

## **Annex C**

ADS-RF Initiator/Responder PICS/OICS



ATNP/WGA/WP A2/3/XX

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## **AERONAUTICAL TELECOMMUNICATION NETWORK PANEL**

### **WORKING GROUP A SUBGROUP A2 (AIR/GROUND APPLICATIONS)**

Toulouse 25th September - 4th October 2001

**Agenda Item 6 : PICS and Interoperability**

### **Automatic Dependent Surveillance Report Forwarding Initiator Edition 3** **PICS/OICS Proforma**

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#### **SUMMARY**

This working paper contains the OPLINKP Profile PICS/OICS proforma tables for ADS RF Initiator Version 1 (Doc 9705 Third Edition).

Worksheet	Tables
WGA Front Sheet	
Contents	
I-1 Identification	Table I-1: PICS/OICS Identification
I-2 Supplier	Table I-2: Supplier and Implementation Identification
I-3 Protocol Id	Table I-3: ADS Protocol Identification
S-1 Protocol Opts	Table S-1: ADS RF Protocol Options
S-2 Configs	Table S-2: ADS RF Conformant Configurations
S-3 Service Primitives	Table S-3: Supported ADS RF Service Primitives
S-4 Start Service Send	Table S-4: ADS Start Forward Service - Sending User (Request, Confirmation)
S-5 Start Service Receive	Table S-5: ADS Start Forward Service - Receiving User (Indication)
S-6 Forward Service	Table S-6: ADS Forward Report Service - Sending or Receiving User (Request, Indication)
S-7 End Forward Service	Table S-7: ADS End Forward Service - Initiating User (Request)
S-8 User Abort Service	Table S-8: ADS User Abort Service - Initiating User (Request, Indication)
S-9 Provider Abort Service	Table S-9: ADS Provider Abort Service - Initiating User (Indication)
S-10 Timers	Table S-10: ADS RF Service Provider Technical Timers
M-1 V1 ARF Top Level	Table M-1: ADS RF Top Level Messages (Version 1)
M-2 V2 ARF Top Level	Table M-2: ADS RF Top Level Messages (Version 2)
P-1 ADS Report	Table P-1: ADS Report
P-2 Emergency Report	Table P-2: ADS Emergency Report
P-3 V2 Emergency Urgency	Table P-3: ADS Emergency Urgency Status (Version 2)

Table I-1: PICS/OICS Identification

Ref No	PICS/OICS Identification	Implementation PICS/OICS
I-1.1	Date of Statement (DD/MM/YY)	
I-1.2	PICS/OICS Serial Number	
	Profile Identification	Profile Details
I-1.3	Profile Name	
I-1.4	Version	
I-1.5	Profile Authority Name	
I-1.6	Profile Applicability (Areas, Countries, Organisations etc where the profile can be applied)	
I-1.7	Date of effect	
I-1.8	Other Information	

Table I-2: Supplier and Implementation Identification

Ref No	Supplier Information	Supplier Details
I-2.1	Organization Name	
I-2.2	Contact Name(s)	
I-2.3	Address	
I-2.4	Telephone Number	
I-2.5	Telex Number	
I-2.6	Fax Number	
I-2.7	E-mail Address	
I-2.8	Other Information	
	<b>Implementation Information</b>	<b>Implementation Details</b>
I-2.9	Implementation Name	
I-2.10	Implementation Version	
I-2.11	Hardware Name	
I-2.12	Hardware Version	
I-2.13	Operating System Name	
I-2.14	Operating System Version	
I-2.15	Special Configuration	
I-2.16	Other Information	

Table I-3: ADS Protocol Identification

Ref No		OPLINKP	Profile	Implementation
I-3.1	Protocol Standard (Title, reference, date)	ICAO Doc 9705 Edition Three - 2001		
I-3.2	ADS Protocol Version	Version 1 Version 2		
I-3.3	Addenda, amendments and corrigenda implemented			
I-3.4	Defect Reports implemented			

Table S-1: ADS RF Protocol Options

Source: Chapter 8 - Subsetting Rules		OPLINKP Profile	Profile	IMP	Associated	Notes
Ref No	Protocol Option	Status	Status	Support	Predicate	
S-1.1	ADS Protocol Version 1	C.1			V1	
S-1.2	ADS Protocol Version 2	C.1			V2	
S-1.2.1	ADS Protocol Version 2 Emulating Version 1	C.2			V2E1	
S-1.3	ARF receiver	Not applicable to a Forward Initiator				
S-1.4	ARF initiator	M			INIT	
	Security Option					
S-1.5	Security	C.3			SEC	
S-1.6	No security	C.4			NOSEC	

**OPLINKP Profile:**

- C.1 One and only one must be supported
- C.2 If Version 2 (V2) supported then **O** else —
- C.3 If Version 2 (V2) supported then **M** else —
- C.4 If Version 2 (V2) supported then **O** else **M**

Table S-2: ADS RF Conformant Configurations

Source: Chapter 8 - Subsetting Rules		OPLINKP Profile	Profile	IMP	Notes
Ref No	List of Configurations: ARF ASE	Status	Status	Support	
S-2.1	I. ARF initiator or ARF receiver	M			
S-2.2	II. ARF receiver	X			



Table S-3: Supported ADS RF Service Primitives

Source: Chapter 3 - Abstract Service		Sender (req, [cnf])			Receiver (ind, [rsp])			Notes
Ref No	Service Primitives	OPLINKP Profile Status	Profile Status	IMP Support	OPLINKP Profile Status	Profile Status	IMP Support	
S-3.1	ARF-start-forward	M			M			
S-3.2	ARF-forward-report	M			M			
S-3.3	ARF-end-forward	M			M			
S-3.4	ARF-user-abort	M			M			
S-3.5	ARF-provider-abort	—	—	—	M			

Table S-4: ADS Start Forward Service - Sending User (Request, Confirmation)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
		Operational Use						
Ref No	Operational Elements	OPLINKP Profile	Status	Profile Cons	Implementation Status	Cons		
S-4.1	Capability of the initiating system to specify an ICAO Facility Designation							
S-4.1.1	ICAO facility designation = IA5 String SIZE(4..8)	M						
S-4.2	Capability of the initiating system to request a Class of Communication Service							
S-4.2.1	One from the abstract values: 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H'	O						
S-4.3	Capability of the initiating system to specify the details of a forwarded report							
S-4.3.1	Forwarded Report Details	O					See ForwardedReport (Table M-1)	
S-4.3.2	Enhanced Forward Request	C.1					See ForwardReport (Table M-1)	
S-4.4	Capability of the initiating system to understand a Reply							
S-4.4.1	Accepted	M						
S-4.4.2	Incompatible Version	M						
S-4.5	Capability of the initiating system to specify security							
S-4.5.1	One of the abstract values 'Exchange supporting key management' or 'No security'	C.1						
S-4.6	Capability of the initiating system to specify an emulated version							
S-4.6.1	ADS-RF Initiator ASE Version Number = INTEGER (1..255)	C.1						

**OPLINKP Profile:**C.1 If ADS-RF Version 2 supported then **M** else —

Table S-5: ADS Start Forward Service - Receiving User (Indication)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
		Operational Use						
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
S-5.1	Capability of the receiving system to understand the details of a forwarded report							
S-5.1.1	Forwarded Report Details	M					See ForwardedReport (Table M-1)	

Table S-6: ADS Forward Report Service - Sending or Receiving User (Request, Indication)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
		Operational Use						
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
S-6.1	Capability of the initiating system to specify or understand the details of a forwarded report							
S-6.1.1	Forwarded Report Details	M					See ForwardedReport (Table M-1)	

Table S-7: ADS End Forward Service - Initiating User (Request)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
		Operational Use						
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
S-7.1	Capability of the initiating system to request an end to the forwarding service	M						

Table S-8: ADS User Abort Service - Initiating User (Request, Indication)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
		Operational Use						
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
S-8.1	Capability of the initiating system to request or understand a User Abort	M						

Table S-9: ADS Provider Abort Service - Initiating User (Indication)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
		Operational Use						
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
S-9.1	Capability of the initiating system to understand a Provider Abort Reason							
S-9.1.1	Reason	M					See AbortReason (Table M-1/M-2)	

