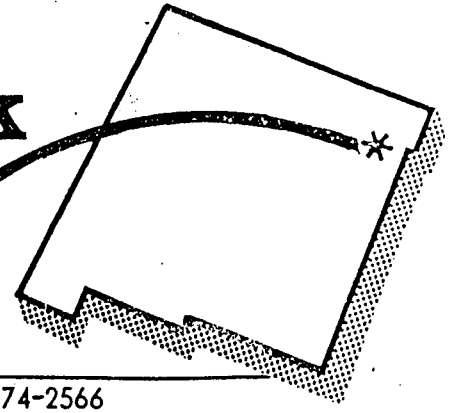




# Clayton Livestock Research Center

## PROGRESS REPORT



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### THE RELATIONSHIP OF ARRIVAL TEMPERATURE AND SUBSEQUENT SICKNESS IN NEWLY RECEIVED SOUTHERN CALVES

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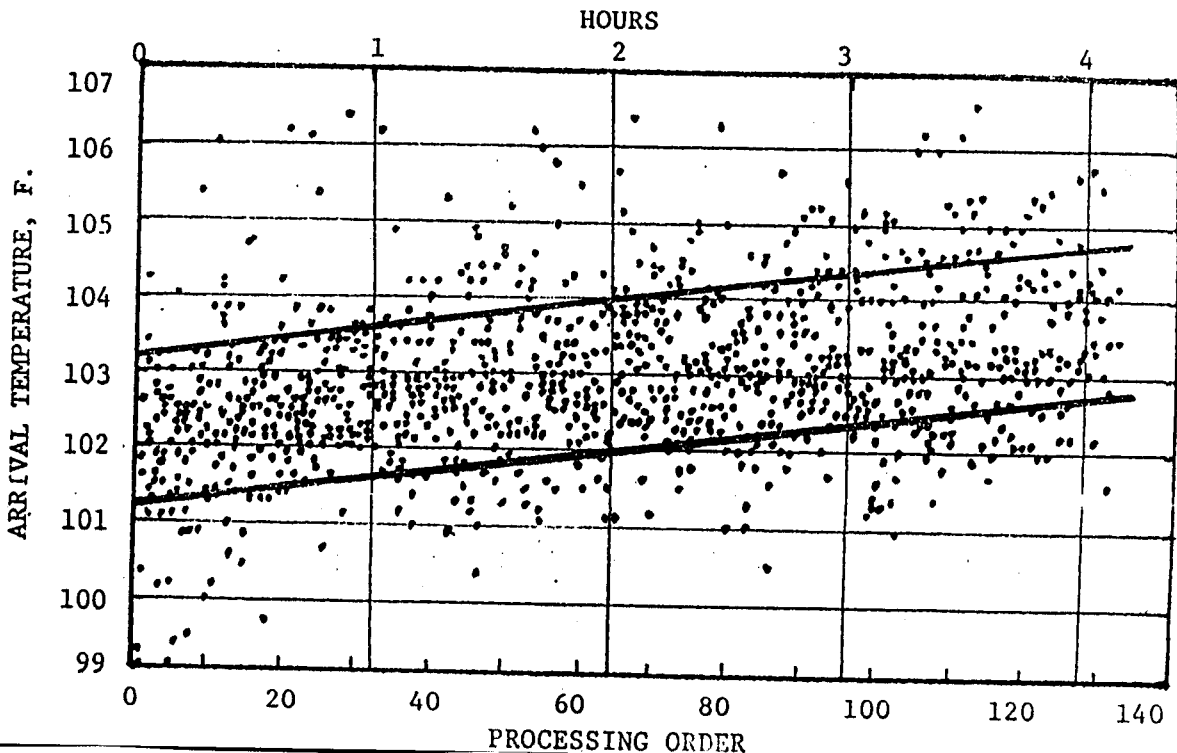
The relation of "off truck" temperatures of newly received calves to sickness level has not been investigated extensively. Due to marketing and shipping procedures arrival temperatures may be more closely related to degree of stress than to disease level. On the other hand, the California Stressed Calf Study Group observed that 35% of calves arriving with temperatures of 102 F or less required treatment, while 45% of those having 102.1 to 103.9 required treatment, and 67% of those with temperatures of 104 and

above required treatment.

