

**AIR WEATHER SERVICE  
SUPPORT  
TO THE  
UNITED STATES ARMY  
TET AND THE DECADE AFTER**



**AWS HISTORICAL STUDY NO. 8**

**Military Airlift Command  
United States Air Force  
Scott Air Force, Illinois**

101st Airborne Division  
(Air Assault)

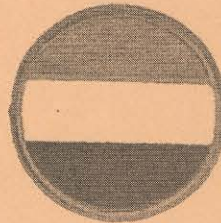
"Screaming Eagles"



82d Airborne Division

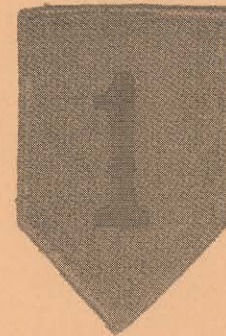
"All American"

UNITED STATES ARMY  
FORCES COMMAND



1st Infantry Division  
(Mechanized)

"The Big Red One"



5th Special Forces  
Group (Airborne)



1st Cavalry Division

"The First Team"



7th Special Forces  
Group (Airborne)

2d Armored Division



31st Air Defense  
Artillery Brigade

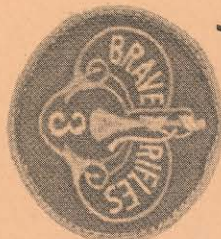


5th Infantry Division  
(Mechanized)

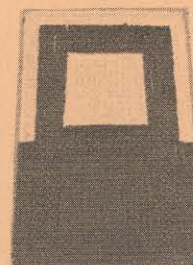
"Red Diamond Division"



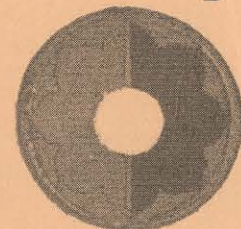
3d Armored Cavalry  
"Brave Rifles"



First United States Army



9th Infantry Division  
"Old Reliables"



The urgency to . . . go into the A Shau Valley was based on inches of rain to be expected after . . . April, not *ceilings* and *visibilities* which would prove so critical. In other words, the forecast monsoon rains (which did occur) never produced the terrible flying conditions of low ceilings and scud which preceded them in April. An air cavalry division can operate in and around the scattered monsoon storms and cope with the occasional heavy cloudbursts far better than it can operate in extremely low ceilings and fog . . . . The lesson learned, then, was that one must be very careful to pick the proper weather indices . . . for an airmobile operation. An inch of rain that falls in thirty minutes is not nearly as important as a tenth of an inch which falls as a light mist over 24 hours.

Tolson, *Airmobility: 1961 - 1971*

P R E F A C E

Over the years, successive editions of the Air Force directive spelling out Air Weather Service's (AWS) mission have specified that it tender meteorological support to the Air Force and the Army. Implied with the directive was that AWS' support be equitable between the Air Force and the Army. That it has not been so in the Army's case, particularly during the decade following the Tet offensive of 1968, is the subject of this study.

This work came about because of four factors: increasing attention focused by the AWS leadership in the 1970s to the problems of supporting the Army; increasingly difficult to parry evidence, which came to a head in 1977, that the problems were of such magnitude that AWS support to the Army was unsatisfactory; Brigadier General Rowe's dramatic reaction to the evidence, whereby he proposed sweeping his weathermen from the battlefield back to the corps level; and the fact that Air Weather Service historians over the past twenty years--present company included--gave scant attention in their official command histories to the vital mission of supporting the Army.

This work started out in mid-1978 as a subsection of the mission chapter for the 1977 Air Weather Service history. But the more I peeled back the veneer, the more it grew. Picking up the trail at the 1958 mile post, the last serious effort devoted by AWS historians to the subject,\* and carrying it through 1977, it ballooned into a chapter--a big chapter. So big, in fact, and so encompassing, that my boss believed wider utilization could be made of it if published as a separate study. He asked that I finish the 1977 AWS history first, and then carry the coverage in this work through 1978 before going to press with it. I finished the final draft in August 1979. With it, a debt to the AWS historical function is canceled.

