

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE February 1997	
BUDGET ACTIVITY 7 - Operational System Development					PE NUMBER AND TITLE 0305145F Arms Control Implementation					
COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	948	27,841	0	0	0	0	0	0	0	948
4190 Treaty Prep/Verification Support	473	0	0	0	0	0	0	0	0	473
4283 Open Skies Treaty Systems Develop	475	0	0	0	0	0	0	0	0	475
4520 Comp Test Ban Treaty Data Ctr Dev	0	27,841	0	0	0	0	0	0	0	0
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

(U) **A. Mission Description and Budget Item Justification**
 (U) This element directly supports implementation and planning for current and pending arms control agreements.

- (U) Treaty preparation/verification support activities encompass a wide range of projects necessary to ensure United States compliance with ongoing and future arms control treaties and agreements.
- (U) Open Skies Treaty Systems Development support includes:
 - (U) Aircraft systems integration, engineering, test, and evaluation
 - (U) Synthetic Aperture Radar (SAR) prototype development
 - (U) Data Annotation and Recording Mapping System (DARMS) prototype development
 - (U) Ground processing software development.
- (U) Comprehensive Test Ban Treaty (CTBT) Prototype International Data Center Development and related CTBT technology development programs transfer from the Advanced Research Projects Agency (ARPA) to AF Arms Control in FY97. Work on seismic event identification techniques performed by Phillips Laboratory (Project 1010) and research on seismology in support of nuclear monitoring performed under the auspices of the AF Office of Scientific Research (Project 2309) were also transformed to AF Arms Control (PE 35145F) in FY97. These actions were taken to consolidate DOD funding and management of key treaty implementation activities and monitoring technologies into one program element.

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

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					February 1997						
BUDGET ACTIVITY			PE NUMBER AND TITLE								
7 - Operational System Development			0305145F Arms Control Implementation								
		<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>					
(U) Previous President's Budget		998	26,786	10,997	11,115						
(U) Appropriated Value											
(U) Adjustments to Appropriated Value											
a. Congressional General Reductions		-20	+1,718								
b. SBIR		-16									
c. Omnibus and Above Threshold Reprogramming											
d. Below Threshold Reprogramming											
e. Rescission		-14									
(U) Air Force Funding Crosswalked to DoD DSWA				-10,997	-11,115						
(U) Current Budget Submit/President's Budget		948	28,477	0	0						
(U) Change Summary Explanation:											
(U) Funding: Transfer of funds during FY98-03 POM.											
Schedule: Not Applicable											
Technical: Not Applicable											
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>											
		<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Cost To Compl</u>	<u>Total Cost</u>
(U) Aircraft Procurement: OC-135B		429	0	0	0	0	0	0	0	0	977
(U) Other Procurement: Items less than \$2.0		38	0	0	0	42	43	0	0	Cont.	Cont.
(U) D. <u>Schedule Profile</u>											
(U) See individual project schedules											

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 1997																																																		
BUDGET ACTIVITY 7 - Operational System Development					PE NUMBER AND TITLE 0305145F Arms Control Implementation				PROJECT 4190																																																	
COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																																
4190 Treaty Prep/Verification Support	473	0	0	0	0	0	0	0	0	473																																																
Quantity of RDT&E Articles																																																										
<p>(U) A. <u>Mission Description and Budget Item Justification</u></p> <ul style="list-style-type: none"> • (U) Treaty preparation/verification support activities encompass a wide range of projects necessary to ensure United States compliance with impending arms control treaties and agreements. They include modifications and enhancements to the Arms Control Treaty Information Operating Network (ACTION) system, research and analysis activities associated with preparing the USAF to support immediate compliance with existing agreements and analysis of the implications of future agreements and negotiations. • (U) Research and analysis associated with this project will be complete in FY96. No further funding has been programmed beyond FY96. <p>(U) <u>FY 1996</u></p> <ul style="list-style-type: none"> - (U) \$473 Accomplishes research to model threats and analyze feasibility of AF's National Missile Defense strategy. Analyzes compliance with ABM treaty. - (U) \$473 Total <p>(U) B. <u>Program Change Summary (\$ in Thousands)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>FY 1996</u></th> <th style="text-align: center;"><u>FY 1997</u></th> <th style="text-align: center;"><u>FY 1998</u></th> <th style="text-align: center;"><u>FY 1999</u></th> <th style="text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget</td> <td align="right">498</td> <td align="right">0</td> <td align="right">0</td> <td align="right">0</td> <td align="right">498</td> </tr> <tr> <td>(U) Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> a. Congressional General Reduction</td> <td align="right">-10</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> b. SBIR</td> <td align="right">-8</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> c. Omnibus and Above Threshold Reprogramming</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> d. Below Threshold Reprogramming</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>												<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>	(U) Previous President's Budget	498	0	0	0	498	(U) Appropriated Value						(U) Adjustments to Appropriated Value						a. Congressional General Reduction	-10					b. SBIR	-8					c. Omnibus and Above Threshold Reprogramming						d. Below Threshold Reprogramming					
	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>																																																					
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(U) Appropriated Value																																																										
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a. Congressional General Reduction	-10																																																									
b. SBIR	-8																																																									
c. Omnibus and Above Threshold Reprogramming																																																										
d. Below Threshold Reprogramming																																																										
Project 4190			Page 3 of 10 Pages				Exhibit R-2 (PE 0305145F)																																																			

