

DTIC FILE COPY

2

STRATEGIC STUDIES INSTITUTE  
U.S. ARMY WAR COLLEGE  
CARLISLE BARRACKS, PENNSYLVANIA 17013-5050

10 September 1989

ACN 89007

FLEX-LEASE: AN ACQUISITION STRATEGY  
FOR THE 1990s

AD-A215 376

DTIC  
ELECTE  
NOV 21 1989  
S & B D

DISTRIBUTION STATEMENT:  
Approved for public release;  
distribution unlimited.

The views, opinions, and/or  
findings contained in this  
paper are those of the author  
and should not be construed  
as an official Department of  
the Army position, policy, or  
decision, unless so designated  
by other official documentation.

89 11 17 053

**U.S. ARMY WAR COLLEGE**

**Major General Paul G. Cerjan, Commandant**

\*\*\*\*\*

**STRATEGIC STUDIES INSTITUTE**

**Director**  
**Colonel Karl W. Robinson**

**Author**  
**Lieutenant Colonel David E. Shaver**

**Editor**  
**Mrs. Marianne P. Cowling**

**Secretary**  
**Mrs. Susan K. Blubaugh**  
**Ms. Rita A. Rummel**

\*\*\*\*\*

## **NOTE**

The contents of this publication represent the research and reasoning of the author and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documents.

## **COMMENTS**

Comments pertaining to this publication are invited and should be forwarded to: Director, Strategic Studies Institute, U.S. Army War College, Carlisle Barracks, PA 17013-5050.

# FOREWORD

This essay presents a concept which the author terms "flex-lease," an alternative acquisition strategy for the next decade. The author proposes that an ideal acquisition strategy in periods of restricted "cash flow" should absorb defense budget reductions without loss of force structure, weapon system cancellations, decreased readiness, restrictive organizational changes, or production line stretch-outs.

The purpose of this essay is to stimulate ideas which appropriately address impending defense budget reductions. The author's concept of "flex-lease" is a fresh approach to acquisition policy and theoretically is applicable to the Department of Defense procurement process.



KARL W. ROBINSON  
Colonel, IN  
Director, Strategic Studies Institute



<b>Accession For</b>	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
<b>Availability Codes</b>	
Dist	Avail and/or Special
A-1	

## BIOGRAPHICAL SKETCH OF THE AUTHOR

LIEUTENANT COLONEL DAVID E. SHAVER is a Strategic Research Analyst with the Strategic Studies Institute. His previous assignments have included command of combat engineer battalions in the 1st and 8th Infantry Divisions; Chief, Military Engineering and Topography Division, USAREUR; and S-3, 937th Engineer Group. In Vietnam he served as a unit commander and staff officer in the 62nd Engineer Battalion (Land Clearing). He received a bachelor's degree from the University of Nebraska-Omaha and a master of science degree from Florida Institute of Technology. Colonel Shaver is a graduate of the Command and General Staff College and the U.S. Army War College. He is author of *Force Structures: The United States and Europe in the Coming Decade*, and coauthor of *Conventional Arms Control in Europe: Army Perspectives*; *How To Think About Conventional Arms Control: A Framework*; and *Burdensharing and Mission Specialization in NATO*.

## FLEX-LEASE: AN ACQUISITION STRATEGY FOR THE 1990s

It should come as no surprise that current U.S. budgetary constraints are forcing Department of Defense decisionmakers to analyze alternatives for reducing costs. These alternatives include reduction of force structure, cancellation of proposed or existing programs, restructure and/or consolidation of existing organizations, reduction of readiness posture, and "stretch-outs" of existing procurement contracts. In such periods of restricted "cash flow," an acquisition strategy is particularly needed which will absorb defense budget reductions. Such a strategy would reduce the necessity for concurrent loss of force structure, weapons system cancellation, decreased readiness, restrictive organizational changes or production line stretch-outs; and the mobilization industrial base would be enhanced or stabilized. This acquisition alternative would not tamper with fielding plans of modern weapon systems. Is there such an alternative? Indeed there is, and it has been termed "Flex-Lease."

"Flex-lease" describes a combination of buying and open-end leasing with the option of purchase. The subsequent description of flex-lease includes a cost analysis of buying and leasing versus buying and stretching out purchases; a list of guidelines for use in decisionmaking; and a choice of leasing agents.