Table S-10: ADS RF Service Provider Technical Timers

Source: Chapter 5 - Protocol Definition			OICS							Notes
			Operational Use							
Ref No	ADS RF Service	Timer	OPLINKP Profile		Profile		Implementation			
			Status	Value	Status	Recommended Value	Status	Value		
S-10.1	ADS RF Timers									
S-10.1.1	ADS Start Forward Request	t-RF-1	M	6 minutes						
S-10.1.2	D-END Request	t-RF-2	M	6 minutes						



Table M-1: ADS RF Top Level Messages (Version 1)

Source: Chapter 4 - ASN.1		Sending					Receiving					PICS	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	ASN.1 Protocol Elements	
<b>M-1.1</b>	<b>ADS RF PDUs</b>											<b>ADSRFPDUs ::= CHOICE</b>	
M-1.1.1	ADS forwarded report PDU	M					M					[0] ADSForwardedReport	
M-1.1.2	ADS provider abort PDU	M					M					[1] AbortReason	
M-1.1.3	Use of Extensibility	X					M					Use of Extensibility	
<b>M-1.1.2</b>	<b>Abort Reasons</b>											<b>AbortReason ::= ENUMERATED</b>	
M-1.1.2.1	Communications service failure	M					M					(0) <i>communications-service-failure</i>	
M-1.1.2.2	Unrecoverable system error	M					M					(1) <i>unrecoverable-system-error</i>	
M-1.1.2.3	Invalid PDU	M					M					(2) <i>invalid-PDU</i>	
M-1.1.2.4	Sequence error	M					M					(3) <i>sequence-error</i>	
M-1.1.2.5	Timer expiry	M					M					(4) <i>timer-expiry</i>	
M-1.1.2.6	Cannot establish contact	—	—	—	—	—	M					(5) <i>cannot-establish-contact</i>	
M-1.1.2.7	Undefined error	M					M					(6) <i>undefined-error</i>	
M-1.1.2.8	Dialogue end not accepted	M					M					(7) <i>dialogue-end-not-accepted</i>	
M-1.1.2.9	Unexpected PDU	M					M					(8) <i>unexpected-PDU</i>	
M-1.1.2.10	Decoding error	M					M					(9) <i>decoding-error</i>	
M-1.1.2.11	Invalid qos parameter	—	—	—	—	—	M					(10) <i>invalid-qos-parameter</i>	
M-1.1.2.12	Use of Extensibility	X					M					Use of Extensibility	
<b>M-1.2</b>	<b>ADS Forwarded Report</b>											<b>ADSForwardedReport ::= SEQUENCE</b>	
M-1.2.1	Aircraft Address	M					M					AircraftAddress	
M-1.2.2	Forwarded Report	M					M					ForwardedReport	
<b>M-1.4</b>	<b>Forwarded Report</b>											<b>ForwardedReport ::= CHOICE</b>	
M-1.4.1	ADS Demand Report	M					M					[0] ADSReport	
M-1.4.2	ADS Periodic Report	M					M					[1] ADSReport	
M-1.4.3	ADS Event Report (	M					M					[2] SEQUENCE {	
M-1.4.4	Event Type	M					M					EventTypeReported	
M-1.4.5	ADS Report )	M					M					ADSReport }	
M-1.4.6	ADS Emergency Report	M					M					[3] ADSEmergencyReport	

Table M-2: ADS RF Top Level Messages (Version 2)

Source: Chapter 4 - ASN.1		Sending					Receiving					PICS	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	ASN.1 Protocol Elements	
<b>M-2.1</b>	<b>ADS RF PDUs</b>											<b>ADSRFPDUs ::= CHOICE</b>	
M-2.1.1	ADS forwarded report PDU	M					M					[0] ADSForwardedReport	
M-2.1.2	ADS provider abort PDU	M					M					[1] AbortReason	
M-2.1.3	Use of Extensibility	M					M					Use of Extensibility	
M-2.1.4	ADS enhanced forwarded report PDU	M					M					[2] EnhancedADSForwardedReport	
<b>M-2.1.2</b>	<b>Abort Reasons</b>											<b>AbortReason ::= ENUMERATED</b>	
M-2.1.2.1	Communications service failure	M					M					(0) communications-service-failure	
M-2.1.2.2	Unrecoverable system error	M					M					(1) unrecoverable-system-error	
M-2.1.2.3	Invalid PDU	M					M					(2) invalid-PDU	
M-2.1.2.4	Sequence error	M					M					(3) sequence-error	
M-2.1.2.5	Timer expiry	M					M					(4) timer-expiry	
M-2.1.2.6	Cannot establish contact	—	—	—	—	—	M					(5) cannot-establish-contact	
M-2.1.2.7	Undefined error	M					M					(6) undefined-error	
M-2.1.2.8	Dialogue end not accepted	M					M					(7) dialogue-end-not-accepted	
M-2.1.2.9	Unexpected PDU	M					M					(8) unexpected-PDU	
M-2.1.2.10	Decoding error	M					M					(9) decoding-error	
M-2.1.2.11	Invalid qos parameter	—	—	—	—	—	M					(10) invalid-qos-parameter	
M-2.1.2.12	Use of Extensibility	X					M					Use of Extensibility	
<b>M-2.2</b>	<b>ADS Forwarded Report</b>											<b>ADSForwardedReport ::= SEQUENCE</b>	
M-2.2.1	Aircraft Address	M					M					AircraftAddress	
M-2.2.2	Forwarded Report	M					M					ForwardedReport	
<b>M-2.3</b>	<b>Enhanced ADS Forwarded Report</b>											<b>EnhancedADSForwardedReport ::= SEQUENCE</b>	
M-2.3.1	Aircraft Address	M					M					[0] AircraftAddress	
M-2.3.2	Forwarded Report	M					M					[1] ForwardedReport	
M-2.3.3	Emergency Urgency Status	M					M					[2] ADSEmergencyUrgencyStatus (OPTIONAL)	
M-2.3.4	Use of Extensibility	X					M					Use of Extensibility	
<b>M-2.4</b>	<b>Forwarded Report</b>											<b>ForwardedReport ::= CHOICE</b>	
M-2.4.1	ADS Demand Report	M					M					[0] ADSReport	
M-2.4.2	ADS Periodic Report	M					M					[1] ADSReport	
M-2.4.3	ADS Event Report (	M					M					[2] SEQUENCE {	
M-2.4.4	Event Type	M					M					EventTypeReported	
M-2.4.5	ADS Report )	M					M					ADSReport }	
M-2.4.6	ADS Emergency Report	M					M					[3] ADSEmergencyReport	

Table P-1: ADS Report

Source: Chapter 4 - ASN.1		Sending					Receiving					PICS	Notes
Ref No	Operational Elements	OPLINKP Profile	Status	Profile Cons	Implementation Status	Cons	OPLINKP Profile	Status	Profile Cons	Implementation Status	Cons	ASN.1 Protocol Elements	
P-1.1	ADSReport											ADSReport ::= SEQUENCE	
P-1.1.1	Position	M					M					[0] Position	
P-1.1.2	Time Stamp	M					M					[1] DateTimeGroup	
P-1.1.3	Figure Of Merit	M					M					[2] FigureOfMerit	
P-1.1.4	Aircraft Address	M					M					[3] AircraftAddress	
P-1.1.5	Projected Profile	M					M					[4] ProjectedProfile	
P-1.1.6	Ground Vector	M					M					[5] GroundVector	
P-1.1.7	Air Vector	M					M					[6] AirVector	
P-1.1.8	Met Info	M					M					[7] MetInfo	
P-1.1.9	Short Term Intent	M					M					[8] ShortTermIntent	
P-1.1.10	Extended Projected Profile	M					M					[9] ExtendedProjectedProfile	
P-1.1.11	Use of Extensibility	X					M					Use of Extensibility	
P-1.1.1	Position											Position ::= SEQUENCE	
P-1.1.1.1	Latitude	M					M					Latitude	
P-1.1.1.2	Longitude	M					M					Longitude	
P-1.1.1.3	Level	M					M					Level	
P-1.1.1.1	Latitude											Latitude ::= SEQUENCE	
P-1.1.1.1.1	Sign	M					M					Sign	
P-1.1.1.1.2	Degrees (0-90)/1	M					M					INTEGER (0..90)	
P-1.1.1.1.3	Minutes (0-59)/1	M					M					INTEGER (0..59)	
P-1.1.1.1.4	Tenths of seconds (0-59.9)/1	M					M					INTEGER (0..599)	
P-1.1.1.1.1	Sign											Sign ::= ENUMERATED	
P-1.1.1.1.1.1	Plus	M					M					(0) <i>plus</i>	
P-1.1.1.1.1.2	Minus	M					M					(1) <i>minus</i>	
P-1.1.1.2	Longitude											Longitude ::= SEQUENCE	
P-1.1.1.2.1	Sign	M					M					Sign	
P-1.1.1.2.2	Degrees (0-180)/1	M					M					INTEGER (0..180)	
P-1.1.1.2.3	Minutes (0-59)/1	M					M					INTEGER (0..59)	
P-1.1.1.2.4	Tenths of seconds (0-59.9)/1	M					M					INTEGER (0..599)	
P-1.1.1.2.1	Sign											Sign ::= ENUMERATED	
P-1.1.1.2.1.1	Plus	M					M					(0) <i>plus</i>	
P-1.1.1.2.1.2	Minus	M					M					(1) <i>minus</i>	
P-1.1.1.3	Level 10s of feet (-750-100,000)/10											INTEGER (-75..10000)	
P-1.1.2	Date Time Group											DateTimeGroup ::= SEQUENCE	
P-1.1.2.1	Date	M					M					Date	
P-1.1.2.2	Time	M					M					Time	
P-1.1.2.1	Date											Date ::= SEQUENCE	