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE February 1997
BUDGET ACTIVITY 7 - Operational System Development			PE NUMBER AND TITLE 0305145F Arms Control Implementation		PROJECT 4190
	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>
e. Rescission	-7				
(U) Adjustments to Budget Years Since FY97 PB		0			
(U) Current Budget Submit/President's Budget	473	0	0	0	473
(U) Change Summary Explanation:					
(U) Funding: SBIR, Rescission, Omnibus and Above Threshold, and General Congressional Reduction in FY96.					
Schedule: Not Applicable					
Technical: Not Applicable					
(U) C. Other Program Funding Summary (\$ in Thousands) Not Applicable					
(U) D. Schedule Profile					
	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
	1 2 3 4 1	2 3 4 1	2 3 4 1	2 3 4 1	
(U) Analysis and Support	X X X X				

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 1997																																
BUDGET ACTIVITY 7 - Operational System Development				PE NUMBER AND TITLE 0305145F Arms Control Implementation				PROJECT 4283																																
<i>COST (In Thousands)</i>	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																														
4283 Open Skies Treaty Systems Develop	475	0	0	0	0	0	0	0	0	475																														
Quantity of RDT&E Articles																																								
<p>(U) A. <u>Mission Description and Budget Item Justification</u></p> <ul style="list-style-type: none"> • (U) Open Skies support includes development of Synthetic Aperture Radar (SAR), SAR media processing equipment, the Data Annotation and Recording Mapping System (DARMS), as well as systems integration, engineering, test, and evaluation. This includes: <ul style="list-style-type: none"> - (U) Aircraft systems integration, engineering, test, and evaluation - (U) Synthetic Aperture Radar (SAR) prototype development - (U) Data Annotation and Recording Mapping System (DARMS) prototype development - (U) Ground processing software development • (U) System integration and test & evaluation of the FOC trainer OC-135B aircraft will be complete in FY96. No further funding has been programmed beyond FY96. <p>(U) <u>FY 1996</u></p> <ul style="list-style-type: none"> - (U) \$475 Completes system integration and test & evaluation of the FOC trainer OC-135B aircraft. - (U) \$475 Total 																																								
<p>(U) B. <u>Program Change Summary (\$ in Thousands)</u></p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:60%;"></th> <th style="width:10%; text-align: center;"><u>FY 1996</u></th> <th style="width:10%; text-align: center;"><u>FY 1997</u></th> <th style="width:10%; text-align: center;"><u>FY 1998</u></th> <th style="width:10%; text-align: center;"><u>FY 1999</u></th> <th style="width:10%; text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget</td> <td align="right">500</td> <td align="right">0</td> <td align="right">0</td> <td align="right">0</td> <td align="right">500</td> </tr> <tr> <td>(U) Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">a. Congressional General Reductions</td> <td align="right">-10</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>												<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>	(U) Previous President's Budget	500	0	0	0	500	(U) Appropriated Value						(U) Adjustments to Appropriated Value						a. Congressional General Reductions	-10				
	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>																																			
(U) Previous President's Budget	500	0	0	0	500																																			
(U) Appropriated Value																																								
(U) Adjustments to Appropriated Value																																								
a. Congressional General Reductions	-10																																							
Project 4283		Page 5 of 10 Pages				Exhibit R-2 (PE 0305145F)																																		

