WebCM Training

Case File Origination

WebCM work flows.

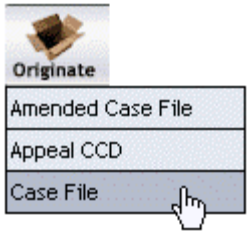
Case File Origination

Objectives:

- Upon completion of this module, you will know how to:
  - Originate a Case File
  - Delete a Draft Case File
  - Modify a Case File
  - Print a Case File
  - Submit a Case File for formal processing.
  - Originate an Amended Case File
  - Originate a Request for an Emergency Change

Case File Origination

Origination



- Once the applicable fields have been completed (minimally page one of the Case File forms), the Case File can be saved. It will remain in your Inbox until it is submitted to the next step in its associated workflow.

- Once saved, the Case File is considered a draft and will remain so until it is submitted to the next step in its associated workflow. Note that the Case File number will include the text "DRAFTCF".

Case File Origination

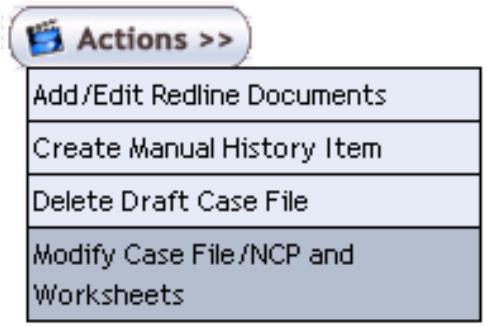
Origination - Case File page 2

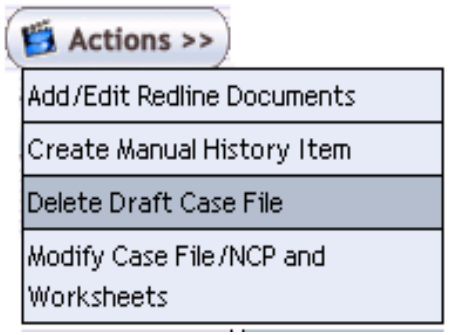
- When you create a new Case File, notice that the second page of the Case File form is read-only. Instead, they are automatically populated by WebCM as each Case File moves through its life cycle. The same is true for the other forms that comprise a Case File package, including the Must Evaluation forms and pages 1 and 2 of the NAS Configuration Control Decision (CCD) form.

Case File Origination

Modifying/Deleting a Draft Case File

- While the draft Case File is in your Inbox, you can modify it or delete it as desired.
- Note that a draft Case File that has been deleted will be completely removed from the system. Once deleted, it cannot be referenced in any way and it is as if the Case File never existed.
- Once the Case File has been submitted to its next workflow step, it cannot be deleted.



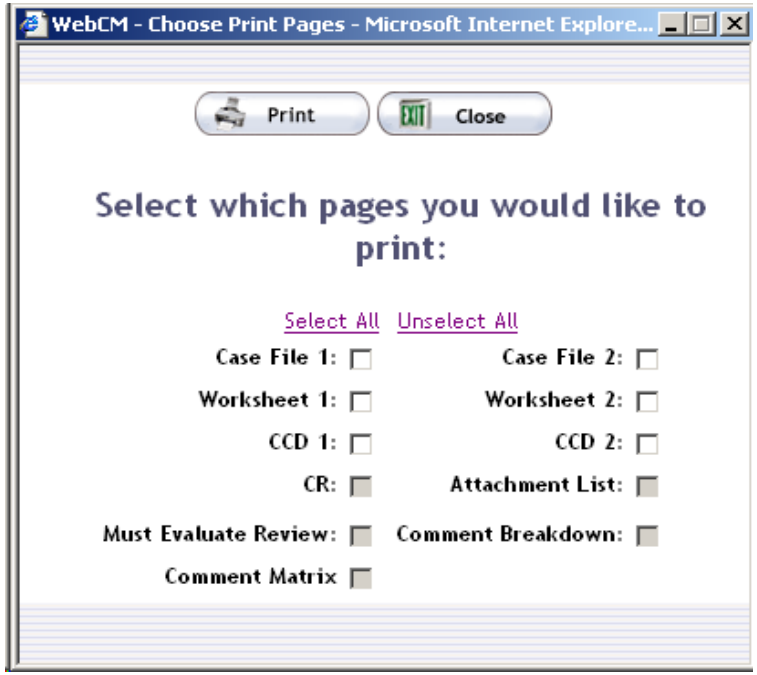


Case File Origination

Printing a Case File

- When viewing a Case File in read-only mode a "Print" button is available. You are able to select one or more pages of the Case File/NCP/CCD forms for printing.

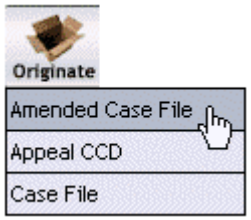
(1) Check the check boxes associated with the Case File/NCP/CCD pages you wish to print....



(2) Click the "Print" button to print the pages you selected below.

Case File Origination

Case File Amendment



- You may create an amended Case File that is based on a previously withdrawn item (i.e., Case File/NCP/CCD).

- Draft Case Files that have been withdrawn or deleted are not eligible.

- An amended Case File is a copy of the work item that you specified, with these exceptions:
  - Fields that are user-dependent (such as the "Case File Originator" field) will be re-populated with your information.
  - Fields that are populated later in the Case File life cycle are set to blank (for instance, the "NCP Number" field on page 1 or any of the fields populated during reviews on page 2).
  - The existing value (if any) in Box 22a (i.e., "Description/Identification of Problem") on Case File page 1 will be appended with additional text to note that the new Case File is an amendment of the original work item.

Case File Origination

Case File Amendment

- By default the Case File number of an amended Case File will include the text "AMEND" to indicate that it is a draft Case File. Once you have submitted the Case File to the next step in its workflow, "AMEND" will be removed from its number (i.e., the amended Case File is no longer a draft).

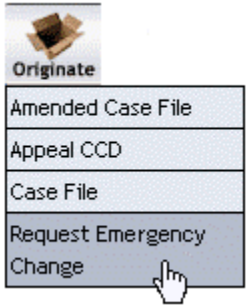
- In addition, the next sequential letter in the alphabet is appended to the Case File number to indicate that the Case File has been amended. If the work item on which the new amended Case File was based was previously assigned an NCP # or a CCD #, then the NCP # and/or CCD # assigned to the amended Case File will also include a letter.
  - Note that the letters 'I', 'O', 'Q', 'S', 'X', and 'Z' are invalid revision letters.

Case File Origination

Emergency Changes

- WebCM supports an Emergency Process that is closely related to Case File Origination. This process is limited to users associated with Field/Site or SMO organizations.

- The Emergency Process involves the Facility/SMO Manager for approval. Once approved, the Organization Manager is responsible for implementing the change. An emergency Case File is then created and processed.



Case File Origination

Submittal

- Following Case File origination, you have the option of forwarding the draft Case File to another user for a preliminary review.
  - The reviewers will have the opportunity to review the draft Case File, make their own modifications, add attachments, etc.
  - When the time comes to submit the Case File, the reviewer's only option will be to return it to you (i.e., the originator).
- Once you are satisfied that the Case File is ready for formal processing, you can submit it to the next step in its workflow as defined for your organization.
  - Once you have submitted the Case File to the next step in its workflow, the "DRAFTCF" text will be removed (i.e., the Case File is no longer a draft) and the system generates the real Case File number based on the combination of the CI and the organization specified in Box 1 of the Case File.

CHICAGO O'HARE INTERNATIONAL AIRPORT (ORD)

ADVANCED ELECTRONIC FLIGHT STRIPS (AEFS)

Safety Risk Management Document (SRMD)

Version 1.3

May 31, 2007

Signature Page

Title: Chicago O'Hare Advanced Electronic Flight Strip (AEFS) Safety Risk Management Document (SRMD)

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Change History

Version	Date	Description of Changes
1.0	February 22, 2007	Initial version submitted for signature
1.1	March 1, 2007	Minor typos addressed on signature page
1.2	May 15, 2007	Comments from ATO-W expressed and reviewed, document "cleaned up", Signature Copy
1.3	May 31, 2007	Comments expressed and reviewed, document "cleaned up", Signature Copy

Executive Summary

The ORD modernization program has proposed the addition of two new towers (North and South). These towers will be operated in conjunction with the existing tower, which will be designated as the main tower. With this new physical airport configuration, centralized operations will also be accommodated by the main tower which will be readily configurable to simultaneously accommodate the North and South tower configurations.

The AEFS system will provide ORD controllers with a real time, secure, efficient and effective means of distributing flight strips electronically. The system will support multiple towers located at a single airport. The system will distribute and manage electronic flight strip operations within a single tower and between multiple towers without affecting ATC operations.

This AEFS Project has risks associated with it and a Safety Management System Risk Analysis was conducted to identify, mitigate and or eliminate risks as necessary. Human factors studies were also conducted by ATO-terminal human factors specialist on AEFS Touch-Screen issues and are referenced in the documentation as well.

The evaluation team consisted of representatives from the ORD ATCT controller staff, supervisor staff, and management staff along with AEFS System Engineers and Computer Specialist from the FAA William J. Hughes Technical Center in Atlantic City New Jersey.

The analysis consisted of developing, tailoring, and finally assessing a list of hazards associated with operations from the ORD ATCT. A total of 81 preliminary hazards were identified for the AEFS program and all risks are currently defined at an acceptable risk level. The 22 medium risks have safety recommendations associated to achieve the target risk level of low. The table below represents the initial risk findings "without" the recommended safety requirements in place.

Table 1: ORD AEFS Initial Risks

#	Hazards	#
1	High Risk (Red)	0
2	Medium Risk (Yellow)	22
3	Low Risk (Green)	59
4	Total	81

In order to mitigate the potential risk identified, the SRMP has identified the necessary safety requirements resented in the table below. A more detailed description of all the identified hazards is in Appendix C.

1. Develop AEFS Testing plans and procedures to incorporate the risks associated with SW Failure.
2. Update Local ORD Standard Operating procedures to accommodate the use of AEFS
3. Complete AEFS Maintenance Handbook

The predicted residual risk, with the implementation of the identified safety requirements is as follows:

#	Hazards	#
1	High Risk (Red)	0
2	Medium Risk (Yellow)	0
3	Low Risk (Green)	81
4	Total	81

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Introduction

In 2006, Chicago O'Hare International Airport (ORD) handled over 900,000 air traffic operations, which are estimated to increase by 28% to approximately 1.0 million operations by next year. In addition, ORD is planning a major modernization of the airport infrastructure to include 3 new runways and numerous new taxiways. It is estimated that these improvements will ultimately accommodate 1.6 million operations per year (approximately double the current traffic flow).

This increase in traffic will require a corresponding increase in the efficiency of ATC operations and must be accomplished without compromising existing levels of safety. Given the inherent inefficiencies associated with the handling of paper-based flight strips, it is difficult to envision how these goals will be met without the introduction of an electronic alternative. The nature of air traffic control requires that controllers respond quickly and consistently to high traffic demands, adverse weather conditions, and/or emergences. With paper-based flight strips, it is common for controllers to be distracted from direct consideration of aircraft operations for several seconds to accomplish flight strip hand-offs. As air traffic increases and decisions become more time critical, these distractions will inevitably lead to an increase in operational errors.

In addition, the ORD modernization plan provides for the construction of two new ATC towers to be operated in conjunction with the existing tower facility. In the highly complex ATC operating environment that will result, the use of paper-based flight strips will not be practical since the controllers will no longer have a means for accomplishing flight strip hand-offs. This problem can easily be resolved with the introduction of an electronic alternative.

Section 1 – Current System / System Baseline

Paper-based flight strips provide air traffic controllers with a physical representation of aircraft and are used by the ATC throughout the NAS to coordinate and plan operations regarding individual flights. Within the ATC tower at ORD, these operations are predominantly concerned with arrivals, departures, and surface movement of aircraft on the airport grounds. As flights are processed through their arrival/departure/surface movement sequences, their corresponding flight strips are passed from one controller to the next – each of who is concerned with a specialized segment of the overall sequence to be completed.

Currently, the Flight Data Input/Output (FDIO) printer based on flight data provided by the Host and Oceanic Computer System Replacement (HOCSR) system automatically introduces flight strips into the ATC tower. In addition, controllers may prepare flight strips manually for managing aircraft movements that do not require the filing of a flight plan (i.e. the movement of aircraft between two locations on the ground). Once an aircraft is processed through an operation, its corresponding flight strip is discarded.

Paper-based flight strips provide basic flight plan information needed by the controllers to efficiently process air traffic for the ORD facility. As a flight strip is passed from one controller to the next, status updates are recorded directly on the strips. These updates are recorded in designated locations via handwritten entries using a system of shorthand notations designed to minimize controller interaction times. This same system is used at ATC facilities throughout the country. However, the exact syntax of notations varies from one facility to the next since flight strip updates are intended only for use within the local facility. When information is to be shared with other facilities, flight strip amendments are submitted via the FDIO interface for transfer to the HOCSR. Whenever a flight strip is amended, whether internally or externally, a new flight strip is automatically printed at the FDIO printer to replace the outdated flight strip, which is then discarded.

Flight Strip Movement & Flow

Figure 1 and Figure 2 show the flow and movement of flight strips within the ATC operational environment for departure and arrival sequences and responsibilities at ORD, respectively. These flows are representative of AT operations at most major airports. They also show the division of responsibilities and the interdependent nature of AT control positions. Local facility operational requirements dictate the actual responsibilities and sequence of events within the ATC tower. The departure and arrival operational flow functions, which are illustrated in Figure 1 and Figure 2, provide the framework for the development of the AEFS requirements.

Departure Operational Flow Responsibilities

The following provides a list of the major departure operational flow functions which are performed by the ATC and TM positions:

- Traffic Management(TM)/Operational Supervisor (OS)
    - Informs the respective controller of any route changes due to weather/restrictions/special cases
    - Monitors traffic flow

- Provides directions to the respective controller in case of any changes
- Amends flight plan in FDIO
- ATC supervisor monitors the ATC tower operations

- Flight Data Clearance Delivery (CD)
  - Checks facility Directives to verify the route of flight and requested altitude
  - Clears the flight plan as filed or modified
  - Assigns transponder code, altitude, departure control frequency etc.
  - Restricts altitude if necessary
  - Informs the Pilot of any route changes
- Ground Metering (GM)
  - Monitors Outbound traffic
  - Monitors Ground Control frequency
  - Provides outbound information to Traffic Management (TM)
  - Sends modified/corrected Flight strips back to the clearance delivery
- Ground Control (GC) - Out Bound
  - Provides instructions/clearance for taxi
  - Coordinates active runway crossings with local controller.
  - Receives instructions from TM if an aircraft needs to be delayed on ground or rerouted
  - Coordinates taxi clearances/handoffs with other Ground controllers (outbound and inbound)
  - Request/Relay flight strip modification to clearance delivery/TM
  - Informs the pilot of any route changes
- Local Control (LC)
  - Enforces runway standards
  - Clears aircraft to take-off
  - Clears aircrafts/vehicles for runway crossings
  - Assigns heading
  - Instructs pilot to contact departure

