

Review of Comsoft Aeronautical Data Access System Information Management & Service in the NOTAM Flow at Palembang Regional Aeronautical Information Service

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ABSTRACT

This study aims to describe how the Comsoft Aeronautical Data Access System (CADAS) is used in the NOTAM workflow at Palembang Aeronautical Information Service and how operators behave when the system is not stable. This research was conducted with a qualitative case study approach, which combined interviews, participatory observations, and document analysis to capture daily operational practices and problems that occurred in real conditions. The results of this study indicated that CADAS is still the main system for NOTAM drafting, verification, and transmission. However, its performance is often disturbed by irregular system errors such as sudden shutdowns, delays in data processing, and intermittent failures to send or receive raw NOTAM information. These disturbances create obstacles in fulfilling time-sensitive procedural requirements especially the ten-minute verification standard as stated in SOP.012. In case of system unresponsiveness, operators switch to alternative procedures through email distribution, Web Flight Plan submission, and manual logbook documentation so as not to cause delays; however, these manual steps require continuous follow-up to avoid gaps in recording. In general, this study underlines the importance of increasing CADAS reliability and ensuring that backup procedures are consistently applied so that continuity can be maintained even if there is an interruption in the system.

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1. Introduction

The rapid development of information technology has greatly changed the way aeronautical data is managed and distributed in aviation activities. In carrying out daily activities, information is a very important element for the safety and smoothness of flight operations, including information conveyed through Notices to Airmen (NOTAM). The Aeronautical Information Services (AIS) helps deliver this information to pilots, air traffic controllers, and other users who need the latest operational data. Since NOTAMs often contain time-sensitive or urgent information, AIS people need systems that help make writing, checking, and sending them more efficient. One of the tools used by the Palembang AIS unit to handle aeronautical data processing work including NOTAM preparation and dissemination is the Comsoft Aeronautical Data Access System Information Management & Service (CADAS). CADAS aims to reduce manual work, help operators process information systematically, and minimize errors by operators. In this case, it is expected that the system can smooth work processes such as managing material reception, preparing drafts, formatting messages, and sending out

approved NOTAMs. This expectation is in line with the operational functions described in the CADAS-ATS Operator's Guide (2013) which includes system objectives and procedures for daily use. However, CADAS implementation in operations may not run smoothly at all times. Palembang personnel reported that CADAS sometimes experiences unexpected problems like unresponsive screens or suddenly shutting down as well as delays in receiving or sending raw NOTAM data. These disturbances are sporadic and vary in number; therefore, operators cannot predict when they will happen. Previous observations in similar technical fields have also identified these phenomena in aeronautical message handling support systems; thus operational disruptions may occur even if these systems are designed to be fault-tolerant (Monica 2022; Prasojo *et al* 2024; Suherman 2024). Though often transient, such disruptions can disrupt workflows especially when operators need to create or update NOTAM within a tight timeframe.

If CADAS is not stable yet, AIS personnel will follow alternative procedures to avoid delays. The alternatives are sending NOTAM data via email or Web Flight Plan and recording activities in a logbook. These methods will ensure that NOTAMs can be distributed but will increase the workload since it requires careful follow-up so no information is missed. If an entry is not recorded during the disruption, they must find reference data from other internal systems such as NavGate or OneDrive; this may take longer. In this case, CADAS is still the main system but instability in CADAS reduces operational efficiency and makes it more difficult to reach the expected standard for that process. The following describes the conditions under which a study on the use of CADAS in the NOTAM process at the Palembang AIS unit is conducted. The study has the purpose of describing how CADAS is operated under normal conditions, what actions are taken by personnel when it becomes unstable, and how workflows change if it does not work as required. Two research questions can be derived from this background:

1. How is NOTAM workflow operated at Palembang Aeronautical Information Service using CADAS?
2. What recommendations could be provided for improvement in effectiveness and efficiency of NOTAM workflow at Palembang AIS unit?

This study aims to describe in detail and clearly how NOTAM workflow using CADAS is implemented, as well as provide recommendations for better usage of the system in daily activities. The output will be used by AirNav Indonesia to improve CADAS and ensure that processing NOTAMs continues seamlessly even when there are operational disruptions.

