
06/06/2001	24	PHiggins	4	4	5	4	4	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
06/06/2001	24	Gray	4	5	6	5	5	4	2	2	2	0	0	0	0	0	2	0	2	2	0	0	3	0	0
06/06/2001	24	Ron	5	5	6	5	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0
05/17/2001	29	Ouren	6	7	7	7	6	5	2	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
05/17/2001	29	EHiggins	7	8	8	8	6	5	2	2	0	0	0	0	0	1	2	0	0	0	0	0	2	0	0
05/17/2001	29	PHiggins	6	6	7	6	4	4	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
05/17/2001	29	Mason	6	7	8	7	5	4	2	2	2	0	0	0	0	0	2	0	3	2	0	0	0	0	0
05/17/2001	29	Inglis	5	6	7	6	5	4	0	2	0	0	0	0	0	0	2	0	2	0	2	0	0	0	0
05/17/2001	29	Ron	6	8	8	8	5	2	0	2	2	0	0	0	0	0	2	0	3	0	0	0	0	0	0
05/22/2001	29	Ouren	5	6	7	6	6	4	0	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
05/22/2001	29	PHiggins	6	6	7	6	4	4	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0
05/22/2001	29	Mason	6	7	7	7	5	4	2	2	2	0	0	0	0	0	2	0	2	1					

03/29/2001	63	Gray	5	7	7	7	6	3	2	3	2	0	0	0	0	0	0	0	0	4	0	3	0	0	0
03/29/2001	63	Inglis	4	7	8	7	6	4	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	2	0
03/29/2001	63	Ron	4	7	8	7	6	4	1	3	0	0	0	3	0	0	2	0	0	3	0	0	3	0	0
03/30/2001	63	Ouren	3	6	7	6	7	2	1	2	0	4	2	0	0	0	2	0	0	2	0	0	0	0	0
03/30/2001	63	EHiggins	5	6	7	6	6	4	2	3	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0
03/30/2001	63	PHiggins	5	5	5	6	4	3	1	2	0	0	2	0	0	0	1	0	0	0	0	1	0	0	0
03/30/2001	63	Mason	6	6	6	6	6	3	1	3	0	0	3	0	0	1	2	0	0	3	0	0	0	0	1
03/30/2001	63	Gray	5	7	7	7	5	2	1	0	2	0	0	0	0	0	3	0	0	5	0	0	0	4	0
03/30/2001	63	Inglis	5	7	7	7	5	3	1	2	0	0	0	0	0	0	2	0	0	2	0	0	2	3	0
03/30/2001	63	Ron	4	6	7	6	6	3	0	3	0	0	0	0	0	0	2	0	0	4	0	0	0	0	0
03/28/2001	65	Ouren	4	1	6	1	6	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/28/2001	65	EHiggins	3	4	5	4	5	4	1	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
03/28/2001	65	PHiggins	5	3	2	3	4	3	1	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0
03/28/2001	65	Gray	5	5	6	5	5	5	2	2	0	0	0	0	0	0	2	0	2	2	0	2	0	0	0
03/28/2001	65	Inglis	5	6	6	6	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	2	0	0	0
03/28/2001	65	Ron	4	4	6	4	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0
06/20/2001	66	Ouren	6	6	7	6	6	5	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
06/20/2001	66	EHiggins	5	6	6	6	5	5	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
06/20/2001	66	PHiggins	6	4	5	4	4	4	1	1	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0
06/20/2001	66	Inglis	6	7	8	7	6	5	1	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
06/20/2001	66	Ron	6	5	6	5	5	4	0	3	0	0	0	0	0	0	2	0	2	0	0	0	0	2	0
04/24/2001	67	Ouren	4	5	7	5	6	5	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0
04/24/2001	67	EHiggins	5	5	6	5	4	4	1	2	0	0	0	0	0	0	2	2	0	0	0	0	2	0	0
04/24/2001	67	PHiggins	4	4	3	4	4	4	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
04/24/2001	67	Mason	5	5	7	5	5	4	1	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
04/24/2001	67	Gray	4	4	5	4	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
04/24/2001	67	Inglis	4	6	6	6	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
04/24/2001	67	Ron	4	5	6	5	4	3	1	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0
05/01/2001	68	Ouren	6	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/01/2001	68	EHiggins	6	6	7	6	5	5	1	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
05/01/2001	68	PHiggins	6	5	6	5	4	4	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0
05/01/2001	68	Mason	6	6	7	6	5	4	1	2	2	0	0	0	0	0	2	0	3	0	0	2	0	0	0
05/01/2001	68	Gray	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/01/2001	68	Inglis	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	2	0	0	0
05/01/2001	68	Ron	6	6	8	6	4	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/02/2001	68	Ouren	5	8	7	8	6	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/02/2001	68	EHiggins	6	7	8	7	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/02/2001	68	Mason	6	6	7	6	6	5	1	2	2	0	0	0	0	0	3	0	3	0	0	2	0	0	0
05/02/2001	68	Gray	6	7	7	7	6	5	1	2	2	0	0	0	0	0	2	0	0	2	0	2	0	0	0
05/02/2001	68	Inglis	5	6	7	6	5	5	1	2	0	0	0	0	0	0	2	0	2	2	0	2	0	0	0
05/02/2001	68	Ron	6	8	8	8	6	6	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
06/19/2001	71	Ouren	5	7	7	7	6	3	1	1	0	2	0	0	0	0	0	0	1	0	0	0	2	0	0
06/19/2001	71	EHiggins	5	6	7	6	5	5	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
06/19/2001	71	PHiggins	4	7	7	7	4	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0
06/19/2001	71	Inglis	5	6	7	6	4	3	1	0	2	3	0	0	0	0	2	0	0	0	0	0	0	0	0
06/19/2001	71	Ron	6	7	7	7	6	3	0	3	0	0	0	2	0	0	2	0	2	3	0	0	0	0	0
06/07/2001	72	Ouren	5	6	5	5	6	4	1	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0
06/07/2001	72	EHiggins	5	6	7	6	6	5	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
06/07/2001	72	PHiggins	5	6	6	6	4	4	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0
06/07/2001	72	Mason	5	6	7	6	6	2	1	3	0	0	0	0	0	0	2	0	1	3	0	0	2	0	0
06/07/2001	72	Gray	4	6	7	6	5	4	2	2	0	0	0	0	0	0	3	2	3	2	0	0	0	0	0
06/07/2001	72	Ron	5	7	7	7	5	4	1	2	0	0	0	0	0	0	3	0	0	2	0	0	2	0	0
06/06/2001	74	Ouren	4	6	6	6	6	4	0	3	0	0	3	0	0	0	2	0	0	0	0	1	0	0	0
06/06/2001	74	EHiggins	6	7	7	7	6	5	2	2	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0
06/06/2001	74	Mason	6	7	7	7	6	1	1	3	2	0	0	0	0	1	2	0	2	2	0	1	1	0	0
06/06/2001	74	PHiggins	5	6	6	6	4	4	1	0	2	0	0	0	0	0	0	0	0	2	0	2	0	0	0
06/06/2001	74	Gray	4	6	6	6	5	5	1	3	3	0	2	0	0	0	3	2	0	3	0	0	0	0	0
06/06/2001	74	Ron	5	6	7	6	7	3	1	3	2	0	0	0	0	0	3	0	0	4	0	3	0	0	0
05/24/2001	77	Ouren	6	7	8	7	6	4	1	2	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
05/24/2001	77	EHiggins	6	8	8	8	6	5	2	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
05/24/2001	77	PHiggins	8	8	8	8	4	4	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
05/24/2001	77	Mason	7	7	7	7	5	5	2	2	0	0	0	0	0	0	2	0	3	1	0	0	0	0	0
05/24/2001	77	Gray	7	8	8	8	6	5	2	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/24/2001	77	Inglis	5	7	8	7	5	4	1	0	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/24/2001	77	Ron	6	8	8	8	4	3	1	2	1	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/17/2001	84	Ouren	5	3	7	3	5	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/17/2001	84	EHiggins	5	4	6	4	5	4	2	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
05/17/2001	84	PHiggins	5	3	3	3	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
05/17/2001	84	Mason	5	4	7	4	6	2	2	2	2	0	2	0	0	0	2	0	0	0	0	0	0	2	0
05/17/2001	84	Inglis	5	6	7	6	6	5	0	2	2	0	0	0	0	0	2	0	1	0	0	2	0	0	0
05/17/2001	84	Ron	5	4	7	4	5	3	0	2	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0
05/22/2001	84	Ouren	5	7	7	7	6	4	1	2	0	0	0	0	0	0	2	0	2	0					

06/08/2001	156	Mason	5	6	7	6	5	5	2	2	3	0	0	0	0	0	2	0	2	1	0	3	1	0	0	0
06/08/2001	156	Gray	5	4	4	4	7	6	2	2	2	0	0	0	0	0	2	0	2	2	2	0	3	0	0	0
06/08/2001	156	Ron	4	6	7	6	6	4	0	2	1	0	0	0	0	0	2	0	0	0	0	2	3	0	0	0
05/12/2001	159	Ouren	4	6	7	6	6	4	1	1	0	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0
05/12/2001	159	EHiggins	5	5	6	5	6	4	2	2	0	0	2	0	0	0	0	0	0	0	3	0	0	2	0	0
05/12/2001	159	PHiggins	6	7	7	7	4	4	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
05/12/2001	159	Mason	4	6	7	6	7	2	1	3	0	0	3	0	0	0	2	0	0	4	0	0	0	0	0	0
05/12/2001	159	Gray	4	6	5	6	4	3	1	3	2	0	3	0	0	0	3	0	0	3	0	0	0	0	0	0
05/12/2001	159	Inglis	5	7	8	7	5	3	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0
05/12/2001	159	Ron	6	6	6	6	7	2	0	3	0	0	0	0	0	0	2	0	0	5	0	0	0	4	0	
05/08/2001	164	Ouren	4	5	7	5	5	4	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
05/08/2001	164	EHiggins	6	6	7	6	5	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/08/2001	164	PHiggins	5	5	6	5	4	4	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
05/08/2001	164	Gray	4	5	5	5	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/08/2001	164	Inglis	3	5	6	5	4	3	0	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/08/2001	164	Ron	4	5	7	5	5	3	0	2	2	0	0	0	0	0	3	0	2	0	0	0	3	0	0	0
03/27/2001	170	Ouren	4	7	8	7	6	4	1	2	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0
03/27/2001	170	EHiggins	4	5	6	5	6	3	1	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0
03/27/2001	170	PHiggins	5	5	5	5	4	4	1	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
03/27/2001	170	Mason	4	6	7	6	6	3	1	3	0	0	3	0	0	0	2	0	0	4	0	1	0	0	0	0
03/27/2001	170	Gray	5	8	7	8	5	3	2	3	0	0	0	0	0	4	3	0	0	3	0	0	0	0	0	0
03/27/2001	170	Inglis	4	7	8	7	5	3	2	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	3	0
03/27/2001	170	Ron	4	7	8	7	6	3	2	3	0	0	0	0	0	1	3	0	0	3	0	0	2	0	0	0
06/14/2001	171	Ouren	5	6	7	6	5	5	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
06/14/2001	171	EHiggins	5	7	8	7	6	5	2	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
06/14/2001	171	PHiggins	4	7	7	7	4	4	1	0	1	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0
06/14/2001	171	Gray	5	8	7	8	5	5	1	2	0	0	0	0	0	3	2	0	2	2	0	0	0	0	0	0
06/14/2001	171	Ron	4	8	8	8	5	5	1	2	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0
06/19/2001	171	Ouren	4	5	7	5	5	4	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
06/19/2001	171	EHiggins	3	4	5	4	5	4	1	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0
06/19/2001	171	PHiggins	3	3	3	3	4	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
06/19/2001	171	Inglis	2	3	6	3	3	3	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/19/2001	171	Ron	3	5	8	5	6	4	0	3	0	0	0	0	0	0	2	0	0	2	0	0	3	0	0	0
04/20/2001	172	Ouren	5	6	7	6	6	5	1	1	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0
04/20/2001	172	EHiggins	5	5	6	5	6	5	2	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
04/20/2001	172	PHiggins	6	6	7	6	4	4	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
04/20/2001	172	Mason	5	7	7	7	6	5	2	2	2	0	0	0	0	0	2	0	1	2	0	0	0	0	0	0
04/20/2001	172	Inglis	5	6	6	6	4	3	1	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
04/20/2001	172	Ron	5	6	6	6	6	6	2	2	1	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0
05/30/2001	173	Ouren	5	6	7	6	6	4	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
05/30/2001	173	EHiggins	6	6	7	6	6	5	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/30/2001	173	PHiggins	7	7	7	7	4	4	1	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
05/30/2001	173	Mason	6	7	7	7	6	5	2	2	2	0	0	0	0	0	2	0	2	2	0	2	1	0	0	0
05/30/2001	173	Gray	6	5	5	5	5	5	2	2	2	0	0	0	0	0	3	0	3	2	0	0	0	0	0	0
05/31/2001	173	Ouren	4	5	8	5	5	4	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
05/31/2001	173	EHiggins	5	5	6	5	6	5	1	1	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0
05/31/2001	173	PHiggins	4	6	6	6	4	4	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0
05/31/2001	173	Mason	5	5	6	5	5	5	2	2	0	0	0	0	0	0	2	0	2	0	0	1	0	0	0	0
05/31/2001	173	Gray	4	3	4	3	5	4	1	3	2	0	0	2	0	0	3	0	2	3	0	0	0	0	0	0
05/31/2001	173	Ron	4	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0
05/15/2001	175	Ouren	5	6	7	6	5	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/15/2001	175	EHiggins	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
05/15/2001	175	PHiggins	7	6	7	6	5	5	1	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/15/2001	175	Mason	5	6	7	6	4	3	2	2	2	0	0	0	0	0	0	0	2	2	0	0	2	0	0	0
05/15/2001	175	Inglis	5	7	8	7	5	3	1	0	2	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0
05/15/2001	175	Ron	5	6	7	6	5	3	0	3	0	0	2	0	0	0	2	0	2	0	0	0	2	0	0	0
04/19/2001	176	Ouren	4	5	7	5	5	4	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/19/2001	176	EHiggins	5	5	6	5	6	5	2	3	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
04/19/2001	176	PHiggins	7	6	6	6	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
04/19/2001	176	Mason	5	5	7	5	5	4	1	3	2	0	1	0	0	0	2	0	2	2	0	0	0	0	0	0
04/19/2001	176	Gray	6	6	6	6	6	5	1	2	2	0	0	0	0	0	2	0	2	2	0	2	0	0	0	0
04/19/2001	176	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
04/19/2001	176	Ron	5	6	8	6	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
04/20/2001	177	Ouren	5	5	6	5	6	3	0	3	0	0	1	0	0	0	2	0	2	0	0	1	0	0	0	0
04/20/2001	177	EHiggins	6	6	7	6	5	2	0	2	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0
04/20/2001	177	PHiggins	6	6	7	6	4	4	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
04/20/2001	177	Mason	5	5	7	5	6	3	1	3	3	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
04/20/2001	177	Inglis	4	6	6	6	4	4	1	2	2	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0
04/20/2001	177	Ron	5	6	8	6	4	3	1	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
0																										

03/21/2001	196	Gray	5	5	6	5	6	5	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
03/21/2001	196	Inglis	4	7	8	7	5	4	2	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
03/21/2001	196	Ron	6	6	7	6	6	4	1	3	0	0	2	3	0	0	3	0	0	0	0	0	0	4	0	0
06/29/2001	199	Ouren	5	6	8	6	6	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/29/2001	199	EHiggins	6	6	7	6	7	6	1	2	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
06/29/2001	199	Mason	5	7	7	7	5	4	2	2	2	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0
06/29/2001	199	Inglis	5	7	7	7	4	3	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
06/29/2001	199	Ron	5	7	8	7	5	4	0	2	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0
05/16/2001	200	Ouren	5	6	7	6	6	4	0	1	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
05/16/2001	200	EHiggins	5	7	8	7	5	4	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/16/2001	200	Mason	6	7	7	7	6	4	2	2	1	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/16/2001	200	Inglis	5	7	8	7	5	3	1	0	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/16/2001	200	Ron	6	7	7	7	4	3	0	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/15/2001	202	Ouren	5	7	7	7	6	4	1	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
05/15/2001	202	EHiggins	6	6	7	6	5	5	2	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
05/15/2001	202	PHiggins	8	8	8	8	5	5	2	0	0	0	0	0	0	0	1	1	2	2	0	0	0	0	0	0
05/15/2001	202	Mason	7	7	7	7	5	2	1	3	0	0	3	0	0	0	2	0	2	3	0	0	0	0	0	0
05/15/2001	202	Inglis	5	7	8	7	5	3	1	2	0	0	0	0	0	0	2	0	3	2	0	0	0	0	0	0
05/15/2001	202	Ron	7	7	8	7	6	2	0	3	0	0	2	0	0	0	3	0	3	2	0	0	0	0	0	0
05/12/2001	205	Ouren	4	4	7	4	6	4	0	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
05/12/2001	205	EHiggins	5	5	6	5	4	3	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/12/2001	205	PHiggins	5	4	5	4	4	4	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
05/12/2001	205	Mason	5	5	7	5	5	4	2	2	2	0	0	0	0	0	2	0	2	0	1	0	0	0	0	0
05/12/2001	205	Gray	5	3	3	3	6	4	1	2	2	0	0	0	0	3	2	0	2	2	0	2	0	0	0	0
05/12/2001	205	Inglis	5	6	7	6	5	3	1	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/12/2001	205	Ron	4	4	6	4	4	3	0	2	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0
06/08/2001	206	Ouren	5	6	7	6	6	5	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0
06/08/2001	206	EHiggins	4	5	6	5	4	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
06/08/2001	206	PHiggins	2	2	2	2	3	3	0	0	0	1	0	1	0	0	1	0	0	0	0	0	1	0	0	0
06/08/2001	206	Mason	5	6	7	6	6	5	1	1	2	0	0	0	0	0	2	0	1	0	0	0	2	1	0	0
06/08/2001	206	Gray	4	5	5	5	6	5	1	2	2	0	0	0	0	0	3	0	2	2	0	2	0	0	0	0
06/08/2001	206	Ron	4	6	7	6	6	5	1	2	1	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0
05/01/2001	209	Ouren	5	7	8	7	6	4	1	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
05/01/2001	209	EHiggins	6	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0
05/01/2001	209	PHiggins	8	7	7	7	4	4	2	1	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
05/01/2001	209	Mason	6	7	7	7	5	4	2	3	2	0	1	0	0	0	2	0	3	2	0	0	0	0	0	0
05/01/2001	209	Gray	6	7	6	7	5	4	2	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0
05/01/2001	209	Inglis	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	1	2	0	0	0	0	0	0
05/01/2001	209	Ron	6	7	8	7	4	3	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/02/2001	209	Ouren	4	7	8	7	7	2	0	3	0	2	5	0	0	0	2	0	0	2	0	0	0	0	0	0
05/02/2001	209	EHiggins	6	7	8	7	6	4	1	2	0	0	3	0	0	0	0	0	3	0	0	3	0	0	0	0
05/02/2001	209	Mason	5	7	7	7	7	1	1	3	3	0	4	0	0	0	2	0	4	0	0	0	0	0	0	0
05/02/2001	209	Gray	5	7	7	7	4	3	1	4	3	0	3	0	0	0	3	0	0	4	0	0	0	0	0	0
05/02/2001	209	Inglis	5	7	8	7	5	2	1	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0	0
05/02/2001	209	Ron	5	8	8	8	7	3	0	3	0	0	0	0	0	0	2	0	0	4	0	0	0	0	0	0
05/04/2001	211	Ouren	4	7	8	7	5	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/04/2001	211	Inglis	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	2	0	0	0	0
05/04/2001	211	Ron	5	8	8	8	4	4	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
05/04/2001	211	PHiggins	4	6	7	6	4	4	1	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0
05/04/2001	211	EHiggins	6	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
04/19/2001	212	Ouren	5	6	7	6	6	4	1	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
04/19/2001	212	EHiggins	6	6	6	6	5	4	2	1	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0
04/19/2001	212	PHiggins	5	3	2	3	3	4	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
04/19/2001	212	Mason	5	5	7	5	5	4	1	2	2	0	1	0	0	0	2	0	3	2	0	0	0	0	0	0
04/19/2001	212	Gray	6	4	5	4	5	4	1	3	3	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0
04/19/2001	212	Inglis	4	4	6	4	4	3	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
04/19/2001	212	Ron	5	6	7	6	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
06/19/2001	213	Ouren	4	7	8	7	6	4	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
06/19/2001	213	EHiggins	6	6	8	8	6	6	2	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
06/19/2001	213	PHiggins	5	7	7	7	4	4	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
06/19/2001	213	Inglis	4	6	7	6	5	4	1	1	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
06/19/2001	213	Ron	5	7	7	7	5	3	0	3	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
03/22/2001	214	EHiggins	7	8	8	8	6	6	2	3	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0
03/22/2001	214	PHiggins	8	8	8	8	6	5	2	1	0	0	0	0	0	0	1	2	2	2	0	0	0	0	0	0
03/22/2001	214	Mason	6	7	8	7	5	4	2	2	2	0	2	0	0	0	2	0	2	2	0	0	0	0	0	0
03/22/2001	214	Gray	7	7	7	7	5	4	2	3	2	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0
03/22/2001	214	Inglis	5	7	7	7	4	3	2	2	2	0	0	0	0	0	2	0	0	0	0	0	0	3	0	0
03/22/2001	214	Ron	6	8	8	8	5	4	1	2	0	0	0	2	0	0	2	0	0	3	0	0	0	0	0	0
05/03/2001	216	Ouren	5	4	6	4	6	5	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