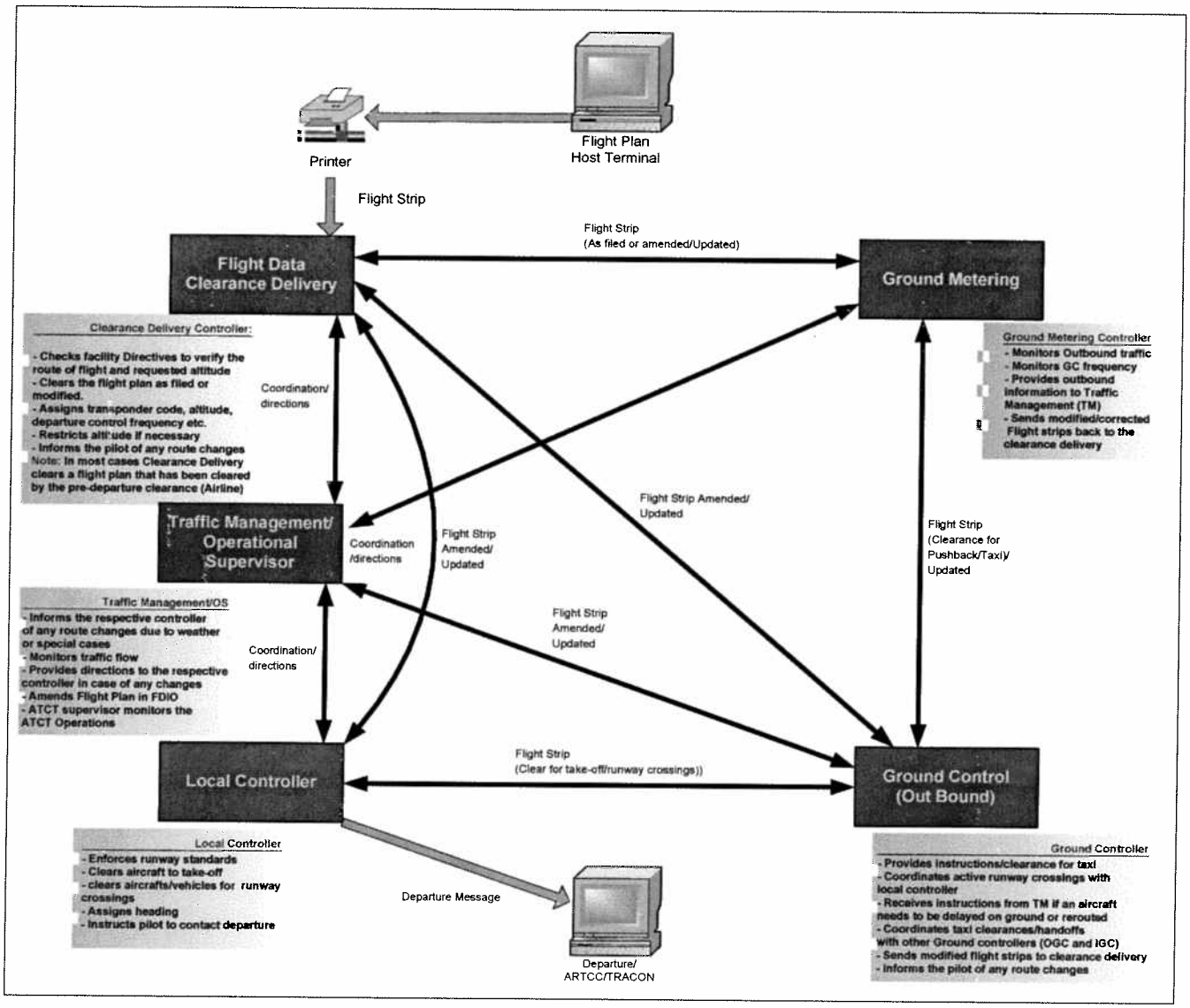


Figure 1 Departure Sequence

Arrival Operational Flow Responsibilities

The arrival controllers perform the following functions based on the current arrival event sequence illustrated in Figure 2:

- Local Control
  - Identifies aircraft on the automation system or is contacted by the Pilot
  - Ensures arrival separation
  - Enforces runway standards
  - Clears aircraft to land
  - Clears aircrafts/vehicles for runway crossings
  - Assigns ground communications frequency

- Ground Control (GC) - Inbound
  - Provides instructions/clearance for taxi

- Coordinates active runway crossings with Local controller
- Coordinates with other Ground controllers
- Instructs the aircraft to contact the ramp control

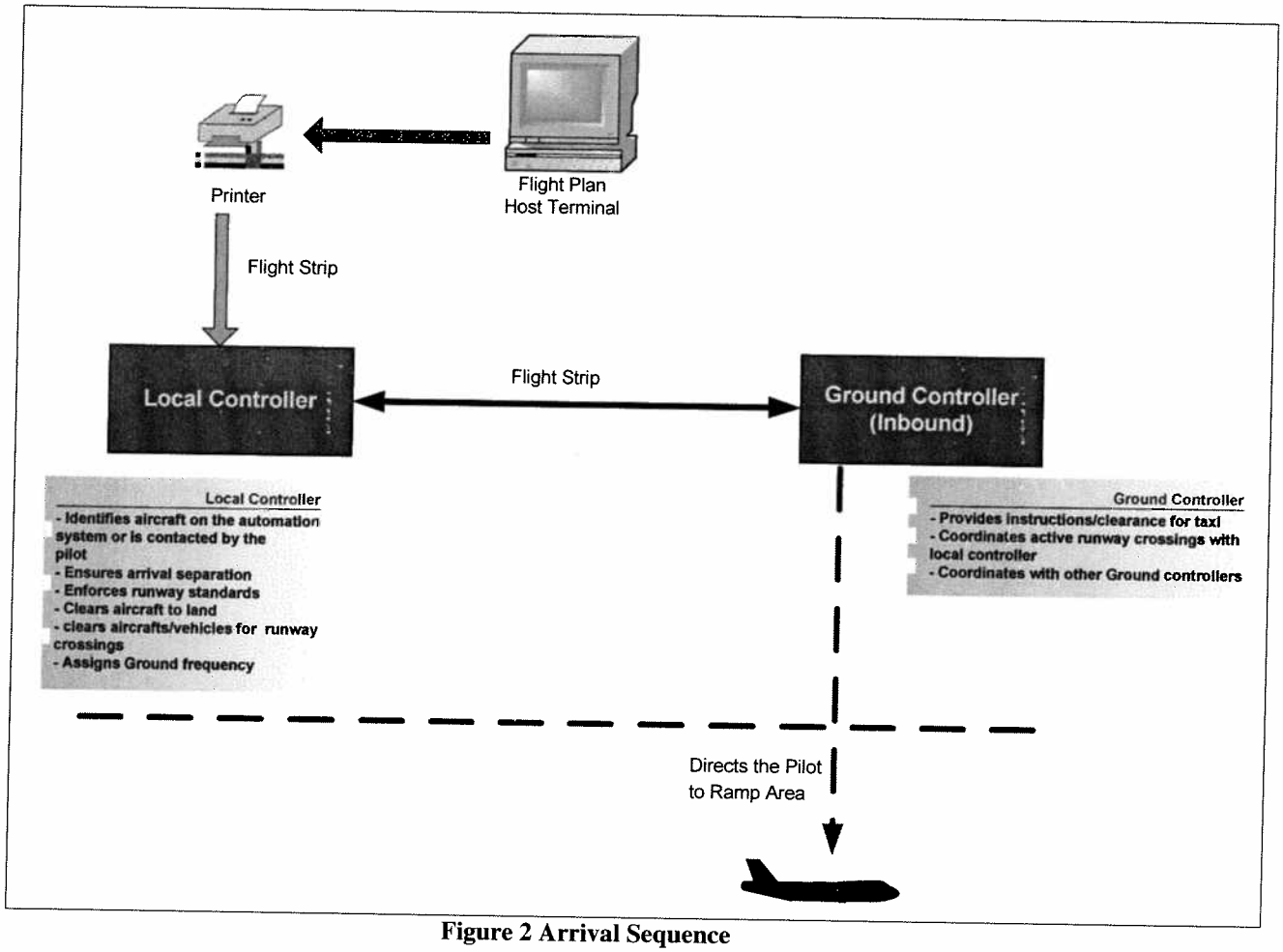


Figure 2 Arrival Sequence

Section 2 – Proposed Change

Each airport has special requirements, which dictate local variations in ATC operations and the implementation of their Flight Strip systems. Local traffic loads and airspace restrictions as well as runway and tower configurations usually dictate these variations. The goal is to develop an extensible electronic flight strip system, which will address ORD's present and future requirements and serve as a model for future implementations at other ATC facilities throughout the NAS.

The ORD modernization program has proposed the addition of two new towers (North and South). These towers will be operated in conjunction with the existing tower, which will be designated as the main tower. With this new physical airport configuration, centralized operations will also be accommodated by the main tower which will be readily configurable to simultaneously accommodate the North and South tower configurations.

The AEFS system will provide ORD controllers with a real time, secure, efficient and effective means of distributing flight strips electronically. The system will support multiple towers located at a single airport. The system will distribute and manage electronic flight strip operations within a single tower and between multiple towers without affecting ATC operations. The AEFS system will increase controllers' ability to manage AT operations more effectively thus potentially increasing throughput. Once a flight strip is received from the HOCSR via FDIO, the AEFS system will distribute it electronically to touch screen displays located at Air Traffic Control (ATC) and Traffic Management (TM) positions. With the AEFS, controllers will have all the functionality currently provided by the paper-based system. Controllers will be able to implement flight strip amendments and updates; transfers between control positions; placing on hold; and removal from operations. In addition, the AEFS system will accommodate the printing and viewing of ATC and system performance data to network printers (Note: The AEFS system will not print to the IER Thermal printers).

The AEFS will process and distribute electronic flight strips amendments to the respective users (ATC tower personnel) and NAS systems. The AEFS will have the capability to send and receive information from FDIO. AEFS interfaces will also be extensible to include EFSTS, and ARMT.

Section 3 – Safety Risk Management Planning and Impacted Organizations

The target audience for this SRMD is the AEFS Program Management, ATO-T (risk acceptance and SRMD approval). This analysis is provided to gain an understanding of what risks are involved in the operational aspects of the AEFS capability at Chicago O'Hare.

Impacted Organization:	ATO-T
Involved Organizations:	ATO-T (AEFS Program Office), Air Traffic Control Specialists, Technical Operations Support Specialists, ATO-S
SRMD Approval:	ATO-T, Terminal Safety and Operations Support
Risk Acceptor:	ATO-T, Terminal Safety and Operations Support

The following members and representative organizations participated on the AEFS Safety Risk Management Panel (SRMP). Members were selected or appointed to provide input and expertise from all impacted and interested stakeholders. Additional participants were called upon during the conduct of the AEFS analysis for specific data and related information.

The Safety Risk Management Panel (SRMP) included:

• Mike Hannigan	AT-ORD
• Bill Spencer	AT-ORD
• Anthony Hearts	Tech Ops-ORD
• Fred Rashe	ANI
• Peter TA	ANI
• John Morgan	ATO-Terminal EFSTS
• Guy Monhollen	ATO-Terminal EFSTS
• Joel Knee	ATO-Terminal EFSTS
• Mike Falteisek	ATO-Terminal Safety
• Kevin Markwell	AT-ORD Support Manager
• Kathy Peterson	CTSA-510
• Steve Cooley	Terminal HF Lead

The SMS SRM 5-Step process was followed in the development of the AEFS SRMD. Stakeholder participants meet on a regular basis to work all five steps of the process, which was conducted under a schedule designed to meet the Program Office implementation goals. Participants were assigned tasks and responsibilities. Meetings were recorded and notes and action items were distributed to the SRMP. The "What if" tool, as well as other analytical techniques; such as Functional Analysis, were used throughout the 5-Step SRM process.

Section 4 – Assumptions/Constraints

The evaluation team identified several assumptions for this project, which are critical for a successful transition to AEFS. The following assumptions have been identified by the team members as "must have" items prior to operation of the AEFS system:

1. The required courses will be provided to operate and maintain the AEFS system at ORD.

2. The AEFS System is considered a piece of Critical NAS Equipment and is on critical power at the facility.

3. ORD ATCT will operate AEFS in accordance to FAA Order 7110.65

4. AEFS has automatic redundant capability

5. System state, as defined for the AEFS is defined to include:
   - IFR in IMC;
   - Maintenance activities;
   - Installation activities

6. It is assumed that the AEFS architecture components and configuration, for the purposes of this SRMD, are consistent with documentation (software specification, system specification, etc.) the Program Office provided at the inception of these analyses.

The evaluation team identified several constraints/limitations for this project, which are critical for a successful transition to AEFS.

1. AEFS is design and built for ORD only

Section 5 – Phase 1: System Description

The system concept diagram in Figure 3 shows the information flow across the AEFS system. Regardless of the operational configuration that is used or the physical location of individual controllers, each controller position will have access to the AEFS system to provide seamless integration of ATC operations at ORD. Traffic Management (TMU) and Operational Supervisors (OS) will also have control and monitoring capabilities.

The AEFS will receive data from the Flight Data Input/Output server located in the tower equipment room. The FDIO server receives its data from HOCSR also called the host located at the Enroute center. The system will connect to FDIO via the PC-RCU (Personal Computer-Remote Control Unit) to receive flight strip data. Also, the system will support a two way interface to the FDIO system to transmit flight strip amendments. In the future, this interface may provide the electronic strips directly to AEFS. Future interfaces to external systems may include ARMT and CARTS/STARS.

The system will support standard electronic displays and touch screen display; with virtual keyboards for data entry; and printers. It will directly connect to electronic displays through the Local Area Network connection. Each electronic display will have the same functionality, but the AT functionality may vary by controller position.

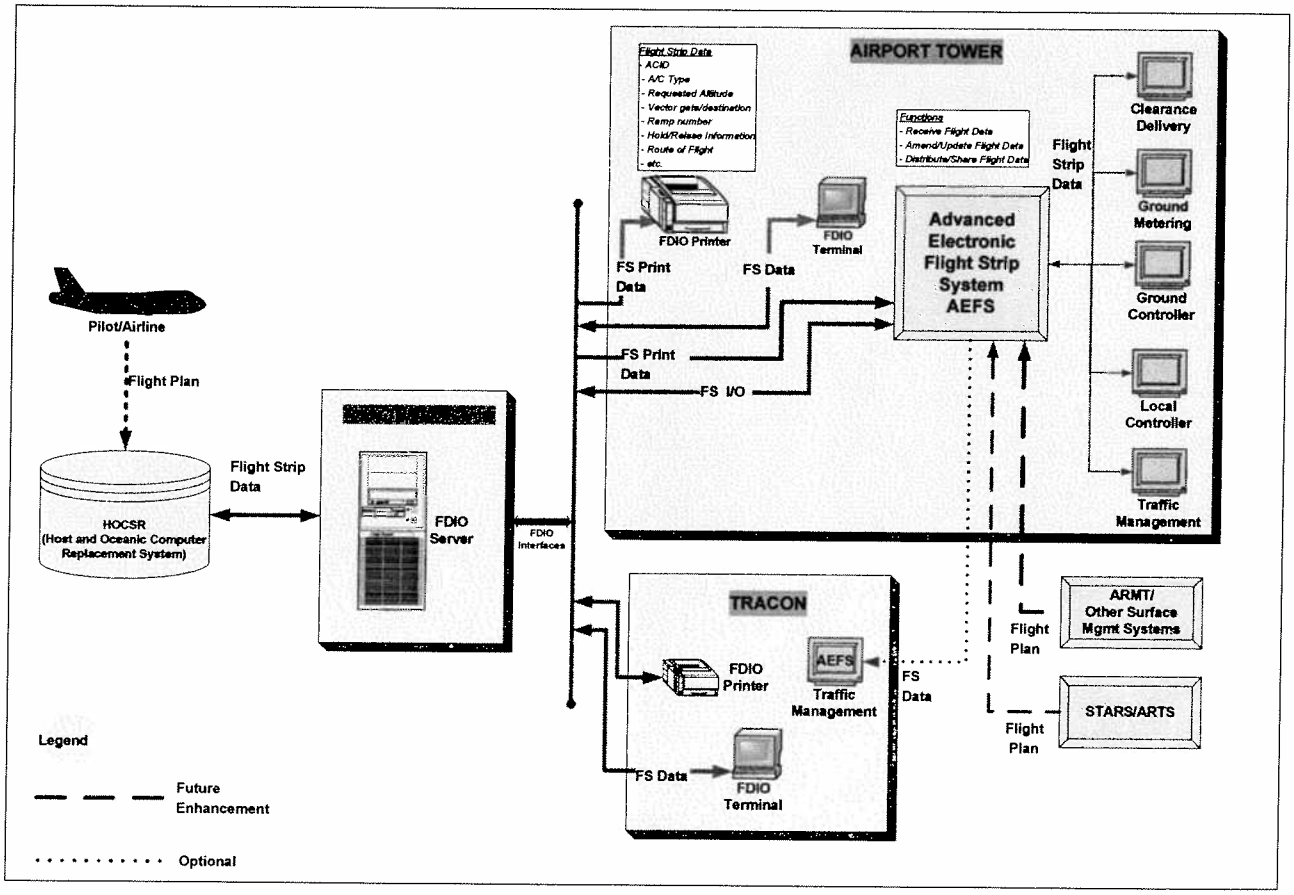


Figure 3 Advanced Electronic Flight Strip System Concept Diagram

To meet the user's requirements, the AEFS GUI is designed with touch-screens as the primary input device. Therefore, no mouse or keyboard dependent input methods are used in the design. A soft keyboard is provided when required for user data entry via the touch screen. However, using a mouse or keyboard is not restricted.