Without question the subject matter was the most perplexing I have ever tackled. Long since forgotten was anything I may have learned about the Army a quarter century ago as an Army ROTC cadet in my undergraduate days. Thus, I had to familiarize myself with the Army's organization and doctrine from the ground up, pre-Vietnam through the mid-1970s. In doing so, I soon discovered why people in AWS who have not been "brushed with brown" have a tendency to refer to Army weather support in generalities. To paraphrase Mr. Churchill, the subject of AWS support to the Army is an abysmal enigma inside a wrapper of mystery, all cloaked with intrigue. In short, it was an extremely complex subject, terribly difficult to get a handle on, and even more challenging to organize into what I hope is a coherent, flowing work.

Because of the subject's complexity, I will be forever grateful to five authorities on the subject who were generous enough to set aside their heavy workloads long enough to review all or selected portions of this study's draft. They were, alphabetically: Major Carl Chesley at Headquarters AWS, a former staff weather officer to the

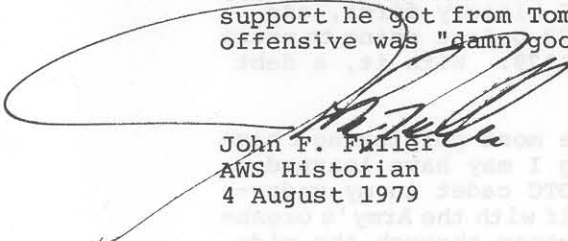
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\* AWS Historical Study No. 4, *History of Weather Support to the United States Army*, Dec58.

82d Airborne Division; Major Glenn McBride in war plans at Headquarters Military Airlift Command (MAC), who worked with the 101st Airborne Division in Vietnam in 1969; Lieutenant Colonel Dell McDonald, Glenn's boss, a graduate of the Command and General Staff College at Fort Leavenworth, who formerly served as AWS' liaison officer to CACDA; Lieutenant Colonel Chuck Swayne, the Army's liaison officer to Headquarters AWS, who had an extensive background in Intelligence, including a tour as the deputy Intelligence officer at III Corps and Fort Hood; and Major Tom Taylor from the MAC Inspector General shop who had served as the staff weather officer to the 1st Cavalry Division (Airmobile) in Vietnam. Tom helped keep me on track with my coverage of the 1968 Tet offensive. Carl responded rapidly on numerous occasions to my requests for documents, and volunteered several others of immense value to this study. Dell and Glenn offered words of encouragement when I needed them most. Chuck kept me attuned to the Army's viewpoint, and offered several suggestions which I incorporated.

My special thanks also to Tom Taylor and Colonel William Shivar for furnishing some of the pictures I used with the Vietnam coverage, and to Lieutenant Colonel Ernie Dash, and his special operations weathermen with the 3d Weather Squadron's Detachment 75 at Hurlburt Field, who gave me pictures of their activities which *Airman* magazine had featured in its May 1977 issue.

Then too, I want to thank the score of AWS officers and enlisted men who allowed me to pick their brains during telephone or in-person interviews, and answer questions that must have seemed inane. If this account is definitive, it is so thanks to the documentary gaps they willingly filled in the interest of finally seeing the entire story put to print in one book. Finally, I should not neglect Lieutenant General Tolson, the 63 year old former commander of the 1st Cav, now retired as a kindly southern gentleman in Raleigh, North Carolina, who took the time one morning to assure me over the telephone that the support he got from Tom Taylor and AWS during the heat of the Tet offensive was "damn good."



John F. Fuller  
AWS Historian  
4 August 1979

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Photo Credits

The Military Airlift Command historical office is indebted to various government agencies and individuals who took the pictures used in this history. They include: Aerospace Audio-visual Service, Air Weather Service, the United States Army, TSgts Dan Doherty and Phillip D. Henderson, Capt Thomas E. Taylor, Maj William H. Quelch, Jr, and Lt Col William H. Shivar of the USAF, and SP4 Franklin Mohler and SP5 Edgar Price of the U.S. Army. Unless otherwise indicated, all of the photographs used are USAF photographs.



