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SAC SAFE PASSAGE IN EXERCISE "SKY SHIELD"

(Unclassified Title)

By

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and
Austin R. Brown, Jr.

Operations Analysts

OPERATIONS ANALYSIS TECHNICAL MEMORANDUM NO. 27

20 October 1960

DIRECTORATE OF OPERATIONS ANALYSIS

Deputy Chief of Staff for Operations

HEADQUARTERS AIR DEFENSE COMMAND
Ent Air Force Base, Colorado

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This report contains the results of an operations analysis study. It does not necessarily express Air Defense Command policy.

Approved William F. Blaylock
WILLIAM F. BLAYLOCK
Director, Operations Analysis

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SUMMARY

1. Thirty SAC safe passage aircraft were scheduled in 6 cells of 5 aircraft each. Twenty-nine aircraft flew. All cells were tracked adequately. Problems arose in maintaining proper flight size in SAGE. Flight size carried for tracks representing one cell of 4 or 5 aircraft varied from 1 to 14.

2. There were no weapons actions against safe passage aircraft, either by manned interceptors or by NIKE. One safe passage aircraft reported an apparent beam attack against him by an F-102. Examination has shown that this was a crossing of tracks with an F-102 on CAP, not an attack. Altitude separation in the crossing was 1,700 feet.

3. There were three mandatory aborts, one from each wing involved. The air defense system had no trouble either in tracking or identifying these aircraft.

4. Identification of safe passage aircraft was performed in three ways, by flight plan correlation, by use of Mark X SIF, and by accepting handover of a track with a given identity and maintaining tracking continuity.

a. Flight plan correlation would have been a possible means of identification for all safe passage aircraft. They were generally within tolerance for lateral displacement from flight plans but timewise varied from 8 minutes ahead to 6 minutes behind schedule.

b. The use by safe passage aircraft of Mark X SIF Mode and Code combinations depending upon true track heading was another aid to identification used in the exercise. Washington Air Defense Sector, the only SAGE sector attempting this procedure, used it effectively. SKY SHIELD was the first SAC/NORAD effort to try this identification procedure. There were some instances of the wrong codes being used by SAC.

c. Sault Ste. Marie and Detroit Air Defense Sectors depended primarily upon identification performed by sectors handing over safe passage tracks to them and upon maintaining tracking continuity on these tracks. These sectors never received positive information on the departure time and number of SAC aircraft engaging in the mission.

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"SAC Safe Passage in Exercise SKY SHIELD"

I. CONCLUSIONS.

A. Twenty-nine SAC aircraft were successfully accorded safe passage through the air defense system during a simulated attack situation.

B. Because of several problem areas in identification, a much larger number of SAC aircraft exiting during a real attack might cause such confusion as to create serious safe passage conditions. The primary problems are:

1. Inadequacy of experience and familiarization of SAC and NORAD personnel with the Mark X SIF Mode-Code identification procedure.

2. Incorrect assessment of tracks related to both the track initiation and identification functions.

3. Inadequate or misunderstood procedures for passing SAC takeoff information through the air defense system.

C. There is no accepted standard policy within the NORAD SAGE system as to whether Mode 1 bracket decode should be used. The 26th Air Division used bracket decode during SKY SHIELD; the 30th Air Division did not.

D. Identification criteria to be used for flight plan correlation in the defense area during an Air Defense Emergency are not defined by ADC Regulation 55-12 or NORAD/CONAD Regulation 55-14.

II. RECOMMENDATIONS.

It is recommended that:

A. Briefings, training, and exercises be used to familiarize SAC and NORAD personnel with the Mark X SIF Mode-Code identification procedure.

B. Procedures be established for a more adequate check of flight size assessment, especially as this concerns safe passage and SAC flight following operations.

C. A standard, clear-cut procedure be established for passing SAC Emergency War Order (EWO) takeoff information to the required air defense units.

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D. Headquarters ADC establish definite rules concerning the use of Mode 1 "bracket decode" or Mode 1 code 00 only in SAGE.

E. Identification criteria to be used for flight plan correlation in the defense area during an Air Defense Emergency be determined and defined by ADC or NORAD in appropriate regulations.

III. SCOPE OF THE STUDY.

A. This study was undertaken to evaluate the effectiveness of procedures used to provide safe passage for SAC aircraft during Exercise SKY SHIELD. Specific objectives were as follows:

1. To determine the air defense actions performed on SAC safe passage aircraft, including tracking, identification, weapon commitment and success.

2. To examine means used to identify SAC safe passage aircraft by air defense units.

3. To evaluate possible causes for failure to provide safe passage.

4. To discover what problem areas exist in safe passage procedures.

B. This evaluation is limited to those areas penetrated by safe passage aircraft where analysts observed the exercise. These were Chicago Air Defense Sector (CHADS), Detroit Air Defense Sector (DEADS), and Sault Ste. Marie Defense Sector (SSMADS) of the 30th Air Division; Washington Air Defense Sector (WAADS) and Syracuse Air Defense Sector (SYADS) of the 26th Air Division; and P-70, Belleville, Illinois, a Master Direction Center, of the 33rd Air Division.

IV. DESCRIPTION OF THE EXERCISE.

A. Headquarters NORAD Operations Order 6-60, dated 1 August 1960, implemented SKY SHIELD. The Operations Order described the 'Situation' as follows:

"'Sky Shield' (unclassified nickname), the annual NORAD/SAC large-scale continent-wide exercise is scheduled for execution on 10 September 1960. A SAC aggressor force consisting of approximately 350 faker aircraft will simulate an attack against the North American Continent employing

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maximum and continuous ECM, chaff, and communications jamming during the attack phase. Additionally, while the continent is undergoing attack, a group of SAC aircraft will simulate a departing retaliatory force to exercise the safe passage concept. All non-exercise air traffic in the United States and Canada will be grounded while the strike phase of the exercise is in progress."