05/15/2001	223	PHiggins	5	6	7	6	4	4	1	0	0	0	1	0	0	0	1	0	1	0	0	0	0		
05/15/2001	223	Mason	6	7	7	7	4	4	1	2	2	0	0	0	0	0	2	0	3	2	0	0	0	0	
05/15/2001	223	Inglis	5	7	8	7	5	3	1	2	0	0	0	0	0	0	2	0	3	2	0	0	0	0	
05/15/2001	223	Ron	6	6	7	6	5	2	0	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	
04/12/2001	224	Ouren	3	2	6	2	6	5	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
04/12/2001	224	EHiggins	3	3	4	3	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	3	0	0	0
04/12/2001	224	PHiggins	2	2	1	2	4	4	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0
04/12/2001	224	Mason	5	2	6	4	5	5	2	2	2	0	0	0	0	0	2	0	0	1	1	2	0	0	0
04/12/2001	224	Inglis	5	6	7	6	4	3	1	2	2	0	0	0	0	0	2	0	0	0	0	2	0	2	0
04/12/2001	224	Ron	4	3	7	3	4	3	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
07/10/2001	226	Ouren	5	7	6	7	6	5	3	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
07/10/2001	226	EHiggins	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0
07/10/2001	226	PHiggins	5	5	5	4	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07/10/2001	226	Mason	5	6	7	6	5	4	1	2	2	0	0	0	0	0	2	0	1	1	0	0	2	0	0
07/10/2001	226	Gray	5	6	7	6	6	5	2	2	0	0	0	0	0	0	3	0	3	2	0	0	0	0	0
06/01/2001	229	Ouren	5	6	8	6	6	5	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
06/01/2001	229	EHiggins	5	6	6	6	6	6	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
06/01/2001	229	PHiggins	5	7	7	7	4	4	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0
06/01/2001	229	Mason	4	6	7	6	6	5	1	2	2	0	0	0	0	0	2	0	2	1	0	3	1	0	0
06/01/2001	229	Ron	5	6	6	6	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0
06/14/2001	231	Ouren	5	7	7	7	6	4	1	2	0	0	0	0	0	0	1	0	3	1	0	0	0	0	0
06/14/2001	231	EHiggins	6	8	8	8	6	5	2	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0
06/14/2001	231	PHiggins	6	8	8	8	5	5	1	1	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0
06/14/2001	231	Gray	6	8	8	8	4	2	1	3	2	0	3	0	0	0	3	0	2	4	0	0	2	0	0
06/14/2001	231	Ron	5	8	8	8	7	3	0	3	0	0	0	0	0	0	3	0	0	4	0	0	0	0	0
06/19/2001	231	Ouren	5	7	8	7	6	4	0	2	0	0	0	0	0	0	2	0	2	1	0	1	0	0	0
06/19/2001	231	EHiggins	6	6	7	6	6	6	2	1	0	1	0	0	0	0	2	0	0	1	0	0	0	0	0
06/19/2001	231	PHiggins	7	7	7	7	4	4	2	0	1	0	0	0	0	0	0	2	2	0	0	0	0	0	0
06/19/2001	231	Inglis	5	6	8	6	4	3	1	0	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
06/19/2001	231	Ron	6	7	7	7	4	2	0	3	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0
05/29/2001	232	Ouren	6	7	7	7	7	3	0	2	0	0	4	0	0	0	2	0	0	2	0	0	0	0	0
05/29/2001	232	EHiggins	6	6	7	6	6	4	1	0	2	0	3	0	0	0	0	0	0	3	0	0	0	0	0
05/29/2001	232	PHiggins	7	7	7	7	5	4	1	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0
05/29/2001	232	Mason	7	7	7	7	6	1	2	3	3	0	0	0	0	0	2	0	3	0	0	0	0	4	0
05/29/2001	232	Gray	7	7	7	7	3	2	2	3	0	0	3	0	0	0	3	0	3	4	0	0	0	0	0
05/29/2001	232	Inglis	5	7	7	7	6	2	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	4	0
05/09/2001	234	Ouren	6	8	8	8	6	5	2	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
05/09/2001	234	EHiggins	6	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0
05/09/2001	234	Mason	5	6	7	6	6	5	3	2	2	0	0	0	0	0	2	0	2	1	0	2	0	0	0
05/09/2001	234	Gray	6	7	7	7	6	5	2	0	2	0	0	0	0	0	2	2	0	2	0	0	2	0	0
05/09/2001	234	Inglis	5	7	8	7	5	3	1	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/09/2001	234	Ron	5	6	7	6	5	3	1	2	0	0	0	0	0	0	2	0	0	1	0	0	2	0	0
05/17/2001	235	Ouren	5	6	7	6	6	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/17/2001	235	EHiggins	6	6	7	6	5	4	1	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0
05/17/2001	235	PHiggins	6	6	7	6	4	4	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
05/17/2001	235	Mason	6	5	7	5	5	4	2	2	2	0	0	0	0	0	2	0	3	2	0	0	0	0	0
05/17/2001	235	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/17/2001	235	Ron	6	5	5	5	5	2	0	3	2	0	0	0	0	0	3	0	3	0	0	0	0	0	0
05/22/2001	235	Ouren	4	5	7	5	6	4	0	2	1	0	0	0	0	0	1	0	0	0	0	2	0	0	0
05/22/2001	235	PHiggins	3	3	4	3	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
05/22/2001	235	Mason	4	5	7	5	6	3	1	3	3	0	0	0	0	0	2	0	2	0	0	2	0	0	0
05/22/2001	235	EHiggins	5	5	6	5	5	5	1	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0
05/22/2001	235	Gray	5	6	6	6	6	5	2	0	3	0	0	0	0	0	3	0	2	0	0	2	0	0	0
05/22/2001	235	Inglis	5	6	8	6	6	5	1	0	2	0	0	0	0	0	2	0	0	2	0	2	0	0	0
05/22/2001	235	Ron	4	6	8	6	7	3	0	3	0	3	2	0	0	0	2	0	0	2	0	0	3	0	0
03/29/2001	239	Ouren	5	7	7	7	6	5	2	2	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0
03/29/2001	239	EHiggins	6	7	7	7	6	6	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
03/29/2001	239	PHiggins	7	8	8	8	6	5	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
03/29/2001	239	Mason	6	6	7	6	5	5	2	2	1	0	0	0	0	0	2	0	1	1	0	2	0	0	0
03/29/2001	239	Gray	6	6	6	6	7	6	2	2	2	0	0	0	0	0	2	0	2	2	0	2	0	0	0
03/29/2001	239	Inglis	5	7	8	7	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
03/29/2001	239	Ron	6	7	7	7	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/15/2001	240	Ouren	5	6	7	6	7	3	0	3	0	0	3	0	0	0	2	0	2	3	0	0	0	0	0
05/15/2001	240	EHiggins	6	6	7	6	6	3	2	2	2	0	3	0	0	0	0	0	0	3	0	0	0	0	0
05/15/2001	240	PHiggins	6	6	7	6	5	4	1	1	0	0	2	0	0	0	0	2	0	2	0	0	0	0	0
05/15/2001	240	Mason	5	6	7	6	7	0	1	4	0	0	4	0	0	0	0	0	0	4	0	0	0	0	0
05/15/2001	240	Inglis	5	6	7	6	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
05/15/2001	240	Ron	5	6	7	6	6	3	0	3	0	0	0	0	0	0	2	0	0	4	0	0	3	0	0
06/14/2001	241	Ouren	5	8	8	8	6	5	1	2	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
06/14/2001	241	EHiggins	7	8	8	8	6	6	1	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
06/14/2001	241	PHiggins	7	8	8	8	4	4	2	0	1	0	0	0	0	0	1	2	2	2	0	0	0	0	0
06/14/2001	241	Gray	8	8	8	8	5	4	2	3	2	0	0	0											

05/01/2001	242	Gray	6	6	6	6	5	3	1	3	0	0	3	0	0	0	3	0	2	4	0	0	0	0	0
05/01/2001	242	Inglis	4	6	8	6	5	5	1	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0
05/01/2001	242	Ron	5	6	8	6	7	3	1	3	0	0	0	0	0	2	0	0	4	0	0	0	3	0	0
05/02/2001	242	Ouren	5	6	7	6	6	4	1	2	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0
05/02/2001	242	EHiggins	5	6	7	6	5	5	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/02/2001	242	Mason	5	6	7	6	5	4	2	2	3	0	1	0	0	0	2	0	2	1	0	1	0	0	0
05/02/2001	242	Gray	6	7	6	7	5	4	1	3	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0
05/02/2001	242	Inglis	4	6	7	6	5	4	1	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/02/2001	242	Ron	6	6	7	6	6	3	1	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
06/01/2001	245	Ouren	4	5	7	5	6	4	0	1	0	0	0	0	0	1	0	2	0	0	1	1	0	0	0
06/01/2001	245	EHiggins	4	4	5	4	4	3	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
06/01/2001	245	PHiggins	3	2	3	2	4	4	1	0	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0
06/01/2001	245	Mason	5	6	7	6	5	3	1	2	2	0	0	0	0	2	0	1	2	0	2	2	0	0	0
06/01/2001	245	Ron	4	5	7	5	4	4	0	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
05/02/2001	246	Ouren	4	7	7	7	5	4	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/02/2001	246	EHiggins	5	6	7	6	5	4	1	2	0	0	2	0	0	2	2	0	0	0	0	0	0	0	0
05/02/2001	246	Mason	5	6	7	6	6	5	1	2	2	0	1	0	0	0	2	0	2	2	0	2	0	0	0
05/02/2001	246	Gray	5	6	6	6	5	4	1	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/02/2001	246	Inglis	4	6	7	6	5	4	1	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/02/2001	246	Ron	5	6	8	6	4	4	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
03/20/2001	247	Ouren	5	5	8	5	6	4	1	3	0	0	0	0	0	2	0	1	2	0	0	0	0	0	0
03/20/2001	247	EHiggins	5	5	6	5	5	5	2	2	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0
03/20/2001	247	PHiggins	3	2	2	2	3	3	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0
03/20/2001	247	Mason	4	5	7	5	5	4	2	1	0	0	0	0	0	2	2	0	0	1	0	1	0	0	0
03/20/2001	247	Gray	4	2	3	2	5	5	2	0	3	0	0	0	0	0	3	0	3	0	0	2	0	0	0
03/20/2001	247	Inglis	4	6	7	6	4	3	1	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
03/20/2001	247	Ron	4	4	5	4	5	5	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
06/01/2001	248	Ouren	6	7	7	7	6	5	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
06/01/2001	248	EHiggins	6	7	8	7	6	5	1	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
06/01/2001	248	PHiggins	7	8	8	8	4	4	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
06/01/2001	248	Mason	6	7	7	7	6	4	2	2	3	0	0	0	0	2	0	3	1	0	2	1	0	0	0
06/01/2001	248	Ron	5	7	8	7	5	3	0	3	2	0	0	0	0	0	3	0	3	0	0	0	0	0	0
03/28/2001	249	Ouren	5	6	7	6	6	4	1	2	0	0	2	0	0	2	0	0	1	0	0	0	0	0	0
03/28/2001	249	EHiggins	5	6	7	6	6	6	2	2	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0
03/28/2001	249	PHiggins	6	5	4	5	4	4	1	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0
03/28/2001	249	Gray	5	6	6	6	7	6	2	2	2	0	0	0	0	0	2	0	0	2	3	0	0	0	0
03/28/2001	249	Inglis	5	6	7	6	5	4	2	2	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
03/28/2001	249	Ron	5	6	7	6	5	4	2	2	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0
06/28/2001	252	Ouren	5	6	6	6	6	4	1	2	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0
06/28/2001	252	Mason	5	5	7	5	5	5	2	2	2	0	0	0	0	0	2	0	3	1	0	2	0	0	0
06/28/2001	252	Inglis	5	7	8	7	4	3	1	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
06/28/2001	252	Ron	6	5	6	5	5	3	0	2	0	0	0	0	0	0	3	0	2	1	0	0	0	0	0
05/15/2001	255	Ouren	6	7	8	7	6	4	0	1	0	0	0	0	0	1	0	1	0	0	3	0	0	0	0
05/15/2001	255	EHiggins	6	8	8	8	5	5	2	2	0	0	2	0	0	2	0	0	0	0	0	2	0	0	0
05/15/2001	255	PHiggins	6	6	7	6	4	4	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
05/15/2001	255	Mason	5	6	7	6	6	3	1	3	0	0	3	0	0	0	3	0	2	2	0	0	0	0	0
05/15/2001	255	Inglis	5	7	8	7	5	3	1	2	2	0	0	0	0	0	2	0	3	2	0	0	0	0	0
05/15/2001	255	Ron	6	7	8	7	6	3	0	2	0	0	4	0	0	0	2	0	2	0	0	0	0	0	0
06/07/2001	260	Ouren	5	5	7	5	5	5	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
06/07/2001	260	EHiggins	5	5	6	5	5	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
06/07/2001	260	PHiggins	6	5	6	5	4	4	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0
06/07/2001	260	Mason	5	6	6	6	5	4	2	2	2	0	0	0	0	0	2	0	2	0	0	2	2	0	0
06/07/2001	260	Gray	5	6	5	6	5	4	2	2	0	0	0	0	0	3	3	0	0	2	0	2	0	0	0
06/07/2001	260	Ron	5	6	6	6	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0
05/25/2001	261	Ouren	5	6	8	6	5	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/25/2001	261	EHiggins	6	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/25/2001	261	PHiggins	4	3	3	3	4	4	1	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
05/25/2001	261	Mason	6	4	7	4	6	3	2	3	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0
05/25/2001	261	Gray	5	4	5	4	4	2	1	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0
05/25/2001	261	Inglis	5	7	8	7	4	3	1	0	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0
05/25/2001	261	Ron	6	4	7	4	5	3	1	3	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0
05/10/2001	264	Ouren	5	6	7	6	5	4	0	1	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0
05/10/2001	264	EHiggins	6	6	7	6	5	4	2	2	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0
05/10/2001	264	PHiggins	7	7	7	7	4	4	1	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0
05/10/2001	264	Mason	5	7	7	7	5	5	1	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/10/2001	264	Gray	6	6	6	6	6	5	2	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/10/2001	264	Inglis	5	7	8	7	4	3	1	2	0	0	0	0	0	0	2	0	2	0	2	0	0	0	0
05/10/2001	264	Ron	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	0	1	0	0	2	0	0
06/29/2001	266	Ouren	5	6	7	6	6	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/29/2001	266	EHiggins	6	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0
06/29/2001	266	Mason	6	7	7	7	5	5	2	2	2	0	0	0	0	0	2	0	3	1	0	0	0	0	0
06/29/2001	266	Inglis	5	7	8	7	4	3	1																

03/27/2001	268	Gray	5	8	7	8	6	5	2	3	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0
03/27/2001	268	Inglis	4	7	8	7	4	4	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
03/27/2001	268	Ron	4	6	8	6	6	4	2	3	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0
04/04/2001	269	Ouren	5	7	7	7	6	4	2	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
04/04/2001	269	EHiggins	5	6	7	6	5	5	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
04/04/2001	269	PHiggins	5	7	6	7	4	4	1	0	0	1	1	0	0	0	1	0	0	0	0	0	1	0	
04/04/2001	269	Mason	5	7	7	7	6	5	2	1	0	0	0	0	0	2	0	2	1	0	1	0	0	0	
04/04/2001	269	Gray	5	6	6	6	6	5	3	3	3	0	0	0	0	0	3	0	3	3	0	0	0	0	
04/04/2001	269	Inglis	5	6	7	6	4	3	2	2	0	0	0	0	0	2	0	0	1	0	0	0	0	0	
04/05/2001	269	Ouren	5	4	7	4	6	5	1	2	0	0	0	0	0	2	0	0	0	0	2	0	0	0	
04/05/2001	269	EHiggins	4	5	6	5	6	5	1	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	
04/05/2001	269	PHiggins	4	4	3	4	4	4	1	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	
04/05/2001	269	Mason	4	7	8	7	5	5	1	2	0	0	1	0	0	0	2	0	1	2	0	2	0	0	
04/05/2001	269	Gray	5	6	6	6	5	4	1	2	3	0	0	0	0	0	2	0	2	2	0	0	0	0	
04/05/2001	269	Inglis	4	7	7	7	5	4	1	2	0	0	0	0	0	2	0	0	0	0	2	0	0	0	
04/05/2001	269	Ron	4	5	5	5	5	4	1	2	0	0	0	0	0	2	0	0	2	0	0	0	0	0	
05/17/2001	271	Ouren	5	6	8	6	6	4	0	2	0	0	0	0	0	1	0	0	0	0	2	0	0	0	
05/17/2001	271	EHiggins	5	6	7	6	5	4	1	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	
05/17/2001	271	PHiggins	5	7	7	7	4	4	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	
05/17/2001	271	Mason	5	6	7	6	5	3	2	3	2	0	2	0	0	0	2	0	0	0	0	0	0	3	
05/17/2001	271	Inglis	4	6	7	6	5	4	0	2	2	0	0	0	0	0	2	0	0	0	2	0	0	0	
05/17/2001	271	Ron	4	5	8	5	5	3	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	
05/22/2001	271	Ouren	4	4	6	4	5	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	
05/22/2001	271	PHiggins	6	2	3	2	3	3	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	
05/22/2001	271	Mason	5	4	7	4	5	4	2	2	2	0	0	0	0	0	2	0	2	0	2	1	0	0	
05/22/2001	271	EHiggins	5	5	6	5	5	4	1	1	0	0	0	0	0	2	0	0	1	0	0	0	0	0	
05/22/2001	271	Gray	5	4	4	4	6	5	2	0	2	0	0	0	0	0	3	0	3	3	0	2	0	0	
05/22/2001	271	Inglis	5	6	7	6	6	5	1	0	0	0	0	0	0	0	2	0	2	2	0	2	0	0	
05/22/2001	271	Ron	5	5	5	5	5	4	1	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	
03/29/2001	272	Ouren	5	7	7	7	6	5	2	2	0	0	0	0	0	1	0	0	1	0	1	0	0	0	
03/29/2001	272	EHiggins	6	7	8	7	6	6	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
03/29/2001	272	PHiggins	7	8	7	8	5	5	1	1	0	0	0	0	0	1	2	0	2	0	0	0	0	0	
03/29/2001	272	Mason	6	8	8	8	6	5	2	2	1	0	0	0	0	0	2	0	2	1	0	0	0	0	
03/29/2001	272	Gray	5	7	7	7	5	5	2	3	2	0	0	0	0	0	3	0	3	3	0	0	0	0	
03/29/2001	272	Inglis	4	7	8	7	4	3	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	
03/29/2001	272	Ron	4	7	7	7	4	3	1	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
05/03/2001	273	Ouren	4	5	7	5	5	4	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
05/03/2001	273	EHiggins	5	5	6	5	5	4	1	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	
05/03/2001	273	PHiggins	6	6	7	6	4	4	1	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	
05/03/2001	273	Mason	5	6	7	6	5	4	1	2	2	0	0	0	0	0	2	0	2	0	0	1	0	0	
05/03/2001	273	Gray	5	7	6	7	5	4	1	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0	
05/03/2001	273	Inglis	5	7	8	7	6	3	1	2	0	0	0	0	0	2	0	2	4	0	0	0	0	0	
05/03/2001	273	Ron	5	7	8	7	5	3	1	2	0	0	0	0	0	3	0	2	0	0	0	0	0	0	
06/20/2001	275	Ouren	5	5	7	5	5	5	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
06/20/2001	275	EHiggins	6	6	7	6	5	5	1	1	0	2	0	0	0	0	1	0	0	1	0	0	0	0	
06/20/2001	275	PHiggins	5	5	5	5	4	4	0	0	0	0	1	0	0	0	2	0	2	0	0	0	0	0	
06/20/2001	275	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	2	0	2	0	0	0	0	3	0	
06/20/2001	275	Ron	4	5	8	5	5	3	2	3	0	0	0	0	0	2	0	0	2	0	0	2	0	0	
06/19/2001	280	Ouren	4	6	8	6	5	4	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
06/19/2001	280	EHiggins	5	6	7	6	6	5	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
06/19/2001	280	PHiggins	3	3	3	3	3	4	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
06/19/2001	280	Inglis	5	7	8	7	6	5	1	0	0	0	0	0	0	2	0	0	2	0	2	0	0	0	
06/19/2001	280	Ron	5	6	7	6	5	4	1	2	0	0	0	2	0	0	2	0	1	0	0	2	0	0	
05/24/2001	284	Ouren	6	5	6	5	6	4	1	1	0	0	0	0	0	0	1	0	2	1	0	0	2	0	
05/24/2001	284	EHiggins	6	6	7	6	5	4	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
05/24/2001	284	PHiggins	6	3	3	3	4	4	1	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	
05/24/2001	284	Mason	6	5	6	5	5	3	1	3	2	0	0	0	0	0	3	0	4	2	0	0	1	0	
05/24/2001	284	Gray	6	5	5	5	5	5	2	3	0	0	0	0	0	3	0	3	3	0	0	0	0	0	
05/24/2001	284	Inglis	5	6	7	6	4	3	1	2	0	0	0	0	0	2	0	2	0	2	0	0	0	0	
05/24/2001	284	Ron	7	5	6	5	6	2	0	3	2	0	0	0	0	0	3	0	3	0	0	0	0	0	
05/29/2001	285	Ouren	6	7	7	7	6	5	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	
05/29/2001	285	EHiggins	6	7	8	7	5	4	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
05/29/2001	285	PHiggins	8	8	8	8	4	4	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	
05/29/2001	285	Mason	8	8	8	8	5	4	2	3	3	0	0	0	0	2	0	3	3	0	0	2	0	0	
05/29/2001	285	Gray	7	7	7	7	6	5	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	
05/29/2001	285	Inglis	5	7	8	7	4	3	1	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	
08/23/2001	289	Ouren	4	7	7	7	5	5	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
08/23/2001	289	EHiggins	5	6	7	6	6	5	1	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	
08/23/2001	289	PHiggins	4	4	4	4	4	4	1	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	
08/23/2001	289	Mason	4	6	7	6	5	3	1	2	2	0	0	0	0	1	1	0	2	0	1	2	0	0	
08/23/2001	289	Inglis	4	6	7	6	4	3	0	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	
08/23/2001	289	Gray	4	6	7	6	5	4	1	2	2	0	0	0	0	0	2	0	2	2	0	0	2	0	
08/23/2001	289	Ron	4	6	7	6	6	3	0	3	0	0	0	0	0	3	3	0	2	2	0	0	2	0	
04/12/2001	291	Ouren	2	5	7	5	8	1	0	4	0	4	7	0	0	0	0	0	5	0					

04/12/2001	291	Inglis	5	6	7	6	6	2	1	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0
04/12/2001	291	Ron	2	5	8	5	7	2	0	3	0	0	0	0	0	0	2	0	0	4	0	0	0	0	0	0	0
04/17/2001	291	Ouren	3	6	8	6	5	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/17/2001	291	EHiggins	4	5	7	5	5	4	1	2	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0
04/17/2001	291	PHiggins	6	5	6	5	4	4	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
04/17/2001	291	Mason	5	7	8	7	5	4	1	1	2	0	1	0	0	0	2	0	1	2	0	0	0	0	0	0	0
04/17/2001	291	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
05/25/2001	294	Ouren	5	6	7	6	6	4	0	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0
05/25/2001	294	EHiggins	6	6	7	6	6	4	2	2	0	0	2	0	0	0	0	0	0	3	0	0	0	0	0	0	0
05/25/2001	294	PHiggins	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
05/25/2001	294	Mason	6	6	7	6	6	3	1	3	2	0	0	0	0	0	2	0	0	0	0	0	0	2	3	0	
05/25/2001	294	Gray	7	8	7	8	5	4	2	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0	0
05/25/2001	294	Inglis	6	7	8	7	5	3	1	0	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0	0	0
05/25/2001	294	Ron	6	8	8	8	7	1	0	3	0	0	0	0	0	0	0	0	4	0	0	0	0	5	0	0	
05/29/2001	295	Ouren	4	7	7	7	5	4	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
05/29/2001	295	EHiggins	5	6	7	6	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
05/29/2001	295	PHiggins	3	3	2	3	4	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
05/29/2001	295	Mason	5	4	6	5	5	4	2	3	2	0	0	0	0	0	2	0	2	1	0	0	2	0	0	0	0
05/29/2001	295	Gray	5	4	5	4	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0
05/29/2001	295	Inglis	4	6	6	6	4	3	0	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
04/18/2001	296	Ouren	4	6	7	6	6	5	1	2	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0
04/18/2001	296	EHiggins	4	5	6	5	4	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
04/18/2001	296	Mason	4	5	7	5	6	5	2	2	2	0	0	0	0	0	2	0	1	0	0	0	0	2	0	0	0
04/18/2001	296	Gray	5	5	5	5	5	4	1	2	0	2	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0
04/18/2001	296	Inglis	5	6	7	6	5	3	1	0	0	0	2	0	0	0	2	0	0	0	0	0	0	2	0	0	0
04/18/2001	296	Ron	5	5	6	5	5	2	1	2	0	0	0	3	0	0	2	0	0	0	0	0	0	0	0	0	0
05/17/2001	297	Ouren	5	6	8	6	6	4	1	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0
05/17/2001	297	EHiggins	7	8	8	8	6	5	1	2	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0
05/17/2001	297	PHiggins	7	7	7	7	5	4	2	1	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0
05/17/2001	297	Mason	6	7	7	7	4	3	2	2	2	0	0	0	0	0	2	0	3	2	0	0	0	0	0	0	0
05/17/2001	297	Inglis	5	7	8	7	5	4	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
05/17/2001	297	Ron	5	7	8	7	4	3	1	2	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0
05/22/2001	297	Ouren	5	6	7	6	6	5	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
05/22/2001	297	PHiggins	5	7	7	7	4	4	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
05/22/2001	297	Mason	6	7	7	7	5	4	2	2	2	0	0	0	0	0	2	0	3	1	0	0	0	0	0	0	0
05/22/2001	297	EHiggins	6	7	8	7	6	5	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
05/22/2001	297	Gray	5	5	6	5	6	5	2	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0
05/22/2001	297	Inglis	5	7	8	7	5	4	1	0	2	0	0	0	0	0	2	0	2	2	0	1	0	0	0	0	0
05/22/2001	297	Ron	6	7	7	7	5	3	1	2	2	0	0	0	0	0	3	0	2	1	0	0	0	0	0	0	0
03/28/2001	300	Ouren	5	7	7	7	6	5	2	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
03/28/2001	300	EHiggins	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
03/28/2001	300	PHiggins	6	7	7	7	4	4	2	2	0	0	0	0	0	1	2	0	0	1	0	0	0	0	0	0	0
03/28/2001	300	Gray	5	7	8	7	5	4	2	3	2	0	0	0	0	0	2	0	2	3	0	0	0	0	0	0	0
03/28/2001	300	Inglis	5	8	8	8	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0
03/28/2001	300	Ron	5	8	8	8	6	6	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
03/27/2001	302	Ouren	4	7	7	7	6	4	1	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0
03/27/2001	302	EHiggins	6	7	7	7	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0
03/27/2001	302	PHiggins	6	7	7	7	5	5	2	0	0	0	0	0	0	0	1	2	1	2	0	0	0	0	0	0	0
03/27/2001	302	Mason	5	6	7	6	5	4	2	2	0	0	0	0	0	0	0	1	2	0	0	1	0	0	0	0	0
03/27/2001	302	Gray	5	6	7	6	4	3	2	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
03/27/2001	302	Inglis	4	6	7	6	4	3	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
03/27/2001	302	Ron	5	6	8	6	6	3	0	3	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
03/20/2001	303	Ouren	5	6	7	6	6	4	2	2	0	0	0	0	0	0	1	0	3	1	0	0	0	0	0	0	0
03/20/2001	303	EHiggins	6	7	8	7	6	6	2	2	0	0	2	0	0	0	0	0	2	3	0	0	0	0	0	0	0
03/20/2001	303	PHiggins	5	6	5	6	5	5	1	2	0	0	0	0	0	0	1	2	0	2	0	1	0	0	0	0	0
03/20/2001	303	Mason	6	7	8	7	6	4	1	2	2	0	2	0	0	1	2	0	0	3	0	0	0	0	0	0	0
03/20/2001	303	Gray	5	7	7	7	5	4	2	0	3	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
03/20/2001	303	Inglis	4	7	8	7	4	3	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0
03/20/2001	303	Ron	5	7	7	7	6	3	1	3	0	0	0	0	0	0	3	0	0	0	0	0	0	3	3	0	0
05/01/2001	306	Ouren	5	5	7	5	6	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
05/01/2001	306	EHiggins	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0
05/01/2001	306	PHiggins	5	5	6	5	4	4	1	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0
05/01/2001	306	Mason	5	7	5	5	4	1	2	0	0	1	0	0	0	0	2	0	2	1	0	0	0	0	0	0	0
05/01/2001	306	Gray	4	4	4	4	5	3	1	3	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0	0	0
05/01/2001	306	Inglis	4	6	7	6	5	4	1	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
05/01/2001	306	Ron	5	4	8	4	5	5	2	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0
05/02/2001	306	Ouren	5	7	7	7	6	4	2	2	0	0	0	0	0	0	2	0	3	0	0	1	0	0	0	0	0
05/02/2001</																											