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## CHAPTER 1 - PRE VIETNAM

### The Interim: Requirements, Doctrine, Field Tests

The war in Korea during the early 1950s was not too old before AWS weathermen supporting elements of the United States Eighth Army there ran afoul of problems similar to those faced in World War II. They did not receive adequate logistical support, and it was subsequently recommended that their needs be made an Army responsibility by including them in the Table of Organization and Equipment (TOEs) of the individual Army units supported. There was more interest in weather support by Army units at the front than by Headquarters Eighth Army, which was extremely vague about its requirements--although it asked for a five-day forecast, furnished eventually by the 30th Weather Squadron. "The Army had never expressed a desire for any but the most general type of weather forecasts, and its representatives had in fact, always shrugged off all attempts by the AWS to find out what they wanted in the way of an improved service," the AWS history for the period related; "the real trouble was that while the Army had to depend on the Air Force for its weather service, there was no one at Army Headquarters who knew enough of the technical aspects of the matter to be able to tell the Air Force what kind of weather service the Army needed." "The Eighth Army," the history concluded, "was not getting a service comparable to that being received by the Fifth Air Force."<sup>1</sup>

*AWS in Korea, August 1950: because of North Korean advances, the 20th Weather Squadron detachment at Pohang (50 miles north of Pusan on Korea's southeast coast) prepares to evacuate. The weathermen had to travel 12 miles through sniper-infested countryside to reach the LST that took them to safety in the south. (USAF Photo)*



Aware of that fact, the Army dispatched a team of experts to Korea to look into the quality of weather service received by the Eighth Army, and to study the problems associated with combat

in winter. The five-man team reported that "there is a broad lack of environmental appreciation by the Army with the result that . . . environmental forecasting is not only far below the potential possible, but is largely unrecognized as of value."<sup>2</sup> Each successive echelon in the hierarchy of command thought it had prima facie need for weather support, but that the echelon immediately below it did not--i.e., the Eighth Army did not feel corps needed it, corps felt divisions did not need it, and so on. In fact, each echelon needed weather support. But the closer an Army unit was to the front, and the further away from an air strip, the worse the support. The team also saw a need for more weather observations at the front lines, and at regiment and battalion level.

Following the Korean War, in the mid and late 1950s, AWS and the Army made concerted efforts to improve weather support to ground forces. There was concern within AWS over efforts by elements within the Army Signal Corps to establish an independent Army Weather Service, but responsible Army officials were not favorably disposed to such an idea, preferring instead to rely upon AWS.<sup>3</sup>

A number of related problems needed resolution to improve weather service to the Army, but AWS focused its efforts on two key issues: to get the Army to formally state or list its requirements for weather service; and to revise and update the all-important joint regulation (Army Regulation 115-10/Air Force Regulation 105-3), spelling out Army weather support policy.

Under its basic mission regulation, Air Force Regulation 20-2 of April 1952, AWS was charged in general terms to tender meteorological service to the Army, as further delineated by the provisions of AR 115-10/AFR 105-3. In turn, the joint regulation was predicated upon one of over 200 roles-and-missions agreements reached by the Army and Air Force under the National Security Act of 1947 (which transferred the Air Force from the Army and established it as a separate branch of the military), whereby the Air Force was made responsible for the "provision of meteorological service to the Army, except Army meteorological ballistics data which will remain in the Army."<sup>4</sup>

A March 1949 version of the joint regulation was in effect in the 1950s, but was obsolete because of major organization, weapons systems, and tactics developments within the Army--e.g., the establishment of Continental Army Command (CONARC) at Fort Monroe, Virginia, in February 1955, the employment of surface-to-air missiles, and, in particular, the growth of "organic" Army aviation. Between 1955 and 1958, AWS and CONARC both forwarded draft revisions of the joint regulation through channels to the Air Staff and the Department of the Army for coordination and approval. But the Army's and Air Force's inability to resolve basic doctrinal differences precluded the publication of an updated joint regulation in the 1950s.<sup>5</sup>

In the absence of an updated joint regulation, a related manual and a regulation were published, in addition to which the Air Staff issued AWS some guidance in the matter of Army weather support.

