ENAC

ENTE NAZIONALE PER L'AVIAZIONE CIVILE

Regolamento "Servizio Informazioni Aeronautiche"

Edizione 1 approvata con delibera CdA n° 40/07 del 24/5/2007

Elenco delle Edizioni del Regolamento "Servizio Informazioni Aeronautiche"

N.	**Data di emissione**	**N.**	**Data di emissione**
1	24 maggio 2007 (delibera CdA n° 40/07 del 24/5/07)		

INTRODUZIONE

1. L'ENAC con il Regolamento "Servizio Informazioni aeronautiche ", adottato in virtù delle attribuzioni conferite dal D.Lgs. 25 luglio 1997, n. 250, ed in accordo alle previsioni del Codice della Navigazione, ha provveduto a recepire le parti applicabili delle previsioni di cui all'Annesso 15 ICAO, così come previsto dall'art. 2 del D.M. 13 luglio 2005 del Vice Ministro delle Infrastrutture e dei Trasporti.

2. Il Regolamento prescrive le regole applicabili al servizio di informazioni aeronautiche (AIS) con riferimento alle previsioni di cui all'Annesso 15 ICAO, edizione 12ª emendamento 33. L'AIS ha la finalità di assicurare, il flusso di informazioni necessario alla sicurezza, alla regolarità ed alla efficienza della navigazione del traffico aereo generale.

3. Il Regolamento è composto da due parti e da otto appendici.
La prima parte contiene le prescrizioni relative alla costituzione ed organizzazione del sistema AIS, alla caratterizzazione delle pubblicazioni aeronautiche quali AIP, NOTAM, AIC. Tale parte è redatte in lingua italiana.
La seconda parte, e le appendici, contengono requisiti tecnici relativi alla redazione ed alla gestione delle pubblicazioni e/o delle informazioni o dati oggetto di pubblicazione. La seconda parte e le appendici sono redatte in lingua inglese e,, quando possibile, mantengono il testo originale e la numerazione dei paragrafi adottata dall'ICAO.

4. Le prescrizioni regolamentari, fatte salve alcune limitate differenze, sono conformi alle previsioni dell'annesso ICAO di riferimento. Ne consegue che, di norma, il materiale ICAO a carattere esplicativo, interpretativo ed applicativo è ritenuto accettabile dall'ENAC.

5. Le note contenute nell'Annesso 15, non costituendo "standard" o "pratica raccomandata" non sono state di norma trasferite nel testo regolamentare. Fanno eccezione alcuni casi specifici nei quali si è ravvisata la necessità di integrarne il contenuto nel Regolamento.

6. Il regolamento recepisce anche i contenuti di cui al Capitolo 10 dell'annesso 15 ICAO relativo alla costituzione ed alla fornitura di dati in formato elettronico relativi all'orografia del territorio ed agli ostacoli. Le date di entrata in vigore dei nuovi requisiti è stata fissata conformemente alle tempistiche previste dell'ICAO (20 novembre 2008 e 18 novembre 2010 a seconda dei casi).
Allo scopo di consentire la graduale ed efficace applicazione di tali requisiti nel rispetto dei termini previsti, ENAC promuoverà, con il coinvolgimento dei soggetti interessati, iniziative specifiche finalizzate a stimolare e monitorare i necessari adeguamenti. In tale ambito sarà anche valutata l'eventualità di adeguare i requisiti alle esigenze nazionali.

REGOLAMENTO “SERVIZIO INFORMAZIONI AERONAUTICHE”

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ACRONIMI

Acronimo	Inglese	Italiano
AFIS	Aerodrome Flight Information Service	Servizio informazioni di volo d’aeroporto
AIP	Aeronautical Information Publication	Pubblicazione di Informazioni Aeronautiche
ARO	Air traffic services Reporting Office	Ufficio informazioni dei servizi di traffico aereo
ATS	Air Traffic Services	Servizi di traffico aereo
FIR	Flight Information Region	Regione informazioni volo
ICAO	International Civil Aviation Organisation	Organizzazione dell’Aviazione Civile Internazionale
IFR	Instrument Flight Rules	Regole del volo strumentale
MSL	Mean Sea Level	Livello medio del mare
VFR	Visual Flight Rules	Regole del volo a vista
VMC	Visual Meteorological Conditions	Condizioni meteorologiche di volo a vista
AIP	Aeronautica Information Publication	
AIS	Aeronautical Informazion Services	Servizio Informazioni Aeronautiche
CRC	Cyclic redundancy check	Controllo Ciclico di Ridondanza
PIB	Pre-flight information bulletin	Bollettino informazioni pre volo
AIRAC	Aeronautical Information Regulation and Control	Regolamentazione e controllo delle informazioni aeronautiche
NOF	International Notam Office	Ufficio Notam
IAIP	Integrated Aeronautical Information Package	Pacchetto integrato di informazioni aeronautiche
ACC	Area Control Centre	Centro controllo d’area

Acronimo	Inglese	Italiano
AFS	Aeronautical Fixed Service	Rete fissa di comunicazione aeronautica
FIC	Flight Information Centre	Centro informazioni volo
GPWS	Ground Proximity Warning System	Impianto avvisatore di prossimità del terreno
TAWS	Terrain Awareness and Warning System	Impianto di avviso e rappresentazione del terreno
MSAW	Minimum Safe Altitude Warning	Avviso quota minima di sicurezza
A-SMGCS	Advanced Surface Movement Guidance Control System	Sistema di guida e controllo dei movimenti a terra avanzato
TMA	TerMinal control Area	Area di controllo terminale
ADIZ	Air Defence Identification Zone	Zona di identificazione della difesa aerea
DEM	Digital Elevation Model	Modello di elevazione digitale
WGS	World Geodetic System	Sistema geodetico mondiale
EGM	Earth Gravitational Model	Modello gravitazionale della superfici terrestre
ISO	International Organisation for Standardisation	Organizzazione Internazionale per le Standardizzazioni

PARTE PRIMA

1. SCOPO

Il regolamento ha lo scopo di definire le prescrizioni applicabili al Servizio Informazioni Aeronautiche con riferimento alle previsioni di cui all'allegato 15 edizione 12^a emendamento 33 alla Convenzione di Chicago (Annesso 15 ICAO).

2. FINALITÀ DEL SERVIZIO

Il Servizio Informazioni Aeronautiche ha la finalità di assicurare il flusso di informazioni necessario alla sicurezza, alla regolarità ed alla efficienza della navigazione del Traffico Aereo Generale.

3. AMBITO DI APPLICAZIONE ED ENTRATA IN VIGORE

3.1 Il regolamento si applica al Servizio Informazioni Aeronautiche relativo al territorio dello Stato Italiano e alle aree nelle quali la responsabilità dei Servizi del Traffico Aereo è affidata all'Italia.

3.2 Il regolamento deve essere rispettato, nell'ambito delle rispettive competenze e responsabilità, da tutti i soggetti che intervengono nel ciclo di origine, trattamento e diffusione delle informazioni aeronautiche.

3.3 Il presente regolamento entra in vigore il 21 giugno 2007

3.3.1 A decorrere dal 1° gennaio 2008 l'AIP dovrà strutturato nelle tre parti GEN, ENR, AD così come definite in Appendix 1

4. DEFINIZIONI

4.1 Ai fini del presente regolamento si applicano le definizioni di seguito riportate e quelle contenute nel Chapter 2 della Parte II:

Accuratezza - *(Accuracy)* Grado di corrispondenza tra valore stimato o misurato e valore reale

Aeroporto: Area delimitata su terra o acqua (comprendente gli edifici, gli impianti, le installazioni e gli apparati) destinata in tutto o in parte all'arrivo, alla partenza e al movimento al suolo di aeromobili. La definizione non include le aviosuperfici.

AIP - Pubblicazione di Informazioni Aeronautiche - *(Aeronautical Information Publication (AIP))*. Una pubblicazione emessa dallo Stato o a seguito di autorizzazione dello stesso contenente informazioni aeronautiche a carattere duraturo essenziali alla navigazione aerea.

AIRAC. Un acronimo *(Aeronautical Information Regulation and Control* - Regolamentazione e controllo delle informazioni aeronautiche) che designa un sistema di notifica anticipata di circostanze che comportano cambiamenti significativi nelle pratiche operative, basato sull'utilizzo di date fisse comuni.

Area di manovra - *(Manoeuvring Area)*. La parte di un aeroporto adibita al decollo, all'atterraggio ed al movimento al suolo degli aeromobili, con esclusione dei piazzali (APRONS).

Area di movimento - *(Movement Area).* La parte di un aeroporto adibita al decollo, all'atterraggio
ed al movimento al suolo degli aeromobili comprendente l'area di manovra e i piazzali.

Area proibita - *(Prohibited area)*. Spazio aereo di dimensioni definite, al di sopra del territorio o delle acque territoriali di uno Stato, entro il quale il volo di aeromobili è vietato.

ASHTAM. Una serie speciale di NOTAM con la quale si notifica, utilizzando uno specifico formato, la variazione di attività di un vulcano, una eruzione vulcanica e/o nube di ceneri vulcaniche significativa per le operazioni degli aeromobili.

Assemblaggio - *(Assemble)*. Un processo che consiste nel far confluire dati provenienti da diverse fonti in un'unica banca dati costituendo così una base per successive elaborazioni. L'assemblaggio include il controllo dei dati e l'assicurazione che gli errori ed omissioni rilevati siano stati rettificati.

Banca dati - *(Database)*. Uno o più file di dati strutturati in maniera tale che appropriate applicazioni possano prelevare dati dai file e aggiornarli

Bollettino informazioni pre volo - *(Pre-flight information bulletin (PIB))*. Una raccolta di NOTAM in vigore riguardanti informazioni operativamente significative, preparata prima del volo.

Circolare di informazioni Aeronautiche - *(Aeronautical Information Circular (AIC))*. Un documento informativo che contiene informazioni tali da non richiedere l'emissione di un notam o l'inserimento in AIP, ma che riguardano la sicurezza del volo la navigazione aerea, argomenti tecnici, amministrativi o normativi.

Controllo Ciclico di Ridondanza - *(Cyclic redundancy check (CRC))*. Un algoritmo matematico applicato alla rappresentazione digitale dei dati che fornisce un livello di garanzia contro la perdita e l'alterazione dei dati.

Dati Aeronautici – (*Aeronautical data)*. Una rappresentazione formalizzata di fatti, concetti o istruzioni aeronautici adatto per la comunicazione, interpretazione o elaborazione.

Eliporto. Un aeroporto o un'area delimitata su una struttura, destinata in tutto o in parte all'arrivo, alla partenza e al movimento al suolo di elicotteri. La definizione non include le elisuperfici.

Emendamento AIP - *(AIP Amendment)*. Variazioni permanenti alle informazioni contenute nell'AIP.

Informazioni Aeronautiche - *(Aeronautical information)*. Informazioni risultanti dalla raccolta analisi formattazione di dati aeronautici

Integrità dei dati aeronautici - *(Integrity (aeronautical data))*. Grado di garanzia che un dato aeronautico e suo relativo valore non sia stato perduto o alterato dall'origine o dall'effettuazione di una modifica autorizzata.

NOTAM. Una avviso distribuito mediante sistemi di telecomunicazione contenente informazioni relative alla istituzione, allo stato o alle modifiche di un qualsiasi impianto aeronautico, servizio, procedura o relative a condizioni di pericolo per la navigazione aerea, la cui tempestiva conoscenza è essenziale per il personale coinvolto nelle operazioni di volo.

Ostacolo - *(Obstacle).* Tutti gli oggetti fissi (temporanei o permanenti) e mobili, o loro parti, che sono situati su di un'area destinata al movimento in superficie degli aeromobili o che si estendono al di sopra di (forano) una superficie definita a protezione degli aeromobili in volo.

Pacchetto integrato di informazioni aeronautiche - *(Integrated Aeronautical Information Package.)*. Un pacchetto che consiste dei seguenti elementi:

- AIP e relativi emendamenti
- Supplementi AIP
- NOTAM e bollettini pre-volo (PIB)
- AIC
- Liste di controllo e liste dei NOTAM in vigore

Precisione - *(Precision)*. La più piccola differenza che può essere discriminata in maniera attendibile con un processo di misurazione.

Principi sul fattore umano - *(Human Factors principles)*. Principi che si applicano alla progettazione, certificazione, addestramento e manutenzione aeronautiche che si prefiggono il raggiungimento di una sicura interfaccia tra l'elemento umano e le altre componenti del sistema attraverso una appropriata considerazione delle prestazioni umane.

Prodotto AIS - *(AIS product)*. Informazioni aeronautiche fornite riattraverso gli elementi del "pacchetto integrato di informazioni aeronautiche" (ad esclusione di NOTAM e PIB), incluse le carte aeronautiche, oppure fornite attraverso idoneo supporto elettronico.

Qualità - *(Quality)*. Grado in cui un insieme di caratteristiche intrinseche soddisfa i requisiti (UNI EN ISO 9000:2005).

Qualità dei dati - *(Data quality)*. Un grado o livello di confidenza che i dati forniti soddisfino le necessità dell'utilizzatore in termini di accuratezza, risoluzione e integrità.

Rintracciabilità – (*Traceability)*: capacità di risalire alla storia, all'applicazione o all'ubicazione di ciò che si sta considerando(UNI EN ISO 9000:2005).

Risoluzione - *(Resolution)*. Un numero di unità o cifre con il quale un valore misurato o calcolato è espresso e usato.

Servizio Informazioni Aeronautiche - *(Aeronautical information service (AIS)).* un servizio, istituito nell'ambito dell'area definita di copertura, incaricato di fornire informazioni e dati aeronautici necessari per la sicurezza, la regolarità e l'efficienza della navigazione aerea.

SNOWTAM. Una serie speciale di NOTAM con la quale si notifica, utilizzando uno specifico formato, la presenza o la rimozione di condizioni di pericolo dovute a neve, ghiaccio, neve bagnata o acqua ristagnante associata con neve, neve bagnata e ghiaccio sull'area di movimento.

Supplemento AIP - *(AIP Supplement).* Variazioni temporanee alle informazioni contenute nell'AIP, pubblicate attraverso pagine speciali.

Terreno - *(Terrain).* La superficie della terra inclusi elementi morfologici naturali quali montagne, colline, crinali, valli, masse d'acqua, ghiacciai e nevai, con esclusione degli ostacoli.

Traffico Aereo Generale - (GAT, General Air Traffic). Il traffico aereo civile e militare che segue le regole dell'aria.

Ufficio internazionale NOTAM - *(International NOTAM office (NOF))*. Un ufficio designato da uno Stato per lo scambio dei NOTAM a livello internazionale.

Validazione: Conferma, sostenuta da evidenze oggettive, che i requisiti relativi ad un utilizzo o ad un'applicazione specifici previsti sono stati soddisfatti(UNI EN ISO 9000:2005).

Verifica - *(verification)*. Conferma, sostenuta da evidenze oggettive, del soddisfacimento di requisiti specificati(UNI EN ISO 9000:2005).

Zona pericolosa. *(Danger area)* Spazio aereo di dimensioni definite all'interno del quale possono sussistere in periodi di tempo specificati attività pericolose per il volo dell'aeromobile.

Zona regolamentata -(Restricted area). Spazio aereo di dimensioni definite, al di sopra del territorio o delle acque territoriali di uno Stato, all'interno del quale il volo degli aeromobili è subordinato al rispetto di specifiche condizioni.

5. PRINCIPI CHE DISCIPLINANO IL SERVIZIO INFORMAZIONI AERONAUTICHE

5.1 Il Servizio Informazioni Aeronautiche è attuato in conformità alle previsioni di cui all'annesso 15 ICAO, così come recepite nel presente regolamento.

5.2 Fatti salvi i casi di diversa disposizione dell'ENAC o di differenza tra requisito regolamentare ENAC e lo standard/raccomandazione ICAO di riferimento, i criteri, le modalità applicative e le interpretazioni contenuti nelle pertinenti pubblicazioni ICAO sono ritenuti accettabili dall'ENAC.

6. RUOLI E RESPONSABILITÀ

6.1 L'ENAC esercita la propria attività in materia di fornitura del servizio di informazioni aeronautiche, agendo come unica autorità di regolazione tecnica, certificazione e vigilanza ai sensi dell'art. 687 del Codice della Navigazione.

6.2 ENAV, sulla base di quanto disposto dall'art. 691 e 691bis del Codice della Navigazione fornisce il servizio Informazioni Aeronautiche (AIS).

6.3 Il fornitore del Servizio Informazioni Aeronautiche riceve e/o origina, collaziona o assembla, redige, pubblica, conserva, distribuisce informazioni aeronautiche concernenti il territorio dello Stato e alle aree nelle quali la responsabilità dei servizi del traffico aereo è affidata all'Italia.

6.4 I dati aeronautici che sono oggetto di pubblicazione sono di norma originati e sono resi disponibili al Servizio AIS dai seguenti soggetti :

- ENAC
- AM
- Fornitori di Servizi della Navigazione Aera
- Gestori di aeroporti certificati.

6.5 ENAC ha la facoltà di individuare ulteriori soggetti titolati ad originare dati aeronautici oggetto di pubblicazione.

6.6 ENAC definisce criteri e modalità per la trasmissione dei dati aeronautici dall'originatore al fornitore del servizio .

6.7 I soggetti indicati nei paragrafi 6.4 e 6.5 sono responsabili della qualità dei dati forniti al Servizio Informazioni Aeronautiche per la pubblicazione. Indipendentemente dalla fonte dei dati, il fornitore del Servizio Informazioni Aeronautiche è responsabile della corrispondenza di quanto pubblicato ai dati ricevuti.

7. ORIGINATORI DI DATI/INFORMAZIONI AERONAUTICHE

I soggetti che intervengono nel ciclo di: origine, trattamento e diffusione delle informazioni aeronautiche devono, nell'ambito delle rispettive competenze, intraprendere le misure necessarie ad assicurare che le informazioni ed i dati aeronautici, relativi al territorio nel quale è fornito il Servizio Informazioni Aeronautiche, siano tempestivi, adeguati e del livello qualitativo richiesto.

8. REQUISITI GENERALI

8.1 Il servizio è fornito a copertura delle 24 ore di ciascuna giornata.

8.2 Il Servizio Informazioni Aeronautiche deve ottenere le informazioni necessarie per fornire il servizio di informazioni pre-volo e per soddisfare le necessità di informazioni in volo provenienti da:

a) Servizi Informazioni Aeronautiche di altri stati;
b) Altre fonti che possono esser disponibili;

8.3 Le informazioni o dati aeronautici ottenuti in accordo al paragrafo 8.2a) devono chiaramente indicare, quando distribuite, che sono emesse sotto l'autorità dello stato di origine.

8.4 Le informazioni o dati aeronautici ottenuti in accordo al paragrafo 8.1.2b) devono, se possibile, essere verificate prima della distribuzione e, qualora non verificate, devono essere chiaramente identificate come tali.

8.5 Il Servizio Informazioni Aeronautiche deve rendere tempestivamente disponibile agli analoghi servizi di altri stati, ogni informazione o dato necessari per la sicurezza, la regolarità e l'efficienza della navigazione aerea al fine di consentire a tali servizi il soddisfacimento di quanto riportato al paragrafo successivo.

8.6 Il Servizio Informazioni Aeronautiche deve assicurare che le informazioni ed i dati aeronautici necessari per la sicurezza, la regolarità e l'efficienza della navigazione aerea siano disponibili in una forma adatta alle esigenze operative:

a) del personale addetto alle operazioni di volo, inclusi gli equipaggi, gli addetti alla programmazione voli ed ai simulatori di volo;
b) degli Enti ATS responsabili per il Servizio Informazioni Volo e i Servizi responsabili per le informazioni pre-volo.

8.7 Le informazioni aeronautiche devono essere pubblicate nella forma di "pacchetto integrato di informazioni aeronautiche" (IAIP).

8.7.1 il pacchetto di informazioni aeronautiche(IAIP). è costituito da:

- AIP e relativi emendamenti
- Supplementi AIP
- NOTAM e bollettini informazioni pre-volo (PIB)
- AIC
- Liste di controllo e liste dei NOTAM in vigore

8.8 Se non diversamente specificato nel presente regolamento, ogni elemento del pacchetto integrato di informazioni aeronautiche, ai fini della distribuzione deve essere pubblicato in lingua italiana ed inglese relativamente alle parti espresse in lingua non codificata.

8.9 Qualunque prodotto AIS oggetto di protezione del copyright, fornito ad altro stato in accordo al paragrafo 11, deve essere reso disponibile a terzi a condizione che:
- I terzi siano resi consapevoli che il prodotto è oggetto di protezione del copyright;
- L'esistenza della protezione del copyright sia appropriatamente annotata.

8.10 L'organizzazione del Servizio Informazioni Aeronautiche, così come la progettazione, il contenuto, l'elaborazione e la distribuzione delle informazioni e dei dati aeronautici devono prendere in considerazione i principi di Fattore Umano che favoriscono la migliore utilizzazione di tali dati ed informazioni.

8.11 Ulteriori requisiti di tipo tecnico sono prescritti al Chapter 3 della Parte II.

9. SISTEMA DI GESTIONE DELLA QUALITÀ

9.1 Il fornitore del Servizio Informazioni Aeronautiche è dotato di un sistema di gestione della qualità in accordo alle previsioni di cui all'allegato I al regolamento (CE) N. 2096/2005 della commissione del 20 dicembre 2005.

9.2 Il "sistema di gestione della qualità" deve fornire agli utilizzatori la necessaria assicurazione e fiducia che le informazioni/dati aeronautiche soddisfino i previsti requisiti di qualità (accuratezza, risoluzione, integrità) e la rintracciabilità dei dati; a tal fine, appropriate procedure devono essere utilizzate in ogni fase del processo di produzione e modifica dei dati . Il sistema di gestione della qualità deve inoltre garantire il rispetto delle date di distribuzione stabilite e il periodo di applicabilità (validità) per l'utilizzo dei dati aeronautici .

9.3 Al fine di garantire il mantenimento dei requisiti di qualità e rintracciabilità dei dati in tutte le fasi del processo, i soggetti originatori, nel fornire le informazioni aeronautiche oggetto di pubblicazione, sono tenuti ad applicare le procedure stabilite e opportunamente divulgate dal fornitore del servizio, in accordo ai requisiti del precitato Sistema di Gestione della Qualità.

