

Aerodrome Reporting Personnel Competence In Aeronautical Data Management at Airport Operating Units

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Abstract

Aviation safety depends on aeronautical information that is accurate, complete, traceable, and published on time. In the Indonesian airport environment, aerodrome reporting personnel act as data originators who identify, record, and submit changes in aerodrome conditions to the regional Aeronautical Information Service (AIS) office for NOTAM and Aeronautical Information Publication (AIP) processing. This study examines the competence of reporting personnel in airport operating units and evaluates the reporting workflow for aeronautical data management. A qualitative case study approach was used through interviews with reporting personnel and AIS regional officers, supported by document analysis of reporting forms, submission letters, NOTAM/AIP-related documents, CASR Part 139, ICAO Annex 15, and ICAO Doc 8126. The data were analyzed using data reduction, data display, and conclusion drawing. The findings show that personnel competence has not fully met CASR 139 requirements, particularly in understanding AIS publication structures, determining coordinates, applying standardized submission formats, and selecting the appropriate publication type between NOTAM and AIP Supplement. Recurring errors include inaccurate coordinates, non-compliant document formats, incomplete attachments, and reactive coordination with the AIS regional office. The study recommends standardized training and certification, layered verification, proactive coordination forums, and integrated digital reporting to strengthen data accuracy, integrity, and timeliness.

Keywords: *Aerodrome reporting officer, aeronautical data, AIS, AIP, CASR 139, NOTAM.*

INTRODUCTION

Aeronautical information is an essential component of aviation safety because flight planning, air traffic services, and airport operations depend on data that is accurate, current, and distributed through standardized products. Information regarding runway conditions, aerodrome facilities, navigation aids, airspace restrictions, obstacles, procedures, and temporary operational changes is disseminated through products such as NOTAM, AIP, AIP Amendment, and AIP Supplement. When data quality is weak, the error may move from local administration to operational decision-making, creating safety, efficiency, and compliance risks for pilots, air traffic controllers, airlines, and airport operators.

In the aeronautical information chain, the Aeronautical Information Service (AIS) does not work as an isolated publisher. AIS depends on data originators, including airport operating units and aerodrome reporting personnel, to provide verified data before publication. ICAO Annex 15 and ICAO Doc 8126 emphasize that aeronautical data must maintain quality characteristics such as accuracy, integrity, completeness, and timeliness. In Indonesia, the Manual of Standard Civil Aviation Safety Regulation (CASR) Part 139 Volume I on land aerodromes requires aerodrome reporting personnel to notify the relevant AIS office of events and changes that must be published through NOTAM or AIP. Therefore, reporting personnel have a technical and safety-critical function, not merely an administrative role.

The research problem addressed in this paper emerges from recurrent errors in data submissions from airport reporting personnel to the AIS Regional Office of Jakarta. The source research report records examples such as coordinate errors for parachuting activity, the use of letter formats that do not comply with the Letter of Operational Coordination Agreement

(LOCA), incomplete supporting documents, and the submission of information as NOTAM when the characteristics of the change require publication through an AIP Supplement. These errors cause the AIS office to return the submission for revision, which lengthens the publication process and may affect the timeliness of aeronautical information.

This paper aims to analyze the competence of aerodrome reporting personnel in managing aeronautical data at airport operating units, identify the types of errors that occur in data submissions, examine the factors that contribute to those errors, and formulate improvement strategies for reporting procedures, coordination, and personnel development. The study focuses on airport operating units under the coordination of AIS Regional Office Jakarta, particularly Radin Inten II Airport, Supadio Airport, and Budiarto Airport.

RESEARCH METHODS

This research used a qualitative approach with a descriptive case study design. The design was selected because the study aimed to understand the competence of aerodrome reporting personnel and the process of reporting aeronautical data in its real operational context. A case study is appropriate when the boundaries between the phenomenon and context are not clearly separated and when the researcher needs to examine procedures, experiences, documents, and organizational interactions together (Yin, 2018; Creswell & Poth, 2018).