In December 1956, Air Force Manual 105-6, *Weather Service for Military Agencies*, was published--the first formal treatise on AWS doctrine. It saw many of tactical air's jobs tied closely to support of ground forces and, therefore, addressed weather support in terms of both. It called for the establishment of a weather wing to support Air Force and Army components in each major theater of operations. Subordinate to the weather wing were weather groups for each tactical air command-army group team in theater. Immediately subordinate to each weather group

was a weather center and two or more weather squadrons. The weather group headquarters and weather center were located with the headquarters of the tactical air command and army group. Weather squadrons were established to support--and be located with the headquarters of-- each tactical air force-field army team. Each squadron had a weather center (responsible for forecasts for periods up to 48 hours), a weather station (detachment) at each tactical air force base and Army corps headquarters, and mobile weather observing teams as required. The corps weather station or detachment not only served the corps headquarters, but provided around-the-clock forecasting and observing service for divisions and other subordinate elements of the corps, including aviation units. But direct AWS support stopped at the corps level. Insofar as weather communications were concerned, the Air Force's Airways and Air Communications Service transmitted products from AWS' theater weather central (which prepared facsimile charts, and issued operational and planning forecasts for periods beyond 48 hours) to the corps' weather center and weather station; communications agencies of the field army and its subordinate elements "normally" provided facilities to collect weather data from elements of the field army (the meteorological sections of artillery units, for instance), and disseminated weather information directly related to ground operations. For administrative and logistical purposes, the corps weather station was "normally" attached to an Army unit and was dependent upon it for such support.<sup>6</sup>

In October 1957, in another first, AWS published a regulation (AWS Regulation 55-56) which specifically addressed procedures for tendering service to Army units. It specified that most Army units overseas and stateside would receive support from AWS detachments at the nearest Air Force base, regardless of the weather wing, group, or squadron to which the particular weather detachment was assigned. Little of the overall service AWS provided the Army was through AWS units on Army installations (fifteen by actual count, stateside and overseas, in August 1956), and even those were assigned to various weather squadrons, groups, or wings. In other words, Army units were supported by AWS on a geographical basis, while most major Air Force units were supported on a functional basis--and had been since AWS' first and only major reorganization, in 1952. The 2d Weather Group at Langley AFB, Virginia, which reported directly to Headquarters AWS and was the forerunner of the 5th Weather Wing activated in October 1965, supported CONARC--the staff weather officer to CONARC was assigned to Headquarters 2d Weather Group. Support of Army units in the Pacific and Europe was the responsibility of the 1st and 2d Weather Wings, respectively. Stateside, pending the assignment of full-time staff weather officers (programmed for mid-1960), limited staff weather officer assistance was provided the six numbered armies, III Corps and XVIII Airborne Corps, and the 101st Airborne Division by AWS detachment commanders from the nearest Air Force base. Weather wings and groups in the zone of interior with detachments supporting Army units kept the 2d Weather Group informed of the services furnished and any proposed changes. If the service asked for by a particular Army unit could not be met by the nearest AWS detachment, the Army unit was so notified and advised to submit its request for additional weather service through channels to the Department of the Army.<sup>7</sup>

#### Air Staff Guidance

Pending revision of the joint regulation, the Air Staff forwarded AWS some interim guidance a year later, in October 1958, regarding

weather support to the Army. The Air Force was to provide, install, and maintain the weather equipment for AWS units on Army installations, and was to furnish the weather communications circuits necessary to connect Army installations with the nearest point of appropriate weather communications circuitry. The Army was to provide, install, and maintain the weather communications equipment at Army installations, and was to provide administrative and logistical services to AWS units involved in direct support of Army units.<sup>8</sup>

Informal Air Staff guidance in late 1958 indicated that the Air Force recognized, in principle, the general desirability of the Air Force's providing weather support to the Army. However, the desirability had to be equated with the availability of manpower and facilities. Army requests for weather service which required additional people or facilities would have to be submitted to the Air Staff, who would then request AWS to evaluate them. Any time the satisfaction of additional Army requirements was expected to jeopardize Air Force interests, the Army would be accorded the option of transferring Army manpower spaces to the Air Force to meet those requirements, or requesting a redeployment of previously allocated Army weather support facilities. Air Force weather facilities would be established at Army installations only after the Army agreed to furnish the specified communications, logistics, and administrative support. Observing equipment provided and used by AWS units serving Army installations would be compatible with tactical deployment considerations and the performance characteristics of airlift aircraft; the Army could provide alternative observing equipment if it wished.<sup>9</sup>