Source: Chapter 4 - ASN.1		Sending					Receiving					PICS	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	ASN.1 Protocol Elements	
P-1.1.2.1.1	Year	M					M					Year	
P-1.1.2.1.2	Month	M					M					Month	
P-1.1.2.1.3	Day	M					M					Day	
P-1.1.2.1.1	Year (1996-2095)											INTEGER (1996..2095)	
P-1.1.2.1.2	Month (1-12)											INTEGER (1..12)	
P-1.1.2.1.3	Day (1-31)											INTEGER (1..31)	
P-1.1.2.2	Time											Time ::= SEQUENCE	
P-1.1.2.2.1	Hours	M					M					[0] TimeHours	
P-1.1.2.2.2	Minutes	M					M					[1] TimeMinutes	
P-1.1.2.2.3	Seconds	M					M					[2] TimeSeconds	
P-1.1.2.2.1	TimeHours (0-23)											INTEGER (0..23)	
P-1.1.2.2.2	TimeMinutes (0-59)											INTEGER (0..59)	
P-1.1.2.2.3	TimeSeconds (0-59)											INTEGER (0..59)	
P-1.1.3	FigureOfMerit											FigureOfMerit ::= SEQUENCE	
P-1.1.3.1	Positional Accuracy	M					M					PositionalAccuracy	
P-1.1.3.2	Multiple navigational units operating	M					M					BOOLEAN	
P-1.1.3.3	ACAS operational	M					M					BOOLEAN	
P-1.1.3.1	PositionalAccuracy											PositionalAccuracy ::= ENUMERATED	
P-1.1.3.1.1	Complete loss	M					M					(0) complete-loss	
P-1.1.3.1.2	Under 30 nm	M					M					(1) under30nm	
P-1.1.3.1.3	Under 15 nm	M					M					(2) under15nm	
P-1.1.3.1.4	Under 8 nm	M					M					(3) under8nm	
P-1.1.3.1.5	Under 4 nm	M					M					(4) under4nm	
P-1.1.3.1.6	Under 1 nm	M					M					(5) under1nm	
P-1.1.3.1.7	Under 0.25 nm	M					M					(6) under-25nm	
P-1.1.3.1.8	Under 0.05 nm	M					M					(7) under-05nm	
P-1.1.4	AircraftAddress ICAO Airframe Id											BIT String SIZE(24)	
P-1.1.1.5	Projected Profile											ProjectedProfile ::= SEQUENCE	
P-1.1.1.5.1	Next way point	M					M					Position	See P-1.1.1
P-1.1.1.5.2	ETA at next way point	M					M					Eta	
P-1.1.1.5.3	Following way point	M					M					Position	See P-1.1.1
P-1.1.1.5.2	ETA	M					M					Time	See P-1.1.1
P-1.1.1.6	Ground Vector											GroundVector ::= SEQUENCE	
P-1.1.1.6.1	Track	M					M					DegreesDirection (OPTIONAL)	
P-1.1.1.6.2	Ground speed (-50 - 2200 knots)	M					M					INTEGER (-50..2200) (OPTIONAL)	

Source: Chapter 4 - ASN.1												PICS		Notes
Ref No	Operational Elements	Sending					Receiving					ASN.1 Protocol Elements		
		OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons			
P-1.1.1.6.3	Vertical Rate Change	M					M					VerticalRateChange (OPTIONAL)		

Source: Chapter 4 - ASN.1		Sending					Receiving					PICS	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	ASN.1 Protocol Elements	
P-1.1.1.6.1	Degrees Direction (0.1 - 360 degrees in units of 0.1 degrees)											INTEGER (1..3600)	
P-1.1.1.6.3	VerticalRateChange (-30000 - 30000 feet per minute in units of 10 feet/minute)											INTEGER (-3000..3000)	
P-1.1.1.7	Air Vector											AirVector ::= SEQUENCE	
P-1.1.1.7.1	Heading	M					M					[0] DegreesDirection (OPTIONAL)	
P-1.1.1.7.2	Air Speed	M					M					[1] AirSpeed (OPTIONAL)	
P-1.1.1.7.3	Vertical Rate Change	M					M					[2] VerticalRateChange (OPTIONAL)	
P-1.1.1.7.1	Degrees Direction (0.1 - 360 degrees in units of 0.1 degrees)											INTEGER (1..3600)	
P-1.1.1.7.2	AirSpeed											AirSpeed ::= CHOICE	
P-1.1.1.7.2.1	Mach	M					M					[0] Mach	
P-1.1.1.7.2.2	IAS	M					M					[1] Ias	
P-1.1.1.7.2.3	Mach and IAS	M					M					[2] SEQUENCE	
P-1.1.1.7.2.3.1	Mach	M					M					Mach	
P-1.1.1.7.2.3.2	IAS	M					M					Ias	
P-1.1.1.7.2.2	Ias (0 - 1100 knots)											INTEGER (0..1100)	
P-1.1.1.7.2.1	Mach (0.5-4 Mach in units of 0.001 Mach)											INTEGER (500..4000)	
P-1.1.1.8	Met Info											MetInfo ::= SEQUENCE	
P-1.1.1.8.1	Wind speed (0 - 300 knots)	M					M					[0] INTEGER (0..300) (OPTIONAL)	
P-1.1.1.8.2	Wind direction (1 - 360 degrees true N)	M					M					[1] INTEGER (1..360) (OPTIONAL)	
P-1.1.1.8.3	Temperature (-100 - 100 degrees C in units of 0.25 degrees)	M					M					[2] INTEGER (-400..400) (OPTIONAL)	
P-1.1.1.8.4	Turbulence (0 - 15)	M					M					[3] INTEGER (0..15) (OPTIONAL)	
P-1.1.1.9	Short Term Intent											ShortTermIntent ::= SEQUENCE	
P-1.1.1.9.1	Following way point	M					M					Position	See P-1.1.1
P-1.1.1.9.2	Projection Time	M					M					ProjectionTime	
P-1.1.1.9.3	Intermediate Intent	M					M					IntermediateIntent	
P-1.1.1.9.2	Projection Time (1min - 4 hrs in mins)											INTEGER (1..240)	
P-1.1.1.9.3	Intermediate Intent											IntermediateIntent ::=	
P-1.1.1.9.3.1	Number of groups (0-7)	M					M					SEQUENCE SIZE(0..7) OF SEQUENCE	
P-1.1.1.9.3.1.1	Distance (1 - 8000 Nautical miles)	M					M					INTEGER (1..8000)	
P-1.1.1.9.3.1.2	Track	M					M					DegreesDirection	
P-1.1.1.9.3.1.3	Level	M					M					Level	
P-1.1.1.9.3.1.4	Projection Time	M					M					ProjectionTime	