05/03/2001	355	Mason	5	6	7	6	5	4	2	2	2	0	0	0	0	0	2	0	2	1	0	0	0	0	0
05/03/2001	355	Gray	5	8	7	8	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/03/2001	355	Inglis	5	7	8	7	4	3	1	2	0	0	0	0	0	0	2	0	2	0	2	0	0	0	0
05/03/2001	355	Ron	6	8	8	8	5	4	1	3	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
06/28/2001	359	Ouren	5	6	7	6	6	3	1	3	0	1	1	0	0	0	2	0	2	0	0	0	0	0	0
06/28/2001	359	Mason	6	7	8	7	6	6	2	1	2	0	0	0	0	0	2	0	2	0	0	2	0	0	0
06/28/2001	359	Inglis	5	7	8	7	5	4	1	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
06/28/2001	359	Ron	5	7	8	7	5	4	2	2	0	0	0	0	0	0	2	0	1	1	0	0	0	0	0
03/29/2001	361	Ouren	5	6	8	6	6	4	1	2	1	0	0	0	0	0	2	0	0	0	0	2	0	0	0
03/29/2001	361	EHiggins	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
03/29/2001	361	PHiggins	4	7	6	7	5	5	2	0	1	0	0	0	0	0	2	2	0	2	0	0	0	0	0
03/29/2001	361	Mason	6	7	7	7	5	4	2	2	1	0	0	0	0	0	2	0	2	0	0	2	0	0	0
03/29/2001	361	Gray	5	7	7	7	6	5	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
03/29/2001	361	Inglis	4	7	8	7	5	4	2	2	0	0	0	0	0	0	2	2	0	0	0	2	0	0	0
03/29/2001	361	Ron	5	6	8	6	4	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
06/28/2001	366	Ouren	5	6	6	6	6	5	1	2	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
06/28/2001	366	Mason	5	7	7	7	5	4	1	3	3	0	1	0	0	0	2	0	0	2	0	0	0	1	0
06/28/2001	366	Inglis	4	7	8	7	4	3	1	2	0	0	0	0	0	0	2	2	0	2	0	0	0	0	0
06/28/2001	366	Ron	4	6	7	6	6	4	1	3	0	0	0	2	0	2	0	0	3	0	0	0	3	0	0
03/30/2001	367	Ouren	4	6	6	6	5	4	1	2	0	2	0	0	0	0	1	0	2	0	0	0	0	0	0
03/30/2001	367	EHiggins	6	7	8	7	6	6	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
03/30/2001	367	PHiggins	7	8	7	8	5	5	2	1	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
03/30/2001	367	Mason	6	6	7	6	5	5	2	2	1	0	0	0	0	0	2	1	2	0	0	0	0	0	0
03/30/2001	367	Gray	6	7	6	7	5	4	3	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0
03/30/2001	367	Inglis	5	7	8	7	5	4	2	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
03/30/2001	367	Ron	5	7	7	7	5	4	2	2	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0
04/03/2001	367	Ouren	5	5	7	5	5	4	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
04/03/2001	367	EHiggins	5	5	6	5	4	3	1	2	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
04/03/2001	367	PHiggins	6	5	4	5	4	4	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
04/03/2001	367	Mason	6	6	7	6	4	4	1	2	1	0	0	0	0	0	2	0	2	1	0	0	1	0	0
04/03/2001	367	Gray	5	4	4	4	5	4	2	3	3	0	0	0	0	0	3	0	3	3	0	0	0	0	0
04/03/2001	367	Inglis	4	7	7	7	4	3	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
05/16/2001	369	Ouren	5	7	8	7	5	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/16/2001	369	EHiggins	6	7	8	7	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/16/2001	369	Mason	6	7	7	7	5	4	1	2	0	0	0	0	0	1	2	0	2	1	0	0	0	0	0
05/16/2001	369	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	2	0	0	0
05/16/2001	369	Ron	5	7	8	7	4	4	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08/02/2001	371	Ouren	5	6	7	6	5	4	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08/02/2001	371	EHiggins	6	7	7	7	5	5	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08/02/2001	371	PHiggins	6	6	6	6	4	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
08/02/2001	371	Inglis	5	8	8	8	4	3	1	0	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
08/02/2001	371	Gray	6	6	6	6	5	4	2	3	0	0	0	0	0	0	3	0	2	3	0	0	3	0	0
08/02/2001	371	Ron	5	7	8	7	5	4	1	3	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0
07/18/2001	374	EHiggins	6	7	7	7	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
07/18/2001	374	PHiggins	5	4	4	4	4	4	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0
07/18/2001	374	Mason	5	6	7	6	5	4	2	2	2	0	0	0	0	0	2	0	2	2	0	0	1	0	0
07/18/2001	374	Gray	6	8	6	8	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
07/18/2001	374	Inglis	5	8	8	8	5	3	2	0	2	0	0	0	0	0	2	0	2	3	0	2	0	0	0
07/18/2001	374	Ron	5	7	7	7	5	4	1	2	0	0	0	0	0	0	2	0	0	2	0	2	0	0	0
06/28/2001	379	Ouren	5	6	6	6	6	4	1	3	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0
06/28/2001	379	Mason	5	6	7	6	4	3	2	2	2	0	0	0	0	0	2	0	0	2	0	0	0	1	0
06/28/2001	379	Inglis	5	7	7	7	5	4	1	0	2	0	0	0	0	0	2	0	0	2	0	2	0	0	0
06/28/2001	379	Ron	5	5	6	5	6	4	1	3	0	0	2	3	0	0	3	0	2	0	0	0	0	0	0
06/28/2001	383	Ouren	5	6	6	6	5	4	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
06/28/2001	383	Mason	5	6	7	6	6	5	3	1	2	0	0	0	0	0	2	0	2	1	0	2	0	0	0
06/28/2001	383	Inglis	5	7	8	7	5	4	1	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
06/28/2001	383	Ron	5	7	7	7	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
06/28/2001	384	Ouren	5	6	6	6	5	4	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
06/28/2001	384	Mason	6	6	7	6	5	5	2	2	2	0	0	0	0	0	2	0	3	2	0	2	0	0	0
06/28/2001	384	Inglis	5	7	8	7	4	3	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
06/28/2001	384	Ron	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
04/18/2001	385	Ouren	4	6	8	6	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/18/2001	385	EHiggins	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
04/18/2001	385	Mason	5	6	7	6	6	5	1	2	2	0	0	0	0	0	2	0	2	0	1	3	0	0	0
04/18/2001	385	Gray	4	6	6	6	7	6	1	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0
04/18/2001	385	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0
04/18/2001	385	Ron	4	5	8	5	6	6	1	2	1	0	0	0	0	0	2	0	0	0	0	2	0	0	0
05/08/2001	387	Ouren	3	7	7	7	7	2	0	0	0	4	3	0	1	0	0	0	0	2	0	0	0	0	0
05/08/2001	387	EHiggins	6	6	7	6	6	3	1	2	2	0	3	0	0	0	0	0	3	0	0	0	0	0	0
05/08/2001	387	PHiggins	4	6	7	6	4	4	1	1	0	0	2	0	0	0	1	0	0	2	0	0	0	0	0
05/08/2001	387	Gray	4	7	7	7	4	2	1	3	0	0	4	0	0	0	4	0	4	0	0	0	0	0	0
05/08/2001	387	Inglis	4	6	7	6	5	3	0</																

05/08/2001	388	Inglis	4	6	7	6	4	4	0	2	2	0	0	0	0	0	2	0	2	0	0	2	0	0	0	0
05/08/2001	388	Ron	5	6	8	6	4	3	0	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
04/12/2001	390	Ouren	5	6	6	6	6	4	1	2	1	0	2	0	0	0	2	0	0	1	0	0	0	0	0	0
04/12/2001	390	EHiggins	6	6	7	6	5	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
04/12/2001	390	PHiggins	6	7	6	7	5	5	2	0	0	0	0	0	0	1	0	2	1	2	0	0	0	0	0	0
04/12/2001	390	Mason	5	5	7	5	5	4	2	2	2	0	0	0	0	0	2	0	2	2	0	2	0	0	0	0
04/12/2001	390	Inglis	5	7	7	7	4	3	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
04/12/2001	390	Ron	5	5	7	5	5	4	1	2	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0
05/15/2001	392	Ouren	4	7	8	7	5	4	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
05/15/2001	392	EHiggins	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
05/15/2001	392	PHiggins	6	7	7	7	4	4	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
05/15/2001	392	Mason	5	7	7	7	5	4	1	2	0	0	0	0	0	0	2	0	1	2	0	0	0	0	0	0
05/15/2001	392	Inglis	5	7	8	7	4	3	1	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/15/2001	392	Ron	5	6	7	6	6	3	0	2	0	0	4	0	0	0	2	0	2	0	0	0	0	0	0	0
04/17/2001	393	Ouren	5	6	7	6	6	4	1	2	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
04/17/2001	393	EHiggins	6	6	7	6	6	4	1	0	2	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0
04/17/2001	393	PHiggins	4	6	7	6	5	5	2	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
04/17/2001	393	Mason	5	6	7	6	6	5	2	2	2	0	1	0	0	0	2	0	1	1	0	1	0	0	0	0
04/17/2001	393	Inglis	5	5	7	5	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/15/2001	394	Ouren	5	6	8	6	5	4	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
05/15/2001	394	EHiggins	6	7	7	7	5	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/15/2001	394	PHiggins	5	7	7	7	4	4	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
05/15/2001	394	Mason	5	7	7	7	5	4	2	3	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/15/2001	394	Inglis	5	7	8	7	4	3	1	2	2	3	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/15/2001	394	Ron	4	6	7	6	5	4	1	2	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0	0
03/20/2001	397	Ouren	5	6	7	6	6	4	2	2	0	0	0	0	0	0	1	0	3	1	0	0	0	0	0	0
03/20/2001	397	EHiggins	5	6	7	6	6	6	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
03/20/2001	397	PHiggins	3	3	2	3	3	3	1	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0
03/20/2001	397	Mason	5	5	7	5	5	4	2	2	1	0	1	0	0	0	2	0	2	2	0	0	0	0	0	0
03/20/2001	397	Gray	5	4	5	4	5	4	2	3	2	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0
03/20/2001	397	Inglis	4	6	6	6	4	3	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
03/20/2001	397	Ron	6	6	6	6	5	3	1	2	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0
03/22/2001	398	EHiggins	6	7	8	7	6	5	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
03/22/2001	398	PHiggins	7	8	7	8	5	5	2	1	0	0	0	0	0	1	0	2	0	2	0	0	0	0	0	0
03/22/2001	398	Mason	6	7	7	7	5	4	2	2	2	0	0	0	0	0	2	0	2	3	0	0	0	0	0	0
03/22/2001	398	Gray	6	6	6	6	5	4	2	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0
03/22/2001	398	Inglis	5	7	8	7	4	3	2	2	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0
03/22/2001	398	Ron	6	5	7	5	5	3	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/25/2001	399	Ouren	5	7	7	7	7	3	0	2	0	0	4	0	0	0	2	0	1	3	0	0	0	0	0	0
05/25/2001	399	EHiggins	5	7	7	7	5	4	1	0	0	0	2	0	0	0	0	0	0	3	0	0	0	0	0	0
05/25/2001	399	PHiggins	.	.	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/25/2001	399	Mason	6	7	7	7	6	1	1	3	0	0	0	0	0	1	2	0	0	0	0	0	2	3	0	0
05/25/2001	399	Gray	6	6	6	6	4	2	1	4	0	0	3	0	0	0	4	0	3	4	0	0	0	0	0	0
05/25/2001	399	Inglis	6	7	8	7	6	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	4	0	0
05/25/2001	399	Ron	6	6	8	6	7	2	0	3	0	0	0	0	0	0	0	0	2	5	0	0	0	0	0	0
03/28/2001	403	Ouren	4	7	8	7	6	4	1	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
03/28/2001	403	EHiggins	5	6	7	6	5	4	1	2	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
03/28/2001	403	PHiggins	4	6	5	6	4	4	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
03/28/2001	403	Gray	5	8	7	8	5	5	2	2	3	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
03/28/2001	403	Inglis	4	8	8	8	5	4	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
03/28/2001	403	Ron	4	7	8	7	5	4	2	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
04/03/2001	405	Ouren	5	8	8	8	7	2	1	3	0	4	4	0	0	0	2	0	0	3	0	0	0	0	0	0
04/03/2001	405	EHiggins	6	6	7	6	5	4	2	0	0	0	3	0	0	0	0	0	3	0	0	3	0	0	0	0
04/03/2001	405	PHiggins	5	7	6	7	4	4	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
04/03/2001	405	Mason	6	7	7	7	7	3	3	3	3	0	4	0	0	0	2	0	0	3	0	0	0	0	0	0
04/03/2001	405	Gray	6	8	7	8	4	2	2	0	3	0	4	0	0	0	4	0	3	5	0	0	0	0	0	0
04/03/2001	405	Inglis	5	7	7	7	5	3	2	2	0	0	0	0	0	0	2	0	0	4	0	0	2	0	0	0
05/16/2001	406	Ouren	5	7	8	7	6	4	1	2	0	1	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/16/2001	406	EHiggins	6	7	7	7	6	2	0	0	2	0	2	0	0	0	0	0	0	3	0	2	0	0	0	0
05/16/2001	406	Mason	6	7	7	7	5	3	1	3	3	0	2	0	0	0	2	0	2	2	0	0	2	0	0	0
05/16/2001	406	Inglis	5	7	8	7	5	3	1	0	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/16/2001	406	Ron	6	7	8	7	5	3	0	2	0	0	0	0	0	0	2	0	3	0	0	3	0	0	0	0
03/30/2001	408	Ouren	4	6	7	6	6	4	1	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
03/30/2001	408	EHiggins	4	6	6	6	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
03/30/2001	408	PHiggins	5	4	3	4	4	3	1	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
03/30/2001	408	Mason	6	5	7	5	5	3	1	3	1	0	1	0	0	1	2	0	2	3	0	0	0	0	0	0
03/30/2001	408	Gray	4	5	5	5	5	4	1	3	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0	0
03/30/2001	408	Inglis	3	6	7	6	4	4	1	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
03/30/2001	408	Ron	4	6	7	6	6	4	0	3	0	0	0	0	0	0	2	0	0	3	0	0	2	0	0	0
04/03/																										

06/14/2001	437	Gray	7	7	6	7	5	4	2	2	3	0	0	0	0	0	2	0	2	2	0	0	2	0	0
06/14/2001	437	Ron	5	6	7	6	6	3	1	2	0	0	0	0	2	0	2	0	0	0	0	0	2	0	0
06/19/2001	437	Ouren	4	5	7	5	6	4	0	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
06/19/2001	437	EHiggins	6	6	7	6	5	5	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
06/19/2001	437	PHiggins	6	6	6	6	4	4	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
06/19/2001	437	Inglis	5	6	7	6	4	3	1	2	0	0	0	0	0	2	0	2	0	2	0	0	0	0	0
06/19/2001	437	Ron	5	6	7	6	5	4	1	2	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0
06/28/2001	438	Ouren	4	7	7	7	6	4	0	2	0	1	0	0	0	0	0	0	2	1	0	0	0	0	0
06/28/2001	438	Mason	6	4	7	4	6	1	3	4	3	0	0	0	0	0	2	0	2	2	0	0	0	0	0
06/28/2001	438	Inglis	5	7	8	7	4	3	1	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0	0
06/28/2001	438	Ron	6	7	8	7	7	2	0	2	0	0	0	5	0	3	0	0	2	0	0	0	0	0	0
03/21/2001	439	Ouren	5	5	7	5	5	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/21/2001	439	EHiggins	5	6	7	6	6	5	1	2	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0
03/21/2001	439	PHiggins	5	5	5	5	4	4	1	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0
03/21/2001	439	Mason	4	5	7	5	5	5	2	1	1	0	0	0	0	0	2	0	1	0	0	1	0	0	0
03/21/2001	439	Gray	5	7	7	7	6	5	2	0	2	0	0	0	0	3	2	0	2	2	0	2	0	0	0
03/21/2001	439	Inglis	4	6	8	6	5	4	2	0	2	0	0	0	0	0	0	0	2	0	2	0	0	0	0
03/21/2001	439	Ron	4	5	8	5	5	4	1	3	2	0	0	0	0	0	2	0	2	0	0	2	0	0	0
06/28/2001	440	Ouren	4	6	7	6	5	4	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
06/28/2001	440	Mason	5	7	8	7	5	4	2	2	3	0	0	0	0	0	2	0	0	2	0	2	0	0	0
06/28/2001	440	Inglis	5	7	8	7	4	3	1	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
06/28/2001	440	Ron	4	7	8	7	5	5	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
03/20/2001	442	Ouren	5	7	7	7	5	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/20/2001	442	EHiggins	6	7	8	7	6	6	2	2	0	0	2	0	0	0	0	0	2	0	0	2	0	0	0
03/20/2001	442	PHiggins	6	7	7	7	4	4	1	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0
03/20/2001	442	Mason	5	6	7	6	6	5	3	2	2	0	0	0	0	0	2	0	2	0	2	2	0	0	0
03/20/2001	442	Gray	4	7	7	7	6	5	2	0	2	0	0	0	0	0	1	0	1	2	0	0	0	0	0
03/20/2001	442	Inglis	4	7	8	7	4	3	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
03/20/2001	442	Ron	5	6	8	6	6	4	2	2	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0
05/25/2001	444	Ouren	6	6	7	6	6	5	1	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
05/25/2001	444	EHiggins	6	7	8	7	6	5	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/25/2001	444	PHiggins	5	4	5	4	4	4	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0
05/25/2001	444	Mason	6	6	7	6	5	4	2	2	0	0	0	0	0	0	2	0	3	1	0	0	0	0	0
05/25/2001	444	Gray	6	4	4	4	4	4	2	2	0	0	0	0	0	0	3	0	3	2	0	0	0	0	0
05/25/2001	444	Inglis	5	7	8	7	4	3	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/25/2001	444	Ron	6	7	8	7	5	3	0	3	0	0	0	0	0	0	3	0	3	0	0	0	2	0	0
05/10/2001	446	Ouren	4	6	7	6	6	4	0	2	0	0	1	0	0	0	2	0	1	1	0	0	0	0	0
05/10/2001	446	EHiggins	4	5	6	5	4	4	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/10/2001	446	PHiggins	5	4	5	4	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
05/10/2001	446	Mason	4	6	7	6	6	2	1	3	0	0	0	0	0	1	2	0	0	3	0	0	2	0	0
05/10/2001	446	Gray	5	5	6	5	5	4	2	3	3	0	0	0	0	0	4	0	2	4	0	0	0	0	0
05/10/2001	446	Inglis	5	7	7	7	5	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3	0
05/10/2001	446	Ron	4	6	8	6	4	3	0	2	0	0	0	0	0	0	2	0	0	2	0	0	2	0	0
03/27/2001	448	Ouren	5	7	8	7	7	4	1	3	0	2	0	0	0	0	2	0	0	2	0	0	0	0	0
03/27/2001	448	EHiggins	5	6	7	6	5	4	1	3	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0
03/27/2001	448	PHiggins	4	7	6	7	5	4	2	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
03/27/2001	448	Mason	4	6	7	6	6	3	1	3	2	0	3	0	0	0	2	0	0	3	0	0	0	0	0
03/27/2001	448	Gray	5	7	7	7	5	4	2	3	0	0	0	0	0	0	2	0	2	4	0	0	0	0	0
03/27/2001	448	Inglis	4	8	8	8	5	3	2	3	0	0	0	0	0	0	3	0	3	3	0	0	0	3	0
03/27/2001	448	Ron	3	7	8	7	6	2	2	2	0	0	0	0	0	0	3	2	2	3	0	0	0	2	0
05/04/2001	449	Ouren	5	3	7	3	6	5	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
05/04/2001	449	Inglis	4	6	6	6	5	5	1	2	1	0	0	0	0	0	2	0	2	0	0	2	0	0	0
05/04/2001	449	Ron	4	4	4	4	4	3	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
05/04/2001	449	PHiggins	2	2	3	2	4	4	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
05/04/2001	449	EHiggins	4	4	5	4	4	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
04/19/2001	451	Ouren	4	7	6	7	7	3	0	3	1	0	4	0	0	0	2	0	0	3	0	0	0	0	0
04/19/2001	451	EHiggins	5	6	7	6	6	3	1	2	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0
04/19/2001	451	PHiggins	4	5	6	5	4	4	2	2	0	0	0	0	0	0	1	0	2	2	0	0	0	0	0
04/19/2001	451	Mason	3	5	7	5	7	2	1	3	2	0	3	0	0	0	2	0	0	0	0	0	0	0	0
04/19/2001	451	Gray	5	5	6	6	5	3	1	3	3	0	3	0	0	0	3	0	0	4	0	0	0	0	0
04/19/2001	451	Inglis	2	4	7	4	5	3	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	4	0
04/19/2001	451	Ron	4	5	7	5	7	3	0	3	0	0	0	2	0	0	3	0	0	4	0	0	0	0	0
05/03/2001	452	Ouren	5	7	7	7	7	3	0	3	0	2	4	0	0	0	2	0	0	0	0	0	0	0	0
05/03/2001	452	EHiggins	6	7	8	7	6	4	2	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0
05/03/2001	452	PHiggins	7	7	7	7	4	4	1	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0
05/03/2001	452	Mason	6	6	7	6	6	2	2	3	3	0	3	0	0	0	3	0	3	4	0	0	0	0	0
05/03/2001	452	Gray	7	8	8	8	4	3	2	4	0	0	4	0	0	0	4	0	0	4	0	0	0	0	0
05/03/2001	452	Inglis	5	6	7	6	5	4	1	2	2	0	2	0	0	0	2	0	2	0	0	0	0	3	0
05/03/2001	452	Ron	6	8	8	8	6	3	2	3	0	0	0	0	0	0	3	0	2	3	0	0	0	0	0
03/20/2001	453	Ouren	4	6	8	6	6	4	2	1	0	0	1	0	0	0	1	0	1	3	0	0	0	0	0
03/20/2001	453	EHiggins	5	6	7	6	5	4	1	2	2	0	3	0	0	0	0	0	0	3	0	0	0	0	0
03/20/2001	453	PHiggins	3	5	4	5	4	4																	