Before we closely examine the concept of flex-lease, we will first discuss the background of government leasing policy and costs associated with reducing or stretching out contracted equipment purchases. *The President's Private Sector Survey on Cost Control (The Grace Commission Report)*, a "comparison of vehicle ownership and leasing options," extols the benefits of ownership when compared with leasing General Services Administration (GSA) vehicles. "The study essentially shows that ownership is the least costly approach. . . . Open-end leasing is approximately 12 percent more costly. . . ."<sup>1</sup> The following excerpt from the report

explains the background of GSA studies in lease versus buy analysis:

GSA has conducted periodic studies of leasing and purchasing since the mid-1970s. In 1977, severe shortages of capital and increased demand for GSA vehicles influenced the decision to lease 5,800 compact sedans. Additional vehicles were leased in 1978, 1979, and 1980. By the end of 1980, 19,170 passenger vehicles, 35 percent of the Interagency Fleet Management System passenger fleet, were leased. In recognition of the fact that in this case leasing was uneconomical, every effort was made to reduce and eliminate dependence on leasing, and by 1983 all leased vehicles had been either terminated or converted to Government ownership.

The latest complete study of leasing versus ownership was conducted in August 1980 by the General Services Administration. The methodology was improved and results updated in March 1981 and again in November 1982. They showed a definite advantage of ownership over leasing, traceable to two important factors: the cost of government debt is usually lower than commercial rates and the government is one of the few entities which procures its vehicles directly from the manufacturer at reduced prices, instead of through an authorized dealership.

In approving large-scale leasing by GSA in 1977, the Office of Management and Budget stipulated that leasing was acceptable in the absence of sufficient capital for the preferred method of vehicle acquisition, outright purchase. The General Accounting Office agreed . . . studies have consistently confirmed this judgment. . . .<sup>2</sup>

Today, the GSA Interagency Fleet Management System (IFMS) has solicited bids for purchase and follow-on open-ended leasing arrangements for 10,050 sedans and light trucks.<sup>3</sup> Federal Property Management Regulation 101-25.502-2 provides the authority for the lease method of procurement:

The lease with option to purchase method shall be used when it is necessary or advantageous to proceed with acquisition of the equipment that meets program or system requirements but it is determined that purchase should be deferred because circumstances do not fully satisfy the conditions set forth in (this regulation).<sup>4</sup>

The information above confirms leasing as an acceptable acquisition policy alternative for reducing defense expenditure in periods of reduced or restricted "cash flow." Then why has the

Department of Defense opted for weapon system cancellations and procurement "stretch-outs" and reductions which intuitively appear to be more costly in the long term? We will now look at examples of procurement reductions and stretch-outs and their associated costs in more detail.

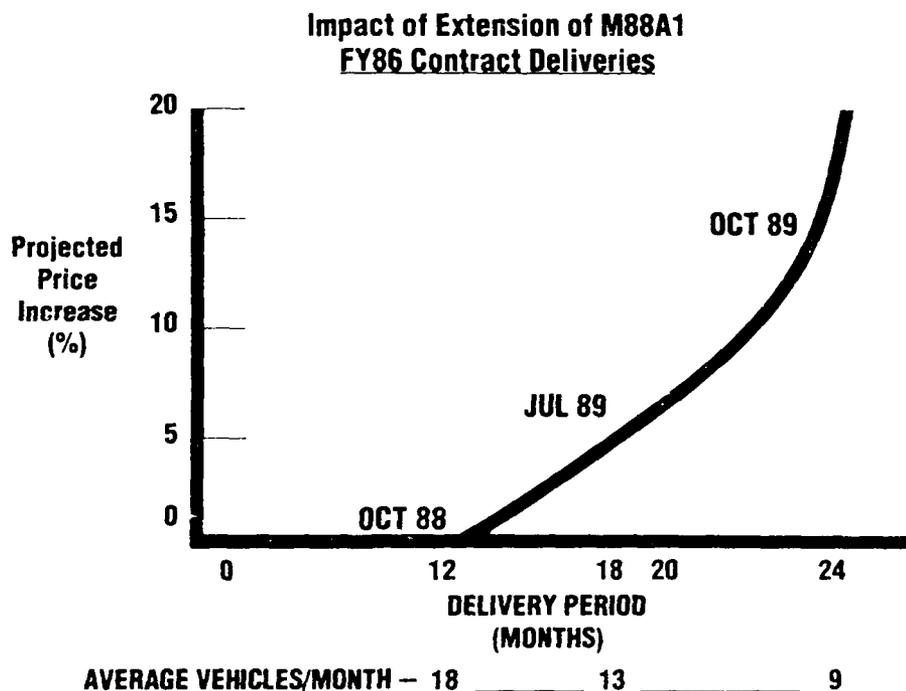
The Department of Defense has announced decisions to "stretch-out" certain major programs. For example, the Air Force C-17 transport aircraft and the Army M-1 tank and Apache anti-tank helicopter programs will be "stretched-out," or reduced, starting with the 1990 budget year. At least 13 C-17's will be stretched out<sup>5</sup> by the Air Force, and Army plans now call for "a drop from 840 tanks per year to 448 in 1990, and then to 261 in 1991,"<sup>6</sup> and the reduction of six Apache helicopters in 1990. The strategy of stretch-out acquisition appears to be standard operating procedure during periods of budgetary constraint, designed to secure short-term savings at long-term expense.