Source: Chapter 4 - ASN.1												PICS		Notes
Ref No	Operational Elements	Sending					Receiving					ASN.1 Protocol Elements		
		OPLINKP Profile	Status	Profile Cons	Implementation Status	Cons	OPLINKP Profile	Status	Profile Cons	Implementation Status	Cons			
P-1.1.1.9.3.1.2	Degrees Direction (0.1 - 360 degrees in units of 0.1 degrees)											INTEGER (1..3600)		
P-1.1.1.9.3.1.3	Level (-750 - 100 000 feet in units of 10 ft)											INTEGER (-750..100000)		
P-1.1.1.9.3.1.4	Projection Time (1min - 4 hrs in mins)											INTEGER (1..240)		
P-1.1.1.10	Extended Projected Profile											ExtendedProjectedProfile ::=		
P-1.1.1.10.1	Number of groups (1 - 128)	M					M					SEQUENCE SIZE(1..128) OF SEQUENCE		
P-1.1.1.10.1.1	Way point	M					M					Position		See P-1.1.1
P-1.1.1.10.1.2	ETA at each way point	M					M					Eta		
P-1.1.1.10.1.2	ETA	M					M					Time		See P-1.2.2

Table P-2: ADS Emergency Report

Source: Chapter 4 - ASN.1		Send					Receive					ASN.1 Protocol Elements	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
P-2.1	ADS Emergency Report											ADSEmergencyReport ::= SEQUENCE	
P-2.1.1	Position	M					M					[0] Position	
P-2.1.2	Time Stamp	M					M					[1] DateTimeGroup	
P-2.1.3	Figure Of Merit	M					M					[2] FigureOfMerit	
P-2.1.4	Aircraft Address	M					M					[3] AircraftAddress (OPTIONAL)	
P-2.1.5	Ground Vector	M					M					[4] GroundVector (OPTIONAL)	
P-2.1.1	Position											Position ::= SEQUENCE	
P-2.1.1.1	Latitude	M					M					Latitude	
P-2.1.1.2	Longitude	M					M					Longitude	
P-2.1.1.3	Level	M					M					Level	
P-2.1.1.1	Latitude											Latitude ::= SEQUENCE	
P-2.1.1.1.1	Sign	M					M					Sign	
P-2.1.1.1.2	Degrees (0-90)/1	M					M					INTEGER (0..90)	
P-2.1.1.1.3	Minutes (0-59)/1	M					M					INTEGER (0..59)	
P-2.1.1.1.4	Tenths of seconds (0-59.9)/1	M					M					INTEGER (0..599)	
P-2.1.1.1.1	Sign											Sign ::= ENUMERATED	
P-2.1.1.1.1.1	Plus	M					M					(0) plus	
P-2.1.1.1.1.2	Minus	M					M					(1) minus	
P-2.1.1.2	Longitude											Longitude ::= SEQUENCE	
P-2.1.1.2.1	Sign	M					M					Sign	
P-2.1.1.2.2	Degrees (0-180)/1	M					M					INTEGER (0..180)	
P-2.1.1.2.3	Minutes (0-59)/1	M					M					INTEGER (0..59)	
P-2.1.1.2.4	Tenths of seconds (0-59.9)/1	M					M					INTEGER (0..599)	
P-2.1.1.2.1	Sign											Sign ::= ENUMERATED	
P-2.1.1.2.1.1	Plus	M					M					(0) plus	
P-2.1.1.2.1.2	Minus	M					M					(1) minus	
P-2.1.1.3	Level 10s of feet (-750-100,000)/10											INTEGER (-75..10000)	
P-2.1.2	Date Time Group											DateTimeGroup ::= SEQUENCE	
P-2.1.2.1	Date	M					M					Date	
P-2.1.2.2	Time	M					M					Time	
P-2.1.2.1	Date											Date ::= SEQUENCE	
P-2.1.2.1.1	Year	M					M					Year	
P-2.1.2.1.2	Month	M					M					Month	
P-2.1.2.1.3	Day	M					M					Day	
P-2.1.2.1.1	Year (1996-2095)											INTEGER (1996..2095)	



Source: Chapter 4 - ASN.1		Send					Receive					ASN.1 Protocol Elements	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
P-2.1.2.1.2	Month (1-12)											INTEGER (1..12)	
P-2.1.2.1.3	Day (1-31)											INTEGER (1..31)	
P-2.1.2.2	Time											Time ::= SEQUENCE	
P-2.1.2.2.1	Hours	M					M					[0] TimeHours	
P-2.1.2.2.2	Minutes	M					M					[1] TimeMinutes	
P-2.1.2.2.3	Seconds	M					M					[2] TimeSeconds	
P-2.1.2.2.1	TimeHours (0-23)											INTEGER (0..23)	
P-2.1.2.2.2	TimeMinutes (0-59)											INTEGER (0..59)	
P-2.1.2.2.3	TimeSeconds (0-59)											INTEGER (0..59)	
P-2.1.3	Figure Of Merit											FigureOfMerit ::= SEQUENCE	
P-2.1.3.1	Positional Accuracy	M					M					PositionalAccuracy	
P-2.1.3.2	Multiple navigational units operating	M					M					BOOLEAN	
P-2.1.3.3	ACAS operational	M					M					BOOLEAN	
P-2.1.3.1	Positional Accuracy											PositionalAccuracy ::= ENUMERATED	
P-2.1.3.1.1	Complete loss	M					M					(0) complete-loss	
P-2.1.3.1.2	Under 30 nm	M					M					(1) under30nm	
P-2.1.3.1.3	Under 15 nm	M					M					(2) under15nm	
P-2.1.3.1.4	Under 8 nm	M					M					(3) under8nm	
P-2.1.3.1.5	Under 4 nm	M					M					(4) under4nm	
P-2.1.3.1.6	Under 1 nm	M					M					(5) under1nm	
P-2.1.3.1.7	Under 0.25 nm	M					M					(6) under-25nm	
P-2.1.3.1.8	Under 0.05 nm	M					M					(7) under-05nm	
P-2.1.4	AircraftAddress ICAO Airframe Id											BIT String SIZE(24)	
P-2.1.5	Ground Vector											GroundVector ::= SEQUENCE	
P-2.1.5.1	Track	M					M					DegreesDirection (OPTIONAL)	
P-2.1.5.2	Ground speed (-50 - 2200 knots)	M					M					INTEGER (-50..2200) (OPTIONAL)	
P-2.1.5.3	Vertical Rate Change	M					M					VerticalRateChange (OPTIONAL)	
P-2.1.5.1	Degrees Direction (0.1 - 360 degrees in units of 0.1 degrees)											INTEGER (1..3600)	
P-2.1.5.3	VerticalRateChange (-30000 - 30000 feet per minute in units of 10 feet/minute)											INTEGER (-3000..3000)	

Table P-3: ADS Emergency Urgency Status (Version 2)

Source: Chapter 4 - ASN.1		Send					Receive					ASN.1 Protocol Elements	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
<b>P-3.1</b>	<b>Emergency Urgency Status</b>											[2] ADSEmergencyUrgencyStatus ::= BIT STRING	
P-3.1.1	Emergency	M					M					(0) emergency	
P-3.1.2	No Communications	M					M					(1) no-communications	
P-3.1.3	Unlawful Interference	M					M					(2) unlawful-interference	
P-3.1.4	Minimum Fuel	M					M					(3) minimum-fuel	
P-3.1.5	Medical	M					M					(4) medical	
P-3.1.6	Reserved	M		Reserved			M					(5) reserved	
P-3.1.7	SIZE ( 6,	M					M					(SIZE (6,	
P-3.1.8	Extensibility Marker)	X					M					... ))	



ATNP/WGA/WP A2/3/XX

12 September 2001

## **AERONAUTICAL TELECOMMUNICATION NETWORK PANEL**

### **WORKING GROUP A SUBGROUP A2 (AIR/GROUND APPLICATIONS)**

Toulouse 25th September - 4th October 2001

**Agenda Item 6 : PICS and Interoperability**

### **Automatic Dependent Surveillance Report Forwarding Responder Edition 3** **PICS/OICS Proforma**

Prepared by: Mike Harcourt

#### **SUMMARY**

This working paper contains the OPLINKP Profile PICS/OICS proforma tables for ADS RF Responder Version 2 (Doc 9705 Second Edition).