From the fall of 1977 through the spring of 1979, 1,018 calves were obtained from one buyer in Florida and shipped to Clayton. The average time in transit was 40 hours. Records were kept of arrival temperatures and subsequent treatments.

Figure 1 shows the arrival temperatures of all calves. An important finding was a statistically significant increase in body tem-

Figure 1. Arrival Temperature of 1,018 Calves Shipped From Florida



perature from the first calves processed to the last. The mean temperature at the start of processing was 102.2 while at the end of processing (approximately 4 hours per load of 120-130 calves) the mean temperature had risen to 103.7. This rise was observed in calves received during both hot and freezing weather and thus cannot be attributed to the ambient temperature during processing. A statistical mean plus or minus the standard deviation represents the range within which 2/3 of the values will fall and can be considered the normal range. The standard deviation for the data in figure 1 is 1.04 F. Thus, the normal temperature range for these calves can be considered as being from 101.2 to 103.2 initially and 102.7 to 104.7 after 4 hours. In light of these data the question arises, at what temperature should medication be given? At 2 hours the mean temperature was  $103.0 \pm 1.04$ . A common criterion is to treat at 103 or above. In the case of these 1,018 calves the use of such a criterion would have resulted in the treatment of half the calves on arrival. It is doubtful that all calves with an arrival temperature of 103 and above were sick, as will be shown in a subsequent figure. If 104 were chosen as the temperature at which treatment would be given, 170 calves (17%) would have been

treated on arrival. However, during the first 2 hours of processing 17 calves which were above the normal range but below 104 would have been missed. From 2 to 4 hours 50 head would have been treated which fell within the normal range.

Data are available from 702 Florida calves which were treated on arrival by using a sliding scale of arrival temperatures. Any calf having a temperature above the limit defined by the mean plus the standard deviation was treated. Thus, in figure 1 any calf having a temperature above the upper inclined line would receive treatment. This line represents the mean arrival temperature plus one standard deviation. Thus, at the start of processing the treatment temperature would be above 103.2, while at 2 hours it would be 104 and at 4 hours, 104.8.

Figure 2 shows the off truck temperatures of 86 calves (12%) treated on arrival. Six percent of these calves died.

The arrival temperatures of 252 calves which were not treated on arrival but subsequently required treatment are shown in figure 3. Seven percent of these calves died. Thus 36% of all calves were in the normal tempe