B. The objectives were stated as:

"a. Field Objectives.

"(1) To exercise the entire NORAD system in defense against a realistic attack conducted within a realistic ECM environment.

"(2) Exercise combat intelligence, collection, evaluation and dissemination.

"(3) To exercise all available means of communication. (See Annex C.)

"(4) To exercise the 'safe passage' procedures of Strategic Air Command traffic and identification procedures in general. (See Appendix 1, Annex A.)

"(5) Exercise control of public information and media representatives."

C. NORAD evaluation and analysis objectives were stated in Annex E as follows:

"1. Objectives.

"The NORAD evaluation and analysis objectives for this exercise are:

"a. Analyze the effectiveness of safe passage procedures for SAC aircraft through the NORAD system.

"b. Analyze the capability of the ground environment network to detect and track bombers flying at very low altitudes.

"c. Analyze the capability of the DEW Line and the barriers to detect and report bombers at high altitudes.

"d. Analyze the capability of the Mid-Canada Line to detect and report bombers at high altitude."

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D. SKY SHIELD was conducted as scheduled. All SAC safe passage aircraft flew as outlined in the Operations Order, except for one early abort.

V. DATA COLLECTION.

A. Analyst observers were sent to all SAGE sectors penetrated by SAC safe passage aircraft. In addition, an observer was sent to P-70, Belleville, Illinois, in order to evaluate the passage of information from a manual Master Direction Center into a SAGE sector. (These observers also were responsible for collecting data required to meet other NORAD evaluation objectives not included in the purview of this study.) Operations analysts participating in the exercise and furnishing data for this study were:

28th AD:	WAADS -	Roy M. Donegon, NORAD
	SYADS -	James K. Roros, ADC
30th AD:	CHADS -	James M. Chapman, ADC
	DEADS -	L. J. Craig, The RAND Corporation
	SSMADS -	Austin R. Brown, Jr., ADC
33rd AD:	P-70 -	Lyle L. Knudsen, ADC

B. Data collected from the SAGE sectors for the period of the exercise consisted of the following:

1. NORAD Form 16 - Army Air Defense Action Log.
2. STRIP printout.
3. ODAP printout.
4. Track overlays for all tracks.
5. Operators' logs.
6. Observer's report, including comments on:
   a. Detailed identification procedures.
   b. Use of Mark X and SIF.

C. Data collected from the MDC, P-70, for the period of the exercise consisted of:

1. NORAD Form 16 - Army Air Defense Action Log.
2. NORAD Form 4 - Recorder's Log.

3. NORAD Form 17 - Identification Log.

4. Track overlays for all tracks.

5. Observer's report.

VI. DISCUSSION OF RESULTS.

A. Routes Planned and Flown.

1. Figures 1 to 3 show the safe passage routes planned for SKY SHIELD and the actual route flown by an abort from each group of aircraft. These aborts were prearranged; each group of safe passage aircraft was directed to abort one SAC aircraft. In each case, this abort was the last aircraft in the group.

2. SAC aircraft adhered very closely to their routes, with a maximum lateral deviation of 18 miles. Maximum deviations in time were 8 minutes ahead and 6 minutes behind checkpoints indicated on SAC Flight Plan Forms 121. All SAC aircraft flew as scheduled except that there were only 9 of the 10 scheduled by 32lst Bomb Wing from McCoy AFB because of an early air abort.

B. Tracking by the Air Defense System.

1. In the portions of the system examined, tracking was effective and continuous. Crosstell from the manual area to SAGE sector and SAGE sector to sector was performed effectively. A summary of tracking information is given in Table I. In the 30th Air Division lateral tell of safe passage tracks occurred as much as 200 miles prior to entering the receiving sector. Also, the relinquishing sector at times carried a track for as much as 150 miles after it left the sector. Carrying safe passage tracks for such distances does not seem to improve the maintenance of safe passage, and under heavy load conditions would increase the burden on the system.

2. In all the SAGE sectors studied, some problems were encountered with flight size assessment. All SAC aircraft flew initially in cells of 5 aircraft, except for the second 32lst Bomb Wing cell near the East Coast, which had 4 aircraft. In each of the three bomb wing groups, one scheduled abort reduced the second cell size by one aircraft. Tables II to IV show the errors and changes of assessment by unit and time. Cells of 4 or 5 aircraft carried assessments varying from 1 to 14. One factor contributing to the over-assessments was track initiation in CHADS shortly after the

tracks were told in from P-70 and subsequent failure to change assessment or drop tracks. DEADS and SEMADS continued to carry most of the tracks as passed by CHADS and failed to correct the assessments. Such errors in flight size assessment might contribute to serious problems in an ENO situation. Enemy aircraft could enter an ENO flight corridor and easily be classified Yoke (Y) along with the SAC aircraft unless careful flight size counts are made.