Worksheet	Tables
WGA Front Sheet	
Contents	
I-1 Identification	Table I-1: PICS/OICS Identification
I-2 Supplier	Table I-2: Supplier and Implementation Identification
I-3 Protocol Id	Table I-3: ADS Protocol Identification
S-1 Protocol Opts	Table S-1: ADS RF Protocol Options
S-2 Configs	Table S-2: ADS RF Conformant Configurations
S-3 Service Primitives	Table S-3: Supported ADS RF Service Primitives
S-5 Start Service Receive	Table S-5: ADS Start Forward Service - Receiving User (Indication)
S-6 Forward Service	Table S-6: ADS Forward Report Service - Receiving User (Indication)
S-7 End Forward Service	Table S-7: ADS End Forward Service - Responding User (Indication)
S-8 User Abort Service	Table S-8: ADS User Abort Service - Responding User (Request, Indication)
S-9 Provider Abort Service	Table S-9: ADS Provider Abort Service - Responding User (Indication)
S-10 Timers	Table S-10: ADS RF Service Provider Technical Timers
M-1 V1 ARF Top Level	Table M-1: ADS RF Top Level Messages (Version 1)
M-2 V2 ARF Top Level	Table M-2: ADS RF Top Level Messages (Version 2)
P-1 ADS Report	Table P-1: ADS Report
P-2 Emergency Report	Table P-2: ADS Emergency Report
P-3 V2 Emergency Urgency	Table P-3: ADS Emergency Urgency Status (Version 2)

Table I-1: PICS/OICS Identification

Ref No	PICS/OICS Identification	Implementation PICS/OICS
I-1.1	Date of Statement (DD/MM/YY)	
I-1.2	PICS/OICS Serial Number	
	Profile Identification	Profile Details
I-1.3	Profile Name	
I-1.4	Version	
I-1.5	Profile Authority Name	
I-1.6	Profile Applicability (Areas, Countries, Organisations etc where the profile can be applied)	
I-1.7	Date of effect	
I-1.8	Other Information	

Table I-2: Supplier and Implementation Identification

Ref No	Supplier Information	Supplier Details
I-2.1	Organization Name	
I-2.2	Contact Name(s)	
I-2.3	Address	
I-2.4	Telephone Number	
I-2.5	Telex Number	
I-2.6	Fax Number	
I-2.7	E-mail Address	
I-2.8	Other Information	
	<b>Implementation Information</b>	<b>Implementation Details</b>
I-2.9	Implementation Name	
I-2.10	Implementation Version	
I-2.11	Hardware Name	
I-2.12	Hardware Version	
I-2.13	Operating System Name	
I-2.14	Operating System Version	
I-2.15	Special Configuration	
I-2.16	Other Information	

Table I-3: ADS Protocol Identification

Ref No		OPLINKP	Profile	Implementation
I-3.1	Protocol Standard (Title, reference, date)	ICAO Doc 9705 Edition Three - 2001		
I-3.2	ADS Protocol Version	Version 1 Version 2		
I-3.3	Addenda, amendments and corrigenda implemented			
I-3.4	Defect Reports implemented			

Table S-1: ADS RF Protocol Options

Source: Chapter 8 - Subsetting Rules		OPLINKP Profile	Profile	IMP	Associated	Notes
Ref No	Protocol Option	Status	Status	Support	Predicate	
S-1.1	ADS Protocol Version 1	C.1			V1	
S-1.2	ADS Protocol Version 2	C.1			V2	
S-1.2.1	ADS Protocol Version 2 Emulating Version 1	C.2			V2E1	
S-1.3	ARF receiver	M			none	
S-1.4	ARF initiator	Not applicable to a Forward Responder				
	Security Option					
S-1.5	Security	C.3			SEC	
S-1.6	No security	C.4			NOSEC	

**OPLINKP Profile:**

- C.1 One and only one must be supported
- C.2 If Version 2 (V2) supported then **O** else —
- C.3 If Version 2 (V2) supported then **M** else —
- C.4 If Version 2 (V2) supported then **O** else **M**



Table S-2: ADS RF Conformant Configurations

Source: Chapter 8 - Subsetting Rules		OPLINKP Profile	Profile	IMP	Notes
Ref No	List of Configurations: ARF ASE	Status	Status	Support	
S-2.1	I. ARF initiator or ARF receiver	X			
S-2.2	II. ARF receiver	M			

Table S-3: Supported ADS RF Service Primitives

Source: Chapter 3 - Abstract Service		Sender (req, [cnf])			Receiver (ind, [rsp])			Notes
Ref No	Service Primitives	OPLINKP Profile Status	Profile Status	IMP Support	OPLINKP Profile Status	Profile Status	IMP Support	
S-3.1	ARF-start-forward	—	—	—	M			
S-3.2	ARF-forward-report	—	—	—	M			
S-3.3	ARF-end-forward	—	—	—	M			
S-3.4	ARF-user-abort	M			M			
S-3.5	ARF-provider-abort	—	—	—	M			

Table S-5: ADS Start Forward Service - Receiving User (Indication)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
		Operational Use						
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
S-5.1	Capability of the receiving system to understand the details of a forwarded report							
S-5.1.1	Forwarded Report Details	M					See ForwardedReport (Table M-1)	

Table S-6: ADS Forward Report Service - Receiving User (Indication)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
Ref No	Operational Elements	Operational Use						
		OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
S-6.1	Capability of the responding system to understand the details of a forwarded report							
S-6.1.1	Forwarded Report Details	M					See ForwardedReport (Table M-1)	

Table S-7: ADS End Forward Service - Responding User (Indication)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
		Operational Use						
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
S-7.1	Capability of the responding system to understand an end to the forwarding service	M						

Table S-8: ADS User Abort Service - Responding User (Request, Indication)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
		Operational Use						
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
S-8.1	Capability of the responding system to request or understand a User Abort	M						

Table S-9: ADS Provider Abort Service - Responding User (Indication)

Source: Chapter 3 - Abstract Service		OICS					ASN.1 Description	Notes
		Operational Use						
Ref No	Operational Elements	OPLINKP Profile	Status	Cons	Implementation Status	Cons		
S-9.1	Capability of the responding system to understand a Provider Abort Reason							
S-9.1.1	Reason	M					See AbortReason (Table P-1)	

Table S-10: ADS RF Service Provider Technical Timers

Source: Chapter 5 - Protocol Definition			OICS						Notes
			Operational Use						
Ref No	ADS RF Service	Timer	OPLINKP Profile		Profile		Implementation		
			Status	Value	Status	Recommended Value	Status	Value	
S-10.1	ADS RF Timers								
S-10.1.1	ADS Start Forward Request	t-RF-1	M	6 minutes	Not used by the Responding System				
S-10.1.2	D-END Request	t-RF-2	M	6 minutes					



Table M-1: ADS RF Top Level Messages (Version 1)

Source: Chapter 4 - ASN.1		Sending					Receiving					PICS	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	ASN.1 Protocol Elements	
<b>M-1.1</b>	<b>ADS RF PDUs</b>											<b>ADSRFPDUs ::= CHOICE</b>	
M-1.1.1	ADS forwarded report PDU	—	—	—	—	—	M					[0] ADSForwardedReport	
M-1.1.2	ADS provider abort PDU	—	—	—	—	—	M					[1] AbortReason	
M-1.1.3	Use of Extensibility	—	—	—	—	—	M					Use of Extensibility	
<b>M-1.1.2</b>	<b>Abort Reasons</b>											<b>AbortReason ::= ENUMERATED</b>	
M-1.1.2.1	Communications service failure	—	—	—	—	—	M					(0) <i>communications-service-failure</i>	
M-1.1.2.2	Unrecoverable system error	—	—	—	—	—	M					(1) <i>unrecoverable-system-error</i>	
M-1.1.2.3	Invalid PDU	—	—	—	—	—	M					(2) <i>invalid-PDU</i>	
M-1.1.2.4	Sequence error	—	—	—	—	—	M					(3) <i>sequence-error</i>	
M-1.1.2.5	Timer expiry	—	—	—	—	—	M					(4) <i>timer-expiry</i>	
M-1.1.2.6	Cannot establish contact	—	—	—	—	—	M					(5) <i>cannot-establish-contact</i>	
M-1.1.2.7	Undefined error	—	—	—	—	—	M					(6) <i>undefined-error</i>	
M-1.1.2.8	Dialogue end not accepted	—	—	—	—	—	M					(7) <i>dialogue-end-not-accepted</i>	
M-1.1.2.9	Unexpected PDU	—	—	—	—	—	M					(8) <i>unexpected-PDU</i>	
M-1.1.2.10	Decoding error	—	—	—	—	—	M					(9) <i>decoding-error</i>	
M-1.1.2.11	Invalid qos parameter	—	—	—	—	—	M					(10) <i>invalid-qos-parameter</i>	
M-1.1.2.12	Use of Extensibility	—	—	—	—	—	M					Use of Extensibility	
<b>M-1.2</b>	<b>ADS Forwarded Report</b>											<b>ADSForwardedReport ::= SEQUENCE</b>	
M-1.2.1	Aircraft Address	—	—	—	—	—	M					AircraftAddress	
M-1.2.2	Forwarded Report	—	—	—	—	—	M					ForwardedReport	
<b>M-1.4</b>	<b>Forwarded Report</b>											<b>ForwardedReport ::= CHOICE</b>	
M-1.4.1	ADS Demand Report	—	—	—	—	—	M					[0] ADSReport	
M-1.4.2	ADS Periodic Report	—	—	—	—	—	M					[1] ADSReport	
M-1.4.3	ADS Event Report (	—	—	—	—	—	M					[2] SEQUENCE {	
M-1.4.4	Event Type	—	—	—	—	—	M					EventTypeReported	
M-1.4.5	ADS Report )	—	—	—	—	—	M					ADSReport }	
M-1.4.6	ADS Emergency Report	—	—	—	—	—	M					[3] ADSEmergencyReport	

