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SUBJECT: Final Report--Allowable Maintenance Inventory Center Credit Returns to the System Support Division Stock Fund

TO: See Distribution

1. The Depot Maintenance Industrial Fund (DMIF) is short funds. Estimates of the shortage range from \$127 to \$207 million. One of the proposals to provide funds to the DMIF is to turn in Maintenance Inventory Center (MIC) assets for credit. In this report, we examine five different policies for granting credit returns for MIC assets. Our report only examines Systems Support Division (SSD) stock fund items. Under current credit return policy, up to \$46.6 million of credit turn-ins can be granted to Maintenance. We can increase the credit return dollar figure to \$60.3 million by allowing credit for items up to the new extended Air Force Acquisition Objective (AFAO). We recommend credit be given for all materiel turned in up to the new AFAO (requirement level plus three years of stock) and do not consider on-order assets as on-hand. This new credit return policy will help the DMIF problem and match credit return policy with requirements policy.

2. Our point of contact is Rob Lucas, HQ AFLC/MMMAA, AUTOVON 787-5249.

FOR THE COMMANDER

Ronald T. Frederickson
 RONALD T. FREDERICKSON
 Actg Ch, Analysis & Information
 Mgt Div
 DCS/Materiel Management

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 Final Report

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THE PROBLEM

PROBLEM STATEMENT

The Depot Maintenance Industrial Fund (DMIF) is estimated to be short in the range of \$127 million to \$207 million. To solve the problem, the Comptroller (AC), Maintenance (MA), and Materiel Management (MM) offices proposed returning the maintenance inventory centers (MIC) assets to supply for credit. We need to see how MIC assets can be returned for credit without causing excesses in the stock fund inventories.

OBJECTIVE

Determine the amount of Systems Support Division (SSD) MIC assets that can be returned to the stock fund for credit.

BACKGROUND

One possible solution to the funding problem is for the stock fund to liberalize their credit return policy. To avoid excesses in stock fund inventories, AFLC stock fund managers proposed that the MIC's inventories could be returned for credit for those items whose current asset position dictated credit return (i.e., did not exceed the Air Force Acquisition Objective (AFAO)).

Currently, stock fund managers give credit to retail activities returning items to the depot if the number of returned items does not cause the depot inventory to exceed the AFAO. The AFAO is the level of stock authorized to equip and sustain the US Approved Forces through peacetime and wartime. Basically, today it is two years of stock above the requirement level. The requirement level is theoretically the maximum amount of stock to order when ordering. Also, due to an AFLC study on stock fund stratification [1], the Air Force is extending the AFAO by one year of demands. With the upcoming policy change, the amount of MIC assets that the stock fund can give credit for will increase further. Also, currently on-order assets are considered as on-hand when determining whether to grant credit. Theoretically, these on-order assets can be cancelled if those assets were provided via a customer return. Consequently, it has been suggested that on-order assets not be considered on-hand when determining an asset's credit position. Therefore, we were asked to determine how much of the current MIC inventory could be turned in for credit under existing and proposed new policies.



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ANALYSIS

The analysis is documented in two sections. The first section describes the approach of examining the different methods used to compute the credit returns for MIC assets. The second gives the results of comparison of these different methods.

APPROACH

Our analysis focused on five credit return policies. Data for the analysis came from the D062 EOQ Master Data Bank for March 88 on the CREATE computer system. The five policies of crediting MIC assets are described below.

POLICY 1: Currently the Systems Support Division (SSD) of the stock fund allows credit for the quantity of assets which is the difference between the AFAO and the on-hand assets. On-hand assets are described as being the sum of the following: on-hand assets, additive assets, intransit assets, and unserviceable assets netted by the condemnation factor. On-order assets are described as being the obligated due-ins (assets on contract) plus committed due-ins (assets on purchase request). Therefore, the allowed credit amount for POLICY 1 (ACAL) for MIC assets is described by the following equations:

$$\begin{aligned} \text{ACAL}(\text{units}) &= \text{AFAO} - (\text{on-hand} + \text{on-order}) \\ \text{ACAL}(\text{dollars}) &= \text{ACAL}(\text{units}) \times \text{unit-price} \end{aligned}$$

We determined the dollar value of MIC assets that could be returned for credit. If the allowed credit amount in units is greater than the MIC assets, then the total MIC assets were added to the sum of the returnable assets. If the MIC assets exceeded the allowed credit amount in units, then only the allowed credit amount was added to the sum of returnable assets.