06/01/2001	496	Mason	4	7	7	7	5	4	1	2	0	0	0	0	0	1	2	0	2	1	0	1	1	0	0	
06/01/2001	496	Ron	5	6	7	6	5	4	1	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
04/29/2001	509	Ouren	5	5	7	5	6	5	2	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	
04/29/2001	509	Mason	4	5	7	6	5	5	1	2	2	0	0	0	0	2	0	1	0	0	2	0	0	0	0	
04/29/2001	509	Gray	5	6	5	6	7	6	1	2	3	0	0	0	0	0	2	0	0	2	0	3	0	0	0	
04/29/2001	509	Inglis	5	7	8	7	5	5	1	2	0	0	0	0	0	2	0	2	0	0	2	0	0	0	0	
04/29/2001	509	Ron	5	6	6	6	5	5	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	
06/08/2001	512	Ouren	5	7	8	7	6	5	1	1	1	0	0	0	0	1	0	0	0	0	2	0	0	0	0	
06/08/2001	512	EHiggins	6	7	8	7	5	5	2	1	1	0	1	0	0	1	0	1	2	0	0	0	0	0	0	
06/08/2001	512	PHiggins	7	6	6	6	4	4	0	1	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	
06/08/2001	512	Mason	6	7	8	7	5	5	2	2	2	0	0	0	0	0	2	0	3	1	0	1	1	0	0	
06/08/2001	512	Gray	6	7	8	7	7	6	2	2	2	0	0	0	0	0	3	0	3	2	0	2	0	0	0	
06/08/2001	512	Ron	5	7	8	7	6	5	1	2	1	0	0	0	0	0	3	0	0	1	0	2	0	0	0	
03/27/2001	513	Ouren	5	7	8	7	7	3	1	3	0	0	0	0	0	0	3	0	2	2	0	0	0	0	0	
03/27/2001	513	EHiggins	5	6	7	6	6	5	2	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	
03/27/2001	513	PHiggins	7	7	7	7	5	4	1	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	
03/27/2001	513	Mason	5	7	8	7	6	5	2	1	2	0	0	0	0	0	2	0	2	2	0	2	0	0	0	
03/27/2001	513	Gray	5	7	8	7	6	5	2	3	2	0	0	0	0	0	2	0	2	3	0	0	0	0	0	
03/27/2001	513	Inglis	4	7	8	7	4	4	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
03/27/2001	513	Ron	5	7	8	7	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
05/12/2001	514	Ouren	4	7	7	7	6	5	2	1	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0	
05/12/2001	514	EHiggins	6	7	8	7	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
05/12/2001	514	PHiggins	7	7	7	7	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
05/12/2001	514	Mason	6	6	7	6	6	5	2	2	2	0	0	0	0	0	2	0	3	0	0	2	0	0	0	
05/12/2001	514	Gray	7	7	7	7	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	
05/12/2001	514	Inglis	6	8	8	8	5	3	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	
05/12/2001	514	Ron	6	7	7	7	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
05/24/2001	517	Ouren	5	7	8	7	7	2	0	3	0	1	3	0	0	0	3	0	3	5	0	0	0	0	0	
05/24/2001	517	EHiggins	6	7	8	7	6	3	0	2	2	0	2	0	0	0	0	0	0	0	2	0	0	0	0	
05/24/2001	517	PHiggins	6	6	7	6	5	4	1	2	0	0	2	0	0	0	0	1	0	2	0	0	0	0	0	
05/24/2001	517	Mason	6	5	7	5	7	0	0	4	0	0	0	0	0	0	2	0	0	0	0	0	0	4	0	
05/24/2001	517	Gray	5	6	6	6	4	2	1	0	0	0	3	0	0	0	4	0	0	4	0	0	0	3	0	
05/24/2001	517	Inglis	5	7	8	7	5	2	1	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	4	0
05/24/2001	517	Ron	6	6	7	6	8	2	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	6	0	
06/20/2001	519	Ouren	3	7	7	7	6	4	0	2	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	
06/20/2001	519	EHiggins	5	7	7	7	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	
06/20/2001	519	PHiggins	5	6	6	6	4	4	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	
06/20/2001	519	Inglis	4	6	7	6	5	3	0	0	2	0	0	0	0	0	0	0	0	0	2	2	4	0	0	
06/20/2001	519	Ron	4	7	7	7	6	3	0	3	0	0	2	0	3	0	2	0	0	2	0	0	0	0	0	
04/20/2001	523	Ouren	5	7	8	7	6	4	0	2	1	0	0	0	0	0	2	0	1	0	0	0	0	0	0	
04/20/2001	523	EHiggins	6	7	8	7	5	3	1	0	0	0	3	0	0	0	0	0	3	0	0	3	0	0	0	
04/20/2001	523	PHiggins	7	7	7	7	4	4	1	1	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	
04/20/2001	523	Mason	5	7	7	7	7	3	1	3	2	0	3	0	0	0	3	0	2	0	0	0	0	0	0	
04/20/2001	523	Inglis	4	6	7	6	4	3	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
04/20/2001	523	Ron	5	7	8	7	4	3	1	3	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
04/24/2001	523	Ouren	4	6	7	6	6	4	1	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	
04/24/2001	523	EHiggins	6	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
04/24/2001	523	PHiggins	3	3	3	2	4	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	
04/24/2001	523	Mason	5	5	7	6	6	5	2	2	2	0	1	0	0	0	0	0	2	1	0	2	0	0	0	
04/24/2001	523	Gray	6	6	6	6	5	5	2	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0	
04/24/2001	523	Inglis	5	7	7	7	5	4	1	2	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0	
04/24/2001	523	Ron	5	6	7	6	5	5	1	3	0	0	0	0	0	0	2	0	2	0	0	0	2	0	0	
06/07/2001	526	Ouren	3	7	8	7	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
06/07/2001	526	EHiggins	5	6	7	6	7	6	2	2	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	
06/07/2001	526	PHiggins	5	7	7	7	4	4	1	1	0	0	0	0	0	0	0	2	0	2	0	1	0	0	0	
06/07/2001	526	Mason	5	7	8	7	5	4	1	3	1	0	0	0	0	0	2	0	1	1	0	0	1	0	0	
06/07/2001	526	Gray	5	6	6	6	5	4	1	3	3	0	0	0	0	0	3	0	0	3	0	0	0	0	0	
06/07/2001	526	Ron	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	
05/04/2001	528	Ouren	4	6	8	6	6	4	0	2	1	0	0	0	0	0	2	0	0	0	0	2	0	0	0	
05/04/2001	528	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	
05/04/2001	528	Ron	5	6	8	6	7	3	0	3	0	0	0	0	0	0	2	0	0	0	0	0	4	0	0	
05/04/2001	528	PHiggins	5	6	7	6	4	4	1	0	0	0	0	0	0	0	1	1	0	1	0	2	0	0	0	
05/04/2001	528	EHiggins	5	6	7	6	6	4	1	2	2	0	3	0	0	0	0	0	0	3	0	0	0	0	0	
03/28/2001	529	Ouren	4	6	7	6	6	4	1	2	0	0	1	0	0	0	2	0	0	3	0	0	0	0	0	
03/28/2001	529	EHiggins	5	7	8	7	6	5	1	2	0	0	2	0	0	0	0	0	0	3	0	0	0	0	0	
03/28/2001	529	PHiggins	5	7	7	7	4	4	1	0	2	0	0	1	0	0	2	0	0	0	0	1	0	0	0	
03/28/2001	529	Gray	4	8	7	8	5	5	2	2	3	0	0	0	0	0	2	0	2	2	0	0	0	0	0	
03/28/2001	529	Inglis	5	8	8	8	5	4	2	2	2	0	0	0	0	0	2	2	0	2	2	0	0	0	0	
03/28/2001	529	Ron	4	7	8	7	5	3	1	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	
03/20/2001	530	Ouren	6	7	8	7	7	4	1	2	0	0	0	0	0	0	2	0	3	2	0	0	0	0	0	
03/20/2001	530	EHiggins	6	7	8	7	6	6	2	2	0	0	2	0	0	0	2	0	0	2	0	0	0	0	0	
03/20/2001	530	PHiggins	5	6	5	6	5																			

05/10/2001	668	Inglis	5	7	8	7	4	3	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/10/2001	668	Ron	4	6	7	6	3	3	0	2	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/17/2001	671	Ouren	5	6	7	6	5	4	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
05/17/2001	671	EHiggins	6	6	7	6	5	4	1	1	0	0	2	0	0	0	1	0	0	2	0	0	0	0	0	0
05/17/2001	671	PHiggins	5	6	7	6	4	4	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/17/2001	671	Mason	6	6	7	6	5	4	2	2	3	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/17/2001	671	Inglis	4	6	7	6	5	4	1	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/17/2001	671	Ron	5	6	8	6	5	3	1	2	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
05/22/2001	671	Ouren	5	6	7	6	6	4	1	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
05/22/2001	671	PHiggins	3	2	2	2	4	4	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
05/22/2001	671	Mason	6	6	7	6	5	4	1	3	0	0	0	0	0	0	2	0	3	3	0	0	1	0	0	0
05/22/2001	671	EHiggins	6	5	6	5	5	4	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/22/2001	671	Gray	6	5	6	5	5	4	2	2	2	0	0	0	0	0	3	0	3	2	0	0	0	0	0	0
05/22/2001	671	Inglis	5	7	8	7	5	4	1	0	0	0	0	0	0	0	2	0	2	3	0	2	0	0	0	0
05/22/2001	671	Ron	6	5	6	5	5	3	0	2	0	0	1	0	0	0	2	0	2	0	0	0	2	0	0	0
03/21/2001	672	Ouren	5	6	7	6	6	4	1	0	0	2	2	0	0	0	0	0	1	0	0	0	0	0	0	0
03/21/2001	672	EHiggins	4	5	6	5	5	4	1	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
03/21/2001	672	PHiggins	5	5	5	5	4	4	1	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
03/21/2001	672	Mason	5	5	7	5	5	3	2	2	2	0	2	0	0	0	2	0	1	0	0	0	0	0	0	0
03/21/2001	672	Gray	5	6	6	6	5	4	2	0	0	0	0	0	0	0	2	0	2	2	0	0	0	0	3	0
03/21/2001	672	Inglis	4	7	8	7	4	3	1	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0
03/21/2001	672	Ron	4	5	6	5	6	3	1	3	0	0	0	3	0	0	3	0	0	0	0	0	4	0	0	0
05/03/2001	673	Ouren	4	4	6	4	6	3	1	3	0	0	3	0	0	0	1	0	0	1	0	0	0	0	0	0
05/03/2001	673	EHiggins	5	6	6	6	5	4	1	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
05/03/2001	673	PHiggins	5	5	6	5	4	4	1	2	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
05/03/2001	673	Mason	5	4	7	4	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/03/2001	673	Gray	5	7	6	7	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/03/2001	673	Inglis	5	7	8	7	5	3	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/03/2001	673	Ron	3	5	6	5	6	6	1	2	2	0	0	0	0	0	2	0	0	0	0	3	0	0	0	0
05/01/2001	675	Ouren	4	5	7	5	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/01/2001	675	EHiggins	5	5	6	5	4	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/01/2001	675	PHiggins	4	5	6	5	4	4	1	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0
05/01/2001	675	Mason	5	5	7	5	5	4	2	2	0	0	0	0	0	0	2	0	2	1	2	1	0	0	0	0
05/01/2001	675	Gray	6	6	6	6	5	4	2	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0
05/01/2001	675	Inglis	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	2	0	2	0	0	0	0	0
05/01/2001	675	Ron	5	6	7	6	5	4	2	2	0	0	0	0	0	0	2	0	1	0	2	0	0	0	0	0
05/02/2001	675	Ouren	4	5	7	5	6	4	0	2	0	1	0	0	0	0	1	3	0	0	0	0	0	0	0	0
05/02/2001	675	EHiggins	4	5	6	5	5	4	1	2	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0
05/02/2001	675	Mason	4	6	7	6	6	3	1	3	2	0	3	0	0	0	2	0	0	3	0	2	0	0	0	0
05/02/2001	675	Gray	4	5	6	5	4	3	1	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0
05/02/2001	675	Inglis	4	6	7	6	5	3	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0
05/02/2001	675	Ron	4	4	8	5	6	4	1	3	0	0	0	0	0	0	2	0	0	4	0	0	0	0	0	0
03/28/2001	676	Ouren	4	6	7	6	6	4	1	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0
03/28/2001	676	EHiggins	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
03/28/2001	676	PHiggins	5	6	5	6	4	4	1	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
03/28/2001	676	Gray	5	8	7	8	6	5	2	3	2	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0
03/28/2001	676	Inglis	5	7	8	7	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
03/28/2001	676	Ron	4	5	7	5	6	4	1	3	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0
03/29/2001	677	Ouren	5	5	7	5	5	4	2	1	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0
03/29/2001	677	EHiggins	4	5	6	5	5	5	2	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0
03/29/2001	677	PHiggins	5	5	4	5	4	4	2	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0
03/29/2001	677	Mason	4	5	7	5	5	4	2	1	0	0	1	0	0	1	2	0	1	1	1	0	0	0	0	0
03/29/2001	677	Gray	5	4	5	4	6	5	2	3	2	0	0	0	0	0	2	0	2	3	0	2	0	0	0	0
03/29/2001	677	Inglis	4	6	7	6	5	4	2	2	0	0	0	0	0	0	2	1	0	2	0	2	0	0	0	0
03/29/2001	677	Ron	4	4	7	4	5	3	2	3	0	0	0	0	0	0	3	3	2	2	0	0	0	0	0	0
05/08/2001	678	Ouren	5	6	7	6	6	5	2	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
05/08/2001	678	EHiggins	5	6	7	6	6	6	2	3	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
05/08/2001	678	PHiggins	5	5	6	5	4	4	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
05/08/2001	678	Gray	4	5	6	5	5	5	1	2	2	0	0	0	0	0	2	0	0	2	0	2	0	0	0	0
05/08/2001	678	Inglis	3	5	6	5	4	4	0	2	2	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0
05/08/2001	678	Ron	4	5	6	5	6	5	0	2	3	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0
03/28/2001	680	Ouren	5	7	7	7	5	4	1	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
03/28/2001	680	EHiggins	6	6	7	6	6	5	2	0	0	0	1	0	0	2	0	0	0	2	0	0	0	0	0	0
03/28/2001	680	PHiggins	4	7	6	7	4	4	1	0	0	0	2	0	0	0	1	0	0	0	0	1	0	0	0	0
03/28/2001	680	Gray	5	8	8	8	6	5	2	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
03/28/2001	680	Inglis	5	7	8	7	4	4	2	1	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0
03/28/2001	680	Ron	5	7	7	7	4	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
04/04/2001	684	Ouren	3	7	7	7	7	3	1	2	0	4	4	0	0	0	2	0	0	2	0	0	0	0	0	0
04/04/2001	684	EHiggins	5	6	7	6	5	4	1	0	2	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0

04/05/2001	684	Gray	5	7	6	7	5	4	3	2	2	0	0	0	0	0	3	0	3	2	0	0	0	0	0
04/05/2001	684	Inglis	4	7	8	7	4	3	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
04/05/2001	684	Ron	5	7	8	7	4	3	1	2	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0
04/12/2001	686	Ouren	4	5	7	5	6	4	2	2	0	0	0	0	0	2	0	2	1	0	0	0	0	0	
04/12/2001	686	EHiggins	4	5	6	5	5	4	1	1	0	2	0	0	0	0	1	0	0	0	0	0	0	0	
04/12/2001	686	PHiggins	6	6	5	6	4	4	1	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	
04/12/2001	686	Mason	5	5	6	5	5	4	2	1	0	0	1	0	0	0	2	0	1	1	0	0	0	0	
04/12/2001	686	Inglis	3	5	6	5	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04/12/2001	686	Ron	5	5	5	5	5	5	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	
05/29/2001	688	Ouren	4	7	8	7	6	4	0	2	0	0	3	0	0	0	2	0	0	0	0	0	0	0	
05/29/2001	688	EHiggins	5	6	7	6	5	3	1	0	2	0	3	0	0	0	0	0	0	2	0	0	2	0	
05/29/2001	688	PHiggins	5	7	7	7	4	4	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
05/29/2001	688	Mason	5	7	8	7	7	1	1	3	3	0	0	0	0	0	2	0	0	0	0	0	2	3	
05/29/2001	688	Gray	4	5	5	5	3	2	1	3	0	0	3	0	0	0	3	0	2	3	0	0	0	0	
05/29/2001	688	Inglis	5	7	7	7	4	3	0	0	2	0	0	0	0	0	0	0	0	0	0	3	3	0	
04/19/2001	689	Ouren	5	7	8	7	6	4	1	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	
04/19/2001	689	EHiggins	6	7	8	7	6	5	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	
04/19/2001	689	PHiggins	6	7	6	7	4	4	2	0	1	0	1	0	0	0	0	0	2	0	0	0	0	0	
04/19/2001	689	Mason	6	7	7	7	5	4	1	2	2	0	1	0	0	0	2	0	3	1	0	0	0	0	
04/19/2001	689	Gray	6	8	8	8	5	4	1	3	2	0	3	0	0	0	3	0	3	3	0	0	0	0	
04/19/2001	689	Inglis	5	7	8	7	4	3	1	2	0	0	0	0	0	0	2	0	2	1	0	0	0	0	
04/19/2001	689	Ron	6	6	7	6	4	3	1	3	0	0	0	0	0	0	3	0	2	2	0	0	0	0	
06/06/2001	692	Ouren	5	7	8	7	6	5	1	2	1	0	0	0	0	0	1	0	0	0	0	2	0	0	
06/06/2001	692	EHiggins	6	8	8	8	7	6	2	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	
06/06/2001	692	Mason	6	5	7	5	5	4	1	2	2	0	0	0	0	0	2	0	2	1	0	2	2	0	
06/06/2001	692	PHiggins	5	5	5	5	5	5	2	0	0	0	0	0	0	0	0	2	2	1	0	0	0	0	
06/06/2001	692	Gray	5	6	6	6	5	4	1	2	0	0	0	0	0	2	2	0	2	2	0	0	0	0	
06/06/2001	692	Ron	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	
03/22/2001	693	EHiggins	6	7	8	7	6	6	2	3	0	0	0	0	0	0	2	0	0	0	0	0	0	0	
03/22/2001	693	PHiggins	6	7	7	7	5	5	2	1	0	0	0	0	0	0	1	0	2	2	0	0	0	0	
03/22/2001	693	Mason	6	7	7	7	5	5	2	1	0	0	0	0	0	0	2	0	2	2	0	0	0	0	
03/22/2001	693	Gray	6	7	7	7	6	5	2	2	3	0	0	0	0	0	3	0	3	2	0	0	0	0	
03/22/2001	693	Inglis	5	8	8	8	4	3	2	2	0	0	0	0	0	0	2	0	2	0	1	0	0	0	
03/22/2001	693	Ron	6	6	6	6	5	3	1	2	0	0	0	0	0	0	2	0	0	3	0	0	0	2	
04/29/2001	694	Ouren	5	7	8	7	6	4	1	2	0	0	2	0	0	0	1	0	1	0	0	0	0	0	
04/29/2001	694	Mason	5	6	7	6	5	4	1	2	2	0	1	0	0	0	2	0	2	1	0	0	0	0	
04/29/2001	694	Gray	5	7	7	7	5	4	2	3	2	0	0	0	0	0	0	0	0	3	0	2	0	0	
04/29/2001	694	Inglis	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	2	2	2	0	0	0	0	
04/29/2001	694	Ron	6	7	8	7	5	2	0	3	2	0	0	0	0	0	3	0	3	0	0	0	0	0	
05/10/2001	697	Ouren	5	6	6	6	6	4	0	2	1	0	0	0	0	0	2	0	0	2	0	2	0	0	
05/10/2001	697	EHiggins	5	5	6	5	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	
05/10/2001	697	PHiggins	6	6	7	6	4	4	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	
05/10/2001	697	Mason	5	7	7	7	5	5	2	2	2	0	0	0	0	0	2	0	0	2	0	0	0	0	
05/10/2001	697	Gray	6	7	7	7	6	5	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	
05/10/2001	697	Inglis	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	2	0	0	
05/10/2001	697	Ron	5	6	6	6	5	3	0	2	0	0	0	0	0	0	2	0	0	0	0	0	3	0	
04/05/2001	698	Ouren	5	6	8	6	7	4	1	2	0	0	2	0	0	0	2	0	0	2	0	1	0	0	
04/05/2001	698	EHiggins	5	6	7	6	5	5	2	2	0	0	2	0	0	0	0	0	2	2	0	0	0	0	
04/05/2001	698	PHiggins	5	7	6	7	4	4	1	1	0	0	1	0	0	0	1	0	1	0	0	0	0	0	
04/05/2001	698	Mason	5	7	8	7	5	4	1	2	2	0	2	0	0	0	2	0	0	2	0	2	0	0	
04/05/2001	698	Gray	6	7	7	7	6	3	2	4	3	0	0	0	0	0	2	2	0	2	4	0	0	0	
04/05/2001	698	Inglis	5	7	7	7	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	2	0	0	
04/05/2001	698	Ron	5	6	8	6	5	3	1	2	0	0	0	2	0	0	2	0	0	3	0	0	0	0	
07/10/2001	700	Ouren	5	6	7	6	6	4	1	2	0	0	0	0	0	0	0	0	2	1	0	0	1	0	
07/10/2001	700	EHiggins	6	7	8	7	5	5	1	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	
07/10/2001	700	PHiggins	5	6	6	6	4	4	1	2	0	0	0	0	0	0	1	2	0	0	0	0	0	0	
07/10/2001	700	Mason	6	6	7	6	5	4	2	2	2	1	0	0	0	0	2	0	2	2	0	0	2	0	
07/10/2001	700	Gray	5	6	6	6	5	4	2	2	3	0	2	0	0	0	3	0	2	3	0	0	0	0	
03/30/2001	701	Ouren	4	6	7	6	5	4	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
03/30/2001	701	EHiggins	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	0	2	0	0	0	
03/30/2001	701	PHiggins	6	6	5	6	4	4	1	1	0	0	0	0	0	0	1	2	0	1	0	0	0	0	
03/30/2001	701	Mason	6	7	8	7	5	4	1	2	0	0	1	0	0	0	2	0	2	2	0	0	0	0	
03/30/2001	701	Gray	4	6	6	6	6	5	2	3	3	0	0	0	0	0	3	0	3	3	0	0	0	0	
03/30/2001	701	Inglis	4	7	8	7	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	
03/30/2001	701	Ron	4	6	8	6	5	4	1	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	
04/29/2001	704	Ouren	4	6	8	6	6	4	1	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	
04/29/2001	704	Mason	4	5	7	5	5	3	1	2	2	0	2	0	0	0	2	0	1	1	0	0	0	0	
04/29/2001	704	Gray	5	6	6	6	4	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	
04/29/2001	704	Inglis	5	6	7	6	5	3	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2	
04/29/2001	704	Ron	5	6	8	6	6	3	1	3	0	0	0	0	0	0	2	0	0	3	0	0	0	3	
08/09/2001	707	Ouren	4	6	7	6	6	4	1	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	
08/09/2001	707	EHiggins	5	6	7	6	5	4	1	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	
08/09/2001	707	PHiggins	5	5	4	5	4	4	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	
08/09/2001	707	Gray	6	7	7	7	5	4	2	3	0	0	3	0	0	0	3	0	2	3	0				