Table M-2: ADS RF Top Level Messages (Version 2)

Source: Chapter 4 - ASN.1		Sending					Receiving					PICS	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	ASN.1 Protocol Elements	
<b>M-2.1</b>	<b>ADS RF PDUs</b>											<b>ADSRFPDUs ::= CHOICE</b>	
M-2.1.1	ADS forwarded report PDU	—	—	—	—	—	M					[0] ADSForwardedReport	
M-2.1.2	ADS provider abort PDU	—	—	—	—	—	M					[1] AbortReason	
M-2.1.3	Use of Extensibility	—	—	—	—	—	M					Use of Extensibility	
M-2.1.4	ADS enhanced forwarded report PDU	—	—	—	—	—	M					[2] EnhancedADSForwardedReport	
<b>M-2.1.2</b>	<b>Abort Reasons</b>											<b>AbortReason ::= ENUMERATED</b>	
M-2.1.2.1	Communications service failure	—	—	—	—	—	M					(0) communications-service-failure	
M-2.1.2.2	Unrecoverable system error	—	—	—	—	—	M					(1) unrecoverable-system-error	
M-2.1.2.3	Invalid PDU	—	—	—	—	—	M					(2) invalid-PDU	
M-2.1.2.4	Sequence error	—	—	—	—	—	M					(3) sequence-error	
M-2.1.2.5	Timer expiry	—	—	—	—	—	M					(4) timer-expiry	
M-2.1.2.6	Cannot establish contact	—	—	—	—	—	M					(5) cannot-establish-contact	
M-2.1.2.7	Undefined error	—	—	—	—	—	M					(6) undefined-error	
M-2.1.2.8	Dialogue end not accepted	—	—	—	—	—	M					(7) dialogue-end-not-accepted	
M-2.1.2.9	Unexpected PDU	—	—	—	—	—	M					(8) unexpected-PDU	
M-2.1.2.10	Decoding error	—	—	—	—	—	M					(9) decoding-error	
M-2.1.2.11	Invalid qos parameter	—	—	—	—	—	M					(10) invalid-qos-parameter	
M-2.1.2.12	Use of Extensibility	—	—	—	—	—	M					Use of Extensibility	
<b>M-2.2</b>	<b>ADS Forwarded Report</b>											<b>ADSForwardedReport ::= SEQUENCE</b>	
M-2.2.1	Aircraft Address	—	—	—	—	—	M					AircraftAddress	
M-2.2.2	Forwarded Report	—	—	—	—	—	M					ForwardedReport	
<b>M-2.3</b>	<b>Enhanced ADS Forwarded Report</b>											<b>EnhancedADSForwardedReport ::= SEQUENCE</b>	
M-2.3.1	Aircraft Address	—	—	—	—	—	M					[0] AircraftAddress	
M-2.3.2	Forwarded Report	—	—	—	—	—	M					[1] ForwardedReport	
M-2.3.3	Emergency Urgency Status	—	—	—	—	—	M					[2] ADSEmergencyUrgencyStatus (OPTIONAL)	
M-2.3.4	Use of Extensibility	—	—	—	—	—	M					Use of Extensibility	
<b>M-2.4</b>	<b>Forwarded Report</b>											<b>ForwardedReport ::= CHOICE</b>	
M-2.4.1	ADS Demand Report	—	—	—	—	—	M					[0] ADSReport	
M-2.4.2	ADS Periodic Report	—	—	—	—	—	M					[1] ADSReport	
M-2.4.3	ADS Event Report (	—	—	—	—	—	M					[2] SEQUENCE {	
M-2.4.4	Event Type	—	—	—	—	—	M					EventTypeReported	
M-2.4.5	ADS Report )	—	—	—	—	—	M					ADSReport }	
M-2.4.6	ADS Emergency Report	—	—	—	—	—	M					[3] ADSEmergencyReport	

Table P-1: ADS Report

Source: Chapter 4 - ASN.1		Sending					Receiving					PICS	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	ASN.1 Protocol Elements	
P-1.1	ADSReport											ADSReport ::= SEQUENCE	
P-1.1.1	Position	—	—	—	—	—	M					[0] Position	
P-1.1.2	Time Stamp	—	—	—	—	—	M					[1] DateTimeGroup	
P-1.1.3	Figure Of Merit	—	—	—	—	—	M					[2] FigureOfMerit	
P-1.1.4	Aircraft Address	—	—	—	—	—	M					[3] AircraftAddress	
P-1.1.5	Projected Profile	—	—	—	—	—	M					[4] ProjectedProfile	
P-1.1.6	Ground Vector	—	—	—	—	—	M					[5] GroundVector	
P-1.1.7	Air Vector	—	—	—	—	—	M					[6] AirVector	
P-1.1.8	Met Info	—	—	—	—	—	M					[7] MetInfo	
P-1.1.9	Short Term Intent	—	—	—	—	—	M					[8] ShortTermIntent	
P-1.1.10	Extended Projected Profile	—	—	—	—	—	M					[9] ExtendedProjectedProfile	
P-1.1.11	Use of Extensibility	—	—	—	—	—	M					Use of Extensibility	
P-1.1.1	Position											Position ::= SEQUENCE	
P-1.1.1.1	Latitude	—	—	—	—	—	M					Latitude	
P-1.1.1.2	Longitude	—	—	—	—	—	M					Longitude	
P-1.1.1.3	Level	—	—	—	—	—	M					Level	
P-1.1.1.1	Latitude											Latitude ::= SEQUENCE	
P-1.1.1.1.1	Sign	—	—	—	—	—	M					Sign	
P-1.1.1.1.2	Degrees (0-90)/1	—	—	—	—	—	M					INTEGER (0..90)	
P-1.1.1.1.3	Minutes (0-59)/1	—	—	—	—	—	M					INTEGER (0..59)	
P-1.1.1.1.4	Tenths of seconds (0-59.9)/1	—	—	—	—	—	M					INTEGER (0..599)	
P-1.1.1.1.1	Sign											Sign ::= ENUMERATED	
P-1.1.1.1.1.1	Plus	—	—	—	—	—	M					(0) plus	
P-1.1.1.1.1.2	Minus	—	—	—	—	—	M					(1) minus	
P-1.1.1.2	Longitude											Longitude ::= SEQUENCE	
P-1.1.1.2.1	Sign	—	—	—	—	—	M					Sign	
P-1.1.1.2.2	Degrees (0-180)/1	—	—	—	—	—	M					INTEGER (0..180)	
P-1.1.1.2.3	Minutes (0-59)/1	—	—	—	—	—	M					INTEGER (0..59)	
P-1.1.1.2.4	Tenths of seconds (0-59.9)/1	—	—	—	—	—	M					INTEGER (0..599)	
P-1.1.1.2.1	Sign											Sign ::= ENUMERATED	
P-1.1.1.2.1.1	Plus	—	—	—	—	—	M					(0) plus	
P-1.1.1.2.1.2	Minus	—	—	—	—	—	M					(1) minus	
P-1.1.1.3	Level 10s of feet (-750-100,000)/10											INTEGER (-75..10000)	
P-1.1.2	Date Time Group											DateTimeGroup ::= SEQUENCE	
P-1.1.2.1	Date	—	—	—	—	—	M					Date	
P-1.1.2.2	Time	—	—	—	—	—	M					Time	
P-1.1.2.1	Date											Date ::= SEQUENCE	