There are costs to stretch-out buying. A competitive manufacturer tries to stabilize production runs over the long-term to sustain economic rates of production, keep the labor force employed, avoid peaks and valleys created by production breaks, keep secondary suppliers "hot" to avoid additional new start-up costs and allow for plant modernization and future growth. If, in the examples of the C-17, the M-1, and the Apache, a major secondary manufacturer/supplier (subcontractor) deems the production rate brought about by the stretch-out as insufficient to keep his production lines and labor force intact, he may decide to terminate his contract. If such is the case, the primary manufacturer will be forced to seek another subcontractor and pay increased production start-up costs, resulting in higher per unit costs and production delays to the Department of Defense (DOD). In the case of the C-17, "stretch-outs" of purchases have contributed to an increase in aircraft unit price from \$119.1 million to \$124.9 million, for an overall aircraft program increase of \$1.5 billion.<sup>7</sup> The reduction in Apache purchase from 72 units planned in January 1989 to 66 units has increased the unit cost of the helicopter by 11 percent. Although concrete figures for increased unit costs for the M-1 tank were not available at publication time, the M-1 tank program will

experience a 5-10 percent cost increase due to the sharp production reductions recently announced.<sup>8</sup> Cost data does exist for other weapon system reductions and "stretch-out" buying, however, and the author has selected such a system for a "real world" look at "stretch-out" costs.

The example presented in Figure 1 involves the impact of production rate extension on the M88A1 tank recovery vehicle, a product of BMY Corporation. As noted in the graph, projected unit price increases occur exponentially as production rates are stretched. Here 18 vehicles can be delivered every 12 months. If the production rate is stretched to 9 vehicles in 24 months, the projected price increase is 15 percent.

Figure 1.



There are three terms in acquisition management which describe a manufacturer's production rate:

1. Maximum economic rate—which increases labor shift size, allows for plant expansion and high return on investment.

2. Minimum economic rate—which keeps labor shift size stable, does not allow plant growth, sustains subcontractor workload.

3. Minimum sustaining rate—reduces labor force substantially, does not allow plant growth, and places the subcontractor workload at risk.<sup>9</sup>

In the M88A1 example, BMY Corporation is currently producing at the minimum economic rate. The potential reduction will drop production to the minimum sustaining rate and result in substantially increased unit costs.

A model can be constructed on the data available for the M88A1 that suggests the "flex-lease" concept is an acceptable acquisition strategy.

If we budget for production of 18 recovery vehicles every year, we will own 90 vehicles at the end of 5 years. If we lease the vehicles rather than buy them, we know it may cost approximately 12 percent more per unit (from the *Grace Commission Report*). If we choose to keep production at the minimum economic rate in a period of severe budget constraint, we may elect to use "flex-lease" to buy half and lease the other half of the annual production. By buying half, we have directly reduced the cost of leasing the other half of annual production (9 vehicles). It may now cost us only 6 percent more, depending on the interest rate, to buy half and lease half than to buy all 18. At the end of 5 years, we will own the 45 vehicles which we purchased and will own as many additional vehicles as we selected to purchase, as funds became available. What is very important here is that we have 90 vehicles *in use* in accordance with our fielding plan of 18 per year.