Provisions that the Army transfer spaces to the Air Force for Army weather support, and AWS evaluate Army requirements, were major shifts in Air Staff policy. Until then, the AWS leadership had been in favor of transferring Army spaces to the Air Force to meet expanding Army weather support requirements, but the Air Staff had been hesitant to do so for fear the Army might reciprocate in such areas as air base defense and Corps of Engineers support. But AWS was advised in 1958 that some top level Air Staff officials were opposed to continuing weather support to the Army, thus the provision for doing so on a "desirability" basis. The Air Staff opinion in 1958 was that the Air Force was not actually obliged to provide the service, and could cancel it any time it became desirable to do so--that was, any time the provision of weather support to the Army diverted Air Force manpower to an extent that Air Force interests were jeopardized.<sup>10</sup>

The crux of the matter was that, in August 1956, after a great deal of urging by the Air Force, the Army finally forwarded the Air Force its first formal and comprehensive statement of requirements for weather service since 1946. It was followed by other formal requirements set forth by the Army in 1958 and again in 1959.<sup>11</sup> The problem with the Army requirements was that they equated to additional Air Force (AWS) manpower--well over 400 manpower spaces as opposed to some 200 AWS spaces (about 2.3 percent of the 8,452 weather officer, warrant officer, enlisted, and civilian spaces authorized AWS) devoted exclusively to Army support stateside and overseas in August 1956.<sup>12</sup>

A key development along those lines was the activation of the 7th Weather Squadron at Heidelberg Army Installation, Germany, and the 16th Weather Squadron at Fort Monroe in early 1959. It was a major functional organizational alignment in that they were the first two weather squadrons in AWS' history activated for exclusive support of the Army. The Air Staff approved their formation, but would not provide the needed manpower spaces. They were taken from existing AWS authorizations at a time when Air Force requirements for meteorological services were also growing.<sup>13</sup>

The Air Force policy statements and directives were helpful to AWS, but they carried little influence in Army circles. In addition to the joint regulation, the document which governed the Army's approach to weather support stateside was CONARC Regulation 115-1, published in March 1961. It defined "direct" support as that provided by AWS people or units having a primary mission of Army support, normally located with the supported Army unit; "remote" service was that provided by AWS personnel or units whose secondary mission was Army support, usually by electronic means. The Air Force was to provide, install, and maintain the fixed meteorological equipment (the Army would furnish the necessary foundations, power, cabling, etc.) needed by AWS units in direct support of the Army; provide weather communications circuits required to connect those AWS units with the nearest point of long-line weather communications circuitry; and provide meteorological supplies peculiar to the operation of those AWS units which were unavailable in Army supply channels. During joint maneuvers and exercises, the Air Force was to furnish weather communications circuits to connect the tactical weather station at the highest Army echelon to long-line weather communications circuitry; the Army would provide the needed terminal communications equipment and expendables, and would provide the weather communications circuits from the highest Army level to lower echelons. On post or in garrison, the Army would furnish direct support AWS units with terminal weather communications equipment to include teletype, facsimile, recording, and dissemination gear. The Army would also provide administrative and logistical support to the direct weather support units similar to that normally afforded any attached unit of comparable size and activity, to include facilities and common supply items.<sup>14</sup>

The primary document, however, which influenced the Army and the Air Force in weather support affairs, was the joint regulation. AWS had already sent its first cadre of people to the war in Vietnam before the 1949 version of AR 115-10/AFR 105-3 was superseded with a new version, dated 23 March 1962, and it remained in effect until 1970.

The 1962 version tied up some loose threads, but the wording of sections addressing key issues was of sufficient ambiguity to permit an interpretation favorable to the Army or AWS, depending upon one's interest or persuasion, or the circumstance at the time. In the revision, for example, in a concession to AWS' wishes, the Army's requirements for direct peacetime weather support were specifically outlined. Further, it specified that the Army review and rejustify those requirements to the Air Force each three months. For wartime requirements, all Army contingency or war plans requiring AWS support were to include a weather support appendix to the intelligence annex.<sup>15</sup>

A significant loophole was woven into the section of the joint regulation discussing responsibilities and organization. The Army would meet its own requirements in the following areas: observations and upper-air soundings in support of artillery; specialized meteorological support to Army research and development activities; Chemical-Biological-Radiological (CBR) and river stage/flood forecasting; and weather observations forward of division--*except* that, and hence the loophole, "this will not exclude placing Air Force weather personnel in the forward area when required by appropriate plans or circumstances." AWS observing support would go as low in echelon as the division, but *could* legally be extended lower. Otherwise the Air Force, through AWS, would provide or arrange for all Army weather support.