There are five basic controller positions supported in the AEFS system. This section provides an overview of the screen layout of each the controller positions. Many of the capabilities required for normal operation span all positions. For simplicity, the major screen elements are consistent across all positions. Many attributes of onscreen elements such as color and font are also consistent. The display layouts, while similar, are tailored based on the positions' ATC functions and the airport's air traffic demand and operational configuration.

General Layout

The standard screen is divided into three main operational areas: control and transfer buttons, flight strip queues, and the Update/Amendment window. These areas are shown in Figure 4.

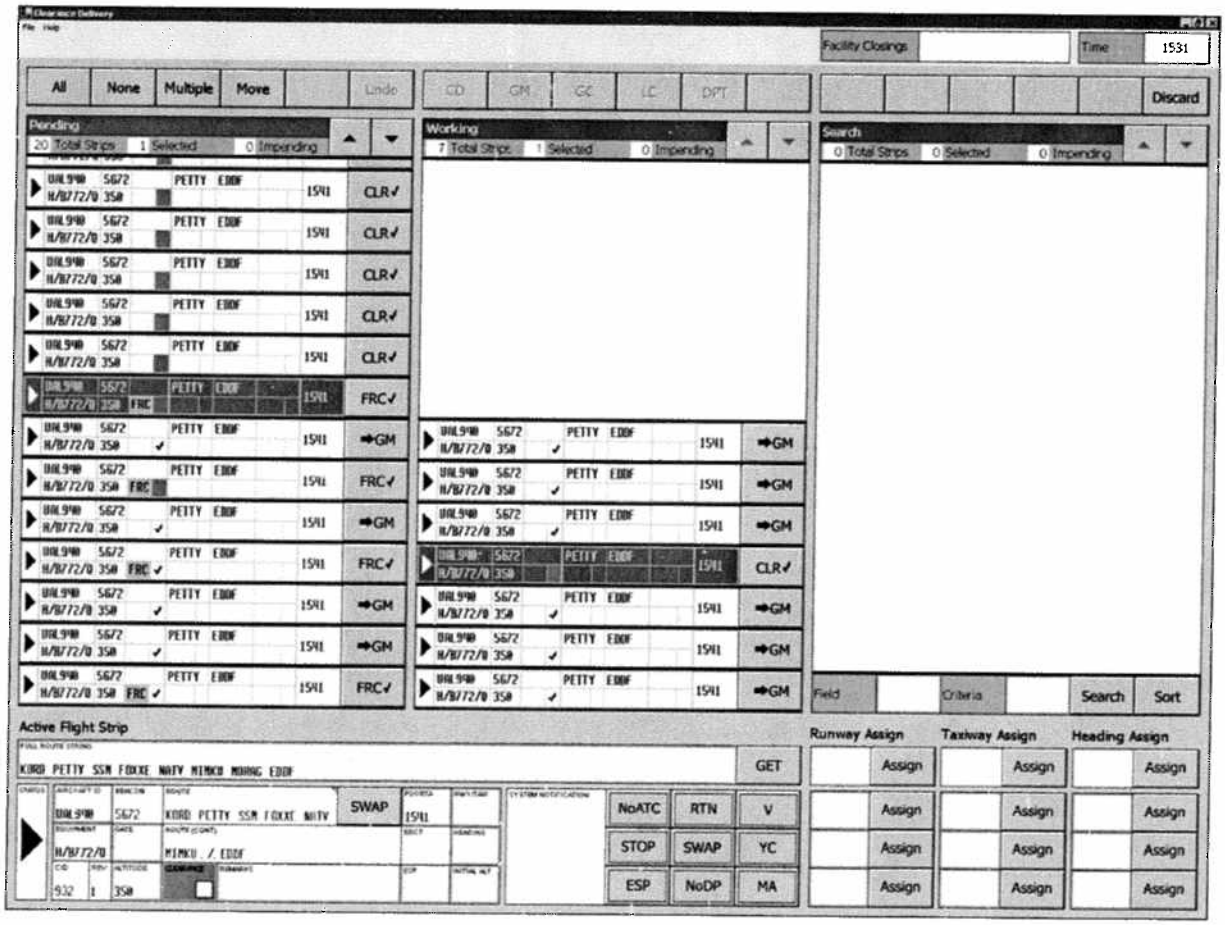


Figure 4 – Screen layout – Operational areas

The control and transfer buttons allow the user to control selection, movement, and transfer of the flight strips in the queues. Queues provide a way for the user to categorize and sort their flight strips. The flight strips shown in the queues are only an abbreviation of the full set of

flight strip information, and are not directly editable. Some queues, such as a search queue, allow users to view flight strips that they are not currently controlling.

The Update/Amendment (U/A) window shows the full flight strip, and allows user edits. It also simplifies the most common actions for some positions by showing quick select buttons for runway, taxiway, and heading assignment.

Controller Positions

The tower air traffic controllers watch over all planes traveling through the airport's airspace, and are responsible for organizing the flow of aircraft into and out of the airport. Each plane is monitored using flight plan information, radar and visual observation. The controllers ensure a safe distance between all aircraft and guide pilots between the hangar or ramp and the end of the airport's airspace. There are five types of controllers in the air traffic control tower:

a. Clearance Delivery

b. Ground Metering

c. Ground Control

d. Local Control

e. Traffic Management

For the tower controllers, the primary source of aircraft flight plan information is the flight strip. Flight strips are used to direct the aircraft and vehicles on the ground. For departure aircraft, the flight strips are printed at the clearance delivery position via the Flight Data Input Output (FDIO) printer. After the clearance is issued to the departing aircraft, the flight strip is transferred to the ground metering position. The pilot contacts the ground-metering controller when he is ready to push back. At this point, the ground-metering controller transfers the flight strip to the ground controller. The ground controller directs the aircraft through the taxiways to its assigned runway and transfers the flight strip to the local controller. The local controller clears the aircraft for take-off and sends the flight strip to the TRACON.

For arrival aircrafts, this operation is completely reversed. The local controller clears the aircraft for landing. Once the aircraft has cleared the runway, the ground controller directs the aircraft to its assigned gate.

The electronic flight strip environment mimics the paper flight strip operation by providing the means to display, transfer, update, amend, and receive flight plan information. The variations for each controller position are listed below.

Clearance Delivery

Clearance delivery receives flight strips in the Pending queue. The Working queue is provided as a temporary holding space if more time is required to process a flight strip. Because the clearance delivery position often works with flight strips that are at other positions, there is a search queue to access flight strips located throughout the system.

Ground Metering

The ground metering screen is divided into four airline-specific queues. As flight strips are transferred to ground metering they are automatically sorted into the proper queue. Based on O'Hare's requirement, United, American, and American Eagle each have a devoted queue. The

fourth queue is for all other airlines. Also, flight strips at ground metering are automatically sequenced based on the flight number. The queues do not allow manual sequencing, and flight strips cannot be moved between queues.

Ground Control

The ground controller position consists of three queues – Pending, Rightbound, and Leftbound. Flight strips transferred from other controller positions to the ground controller appear in the pending queue.

Local Control

The number of queues for local controller position is dependent on the number of runways the controller is controlling, and how those runways are being used. Below each set of runway queues are status buttons for clearing aircraft and putting aircraft in position and hold status. By default, flight strips transferred to local control go to the Holding queue. If a runway is specified in an incoming flight strip, it is sent to the appropriate queue.

Section 6 – Phase 2: Identified Hazards

The AEFS hazards were pre-identified using an experienced team of air traffic control consultants, AEFS System Engineers and SMS safety experts. This team identified eighty-one (81) hazards based upon the AEFS and Air Traffic requirements **(Appendix C),** which could potentially impact the air traffic controller's ability to perform their daily tasks or could create disruptions within their operational area. All hazards were also identified during a system state of any time of the 24/7 operations. The evaluation team also decided to use a qualitative approach when determining risk and likelihood as determined by ORD ATCT expertise and AEFS System Engineering expertise.

The 81 hazards were categorized into the following areas:

Interface Hazards
Functional Hazards
◉ Input/Output
◉ Flight Strip Transferring
◉ Flight Restrictions
◉ Flight Strip Amendments
◉ Configuration and Adaptation
◉ AT Controller and Assigned Functions
◉ Print Requirements
◉ Redundancy Requirements
◉ Capacity Requirements
◉ Data Storage and retrieval Requirements
◉ Reliability, Maintainability and Availability
◉ Performance Requirements
◉ Display Hazards
◉ Touch Screen Hazards
Physical Hazards

Table 2AEFS Hazard Categories

Hazards of Greatest Concern

There are no high-risk hazards and 22 medium initial risks that are identified in the AEFS SHA. The remaining low risk hazards can be found in the SHA worksheets in Appendix B of this SRMD.

Hazard #	HAZARDS	Initial Risk
	INTERFACE HAZARDS	
6	Failure to transfer the FS data within the facility (towers and operational positions) and to external interfaces	4B-Medium
7	Transfer invalid FS data within the facility (towers and operational positions) and to external interfaces	3C-Medium
11	AEFS failure to provide the electronic display of flight strip status updates in ATC tower.	2D-Medium
	FUNCTIONAL HAZARDS	
	Input/Output	
17	AEFS system failure to transfer the FS data within the facility (towers and operational positions) and to external interfaces	4B-Medium
18	AEFS system transfers invalid FS data within the facility (towers and operational positions) and to external interfaces	4B-Medium
19	AEFS system failure to distribute flight strip data to all ATC positions.	4B-Medium
20	AEFS distributes invalid flight strip data to all ATC positions.	4B-Medium
	Flight Strip Transfer and Sharing	
26	The AEFS failure to transfer flight strips between the ATC and TM in multiple towers.	4B-Medium
27	The AEFS transfers invalid flight strips between the ATC and TM in multiple towers.	4B-Medium
28	The AEFS system fails to distribution of flight strip updates, amendments and notations to support local tower operations	4B-Medium
29	The AEFS system distribution of invalid flight strip updates, amendments and notations to support local tower operations	3C-Medium

Table 3 Hazard Table

Hazard #	HAZARDS	Initial Risk
	Flight Strip Amendment and Update General Requirements	
35	The AEFS system failure to receive acknowledgement/verification/approval by the ATC or TM before processing and distributing FS updates/amendments.	3C-Medium
	Flight Strip Amendments	
38	The AEFS system failure to provide the capability for authorized users to enter flight strip amendments from menus/lists	3C-Medium
41	The AEFS system failure to forward flight strip amendments to FDIO.	3C-Medium
42	The AEFS system failure to process amended flight strips received from FDIO	3C-Medium
43	The AEFS system failure to identify amended flight strips by including FDIO assigned revision numbers.	3C-Medium
	Flight Strip Updates	
48	AEFS system unable to provide the capability for controllers to view the status of flight strips based on their assigned functions.	3C-Medium
	Reliability, Maintainability and Availability (RMA)	
64	The AEFS system unable protect and maintain the integrity of ATC FS operational data during system failures.	3C-Medium
	Display Hazards	
69	Windowing display capability unable to meet the facility's requirements (1600X1200).	3C-Medium
75	The AEFS failure to provide the capability to display multiple windows of information simultaneously with each window functioning independently.	3C-Medium
76	The AEFS presentation of flight strips data shall be in accordance with FAA human factors and ATC guidelines.	3C-Medium
77	AEFS presentation in each window cause clutter or flicker	3C-Medium

The Medium Risks, although acceptable levels of risk should be mitigated to ensure a safe operation at Chicago O'Hare Airport. Closure occurs when all the safety requirements are implemented, documented, the ATO-T Service Unit and AEFS Program Management accept the risk, and the SRMD is approved by the ATO-T Service Director / Manager level. The safety requirements must be formally implemented in the system design or the system program. This effort must continue throughout the AEFS Program life cycle.

Section 7 – Phase 3 & 4: Risks Analysis & Risks Assessed

Hazard Identification

During the evaluation stage, the team determined that the most meaningful and productive method for evaluating the change would be to examine each AEFS requirements and how it impacted AT operations. A System Hazard Analysis (SHA) using the "what if" model was used on the AEFS program when determining risks.

Describing and Bounding the System

The ORD-AEFS SRMP identified the system as the AEFS System going into the ORD Main Towers and Remote Towers. This also included the equipment needed for maintenance and monitoring.

Risk Assessment Ratings

The likelihood of occurrence for hazards is reduced with the introduction of AEFS testing procedures and training. Efforts need to continue to further reduce their likelihood. For example, having an AEFS Test Plan would help mitigate hazards related to software failures and maintainer operations thus, making AEFS efforts more effective.

For a given hazard description, the severity is first determined using the methodology provided in SMS manual. The likelihood of occurrence was determined based on a qualitative judgment using the experience of the SRMP and consulting with experts familiar with the system and its operation. The intersection of Severity and Likelihood determines the region of risk on the matrix. For example, a "1 C" is of Catastrophic Severity and Extremely Remote Likelihood. Therefore it is in the "High" risk region of the RAC matrix.

Severity Definitions

Severity is determined by the worst credible potential outcome. Less severe effects may be considered analytically in addition to this, but at a minimum, the most severe effects are considered. Likelihood is not considered when determining severity. Determination of severity is independent of likelihood. When determining the severity of a hazard description the "Air Traffic Control" row was utilized for ATC operations and "Flying Public" row used for flight crew operations (see Table 7.1 below).

Hazard Analysis

Worksheets were developed to record the hazards, causes, possible effects, system states, severity rationale, likelihood rationale, current risk, existing safety requirements, recommended safety requirements, and predicted residual risk. The SRMP held a discussion on each of the identified hazards. The purpose of these discussions were to examine the hazard causes, validate the severity of consequence for each of hazards on the worksheet, and assign a qualitative likelihood of occurrence based on the operational and technical expertise of those involved in the hazard analysis. For severity and likelihood definitions, Tables 3 and 4 on the following pages, from the SMS Manual were utilized, respectively.

Table 4 Severity Definitions

Effect On: ↓	Hazard Severity Classification				
	No Safety Effect 5	**Minor 4**	**Major 3**	**Hazardous 2**	**Catastrophic 1**
Air Traffic Control	Slight increase in ATC workload	Slight reduction in ATC capability, or significant increase in ATC workload	Reduction in separation as defined by a low/moderate severity operational error (as defined in FAA Order 7210.56), or significant reduction in ATC capability	Reduction in separation as defined by a high severity operational error (as defined in FAA Order 7210.56), or a total loss of ATC Capability (ATC Zero)	Collision with other aircraft, obstacles, or terrain
Flying Public[1]	- No effect on flight crew - Has no effect on safety - Inconvenience	- Slight increase in flight crew workload - Slight reduction in safety margin or functional capabilities - Physical discomfort of occupants	- Significant increase in flight crew workload - Significant reduction in safety margin or functional capability - Physical distress possibly including injuries	- Large reduction in safety margin or functional capabilities - Serious or fatal injury to small number of occupants or cabin crew - Physical distress/ excessive workload	Outcome would result in: - Hull loss - Multiple fatalities

[1] For more information regarding these definitions, refer to FAA Advisory Circular 25.1309-1A, *System Design Analysis*, 06-21-88.

