



UNCLASSIFIED

18 NOV 1991

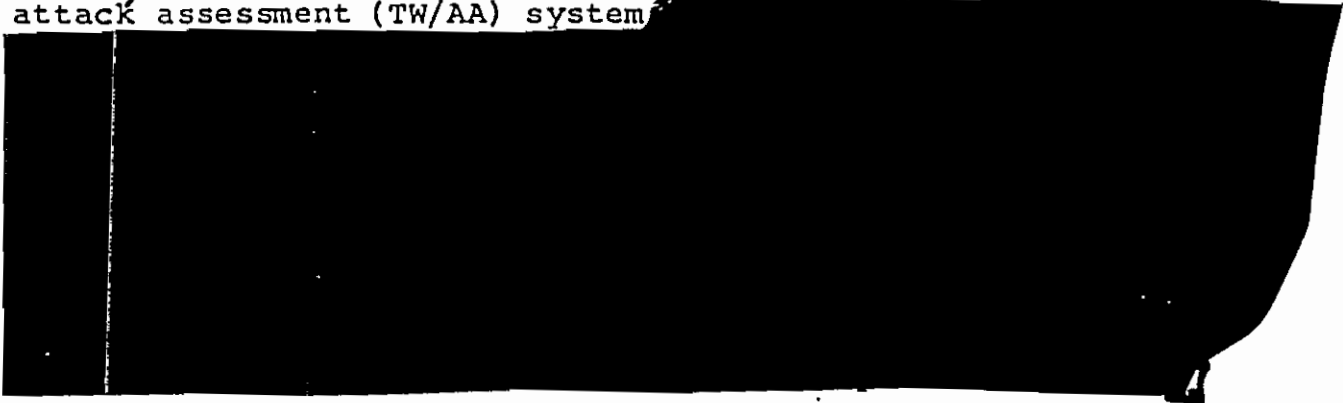
INTERNATIONAL
SECURITY POLICY

MEMORANDUM FOR ASSISTANT SECRETARY OF DEFENSE (COMMAND, CONTROL,
COMMUNICATIONS & INTELLIGENCE)

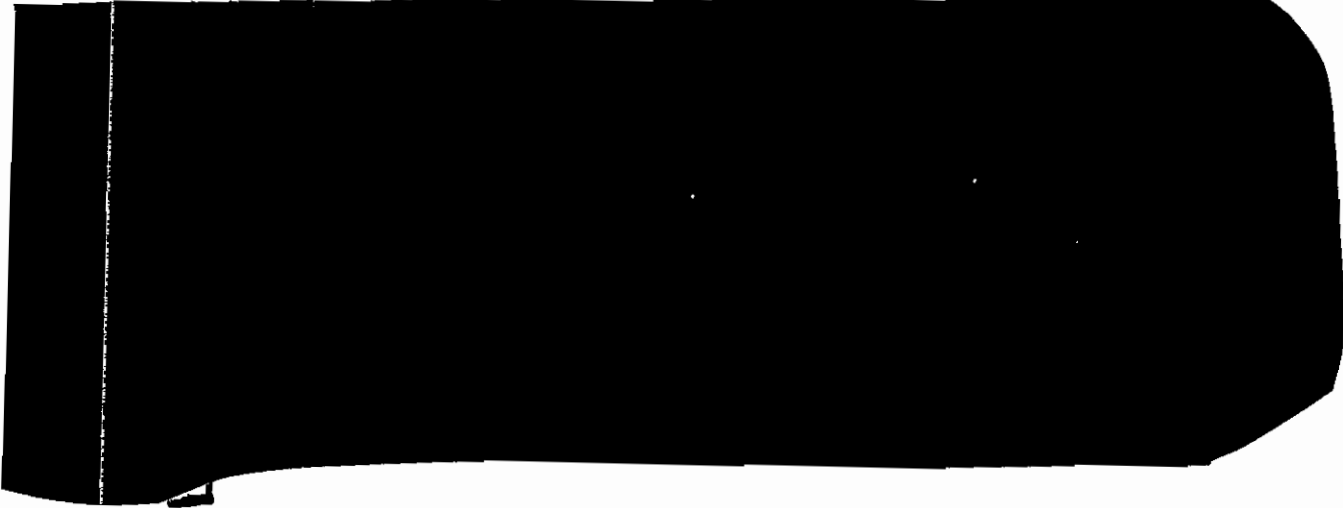
SUBJECT: Follow-On Early Warning System (U)

(U) Following the 21 October C3I Systems Committee meeting on the Follow-on Early Warning System (FEWS), OUSD(Policy) was invited to comment on the policy implications of PA&E's assessment of the COEA and the military significance of the improved capabilities provided by FEWS. We offer the following assessment of the military importance of FEWS to strategic and theater offensive and defensive forces in order to provide additional information to the Committee and to the DAB.

