# THE EFFECTS OF MULTIPLE COMPONENT PRICING ON PRODUCERS AND HANDLERS IN THE FEDERAL ORDER NO. 4 MARKETING AREA

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# THE EFFECTS OF MULTIPLE COMPONENT PRICING ON PRODUCERS AND HANDLERS IN THE FEDERAL ORDER NO. 4 MARKETING AREA

## I. INTRODUCTION

The Federal Milk Marketing Order Program was established in the Agricultural Marketing Agreement Act of 1937 to address the specific marketing problems associated with milk marketing. A supply and demand problem is created due to the daily production process of milk as well as its perishability. Fluid milk cannot be stored for long periods of time, therefore, a continual surplus must be produced in order to assure an adequate supply of fluid milk to meet the day-to-day needs of consumers.

In order to accomplish this goal, milk orders were created, the scope and terms of which are spelled out in the Agricultural Marketing Agreement Act (7 CFR 1000-1199). The general provisions included in all orders are a "classified pricing plan, a system of minimum class prices, and a plan for payments of uniform prices to producers and provisions for administering the order. Although an order considers the particular requirements of an individual market, it is closely coordinated among all markets." (USDA,6)

> While Federal milk orders are an important marketing tool, they, by law, serve only a limited function in the marketing of fluid milk. They do not control production, nor restrict the marketing of milk by producers. They do not guarantee farmers a market with any buyer. The orders do not establish sanitary or quality standards. (Sanitary regulations for milk sold in fluid markets are prescribed and administered by local and State health authorities.) The orders do not guarantee a fixed level of price to producers nor do they set a ceiling on producer prices. They do not set wholesale or retail prices.(USDA,6-7)

On January 1, 1992, the Federal Order No. 4 (Middle Atlantic) marketing area (See Figure 1, Map of Federal Orders) began using a multiple component pricing plan. In addition to skim and butterfat, which were the prior components priced, nonfat milk solids (NFMS) have become the third component priced. This change is the result of a public hearing held July 17-18, 1990, in Philadelphia, PA.

In its Final Decision (56 FR 61348), the United States Department of Agriculture (USDA) stated that "three factors should be present before the pricing of a milk component can be economically justified. First, the component should have economic value. Second, the variability of the component should be of such magnitude that the economic value of the milk changes because of changes in the economic value of the component. Third, the variability of the component should be measurable."

The evidence presented at the hearing addressed each of these conditions. The proliferation of industry-sponsored premium programs illustrated the fact that handlers believe that nonfat milk solids have economic value since they were willing to pay more for milk containing higher NFMS levels. The record also contained testimony which showed that differences in NFMS levels could substantially alter pay prices received by producers. Pertaining to the measurability of nonfat milk solids, the Association of Official Analytical Chemists (AOAC) has approved several appropriate methods to test for NFMS.

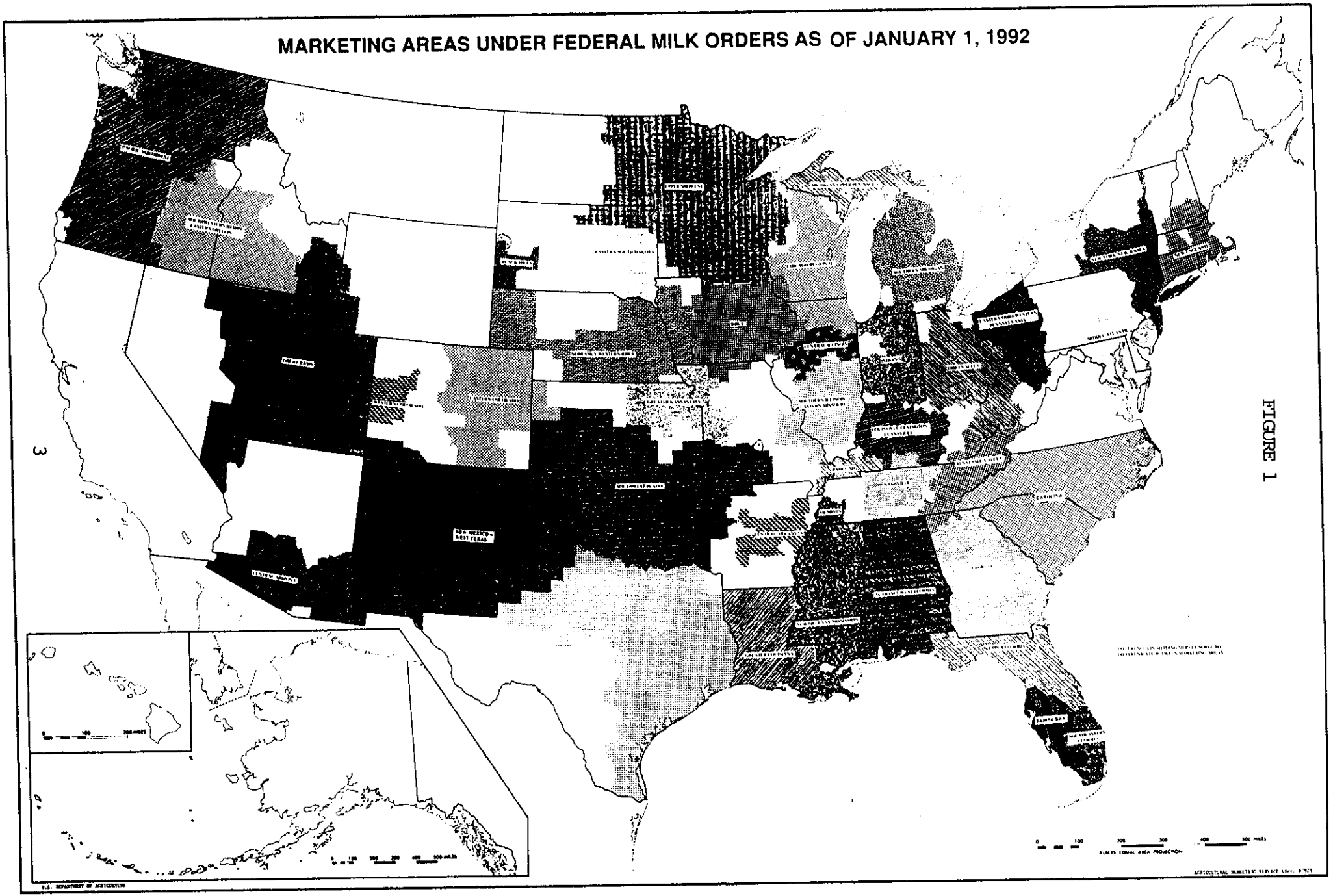

MARKETING AREAS UNDER FEDERAL MILK ORDERS AS OF JANUARY 1, 1992

FIGURE 1

Thus, it was decided that a multiple component pricing plan was necessary in order to better realize the economic value of producer milk. This was particularly the case in the Middle Atlantic marketing area due to the variability in the industry-sponsored premium programs. That variability, and the fact that not all producers were able to participate in such programs, had led to a situation in which producers were not receiving the same prices for their milk nor were handlers paying the same prices for milk which they received. This disrupted the orderly marketing conditions because the uniformity in the pricing system was no longer being observed.

The hearing record contained testimony which indicated that the yield of certain Class II and all Class III manufactured products does in fact depend on the level of nonfat milk solids or protein present in the producer milk. In deciding which of these two components to price, the manufacturing structure of Federal Order No. 4 had to be examined. It was found that a larger volume of milk in Order No. 4 was used in Class III manufactured products (specifically milk powders) whose yield depends more on the NFMS level than on the protein level. Therefore, it was determined that the appropriate components to price were nonfat milk solids, butterfat, and skim.

The purpose of this study is to determine what effect, if any, multiple component pricing has had on producers and handlers in the Order No. 4 marketing area during the period from January to June, 1992. The original intent of the multiple component pricing proposal was that it would result in revenue neutrality, meaning

that the actual value of producer milk pooled under the Order (pool values) would not change. Pool values under the prior pricing system (skim and butterfat) will be compared to pool values generated under the current pricing system (multiple component) to determine if revenue neutrality did in fact occur. Testing procedures will be discussed as to the relationship between NFMS levels, butterfat levels, and the resulting handler obligations. Individual handler obligations will then be computed using skim and butterfat pricing and multiple component pricing to determine the differences between the two pricing systems. Individual producer pay rates and the value of producer milk will also be computed using both pricing systems. In analyzing the producer data, three variables will be considered. First, producers will be categorized according to farm size or monthly production to see if one size group has an advantage over another. Secondly, producer data will be analyzed with regard to their cooperative affiliation or nonmember (independent) status to determine if there are advantages or disadvantages to remaining independent. Thirdly, producers will be categorized by state location in order to assess any regional effects of multiple component pricing. Data was collected and analyzed for all six months of the study. February was chosen as a representative month for illustrative purposes. Unless otherwise noted, the patterns for February are similar to the other five months.

## II. PRICING SYSTEM

Class Prices

The computation of class prices did not change from the previous system to the current system. The Class I price is determined by adding the Order No. 4 Class I differential of $3.03 to the basic formula price for the second preceding month. The basic formula price is the Minnesota-Wisconsin (M-W) price adjusted to 3.5% butterfat content. The Class II price is computed by the USDA, Dairy Division, using a formula which can result in a positive or negative adjustment to the basic formula price for the second preceding month. The Class III price is determined by making seasonal adjustments, ranging from -10 cents to +12 cents, to the basic formula price for the current month. Appendix A illustrates class price computations for the month of February 1992.

Producer Prices

Order No. 4 producer pay prices are computed using a seasonal incentive base-excess plan which also remained unchanged. Under this plan, producers establish a daily base during the months of August through December which is used the following March through February to arrive at a producer's base pounds each month. Any amount produced over that base is considered excess milk.

Under the previous pricing system, the producer was paid according to base and excess pounds. The only adjustment made to the base and excess prices was for the butterfat content of the individual producer's milk (see Appendix B). The uniform base and excess prices were calculated at 3.5 percent butterfat content.

For each tenth of a percent above or below 3.5%, an adjustment equal to the butterfat differential was added to or subtracted from the base and excess prices.

The base price under the previous system was calculated as follows. Summing the Class I, II, and III pounds multiplied by their respective class prices and making several adjustments (i.e. overage values, inventory reclassification, etc.) represented the total pool value of the milk. From that total, the excess pounds multiplied by the excess price was subtracted (the excess price was equal to the Class III price). The result was the base milk value, which, divided by the total base pounds yielded the uniform price for base milk. Appendix C illustrates the uniform price calculation for February 1992 under skim and butterfat pricing. The value of producer milk can be derived from Appendix C by adding the base and excess values at 3.5 % butterfat test to obtain a total value of $71,067,396.98.

Under the multiple component pricing system, there is no longer a base or excess price. The payment to producers is made up of three prices; the weighted average differential base milk price per hundredweight (cwt), the producer nonfat milk solids price per pound, and the butterfat price per pound.