Source: Chapter 4 - ASN.1		Sending					Receiving					PICS	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	ASN.1 Protocol Elements	
P-1.1.2.1.1	Year	—	—	—	—	—	M					Year	
P-1.1.2.1.2	Month	—	—	—	—	—	M					Month	
P-1.1.2.1.3	Day	—	—	—	—	—	M					Day	
P-1.1.2.1.1	Year (1996-2095)											INTEGER (1996..2095)	
P-1.1.2.1.2	Month (1-12)											INTEGER (1..12)	
P-1.1.2.1.3	Day (1-31)											INTEGER (1..31)	
P-1.1.2.2	Time											Time ::= SEQUENCE	
P-1.1.2.2.1	Hours	—	—	—	—	—	M					[0] TimeHours	
P-1.1.2.2.2	Minutes	—	—	—	—	—	M					[1] TimeMinutes	
P-1.1.2.2.3	Seconds	—	—	—	—	—	M					[2] TimeSeconds	
P-1.1.2.2.1	TimeHours (0-23)											INTEGER (0..23)	
P-1.1.2.2.2	TimeMinutes (0-59)											INTEGER (0..59)	
P-1.1.2.2.3	TimeSeconds (0-59)											INTEGER (0..59)	
P-1.1.3	FigureOfMerit											FigureOfMerit ::= SEQUENCE	
P-1.1.3.1	Positional Accuracy	—	—	—	—	—	M					PositionalAccuracy	
P-1.1.3.2	Multiple navigational units operating	—	—	—	—	—	M					BOOLEAN	
P-1.1.3.3	ACAS operational	—	—	—	—	—	M					BOOLEAN	
P-1.1.3.1	PositionalAccuracy											PositionalAccuracy ::= ENUMERATED	
P-1.1.3.1.1	Complete loss	—	—	—	—	—	M					(0) complete-loss	
P-1.1.3.1.2	Under 30 nm	—	—	—	—	—	M					(1) under30nm	
P-1.1.3.1.3	Under 15 nm	—	—	—	—	—	M					(2) under15nm	
P-1.1.3.1.4	Under 8 nm	—	—	—	—	—	M					(3) under8nm	
P-1.1.3.1.5	Under 4 nm	—	—	—	—	—	M					(4) under4nm	
P-1.1.3.1.6	Under 1 nm	—	—	—	—	—	M					(5) under1nm	
P-1.1.3.1.7	Under 0.25 nm	—	—	—	—	—	M					(6) under-25nm	
P-1.1.3.1.8	Under 0.05 nm	—	—	—	—	—	M					(7) under-05nm	
P-1.1.4	AircraftAddress ICAO Airframe Id											BIT String SIZE(24)	
P-1.1.1.5	Projected Profile											ProjectedProfile ::= SEQUENCE	
P-1.1.1.5.1	Next way point	—	—	—	—	—	M					Position	See P-1.1.1
P-1.1.1.5.2	ETA at next way point	—	—	—	—	—	M					Eta	
P-1.1.1.5.3	Following way point	—	—	—	—	—	M					Position	See P-1.1.1
P-1.1.1.5.2	ETA	—	—	—	—	—	M					Time	See P-1.1.1
P-1.1.1.6	Ground Vector											GroundVector ::= SEQUENCE	
P-1.1.1.6.1	Track	—	—	—	—	—	M					DegreesDirection (OPTIONAL)	
P-1.1.1.6.2	Ground speed (-50 - 2200 knots)	—	—	—	—	—	M					INTEGER (-50..2200) (OPTIONAL)	

Source: Chapter 4 - ASN.1												PICS		Notes
Ref No	Operational Elements	Sending					Receiving					ASN.1 Protocol Elements		
		OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons			
P-1.1.1.6.3	Vertical Rate Change	—	—	—	—	—	M						VerticalRateChange (OPTIONAL)	

Source: Chapter 4 - ASN.1		Sending					Receiving					PICS	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	ASN.1 Protocol Elements	
P-1.1.1.6.1	Degrees Direction (0.1 - 360 degrees in units of 0.1 degrees)											INTEGER (1..3600)	
P-1.1.1.6.3	VerticalRateChange (-30000 - 30000 feet per minute in units of 10 feet/minute)											INTEGER (-3000..3000)	
P-1.1.1.7	Air Vector											AirVector ::= SEQUENCE	
P-1.1.1.7.1	Heading	—	—	—	—	—	M					[0] DegreesDirection (OPTIONAL)	
P-1.1.1.7.2	Air Speed	—	—	—	—	—	M					[1] AirSpeed (OPTIONAL)	
P-1.1.1.7.3	Vertical Rate Change	—	—	—	—	—	M					[2] VerticalRateChange (OPTIONAL)	
P-1.1.1.7.1	Degrees Direction (0.1 - 360 degrees in units of 0.1 degrees)											INTEGER (1..3600)	
P-1.1.1.7.2	AirSpeed											AirSpeed ::= CHOICE	
P-1.1.1.7.2.1	Mach	—	—	—	—	—	M					[0] Mach	
P-1.1.1.7.2.2	IAS	—	—	—	—	—	M					[1] Ias	
P-1.1.1.7.2.3	Mach and IAS	—	—	—	—	—	M					[2] SEQUENCE	
P-1.1.1.7.2.3.1	Mach	—	—	—	—	—	M					Mach	
P-1.1.1.7.2.3.2	IAS	—	—	—	—	—	M					Ias	
P-1.1.1.7.2.2	Ias (0 - 1100 knots)											INTEGER (0..1100)	
P-1.1.1.7.2.1	Mach (0.5-4 Mach in units of 0.001 Mach)											INTEGER (500..4000)	
P-1.1.1.8	Met Info											MetInfo ::= SEQUENCE	
P-1.1.1.8.1	Wind speed (0 - 300 knots)	—	—	—	—	—	M					[0] INTEGER (0..300) (OPTIONAL)	
P-1.1.1.8.2	Wind direction (1 - 360 degrees true N)	—	—	—	—	—	M					[1] INTEGER (1..360) (OPTIONAL)	
P-1.1.1.8.3	Temperature (-100 - 100 degrees C in units of 0.25 degrees)	—	—	—	—	—	M					[2] INTEGER (-400..400) (OPTIONAL)	
P-1.1.1.8.4	Turbulence (0 - 15)	—	—	—	—	—	M					[3] INTEGER (0..15) (OPTIONAL)	
P-1.1.1.9	Short Term Intent											ShortTermIntent ::= SEQUENCE	
P-1.1.1.9.1	Following way point	—	—	—	—	—	M					Position	See P-1.1.1
P-1.1.1.9.2	Projection Time	—	—	—	—	—	M					ProjectionTime	
P-1.1.1.9.3	Intermediate Intent	—	—	—	—	—	M					IntermediateIntent	
P-1.1.1.9.2	Projection Time (1min - 4 hrs in mins)											INTEGER (1..240)	
P-1.1.1.9.3	Intermediate Intent											IntermediateIntent ::=	
P-1.1.1.9.3.1	Number of groups (0-7)	—	—	—	—	—	M					SEQUENCE SIZE(0..7) OF SEQUENCE	
P-1.1.1.9.3.1.1	Distance (1 - 8000 Nautical miles)	—	—	—	—	—	M					INTEGER (1..8000)	
P-1.1.1.9.3.1.2	Track	—	—	—	—	—	M					DegreesDirection	
P-1.1.1.9.3.1.3	Level	—	—	—	—	—	M					Level	
P-1.1.1.9.3.1.4	Projection Time	—	—	—	—	—	M					ProjectionTime	