The typical AWS organizational structure for support of a field army, as outlined in the joint regulation, called for a weather

squadron (its headquarters manned by 5 officers and 7 enlisted men, supported by a detachment with a complement of 5 officers and 36 enlisted men) with the field army headquarters, and weather detachments (manned by 4 officers and 19 enlisted men at corps level, and one officer and 5 enlisted men at division level) at each subordinate corps and division headquarters--each weather unit at each of those echelons consisting of complete forecasting, observing, and staff support sections.<sup>16</sup>

The staff weather officer provided by AWS at all Army echelons came under the operational control of the Army commander, and under the staff supervision of the organization's Intelligence officer; but he was to be free to coordinate weather matters directly with the commander and other staff agencies. Staff weather officers assisted their Army units in determining weather service requirements, but the unit's Intelligence officer was to formally state and forward them. The Intelligence officer was also responsible for "disseminating processed weather information . . . to appropriate command elements," and for "coordinating Army personnel weather training requirements" with the unit's operations section. The Army was to provide weather observers for artillery meteorological sections, and personnel to take "necessary forward area or other specialized weather observations."<sup>17</sup>

In the area of logistics support, the Air Force would procure, install, and maintain the weather equipment needed by AWS units, while the Army would "furnish logistical support to Air Force units equitable with that furnished to Army units of comparable size and activity"--to include vehicle maintenance, supply items, field clothing and equipment, and mess facilities.<sup>18</sup>

A key section of the joint regulation addressed weather communications. In essence, the Air Force would provide long-line communications circuits to AWS units on Army installations, while the Army would "provide main-frame terminations, on-post circuitry and terminal communication equipment including installation, maintenance, and other local services necessary for operation of all weather communications facilities on Army installations." In the field, during "exercises or operations," the Air Force would furnish mobile weather communications support to the field army level, and the Army would furnish it below that level--i.e., corps level and below. The Army would also provide and maintain the necessary facilities for disseminating weather information to Army users.<sup>19</sup>