The weighted average differential base milk price is calculated by first summing the Class I pounds multiplied by the difference between the Class I and Class III prices adjusted for location differentials and the Class II pounds multiplied by the difference between the Class II and Class III prices. Again, there are several adjustments made (i.e. overage values, inventory

reclassification, etc.) to arrive at the total pool class differential value of the producer milk. Dividing the total base pounds into this value yields the weighted average differential base milk price. This price is paid to producers for each hundredweight of base milk delivered.

The producer nonfat milk solids price is calculated by first determining the value of the NFMS in Class I by multiplying the Class I producer skim pounds by the skim price per hundredweight. Second, the value of the NFMS in Class II and III producer milk is determined by multiplying the producer pounds of NFMS used in Class II and III by a nonfat milk solids price. This price is calculated by subtracting the butterfat price per pound, multiplied by 3.5, from the Class III price and dividing by the average percent of nonfat milk solids in all producer milk. Summing these two values yields the total value of NFMS in the pool, which, divided by the total pounds of nonfat milk solids, results in a producer nonfat milk solids price. This price is paid to producers for each pound of nonfat milk solids delivered.

The producer is also paid a butterfat price for each pound of butterfat delivered. This butterfat price is computed based on the butterfat differential which is announced by the Dairy Division each month. The butterfat price is equal to the skim price divided by 100 plus the butterfat differential. It is applied to the butterfat content of each individual's total production.

Appendix D illustrates the uniform price calculation for February 1992 under multiple component pricing. This price calculation contains only two of the three values which make up the

payment to producers in that it excludes the value of the butterfat. Therefore, the total value of producer milk cannot be derived solely from the information contained in the price calculation. A comparable value can be obtained, however, by determining the butterfat value as follows:

[(total producer milk*3.5%) * (butterfat price per pound)]

and adding it to the values for base, skim, and NFMS in Class II and III. (See Appendix D) The resulting value for February 1992 is $71,141,975.03. When a comparison is made between this figure and the figure from Appendix C, a difference of $74,578.05 is found. This represents the approximate change in the pool value from using multiple component pricing.

## III. IMPLEMENTATION/OPERATION

Testing Procedures and Results

All producer milk is tested for component composition either by the cooperatives or the handlers three to four times per month on average (Sausville). Producers who are members of cooperatives have their milk tested by the cooperative. Producers who are nonmembers have their milk tested by the handler to which their milk is delivered. The Market Administrator (MA) laboratory tests all nonmember milk and a sample (usually 10%) of cooperative milk four times each month.

During the six months of the study, producer solids were determined at the MA lab using the Infrared Milko-Scan which was calibrated using samples tested by AOAC chemically approved methods. The methods used were the following: the Direct Dry Oven

Method for total solids, the Babcock Test for butterfat, the Kjeldahl Method for protein, a constant factor for ash, and a calculated value for lactose. NFMS were determined by subtracting butterfat from total solids. As a secondary test, the protein, ash, and lactose levels were added and that value was then compared to the NFMS level to check that the two values were in line with one another.

When comparisons were made between the MA lab test results and the handler and cooperative test results, variations were found. There were several reasons for the differences. Most handler and cooperative labs used samples obtained from an independent laboratory in the Midwest to calibrate their infrared machines for nonfat milk solids. The MA lab used calibration samples from the Order No. 1 (New England) lab to calibrate for nonfat milk solids. Handler and cooperative labs were using one of two methods to determine lactose levels. Lactose levels were found by either using a calculated value or by the polarimetric method. Similarly, handler and cooperative labs were using one of two methods to obtain an ash factor, using a constant or determining an ash factor by a chemical gravimetric method. A final reason for the differences in tests was that some handler and cooperative labs were using the Ether-Extraction Method instead of the Babcock Test to determine butterfat levels. These two methods produce quite different results. The Babcock Test tends to show higher butterfat levels which results in lower NFMS levels. The Ether-Extraction Method shows lower butterfat levels which lead to higher NFMS levels.

According to the AOAC, the Ether-Extraction Method is the correct method to apply when the test is to be used to ultimately determine NFMS, because it produces more accurate results for butterfat levels. Therefore, as of October, 1992, in order to assure uniformity, all cooperatives, handlers and the MA lab will be using Ether-Extraction Method samples to calibrate their equipment and instruments.

Each month, a simple average is taken of each producer's NFMS tests. The resulting average is the test on which the producer is paid. During each month of the study, the producer NFMS tests were normally distributed around the market average nonfat milk solids test. Figure 2 shows the distribution for February. The market averages for NFMS for the six months of the study are shown in Table 1. The market average NFMS tests were determined by dividing the actual pounds of nonfat milk solids in the pool by the total pounds of producer milk in the pool.

**TABLE 1**

**AVERAGE NFMS TEST OF PRODUCER MILK BY MONTHLY PRODUCTION**

| | <60,000 LB | 60 - 120,000 LB | >120,000 LB | MKT AVG |
|---|---|---|---|---|
| JAN | 8.62% | 8.69% | 8.73% | 8.70% |
| FEB | 8.61 | 8.69 | 8.72 | 8.69 |
| MAR | 8.59 | 8.67 | 8.71 | 8.68 |
| APR | 8.59 | 8.66 | 8.70 | 8.68 |
| MAY | 8.62 | 8.65 | 8.68 | 8.66 |
| JUN | 8.52 | 8.57 | 8.61 | 8.58 |
| AVG | 8.59 | 8.66 | 8.69 | 8.67 |

FIGURE 2

# DISTRIBUTION OF PRODUCER
## NFMS TESTS - FEBRUARY 1992

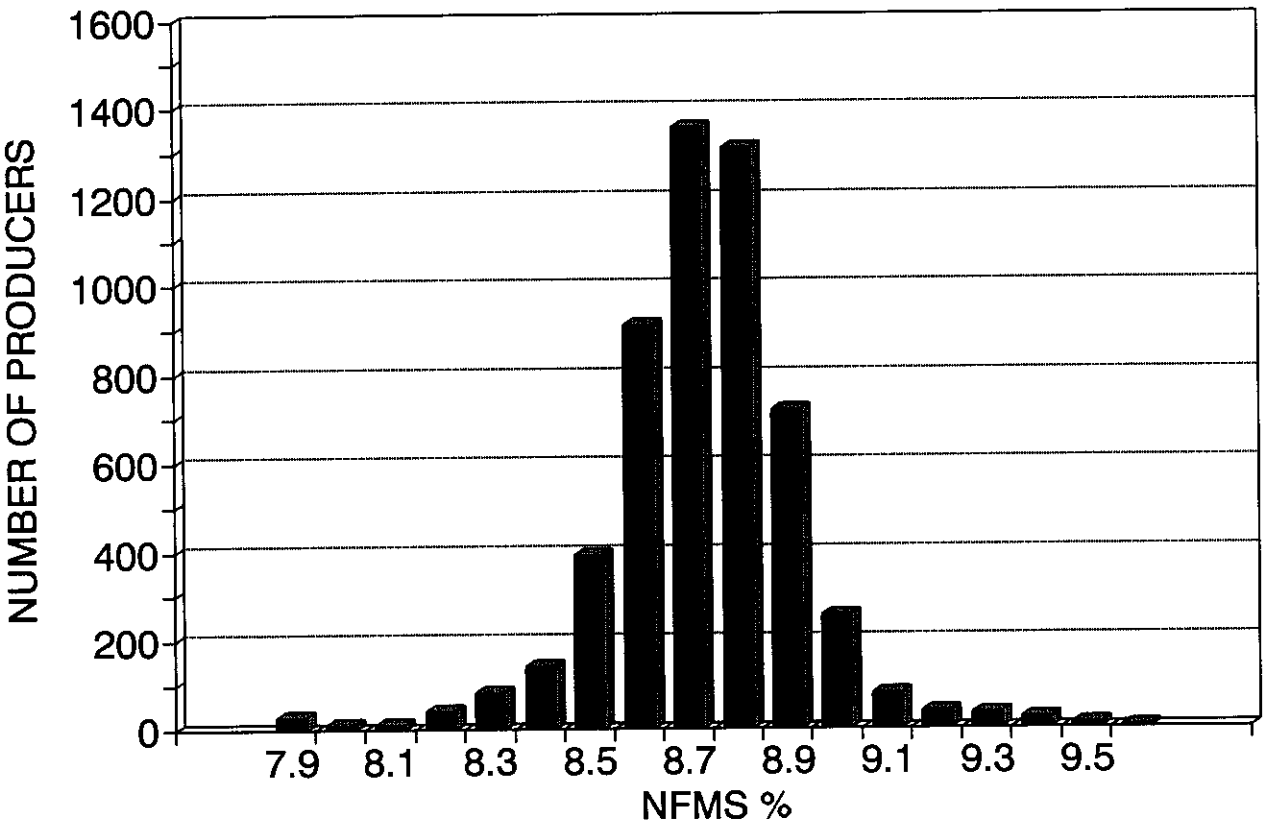
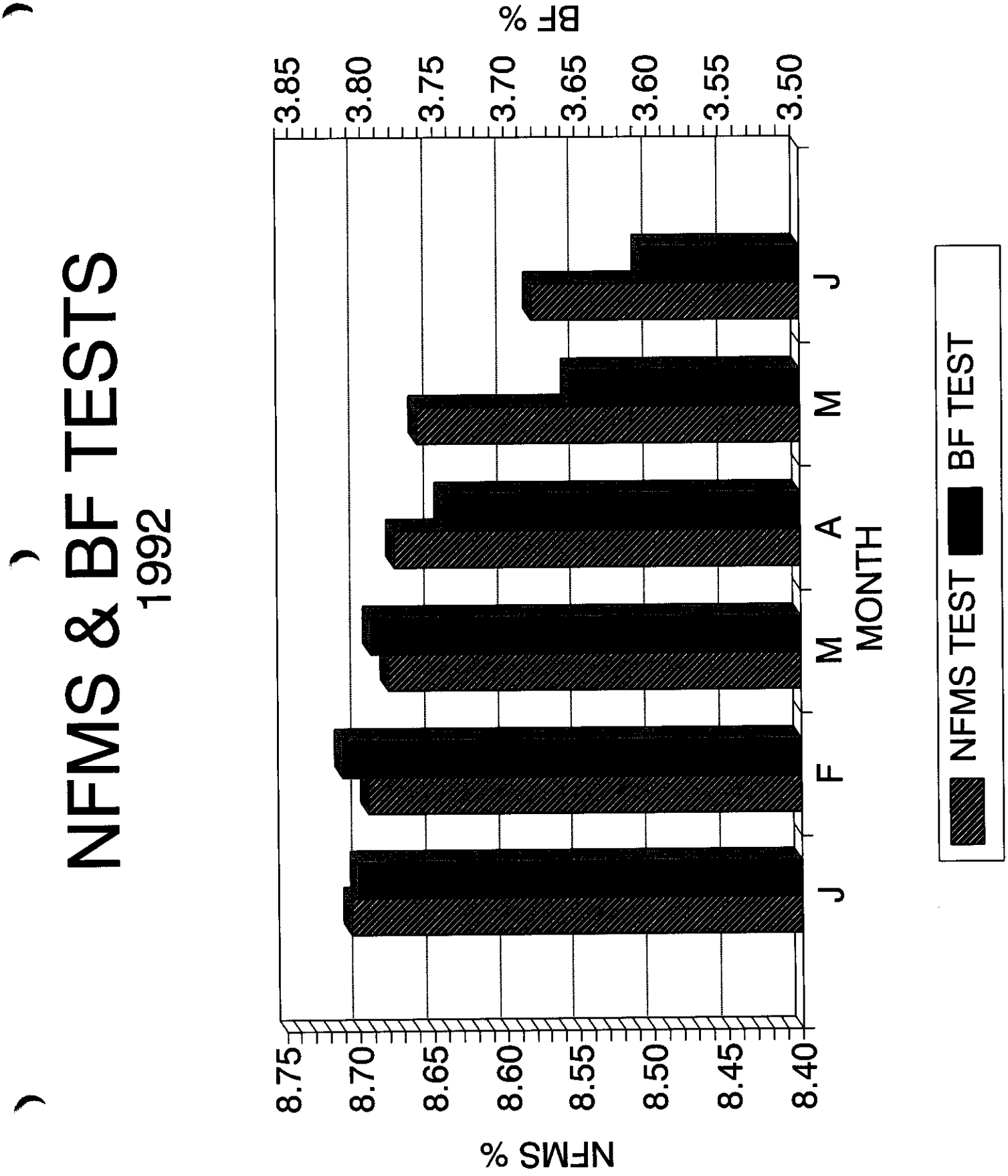