Table 5 Likelihood Definitions

	NAS System Hazards			Flight Procedures Hazards	Operational Hazards	
		Qualitative				
	Quantitative[1]	Individual Item/System	ATC Service/ NAS Level System[2]		Per Facility[3]	NAS-wide[4]
Frequent A	Probability of occurrence per operation/operational hour is equal to or greater than $1x10^{-3}$	Expected to occur frequently for an item	Continuously experienced in the system	Probability of occurrence per operation/ operational hour is equal to or greater than $1x10^{-5}$	Expected to occur more than once per week	Expected to occur every 1-2 days
Probable B	Probability of occurrence per operation/operational hour is less than $1x10^{-3}$, but equal to or greater than $1x10^{-5}$	Expected to occur several times in the life of an item	Expected to occur frequently in the system		Expected to occur about once every month	Expected to occur several times per month
Remote C	Probability of occurrence per operation/operational hour is less than $1x10^{-5}$ but equal to or greater than $1x10^{-7}$	Expected to occur sometime in the life cycle of an item	Expected to occur several times in system life cycle	Probability of occurrence per operation/ operational hour is less than $1x10^{-5}$ but equal to or greater than $1x10^{-7}$	Expected to occur about once every 1 -10 years	Expected to occur about once every few months
Extremely Remote D	Probability of occurrence per operation/operational hour is less than $1x10^{-7}$ but equal to or greater than $1x10^{-9}$	Unlikely but possible to occur in an item's life cycle	Unlikely but can reasonably be expected to occur in the system life cycle	Probability of occurrence per operation/ operational hour is less than $1x10^{-7}$ but equal to or greater than $1x10^{-9}$	Expected to occur about once every 10-100 years	Expected to occur about once every 3 years
Extremely Improbable E	Probability of occurrence per operation/operational hour is less than $1x10^{-9}$	So unlikely, it can be assumed that it will not occur in an item's life cycle	Unlikely to occur, but possible in system life cycle	Probability of occurrence per operation/ operational hour is less than $1x10^{-9}$	Expected to occur less than once every 100 years	Expected to occur less than once every 30 years

Notes:
1. Assumes operation 24x7x365 or approximately 8000 hrs/year for a single item/system
2. Assumes NAS-Wide occurrence is an order of magnitude greater than an individual item/system
3. Oceanic Center, TRACON, ARTCC or Tower
4. Assumes the hazard is 3 times as likely to occur in the NAS than in a single facility

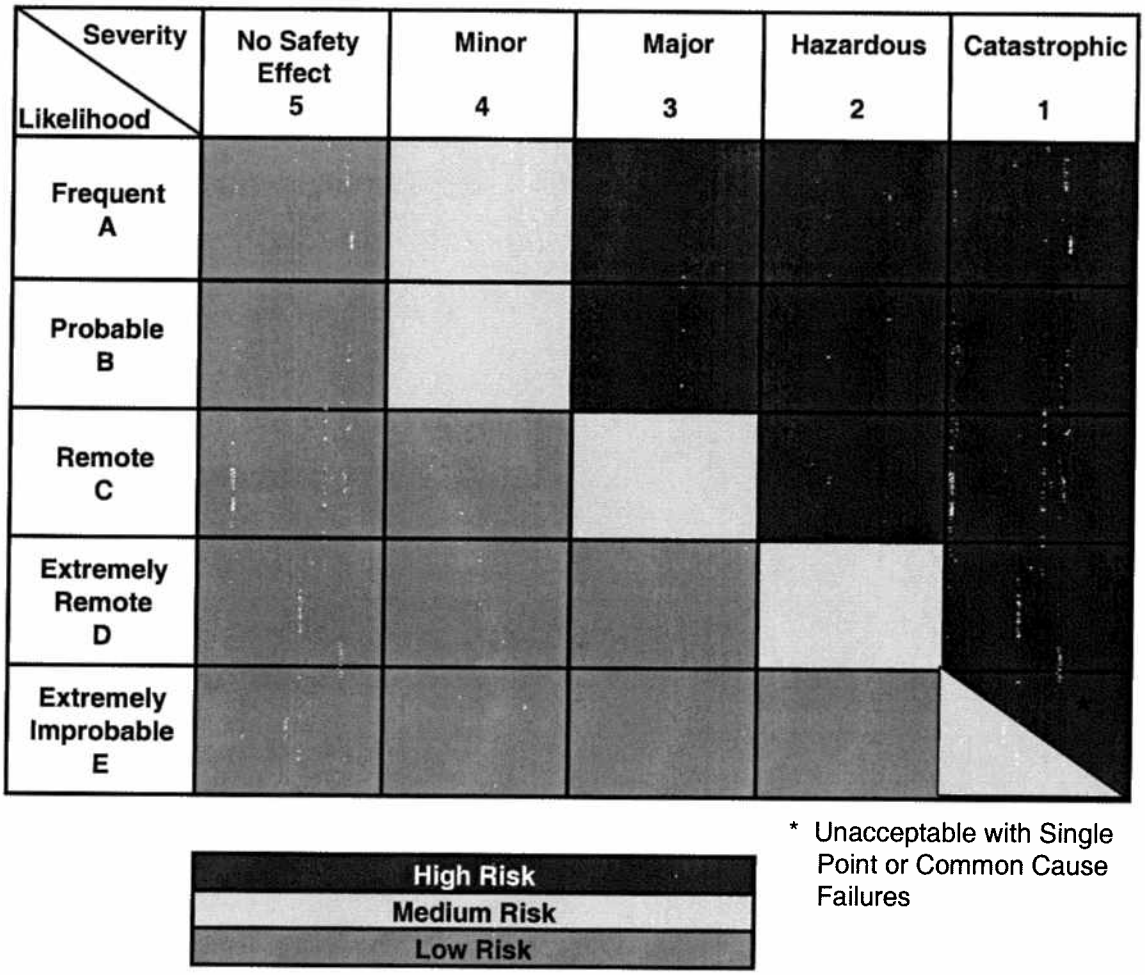


Figure 5 Risk Matrix

The risk levels used in the matrix can be defined as:

- **High risk** – Unacceptable risk - proposal cannot be implemented unless hazards are further mitigated so that risk is reduced to medium or low level and AOV approves the mitigating controls. Tracking and management are required. Catastrophic hazards that are caused by: (1) single-point events or failures, (2) common cause events or failures, or (3) undetectable latent events in combination with single point or common cause events are considered high risk, even if extremely remote. (Note: high risk is unacceptable at the time of hazard closure. However, for short periods of time, high risk may exist while mitigation plans are put into affect.)
- **Medium risk** – Acceptable risk - minimum acceptable safety objective; proposal may be implemented, but tracking and management are required.
- **Low risk** – Target - acceptable without restriction or limitation; hazards are not required to be actively managed but are documented.

Section 8 – Phase 5: Treatment of Risks / Mitigation of Hazards

The table below contains a list of all the recommended safety requirements that have been generated from the AEFS SHA. The AEFS Program Office has accepted all of the existing safety requirements as being verified for the AEFS Program. The safety requirements that were generated from the AEFS SHA were reviewed for applicability to partially or fully mitigate the AEFS hazards.

1. Develop AEFS Testing plans and procedures to incorporate the risks associated with SW Failure.
2. Update Local ORD Standard Operating procedures to accommodate the use of AEFS
3. Complete AEFS Maintenance Handbook

Implementation of the recommended safety requirements is expected to further reduce the likelihood of occurrence of the identified AEFS hazards. The decision to implement any or all of the recommended safety requirements is the responsibility of the AEFS Program Office. The authority responsible for the implementation of the valid recommended safety requirements resides with ATO-T.

Table 6 Safety Order of Precedence

Description	Priority	Definition	Example
Design for minimum risk	1	Design the system (e.g., operation, procedure, or equipment) to eliminate risks. If the identified risk cannot be eliminated, reduce it to an acceptable level through selection of alternatives.	1. If a collision hazard exists because of a transition to a higher Minimum En route Altitude at a crossing point, moving the crossing point to another location would eliminate the risk 2. If "loss of power" is a hazard to a system, adding a second independent power source reduces the likelihood of the "loss of power" hazard
Incorporate safety devices	2	If identified risks cannot be eliminated through alternative selection, reduce the risk via the use of fixed, automatic, or other safety features or devices, and make provisions for periodic functional checks of safety devices.	1. An automatic "low altitude" detector in a surveillance system 2. Ground circuit in refueling nozzle 3. Automatic engine restart logic
Provide warning	3	When neither alternatives nor safety devices can effectively eliminate or adequately reduce risk, warning devices or procedures are used to detect the condition and to produce an adequate warning. The warning must be provided in time to avert the hazard effects. Warnings and their application are designed to minimize the likelihood of inappropriate human reaction and response.	1. A warning in an operators manual 2. "Engine Failure" light in a helicopter 3. Flashing warning on a radar screen
Develop procedures and training	4	Where it is impractical to eliminate risks through alternative selection, safety features, and warning devices: procedures and training are used. However, concurrence of management authority is required when procedures and training are solely applied to reduce risks of catastrophic or hazardous severity.	1. A missed approach procedure 2. Training in stall/spin recovery 3. Procedure to vector an aircraft above a Minimum Safe Altitude on a VHF Omni-directional Range (VOR) airway 4. Procedures for loss of communications

Section 9 – Tracking and Monitoring of Hazards

The SMS requires that each high and medium hazard be tracked until its risk is mitigated to low (when possible) and the effectiveness of the mitigations verified. ORD-AEFS hazards will be tracked to ensure that mitigations and safety requirements have been incorporated into final AEFS design requirements and test plans. Hazards will be re-validated after a year. The SRMP has the responsibility to enter the hazards in the FAA's Hazard Tracking System (HTS).

APPENDICES

Appendix A – FAA Documents Related to the AEFS SRMD

The following list of documents (orders, directives, regulations, handbooks, and manuals) addresses NAS safety management that relates to *AEFS* and has been consulted in the development of the *SRMD* and the SRM process. In some cases the documents listed below may have been updated since this list was compiled. Please refer to the appropriate line of business for the most recent version of all documents.

Air Traffic Control:

- *Order 7110.65*

Facilities & Equipment:

- *AEFS Requirements Document*
- *AEFS Human Factors Study*

Safety Risk Management:

- *Order 8040.4, Safety Risk Management*
- FAA SMS Manual – Version 1.1

Appendix B – AEFS Preliminary Hazard List

Hazard #	HAZARDS
	INTERFACE HAZARDS
1	FDIO Interface Failure
2	ARMT Interface Failure
3	STARS/ARTS Interface Failure
4	Receive Invalid Data from FDIO
5	Receive Invalid Data from STARS/ARTS
6	Failure to transfer the FS data within the facility (towers and operational positions) and to external interfaces
7	Transfer Invalid FS data within the facility (towers and operational positions) and to external interfaces
8	Failure to accept input from Air Traffic Control at all positions
9	Failure to accept input from Traffic Management.
10	Failure to support display of electronic flight strips in a single or multiple ATC Towers (maximum 8) based on the airport's operational needs.
11	AEFS failure to provide the electronic display of flight strip status updates in ATC tower.
12	AEFS failure to provide flight strip in C-Remote facilities, i.e., TRACON.
13	Failure to transmit flight strip amendments to FDIO.
14	Transmit invalid flight strip amendments to FDIO.

Hazard #	HAZARDS
	FUNCTIONAL HAZARDS
	Input/Output
15	Users unable to manually generate electronic flight strips at any given position
16	The ability to validate and process FS information or changes received from local users and external systems does not work.
17	AEFS system failure to transfer the FS data within the facility (towers and operational positions) and to external interfaces
18	AEFS system transfers invalid FS data within the facility (towers and operational positions) and to external interfaces
19	AEFS system failure to distribute flight strip data to all ATC positions.
20	AEFS distributes invalid flight strip data to all ATC positions.
21	Failure of authorized user to override FS rules and sequencing criteria to meet immediate operational needs
22	The AEFS failure to provide the capability to generate history of flight strip reports in tabular format for display and printing.
23	The AEFS generates invalid history of flight strip reports in tabular format for display and printing.
24	The AEFS failure to use Coordinated Universal Time (UTC) from a certified FAA or DOD source for internal and external synchronization.
25	The AEFS failure to use UTC time to track the status of each electronic flight strip.
	Flight Strip Transfer and Sharing
26	The AEFS failure to transfer flight strips between the ATC and TM in multiple towers.
27	The AEFS transfers invalid flight strips between the ATC and TM in multiple towers.
28	The AEFS system fails to distribution of flight strip updates, amendments and notations to support local tower operations
29	The AEFS system distribution of invalid flight strip updates, amendments and notations to support local tower operations

Hazard #	HAZARDS
	Flight Strip Cat and Sequencing
30	AEFS failure to provide drag and drop capability on ATC tower electronic displays for organizing and transferring/placing flight strips into the appropriate ATC FS categories.
31	The AEFS system failure to initiate sequencing of flight strips upon request by the user or automatically by preset criteria.
	Flight Restrictions
32	The AEFS system failure to provide ATC and TM to introduce TFM initiatives (e.g., restrictions, ground stops, emergencies,) into the processing and display of flight strips.
33	The AEFS system failure to include the airport or local ATC tower initiatives in the processing and display of flight strips.
	Flight Strip Amendment and Update General Requirements
34	The AEFS system failure to provide the capability to visually flag FS updates/amendments on the display for acknowledgement.
35	The AEFS system failure to receive acknowledgement/verification/approval by the ATC or TM before processing and distributing FS updates/amendments.
36	The AEFS system failure to display and maintain a FS's sequence at the AT/TM positions while the FS is being amended/updated by another AT position.
37	The AEFS system display and maintain a invalid FS's sequence at the AT/TM positions while the FS is being amended/updated by another AT position.
	Flight Strip Amendments
38	The AEFS system failure to provide the capability for authorized users to enter flight strip amendments from menus/lists
39	The AEFS system failure to provide the capability for TM to approve locally amended flight strips.
40	The AEFS system failure to provide the capability for an authorized user to simultaneously amend multiple flight strips.
41	The AEFS system failure to forward flight strip amendments to FDIO.
42	The AEFS system failure to process amended flight strips received from FDIO
43	The AEFS system failure to identify amended flight strips by including FDIO assigned revision numbers.
	Flight Strip Updates
44	The AEFS system failure to provide the capability for authorized users to enter flight strips updates/comments for local tower operations.
45	The AEFS system failure provides an assigned field for "Tower to TRACON" updates.
46	The AEFS system failure to validate the FS data entered against the site operational rules and airport configuration requirements.
47	The AEFS system failure to include local FS updates with the revised flight strip when an updated FS is replaced by a revised FS from FDIO

Hazard #	HAZARDS
	Configuration and Adaptation
	AT Controller Positions and Assigned Functions
48	AEFS system unable to provide the capability for controllers to view the status of flight strips based on their assigned functions.
49	AEFS system failure to prevent the simultaneous manipulation (categorizing, transferring, amending or updating) of a flight strip by multiple users.
50	AEFS system unable to provide full route clearance data to the controllers.
51	AEFS system unable to combine multiple AT controller positions in one operational position.
52	AEFS system fails to provide the controller's operational position identifier with the flight strip data.
53	AEFS system failure to report the status of each flight strip and ATC tower operational phase upon request by the user.
	Print Requirements
54	The AEFS system failure to print electronic flight strips and history of flight strip reports in tabular format.
55	AEFS system failure to provide the capability for authorized users to submit print requests.
	Capacity Requirements
56	The AEFS system failure to display a minimum of 80 flight strips per controller display. (? Number of FS)
57	The AEFS system unable to store flight strip data for a maximum of 45 days for on-line analysis.
58	The AEFS system failure to provide flight strip status and history to ATC and TM .
59	The AEFS system failure to playback flight strip data in chronological order to support training and problem resolution.
60	The AEFS failure to archive flight strip data received from FDIO.
61	The AEFS system fails to time stamp internal data elements and input/output data to support operational functions and archiving.
62	The AEFS system provides an invalid time stamp internal data elements and input/output data to support operational functions and archiving.
63	The AEFS system search capability fails to retrieve FSs' based on operational parameters.
	Reliability, Maintainability and Availability (RMA)
64	The AEFS systems unable protect and maintain the integrity of ATC FS operational data during system failures.

Hazard #	HAZARDS
	Performance Requirements
65	The AEFS system fails to provide a TBD seconds update (refresh) rate for the screens/displays.
66	The AEFS system fails to complete user/controller's requests in less than TBD Seconds
	Display Hazards
67	The AEFS fails to present flight strip data including the local update fields on electronic displays.
68	The AEFS presents invalid flight strip data including the local update fields on electronic displays.
69	Windowing display capability unable to meet the facility's requirements (1600X1200).
70	The AEFS failure to accept user requests to change the default and/or assigned windowing display configuration within 1 second.
71	Color Failure
72	Touch Screen Failure
73	The AEFS system shall support touch screen displays.
74	The AEFS displays failure to recover the presentation quality within two seconds after a screen/window change or refresh occurs.
75	The AEFS failure to provide the capability to display multiple windows of information simultaneously with each window functioning independently.
76	The AEFS presentation of flight strips data shall be in accordance with FAA human factors and ATC guidelines.
77	AEFS presentation in each window cause clutter or flicker
78	The AEFS displays un-readable in ATC tower cab due to ambient light conditions and free of reflections and glare.
	Physical Hazards
79	Physical Hazards (ATCT finger hurts due to impact)
	HVAC
80	AEFS system shall include sufficient power, grounding capacity, illumination and heating, ventilation and air conditioning (HVAC) adequate for local climatic conditions to operate and maintain AEFS equipment.
81	The ATC tower facility power systems modified improperly to provide power panels, uninterruptible power supply (UPS), switching devices, and other power system components required to interface with AEFS.

