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When it is considered that responsibility for material control is on the basis of uranium and uranium-235 content, justification for the withdrawal of samples, as well as obtaining accurate weights, is apparent. During the early operation of the ORGDP feed processing facility, with large routine oxide receipts from off area, it was soon realized that strict compliance with existing AEC accountability regulations for this material flow would be costly and cumbersome even, in some instances, to the extent of delaying the availability of the material for processing while awaiting sampling. For these reasons, a control program was devised to determine the reliability of the vendor-obtained samples. It was believed that if the representativeness of the samples at the point of origin could be established and each vendor would be cooperative, a satisfactory proposal which would accomplish the desired objective, i.e., verification of material receipts, at a fraction of total resampling costs, could be offered and demonstrated to AEC personnel. It is to be understood that all analyses for determining the extent of responsibility for material receipts would be made by the receiving station laboratory. Through this effort, an agreement was reached with the AEC that a vendor-submitted sample control program with receiver analyses would constitute compliance with the subject paragraph.

An example of such a flow to the ORGDP is Savannah River oxide. As a receiving installation, we attempt to maintain surveillance over the acceptability of the shipper's sampling program. This is accomplished through the resampling of approximately four oxide containers per week and comparing the uranium and uranium-235 analyses on these samples with similar ones supplied by the vendor. Both samples are analyzed locally. At the inception of this flow, the resampling program indicated that Savannah River could neither sample nor analyze accurately. Through cooperative effort between the two stations, both problems have been resolved.

At present, Paducah is receiving depleted oxide from Hanford and normal green salt mainly from Fernald. Their receiving data consist of analyzing the vendor-submitted oxide sample on a rail car basis (100,000 pounds) and accepting the vendor-determined uranium and uranium-235 data for green salt. All containers are weighed upon receipt. In addition to these flows, Savannah River oxide is received on an interrupted basis. It should be noted that the most recent "Report of Survey" for the Paducah plant by AEC accountability personnel recommends that a program be initiated for the sampling of UO_3 from Hanford and occasionally from Savannah River to form an independent opinion of material receipts as required in paragraph 7401-082. At the time of this survey, green salt receipts had not attained routine proportions sufficiently large to warrant its inclusion in the recommendation.

The sampling schedule utilized at Paducah for product UF_6 consists of withdrawing a single Harshaw bomb to represent a production day. A small sample for isotopic determination is withdrawn for each production cylinder. While

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this schedule will not fulfill the AEC requirements for material transfers between stations, such is not necessary because the feed plant product does not leave the Paducah site. On the other hand, ORGDP produced feed material must be transferred off area, hence, must be represented through an adequate sampling program. Therefore, the variation in costs between plants arising from this source is considered legitimate.

Comparable deficiency and production data for the two feed plants are presented in table 2 for the period January, 1956, through April, 1957. Production is, of course, higher at Paducah. Average monthly deficiencies are compatible for the two plants.

The general problem in attempting to compare accountability costs for the two feed plants is fundamentally one of different operating philosophies. Significant cost reductions can not be made at the ORGDP without compromising AEC procedures, although minor reductions can possibly be effected in terms of internal controls on activities such as ash screening and pulverizing. It has been pointed out that there is a legitimate cost variation in product UF₆ measurements between the two plants because the Paducah produced material does not represent an off-area shipment, while that produced at the local feed plant is an off-area shipment. Without actually altering existing procedures at either plant, a reconciliation of this difference might be accomplished by establishing a special cost collection activity for UF₆ measurements. This method would, in addition, result in properly proportioning the cost variability arising from the difference in the two feed plant capacities. An alternate to this proposal would be to transfer ORGDP feed production UF₆ analytical costs to the Paducah plant since the material will be fed at that site. On the question of material receipts, it appears that some policy decision is required in relation to whether the AEC requirements are to be fulfilled.



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TABLE 1

COMPARATIVE ACCOUNTABILITY COSTS IN ORGDP AND PADUCAH FEED PLANT OPERATIONS
(Dollars per Pound)

| Product | November, 1956 | | December, 1956 | | January, 1957 | | February, 1957 | |
|-----------------|----------------|---------|----------------|---------|---------------|---------|----------------|---------|
| | ORGDP | Paducah | ORGDP | Paducah | ORGDP | Paducah | ORGDP | Paducah |
| UF ₄ | 0.0102 | 0.0017 | 0.0074 | 0.0012 | 0.0086 | 0.0013 | 0.0095 | 0.0016 |
| UF ₆ | 0.0067 | 0.0041 | 0.0058 | 0.0024 | 0.0044 | 0.0015 | 0.0041 | 0.0024 |
| Total | 0.0159 | 0.0056 | 0.0128 | 0.0032 | 0.0118 | 0.0020 | 0.0125 | 0.0033 |

Note: Total costs are based on UF₆ production.

TABLE 2

OAK RIDGE AND PADUCAH FEED PLANT DEFICIENCY AND PRODUCTION DATA,
January, 1956 - March, 1957

| Month | Oak Ridge | | | Paducah | | |
|---------------|--------------|-----------|------------|--------------|-----------|------------|
| | Deficiencies | | Production | Deficiencies | | Production |
| | Kg. U | Kg. U-235 | Kg. U | Kg. U | Kg. U-235 | Kg. U |
| January, 1956 | 3,435 | 66 | 240,010 | -4,065 | -29 | 342,479 |
| February | -4,016 | -68 | 110,487 | 1,903 | 15 | 363,348 |
| March | 5,380 | 36 | 297,503 | 2,840 | 22 | 424,637 |
| April | 509 | 10 | 360,885 | 7,884 | 66 | 456,096 |
| May | 5,915 | 37 | 399,753 | 34 | -14 | 474,113 |
| June | -7,380 | -52 | 359,733 | -2,367 | -13 | 467,349 |
| July | 451 | 5 | 322,197 | -114 | 3 | 490,661 |
| August | 2,285 | 13 | 343,990 | 1,370 | 6 | 425,326 |
| September | -582 | -10 | 254,765 | 948 | 10 | 566,258 |
| October | -998 | -5 | 256,334 | 3,709 | 25 | 560,843 |
| November | 3,108 | 27 | 274,427 | -2,918 | -18 | 484,906 |
| December | 541 | -4 | 340,625 | -2,918 | -24 | 796,850 |
| January, 1957 | 1,884 | 15 | 384,524 | 1,261 | 3 | 709,958 |
| February | -1,094 | -4 | 331,912 | -2,065 | -13 | 735,854 |
| March | 295 | 0 | 287,841 | -331 | 6 | 882,690 |
| April | -4,495 | -29 | - | -956 | 2 | - |
| Average | 327 | 2.3 | | 263 | 2.9 | |