Table 1 also shows the relationship between farm size and NFMS tests. Producers were divided according to monthly production and delivery. The three divisions were producers with under 60,000 pounds of milk shipped and received by handlers (or cooperatives) each month, producers who had between 60,000 and 120,000 pounds of milk received by handlers each month, and producers with over 120,000 pounds of milk received by handlers each month. The average NFMS test for smaller producers is quite lower than the market average in all months. The average NFMS test for medium-sized producers was very close to the market average in all months, whereas, the average NFMS test for the larger producers was slightly above the market average NFMS test in each month. From Table 1, it would appear that there is a positive relationship between farm size and the production of nonfat milk solids.

Figure 3 shows the relationship between market average NFMS tests and butterfat tests. Butterfat as a percentage of total pounds of production declined 0.21 percentage points from its high of 3.82% in February to its low of 3.61% in June. The sharpest decline occurred from April to May when the market average butterfat dropped 0.09 percentage points. Nonfat milk solids as a percentage of total pounds of production, on the other hand, only dropped 0.12 percentage points from its high in January to its low in June. For NFMS, the sharpest decline occurred from May to June. Clearly, NFMS were less variable over the six month period than butterfat.

FIGURE 3


NFMS & BF TESTS
1992
BF %
3.85
3.80
3.75
3.70
3.65
3.60
3.55
3.50
8.75
8.70
8.65
8.60
8.55
8.50
8.45
8.40
NFMS %
J
F
M
A
M
J
MONTH
NFMS TEST
BF TEST

HANDLER OBLIGATIONS

Handlers who receive producer milk from milk marketing cooperatives use the test results determined by the cooperative. Handlers who receive nonmember milk are responsible for testing that milk for NFMS and butterfat. Table 2 shows a breakdown of the handler NFMS receipts by test for February. The percent of total pool milk is normally distributed around the market average NFMS test.

The gross value of producer milk by individual handler was computed each month at test under the prior skim and butterfat pricing system and under the current multiple component pricing system. These values are the gross charges incurred by handlers for milk which they received during the month. These values do include a deduction each month for handlers who have location differentials on their Class I milk. The deductions are the same under both pricing systems so they do not affect the comparison between the two systems.

**TABLE 2**
**HANDLER NFMS RECEIPTS**
**FEBRUARY 1992**

| NFMS % | NUMBER OF HANDLERS | PERCENT OF TOTAL POOL MILK |
|---|---|---|
| < 8.39 | 3 | 0.04 |
| 8.40-8.49 | 1 | 0.14 |
| 8.50-8.54 | 1 | 0.03 |
| 8.55-8.59 | 1 | 0.96 |
| 8.60-8.64 | 5 | 3.28 |
| 8.65-8.69* | 19 | 75.81 |
| 8.70-8.74 | 12 | 14.74 |
| 8.75-8.79 | 4 | 5.00 |
| > 8.80 | 0 | 0.00 |
| | 46 | 100.00 |

* MARKET AVERAGE - 8.69%

Under the prior pricing system, the total pounds of milk in each class (I, II, and III) were multiplied by the respective class prices adjusted for butterfat. The adjustment for butterfat made to the class prices for each handler was calculated in the same manner as the adjustment made to the base and excess prices, which was discussed on pages 6 and 7 and illustrated in Appendix B. The values for each class were then totaled to obtain the gross value of producer milk for every handler.

Under the multiple component pricing system, the gross value of producer milk by handler, at test, is determined by summing the following values: total Class I pounds multiplied by the Class I differential per cwt (Class I price minus the Class III price), total Class II pounds multiplied by the Class II differential per cwt (Class II price minus the Class III price), Class I skim pounds multiplied by the skim price per cwt, nonfat milk solids in Class II and III multiplied by the nonfat milk solids price per pound, and the total butterfat pounds multiplied by the butterfat price per pound. This calculation is shown in Appendix E.

Table 3 shows a comparison of individual handler obligations under both pricing systems. This table omits three handlers who operate under Section 1004.9(c) (handlers who receive producer milk on a basis other than farm bulk tank calibrations). Larger obligations under component pricing are primarily a result of higher NFMS tests but can also occur as a result of a higher usage of producer milk to manufacture Class II and III products. Those handlers that have a relatively high NFMS test will naturally have an increase in obligation because, by definition, the value of the

TABLE 3
GROSS VALUE OF PRODUCER MILK BY HANDLER AT TEST
FEBRUARY 1992

| HAND NO. | NFMS % PRODUCT | NFMS % SKIM | GROSS VALUE COMPONENT | GROSS VALUE SKIM & BF | DIFFERENCE $ | DIFFERENCE % |
|---|---|---|---|---|---|---|
| 1 | 8.78958 | 9.17590 | $533,436 | $527,019 | $6,417 | 1.22 |
| 2 | 8.69288 | 9.06978 | 67,318 | 67,019 | 299 | 0.45 |
| 3 | 8.71322 | 9.05361 | 105,771 | 105,413 | 358 | 0.34 |
| 4 | 8.69684 | 9.04279 | 10,658,094 | 10,631,656 | 26,438 | 0.25 |
| 5 | 8.69516 | 9.04343 | 1,946,728 | 1,941,806 | 4,922 | 0.25 |
| 6 | 8.69797 | 9.04423 | 9,105,777 | 9,083,531 | 22,246 | 0.24 |
| 7 | 8.68828 | 9.03553 | 6,609,705 | 6,596,801 | 12,904 | 0.20 |
| 8 | 8.72773 | 9.06131 | 143,561 | 143,290 | 271 | 0.19 |
| 9 | 8.73391 | 9.06997 | 2,946,813 | 2,943,102 | 3,711 | 0.13 |
| 10 | 8.74227 | 9.08716 | 320,401 | 320,110 | 291 | 0.09 |
| 11 | 8.77182 | 9.11935 | 2,803,317 | 2,801,094 | 2,223 | 0.08 |
| 12 | 8.76032 | 9.11643 | 142,822 | 142,706 | 116 | 0.08 |
| 13 | 8.76141 | 9.10710 | 395,049 | 394,785 | 264 | 0.07 |
| 14 | 8.69312 | 9.04512 | 1,522,756 | 1,521,967 | 789 | 0.05 |
| 15 | 8.72181 | 9.06851 | 3,938,360 | 3,936,823 | 1,537 | 0.04 |
| 16 | 8.70604 | 9.04231 | 641,167 | 641,001 | 166 | 0.03 |
| 17 | 8.67934 | 9.02517 | 146,987 | 146,942 | 45 | 0.03 |
| 18 | 8.72057 | 9.05583 | 1,470,594 | 1,470,270 | 324 | 0.02 |
| 19 | 8.71303 | 9.05798 | 1,539,152 | 1,538,887 | 265 | 0.02 |
| 20 | 8.67286 | 9.01192 | 815,137 | 814,981 | 156 | 0.02 |
| 21 | 8.74896 | 9.09487 | 106,841 | 106,815 | 26 | 0.02 |
| 22 | 8.71949 | 9.06707 | 96,611 | 96,597 | 14 | 0.02 |
| 23 | 8.68750 | 9.03219 | 3,401,432 | 3,401,040 | 392 | 0.01 |
| 24 | 8.66484 | 9.01585 | 1,695,626 | 1,695,511 | 115 | 0.01 |
| 25 | 8.68625 | 9.03143 | 1,401,381 | 1,401,310 | 71 | 0.01 |
| 26 | 8.68519 | 9.02152 | 959,823 | 959,753 | 70 | 0.01 |
| 27 | 8.73349 | 9.07035 | 343,420 | 343,371 | 49 | 0.01 |
| 28 | 8.67778 | 9.02160 | 2,091,573 | 2,091,506 | 67 | 0 |
| 29 | 8.68001 | 9.02189 | 5,060,350 | 5,060,292 | 58 | 0 |
| 30 | 8.66721 | 9.01249 | 1,561,917 | 1,561,869 | 48 | 0 |
| 31 | 8.68070 | 0 | 3,959,986 | 3,959,975 | 11 | 0 |
| 32 | 8.66986 | 9.00936 | 1,504,857 | 1,504,856 | 1 | 0 |
| 33 | 8.65566 | 8.99234 | 102,458 | 102,460 | -2 | 0 |
| 34 | 8.63974 | 8.99012 | 1,201,431 | 1,201,531 | -100 | -0.01 |
| 35 | 8.64180 | 8.94732 | 131,389 | 131,413 | -24 | -0.02 |
| 36 | 8.62798 | 8.96985 | 923,492 | 923,673 | -181 | -0.02 |
| 37 | 8.65572 | 8.99745 | 892,841 | 893,097 | -256 | -0.03 |
| 38 | 8.62489 | 8.96279 | 208,516 | 208,755 | -239 | -0.11 |
| 39 | 8.43002 | 8.74093 | 112,689 | 112,845 | -156 | -0.14 |
| 40 | 8.27104* | 8.60032* | 21,282 | 21,387 | -105 | -0.49 |
| 41 | 8.60681 | 8.94139 | 141,368 | 142,104 | -736 | -0.52 |
| 42 | 8.58345 | 8.92896 | 608,631 | 612,294 | -3,663 | -0.60 |
| 43 | 8.54491 | 8.89815 | 17,792 | 17,943 | -151 | -0.84 |
| TOTAL | | | $72,398,651 | $72,319,600 | $79,051 | 0.11% |

* M.A. Laboratory Test

producer milk has increased due to the greater amount of solids contained in that milk. Lower obligations under component pricing are a result of lower NFMS tests and/or a lower usage of producer milk to manufacture Class II and III products.