Appendix C – Hazard Analysis Worksheets

Hazard #	HAZARDS	Causes	Existing Controls	Possible Effect (Severity)	Severity Rationale	Likelihood	Initial Risk	Safety Requirements	Residual Risk
	INTERFACE HAZARDS								
1	FDIO Interface Failure	Modem Failure, Line Failure, FDIO Failure	Redundancy/ UPS, 7110.65	3-Major	Significat Reduction in Capability	D-Extremely Remote	3D-Low	N/A	3D-Low
2	ARMT Interface Failure	Line Failure, Software Failure, Video Card Failure	Redundancy/ UPS, 7110.65	5-No Safety Effect	No Impact to AEFS	A-Frequent	5A-Low	N/A	5A-Low
3	STARS/ARTS Interface Failure	Line Failure, Software Failure, Processor Failure	7110.65, Testing Procedures	4-Minor	Significant Increase in Workload	D-Extremely Remote	4D-Low	N/A	4D-Low
4	Receive Invalid Data from FDIO	Input Incorrectly	Service is certified, 7110.65	2-Hazardous	Total Loss of ATC Capability	E-Extremely Improbable	2E-Low	N/A	2E-Low
5	Receive Invalid Data from STARS/ARTS	Software Failure, Line Interfernece, Input wrong	7110.65, Testing Procedures	3-Major	Significat Reduction in Capability	D-Extremely C-Remote	3D-Low	N/A	3D-Low
6	Failure to transfer the FS data within the facility (towers and operational positions) and to external interfaces	AEFS Software Filure, Display Filure, HW Failure, Line (FO)	Line Redundancy, HW Redundancy,	4-Minor	Significant Increase in Workload	B-Probable	4B-Medium	Incorporate into test Plans	4C-Low
7	Transfer Invalid FS data within the facility (towers and operational positions) and to external interfaces	Software Failure, Line Interfernece, Input wrong	7110.65	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	Incorporate into test Plans	3D-Low
8	Failure to accept input from Air Traffic Control at all positions	Touch Screen Failure, Equipment Faiure, Software Failure	Spares Available, Procedures	3-Major	Significat Reduction in Capability	D-Extremely Remote	3D-Low	N/A	3D-Low
9	Failure to accept input from Traffic Management.	Touch Screen Failure, Equipment Faiure, Software Failure	Spares Available, Procedures	3-Major	Significat Reduction in Capability	D-Extremely Remote	3D-Low	N/A	3D-Low
10	Failure to support display of electronic flight strips in a single or multiple ATC Towers (maximum 8) based on the airport's operational needs.	Software Failure, Line Interfernece, HW Failure	7110.65	3-Major	Significat Reduction in Capability	D-Extremely Remote	3D-Low	N/A	3D-Low
11	AEFS failure to provide the electronic display of flight strip status updates in ATC tower.	SW Failure	None	2-Hazardous	Loss of Seperation	D-Extremely Remote	2D-Medium	Incorporate into test Plans, Opertioanl testing, Monitoring	2E-Low
12	AEFS failure to provide flight strip in C-Remote facilities, i.e., TRACON.	Software Failure, Line Interfernece, Input wrong	7110.65	4-Minor	Significant Increase in Workload	D-Extremely Remote	4D-Low	N/A	4D-Low
13	Failure to transmit flight strip amendments to FDIO.	Software Failure, Line Interfernece, Input wrong	7110.65, System Acklnow.,	4-Minor	Significant Increase in Workload	D-Extremely Remote	4D-Low	N/A	4D-Low
14	Transmit invalid flight strip amendments to FDIO.	, Input wrong	Pilot Confirmation, 7110.65	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low

Hazard #	HAZARDS	Causes	Existing Controls	Possible Effect (Severity)	Severity Rationale	Likelihood	Initial Risk	Safety Requirements	Residual Risk
	FUNCTIONAL HAZARDS								
	Input/Output								
15	Users unable to manually generate electronic flight strips at any given position	SW Failure	7110.65	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
16	The ability to validate and process FS information or changes received from local users and external systems does not work.	Modem Failure, Line Failure, SW Failure	7110.65	3-Major	Significat Reduction in Capability	D-Extremely Remote	3D-Low	N/A	3D-Low
17	AEFS system failure to transfer the FS data within the facility (towers and operational positions) and to external interfaces	AEFS Software Filure, Display Filure, HW Failure, Line (FO)	Line Redundancy, HW Redundancy,	4-Minor	Significant Increase in Workload	B-Probable	4B-Medium	Incorporate Into test Plans	4D-Low
18	AEFS system transfers invalid FS data within the facility (towers and operational positions) and to external interfaces	AEFS Software Filure, Display Filure, HW Failure, Line (FO)	Line Redundancy, HW Redundancy,	4-Minor	Significant Increase in Workload	B-Probable	4B-Medium	Incorporate Into test Plans	4D-Low
19	AEFS system failure to distribute flight strip data to all ATC positions.	AEFS Software Filure, Display Filure, HW Failure, Line (FO)	Line Redundancy, HW Redundancy,	4-Minor	Significant Increase in Workload	B-Probable	4B-Medium	Incorporate Into test Plans	4D-Low
20	AEFS distributes invalid flight strip data to all ATC positions.	AEFS Software Filure, Display Filure, HW Failure, Line (FO)	Line Redundancy, HW Redundancy,	4-Minor	Significant Increase in Workload	B-Probable	4B-Medium	Incorporate Into test Plans	4D-Low
21	Failure of authorized user to override FS rules and sequencing criteria to meet immediate operational needs	SW Failure	7110.65	4-Minor	Significant Increase in Workload	C-Remote	4C-Low	N/A	4C-Low
22	The AEFS failure to provide the capability to generate history of flight strip reports in tabular format for display and printing.	SW Failure, Corruptyed Database	7110.65	5-No Safety Effect	Slight Increase in Workload	C-Remote	5D-Low	N/A	5D-Low
23	The AEFS generates invalid history of flight strip reports in tabular format for display and printing.	SW Failure, Corruptyed Database	7110.65	5-No Safety Effect	Slight Increase in Workload	C-Remote	5D-Low	N/A	5D-Low
24	The AEFS failure to use Coordinated Universal Time (UTC) from a certified FAA or DOD source for internal and external synchronization.	SW Failure,	Strip Remains in HOST, Requirment to hold the strip for longer peiod of time	4-Minor	Significant Increase in Workload	C-Remote	4C-Low	N/A	4C-Low
25	The AEFS failure to use UTC time to track the status of each electronic flight strip.	SW Failure,	Strip Remains in HOST, Requirment to hold the strip for longer peiod of time	4-Minor	Significant Increase in Workload	C-Remote	4C-Low	N/A	4C-Low

Hazard #	HAZARDS	Causes	Existing Controls	Possible Effect (Severity)	Severity Rationale	Likelihood	Initial Risk	Safety Requirements	Residual Risk
	Flight Strip Transfer and Sharing								
26	**The AEFS failure to transfer flight strips between the ATC and TM in multiple towers.**	AEFS Software Filure, Display Fiture, HW Failure, Line (FO)	Line Redundancy, HW Redundancy,	4-Minor	Significant Increase in Workload	B-Probable	4B-Medium	Incorporate Into test Plans	4D-Low
27	**The AEFS transfers invalid flight strips between the ATC and TM in multiple towers.**	AEFS Software Filure, Display Filure, HW Failure, Line (FO)	Line Redundancy, HW Redundancy,	4-Minor	Significant Increase in Workload	B-Probable	4B-Medium	Incorporate Into test Plans	4D-Low
28	**The AEFS system fails to distribution of flight strip updates, amendments and notations to support local tower operations**	AEFS Software Filure, Display Filure, HW Failure, Line (FO)	Line Redundancy, HW Redundancy,	4-Minor	Significant Increase in Workload	B-Probable	4B-Medium	Incorporate Into test Plans	4D-Low
29	**The AEFS system distribution of invalid flight strip updates, amendments and notations to support local tower operations**	Software Failure, Line Interfernece, Input wrong	7110.65	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	Incorporate Into test Plans	3D-Low
	Flight Strip Set and Processing								
30	**AEFS failure to provide drag and drop capability on ATC tower electronic displays for organizing and transferring/placing flight strips into the appropriate ATC FS categories.**	Display Failure, SW Failure	Visual Identification, 7110.65, Redundancies	4-Minor	Significant Increase in Workload	C-Remote	4C-Low	N/A	4C-Low
31	**The AEFS system failure to initiate sequencing of flight strips upon request by the user or automatically by preset criteria.**	SW Failure	Visual Identification, 7110.65	4-Minor	Significant Increase in Workload	C-Remote	4C-Low	N/A	4C-Low
	Flight Restrictions								
32	**The AEFS system failure to provide ATC and TM to introduce TFM initiatives (e.g., restrictions, ground stops, emergencies, ...) into the processing and display of flight strips.**	SW Failure	Visual Identidication, 7110.65	4-Minor	Significant Increase in Workload	Extremley C-Remote	4D-Low	N/A	4D-Low
33	**The AEFS system failure to include the airport or local ATC tower initiatives in the processing and display of flight strips.**	SW Failure	Visual Identidication, 7110.65	4-Minor	Significant Increase in Workload	Extremley C-Remote	4D-Low	N/A	4D-Low
	Flight Strip Amendment and Update General Requirements								
34	**The AEFS system failure to provide the capability to visually flag FS updates/amendments on the display for acknowledgement.**	SW Failure,	Strip Remains in HOST, Requirment to hold the strip for longer peiod of time	4-Minor	Significant Increase in Workload	C-Remote	4C-Low	N/A	4C-Low
35	**The AEFS system failure to receive acknowledgement/verification/approval by the ATC or TM before processing and distributing FS updates/amendments.**	SW Failure	7110.65 and Visual Observations,	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	Incorporate Into test Plans	3D-Low
36	**The AEFS system failure to display and maintain a FS's sequence at the AT/TM positions while the FS is being amended/updated by another AT position.**	SW Failure	Visual Observation	4-Minor	Significant Increase in Workload	C-Remote	4D-Low	N/A	4D-Low
37	**The AEFS system display and maintain a invalid FS's sequence at the AT/TM positions while the FS is being amended/updated by another AT position.**	SW Failure	Visual Observation	4-Minor	Significant Increase in Workload	C-Remote	4D-Low	N/A	4D-Low

Hazard #	HAZARDS	Causes	Existing Controls	Possible Effect (Severity)	Severity Rationale	Likelihood	Initial Risk	Safety Requirements	Residual Risk
	Flight Strip Amendments								
38	**The AEFS system failure to provide the capability for authorized users to enter flight strip amendments from menus/lists**	Modem Failure, Line Failure, FDIO Failure	Redundancy/ UPS, 7110.65	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	Incoprate into test Plans & SOP	3D-Low
39	**The AEFS system failure to provide the capability for TM to approve locally amended flight strips.**	SW Failure, Display Failure	Visual Observation	4-Minor	Significact Increase in Workload	C-Remote	4D-Low	N/A	4D-Low
40	**The AEFS system failure to provide the capability for an authorized user to simultaneously amend multiple flight strips.**	SW Failure, Display Failure	Visual Observation	4-Minor	Significact Increase in Workload	C-Remote	4D-Low	N/A	4D-Low
41	**The AEFS system failure to forward flight strip amendments to FDIO.**	Modem Failure, Line Failure, FDIO Failure	Redundancy/ UPS, 7110.65	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	Incoprate into test Plans & SOP	3D-Low
42	**The AEFS system failure to process amended flight strips received from FDIO**	Modem Failure, Line Failure, FDIO Failure	Redundancy/ UPS, 7110.65	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	Incoprate into test Plans & SOP	3D-Low
43	**The AEFS system failure to identify amended flight strips by including FDIO assigned revision numbers.**	Modem Failure, Line Failure, FDIO Failure	Redundancy/ UPS, 7110.65	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	Incoprate into test Plans & SOP	3D-Low
	Flight Strip Updates								
44	**The AEFS system failure to provide the capability for authorized users to enter flight strips updates/comments for local tower operations.**	SW Failure, Display Failure	Visual Observation	4-Minor	Significant Increase in Workload	C-Remote	4D-Low	N/A	4D-Low
45	**The AEFS system failure provide an assigned field for "Tower to TRACON" updates.**	Software Failure, Line Interfernece, Input wrong	7110.65	4-Minor	Significant Increase in Workload	C-Remote	4C-Low	N/A	4C-Low
46	**The AEFS system failure to validate the FS data entered against the site operational rules and airport configuration requirements.**	Software Failure, Line Interfernece, Input wrong	7110.65	4-Minor	Significant Increase in Workload	C-Remote	4C-Low	N/A	4C-Low
47	**The AEFS system failure to include local FS updates with the revised flight strip when an updated FS is replaced by a revised FS from FDIO**	SW Failure (SWAP Situation)	Visual Observation	4-Minor	Significant Increase in Workload	C-Remote	4C-Low	N/A	4C-Low

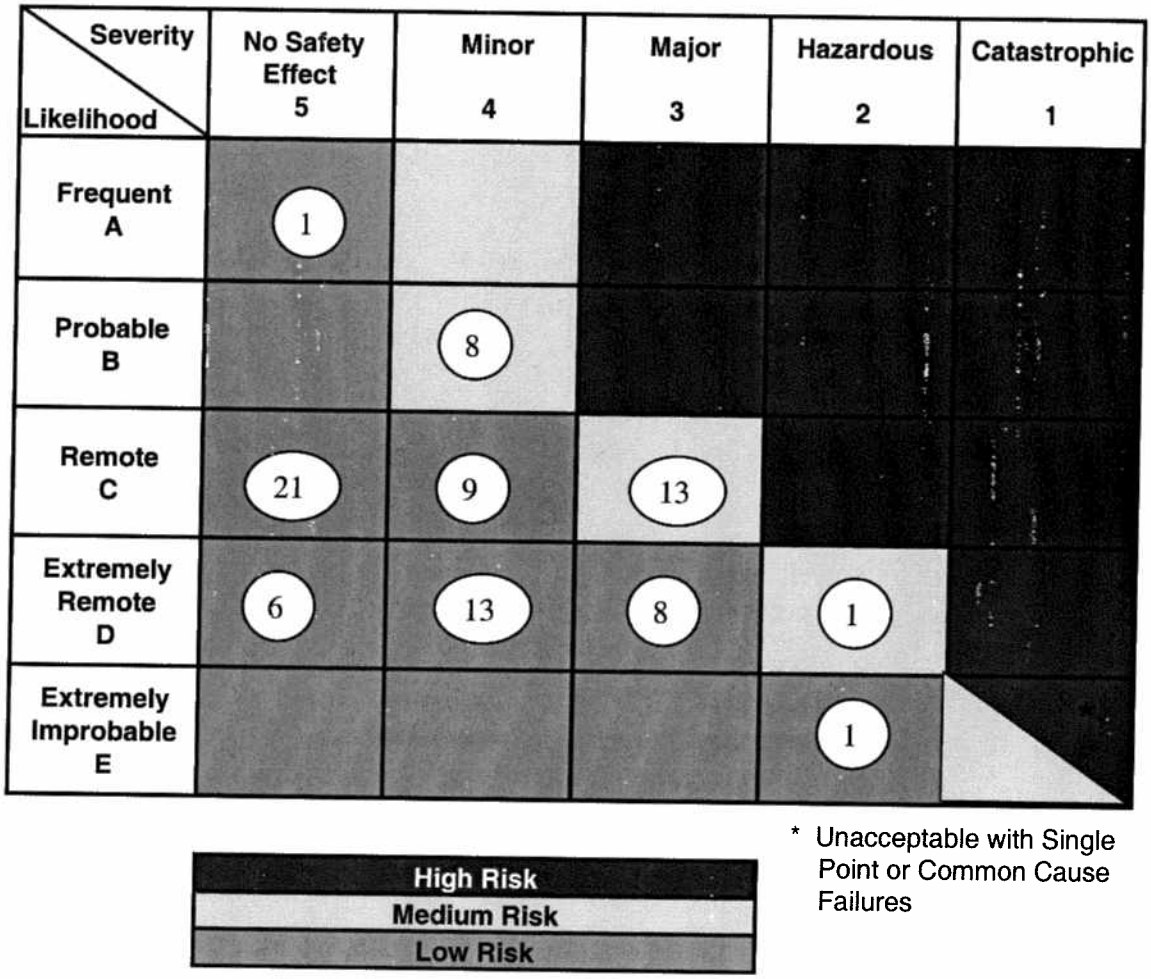
Hazard #	HAZARDS	Causes	Existing Controls	Possible Effect (Severity)	Severity Rationale	Likelihood	Initial Risk	Safety Requirements	Residual Risk
	Configuration and Assignment								
	AT Controller Positions and Assigned Functions								
48	AEFS system unable to provide the capability for controllers to view the status of flight strips based on their assigned functions.	SW Failure	Visual Observation, 7110.65	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	Testing procedure, SOP, Contigency Plans	3D-Low
49	AEFS system failure to prevent the simultaneous manipulation (categorizing, transferring, amending or updating) of a flight strip by multiple users.	SW Failure, Display Failure	Visual Observation	4-Minor	Significant Increase in Workload	C-Remote	4D-Low	N/A	4D-Low
50	AEFS system unable to provide full route clearance data to the controllers.	SW Failure,	Visual Observation, 7110.65	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
51	AEFS system unable to combine multiple AT controller positions in one operational position.	SW Failure,	Visual Observation,	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
52	AEFS system fails to provide the controller's operational position identifier with the flight strip data.	SW Failure,	Visual Observation,	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
53	AEFS system failure to report the status of each flight strip and ATC tower operational phase upon request by the user .	SW Failure,	Visual Observation,	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
	Print Requirements								
54	The AEFS system failure to print electronic flight strips and history of flight strip reports in tabular format.	SW Failure, Corruptyed Database	Visual Observation,	5-No Safety Effect	Slight Increase in Workload	C-Remote	5D-Low	N/A	5D-Low
55	AEFS system failure to provide the capability for authorized users to submit print requests.	SW Failure, Corruptyed Database	Visual Observation,	5-No Safety Effect	Slight Increase in Workload	C-Remote	5D-Low	N/A	5D-Low