Source: Chapter 4 - ASN.1												PICS		Notes
Ref No	Operational Elements	Sending					Receiving					ASN.1 Protocol Elements		
		OPLINKP Profile	Status	Profile Cons	Implementation Status	Cons	OPLINKP Profile	Status	Profile Cons	Implementation Status	Cons			
P-1.1.1.9.3.1.2	Degrees Direction (0.1 - 360 degrees in units of 0.1 degrees)											INTEGER (1..3600)		
P-1.1.1.9.3.1.3	Level (-750 - 100 000 feet in units of 10 ft)											INTEGER (-750..100000)		
P-1.1.1.9.3.1.4	Projection Time (1min - 4 hrs in mins)											INTEGER (1..240)		
P-1.1.1.10	Extended Projected Profile											ExtendedProjectedProfile ::=		
P-1.1.1.10.1	Number of groups (1 - 128)	—	—	—	—	—	M					SEQUENCE SIZE(1..128) OF SEQUENCE		
P-1.1.1.10.1.1	Way point	—	—	—	—	—	M					Position		See P-1.1.1
P-1.1.1.10.1.2	ETA at each way point	—	—	—	—	—	M					Eta		
P-1.1.1.10.1.2	ETA	—	—	—	—	—	M					Time		See P-1.2.2

Table P-2: ADS Emergency Report

Source: Chapter 4 - ASN.1		Send					Receive					ASN.1 Protocol Elements	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
P-2.1	ADS Emergency Report											ADSEmergencyReport ::= SEQUENCE	
P-2.1.1	Position	—	—	—	—	—	M					[0] Position	
P-2.1.2	Time Stamp	—	—	—	—	—	M					[1] DateTimeGroup	
P-2.1.3	Figure Of Merit	—	—	—	—	—	M					[2] FigureOfMerit	
P-2.1.4	Aircraft Address	—	—	—	—	—	M					[3] AircraftAddress (OPTIONAL)	
P-2.1.5	Ground Vector	—	—	—	—	—	M					[4] GroundVector (OPTIONAL)	
P-2.1.1	Position											Position ::= SEQUENCE	
P-2.1.1.1	Latitude	—	—	—	—	—	M					Latitude	
P-2.1.1.2	Longitude	—	—	—	—	—	M					Longitude	
P-2.1.1.3	Level	—	—	—	—	—	M					Level	
P-2.1.1.1	Latitude											Latitude ::= SEQUENCE	
P-2.1.1.1.1	Sign	—	—	—	—	—	M					Sign	
P-2.1.1.1.2	Degrees (0-90)/1	—	—	—	—	—	M					INTEGER (0..90)	
P-2.1.1.1.3	Minutes (0-59)/1	—	—	—	—	—	M					INTEGER (0..59)	
P-2.1.1.1.4	Tenths of seconds (0-59.9)/1	—	—	—	—	—	M					INTEGER (0..599)	
P-2.1.1.1.1	Sign											Sign ::= ENUMERATED	
P-2.1.1.1.1.1	Plus	—	—	—	—	—	M					(0) plus	
P-2.1.1.1.1.2	Minus	—	—	—	—	—	M					(1) minus	
P-2.1.1.2	Longitude											Longitude ::= SEQUENCE	
P-2.1.1.2.1	Sign	—	—	—	—	—	M					Sign	
P-2.1.1.2.2	Degrees (0-180)/1	—	—	—	—	—	M					INTEGER (0..180)	
P-2.1.1.2.3	Minutes (0-59)/1	—	—	—	—	—	M					INTEGER (0..59)	
P-2.1.1.2.4	Tenths of seconds (0-59.9)/1	—	—	—	—	—	M					INTEGER (0..599)	
P-2.1.1.2.1	Sign											Sign ::= ENUMERATED	
P-2.1.1.2.1.1	Plus	—	—	—	—	—	M					(0) plus	
P-2.1.1.2.1.2	Minus	—	—	—	—	—	M					(1) minus	
P-2.1.1.3	Level 10s of feet (-750-100,000)/10											INTEGER (-75..10000)	
P-2.1.2	Date Time Group											DateTimeGroup ::= SEQUENCE	
P-2.1.2.1	Date	—	—	—	—	—	M					Date	
P-2.1.2.2	Time	—	—	—	—	—	M					Time	
P-2.1.2.1	Date											Date ::= SEQUENCE	
P-2.1.2.1.1	Year	—	—	—	—	—	M					Year	
P-2.1.2.1.2	Month	—	—	—	—	—	M					Month	
P-2.1.2.1.3	Day	—	—	—	—	—	M					Day	
P-2.1.2.1.1	Year (1996-2095)											INTEGER (1996..2095)	



Source: Chapter 4 - ASN.1		Send					Receive					ASN.1 Protocol Elements	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
P-2.1.2.1.2	Month (1-12)											INTEGER (1..12)	
P-2.1.2.1.3	Day (1-31)											INTEGER (1..31)	
P-2.1.2.2	Time											Time ::= SEQUENCE	
P-2.1.2.2.1	Hours	—	—	—	—	—	M					[0] TimeHours	
P-2.1.2.2.2	Minutes	—	—	—	—	—	M					[1] TimeMinutes	
P-2.1.2.2.3	Seconds	—	—	—	—	—	M					[2] TimeSeconds	
P-2.1.2.2.1	TimeHours (0-23)											INTEGER (0..23)	
P-2.1.2.2.2	TimeMinutes (0-59)											INTEGER (0..59)	
P-2.1.2.2.3	TimeSeconds (0-59)											INTEGER (0..59)	
P-2.1.3	Figure Of Merit											FigureOfMerit ::= SEQUENCE	
P-2.1.3.1	Positional Accuracy	—	—	—	—	—	M					PositionalAccuracy	
P-2.1.3.2	Multiple navigational units operating	—	—	—	—	—	M					BOOLEAN	
P-2.1.3.3	ACAS operational	—	—	—	—	—	M					BOOLEAN	
P-2.1.3.1	Positional Accuracy											PositionalAccuracy ::= ENUMERATED	
P-2.1.3.1.1	Complete loss	—	—	—	—	—	M					(0) complete-loss	
P-2.1.3.1.2	Under 30 nm	—	—	—	—	—	M					(1) under30nm	
P-2.1.3.1.3	Under 15 nm	—	—	—	—	—	M					(2) under15nm	
P-2.1.3.1.4	Under 8 nm	—	—	—	—	—	M					(3) under8nm	
P-2.1.3.1.5	Under 4 nm	—	—	—	—	—	M					(4) under4nm	
P-2.1.3.1.6	Under 1 nm	—	—	—	—	—	M					(5) under1nm	
P-2.1.3.1.7	Under 0.25 nm	—	—	—	—	—	M					(6) under-25nm	
P-2.1.3.1.8	Under 0.05 nm	—	—	—	—	—	M					(7) under-05nm	
P-2.1.4	AircraftAddress ICAO Airframe Id											BIT String SIZE(24)	
P-2.1.5	Ground Vector											GroundVector ::= SEQUENCE	
P-2.1.5.1	Track	—	—	—	—	—	M					DegreesDirection (OPTIONAL)	
P-2.1.5.2	Ground speed (-50 - 2200 knots)	—	—	—	—	—	M					INTEGER (-50..2200) (OPTIONAL)	
P-2.1.5.3	Vertical Rate Change	—	—	—	—	—	M					VerticalRateChange (OPTIONAL)	
P-2.1.5.1	Degrees Direction (0.1 - 360 degrees in units of 0.1 degrees)											INTEGER (1..3600)	
P-2.1.5.3	VerticalRateChange (-30000 - 30000 feet per minute in units of 10 feet/minute)											INTEGER (-3000..3000)	

Table P-3: ADS Emergency Urgency Status (Version 2)

Source: Chapter 4 - ASN.1		Send					Receive					ASN.1 Protocol Elements	Notes
Ref No	Operational Elements	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons	OPLINKP Profile	Profile Status	Cons	Implementation Status	Cons		
<b>P-3.1</b>	<b>Emergency Urgency Status</b>											[2] ADSEmergencyUrgencyStatus ::= BIT STRING	
P-3.1.1	Emergency	—	—	—	—	—	M					(0) emergency	
P-3.1.2	No Communications	—	—	—	—	—	M					(1) no-communications	
P-3.1.3	Unlawful Interference	—	—	—	—	—	M					(2) unlawful-interference	
P-3.1.4	Minimum Fuel	—	—	—	—	—	M					(3) minimum-fuel	
P-3.1.5	Medical	—	—	—	—	—	M					(4) medical	
P-3.1.6	Reserved	—	—	—	—	—	M					(5) reserved	
P-3.1.7	SIZE ( 6,	—	—	—	—	—	M					(SIZE (6,	
P-3.1.8	Extensibility Marker)	—	—	—	—	—	M					... ))	