If we contract for 90 vehicles over the 5-year period, but elect to stretch out production, unit costs may rise at a minimum of 15 percent (using BMY data for the M88A1) or even much higher. We will not field the 90 vehicles our fielding plan calls for and what we do field will obviously cost more in the long term. The difference between "pure" leasing and stretch-out buying may be represented as 3 percent cheaper (15 percent more expensive to stretch out minus 12 percent more expensive to lease). If we buy 50 percent and lease 50 percent at minimum economic rates of production, the savings over stretch-out may become as high as 9 percent (15 percent minus 6 percent), depending on interest rates. If we buy 75 percent and lease 25 percent, our savings could become 12 percent (15 percent minus 3 percent). The more we can buy without stretch-out, the greater the savings.

Flex-lease savings in the M88A1 example are not as significant as potential savings from more costly weapons systems. In periods of severe budget reductions, flex-leasing may become more important as well.

If, for example, we establish a unit cost of \$1 billion for a high ticket weapon system with a contracted buy of 90 systems over 5 years at 18 systems per year, then overlay a severe budget constraint of 10 percent per year for the next 3 years before a return to zero growth, the amount of funds allocated by year for this weapon system is:

Year	System Budget
1	\$16.200B
2	14.580B
3	13.122B
4	18.000B
5	<u>18.000B</u>
Total system funding	\$79.902B

Since we need \$90 billion for the 5-year contract, we will be \$10.1 billion short. This realization causes us to investigate stretch-outs, when perhaps we should look at flex-lease. I have

depicted flex-lease results, based on a 20-year economic life of the system at 10 percent annual simple interest below:<sup>10</sup>

<u>YEAR</u>	<u>SYSTEM BUDGET</u>	<u># BUY</u>	<u>COST OF BUY</u>	<u># LEASED</u>	<u>COST OF LEASE</u>	<u>TOTAL ANNUAL COSTS</u>	<u>BUDGET</u>
1	16.2B	15	15B	3	.5B	15.5B	+0.7B
2	14.6B	13	13B	5	1.3B	14.3B	+0.3B
3	13.1B	11	11B	7	2.4B	13.4B	-0.3B
4	18.0B	15	15B	3	2.9B	17.9B	+0.1B
5	18.0B	15	15B	3	3.4B	18.4B	-0.4B
<b>TOTAL</b>	<b>79.9B</b>	<b>69</b>	<b>69B</b>	<b>21</b>	<b>10.5B</b>	<b>79.5B</b>	<b>+.4B</b>

After 5 years we own 69 systems. The cost of purchasing the remaining 21 systems would be \$17B (which credits \$4B as payment on principal). If we opt not to buy, but to continue leasing, our annual lease payment will be \$3.4B, while the depreciated system buy-out cost would be reduced each year (depreciated value). We have the additional option of selling or returning the system to the manufacturer for product improvement and resale. By budgeting a contract closeout cost in the sixth year of \$17B, the total cost of flex-lease is \$96.5B or 7 percent more than buying (\$90B vs. \$96.5B). It should be noted that prime interest rates below 10 percent will reduce the cost of flex-lease and eliminate the cost overruns.<sup>11</sup> Now let's examine a stretch-out purchase using the same data. The following table depicts the same \$1B unit cost system in a purchase using a 15 percent increase criteria for stretch-out buying.