Hazard #	HAZARDS	Causes	Existing Controls	Possible Effect (Severity)	Severity Rationale	Likelihood	Initial Risk	Safety Requirements	Residual Risk
	Capacity Requirements								
56	**The AEFS system failure to display a minimum of 80 flight strips per controller display. (? Number of FS)**	SW Filure, Display Failure	Visual identification', validated during pre-limary testing	5-No Safety Effect	Slight Increase in Workload	C-Remote	5D-Low	N/A	5D-Low
57	**The AEFS system unable to store flight strip data for a maximum of 45 days for on-line analysis.**	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
58	**The AEFS system failure to provide flight strip status and history to ATC and TM .**	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
59	**The AEFS system failure to playback flight strip data in chronological order to support training and problem resolution.**	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
60	**The AEFS failure to archive flight strip data received from FDIO.**	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
61	**The AEFS system fails to time stamp internal data elements and input/output data to support operational functions and archiving.**	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
52	**The AEFS system provides an invalid time stamp internal data elements and input/output data to support operational functions and archiving.**	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
63	**The AEFS system search capability fails to retrieve FSs' based on operational parameters.**	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
	Reliability, Maintainability and Availability (RMA)								
64	**The AEFS system unable protect and maintain the integrity of ATC FS operational data during system failures.**	SW/HW/Lines	Redundancy	3-Major	Significant Reduction in Capability	C-Remote	3C-Medium	Site Installtion Plan and MHB	3D-Low
	Performance Requirements								
65	**The AEFS system fails to provide a TBD seconds update (refresh) rate for the screens/displays .**	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
66	**The AEFS system fails to complete user/controller's requests in less than TBD Seconds**	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low

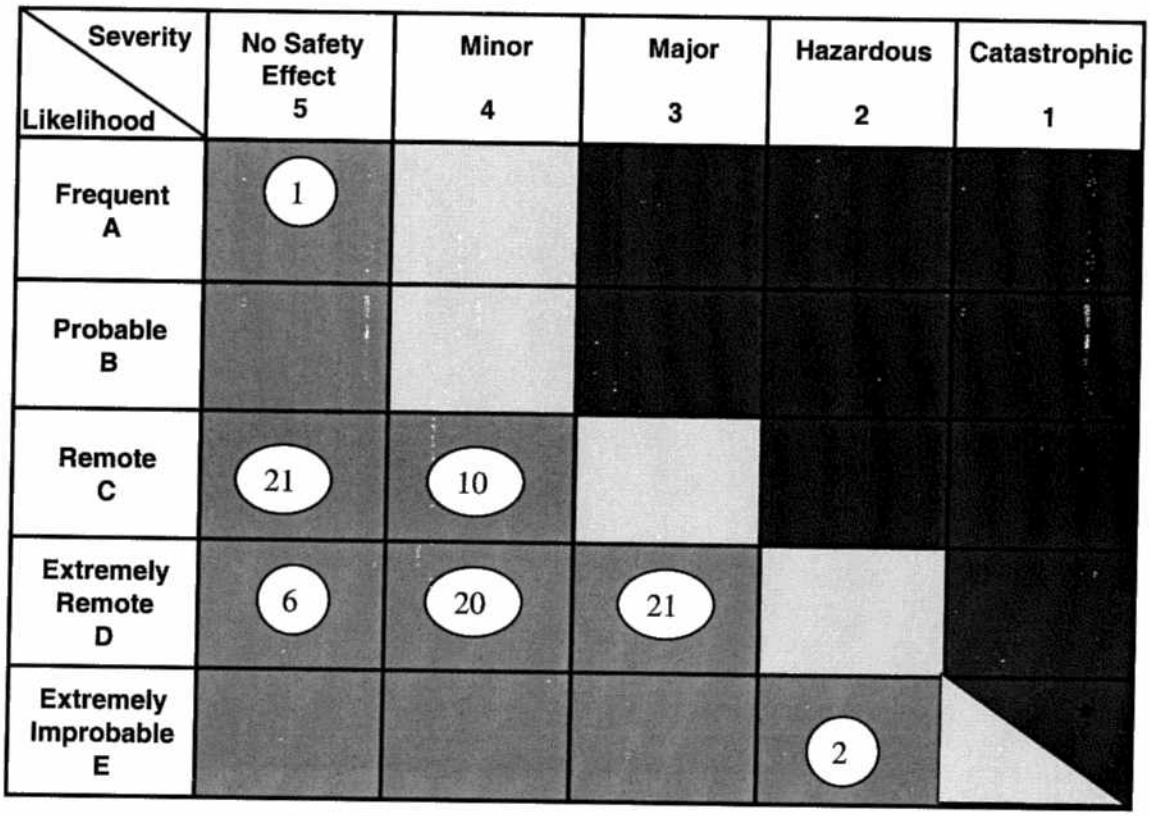
Hazard #	HAZARDS	Causes	Existing Controls	Possible Effect (Severity)	Severity Rationale	Likelihood	Initial Risk	Safety Requirements	Residual Risk
	Display Hazards								
67	The AEFS fails to present flight strip data including the local update fields on electronic displays.	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
68	The AEFS presents invalid flight strip data including the local update fields on electronic displays.	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
69	Windowing display capability unable to meet the facility's requirements (1600X1200).	SW Failure	Visual Identification, Redundancy, Spares	3-Major	Significant Reduction in Capability	C-Remote	3C-Medium	Develop Testing Procedures, Spares	3D-Low
70	The AEFS failure to accept user requests to change the default and/or assigned windowing display configuration within 1 second.	SW Failure	Visual identification', validated during pre-limary testing	5-No Safety Effect	Slight Increase in Workload	C-Remote	5D-Low	N/A	5D-Low
71	Color Failure	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
72	Touch Sreen Failure	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
73	The AEFS system shall support touch screen displays.	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
74	The AEFS displays failrue to recover the presentation quality within two seconds after a screen/window change or refresh occurs.	SW Failure, HW Failure	Redundancy, Tape Back ups	5-No Safety Effect	Slight Increase in Workload	C-Remote	5C-Low	N/A	5C-Low
75	The AEFS failure to provide the capability to display multiple windows of information simultaneously with each window functioning independently.	Sw Failure	Visual Identification	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	Incoporate into test Plans	3D-Low
76	The AEFS presentation of flight strips data shall be in accordance with FAA human factors and ATC guidelines.	System limitations, Design Trade offs	HF Design Std 001	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	testing to include HF Verification, Need to Vliadate MITRE Task Analysis	3D-Low
77	AEFS presentation in each window cause clutter or flicker	Sw Failure	Visual Identification	3-Major	Significat Reduction in Capability	C-Remote	3C-Medium	Incoporate into test Plans	3D-Low
78	The AEFS displays un-readable in ATC tower cab due to ambient light conditions and free of reflections and glare.	Finger Prints, sun glare, lighting, polarized sunglasses are used by ATCT	Contract and Brightness on Monitor, Cab Shades, Adjustable cab lighting, HF Study	3-Major	Strip Failure to move	D-Extremely Remote	3D-Low	N/A	3D-Low

Hazard #	HAZARDS	Causes	Existing Controls	Possible Effect (Severity)	Severity Rationale	Likelihood	Initial Risk	Safety Requirements	Residual Risk
	Physical Hazards								
79	**Physical Hazards (ATCT finger hurts due to impact)**	Repetitive Motion	HF Study	3-Major	Human injury	D-Extremely Remote	3D-Low	Stylus Pen	3D-Low
	HVAC								
90	**AEFS system shall include sufficient power, grounding capacity, illumination and heating, ventilation and air conditioning (HVAC) adequate for local climatic conditions to operate and maintain AEFS equipment.**	Failure of HVAC	FAA Orders 6480.6, Redundaices	4-Minor	Reduction in capability	D-Extremely Remote	4D-Low	N/A	4D-Low
81	**The ATC tower facility power systems modified improperly to provide power panels, uninterruptible power supply (UPS), switching devices, and other power system components required to interface with AEFS.**	Failure of HVAC	FAA Orders 6480.6, Redundaices	4-Minor	reduction in capability	D-Extremely Remote	4D-Low	N/A	4D-Low

Appendix D – Initial Risk Table



Appendix E – Residual Risk Table



Glossary

ACRONYM	DEFINITION
AEFS	Advanced Electronic Flight Strip
ATC	Air Traffic Control
CD	Clearance Delivery
FDIO	Flight Data input/Output
FS	Flight Strip
GC	Ground Control
GM	Ground Metering
GUI	Graphical User Interface
HOCSR	Host and oceanic Computer System Replacement
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
LC	Local Control
ORD	Chicago O'Hare International Airport
OS	Operational Supervisor
PC-RCU	Personal Computer-Remote Control Unit
SHA	System Hazard Analysis
SMS	Safety Management System
SRM	Safety Risk Management
SRMP	Safety Risk Management Panel
SSMP	System Safety Management Program
STARS	Standard Terminal Automation Replacement System
TBD	To Be Determined
TCP	Terminal Controller Position
TCW	Terminal Controller Workstation
TDW	Tower Display Workstation
TM	Traffic Management
TMU	Traffic Management Unit
WAN	Wide Area Network

CASEFILE/NCP SAFETY RISK MANAGEMENT (CNSRM)
CHECKLIST

Casefile Title: Tool Needed to Compare Two Runs of a Baseline Test

Date: 8/29/07

To: Configuration Management Control Desk

Copy: Recommend that copies be provided real time to:

Kathy Smith, Safety Engineer

Description of Proposed System or Change

Ocean 21 offline support software does not provide the capability to compare System Analysis Recording (SAR) data from two separate test sessions. Used in conjunction with the enhanced simulation capability tool, the provision of a compare capability will significantly improve test coverage and reduce the time taken in the manual analysis of test results. The aim of the tool is to provide the means to quickly and cost effectively; compare the output from two test runs in order to identify any unintended changes to Ocean 21 functionality.

Is Further Safety Analysis Required

YES ■ NO ☐

Justification/Rationale for SRM Decision

If YES Checked Above – The ATOP Program Office will form a panel to develop an SRMD in accordance with the SMS manual. This SRM Checklist has provided a preliminary analysis of hazards and assessment of risk. Once the Functional Description Narrative is completed which describes in more detail the functionality, the SRMD will be drafted. During the subsequent design phase, the SRMD will be reviewed and updated as necessary. The SRMD will then be circulated for signatures. Upon completion of the SRMD process, the NCP will be presented to the Configuration Control Board for approval.

Jon Ericson for Richard Lewis — 8/29/07

Richard Lewis
Oceanic Branch Manager, AJE-2210

Date

Federal Aviation Administration

Memorandum

Date: JUN 15 2007

To: Luis Ramirez
Director, En Route and Oceanic Safety and Operations Support

From: Richard Lewis DC (For Rick Lewis)
Branch Manager, Oceanic System

Subject: Safety Risk Management (SRM) for the Advanced Technologies and Oceanic Procedures (ATOP) Issue 30527: Licenses for Support Specialist Workstation Processors (SSWPs) McAfee Software are Out-of-Date

---

National Airspace System (NAS) Change:

The ATOP SSWPs are part of the ATOP support (non-operational) configuration. These processors are not presently protected by up-to-date anti-virus definitions due to the original licensing being out-of-date. During the procurement of new anti-virus licensing and software; discussions were held as to how best to provide timely (weekly) virus definition updates to the field with the least amount of user intervention. The current requirement is for anti-virus updates to be supplied by the William J. Hughes Technical Center (WJHTC) via Compact Discs (CDs).

Delivering timely (weekly) virus updates via CD would be labor intensive and expensive. This modification automates the manual steps (via scripts) for updating the SSWP anti-virus definitions. It utilizes current support networks and site connectivity to provide the latest updates from the WJHTC. It also ensures that no user intervention will be required to ensure the ATOP SSWPs have the latest anti-virus definitions in the field.

Rationale for not requiring SRM:

The network connectivity to be utilized is currently in use today for such support activities as transferring system releases to the ATOP sites, and transferring System Analysis Recording data from the site to the WJHTC. All scripts utilize existing applications and services on the ATOP network and support systems. The delivery mechanism will ensure up-to-date anti-virus protection to the field as well as the WJHTC. Only support systems (non-operational) will be

affected by this modification. This proposed change does not negatively affect the NAS and there are no safety impacts. Therefore, this change does not require additional SRM analysis. We, the undersigned, understand the change described above does not negatively affect safety.

Reviewed by:

Signature — Kathy D. Smith, Safety Engineer, ATO-E Safety and Operations Support — Date: 6/11/07

Signature — Henry I. Gonzalez, Director, ATO-E En Route and Oceanic Program Operations — Date: 6/12/07

Signature — Kenneth A. Myers, National Quality Assurance and Safety Manager, ATO-E Safety and Operations Support — Date: 6/15/07

Approved by:

Signature — for Luis A. Ramirez, Director, ATO-E Safety and Operations Support — Date: 6/15/07

Federal Aviation Administration

Memorandum

Date: JUN 15 2007

To: Luis Ramirez
Director, En Route and Oceanic Safety and Operations Support

From: Richard Lewis
Branch Manager, Oceanic System

Subject: Safety Risk Management (SRM) for the Advanced Technologies and Oceanic Procedures (ATOP) Issue 30527: Licenses for Support Specialist Workstation Processors (SSWPs) McAfee Software are Out-of-Date

CONCURRENCES
ROUTING SYMBOL: AJE- 33(KSmith
INITIALS/SIG: K
DATE: 6/11/07
ROUTING SYMBOL: AJE-1(HGonzal
INITIALS/SIG: 6/12
DATE: AJE-1
ROUTING SYMBOL: AJE-33(KMyers
INITIALS/SIG: K.Myers
DATE: 6/15/07
ROUTING SYMBOL:
INITIALS/SIG:
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DATE:
ROUTING SYMBOL:
INITIALS/SIG:
DATE:
ROUTING SYMBOL:
INITIALS/SIG:
DATE:
ROUTING SYMBOL: AJE-3(LRamirez
INITIALS/SIG: KMyers
DATE: 6/17/07

National Airspace System (NAS) Change:

The ATOP SSWPs are part of the ATOP support (non-operational) configuration. These processors are not presently protected by up-to-date anti-virus definitions due to the original licensing being out-of-date. During the procurement of new anti-virus licensing and software; discussions were held as to how best to provide timely (weekly) virus definition updates to the field with the least amount of user intervention. The current requirement is for anti-virus updates to be supplied by the William J. Hughes Technical Center (WJHTC) via Compact Discs (CDs).