3. Under conditions of heavy ECM or clutter, tracking safe passage aircraft from search radar returns could possibly be difficult. Both the 26th Air Division and 30th Air Division were concerned about this problem and proposed means of using Mark X SIF for tracking the safe passage aircraft.

a. In SAGE there are two options for transmitting Mode 1 SIF returns from a radar site to the direction center. In the first, the standard option for SAGE, only Mode 1 code 00 returns are transmitted; in the second, called bracket decode, any Mode 1 return is transmitted. Mode 1 code 00 is normally reserved for ADC interceptors. At the DC both options look the same; there are no means of distinguishing different codes in the bracket decode option. Selection of option is made by switch action or rewiring at the FST-2 at the radar site.

b. The 30th Air Division proposed to NORAD in a message dated 9 September 1960 that all SAC safe passage aircraft be instructed to use Mode 1 code 00 in place of the code specified by the Operations Order. The message was received by NORAD too late to take any action pro or con. There is no evidence to indicate that any sectors of the 30th Air Division had any difficulty maintaining good tracking on any of the safe passage aircraft of this exercise.

c. The 26th Air Division approached the same problem by having all of its FST 2's set for bracket decode, so that Mark X returns for all safe passage aircraft and interceptors were received at all direction centers in the division. As would be expected, good tracking was maintained.

d. The use of Mark X for tracking in either of the above methods also makes it possible to use it as an improper means of identification, since only interceptor and safe passage aircraft are supposed to be showing Mark X. Identification personnel might be tempted to use this insecure method of identification under heavy load conditions. There is no indication that Mark X was used for identification in the 26th Air Division. The 30th Air Division stated in its proposal that Mark X displays in SAGE would be used only for tracking, not for identification.

e. The proposal of the 30th Air Division would eliminate the Mode 1 portion of the Mark X SIF Mode-Code identification procedure described in paragraph C.2.c., below, and thus, if used in EWO, would require changes to SACM 55-4 and NORADM 55-4. Using Mode 3 only in identification of EWO aircraft would be less secure than using both Modes 1 and 3.

f. This exercise has demonstrated again the lack of uniformity in the use of Mark X Mode 1 in SAGE. Headquarters ADC should establish definite rules for this operation. Possible alternatives are:

(1) All sectors use Mode1 code 00 returns only.

(2) All sectors use bracket decode.

(3) Each air division establish a policy for its own sectors based on local conditions.

g. In making this determination several factors must be considered. Among these are:

(1) Interference problems.

(2) Presently programmed limits on Mark X data inputs to SAGE.

(3) Extent of need for Mark X assist in tracking.

(4) Identification security.

(5) Separation of interceptors and non-interceptors.

C. Identification.

1. Evaluation of the identification procedures used in SKY SHIELD comprises the major portion of this study, since identification is the key to successful safe passage of SAC aircraft. Generally, the identification process caused the proper results; all safe passage aircraft were carried properly as Yoke (Y), and no weapons were committed against them. In order to gain some material benefit from this evaluation, it is necessary to extrapolate the results of SKY SHIELD into an estimate of what would happen if all of SAC were forced into an EWO operation under conditions of a real attack. Slight errors of procedure that produced no adverse results under

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the conditions of SKY SHIELD would be greatly magnified in a real EWO and might result in the destruction of many SAC aircraft. Thus, all identification procedures used merit detailed consideration with special emphasis on aspects of identification that did not function properly.

2. Identification of safe passage aircraft in SKY SHIELD was done in three ways: flight plan correlation, maintaining the classification as passed from another sector, and Mark X NIF Mode-Code variation based on true track. These will be considered separately below.

a. Flight plan information was supplied to air defense units in NORAD Operations Order 6-60. Route information was given to the nearest minute of latitude and longitude. The only time indicated was a range of takeoff times for each cell of 5 aircraft. An obvious error in times existed in the NORAD Operations Order for the second cells of both the 68th Bomb Wing and the 384th Bomb Wing. This was apparently never corrected by a NORAD change to the Operations Order. Identification by flight plan correlation using these flight plans was quite successful. Several units were in doubt as to the adequacy of their information.

(1) In SSMADS definite word was never received as to positive departure of a given number of SAC aircraft at the planned time. Information on takeoff times and number of aircraft from Chennault and Little Rock was passed properly through the air defense system to P-70 and on to CHADS. There is no indication that this information ever reached DEADS or SSMADS. The failure to pass this information is extremely critical, since knowledge of E hour, option, and actual takeoff times and numbers of aircraft would be required by all air defense sectors in case of a genuine departure of SAC. In this instance, SSMADS assumed that incoming Yoke (Y) tracks were properly identified when passed from the south. All SAC aircraft from the 384th Bomb Wing, Little Rock, began ECM and chaff while still in the safe passage corridor in SSMADS. (This error was due to an incorrect 384th Bomb Wing frag order.) Thus SSMADS, without positive knowledge that this SAC unit was en route, and in spite of seeing these aircraft committing an unfriendly act (ECM), maintained a classification of Yoke (Y).

(2) DEADS, while in somewhat the same situation as SSMADS, freely accepted Yoke (Y) classifications from the CHADS to the south. DEADS, not having a peacetime identification function, was reported to have an indifferent attitude toward identification during this mission. Aircraft

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crosstold into the sector as Unknown (U) or initiated in the sector as Pending (P) became Faker (X) without being referred to the Trusted Agent. Any safe passage aircraft that had been incompletely tracked and was not on an obvious south-to-north route would probably have been classified Unknown and then Faker in the same way.

(3) In WAADS there was some question as to whether the flight plan information in Operations Order 6-60 coincided with a SAC Strike Route Information Book route. When it was discovered that this was not the case, identification personnel felt they must use the Mark X SIF Mode-Code procedure as described in paragraph c. below. WAADS is the only sector that had made prior arrangements to provide briefings and trained personnel for the implementation of this system.

(4) There are no specific instructions on correlation criteria to be used for identification of SAC or any other aircraft in the defense area during an air defense emergency. ADC Regulation 55-12 dated 2 March 1960 defines criteria for Air Defense Identification Zones (ADIZ's) as follows:

"5. Identification Criteria:

"a. Friendly Tracks. The following methods and criteria are established for the identification of tracks as Friendly:

"(1) Information derived from a pre-filed flight plan, updated by information obtained from in-flight amendments and position reports, is compared with an established track. If the information as to the proposed flight and the information as to the established track correlate within the established criteria, the track may be identified Friendly. The criteria for Friendly identification are as follows:

"(a) Domestic ADIZ. Correlated within plus or minus five minutes flying time forward or behind the flight plan specified position and within ten nautical miles on either side of centerline of the flight plan route.