Summing all individual obligations results in a gross handler obligation under each pricing system. The largest change is an increase of $79,051 in February. This represents only a one and a half cent increase per hundredweight, or one-tenth of one percent change. The smallest change occurred in June with an increase of $34,962, which represents a half cent increase or 0.05%. These values represent the difference between charges incurred by handlers under skim and butterfat pricing and multiple component pricing.

## IV. PRODUCER PRICE ANALYSIS

In order to compare producer prices, it was necessary to recompute pool values and uniform prices as it would have been done under the prior pricing system. This was accomplished using the aforementioned process (page 7) for calculating the uniform base and excess prices.

For each producer a dollar value for monthly milk production was computed by multiplying the base pounds by the uniform base price adjusted for butterfat content, multiplying the excess pounds by the excess price adjusted for butterfat content, and then summing the resulting values. This figure represents the minimum Federal Order dollar value of the individual producer's milk under

the prior pricing system. Dividing the producer's total pounds into this value yields the producer pay rate per hundredweight.

Under the multiple component pricing system, a dollar value for each producer's milk was computed by summing the following values: producer base pounds multiplied by the announced base differential price per hundredweight, total pounds of producer nonfat milk solids multiplied by the announced producer NFMS price per pound, and total butterfat pounds multiplied by the announced butterfat price per pound. Again, dividing the total pounds of producer milk into this dollar value yields the producer pay rate per hundredweight under the multiple component pricing system.

Table 4 is a comparison of changes in producer returns from the prior pricing system to the current pricing system. In all months, except April, a greater percentage of producers had average pay price per hundredweight decreases. During April, the numbers were about even, with 48.7% having a rate per cwt increase, and 48.4% having a rate per cwt decrease.

For every month of the study, there was a slight increase in the total value of producer milk. The largest such increase occurred in April when the pool value increased $103,673. This represents a change of only two cents per hundredweight. During May, the total value of producer milk did not change at all on a per hundredweight basis. Therefore, the original assumption that multiple component pricing, as implemented in F.O. No. 4, would be revenue neutral was essentially correct in that the changes in producer milk value and handler obligations were relatively small.

TABLE 4

CHANGE IN PRODUCER RETURNS
SKIM AND BF VS MULTIPLE COMPONENT PRICING

| | JANUARY | FEBRUARY | MARCH |
|---|---|---|---|
| Avg Change in Price at Test | $0.01 | $0.01 | $0.01 |
| Largest Price/cwt Increase | $0.99 | $0.89 | $0.91 |
| Largest Price/cwt Decrease | $2.03 | $2.19 | $2.22 |
| Number of Producers with: | | | |
| Price Increase | 2,502 | 2,562 | 2,565 |
| Price Decrease | 2,787 | 2,708 | 2,772 |
| No Change | 142 | 154 | 148 |
| Largest Value Increase | $3,498 | $2,726 | $2,755 |
| Largest Value Decrease | $7,501 | $6,546 | $3,741 |
| Total Change in Pool Value | $63,195 | $69,712 | $62,930 |

| | APRIL | MAY | JUNE |
|---|---|---|---|
| Avg Change in Price at Test | $0.02 | $0.00 | $0.01 |
| Largest Price/cwt Increase | $0.99 | $1.05 | $1.15 |
| Largest Price/cwt Decrease | $1.35 | $1.39 | $1.79 |
| Number of Producers with: | | | |
| Price Increase | 2,674 | 2,528 | 2,544 |
| Price Decrease | 2,660 | 2,801 | 2,830 |
| No Change | 161 | 164 | 117 |
| Largest Value Increase | $3,453 | $2,384 | $2,257 |
| Largest Value Decrease | $58,574 | $8,330 | $7,381 |
| Total Change in Pool Value | $103,673 | $16,243 | $59,541 |

A definite pattern existed as to the types of producers that had the largest rate per cwt change and those that had the largest total dollar value change. Producers who had the largest rate per cwt increase were producers with extremely high NFMS tests. Producers who had the largest rate per cwt decrease were producers with extremely low NFMS tests. Producers who had the largest total dollar value increase were very large producers with above average NFMS tests, whereas, producers with the largest total dollar value decrease were very large producers with below average NFMS tests.

All Producers

As a whole, producer rate changes, as well as dollar value changes, were normally distributed. These distributions are illustrated in Figures 4 and 5 for February. The range from -5 cents per cwt change to +5 cents per cwt change included, on average over the six months, 24% of the producers. Moving the range to plus and minus 10 cents per cwt captured 47% of the producers. Over the six month period, on average, 33% of the producers lost or gained $50 or less per month and 57% lost or gained $100 dollars or less per month.

Farm size or Monthly Production

When the change in producer pay rate was analyzed according to size or monthly production, the results followed the same pattern as the NFMS test distribution by monthly production. Table 5 shows a breakdown by farm size and the resulting changes in producer pay rates for all six months. The ratio of producers with negative rate changes to those with positive rate changes over the six month period were 1.7 to 1.0 for producers under 60,000 lbs, 1.0 to 1.0

