CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE **0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**41.381**	**71.952**	**15.053**	**7.831**	**0.784**	**0.784**	**0.881**	**0.881**
Project S3031/Single Int. Air Picture (SIAP)	**41.381**	**71.952**	**15.053**	**7.831**	**0.784**	**0.784**	**0.881**	**0.881**

PE transferred from SIAP System Engineering Task Force to the Navy starting in FY2004

A. (U) Mission Description and Budget Item Justification

A Single Integrated Air Picture (SIAP) is the product of fused, near-real-time and real-time data from multiple sensors to allow development of common, continuous, and unambiguous tracks of all airborne objects in the surveillance area. All airborne objects must be detected, tracked, and reported. Each object must have one and only one track identifier and associated characteristics to be incorporated into SIAP. Current systems do not provide this capability. The SIAP System Engineering (SE) Task Force was approved by the Joint Requirements Oversight Council (JROC) in March 2000, and chartered in Oct 2000 by the Under Secretary of Defense (A&T) to perform "the system engineering needed to fix problems in the existing Joint Data Network (JDN) and to guide development toward a future SIAP capability." This PE is funded by all the services and controlled by the SIAP Acquisition Executive. **Starting in FY2004 joint SIAP funding will transition to a US Army PE and related documentation will be provided through the US Army.**

This Joint engineering organization will develop tools/processes and perform system engineering that will identify cost effective fixes to US/coalition tactical data link systems. The resulting fixes will be addressed in incremental blocks designed to improve the SIAP. Each block will identify specific changes to be implemented in tactical systems to improve out integrated air and missile defense/theater air warfare capabilities. These blocks will identify the engineering specifications, supporting rationale (test results and analysis), and acquisition estimates expected to implement the changes. Once implemented by the Services, these improvements will reduce the risk of fratricide to US/coalition forces as well as allow our combatant commanders to exploit the full kinematic range of our weapons through better Joint Force integration.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME **0603879N SINGLE INT. AIR PICTURE (SIAP) SYS ENG**				PROJECT NUMBER AND NAME Project S3031/Single Int. Air Picture (SIAP)			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**41.381**	**71.952**	**15.053**	**7.831**	**0.784**	**0.784**	**0.881**	**0.881**
RDT&E Articles Qty	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Single Integrated Air Picture (SIAP) System Engineering (SE) Task Force (TF) is charged with implementing a disciplined systems engineering process to identify and recommend the most effective and efficient means to achieve a SIAP capability that satisfies warfighter needs. The product of the SIAP SE recommendations will be combat-ready, operationally certified equipment and computer programs that enable the warfighter to build and maintain a SIAP, as well as inputs to tactics, techniques, and procedures (TTP) necessary to operate the components of the integrated system.

• Block 0 addressed four joint warfighting shortfalls selected for their impact on the Joint Data Network (JDN), their applicability across the Services, and the engineering maturity reflected by interface change proposals already on-record. The Block 0 fixes addressed were: improved correlelation/decorrelation, formation tracking/correlation, identification taxonomy and symbology, and an identification (ID) conflict resolution matrix. The effect of these fixes will reduce operator confusion and lay the groundwork for subsequent JDN improvements.

• Block 1 is addressing a set of JDN deficiencies approved by United States Joint Forces Command to provide warfighter benefits which can be implemented in the near- to mid-term. The issues being addressed are: further reduction of dual tracks, improved combat ID capability, improved data sharing (network capacity), and improved air picture for theater ballistic missile defense performance.

Beginning in FY04 this project develops, designs, and tests Navy engineering changes for SIAP System Engineering Task Force Block upgrades in response to Joint Requirements Oversight Council (JROC) validated requirements. SIAP capability is being introduced through a series of Block improvements targeted at eliminating specific interoperability issues, providing C4I enhancements, and delivering an executable integrated architecture. Funding for planned systems upgrades (E-2C/CEC, AEGIS and Ship Self Defense System (SSDS).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	**0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	**Project S3031/Single Int. Air Picture (SIAP)**

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
SIAP System Engineering Task Force	41.381	0.000	0.000	0.000

(**U) FY2002 Accomplishments:**
The SIAP System Engineer laid the groundwork for developing engineering concepts needed to support improved integration of tactical combat systems through enhancements to the Joint Data Network and Joint Air & Missile Defense Integrated Architecture. Two key engineering products produced in FY 02 were our SIAP metrics that gave the Joint community standardized ways to measure the completeness, continuity, and accuracy of the air picture, and our first Common Reference Scenario that gave the Joint Community a set of standardized conditions to use in models and simulations.