05/29/2001	713	Mason	6	6	7	6	5	4	2	3	2	0	0	0	0	0	2	0	2	0	0	2	1	1	0	0
05/29/2001	713	Gray	6	6	6	6	6	5	2	2	2	0	0	0	0	0	2	0	2	0	2	0	0	0	0	0
05/29/2001	713	Inglis	5	6	6	6	4	3	0	0	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/04/2001	714	Ouren	5	4	7	4	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/04/2001	714	Inglis	4	6	6	6	5	5	1	1	2	0	0	0	0	0	2	0	2	0	0	0	2	0	0	0
05/04/2001	714	Ron	4	4	5	4	4	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/04/2001	714	PHiggins	4	5	6	5	4	4	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
05/04/2001	714	EHiggins	5	5	6	5	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/04/2001	720	Ouren	4	4	6	4	5	4	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/04/2001	720	Inglis	3	6	6	6	4	3	0	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/04/2001	720	Ron	5	4	5	4	4	4	2	3	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
05/04/2001	720	PHiggins	5	4	5	4	4	4	1	1	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
05/04/2001	720	EHiggins	4	5	6	5	4	4	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/20/2001	721	Ouren	4	7	7	7	5	4	0	1	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0
06/20/2001	721	EHiggins	6	7	8	7	5	4	1	2	0	2	0	0	0	0	1	0	0	1	0	0	0	0	0	0
06/20/2001	721	PHiggins	5	8	8	8	4	4	1	0	1	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0
06/20/2001	721	Inglis	5	6	7	6	5	4	0	2	0	0	0	0	0	0	2	0	2	0	0	0	0	3	0	0
06/20/2001	721	Ron	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
04/18/2001	723	Ouren	4	3	5	3	6	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/18/2001	723	EHiggins	4	3	4	3	4	3	0	1	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
04/18/2001	723	Mason	4	4	6	5	5	5	1	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
04/18/2001	723	Gray	6	4	4	4	6	5	2	3	2	0	0	0	0	0	2	0	2	3	0	2	0	0	0	0
04/18/2001	723	Inglis	5	6	6	6	5	4	1	2	1	0	0	0	0	0	2	0	2	0	0	1	0	0	0	0
04/18/2001	723	Ron	5	3	3	3	4	2	0	3	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0
07/18/2001	723	EHiggins	6	8	8	8	6	4	2	2	0	0	0	0	0	0	2	0	0	3	0	0	2	0	0	0
07/18/2001	723	PHiggins	7	7	7	7	4	4	1	0	0	0	0	0	0	0	2	2	0	2	0	0	0	0	0	0
07/18/2001	723	Mason	6	6	7	6	6	2	1	3	3	0	4	0	0	0	2	0	2	4	0	0	3	0	0	0
07/18/2001	723	Gray	7	7	6	7	4	3	2	3	0	0	4	0	0	0	3	0	3	4	0	0	0	0	0	0
07/18/2001	723	Inglis	5	8	8	8	5	3	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
07/18/2001	723	Ron	7	7	7	7	2	0	0	3	0	0	0	0	0	0	3	0	3	5	0	0	0	0	0	0
03/27/2001	724	Ouren	5	6	7	6	6	4	2	3	0	0	0	0	0	0	3	0	0	2	0	0	0	0	0	0
03/27/2001	724	EHiggins	5	6	7	6	4	3	1	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0
03/27/2001	724	PHiggins	6	4	3	4	4	4	1	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0
03/27/2001	724	Mason	6	6	6	6	5	5	2	2	0	0	0	0	0	0	2	0	3	2	0	0	0	0	0	0
03/27/2001	724	Gray	6	6	6	6	5	4	2	3	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0	0
03/27/2001	724	Inglis	4	6	7	6	4	4	2	1	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
03/27/2001	724	Ron	5	5	5	5	5	4	2	3	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0
06/28/2001	725	Ouren	5	6	7	6	5	4	1	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
06/28/2001	725	Mason	6	6	7	6	5	4	2	2	2	0	0	0	0	0	2	1	2	0	0	1	0	0	0	0
06/28/2001	725	Inglis	5	6	7	6	4	3	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
06/28/2001	725	Ron	5	6	7	6	4	3	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
04/17/2001	727	Ouren	5	6	6	6	6	4	2	2	1	2	2	0	0	0	2	0	0	1	0	0	0	0	0	0
04/17/2001	727	EHiggins	5	5	6	5	6	5	1	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
04/17/2001	727	PHiggins	5	4	3	4	4	4	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0
04/17/2001	727	Mason	6	6	7	6	5	4	1	2	3	0	2	0	0	0	2	0	3	2	0	0	0	0	0	0
04/17/2001	727	Inglis	5	5	7	5	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
03/20/2001	730	Ouren	5	4	6	4	6	5	2	1	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0
03/20/2001	730	EHiggins	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
03/20/2001	730	PHiggins	3	5	4	5	5	4	1	2	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0
03/20/2001	730	Mason	5	5	6	6	6	4	2	2	0	0	2	0	0	0	2	0	2	2	0	0	0	0	0	0
03/20/2001	730	Gray	4	6	6	6	5	5	2	3	2	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0
03/20/2001	730	Inglis	4	6	7	6	4	3	2	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
03/20/2001	730	Ron	5	7	8	7	6	4	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0
05/25/2001	732	Ouren	5	6	7	6	6	5	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
05/25/2001	732	EHiggins	6	6	7	6	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/25/2001	732	PHiggins	.	.	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/25/2001	732	Mason	5	5	7	5	5	3	1	3	2	0	0	0	0	0	2	0	2	0	0	0	2	2	0	0
05/25/2001	732	Gray	4	6	6	6	4	2	1	3	0	0	3	0	0	0	3	0	0	3	0	0	0	0	0	0
05/25/2001	732	Inglis	4	6	6	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/25/2001	732	Ron	5	6	8	6	7	3	0	3	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0
06/14/2001	739	Ouren	5	8	8	8	5	4	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
06/14/2001	739	EHiggins	6	8	8	8	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
06/14/2001	739	PHiggins	5	8	8	8	4	4	1	1	0	0	0	0	0	1	1	2	0	1	0	0	0	0	0	0
06/14/2001	739	Gray	5	8	8	8	5	4	1	2	2	0	0	0	0	0	3	0	3	2	0	0	0	0	0	0
06/14/2001	739	Ron	5	8	8	8	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
06/19/2001	739	Ouren	4	7	8	7	5	4	0	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
06/19/2001	739	EHiggins	5	6	7	6	6	5	2	2	0	0	2	0	0	0	0	0	3	0	0	0	0	0	0	0
06/19/2001	739	PHiggins	6	5	5	5	4	5	0	0	0	0	2	0	0	0	0	2	0	1	0	0	0	0	0	0
06/19/2001	739	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
06/19/																										

05/02/2001	783	Ouren	5	7	8	7	7	3	0	2	0	2	3	0	0	0	2	0	1	1	0	0	0	0	0
05/02/2001	783	EHiggins	6	7	8	7	6	6	2	3	0	0	2	0	0	0	0	0	0	3	0	0	2	0	0
05/02/2001	783	Mason	6	6	7	6	6	3	2	2	3	0	3	0	0	0	2	0	2	2	0	0	0	0	0
05/02/2001	783	Gray	6	5	6	5	4	4	1	3	2	0	0	0	0	0	3	0	3	3	0	0	0	0	0
05/02/2001	783	Inglis	5	6	7	6	5	3	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	3	0
05/02/2001	783	Ron	6	7	7	7	6	4	1	3	0	0	0	0	0	0	2	0	3	0	0	0	0	3	0
03/27/2001	786	Ouren	5	7	7	7	7	4	2	3	0	2	2	0	0	0	3	0	0	3	0	0	0	0	0
03/27/2001	786	EHiggins	5	6	7	6	6	4	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0
03/27/2001	786	PHiggins	7	7	7	7	4	4	1	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0
03/27/2001	786	Mason	5	6	7	6	5	3	1	3	0	2	0	0	0	0	2	0	2	3	0	0	0	0	0
03/27/2001	786	Gray	5	8	8	8	6	5	2	2	0	0	0	0	0	0	3	0	3	2	0	0	0	0	0
03/27/2001	786	Inglis	4	7	8	7	4	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
03/27/2001	786	Ron	5	6	7	6	6	2	1	3	0	0	0	0	0	0	3	0	2	3	0	0	0	3	0
05/12/2001	787	Ouren	5	6	7	6	6	4	2	2	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
05/12/2001	787	EHiggins	6	7	8	7	5	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/12/2001	787	PHiggins	7	7	7	7	4	4	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
05/12/2001	787	Mason	6	7	7	7	6	5	2	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/12/2001	787	Gray	6	7	7	7	6	5	2	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0
05/12/2001	787	Inglis	5	7	7	7	5	3	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/12/2001	787	Ron	5	6	8	6	4	4	2	2	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
05/29/2001	791	Ouren	4	7	8	7	5	4	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
05/29/2001	791	EHiggins	5	6	7	6	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/29/2001	791	PHiggins	5	5	5	5	4	4	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
05/29/2001	791	Mason	5	7	7	7	6	4	1	2	3	0	0	0	0	0	2	0	0	1	0	3	0	0	0
05/29/2001	791	Gray	4	4	5	4	6	5	1	0	2	0	0	0	0	0	2	0	0	3	0	3	0	0	0
05/29/2001	791	Inglis	4	6	6	6	5	3	0	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
04/19/2001	793	Ouren	4	5	6	5	6	5	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
04/19/2001	793	EHiggins	4	5	6	5	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
04/19/2001	793	PHiggins	6	6	7	6	4	4	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
04/19/2001	793	Mason	5	6	7	6	5	4	1	2	3	0	1	0	0	0	2	0	0	2	0	3	0	0	0
04/19/2001	793	Gray	6	7	7	7	7	6	1	2	3	0	0	0	0	0	3	0	0	2	0	0	0	0	0
04/19/2001	793	Inglis	5	6	7	6	5	4	1	0	0	0	0	0	0	0	2	0	2	3	0	2	0	0	0
04/19/2001	793	Ron	5	6	6	6	6	5	1	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0
05/01/2001	793	Ouren	5	6	8	6	5	4	1	2	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
05/01/2001	793	EHiggins	6	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/01/2001	793	PHiggins	6	7	8	7	4	4	1	2	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0
05/01/2001	793	Mason	6	6	7	6	6	3	1	2	2	0	2	0	0	0	2	0	2	2	0	0	0	0	0
05/01/2001	793	Gray	6	7	7	7	5	4	1	3	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0
05/01/2001	793	Inglis	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	2	0	0	0
05/01/2001	793	Ron	5	7	8	7	4	3	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
05/02/2001	793	Ouren	6	7	6	7	5	5	2	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
05/02/2001	793	EHiggins	6	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/02/2001	793	Mason	5	5	7	5	5	5	1	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/02/2001	793	Gray	5	4	5	4	5	4	1	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0
05/02/2001	793	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/02/2001	793	Ron	6	5	6	5	5	3	2	3	0	0	0	0	0	0	2	0	3	0	0	0	0	0	0
05/25/2001	794	Ouren	5	7	7	7	6	4	1	1	0	0	1	0	0	0	1	0	2	3	0	0	0	0	0
05/25/2001	794	EHiggins	6	8	8	8	6	5	2	2	0	0	0	0	0	1	2	0	0	1	0	0	0	0	0
05/25/2001	794	PHiggins	6	7	7	7	4	4	2	0	0	0	0	0	0	0	1	0	2	0	0	1	0	0	0
05/25/2001	794	Mason	6	6	6	6	5	3	2	3	2	0	0	0	0	0	2	0	4	0	0	0	2	2	0
05/25/2001	794	Gray	7	7	6	7	6	5	2	3	2	0	0	0	0	0	3	0	3	3	0	0	0	0	0
05/25/2001	794	Inglis	6	7	8	7	4	3	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0
05/25/2001	794	Ron	7	7	7	7	6	4	1	2	0	0	1	0	0	0	2	0	3	2	0	0	2	0	0
06/14/2001	796	Ouren	5	7	7	7	6	5	1	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
06/14/2001	796	EHiggins	6	8	8	8	6	5	2	2	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
06/14/2001	796	PHiggins	5	6	6	6	4	4	0	0	1	0	0	0	0	0	1	0	0	1	0	0	1	0	0
06/14/2001	796	Gray	6	8	7	8	5	4	2	2	2	0	2	0	0	0	3	0	2	2	0	0	2	0	0
06/14/2001	796	Ron	5	6	7	6	5	3	0	3	0	0	0	0	0	0	3	0	2	2	0	0	2	0	0
06/19/2001	796	Ouren	5	6	7	6	6	4	1	2	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0
06/19/2001	796	EHiggins	7	7	8	7	6	6	2	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
06/19/2001	796	PHiggins	8	8	8	8	4	4	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
06/19/2001	796	Inglis	5	6	7	6	6	3	1	0	0	3	0	0	0	0	0	0	0	4	0	0	0	0	0
06/19/2001	796	Ron	6	8	8	8	6	2	0	3	0	0	0	0	0	3	0	2	0	2	2	0	0	0	0
04/29/2001	799	Ouren	5	7	7	7	6	5	1	2	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
04/29/2001	799	Mason	5	5	7	5	5	4	1	2	2	0	0	0	0	0	2	0	2	1	0	2	0	0	0
04/29/2001	799	Gray	5	6	6	6	6	5	2	0	2	0	0	0	0	0	3	0	0	0	0	2	0	0	0
04/29/2001	799	Inglis	5	6	7	6	5	5	1	0	0	0	0	0	0	0	2	0	2	2	0	2	0	0	0
04/29/2001	799	Ron	5	5	8	5	6	5	1	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0
06/08/2001	800	Ouren	6	7	7	7	6	5	2	1	1	0	0	0	0	0	0	0	2	0	0	2	0	0	0
06/08/2001	800	EHiggins	6	6	7	6	6	5	1	1	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0
06/08/2001	800	PHiggins	6	5	5	5	4	4	1	0	0	1	0	0	0	0	0	1	0	2	0	0	1	0	0
06/08/2001	800	Mason	5	6	7	6	5	4																	

04/29/2001	801	Inglis	5	7	8	7	5	5	2	2	0	0	0	0	0	0	2	0	2	0	2	0	0	0	0
04/29/2001	801	Ron	6	7	7	7	5	3	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
03/22/2001	805	EHiggins	6	6	7	6	5	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
03/22/2001	805	PHiggins	7	7	6	7	4	4	1	1	1	0	0	0	0	1	1	0	0	0	0	1	0	0	0
03/22/2001	805	Mason	5	6	7	6	5	4	2	2	2	0	1	0	0	0	2	0	2	2	0	0	0	0	0
03/22/2001	805	Gray	7	7	7	7	6	4	2	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0
03/22/2001	805	Inglis	4	7	8	7	4	3	2	2	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0
03/22/2001	805	Ron	6	7	6	6	6	3	1	3	0	0	0	3	0	0	3	0	3	0	0	0	0	0	0
03/28/2001	806	Ouren	5	7	8	7	5	4	1	3	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
03/28/2001	806	EHiggins	5	8	8	8	5	5	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
03/28/2001	806	PHiggins	5	8	7	8	4	4	1	0	0	0	1	0	0	0	2	0	0	0	0	0	1	0	0
03/28/2001	806	Gray	5	7	7	7	6	5	2	3	2	0	0	0	0	0	2	0	2	2	0	0	0	0	0
03/28/2001	806	Inglis	4	8	8	8	4	4	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
03/28/2001	806	Ron	5	7	8	7	6	3	1	3	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0
04/19/2001	807	Ouren	5	1	6	1	6	5	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
04/19/2001	807	EHiggins	4	3	4	3	4	3	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
04/19/2001	807	PHiggins	5	3	2	3	3	3	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
04/19/2001	807	Mason	5	4	6	5	5	5	2	2	2	0	0	0	0	1	2	0	2	0	0	0	0	0	0
04/19/2001	807	Gray	5	4	5	4	4	3	1	3	2	0	2	0	0	0	3	0	3	3	0	0	0	0	0
04/19/2001	807	Inglis	4	4	6	4	4	3	1	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0
04/19/2001	807	Ron	5	5	5	5	5	3	0	2	2	0	0	0	0	0	3	0	3	0	0	0	0	0	0
05/17/2001	808	Ouren	4	5	7	5	5	4	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
05/17/2001	808	EHiggins	6	6	7	6	4	4	1	1	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0
05/17/2001	808	PHiggins	7	6	7	6	4	4	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
05/17/2001	808	Mason	6	6	7	6	5	4	2	2	0	0	0	0	0	0	2	0	3	2	0	0	0	0	0
05/17/2001	808	Inglis	5	7	8	7	5	4	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
05/17/2001	808	Ron	6	5	7	5	5	3	0	3	2	0	0	0	0	0	3	0	2	0	0	0	0	0	0
06/08/2001	810	Ouren	4	5	7	5	6	4	0	1	0	0	0	0	0	0	1	2	0	1	0	0	0	0	0
06/08/2001	810	EHiggins	4	4	5	4	5	4	2	2	1	0	2	0	0	0	0	0	0	2	0	0	0	0	0
06/08/2001	810	PHiggins	5	2	2	2	4	4	1	0	0	0	0	0	0	0	1	2	0	1	0	2	2	0	0
06/08/2001	810	Mason	5	6	7	6	6	2	1	3	2	0	0	0	0	0	2	0	3	0	0	0	3	0	0
06/08/2001	810	Gray	5	6	6	6	4	2	1	3	2	0	3	0	0	0	3	0	2	3	0	0	2	0	0
06/08/2001	810	Ron	5	6	7	6	7	3	1	3	0	0	0	0	0	0	2	0	0	4	0	0	0	0	0
05/30/2001	811	Ouren	3	5	7	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
05/30/2001	811	EHiggins	5	5	6	5	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/30/2001	811	PHiggins	4	4	3	4	4	4	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
05/30/2001	811	Mason	3	5	7	5	5	4	2	2	1	0	0	0	0	0	2	0	0	0	0	1	0	0	0
05/30/2001	811	Gray	4	5	5	5	6	5	1	2	2	0	0	0	0	0	2	0	2	2	0	2	0	0	0
05/31/2001	811	Ouren	4	6	8	6	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
05/31/2001	811	EHiggins	5	6	7	6	6	5	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/31/2001	811	PHiggins	5	5	5	5	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0
05/31/2001	811	Mason	5	7	7	7	5	4	1	2	3	0	0	0	0	0	2	0	2	2	0	2	2	0	0
05/31/2001	811	Gray	5	6	6	6	6	5	1	2	2	0	0	0	0	0	2	0	2	2	0	2	0	0	0
05/31/2001	811	Ron	5	7	8	7	5	4	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/31/2001	812	Ouren	5	6	7	6	6	4	0	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
05/31/2001	812	EHiggins	5	6	7	6	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/31/2001	812	PHiggins	6	6	6	6	4	4	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
05/31/2001	812	Mason	6	6	7	6	5	4	2	2	0	0	1	0	0	0	2	0	2	0	1	0	0	0	0
05/31/2001	812	Gray	5	7	7	7	5	4	1	2	0	0	0	0	0	2	2	0	2	2	0	0	0	0	0
05/31/2001	812	Ron	5	6	8	6	5	3	1	2	0	0	0	0	0	0	2	0	0	2	0	2	1	0	0
04/12/2001	814	Ouren	3	6	7	6	7	3	0	3	1	3	3	0	0	0	2	0	0	2	0	2	0	0	0
04/12/2001	814	EHiggins	4	5	6	5	5	4	1	0	2	0	3	0	0	0	0	0	0	2	0	0	0	0	0
04/12/2001	814	PHiggins	4	4	3	4	4	4	1	2	0	0	0	2	0	0	0	0	0	1	0	2	0	0	0
04/12/2001	814	Mason	4	6	8	6	7	3	1	3	3	0	3	0	0	0	2	0	0	0	0	2	0	3	0
04/12/2001	814	Inglis	5	6	7	6	6	2	1	2	2	0	0	0	0	0	2	0	0	0	0	0	0	4	0
04/12/2001	814	Ron	5	5	8	5	6	4	1	3	0	0	0	0	0	0	2	0	0	4	0	2	0	0	0
04/17/2001	814	Ouren	5	6	6	6	6	5	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/17/2001	814	EHiggins	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
04/17/2001	814	PHiggins	4	5	6	5	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
04/17/2001	814	Mason	5	6	7	6	6	5	2	2	2	0	0	0	0	0	2	0	2	1	0	2	0	0	0
04/17/2001	814	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
06/06/2001	817	Ouren	5	6	6	6	6	4	0	2	1	0	0	0	0	0	2	0	1	0	0	0	0	0	0
06/06/2001	817	EHiggins	5	7	7	7	6	5	1	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
06/06/2001	817	Mason	6	6	7	6	5	4	1	2	2	0	0	0	0	0	1	2	0	2	2	0	1	1	0
06/06/2001	817	PHiggins	6	5	5	5	4	4	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
06/06/2001	817	Gray	5	7	6	7	5	5	2	3	2	0	0	0	0	0	2	0	2	3	0	0	0	0	0
06/06/2001	817	Ron	4	6	8	6	5	3	0	2	0	0	0	3	0	0	2	0	0	0	0	0	0	0	0
05/25/2001	819	Ouren	6	6	7	6	6	5	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
05/25/2001	819	EHiggins	6	7	7	7	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
05/25/2001	819	PHiggins	6	7	7	7	4	4	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
05/25/2001	819	Mason	6	5	7	5	5	4	1	2	2	0	0	0	0	0	2	0	3	1	0	0	2	0	0
05/25/2001	819	Gray	6	6	6	6	5	4																	

05/04/2001	820	PHiggins	5	7	7	7	4	4	1	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0
05/04/2001	820	EHiggins	5	6	7	6	5	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/04/2001	821	Ouren	5	6	8	6	6	4	0	3	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/04/2001	821	Inglis	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	0
05/04/2001	821	Ron	4	6	8	6	5	5	1	2	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0
05/04/2001	821	PHiggins	5	7	7	7	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/04/2001	821	EHiggins	5	7	8	7	5	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/09/2001	825	Ouren	5	5	7	5	5	4	0	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
05/09/2001	825	EHiggins	4	4	5	4	4	3	1	1	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/09/2001	825	Mason	4	4	7	4	6	4	2	2	1	0	0	0	0	0	2	0	2	0	0	0	1	1	0	0
05/09/2001	825	Gray	4	4	5	4	5	4	1	2	0	0	0	0	0	0	2	2	0	2	0	0	2	0	0	0
05/09/2001	825	Inglis	4	6	6	6	4	3	0	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/09/2001	825	Ron	5	4	6	4	4	3	0	3	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/08/2001	828	Ouren	5	7	8	7	6	5	1	1	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
05/08/2001	828	EHiggins	5	6	7	6	5	5	2	2	0	0	0	0	0	2	2	0	2	0	0	0	0	0	0	0
05/08/2001	828	PHiggins	6	7	7	7	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/08/2001	828	Gray	5	8	7	8	4	4	1	2	0	0	0	0	0	3	2	0	2	2	0	0	0	0	0	0
05/08/2001	828	Inglis	4	6	7	6	4	3	0	2	0	0	0	0	0	0	2	0	2	0	0	1	0	0	0	0
05/08/2001	828	Ron	5	7	7	7	5	3	1	2	2	2	0	0	0	0	3	0	2	0	0	0	0	0	0	0
06/01/2001	829	Ouren	5	3	5	3	6	5	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
06/01/2001	829	EHiggins	3	3	4	3	5	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
06/01/2001	829	PHiggins	5	5	6	5	4	4	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
06/01/2001	829	Mason	4	5	7	5	5	4	3	2	2	0	0	0	0	0	2	0	2	1	0	2	1	0	0	0
06/01/2001	829	Ron	5	4	6	4	5	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/30/2001	830	Ouren	4	7	7	7	5	4	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
05/30/2001	830	EHiggins	5	6	7	6	5	4	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/30/2001	830	PHiggins	5	6	6	6	4	4	1	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0
05/30/2001	830	Mason	5	7	7	7	5	4	1	3	3	0	0	0	0	0	3	0	2	0	3	0	0	0	0	0
05/30/2001	830	Gray	6	6	7	6	6	5	1	2	2	0	0	0	0	0	3	0	3	2	0	0	0	0	0	0
06/29/2001	837	Ouren	4	7	7	1	6	4	0	3	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
06/29/2001	837	EHiggins	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
06/29/2001	837	Mason	4	7	7	7	5	4	1	3	2	0	0	0	0	0	1	2	0	2	3	0	1	0	0	0
06/29/2001	837	Inglis	5	7	7	7	4	3	1	0	2	0	0	0	0	0	0	2	0	2	0	2	0	0	0	0
06/29/2001	837	Ron	4	6	6	6	5	4	1	3	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0
05/03/2001	843	Ouren	4	5	6	5	6	5	2	1	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
05/03/2001	843	EHiggins	6	6	7	6	6	5	2	2	0	0	0	0	0	1	2	0	0	1	0	0	0	0	0	0
05/03/2001	843	PHiggins	6	6	7	6	4	4	1	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	0	0
05/03/2001	843	Mason	5	6	6	6	7	2	1	3	3	0	4	0	0	3	2	0	0	0	0	0	0	0	0	0
05/03/2001	843	Gray	6	6	6	6	5	4	2	3	2	0	2	0	0	0	3	0	3	0	2	0	0	0	0	0
05/03/2001	843	Inglis	5	6	7	6	5	3	1	2	2	0	2	0	0	0	2	0	2	0	0	0	2	0	0	0
05/03/2001	843	Ron	5	5	6	5	6	4	1	2	0	0	2	3	0	0	2	0	0	0	0	0	0	0	0	0
06/20/2001	844	Ouren	5	6	8	6	6	3	0	2	0	0	3	0	0	0	1	0	1	1	0	0	0	0	0	0
06/20/2001	844	EHiggins	6	6	6	6	5	4	1	1	0	0	2	0	0	2	0	0	2	2	0	0	0	0	0	0
06/20/2001	844	PHiggins	6	8	8	8	4	4	1	0	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0
06/20/2001	844	Inglis	5	7	8	7	6	4	1	2	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0	0
06/20/2001	844	Ron	6	6	7	6	6	3	0	3	0	0	0	0	0	3	0	2	0	0	2	0	0	0	0	0
03/21/2001	846	Ouren	5	7	7	7	6	5	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
03/21/2001	846	EHiggins	6	7	8	7	6	6	2	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0
03/21/2001	846	PHiggins	5	7	7	7	5	5	2	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
03/21/2001	846	Mason	6	7	8	7	6	5	2	1	1	0	0	0	0	0	2	0	1	1	0	1	0	0	0	0
03/21/2001	846	Gray	5	7	7	7	6	5	2	3	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0	0
03/21/2001	846	Inglis	4	8	8	8	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
03/21/2001	846	Ron	5	7	7	7	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
04/20/2001	852	Ouren	5	7	7	7	6	4	1	2	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
04/20/2001	852	EHiggins	6	7	8	7	6	6	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
04/20/2001	852	PHiggins	5	6	7	6	4	4	1	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
04/20/2001	852	Mason	6	6	7	6	6	4	1	3	2	0	2	0	0	2	2	0	3	3	0	0	0	0	0	0
04/20/2001	852	Inglis	5	6	7	6	5	4	1	0	2	0	0	0	0	0	2	0	2	2	0	2	0	0	0	0
04/20/2001	852	Ron	5	7	8	7	6	4	1	3	0	0	2	0	0	0	2	0	0	3	0	0	0	0	0	0
04/24/2001	852	Ouren	3	5	7	5	5	4	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
04/24/2001	852	EHiggins	5	5	6	5	5	5	2	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0
04/24/2001	852	PHiggins	6	2	3	2	4	4	1	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
04/24/2001	852	Mason	4	5	7	5	6	5	2	2	3	0	0	0	0	0	2	0	3	2	0	3	0	0	0	0
04/24/2001	852	Gray	6	6	6	6	7	6	2	3	4	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0
04/24/2001	852	Inglis	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	2	0	0	0	0
04/24/2001	852	Ron	4	4	8	4	6	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
06/06/2001	854	Ouren	4	6	7	6	6	4	0	2	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0
06/06/2001	854	EHiggins	5	6	7	6	5	4	2	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0
06/06/2001	854	Mason	4	5	7	5	6	1	1	3	3	0	2	0	0	0	2	0	0	3	0	0	2	0	0	0