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)											DATE February 1997			
BUDGET ACTIVITY 7 - Operational System Development						PE NUMBER AND TITLE 0305145F Arms Control Implementation					PROJECT 4283			
		<u>FY 1996</u>		<u>FY 1997</u>		<u>FY 1998</u>		<u>FY 1999</u>		<u>Total Cost</u>				
b. SBIR		-8												
c. Omnibus and Above Threshold Programming		-7												
d. Below Threshold Reprogramming														
(U) Current Budget Submit/President's Budget		475		0		0		0		475				
(U) Change Summary Explanation:														
(U) Funding: Omnibus and Above Threshold and General Congressional Reduction in FY96.														
Schedule: Not Applicable														
Technical: Not Applicable														
(U) C. Other Program Funding Summary (\$ in Thousands)														
		<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To Compl</u>	<u>Total Cost</u>			
(U) Aircraft Procurement: OC-135B		429	0	0	0	0	0	0	0	0	977			
(U) Other Procurement: Items less than \$2.0		38	0	0	0	42	43	0	0	Cont	TBD			
(U) D. Schedule Profile														
<i>Includes all Program activities not just RDT&E</i>														
		<u>FY 1996</u>		<u>FY 1997</u>		<u>FY 1998</u>		<u>FY 1999</u>						
(U) Milestone II/III (Complete Mar 93)	1	2	3	4	1	2	3	4	1	2	3	4	1	2
(U) Critical Design Complete (3010)														
(U) FOC Aircraft #1														
(U) Modifications	X													
(U) T&E (3600)	X	X	X											
(U) Delivery			X											
(U) FOC Aircraft #2														
(U) Modifications (3010)	X	X	X											
(U) T&E (3600)			X	X	X									
(U) Delivery					X									
(U) FOC Retrofit of IOC Aircraft	X	X	X	X	X									
Project 4283														
Page 6 of 10 Pages														
Exhibit R-2 (PE 0305145F)														

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)											DATE February 1997					
BUDGET ACTIVITY 7 - Operational System Development					PE NUMBER AND TITLE 0305145F Arms Control Implementation						PROJECT 4283					
<i>Includes all Program activities not just RDT&E</i>					<u>FY 1996</u>		<u>FY 1997</u>		<u>FY 1998</u>		<u>FY 1999</u>					
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(U) T&E (3600)					X	X	X									
(U) Ground Proc'ng Facility Enhancements (3600)	X	X	X	X	X											
(U) Engine Stage III Noise Abatement																

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
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BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0305145F Arms Control Implementation	PROJECT 4520
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COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4520 Comp Test Ban Treaty Data Ctr Dev	0	27,841	0	0	0	0	0	0	0	0

Quantity of RDT&E Articles										
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(U) A. Mission Description and Budget Item Justification

(U) The CTBT effort will encompass a multitude of activities in FY97 that enable the DoD to prepare for US treaty implementation and compliance. Prior to FY97, these activities were managed by AFTAC, ARPA, Phillips Labs, and the Office of Scientific Research. Activities include:

- (U) Development of National and International Data Centers (\$16.3 million)
 - (U) secure and robust data communication and acquisition
 - (U) automated systems development and integration
 - (U) automated signal processing and integration into operational system
 - (U) expansion from seismic-only processing to include hydroacoustic, infrasound, and radionuclide data
 - (U) development of man-machine interface
 - (U) automation and integration of knowledge bases, multi-source cueing, and regional discrimination research
 - (U) complete integration of automated and interactive processing algorithms
 - (U) demonstrate atmospheric transport capability for radionuclide location
 - (U) prototype multi-technique data fusion and correlation system
 - (U) data authentication
 - (U) conclude testing of the integrated system
 - (U) initiation of transition of the IDC to CTBT Organization/Preparatory Commission
- (U) Treaty Implementation and Technical Support (\$4.593 million)
 - (U) definition of processes and techniques for treaty required data exchanges and notifications
 - (U) compliance and verification decision tools
 - (U) interface to other National Systems
 - (U) interface to the US research community