POLICY 2: This policy is the same as the one above, except it only examines those items that had a credit indicator of "A." The current system periodically goes through the logic of POLICY 1 and assigns a credit indicator code of "A" or "D." The system then uses the code to determine whether to grant credit. A credit indicator of "A" means that the SSD stock fund will accept credit returns for these items because the wholesale asset position is less than the AFAO. The current AFAO equates to two years demands above the requirement level. A credit indicator of "D" means that such credit is denied because allowing credit would drive stock levels above the AFAO.

POLICY 3: This is the same as POLICY 1, except on-order assets are excluded; they are not counted as assets. For those items which have assets on-order, if these orders can be cancelled, then the returned assets could make up for the requirement of the on-order assets. The allowed credit amount for MIC assets under this policy can be described by the following equations:

$$\begin{aligned} \text{ACA3}(\text{units}) &= \text{AFAO} - \text{on-hand} \quad (\text{on-order assets not included}) \\ \text{ACA3}(\text{dollars}) &= \text{ACA3}(\text{units}) \times \text{unit-price} \end{aligned}$$

POLICY 4: This is the same as POLICY 3, but it includes the new extended AFAO. The AFAO will soon include extended year (EY) budget dollars for assets that are held on retention before being considered excess. This amounts to an extra year of demands. The allowed credit amount for MIC assets under the policy can

be described by the following equations:

$$\begin{aligned} \text{NEW-AFAO} &= \text{AFAO} + (\text{one year of demands}) \\ &= \text{AFAO} + (\text{program-monthly-demand-rate} \times 12) \\ \text{ACA4}(\text{units}) &= \text{NEW AFAO} - \text{on-hand} \\ \text{ACA4}(\text{dollars}) &= \text{ACA4}(\text{units}) \times \text{unit-price} \end{aligned}$$

POLICY 5: MIC assets on the D062 EOQ Master Data Bank are obtained from the D033 retail Stock Control and Distribution System. It is Maintenance's contention that the D033 system understates the assets that are currently in the MIC. Therefore, we included a fifth policy which computes the maximum allowable credit returns possible should the actual MIC inventory balance be greater than those balances shown on the D062 data bank. Thus, POLICY 5 is the maximum amount of creditable returns for items in the MIC. Basically, POLICY 5 is the difference between the current AFAO and the on-hand plus on-order assets for stock numbers that have a MIC balance.

RESULTS

Table 1 provides the results of the return policies we examined.

| RETURNABLE MIC ASSETS (DOLLARS IN MILLIONS) | | | | | |
|--|------------------------------|---|---------------------------|-------------------------------|---------------------------|
| ALC | (1) ON-HAND + ON-ORDER | (2) ON-HAND + ON-ORDER (CRED IND = A) | (3) ON-HAND TO AFAO | (4) ON-HAND TO NEW AFAO | (5) MAXIMUM RETURNS |
| OC-ALC | 15.8 | 15.0 | 20.2 | 21.7 | 249.8 |
| OO-ALC | 3.8 | 3.6 | 4.6 | 5.0 | 71.8 |
| SA-ALC | 16.2 | 15.6 | 19.8 | 20.6 | 353.6 |
| SM-ALC | 4.3 | 3.9 | 5.0 | 5.2 | 36.0 |
| WR-ALC | 6.5 | 6.3 | 7.7 | 7.8 | 108.0 |
| TOTAL | <u>46.6</u> | <u>44.4</u> | <u>57.3</u> | <u>60.3</u> | <u>819.2</u> |

Table 1

Column (1) examines the current policy for all items. Column (2) examines the current policy for those items which have a credit indicator code of "A." Note, up to \$46.6 million in MIC assets are returnable under current policy. If we also allow credit returns for on-order assets (assuming that termination costs are low enough to make this a cost effective practice), the allowed credit amount increases to \$57.3 million (column (3)). If we then extend the credit to include the new AFAO level (column (4)), the allowed credit amount then increases to \$60.3 million. This level falls short of the minimum \$127 million needed to solve the DMIF funding problem. However, since MIC levels are probably greater than those shown in the D062 system (and in the table), the potential for more MIC assets being credited by the stock fund is possible. Column (5) shows that the maximum allowable MIC credit return under current policy can be up to \$819.2 million. Given the D062 SSD MIC inventory balance of \$84.5 million for March 88,

if current MIC assets are understated, there is a large credit ceiling up to which such MIC assets can be returned. Even if MIC assets in this report are understated, SSD MIC assets alone will not cover the DMIF shortage. Perhaps the \$40 to \$50 million of General Support Division MIC assets along with the SSD MIC assets will cover the shortage, but even this may not be enough if the DMIF shortage is as large as \$207 million.