2. Methodology

This study employs a qualitative research approach using a descriptive case study design, which allows the researcher to examine the phenomenon in its natural operational environment and capture conditions that may not be visible through quantitative techniques. As described by Sugiyono (2022), qualitative research positions the researcher as the primary instrument responsible for collecting, interpreting, and validating data. This methodological choice is appropriate for studying the workflow of NOTAM processing through the Comsoft Aeronautical Data Access System (CADAS), where operational nuances, staff experiences, and situational responses form an integral part of the analysis. Throughout the research process, precision in terminology and language use followed the conventions outlined in the *Kamus Besar Bahasa Indonesia Edisi VI* (Badan Pengembangan dan Pembinaan Bahasa, 2023/2025), ensuring clarity

during documentation and interpretation.

Data collection was conducted using triangulation through three complementary techniques: in-depth interviews, participatory observation, and document analysis. In-depth interviews were carried out with personnel directly involved in the NOTAM workflow at the Palembang Aeronautical Information Service, including AIS officers, CADAS operators, and recipients of NOTAM outputs. The interviews aimed to explore their experiences with CADAS, how they respond to system disturbances, and the practical challenges encountered during daily operations. These interviews enriched the analysis by revealing perspectives that cannot be captured through document review alone. Participatory observation was conducted by monitoring real-time operational activities in the NOTAM workflow. This approach enabled the researcher to observe how CADAS is used during routine and disrupted conditions, how personnel interact with the system, and how alternative procedures—such as email transmission or manual logging—are activated when CADAS becomes unstable. Observations were recorded in field notes, focusing on workflow sequences, decision-making patterns, response times, and system behavior.

Document analysis complemented the interviews and observations by examining various operational documents, including standard operating procedures (SOP), incident logs, digital archives, and NOTAM databases. These documents were used to validate the information gathered through other methods and to identify discrepancies between documented procedures and actual practice. Reviewing formal references such as *Doc 8126 Aeronautical Information Services Manual* (2021) and *ICAO Annex 15* (2018) provided additional grounding for interpreting workflow requirements, although the focus of analysis remained on local operational conditions rather than international comparisons. The collected data were organized and analyzed using narrative and thematic techniques. Each data source—interviews, observations, and documents—was coded and categorized to identify patterns and recurring issues. Themes related to CADAS reliability, workflow adjustments during disruptions, operator strategies, and procedural alignment were identified through iterative coding. These themes were then synthesized to build an integrated understanding of how CADAS functions in practice and how personnel adapt when system performance becomes unstable. The triangulation approach not only strengthened the credibility of the findings but also ensured that operational realities were captured from multiple perspectives.

Table 1. Overview of Data Collection Techniques and Their Purposes

Technique	Primary Purpose	Focus of Data
In-Depth Interviews	Understanding operator experiences and challenges	Perceptions of CADAS, handling disruptions, workflow practices
Participatory Observation	Capturing real-time operational behavior	Workflow sequence, system responses, personnel actions
Document Analysis	Verifying and contextualizing observed practices	SOP, incident logs, NOTAM archives, internal guidelines

This table summarizes the three primary data collection techniques used in the study—interviews, participatory observation, and document analysis—along with their specific roles in supporting the examination of the NOTAM workflow using CADAS.

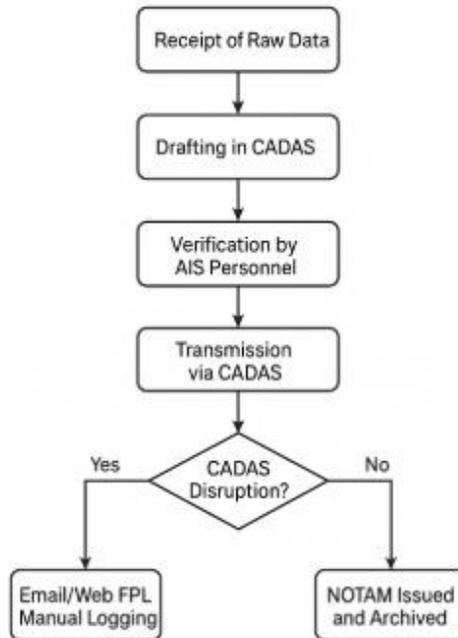


Figure 1. Conceptual Workflow of NOTAM Processing Through CADAS

This figure illustrates the sequence of NOTAM processing within CADAS, including drafting, verification, transmission, and the alternative procedures activated when system disruptions occur.