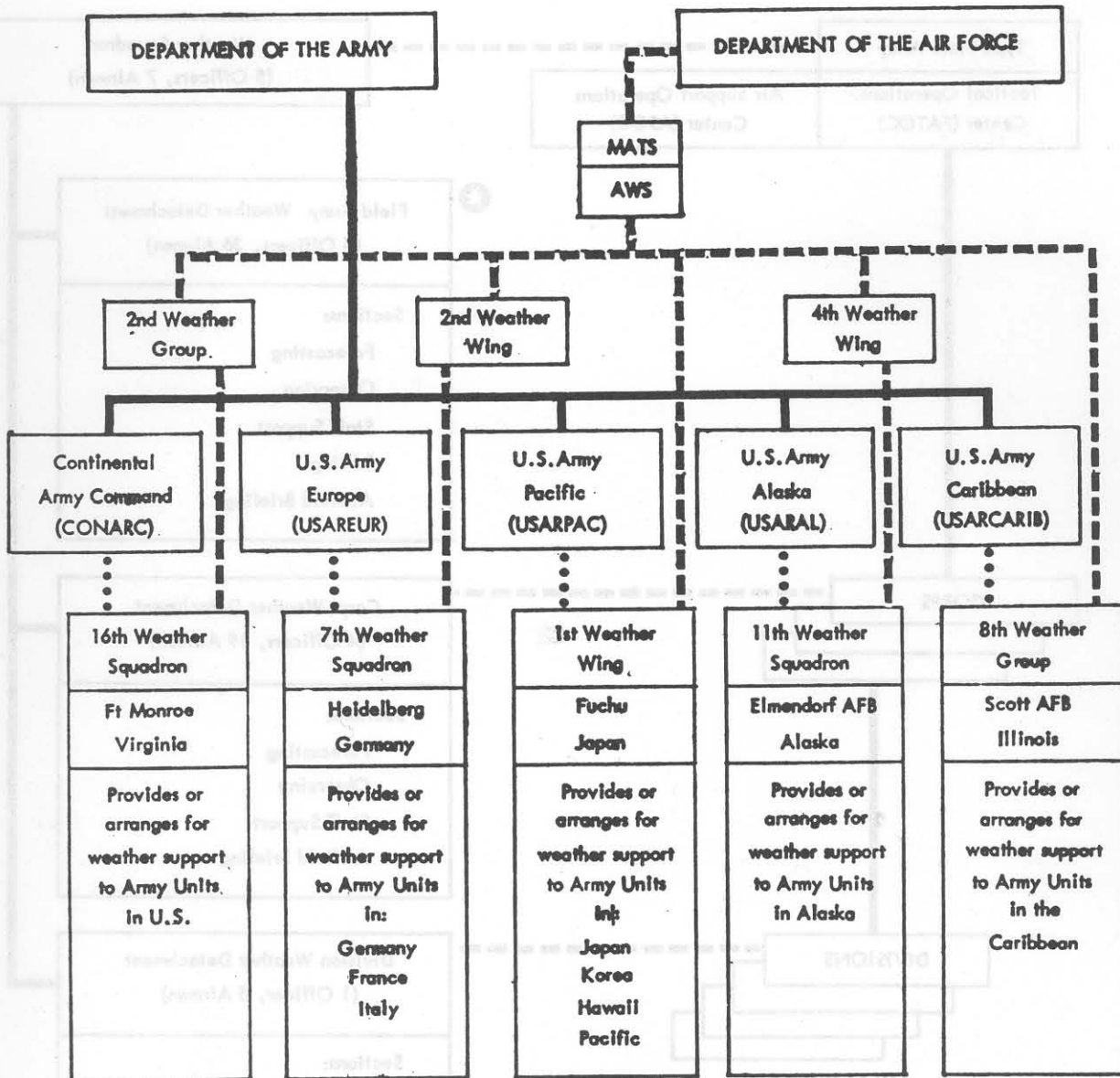
The communications section of the joint regulation was changed in May 1965 to specify that the Air Force provide long-line communications to Army posts where AWS detachments were located, *as well as* provide, install, and maintain associated terminal weather communications equipment. At Army posts without AWS detachments, the Air Force would provide for long-line circuits, but the Army would take care of the rest. Responsibilities for disseminating weather information, and for weather communications support in the field, were not changed from the 1962 version.<sup>20</sup>

It was in 1965 also that the Air Force published another major document on AWS doctrine, a successor to Air Force Manual 105-6 discussed above. In a section devoted to weather support of tactical Army forces, Air Force Manual 2-31, *Aerospace Environmental Operations*, of December 1965, provided latitude for AWS to furnish observing support below division level, addressed AWS' centralization concepts for the battlefield, but did not tackle the all-important questions of how AWS weathermen in the field would be supported from a communications standpoint or logistically.<sup>21</sup>