To summarize, AFLC stock fund managers should grant credit for return of MIC assets. Giving credit up to the new AFAO and without on-order assets (POLICY 4) will help solve the DMIF problem. Also, granting credit returns for MIC assets makes for a smart business practice. The stock fund is a revolving fund; for every buy we make, the same item should sell, but only once. If we get turn-ins without credit, and then resell that item, the stock fund builds cash. Other studies have shown there is a high probability of subsequent use of assets within the AFAO. That is why the AFAO is part of retention policy. It is the maximum level of applicable inventory. Since the Air Force will resell the assets, it should grant credit for turn-ins that take the asset balance up to the AFAO.

CONCLUSIONS

1. According to one data analysis, up to \$60.3 million of MIC assets can be credited to the SSD stock fund using the new AFAO and not considering on-order assets as on-hand.
2. If the MIC contains more assets than indicated on the D062 record, the amount of credit allowed could increase significantly.
3. The Air Force has approved the extended AFAO. The extra year of stock is applicable inventory; it has a high probability of subsequent use.
4. Granting credit for MIC turn-ins that increase wholesale assets up to the new AFAO without considering on-order assets will help solve the DMIF funding problem and will comply with the intent of the revolving stock fund, i.e., one sell for one buy.

RECOMMENDATIONS

1. Give credit for all materiel turned in up to the new AFAO (requirement level plus three years of stock) and do not consider on-order assets as on-hand. (OPR: AFLC/MMM)

REFERENCES

1. Blazer, Douglas J., Lt Col, Marie Niehaus, Joe Draudt and John Waits, "Stock Fund Stratification," AFLC/MMMA Report, August 1987.

APPENDIX A
ALLOWABLE MIC CREDIT RETURNS

APPENDIX A

ALLOWABLE MIC CREDIT RETURNS

There is currently a DMIF funding shortage of \$127 to \$207 million. As a solution to the problem, AFIC stock fund managers proposed the MIC's inventories could be returned for credit for those items whose current asset position dictated a credit return (i.e., did not exceed the Air Force Acquisition Objective (AFAO)). The tables below give the data outputs for five different credit return policies in which MIC assets could be returned to the stock fund for credit. Programming for the data analysis was performed on the CREATE computer system using the March 88 tapes of the D062 EOQ Master Data Bank. Only items which had a MIC balance were examined.

Under current policy, stock fund managers can grant credit to retail activities returning items to the depot if the number of returned items does not cause the depot inventory to exceed the AFAO. For each of the five policies examined, the allowable credit amount (ACA) for each item was computed as follows:

$$\text{ACA(units)} = \text{AFAO} - \text{asset-position} \quad (1)$$

$$\text{ACA(dollars)} = \text{ACA(units)} \times \text{unit-price} \quad (2)$$

where the asset-position is either the on-hand plus on-order assets or just the on-hand assets, and the AFAO is either the current AFAO or the new extended AFAO.

We determined the dollar value of MIC assets that could be returned for credit. If the allowed credit amount in units is greater than the MIC assets, then the total MIC assets were added to the sum of the returnable assets. If the MIC assets exceeded the allowed credit amount in units, then only the allowed credit amount was added to the sum of returnable assets.

Table 1 examines the allowable credit returns under today's current policy. It describes the assets that can be returned from the MIC under current policy. Column (1) represents the 'asset-position' in equation (1) above. The AFAO in column (2) reflects the current definition and represents approximately two years of stock. The 'MIC INVENTORY' in column (3) gives the total dollar value of the MIC's inventory balance at each Air Logistics Center (ALC), and the 'RETURNABLE MIC' (column (4)) is that portion of the total MIC for which the stock fund will accept credit. The sum of the 'PRs ON-ORDER' and 'CONTRACTS ON-ORDER' (columns (5) and (6)) yields the total on-order assets in the first (ON-HAND + ON-ORDER) column.