(S) The effective functioning of the U.S. tactical warning/attack assessment (TW/AA) system



(S) Within the strategic nuclear context,



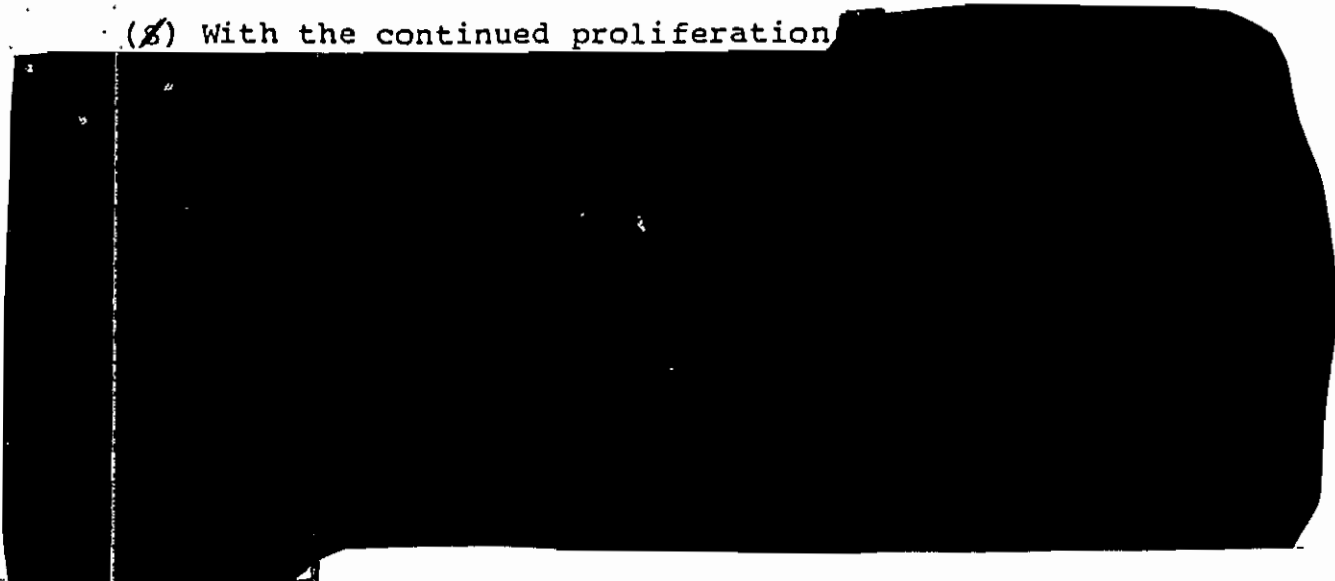
Classified by: DASD,ISP-NF&ACP
Declassify on: OADR

UNCLASSIFIED

~~SECRET~~

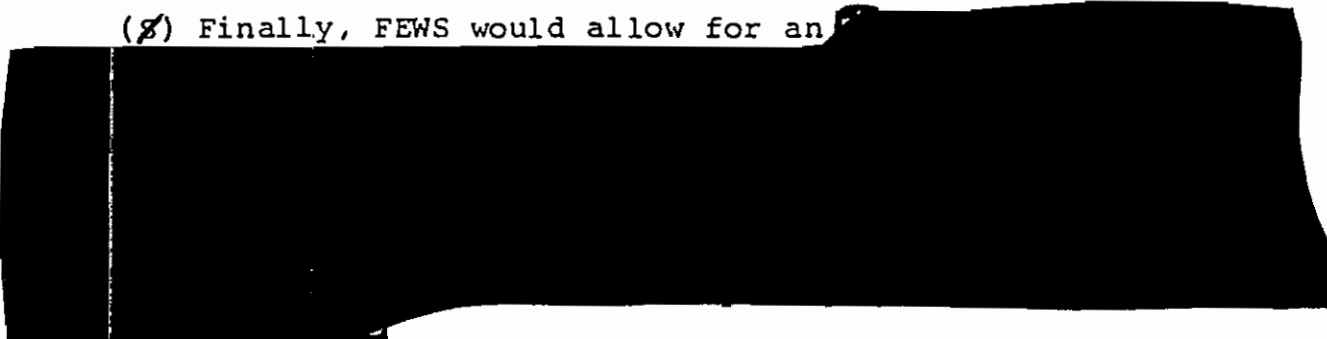
DOCUMENT # 3
92-FDI-1705

(S) With the continued proliferation



b (1)

(S) Finally, FEWS would allow for an



b (1)

(U) In summary, policy considerations continue to support the acquisition of FEWS as a key component of our future TW/AA system.