Additional accomplishments and actions include:
-Block 0 Follow-up, included coordination with Services on Block 0 implementation plans and completing deferred work on Formation Tracking.
-Continued developement of Block 1 Improvement Plan, with focus on JDN enhancements to improve the JTAMD FoS SIAP performance, with a scheduled delivery to the JROC in Dec 02. This plan will identify the specific changes to be implemented in specific systems to improve the JTAMD FoS SIAP capability. This will include analysis and rationale, and acquisition estimates/costs. Engineering will start in FY02 but is not expected to complete until FY03.
- Developed prototype Capability and Limitations Document, May 02. This prototype gave joint commanders an initial concept for describing the capabilities and limitations of the Joint Theater Air and Missile Defense Family of Systems (JTAMD FoS).
- Developed System Engineering Management Plan, Apr 02. The SEMP provides a uniform framework for controlling all SIAP products.
- SIAP Architecture: Development continues in FY 02, with a scheduled delivery of Dec 02. The Architecture will comprise the set of SIAP requirements, specifications, interface definitions, and metrics the define the expected SIAP capability of current contributing systems. This will be the yardstick against which current SIAP deficiencies and future objective capabilities will be measured.
- SIAP Component of the Theater Air Missile Defense Integrated Architecture: Development continues in FY 02 with a scheduled delivery in Dec 02. The SIAP component of the TAMD architecture defines the Joint interfaces and connectivity, Joint performance requirements, and the associated information exchange requirements data models.
- SIAP Roadmap: Development continues in FY 02 with a scheduled initial delivery in Dec 02. The SIAP Roadmap defines block upgrades to satisfy operational requirements leading to the objective SIAP capability.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	**0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	**Project S3031/Single Int. Air Picture (SIAP)**

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
SIAP System Engineering Task Force	0.000	71.952	0.000	0.000

(U) FY2003 PLAN:

Continue developing Joint Data Network enhancements to improve the JTAMD FoS SIAP performance and continue to develop engineering concepts needed to support the Integrated Architecture. Specific products will include a recommended list of Block 1 improvements which will be presented to the JROC in the 1st Qtr of FY03, with the engineering specifications completed in 4th Qtr FY 03 . We will also refine the set of metrics needed to define the completeness, continuity, and accuracy of target tracks; and a description of the systems used by the services and the capabilities and limitations of those systems in providing a Single Integrated Air Picture.

BLOCK 0: Monitor implementation of Block 0 fixes in Service systems. Conduct technical design reviews with 13 core affected weapon systems implementing Block 0 fixes.

BLOCK 1: Complete engineering of Block 1 SIAP improvements affecting 30-50 programs across DoD. Establish technical configuration management of JROC approved solutions for Joint and NATO application.

BLOCK 2: Initiate definition of Block 2. Begin the process of translating JROC validated requirements into equipment and computer programs with the Services and JFCOM. Coordinate design and solution development with the Services and Agencies. Develop program objectives and management plan in accordance with the SIAP system engineering process.

ARCHITECTURE: Continue development of the SIAP component of the JTAMD Integrated Architecture. Coordinate the matching of Block 1 solutions and Block 2 issues to the Joint requirements as defined in the CRDs and Integrated Architecture. Establish maintenance functions to ensure that the Integrated Architecture functions as a Joint requirements engineering structure and decision making tool.

Systems Engineering Tools and Analysis: Develop analysis tools/techniques to evaluate the technical and warfighting benefits of the SIAP Block Improvements. Such analysis tools consist of modeling and simulation capabilities, hardware in the loop laboratories and data reduction of open-air live exercises. Analyze and synchronize candidate solutions with respect to individual Services and weapon systems. Plot predicted and fielded Joint Tactical Data Link performance capabilities timelines.