9.4 Allo scopo di consentire la correzione di eventuali errori o anomalie dei dati individuati nelle fasi di produzione/manutenzione o nella gestione operativa degli stessi, il fornitore del AIS deve istituire procedure tali da garantire che in ogni momento per dati aeronautici sia garantita la rintracciabilità fino all'origine.

10. QUALITÀ DEI DATI

10.1 L' accuratezza dei dati aeronautici, basati su un livello di confidenza del 95%, deve essere quella prescritta:

- dall'annesso 11 ICAO, Chapter 2 paragrafo 2.18; e
- dal "Regolamento per la costruzione e l'esercizio degli aeroporti"..

A tal riguardo devono essere identificati tre tipi di dati posizionali:

- punti rilevati (esempio: soglie pista, posizioni degli aiuti alla navigazione, etc.);
- punti calcolati (calcolati matematicamente da punti rilevati)
- punti prestabiliti (esempio: punti di confine di una FIR, etc.)

10.2 La disciplina della risoluzione di pubblicazione dei dati aeronautici è quella definita nelle *appendix* 1 e 7.

10.3 L'integrità dei dati aeronautici deve essere mantenuta attraverso tutto il processo di trattamento dei dati, dall'origine/rilevazione alla distribuzione all'utilizzatore.
I requisiti di integrità dei dati aeronautici devono essere basati sulla valutazione del rischio potenziale derivante dall'alterazione del dato e dall'uso cui tale dato è destinato.
Si applicano le seguenti classificazioni e livelli di integrità dei dati:

a) Dati critici – livello di integrità 1×10^{-8}: nel caso in cui vi sia una alta probabilità che l'utilizzo di un dato alterato possa costituire serio rischio per la sicurezza delle operazoni con potenziali effetti catastrofici.
b) Dati essenziali – livello di integrità 1×10^{-5}: nel caso in cui vi sia una bassa probabilità che l'utilizzo di un dato alterato possa costituire serio rischio per la sicurezza delle operazoni con potenziali effetti catastrofici.
c) Dati ordinari – livello di integrità 1×10^{-3}: nel caso in cui vi sia una probabilità molto bassa che l'utilizzo di un dato alterato possa costituire serio rischio per la sicurezza delle operazioni con potenziali effetti catastrofici.

10.4 I requisiti di qualità dei dati aeronautici relativi alla classificazione ed alla integrità dei dati sono riportati in appendix 7 tabelle da A7-1 a A7-5.

10.5 La protezione dei dati aeronautici in formato elettronico quando memorizzati o in transito deve essere totalmente controllata tramite “cyclic redundancy check” (CRC) con algoritmo a 32 bit.

10.6 *non utilizzato*

10.7 I soggetti di cui al paragrafo 6.4 e 6.7, da cui origina il materiale (dati o informazioni aeronautiche) da pubblicare quale elemento del pacchetto integrato di informazioni aeronautiche devono accuratamente verificare e coordinare lo stesso con i soggetti competenti prima di sottoporlo al Servizio Informazioni Aeronautiche, in modo tale da garantire che siano state incluse tutte le informazioni necessarie e che esse risultino corrette prima della pubblicazione. A tale scopo devoo essere istituite procedure di verifica e validazione che assicurino che siano soddisfatti i requisiti di qualità (accuratezza, risoluzione, integrità) e di rintracciabilità dei dati aeronautici.

11. SCAMBI DI DATI ED INFORMAZIONI AERONAUTICHE

11.1 Il fornitore del Servizio Informazioni Aeronautiche deve designare l’ufficio cui devono essere indirizzati tutti gli elementi del pacchetto integrato di informazioni aeronautiche originati da altri stati.
Tale ufficio deve essere qualificato per trattare le richieste di dati e informazioni aeronautiche da parte di altri stati.

11.2 Il fornitore del Servizio Informazioni Aeronautiche deve adottare le misure necessarie per soddisfare le esigenze di diffusione e di ricezione dei NOTAM distribuiti via telecomunicazioni.

11.3 Ogni qualvolta possibile il fornitore del Servizio Informazioni Aeronautiche deve stabilire contatti diretti con gli analoghi servizi di altri stati allo scopo di agevolare lo scambio di informazioni e dati aeronautici.

11.4 almeno una copia di ciascuno degli elementi che compongono il pacchetto integrato di informazioni aeronautiche, in carta o in formato elettronico, deve essere resa disponibile a ciascuno stato ICAO che ne faccia richiesta su base di reciproca gratuità.

12. AIP (Aeronautical Information Publication)

12.1 Generalità

12.1.1 L’AIP è una pubblicazione edita e distribuita per conto dello Stato italiano dal fornitore del Servizio Informazioni Aeronautiche la cui funzione principale è quella di soddisfare le esigenze di notifica e divulgazione delle informazioni aeronautiche di carattere duraturo essenziali per la navigazione aerea.

12.1.2 L’AIP è la fonte primaria di informazioni di validità permanente o di validità prolungata quando relative a mutamenti temporanei.

12.1.3 Variazioni permanenti all'AIP devono essere pubblicati come "Emendamenti AIP"

12.1.4 Variazioni temporanee ma di lunga durata (tre mesi ed oltre) e informazioni di breve durata che comportino un testo esteso e/o rappresentazioni grafiche, devono essere pubblicati come "Supplementi AIP". Il soggetto che ha richiesto l'emissione del supplemento AIP deve monitorare il permanere delle condizioni che ne hanno determinato l'emissione in modo da richiedere l'eventuale cancellazione anticipata o il prolungamento della validità.

12.1.5 Variazioni operativamente significative all'AIP devono essere pubblicate in accordo alle procedure AIRAC .

12.2 Contenuto dell'AIP

12.2.1 L'appendix 1 definisce:
- le informazioni che devono essere riportate nell'AIP;
- l'organizzazione ed il formato della pubblicazione.

12.2.3 Nel caso di AIP, o parti di AIP, concepito principalmente per l'uso operativo in volo, il formato e l'organizzazione della pubblicazione devono essere proposti dal fornitore dell'AIS e approvati dall'ENAC.

12.2.4 L'AIP deve riportare nella parte GEN (Generale):
a) l'identificazione delle autorità responsabili per le infrastrutture di navigazione aerea, servizi o procedure trattati in AIP;
b) le condizioni generali di disponibilità dei servizi e delle infrastrutture;
c) l'elenco delle differenze significative esistenti tra le regolamentazioni e prassi nazionali, e i relativi standard e pratiche raccomandate ICAO. Tali differenze devono essere espresse in forma tale da consentire all'utente di distinguere prontamente la differenza tra requisito nazionale e corrispondente previsione ICAO;
d) la scelta Italiana in merito ai casi nei quali gli Standard e pratiche raccomandate ICAO prevedono che lo stato possa scegliere tra più possibili azioni.

12.2.5 Le carte aeronautiche elencate in appendix 1 parte AD, quando disponibili per l'aeroporto/eliporto considerato, costituiscono parte integrante dell'AIP, ovvero possono essere distribuite separatamente ai destinatari dell'AIP secondo le modalità indicate nelle pertinenti pubblicazioni aeronautiche.

12.2.6 Qualora sia appropriato, a complemento o in sostituzione di parti di testo, devono essere usati grafici, mappe o diagrammi.

12.3 Requisiti per la redazione e gestione dell'AIP

Requisiti per la redazione e gestione dell'AIP, Emendamenti AIP e Supplementi AIP, sono definiti al Chapter 4 della Parte II.

13. NOTAM

13.1 Un NOTAM deve essere originato e pubblicato prontamente in ogni caso in cui l'informazione da diffondere sia:

a) di natura temporanea e di breve durata; o
b) relativa a variazioni operativamente significative di natura permanente effettuate con breve preavviso; o
c) relativa a variazioni operativamente significative di natura temporanea ma di lunga durata effettuate con breve preavviso.

13.2 Le disposizioni di cui al paragrafo 13.1 non si applicano nel caso in cui sia necessario pubblicare documenti con una parte testuale rilevante o modifiche di natura cartografica.

13.3Un NOTAM non deve restare in vigore per più di tre mesi. Qualora sia previsto che la durata delle variazioni oggetto di notifica ecceda i tre mesi, dette variazioni devono essere pubblicate tramite supplemento AIP. Quando una variazione temporanea a informazioni contenute in AIP notificata a mezzo NOTAM inaspettatamente eccede i tre mesi, può essere emesso un NOTAM che rinnova il precedente o un nuovo NOTAM, a condizione che la nuova durata non ecceda i tre mesi. Negli altri casi dovrà essere emesso un Supplemento AIP.
Il soggetto che ha richiesto l'emissione del NOTAM deve monitorare il permanere delle condizioni che hanno determinato l'emissione dello stesso in modo da richiederne l'eventuale cancellazione anticipata o il rinnovo ovvero l'emissione Supplemento AIP.

13.4 Nei paragrafi 5.1.1.1. 5.1.1.2 e 5.1.1.3 della Parte II, Charter 5, sono definite le circostanze per le quali deve essere originato e pubblicato un NOTAM e quelle per le quali un NOTAM non deve essere originato.

13.5 La necessità dell'emissione di un NOTAM deve essere considerata in qualunque circostanza, anche diversa da quelle richiamate in paragrafo 13.4, che possa interessare le operazioni degli aeromobili".

13.7 Fatti salvi i casi di urgenza, i NOTAM relativi a:

- attivazione di aree pericolose, regolamentate o proibite pubblicate;
- attività che richiedono restrizioni temporanee di spazio aereo, diverse da operazioni di emergenza;
- ogni circostanza pianificata;

devono essere pubblicati con almeno sette giorni di anticipo rispetto all'evento oggetto di notifica.

13.8.1 L’informazione concernente qualsiasi successiva cancellazione delle attività o riduzione della durata di queste o delle dimensioni dello spazio aereo interessato, deve essere fornita, quando possibile, con almeno 24 ore di anticipo, e comunque al più presto.

13.9 I NOTAM relativi alla inefficienza di aiuti alla navigazione aerea, ai sistemi o servizi di comunicazione devono fornire una stima del periodo di inefficienza o del previsto ripristino alla normalità.

13.10 Informazioni riguardanti la presenza di ghiaccio, neve, neve bagnata e acqua stagnante sulle pavimentazioni degli aeroporti deve essere notificata tramite SNOWTAM. In casi eccezionali, qualora non sia possibile l’emissione di uno SNOWTAM deve essere emesso un NOTAM contenente le informazioni rilevanti.

13.11 informazioni riguardanti cambiamenti operativamente significativi di attività vulcanica, un eruzione vulcanica e/o nubi di cenere vulcanica devono essere notificate tramite ASHTAM.
Qualora non sia possibile l’emissione di un ASHTAM deve essere emesso un NOTAM contenente le informazioni rilevanti.

13.12 Quando un Emendamento o un Supplemento AIP è pubblicato in accordo alle procedure AIRAC, deve essere emesso un NOTAM con una breve descrizione dei contenuti, la data di entrata in vigore, il numero di riferimento dell’Emendamento o Supplemento. Tale NOTAM deve entrare in vigore alla stessa data di entrata in vigore dell’emendamento o supplemento e deve rimanere in corso di validità per quattordici giorni.

13.13 I NOTAM devono essere distribuiti sulla base di una richiesta.

13.14 I requisiti per la redazione e gestione dei NOTAM, inclusi SNOWTAM ed ASHTAM, sono definiti nella Parte II, Chapter 5.

14. AIRAC

14.1 Requisiti generali

14.1.1 Informazioni riguardanti le circostanze elencate in appendix 4 devono essere distribuite nell’ambito del sistema predefinito AIRAC che prevede una serie di date comuni di entrata in vigore, ad intervalli di 28 giorni.
L’informazione notificata non deve variare per almeno ulteriori 28 giorni a decorrere dalla data di entrata in vigore, a meno che la circostanza oggetto di notifica non sia di natura temporanea di durata inferiore a tale periodo.

14.1.3 In assenza di informazioni da pubblicare a mezzo AIRAC, deve essere emesso un NOTAM con la dicitura NIL non più tardi di 28 giorni prima della data di entrata in vigore prevista.

14.1.4 Date di entrata in vigore diverse da quelle AIRAC non devono essere utilizzate per cambiamenti operativamente significativi programmati che richiedano variazioni di cartografia e/o aggiornamenti delle banche dati di navigazione.

14.1.5 Per variazioni che ricadono nel sistema AIRAC deve essere evitato l'utilizzo di date di entrata in vigore comprese tra il 21 dicembre e 17 gennaio inclusi.

14.2 distribuzione di informazioni su supporto cartaceo.

14.2.1 In tutti i casi, le informazioni fornite tramite il sistema AIRAC devono essere pubblicate su supporto cartaceo e devono essere distribuite con anticipo di almeno 42 giorni rispetto alla data di entrata in vigore, con l'obiettivo di raggiungere il destinatario con un preavviso di almeno 28 giorni.

14.2.2 Nel caso di variazioni rilevanti e quando ciò sia opportuno e possibile, le informazioni fornite tramite il sistema AIRAC devono essere distribuite con l'obiettivo di raggiungere il destinatario con un preavviso di almeno 56 giorni (doppio ciclo AIRAC).

14.3 Distribuzione delle informazioni in formato elettronico

14.3.1 L'aggiornamento di una eventuale banca dati aeronautica, nei casi elencati nell'appendix 4, deve assicurare che le date di entrata in vigore dei dati oggetto di aggiornamento corrispondano alle date AIRAC stabilite per le copie cartacee che aggiornano gli stessi dati.

14.3.2 Le informazioni fornite in formato elettronico, riguardanti le circostanze elencate nell'appendix 4, devono essere rese disponibili dall'Ente AIS in modo da raggiungere i destinatari almeno 28 giorni prima della data di entrata in vigore del ciclo AIRAC.

14.3.3 Nel caso di variazioni rilevanti e quando ciò sia opportuno e possibile, le informazioni fornite tramite il sistema AIRAC devono essere distribuite con l'obiettivo di raggiungere il destinatario con un preavviso di almeno 56 giorni (doppio ciclo AIRAC).

15 CIRCOLARI DI INFORMAZIONI AERONAUTICHE (AIC)

15.1 Un' AIC deve essere emessa ogniqualvolta sia necessario pubblicare informazioni aeronautiche non altrimenti qualificabili rispetto alle specifiche previste per la pubblicazione in AIP o a mezzo NOTA
15.1.1 Una AIC deve essere emessa ogniqualvolta sia opportuno pubblicare:

a. previsioni a lungo termine di rilevanti modifiche a legislazione, regolamentazione, procedure o impianti;
b. informazioni di natura puramente esplicativa o consultiva che possano interessare la sicurezza del volo;
c. informazioni o notifiche di natura esplicativa o consultiva relative a materie di carattere tecnico, legislativo o puramente amministrativo.

15.1.2 Le AIC devono essere emesse in formato cartaceo.

15.2 disponibile

15.3 Requisiti generali per la redazione e pubblicazione delle AIC e una casistica delle tipologie di informazioni di norma trattate con tali circolare sono riportati al Chapter 7 della Parte II.

16. INFORMAZIONI/DATI PRE/POST-VOLO

16.1 Informazioni/dati pre-volo.

16.1.1 In ciascun aeroporto devono essere resi disponibili al personale addetto alle operazioni di volo, inclusi gli equipaggi di volo e servizi responsabili per le informazioni pre-volo, le informazioni aeronautiche essenziali per la sicurezza, regolarità ed efficienza della navigazione aerea e relative alle porzioni di rotte aventi origine sull'aeroporto considerato.
Le informazioni sono rese disponibili presso l'ARO dell'aeroporto, ove istituito, o presso l'ARO di riferimento pubblicato.

16.1.2 Le informazioni aeronautiche fornite in accordo al paragrafo 16.1.1 ai fini della pianificazione pre-volo devono includere:

a. I pertinenti elementi del Pacchetto Integrato di Informazioni Aeronautiche;
b. Le pertinenti mappe e cartografia .

16.1.3 Le ulteriori informazioni relative agli aeroporti di partenza, da fornire quali informazioni pre-volo, sono elencate nel Chapter 8 della parte II.

16.1.4 Agli equipaggi di volo deve esser reso disponibile un "bollettino informazioni pre-volo" (PIB – pre-flight information bulettin), in linguaggio chiaro, contenente un riepilogo dei NOTAM in vigore e altre informazioni con carattere di urgenza.

16.3 Informazioni post-volo

16.3.1 Gli enti ATS devono trasmettere al Servizio Informazioni Aeronautiche, le informazioni relative agli aeroporti/eliporti comunicate dagli equipaggi di volo riguardanti:

a) le condizioni e l'operatività degli impianti di navigazione;
b) la presenza di volatili.

Tali informazioni devono essere distribuite dall'AIS come applicabile in funzione della tipologia di informazione ricevuta (es. notam, PIB, info pre-volo, etc).

17. TELECOMUNICAZIONI

17.1 L'ufficio NOTAM internazionale (NOF) deve essere collegato alla rete fissa di comunicazione aeronautica internazionale (AFS).

17.1.1 I collegamenti devono supportare la stampa dellecomunicazioni.

17.2 l'Ufficio NOTAM internazionale deve essere collegato attraverso l'AFS ai seguenti punti in ambito territoriale:

a) Centri di controllo d'area (ACC) e centri informazioni volo (FIC);
b) Aeroporti ove sia istituito l'ARO

18. TERRENO ED OSTACOLI: DATI IN FORMATO ELETTRONICO

18.1 In accordo alle tempistiche specificate in paragrafo 18.3 deve essere costituita un banca dati in formato elettronico costituita da dati relativi alla orografia del territorio e agli ostacoli, allo scopo di soddisfare le esigenze di supporto delle seguenti applicazioni relative alla navigazione aerea:

a) Sistema avvisatore di prossimità del terreno (GPWS) con sistema di avviso e rappresentazione del terreno (TAWS) e sistema di avviso quota minima di sicurezza (MSAW).

b) definizione delle procedure di contingenza da utilizzare in caso di un'emergenza durante un mancato avvicinamento o un decollo.

c) analisi delle limitazioni operative degli aeromobili;

d) progettazione delle procedure strumentali (incluse procedure di *circling*)

e) determinazione delle curve di *drift-down* in rotta e della localizzazione di siti di atterraggio di emergenza in rotta.

f) Sistema di guida e controllo dei movimenti a terra avanzato (*advanced surface movement guidance and control system* (A-SMGCS));

g) produzione di carte aronautiche e di database di bordo;

h) simulatore di volo;

i) *synthetic vision*; e

j) Ostacoli aeroportuali.

18.2 Per soddisfare le esigenze delle applicazioni di cui ai punti da a) a j) precedenti, gli insiemi di dati orografici e di quelli relativi agli ostacoli devono essere raccolti e memorizzati in banche dati secondo la seguente copertura:

- Area 1: intero territorio dello Stato
- Area 2: area di controllo terminale (TMA)
- Area 3: area aeroportuale
- Area 4: area relativa ad operazioni Cat II o III.

18.3 La banca dati di cui al paragrafo 18.1 deve essere resa disponibile, nel rispetto dei requisiti tecnici specificati nella parte II Chapter 10, a decorrere dal 20 novembre 2008, per i dati terreno e ostacoli relativi all'Area 1 e dati terreno relativi all'Area 4, e a decorrere dal 18 novembre 2010 per i dati terreno ed ostacoli relativi alle aree 2 e 3.

Parte Seconda

Note: *Chaper 1 is not used*

CHAPTER 2.

DEFINITIONS

Accuracy. A degree of conformance between the estimated or measured value and the true value.

Aerodrome. A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure andsurface movement of aircraft. The definition doesn’t include the “aviosuperfici”.

Accuracy. A degree of conformance between the estimated or measured value and the true value.

Aeronautical data. A representation of aeronautical facts, concepts or instructions in a formalized manner suitable for communication, interpretation or processing.

Aeronautical information. Information resulting from the assembly, analysis and formatting of aeronautical data.

Aeronautical Information Circular (AIC). A notice containing information that does not qualify for the origination of a NOTAM or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters.

Aeronautical Information Publication (AIP). A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

Aeronautical information service (AIS). A service established within the defined area of coverage responsible for the provision of aeronautical information/data necessary for the safety, regularity and efficiency of air navigation.

AIP Amendment. Permanent changes to the information contained in the AIP.

AIP Supplement. Temporary changes to the information contained in the AIP which are published by means of special pages.

AIRAC. An acronym (aeronautical information regulation and control) signifying a system aimed at advance notification based on common effective dates, of circumstances that necessitate significant changes in operating practices.

Air defence identification zone (ADIZ). Special designated airspace of defined dimensions within which aircraft are required to comply with special identification and/or reporting procedures additional to those related to the provision of air traffic services (ATS**)**.

AIS product. Aeronautical information provided in the form of the elements of the Integrated Aeronautical Information Package (except NOTAM and PIB), including aeronautical charts, or in the form of suitable electronic media.

Application. Manipulation and processing of data in support of user requirements (ISO 19104*).

ASHTAM. A special series NOTAM notifying by means of a specific format change in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations.

Assemble. A process of merging data from multiple sources into a database and establishing a baseline for subsequent processing. *The assemble phase includes checking the data and ensuring that detected errors and omissions are rectified.*

Bare Earth. Surface of the Earth including bodies of water and permanent ice and snow, and excluding vegetation and man-made objects.

Calendar. Discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day (ISO 19108*).

Canopy. Bare Earth supplemented by vegetation height.

Culture. All man-made features constructed on the surface of the Earth, such as cities, railways and canals.

Cyclic redundancy check (CRC). A mathematical algorithm applied to the digital expression of data that provides a level of assurance against loss or alteration of data.

Danger area. An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Database. One or more files of data so structured that appropriate applications may draw from the files and update them.

Data product. Data set or data set series that conforms to a data product specification (ISO 19131*).

Data product specification. Detailed description of a data set or data set series together with additional information that will enable it to be created, supplied to and used by another party (ISO 19131*).

Data quality. A degree or level of confidence that the data provided meets the requirements of the data user in terms of accuracy, resolution and integrity.

Data set. Identifiable collection of data (ISO 19101*).

Data set series. Collection of data sets sharing the same product specification (ISO 19115*).