ALLOWABLE MIC CREDIT RETURNS
POLICY 1: CURRENT POLICY

| | (1) WHOLESALE ASSET POSITION (ON-HAND + ON-ORDER) | (2) CURRENT AFAO (2 YEARS) | (3) MIC INVENTORY | (4) RETURNABLE MIC | (5) PRs ON-ORDER | (6) CONTRACTS ON-ORDER |
|-------------|---|-------------------------------------|-------------------------|--------------------------|------------------------|------------------------------|
| OC-ALC | \$950.1 | \$886.7 | \$34.5 | \$15.8 | \$63.7 | \$278.3 |
| (ITEMS) | 18,128 | 18,128 | 18,128 | 6,346 | 1,282 | 3,489 |
| OO-ALC | \$243.2 | \$241.0 | \$7.4 | \$3.8 | \$16.8 | \$72.1 |
| (ITEMS) | 6,578 | 6,578 | 6,578 | 2,648 | 426 | 1,165 |
| SA-ALC | \$940.3 | \$1,121.0 | \$25.2 | \$16.2 | \$118.4 | \$328.0 |
| (ITEMS) | 9,604 | 9,604 | 9,604 | 3,910 | 1,243 | 2,313 |
| SM-ALC | \$95.0 | \$108.4 | \$7.2 | \$4.3 | \$12.5 | \$33.7 |
| (ITEMS) | 2,336 | 2,336 | 2,336 | 1,042 | 270 | 464 |
| WR-ALC | \$232.4 | \$300.6 | \$10.2 | \$6.5 | \$39.2 | \$92.7 |
| (ITEMS) | 3,012 | 3,012 | 3,012 | 1,478 | 345 | 946 |
| TOTAL \$ | \$2,461.0 | \$2,657.7 | \$84.5 | \$46.6 | \$250.6 | \$804.8 |
| TOTAL ITEMS | 39,658 | 39,658 | 39,658 | 15,424 | 3,566 | 8,377 |

Table 1

For POLICY 1, Maintenance can turn in \$46.6 million for credit. Note the SSD portion of the MIC inventory is \$84.5 million. That is out of an approximate total of \$130 million MIC inventory.

Table 2 examines today's current policy as in Table 1, but it only examines those items that had a credit indicator of "A." A credit indicator of "A" means that the stock fund will accept credit returns for these items because the wholesale asset position is less than the AFAO. Note that of the 39,658 line items in the MIC (see "Total Items" in Table 1), only about 16,653 are sufficiently short assets (at the wholesale level) to grant credit.

ALLOWABLE MIC CREDIT RETURNS
POLICY 2: CURRENT POLICY
FOR ITEMS WHERE THE
CREDIT INDICATOR = "A"

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-------------------|--|------------------------------|------------------|-------------------|-----------------|-----------------------|
| | WHOLESALE ASSET POSITION (ON-HAND + ON-ORDER) | CURRENT AFAO (2 YEARS) | MIC INVENTORY | RETURNABLE MIC | PRs ON-ORDER | CONTRACTS ON-ORDER |
| OC-ALC (ITEMS) | \$392.5 6,819 | \$616.8 6,819 | \$16.7 6,819 | \$15.0 6,180 | \$52.6 1,012 | \$157.7 1,901 |
| OO-ALC (ITEMS) | \$118.1 2,875 | \$174.0 2,875 | \$4.1 2,875 | \$3.6 2,563 | \$14.3 302 | \$46.6 690 |
| SA-ALC (ITEMS) | \$537.0 4,321 | \$851.5 4,321 | \$16.9 4,321 | \$15.6 3,786 | \$91.3 921 | \$210.0 1,348 |
| SM-ALC (ITEMS) | \$44.2 1,091 | \$76.6 1,091 | \$4.2 1,091 | \$3.9 997 | \$10.9 187 | \$15.1 248 |
| WR-ALC (ITEMS) | \$149.2 1,547 | \$247.6 1,547 | \$7.2 1,547 | \$6.3 1,362 | \$35.1 272 | \$65.7 543 |
| TOTAL \$ | \$1,241.0 | \$1,966.5 | \$49.1 | \$44.4 | \$204.2 | \$495.1 |
| TOTAL ITEMS | 16,653 | 16,653 | 16,653 | 14,888 | 2,694 | 4,730 |

Table 2

Table 3 presents the results for POLICY 3 which is the same as POLICY 1 except on-order assets are not included; they are not counted as assets. For those items which have assets on-order, if these orders can be cancelled, then the returned assets could make up for the requirement for the on-order assets. Therefore the 'asset-position' in equation (1) above is represented only by the on-hand assets.