FIGURE 4

# DISTRIBUTION OF PRODUCER
## RATE CHANGES - FEBRUARY 1992

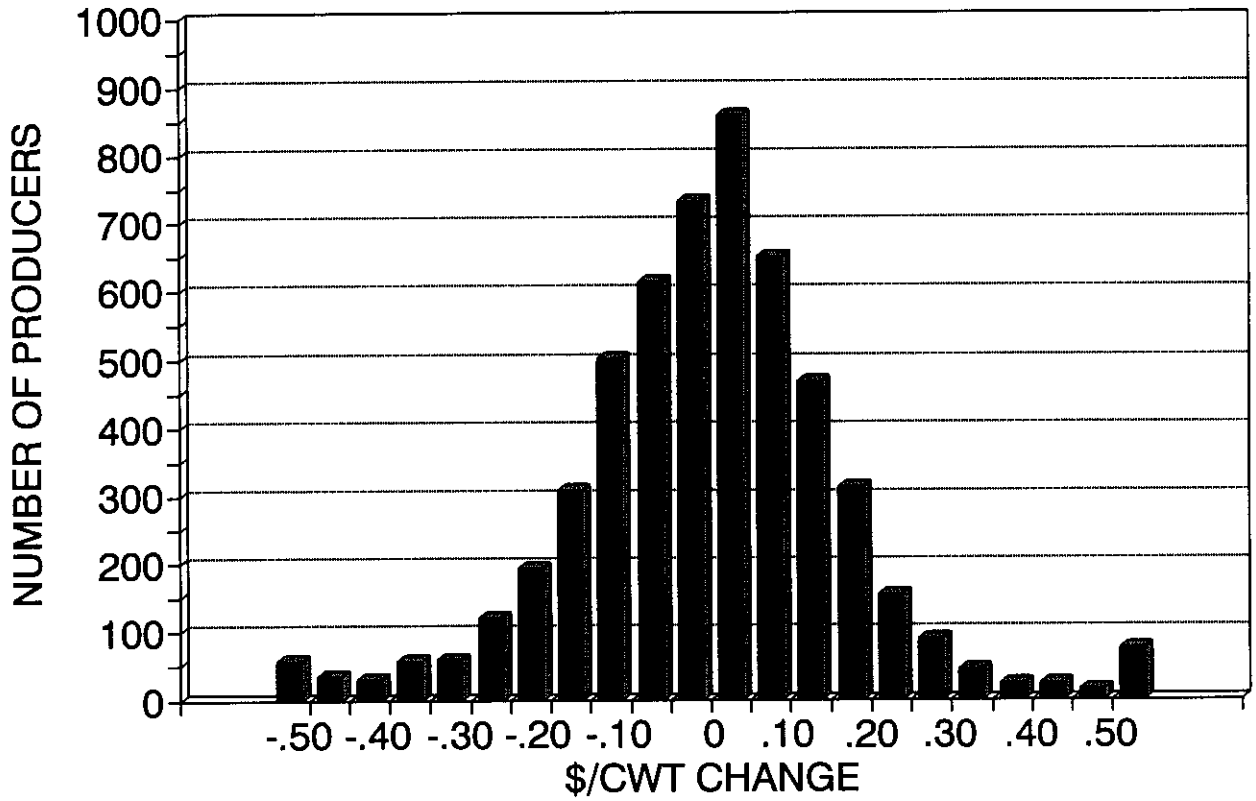


FIGURE 5

# DISTRIBUTION OF PRODUCER
## DOLLAR VALUE CHANGES - FEBRUARY 1992

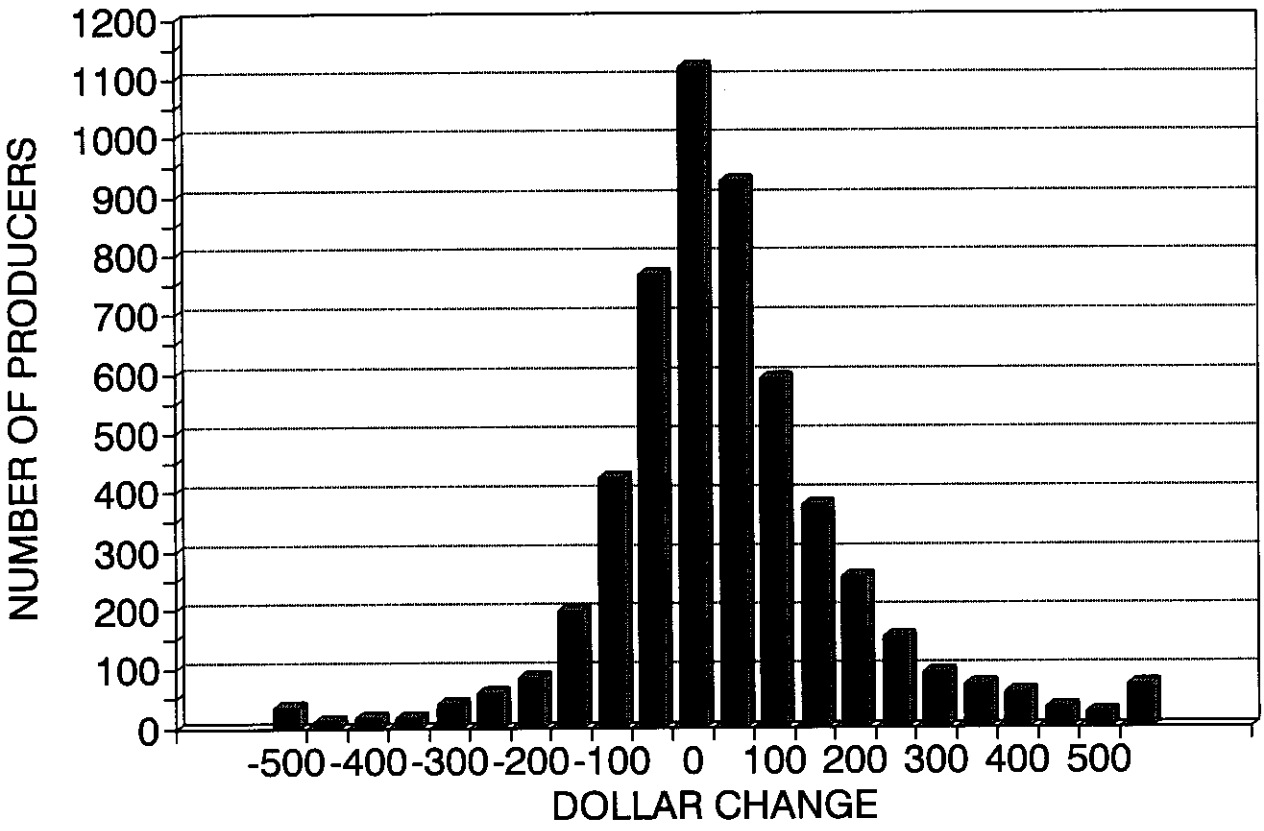


TABLE 5

CHANGE IN PRODUCER PAY RATE
BY MONTHLY PRODUCTION

UNDER 60,000 LBS

| | NEG RATE CHANGE | ZERO RATE CHANGE | POS RATE CHANGE | NEG TO POS RATIO |
|---|---|---|---|---|
| JANUARY | 62.3% | 2.2% | 35.5% | 1.8 : 1 |
| FEBRUARY | 61.9 | 1.2 | 36.4 | 1.7 : 1 |
| MARCH | 62.8 | 2.1 | 35.1 | 1.8 : 1 |
| APRIL | 60.3 | 2.4 | 37.3 | 1.6 : 1 |
| MAY | 59.7 | 2.1 | 38.2 | 1.6 : 1 |
| JUNE | 63.3 | 1.9 | 34.8 | 1.8 : 1 |
| AVG | 61.7 | | 36.2 | 1.7 : 1 |

60,000 TO 120,000 LBS

| | NEG RATE CHANGE | ZERO RATE CHANGE | POS RATE CHANGE | NEG TO POS RATIO |
|---|---|---|---|---|
| JANUARY | 51.4% | 3.0% | 45.6% | 1.1 : 1 |
| FEBRUARY | 47.6 | 3.4 | 49.0 | 1.0 : 1 |
| MARCH | 49.8 | 3.2 | 47.0 | 1.1 : 1 |
| APRIL | 47.2 | 3.2 | 49.6 | 1.0 : 1 |
| MAY | 51.1 | 3.1 | 45.8 | 1.1 : 1 |
| JUNE | 49.7 | 2.2 | 48.1 | 1.0 : 1 |
| AVG | 49.5 | | 47.5 | 1.0 : 1 |

OVER 60,000 LBS

| | NEG RATE CHANGE | ZERO RATE CHANGE | POS RATE CHANGE | NEG TO POS RATIO |
|---|---|---|---|---|
| JANUARY | 38.9% | 2.5% | 58.6% | 0.7 : 1 |
| FEBRUARY | 37.0 | 3.5 | 59.5 | 0.6 : 1 |
| MARCH | 37.9 | 2.7 | 59.4 | 0.6 : 1 |
| APRIL | 35.4 | 3.1 | 61.5 | 0.6 : 1 |
| MAY | 40.9 | 3.7 | 55.4 | 0.7 : 1 |
| JUNE | 36.9 | 2.4 | 60.7 | 0.6 : 1 |
| AVG | 37.8 | | 59.2 | 0.6 : 1 |

for producers between 60,000 and 120,000 lbs, and 0.6 to 1.0 for producers over 120,000 lbs. The average pay rate changes are shown in Figure 6 for each month. It would appear that larger producers are able to generate higher NFMS levels, and therefore, a higher price for their milk.

Cooperative Affiliation

Changes in producer pay rates were also analyzed according to cooperative affiliation. Tables 6a and 6b illustrate the breakdown of changes in pay rate as well as the average price per hundredweight increases or decreases for producers in the five largest cooperatives in F.O. No. 4 and all nonmembers as a group. Multiple component pricing did affect cooperatives differently. Figure 7 represents the change in the producer pay price by cooperative affiliation for each month. Members of Coops 2 and 5, as well as nonmembers, on average had a positive return as a result of NFMS pricing. These groups had average pay price increases in most months, and when decreases did occur, they were relatively small. Coops 1 and 3 remained virtually unchanged with the adoption of component pricing. Coop 4 was negatively impacted, having significant producer pay price decreases each month.

The largest difference between an average price increase and an average price decrease occurred in January when the spread was 17 cents per hundredweight (from negative 10 cents per cwt to positive 7 cents per cwt). The smallest difference occurred during March and April when the spread was 11 cents per hundredweight (from negative 8 cents per cwt to positive 3 cents per cwt and from

# AVERAGE RATE CHANGE
## BY MONTHLY PRODUCTION

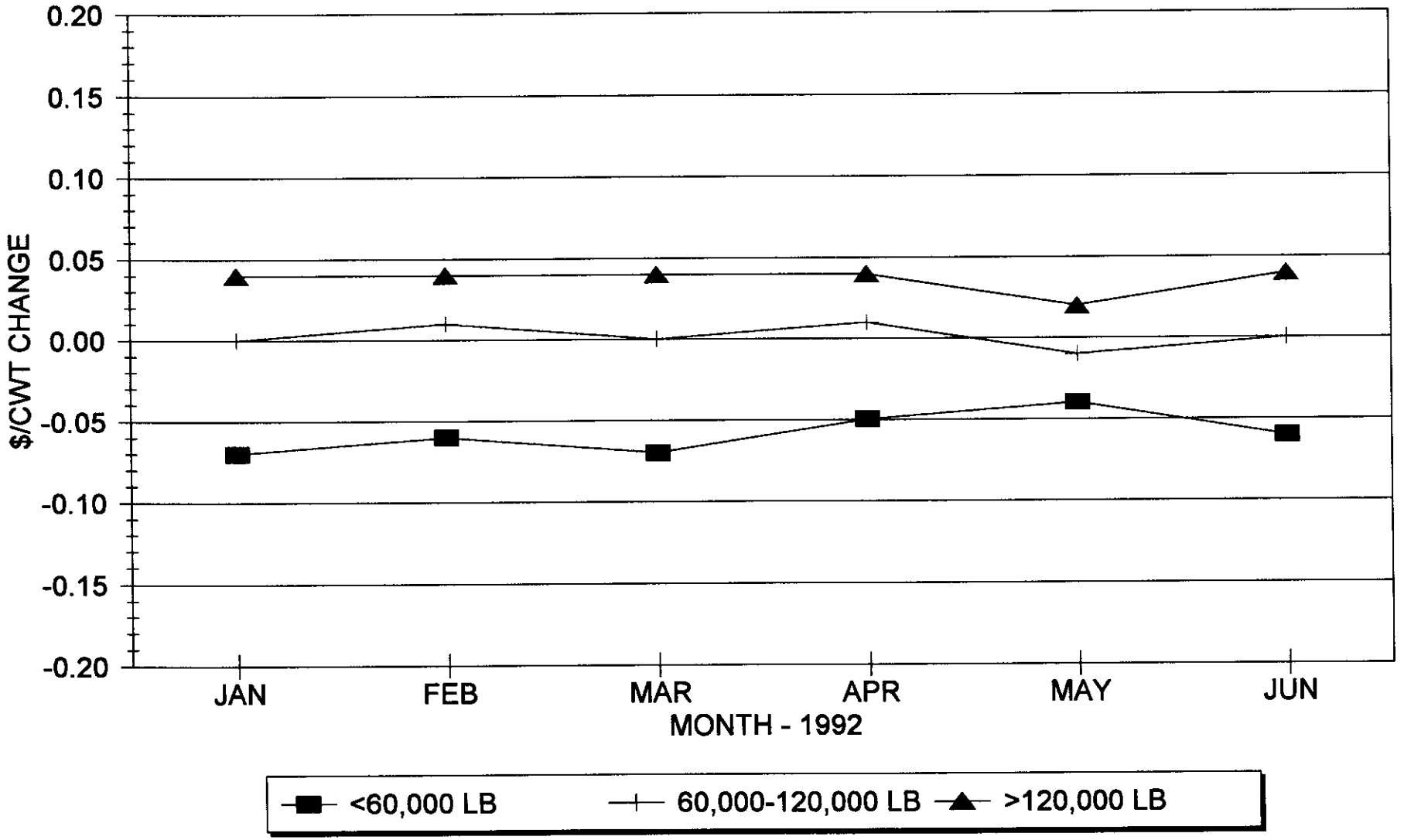



FIGURE 6

TABLE 6a

CHANGES IN PRODUCER PAY RATE
BY COOPERATIVE AFFILIATION

JANUARY

| | % OF MEMBERS WITH PRICE INCREASE | % OF MEMBERS WITH PRICE DECREASE | % OF MEMBERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| COOP 1 | 43.73 | 53.58 | 2.75 | $0.00 |
| COOP 2 | 53.31 | 43.94 | 2.75 | 0.03 |
| COOP 3 | 39.09 | 59.39 | 1.52 | (0.01) |
| COOP 4 | 20.80 | 76.80 | 2.40 | (0.10) |
| COOP 5 | 67.31 | 30.13 | 2.56 | 0.07 |
| NONMEMBERS | 42.00 | 55.64 | 2.36 | 0.06 |

FEBRUARY

| | % OF MEMBERS WITH PRICE INCREASE | % OF MEMBERS WITH PRICE DECREASE | % OF MEMBERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| COOP 1 | 45.56 | 51.26 | 3.18 | $0.00 |
| COOP 2 | 53.18 | 43.64 | 3.18 | 0.02 |
| COOP 3 | 39.62 | 58.86 | 1.52 | 0.00 |
| COOP 4 | 24.80 | 73.60 | 1.60 | (0.09) |
| COOP 5 | 61.04 | 35.71 | 3.25 | 0.05 |
| NONMEMBERS | 58.31 | 40.37 | 1.32 | 0.04 |

MARCH

| | % OF MEMBERS WITH PRICE INCREASE | % OF MEMBERS WITH PRICE DECREASE | % OF MEMBERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| COOP 1 | 43.46 | 53.93 | 2.61 | $0.00 |
| COOP 2 | 55.37 | 41.19 | 3.44 | 0.03 |
| COOP 3 | 44.34 | 53.36 | 2.30 | 0.01 |
| COOP 4 | 24.03 | 74.42 | 1.55 | (0.08) |
| COOP 5 | 55.90 | 41.62 | 2.48 | 0.03 |
| NONMEMBERS | 58.31 | 39.21 | 2.48 | 0.03 |

