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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE June 2001		
BUDGET ACTIVITY 05 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604012F Joint Helmet Mounted Cueing System (JHMCS)					PROJECT 4789	
COST (\$ in Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
4789	Joint Helmet Mounted Cueing System (JHMCS)	16,711	1,300	5,960	1,957	1,012	3,090	3,157	3,228	0	36,415
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

Prior to FY00 JHMCS was funded under PE 64201F (Integrated Avionics Planning and Development).

The FY03-FY07 budget numbers do not reflect DoD's strategic review results.

(U) **A. Mission Description**
 This joint program with the Navy (Air Force is the lead service) will develop a helmet display system, capable of depicting aircraft heading data, pilot's viewing perspective, target indication graphics and digital information on the aircrew visor. Displaying this information allows the pilot to quickly align sensors and weapons on targets and engage threats using high off-boresight weapons such as the AIM-9X. A program restructure was approved in Dec 99 which extended the EMD contract to allow for redesign of the Helmet Interface Vehicle (HVI) cable to improve reliability, software upgrades to improve built-in test, and maturation of high off-boresight (HOBS) cueing capability with the AIM-9X. The restructure added a second LRIP in FY01 and delayed the Milestone III Production Decision from Sep 00 until Apr 02. Activities in FY02 include an Electronics Unit software update, helmet fit process improvements, regression testing, and preparation for Milestone III and full rate production. FY02 also includes study efforts to support night display and cueing with existing and future night vision goggles and definition of improved magnetic mapping processes to reduce the life cycle costs of mapping deployed aircraft.

(U) **FY 2000 (\$ in Thousands)**

(U) \$15,622	Continue JHMCS Engineering and Manufacturing Development (EMD) Contract
(U) \$588	Continue Air Force Flight Test Center (AFFTC) Test Support
(U) \$501	Continue Program Management Support
(U) \$16,711	Total

NOTE: Received \$9.874M FY00 Omnibus funding Nov 00 for planned support of EMD/Flight testing in FY00 and FY01 per the Dec 99 restructure.

The following net transactions are not reflected in the FY00 program total: BTR = -13K. These transactions are not reflected in other sections of the RDocs where an FY00 total is shown.

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(U) **A. Mission Description Continued**

(U) FY 2001 (\$ in Thousands)

- (U) \$628 Continue JHMCS Engineering and Manufacturing Development (EMD) Contract.
- (U) \$672 Continue Program Management Support
- (U) \$1,300 Total

The following net transactions are not reflected in the FY01 program total: BTR = +184K, SBIR = -45K. These transactions are not reflected in other sections of the RDocs where an FY01 total is shown.

(U) FY 2002 (\$ in Thousands)

- (U) \$5,492 Continue JHMCS Engineering and Manufacturing Development (EMD) Contract, to include night vision study efforts and P3I work.
- (U) \$468 Continue Program Management Support
- (U) \$5,960 Total

(U) **B. Budget Activity Justification**

This program is in budget activity 5 - EMD, Phase II, Research Category 6.4 because of the development nature of this program.

(U) **C. Program Change Summary (\$ in Thousands)**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 2001 PBR)	2,970	1,312	2,926	26,396
(U) Appropriated Value	2,970	1,312		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-19	-9		
b. Small Business Innovative Research	-85			
c. Omnibus or Other Above Threshold Reprogram	9,874			
d. Below Threshold Reprogram	3,983			
e. Rescissions	-12	-3		
(U) Adjustments to Budget Years Since FY 2001 PBR	0	0	3,034	
(U) Current Budget Submit/FY 2002 PBR	16,711	1,300	5,960	36,415

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(U) **C. Program Change Summary (\$ in Thousands) Continued**

(U) **Significant Program Changes:**

General:

The Air Force and Navy PEOs approved the JHMCS program restructure plan in Dec 99. The restructure extended the EMD contract to improve HVI reliability and mature HOBS performance, added a second LRIP in FY01, and delayed the MSIII decision until FY02. Production readiness in support of FRP will now occur in FY02. All HOBS cueing concerns were resolved during FY00. JHMCS now consistently provides HOBS cueing to the limits of the AIM-9X, and DT/OT pilots now rate performance as 'excellent'. The HVI was redesigned during FY00, successfully completed qualification testing, and is doing very well in tower testing. FY01 will also resolve the following R&M issues: canopy scratching, magnetic mapper ruggedness and open logistics documentation. The Navy PEO approved the program for LRIP in May 00 for the F/A-18E/F. Both PEOs approved the program for its second LRIP in May 01 to procure units for the F-15, F-16, and F/A-18E/F. The program was approved to start operational test and evaluation in Jun 01.