3. Results

The results of this study were gleaned from in-depth interviews with personnel at the Palembang Aeronautical Information Service (AIS) who interface directly with the Comsoft Aeronautical Data Access System (CADAS). Such information should provide a fairly accurate description of the workings of CADAS within daily operations and system instability effects on the NOTAM workflow. Personnel have consistently indicated that although CADAS is still used as the main system for drafting, receiving, and transmitting NOTAM data, performance more often than not is interrupted due to irregular system errors. Interviews have revealed that disruptions to CADAS happen randomly; some months witness one or two errors while others see more frequent occurrences. There are also months when it runs perfectly without any disturbance. Since there is no pattern involved, then such disruptions are unpredictable. Most personnel described types of errors as sudden shutdowns of the system, inability to send or receive raw NOTAM data, and intermittent delays in response from the system. Even though these problems do not usually stop every operation altogether, they disrupt it at very crucial moments—especially when NOTAMs need to be issued urgently.

When there are disturbances, AIS personnel cannot fix the system by themselves because of technical incapability. Their first step is always to call a technician through phone or messaging. Technicians usually tell them to reboot the system and then CADAS goes back to normal operation most of the time afterward. Since this solution is only reactive though, it means that those same disturbances can happen again at any time without notice. They admitted that most of these disturbances do not result in permanent damage but could be operationally dangerous if they happen during critical tasks requiring immediate action. The effect of instability in CADAS becomes clearer when compared

with SOP.012 on NOTAM/SNOWTAM request correction and evaluation which requires confirmation results to be verified within ten minutes after data submission; this can only be achieved under stable conditions! When CADAS hangs up, delays are inevitable since one has to wait for technical restoration before continuing with processing hence creating a gap between what is required by procedures and what happens in reality during operations.

For long disruptions, personnel turn on alternative procedures like disseminating NOTAMs via email or the Web Flight Plan system and noting related activities by hand in the NOTAM logbook; these procedures guarantee that information distribution keeps going though they are not always used consistently during small disruptions—in some cases incomplete manual entries make personnel look for reference data using NavGate or OneDrive which adds to processing time and lowers efficiency. The results indicate that CADAS instability constitutes the most significant challenge in the current operating environment. While the system supports the NOTAM workflow under normal conditions, unpredictable disruptions can affect the drafting, verification, and transmission processes. Such instability prevents the unit from meeting time-critical procedural requirements, highlighting an urgent need for enhanced system reliability and more consistent application of alternative procedures.

Table 2. Summary of CADAS Operational Issues Identified from Interviews

Aspect	Findings
Frequency of Disruptions	Occur irregularly; 1–2 times per month, sometimes more; some months without disruption.
Types of Errors	Sudden shutdown, inability to transmit/receive raw NOTAM data, intermittent system delays.
Initial Response	Contact technician; system restart conducted under technician guidance.
Recovery Effectiveness	System generally returns to normal but issue may reoccur.
Operational Impact	Workflow interrupted, especially during urgent NOTAM issuance.
Alignment with SOP.012	Ten-minute verification rule cannot be met during disruptions.
Fallback Procedures	Email/Web Flight Plan transmission; manual logbook documentation.
Challenges in Record Retrieval	Missing manual records require checking NavGate or OneDrive.
Primary Issue Identified	CADAS instability reduces operational efficiency and reliability.