TABLE 6b

CHANGES IN PRODUCER PAY RATE
BY COOPERATIVE AFFILIATION

APRIL

| | % OF MEMBERS WITH PRICE INCREASE | % OF MEMBERS WITH PRICE DECREASE | % OF MEMBERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| COOP 1 | 44.79 | 52.18 | 3.03 | $0.00 |
| COOP 2 | 60.81 | 36.52 | 2.67 | 0.05 |
| COOP 3 | 44.45 | 52.68 | 2.87 | 0.00 |
| COOP 4 | 24.81 | 73.64 | 1.55 | (0.06) |
| COOP 5 | 41.36 | 53.70 | 4.94 | (0.01) |
| NONMEMBERS | 61.57 | 34.24 | 4.19 | 0.04 |

MAY

| | % OF MEMBERS WITH PRICE INCREASE | % OF MEMBERS WITH PRICE DECREASE | % OF MEMBERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| COOP 1 | 43.28 | 53.66 | 3.06 | $(0.01) |
| COOP 2 | 57.38 | 40.17 | 2.45 | 0.03 |
| COOP 3 | 47.89 | 49.62 | 2.49 | 0.00 |
| COOP 4 | 17.05 | 81.40 | 1.55 | (0.10) |
| COOP 5 | 52.17 | 44.10 | 3.73 | 0.01 |
| NONMEMBERS | 43.93 | 51.94 | 4.13 | (0.01) |

JUNE

| | % OF MEMBERS WITH PRICE INCREASE | % OF MEMBERS WITH PRICE DECREASE | % OF MEMBERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| COOP 1 | 43.15 | 55.04 | 1.81 | $0.00 |
| COOP 2 | 57.97 | 39.47 | 2.56 | 0.05 |
| COOP 3 | 44.22 | 53.79 | 1.99 | 0.01 |
| COOP 4 | 16.28 | 79.84 | 3.88 | (0.09) |
| COOP 5 | 63.80 | 36.20 | 0.00 | 0.07 |
| NONMEMBERS | 42.09 | 54.19 | 3.72 | (0.01) |

# CHANGE IN PRODUCER PAY PRICE
## BY COOPERATIVE AFFILIATION

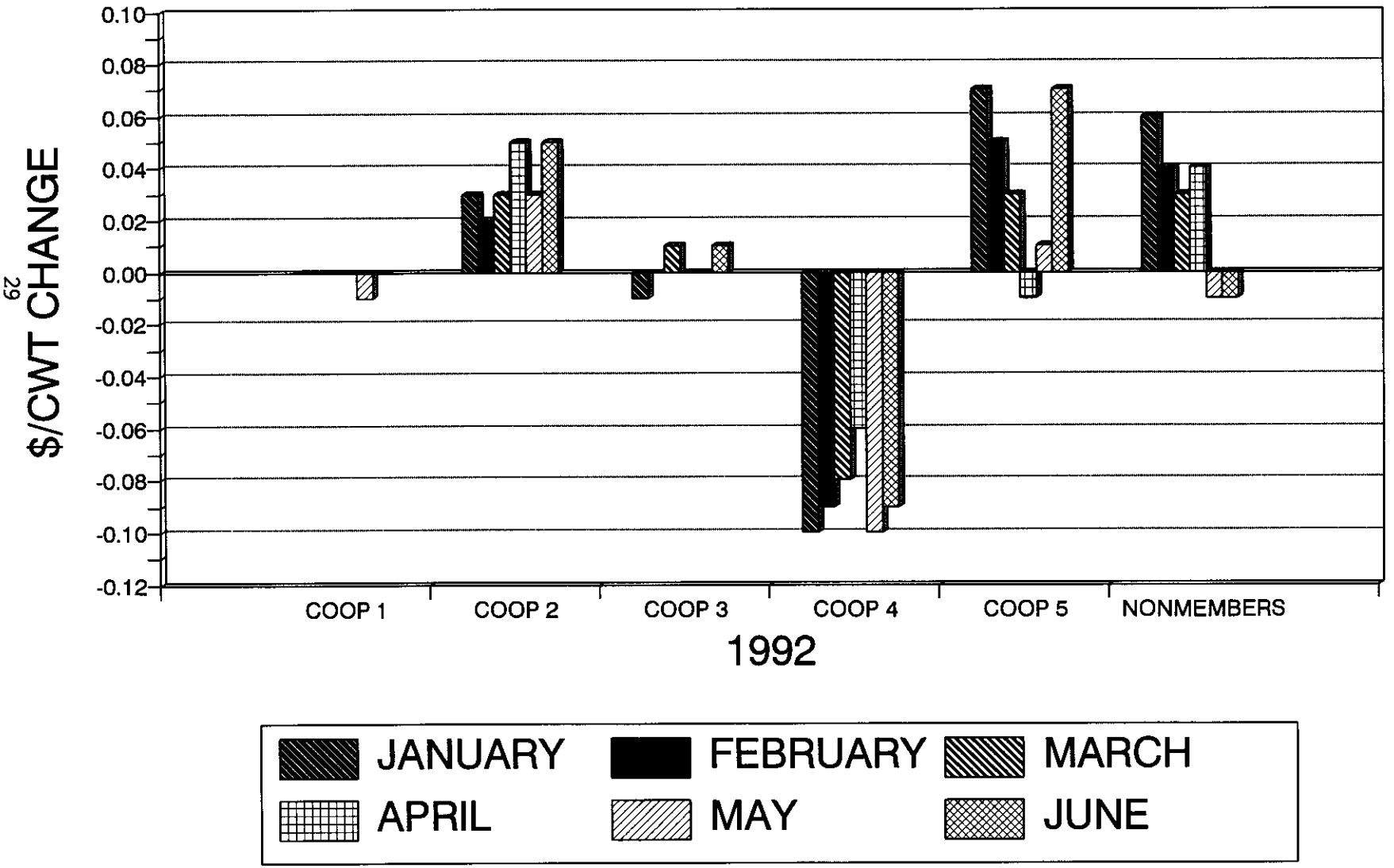



FIGURE 7

negative 6 cents per cwt to positive 5 cents per cwt, respectively).

Figure 8 shows the distribution of producer rate changes for each of the five cooperatives and nonmembers for February. Coops 1 and 2 are normally distributed around a zero dollar per cwt. change each month. Likewise, Coop 3 has a normal distribution around a zero dollar per cwt. change, with the exception of those producers with a greater than 50 cent per cwt change. This group, and the similar group for Coop 4, may imply color breed herds or mixed herds since they have extremely high butterfat and NFMS tests. Coop 4 has a distribution which shows that a majority of its producers had a price decrease for all months. The distribution for Coop 5 illustrates that for all months, except April and May, a majority of its producers had a price increase. During April and May, Coop 5's producers were distributed around a zero change. For the months of January through April, the distributions of producer rate per hundredweight changes for nonmembers illustrated an overall rate per cwt increase. During May and June, the distributions showed small rate per cwt decreases.

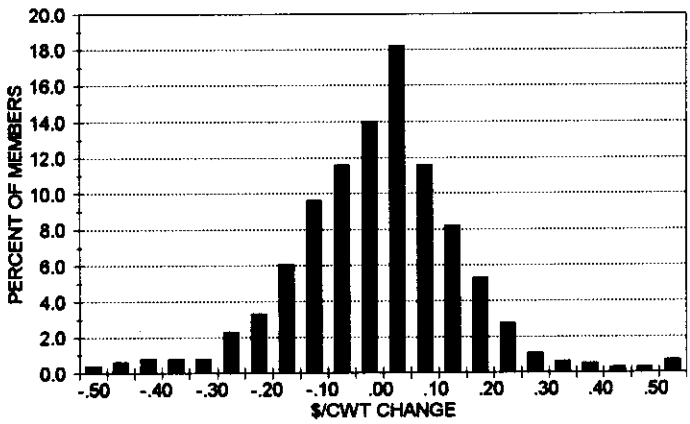
From the data presented, it would appear that there is no distinct advantage or disadvantage associated with independence or cooperative affiliation. It is interesting to note, however, that further analysis showed that the average farm size over the six month period for Coop 4 was 61,216 pounds, whereas, the average farm size for Coop 5 was 150,232 pounds. This finding would

FIGURE 8

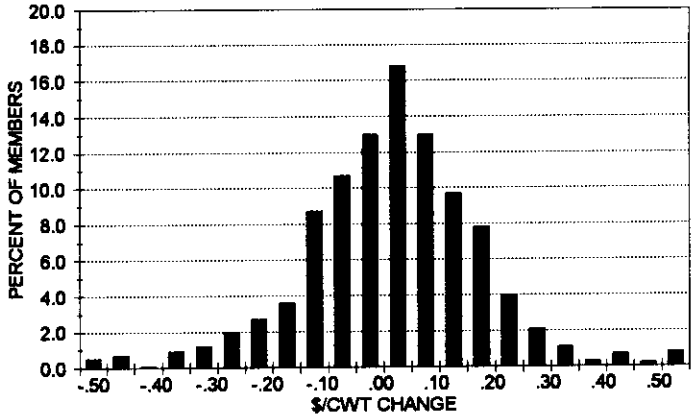
**DISTRIBUTION OF PRODUCER RATE CHANGE**