Datum. Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities (ISO 19104*).

Digital Elevation Model (DEM). The representation of terrain surface by continuous elevation values at all intersections of a defined grid, referenced to common datum.

Ellipsoid height (Geodetic height). The height related to the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question.

Feature. Abstraction of real world phenomena (ISO 19101*).

Feature attribute. Characteristic of a feature (ISO 19101*).

Feature operation. Operation that every instance of a feature type may perform (ISO 19110*).

Feature relationship. Relationship that links instances of one feature type with instances of the same or a different feature type (ISO 19101*).

Feature type. Class of real world phenomena with common properties (ISO 19110*).

Geodesic distance. The shortest distance between any two points on a mathematically defined ellipsoidal surface.

Geodetic datum. A minimum set of parameters required to define location and orientation of the local reference system with respect to the global reference system/frame.

Geoid. The equipotential surface in the gravity field of the Earth which coincides with the undisturbed mean sea level (MSL) extended continuously through the continents.

Geoid undulation. The distance of the geoid above (positive) or below (negative) the mathematical reference ellipsoid.

Gregorian calendar. Calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar (ISO 19108*).

Height. The vertical distance of a level, point or an object considered as a point, measured from a specific datum.

Heliport. An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters. The definition doesn't include the "elisuperfici"

Human Factors principles. Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

Integrated Aeronautical Information Package. A package which consists of the following elements:

- AIP, including amendment service;
- Supplements to the AIP;
- NOTAM and PIB;
- AIC; and
- checklists and lists of valid NOTAM.

Integrity (aeronautical data). A degree of assurance that an aeronautical data and its value has not been lost nor altered since the data origination or authorized amendment.

International airport. Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

International NOTAM office (NOF). An office designated by a State for the exchange of NOTAM internationally.

Manoeuvring area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

Metadata. Data about data (i.e. Data that describes and documents data)

Movement area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron(s).

NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

Obstacle. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight.

Obstacle/terrain data collection surface. A defined surface intended for the purpose of collecting obstacle/terrain data.

Orthometric height. Height of a point related to the geoid, generally presented as an MSL elevation.

Portrayal. Presentation of information to humans (ISO 19117*).

Position (geographical). Set of coordinates (latitude and longitude) referenced to the mathematical reference ellipsoid which define the position of a point on the surface of the Earth.

Post spacing. Angular or linear distance between two adjacent elevation points.

Precision. The smallest difference that can be reliably distinguished by a measurement process.

Pre-flight information bulletin (PIB). A presentation of current NOTAM information of operational significance, prepared prior to flight.

Prohibited area. An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

Quality. Degree to which a set of inherent characteristics fulfils requirements (ISO 9000 2005).

Relief. The inequalities in elevation of the surface of the Earth represented on a aeronautical charts by contours, hypsometric tints, shading or spot elevations.

Resolution. A number of units or digits to which a measured or calculated value is expressed and used.

Restricted area. An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

Route stage. A route or portion of a route flown without an intermediate landing.

SNOWTAM. A special series NOTAM notifying the presence or removal of hazardous conditions due to snow, ice, slush or standing water associated with snow, slush and ice on the movement area, by means of a specific format.

Station declination. An alignment variation between the zero degree radial of a VOR and true north, determined at the time the VOR station is calibrated.

Terrain. The surface of the Earth containing naturally occuring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles.

CHAPTER 3.

GENERAL

Note: See Parte Prima, paragraph 8.

Note: Paragraphs 3.1 to 3.5 are not used

3.6 General specifications

Note: Paragraphs 3.6.1 is not used

3.6.2 Place names shall be spelt in conformity with local usage, transliterated, when necessary, into the Latin alphabet.

3.6.3 Units of measurement used in the distribution of aeronautical information/data **shall** be consistent with the ENAC Regulation “Regolamento per l’utilizzo delle unità di misura nel settore dell’aviazione civile”

3.6.4 Use of ICAO abbreviations.

ICAO abbreviations shall be used in the aeronautical information services whenever they are appropriate and their use will facilitate distribution of information/data.

3.6.5 Use of automation

Automation in AIS shall be introduced with the objective of improving the speed, accuracy, effciency and cost-effectiveness of aeronautical information services.

3.6.6 Identification and delineation of prohibited, restricted and danger areas

3.6.6.1 Each prohibited area, restricted area, or danger area established by a State shall, upon initial establishment, be given an identification and full details shall be promulgated (see ENR 5.1 of Appendix 1).

3.6.6.2 The identification so assigned shall be used to identify the area in all subsequent notifications pertaining to that area.

3.6.6.3The identification shall be composed of a group of letters and figures as follows:

a) nationality letters for location indicators assigned to the State or territory which has established the airspace;

b) a letter P for prohibited area, R for restricted area and D for danger area as appropriate;

c) a number, unduplicated within the State or territory concerned.

3.6.6.4 To avoid confusion, identification numbers shall not be reused for a period of at least one year after cancellation of the area to which they refer.

3.6.6.5 When a prohibited, restricted or danger area is established, the area shall be as small as practicable and be contained within simple geometrical limits, so as to permit ease of reference by all concerned.

3.7 Common reference systems for air navigation

3.7.1 Horizontal reference system

3.7.1.1 World Geodetic System - 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system for international air navigation. Consequently, published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

3.7.1.2 In precise geodetic applications and some air navigation applications, temporal changes in the tectonic plate motion and tidal effects on the Earth's crust shall be modelled and estimated. To reflect the temporal effect, an epoch should be included with any set of absolute station coordinates.

3.7.1.3 Geographical coordinates which have been tranformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in ICAO Annex 11, Chapter 2, and ICAO Annex 14, Volumes I and II, Chapter 2, shall be identified by an asterisk.

3.7.1.4 The order of publication resolution of geographical coordinates shall be that specified in Appendix 1 and Table A7-1 of Appendix 7 while the order of chart resolution of geographical coordinates shall be that specified in ICAO Annex 4, Appendix 6, Table 1.

3.7.2 Vertical reference system

3.7.2.1 Mean sea level (MSL) datum, which gives the relationship of gravity-related height (elevation) to a surface known as the geoid, shall be used as the vertical reference system for air navigation.

3.7.2.2

The Earth Gravitational Model - 1996 (EGM-96), containing long wavelength gravity field data to degree and order 360, or equivalent, shall be used as the global gravity model.

3.7.2.3 At those geographical positions where the accuracy of EGM-96 does not meet the accuracy requirements for elevation and geoid undulation specified in Annex 14, Volumes I and II, on the basis of EGM-96 data, regional, national or local geoid models containing high resolution (short wavelength) gravity field data shall be developed and used. When a geoid model other than the EGM-96 is used, a description of the model used, including the parameters required for height transformation between the model and EGM-96, shall be provided in the Aeronautical Information Publication (AIP).

3.7.2.4 In addition to elevation referenced to the MSL (geoid), for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions specified in Appendix 1 shall also be published.

3.7.2.5 The order of publication resolution of elevation and geoid undulation shall be that specified in Appendix 1 and Table A7-2 of Appendix 7 while the order of chart resolution of elevation and geoid undulation shall be that specified in ICAO Annex 4, Appendix 6, Table 2.

3.7.3 Temporal reference system

3.7.3.1 For international civil aviation, the Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system.

3.7.3.2When a different temporal reference system is used for some applications, the feature catalogue, or the metadata associated with an application schema or a data set, as appropriate, shall include either a description of that system or a citation for a document that describes that temporal reference system.

CHAPTER 4.

AERONAUTICAL INFORMATION PUBLICATIONS (AIP)

Note: See Parte Prima, paragraph 12.

Note: Paragraph 4.1 is not used

4.2 General specifications

4.2.1 Each Aeronautical Information Publication shall be self-contained and shall include a table of contents. If it is necessary by reason of bulk or for convenience, to publish an AIP in two or more parts or volumes, each of them will indicate that the remainder of the information is to be found in the other part(s) or volume(s).

4.2.1.1 Each AIP shall not duplicate information within itself or from other sources.

4.2.2 AIP shall be published in loose-leaf form unless the complete publication is reissued at frequent intervals.

4.2.3 Each Aeronautical Information Publication shall be dated. In the case of Aeronautical Information Publications issued in loose-leaf form, each page shall be dated. The date, consisting of the day, month (by name) and year, shall be the publication date or the effective date of the information.

4.2.4 A checklist giving the current date of each page in the Aeronautical Information Publication series shall be reissued frequently to assist the user in maintaining a current publication. The page number/chart title and date of the checklist shall appear on the checklist itself.

4.2.5 Each Aeronautical Information Publication issued as a bound volume and each page of an Aeronautical Information Publication issued in loose-leaf form shall be so annotated as to indicate clearly:

a) the identity of the Aeronautical Information Publication;

b) the territory covered and subdivisions when necessary;

c) the identification of the issuing State and producing organization (authority);

d) page numbers/chart titles;

e) the degree of reliability if the information is doubtful.

4.2.6 The sheet size should be no larger than 210 × 297 mm, except that larger sheets may be used provided they are folded to the same size.

4.2.7 All changes to the AIP, or new information on a reprinted page, shall be identified by a distinctive symbol or annotation.

4.2.8 Changes to the AIP published in accordance with AIRAC procedures, shall be clearly identified by the acronym - AIRAC.

4.2.9AIP shall be amended or reissued at such regular intervals as may be necessary to keep them up to date. Recourse to hand amendments or annotations shall be kept to the minimum. The normal method of amendment shall be by means of replacement sheets.

4.2.9.1The regular interval referred to in 4.2.9 shall be specified in the AIP, Part 1 - General (GEN).

4.3 Specifications for AIP Amendments

Note: Paragraph 4.3.1 is not used

4.3.2 Each AIP Amendment shall be allocated a serial number, which shall be consecutive.

4.3.3 Each AIP Amendment page, including the cover sheet, shall display a publication date.

4.3.4 Each AIRAC AIP Amendment page, including the cover sheet, shall display an effective date.

4.3.5 When an AIP Amendment is issued, it shall include references to the serial number of those elements, if any, of the Integrated Aeronautical Information Package which have been incorporated into the amendment.

4.3.6 A brief indication of the subjects affected by the amendment shall be given on the AIP Amendment cover sheet.

4.3.7 When an AIP Amendment will not be published at the established interval or publication date, a NIL notification shall be originated and distributed by the monthly printed plain-language list of valid NOTAM required by 5.2.13.3.

4.4 Specifications for AIP Supplements

Note: Paragraph 4.4.1 not used

4.4.2 Each AIP Supplement shall be allocated a serial number which shall be consecutive and based on the calendar year.

4.4.3 AIP Supplement pages shall be kept in the AIP as long as all or some of their contents remain valid.

4.4.4 When an AIP Supplement is sent in replacement of a NOTAM, it shall include a reference to the serial number of the NOTAM.

4.4.5 A checklist of valid AIP Supplements shall be issued at intervals of not more than one month. This information shall be issued through the medium of the monthly printed plain-language list of valid NOTAM required by 5.2.13.3.

4.4.6AIP Supplement pages should be coloured in order to be conspicuous, preferably in yellow.

4.4.7 AIP Supplement pages should be kept as the first item in the AIP parts.

4.5 Distribution

AIP, AIP Amendments and AIP Supplements shall be made available by the most expeditious means.

CHAPTER 5.

NOTAM

Note: See Parte Prima, paragraph 13.

Note: Paragraph 5.1 is not used

5.1.1.1 A NOTAM shall be originated and issued concerning the following information:

a) establishment, closure or significant changes in operation of aerodrome(s)/heliport(s) or runways;
b) establishment, withdrawal and significant changes in operation of aeronautical services (AGA, AIS, ATS, COM, MET, SAR, etc.);
c) establishment or withdrawal of electronic and other aids to air navigation and aerodromes/heliports. This includes: interruption or return to operation, change of frequencies, change in notified hours of service, change of identification, change of orientation (directional aids), change of location, power increase or decrease amounting to 50 per cent or more, change in broadcast schedules or contents, or irregularity or unreliability of operation of any electronic aid to air navigation, and air-ground communication services;
d) establishment, withdrawal or significant changes made to visual aids;
e) interruption of or return to operation of major components of aerodrome lighting systems;
f) establishment, withdrawal or significant changes made to procedures for air navigation services;
g) occurrence or correction of major defects or impediments in the manoeuvring area;
h) changes to and limitations on availability of fuel, oil and oxygen;
i) major changes to search and rescue facilities and services available;
j) establishment, withdrawal or return to operation of hazard beacons marking obstacles to air navigation;
k) changes in regulations requiring immediate action, e.g. prohibited areas for SAR action;
l) presence of hazards which affect air navigation (including obstacles, military exercises, displays, races and parachuting events);
m) erecting or removal of, or changes to, obstacles to air navigation in the take-off/climb, missed approach, approach areas and runway strip;
n) establishment or discontinuance (including activation or deactivation) as applicable, or changes in the status of prohibited, restricted or danger areas;
o) establishment or discontinuance of areas or routes or portions thereof where the possibility of interception exists and where the maintenance of guard on the VHF emergency frequency 121.5 MHz is required;
p) allocation, cancellation or change of location indicators;
q) significant changes in the level of protection normally available at an aerodrome for rescue and firefighting purposes. NOTAM shall be originated only when a change of category is involved and such change of category shall be clearly stated (see Annex 14, Volume I, Chapter 9, and Attachment A, Section 17);
r) presence or removal of, or significant changes in, hazardous conditions due to snow, slush, ice or water on the movement area;
s) outbreaks of epidemics necessitating changes in notified requirements for inoculations and quarantine measures;
t) forecasts of solar cosmic radiation, where provided;
u) an operationally significant change in volcanic activity, the location, date and

time of volcanic eruptions and/or horizontal and vertical extent of volcanic ash cloud, including direction of movement, flight levels and routes or portions of routes which could be affected;

v) release into the atmosphere of radioactive materials or toxic chemicals following a nuclear or chemical incident, the location, date and time of the incident, the flight levels and routes or portions thereof which could be affected and the direction of movement;

w) establishment of operations of humanitarian relief missions, such as those undertaken under the auspices of United Nations, together with procedures and/or limitations which affect air navigation; and

x) implementation of short-term contingency measures in cases of disruption, or partial disruption, of air traffic services and related supporting services.

5.1.1.2 *The need for origination of a NOTAM shall be considered in any other circumstance which may affect the operations of aircraft.*

5.1.1.3 The following information shall not be notified by NOTAM:

a) routine maintenance work on aprons and taxiways which does not affect the safe movement of aircraft;
b) runway marking work, when aircraft operations can safely be conducted on other available runways, or the equipment used can be removed when necessary;
c) temporary obstructions in the vicinity of aerodromes/heliports that do not affect the safe operation of aircraft;
d) partial failure of aerodrome/heliport lighting facilities where such failure does not directly affect aircraft operations;
e) partial temporary failure of air-ground communications when suitable alternative frequencies are known to be available and are operative;
f) the lack of apron marshalling services and road traffic control;
g) the unserviceability of location, destination or other instruction signs on the aerodrome movement area;
h) *Not used*;
i) other information of a similar temporary nature.

5.2 General specifications

5.2.1 Except as otherwise provided in 5.2.3 and 5.2.4, each NOTAM shall contain the information in the order shown in the NOTAM Format in Appendix 6.

5.2.2 Text of NOTAM shall be composed of the significations/uniform abbreviated phraseology assigned to the ICAO NOTAM Code complemented by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, figures and plain language.

5.2.2.1 When NOTAM is selected for international distribution, English text shall be included for those parts expressed in plain language.

5.2.3 SNOWTAMs shall contain the information in the order shown in the SNOWTAM Format in Appendix 2.

5.2.4 ASHTAMs shall contain the information in the order shown in the ASHTAM Format in Appendix 3.

5.2.5 The NOTAM originator shall allocate to each NOTAM a series identified by a letter and a four-digit number followed by a stroke and a two-digit number for the year. The four-digit number shall be consecutive and based on the calendar year. *Letters A to Z, with the exception of S and T, may be used to identify a NOTAM series.*

5.2.6 When errors occur in a NOTAM, a NOTAM with a new number to replace the erroneous NOTAM shall be issued.

5.2.7 When a NOTAM is issued which cancels or replaces a previous NOTAM, the series and number of the previous NOTAM shall be indicated. The series, location indicator and subject of both NOTAM shall be the same. Only one NOTAM shall be cancelled or replaced by a NOTAM.

5.2.8 Each NOTAM shall deal with only one subject and one condition of the subject.

5.2.9 Each NOTAM shall be as brief as possible and so compiled that its meaning is clear without the need to refer to another document.

5.2.10 Each NOTAM shall be transmitted as a single telecommunication message.

5.2.11 A NOTAM containing permanent or temporary information of long duration shall carry appropriate AIP or AIP Supplement references.

5.2.12 Location indicators included in the text of a NOTAM shall be those defined by the pertinent ICAO publication.

5.2.12.1 In no case shall a curtailed form of such indicators be used.

5.2.12.2 Where no ICAO location indicator is assigned to the location, its place name spelt in accordance with 3.6.2 shall be entered in plain language.

5.2.13 A checklist of valid NOTAM shall be issued as a NOTAM over the Aeronautical Fixed Service (AFS) at intervals of not more than one month using the NOTAM Format specified in Appendix 6. One NOTAM shall be issued for each series.

5.2.13.1 A checklist of NOTAM shall refer to the latest AIP Amendments, AIP Supplements and at least the internationally distributed AIC.

5.2.13.2 A checklist of NOTAM shall have the same distribution as the actual message series to which they refer and shall be clearly identified as checklist.

5.2.13.3 A monthly printed plain-language list of valid NOTAM, including indications of the latest AIP Amendments, AIC issued and a checklist of AIP Supplements, shall be prepared with a minimum of delay and forwarded by the most expeditious means to recipients of the Integrated Aeronautical Information Package.

5.3 Distribution

Note - paragraph 5.3.1 is not used.

5.3.2 NOTAM shall be prepared in conformity with the relevant provisions of the ICAO communication procedures.

5.3.2.1 The AFS shall, whenever practicable, be employed for NOTAM distribution.

5.3.2.2 When a NOTAM exchanged as specified in 5.3.4 is sent by means other than the AFS, a six-digit date-time group indicating the date and time of NOTAM origination, and the identification of the originator shall be used, preceding the text.

5.3.3The AIS provider shall select the NOTAM that are to be given international distribution.

5.3.3.1 Selective distribution lists should be used when practicable.

5.3.4 International exchange of NOTAM shall take place only as mutually agreed between the international NOTAM offices concerned. The international exchange of ASHTAM (see 5.2.4), and NOTAM where NOTAM are used for distribution of information on volcanic activity, shall include volcanic ash advisory centres, and shall take account of the requirements of long-range operations.

5.3.4.1 These exchanges of NOTAM between international NOTAM offices shall, as far as practicable, be limited to the requirements of the receiving States concerned by means of separate series providing for at least international and domestic flights.

5.3.4.2 A predetermined distribution system for NOTAM transmitted on the AFS in accordance with Appendix 5 shall be used whenever possible, subject to the requirements of 5.3.4.

NOTE: CHAPTER 6 IS NOT USED

CHAPTER 7
AERONAUTICAL INFORMATION CIRCULARS (AIC)

Note: See Parte Prima, paragraph 15

7.1 Origination

7.1.1 The circumstances listed in part I paragraph 15.1.1 shall include:

1) forecasts of important changes in the air navigation procedures, services and facilities provided;

2) forecasts of implementation of new navigational systems;

3) significant information arising from aircraft accident/incident investigation which has a bearing on flight safety;

4) information on regulations relating to the safeguarding of international civil aviation against acts of unlawful interference;

5) advice on medical matters of special interest to pilots;

6) warnings to pilots concerning the avoidance of physical hazards;

7) effect of certain weather phenomena on aircraft operations;

8) information on new hazards affecting aircraft handling techniques;

9) regulations relating to the carriage of restricted articles by air;

10) reference to the requirements of, and publication of changes in, national legislation;

11) aircrew licensing arrangements;

12) training of aviation personnel;

13) application of, or exemption from, requirements in national legislation;

14) advice on the use and maintenance of specific types of equipment;

15) actual or planned availability of new or revised editions of aeronautical charts;

16) carriage of radio equipment;

17) explanatory information relating to noise abatement;

18) selected airworthiness directives;

19) changes in NOTAM series or distribution, new editions of AIP or major changes in their contents, coverage or format;

20) advance information on the snow plan (see 7.1.1.2);

21) other information of a similar nature.

7.1.2 The snow plan published under AD 1.2.2 of Appendix 1 shall be supplemented by seasonal information, to be issued well in advance of the beginning of each winter - not less than one month before the normal onset of winter conditions - and shall contain information such as that listed below:
This information, or any part of it, may be included in the AIP, if so desired.

a) a list of aerodromes/heliports where snow clearance is expected to be performed during the coming winter:

*1) in accordance with the runway and taxiway systems; or

*2) planned snow clearing, deviating from the runway system (length, width and number of runways, affected taxiways and aprons or portions thereof);

*b) information concerning any centre designated to coordinate information on the current state of progress of clearance and on the current state of runways, taxiways and aprons;

c) a division of the aerodromes/heliports into SNOWTAM distribution lists in order to avoid excessive NOTAM distribution;

*d) an indication, as necessary, of minor changes to the standing snow plan;

*e) a descriptive list of clearance equipment;

*f) a listing of what will be considered as the minimum critical snow bank to be reported at each aerodrome/heliport at which reporting will commence.

7.2 General specifications

7.2.1 AIC shall be issued in printed form.

7.2.1.1 The AIS provider shall select the AIC that are to be given international distribution.

7.2.1.2 Each AIC shall be allocated a serial number which shall be consecutive and based on the calendar year.

7.2.1.3 When AIC are distributed in more than one series, each series shall be separately identified by a letter.

7.2.2 A checklist of AIC currently in force shall be issued at least once a year, with distribution as for the AIC.

7.3 Distribution

The AIS provider shall give AIC selected for international distribution the same distribution as for the AIP.

CHAPTER 8

PRE-FLIGHT AND POST-FLIGHT INFORMATION/DATA

Note: See Parte Prima, paragraph 16.