Douglas R. Graham
Deputy Assistant Secretary of Defense
Strategic Defense, Space & Verification Policy

Franklin C. Miller
Deputy Assistant Secretary of Defense
Nuclear Forces and Arms Control Policy

Prepared by: D.Rosenblum;ISP/SFP;4B880;x59535

INTEGRATED PROGRAM ASSESSMENT
for the

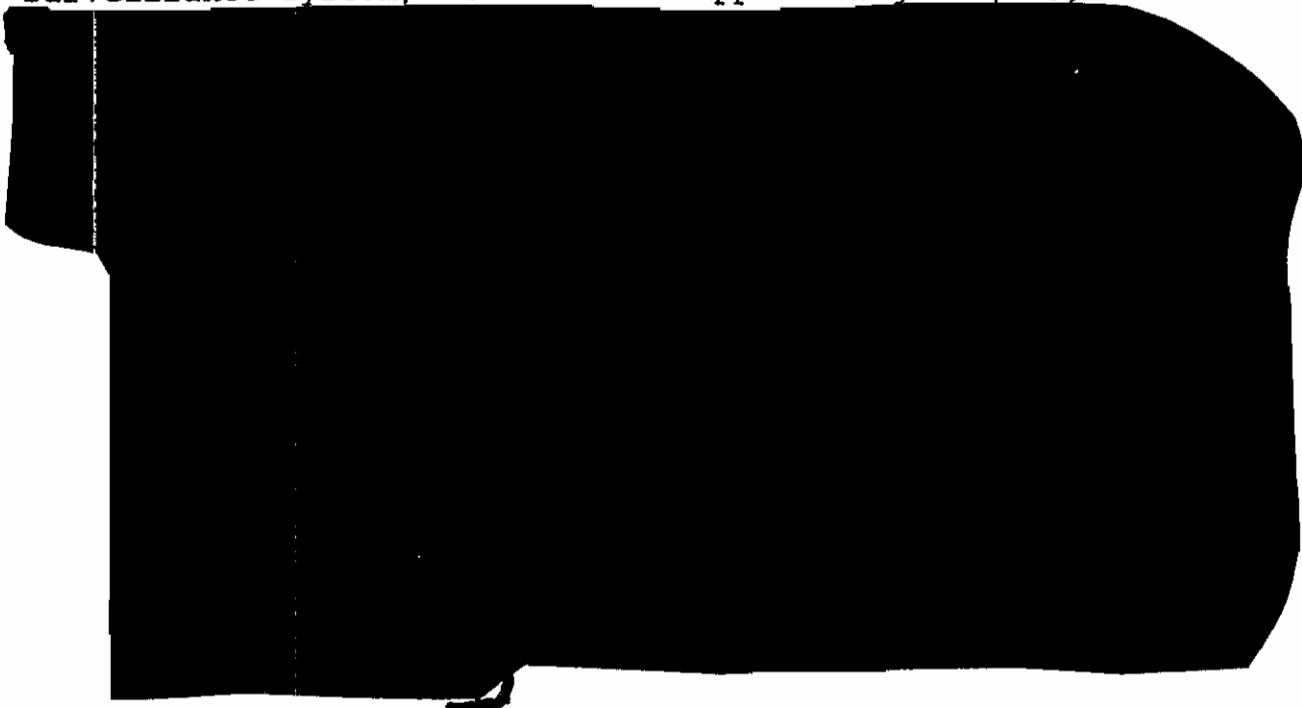
FOLLOW-ON EARLY WARNING SYSTEM (FEWS)

EXECUTION STATUS

(U) FEWS benefits from \$2 Billion in technology and systems investment by the Strategic Defense Initiative Organization on the Boost Surveillance and Tracking System (BSTS). Grumman and Lockheed (BSTS Dem/Val contractors) were under contract for BSTS until June 91. During this time they demonstrated critical hardware, focal plane arrays, onboard data processing, and optics. The BSTS program was ready for a Milestone II decision in Oct 90, but was canceled because of the SDIO redirection to develop the Brilliant Pebbles concept. Since the FEWS program descends from the BSTS efforts, it is farther along in development than most programs at this stage ... in a sense going from a Dem/Val (BSTS) phase into a Dem/Val (FEWS) phase.