05/24/2001	881	PHiggins	6	5	6	5	4	4	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
05/24/2001	881	Mason	6	6	7	6	5	4	1	2	2	0	0	0	0	0	2	0	3	0	0	2	0	0
05/24/2001	881	Gray	6	7	6	7	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0
05/24/2001	881	Inglis	5	6	7	6	5	4	1	0	0	0	0	0	0	0	2	0	2	3	0	0	0	0
05/24/2001	881	Ron	5	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	0	1	0	0	2	0
05/09/2001	882	Ouren	4	5	7	5	5	4	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0
05/09/2001	882	EHiggins	5	6	7	6	5	5	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0
05/09/2001	882	Mason	5	6	7	6	5	4	2	2	0	0	0	0	0	0	2	0	2	1	0	0	0	0
05/09/2001	882	Gray	6	6	6	6	6	5	2	0	2	0	0	0	0	3	2	0	0	0	0	2	0	0
05/09/2001	882	Inglis	4	5	5	5	4	0	2	2	0	0	0	0	0	2	0	2	2	0	2	0	0	0
05/09/2001	882	Ron	4	7	7	7	4	4	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0
05/29/2001	883	Ouren	5	4	7	4	6	5	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
05/29/2001	883	EHiggins	5	5	5	5	5	4	1	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0
05/29/2001	883	PHiggins	6	4	3	4	4	4	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
05/29/2001	883	Mason	5	4	6	5	6	3	2	3	2	0	0	0	0	0	2	0	2	3	0	2	2	0
05/29/2001	883	Gray	6	3	4	3	6	5	2	2	2	0	0	0	0	0	2	0	2	2	0	2	0	0
05/29/2001	883	Inglis	4	5	6	5	4	3	0	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0
05/10/2001	891	Ouren	5	6	7	6	5	4	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0
05/10/2001	891	EHiggins	5	5	6	5	4	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
05/10/2001	891	PHiggins	6	7	7	7	4	4	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0
05/10/2001	891	Mason	5	5	7	5	5	4	2	2	2	0	0	0	0	0	2	0	3	1	0	0	1	0
05/10/2001	891	Gray	5	6	6	6	5	4	1	2	2	0	0	0	0	0	2	0	2	2	0	2	0	0
05/10/2001	891	Inglis	5	6	6	6	4	3	0	0	3	0	0	0	0	0	2	0	1	0	0	2	0	0
05/10/2001	891	Ron	5	7	8	7	5	3	0	2	0	0	0	0	0	0	3	0	2	0	0	0	0	0
05/09/2001	893	Ouren	5	5	7	5	6	4	0	2	0	0	0	0	0	0	1	0	1	0	0	2	0	0
05/09/2001	893	EHiggins	5	5	6	5	5	4	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
05/09/2001	893	Mason	5	5	7	4	5	4	2	2	0	0	0	0	0	0	2	0	2	0	1	0	0	1
05/09/2001	893	Gray	4	5	5	5	6	5	1	0	2	0	0	0	0	0	2	0	0	0	0	2	0	0
05/09/2001	893	Inglis	5	7	7	7	4	3	0	2	0	0	0	0	0	0	2	0	2	2	0	0	2	0
05/09/2001	893	Ron	4	5	6	5	5	3	1	2	0	0	0	0	0	0	2	0	0	2	0	0	2	0
04/29/2001	896	Ouren	4	6	8	6	6	3	1	0	0	3	0	0	0	0	1	0	0	0	0	2	0	0
04/29/2001	896	Mason	5	6	7	6	6	5	1	1	2	0	0	0	0	0	2	0	0	0	0	2	0	0
04/29/2001	896	Gray	4	6	6	6	5	4	1	2	0	0	0	0	0	0	2	2	0	2	0	0	0	0
04/29/2001	896	Inglis	3	6	7	6	4	3	1	2	0	0	0	0	0	0	2	0	2	1	0	0	0	0
04/29/2001	896	Ron	4	6	7	6	5	4	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0
04/03/2001	900	Ouren	5	7	8	7	5	4	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04/03/2001	900	EHiggins	6	6	7	6	5	5	2	0	0	0	2	0	0	0	0	0	0	2	0	0	2	0
04/03/2001	900	PHiggins	5	7	6	7	4	4	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0
04/03/2001	900	Mason	5	8	8	8	6	3	1	2	2	0	0	0	0	0	2	0	2	2	0	0	0	0
04/03/2001	900	Gray	5	7	6	7	5	4	2	3	2	0	0	0	0	0	3	0	3	3	0	0	0	0
04/03/2001	900	Inglis	4	7	8	7	5	4	2	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0
05/25/2001	901	Ouren	5	6	8	6	7	2	0	3	2	0	4	0	0	0	2	0	0	4	0	2	0	0
05/25/2001	901	EHiggins	6	7	7	7	5	4	1	2	2	0	2	0	0	0	0	0	3	0	0	0	0	0
05/25/2001	901	PHiggins	6	6	7	6	4	4	1	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0
05/25/2001	901	Mason	4	6	7	6	5	3	1	3	2	0	0	0	0	0	2	0	0	3	0	0	2	1
05/25/2001	901	Gray	4	4	5	4	4	3	1	0	3	0	3	0	0	0	3	0	3	0	0	0	0	0
05/25/2001	901	Inglis	5	6	7	6	6	3	0	0	0	0	0	0	0	0	2	0	2	0	0	0	3	0
05/25/2001	901	Ron	5	7	8	7	6	3	1	3	0	0	0	0	0	0	2	0	0	4	0	0	2	0
06/14/2001	902	Ouren	4	6	7	6	6	4	0	0	0	1	0	0	0	0	2	0	0	2	0	0	0	0
06/14/2001	902	EHiggins	5	6	7	6	5	4	2	1	0	0	1	0	0	0	2	0	0	2	0	0	0	0
06/14/2001	902	PHiggins	4	6	6	6	4	4	1	1	0	0	1	0	0	0	0	1	1	2	0	0	0	0
06/14/2001	902	Gray	6	8	7	8	4	3	1	2	3	0	2	0	0	0	3	0	3	3	0	1	0	0
06/14/2001	902	Ron	5	7	8	7	6	4	1	3	0	0	0	0	0	0	2	2	0	3	0	0	2	0
06/19/2001	902	Ouren	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	1	0	0
06/19/2001	902	EHiggins	6	6	7	6	6	5	2	1	0	0	0	0	0	0	2	0	0	1	0	0	0	0
06/19/2001	902	PHiggins	6	5	5	5	4	4	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
06/19/2001	902	Inglis	4	5	6	5	4	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0
06/19/2001	902	Ron	5	5	6	5	4	3	0	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0
05/17/2001	903	Ouren	5	6	7	6	6	4	1	1	0	0	0	0	0	0	1	0	2	0	0	1	0	0
05/17/2001	903	EHiggins	5	6	7	6	5	3	1	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0
05/17/2001	903	PHiggins	6	6	7	6	4	4	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0
05/17/2001	903	Mason	5	6	7	6	5	3	2	3	0	0	0	0	0	0	2	0	2	0	0	0	2	0
05/17/2001	903	Inglis	4	6	7	6	5	4	1	2	2	0	0	0	0	0	2	0	2	0	0	0	0	0
05/17/2001	903	Ron	5	5	8	5	5	3	1	2	2	0	0	0	0	0	2	0	0	2	2	0	0	0
05/22/2001	903	Ouren	4	7	7	7	6	4	0	2	0	0	0	0	0	0	0	0	0	2	0	0	2	0
05/22/2001	903	PHiggins	6	6	7	6	4	4	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
05/22/2001	903	Mason	5	7	8	7	5	4	2	2	2	0	0	0	0	0	1	2	0	2	0	0	2	1
05/22/2001	903	EHiggins	6	7	8	7	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	2	0
05/22/2001	903	Gray	5	7	6	7	7	6	2	0	2	0	0	0	0	0	2	0	0	0	0	3	0	0
05/22/2001	903	Inglis	5	7	8	7	5	4	1	0	0	0	0	0	0	0	2	0	2	3	0	2	2	0
05/22/2001	903	Ron	5	7	8	7	6	4	0	3	0	0	1	0	0	0	2	0	2	2	0	0	0	0
06/20/2001	907	Ouren	5	6	6	6	6	4	0	2	0	0	1	0	0	0	1	0	0	0	0	2	0	0
06/20/2001	907	EHiggins	5	5	6	5	5	4	1	1	0	2	0	0	0	0	1	0	0	0	1	0	0	0
06/20/2001	907	PHiggins	6	6	6	6	4	4	1	1	0	0	0	0	0	0	1	1	0	1	0	0	0	0</

05/02/2001	951	Ouren	5	7	7	7	6	3	1	2	1	0	0	0	0	0	2	0	2	1	0	1	0	0	0	0
05/02/2001	951	EHiggins	7	7	8	7	6	5	2	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/02/2001	951	Mason	6	7	7	7	6	5	2	2	2	0	0	0	0	0	3	0	3	1	0	1	0	0	0	0
05/02/2001	951	Gray	6	8	7	8	6	5	2	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/02/2001	951	Inglis	5	7	7	7	5	4	1	2	0	0	0	0	0	0	2	0	2	0	1	0	0	0	0	0
05/02/2001	951	Ron	5	8	8	8	5	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/31/2001	951	Ouren	4	7	7	7	6	4	0	2	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
05/31/2001	951	EHiggins	5	6	7	6	6	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
05/31/2001	951	PHiggins	6	5	5	5	4	4	0	0	0	0	0	0	0	0	1	2	0	0	0	0	2	0	0	0
05/31/2001	951	Mason	5	6	7	6	5	4	1	2	2	0	0	0	0	0	2	0	0	2	0	0	2	1	0	0
05/31/2001	951	Gray	5	6	5	6	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	2	0	0	0
05/31/2001	951	Ron	5	6	8	6	6	3	0	3	0	0	2	0	0	0	2	0	0	3	0	0	0	0	3	0
06/20/2001	954	Ouren	5	8	8	8	6	4	2	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
06/20/2001	954	EHiggins	7	8	8	8	6	5	2	2	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0
06/20/2001	954	PHiggins	7	8	8	8	4	4	1	1	0	0	0	0	0	0	2	1	2	0	0	0	0	0	0	0
06/20/2001	954	Inglis	5	7	8	7	6	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0
06/20/2001	954	Ron	5	7	7	7	5	3	1	3	0	0	0	0	0	0	2	0	0	3	0	0	2	0	0	0
05/17/2001	955	Ouren	5	7	7	7	5	4	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
05/17/2001	955	EHiggins	6	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/17/2001	955	PHiggins	7	8	8	8	4	4	1	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0
05/17/2001	955	Mason	6	7	8	7	6	5	2	2	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0
05/17/2001	955	Inglis	5	7	8	7	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/17/2001	955	Ron	5	7	8	7	4	3	1	2	2	0	0	0	0	0	2	0	2	0	0	0	0	2	0	0
05/22/2001	955	Ouren	4	5	7	5	6	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
05/22/2001	955	PHiggins	4	7	7	7	4	5	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
05/22/2001	955	Mason	5	5	7	5	5	3	1	3	2	0	0	0	0	0	2	0	2	3	0	3	0	3	0	2
05/22/2001	955	EHiggins	5	5	6	5	5	4	1	2	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0
05/22/2001	955	Gray	4	6	6	6	4	3	1	0	2	0	0	0	0	0	3	0	0	0	0	2	3	3	0	0
05/22/2001	955	Inglis	5	7	8	7	4	3	1	2	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0
05/22/2001	955	Ron	5	6	7	6	7	3	0	3	0	0	0	0	0	0	2	0	0	3	0	0	3	0	0	0
06/20/2001	957	Ouren	4	6	7	6	6	4	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
06/20/2001	957	EHiggins	6	6	7	6	6	5	1	1	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
06/20/2001	957	PHiggins	5	5	5	5	4	4	0	1	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
06/20/2001	957	Inglis	5	6	7	6	5	3	1	0	2	0	0	0	0	0	3	0	2	0	0	2	0	3	0	0
06/20/2001	957	Ron	6	5	7	5	5	4	0	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
05/12/2001	961	Ouren	4	7	8	7	6	4	0	2	0	0	0	0	0	0	1	0	0	0	0	1	2	0	0	0
05/12/2001	961	EHiggins	7	7	8	7	6	5	1	1	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0
05/12/2001	961	PHiggins	5	6	7	6	4	4	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
05/12/2001	961	Mason	5	7	7	7	6	5	2	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/12/2001	961	Gray	5	8	7	8	6	5	2	2	2	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0
05/12/2001	961	Inglis	5	7	8	7	5	3	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/12/2001	961	Ron	5	6	8	6	5	3	1	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
05/30/2001	964	Ouren	5	6	7	6	6	4	0	2	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
05/30/2001	964	EHiggins	6	6	7	6	5	5	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/30/2001	964	PHiggins	7	6	7	6	4	4	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
05/30/2001	964	Mason	7	6	7	6	5	4	1	3	2	0	0	0	0	0	2	0	3	2	0	0	1	0	0	0
05/30/2001	964	Gray	6	6	6	6	5	4	2	3	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0
05/16/2001	967	Ouren	5	6	7	6	6	4	0	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
05/16/2001	967	EHiggins	5	6	7	6	4	3	1	1	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05/16/2001	967	Mason	5	6	7	6	5	4	2	2	0	0	0	0	0	0	2	0	2	1	0	0	0	2	0	0
05/16/2001	967	Inglis	5	7	8	7	5	3	1	2	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0
05/16/2001	967	Ron	6	5	5	5	4	3	0	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
04/12/2001	969	Ouren	4	7	8	7	6	4	0	3	0	1	1	0	0	0	2	0	0	1	0	0	0	0	0	0
04/12/2001	969	EHiggins	4	5	6	5	5	5	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
04/12/2001	969	PHiggins	4	4	3	4	5	5	1	1	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
04/12/2001	969	Mason	4	7	8	7	6	3	2	3	3	0	2	0	0	0	2	2	0	0	3	0	3	0	0	0
04/12/2001	969	Inglis	4	6	7	6	4	3	1	2	2	0	0	0	0	0	2	0	0	2	0	2	0	0	0	0
04/12/2001	969	Ron	3	5	8	6	6	3	2	3	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0
04/17/2001	969	Ouren	4	5	7	5	6	3	1	2	1	2	2	0	0	0	2	0	0	2	0	0	0	0	0	0
04/17/2001	969	EHiggins	3	3	4	3	5	3	0	2	0	0	2	0	0	0	2	0	0	2	0	0	0	0	0	0
04/17/2001	969	PHiggins	5	5	6	5	4	4	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0
04/17/2001	969	Mason	4	5	7	5	6	4	1	3	3	0	2	0	0	0	2	0	0	0	0	3	0	0	0	0
04/17/2001	969	Inglis	5	5	7	5	5	4	1	1	1	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
06/01/2001	970	Ouren	4	6	7	6	6	4	1	2	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0
06/01/2001	970	EHiggins	5	6	7	6	5	4	1	0	0	2	0	0	0	0	0	0	0	2	0	0	2	0	0	0
06/01/2001	970	PHiggins	5	6	6	6	4	4	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
06/01/2001	970	Mason	6	6	7	6	5	4	1	2	0	0	0	0	0	0	2	0	2	2	0	0	2	0	0	0
06/01/2001	970	Ron	5	7	7	7	5	3	1	2	0	0	0	0	0	0	2	0	0	2	0	0	2	0	0	0
08/09/2001	973	Ouren	3	6	7	6	6	4	0	2	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0

Appendix 47. Sensory broiling record raw data for the study

Date	Anim	Code	StoreDa y	TimeOff	TimeOn	Ttime	TempOff	TempOn	TawWt	CkWt	Loss
07/10/2001	657	2	21	9:03	8:51	12	72.7	14.3	94.6	80.4	15
05/15/2001	276	92	14	9:42	9:30	12	70.2	-0.8	187.1	160	14.5
06/14/2001	398	241	35	9:41	9:29	12	70	17.4	156.4	137.4	12.1
08/09/2001	372	414	28	9:22	9:10	12	78	11	150	116.1	22.6
05/12/2001	219	921	28	8:45	8:33	12	70.9	-1.6	88.5	72.4	18.2
05/12/2001	219	50	14	8:45	8:32	13	72.5	-1.5	183.6	152.3	17
06/14/2001	219	231	35	9:32	9:19	13	70	16	131.9	110.6	16.1
07/10/2001	931	610	35	9:15	9:02	13	70.9	12.3	316.6	275	13.1
06/28/2001	363	366	35	8:46	8:32	14	71.5	8.2	74.8	54.6	27
06/28/2001	109	725	14	9:17	9:03	14	71.1	14	149.9	125.7	16.1
06/14/2001	236	796	21	9:50	9:36	14	72.3	16.7	190	149	21.6
06/19/2001	634	796	28	9:52	9:38	14	71.5	4.7	213.7	179.3	16.1
05/12/2001	798	949	35	9:05	8:51	14	70	-0.2	184.3	138.8	24.7
06/20/2001	699	954	28	9:14	9:00	14	70	5.2	159	131.5	17.3
05/24/2001	303	77	35	9:34	9:19	15	70.7	-1.4	168	144.4	14
05/17/2001	592	235	1	9:43	9:28	15	70	1.8	165.8	138.2	16.6
06/28/2001	227	384	14	9:15	9:00	15	70.2	11.3	176.7	148.5	16
05/22/2001	798	29	14	9:55	9:39	16	71.8	-1.4	148.4	114	23.2
05/01/2001	738	209	14	10:41	10:25	16	71.8	-1	159.1	134.3	15.6
06/01/2001	556	248	35	9:45	9:29	16	70.7	3.2	138.7	113.4	18.2
06/28/2001	484	252	1	9:36	9:20	16	70.6	14.2	161.4	131.6	18.5
06/29/2001	620	266	1	9:29	9:13	16	70	0.6	183.7	150.6	18
05/16/2001	276	406	21	9:32	9:16	16	70.1	-1	148.9	117.8	20.9
06/28/2001	274	438	35	9:33	9:17	16	70.5	13.1	242	196.9	18.6
07/10/2001	114	585	28	8:49	8:33	16	71.6	7.7	183.6	129.4	29.5
05/12/2001	573	611	14	8:50	8:34	16	70	-1.5	121.6	99.6	18.1
05/30/2001	219	650	1	9:42	9:26	16	70	-1.4	141.7	116.7	17.6
04/19/2001	575	689	35	10:31	10:15	16	72.6	9.5	116.7	98.4	15.7
04/17/2001	738	757	1	10:17	10:01	16	70	-0.1	126.2	102.5	18.8
03/27/2001	926	786	28	10:35	10:19	16	70	4.6	163.7	131.3	19.8
05/24/2001	757	861	7	9:14	8:58	16	71	-1.2	167.9	121.6	27.6
05/16/2001	635	967	14	9:50	9:34	16	70	-0.1	149	120.5	19.1
03/28/2001	363	4	1	9:03	8:46	17	71.1	-0.6	86.4	64.4	25.5
05/24/2001	798	284	1	9:41	9:24	17	70	-0.9	157.6	138	12.4
06/28/2001	303	359	14	8:53	8:36	17	70	9.5	167.2	132.4	20.8
05/04/2001	657	449	14	9:05	8:48	17	70.3	-1.3	123.8	89	28.1
08/09/2001	252	707	7	8:53	8:36	17	78.2	-0.1	162.8	119.9	26.4
06/14/2001	138	739	21	9:10	8:53	17	74	10.6	205.6	164.3	20.1
05/12/2001	364	787	7	8:51	8:34	17	71.8	-1.4	204.7	166.7	18.6
03/21/2001	303	846	28	8:42	8:25	17	70	0.2	136.6	102.9	24.7
05/24/2001	699	911	14	9:39	9:22	17	70	-1	173	147.5	14.7
05/31/2001	657	6	21	9:39	9:21	18	71	-1.2	109.2	85.5	21.7
05/30/2001	176	10	1	9:50	9:32	18	70.4	-1.3	214.1	176.2	17.7
06/29/2001	276	22	7	9:34	9:16	18	79.8	7.7	150.7	.	.
04/19/2001	592	43	14	10:35	10:17	18	70	5.1	161.6	130.8	19.1
06/29/2001	738	119	21	9:49	9:31	18	78	16.6	96.2	63	34.5
05/31/2001	363	179	28	9:13	8:55	18	70.1	-0.4	117.4	85.8	26.9
07/10/2001	76	226	14	9:14	8:56	18	70	14	198.4	153	22.9
05/17/2001	328	297	21	9:08	8:50	18	70.8	-1.1	210.5	160.8	23.6
03/20/2001	502	442	21	10:48	10:30	18	70	3.8	143.3	109.5	23.6
06/20/2001	398	653	1	8:55	8:37	18	70.9	5.2	127.7	95.7	25.1
05/10/2001	114	668	14	9:15	8:57	18	70	-1.1	176.7	130.6	46.1
07/10/2001	560	700	28	8:51	8:33	18	70.8	8.5	188.2	150.8	19.9
06/20/2001	608	721	21	8:57	8:39	18	70	-0.7	201.1	158.4	21.2
05/24/2001	114	740	7	9:16	8:58	18	70	-1.5	173.8	141.6	18.5
05/01/2001	502	751	35	10:40	10:22	18	70	5.1	143	111.3	22.2
05/10/2001	227	767	1	9:15	8:57	18	70.9	-1.2	139.4	107.8	31.6
06/29/2001	646	47	14	9:54	9:35	19	74.8	9.6	172.3	135.1	21.6
05/22/2001	668	84	1	10:17	9:58	19	70	0.7	212.4	170.6	19.7

