Operational Tracking System

Texas A & M University - Corpus Christi
Graduate Project

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I. Abstract

Operational Tracking System (OTS)

This project is the design and implementation of a system to automate operational tracking of Student Naval Aviators as they progress through their training syllabus. This system acts as a bridge which logically combines data from two independent database systems involved in flight scheduling and flight time management. The combined data are used to track student aviator progress and present the data in related and required reports.
II. Background and Rationale

Naval aviation training is high volume and high paced. All student aviators progress through primary and intermediate flight training prior to the advanced curriculum. "Advanced" multi-engine flight training consists of approximately six months of training by student aviators in T-44A aircraft located solely at Naval Air Station Corpus Christi.

Table 1 is a summary of the overall advanced training sequence, not including exceptions (such as allowable module overlap), and Table 2 defines the acronyms used to describe each flying stage of training.

<table>
<thead>
<tr>
<th>MODULE</th>
<th>FLIGHTS &amp; SIMULATORS</th>
<th>FLIGHT &amp; SIMULATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Ground School</td>
<td>Ground School</td>
</tr>
<tr>
<td>1</td>
<td>FAM 0, CPT 1-7</td>
<td>FAM 0, CPT 1-7</td>
</tr>
<tr>
<td>2</td>
<td>FAM 1-5</td>
<td>FAM 1-5</td>
</tr>
<tr>
<td>3</td>
<td>FAM 6-13, BI 1-7X</td>
<td>FAM 6-13S, BI 1-8X</td>
</tr>
<tr>
<td>4</td>
<td>RI 1-13</td>
<td>NFAM 1-4, RI 1-21</td>
</tr>
<tr>
<td>5</td>
<td>RI 14-20X</td>
<td>RI 22-24</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>RI 25-29X</td>
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<tr>
<td>7</td>
<td>-</td>
<td>AN-1, FORM 1-2, VNAV 1, ONAV 1</td>
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</table>

Table 1. Summary of the Overall Training Sequence

<table>
<thead>
<tr>
<th>Stage</th>
<th>Full Name</th>
<th>Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPT</td>
<td>Cockpit Procedure Trainer</td>
<td>Simulator Initial Cockpit Training</td>
</tr>
<tr>
<td>FAM</td>
<td>Familiarization</td>
<td>Day VFR* Aircraft Acquaintance</td>
</tr>
<tr>
<td>NFAM</td>
<td>Night Familiarization</td>
<td>Night VFR* Aircraft Acquaintance</td>
</tr>
<tr>
<td>BI</td>
<td>Basic Instruments</td>
<td>Initial Instrumentation Orientation</td>
</tr>
<tr>
<td>RI</td>
<td>Radio Instruments</td>
<td>Advanced Instrument Use &amp; Understanding</td>
</tr>
<tr>
<td>FORM</td>
<td>Formation</td>
<td>Close Flight with Another Aircraft</td>
</tr>
<tr>
<td>VNAV</td>
<td>Visual Navigation</td>
<td>VFR* Flight, Ground Navigation</td>
</tr>
<tr>
<td>ONAV</td>
<td>Ocean Navigation</td>
<td>Extended Over Ocean Flight &amp; Navigation</td>
</tr>
<tr>
<td>AN</td>
<td>Air Navigation</td>
<td>Airways Training, Solo</td>
</tr>
</tbody>
</table>

*VFR: Visual Flight Rules

Table 2. Stage Acronym Definition

2
Methods used to track student aviators through their advanced training have been manual in nature. A grid system has been taped onto a large wall-mounted board (approximately four feet by five feet). A row exists for each student aviator, and each column represents one flight or simulator event. Magnetic "pucks," small magnetic markers, are placed in blocks applying to individual student aviator events as they are completed. The magnetic board is updated daily from an annotated hard-copy flight schedule from the previous day by "pucking" events that have been completed.

Weekly Operations Department reports are generated in a number of areas for student aviator tracking and flight time management, and each of these reports have relied on manual computation of applicable areas. A Weekly Syllabus Report is generated to track flight hours flown during the previous week. Money allocation to Navy squadrons is based on flight time, stressing the importance of this report. This report is especially important at the end of Fiscal Quarters and Fiscal Years when reviews of flight time consumption is performed. The Weekly Syllabus Report also identifies student aviator entries that have been shifted in the allowable time-to-train matrix along with justification for that shift. Finally, this report also contains an estimate of flight time required to train student aviators for upcoming weeks.

A Weekly Tracking Report is used to ensure that student aviators are progressing along the training curriculum. The
completion of Module 4 is used as a milestone, and the report has been constructed from data on the magnetic tracking board.

The training squadron must ensure adequate total and night flight times are logged by student aviators during their training. Student aviators have been required to check their flight time log books to ensure flight time requirements are met and to notify the flight schedulers to resolve any deficiencies.

The Operational Tracking System (OTS) has been implemented on a parallel-use basis during the system development. As OTS training continues and user comfort with the system improves, OTS will eventually supersede old manual methods of student aviator tracking. OTS automates the tracking methods currently used by accessing data already available in the squadron. The Computer Aided Scheduling (CAS) database system, which maintains files on each student aviator identifying events completed, provides data necessary for progress and tracking reports. Flight time information is acquired from the Computer Aided Naval-Flight-Record Data Entry (CANDE) system, the Navy's system used to track flight time on a large scale for items such as flight time usage. While individuals' flight time record keeping will continue to be performed in a hand-written logbook, CANDE makes data available electronically for flight time tracking requirements.

The OTS access to up-to-date data allows efficient tracking of student aviators as they progress towards their training completion. The system eliminates much of the excessive and repetitive manual work required to meet this goal by capturing
data already available and using the combined information to generate reports. The resulting improvement of tracking efficiency demonstrates effective managerial use of computer systems and shared data.