8.1 Pre-flight information

8.1.1 Not used

8.1.2 Additional current information relating to the aerodrome of departure shall be provided concerning the following:

a) construction or maintenance work on or immediately adjacent to the manoeuvring area;

b) rough portions of any part of the manoeuvring area, whether marked or not, e.g. broken parts of the surface of runways and taxiways;

c) presence and depth of snow, ice or water on runways and taxiways, including their effect on surface friction;

d) snow drifted or piled on or adjacent to runways or taxiways;

e) parked aircraft or other objects on or immediately adjacent to taxiways;

f) presence of other temporary hazards;

g) presence of birds constituting a potential hazard to aircraft operations;

h) failure or irregular operation of part or all of the aerodrome lighting system including approach, threshold, runway, taxiway, obstruction and manoeuvring area unserviceability lights and aerodrome power supply;

i) failure, irregular operation and changes in the operational status of ILS (including markers), MLS, basic GNSS, SBAS, GBAS, SRE, PAR, DME, SSR, VOR, NDB, VHF aeromobile channels, RVR observing system, and secondary power supply; and

j) presence and operation of humanitarian relief missions, such as those undertaken under the auspices of the United Nations, together with any associated procedures and/or limitations applied thereof.

NOTE: CHAPTER 9 IS NOT USED

CHAPTER 10.
ELECTRONIC TERRAIN AND OBSTACLE DATA

Note: See Parte Prima, paragraph 18.

Note: paragraph 10.1 is not used

10.2 Coverage and terrain and obstacle data numerical requirements

10.2.1 As stated in part I paragraph 18.2 the following coverage areas apply:

- Area 1: entire territory of a State;
- Area 2: terminal control area;
- Area 3: aerodrome/heliport area; and
- Area 4: Category II or III operations area.

10.2.2Area 1 shall cover the entire territory of a State, including aerodromes/heliports. Area 2 shall be the terminal control area as published in the aeronautical information publication (AIP) or limited to a 45-km radius from the aerodrome/heliport reference point (whichever is smaller). At IFR aerodromes/heliports where a terminal control area has not been established, Area 2 shall be the area within a 45-km radius of the aerodrome/heliport reference point.

10.2.3 At IFR aerodromes/heliports, Area 3 shall cover the area that extends from the edge(s) of the runway(s) to 90 m from the runway centre line(s) and for all other parts of aerodrome/heliport movement area(s), 50 m from the edge(s) of the defined area(s).

10.2.4 Area 4 shall be restricted to those runways where precision approach Category II or III operations have been established and where detailed terrain information is required by operators to enable them to assess, by use of radio altimeters, the effect of terrain on decision height determination. The width of the area shall be 60 m on either side of the extended runway centre line while the length shall be 900 m from the runway threshold measured along the extended runway centre line.

10.2.5 According to the air navigation applications listed in Parte Prima paragraph 18.1and areas of coverage, sets of electronic terrain data shall satisfy the numerical requirements specified in Appendix 8, Table A8-1 while obstacle data shall satisfy the numerical requirements specified in Appendix 8, Table A8-2.

10.3 Terrain database - content and structure

10.3.1 A terrain database shall contain digital sets of data representing terrain surface in the form of continuous elevation values at all intersections (points) of a defined grid, referenced to common datum. A terrain grid shall be angular or linear and shall be of regular or irregular shape.

10.3.2 Sets of electronic terrain data shall include spatial (position and elevation), thematic and temporal aspects for the surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles. In practical terms, depending on the acquisition method used, this shall represent the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as “first reflective surface”.

10.3.3 Terrain data shall be collected according to the areas specified in 10.2, terrain data collection surfaces and criteria specified in Appendix 8, Figure A8-1, and in accordance with the terrain data numerical requirements provided in Table A8-1 of Appendix 8. In terrain databases, only one feature type, i.e. terrain, shall be recorded. Feature attributes describing terrain shall be those listed in Appendix 8, Table A8-3. The terrain feature attributes listed in Table A8-3 represent the minimum set of terrain attributes, and those annotated as mandatory shall be recorded in the terrain database.

10.4 Obstacle database - content and structure

10.4.1 One obstacle database shall contain a digital set of obstacle data and shall include those features having vertical significance in relation to adjacent and surrounding features that are considered hazardous to air navigation. Obstacle data shall comprise the digital representation of the vertical and horizontal extent of man-made objects. Obstacles shall not be included in terrain databases. Obstacle data elements are features that shall be represented in the database by points, lines or polygons.

10.4.2 Obstacles, which in accordance with the definition, can be fixed (permanent or temporary) or mobile shall be identified within the areas defined in 10.2, on the basis of the obstacle data collection surfaces and criteria specified in Appendix 8, Figure A8-2, and collected in accordance with obstacle data numerical requirements provided in Table A8-2 of Appendix 8. In an obstacle database, all defined obstacle feature types shall be recorded and each of them shall be described according to the list of mandatory attributes provided in Table A8-4 of Appendix 8.

10.5 Terrain and obstacle data product specifications

10.5.1 To allow and support the interchange and use of sets of electronic terrain and obstacle data among different data providers and data users, the ISO 19100 series of standards for geographic information shall be used as a general data modelling framework.

10.5.2 A comprehensive statement of available electronic terrain and obstacle data sets shall be provided in the form of terrain data product specifications as well as obstacle data product specifications on which basis air navigation users will be able to evaluate the products and determine whether they fulfil the requirements for their intended use (application).

10.5.3 Each terrain data product specification shall include an overview, a specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information, and metadata.

10.5.4 The overview of terrain data product specification or obstacle data product specification shall provide an informal description of the product and shall contain general information about the data product. Specification of terrain data may not be homogenous across the whole data product but may vary for different parts of the data sets. For each such subset of data, a specification scope shall be identified. Identification information concerning both terrain and obstacle data products shall include the title of the product; a brief narrative summary of the content, purpose, and spatial resolution if appropriate (a general statement about the density of spatial data); the geographic area covered by the data product; and supplemental information.

10.5.5 Content information of feature-based terrain data sets or of feature-based obstacle data sets shall each be described in terms of an application schema and a feature catalogue. Application schema shall provide a formal description of the data structure and content of data sets while the feature catalogue shall provide the semantics of all feature types together with their attributes and attribute value domains, association types between feature types and feature operations, inheritance relations and constraints. Coverage is considered a subtype of a feature and can be derived from a collection of features that have common attributes. Both terrain and obstacle data product specifications shall identify clearly the coverage and/or imagery they include and shall provide a narrative description of each of them.

10.5.6 Both terrain data product specifications and obstacle data product specifications shall include information that identifies the reference system used in the data product. This shall include the spatial reference system and temporal reference system. Additionally, both data product specifications shall identify the data quality requirements for each data product. This shall include a statement on acceptable conformance quality levels and corresponding data quality measures. This statement shall cover all the data quality elements and data quality sub-elements, even if only to state that a specific data quality element or sub-element is not applicable.

10.5.7 Terrain data product specifications shall include a data capture statement which shall be a general description of the sources and of processes applied for the capture of terrain data. The principles and criteria applied in the maintenance of terrain data sets and obstacle data sets shall also be provided with the data specifications, including the frequency with which data products are updated. Of particular importance shall be the maintenance information of obstacle data sets and an indication of the principles, methods and criteria applied for obstacle data maintenance.

10.5.8 Terrain data product specifications shall contain information on how data held with data sets is presented, i.e. as a graphic output, as a plot or as an image. The product specifications for both terrain and obstacles shall also contain data product delivery information which shall include delivery formats and delivery medium information.

10.5.9 The core terrain and obstacle metadata elements shall be included in the data product specifications. Any additional metadata items required to be supplied shall be stated in each product specification together with the format and encoding of the metadata.

APPENDIX 1.

CONTENTS OF AERONAUTICAL INFORMATION PUBLICATION (AIP)

PART 1 — GENERAL (GEN)

If an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments must be included in each volume.

GEN 0.1 Preface

Brief description of the Aeronautical Information Publication (AIP), including:

1) name of the publishing authority;
2) applicable ICAO documents;
3) the AIP structure and established regular amendment interval; and
4) service to contact in case of detected AIP errors or omissions.

GEN 0.2 Record of AIP Amendments

A record of AIP Amendments and AIRAC AIP Amendments (published in accordance with the AIRAC system) containing:

1) amendment number;
2) publication date;
3) date inserted (for the AIRAC AIP Amendments, effective date); and
4) initials of officer who inserted the amendment.

GEN 0.3 Record of AIP Supplements

A record of issued AIP Supplements containing:

1) Supplement number;
2) Supplement subject;
3) AIP section(s) affected;
4) period of validity; and
5) cancellation record.

GEN 0.4 Checklist of AIP pages

A checklist of AIP pages containing:

1) page number/chart title; and
2) publication or effective date (day, month by name and year) of the aeronautical information.

GEN 0.5 List of hand amendments to the AIP

A list of current hand amendments to the AIP containing:
1) AIP page(s) affected;
2) amendment text; and
3) AIP Amendment number by which a hand amendment was introduced.

GEN 0.6 Table of contents to Part 1

A list of sections and subsections contained in Part 1 — General (GEN).
Note.— Subsections may be listed alphabetically.

GEN 1. NATIONAL REGULATIONS AND REQUIREMENTS

GEN 1.1 Designated authorities

The addresses of designated authorities concerned with the facilitation of air navigation (civil aviation, meteorology, customs, immigration, health, en-route and aerodrome charges, agricultural quarantine and aircraft accident investigation) containing, for each authority:
1) designated authority;
2) name of the authority;
3) postal address;
4) telephone number;
5) telefax number;
6) telex number; and
7) aeronautical fixed service (AFS) address.

GEN 1.2 Entry, transit and departure of aircraft

Regulations and requirements for advance notification and applications for permission concerning entry, transit and departure of aircraft.

GEN 1.3 Entry, transit and departure of passengers and crew

Regulations (including customs, immigration and quarantine, and requirements for advance notification and applications for permission) concerning entry, transit and departure of non-immigrant passengers and crew.

GEN 1.4 Entry, transit and departure of cargo

Regulations (including customs, and requirements for advance notification and applications for permission) concerning entry, transit and departure of cargo.

GEN 1.5 Aircraft instruments, equipment and flight documents

Brief description of aircraft instruments, equipment and flight documents, including:

1) instruments, equipment (including aircraft communication and navigation equipment) and flight documents to be carried on aircraft, including any special requirement in addition to the provisions specified in Annex 6, Part I, Chapters 6 and 7; and
2) emergency locator transmitter (ELT), signalling devices and life-saving equipment as presented in Annex 6, Part I, 6.6 and Part II, 6.4 where so determined by regional air navigation meetings, for flights over designated land areas.

GEN 1.6 Summary of national regulations and international agreements/conventions

A list of titles and references and, where applicable, summaries of national regulations affecting air navigation, together with a list of international agreements/conventions ratified by State.

GEN 1.7 Differences from ICAO Standards, Recommended Practices and Procedures

A list of significant differences between national regulations and practices of the State and related ICAO provisions, including:

1) provision affected (Annex and edition number, paragraph); and
2) difference in full text.

All significant differences must be listed under this subsection.
All Annexes must be listed in numerical order even if there is no difference to an Annex, in which case a NIL notification must be provided. National differences or the degree of nonapplication of the regional supplementary procedures (SUPPS) must be notified immediately following the Annex to which the supplementary procedure relates.

GEN 2. TABLES AND CODES

GEN 2.1 Measuring system, aircraft markings, holidays

GEN 2.1.1 Units of measurement
Description of units of measurement used including table of units of measurement.

GEN 2.1.2 Temporal reference system
Description of the temporal reference system (calendar and time system) employed, together with an indication of whether or not daylight saving hours are employed and how the temporal reference system is presented throughout the AIP.

GEN 2.1.3 Horizontal reference system
Brief description of the horizontal (geodetic) reference system used, including:

1) name/designation of the reference system;
2) identification of the projection;
3) identification of the ellipsoid used;
4) identification of the datum used;
5) area(s) of application; and
6) an explanation, if applicable, of the asterisk used to identify those coordinates that do not meet Annex 11 and 14 accuracy requirements.

GEN 2.1.4 Vertical reference system
Brief description of the vertical reference system used, including:

1) name/designation of the reference system;
2) description of the geoid model used including the parameters required for height transformation between the model used and EGM-96; and
3) an explanation, if applicable, of the asterisk used to identify those elevations/geoid undulations that do not meet Annex 14 accuracy requirements.

GEN 2.1.5 Aircraft nationality and registration marks
Indication of aircraft nationality and registration marks adopted by the State.

GEN 2.1.6 Public holidays
A list of public holidays with indication of services being affected.

GEN 2.2 Abbreviations used in AIS publications

A list of alphabetically arranged abbreviations and their respective significations used by the State in its AIP and in the distribution of aeronautical information/data with appropriate annotation for those national abbreviations that are different from those contained in the *Procedures for Air Navigation Services — ICAO*

Abbreviations and Codes (PANS-ABC, Doc 8400). *A list of alphabetically arranged definitions/glossary of terms may also be added.*

GEN 2.3 Chart symbols

A list of chart symbols arranged according to the chart series where symbols are applied.

GEN 2.4 Location indicators

A list of alphabetically arranged location indicators assigned to the locations of aeronautical fixed stations to be used for encoding and decoding purposes. An annotation to locations not connected to the Aeronautical Fixed Service (AFS) must be provided.

GEN 2.5 List of radio navigation aids

A list of radio navigation aids arranged alphabetically, containing:

1) identifier;
2) name of the station;
3) type of facility/aid; and
4) indication whether aid serves en-route (E), aerodrome (A) or dual (AE) purposes.

GEN 2.6 Conversion tables

Tables for conversion between:

1) nautical miles and kilometres and vice versa;
2) feet and metres and vice versa;
3) decimal minutes of arc and seconds of arc and vice versa; and
4) other conversion tables, as appropriate.

GEN 2.7 Sunrise/sunset tables

Brief description of criteria used for determination of the times given in the sunrise/sunset tables, together with an alphabetical list of locations for which the times are given with a reference to the related page in the table and the sunrise/sunset tables for the selected stations/locations, including:

1) station name;
2) ICAO location indicator;

3) geographical coordinates in degrees and minutes;
4) date(s) for which times are given;
5) time for the beginning of morning civil twilight;
6) time for sunrise;
7) time for sunset; and
8) time for the end of evening civil twilight.

GEN 3. SERVICES

GEN 3.1 Aeronautical information services

GEN 3.1.1 Responsible service
Description of the Aeronautical Information Service (AIS) provided and its major components, including:

1) service/unit name;
2) postal address;
3) telephone number;
4) telefax number;
5) telex number;
6) AFS address;
7) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
8) an indication if service is not H24.

GEN 3.1.2 Area of responsibility
The area of responsibility for the aeronautical information service.

GEN 3.1.3 Aeronautical publications
Description of the elements of the Integrated Aeronautical Information Package, including:

1) AIP and related amendment service;
2) AIP Supplements;
3) AIC;
4) NOTAM and pre-flight information bulletins (PIB);
5) checklists and lists of valid NOTAM; and
6) how they may be obtained.

When an AIC is used to promulgate publication prices, that must be indicated in this section of the AIP.

GEN 3.1.4 AIRAC system.
Brief description of the AIRAC system provided including a table of present and near future AIRAC dates.

GEN 3.1.5 Pre-flight information service at aerodromes/heliports.

A list of aerodromes/heliports at which pre-flight information is routinely available, including an indication of relevant:

1) elements of the Integrated Aeronautical Information Packages held;
2) maps and charts held; and
3) general area of coverage of such data.

GEN 3.1.6 Electronic terrain and obstacle data.
Details of how electronic terrain and obstacle data may be obtained, containing:

1) name of the individual, service or organization responsible;
2) street address and e-mail address of the individual, service or organization responsible;
3) telefax number of the individual, service or organization responsible;
4) contact telephone number of the individual, service or organization responsible;
5) hours of service (time period including time zone when contact can be made);
6) online information that can be used to contact the individual, service or organization; and
7) supplemental information, if necessary, on how and when to contact the individual, service or organization.

GEN 3.2 Aeronautical charts

GEN 3.2.1 Responsible service(s)
Description of service(s) responsible for the production of aeronautical charts, including:

1) service name;
2) postal address;
3) telephone number;
4) telefax number;
5) telex number;
6) AFS address;
7) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
8) an indication if service is not H24.

GEN 3.2.2 Maintenance of charts
Brief description of how aeronautical charts are revised and amended.

GEN 3.2.3 Purchase arrangements
Details of how charts may be obtained, containing:

1) service/sales agency(ies);
2) postal address;
3) telephone number;
4) telefax number;

5) telex number; and
6) AFS address.

GEN 3.2.4 Aeronautical chart series available.
A list of aeronautical chart series available followed by a general description of each series and an indication of the intended use.

GEN 3.2.5 List of aeronautical charts available
A list of aeronautical charts available, including:
1) title of series;
2) scale of series;
3) name and/or number of each chart or each sheet in a series;
4) price per sheet; and
5) date of latest revision.

GEN 3.2.6 Index to the World Aeronautical Chart (WAC) —
ICAO 1:1 000 000
An index chart showing coverage and sheet layout for the WAC 1:1 000 000 produced by a State. If Aeronautical Chart — ICAO 1:500 000 is produced instead of WAC1:1 000 000, index charts must be used to indicate coverage
and sheet layout for the Aeronautical Chart — ICAO 1:500 000.

GEN 3.2.7 Topographical charts.
Details of how topographical charts may be obtained, containing:
1) name of service/agency(ies);
2) postal address;
3) telephone number;
4) telefax number;
5) telex number; and
6) AFS address.

GEN 3.2.8 Corrections to charts not contained in the AIP
A list of corrections to aeronautical charts not contained in the AIP, or an indication where such information can be obtained.

GEN 3.3 Air traffic services

GEN 3.3.1 Responsible service
Description of the air traffic service and its major components, including:
1) service name;
2) postal address;
3) telephone number;
4) telefax number;
5) telex number;
6) AFS address;

7) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
8) an indication if service is not H24.

GEN 3.3.2 Area of responsibility
Brief description of area of responsibility for which air traffic services are provided.

GEN 3.3.3 Types of services
Brief description of main types of air traffic services provided.

GEN 3.3.4 Coordination between the operator and ATS.
General conditions under which coordination between the operator and air traffic services is effected.

GEN 3.3.5 Minimum flight altitude
The criteria used to determine minimum flight altitudes.

GEN 3.3.6 ATS units address list
A list of ATS units and their addresses arranged alphabetically, containing:
1) unit name;
2) postal address;
3) telephone number;
4) telefax number;
5) telex number; and
6) AFS address.

GEN 3.4 Communication services

GEN 3.4.1 Responsible service
Description of the service responsible for the provision of telecommunication and navigation facilities, including:
1) service name;
2) postal address;
3) telephone number;
4) telefax number;
5) telex number;
6) AFS address;
7) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
8) an indication if service is not H24.

GEN 3.4.2 Area of responsibility.
Brief description of area of responsibility for which telecommunication service is provided.

GEN 3.4.3 Types of service

Brief description of the main types of service and facilities provided, including:

1) radio navigation services;
2) mobile service;
3) broadcasting service;
4) language(s) used; and
5) an indication of where detailed information can be obtained.

GEN 3.4.4 Requirements and conditions

Brief description concerning the requirements and conditions under which the communication service is available.

GEN 3.5 Meteorological services

GEN 3.5.1 Responsible service

Brief description of the meteorological service responsible for the provision of meteorological information, including:

1) service name;
2) postal address;
3) telephone number;
4) telefax number;
5) telex number;
6) AFS address;
7) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
8) an indication if service is not H24.

GEN 3.5.2 Area of responsibility.

Brief description of area and/or air routes for which meteorological service is provided.

GEN 3.5.3 Meteorological observations and reports.

Detailed description of the meteorological observations and reports provided for international air navigation, including:

1) name of the station and the ICAO location indicator;
2) type and frequency of observation including an indication of automatic observing equipment;
3) types of meteorological reports (e.g. METAR) and availability of a trend forecast;
4) specific type of observation system and number of observation sites used to observe and report surface wind, visibility, runway visual range, cloud base, temperature and, where applicable, wind shear (e.g. anemometer at intersection of runways, transmissometer next to touchdown zone, etc.);
5) hours of operation; and
6) indication of aeronautical climatological information available.

GEN 3.5.4 Types of services

Brief description of the main types of service provided, including details of briefing, consultation, display of meteorological information, flight documentation available for operators and flight crew members, and of the methods and means used for supplying the meteorological information.

GEN 3.5.5 Notification required from operators
Minimum amount of advance notice required by the meteorological authority from operators in respect of briefing, consultation and flight documentation and other meteorological information they require or change.

GEN 3.5.6 Aircraft reports
As necessary, requirements of the meteorological authority for the making and transmission of aircraft reports.

GEN 3.5.7 VOLMET service
Description of VOLMET service, including:

1) name of transmitting station;
2) call sign or identification and abbreviation for the radio communication emission;
3) frequency or frequencies used for broadcast;
4) broadcasting period;
5) hours of service;
6) list of aerodromes/heliports for which reports and/or forecasts are included; and
7) reports, forecasts and SIGMET information included and remarks.

GEN 3.5.8 SIGMET and AIRMET service.
Description of the meteorological watch provided within flight information regions or control areas for which air traffic services are provided, including a list of the meteorological watch offices with:

1) name of the meteorological watch office, ICAO location indicator;
2) hours of service;
3) flight information region(s) or control area(s) served;
4) types of SIGMET information issued (SIGMET, SST SIGMET) and validity periods;
5) specific procedures applied to SIGMET information (e.g. for volcanic ash and tropical cyclones);
6) procedures applied to AIRMET information (in accordance with relevant regional air navigation agreements);
7) the air traffic services unit(s) provided with SIGMET and AIRMET information; and
8) additional information (e.g. concerning any limitation of service, etc.).

GEN 3.5.9 Other automated meteorological services
Description of available automated services for the provision of meteorological information (e.g. automated pre-flight information service accessible by telephone and/or computer modem) including:

1) service name;
2) information available;
3) areas, routes and aerodromes covered; and
4) telephone, telex and telefax number(s).