Validation and Certification of SIAP Block 0/1 improvements: Funds will be used to identify and provide SIAP-specific fidelity improvements in national testing and certification facilities. These enhancements to the current land-based infrastructure are necessary to support accurate validation and certification of the implementation of SIAP Block improvements. SIAP Block Improvements will be tested and certified for operational use and the land based testing infrastructure will be used to validate achievement of SIAP's Measures of Effectiveness (MOEs) and Measures of Performance (MOPs).

Program Management: Continues to support SIAP TF infrastructure requirements such as rent, LAN (local area network), telephone, computers, VTC(video teleconferences) center, conference rooms, office equipment, facilities management / construction and contract office support.

Starting in FY2004 the Joint Siap Task Force will be funded in a US Army PE and the Navy SIAP Upgrade program is being realigned to this PE.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	**0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	**Project S3031/Single Int. Air Picture (SIAP)**

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Navy Block Upgrade Implementation	0.000	0.000	15.053	7.831

(U) FY2004 PLAN:
Begins development of a SIAP reference implementation through the development of a “platform” independent behavior model and follow-on “platform” specific performance model in a digital computing environment. Navy Program Office engineering is required to assure common development of highly reusable software to accomplish the functionality required for each issue (e.g., data registration), and its integration with the functionality required for each system. FY 03 work is to design reference algorithms for priority core command and control systems: AEGIS, SSDS and E-2C/CEC.

(U) FY2005 PLAN:
Completes Block 1 design phase of the reference algorithms for the priority core command and control systems and initiates the code, debug and software testing phase in a simulation/stimulation environment.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	**0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	**Project S3031/Single Int. Air Picture (SIAP)**

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	42.727	73.966	0.000	0.000
Current BES/President's Budget: (FY04/05 OSD/OMB Controls)	41.381	71.952	15.053	7.831
Total Adjustments	-1.346	-2.014	15.053	7.831
Summary of Adjustments				
C3-SIAP	0.000	0.000	15.400	8.000
Congressional program reductions	0.000	0.000	0.000	0.000
Congressional undistributed reductions	-0.472	-0.818	0.000	0.000
Congressional rescissions	0.000	0.000	0.000	0.000
SBIR/STTR Transfer	-1.140	0.000	0.000	0.000
Economic Assumtions	-0.115	-1.196	-0.347	-0.169
Reprogrammings	0.381	0.000	0.000	0.000
Congressional increases	0.000	0.000	0.000	0.000
Subtotal	-1.346	-2.014	15.053	7.831

Schedule: See Atached R4.

Technical: Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME **0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	PROJECT NUMBER AND NAME **Project S3031/Single Int. Air Picture (SIAP)**

D. OTHER PROGRAM FUNDING SUMMARY: Block 1

Line Item No. & Name
PE 0603582N Combat Systems Integration
PE 0604307N Surface Combatant Combat System Imp.
PE 0604755N Quick Reaction Combat Capability
PE 0603658N Cooperative Engagement Capability

E. ACQUISITION STRATEGY: Not Applicable

F. MAJOR PERFORMERS:

Naval Surface Warfare Center, Dahlgren VA - Surface Combatant System Engineering and Computer Integration
Naval Air Warfare Center Aircraft Division, Patuxent River MD - Aircraft Platform Integration and System Engineering
Space and Warfare Systems Command, San Diego CA - System Communication

R-1 SHOPPING LIST - Item No. 83

Exhibit R-3 Cost Analysis (page 1) | DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N/BA-4** | PROGRAM ELEMENT: **0603879N** | PROJECT NAME AND NUMBER: S3031 - SINGLE INTEGRATED AIR PICTURE SYS ENG TASK FORCE