THREAT HIGHLIGHTS AND PRESENT SYSTEM SHORTFALLS

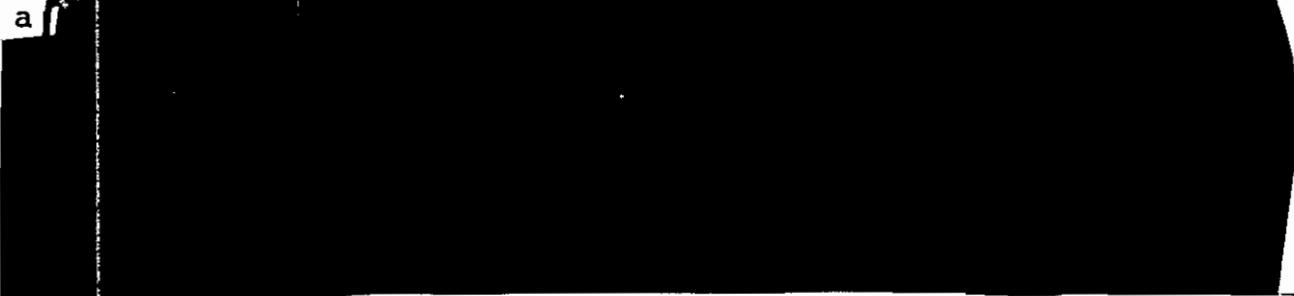
(S) There are several changes in the threat that make the present surveillance system, the Defense Support Program (DSP)



ALTERNATIVES

(S) The Cost and Operational Effectiveness Analysis (COEA) examined five alternatives to the current DSP system that attempt to resolve the shortfalls identified above--two upgraded versions

of DSP and three FEWS variants. The lowest cost alternative was a



DU

The Air Force plans to evaluate the costs and risks of various paths leading to full onboard stereo processing during the dem/val phase.

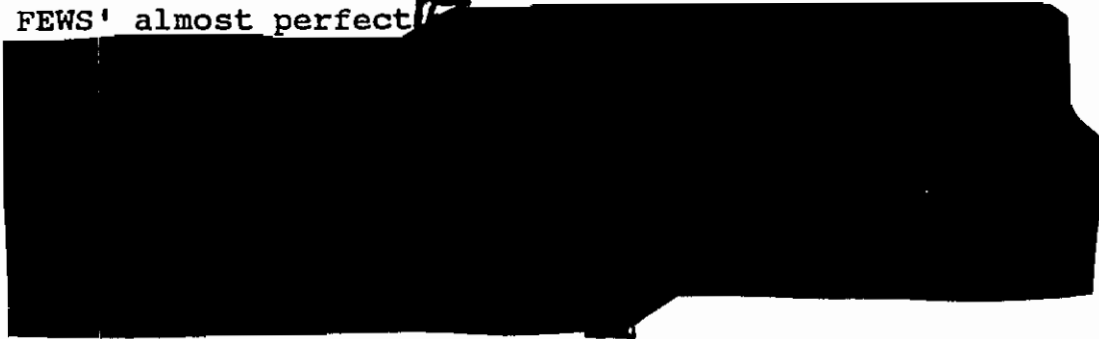
(S) Although the upgraded DSP options would perform better, relative to the JROC requirements, than the current DSP system, FEWS offers improvements in data quality, coverage, and survivability that DSP with reasonable upgrades cannot provide.

- o FEWS' most important advantage is its better



Upgrading DSP to the FEWS sensitivity level, if feasible, appears as costly as FEWS.