ALLOWABLE MIC CREDIT RETURNS
POLICY 3: CURRENT POLICY
ON-ORDER ASSETS NOT INCLUDED IN ON-HAND ASSETS

| | WHOLESALE ASSET POSITION (ON-HAND) | CURRENT AFAO (2 YEARS) | MIC INVENTORY | RETURNABLE MIC |
|-------------|--|------------------------------|------------------|-------------------|
| OC-ALC | \$608.2 | \$886.7 | \$34.5 | \$20.2 |
| (ITEMS) | 18,128 | 18,128 | 18,128 | 7,673 |
| OO-ALC | \$154.3 | \$241.0 | \$7.4 | \$4.6 |
| (ITEMS) | 6,578 | 6,578 | 6,578 | 3,122 |
| SA-ALC | \$494.0 | \$1,121.0 | \$25.2 | \$19.8 |
| (ITEMS) | 9,604 | 9,604 | 9,604 | 4,732 |
| SM-ALC | \$48.9 | \$108.4 | \$7.2 | \$5.0 |
| (ITEMS) | 2,336 | 2,336 | 2,336 | 1,287 |
| WR-ALC | \$100.5 | \$300.6 | \$10.2 | \$7.7 |
| (ITEMS) | 3,012 | 3,012 | 3,012 | 1,849 |
| TOTAL \$ | \$1,405.9 | \$2,657.7 | \$84.5 | \$57.3 |
| TOTAL ITEMS | 39,658 | 39,658 | 39,658 | 18,663 |

Table 3

Table 4 reflects POLICY 4 which is the same as POLICY 3, but it includes the new extended AFAO. The AFAO will soon include extended year (EY) budget dollars. This amounts to an extra year of demands being included in the AFAO.

ALLOWABLE MIC CREDIT RETURNS
 POLICY 4: NEW POLICY
 ON-ORDER ASSETS NOT INCLUDED IN ON-HAND ASSETS
 INCLUDES NEW EXTENDED AFAO

| | WHOLESALE ASSET POSITION (ON-HAND) | CURRENT AFAO (3 YEARS) | MIC INVENTORY | RETURNABLE MIC |
|-------------|--|------------------------------|------------------|-------------------|
| OC-ALC | \$608.2 | \$1,079.1 | \$34.5 | \$21.7 |
| (ITEMS) | 18,128 | 18,128 | 18,128 | 8,653 |
| OO-ALC | \$154.3 | \$294.4 | \$7.4 | \$5.0 |
| (ITEMS) | 6,578 | 6,578 | 6,578 | 3,487 |
| SA-ALC | \$494.0 | \$1,326.4 | \$25.2 | \$20.6 |
| (ITEMS) | 9,604 | 9,604 | 9,604 | 5,266 |
| SM-ALC | \$48.9 | \$130.0 | \$7.2 | \$5.2 |
| (ITEMS) | 2,336 | 2,336 | 2,336 | 1,442 |
| WR-ALC | \$100.5 | \$345.7 | \$10.2 | \$7.8 |
| (ITEMS) | 3,012 | 3,012 | 3,012 | 1,997 |
| TOTAL \$ | \$1,405.9 | \$3,175.6 | \$84.5 | \$60.3 |
| TOTAL ITEMS | 39,658 | 39,658 | 39,658 | 20,845 |

Table 4

Using the same current policy as in POLICY 1, Table 5 shows the maximum amount of creditable returns in the MIC. Basically, POLICY 5 is the difference between the current AFAO and the on-hand plus on-order assets for the stock numbers that have a MIC balance. Should the \$84.5 million MIC inventory balance be understated, there is a large credit ceiling (\$819.2 million) up to which MIC assets can be returned.

ALLOWABLE MIC CREDIT RETURNS
POLICY 5: CURRENT POLICY
MAXIMUM ALLOWABLE CREDIT RETURN

| | WHOLESALE ASSET POSITION (ON-HAND + ON-ORDER) | CURRENT AFAO (2 YEARS) | MIC INVENTORY | MAXIMUM ALLOWED CREDIT AMOUNT |
|-------------|--|------------------------------|------------------|-------------------------------------|
| OC-ALC | \$950.1 | \$886.7 | \$34.5 | \$249.8 |
| (ITEMS) | 18,128 | 18,128 | 18,128 | 6,346 |
| OO-ALC | \$243.2 | \$241.0 | \$7.4 | \$71.8 |
| (ITEMS) | 6,578 | 6,578 | 6,578 | 2,648 |
| SA-ALC | \$940.3 | \$1,121.0 | \$25.2 | \$353.6 |
| (ITEMS) | 9,604 | 9,604 | 9,604 | 3,910 |
| SM-ALC | \$95.0 | \$108.4 | \$7.2 | \$36.0 |
| (ITEMS) | 2,336 | 2,336 | 2,336 | 1,042 |
| WR-ALC | \$232.4 | \$300.6 | \$10.2 | \$108.0 |
| (ITEMS) | 3,012 | 3,012 | 3,012 | 1,478 |
| TOTAL \$ | \$2,461.0 | \$2,657.7 | \$84.5 | \$819.2 |
| TOTAL ITEMS | 39,658 | 39,658 | 39,658 | 15,424 |

Table 5