Cost Categories (Tailor to WBS, or System/Item Req't)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	**FY 03 Cost**	FY 03 Award Date	**FY 04 Cost**	FY 04 Award Date	**FY 05 Cost**	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 0	MIPR	Army PEO/AMD, Huntsville AL	0.838	0.041	VAR	0.000	VAR	0.000	VAR	0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	1.086	0.043		0.000		0.000		0.000	0.000	
	MIPR	Air Force ESC, Boston MA	1.283	0.046		0.000		0.000		0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0.601	0.020		0.000		0.000		0.000	0.000	
	VAR	Contract Supt, Various	4.268	1.050		0.000		0.000		0.000	0.000	
Subtotal Block 0			8.075	1.200		0.000		0.000				
Block 1	MIPR	Army PEO/AMD, Huntsville AL	8.707	6.633	VAR	0.000	VAR	0.000	VAR	0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	9.180	6.905		0.000		0.000		0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	9.866	7.248		0.000		0.000		0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	4.256	2.789		0.000		0.000		0.000	0.000	
	VAR	Contract Supt, Various	8.208	12.491		0.000		0.000		0.000	0.000	
	WX	NAVAIR, Pax River MD	0.000	0.000		4.516		2.349		CONT.	CONT.	
	WX	NSWC, Dahlgren VA	0.000	0.000		4.365		2.271		CONT.	CONT.	
	FAD	APL, Laurel MD	0.000	0.000		0.903		0.470		CONT.	CONT.	
	PD	SPAWAR, San Diego CA	0.000	0.000		2.559		1.331		CONT.	CONT.	
	VAR	Contract Supt, Various	0.000	0.000		2.710		1.410		CONT.	CONT.	
Subtotal Block 1			40.216	36.066		15.053		7.831		0.000	0.000	
Block 2	MIPR	Army PEO/AMD, Huntsville AL	0	2.060	VAR	0.000	VAR	0.000	VAR	0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	0	2.266		0.000		0.000		0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	0	2.369		0.000		0.000		0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0	1.030		0.000		0.000		0.000	0.000	
	VAR	Contract Supt, Various	0	2.275		0.000		0.000		0.000	0.000	
Subtotal Block 2				10.000		0.000		0.000				
Architecture	MIPR	Army PEO/AMD, Huntsville AL	0	1.536	VAR	0.000	VAR	0.000	VAR	0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	0	1.625		0.000		0.000		0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	0	1.684		0.000		0.000		0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0	0.786		0.000		0.000		0.000	0.000	
	VAR	Contract Supt, Various	0	2.369		0.000		0.000		0.000	0.000	
Subtotal Architecture				8.000		0.000		0.000				
System Engineering	MIPR	Army PEO/AMD, Huntsville AL	0	0.988	VAR	0.000	VAR	0.000	VAR	0.000	0.000	
Tools & Analysis	MIPR	Navy PEO/TSC, Arlington VA	0	0.876		0.000		0.000		0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	0	1.206		0.000		0.000		0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0	0.520		0.000		0.000		0.000	0.000	
	VAR	Contract Supt, Various	0	1.196		0.000		0.000		0.000	0.000	
Subtotal SE Tools & Analysis				4.786		0.000		0.000				
Validation and Certification	WR	Navy DEP/JDEP, NSWC-DD, Dahlgren VA	0	7.000		0.000		0.000				
TOTAL			48.291	67.052		15.053		7.831				
Remarks:												
Development Support Equipment											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