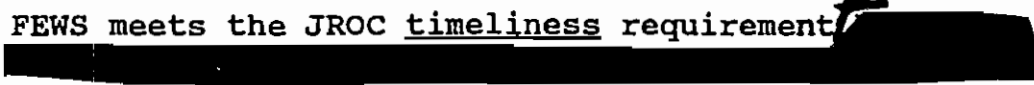
- o FEWS' almost perfect



- o FEWS provides





- o FEWS meets the JROC timeliness requirement





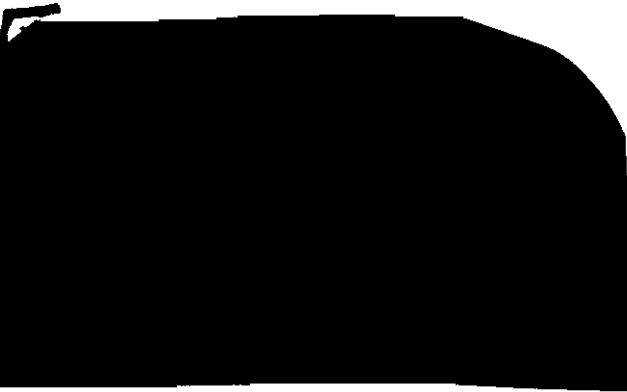
o FEWS would eliminate the costly and vulnerable overseas ground stations starting around 2005. This worthwhile improvement could also be implemented, perhaps earlier, with DSP by substituting reliable dual RF crosslinks for the currently programmed single laser crosslinks.

o FEWS would 

o Although there are some attractive options for upgrading DSP's performance  and reducing its cost (e.g., life extension improvements), DSP cannot evolve to the FEWS level of capability without a development effort as large as planned for FEWS.

(U) Despite these advantages for FEWS over DSP, the COEA had difficulty in demonstrating clearly significant consequences of the performance differences in terms of decision options available to the NCA and force commanders in the three scenarios it examined: large nuclear, limited nuclear, and theater conventional.

[Note - The committee did not reach consensus on the above conclusion. Some committee members feel that since FEWS will provide more complete, more accurate information to decision makers sooner, that FEWS provides critical information important to selecting an attack option.]

(S) In the large nuclear attack,  b(1)

[REDACTED]

(S) In a limited nuclear attack, [REDACTED]

[REDACTED]

[Note - Once again there was no committee consensus on this conclusion. Some members feel that the advantages of FEWS are critical in making decisions.]

(S) FEWS' greatest potential benefits appear to be in theater conflicts. [REDACTED]

[REDACTED] Whether or not these differences are significant will depend on the threat, our capabilities and tactics, and other theater-specific conditions. FEWS' most important contribution could be assisting theater missile defense. [REDACTED]

[REDACTED] The Air Force plans to evaluate the theater contribution of FEWS in more detail in the Milestone II COEA.

(S) The Program Office Estimate of the life cycle cost difference between the lowest cost DSP upgrade and FEWS with onboard monocular processing (the minimum FEWS capability that Congress will support) is about \$4.2 billion (FY91 \$) [REDACTED]

(U) In summary, the COEA made a reasonable case that FEWS is a cost-effective approach for meeting all the validated requirements. The COEA also attempted to assess the military

~~SECRET~~

UNCLASSIFIED

benefits independent of whether the requirements are fully satisfied. The importance of the FEWS' performance improvements was difficult to establish, however, due to the uncertainties associated with future NCA decision options (for nuclear attacks) and with future theater developments.

[Note - As above not all committee members agreed with this conclusion. FEWS does provide critical information needed for decision making.]

(U) Despite these uncertainties, however, a competitive dem/val program costing about \$450 million may be a worthwhile investment because:

- o Progress in design and technology during dem/val may reduce the weight and incremental cost of FEWS.
- o The competition may lead to lower costs than estimated in the COEA if FEWS proceeds to EMD, and might also result in more bidders and lower cost alternatives for a competitive DSP upgrade if FEWS is terminated after the dem/val.
- o Further developments in TMD might reveal that FEWS is a cost-effective alternative to an upgraded DSP for enhancing the performance of TMD systems.
- o Terminating FEWS would probably postpone any major sensitivity upgrade at least five years, delaying full capability until 2010 or later. Threats that require this sensitivity (or other FEWS advantages) could evolve sooner.

ACQUISITION STRATEGY

(U) The Air Force plan is to support two contractors in the Dem/Val process, and down-select to one contractor for EMD. In EMD we will build and launch seven satellites and build fixed and mobile ground stations. Two of the seven satellites will be built with RDT&E funds and five in an LRIP phase.

(U) We will not hold a Milestone III meeting before the completion of IOT&E as depicted in the Integrated Test Program Summary in the TEMP. The Committee will review the results of IOT&E and will then determine if the DAB needs to review the program.