Figure 2. Temperatures of Calves Treated on Arrival

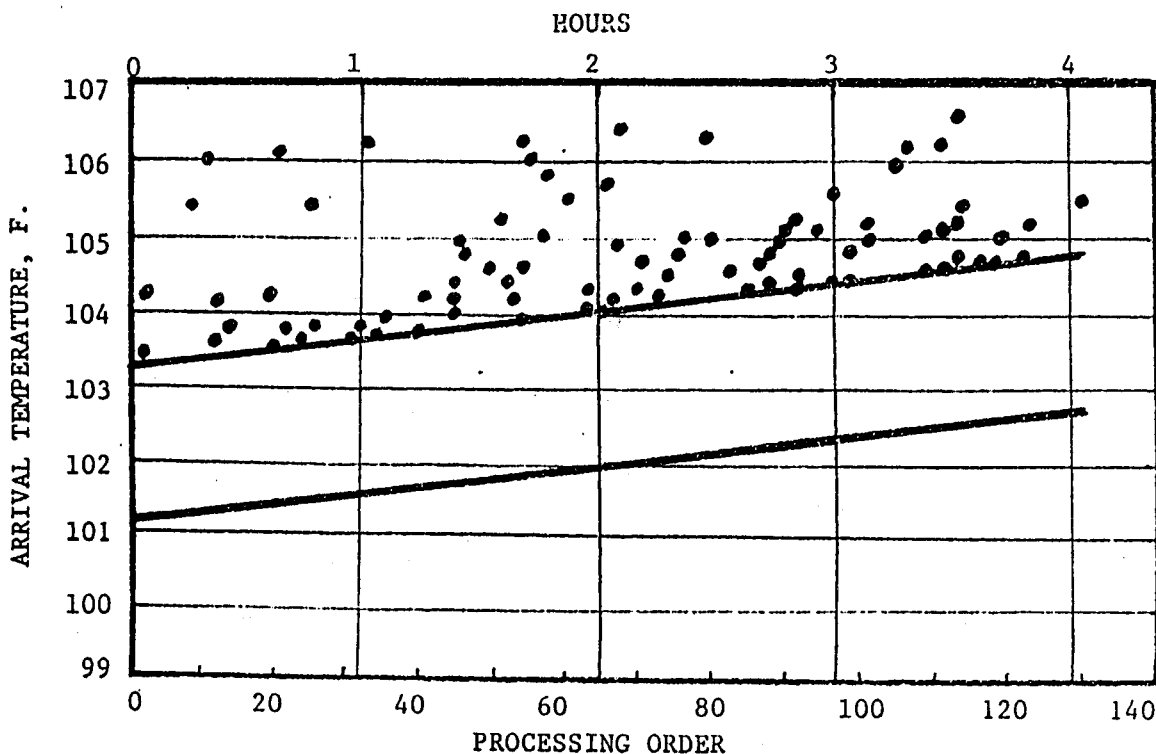


Figure 3. Temperatures of Calves Not Treated on Arrival But Requiring Later Treatment