04/03/2001	69	178	7	10:19	10:00	19	71.8	5.5	180.4	133.9	25.8
05/29/2001	657	295	7	9:46	9:27	19	70	-1.2	123.3	93.6	24.1
05/10/2001	282	347	14	9:35	9:16	19	72.3	-0.8	211.9	147.7	64.2
06/19/2001	301	437	7	10:04	9:45	19	70	8.1	108.2	83.6	22.7
06/28/2001	314	440	21	9:38	9:19	19	74.6	15	169.9	126.9	25.3
03/22/2001	301	539	1	10:51	10:32	19	70	3.6	138	108.7	21.2
06/08/2001	83	641	28	9:08	8:49	19	76.3	-0.5	80	60.4	24.5
04/12/2001	634	686	14	10:17	9:58	19	70.1	0	187.9	139.9	25.5
05/04/2001	573	720	21	9:07	8:48	19	70	-1.5	141.5	101.6	28.2
06/08/2001	236	800	7	9:07	8:48	19	70.8	-0.3	202.3	159.1	21.4
05/25/2001	219	819	7	9:22	9:03	19	70	-1.5	140.8	115.5	18
05/15/2001	731	918	14	10:25	10:06	19	70.2	3.8	167.4	137.3	18
04/03/2001	414	931	21	11:00	10:41	19	69.9	2.6	217.5	168.1	22.7
05/30/2001	657	6	28	9:46	9:26	20	70.1	-1.5	150.9	115.2	23.7
04/24/2001	771	136	14	10:26	10:06	20	70.3	-0.6	145	105.7	27.1
05/24/2001	395	154	21	9:17	8:57	20	70.6	-1.6	244.7	206.2	15.7
05/12/2001	771	159	35	9:17	8:57	20	70	-0.9	144.7	102.5	29.2
03/30/2001	502	178	1	9:43	9:23	20	70.4	3.8	129.8	99.5	23.3
06/08/2001	363	206	14	9:04	8:44	20	75.1	-0.8	135.8	99.1	27
05/22/2001	481	297	28	9:09	8:49	20	73.1	-1.3	179.8	146.5	18.5
04/20/2001	926	354	14	10:07	9:47	20	70	5.2	138.5	103.4	25.3
06/28/2001	807	379	28	8:55	8:35	20	71.4	6.6	278.8	230	17.5
06/28/2001	608	383	7	8:58	8:38	20	70	7.9	182.7	135.1	26.1
05/15/2001	573	392	35	9:25	9:05	20	70.1	-1.2	132	97.2	26.4
05/25/2001	314	444	14	9:59	9:39	20	70	-0.6	212.2	181.3	14.6
05/03/2001	668	452	14	10:57	10:37	20	70	-0.6	261.6	213.2	18.5
04/18/2001	619	459	1	9:15	8:55	20	70.7	-0.8	182.8	142.6	22
04/18/2001	798	468	21	9:15	8:55	20	71	-1	159.6	124.3	22.1
05/31/2001	69	484	35	9:16	8:56	20	70	-1.6	143.8	108.6	24.5
04/18/2001	69	583	14	8:48	8:28	20	.	-1.4	132.4	102.5	22.6
04/17/2001	276	660	35	10:20	10:00	20	70	-0.1	186.1	133.3	28.4
05/01/2001	274	675	7	9:52	9:32	20	70	-1	236.2	178	24.6
03/27/2001	751	724	1	10:39	10:19	20	70	1.9	196.7	154.1	21.7
06/01/2001	236	107	28	9:35	9:14	21	70	-1.6	169.7	121.8	28.2
03/30/2001	76	118	7	9:46	9:25	21	70.1	-0.7	210.2	167.5	20.3
05/01/2001	372	242	35	9:53	9:32	21	70.5	-0.9	178.5	120.6	32.4
05/02/2001	575	242	14	9:12	8:51	21	72.8	-1.6	173.2	130.1	24.9
03/27/2001	91	302	7	10:04	9:43	21	70	-0.6	173.1	130	24.9
03/20/2001	328	303	28	10:51	10:30	21	70.1	0	214.4	161.6	24.6
05/01/2001	186	306	1	9:53	9:32	21	70	-1.2	277.6	196.6	29.2
04/03/2001	573	367	28	10:21	10:00	21	71.2	4.6	201.2	158.4	21.3
04/17/2001	646	393	21	9:51	9:30	21	70	-1.4	212	151.8	28.4
05/08/2001	731	473	14	9:03	8:42	21	70.1	-1	134	89.1	33.5
05/24/2001	502	483	28	9:18	8:57	21	72.7	-1.4	149.3	111.8	25.1
05/15/2001	560	492	7	9:02	8:41	21	70.2	-1.6	204.8	164.4	19.7
05/01/2001	227	554	21	10:18	9:57	21	70	0.8	151.8	117.8	22.4
05/03/2001	301	565	14	10:04	9:43	21	70.4	-1.7	139.2	99	28.9
05/22/2001	447	573	21	9:10	8:49	21	71.9	-1.7	240.8	185.6	22.9
06/19/2001	225	739	35	9:03	8:42	21	76.2	-1.2	109.3	74.3	32
04/04/2001	726	741	28	9:51	9:30	21	70	8.2	148	108.3	26.8
05/16/2001	75	756	7	9:13	8:52	21	70.3	-1.3	284.2	205.7	27.6
03/28/2001	83	806	21	9:45	9:24	21	70	12.2	168.3	128.3	23.8
06/06/2001	798	909	7	9:04	8:43	21	71.1	-1.2	175.2	119.5	31.8
05/02/2001	303	951	21	9:17	8:56	21	72.1	-1.3	208.9	175.3	16.1
05/30/2001	726	964	21	10:12	9:51	21	70	0.5	203.4	160.8	20.9
04/05/2001	681	1999	14	11:25	11:04	21	70.2	8.6	297.8	257.4	13.6
06/06/2001	301	11	35	9:07	8:45	22	70	-1.6	142.6	94.4	33.8
05/16/2001	731	57	35	9:36	9:14	22	70.7	-1.1	216.4	160.5	25.8
06/20/2001	749	66	28	9:03	8:41	22	78.1	-0.7	299.2	226.2	24.4
06/14/2001	699	90	7	9:34	9:12	22	70	17.6	158.1	122.4	22.6
05/02/2001	731	109	7	9:15	8:53	22	70	-1.3	137.4	98.9	28
06/29/2001	876	199	7	9:33	9:11	22	70.9	1.6	179	134.5	24.9
05/16/2001	141	200	1	9:13	8:51	22	70.2	-1.4	169.8	132.7	21.8
05/15/2001	219	202	21	9:32	9:10	22	70.1	-1.1	148.9	119.8	19.5
05/24/2001	626	517	35	9:19	8:57	22	70	-1.7	309.4	239.4	22.6

03/20/2001	176	530	35	10:52	10:30	22	70.1	1.9	261.4	211.6	19.1
05/29/2001	76	600	14	9:16	8:54	22	70.6	-1.8	187.6	135.5	27.8
04/29/2001	363	608	7	9:01	8:39	22	70	-1.6	140.1	107.4	23.3
05/03/2001	635	639	28	10:38	10:16	22	70	-0.6	138	97.8	29.1
04/12/2001	156	660	14	10:22	10:00	22	70.8	-1.2	202.7	148.1	26.9
05/29/2001	654	688	35	9:48	9:26	22	70	-1.5	190.8	148.8	22
03/22/2001	69	693	28	10:54	10:32	22	70	-0.5	167.4	138.8	17.1
05/25/2001	731	732	28	9:26	9:04	22	72.8	-1.7	163.5	120.3	26.4
06/06/2001	227	744	7	9:05	8:43	22	70.5	-0.7	114.4	79.1	30.9
04/12/2001	114	757	21	10:26	10:04	22	71.1	5	118.1	88.8	24.8
05/02/2001	486	783	35	9:43	9:21	22	70	-1.5	319.8	269.1	15.9
05/30/2001	798	811	28	9:24	9:02	22	71.1	-1.5	125	76.6	38.7
05/08/2001	141	828	14	9:45	9:23	22	70.2	-1.5	148.6	110.6	25.6
03/29/2001	364	878	1	10:50	10:28	22	72	-2.2	192.7	129.2	33
06/14/2001	265	902	14	9:11	8:49	22	.	10.1	331.3	262.7	20.7
04/24/2001	109	941	21	10:29	10:07	22	70	-0.2	182.8	129.2	29.3
05/30/2001	141	13	21	9:22	8:59	23	70.7	-1.6	172.1	132.7	22.9
05/17/2001	176	29	14	10:11	9:48	23	72.5	6.7	239.4	194.9	18.6
07/13/2001	138	40	14	9:27	9:04	23	73.9	-0.8	136.7	110.3	19.3
05/15/2001	364	175	28	10:23	10:00	23	70.7	-0.6	221.2	176.9	20
05/15/2001	447	223	1	9:38	9:15	23	71.8	-1.5	284	230	19
06/19/2001	398	231	14	9:34	9:11	23	70	-0.5	205.6	163.7	20.4
05/15/2001	786	240	35	10:05	9:42	23	71.5	-1	310.2	244.6	21.1
03/28/2001	303	300	7	9:09	8:46	23	70.1	-0.8	198.8	152.6	23.2
06/06/2001	484	325	28	9:40	9:17	23	70	-0.5	146.7	111.8	23.8
04/03/2001	236	405	35	11:04	10:41	23	70.8	3	226.9	170.5	24.9
06/14/2001	368	437	28	9:59	9:36	23	71.1	14.8	343.3	262	23.7
06/20/2001	75	479	14	9:31	9:08	23	70	-0.2	292.1	206.2	29.4
03/27/2001	688	513	14	10:42	10:19	23	70	0.2	288.2	228.5	20.7
06/07/2001	699	541	35	9:12	8:49	23	70	-1.2	158.6	111.4	29.8
05/17/2001	447	573	28	8:48	8:25	23	70.3	-1.2	258.8	186.5	27.9
04/12/2001	699	616	1	10:50	10:27	23	70.1	-1	201.7	151.8	24.7
05/22/2001	282	671	1	9:37	9:14	23	73	-1.7	212	157	25.9
04/05/2001	556	684	7	11:20	10:57	23	70.1	8.2	172.9	130.3	24.6
04/20/2001	771	763	28	9:38	9:15	23	70.2	-1.5	173.2	108.2	37.5
05/16/2001	646	764	28	9:14	8:51	23	70.1	-1.5	203.5	155.2	23.7
04/05/2001	109	771	35	10:50	10:27	23	70.3	4.2	183.1	116.4	36.4
05/02/2001	521	793	1	9:39	9:16	23	70.5	-1.7	284.6	225.9	20.6
03/22/2001	683	805	21	10:55	10:32	23	70.3	-0.8	287.6	239.5	16.7
04/19/2001	573	807	7	10:38	10:15	23	71	0	138	110.1	20.2
03/21/2001	619	875	28	9:26	9:03	23	70.2	-1.8	190.1	142.8	24.9
05/25/2001	575	901	1	9:24	9:01	23	70.1	-1.4	199.1	162	18.6
05/12/2001	718	948	21	8:56	8:33	23	71.3	-1.9	274.8	218.2	20.6
05/25/2001	138	9	35	9:54	9:30	24	73.2	-1.5	215.9	156.8	27.4
05/25/2001	141	54	28	9:50	9:26	24	70	-1.4	148.7	116.3	21.8
04/18/2001	138	55	1	8:49	8:25	24	70	-1.8	209.2	149.8	28.4
03/28/2001	225	65	1	9:11	8:47	24	70	2.9	155.5	105.2	32.3
04/04/2001	619	187	7	9:54	9:30	24	71.1	7.7	189.5	138.9	26.7
03/22/2001	156	194	1	10:56	10:32	24	71.6	-0.3	224.3	177.9	20.7
04/19/2001	560	212	14	10:43	10:19	24	70	1.3	174.4	130.1	25.4
06/19/2001	363	213	21	9:28	9:04	24	70	5.8	133.2	102.7	22.9
05/25/2001	771	261	7	9:53	9:29	24	70.6	-1.3	162.7	131.8	19
03/29/2001	681	272	7	10:11	9:47	24	72.1	-0.6	263.5	186	29.4
05/02/2001	236	306	14	9:20	8:56	24	70.8	-1.2	209.6	161.7	22.9
03/30/2001	654	367	1	9:48	9:24	24	70	1.9	195	150.3	22.9
04/12/2001	484	390	7	10:42	10:18	24	70	-1	194.1	142.1	26.8
03/27/2001	757	423	21	10:07	9:43	24	70	-0.6	165.1	121.1	26.7
04/17/2001	556	430	21	9:54	9:30	24	70	-1.2	230.3	181.4	21.2
05/30/2001	634	469	21	9:25	9:01	24	70.3	-1.5	258.6	175.7	32.1
05/09/2001	608	549	35	10:26	10:02	24	70.1	-2.1	133.3	132.1	0.9
05/10/2001	592	553	28	9:20	8:56	24	72.2	-1.6	184.1	138.9	45.2
04/05/2001	364	590	21	11:21	10:57	24	71.5	7.2	214.9	162	24.6
06/29/2001	393	597	21	9:43	9:19	24	71.6	11	.	133.7	.
05/24/2001	560	643	14	9:45	9:21	24	70.3	0.8	207.4	164.9	20.5
05/31/2001	926	650	7	9:45	9:21	24	70	-1.6	147.8	110	25.6

05/17/2001	481	671	21	9:34	9:10	24	70.1	-1.4	228.3	177.7	22.2
03/28/2001	91	676	28	9:48	9:24	24	70.3	9.1	200.6	141.9	29.3
04/04/2001	560	684	35	10:17	9:53	24	70.5	8.2	220.3	156.1	29.1
06/06/2001	393	692	14	9:43	9:19	24	71.9	-0.7	179.6	134.9	24.9
03/30/2001	398	742	28	9:50	9:26	24	70	2.7	198.6	156.8	21
05/01/2001	404	793	21	10:20	9:56	24	70	-0.9	299	223.1	25.4
04/17/2001	771	872	1	10:25	10:01	24	70	-0.5	104.2	98.9	5.1
03/21/2001	109	926	1	9:27	9:03	24	70	-1.9	169.7	121.2	28.6
05/31/2001	556	13	14	9:20	8:55	25	70	-1.6	211.5	162.4	23.2
03/29/2001	372	16	21	10:12	9:47	25	72.3	-0.9	189.7	136.5	28
04/04/2001	265	19	21	10:24	9:59	25	70	9.8	216.3	151.6	29.9
06/08/2001	274	33	1	9:37	9:12	25	70.4	-0.2	320.6	229.2	28.5
04/19/2001	738	96	28	10:04	9:39	25	-0.8	70.3	125.4	87.6	30.1
03/27/2001	447	170	7	10:08	9:43	25	70.9	0.1	194.3	136.5	29.7
04/24/2001	225	177	14	9:56	9:31	25	73.8	-0.8	133.5	83.8	37.2
05/30/2001	620	179	35	9:24	8:59	25	73.4	-1.8	183	133.2	27.2
03/22/2001	684	193	14	10:57	10:32	25	70	-0.3	250.6	188.4	24.8
04/04/2001	481	269	14	9:55	9:30	25	70	7.5	184.1	134	27.2
05/25/2001	494	294	21	9:29	9:04	25	70	-1.9	245.6	193	21.4
04/24/2001	109	328	7	10:32	10:07	25	70	-0.5	232.6	173.5	25.4
03/27/2001	731	334	1	10:44	10:19	25	70.2	4.8	195.5	136.6	30.1
05/10/2001	414	342	7	9:54	9:29	25	70.1	-0.9	258.4	194.4	64
05/09/2001	364	419	14	10:00	9:35	25	70.1	-1.6	179	130.7	27
06/08/2001	76	512	35	9:13	8:48	25	70.5	-0.9	195.7	137.9	29.5
03/27/2001	749	550	14	10:44	10:19	25	70	-0.9	264.7	214.9	18.8
06/07/2001	620	617	14	9:15	8:50	25	70	-1.4	186.8	120.5	35.5
05/03/2001	176	659	28	10:35	10:10	25	70	-1	271	206.9	23.7
04/29/2001	225	704	28	9:04	8:39	25	70	-1.5	160.4	103.4	35.5
05/09/2001	731	825	21	9:59	9:34	25	70	-2.2	161.1	109.9	31.8
06/28/2001	282	879	28	8:59	8:34	25	72	6.7	194.6	137.3	29.4
06/19/2001	69	902	1	9:02	8:37	25	71.2	-1	154.5	113.7	26.4
05/22/2001	592	955	35	9:15	8:50	25	70.1	-2	195.5	134.8	31
06/01/2001	398	970	21	9:13	8:48	25	70	-1.6	185.8	143.2	22.9
05/04/2001	414	20	35	9:14	8:48	26	70.1	-1.3	173.5	116.9	32.6
06/08/2001	282	114	21	9:11	8:45	26	74.1	2.2	185.5	127.1	31.5
04/03/2001	634	118	1	11:03	10:37	26	69.8	-2	270.6	197.4	27.1
06/19/2001	274	171	21	8:55	8:29	26	72.2	-1.4	271.5	184.8	31.9
05/12/2001	646	205	1	9:00	8:34	26	70.3	-1.8	215.2	157.4	26.9
05/15/2001	91	255	21	9:59	9:33	26	70.4	-0.8	208.1	162.9	21.7
03/27/2001	76	268	28	10:45	10:19	26	70	-1.4	192.1	139.9	27.2
08/23/2001	684	289	14	9:04	8:38	26	70.3	-1.2	207.5	143.2	31
04/17/2001	372	291	14	9:57	9:31	26	70	-0.9	171.9	123.8	28
07/18/2001	556	374	14	9:31	9:05	26	75.3	-0.4	179	139.4	22.1
05/25/2001	404	399	35	9:54	9:28	26	70.8	-1.6	297.2	222.3	25.2
03/30/2001	654	408	28	9:23	8:57	26	70	-1.3	206.5	146.5	29.1
03/21/2001	596	439	21	8:51	8:25	26	78	-1.2	304.7	227.6	25.3
07/19/2001	608	492	28	9:07	8:41	26	71.3	-1.2	127.6	99.8	21.8
06/29/2001	926	532	35	9:09	8:43	26	71.1	7.2	98.8	57.8	41.5
06/06/2001	76	561	1	9:56	9:30	26	71	-0.8	198	130.7	34
06/14/2001	227	624	28	9:14	8:48	26	70.4	10.8	150.3	109.1	27.4
05/25/2001	699	629	21	9:28	9:02	26	70.5	-1.7	168.2	136	19.1
04/17/2001	931	727	14	10:23	9:57	26	70.1	-0.7	407.2	335	17.7
03/20/2001	484	730	21	10:56	10:30	26	70.8	-0.7	218.7	167.2	23.5
06/08/2001	75	810	28	9:31	9:05	26	70.3	-0.7	305.4	192.3	37
06/29/2001	301	837	28	10:02	9:36	26	70	8.6	124.9	86.6	30.7
05/17/2001	731	903	28	9:26	9:00	26	70.1	-1.6	192.2	140.9	26.7
06/08/2001	141	908	7	9:10	8:44	26	70.7	-1.3	176.2	127.9	27.4
06/01/2001	635	934	7	9:43	9:17	26	70.2	-1.4	150.6	99.4	34
05/17/2001	646	955	7	9:25	8:59	26	70	-1.6	215.5	162.4	24.6
05/22/2001	414	974	28	9:54	9:28	26	72.5	-1.5	178.2	135.6	23.9
03/30/2001	447	996	35	9:23	8:57	26	70	-0.5	202.6	138.5	31.6
04/03/2001	186	996	7	10:26	10:00	26	70.3	2.4	335.1	234.2	30.1
06/06/2001	926	62	1	9:12	8:45	27	72	-1.3	114.9	79.6	30.7
05/30/2001	353	125	14	9:27	9:00	27	70.3	-1.8	345.2	275.8	20.1
05/08/2001	771	164	21	9:40	9:13	27	70.3	-1.4	167.7	108.9	35.1

05/10/2001	434	180	35	9:55	9:28	27	72.3	-0.5	244.8	192.2	52.6
04/05/2001	731	187	7	10:54	10:27	27	72.5	5.9	191.7	126.3	34.1
03/22/2001	496	214	35	10:25	9:58	27	70	-1.2	356.5	286.8	19.6
05/09/2001	560	234	21	10:06	9:39	27	70	-1.8	226	162.1	28.3
05/02/2001	282	246	7	9:23	8:56	27	71.9	-1.4	269.1	198.9	26.1
04/20/2001	757	328	1	10:14	9:47	27	70.2	-1.3	179.3	123.2	31.3
05/03/2001	619	355	14	10:12	9:45	27	70	-1.7	196	146.9	25.1
03/29/2001	83	361	1	10:14	9:47	27	70	-0.5	144.4	98.5	31.8
03/20/2001	657	453	35	10:57	10:30	27	70.5	7	151.2	110.9	26.7
04/04/2001	496	466	1	9:24	8:57	27	70.2	5.1	261.6	202.1	22.7
04/29/2001	731	486	35	10:11	9:44	27	70.4	-1.3	185.8	132.9	28.5
04/29/2001	749	490	35	9:06	8:39	27	70.2	-1.6	288	212.4	26.3
05/16/2001	575	574	21	10:04	9:37	27	70	-0.8	209.2	158.3	24.3
05/09/2001	398	584	7	9:27	9:00	27	77.7	-2	142.6	99.4	30.3
05/04/2001	931	618	28	9:57	9:30	27	70.8	-0.9	.	296.7	.
04/24/2001	646	631	35	11:03	10:36	27	73.7	5.3	211.3	140.1	33.7
06/07/2001	225	663	21	9:17	8:50	27	70	-1.2	142.5	82.4	42.2
05/03/2001	592	673	7	10:10	9:43	27	70	-1.8	181.4	134.8	25.7
03/30/2001	684	701	21	9:24	8:57	27	70.1	-1.2	270.3	190	29.7
04/24/2001	350	763	28	10:33	10:06	27	70	-0.8	267.5	201.2	24.8
05/29/2001	109	791	28	9:19	8:52	27	70	-2	186.8	123.4	33.9
04/29/2001	620	801	28	9:36	9:09	27	70	-1.3	250.2	202.6	19
05/31/2001	328	812	7	9:47	9:20	27	70.1	-1.5	149.9	111.9	25.4
05/30/2001	138	830	7	9:55	9:28	27	70.2	-1.6	236.9	169.2	28.6
05/29/2001	573	856	1	9:19	8:52	27	70	-1.7	181.5	131.7	27.4
05/10/2001	76	891	21	9:50	9:23	27	70	-1.8	249	183.1	65.9
06/20/2001	481	907	35	9:01	8:34	27	70.5	-0.5	206.7	144.5	30.1
05/01/2001	668	946	28	10:32	10:05	27	70	-0.9	312.3	233.2	25.3
06/19/2001	654	982	14	9:00	8:33	27	82	-1	178	114.3	35.8
08/10/2001	689	0	35	8:55	8:27	28	72.3	-1.3	216.9	151.1	30.3
06/01/2001	138	5	28	9:16	8:48	28	71.3	-1.6	201.8	133.1	34
04/24/2001	75	67	1	9:58	9:30	28	70	-0.9	293.5	197.4	32.7
05/01/2001	481	68	7	10:24	9:56	28	70	-1	214.1	161.2	24.7
06/07/2001	757	116	28	9:44	9:16	28	74	-1.1	185.5	128.2	30.9
04/20/2001	486	172	7	9:09	8:41	28	70.1	-1.8	216.3	151.4	30
03/21/2001	684	196	7	9:31	9:03	28	71.2	-1.5	244.2	176.4	27.8
05/04/2001	620	211	7	9:44	9:16	28	70	-1	198.3	146.2	26.3
05/17/2001	484	271	35	8:53	8:25	28	72.2	-1.2	204.9	137.8	32.7
03/22/2001	404	398	7	10:26	9:58	28	70.2	-1.1	310.3	241.9	22
03/27/2001	234	448	35	10:11	9:43	28	70.1	1	277.6	203.1	26.8
05/03/2001	368	456	21	10:11	9:43	28	71	-1.8	249.1	182.9	26.6
05/09/2001	668	464	35	9:29	9:01	28	73	-2	208.6	129	38.2
06/20/2001	276	476	1	8:59	8:31	28	70	0.6	239.1	170.9	28.5
04/29/2001	484	509	14	9:29	9:01	28	70.5	-1.3	180.5	123.7	31.5
03/21/2001	486	540	14	9:31	9:03	28	70.1	-1.7	210.1	149.7	28.7
06/01/2001	757	544	14	9:16	8:48	28	71.4	-1.7	153.8	103.2	32.9
03/30/2001	301	558	21	9:53	9:25	28	71.3	0.6	218.2	151.9	30.4
04/12/2001	681	566	21	9:54	9:26	28	70.1	-1.4	266.3	186.6	29.9
05/10/2001	81	697	28	10:06	9:38	28	73.2	-0.8	283.8	219.3	64.5
07/19/2001	353	762	35	9:16	8:48	28	72.3	11.7	310.2	233.1	24.9
04/29/2001	684	799	1	9:07	8:39	28	70.1	-1.5	284.8	205.5	27.8
05/17/2001	81	808	1	9:23	8:55	28	70.5	-1.4	319.1	244	23.5
07/10/2001	705	915	35	9:35	9:07	28	73.6	5	307.5	227.5	26
03/22/2001	603	925	21	11:00	10:32	28	70	-1.2	318.2	241.1	24.2
06/14/2001	556	982	1	9:17	8:49	28	70	10.4	254.5	183.8	27.8
04/03/2001	364	990	35	11:09	10:41	28	69.8	.	192	139.4	27.4
06/19/2001	206	71	35	9:36	9:07	29	70	-0.6	304.4	201.9	33.7
05/03/2001	314	141	35	10:36	10:07	29	70.1	-1.1	177.1	126.3	28.7
05/02/2001	683	153	35	10:31	10:02	29	71.1	-1.5	337.6	258.7	23.4
05/30/2001	368	173	7	9:53	9:24	29	70.1	-1.6	291.9	224	23.3
04/04/2001	328	319	35	9:26	8:57	29	70	6.9	111.4	76.1	31.7
03/22/2001	510	329	28	10:27	9:58	29	71.2	-0.9	209.3	154.1	26.4
05/08/2001	556	388	28	9:48	9:19	29	70.1	-1.4	221.2	161.2	27.1
03/20/2001	91	397	14	10:59	10:30	29	69.7	-0.9	242.1	182.1	24.8
04/03/2001	82	408	14	10:29	10:00	29	71.3	-1.4	246.1	199.1	19.1