"(b) Coastal ADIZ. Correlation within plus or minus five minutes flying time forward or behind the flight plan specified position and within 20 nautical miles on either side of centerline of the flight plan route."

The requirement for identification in defense areas is stated in paragraph 3.b. "During Maximum Readiness (Air Defense Emergency), to establish and maintain the identity of all airborne objects while penetrating or operating within an ADIZ. In addition, establish and maintain the identity of, or ready control over, all airborne objects while penetrating or operating within the defense area. This latter requirement is met when additional restrictions authorized in the SCATER plan (Emergency SCAT Rules or Full SCATER) are applied." If flight plan correlation is used to establish and maintain identity, the criteria appropriate to defense area identification is not given. NORAD/CONAD Regulation 55-14, dated 19 September 1960, (after SKY SHIELD) gives no further clarification of this procedure.

b. Maintenance of track classification as passed from another sector was used as a primary means of identification in CHADS, DEADS, SSMADS, and SYADS with some reference to flight plan correlation for verification. This is generally accepted as an approved secure method; however, the reliance on its use contributed to the serious errors in assessment discussed in paragraph B. above. Safe passage aircraft were improperly carried with a Friendly (F) instead of Yoke (Y) classification by 32nd Air Division manual sites south of WAADS. After tracks on two cells were passed to WAADS as F, and carrying correct assessment, WAADS changed the classification to Y, and, in the case of the second cell, erred in assessment during the rest of the time tracked. (See Table III.)

c. The Mark X SIF Mode-Code variation procedure is described in SAC Manual 55-4 dated February 1960. NORAD Manual 55-4 dated April 1959 did not at the time of SKY SHIELD include instructions on the procedure. An addition to this manual including details of this procedure will probably be distributed to NORAD units during October 1960. The NORAD Operations Order probably should have referenced "NORAD/CONAD Supplement 1-60 to U.S. Supplement #1 to ACP-160 IFF Mark X (SIF)", dated August 1960, which contains in Chapter 11 the same information on the Mark X (SIF) Mode-Code procedure as does SACM 55-4. This NORAD/CONAD document should have been received by all air defense units before SKY SHIELD. NORAD Operations Order 6-60 included a description of the Mark X SIF procedure and the codes to be used for SKY SHIELD. The appropriate portion is quoted here:

"5. SIF/IFF Procedures.

"a. When 'safe passage' aircraft become 'strike aircraft', IFF/SIF will be placed in 'Standby'.

"b. In the event NORAD Manual 55-4 (presently under revision) is not in the field, the 'safe passage' aircraft will operate in accordance with current NORAD and SAC Manuals 55-4. In addition, IFF/SIF procedures will apply. (See Figure 2, page A-2-4.)

"(1) Description of Procedure. To assist in the identification of EWO traffic, designated Mode 1 and Mode 3 codes have been assigned to each 20 degree sector of the compass rose (see Figure 1, page A-2-3). EWO aircraft depending on true track being made good over the ground/surface will squawk the designated Mode 1/3 codes as outlined in Figure 2. To compensate for any error in track, and to permit acceptable tolerance between sectors, a plus or minus five degree leeway is included. As an example, an aircraft making good a predicted true track of 020 degrees could be squawking the codes assigned the 021 to 040 sector. However, the aircraft squawking the codes assigned the 021 to 040 sector and only making good a track of 015, thus being out of the plus or minus 5° tolerance, would be subject to tactical action.

"(2) Operational Procedures.

"(a) EWO traffic will squawk designated codes for true track being made good as soon as possible after take-off and on course outbound. (Mode 2 switch will be on at all times equipment is being operated.)

"(b) If EWO traffic climbs to altitude over base or some other designated point, the orbit code will be squawked until altitude is reached, and aircraft then proceeds on course, at which time paragraph a, above, will apply.

"(c) Transponders will be operated continually as described in the foregoing paragraphs until strike aircraft reach a point approximately 300 miles from the nearest hostile radar, at which time the Master Control Switch on the IFF control box will be placed in the 'Standby' position.

"(d) Normally, only the lead aircraft will show IFF when aircraft are proceeding in formation. Tanker aircraft will show IFF/SIF during all operation while receiving aircraft will not show IFF/SIF during refueling."

This Mark X SIF Mode-Code identification procedure was devised to be used primarily in the manual air defense environment. It can be used in SAGE only by arranging to have code interrogations done by personnel at a Long Range Input (LRI) radar site. The procedure will have some direct utility in SAGE only when

the SAGE program has a Mode 3 readout capability, which will be available either with Model 8 or a subsequent model. However, its use in SAGE will always be limited for several reasons. There will never be a Mode 1 readout capability in SAGE unless present planning is changed. Even the Mode 3 readout capability in SAGE is somewhat hampered by the fact that an aircraft showing a Mode 2/Mode 3 interlace response is read out as Mode 2. Mode 3 is decoded only when Mode 2 is shut off in the aircraft. The use of this identification technique also requires better heading information than is now available in SAGE. Study of STRIP printouts for one track showed fluctuating headings with variations of 30° from that reported by the navigator to be common.

(1) It is apparent that this Mark X SIF identification procedure had never been tried in a coordinated effort between SAC and NORAD before SKY SHIELD. Therefore, it is not surprising that a number of errors occurred. The application of the procedure by the three SAC bomb wings and NORAD units are outlined below.