GEN 3.6 Search and rescue

GEN 3.6.1 Responsible service(s)
Brief description of service(s) responsible for the provision of search and rescue (SAR), including:

1) service/unit name;
2) postal address;
3) telephone number;
4) telefax number;
5) telex number;
6) AFS address; and
7) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed.

GEN 3.6.2 Area of responsibility
Brief description of area of responsibility within which search and rescue services are provided.

GEN 3.6.3 Types of service
Brief description and geographical portrayal, where appropriate, of the type of service and facilities provided including indications where SAR aerial coverage is dependent upon significant deployment of aircraft.

GEN 3.6.4 SAR agreements
Brief description of SAR agreements in force, including provisions for facilitating entry and departure of other States' aircraft for search, rescue, salvage, repair or salvage in connection with lost or damaged aircraft, either with airborne notification only or after flight plan notification.

GEN 3.6.5 Conditions of availability
Brief description of provisions for search and rescue, including the general conditions under which the service and facilities are available for international use, including an indication of whether a facility available for search and rescue is specialized in SAR techniques and functions, or is specially used for other purposes but adapted for SAR purposes by training and equipment,
or is only occasionally available and has no particular training or preparation for SAR work.

GEN 3.6.6 Procedures and signals used
Brief description of the procedures and signals employed by rescue aircraft and a table showing the signals to be used by survivors.

GEN 4. CHARGES FOR AERODROMES AND AIR NAVIGATION SERVICES

Reference may be made to where details of actual charges may be found, if not itemized in this chapter.

GEN 4.1 Aerodrome/heliport charges
Brief description of type of charges which may be applicable at aerodromes/heliports available for international use, including:

1) *landing of aircraft;*
2) *parking, hangarage and long-term storage of aircraft;*
3) *passenger service;*
4) *security;*
5) *noise-related items;*
6) *other (customs, health, immigration, etc.);*
7) *exemptions/reductions; and*
8) *8) methods of payment.*

GEN 4.2 Air navigation services charges
Brief description of charges which may be applicable to air navigation services provided for international use, including:

1) *approach control;*
2) *route air navigation services;*
3) *cost basis for air navigation services and exemptions/reductions; and*
4) *methods of payment.*

PART 2 — EN-ROUTE (ENR)

If an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments must be included in each volume. In the case of an AIP being published as one volume, the annotation “not applicable” must be entered against each of the above subsections.
Reference must be made in the appropriate subsection to indicate that differences between national regulations and ICAO SARPs and procedures exist and that they are detailed in GEN 1.7.

ENR 0.6 Table of contents to Part 2

A list of sections and subsections contained in Part 2 — En-route. *Subsections may be listed alphabetically.*

ENR 1. GENERAL RULES AND PROCEDURES

ENR 1.1 General rules

The requirement is for publication of the general rules as applied within the State.

ENR 1.2 Visual flight rules

The requirement is for publication of the visual flight rules as applied within the State.

ENR 1.3 Instrument flight rules

The requirement is for publication of the instrument flight rules as applied within the State.

ENR 1.4 ATS airspace classification

The description of ATS airspace classes in the form of the ATS airspace classification table in Annex 11, Appendix 4, appropriately annotated to indicate those airspace classes not used by the State.

ENR 1.5 Holding, approach and departure procedures

ENR 1.5.1 General
The requirement is for a statement concerning the criteria on which holding, approach and departure procedures are established. If different from ICAO provisions, the requirement is for presentation of criteria used in a tabular form.

ENR 1.5.2 Arriving flights
The requirement is to present procedures (conventional or area navigation or both) for arriving flights which are common to flights into or within the same type of airspace. If different procedures apply within a terminal airspace, a note to this effect must be given together with a reference to where the
specific procedures can be found.

ENR 1.5.3 Departing flights
The requirement is to present procedures (conventional or area navigation or both) for departing flights which are common to flights departing from any aerodrome

ENR 1.6 Radar services and procedures

ENR 1.6.1 Primary radar
Description of primary radar services and procedures, including:
1) supplementary services;
2) the application of radar control service;
3) radar and radio failure procedures; and
4) graphic portrayal of area of radar coverage.

ENR 1.6.2 Secondary surveillance radar (SSR)
Description of secondary surveillance radar (SSR) operating procedures, including:
1) emergency procedures;
2) radio communication failure and unlawful interference procedures;
3) the system of SSR code assignment; and
4) graphic portrayal of area of SSR coverage.

ENR 1.7 Altimeter setting procedures

The requirement is for a statement of altimeter setting procedures in use, containing:
1) brief introduction with a statement concerning the ICAO documents on which the procedures are based together with differences to ICAO provisions, if any;
2) basic altimeter setting procedures;
3) description of altimeter setting region(s);
4) procedures applicable to operators (including pilots); and table of cruising levels.

ENR 1.8 Regional supplementary procedures.

The requirement is for presentation of regional supplementary procedures (SUPPS) affecting the entire area of responsibility, with properly annotated national differences, if any.

ENR 1.9 Air traffic flow management

Brief description of air traffic flow management (ATFM) system, including:
1) ATFM structure, service area, service provided, location of unit(s) and hours of operation;
2) types of flow messages and descriptions of the formats; and
3) procedures applicable for departing flights, containing:

a) service responsible for provision of information on applied ATFM measures;
b) flight plan requirements; and
c) lot allocations.

ENR 1.10 Flight planning

The requirement is to indicate any restriction, limitation or advisory information related to the flight planning stage which may assist the user in the presentation of the intended flight operation, including:

1) procedures for the submission of a flight plan;
2) repetitive flight plan system; and
3) changes to the submitted flight plan.

ENR 1.11 Addressing of flight plan messages

The requirement is for an indication, in tabular form, of the addresses allocated to flight plans, showing:

1) category of flight (IFR, VFR or both);
2) route (into or via FIR and/or TMA); and message address.

ENR 1.12 Interception of civil aircraft

The requirement is for a complete statement of interception procedures and visual signals to be used with a clear indication of whether ICAO provisions are applied and if not, a complete presentation of differences.

ENR 1.13 Unlawful interference

The requirement is for presentation of appropriate procedures to be applied in case of unlawful interference.

ENR 1.14 Air traffic incidents

Description of air traffic incidents reporting system, including:

1) definition of air traffic incidents;
2) use of the “Air Traffic Incident Reporting Form”;
3) reporting procedures (including in-flight procedures); and
4) purpose of reporting and handling of the form.

ENR 2. AIR TRAFFIC SERVICES AIRSPACE

ENR 2.1 FIR, UIR, TMA

Detailed description of flight information regions (FIR), upper flight information regions (UIR), and terminal control areas (TMA), including:

1) name, geographical coordinates in degrees and minutes of the FIR/UIR lateral limits and in degrees, minutes and seconds of the TMA lateral limits, vertical limits and class of airspace;
2) identification of unit providing the service;
3) call sign of aeronautical station serving the unit and language(s) used, specifying the area and conditions, when and where to be used, if applicable;
4) frequencies supplemented by indications for specific purposes; and
5) remarks.

Control zones around military air bases not otherwise described in the AIP must be included in this subsection. Where **ENAC** requirements concerning flight plans, two-way communications and position reporting apply to all flights in order to eliminate or reduce the need for interceptions and/or where the possibility of interception exists and the maintenance of guard on the VHF emergency channel 121.5 MHz is required, a statement to this effect must be included for the relevant area(s) or portion(s) thereof.
A description of designated areas over which the carriage of an emergency locator transmitter (ELT) is required and where aircraft shall continuously guard the VHF emergency frequency 121.5 MHz, except for those periods when aircraft are carrying out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels.

ENR 2.2 Other regulated airspace

Where established, a detailed description of other types of regulated airspace and airspace classification.

ENR 3. ATS ROUTES

Changeover points established at the midpoint between two radio navigation aids, or at the intersection of the two radials in the case of a route which changes direction between the navigation aids, need not be shown for each route segment if a general statement regarding their existence is made.

ENR 3.1 Lower ATS routes

Detailed description of lower ATS routes, including:

1) route designator, required navigation performance (RNP) type(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points. *In relation to Annex 11, Appendix 1, and for flight planning purposes, the specified RNP type is not considered to be an integral part of the route designator*
2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
3) upper and lower limits or minimum flight altitudes to the nearest higher 50 m or 100 ft, and airspace classification;
4) lateral limits;
5) direction of cruising levels; and
6) remarks, including an indication of the controlling unit and its operating frequency.

ENR 3.2 Upper ATS routes

Detailed description of upper ATS routes, including:

1) route designator, required navigation performance (RNP) type(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points. *In relation to Annex 11, Appendix 1, and for flight planning purposes, the specified RNP type is not considered to be an integral part of the route designator.*;
2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
3) upper and lower limits and airspace classification;
4) lateral limits;
5) direction of cruising levels; and
6) remarks, including an indication of the controlling unit and its operating frequency.

ENR 3.3 Area navigation routes

Detailed description of area navigation (RNAV) routes, including:

1) route designator, required navigation performance (RNP) type(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request”

reporting points. *In relation to Annex 11, Appendix 1, and for flight planning purposes, the specified RNP type is not considered to be an integral part of the route designator.*;

2) in respect of waypoints defining a VOR/DME area navigation route, additionally:
   a. station identification of the reference VOR/DME;
   b. bearing to the nearest degree and the distance to the nearest tenth of a kilometre or tenth of a nautical mile from the reference VOR/DME, if the waypoint is not collocated with it; and
   c. elevation of the transmitting antenna of DME to the nearest 30 m (100 ft);
3) geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between defined end-points and distance between each successive designated significant point;
4) upper and lower limits and airspace classification;
5) direction of cruising levels; and
6) remarks, including an indication of the controlling unit and its operating frequency.

ENR 3.4 Helicopter routes

Detailed description of helicopter routes, including:

1) route designator, required navigation performance (RNP) type(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including "compulsory" or "on-request" reporting points. *In relation to Annex 11, Appendix 1, and for flight planning purposes, the specified RNP type is not considered to be an integral part of the route designator*;
2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
3) upper and lower limits and airspace classification;
4) minimum flight altitudes to the nearest higher 50 m or 100 ft; and
5) remarks, including an indication of the controlling unit andits operating frequency.

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ENR 3.5 Other routes

The requirement is to describe other specifically designated routes which are compulsory within specified area(s).

ENR 3.6 En-route holding

The requirement is for a detailed description of en-route holding procedures, containing:

1) holding identification (if any) and holding fix (navigation aid) or waypoint with geographical coordinates in degrees, minutes and seconds;
2) inbound track;
3) direction of the procedure turn;
4) maximum indicated airspeed;
5) minimum and maximum holding level;
6) time/distance outbound; and
7) indication of the controlling unit and its operating frequency.

ENR 4. RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 Radio navigation aids — en-route

A list of stations providing radio navigation services established for en-route purposes and arranged alphabetically by name of the station, including:

1) name of the station and magnetic variation to the nearest degree and for VOR, station declination to the nearest degree used for technical line-up of the aid;
2) identification;
3) frequency/channel for each element;
4) hours of operation;
5) geographical coordinates in degrees, minutes and seconds of the position of the transmitting antenna;
6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft); and
7) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

ENR 4.2 Special navigation systems

Description of stations associated with special navigation systems (DECCA, LORAN, etc.), including:

1) name of station or chain;
2) type of service available (master signal, slave signal,colour);
3) frequency (channel number, basic pulse rate, recurrence rate, as applicable);
4) hours of operation;
5) geographical coordinates in degrees, minutes and seconds of the position of the transmitting station; and
6) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

ENR 4.3 Global navigation satellite system (GNSS)

A list and description of elements of the global navigation satellite system (GNSS) providing the navigation service established for en-route purposes and arranged alphabetically by name of the element, including:

1) the name of the GNSS element (GPS, GLONASS, EGNOS, MSAS, WAAS, etc.);
2) frequency(ies), as appropriate;
3) geographical coordinates in degrees, minutes and seconds of the nominal service area and coverage area; and
4) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column.

ENR 4.4 Name-code designators for significant points

An alphabetically arranged list of name-code designators (five-letter pronounceable "name-code") established for significant points at positions not marked by the site of radio navigation aids, including:

1) name-code designator;
2) geographical coordinates in degrees, minutes and seconds of the position; and
3) reference to ATS or other routes where the point is located.

ENR 4.5 Aeronautical ground lights — en-route

A list of aeronautical ground lights and other light beacons designating geographical positions which are selected by the State as being significant, including:

1) name of the city or town or other identification of the beacon;
2) type of beacon and intensity of the light in thousands of candelas; characteristics of the signal; operational hours; and

3) remarks.

ENR 5. NAVIGATION WARNINGS

ENR 5.1 Prohibited, restricted and danger areas.

Description, supplemented by graphic portrayal where appropriate, of prohibited, restricted and danger areas together with information regarding their establishment and activation, including:

1) identification, name and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
2) upper and lower limits; and
3) remarks, including time of activity.

Type of restriction or nature of hazard and risk of interception in the event of penetration must be indicated in the remarks column.

ENR 5.2 Military exercise and training areas and air defence identification zone (ADIZ)

Description, supplemented by graphic portrayal where appropriate, of established military training areas and military exercises taking place at regular intervals, and established air defence identification zone (ADIZ), including:

1) geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
2) upper and lower limits and system and means of activation announcements together with information pertinent to civil flights and applicable ADIZ procedures; and
3) remarks, including time of activity and risk of interception in the event of penetration of ADIZ.

ENR 5.3 Other activities of a dangerous nature and other potential hazards

ENR 5.3.1 Other activities of a dangerous nature
Description, supplemented by charts where appropriate, of activities that could affect flights including:

1) geographical coordinates in degrees and minutes of centre of area and range of influence;
2) vertical limits;
3) advisory measures;
4) authority responsible for the provision of information; and
5) remarks, including time of activity.

ENR 5.3.2 Other potential hazards

Description, supplemented by charts where appropriate, of other potential hazards that could affect flights (e.g. active volcanoes, nuclear power stations, etc.) including:

1) geographical coordinates in degrees and minutes of location of potential hazard;
2) vertical limits;
3) advisory measures;
4) authority responsible for the provision of information; and remarks.

ENR 5.4 Air navigation obstacles

The list of obstacles *whose height above the ground is 100 m and higher* affecting air navigation in Area 1 (the entire State territory), including:

1) obstacle identification or designation;
2) type of obstacle;
3) obstacle position, represented by geographical coordinates in degrees, minutes and seconds;
4) obstacle elevation and height to the nearest metre or foot;
5) type and colour of obstacle lighting (if any); and
6) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6.

ENR 5.5 Aerial sporting and recreational activities

Brief description, supplemented by graphic portrayal where appropriate, of intensive aerial sporting and recreational activities together with conditions under which they are carried out, including:

1) designation and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
2) vertical limits;
3) operator/user telephone number; and
4) remarks, including time of activity.

This paragraph may be subdivided into different sections for each different category of activity, giving the indicated details in each case.

ENR 5.6 Bird migration and areas with sensitive fauna

Description, supplemented by charts where practicable, of movements of birds associated with migration, including migration routes and permanent resting areas and areas with sensitive fauna.

ENR 6. EN-ROUTE CHARTS

The requirement is for the En-route Chart — ICAO and index charts to be included in this section.

PART 3 — AERODROMES (AD)

If an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments must be included in each
volume. In the case of an AIP being published as one volume, the annotation “not applicable” must be entered against each of the above subsections.

AD 0.6 Table of contents to Part 3

A list of sections and subsections contained in Part 3 — Aerodromes (AD). *Subsections may be listed alphabetically*

AD 1. AERODROMES/HELIPORTS — INTRODUCTION

AD 1.1 Aerodrome availability

Brief description of the State’s designated authority responsible for aerodromes, including:

1) the general conditions under which aerodromes and associated facilities are available for use;
2) statement concerning the ICAO documents on which the services are based and a reference to the AIP location where differences, if any, are listed;
3) regulations, if any, concerning civil use of military air bases;
4) the general conditions under which the low visibility procedures applicable to Cat II/III operations at aerodromes, if any, are applied;
5) friction measuring device used and the runway friction level below which the State will declare the runway to be slippery when wet; and
6) other information of a similar nature.

AD 1.2 Rescue and firefighting services and snow plan

AD 1.2.1 Rescue and firefighting services
Brief description of rules governing the establishment of rescue and firefighting services at aerodromes and heliports available for public use together with an indication of rescue and firefighting categories established by a State.

AD 1.2.2 Snow plan

Brief description of general snow plan considerations for aerodromes available for public use at which snow conditions are normally liable to occur, including:

1) organization of the winter service;
2) surveillance of movement areas;
3) measuring methods and measurements taken;
4) actions taken to maintain the usability of movement areas;
5) system and means of reporting;
6) the cases of runway closure; and
7) distribution of information about snow conditions.

Where different snow plan considerations apply at aerodromes, this subparagraph may be subdivided accordingly.

AD 1.3 Index to aerodromes

A list, supplemented by graphic portrayal, of aerodromes and heliports within a State, including:

1) aerodrome/heliport name and ICAO location indicator;
2) type of traffic permitted to use the aerodrome/heliport (international/national, IFR/VFR, scheduled/non-scheduled, private); and
3) reference to AIP, Part 3 subsection in which aerodrome/ details are presented.

AD 1.4 Grouping of aerodromes.

Brief description of the criteria applied by the State in grouping aerodromes/heliports for the production/distribution/ provision of information purposes (e.g. international/national; primary/secondary; major/other; civil/military; etc.).

AD 2. AERODROMES

Note.— **** is to be replaced by the relevant ICAO location indicator.

****** AD 2.1 Aerodrome location indicator and name**

The requirement is for the ICAO location indicator allocated to the aerodrome and the name of aerodrome. An ICAO location indicator must be an integral part of the referencing system applicable to all subsections in section AD 2.

****** AD 2.2 Aerodrome geographical and administrative data**

The requirement is for aerodrome geographical and administrative data including:

1) aerodrome reference point (geographical coordinates in degrees, minutes and seconds) and its site;
2) direction and distance of aerodrome reference point from centre of the city or town which the aerodrome serves;
3) aerodrome elevation to the nearest metre or foot, and reference temperature;
4) geoid undulation at the aerodrome elevation position to the nearest metre or foot;
5) magnetic variation to the nearest degree, date of information and annual change;
6) name of aerodrome administration, address, telephone, telefax and telex numbers and AFS address;
7) types of traffic permitted to use the aerodrome (IFR/VFR); and
8) remarks.

****** AD 2.3 Operational hours**

Detailed description of the hours of operation of services at the aerodrome, including:

1) aerodrome administration;
2) customs and immigration;
3) health and sanitation;
4) AIS briefing office;
5) ATS reporting office (ARO);
6) MET briefing office;
7) air traffic service;
8) fuelling;
9) handling;
10) security;
11) de-icing; and
12) remarks.

****** AD 2.4 Handling services and facilities**

Detailed description of the handling services and facilities available at the aerodrome, including:

1) cargo-handling facilities;
2) fuel and oil types;
3) fuelling facilities and capacity;
4) de-icing facilities;
5) hangar space for visiting aircraft;
6) repair facilities for visiting aircraft; and
7) remarks.

**** **AD 2.5 Passenger facilities**

Brief description of passenger facilities available at the aerodrome, including:

1) *hotel(s) at or in the vicinity of aerodrome;*
2) *restaurant(s) at or in the vicinity of aerodrome;*
3) *transportation possibilities;*
4) medical facilities;
5) *bank and post office at or in the vicinity of aerodrome;*
6) *tourist office;* and
7) remarks.

**** **AD 2.6 Rescue and firefighting services**

Detailed description of the rescue and firefighting services and equipment available at the aerodrome, including:

1) aerodrome category for firefighting;
2) rescue equipment;
3) *capability for removal of disabled aircraft;* and
4) remarks.

**** **AD 2.7 Seasonal availability — clearing**

Detailed description of the equipment and operational priorities established for the clearance of aerodrome movement areas, including:

1) type(s) of clearing equipment;
2) clearance priorities; and
3) remarks.

**** **AD 2.8 Aprons, taxiways and check locations/positions data**

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints, including:

1) surface and strength of aprons;
2) width, surface and strength of taxiways;
3) location and elevation to the nearest metre or foot of altimeter checkpoints;
4) location of VOR checkpoints;
5) position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and
6) emarks.

If check locations/positions are presented on an aerodrome chart, a note to that effect must be provided under this subsection.

**** **AD 2.9 Surface movement guidance and control system and markings**

Brief description of the surface movement guidance and control system and runway and taxiway markings, including:

1) use of aircraft stand identification signs, taxiway guide lines and visual docking/parking guidance system at aircraft stands;
2) runway and taxiway markings and lights;
3) stop bars (if any); and remarks.

****** AD 2.10 Aerodrome obstacles**

Detailed description of obstacles, including:

1) obstacles in Area 2:
    a. obstacle identification or designation;
    b. type of obstacle;
    c. obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
    d. obstacle elevation and height to the nearest metre or foot;
    e. obstacle marking, and type and colour of obstacle lighting (if any);
    f. if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and
    g. NIL indication, if appropriate.

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2) obstacles in Area 3:
    a. obstacle identification or designation;
    b. type of obstacle;
    c. obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
    d. obstacle elevation and height to the nearest metre or foot;
    e. obstacle marking, and type and colour of obstacle lighting (if any);
    f. if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and g) NIL indication, if appropriate.

****** AD 2.11 Meteorological information provided**

Detailed description of meteorological information provided at the aerodrome and an indication of which meteorological office is responsible for the service enumerated, including:

1) name of the associated meteorological office;

2) hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;
3) office responsible for preparation of TAFs and periods of validity and interval of issuance of the forecasts;
4) availability of the trend forecasts for the aerodrome, and interval of issuance;
5) information on how briefing and/or consultation is provided;
6) types of flight documentation supplied and language(s) used in flight documentation;
7) charts and other information displayed or available for briefing or consultation;
8) supplementary equipment available for providing information on meteorological conditions, e.g. weather radar and receiver for satellite images;
9) the air traffic services unit(s) provided with meteorological information; and
10) additional information (e.g. concerning any limitation of service, etc.).