**FEBRUARY 1992**

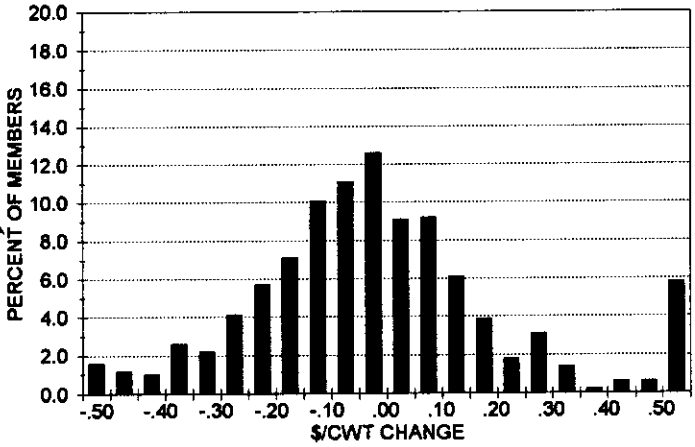
**COOP 1**



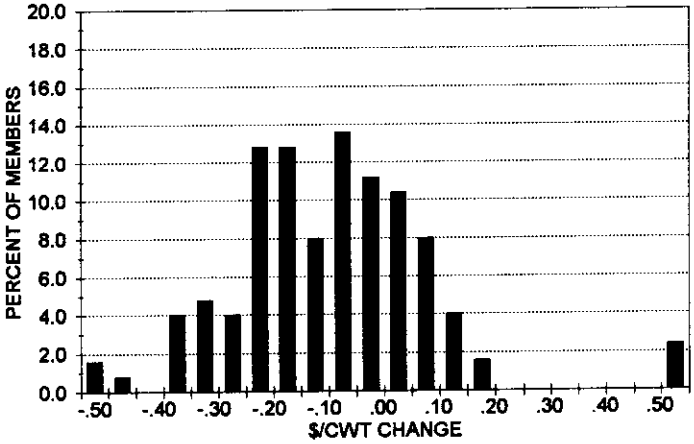

**COOP 2**



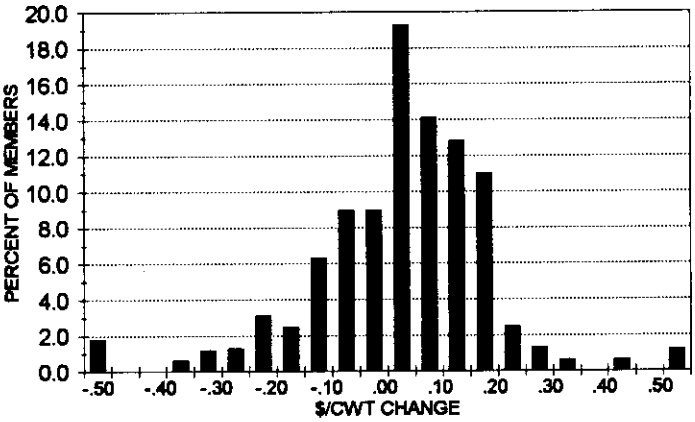

**COOP 3**



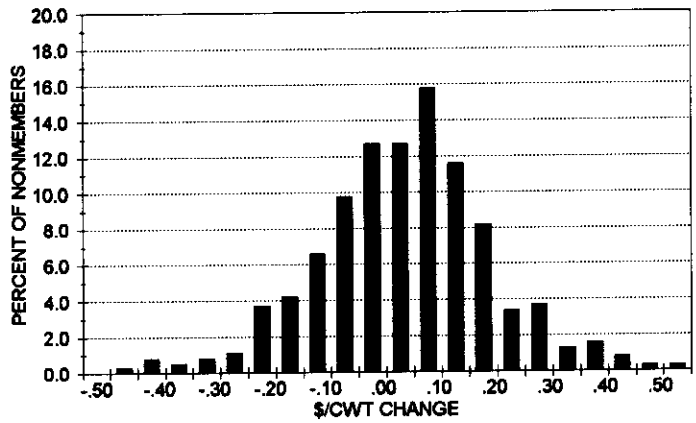

**COOP 4**




**COOP 5**




**NONMEMBERS**



support the conclusion that larger producers have an advantage with the use of multiple component pricing.

State Location

A final analysis which was conducted consisted of grouping the producers according to their state and county locations in order to determine the effects of multiple component pricing in different geographical regions. Tables 7a and 7b show the changes in producer pay rates by state. Each of the states show a positive or zero average price change in all months, except for Pennsylvania. Pennsylvania had a one cent per cwt decrease in May. On average, over the six month period of the study, producers in Delaware and Virginia had relatively large pay rate per hundredweight increases, $0.06 and $0.05 respectively. In terms of total dollar changes, producers in Maryland and Virginia averaged gains of $25,000 and $23,000 per month, respectively, over the six months of the study. As a result, there appeared to be a large transfer of funds to these two states and a general revenue loss to Pennsylvania.

## V. FINDINGS AND CONCLUSIONS

Multiple component pricing, as implemented in Federal Order 4, did not substantially alter the pool values from those that would have occurred in its absence for the period studied. This is logical in that an increase in the nonfat milk solids (NFMS) level is offset by a decrease in the NFMS price, resulting in little or no change in revenue connected with NFMS. The largest increase in the total value of producer milk was $103,673, which represents only a two cent per hundredweight change. The smallest increase

TABLE 7a

CHANGES IN PRODUCER PAY RATE
BY STATE LOCATION

JANUARY

| | % PRODUCERS WITH PRICE INCREASE | % PRODUCERS WITH PRICE DECREASE | % PRODUCERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| DELAWARE | 51.02 | 44.90 | 4.08 | $0.04 |
| MARYLAND | 49.19 | 47.79 | 3.02 | 0.02 |
| NEW JERSEY | 44.94 | 51.69 | 3.37 | 0.00 |
| PENNSYLVANIA | 43.69 | 53.73 | 2.58 | 0.00 |
| VIRGINIA | 61.85 | 36.13 | 2.02 | 0.06 |
| W. VIRGINIA | 53.52 | 46.48 | 0.00 | 0.02 |

FEBRUARY

| | % PRODUCERS WITH PRICE INCREASE | % PRODUCERS WITH PRICE DECREASE | % PRODUCERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| DELAWARE | 44.90 | 51.02 | 4.08 | $0.03 |
| MARYLAND | 47.53 | 49.45 | 3.02 | 0.01 |
| NEW JERSEY | 51.68 | 42.70 | 5.62 | 0.02 |
| PENNSYLVANIA | 46.12 | 51.04 | 2.84 | 0.01 |
| VIRGINIA | 57.97 | 40.00 | 2.03 | 0.04 |
| W. VIRGINIA | 47.89 | 51.11 | 0.00 | 0.02 |

MARCH

| | % PRODUCERS WITH PRICE INCREASE | % PRODUCERS WITH PRICE DECREASE | % PRODUCERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| DELAWARE | 47.27 | 47.27 | 5.46 | $0.05 |
| MARYLAND | 50.46 | 46.30 | 3.24 | 0.02 |
| NEW JERSEY | 55.56 | 42.22 | 2.22 | 0.02 |
| PENNSYLVANIA | 44.81 | 52.67 | 2.52 | 0.00 |
| VIRGINIA | 56.90 | 40.52 | 2.58 | 0.03 |
| W. VIRGINIA | 42.25 | 53.52 | 4.23 | 0.03 |

TABLE 7b

CHANGES IN PRODUCER PAY RATE
BY STATE LOCATION

APRIL

| | % PRODUCERS WITH PRICE INCREASE | % PRODUCERS WITH PRICE DECREASE | % PRODUCERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| DELAWARE | 58.18 | 36.36 | 5.46 | $0.07 |
| MARYLAND | 54.70 | 42.47 | 2.83 | 0.04 |
| NEW JERSEY | 58.89 | 40.00 | 1.11 | 0.04 |
| PENNSYLVANIA | 46.64 | 50.52 | 2.84 | 0.01 |
| VIRGINIA | 51.29 | 44.70 | 4.01 | 0.03 |
| W. VIRGINIA | 43.66 | 52.11 | 4.23 | 0.03 |

MAY

| | % PRODUCERS WITH PRICE INCREASE | % PRODUCERS WITH PRICE DECREASE | % PRODUCERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| DELAWARE | 58.18 | 41.82 | 0.00 | $0.07 |
| MARYLAND | 51.92 | 45.24 | 2.84 | 0.02 |
| NEW JERSEY | 60.68 | 38.20 | 1.12 | 0.04 |
| PENNSYLVANIA | 43.07 | 53.85 | 3.08 | (0.01) |
| VIRGINIA | 56.80 | 40.18 | 3.02 | 0.04 |
| W. VIRGINIA | 50.70 | 45.07 | 4.23 | 0.03 |

JUNE

| | % PRODUCERS WITH PRICE INCREASE | % PRODUCERS WITH PRICE DECREASE | % PRODUCERS WITH NO PRICE CHANGE | AVERAGE PRICE INC (DEC) |
|---|---|---|---|---|
| DELAWARE | 50.91 | 47.27 | 1.82 | $0.08 |
| MARYLAND | 49.39 | 48.46 | 2.15 | 0.02 |
| NEW JERSEY | 50.00 | 48.86 | 1.14 | 0.05 |
| PENNSYLVANIA | 43.99 | 53.75 | 2.26 | 0.00 |
| VIRGINIA | 63.50 | 35.58 | 0.92 | 0.07 |
| W. VIRGINIA | 49.18 | 49.18 | 1.64 | 0.05 |

was $16,243, which represents no change on a per hundredweight basis. Multiple component pricing, therefore, did result in nearly a revenue neutral situation for the market as a whole.

On an individual handler and producer basis however, there was a clear redistribution of revenue. On the handler side, the "winners" were those handlers that received lower testing milk from producers that was utilized in Class I. These handlers did not need the higher levels of nonfat milk solids for use in Class II and III products whose yield is positively correlated with NFMS content. Since the milk was utilized in Class I, these handlers were not charged for the actual pounds of NFMS contained in that milk. Instead, they were charged for the skim pounds on a per hundredweight basis. The apparent "losers" were those handlers that received higher testing producer milk that was utilized in Class II and III. However, handlers who make milk powders, Class II products fortified with powder, and, to a certain extent, cheeses will be able to recoup some, if not all, of the loss in the form of higher yields due to the additional nonfat milk solids. Multiple component pricing, therefore, does create a competitive disadvantage for handlers who manufacture Class II products, such as dips, sour cream, etc. in that they must pay for the higher NFMS levels, but they do not gain because the yield for these products is not correlated as closely with NFMS content.

On the producer side, multiple component pricing appeared to accomplish its goal of better recognizing the economic value of producer milk based on its butterfat and nonfat milk solids content. Those producers who had above average tests were paid a

higher price than they would have received without multiple component pricing. Likewise, producers who had below average tests were paid a lower price than they would have received without multiple component pricing.

Multiple component pricing did tend to favor larger producers over smaller producers. The larger producers generated more nonfat milk solids over the six month period. It might have been that these producers had in place breeding and/or nutritional programs prior to implementation that enabled them to adjust more quickly to multiple component pricing. Smaller producers may not have had the time or resources to adjust in the first six months after multiple component pricing became effective. Regardless, smaller producers need to find a way to generate more solids if they want to maintain the profit level which they enjoyed prior to multiple component pricing.

Cooperative affiliation and nonmember status were not found to be factors. Average producer pay rate differences varied quite a bit from one cooperative to another, as well as between nonmembers and cooperative members.

The producers in the southernmost states under the order seemed to gain more from multiple component pricing than the producers farther north. This could have resulted from the favorable weather conditions in Virginia and Maryland during the spring and early summer. Again, six months may not have been a long enough adjustment period.

As multiple component pricing becomes national in scope, an issue which must be considered is the difference in the nonfat milk

solids of producer milk between regions. As Table 8 illustrates, there are differences in the nonfat milk solids content between producer milk received at Federal Order No. 4 plants and plants used in the Minnesota-Wisconsin (M-W) price series. The M-W plant data are used to drive producer prices throughout the country. Therefore, in order to fully compensate producers for the NFMS content of their milk, there should be some mechanism, similar to the butterfat differential, to adjust the M-W price up or down for higher or lower levels of nonfat milk solids in the same manner that payment adjustments are made for higher and lower levels of butterfat. This would insure that producers with higher volumes of nonfat milk solids will not be underpaid for their milk and those with lower volumes will not be overpaid.

At this point, a word about testing procedures should be raised. During the first six months of 1992, handlers in F.O. No. 4 were using different methods to calibrate and determine NFMS content. From information obtained from Market Administrator personnel in Minnesota and Wisconsin, it would appear that most plants used in the M-W price series are using Ether-Extraction samples to calibrate their infra-red machines. It should be noted, however, that the actual testing procedures and factors used at those plants are unknown to me. It will accomplish nothing to set up a mechanism to adjust price according to the NFMS level if the tests are not comparable. If producers are to be paid based on the M-W price series, the testing procedures should be relatively uniform across different regions in order to gain better accuracy and repeatability in the test results.