(a) 384th Bomb Wing, Little Rock AFB. The first cell (5 aircraft) of this unit was not consistent in its display of SIF. The proper mode-code combination for its track was Mode 1 code 31 and Mode 3 code 15. The #1 and #3 aircraft were on the right code for most of the route. The #4 aircraft was using Mode 1 code 00 and Mode 3 code 02 during the early part of its route and then went to "Standby". No explanation of this code setting is available. The #2 and #5 aircraft were properly set on "Standby" during the entire safe passage route. The second cell (5 aircraft) from Little Rock used the right SIF settings on the entire outbound route; i.e., #1 aircraft showed Mode 1 code 31 and Mode 3 code 15, the others, "Standby".

(b) 68th Bomb Wing, Chennault AFB. There were two basic errors in SIF mode-code settings used by this group of aircraft. The SAC Operations Order implementing the exercise (Operations Order 11-61, "Sky Shield," Hq 2nd Air Force, dated 27 July 1960) referred in Appendix X to a table in SAC Manual 55-4, dated February 1960, as follows:

"6. SIF/IFF PROCEDURES: (U)

"a. Safe Passage aircraft IAW Chapter 10, SACM 55-4, Figure 2, Column 5. (S)"

All aircraft from the 68th Bomb Wing used Column 1 instead of Column 5. This probably resulted from an error in the unit

frag order or an oversight in briefing the crews. In addition, one aircraft reported that he was showing the mode-code for a track of 341°-360° while his track was actually 025° during nearly the entire safe passage route. The first error would have resulted in misidentification of all ten aircraft had the procedure been used; the second error points out that it is possible for an aircrew to misinterpret the procedure as it relates to true track of the aircraft. In both cells of the 68th Bomb Wing and in the first cell of the 384th Bomb Wing, SAC crews did not adhere to the policy of having only the formation leader showing Mark X SIF. Possibly a definition as to when "aircraft are proceeding in formation" is required. Air defense units penetrated by the 384th and 68th Bomb Wing safe passage cells did not use the Mark X SIF Mode-Code procedure for identification. An attempt was made to read out codes at P-70 for the 68th Bomb Wing aircraft; this failed because of the wrong codes being used by the SAC aircraft.

(c) 321st Bomb Wing, McCoy AFB.

Reports indicate that the lead aircraft of each cell was showing the correct Mark X SIF codes. An observer's report from WAADS indicated that WAADS used Mark X SIF Mode-Code settings for identification. In order to perform identification in this way, WAADS ensured that voice communication lines were available between the DC and LRI sites and briefed DC and LRI personnel on the procedure. Since the procedure was successful when 321st Bomb Wing aircraft passed through WAADS, it can be assumed that the aircraft used proper codes.

(2) One aircraft was scheduled to abort from each group of safe passage aircraft flying the mission. A correct use of Mark X SIF at the time of abort would have dictated a certain Mode 1 and Mode 3 code setting for the true track maintained while returning to base. Records indicate that none of the three aborts used the correct Mode 1/Mode 3 code. The 384th Bomb Wing abort used Mode 1 code 00, with no record of his Mode 3 code. The 68th Bomb Wing abort used Mode 1 code 02 and Mode 3 code 02. The 321st Bomb Wing abort was originally on "Standby", since he was not lead aircraft; he did not turn on Mark X SIF when he aborted. If these aborts had occurred in areas using the Mark X SIF Mode 1 and 3 identification procedure, none would have been verified as safe passage aircraft; all would have been subject to tactical action. As it happened, all were maintained as Y based on continuous tracking.

D. Weapon Commitment.

No weapons, either interceptors or NIKE, were committed against safe passage aircraft. The last aircraft in

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the second cell from 68th Bomb Wing while in CHADS reported sighting an F-102 on a possible beam approach. Examination of this event showed that the interceptor was on CAP about 1700 feet above the SAC aircraft; no attack was being attempted.

E. Flight Plans Passed by FAA.

There were a few instances in SSMADS, CHADS, and P-70 of flight plans being passed to the Identification Sections. Those in SSMADS and CHADS were on safe passage aircraft; the routes as passed did not coincide with planned and flown routes. Those in P-70 were on Faker aircraft. Although these flight plans should not have been passed to air defense units by FAA, there is no evidence that they compromised the mission or caused any difficulty.