(U) The Committee did not support the proposal in the Cooperative Opportunities Document to make FEWS a cooperative program. This was based on the fact that the FEWS program results from work completed under the Boost Surveillance and Tracking System (BSTS)

⁵ UNCLASSIFIED

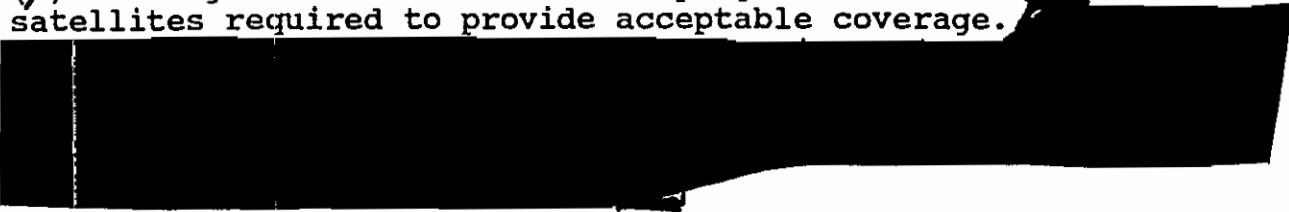
~~SECRET~~

and contractors have already formed teaming arrangements. Forcing this program to solicit cooperative efforts with foreign companies and governments will jeopardize our ability to capitalize on the BSTS efforts and delay the program. The committee does not recommend a cooperative program at this time, but encourages the Air Force to explore cooperative efforts in the next phase, especially with Canada.

(U) There was considerable discussion about FEWS' ability to provide warning of tactical ballistic missiles and support active defense in theater scenarios. The committee feels that the Air Force and the SDIO should define a sensor architecture that supports TW/AA and missile defense. This effort should include the need and plans for tactical terminals.

COST DRIVERS & MAJOR TRADEOFFS

(S) The major cost driver in this program is the number of satellites required to provide acceptable coverage.



RISK ASSESSMENT & RISK REDUCTION PLANS

(U) The Dem/Val phase will reduce risk in several key areas. The first area is the production and manufacturing levels of focal plane sensor devices and signal processing chips. The performance aspect of these devices is rated moderate and producibility is rated high risk. Development efforts will continue in these areas during the Dem/Val phase to bring the ratings to the moderate level at the start of EMD.

(U) The second area is in optical fabrication and testing. The BSTS effort included demonstration of advanced optical techniques as well as computer controlled surfacing. This area is rated moderate. The program office will test the full FEWS telescope system on the ground before it is flown.

(U) There are two designs for the communications crosslink system: laser and 60Ghz radio frequency. The overall risk to the crosslink program is moderate.

(U) The Dem/Val program will emphasize risk reduction and is integrated with planned and ongoing technology efforts in the SDIO.

(U) The System Program Office has satisfied earlier concerns about testing organizational level organic support during operational testing by agreeing that they will have the equipment in place for the test.

(U) In the next update of the Acquisition Program Baseline the Program Office will include operational availability thresholds and objectives for each of the functional mission areas, and include thresholds for specific parameters (such as mean time to repair), to constrain the logistics support burden for the survivable ground segment.

AFFORDABILITY

FEWS FUNDING	(TY \$ in M)					
	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>	<u>FY96</u>	<u>FY97</u>
REQD	82	327	415	432	741	736
CAIG EST	82	327	456	479	798	788
ABES	82	227	0	0	0	0

(U) The Air Force has underfunded the program and it is not executable.

(U) The Defense Program Projection (DPP) contains \$3.9B for FEWS in the FY98-03 period. The Integrated Program Summary projects a program \$1.3B greater than this. While Air Force investment commitments generally decline beyond FY98, this will worsen the already significant investment crunch in FY98.

RECOMMENDATION

(U) The Committee has determined that the FEWS alternatives are technically ready for the Demonstration/Validation phase when the Department fully funds the program. The Committee also recognizes that the FEWS alternatives provide a greater improvement in sensor performance than the DSP upgrades and provide a growth path that allow the Department to improve the program as the threat changes.

(U) The Committee agrees that in the face of the changing threat, primarily the proliferation of tactical ballistic missiles, the Department requires upgrades to the present system. And that the best way for the Department to obtain these upgrades and the flexibility to adapt to future threats is to initiate a competitive effort for the FEWS. The Committee recommends that the DAB approve the FEWS program to begin the Dem/Val phase.

UNCLASSIFIED

(U) ASD(C3I) and the Air Force presented this program to the Deputy Secretary of Defense as the Improved Competed DSP. This description accurately depicts what we need: an improvement over our present system, and competition to provide a cost effective way to obtain it.

UNCLASSIFIED