****** AD 2.12 Runway physical characteristics**

Detailed description of runway physical characteristics, for each runway, including:
1) designations;
2) true bearings to one-hundredth of a degree;
3) dimensions of runways to the nearest metre or foot;
4) strength of pavement (PCN and associated data) and surface of each runway and associated stopways;
5) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for each threshold and runway end, and geoid undulation to the nearest one-half metre or foot for each threshold;
6) elevations of:
    a. thresholds of a non-precision approach runway to the nearest metre or foot; and
    b. thresholds and the highest elevation of the touchdown zone of a precision approach runway to the nearest one-half metre or foot;
7) slope of each runway and associated stopways;
8) dimensions of stopway (if any) to the nearest metre or foot;
9) dimensions of clearway (if any) to the nearest metre or foot;
10) dimensions of strips;
11) the existence of an obstacle-free zone; and
12) remarks.

****** AD 2.13 Declared distances**

Detailed description of declared distances to the nearest metre or foot for each direction of each runway, including:
1) runway designator;
2) take-off run available;

3) take-off distance available;
4) accelerate-stop distance available;
5) landing distance available; and
6) remarks.

If a runway direction cannot be used for take-off or landing, or both, because it is operationally forbidden, then this must be declared and the words “not usable” or the abbreviation “NU” entered.

****** AD 2.14 Approach and runway lighting**

Detailed description of approach and runway lighting, including:

1) runway designator;
2) type, length and intensity of approach lighting system;
3) runway threshold lights, colour and wing bars;
4) type of visual approach slope indicator system;
5) length of runway touchdown zone lights;
6) length, spacing, colour and intensity of runway centre line lights;
7) length, spacing, colour and intensity of runway edge lights;
8) colour of runway end lights and wing bars;
9) length and colour of stopway lights; and
10) remarks.

****** AD 2.15 Other lighting, secondary power supply**

Description of other lighting and secondary power supply, including:

1) location, characteristics and hours of operation of aerodrome beacon/identification beacon (if any);
2) location and lighting (if any) of anemometer/landing direction indicator;
3) taxiway edge and taxiway centre line lights;
4) secondary power supply including switch-over time; and
5) remarks.

****** AD 2.16 Helicopter landing area**

Detailed description of helicopter landing area provided at the aerodrome, including:

1) geographical coordinates in degrees, minutes, seconds and hundredths of seconds and geoid undulation to the nearest one-half metre or foot of the geometric centre of touchdown and lift-off (TLOF) or of each threshold of final approach and take-off (FATO) area (where appropriate);
2) TLOF and/or FATO area elevation:
    a. for non-precision approaches, to the nearest metre or foot; and
    b. for precision approaches, to the nearest one-half metre or foot;
3) TLOF and FATO area dimensions to the nearest metre or foot, surface type, bearing strength and marking;
4) true bearings to one-hundredth of a degree of FATO;
5) declared distances available, to the nearest metre or foot;
6) approach and FATO lighting; and

7) remarks.

****** AD 2.17 Air traffic services airspace**

Detailed description of air traffic services (ATS) airspace organized at the aerodrome, including:

1) airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;
2) vertical limits;
3) airspace classification;
4) call sign and language(s) of the ATS unit providing service;
5) transition altitude; and
6) remarks.

****** AD 2.18 Air traffic services communication facilities**

Detailed description of air traffic services communication facilities established at the aerodrome, including:

1) service designation;
2) call sign;
3) frequency(ies);
4) hours of operation; and
5) remarks.

****** AD 2.19 Radio navigation and landing aids**

Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the aerodrome, including:

1) type of aids, magnetic variation to the nearest degree, as appropriate, and type of supported operation for ILS/MLS, basic GNSS, SBAS, and GBAS and for VOR/ILS/MLS also station declination to the nearest degree used for technical line-up of the aid;
2) identification, if required;
3) frequency(ies), as appropriate;
4) hours of operation, as appropriate;
5) geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft); and 7) remarks.

When the same aid is used for both en-route and aerodrome purposes, a description must also be given in section ENR 4.
If the ground-based augmentation system (GBAS) serves more than one aerodrome, description of the aid must be provided under each aerodrome. If the operating authority of the facility is other than the designated governmental agency,

the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks
column.

**** AD 2.20 Local traffic regulations

Detailed description of regulations applicable to the traffic at the aerodrome including standard routes for taxiing aircraft, parking regulations, school and training flights and similar but excluding flight procedures.

**** AD 2.21 Noise abatement procedures

Detailed description of noise abatement procedures established at the aerodrome.

**** AD 2.22 Flight procedures

Detailed description of the conditions and flight procedures, including radar procedures, established on the basis of airspace organization at the aerodrome.

**** AD 2.23 Additional information

Additional information at the aerodrome, such as an indication of bird concentrations at the aerodrome, together with an indication of significant daily movement between resting and feeding areas, to the extent practicable.

**** AD 2.24 Charts related to an aerodrome

The requirement is for charts related to an aerodrome to be included in the following order:

1) Aerodrome/Heliport Chart — ICAO;
2) Aircraft Parking/Docking Chart — ICAO;
3) Aerodrome Ground Movement Chart — ICAO;
4) Aerodrome Obstacle Chart — ICAO Type A (for each runway);
5) Precision Approach Terrain Chart — ICAO (precision approach Cat II and III runways);
6) Area Chart — ICAO (departure and transit routes);
7) Standard Departure Chart — Instrument — ICAO;
8) Area Chart — ICAO (arrival and transit routes);
9) Standard Arrival Chart — Instrument — ICAO;
10) Radar Minimum Altitude Chart — ICAO;
11) Instrument Approach Chart — ICAO (for each runway and procedure type);
12) Visual Approach Chart — ICAO; and

13) bird concentrations in the vicinity of the aerodrome.

If some of the charts are not produced, a statement to this effect must be given in section GEN 3.2, Aeronautical charts.

AD 3. HELIPORTS

When a helicopter landing area is provided at the aerodrome, associated data must be listed only under **** AD 2.16.

Note.— **** is to be replaced by the relevant ICAO location indicator.

**** AD 3.1 Heliport location indicator and name

The requirement is for the ICAO location indicator assigned to the heliport and the name of heliport. An ICAO location indicator must be an integral part of the referencing system applicable to all subsections in section AD 3.

**** AD 3.2 Heliport geographical and administrative data

The requirement is for heliport geographical and administrative data, including:

1) heliport reference point (geographical coordinates in degrees, minutes and seconds) and its site;
2) direction and distance of heliport reference point from centre of the city or town which the heliport serves;
3) heliport elevation to the nearest metre or foot, and reference temperature;
4) geoid undulation at the heliport elevation position to the nearest metre or foot;
5) magnetic variation to the nearest degree, date of information and annual change;
6) name of heliport administration, address, telephone, telefax and telex numbers and AFS address;
7) types of traffic permitted to use the heliport (IFR/VFR); and
8) remarks.

**** AD 3.3 Operational hours

Detailed description of the hours of operation of services at the heliport, including:

1) heliport administration;
2) customs and immigration;
3) health and sanitation;
4) AIS briefing office;
5) ATS reporting office (ARO);
6) MET briefing office;

7) air traffic service;
8) fuelling;
9) handling;
10) security;
11) de-icing; and
12) remarks.

****** AD 3.4 Handling services and facilities**

Detailed description of the handling services and facilities available at the heliport, including:

1) cargo-handling facilities;
2) fuel and oil types;
3) fuelling facilities and capacity;
4) de-icing facilities;
5) hangar space for visiting helicopter;
6) repair facilities for visiting helicopter; and
7) remarks.

****** AD 3.5 Passenger facilities**

Brief description of passenger facilities available at the heliport, including:

1) *hotel(s) at or in the vicinity of the heliport;*
2) *restaurant(s) at or in the vicinity of the heliport;*
3) *transportation possibilities;*
4) medical facilities;
5) *bank and post office at or in the vicinity of the heliport;*
6) *tourist office;* and
7) remarks.

****** AD 3.6 Rescue and firefighting services**

Detailed description of the rescue and firefighting services and equipment available at the heliport, including:

1) heliport category for firefighting;
2) rescue equipment;
3) *capability for removal of disabled helicopter;* and
4) remarks.

****** AD 3.7 Seasonal availability — clearing**

Detailed description of the equipment and operational priorities established for the clearance of heliport movement areas, including:

1) type(s) of clearing equipment;
2) clearance priorities; and
3) remarks.

****** AD 3.8 Aprons, taxiways and check locations/positions data**

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints, including:

1) surface and strength of aprons, helicopter stands;
2) width, surface type and designation of helicopter ground taxiways;
3) width and designation of helicopter air taxiway and air transit route;
4) location and elevation to the nearest metre or foot of altimeter checkpoints;
5) location of VOR checkpoints;
6) position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and
7) remarks.

If check locations/positions are presented on a heliport chart, a note to that effect must be provided under this subsection.

****** AD 3.9 Markings and markers**

Brief description of final approach and take-off area and taxiway markings and markers, including:

1) final approach and take-off markings;
2) taxiway markings, air taxiway markers and air transit route markers; and
3) remarks.

****** AD 3.10 Heliport obstacles**

Detailed description of obstacles, including:

1) obstacles in Area 2:
    a. obstacle identification or designation;
    b. type of obstacle;
    c. obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
    d. obstacle elevation and height to the nearest metre or foot;
    e. obstacle marking, and type and colour of obstacle lighting (if any);
    f. if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and
    g. NIL indication, if appropriate.

2) obstacles in Area 3:
    a. obstacle identification or designation;
    b. type of obstacle;

c. obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
d. obstacle elevation and height to the nearest metre or foot;
e. obstacle marking, and type and colour of obstacle lighting (if any);
f. if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and
g. NIL indication, if appropriate.

****** AD 3.11 Meteorological information provided**

Detailed description of meteorological information provided at the heliport and an indication of which meteorological office is responsible for the service enumerated, including:

1) name of the associated meteorological office;
2) hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;
3) office responsible for preparation of TAFs, and periods of validity of the forecasts;
4) availability of the trend forecasts for the heliport, and interval of issuance;
5) information on how briefing and/or consultation is provided;
6) type of flight documentation supplied and language(s) used in flight documentation;
7) charts and other information displayed or available for briefing or consultation;
8) supplementary equipment available for providing information on meteorological conditions, e.g. weather radar and receiver for satellite images;
9) the air traffic services unit(s) provided with meteorological information; and
10) additional information (e.g. concerning any limitation of service, etc.).

****** AD 3.12 Heliport data**

Detailed description of heliport dimensions and related information, including:

1) heliport type — surface-level, elevated or helideck;
2) touchdown and lift-off (TLOF) area dimensions to the nearest metre or foot;
3) true bearings to one-hundredth of a degree of final approach and take-off (FATO) area;
4) dimensions to the nearest metre or foot of FATO, and surface type;
5) surface and bearing strength in tonnes (1 000 kg) of TLOF;
6) geographical coordinates in degrees, minutes, seconds and hundredths of seconds and geoid undulation to the nearest one-half metre or foot of the geometric centre of TLOF or of each threshold of FATO (where appropriate);
7) TLOF and/or FATO slope and elevation:

    a. for non-precision approaches to the nearest metre or foot; and
    b. for precision approaches to the nearest one-half metre or foot;
8) dimensions of safety area;
9) dimensions, to the nearest metre or foot, of helicopter clearway;
10) the existence of an obstacle-free sector; and
11) remarks.

**** **AD 3.13 Declared distances**

Detailed description of declared distances to the nearest metre or foot, where relevant for a heliport, including:
1) take-off distance available;
2) rejected take-off distance available;
3) landing distance available; and
4) remarks.

**** **AD 3.14 Approach and FATO lighting**

Detailed description of approach and FATO lighting, including:
1) type, length and intensity of approach lighting system;
2) type of visual approach slope indicator system;
3) characteristics and location of FATO area lights;
4) characteristics and location of aiming point lights;
5) characteristics and location of TLOF lighting system; and
6) remarks.

**** **AD 3.15 Other lighting, secondary power supply**
Description of other lighting and secondary power supply,
including:
1) location, characteristics and hours of operation of heliport beacon;
2) location and lighting of wind direction indicator (WDI);
3) taxiway edge and taxiway centre line lights;
4) secondary power supply including switch-over time; and
5) remarks.

**** **AD 3.16 Air traffic services airspace**

Detailed description of air traffic services (ATS) airspace organized at the heliport, including:
1) airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;
2) vertical limits;
3) airspace classification;

4) call sign and language(s) of ATS unit providing service;
5) transition altitude; and
6) remarks.

****** AD 3.17 Air traffic services communication facilities**

Detailed description of air traffic services communication facilities established at the heliport, including:

1) service designation;
2) call sign;
3) frequency(ies);
4) hours of operation; and
5) remarks.

****** AD 3.18 Radio navigation and landing aids**

Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the heliport, including:

1) type of aids, magnetic variation (for VOR, station declination used for technical line-up of the aid) to the nearest degree, and type of operation for ILS, MLS, basic GNSS, SBAS, and GBAS;
2) identification, if required;
3) frequency(ies), as appropriate;
4) hours of operation, as appropriate;
5) geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft); and
7) remarks.

When the same aid is used for both en-route and heliport purposes, a description must also be given in section ENR 4. If the ground-based augmentation system (GBAS) serves more than one heliport, description of the aid must be provided under each heliport. If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

****** AD 3.19 Local traffic regulations**

Detailed description of regulations applicable to traffic at the heliport, including standard routes for taxiing helicopters, parking regulations, school and training flights and similar but excluding flight procedures.

**** **AD 3.20 Noise abatement procedures**

Detailed description of noise abatement procedures established at the heliport.

**** **AD 3.21 Flight procedures**

Detailed description of the conditions and flight procedures, including radar procedures, established on the basis of airspace organization established at the heliport.

**** **AD 3.22 Additional information**

Additional information about the heliport, such as an indication of bird concentrations at the heliport together with an indication of significant daily movement between resting and feeding areas, to the extent practicable.

**** **AD 3.23 Charts related to a heliport**

The requirement is for charts related to a heliport to be included in the following order:

1) Aerodrome/Heliport Chart — ICAO;
2) Area Chart — ICAO (departure and transit routes);
3) Standard Departure Chart — Instrument — ICAO;
4) Area Chart — ICAO (arrival and transit routes);
5) Standard Arrival Chart — Instrument — ICAO;
6) Radar Minimum Altitude Chart — ICAO;
7) Instrument Approach Chart — ICAO (for each procedure type);
8) Visual Approach Chart — ICAO; and
9) bird concentrations in the vicinity of heliport.

If some of the charts are not produced, a statement to this effect must be given in section GEN 3.2, Aeronautical charts.

APPENDIX 2

SNOWTAM FORMAT

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSES)		⋘
	(DATE AND TIME OF FILING)	(ORIGINATOR'S INDICATOR)		⋘
(Abbreviated heading)	(SWAA* SERIAL NUMBER) S W * *	(LOCATION INDICATOR)	DATE/TIME OF OBSERVATION	(OPTIONAL GROUP) ⋘ (

SNOWTAM	(Serial number) →

(AERODROME LOCATION INDICATOR)	A)	→
(DATE/TIME OF OBSERVATION *(Time of completion of measurement in UTC)*)	B)	→
(RUNWAY DESIGNATORS)	C)	→
(CLEARED RUNWAY LENGTH, IF LESS THAN PUBLISHED LENGTH *(m)*)	D)	→
(CLEARED RUNWAY WIDTH, IF LESS THAN PUBLISHED WIDTH *(m; if offset left or right of centre line add "L" or "R")*)	E)	→
(DEPOSITS OVER TOTAL RUNWAY LENGTH *(Observed on each third of the runway, starting from threshold having the lower runway designation number)* NIL — CLEAR AND DRY 1 — DAMP 2 — WET or water patches 3 — RIME OR FROST COVERED *(depth normally less than 1 mm)* 4 — DRY SNOW 5 — WET SNOW 6 — SLUSH 7 — ICE 8 — COMPACTED OR ROLLED SNOW 9 — FROZEN RUTS OR RIDGES)	F)	→
(MEAN DEPTH *(mm)* FOR EACH THIRD OF TOTAL RUNWAY LENGTH)	G)	→
(FRICTION MEASUREMENTS ON EACH THIRD OF RUNWAY AND FRICTION MEASURING DEVICE MEASURED OR CALCULATED COEFFICIENT *or* ESTIMATED SURFACE FRICTION 0.40 and above — GOOD — 5 0.39 to 0.36 — MEDIUM/GOOD — 4 0.35 to 0.30 — MEDIUM — 3 0.29 to 0.26 — MEDIUM/POOR — 2 0.25 and below — POOR — 1 9 — unreliable — UNRELIABLE — 9 *(When quoting a measured coefficient, use the observed two figures, followed by the abbreviation of the friction measuring device used. When quoting an estimate, use single digit)*)	H)	→
(CRITICAL SNOWBANKS *(If present, insert height (cm)/distance from the edge of runway (m) followed by "L", "R" or "LR" if applicable)*)	J)	→
(RUNWAY LIGHTS *(If obscured, insert "YES" followed by "L", "R" or both "LR" if applicable)*)	K)	→
(FURTHER CLEARANCE *(If planned, insert length (m)/width (m) to be cleared or if to full dimensions, insert "TOTAL")*)	L)	→
(FURTHER CLEARANCE EXPECTED TO BE COMPLETED BY . . . *(UTC)*)	M)	→
(TAXIWAY *(If no appropriate taxiway is available, insert "NO")*)	N)	→
(TAXIWAY SNOWBANKS *(If more than 60 cm, insert "YES" followed by distance apart, m)*)	P)	→
(APRON *(If unusable insert "NO")*)	R)	→
(NEXT PLANNED OBSERVATION/MEASUREMENT IS FOR) *(month/day/hour in UTC)*	S)	→
(PLAIN-LANGUAGE REMARKS *(Including contaminant coverage and other operationally significant information, e.g. sanding, de-icing)*)	T)	)⋘

NOTES: 1. *Enter ICAO nationality letters as given in ICAO Doc 7910, Part 2.
2. Information on other runways, repeat from C to P.
3. Words in brackets ( ) not to be transmitted.

SIGNATURE OF ORIGINATOR *(not for transmission)*

INSTRUCTIONS FOR THE COMPLETION OF THE SNOWTAM FORMAT

1. General

a) When reporting on two or three runways, repeat Items C to P inclusive.
b) Items together with their indicator must be dropped completely, where no information is to be included.
c) Metric units must be used and the unit of measurement not reported.
d) The maximum validity of SNOWTAM is 24 hours. New SNOWTAM must be issued whenever there is a significant change in conditions. The following changes relating to runway conditions are considered as significant:
   1. a change in the coefficient of friction of about 0.05;
   2. changes in depth of deposit greater than the following: 20 mm for dry snow, 10 mm for wet snow, 3 mm for slush;
   3. a change in the available length or width of a runway of 10 per cent or more;
   4. any change in the type of deposit or extent of coverage which requires reclassification in Items F or T of the SNOWTAM;
   5. when critical snow banks exist on one or both sides of the runway, any change in the height or distance from centre line;
   6. any change in the conspicuity of runway lighting caused by obscuring of the lights;
   7. any other conditions known to be significant according to experience or local circumstances.
e) The abbreviated heading “TTAAiiii CCCC MMYYGGgg (BBB)” is included to facilitate the automatic processing of SNOWTAM messages in computer data banks. The explanation of these symbols is:
   TT = data designator for SNOWTAM = SW;
   AA = geographical designator for States, e.g. LF =FRANCE, EG = United Kingdom (see *Location Indicators* (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators); ;
   iiii = SNOWTAM serial number in a four-figure group;
   CCCC = four-letter location indicator of the aerodrome to which the SNOWTAM refers (see *Location Indicators* (Doc 7910)); MMYYGGgg = date/time of observation/measurement, whereby:
      MM = month, e.g. January = 01, December = 12
      YY = day of the month
      GGgg = time in hours (GG) andminutes (gg) UTC;
   (BBB) = optional group for:
      Correction to SNOWTAM message previously disseminated with the same serial number = COR.

Note.— Brackets in (BBB) are used to indicate that this group is optional.

Example: Abbreviated heading of SNOWTAM No. 149 from Zurich, measurement/ observation of 7 November at 0620 UTC:

SWLS0149 LSZH 11070620

2. *Item A* — Aerodrome location indicator (four-letter location indicator).

3. *Item B* — Eight-figure date/time group — giving time of observation as month, day, hour and minute in UTC; this item must always be completed.

4. *Item C* — Lower runway designator number.

5. *Item D* — Cleared runway length in metres, if less than published length (see Item T on reporting on part of runway not cleared).

6. *Item E* — Cleared runway width in metres, if less than published width; if offset left or right of centre line, add “L” or “R”, as viewed from the threshold having the lower runway designation number.

7. *Item F* — Deposit over total runway length as explained in SNOWTAM Format. Suitable combinations of these numbers may be used to indicate varying conditions over runway segments. If more than one deposit is present on the same portion of the runway, they should be reported in sequence from the top to the bottom. Drifts, depths of deposit appreciably greater than the average values or other significant characteristics of the deposits may be reported under Item T in plain language.

8. *Item G* — Mean depth in millimetres deposit for each third of total runway length, or “XX” if not measurable or operationally not significant; the assessment to be made to an accuracy of 20 mm for dry snow, 10 mm for wet snow and 3 mm for slush.

9. *Item H* — Friction measurements on each third of the runway and friction measuring device. Measured or calculated coefficient (two digits) or, if not available, estimated surface friction (single digit) in the order from the threshold having the lower runway designation number. Insert a code 9 when surface conditions or available friction measuring device do not permit a reliable surface friction measurement to be made. Use the following abbreviations to indicate the type of friction measuring device used:

BRD Brakemeter-Dynometer
GRT Grip tester
MUM Mu-meter
RFT Runway friction tester
SFH Surface friction tester (high-pressure tire)
SFL Surface friction tester (low-pressure tire)
SKH Skiddometer (high-pressure tire)
SKL Skiddometer (low-pressure tire)
TAP Tapley meter
If other equipment is used, specify in plain language.

10. *Item J* — Critical snowbanks. If present insert height in centimetres and distance from edge of runway in metres, followed by left (“L”) or right (“R”) side or both sides (“LR”), as viewed from the threshold having the lower runway designation number.

11. *Item K* — If runway lights are obscured, insert “YES” followed by “L”, “R” or both “LR”, as viewed from the threshold having the lower runway designation number.