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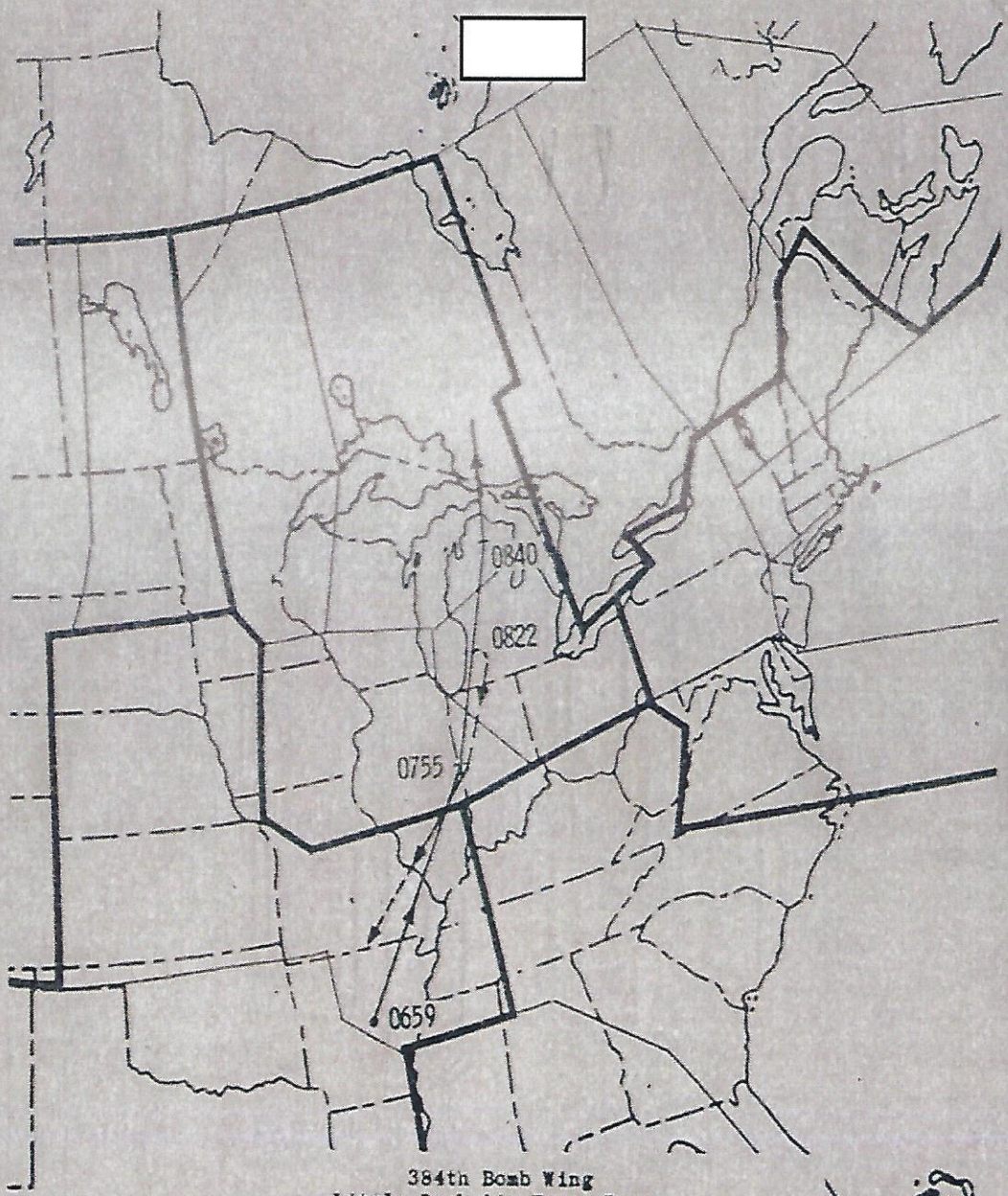
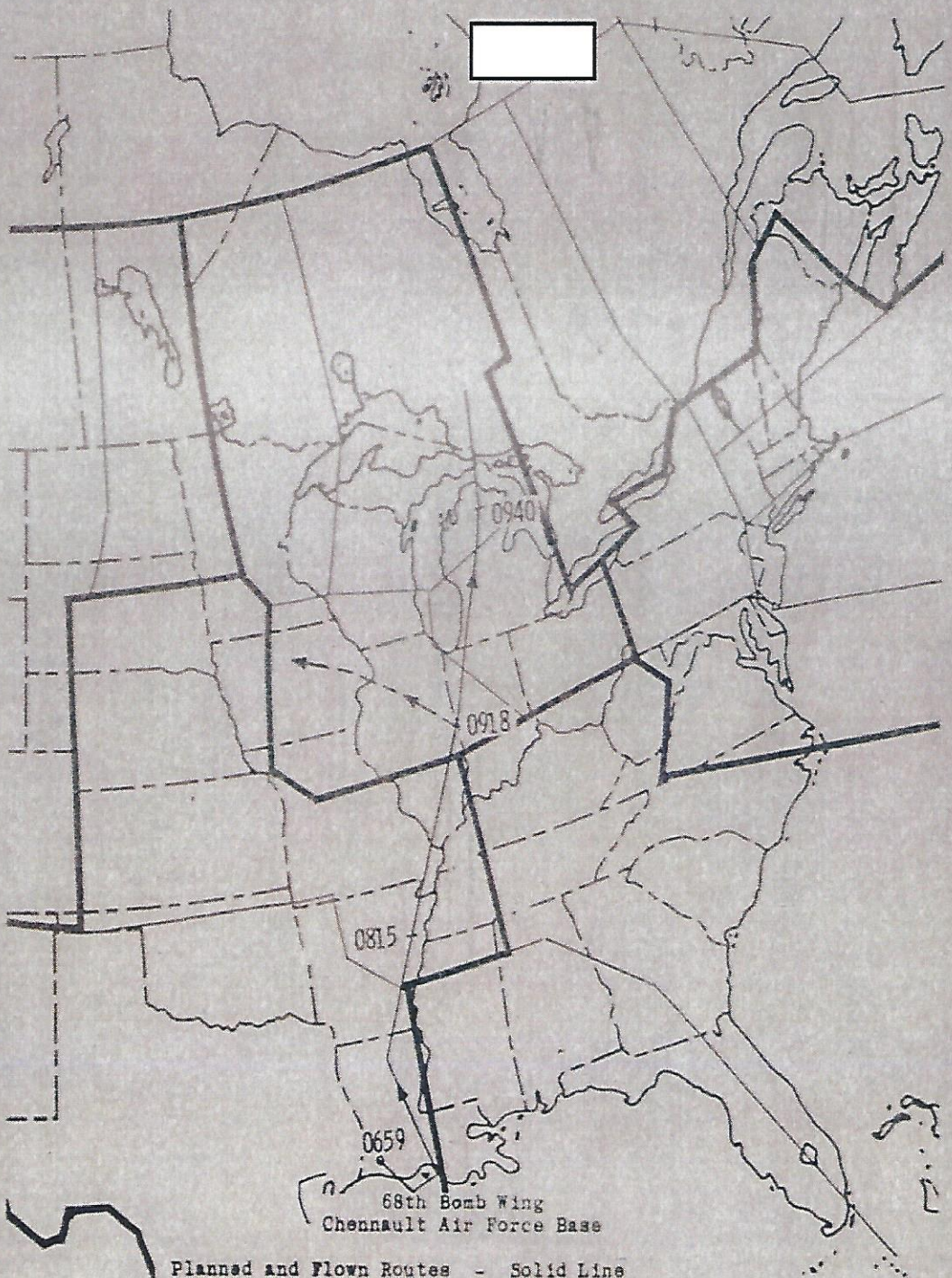