<u>YEAR</u>	<u>SYSTEM BUDGET</u>	<u># BUY</u>	<u>COST OF BUY</u>	<u>BUDGET</u>
1	16.2B	14	16.1B	+0.1B
2	14.6B	12	13.8B	+0.8B
3	13.1B	11	12.7B	+0.4B
4	18.0B	16	18.4B	-0.4B
5	18.0B	16	18.4B	-0.4B
<b>TOTAL</b>	<b>79.9B</b>	<b>69</b>	<b>79.4B</b>	<b>+0.5B</b>

After 5 years we own 69 systems, the same number that we owned using flex-lease. The cost of purchasing the remaining 21 vehicles will be \$21B, if we can influence the manufacturer to roll his unit price back to \$1B (unlikely), or \$24.2 billion if we can't. We did save \$0.5 billion during the budget years, so our total costs

include the reduced budget total of \$79.4 billion plus our contract buy out of \$24.2 billion less \$0.5B = \$103.6B. That is an *increase* to the original budget of \$13.6B or 15 percent versus 7 percent for flex-lease. Flex-lease offers the additional advantage of fielding in accordance with prescribed plans while stretch-out buying leaves us with at least 1 or 2 years left before we receive all 90 systems.

In this example, the best option remains purchase at minimum economic rates of production. "Pure" leasing may be 12 percent more expensive, stretch-out buying may be 15 percent more expensive, while flex-leasing could be only 7 (or less) percent more expensive. Since we have built a severe budget constriction into the analysis of 10 percent per year budget cuts for the first 3 years, let's now remove the constrictions and use zero-growth budgets with the same flex-lease buys and leases. In the data below, flex-lease results are depicted, based upon zero budget growth and the same buy-lease pattern that we used previously.

<b>YEAR</b>	<b>SYSTEM BUDGET</b>	<b># BUY</b>	<b>COST OF BUY</b>	<b># LEASED</b>	<b>COST OF LEASE</b>	<b>TOTAL ANNUAL COSTS</b>	<b>BUDGET</b>
1	18B	15	15B	3	0.5B	15.5B	+2.5B
2	18B	13	13B	5	1.3B	14.3B	+3.7B
3	18B	11	11B	7	2.4B	13.4B	+4.6B
4	18B	15	15B	3	2.9B	17.9B	+0.1B
5	18B	15	15B	3	3.4B	18.4B	-0.4B
<b>TOTAL</b>	<b>90B</b>	<b>69</b>	<b>69B</b>	<b>21</b>	<b>10.5B</b>	<b>79.5B</b>	<b>+10.5B</b>

After 5 years we still own 69 systems. The cost of purchasing the remaining 21 systems again would be \$17B, based on depreciated value. The difference is that we have generated a budget excess of \$10.5B. If our intention is to create budget excesses in FY 90 and 91 to fund other important systems, we can use flex-lease, as indicated above to generate them and budget close out costs in the sixth year as we did earlier.

The following flex-lease guidelines should be considered, before embarking on a cost analysis of buying and leasing versus buying and stretching out.

- Select high dollar units for maximum benefit.

- Select the most popular weapon systems which have viable world markets (e.g., MLRS, Patriot, F-15E, F16).
- Investigate stretch-out prices with manufacturer (the 15 percent figure for the M88A1 may be considerably higher).
- Determine manufacturer's minimum economic rate of production (a production rate that effectively utilizes all manufacturing inputs, and below which unit costs rise dramatically).
- Determine the economic life of the system to find annual depreciated value.
- Use current treasury bill rates to determine U.S. Government interest costs.
- Select the leasing agent (the Army has three choices, General Services Administration [currently used for light, nontactical vehicles], U.S. Army Materiel Command (AMC), and the manufacturer with or without use of a third party fiduciary).
- Service allied requests to lease. Israel presently is pressing "to lease" \$250 million worth of AH-64A Apache attack helicopters and an undisclosed amount of UH-60A Black Hawk transport helicopters from DOD under a little known reciprocal no-cost lease provision included in the 1989 National Defense Authorization Act. Abraham Orea, head of Israel's Defense Directorate of Procurement and Production, has stated: "A leasing arrangement with either one of the U.S. Armed Forces or with a manufacturer will enable us to get what we need now in spite of the lacking funds."<sup>12</sup>