**TABLE 8**

**AVG NFMS TESTS**
**M-W PLANTS AND F.O. NO. 4 PLANTS**
**1992**

| MONTH | NFMS % M-W PLANTS* | F.O. 4 PLANTS |
|---|---|---|
| JANUARY | 8.55 | 8.70 |
| FEBRUARY | 8.52 | 8.69 |
| MARCH | 8.55 | 8.68 |
| APRIL | 8.57 | 8.68 |
| MAY | 8.56 | 8.66 |
| JUNE | 8.56 | 8.53 |

* Source: Dairy Market News

The data presented in this paper shows that multiple component pricing as implemented in Federal Order 4 has strengths, but there are also some procedural implications. As multiple component pricing becomes an issue in more and more Federal Orders, these implications should be considered. This will result in a more equitable treatment of both producers and handlers across the country.

APPENDIX A

CLASS PRICES - FEBRUARY 1992

CLASS I:

| | |
|---|---|
| M-W Price at 3.5% butterfat content for December 1991 (second preceding month) | $12.10 |
| Plus: Class I Differential for F.O. No. 4 | 3.03 |
| **CLASS I PRICE FOR FEBRUARY 1992** | **$15.13** |

CLASS II:

| | |
|---|---|
| M-W Price at 3.5% butterfat content for December 1991 (second preceding month) | $12.10 |
| Plus: Total Weighted Change in Gross Values of Milk used to Produce Cheddar Cheese and Butter-NDM | -.39 |
| Basic Class II Formula Price | $11.71 |
| Plus: Class II Differential | +.19 |
| Plus: Amount by which the Basic Formula Price exceeded the Class II Price for December 1991 | .00 |
| **CLASS II PRICE FOR FEBRUARY 1992** | **$11.90** |

CLASS III:

| | |
|---|---|
| M-W Price at 3.5% butterfat content for February 1992 (current month) | $11.21 |
| Plus: Seasonal Adjustment for February | +.04 |
| **CLASS III PRICE FOR FEBRUARY 1992** | **$11.25** |

APPENDIX B

PRODUCER PRICES - FEBRUARY 1992

ADJUSTMENTS TO UNIFORM BASE AND EXCESS PRICES FOR BF CONTENT

Producer Butterfat Content - 3.65%

| ADJUSTMENT TO UNIFORM BASE AND EXCESS PRICES: | |
|---|---|
| Producer BF Content | 3.65 |
| Less: | -3.50 |
| Difference from 3.5 | .15 |
| | x 10 |
| Tenths of a percent different from 3.5 | 1.50 |
| BF Differential - February 1992 | x.086 |
| Adjustment for Butterfat ADDED to Uniform Base and Excess Prices | $.129 |

Producer Butterfat Content - 3.40%

| ADJUSTMENT TO UNIFORM BASE AND EXCESS PRICES: | |
|---|---|
| Producer BF Content | 3.40 |
| Less: | -3.50 |
| Difference from 3.5 | -.10 |
| | x 10 |
| Tenths of a percent different from 3.5 | -1.00 |
| BF Differential - February 1992 | x.086 |
| Adjustment for Butterfat SUBTRACTED from Uniform Base and Excess Prices | $-.086 |

APPPENDIX C

PRODUCER PRICES - FEBRUARY 1992

SKIM AND BUTTERFAT PRICING

| COMPUTATION OF WEIGHTED AVERAGE PRICE: | POUNDS OF MILK | RATE | VALUE |
|---|---|---|---|
| Class I Producer Milk | 248,925,660 | $15.10604 | $37,602,809.77 |
| Class II Producer Milk | 101,325,115 | 11.90 | 12,057,688.69 |
| Class III Producer Milk | 188,459,642 | 11.25 | 21,201,709.73 |
| Total Producer Milk | 538,710,417 | $13.15404 | $70,862,208.19 |
| Other Source Receipts of Unregulated Fluid Milk Assigned Class I | 333,948 | 14.99195 | 13,590.91 |
| Total Pooled Milk | 539,044,365 | $13.15518 | 12,433.97 |
| Add: Value of Overage | | | 8,444.74 |
| Value of Reclassified Inventory | | | 141,183.33 |
| Value of Other Source Receipts (unapproved or nonfluid) assigned Class I | | | 360,916.32 |
| Location Adjustment on Other Source Receipts | | $13.25478 | $71,449,142.78 |
| Not Less than 1/2 of the Unobligated Balance in the Producer Settlement Fund | | .04478 | 241,382.16 |
| Adjusted Value of Total Pooled Milk | | $13.21 | $71,207,760.62 |
| Adjustment Pursuant to Section 1004.61 (a)(3): | | | |
| WEIGHTED AVERAGE PRICE | | | |

| COMPUTATION OF UNIFORM PRICE FOR EXCESS MILK: | | | |
|---|---|---|---|
| Excess Milk - Not to Exceed Total Class III Utilization | 83,464,632 | $11.25 | $9,389,771.10 |
| Excess Milk - Not to Exceed Total Class II Utilization | 0 | 0 | 0.00 |
| Excess Milk - in Excess of Total Class II Utilization | 0 | 0 | 0.00 |
| Total Value of Excess Milk | | $11.25 | $9,389,771.10 |
| UNIFORM PRICE FOR EXCESS MILK | | $11.25 | $9,389,771.10 |

| COMPUTATION OF UNIFORM PRICE FOR BASE MILK: | | | |
|---|---|---|---|
| Adjusted Value of Total Pooled Milk | 539,044,365 | $13.25478 | $71,449,142.78 |
| Less: Value of Other Source Receipts Assigned Class I | 333,948 | 13.21 | 44,114.53 |
| Less: Value of Excess Milk | 83,464,632 | 11.25 | 9,389,771.10 |
| Base Milk Value | 455,245,785 | $13.62237 | $62,015,257.15 |
| Less: Reserve for Producer Settlement Fund | | | 337,631.27 |
| UNIFORM BASE MILK PRICE | | $13.55 | $61,677,625.88 |

* Total Value of Producer Milk = Base Value + Excess Value
= $61,677,625.88 + $9,389,771.10
= $71,067,396.98

APPPENDIX D

PRODUCER PRICES - FEBRUARY 1992

MULTIPLE COMPONENT PRICING

| COMPUTATION OF WEIGHTED AVERAGE DIFFERENTIAL PRICE: | POUNDS OF MILK | RATE | VALUE |
|---|---|---|---|
| Class I Producer Milk | 248,925,660 | $3.85604 | $9,598,668.06 |
| Class II Producer Milk | 101,325,115 | 0.65 | 658,613.24 |
| Class III Producer Milk | 188,459,642 | 0.00 | 0.00 |
| Total Producer Milk | 538,710,417 | $1.90404 | $10,257,281.30 |
| Other Source Receipts of Unregulated Fluid Milk Assigned Class I | 333,948 | 3.74195 | 12,496.18 |
| Total Pooled Milk | 539,044,365 | $1.90518 | $10,269,777.48 |
| Add: Value of Overage | | | 13,590.91 |
| Value of Reclassified Inventory | | | 12,733.97 |
| Value of Other Source Receipts (unapproved or nonfluid) assigned Class I | | | 8,444.74 |
| Location Adjustment on Other Source Receipts | | | 141,183.33 |
| Not Less than 1/2 of the Unobligated Balance in the Producer Settlement Fund | | | 360,916.32 |
| Adjusted Value of Total Pooled Milk | | $2.00478 | $10,806,646.75 |
| Adjustment Pursuant to Section 1004.61 (a)(3): | | .04478 | 241,377.20 |
| WEIGHTED AVERAGE DIFFERENTIAL PRICE | | $1.96 | $10,565,269.55 |

| COMPUTATION OF WEIGHTED AVERAGE DIFFERENTIAL PRICE FOR BASE MILK: | | | |
|---|---|---|---|
| Adjusted Value of Total Pooled Milk | 539,044,365 | $2.00478 | $10,806,646.75 |
| Less: Value of Other Source Receipts Assigned Class I | 333,948 | 1.96 | 6,545.38 |
| Base Milk Differential Value | 455,245,785 | $2.37237 | $10,800,101.37 |
| Less: Reserve For Producer Settlement Fund | | .04237 | 192,874.58 |
| WEIGHTED AVERAGE DIFFERENTIAL BASE MILK PRICE | | $2.33 | $10,607,226.79 |

| NONFAT MILK SOLIDS PRICE: | | | |
|---|---|---|---|
| Class I Producer Skim Milk | 2,473,581,115 | 8.24 | 20,071,083.88 |
| Nonfat Milk Solids in Class II & III Producer Milk | 24,813,951 | .91460 | 22,694,839.58 |
| Total Value | 46,836,447 | $ .91309 | $42,765,923.46 |
| Adjustment Pursuant to 1004.61 (c)(3): | | .00309 | 144,756.69 |
| PRODUCER NONFAT MILK SOLIDS PRICE | | $ .91 | $42,621,166.77 |

* Butterfat Value = (538,710,417 x 3.5%) x (.9424) = $17,768,824.78

Total Value of Producer Milk = Base Value + Skim Value + NFMS in Class II & III Value + Butterfat Value
= $10,607,226.79 + $20,071,083.88 + $22,694,839.58 + $17,768,824.78
= $71,141,975.03

APPENDIX E

HANDLER OBLIGATIONS

MULTIPLE COMPONENT PRICING

Class I Differential:

Class I Price
- Class III Price
Class I Differential/cwt

Class II Differential:

Class II Price
- Class III Price
Class II Differential/cwt

Handler Obligation:

| | | |
|---|---|---|
| (Class I Pounds) | x | (Class I Differential/cwt) |
| +(Class II Pounds) | x | (Class II Differential/cwt) |
| +(Class I Skim Pounds) | x | (Skim Price/cwt) |
| +(Class II NFMS Pounds) | x | (NFMS Price/lb) |
| +(Class III NFMS Pounds) | x | (NFMS Price/lb) |
| +(Total Butterfat Pounds) | x | (Butterfat Price/lb) |
| HANDLER OBLIGATION | | |

## BIBLIOGRAPHY


Borland, International; "Quattro Pro", 1989. Software used to create graphics and certain tables.

Office of the Federal Register; "Code of Federal Regulations", Title 7, Parts 1000-1199, January 1, 1991.

Office of the Federal Register; "Federal Register", Vol. 56, No. 232, p.61348, December 3, 1991.

Sausville, Susan; Chemist at the Federal Order No. 4 Market Administrator's Office. Provided all technical information for the section "Testing Procedures and Results".

USDA, Agricultural Marketing Service; "The Federal Milk Marketing Order Program", Marketing Bulletin Number 27, Revised 1981, Updated 1989.