384th Bomb Wing
Little Rock Air Force Base

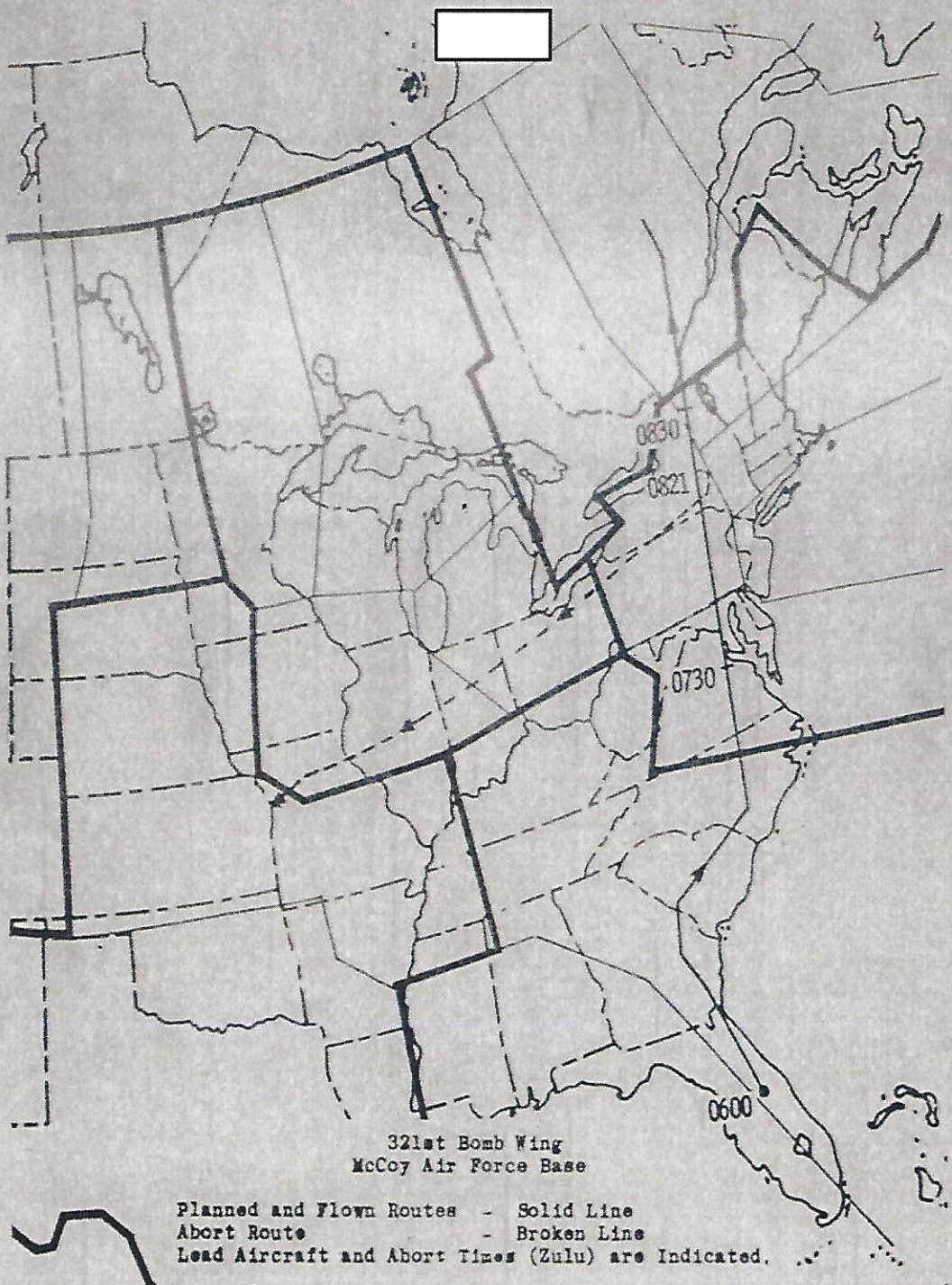
Planned and Flown Routes - Solid Line
Abort Route - Broken Line
Lead Aircraft and Abort Times (Zulu) are Indicated.

Figure 1



68th Bomb Wing
Chennault Air Force Base

Planned and Flown Routes - Solid Line
Abort Route - Broken Line
Lead Aircraft and Abort Times (Zulu) are Indicated.



321st Bomb Wing
McCoy Air Force Base

Planned and Flown Routes - Solid Line
Abort Route - Broken Line
Lead Aircraft and Abort Times (Zulu) are Indicated.

