LAMPIRAN KEPUTUSAN DIREKTUR JENDERAL PERHUBUNGAN UDARA
NOMOR : SKEP/22/II/2008
TANGGAL : 21 Pebruari 2008

Advisory Circular

AC 25 - 4

INERTIAL NAVIGATION SYSTEMS (INS)

Revision : -

Date :

REPUBLIC OF INDONESIA - MINISTRY OF TRANSPORTATIONS
DIRECTORATE GENERAL OF CIVIL AVIATION
JAKARTA – INDONESIA

DEPARTEMEN PERHUBUNGAN
DIREKTORAT JENDERAL PERHUBUNGAN UDARA

PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA
NOMOR : SKEP/22-/ II /2008

TENTANG

ADVISORY CIRCULAR (AC) 25-4
SISTIM PERALATAN NAVIGASI

DENGAN RAHMAT TUHAN YANG MAHA ESA

DIREKTUR JENDERAL PERHUBUNGAN UDARA,

Menimbang :

a. bahwa sesuai dengan Keputusan Menteri Perhubungan Nomor KM 26 Tahun 2006 tentang Penyempurnaan Keputusan Menteri Perhubungan Nomor KM 38 Tahun 2001 mengenai Standar Kelaikan Udara Pesawat Udara Kategori Transport, telah diatur mengenai sistim peralatan ;

b. bahwa berdasarkan pertimbangan sebagaimana dimaksud dalam huruf a, maka perlu ditetapkan Advisory Circular (AC) 25-4 tentang Sistim Peralatan Navigasi, dengan Peraturan Direktur Jenderal Perhubungan Udara;

Mengingat :

1. Undang-undang Nomor 15 Tahun 1992 tentang Penerbangan (Lembaran Negara Tahun 1992 Nomor 53, Tambahan Lembaran Negara Nomor 3481);

2. Peraturan Pemerintah Nomor 3 Tahun 2001 tentang Keamanan dan Keselamatan Penerbangan (Lembaran Negara Tahun 2001 Nomor 9, Tambahan Lembaran Negara Nomor 4075);

3. Peraturan Presiden Nomor 9 Tahun 2005 tentang Kedudukan, Tugas, Fungsi, Kewenangan, Susunan Organisasi dan Tata Kerja Kementerian Negara Republik Indonesia sebagaimana telah diubah terakhir dengan Peraturan Presiden Nomor 94 Tahun 2006;

4. Peraturan Presiden Nomor 10 Tahun 2005 tentang Unit Organisasi dan Tugas Eselon I Kementerian Negara Republik Indonesia sebagaimana telah diubah terakhir dengan Peraturan Presiden Nomor 17 Tahun 2007;

5. Keputusan Menteri Perhubungan Nomor T.11./2/4-U Tahun 1960 tentang Peraturan-Peraturan Keselamatan Penerbangan Sipil (CASR) sebagaimana telah diubah terakhir dengan Peraturan Menteri Perhubungan Nomor KM 4 Tahun 2006;

6. Peraturan Menteri Perhubungan Nomor KM 43 Tahun 2005 tentang Organisasi dan Tata Kerja Departemen Perhubungan, sebagaimana telah diubah terakhir dengan Peraturan Menteri Perhubungan Nomor KM 37 Tahun 2006;

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MEMUTUSKAN :

Menetapkan : PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA TENTANG ADVISORY CIRCULAR (AC) 25-4 TENTANG SISTIM PERALATAN NAVIGASI.

Pasal 1

Advisory Circular (AC) 25-4 tentang Sistim Peralatan Navigasi, sebagaimana tercantum dalam Lampiran Peraturan ini.

Pasal 2

Peraturan ini mulai berlaku pada tanggal ditetapkan.

Ditetapkan di : Jakarta
Pada tanggal : 21 Februari 2008

DIREKTUR JENDERAL PERHUBUNGAN UDARA,

BUDHI M SUYITNO
NIP. 120 088 924

SALINAN Peraturan ini disampaikan kepada :

1. Sekretaris Jenderal Departemen Perhubungan;
2. Inspektur Jenderal Departemen Perhubungan;
3. Sekretaris Direktorat Jenderal Perhubungan Udara;
4. Para Direktur di lingkungan Ditjen Hubud.

RrSKEP-ac 120-92/LIS/JAN08

Rskep-16-29A/IUSBLIS/Sept07

MEMUTUSKAN :

Menetapkan : PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA TENTANG ADVISORY CIRCULAR (AC) 25-4 TENTANG SISTIM PERALATAN NAVIGASI.

Pasal 1

Advisory Circular (AC) 25-4 tentang Sistim Peralatan Navigasi, sebagaimana tercantum dalam Lampiran Peraturan ini.

Pasal 2

Peraturan ini mulai berlaku pada tanggal ditetapkan.

Ditetapkan di : Jakarta
Pada tanggal : 21 Februari 2008

DIREKTUR JENDERAL PERHUBUNGAN UDARA

Ttd

BUDHI M SUYITNO
NIP. 120 088 924

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4. Para Direktur di lingkungan Ditjen Hubud.

Salinan Sesuai dengan aslinya

KEPALA BAGIAN HUKUM
SESDITJEN HUBUD

RUDI RICHARDO
NIP. 120 154 783

FOREWORD

1. **PURPOSE:** This advisory circular (AC) discusses and sets forth an acceptable means for complying with rules governing the installation of inertial navigation systems in transport category aircraft.

