DOCKET NO.: SA-517
EXHIBIT NO. 3-N

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

NTSB STAFF REVIEW AND CONCLUSIONS
FAA'S MSAW PROGRAM EVALUATION PROGRAM OF 10 AIR TRAFFIC CONTROL FACILITIES

(3 pages)

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Subject: Summary of FAA MSAW Review

In response to the deficiencies discovered during the Board's investigation of the Guam accident, Ron Morgan (AAT-1) directed the Air Traffic Evaluations and Investigations Staff (AAT-20) to perform an in-depth review of MSAW-related operations at ten selected field facilities. They were Atlanta, GA., Birmingham, AL., Boise, ID., Charlotte, N. C., Dallas-Fort Worth, TX., Monterey, CA., Palm Springs, CA., Pasco/TriCities, WA., Reno, NV., and Salt Lake City, UT. The FAA teams interviewed management and staff specialists, air traffic control specialists, and airway facility technicians about their knowledge and understanding of MSAW operations and support, MSAW training, and FAA requirements for verification and validation of MSAW functionality.

While there were occasional bright spots, the overall level of understanding of the MSAW system shown in these documents is disturbingly poor. It also does not reflect well on the FAA's ongoing facility evaluation process, because the issues raised here are not new, but instead relate to training deficiencies, poor oversight of local automation policies and procedures, and failure to ensure that staff were provided with adequate guidance on management of the MSAW system. The larger question is "How did this go unnoticed for so long?"

Areas of concern:

Training: Staff specialists and operational controllers described MSAW-related training as minimal at best. Sample comments:

"There was no real comprehension concerning how MSAW works."
"Classroom training was regarded as very weak."
"None of the controllers received any ETG (simulator) training or a demonstration of aircraft exhibiting an MSAW alert."
"Responses varied from 'received no training' to 'engaged in word-of-mouth discussions about the operations of MSAW."

The few (two?) operational controllers interviewed who had substantial understanding of MSAW were self-taught and unable to attribute their knowledge to a specific source.

The training and understanding of MSAW exhibited by automation specialists varied from "more than adequate" to "don't recall receiving any training", although most seemed to have acquired a working knowledge of the system.

System checks: Daily MSAW checks are the norm, but the requirements for doing so, documenting that they occurred, and oversight of the process are vague and not fully understood by those responsible for implementation. Many respondents said they had not been specifically trained to perform such checks.

Response to local and remote MSAW alerts: Operational personnel were familiar with 7110.65 requirements for safety alerts, but many respondents felt that MSAW alarms were often unfounded and did not warrant a warning to the aircraft involved. Some never issued warnings to VFR aircraft. Personnel employed at ARTS facilities with remote BRITE displays at satellite airports were often uncertain of the MSAW alert capabilities available there. Controller response to alerts generated by aircraft under control of remote facilities was also variable, although the 7110.65 specifically addresses their responsibility in such circumstances.

Nuisance Alarms: Chronic occurrence identified by nearly all respondents, although its perception as an operational problem varied. Experience helped to identify "known" false alarm situations. As a human factors issue, repeated nuisance alarms tended to cause controllers to "tune out" the aural alarm horn. Sample comment: "Visitors hear the alarm more than we do." Due to repeated nuisance alarms generated because of local geography, Palm Springs routinely inhibits part of their MSAW coverage on clear days. Some automation specialists reported minimal training on MSAW site adaptation ("Three days out of a three month ARTS course"), even though adaptation is a large part of their work and its quality directly affects the nuisance alarm rate.

Areas where MSAW processing is inhibited: Some facilities (such as Palm Springs) have site adapted areas where MSAW is inhibited. There was a general lack of knowledge among operational personnel as to where these areas were located, how to find out where they were located, and who had the authority to approve their establishment.

Facility Staff Automation Support: The quality and commitment of automation support was variable. Larger facilities such as DFW had full-time, well-qualified staff assigned to the task, while the person responsible for automation at Reno estimated his time commitment as 5% due to time-sharing with other staff and operational duties. The evaluation team felt that his prior training was inadequate for assignment as an automation specialist. Several respondents reported having to split their time among as many as five or six different collateral duties. The person responsible for automation support at Pasco handles four other ARTS IIA facilities as well. Several automation specialists commented that the Academy training they received was inadequate, especially in adaptation. Current facility staffing standards seem to be affecting the provision of automation support: one facility was concerned that if their specialist left, he could not be replaced. Automation responsibilities would then be

assigned to an inexperienced staffer with no automation background. The FAA Academy is not currently offering any automation specialist courses, so no formal training is available for such individuals. FAA policy on reduction of staff support levels may lead to increased instances of untrained personnel being assigned technical responsibilities for which they have inadequate preparation.

Guidance for management of the MSAW system is lacking, with automation specialists having divergent opinions on how the system should be configured, who is responsible for authorizing changes, and what source documents are controlling, if any. The quality of local automation documentation was variable, with some facilities maintaining an excellent record of software changes and others not doing as well. Apparently, no formal process for automation record management is prescribed by FAA. Some facilities have not yet fully complied with the checks prescribed by the August GENOTs issued after the Guam crash.

<u>Airway Facilities knowledge of MSAW:</u> AF technicians are responsible for certification of the ARTS system, but mainly as a hardware device. Thus, they feel comfortable in ensuring that the mechanical parts of the system work (radar displays, warning horns, lights, etc.) but have little knowledge or interest in the software aspects, which are viewed as air traffic issues. Required diagnostic and certification checks were generally performed and logged, although there were varying opinions about exactly what checks are needed and at what intervals. There also seems to be some misunderstanding about the and AT areas of responsibility, and a need for increased moderation between the two groups.