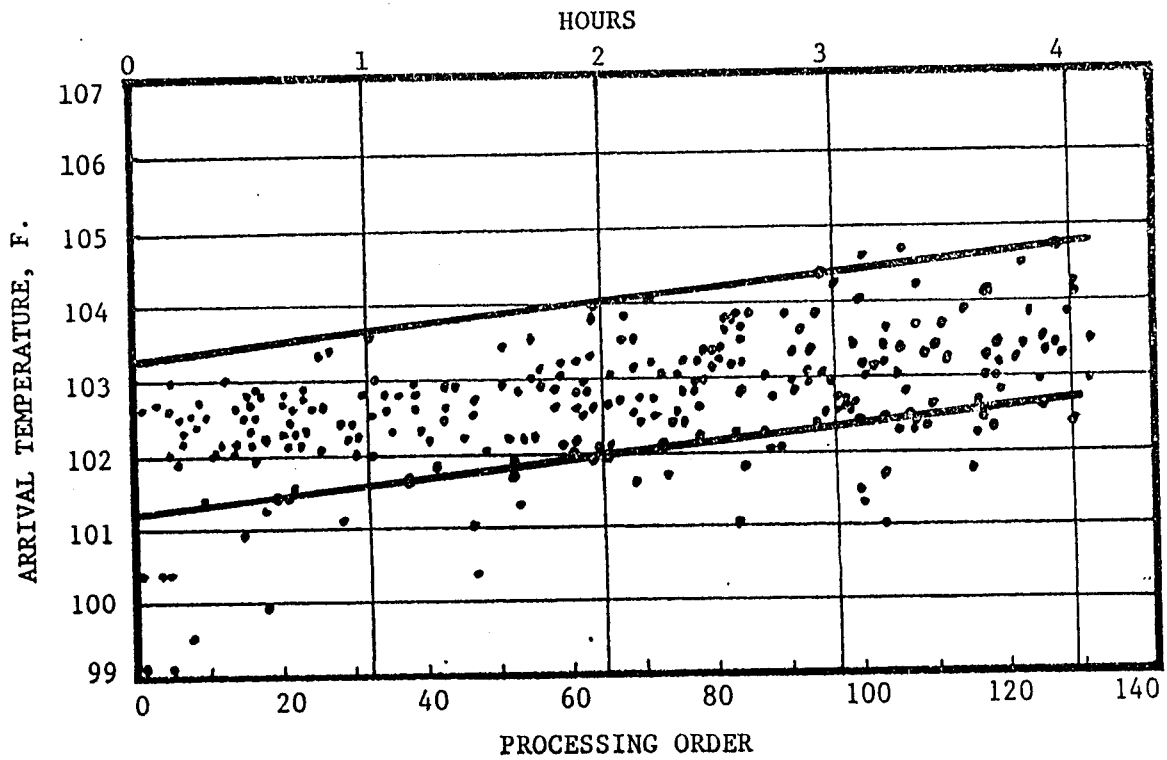
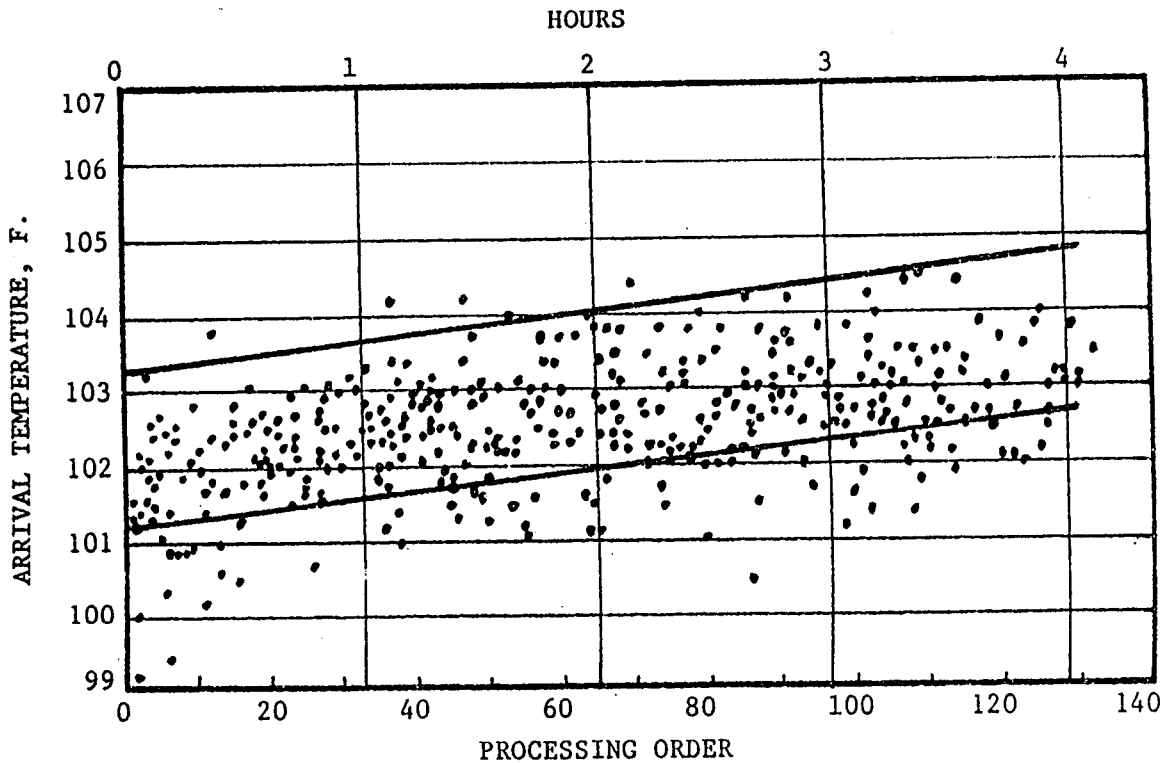


Figure 4. Temperatures of Calves Which Were Never Treated



ature group but required later treatment. Note that in this normal group there appeared to be no relationship between arrival temperature and whether subsequent treatment was required.

Figure 4 shows a plot of the arrival temperatures of 364 calves which fell in the normal group and were therefore not treated on arrival and were not pulled for subsequent treatment. This group represents 52% of all calves. Two percent of this group died. The 5 calves above the normal line should

have received treatment on arrival but were missed and were never picked up as sick by the pen riders. The important point to note is the overlapping of the arrival temperatures of the calves not treated on arrival but subsequently treated with those which were never treated. It appears that it was impossible to tell from arrival temperature which of these calves would subsequently require treatment. In this case some type of mass medication program for all calves on arrival might have been the best procedure.

The research program at the Clayton Livestock Research Center is planned to meet the needs of the beef cattle industry, with emphasis on the performance of newly-weaned or recently-shipped calves. We would be pleased to learn of your problems in order that we might plan research of value to you.



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