## SUMMARY

In periods of budget constraints, decisionmakers seek alternatives for reducing costs. The alternatives of choice are reductions in force structure and readiness posture; cancellations of proposed or existing programs; restructuring or consolidating organizations and missions; and stretch-outs of existing procurement contracts. Flex-lease is an acquisition strategy which can absorb budget reductions without reducing, cancelling, or stretching out purchases while simultaneously enhancing or stabilizing the mobilization industrial base. Leasing may be 12 percent more expensive than buying. Stretch-outs are at least 15 percent more expensive than buying at minimum economic rates of production. Flex-leasing, a strategy of buying and leasing at stable production rates, is less expensive than either "pure" leasing or stretch-outs. With flex-lease, the more you can buy, the better off you are. A strategy of buying some systems and leasing the rest may only be 7 or less percent more expensive than normal purchase. Using flex-lease instead of stretching out programs such as the C-17 or the M-1 will keep system costs lower over the long term while generating budget year excesses in the short term. Theoretically, flex-lease is applicable to all DOD procurement. It is also available to our allies, so more systems can reach the field as planned within each budget year, without reducing, cancelling, restructuring, stretching out programs, or, ultimately, raising taxes.

## ENDNOTES

1. Office of Federal Supply and Service, Office of Transportation, National Fleet Management Division, "Comparison of Vehicle Ownership and Leasing Options," *The President's Private Sector Survey on Cost Control (The Grace Commission Report)*, March 1984, Disk CBP/Options.

2. *Ibid.*, Disk CBP/Options 1.

3. No. FCAPM-VO-97753-S, "Definite Quantity Contract for FSC Class 2310-Class III Sedans and FSC Class 2320-Class IV

Light Trucks, Open End Lease/Closed End Lease," *GSA Form 1602 (Rev. 6-84)*, October 7, 1988, pp. 2- 4.

4. *Federal Property Management Regulation 101-25.502-2*. p. 451.

5. Barbara Amouyal, "Air Force to Stretch C-17 Production to Cut Budget," *Defense News*, March 6, 1989, p. 3.

6. Peter Grier, "Budget Squeeze Scores Hit on Army's M-1 Tank," *The Christian Science Monitor*, February 17, 1989, p. 8.

7. Amouyal, p. 3.

8. Telephone conversation with cost specialists assigned to the M1A1 Project Management Office, Warren, Michigan.

9. *Ibid.*

10. The simple cost of leasing is estimated here by adding the annual principal repayment (5 percent of the borrowed sum based on a 20-year annual depreciation schedule) to the interest rate at simple, noncompounded. I selected 10 percent as the interest rate to simplify the mathematics. The prime rate is actually lower than 10 percent at this writing and the U.S. Government does borrow at much less than the prime rate.

11. The lower the interest rate selected in this illustration becomes, the lower the increase in the flex-lease cost over buying becomes.

12. Barbara Amouyal, "Israel Seeks to Lease Helicopters," *Defense News*, February 13, 1989, p. 1.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ACN 89007	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Flex-Lease: An Acquisition Strategy for the 1990s	5. TYPE OF REPORT & PERIOD COVERED Final Report	
	6. PERFORMING ORG. REPORT NUMBER	
7. AUTHOR(s) LTC David E. Shaver	8. CONTRACT OR GRANT NUMBER(s)	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Strategic Studies Institute U.S. Army War College Carlisle Barracks, PA 17013-5050	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS	
11. CONTROLLING OFFICE NAME AND ADDRESS Strategic Studies Institute U.S. Army War College Carlisle Barracks, PA 17013-5050	12. REPORT DATE 10 September 1989	
	13. NUMBER OF PAGES 15	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15. SECURITY CLASS. (of this report) UNCLASSIFIED	
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES <i>font in p. 12</i>		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) acquisition strategy, stretch-out buying, cash flow, Grace Commission, open-end leasing, option to purchase, "flex-lease", economic rate of production, modernization threshold, industrial base. (LD) <i>use single quote</i>		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) In this essay the author presents a concept which he terms "flex-lease" as an alternative acquisition strategy for the next decade. An ideal acquisition strategy in periods of restricted "cash flow" should absorb defense budget reductions without loss of force structure, weapon system cancellations, decreased readiness, restrictive organization changes, or production line stretch-outs. The author's thesis is that it is cheaper to buy and lease what you can afford, rather than buy and later stretch-out that buy. He also provides guidelines for "flex-lease" success in selection of applicable systems.		

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

(over)

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

20. Abstract (continued)

→determination of economic rate of production and life cycle costs and selection of leasing agent. *Report.*

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)