Funding:

The Dec 99 restructure required additional funding after the FY01PB. FY01 restructure funding requirements were covered with \$9.874M from the FY00 Omnibus Reprogramming, and an additional \$3.0M for FY02 was added in the FY02 President's Budget.

Schedule:

The following schedule milestones are based on the approved restructure: AFPEO/FB approved the program to enter LRIP 2 in May 01 and to start OT&E in Jun 01; LRIP 2 contract award 3QFY01; MSIII decision in 3QFY02 and Air Force RAA in 4QFY03.

(U) **D. Other Program Funding Summary (\$ in Thousands)**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>							
(U) RDT&E, BA 5, PE 0604201F, Integrated Avionics Planning and Development										45,151

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(U) E. Acquisition Strategy

JHMCS is an ACAT III joint USAF/USN program (USAF - executive service). The contract structure is a Cost Plus Award Fee (CPAF). The CPAF contract is through Boeing - St. Louis for integration into the F-15 and F/A-18 aircraft. All other aircraft integration will be handled by the respective platform Prime Contractor. Boeing has subcontracted to Vision Systems International (VSI) to provide JHMCS subsystems hardware/software. VSI is a partnership between Elbit (an Israeli company based in Ft Worth, TX) and Kaiser Electronics. The Joint Program Office is using a unique approach of developing common hardware as Government Furnished Equipment (GFE) to minimize platform integration risk. The results of this approach allows for substantial hardware commonality and 100% software commonality on all A/C. Furthermore lessons learned from one aircraft integration are directly transferable to all aircraft. The program received approval to restructure in FY00, extending the EMD contract to allow resolution of deficiencies including poor reliability of the HVI cable and software enhancements to improve high off boresight cueing. The restructure added a second LRIP in FY01 and delayed Milestone III from Sep 00 until Apr 02. The revised schedule better synchronizes JHMCS with the parallel developed AIM-9X missile.

(U) F. Schedule Profile

	<u>FY 2000</u>			<u>FY 2001</u>			<u>FY 2002</u>				
	1	2	3	1	2	3	4	1	2	3	4
(U) LRIP 1 Production Decision (Navy PEO(T))			*								
(U) LRIP 1 Contract Award				*							
(U) LRIP 2 Production Decision (AFPEO/FB)						*					
(U) Air Force IOT&E - Starts						*					
(U) Navy OPEVAL - Starts							X				
(U) IOT&E/OPEVAL - Completes									X		
(U) Full Rate Production Decision (MSIII)											X
(U) F-15 RAA - 4th Qtr FY03											

X - Planned event
* - Completed event

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE June 2001				
BUDGET ACTIVITY 05 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604012F Joint Helmet Mounted Cueing System (JHMCS)			PROJECT 4789			
(U) A. Project Cost Breakdown (\$ in Thousands)											
					FY 2000		FY 2001			FY 2002	
(U)	Project Cost Categories										
(U)	EMD				15,622		628			5,492	
(U)	Flight Test Support (AFFTC)				588		0			0	
(U)	Program Management				501		672			468	
(U)	Total				16,711		1,300			5,960	
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
(U) Performing Organizations:											
	<u>Contractor or Government Performing Activity</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Performing Activity EAC</u>	<u>Project Office EAC</u>	<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	<u>Product Development Organizations</u>										
	Boeing Company	CPAF	2/97	0	0	0	15,622	628	5,492	10,629	32,371
	<u>Support and Management Organizations</u>										
	Various	Various	2/97	0	0	0	501	672	468	1,815	3,456
	<u>Test and Evaluation Organizations</u>										
	Various	Various	2/97	0	0	0	588	0	0	0	588
(U) Government Furnished Property:											
	<u>Item Description</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Delivery Date</u>		<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	<u>Product Development Property</u>										
	<u>Support and Management Property</u>										
	<u>Test and Evaluation Property</u>										

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	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
	<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
<u>Subtotals</u>						
Subtotal Product Development	0	15,622	628	5,492	10,629	32,371
Subtotal Support and Management	0	501	672	468	1,815	3,456
Subtotal Test and Evaluation	0	588	0	0	0	588
Total Project	0	16,711	1,300	5,960	12,444	36,415