The research object was the reporting process for changes in aerodrome data at airport operating units under the coordination of AIS Regional Office Jakarta. The study focused on personnel reporting roles at Radin Inten II Airport, Supadio Airport, and Budiarto Airport. The informants included aerodrome reporting personnel and AIS regional officers who were involved in receiving, verifying, clarifying, or processing aeronautical data submissions.

Data were collected through semi-structured interviews and document analysis. Interview questions explored personnel background, experience as reporting officers, training history, understanding of CASR 139, Annex 15, and Doc 8126, reporting workflow, verification practices, common errors, factors causing errors, and improvement strategies. Document analysis covered reporting forms, submission letters to the AIS Regional Office, NOTAM-related documents, AIP Amendment or AIP Supplement references, CASR Part 139, Annex 15, Doc 8126, and LOCA-related format requirements.

Data analysis followed the interactive model of Miles, Huberman, and Saldana (2014), consisting of data reduction, data display, and conclusion drawing. The first stage selected and grouped data into themes such as competence, reporting procedures, errors, coordination, and regulatory compliance. The second stage displayed the information through narrative explanation and a gap analysis matrix. The final stage drew conclusions by comparing interview results, document evidence, and regulatory requirements. Validity was strengthened through triangulation of sources, techniques, and documents (Patton, 2015).

RESULTS AND DISCUSSION

Reporting Context and Existing Workflow

The reporting personnel in the studied airport units generally have aviation-related educational backgrounds and operational experience. Their average length of work experience is approximately five to ten years across airport operations. Nevertheless, the research found that not all personnel had attended recent formal training related to AIS, NOTAM procedures, AIP data structures, or aeronautical data quality requirements. This condition indicates that

experience alone does not guarantee standard competence when tasks involve technical data, coordinate accuracy, and publication decisions.

The existing workflow begins with identification of aerodrome data changes, followed by preparation of a change report and supporting documents such as photos, maps, measurement results, or other technical evidence. The report is then reviewed internally by operational supervisors or airport managers before being submitted to the AIS Regional Office. If the submission is incomplete or inconsistent, AIS requests clarification or revision before the information can be published as NOTAM, AIP Amendment, or AIP Supplement. The workflow is logically aligned with the AIS data chain, but implementation is inconsistent across airport units. Some units still rely on manual reporting and individual experience, leading to variations in format, completeness, and submission quality.

Competence Gaps

The first major finding is that the competence of reporting personnel has not fully met CASR 139 expectations. Several personnel understand the general reporting obligation but do not consistently understand the safety impact of inaccurate or late data. The most visible competence gaps are related to coordinate determination, understanding of AIS publication structures, technical description of aerodrome changes, and preparation of documents according to LOCA format. These gaps are important because AIS can only publish data after verifying the completeness and correctness of the submission.

The competence gap is also reflected in limited familiarity with data quality principles. Personnel need to understand not only what must be reported, but also why accuracy, integrity, and timeliness matter. A small coordinate error in a published activity area, a wrong description of affected movement areas, or a wrong publication category may create operational uncertainty for flight crews and air traffic services. From a safety management viewpoint, this finding shows that the first barrier in the information chain requires strengthening.

Types of Submission Errors

The study identified recurrent errors in aeronautical data submissions. First, coordinate errors occurred in requests related to activities such as parachuting, works in the movement area, or temporary restrictions involving defined airspace or aerodrome locations. Because coordinates are safety-critical data, inaccurate values require correction before publication. Second, document-format errors occurred when submission letters or change forms did not follow LOCA requirements. These included incomplete fields, inappropriate wording for AIS use, unclear descriptions, and inconsistencies in time references.

Third, some submissions used the wrong publication type. A change that should be published through an AIP Supplement because of its duration or nature was sometimes submitted as a NOTAM. This error delays publication because AIS must return the submission or request additional clarification. Fourth, supporting attachments were sometimes incomplete, making it difficult for the AIS Regional Office to verify the operational impact. These errors show that the problem is both technical and administrative.