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TABLE I

TRACKING INFORMATION ON SAC SAFE PASSAGE AIRCRAFT

384th Bomb Wing	Track Designators	Initiated By	Tracked By	Flight Hrs	Altitude (M ft)	Poker Load**
1st Cell, 5 Acft Alt, 30-33 M	MC88	F-70	F-70	5	30	0
	MC88*	F-70	CHADS	5	27.6-33.0	25
			DEADS	5	28.0-30.6	18
			SSMADS	5-1	28.8-32.0	3
	K190	CHADS	CHADS	1	29.3-34.4	19
			DEADS	1-2	29.6-34.4	18
			SSMADS	2	26.0-36.4	1
	K191	CHADS	CHADS	2	28.5-36.0	25
			DEADS	2	28.0-36.0	18
			SSMADS	2	26.8-86.8	0
	K192	CHADS	CHADS	1	27.6-32.0	25
			DEADS	1	29.3-31.3	18
			SSMADS	1	31.5	3
	K193	CHADS	CHADS	1	28.4-34.8	25
			DEADS	1	28.8-35.3	18
			SSMADS	1-3	23.0-35.5	3
2nd Cell, 5 Acft Alt, 27-29 M	MC89	F-70	F-70	5	20	0
	MC89*	F-70	CHADS	5	20.0-32.4	25
			DEADS	5	28.8-35.3	14
			SSMADS	1-5	26.5-35.5	1
	K194	CHADS	CHADS	1	28.8-45.6	25
			DEADS	1	26.0-45.5	14
	K195	CHADS	CHADS	1	26.8-32.0	25
			DEADS	1	28.0-30.0	14
			SSMADS	1	26.4-30.0	0
	K196	CHADS	CHADS	1	29.3-34.0	25
			DEADS	1-2	30.0-39.3	14
			SSMADS	2-1	20.4-34.0	0
	K197	CHADS	CHADS	1	28.0-32.0	25
			DEADS	1-2	28.0-32.4	14
			SSMADS	0-1	27.5-32.5	0
Scheduled Abort (2nd Cell, 1 Acft Alt, 20.5 M)	K194	CHADS	DEADS	1	26.0-32.0	14
			CHADS	1	20.4-26.0	31
			F-70	1	38	4

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TABLE I (Continued)

68th Bomb Wing	Track Designators	Initiated By	Tracked By	Flight Size	Altitude (M ft)	Faker Load**
1st Call, 5 Acft	V057	Manual Site So. of P-70	P-70	5	36	3
Alt, 25-29 M	V057*	Manual Site So. of P-70	CHADS	5	31.6-36.4	89
			DHADS	5	36.4-38.0	43
			SCHADS	5-1	31.3-52.8	4
2nd Call, 5 Acft	V064	Manual Site So. of P-70	P-70	5	28	3
Alt, 30-38 M	V064*	Manual Site So. of P-70	CHADS	5	28.0-32.0	15
	K224	CHADS	CHADS	1	31.3-34.0	15
			DHADS	1	33.3-36.0	50
			SCHADS	1	30.8-99.3	4
	K225	CHADS	CHADS	1	33.3-34.0	15
			DHADS	1	32.0-37.6	40
			SCHADS	1-10	31.3-85.3	4
	K226	CHADS	CHADS	1	32.4-33.3	12
			DHADS	1	32.4-36.0	40
			SCHADS	1-3	24.8-36.4	4
	K227	CHADS	CHADS	1	29.3-33.6	15
Scheduled Abort (2nd Call, 1 Acft Alt, 32 M)	K227	CHADS	CHADS	1	30.0-33.3	11
321st Bomb Wing						
1st Call, 5 Acft	H429	Manual Site So. of WAADS	WAADS	5	26.4-34.8	7
Alt, 26-29 M			SYADS	5	27.5-31.6	46
2nd Call, 4 Acft	H434	Manual Site So. of WAADS	WAADS	4	18	7
Alt, 27-29 M	H432	WAADS	WAADS	1-5	28.0-36.4	7
			SYADS	5-2	26.0-36.4	61
Scheduled Abort (2nd Call, 1 Acft Alt, 29 M)	Y001	SYADS	SYADS	1	30.8-36.4	68
			DHADS	1	28.4-37.6	43
			CHADS	1	35.6-38.0	6

*This track is a SAGE continuation of the manual track preceding it.
**The maximum number of Faker and Bee tracks in the sector during the period given track is being carried.

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TABLE II

[redacted] WING, LITTLE ROCK AFB
ASSUMED FLIGHT SIZES FOR SAFE PASSAGE CELLS

First Call

Time (Z)	Air Defense Unit	Actual Flight Size	Number of Tracks	Total Announced Flight Size
0710	F-70	5	1	5
0745	CHADS	5	1	5
0750	CHADS	5	5	10
0805	CHADS	5	5	10
0810	DEADS	5	5	11
0830	DEADS	5	5	11
0840	SEWADS	5	3	5
0845	SEWADS	5	3	7
0850	SEWADS	5	3	5

Second Call

0720	F-70	5	1	5
0753	CHADS	5	1	5
0800	CHADS	5	5	9
0820	DEADS	5	5	9
0830	DEADS	5	5	11
0840	SEWADS	4	4	10
0850	SEWADS	4	4	5
0855	SEWADS	4	4	6
0905	SEWADS	4	4	4

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TABLE III

60TH BOMB WING, CHENNAULT AFB
ASSESSED FLIGHT SIZES FOR MAVE PASSAGE CELLS

First Call

Time (Z)	Air Defense Unit	Actual Flight Size	Number of Tracks	Total Assessed Flight Size
0810	P-70	5	1	5
0850	CHADS	5	1	5
0910	IHADS	5	1	5
0930	SHWADS	5	1	5
0930	SHWADS	5	1	1

Second Call

0815	P-70	5	1	5
0910	CHADS	5	5	9
0930	IHADS	4	3	3
0947	SHWADS	4	3	3
0952	SHWADS	4	3	5
0958	SHWADS	4	3	6
1000	SHWADS	4	3	14
1003	SHWADS	4	3	6
1004	SHWADS	4	3	5

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TABLE IV

3(1ST BOMB WING, MCCOY AFB
ASSUMED FLIGHT SIZES FOR SAFE PASSAGE CELLS

First Call

Time (Z)	Air Defense Unit	Actual Flight Size	Number of Tracks	Total Assessed Flight Size
0700	SM-159	5	1	5
0710	WAADS	5	1	5
0745	SIADS	5	1	5

Second Call

0710	SM-159	4	1	4
0715	WAADS	4	1	1
0721	WAADS	4	1	5
0750	SIADS	4	1	5
0821	SIADS	4	2	4
0822	SIADS	4	2	3

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