2. **REFERENCES:** This Advisory Circular is advisory only and should be used in accordance with the applicable regulations.

3. **REVISION:** Revision of this Advisory Circular will be approved by the Director General of Civil Aviation.

DIRECTOR GENERAL OF CIVIL AVIATION

T T D

BUDHI M. SUYITNO
NIP. 120 088 924

Salinan sesuai dengan aslinya
Kepala Bagian Hukum
Sesditjen Hubud

RUDI RICHARDO
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2/21/2008

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DIRECTOR GENERAL OF CIVIL AVIATION

BUDHI M. SUYITNO

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AC 25-4 - INERTIAL NAVIGATION SYSTEMS (INS)

Ministry of Transportation
Directorate General of Civil Aviation

1. PURPOSE.

This circular sets forth an acceptable means for complying with rules governing the installation of inertial navigation systems in transport category aircraft. Other criteria which will afford a demonstration of compliance with applicable requirements are also acceptable.

2. REFERENCES.

Civil Aviation Safety Regulations 25.1301, 25.1309, 25.1431, and 25.1581.

3. DEFINITIONS.

For the purposes of this advisory circular, the following definitions apply:

a. Inertial Navigation System (INS). A self-contained navigation system which provides airplane position and other significant navigation information in response to signals resulting from inertial effects on components within the system.

b. Sole Means of Navigation. The navigation system installation used exclusively and without any other navigation data inputs, on which specific operations under the applicable operating rules are predicated.

c. Optional Navigation System. A navigation system not required for safe operation of, or used in the predication of aircraft operations.

4. DISCUSSION.

Existing guidelines for evaluation of airborne navigation systems do not provide adequate criteria for use in determining the airworthiness of INS installations. The criteria contained in this circular are directed toward the unique features of INS installations and a means of demonstrating compliance with the applicable rules.

5. ACCEPTABLE MEANS OF COMPLIANCE (INS AS SOLE MEANS OF NAVIGATION DURING A SIGNIFICANT PORTION OF FLIGHT).

When installed for use as the sole means of navigation during a significant portion of flight, the INS installation is acceptable under the referenced regulations if -

a. it provides, in readily usable form, the following:

(1) valid ground alignment at all latitudes appropriate for intended use of the installation.

(2) a display of alignment status to the flight crew.

(3) the present position of the airplane, in suitable coordinates.

(4) information on destinations) or waypoint position.

(5) the information needed to gain and maintain desired track and to determine deviation from desired track.

(6) the information needed to determine the estimated time of arrival (ETA).

b. its accuracy in the inertial mode is -

(1) appropriate for the specific air route structures in which it is to be used. Specifically, the INS installation accuracy appropriate for use over the North Atlantic is obtained by limiting crosstrack error to a maximum of ± 20 nautical miles and along track error to a maximum of ± 25 nautical miles.

(2) determined on a 95 percent probability basis for flights of typical durations, on selected routes, and at appropriate latitudes (including the highest for which certification is sought), over the representative speed and altitude range. An acceptable combination of laboratory data and flight demonstrations may be used for this determination.

(3) based upon a comparison of INS installation readout at destinations with position fixes obtained by visually sighting ground reference points and/or by using other navigation equipment (such as LORAN, TACAN, VOR, DME, or ground radar).

(4) specified in the airplane flight manual for duration of time representative of intended use.

c. for INS installations that do not have memory or other inflight alignment means, a separate electrical power source (independent of the main propulsion system) is provided which can supply, for at least 5 minutes, enough power (as shown by analysis and demonstrated in the airplane) to maintain the INS in such condition that its full capability is restored upon reactivation of the normal electrical supply.

d. upon occurrence of reasonably probable failures or malfunctions within the system -

(1) the equipment provides, by visual, mechanical, or electrical output signals, indications of the invalidity of output data, or

(2) the equipment provides such visual, mechanical, or electrical output signals, or devices, as may be required to permit the flight crew to detect significant deviations between similar systems or the invalidity of output data from a single system.

e. a reasonably probable failure or malfunction within the system does not result in loss of the aircraft's required navigation capability.

f. the system alignment and/or navigation computer functions are not invalidated by normal aircraft power interruptions and transients.

g. it is not the source or cause of objectionable radio frequency interference, and is not adversely affected by radio frequency interference from other aircraft systems.

h. the DGCA approved airplane flight manual, or supplement thereto, includes pertinent material as required to define the normal and emergency operating procedures and applicable operating limitations associated with INS performance (such as maximum latitude at which ground alignment capability is provided).

6. ACCEPTABLE MEANS OF COMPLIANCE (INS USED WITH OTHER MEANS OF NAVIGATION).

When installed for use in association with other navigation services, such as VOR/DME, the INS installation is acceptable under the referenced regulations if it satisfies all conditions set forth in paragraph 5 of this circular, except the one in subparagraph 5.c.

7. ACCEPTABLE MEANS OF COMPLIANCE (INS AS AN OPTIONAL INSTALLATION).

When installed as an optional installation, the INS installation is acceptable if -

a. it functions properly in the aircraft.

b. there are no unsafe features.

c. it presents no hazards to the operation of the aircraft.

d. it causes no derogation of performance a systems in other aircraft or ground facilities.