Delivering timely (weekly) virus updates via CD would be labor intensive and expensive. This modification automates the manual steps (via scripts) for updating the SSWP anti-virus definitions. It utilizes current support networks and site connectivity to provide the latest updates from the WJHTC. It also ensures that no user intervention will be required to ensure the ATOP SSWPs have the latest anti-virus definitions in the field.

Rationale for not requiring SRM:

The network connectivity to be utilized is currently in use today for such support activities as transferring system releases to the ATOP sites, and transferring System Analysis Recording data from the site to the WJHTC. All scripts utilize existing applications and services on the ATOP network and support systems. The delivery mechanism will ensure up-to-date anti-virus protection to the field as well as the WJHTC. Only support systems (non-operational) will be

affected by this modification. This proposed change does not negatively affect the NAS and there are no safety impacts. Therefore, this change does not require additional SRM analysis. We, the undersigned, understand the change described above does not negatively affect safety.

Reviewed by:

Signature	Kathy D. Smith Safety Engineer ATO-E Safety and Operations Support	Date
Signature	Henry I. Gonzalez Director ATO-E En Route and Oceanic Program Operations	Date
Signature	Kenneth A. Myers National Quality Assurance and Safety Manager ATO-E Safety and Operations Support	Date

Approved by:

Signature	Luis A. Ramirez Director ATO-E Safety and Operations Support	Date

CASE FILE/NAS CHANGE PROPOSAL

(PLEASE TYPE OR PRINT NEATLY)

Page 1 of _____

1.Case File Number	2. FOR CM USE	Case File Received Date	NCP Issuance Date	NCP Number

3. Scope of Change

☐ Local ☐ National
☐ Test

4. Reason For Change

☐ Safety ☐ Technical Upgrade ☐ Systems Interface
☐ Requirements Change ☐ Design Error ☐ Parts Unavailability
☐ Baseline ☐ Other

5 Priority

☐ Normal
☐ Time-Critical
☐ Urgent

6. Justification of Time Critical/Urgent Priority

7. Supplemental Change Form

☐ ECR/ECP ☐ TES ☐ N/A

7a. Supplemental Change No._____

7b. Supplemental Change Initiation Date_____

8. Case File Originator	9. Originator's Organization	10. Telephone Number	11. Case File Initiation Date

12. Type of Document Affected

☐ CPFS ☐ SPEC ☐ MTBK ☐ _____
☐ TI ☐ DWG ☐ IRD/ICD

13. Baseline Document Number(s)

14. CI Subsystem Designator	15. FA Type	16. CI Component Designator

17. Facility Identifier (FACID)	18. Facility Code (FACCODE)	19. Cost Center Code	20. System Software Version

21. Title

22. Description: (a) identification of problem, (b) proposed change, (c) interface impact, (d) cost estimate (e) funding source (f) benefits/risks, (g) Schedule (h) Other (e.g. logistics, quality, etc.)

(b)

(c)

(d).

(e)

(f)

(g)

(h)

Blocks 1 through 22 are to be completed by originator and/or the NCP coordinator. If a block is not applicable, write n/a. Attach additional sheets if necessary. See current revision of NAS-MD-001 for detailed completion instructions.

NAS Change Proposal (NCP) Form (FAA FORM 1800-2) Instructions

The case file/NCP prepared on FAA Form 1800-2 is used to propose changes to or establish baselines of NAS systems/subsystems and their associated documentation.

General Instructions

All pages of the case file/NAS Change Proposal (NCP) should be numbered and clearly marked page (A) of (B), where (A) is the actual page number and (B) is the total number of pages. The case file number should also be clearly marked on each page. Blocks 1 through 22 are to be completed by the originator, using additional sheets if necessary. If a block is not applicable, designate with "N/A". Use of an automated version of the 1800-2 form in MICROSOFT WORD is recommended. Copies of this application are available upon request from ASD-220.

Detailed Instructions

1. Case File Number

This should be a discrete identification number (alphanumeric format, e.g., STLAF-CD -001) issued by the originating organization:

a. First 5 alphanumeric characters identify originating organization (e.g., AL462; STLAF; ZLAAT; TR230, etc.).

b. The center group is a maximum of five characters and represents the acronym for the subsystem the case file is affecting (for baselined systems this acronym is found in NAS-MD-001 otherwise this will correspond to the Facility, Service and Equipment Profile (FSEP) acronym for the subsystem, (e.g., CD, AFSS , EARTS, etc.).

c. Last group of three digits denotes consecutive number assigned by the originator's organization for the specific subsystem identified in the center group (e.g., 001, 002, 999).

Note: Numbers are assigned consecutively for the life of the system and do not start over again at the beginning of the calendar year.

d. Capital letter added at the end of a case file number denotes an amendment to that case file (e.g. A, B, C, etc.).

2. For CM Use

A block for CM Organization Use to identify:

a. Case file received date.

b. NCP Issuance date.

c. NCP Number.

As appropriate

3. Scope of Change

a. Local - Case file applies to one or more identified sites, as indicated in block 17, and dependent upon the change proposed, may be either approved at the Headquarters or the Regional Configuration Control Board level.

b. Test - Case file applies to one or more identified sites and is approved at the Headquarters Configuration Control Board level for a limited duration specified in the CCD.

c. National - Case file is applicable to all items of a type specified and is approved at the Headquarters Configuration Control Board level.

4. Reason for change

The reason for generating change shall be selected. If "Other" is selected, provide an explanation of "other".

a. Safety- Correction of a deficiency which is required primarily to eliminate an unsafe condition.
b. Technical Upgrade- a proposal to incorporate advanced technology into an existing system, piece of equipment, etc., either hardware or software.
c. Systems Interface- a proposal dealing with system hardware and/or software and documents that are considered the "go between" enabling different systems to interact. This includes communications, power, etc.

d. Requirements Change- a proposal to add a new requirement or change an existing requirement to a system, piece of equipment, etc.
e. Design Error- a condition caused directly by human engineering error or design shortcomings. (Do not confuse with obsolete, antiquated or non-designed items or fixes)
f. Parts Unavailability- A proposal to incorporate a new component/part into an existing system, piece of equipment, to replace a part no longer being manufactured.
g. Baselining- documenting a specific configuration including hardware, software, firmware, test equipment, power and facility space. This includes the documentation to define the configuration of specifications, plans, drawings, manuals, etc.
h. Other- a change that does not fit into any of the previous categories.

5. Priority

Select appropriate priority and provide justification as necessary in block 6:

a. Normal - Classification for case files that do not meet criteria of urgent or time critical.

b. Time-Critical - Classification restricted to changes requiring expeditious processing (e.g. need CCD by certain date, to support schedule of other projects, budget related, etc). Reason and required date must be specified in block 6.

c. Urgent - Classification for changes which will prevent a prolonged outage or catastrophic failure to operational systems or correct unsafe conditions (usually to document a fix already made for safety reasons). Include explanation under justification in block 6.

6. Justification of Time Critical/Urgent Priority

If block 5 is marked Time Critical or Urgent Priority, justification must be provided in this block.

7. Supplemental Change Form

Used to identify initiating change documentation, such as Engineering Change Request (ECR), Engineering Change Proposal (ECP), Technical Employee Suggestion (TES). A copy of the change form used to initiate the case file must be attached. If not applicable, this block is marked N/A.

a. Supplemental Change No. - If either ECR/ECP or TES is checked in the upper portion of block 7 then the corresponding ECR/ECP or TES change number must be supplied.

b. Supplemental Change Initiation Date - The date of initiation of either the ECR/ECP or TES change is entered in this block.

8. Case File Originator

Case file originator's full name must be printed in this block.

9. Originator Organization

The organization of the originator identified in block 8 must be entered in this block.

10. Telephone Number

The telephone number, including area code, of the originator identified in block 8 must be entered in this block.

11. Case File Initiation Date

The date of initiation of the case file is entered in this block (Month/day/year-xx/xx/xxxx).

12. Type of Document Affected

At least one baseline document type must be identified. Multiple selections can be made only if multiple types of baseline documents are being changed by a case file.

CPFS - Computer Program Functional Specification
SPEC - Specification
MTBK - Maintenance Technical Handbook
TI - Technical Instruction Book
DWG - Drawing
IRD/ICD - Interface Requirements Document /Interface Control Document

13. Baseline Document Number(s)

The document number of each baseline document listed in block 12 must be provided. Case files to change a configuration item cannot be processed without identified documentation.

14. CI Subsystem Designator

a. For operational support phase, intended to capture the specific model of the designated subsystem (e.g. ARSR-4, ASDE-3, ASR-9). The case file number should only reflect the generic identifier (e.g. ARSR, ASDE, ASR). If a specific model is not applicable, use the subsystem designator identified in the center of the case file number (e.g. UA460-ITWS-XXX).

b. For acquisition phase, the FAA project is the CI designator (e.g. FBWTG) acronym.

c. For changes that apply to the top level NAS documents, the CI designator "NAS" is used, as well as the specific subsystem designators affected (e.g. ITWS, WAAS, WARP).

d. The designator "BLD" is used for changes affecting ARTCC-as built facility drawings. "ACF" is used for changes affecting both the standard and site-specific end state facility space drawings.

15. FA Type Number

Should be provided from NAS-MD-001; otherwise N/A.

16. CI Component Designator

When this kind of equipment or software module is affected by a proposed change, its CI designator should be cited in this block on the case file exactly as it appears in NAS-MD-001.

17. Facility Identifier (FACID)

For Local and Test case files pertaining to hardware facilities (Format: AABBBBBCCCC). This is an eleven-character field (i.e. WPARSR_BAM_) with the first two characters "WP" representing the Region, the next five characters "ARSR_" representing the Facility and the last four characters "BAM_" representing the Location per the FSEP. Each character has a place and if there is no character for a given place then an underscore "_" is the proper character. Enter "N/A" for National case files.

18. Facility Code (FACCODE)

For Local and Test case files pertaining to hardware facilities. This is a five-digit code which breaks the facility down to its lowest unit as per FAA Order 1375.4. Enter "N/A" for National case files. (ASDE-2 would be entered 45512).

19. Cost Center Code

5-character alphanumeric code indicating cost center which change implementation is to be charged against. This should be provided for Local and Test case files (e.g., 12345).

20. System Software Version

When making a change to software the specific software version of the software being proposed for change is to be provided (i.e., Version 4.2).

21. Title

Indicate the subject of the change, being as descriptive as possible. For waivers to installation and siting criteria, include location and runway if applicable.

22. Description

Complete information pertaining to items a through h should be provided. Attach additional pages if necessary.

a. Identification of problem - provide complete information identifying nature of problem, length of time it has existed, etc.

b. Proposed change - identify proposed solution(s) to the problem in as much detail as possible.

c. Interface impact - identify any known interface impacts involved with the proposed change.

d. Cost estimate - Supply estimated cost and basis of estimate.

e. Funding source - Identify organization providing funding for change, if known.

f. Benefits/risks - state the benefits of this change or the impact of not making the change.

g. Schedule - provide a schedule for the change to be implemented whenever possible.

h. Other (e.g., logistics, quality, companion Case Files/NCPs, etc.)- Identify the logistics, quality, etc. impacts in as much detail as possible. Additionally, this block shall also identify by title and number all companion Case Files/NCPs associated with this change.

23. Name and title of originator's immediate supervisor

Required. Title and name must be typed or printed clearly in the first section of this block. The supervisor's legal signature goes in the second section of the block and the date signed goes in the third section.

24. Facility/SMO Review (AT/AF)

Facility/SMO coordination is required for all case files originating from a facility or SMO. The SMO and/or Air Traffic Manager needs to sign the block(s) at the bottom of Block 24.

25. Regional Review

Regional coordination is required for all case files originating from a facility/region. The signature of the individual responsible for regional case file coordination (Configuration Manager, NCP Coordinator or Regional Executive Secretary) is required.

26. Prescreening Review Organization Comments

This block is completed by the Prescreening Office and not the originator of the case file/NCP. Prescreening review must be indicated for those case files requiring review by a prescreening organization. The prescreening office will accomplish the review, recommend approval or disapproval of the case file, identify if this is a new requirement and list the recommended must evaluators for the review. If disapproved, the prescreening office will return the case file with comments to the originator (through Regional CM for those case files originated at or below the regional level) and send a copy to ASD-220.

Required for all field-initiated case files (except for waivers against installation and siting criteria documents, see page 4, paragraph 11) and headquarters-initiated case files affecting the top level NAS documents. Prescreening offices perform reviews for technical merit and feasibility of each change.

NOTE: Field-initiated case files requiring prescreening by AOS-200 are sent directly to the division. Field-initiated case files requiring prescreening by AOS-300/400/500/600 are sent to AOS-530 for further distribution.

The prescreening offices are as follows:

a. ANS-100 (NAS Planning & Support Division) - For case files which change as-built equipment layout drawings for major facilities. Also for case files which involve more than panel connection and wiring, or connection of equipment and subsystems to critical power (ARTCC/ACF) that is not in accordance with FAA Order 6950.15. Also for changes to Volume VI of NAS System Specification (NAS-SS-1000), facility (building) design criteria, and end-state generic drawings for all facilities such as ARTCCs, ACFs, ATCTs, TRACONs and AFSSs. ANS-100 coordinates all ANS case file activity. In addition, power related changes must be prescreened in parallel by AOS-200.

b. AOS-510 (Communication System Engineering Support Branch) - For operational equipment and software associated with Communications and Telecommunications with the exception of NADIN which must be forwarded to AOS-530.

c. AOS-530 (Information Resource Management Systems Engineering Support Branch) - For case files affecting operational systems. AOS-530 coordinates all prescreening and other CM-related activity for the AOS-300/400/520/530/540/600 divisions. In addition, AOS-530 acts as coordinator for the Enroute FARM Team and Terminal IPT.

d. AOS-200 (National Airways Systems Engineering Division) - For operational equipment and software associated with Surveillance, GPS-NAV, and Infrastructure.

e. ASD-100 (Architecture and System Engineering) – For case files affecting Interface Requirement Documents (IRDs), the NAS Level 1 Design Document (NAS-DD-1000), NAS System Requirements (NAS-SR-1000) and NAS System Specification (NAS-SS-1000), except VolumeVI.

f. AUA-600 (Oceanic and Offshore) – For equipment and software changes affecting AUA-600 IPT configuration items.

g. Other (BLANK) – Used when other than a regular prescreening office is identified (e.g. RCCB prescreening office).

27. Configuration Management Use Only

For internal Configuration Management use only.

APPENDIX 1. CASEFILE/NCP SAFETY RISK MANAGEMENT (CNSRM) CHECKLIST TEMPLATE

Casefile Number_- ATO0W-MALS-1002
Casefile Title - Adak ALS Upgrade, Modified MALS

Date: 1-17-07

To: Configuration Management Control Desk

Copy: Configuration Management Control Desk:

Description of Proposed System or Change
Install a modified MALS for RW 23 at Adak, (delete light bars at the 1200 and 1400 stations)

Assumptions
The installation of a MALS or any other approach light system to RW 23 will not result in any light credit, as the existing minimums, decision heights etc. are fixed by existing NAVAIDS, runway location and surrounding terrain. The approach light system for RW 23 is intended solely to aid the transition from an instrument to a visual environment. There is insufficient budget for a full MALS or MALSR. A shortened MALS will be a huge improvement over no approach lights at all.

Is Further Safety Analysis Required

NO

Justification/Rationale for SRM Decision

Based on Chapter 3.3, page 17 of the Safety Management System manual, this case file/ NCP does not meet any of the five stated requirements for an SRM.

Jeff Martin, Manager
NAVAIDS Engineering Center - Anchorage
phone (907) 271-3814
fax .(907) 271-2853

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

NOTICE
N JO 1800.2

Effective Date:
9/28/2006
Cancellation
Date: 9/28/2007

SUBJ: NAS Change Proposal (NCP) Process Support of the Safety Management System

1. PURPOSE. This notice addresses changes to the FAA NAS Change Proposal (NCP) process to support the Safety Management System (SMS). The NCP process is described in detail in FAA Order 1800.66, Configuration Management Policy.

2. DISTRIBUTION. This notice is distributed in Washington headquarters to division level within the Air Traffic Organization; to division level within the Technical Operations, En Route, and Terminal Service Areas; and to all Technical Operations, En Route, and Terminal field offices with a standard distribution.