12. *Item L* — When further clearance will be undertaken, enter length and width of runway or “TOTAL” if runway will be cleared to full dimensions.

13. *Item M* — Enter the anticipated time of completion in UTC.

14. *Item N* — The code for Item F may be used to describe taxiway conditions; enter “NO” if no taxiways serving the associated runway are available.

15. *Item P* — If applicable, enter “YES” followed by the lateral distance in metres.

16. *Item R* — The code for Item F may be used to describe apron conditions; enter “NO” if the apron is unusable.

17. *Item S* — Enter the anticipated time of next observation/measurement in UTC.

18. *Item T* — Describe in plain language any operationally significant information but always report on length of uncleared runway (Item D) and extent of runway contamination (Item F) for each third of the runway (if appropriate) in accordance with the following scale:

Runway contamination — 10% — if less than 10% of runway contaminated
Runway contamination — 25% — if 11–25% of runway contaminated
Runway contamination — 50% — if 26–50% of runway contaminated
Runway contamination — 100% — if 51–100% of runway contaminated.

EXAMPLE OF COMPLETED SNOWTAM FORMAT

GG EHAMZQZX EDDFZQZX EKCHZQZX
070645 LSZHYNYX
SWLS0149 LSZH 11070620
(SNOWTAM 0149
A) LSZH B) 11070620 C) 02 D) ... P)
C) 09 D) ... P)
C) 12 D) ... P)
R) NO S)11070920 T) DEICING)

Definitions of the various types of snow

Slush. Water-saturated snow which with a heel-and-toe slapdown motion against the ground will be displaced with a splatter; specific gravity: 0.5 up to 0.8.

Snow (on the ground).

a) *Dry snow.* Snow which can be blown if loose or, if compacted by hand, will fall apart again upon release; specific gravity: up to but not including 0.35.
b) *Wet snow.* Snow which, if compacted by hand, will stick together and tend to or form a snowball; specific gravity: 0.35 up to but not including 0.5.
c) *Compacted snow.* Snow which has been compressed into a solid mass that resists further compression and will hold together or break up into lumps if picked up; specific gravity: 0.5 and over.

APPENDIX 3. ASHTAM FORMAT

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSEE INDICATOR(S))[1]		
	(DATE AND TIME OF FILING)	(ORIGINATOR'S INDICATOR)		
(Abbreviated heading)	(VA[*2] SERIAL NUMBER) V A [*2] [*2]	(LOCATION INDICATOR)	DATE/TIME OF ISSUANCE	(OPTIONAL GROUP)

ASHTAM	(SERIAL NUMBER)
(FLIGHT INFORMATION REGION AFFECTED)	A)
(DATE/TIME (UTC) OF ERUPTION)	B)
(VOLCANO NAME AND NUMBER)	C)
(VOLCANO LATITUDE/LONGITUDE OR VOLCANO RADIAL AND DISTANCE FROM NAVAID)	D)
(VOLCANO LEVEL OF ALERT COLOUR CODE, INCLUDING ANY PRIOR LEVEL OF ALERT COLOUR CODE)[3]	E)
(EXISTENCE AND HORIZONTAL/VERTICAL EXTENT OF VOLCANIC ASH CLOUD)[4]	F)
(DIRECTION OF MOVEMENT OF ASH CLOUD)[4]	G)
(AIR ROUTES OR PORTIONS OF AIR ROUTES AND FLIGHT LEVELS AFFECTED)	H)
(CLOSURE OF AIRSPACE AND/OR AIR ROUTES OR PORTIONS OF AIR ROUTES, AND ALTERNATIVE AIR ROUTES AVAILABLE)	I)
(SOURCE OF INFORMATION)	J)
(PLAIN-LANGUAGE REMARKS)	K)

NOTES:
1. See also Appendix 5 regarding addressee indicators used in predetermined distribution systems.
2. [*]Enter ICAO nationality letter as given in ICAO Doc 7910, Part 2.
3. See paragraph 3.5 below.
4. Advice on the existence, extent and movement of volcanic ash cloud G) and H) may be obtained from the Volcanic Ash Advisory Centre(s) responsible for the FIR concerned.
5. Item titles in brackets ( ) not to be transmitted.

SIGNATURE OF ORIGINATOR *(not for transmission)*

INSTRUCTIONS FOR THE COMPLETION OF THE ASHTAM FORMAT

1. *General*

1.1 The ASHTAM provides information on the status of activity of a volcano when a change in its activity is, or is expected to be of operational significance. This information is provided using the volcano level of alert colour code given in 3.5 below.

1.2 In the event of a volcanic eruption producing ash cloud of operational significance, the ASHTAM also provides information on the location, extent and movement of the ash cloud and the air routes and flight levels affected.

1.3 Issuance of an ASHTAM giving information on a volcanic eruption, in accordance with section 3 below, should not be delayed until complete information A) to K) is available but should be issued immediately following receipt of notification that an eruption has occurred or is expected to occur, or a change in the status of activity of a volcano of operational significance has occurred or is expected to occur, or an ash cloud is reported. In the case of an expected eruption, and hence no ash cloud evident at that time, items A) to E) should be completed and items F) to I) indicated as "not applicable". Similarly, if a volcanic ash cloud is reported, e.g. by special air-report, but the source volcano is not known at that time, the ASHTAM should be issued initially with items A) to E) indicated as "unknown", and items F) to K) completed, as necessary, based on the special air-report, pending receipt of further information. In other circumstances, if information fora specific field A) to K) is not available indicate "NIL".

1.4 The maximum period of validity of ASHTAM is 24 hours. New ASHTAM must be issued whenever there is a change in the level of alert.

2. *Abbreviated heading*

2.1 Following the usual AFTN communications header, the abbreviated heading "TT AAiiii CCCC MMYYGGgg (BBB)" is included to facilitate the automatic processing of ASHTAM messages in computer data banks. The explanation of these symbols is:

TT = data designator for ASHTAM = VA;
AA = geographical designator for States, e.g. NZ = New Zealand(see *Location Indicators* (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators);
iiii = ASHTAM serial number in a four-figure group;
CCCC = four-letter location indicator of the flight information region concerned (see *Location Indicators* (Doc 7910), Part 5, addresses of centres in charge of FIR/UIR);
MMYYGGgg = date/time of report, whereby:
MM = month, e.g. January = 01, December = 12
YY = day of the month
GGgg = time in hours (GG) and minutes (gg) UTC;
(BBB) = Optional group for correction to an ASHTAM message previously disseminated with the same serial number = COR.

Note.— Brackets in (BBB) are used to indicate that this group is optional.

Example: Abbreviated heading of ASHTAM for Auckland Oceanic FIR, report on 7 November at 0620 UTC:

VANZ0001 NZZO 11070620

3. *Content of ASHTAM*

3.1 *Item A* — Flight information region affected, plainlanguage equivalent of the location indicator given in the abbreviated heading, in this example “Auckland Oceanic FIR”.

3.2 *Item B* — Date and time (UTC) of first eruption.

3.3 *Item C* — Name of volcano, and number of volcano as listed in the ICAO *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds* (Doc 9691), Appendix H, and on the World Map of Volcanoes and Principal Aeronautical Features.

3.4 *Item D* — Latitude/Longitude of the volcano in whole degrees or radial and distance of volcano from NAVAID (as listed in the ICAO *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds* (Doc 9691), Appendix H, and on the World Map of Volcanoes and Principal Aeronautical Features).

3.5 *Item E* — Colour code for level of alert indicating volcanic activity, including any previous level of alert colour code as follows:

Level of alert colour code	*Status of activity of volcano*
RED ALERT	Volcanic eruption in progress. Ash plume/cloud reported above FL 250. *Or* Volcano dangerous, eruption likely, with ash plume/cloud expected to rise above FL 250.
ORANGE ALERT	Volcanic eruption in progress but ash plume/cloud not reaching nor expected to reach FL 250. *or* Volcano dangerous, eruption likely but ash plume/cloud not expected to reach FL 250.
YELLOW ALERT	Volcano known to be active from time to time and volcanic activity has recently increased significantly, volcano not currently considered dangerous but caution should be exercised. *or* (After an eruption, i.e. change in alert to yellow from red or orange.) Volcanic activity has decreased significantly, volcano not currently considered dangerous but caution should be exercised.
GREEN ALERT	Volcanic activity considered to have ceased and volcano reverted to its normal state.

Note.— The colour code for the level of alert indicating the status of activity of the volcano and any change from a previous status of activity should be provided to the area control centre by the responsible vulcanological agency in the State concerned, e.g. "RED ALERT FOLLOWING YELLOW" OR "GREEN ALERT FOLLOWING ORANGE".

3.6 *Item F* — If volcanic ash cloud of operational significance is reported, indicate the horizontal extent and base/top of the ash cloud using latitude/longitude (in whole degrees) and altitudes in thousands of metres (feet) and/or radial and distance from source volcano. Information initially may be based only on special air-report, but subsequent information may be more detailed based on advice from the responsible meteorological watch office and/or volcanic ash advisory centre.

3.7 *Item G* — Indicate forecast direction of movement of the ash cloud at selected levels based on advice from the responsible meteorological watch office and/or volcanic ash advisory centre.

3.8 *Item H* — Indicate air routes and portions of air routes and flight levels affected, or expected to become affected.

3.9 *Item I* — Indicate closure of airspace, air routes or portions of air routes, and availability of alternative routes.

3.10 *Item J* — Source of the information, e.g. “special air-report” or “vulcanological agency”, etc. The source of information should always be indicated, whether an eruption has actually occurred or ash cloud reported, or not.

3.11 *Item K* — Include in plain language any operationally significant information additional to the foregoing.

APPENDIX 4. INFORMATION TO BE NOTIFIED BY AIRAC

PART 1

1. The establishment, withdrawal of, and premeditated significant changes (including operational trials) to:

1.1 Limits (horizontal and vertical), regulations and procedures applicable to:

a) flight information regions;
b) control areas;
c) control zones;
d) advisory areas;
e) ATS routes;
f) permanent danger, prohibited and restricted areas (including type and periods of activity when known) and ADIZ;
g) permanent areas or routes or portions thereof where the possibility of interception exists.

1.2 Positions, frequencies, call signs, known irregularities and maintenance periods of radio navigation aids and communication facilities.

1.3 Holding and approach procedures, arrival and departure procedures, noise abatement procedures and any other pertinent ATS procedures.

1.4 Meteorological facilities (including broadcasts) and procedures.

1.5 Runways and stopways.

PART 2

2. The establishment and withdrawal of, and premeditated significant changes to:

2.1 Position, height and lighting of navigational obstacles.

2.2 Taxiways and aprons.

2.3 Hours of service: aerodromes, facilities and services.

2.4 Customs, immigration and health services.

2.5 Temporary danger, prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft.

2.6 Temporary areas or routes or portions thereof where the possibility of interception exists.

APPENDIX 5.

PREDETERMINED DISTRIBUTION SYSTEM FOR NOTAM

1. The predetermined distribution system provides for incoming NOTAM (including SNOWTAM and ASHTAM) to be channelled through the AFTN direct to designated addressees predetermined by the receiving country concerned while concurrently being routed to the international NOTAM office for checking and control purposes.

2. The addressee indicators for those designated addressees are constituted as follows:

1) *First and second letters*
The first two letters of the location indicator for the AFTN communication centre associated with the relevant international NOTAM office of the receiving country.

2) *Third and fourth letters:*
The letters “ZZ” indicating a requirement for special distribution.

3) *Fifth letter:*
The fifth letter differentiating between NOTAM (letter “N”), SNOWTAM (letter “S”), and ASHTAM (letter “V”).

4) *Sixth and seventh letters:*
The sixth and seventh letters, each taken from the series A to Z and denoting the national and/or international distribution list(s) to be used by the receiving AFTN centre. *The fifth, sixth and seventh letters replace the threeletter designator YNY which, in the normal distribution system, denotes an international NOTAM office.*

5) *Eighth letter:*
The eighth position letter shall be the filler letter “X” to complete the eight-letter addressee indicator.

3. States are to inform the States from which they receive NOTAM of the sixth and seventh letters to be used under different circumstances to ensure proper routing.

APPENDIX 6

NOTAM FORMAT

Priority Indicator	→
Address	
	≪≡
Date and time of filing	→
Originator's Indicator	≪≡ (

Message Series, Number and Identifier

NOTAM containing new information	.... (series and number/year)	NOTAMN
NOTAM replacing a previous NOTAM	.... (series and number/year)	NOTAMR .... (series and number/year of NOTAM to be replaced)
NOTAM cancelling a previous NOTAM	.... (series and number/year)	NOTAMC .... (series and number/year of NOTAM to be cancelled) ≪≡

Qualifiers

	FIR	NOTAM Code	Traffic	Purpose	Scope	Lower Limit	Upper Limit	Coordinates, Radius	
Q)	/	Q /	/	/	/	/	/		≪≡

Identification of ICAO location indicator in which the facility, airspace or condition reported on is located	A) →

Period of Validity

From *(date-time group)*	B)		→
To *(PERM or date-time group)*	C)	EST* PERM*	≪≡
Time Schedule *(if applicable)*	D)		→
			≪≡

Text of NOTAM; Plain-language Entry (using ICAO Abbreviations)

E)

≪≡

Lower Limit	F) →
Upper Limit	G))≪≡
Signature	

*Delete as appropriate

INSTRUCTIONS FOR THE COMPLETION OF THE NOTAM FORMAT

1. General

The qualifier line (Item Q) and all identifiers (Items A) to G) inclusive) each followed by a closing parenthesis, as shown in the format, shall be transmitted unless there is no entry to be made against a particular identifier.

2. NOTAM numbering

Each NOTAM shall be allocated a series identified by a letter and a four-digit number followed by a stroke and a two-digit number for the year (e.g. A0023/03).

3. Qualifiers (Item Q)

Item Q) is divided in eight fields, each separated by a stroke. If no entry is to be made in a field, it is not necessary to transmit blanks between the strokes. Examples of how fields are to be filled are shown in the *Aeronautical Information Services Manual* (Doc 8126). The definition of the field is as follows:

1) FIR
    a. ICAO location indicator of affected FIR or, if applicable to more than one FIR within a State, the first two letters of the ICAO location indicator of a State plus “XX”. The ICAO location indicators of the FIRs concerned shall then be listed in Item A) or indicator of State or non-governmental agency which is responsible for provision of a navigation service in more than one State.
    b. If one State issues a NOTAM affecting FIRs in a group of States, the first two letters of the ICAO location indicator of the issuing State plus “XX” shall be included. The location indicators of the FIRs concerned shall then be listed in Item A) or indicator of State or non-governmental agency which is responsible for provision of a navigation service in more than one State.

2) NOTAM CODE
   All NOTAM Code groups contain a total of five letters and the first letter is always the letter Q. The second and third letters identify the subject, and the fourth and fifth letters denote the status of the subject reported upon. For combinations of second and third and fourth and fifth letters, insert the ICAO NOTAM codes listed in the PANS-ABC (Doc 8400) or in the NOTAM Selection Criteria contained in the *Aeronautical Information Services Manual* (Doc 8126) or insert one of the following combinations, as appropriate:
    a. If the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert “XX” as the second and third letters (e.g. QXXAK);
    b. If the condition of the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert “XX” as the fourth and fifth letters (e.g. QFAXX);
    c. When a NOTAM containing operationally significant information is issued in accordance with Appendix 4 and Part I Chapter 6 and when it is used to announce existence of AIRAC AIP Amendments or Supplements, insert “TT” as the fourth and fifth letters of the NOTAM Code;

d. When a NOTAM is issued containing a checklist of valid NOTAM, insert “KKKK” as the second, third, fourth and fifth letters; and
e. The following fourth and fifth letters of the NOTAM Code shall be used in NOTAM cancellations:

AK : RESUMED NORMAL OPERATION
AL : OPERATIVE (OR RE-OPERATIVE) SUBJECT TO PREVIOUSLY PUBLISHED LIMITATIONS/CONDITIONS
AO : OPERATIONAL
CC : COMPLETED
XX : PLAIN LANGUAGE

3) TRAFFIC

I = IFR
V = VFR
K = NOTAM is a checklist

Depending on the NOTAM subject and content, the qualifier field TRAFFIC may contain combined qualifiers. For possible combinations refer to the NOTAM Selection Criteria in the Aeronautical Information Services Manual *(Doc 8126).*

4) PURPOSE

N = NOTAM selected for the immediate attention of aircraft operators
B = NOTAM selected for PIB entry O = NOTAM concerning flight operations
M = Miscellaneous NOTAM; not subject for a briefing, but it is available on request
K = NOTAM is a checklist

Depending on the NOTAM subject and content, the qualifier field PURPOSE may contain combined qualifiers. For possible combinations refer to the NOTAM Selection Criteria in the Aeronautical Information Services Manual *(Doc 8126).*

5) SCOPE

A = Aerodrome
E = En-route
W = Nav Warning
K = NOTAM is a checklist

Depending on the NOTAM subject and content, the qualifier field SCOPE may contain combined qualifiers. For possible combinations refer to the NOTAM Selection Criteria in the Aeronautical Information Services Manual *(Doc 8126). If the subject is qualified AE, the aerodrome location indicator must be reported in Item A).*

6) and 7) LOWER/UPPER

LOWER and UPPER limits shall always be filled and shall only be expressed in flight levels (FL). In the case of navigation warnings and airspace restrictions, values entered shall be consistent with those provided under Items F) and G). If the subject does not contain specific height information, insert “000” for LOWER and “999” for UPPER as default values.

8) COORDINATES, RADIUS

The latitude and longitude accurate to one minute, as well as a three-digit distance figure giving the radius of influence in NM (e.g. 4700N01140E043). Coordinates present approximate centre of circle whose radius encompasses the whole area of influence, and if the NOTAM affects the entire FIR/UIR or more than one FIR/UIR, enter the default value “999” for radius.

4. Item A)

Insert the location indicator as contained in ICAO Doc 7910 of the aerodrome or FIR in which the facility, airspace, or condition being reported on is located. More than one FIR/UIR may be indicated when appropriate. If there is no available ICAO location indicator, use the ICAO nationality letter as given in ICAO Doc 7910, Part 2, plus “XX” and followed up in Item E) by the name, in plain language.
If information concerns GNSS, insert the appropriate ICAO location indicator allocated for a GNSS element or the common location indicator allocated for all elements of GNSS (except GBAS). *In the case of GNSS, the location indicator may be used when identifying a GNSS element outage (e.g. KNMH for a GPS satellite outage).*

5. Item B)

For date-time group use a ten-figure group, giving year, month, day, hours and minutes in UTC. This entry is the date-time at which the NOTAMN comes into force. In the cases of NOTAMR and NOTAMC, the date-time group is the actual date and time of the NOTAM origination.

6. Item C)

With the exception of NOTAMC, a date-time group (a ten-figure group giving year, month, day, hours and minutes in UTC) indicating duration of information shall be used unless the information is of a permanent nature in which case the abbreviation “PERM” is inserted instead. If the information on timing is uncertain, the approximate duration shall be indicated using a date-time group followed by the abbreviation “EST”. Any NOTAM which includes an “EST” shall be cancelled or replaced before the date-time specified in Item C).

7. Item D)

If the hazard, status of operation or condition of facilities being reported on will be active in accordance with a specific time and date schedule between the dates-times indicated in Items B) and C), insert such information under Item D). If Item D) exceeds 200 characters, consideration shall be given to providing such information in a separate, consecutive NOTAM.

8. Item E)

Use decoded NOTAM Code, complemented where necessary by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, figures and plain language. When NOTAM is selected for international distribution, English text shall be included for those parts expressed in plain language. This entry shall be clear and concise in order to provide a suitable PIB entry. In the case of NOTAMC, a subject reference and status message shall be included to enable accurate plausibility checks.

9. Items F) and G)

These items are normally applicable to navigation warnings or airspace restrictions and are usually part of the PIB entry. Insert both lower and upper height limits of activities or restrictions, clearly indicating reference datum and units of measurement.