CLASSIFICATION: **UNCLASSIFIED**

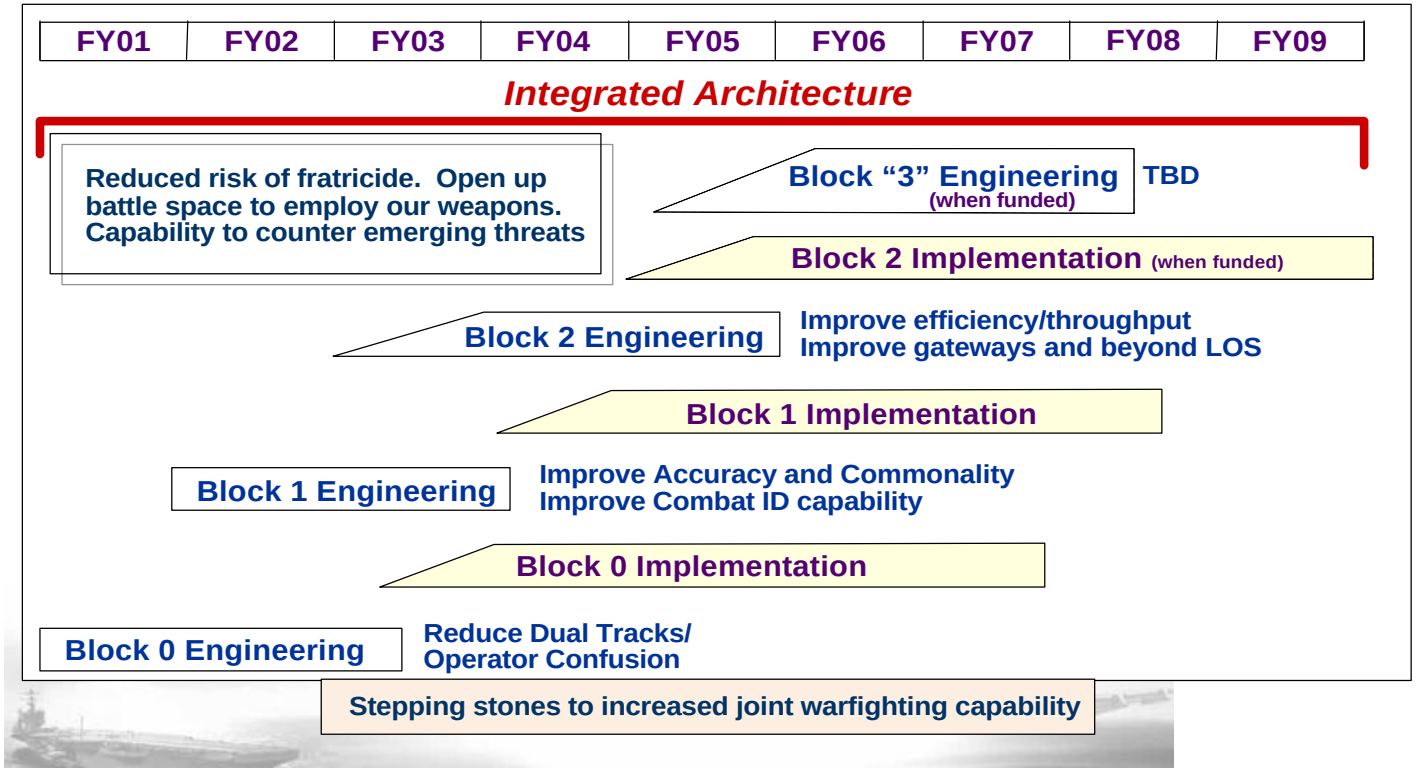
Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**			PROGRAM ELE **0603879N**	PROJECT NAME AND NUMBER S3031 - SINGLE INTEGRATED AIR PICTURE SYS ENG TASK FORCE									
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation													
Operational Test & Evaluation													
Tooling													
GFE													
Subtotal T&E			0.000	0.000		0.000		0.000			0.000		
Remarks:													
Contractor Engineering Support													
Government Engineering Support													
Program Management Support			0.975	1.900									
Travel			0.180	0.100									
Labor (Research Personnel)													
Rent/Const/Utilities/Computers				2.900									
Subtotal Management			1.155	4.900		0.000		0.000		0.000			
Remarks:													
Total Cost			49.446	71.952		15.053		7.831					
Remarks:													

R-1 SHOPPING LIST - Item No. 83

Exhibit R-3, Project Cost Analysi
(Exhibit R-3, page 9 of 10)

UNCLASSIFIED

EXHIBIT R4, Schedule Profile		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INTEGRATED AIR PICTURE (SIAP) SYS ENG	PROJECT NUMBER AND NAME Project S3031/Single Int. Air Picture (SIAP)



R-1 SHOPPING LIST - Item No. 83