UNCLASSIFIED

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BUDGET ACTIVITY 7 - Operational System Development		February 1997												
PE NUMBER AND TITLE 0305145F Arms Control Implementation		PROJECT 4520												
<ul style="list-style-type: none"> - (U) support to Preparatory Commission activities - (U) provide capability to analyze, characterize and resolve events located in the US in order to minimize frivolous on-site inspection requests for foreign governments and the CTBT international organization • (U) Research and development of nuclear monitoring techniques (\$5.893 million) <ul style="list-style-type: none"> - (U) Seismic, hydroacoustic, infrasound and radionuclide data exploitation <ul style="list-style-type: none"> (U) improved understanding of the phenomenology of signal and noise sources (U) calibrated location and discrimination of small events globally, with emphasis on the former Soviet Union (U) modeling of sources and propagation (U) new techniques for multi-source data fusion - (U) Seismic-specific data exploitation <ul style="list-style-type: none"> (U) improved detection and identification of surface waves (U) improved depth estimation - (U) Hydroacoustic and infrasound-specific data exploitation <ul style="list-style-type: none"> (U) use of spatially- and temporally-varying velocity models for real-time event location (U) new discriminates for identification of events - (U) Radionuclide specific data exploitation <ul style="list-style-type: none"> (U) new techniques for detection and identification of fission products for gamma spectroscopy (U) improved event location using data from multiple stations and advance atmosphere transport models - (U) Satellite-specific data exploitation <ul style="list-style-type: none"> (U) characterization of low-level explosion and natural phenomena • (U) Prior to FY97, ARPA, Phillips Labs, and OSR managed these activities under the following PEs: <table border="0" style="margin-left: 20px;"> <tr> <td>(U) ARPA</td> <td>PE 0602301E, Project ST-23</td> </tr> <tr> <td>(U) OSR</td> <td>PE 0601102F, Project 2309</td> </tr> <tr> <td>(U) Phillips Labs</td> <td>PE 0602601F, Project 1010</td> </tr> </table> • (U) Funding and management of these efforts transferred to DSWA effective FY98. <table border="0" style="margin-left: 20px;"> <tr> <td>(U) <u>FY 1996</u></td> <td></td> </tr> <tr> <td>- (U) \$0</td> <td>N/A</td> </tr> <tr> <td>- (U) \$0</td> <td>Total</td> </tr> </table> 			(U) ARPA	PE 0602301E, Project ST-23	(U) OSR	PE 0601102F, Project 2309	(U) Phillips Labs	PE 0602601F, Project 1010	(U) <u>FY 1996</u>		- (U) \$0	N/A	- (U) \$0	Total
(U) ARPA	PE 0602301E, Project ST-23													
(U) OSR	PE 0601102F, Project 2309													
(U) Phillips Labs	PE 0602601F, Project 1010													
(U) <u>FY 1996</u>														
- (U) \$0	N/A													
- (U) \$0	Total													
Project 4520	Page 9 of 10 Pages	Exhibit R-2 (PE 0305145F)												

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE February 1997	
BUDGET ACTIVITY 7 - Operational System Development				PE NUMBER AND TITLE 0305145F Arms Control Implementation			PROJECT 4520
(U) <u>FY 1997</u> - (U) \$26,786 Multiple - (U) \$26,786 Total							
(U) B. <u>Program Change Summary (\$ in Thousands)</u>							
		<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total</u>	
(U) Previous President's Budget		0	26,786	10,997	11,115	<u>Cost</u>	
(U) Appropriated Value			0	0	0		
(U) Adjustments to Appropriated Value							
a. Reprogramming			0	-10,997	-11,115	Continuing	
(U) Current Budget Submit/President's Budget		0	26,786	0	0	Continuing	
 (U) Change Summary Explanation:							
(U) Funding: FY98-99 -- Transfers funding from AF to DSWA.							
Schedule: Not Applicable							
Technical: Not Applicable							
 (U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>							
 (U) D. <u>Schedule Profile</u>							
		<u>FY 1996</u>		<u>FY 1997</u>		<u>FY 1998</u>	
	1	2	3	4	1	2	3
		4		1	2	3	4
(U) Prototype IDC Development				X	X	X	X
(U) NDC Development				X	X	X	X
(U) Monitoring Technologies Development				X	X	X	X
(U) Treaty Implementation & Technical Support				X	X	X	X