3. CANCELLATION. Notice N JO 1800.1, NAS Change Proposal (NCP) Process Support of the Safety Management System, is cancelled. Notice N JO 1800.2 reissues the same information that was contained in Notice N JO 1800.1 and provides clarification regarding the supervisor's responsibility to ensure that appropriate safety documentation is attached to the casefile/NCP (see paragraph 9c(1) for exact clarification in **bold**.)

4. BACKGROUND. Aviation safety is a fundamental mission of the FAA. Thus, changes to NAS systems, equipment, and facilities providing air traffic control must not negatively impact NAS safety. These NAS system changes are authorized and documented through the NCP process. Although the NCP process does not preclude evaluation of NAS changes for system safety, the agency did not have a corporate infrastructure in place to systematically assess NCPs for safety risks. The FAA Administrator's 2004-2008 Flight Plan identified a specific initiative to implement the SMS using a phased approach with initial implementation focusing on targeted NAS changes. In November 2003, the Air Traffic Organization (ATO) was created and with it the Safety Service Unit was established to provide an infrastructure to address policy, training, oversight/monitoring, and other resources to effectively integrate system safety into the operational NAS. This notice provides interim policy changes to the NCP process to support the SMS as described in the current SMS Manual.

5. ACTION. FAA Form 1800-2, NAS Change Proposal, in conjunction with a signed Casefile/NCP Safety Risk Management (CNSRM) Checklist or Safety Risk Management Decision Memo (SRMDM) and, if required, an approved Safety Risk Management Document (SRMD) shall be used to support effective decisions regarding changes to operational NAS systems, equipment, and facilities. Signed CNSRM checklists, SRMDMs, and SRMDs need to

Distribution: A-W(TS/AT/TA/TP/TT/TX/RS/RN/RR/RW/RX/AF/FZ/NI/OP/OS/SR/VN/SC/TB/TQ/RI/RA/AR/BZ/CM/ND/SD/SU/UA/CA/CT/CB/CX)-2; A-X(AF/AT)-2; A-FAF/FAT-0 (STD)

Initiated By: AJW-272

be considered as inputs to the casefile/NCP process, otherwise organizations that originate casefile/NCPs may experience process delays. Personnel that have been assigned casefile/NCP control desk responsibilities shall not assign NCP numbers to casefiles unless a signed CNSRM checklist or SRMDM is attached as part of the package.

NOTE: The completed/signed CNSRM checklist is an acceptable alternative for a Safety Risk Management Decision Memo (SRMDM) required per the SMS Manual. The signed CNSRM checklist or SRMDM are acceptable documents for the NCP process and both terms are considered as interchangeable throughout the remaining sections of this Notice. An SRMD must be prepared when the CNSRM checklist determines that safety risk management is required.

All Configuration Control Boards (CCBs) shall ensure that each NCP includes a signed CNSRM checklist or SRMDM and, if required, an approved SRMD. CCB Chairpersons shall approve only NCPs that include a signed CNSRM checklist or SRMDM, and, if required, an approved SRMD.

a. Effective upon the date of this notice, all test case files/NCPs require a signed CNSRM checklist or SRMDM, and, if required, an approved SRMD.

b. Effective October 1, 2006, ALL changes to the NAS requiring a casefile/NCP in accordance with FAA Order 1800.66 will also require a signed CNSRM checklist or SRMDM, and, if required, an approved SRMD.

6. SRMD APPLICABILITY. When a system change is considered, supervisors may conclude that a comprehensive safety risk assessment is not required if the proposed change has no safety impact to the provision of air traffic service. For specific guidelines and criteria for making the determination, refer to the FAA SMS Manual Chapter 3 – Applicability of Safety Risk Management.

7. SRM CASEFILE/NCP DOCUMENTATION AND GUIDELINES. When a change is proposed to the NAS, supervisors of casefile/NCP originators must use the SMS Manual to decide what level of safety analysis is required; this decision must be documented. All casefile/NCPs will require a signed CNSRM checklist, which will include the determination as to whether or not an SRMD will be completed. The CNSRM checklist must include the following per Appendix 1, Casefile/NCP Safety Risk Management (CNSRM) Checklist Template:

a. Casefile number associated with CNSRM checklist.

b. Casefile title associated with CNSRM checklist.

c. Description of proposed system or change.

d. Assumptions.

e. Is further safety analysis required (Yes or No).

f. If Yes checked – Attach plan for SRMD completion or an approved SRMD.

g. If No checked – Include justification.

8. SRMD DOCUMENTATION AND GUIDELINES. The SMS requires documentation for all proposed changes to the NAS regardless of whether or not an SRMD is required. All new and modified NAS operational systems must be evaluated for safety risk. The findings of safety risk assessments shall be documented in an SRMD. The SRMD is a report that documents the safety risk assessment findings to support a decision that the proposed system change meets risk acceptance criteria. The content of an SRMD is found in the SMS Manual, Appendix D.

a. The SRMD will vary depending upon the type and complexity of the proposed change. For specific guidelines and criteria on making this determination, reference the FAA Safety Management System (SMS) Manual Chapter 5 – Safety Risk Management Documentation: Development and Approval. Supervisors of casefile/NCP originators shall ensure that a CNSRM checklist, and, if needed, an SRMD are signed by the appropriate authority effectively implementing the NAS change as outlined in the SMS Manual. FAA Order 1800.66 requires the supervisor of the person initiating the casefile to sign Block 23 of FAA Form 1800-2, NAS Change Proposal. This supervisor is also responsible for ensuring that a signed CNSRM checklist is attached to the casefile. Supervisors who approve casefiles in Block 23 are also responsible for ensuring the completeness of CNSRM checklists.

9. RESPONSIBILITIES.

a. The Safety Service Unit (ATO-S) is responsible for:

(1) Reviewing NCPs, during the Must Evaluation Process, that include SRMDs that are subject to the Safety Service Unit's approval.

(2) Commenting on NCP comments as appropriate.

(3) Providing recommendations to NCP originators and assisting NCP originators in resolving safety related comments submitted.

(4) Ensuring appropriate action items are recommended for incorporation into the NCP configuration control decision (CCD) as necessary.

(5) Providing SRM training in an appropriate and timely manner to casefile originators and their supervisors who approve the casefiles in Block 23.

b. Service Unit Safety Managers are responsible for:

(1) Reviewing NCPs, during the Must Evaluation process.

(2) Ensuring completeness of SRMDs.

(3) Commenting on NCP comments as appropriate.

(4) Providing recommendations to NCP originators and assisting NCP originators in resolving safety related comments submitted.

(5) Ensuring appropriate action items are recommended for incorporation into the NCP configuration control decision (CCD) as necessary.

c. Supervisors of casefile/NCP originators are responsible for:

(1) Signing-off on Block 23 of casefile/NCPs originated within their organization consistent with the existing practice established by FAA Order 1800.66 and ensuring a CNSRM checklist and if required a SRMD **or plan for SRMD completion** is attached to the casefile/NCP.

(2) Ensuring completeness of CNSRM checklists.

(3) Signing off on CNSRM checklists.

d. CCB Chairpersons are responsible for approving only NCPs that include a signed CNSRM checklist, and, if required, an approved SRMD.

e. CM Control Desk personnel are responsible for assigning NCP numbers to only those casefiles that have a signed CNSRM checklist attached.

10. FEEDBACK. When using the SMS guidance or templates, all organizations are encouraged to assess the effectiveness and usefulness. Organizations should provide feedback regarding the effectiveness and usefulness of the SMS guidance and templates to the Safety Service Unit.

11. ISSUANCE OF ORDER. Following review and evaluation of the suggestions and recommendations received, FAA Order 1800.66 will be updated and fully coordinated in accordance with FAA Order 1320.1, FAA Directives System.

12. WEBSITE LINKS. The following website links are available to assist in complying with this notice: http://intranet.faa.gov/ats/atq/

Steve Zaidman
Vice President, Technical Operations Services

APPENDIX 1. CASEFILE/NCP SAFETY RISK MANAGEMENT (CNSRM) CHECKLIST TEMPLATE

Casefile Number_____
Casefile Title_____

Date:

To: Configuration Management Control Desk

Copy: **Recommend that copies be provided real time to:**

Service Unit Safety Manager/Engineer

Description of Proposed System or Change
Enter a succinct description of the system or change. This need not be longer than one to several paragraphs. For proposed NCPs, this description will be the NCP definition.

Assumptions
What basic assumptions apply as the basis for the SRM decision (i.e., that this is an advisory service, is only for research and development or test, is a traffic management tool, aids in control of aircraft, etc.)? Describe the assumptions about the current system and potential system states, including about any critical support systems and interfaces without which the system could not achieve its functions. State the other organizations with which your system or change interfaces and if they are a party to this SRM decision.

Is Further Safety Analysis Required

YES ☐ NO ☐

Justification/Rationale for SRM Decision
In this section, explain the process you used (i.e., the paragraphs and figures of the SRM guidance from the SMS Manual) to come to your decision. Tell why you believe a proposed system or change does or does not affect the NAS and why it does or does not have a safety-significant impact. Use the results of the SRM guidelines as the basis for the justification (reference the SMS Manual chapters on SMS Requirements and Applicability of Safety Risk Management).

If YES Checked Above – Attach the plan for SRMD Completion (this plan must also reference the casefile/NCP title and number) or attach the approved SRMD.

Signature Block

Field Test Plan

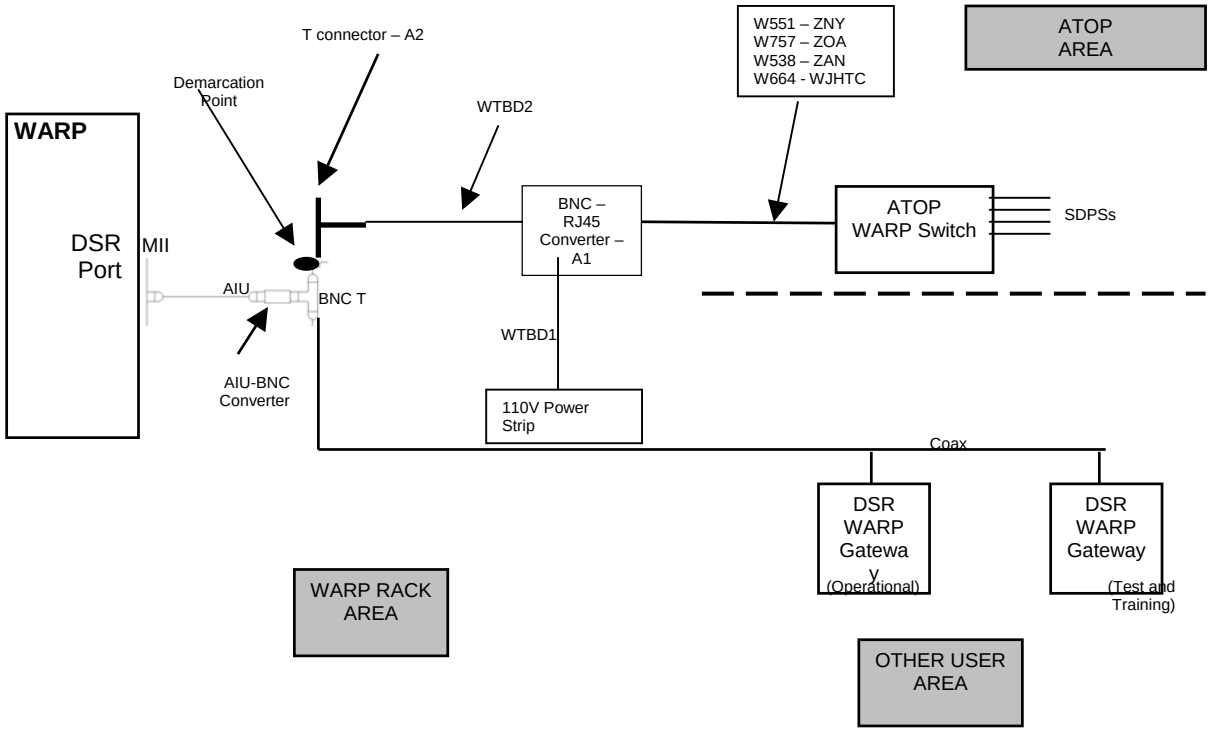
1. Title: Temporarily Connect the ATOP Weather and Radar Processing (WARP) interface to the ATOP Test & Training (T&T) Laboratory at New York ARTCC

2. Background: Temporarily move the Weather and Radar Processing (WARP) interface from the ATOP System to the ATOP Test & Training (T&T) Laboratory at New York ARTCC to allow for controller training. The Weather and Radar Processing (WARP) interface is currently not being used on the operational ATOP System at the New York ARTCC. Disconnecting this interface from the ATOP System will have no impact since this interface is not being used (NO-OPed). Reconnecting this interface to the New York ARTCC ATOP Test & Training (T&T) Laboratory will have no impact because the ATOP T&T Laboratory is a non-operational system. Later reconnecting this interface to the Operational ATOP System will have no impact since it will be reconnected before it is used operationally (still NO-OPed). Some coordination will be needed with the WARP operators when the WARP cable is disconnected because of the error messages they will see.

   The test objectives are the following:

   1) Demonstrate correct physical/electrical connection, and

   2) Demonstrate WARP data can be displayed on a ATOP Controller Workstation Position (CWP).



2.1 Systems Affected: ATOP and WARP
2.2 System Configuration Item Affected: BNC-RJ45 Converter and ATOP WARP Switch

3. General Description of the Modification:

3.1 Disconnect Cable W551 in New York from the ATOP WARP Switch. Reconnect Cable W551 to the New York ATOP Test and Training Lab SDPS.

4. Test Equipment Required: None

5. Location of Test: New York ARTCC (ZNY)

6. Test Schedule. Testing will occur after the approval of case file ATOE-ATOP-1072 and generation of the appropriate System Support Directive document.

7. General Test Approach.

7.1 WARP / ATOP ZNY Test & Training Laboratory Interface
7.1.1 Reference SSM-WARP-073, WARP/ATOP Connection at ZAN, ZOA and ZNY for the procedures necessary for performing this connection. Special attention should be given to risks described in Section 22 of the SSM.

7.1.2 Disconnect Cable W551 in New York from the ATOP WARP Switch.
7.1.3 Reconnect Cable W551 to the New York ATOP Test and Training Laboratory SDPS.
7.1.4 On a CWP in the ATOP ZNY T&T Lab, verify WARP weather is displayed. See ATOP ATC Operator's Manual (ATOM), Section 13.5.7.

8. Other Information:

8.1 Removal: After the test period specified in the case file is over, reconnect Cable W551 to the ATOP WARP Switch.
8.2 Test Report: A test report will be completed at the end of the test period.

U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

Subject: **ACTION:** Test NAS Change Proposal (NCP) Evaluations

Date: MAR 21 2006

From: NAS CCB Co-Chairs

Reply to
Attn. of:

To: All NAS Configuration Control Boards

This memorandum provides direction to all CCBs responsible for configuration management (CM) of prototype, test, and operational systems within the NAS (including non-NAS equipment interfaces to operational NAS equipment). Federal Aviation Administration (FAA) CM Policy Order 1800.66 requires documentation for test NCPs: a requirements document or statement, test plan and procedures including exit criteria. Attached are interim "Guidelines for Test NCP Evaluation." These interim guidelines should be followed and enforced by all CCBs until superseded by updates to FAA CM Policy Order 1800.66.

Richard Thoma
NAS CCB Co-Chair

James H. Williams
NAS CCB Co-Chair

Attachment

Attachment - Guidelines for Test NCP Evaluation

All test NCP's submitted for CCB approval must include a "Test Plan". The Test Plan should provide the following information:

1. Description of the system or system modifications to be tested.
2. Description of the connections (i.e. interfacing systems) including a diagram.
3. Requirements document or statement
4. Description of the test objectives and the data to be collected
5. Description of the evaluation plan
6. Description of the installation plan
7. Test procedures
8. Exit Criteria
9. Description of the removal plan
10. Cost associated with:
    a. Developing the Test Plan
    b. Labor Costs
    c. Procedure development
    d. Test data collection
    e. Test equipment
    f. Related equipment
    g. Installation
    h. Maintaining and supporting the test set up for the testing period
    i. Removing the test equipment and restoring the test site after test completion
11. Schedule for installation, monitoring period, and removal of the test equipment