Table 2 summarizes the key operational issues identified from the interviews with AIS personnel. It provides a structured overview of how CADAS instability affects daily workflow, including the frequency and nature of disruptions, personnel responses, and the broader operational impacts. The table highlights that disruptions occur without a predictable pattern and vary in severity. Personnel rely heavily on technician assistance because they cannot troubleshoot the system independently, resulting in a reactive approach to system recovery. The table also illustrates that CADAS instability directly interferes with time-sensitive requirements outlined in SOP.012, creating delays in verification processes. Additionally, although alternative procedures are available, they are not applied consistently during minor disruptions, leading to occasional gaps in manual records. These findings collectively emphasize that system instability is the primary operational constraint influencing NOTAM processing performance.

4. Discussion

The NOTAM workflow within the Palembang AIS unit is governed by SOP.012, which pertains to NOTAM/SNOWTAM request correction and evaluation. Under normal circumstances, the workflow commences with the receipt of raw NOTAM data from various sources. Then, personnel draft the NOTAM manually in CADAS since there are no automatic templates or built-in historical search functions available in the system. Therefore, accuracy and efficiency in drafting depend on operator skill—especially when there is an increasing volume of NOTAM activity. After drafting, it will be verified and transmitted through AFTN as well as archived within the system for this unit to comply with SOP requirements such as a ten-minute verification standard. The operational challenges manifest when there is instability in CADAS. From interviews conducted, disruptions happen without following any particular pattern; for example, sudden crashes of the system or failure to send and receive raw data. Under these conditions, it would be very difficult for personnel to meet timing requirements specified in SOP.012 since operators cannot troubleshoot the system by themselves but have to wait for a technician who can restore its functionality. Thus, verification and transmission may not always be accomplished within the stipulated time frame. This gap between what is expected by procedure and what actually happens due to system performance creates delays that would not exist in a fully stable operating environment.

When CADAS is down and unresponsive, personnel use fallback procedures to keep things going. They send NOTAMs out through email or the Web Flight Plan system instead. They write down details in the NOTAM logbook as a backup record, but this doesn't always happen during small problems. If manual entries are missing, they have to use either NavGate or OneDrive to get what they need which takes longer and makes everything less efficient. Still, these backup plans make sure that NOTAMs get sent out so that service doesn't completely stop. The mitigations implemented by AIS personnel show their efforts to adapt to instability while still trying to follow procedures as closely as possible. Training focuses on quickly switching over to alternative communication methods, structured manual recording, and fast coordination with technicians. Though these steps do not give back all of CADAS' features, they provide temporary fixes that let important work continue until the system can be fixed. In general, the conversation brings forward two main points that are in line with the study's research questions. First, the NOTAM workflow in Palembang follows the set procedural order since CADAS is used as the main system for drafting, verification, and transmission. Second, the effectiveness and efficiency of the workflow depend on how much instability there is in the system. Although CADAS allows for routine operations, unpredictable disruptions create gaps between what is required by the procedure and what is actually done. The current mitigation strategies help to reduce disruption impacts but also highlight an urgent need for improved system reliability to ensure consistent compliance with SOP.012 and maintain operational performance.

5. Conclusion

The CADAS system remains the primary tool for drafting and receiving NOTAMs at the Palembang Aeronautical Information Service. Although operational procedures are followed correctly, CADAS continues to exhibit unpredictable disruptions, including sudden shutdowns, system errors, and failures in sending or receiving data. When these disruptions occur, personnel must wait for technical assistance, as they are not authorized to perform system repairs independently. During this period, NOTAM transmission shifts to alternative channels such as email or the Web Flight Plan system, while documentation is recorded manually through forms and the NOTAM logbook. Regular verification of these manual records is essential to ensure that no NOTAM is

overlooked.

Improving the effectiveness of the NOTAM workflow requires consistent documentation practices, proper use of alternative procedures during system interruptions, and enhancements to the CADAS platform. Potential improvements include the addition of historical search features, automated drafting templates, expanded storage capacity, and improved overall system stability. Routine reporting of disruptions in accordance with existing procedures, accompanied by periodic evaluations, will support the identification of recurring issues. Regular training is also necessary to ensure that personnel can respond efficiently during system failures. Through these measures, even with recurring CADAS instability, the NOTAM workflow can continue smoothly and documentation can remain complete and reliable. Strengthening both the system and the operational response framework will contribute to more dependable aeronautical information services.

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