08/10/2001	626	418	35	8:54	8:25	29	70	-1.2	306.3	222.6	27.3
04/12/2001	738	430	7	9:55	9:26	29	70	-1.1	161.1	110.7	31.3
04/17/2001	619	552	35	9:59	9:30	29	70.8	-1.2	192.6	118.6	38.4
04/20/2001	114	598	35	9:12	8:43	29	70.1	-1.6	123.3	81.3	34.1
06/07/2001	314	645	1	9:18	8:49	29	70	-1.4	206.2	136.6	33.8
03/21/2001	634	672	35	8:54	8:25	29	70	-0.7	210.2	140.4	33.2
05/04/2001	368	714	1	9:17	8:48	29	70.5	-1.4	265.1	166.4	37.2
06/20/2001	434	957	7	9:59	9:30	29	70	-0.7	271.5	206.5	23.9
05/12/2001	176	961	7	9:18	8:49	29	71.2	-1	338.9	265.1	21.8
05/17/2001	234	974	7	9:58	9:29	29	70.1	-1.8	282.2	211.3	25.1
05/16/2001	688	989	1	10:07	9:38	29	70.1	-0.6	262.4	198.4	24.4
04/17/2001	575	23	7	10:54	10:24	30	72.2	-0.7	248.2	212.7	14.3
06/07/2001	350	72	14	9:47	9:17	30	74.4	-1.2	289.5	203.6	29.7
03/22/2001	353	93	7	10:28	9:58	30	70.1	-1.1	318.2	246.3	22.6
04/05/2001	82	106	1	10:19	9:49	30	70.1	6.2	270.2	184.4	31.8
05/29/2001	372	185	7	9:24	8:54	30	71.6	-1.7	180.9	123.8	31.6
05/02/2001	265	209	28	10:18	9:48	30	73.7	-1.2	300.3	211.8	29.5
05/29/2001	626	232	28	9:50	9:20	30	70.1	-1.6	363.4	278.8	23.3
06/20/2001	900	275	21	9:29	8:59	30	70.5	9.3	229.4	155.4	32.3
04/12/2001	265	291	35	9:56	9:26	30	71.3	-1.4	241.2	148.5	38.4
04/04/2001	592	311	21	9:30	9:00	30	70.7	7	165.2	115.2	30.3
05/12/2001	353	324	28	9:36	9:06	30	70	-1.2	326.3	251.3	23
06/29/2001	726	341	14	9:09	8:39	30	70.3	-0.8	228.3	146.7	35.7
04/03/2001	353	348	1	11:07	10:37	30	70	0.4	277.3	208.6	24.8
05/16/2001	668	369	7	10:19	9:49	30	70.6	-0.8	346.3	283.5	18.1
05/30/2001	186	484	35	9:31	9:01	30	70.1	-1.8	309.2	219.5	29
06/08/2001	608	623	1	9:15	8:45	30	72.2	-0.9	152.6	85.6	43.9
04/29/2001	82	694	21	10:07	9:37	30	70.1	-1	244.6	174.2	28.8
04/18/2001	395	723	7	9:47	9:17	30	70.9	-0.7	329.7	263	20.2
04/05/2001	186	741	21	10:57	10:27	30	72.1	5.9	293.6	206.2	29.8
08/02/2001	234	746	21	9:52	9:22	30	70	-1.2	285.3	201.5	29.4
04/19/2001	635	759	21	10:08	9:38	30	-1.4	70.7	176.1	109	38.1
05/04/2001	688	821	28	9:18	8:48	30	70.7	-1.4	206.3	131.4	36.3
05/09/2001	83	882	14	10:08	9:38	30	70	-1.7	152.4	108.5	28.8
05/29/2001	156	945	21	9:22	8:52	30	71.8	-2	216.7	153	29.4
04/17/2001	603	969	28	10:01	9:31	30	70.2	1.3	308.1	208.5	32.3
03/28/2001	603	981	14	9:54	9:24	30	70	4.6	327.7	239.5	26.9
06/19/2001	393	12	35	9:54	9:23	31	71.1	2.8	236.8	179.8	24.1
05/08/2001	328	18	1	9:15	8:44	31	71.9	-1.7	200.1	119.6	40.2
06/06/2001	414	24	1	9:41	9:10	31	70.4	-1.8	211.3	144.4	31.7
05/02/2001	494	68	1	9:49	9:18	31	71.2	-1.2	319.2	248.9	22
04/04/2001	786	106	28	9:28	8:57	31	70	8	290	139.5	51.9
05/01/2001	575	108	28	10:03	9:32	31	71.3	-1.2	230.9	78.9	65.8
06/14/2001	234	171	14	9:18	8:47	31	71.3	9.7	267	200.2	25
04/12/2001	91	224	1	9:57	9:26	31	70.2	-1.2	237.9	167.2	29.7
03/28/2001	654	403	21	9:17	8:46	31	70.8	3.1	187	133.1	28.8
05/10/2001	603	446	35	9:28	8:57	31	70.7	-1.3	327.4	218.1	109.3
06/20/2001	353	519	21	10:03	9:32	31	70.9	1.3	233.4	163.7	29.9
03/28/2001	688	529	35	9:17	8:46	31	70.2	-0.4	293.2	235.7	19.6
04/04/2001	486	542	1	9:31	9:00	31	71	5.4	312.8	230.9	26.2
06/29/2001	395	565	1	9:10	8:39	31	70.1	-1	226	162.1	28.3
05/04/2001	114	570	1	9:47	9:16	31	70	-0.8	196.6	122.6	37.6
04/18/2001	114	572	21	8:56	8:25	31	70	-1.9	237.2	163.8	30.9
03/22/2001	81	632	35	10:29	9:58	31	70	-1.3	327.2	246	24.8
04/03/2001	705	662	14	11:38	11:07	31	70.1	-0.4	392.1	288.2	26.5
05/02/2001	684	675	28	9:21	8:50	31	70	-1.8	294.1	194.7	33.8
03/28/2001	494	680	7	9:55	9:24	31	70	-0.7	287.4	217.7	24.3
03/28/2001	404	753	14	9:18	8:47	31	70	-0.5	302.4	221.4	26.8
04/04/2001	718	771	14	10:03	9:32	31	70	6.3	269	198.5	26.2
05/17/2001	494	3	14	10:08	9:36	32	70	-1.6	228.3	176.5	22.7
05/08/2001	654	41	7	9:55	9:23	32	70.2	-1.4	179.6	118.9	33.8
06/08/2001	807	156	21	9:40	9:08	32	70	-0.2	363	237.5	34.6
05/03/2001	395	216	7	10:47	10:15	32	70	-0.7	290.6	222.1	23.6
03/28/2001	486	249	28	9:56	9:24	32	70.1	5.5	272	206.9	23.9
05/16/2001	275	314	35	10:38	10:06	32	70.1	-1.1	329.9	232.9	29.4

03/29/2001	447	330	14	10:19	9:47	32	70	-0.1	297.3	202.9	31.8
04/29/2001	176	344	21	10:02	9:30	32	77	-1.2	228.7	180.6	21
04/19/2001	684	451	35	10:10	9:38	32	-1.7	71.1	263.2	178	32.4
03/28/2001	681	458	35	9:56	9:24	32	70.1	7.3	275.5	191.1	30.6
03/20/2001	434	477	14	10:18	9:46	32	70.6	-1	361.7	259.7	28.2
03/29/2001	596	494	28	11:00	10:28	32	70.1	-2.3	330.2	233.7	29.2
06/14/2001	807	536	1	9:24	8:52	32	70.1	5.6	356.7	251.4	29.5
04/05/2001	757	542	35	10:21	9:49	32	70	8	158.1	105.2	33.5
06/07/2001	608	543	14	9:21	8:49	32	70.1	-1.3	196.5	131.3	33.2
04/18/2001	274	580	28	9:50	9:18	32	70.8	-1	355.9	249.8	29.8
06/29/2001	900	587	28	10:02	9:30	32	71.5	-1	234.4	167.3	28.6
04/17/2001	683	616	28	10:56	10:24	32	73.3	-0.8	284.8	179.3	37
04/20/2001	620	631	21	10:19	9:47	32	70.7	-1.4	222.2	161.6	27.3
04/05/2001	521	698	28	10:54	10:22	32	71.1	4.5	269	190.3	29.3
05/03/2001	275	779	1	11:12	10:40	32	70	-0.6	282.6	197.3	30.2
05/04/2001	83	820	7	9:51	9:19	32	70.8	-0.4	138.6	90.9	34.4
04/20/2001	726	852	35	10:20	9:48	32	70.8	-1.2	212.6	151.9	28.6
03/27/2001	521	880	35	10:15	9:43	32	70	-0.5	324.7	235.6	27.4
04/29/2001	265	896	1	9:41	9:09	32	70	-1.1	280.3	182.4	34.9
04/18/2001	414	943	14	8:57	8:25	32	70	-1.5	271	180.6	33.4
05/01/2001	328	950	14	10:04	9:32	32	75.5	-1.2	207.6	139.4	32.9
04/19/2001	275	176	21	10:47	10:14	33	70.6	-0.6	310.1	225.1	27.4
05/29/2001	470	285	1	9:56	9:23	33	70.1	-1.5	421.1	310.2	26.3
04/18/2001	156	385	35	8:58	8:25	33	71.6	-1.6	172	114.4	33.5
04/24/2001	470	515	35	10:04	9:31	33	70	-1.3	417.6	286.9	31.3
04/24/2001	726	523	7	10:39	10:06	33	70	-1	260.6	194.9	25.2
06/07/2001	276	526	28	9:46	9:13	33	70.1	-1.2	190.7	136.7	28.3
04/19/2001	603	545	7	10:12	9:39	33	70	-1.3	333.8	233.1	30.2
03/20/2001	82	559	28	10:22	9:49	33	72.7	-1	391.1	268.1	31.4
03/22/2001	900	564	14	10:31	9:58	33	70.1	-0.6	311.9	231.9	25.6
08/23/2001	186	595	14	9:09	8:36	33	70	-1.2	278.8	203.7	26.9
03/21/2001	82	636	35	8:58	8:25	33	70.2	-1.3	259.6	180.8	30.4
05/29/2001	496	713	21	10:03	9:30	33	70	-1.6	300	232.9	22.4
05/15/2001	434	774	1	10:14	9:41	33	71.1	-1.1	282.7	212.8	24.7
04/29/2001	718	775	7	9:44	9:11	33	70.2	-1.3	305	223.8	26.6
05/25/2001	626	794	14	10:24	9:51	33	71.7	-1.6	359.5	285.9	20.5
06/01/2001	634	829	7	9:23	8:50	33	70.2	-1.5	282.4	189.2	33
06/06/2001	738	854	35	9:16	8:43	33	70.8	-1.5	162.1	98.5	39.2
03/30/2001	275	861	14	9:21	8:48	33	70	-1	371.2	258.7	30.3
05/16/2001	726	869	14	9:47	9:14	33	70	-1.1	289	227.4	21.3
05/24/2001	596	881	1	9:52	9:19	33	70	-1.5	345.4	255.9	25.9
04/03/2001	619	900	21	11:10	10:37	33	69.7	3	179.8	136.1	24.3
05/24/2001	470	914	21	9:54	9:21	33	70	-1.7	389.5	304.2	21.9
05/10/2001	726	928	1	9:29	8:56	33	70.9	-1.5	226.5	155.1	71.4
04/12/2001	141	969	35	9:59	9:26	33	70.9	-0.8	146.9	91.8	37.5
03/27/2001	350	30	21	10:17	9:43	34	70	-1.1	332.5	233.5	29.8
05/02/2001	206	126	21	9:59	9:25	34	70	-1	372.4	280	24.8
04/20/2001	75	177	21	9:17	8:43	34	70	-1.9	340.7	225.5	33.8
05/08/2001	494	192	28	9:51	9:17	34	70	-1.9	216.4	144	33.5
05/03/2001	900	273	1	10:17	9:43	34	70.2	-1.9	266.6	190.1	28.7
04/05/2001	156	311	28	10:23	9:49	34	71.5	6.6	233.5	164.1	29.7
04/18/2001	635	346	35	8:59	8:25	34	70.9	-1.6	145.2	92.3	36.4
03/21/2001	81	349	21	8:59	8:25	34	78	-1.2	289.8	217.7	24.9
05/15/2001	626	394	7	9:40	9:06	34	70	-1.8	350	251.8	28.1
04/20/2001	596	426	7	10:22	9:48	34	72.2	-1.5	399.9	288.6	27.8
05/31/2001	635	429	1	10:19	9:45	34	70	-1.2	177	109.6	38.1
04/20/2001	275	523	28	9:52	9:18	34	70.7	-1.6	319.8	240	25
06/29/2001	681	535	28	9:14	8:40	34	71	-0.5	231.6	146.4	36.8
05/29/2001	350	578	35	9:28	8:54	34	70.3	-2.2	423.7	295.5	30.3
03/21/2001	481	667	1	8:59	8:25	34	75.6	-0.9	225.5	168.1	25.5
04/03/2001	470	742	28	11:11	10:37	34	69.8	-3.3	371.4	237.6	36
04/12/2001	404	872	28	10:36	10:02	34	70.1	-1.2	320.6	218	32
05/09/2001	900	61	7	10:10	9:35	35	70	-2.1	313.4	222.6	29
04/18/2001	275	98	7	9:53	9:18	35	70.1	-1.1	313.4	236.5	24.5
03/29/2001	393	239	28	10:57	10:22	35	70.2	-1.9	272.6	193.1	29.2

06/01/2001	274	245	14	9:25	8:50	35	70.5	-1.5	276.2	182	34.1
05/10/2001	683	264	7	10:07	9:32	35	70.1	-0.9	370.8	287.6	83.2
05/22/2001	206	271	7	9:23	8:48	35	70	-2.1	330.5	233.6	29.3
05/12/2001	876	514	1	9:28	8:53	35	70.2	-1.2	322.1	235.8	26.8
05/04/2001	596	528	35	9:53	9:18	35	70.5	-0.8	342	231.7	32.3
04/19/2001	596	793	14	10:13	9:38	35	-1.6	70	369.6	249.8	32.4
05/15/2001	395	919	28	9:14	8:39	35	70	-1.8	336.5	244.7	27.3
05/25/2001	206	922	1	9:36	9:01	35	70	-1.8	307	230.8	24.8
04/20/2001	236	941	1	9:56	9:21	35	70	-1.3	174.9	103.3	40.9
05/08/2001	393	183	1	9:20	8:44	36	70.3	-2	224.6	152.4	32.1
04/05/2001	668	269	14	11:03	10:27	36	74.3	5.3	254.5	169.2	33.5
03/29/2001	900	313	35	10:23	9:47	36	70.2	-0.8	274.3	179.3	34.6
05/10/2001	521	316	21	9:53	9:17	36	70	-1	318.1	230.9	87.2
05/08/2001	718	326	35	9:58	9:22	36	70	-1.4	330.4	234.4	29.1
07/18/2001	353	433	35	9:58	9:22	36	70	0.8	298.6	200.4	32.9
05/09/2001	876	612	28	10:38	10:02	36	72.5	-2.4	255.2	173.3	32.1
05/08/2001	926	678	21	9:21	8:45	36	70	-2.8	166.5	103.6	37.8
05/08/2001	350	760	7	9:19	8:43	36	72.5	-2	320.5	216.7	32.4
05/03/2001	807	843	35	11:02	10:26	36	70	-0.9	356.6	266.5	25.3
05/09/2001	206	893	28	9:37	9:01	36	70.1	-2.5	322.9	217.3	32.7
08/09/2001	234	973	28	9:26	8:50	36	70	-0.5	239.7	158.1	34
06/14/2001	470	12	7	10:02	9:25	37	71	12	418.7	291.4	30.4
05/22/2001	91	235	35	9:52	9:15	37	73.9	-1.9	300.3	206.7	31.2
06/01/2001	496	309	7	9:55	9:18	37	70.1	-1.6	302.9	234	22.7
05/04/2001	486	331	21	9:25	8:48	37	70.3	-1.6	294.2	219.6	25.4
03/30/2001	206	348	14	10:03	9:26	37	70.5	-1.3	327.2	231.8	29.2
03/21/2001	496	421	14	9:40	9:03	37	70	-2	261.3	198.1	24.2
06/28/2001	786	489	1	9:31	8:54	37	70	8.8	335.5	233.7	30.3
03/30/2001	709	663	35	9:25	8:48	37	70.3	-1.2	329	240.3	27
04/12/2001	186	814	28	10:38	10:01	37	70.4	-1.4	301.1	187.6	37.7
04/17/2001	749	814	7	10:37	10:00	37	71.6	-0.9	303.5	211.5	30.3
04/24/2001	69	932	21	10:43	10:06	37	71.7	-0.9	253.6	189.2	25.4
05/12/2001	705	933	21	9:38	9:01	37	70	-1.3	337.9	248.8	26.4
06/06/2001	234	74	28	10:09	9:31	38	70.7	-1	347.1	238.6	31.3
05/22/2001	705	112	7	9:52	9:14	38	70	-1.9	361.6	256.4	29.1
05/09/2001	303	425	1	10:12	9:34	38	70	-2.1	235.2	158.6	32.6
03/20/2001	603	454	1	10:27	9:49	38	70.2	-1.2	364.1	251.3	31
05/31/2001	265	811	7	9:34	8:56	38	72.6	-1.8	309	206.2	33.3
06/06/2001	368	817	14	10:10	9:32	38	70	-1.2	251.4	183.4	27
03/29/2001	156	864	7	11:00	10:22	38	72.8	-2.3	229.4	154.4	32.7
03/20/2001	688	868	7	10:24	9:46	38	70.1	-0.9	399	288.7	27.6
05/04/2001	470	873	14	9:26	8:48	38	70.2	-1.7	365.1	247.7	32.2
04/04/2001	314	999	7	10:09	9:31	38	70	5.8	289.9	218.7	24.6
05/31/2001	683	173	14	9:36	8:57	39	70.1	-1.8	350	242.2	30.8
03/20/2001	683	247	1	10:28	9:49	39	70	-1.4	433.8	301.6	30.5
03/21/2001	931	461	7	9:42	9:03	39	70	-1.9	424.1	323.6	23.7
06/20/2001	82	485	7	9:54	9:15	39	70	-0.7	330.7	240	27.4
06/01/2001	434	496	21	9:29	8:50	39	70	-1.8	263.2	178.3	32.3
04/20/2001	81	586	14	9:20	8:41	39	70	-1.8	329.3	236.1	28.3
05/16/2001	434	603	28	9:35	8:56	39	70	-1.2	303.3	212.4	30
03/20/2001	786	620	7	10:25	9:46	39	70.1	-0.9	361.8	257.6	28.8
04/19/2001	718	665	28	10:17	9:38	39	-1.7	70	312.3	219.5	29.7
04/29/2001	395	754	14	9:50	9:11	39	70	-1.6	335.1	265.9	20.7
06/20/2001	368	844	35	9:41	9:02	39	70	-0.2	295.6	216.6	26.7
05/31/2001	496	951	28	10:17	9:38	39	70	-1.5	293	208.5	28.8
05/31/2001	876	10	21	10:15	9:35	40	70.1	-1.6	317.1	219	30.9
03/29/2001	494	63	35	10:27	9:47	40	70	-0.8	256.5	167.3	34.8
05/08/2001	876	387	35	10:21	9:41	40	71.3	-1.6	342	212.4	37.9
06/01/2001	626	435	1	10:16	9:36	40	72.4	-1.8	333.5	223.8	32.9
03/30/2001	521	616	7	9:28	8:48	40	70	-1.1	260.2	180.1	30.8
04/24/2001	404	852	1	11:16	10:36	40	70	-0.6	312.1	203.1	34.9
05/01/2001	705	126	1	11:00	10:19	41	74.4	-1	338.4	237.6	29.8
06/19/2001	81	280	7	9:43	9:02	41	70	-0.6	342.6	245.5	28.3
05/31/2001	718	469	1	9:37	8:56	41	70	-2	346.4	227.8	34.2
05/29/2001	807	883	14	10:01	9:20	41	70	-1.7	430.6	316.2	26.6

05/09/2001	681	748	1	10:45	10:03	42	70	-2.3	326.4	228.7	29.9
04/24/2001	705	426	28	11:20	10:36	44	73.6	-0.4	348.2	245.7	29.4
03/29/2001	521	677	14	11:06	10:22	44	70.2	-2.5	308.6	207.1	32.9
06/07/2001	807	260	7	10:06	9:21	45	71.1	-1.3	384.9	267.9	30.4
06/06/2001	786	455	21	9:30	8:43	47	70.1	-1.6	312.7	201.2	35.7
05/22/2001	931	903	21	9:57	9:10	47	70.5	-1.9	440.8	317.2	28
06/07/2001	75	992	35	10:06	9:19	47	78	-1.3	361.2	198.5	45
06/01/2001	350	229	1	10:14	9:26	48	70	-1.9	361.6	230.2	36.3
06/19/2001	234	624	1	9:23	8:31	52	72.6	-1.6	311	179.9	42.2
05/17/2001	395	84	35	10:24	9:52	32	70	0.3	282.7	211.7	25.1
03/29/2001	688	144	21	.	10:28	.	70.1	-2.2	249	192.9	22.5
04/18/2001	749	296	21	.	.	.	70.1	.	289.8	213.7	26.3
04/05/2001	749	999	1	.	10:27	.	70	4	264.3	183.4	30.6

Appendix 48. Intercept and slope values for regression analysis with Warner-Bratzler shear force

Anim	Dumpy	Shear	Intercept	Slope
69	35	3.952666667	5.166025641	-0.048660256
75	35	4.622333333	5.133893657	-0.00950027
76	35	3.627	6.490337449	-0.069122874
81	35	4.288666667	4.003942618	0.001206707
82	35	3.999666667	4.650907625	-0.02423691
83	35	3.647	3.680726923	0.027109707
91	35	4.656666667	7.807559312	-0.112791093
109	35	3.138666667	4.595155601	-0.018401889
114	35	4.469	6.309520175	-0.052814035
138	35	2.857333333	3.831069231	-0.011721978
141	35	3.106	3.521005466	0.000153779
156	35	3.938166667	6.21421773	-0.081506349
176	35	3.247	4.416012416	-0.032154791
186	35	3.826166667	5.193040688	-0.041808907
206	35	3.316833333	4.862779487	-0.038638462
219	35	2.917	5.047524966	-0.043623583
225	35	5.765833333	4.899483333	0.019814881
227	35	4.657	5.861030364	-0.05919197
234	35	3.685333333	4.113615182	-0.027570985
236	35	4.36	5.05612004	-0.0303417
265	35	3.7765	4.493783266	-0.033247166
275	35	4.521	6.289279487	-0.069439927
276	35	3.475666667	3.985122402	-0.001357557
282	35	3.710333333	4.432218758	-0.006087854
301	35	6.398166667	4.25688448	0.038251822
303	35	2.237166667	3.697509042	-0.034846424
314	35	3.691	4.324682564	-0.014341978
328	35	4.743833333	6.041754858	-0.042520715
350	35	3.785833333	4.207687922	-0.025976046
353	35	4.153	4.461742078	-0.020187287
363	35	4.037	5.636383536	-0.055425169
363	35	4.046	4.697183333	-0.018987143
364	35	5.148833333	4.597693995	0.015518893
368	35	3.083333333	4.380453846	-0.024304396
372	35	2.927666667	5.633874359	-0.065463004
393	35	4.153166667	4.940005128	-0.028934432
395	35	7.443333333	6.132074089	0.060454926
398	35	2.6435	4.653095047	-0.05512865
404	35	3.315833333	5.154677395	-0.051333941
404	35	4.16	5.000791667	-0.038664881
414	35	3.602333333	6.704926721	-0.071138934
434	35	3.689333333	4.662706815	-0.017769568
447	35	3.288833333	4.217230567	-0.020417139
470	35	2.906	3.833810256	-0.032354579
481	35	3.363	5.594812955	-0.048327463
484	35	3.8765	5.756049528	-0.038413495
486	35	3.065	4.909206613	-0.034911066
494	35	2.918166667	3.413014372	-0.013286977
496	35	3.343833333	4.234161673	-0.022740283
502	35	3.86	4.084310661	-0.000431107
521	35	3.788666667	5.663033333	-0.078685714
556	35	4.203666667	7.498387112	-0.097575371
560	35	4.243	4.492020209	0.017667881
573	35	4.8345	8.432556005	-0.115352227
575	35	3.717666667	5.577137382	-0.04297004
592	35	3.580833333	4.952861336	0.001190553
596	35	3.326166667	4.03444332	0.007047233
603	35	5.082833333	5.904063274	-0.044091855
608	35	2.832333333	4.827394872	-0.035194505
611	35	3.431166667	4.475658537	-0.024635308
619	35	2.541833333	4.215736302	-0.030741363
620	35	2.955333333	4.932343468	-0.047815668

626	35	4.481333333	4.384320108	-0.031411201
634	35	4.110666667	6.746697436	-0.088511355
635	35	5.0345	5.617313428	-0.006663968
646	35	4.105833333	4.149597301	-0.00348664
654	35	4.4345	4.296113495	0.021999865
654	35	5.2295	4.442125	0.018293452
657	35	4.866666667	6.377446188	-0.039323212
668	35	4.8956	4.800242024	-0.017891687
681	35	3.550666667	4.069730567	-0.038083806
683	35	3.632666667	5.04660668	-0.029430567
684	35	4.881833333	5.103260328	-0.033768204
688	35	3.757	3.718375776	-0.019665924
699	35	3.302666667	4.269269501	-0.016535695
705	35	4.168333333	5.343160999	-0.037211943
718	35	3.365833333	5.678074359	-0.058108791
726	35	3.603833333	7.456271255	-0.109642713
731	35	4.350833333	6.732892857	-0.050984694
731	35	4.8335	7.884222222	-0.090803571
738	35	3.431666667	3.401655556	0.022757143
749	35	4.0785	4.769587922	-0.018292713
757	35	5.804	6.572389406	-0.004221727
771	35	5.515333333	7.047000202	-0.069441835
786	35	4.169	4.863754116	-0.031039541
798	35	4.932833333	5.620097571	-0.022714642
807	35	3.350333333	5.948884211	-0.068020175
876	35	3.929166667	4.18735641	-0.02021685
900	35	3.4705	3.4676722	0.007200945
926	35	4.554	5.093656815	-0.008136235
931	35	4.21	4.333683536	-0.019791835

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