APPENDIX 7

AERONAUTICAL DATA QUALITY REQUIREMENTS

Table A7-1. Latitude and longitude

Latitude and longitude	Publication resolution	Integrity Classification
Flight information region boundary points	1 min	1×10^{-3} routine
P, R, D area boundary points (outside CTA/CTZ boundaries)	1 min	1×10^{-3} routine
P, R, D area boundary points (inside CTA/CTZ boundaries)	1 sec	1×10^{-5} essential
CTA/CTZ boundary points	1 sec	1×10^{-5} essential
En-route NAVAIDS and fixes, holding, STAR/SID points	1 sec	1×10^{-5} essential
Obstacles in Area 1 (the entire State territory)	1 sec	1×10^{-3} routine
Aerodrome/heliport reference point	1 sec	1×10^{-3} routine
NAVAIDS located at the aerodrome/heliport	1/10 sec	1×10^{-5} essential
Obstacles in Area 3	1/10 sec	1×10^{-5} essential
Obstacles in Area 2	1/10 sec	1×10^{-5} essential
Final approach fixes/points and other essential fixes/points comprising the instrument approach procedure	1/10 sec	1×10^{-5} essential
Runway threshold	1/100 sec	1×10^{-8} critical
Runway end (flight path alignment point)	1/100 sec	1×10^{-8} critical
Runway holding position	1/100 sec	1×10^{-8} critical
Taxiway centre line/parking guidance line points	1/100 sec	1×10^{-5} essential
Taxiway intersection marking line	1/100 sec	1×10^{-5} essential
Exit guidance line	1/100 sec	1×10^{-5} essential
Aircraft stand points/INS checkpoints	1/100 sec	1×10^{-3} routine
Geometric centre of TLOF or FATO thresholds, heliports	1/100 sec	1×10^{-8} critical
Apron boundaries (polygon)	1/10 sec	1×10^{-3} routine
De-icing/anti-icing facility (polygon)	1/10 sec	1×10^{-3} routine

Note.— See Appendix 8 for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

Table A7-2. Elevation/altitude/height

Elevation/altitude/height	Publication resolution	Integrity Classification
Aerodrome/heliport elevation	1 m or 1 ft	1×10^{-5} essential
WGS-84 geoid undulation at aerodrome/heliport elevation position	1 m or 1 ft	1×10^{-5} essential
Runway or FATO threshold, non-precision approaches	1 m or 1 ft	1×10^{-5} essential
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, non-precision approaches	1 m or 1 ft	1×10^{-5} essential
Runway or FATO threshold, precision approaches	0.1 m or 0.1 ft	1×10^{-8} critical
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, precision approaches	0.1 m or 0.1 ft	1×10^{-8} critical
Threshold crossing height, precision approaches	0.1 m or 0.1 ft	1×10^{-8} critical
Obstacles in Area 2	1 m or 1 ft	1×10^{-5} essential
Obstacles in Area 3	0.1 m or 0.1 ft	1×10^{-5} essential
Obstacles in Area 1 (the entire State territory)	1 m or 1 ft	1×10^{-3} routine
Distance measuring equipment/precision (DME/P)	3 m (10 ft)	1×10^{-5} essential
Distance measuring equipment (DME)	30 m (100 ft)	1×10^{-5} essential
Minimum altitudes	50 m or 100 ft	1×10^{-3} routine

Note.— See Appendix 8 for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

Table A7-3. Declination and magnetic variation

Declination/variation	Publication resolution	Integrity Classification
VHF NAVAID station declination used for technical line-up	1 degree	1×10^{-5} essential
NDB NAVAID magnetic variation	1 degree	1×10^{-3} routine
Aerodrome/heliport magnetic variation	1 degree	1×10^{-5} essential
ILS localizer antenna magnetic variation	1 degree	1×10^{-5} essential
MLS azimuth antenna magnetic variation	1 degree	1×10^{-5} essential

Table A7-4. Bearing

Bearing	Publication resolution	Integrity Classification
Airway segments	1 degree	1×10^{-3} routine
En-route and terminal fix formations	1/10 degree	1×10^{-3} routine
Terminal arrival/departure route segments	1 degree	1×10^{-3} routine
Instrument approach procedure fix formations	1/100 degree	1×10^{-5} essential
ILS localizer alignment (True)	1/100 degree	1×10^{-5} essential
MLS zero azimuth alignment (True)	1/100 degree	1×10^{-5} essential
Runway and FATO bearing (True)	1/100 degree	1×10^{-3} routine

Table A7-5. Length/distance/dimension

Length/distance/dimension	Publication resolution	Integrity Classification
Airway segment length	1/10 km or 1/10 NM	1×10^{-3} routine
En-route fix formation distance	1/10 km or 1/10 NM	1×10^{-3} routine
Terminal arrival/departure route segment length	1/100 km or 1/100 NM	1×10^{-5} essential
Terminal and instrument approach procedure fix formation distance	1/100 km or 1/100 NM	1×10^{-5} essential
Runway and FATO length, TLOF dimensions	1 m or 1 ft	1×10^{-8} critical
Runway width	1 m or 1 ft	1×10^{-5} essential
Displaced threshold distance	1 m or 1 ft	1×10^{-3} routine
Clearway length and width	1 m or 1 ft	1×10^{-5} essential
Stopway length and width	1 m or 1 ft	1×10^{-8} critical
Landing distance available	1 m or 1 ft	1×10^{-8} critical
Take-off run available	1 m or 1 ft	1×10^{-8} critical
Take-off distance available	1 m or 1 ft	1×10^{-8} critical
Accelerate-stop distance available	1 m or 1 ft	1×10^{-8} critical
Runway shoulder width	1 m or 1 ft	1×10^{-5} essential
Taxiway width	1 m or 1 ft	1×10^{-5} essential
Taxiway shoulder width	1 m or 1 ft	1×10^{-5} essential
ILS localizer antenna-runway end, distance	1 m or 1 ft	1×10^{-3} routine
ILS glide slope antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-3} routine
ILS marker-threshold distance	1 m or 1 ft	1×10^{-5} essential
ILS DME antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-5} essential
MLS azimuth antenna-runway end, distance	1 m or 1 ft	1×10^{-3} routine
MLS elevation antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-3} routine
MLS DME/P antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-5} essential

APPENDIX 8

TERRAIN AND OBSTACLE DATA REQUIREMENTS

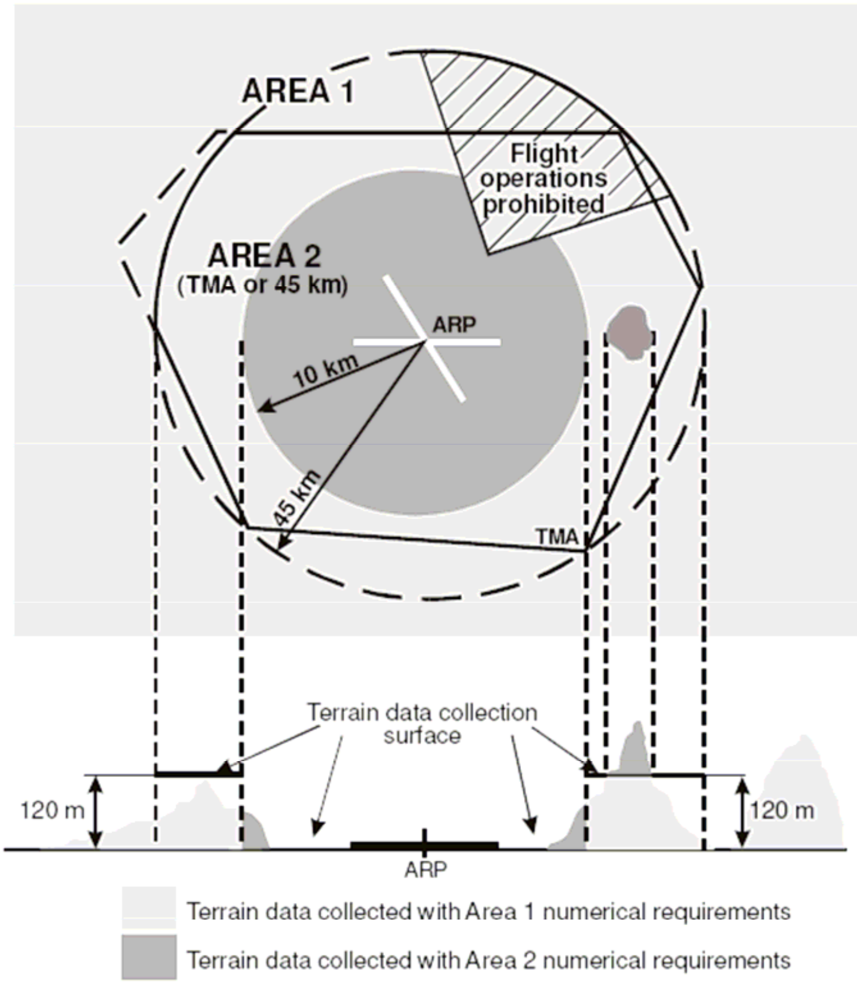

Figure A8-1. Terrain data collection surfaces — Area 1 and Area 2

1. Within the area covered by a 10-km radius from the ARP, terrain data shall be collected and recorded in accordance with the Area 2 numerical requirements.

2. In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that penetrates the horizontal plane 120 m above the lowest runway elevation shall be collected and recorded in accordance with the Area 2 numerical requirements.

3. In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that does not penetrate the horizontal plane 120 m above the lowest runway elevation shall be collected and recorded in accordance with the Area 1 numerical requirements.

4. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, terrain data shall only be collected and recorded in accordance with the Area 1 numerical requirements.

Note.— Terrain data numerical requirements for Areas 1 and 2 are specified in Table A8-1.

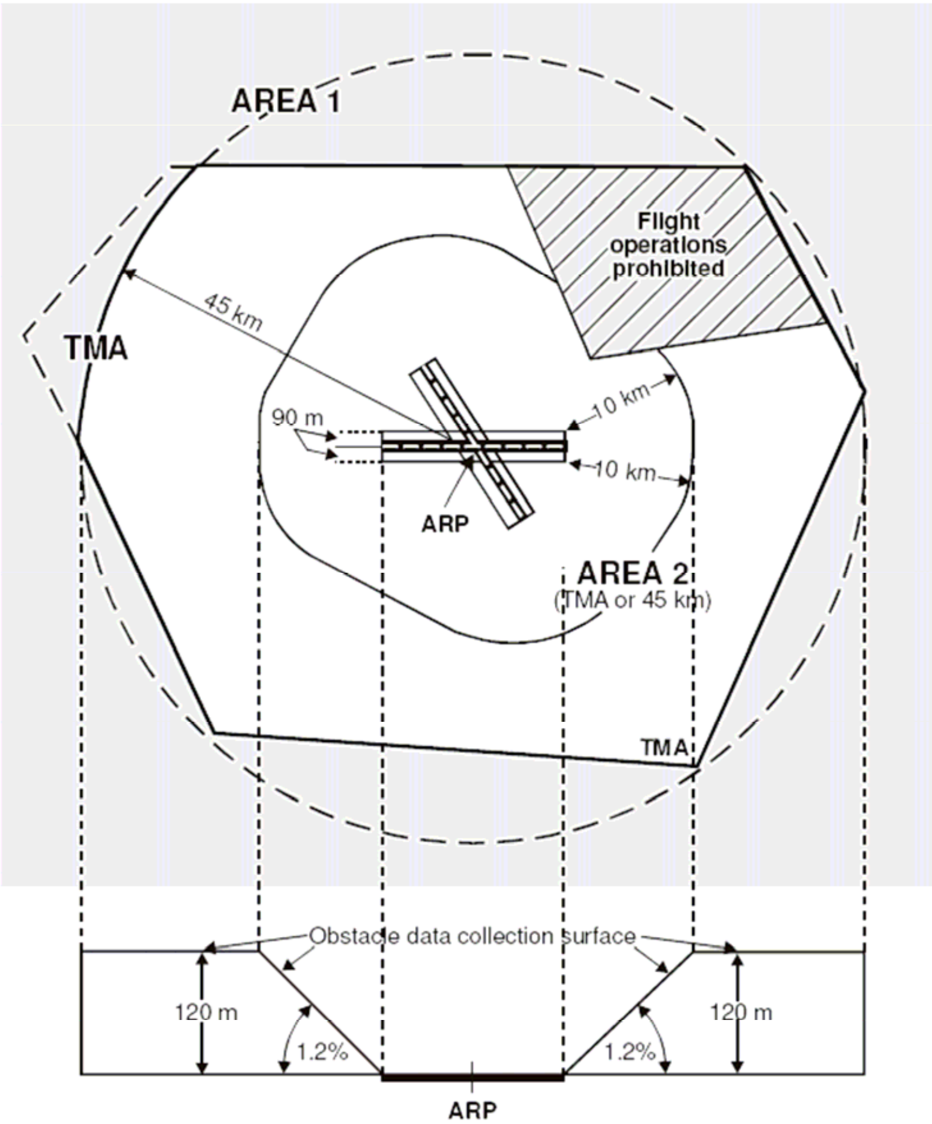

Figure A8-2. Obstacle data collection surfaces — Area 1 and Area 2

1. Obstacle data shall be collected and recorded in accordance with the Area 2 numerical requirements specified in Table A8-2:

   a) any obstacle that penetrates the conical surface whose origin is at the edges of the 180-m wide rectangular area and at the nearest runway elevation measured along the runway centre line, extending at 1.2 per cent slope until it reaches 120 m above the lowest runway elevation of all operational runways at the aerodrome (1.2 per cent slope reaches 120 m at 10 km); in the remainder of Area 2 (between 10 km and the TMA boundary or 45-km radius, whichever is smaller), the horizontal surface 120 m above the lowest runway elevation; and

   b) in those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacle data shall be collected and recorded in accordance with the Area 1 requirements.

2. Data on every obstacle within Area 1 whose height above the ground is 100 m or higher shall be collected and recorded in the database in accordance with the Area 1 numerical requirements specified in Table A8-2.

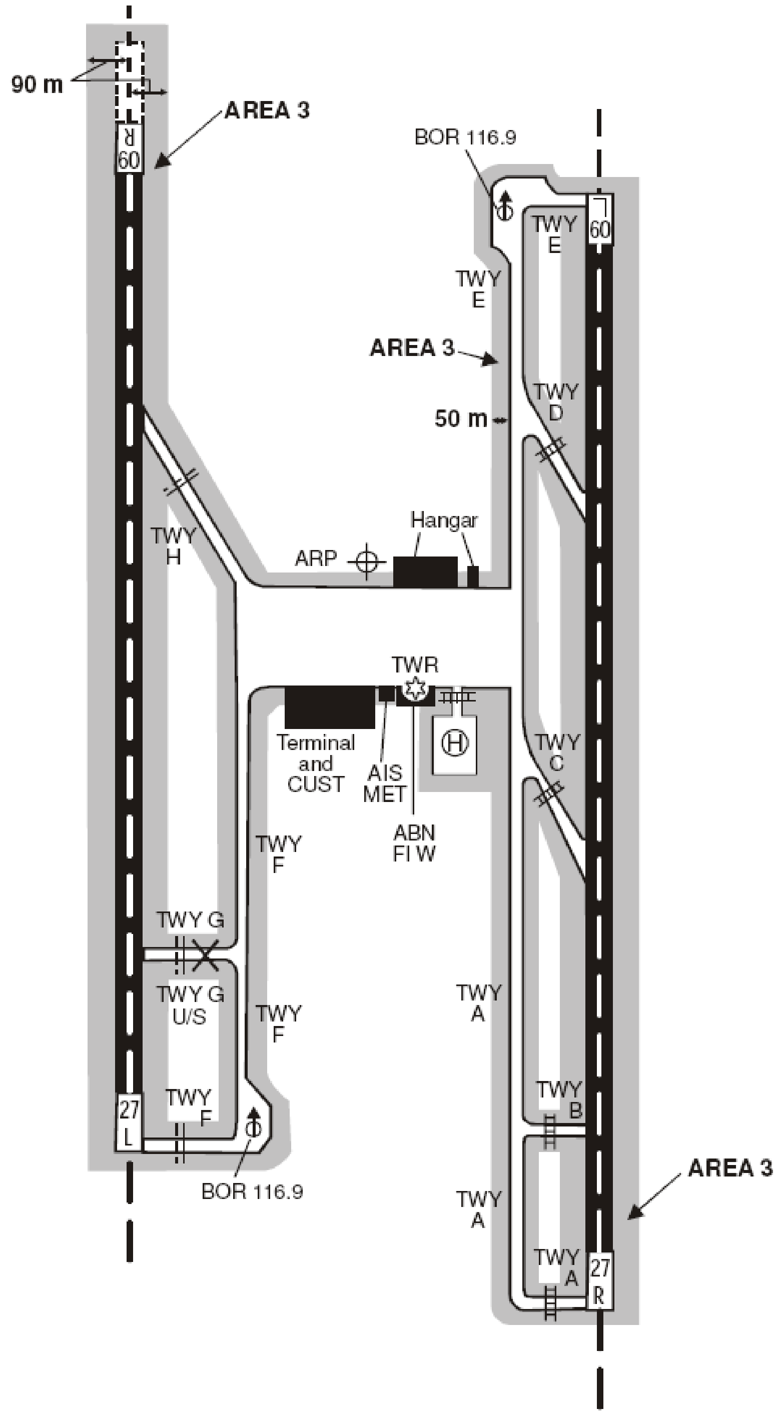

Figure A8-3. Terrain and obstacle data collection surface — Area 3

1. Data on terrain and obstacles that extend more than a half-metre (0.5 m) above the horizontal plane passing through the nearest point on the aerodrome/heliport movement area shall be collected and recorded.

2. Terrain and obstacle data in Area 3 shall be collected and recorded in accordance with numerical requirements specified in Table A8-1 and Table A8-2, respectively.

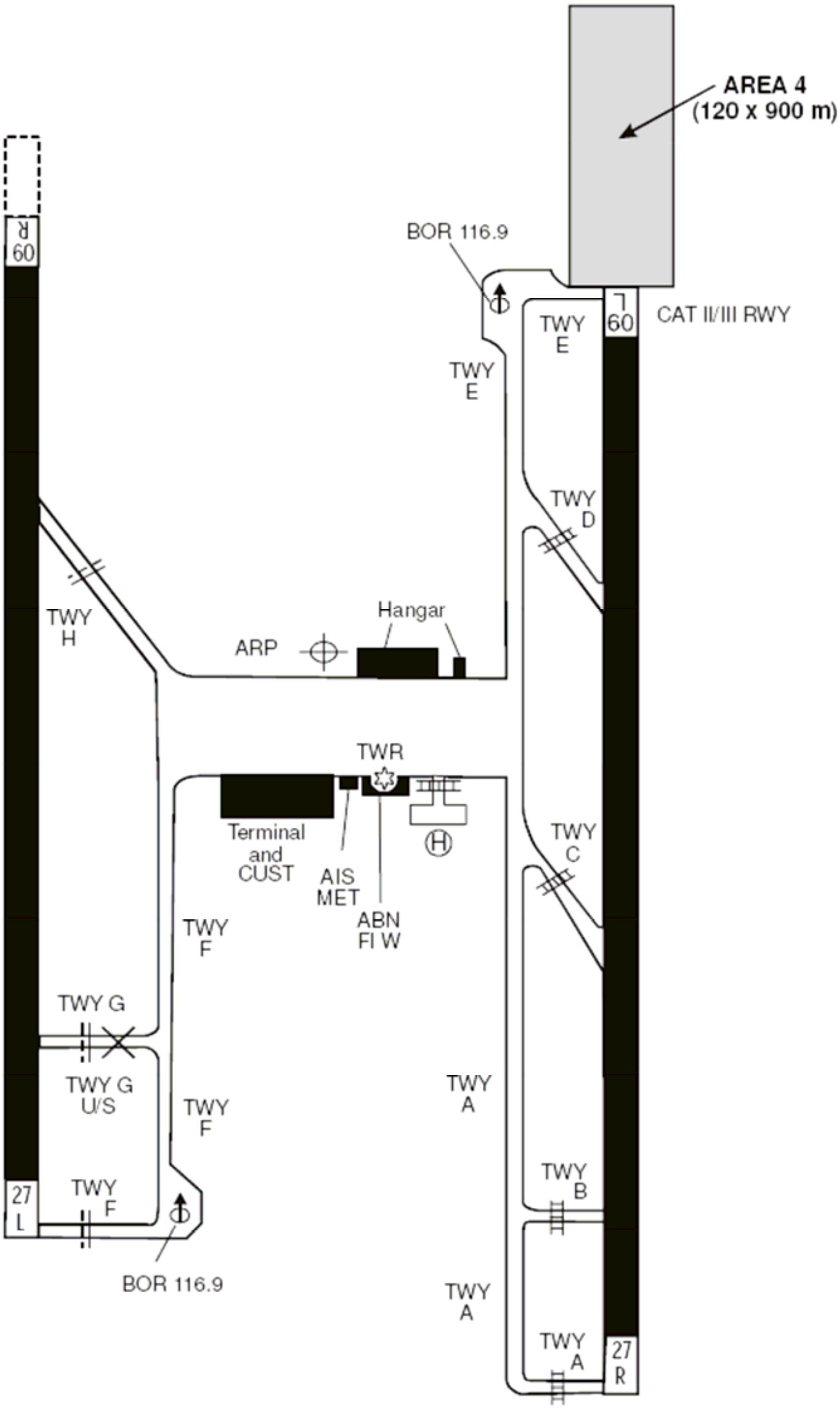

Figure A8-4. Terrain data collection surface — Area 4

Only terrain data shall be collected and recorded in Area 4 in accordance with the numerical requirements specified in Table A8-1.

Table A8-1. Terrain data numerical requirements

	Area 1	Area 2	Area 3	Area 4
Post spacing	3 arc seconds (approx. 90 m)	1 arc second (approx. 30 m)	0.6 arc seconds (approx. 20 m)	0.3 arc seconds (approx. 9 m)
Vertical accuracy	30 m	3 m	0.5 m	1 m
Vertical resolution	1 m	0.1 m	0.01 m	0.1 m
Horizontal accuracy	50 m	5 m	0.5 m	2.5 m
Confidence level (1σ)	90%	90%	90%	90%
Data classification Integrity level	routine 1×10^{-3}	essential 1×10^{-5}	essential 1×10^{-5}	essential 1×10^{-5}
Maintenance period	as required	as required	as required	as required

Table A8-2. Obstacle data numerical requirements

	Area 1	Area 2	Area 3
Vertical accuracy	30 m	3 m	0.5 m
Vertical resolution	1 m	0.1 m	0.01 m
Horizontal accuracy	50 m	5 m	0.5 m
Confidence level (1σ)	90%	90%	90%
Data classification Integrity level	routine 1×10^{-3}	essential 1×10^{-5}	essential 1×10^{-5}
Maintenance period	as required	as required	as required

Table A8-3. Terrain attributes

Terrain attribute	Mandatory/Optional
Area of coverage	Mandatory
Data originator identifier	Mandatory
Acquisition method	Mandatory
Post spacing	Mandatory
Horizontal reference system	Mandatory
Horizontal resolution	Mandatory
Horizontal accuracy	Mandatory
Horizontal confidence level	Mandatory
Horizontal position	Mandatory
Elevation	Mandatory
Elevation reference	Mandatory
Vertical reference system	Mandatory
Vertical resolution	Mandatory
Vertical accuracy	Mandatory
Vertical confidence level	Mandatory
Surface type	Mandatory
Recorded surface	Mandatory
Penetration level	Optional
Known variations	Optional
Integrity	Mandatory
Date and time stamp	Mandatory
Unit of measurement used	Mandatory

Table A8-4. Obstacle attributes

Obstacle attribute	Mandatory/Optional
Area of coverage	Mandatory
Data originator identifier	Mandatory
Obstacle identifier	Mandatory
Horizontal accuracy	Mandatory
Horizontal confidence level	Mandatory
Horizontal position	Mandatory
Horizontal resolution	Mandatory
Horizontal extent	Mandatory
Horizontal reference system	Mandatory
Elevation	Mandatory
Vertical accuracy	Mandatory
Vertical confidence level	Mandatory
Elevation reference	Mandatory
Vertical resolution	Mandatory
Vertical reference system	Mandatory
Obstacle type	Mandatory
Geometry type	Mandatory
Integrity	Mandatory
Date and time stamp	Mandatory
Unit of measurement used	Mandatory
Operations	Optional
Effectivity	Optional