Coordination Between Airport Units and AIS Regional Office

Coordination between airport reporting personnel and the AIS Regional Office is a critical success factor. Ideally, coordination should be proactive, especially when an airport unit is uncertain whether information should be processed as NOTAM, AIP Amendment, or AIP Supplement. The research found that communication often remains reactive; consultation usually occurs after AIS identifies an error or returns a submission. There are limited routine technical forums to align interpretation of formats, supporting-document requirements, coordinate standards, and publication criteria.

Reactive coordination increases revision cycles and workload for both airport units and AIS. It also creates a time risk because some aeronautical information must be disseminated quickly. A proactive coordination model would allow early identification of the required product,

data format, supporting attachments, and publication schedule. Therefore, coordination should be treated as a quality assurance mechanism, not only as a communication activity after errors occur.

Table 1
Gap Analysis of Aeronautical Data Reporting

Aspect	Expected Condition	Actual Condition	Gap
ARO competence	Personnel understand CASR 139, Annex 15, coordinate determination, NOTAM/AIP structures, and formal reporting procedures.	Competence is uneven; many personnel have limited AIS/NOTAM training and rely heavily on experience.	Competence required by regulation is not consistently matched by actual capability.
Internal SOP	Standard procedures include layered verification, checklist use, and consistent data formatting before submission.	Several units do not have written or consistently applied SOPs and checklists.	Lack of standardized workflow creates inconsistent data quality.
Airport-AIS coordination	Technical coordination is proactive and occurs before submission when data interpretation is uncertain.	Communication is mostly reactive and occurs after submissions are returned.	Weak coordination creates repeated revisions and delays.
Data quality	Submitted data are accurate, complete, compliant with LOCA format, and meet accuracy-integrity-timeliness principles.	Errors occur in coordinates, document format, publication type, and supporting attachments.	Submitted data do not always meet AIS verification requirements.
Publication process	AIS receives valid data ready for timely publication.	AIS must request corrections before publication.	Revision cycles reduce efficiency and may affect timeliness.
Reporting system	Digital reporting supports automatic validation, standard templates, and data traceability.	Many processes remain manual.	Manual processes increase human-error risk.

Source: Processed from research findings, 2025

Discussion of Improvement Needs

The findings indicate that strengthening aeronautical data management requires integrated action at four levels. First, personnel development is needed through formal training and certification aligned with CASR 139, Annex 15, Doc 8126, AIP, NOTAM, and AIP Supplement procedures. Training should include practical exercises on coordinate validation, document preparation, publication-type selection, and case-based error analysis. Second, each airport unit should implement layered internal verification before sending data to AIS. A checklist can reduce missing attachments, inconsistent wording, and wrong time references.

Third, the AIS Regional Office and airport reporting personnel should establish periodic technical forums. These forums can standardize interpretation of LOCA formats, share examples of rejected submissions, and build a shared understanding of when to use NOTAM or AIP Supplement. Fourth, digital reporting should be developed to reduce manual input errors and strengthen traceability. A digital system with controlled templates, mandatory fields, coordinate validation, document-upload requirements, and status tracking would support the principles of data accuracy, integrity, timeliness, and traceability required in aeronautical information management.

CONCLUSION

This study concludes that aerodrome reporting personnel in the observed airport operating units play a strategic role as data originators in aeronautical information management, but their competence has not fully met CASR 139 requirements. The gap is visible in understanding of AIS publication structures, coordinate determination, document formatting, and publication-type classification. Although several personnel have long operational experience, formal and updated training related to AIS, NOTAM, AIP, and aeronautical data quality remains insufficient.

Recurring errors include inaccurate coordinates, submission formats that do not comply with LOCA, incomplete technical attachments, and incorrect selection between NOTAM and AIP Supplement. These errors cause repeated revisions by the AIS Regional Office, reduce process efficiency, and may affect the timeliness of aeronautical information publication. Coordination between airport units and AIS is still reactive, which indicates that communication must be strengthened as part of quality assurance.

The study recommends four practical improvements: formal and continuous training supported by national ARO certification; layered verification and checklist-based SOPs before submission; periodic technical coordination between airport units and AIS Regional Office; and integrated digital reporting to reduce manual errors and improve traceability. Future research should include more airport units, direct observation of digital reporting practices, and comparative analysis of aerodrome reporting implementation in other regulatory environments.

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