March 1962

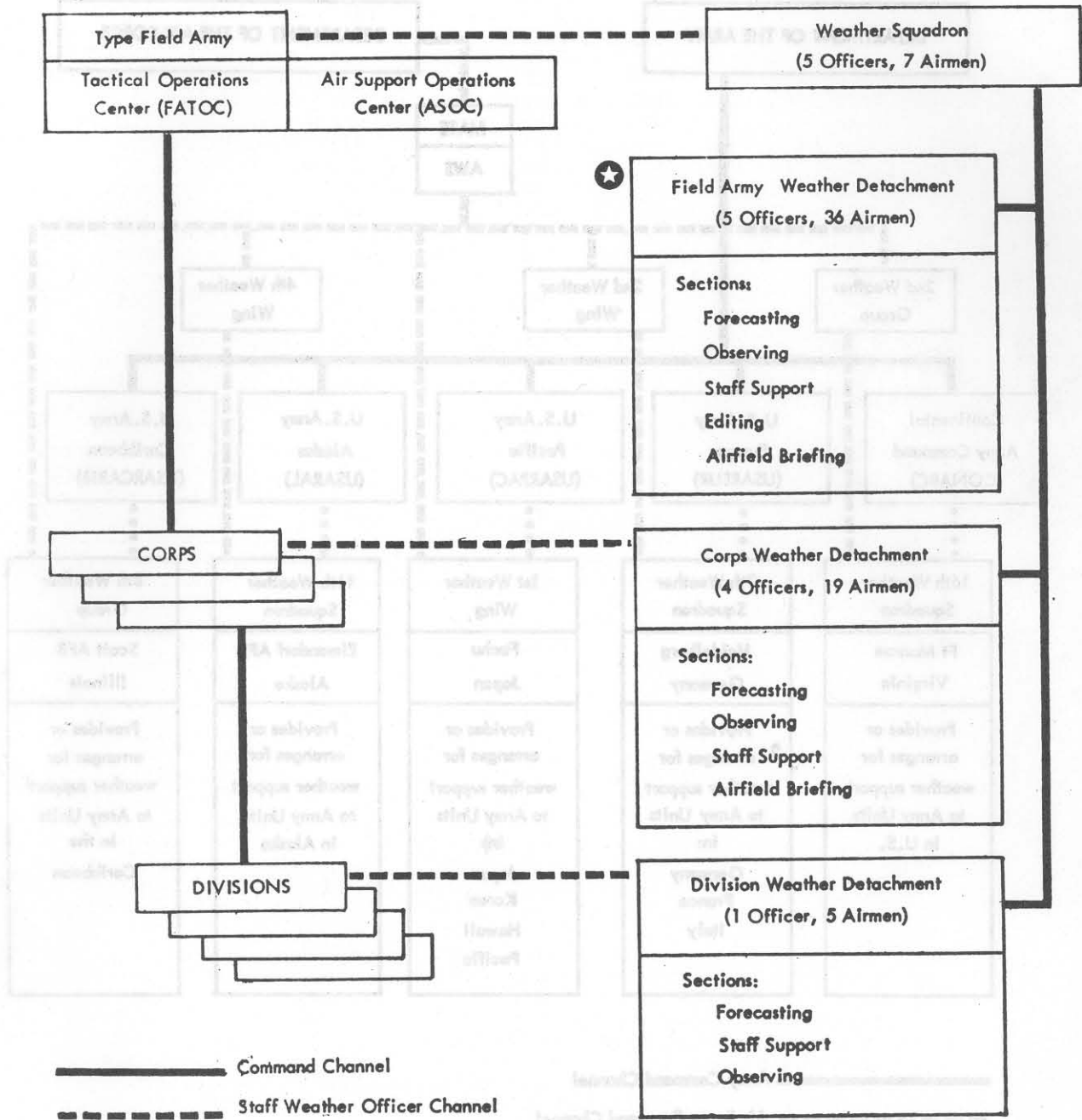
CURRENT ARMY WEATHER SUPPORT ORGANIZATION



————— Army Command Channel  
 - - - - - Air Force Command Channel  
 ..... Weather Support Channel

March 1962

TYPE FIELD ARMY WEATHER SUPPORT ORGANIZATION



★ Serves as basic weather facility for squadron commander and other weather personnel supporting ASOC, FATOC, and Field Army air strip.

### Swift Strike III, 1963

The concepts, policy, and doctrine regarding the Army's weather support requirements, as espoused by the Air Force and Army directives discussed above, were routinely tested in the field during Army maneuvers held each year, or during joint exercises. But with the publication of the revised joint regulation in March 1962, the Army and AWS conducted a special evaluation of AWS' capabilities to support Army corps and divisions in the field in a tactical situation. The test was conducted during exercise Swift Strike III in August 1963, in the Fort Bragg, North Carolina, area and South Carolina, and looked specifically at AWS support to the XVIII Airborne Corps, commanded by General William C. Westmoreland, and its 82d and 101st Airborne Divisions. It directly involved some 165 AWS personnel. Objectives of the test included evaluating such areas as: AWS' manning levels; Army requirements for weather service; weather observations from organic Army units (excluding artillery); Army meteorological and non-meteorological logistical and administrative support to AWS units under the joint regulation and appropriate division and corps TOEs; and the adequacy of tactical Army communications provided AWS units at corps and division levels.

The results of the Swift Strike III test surfaced problems in tendering weather support to the Army that, by then, had become traditional in nature--a way of life for pragmatists in the Army weather support business. Shortcomings cropped up in communications, logistical support, and in the utilization and the combat or field training of AWS people. XVIII Airborne Corps priorities assigned to AWS' people and gear were so low that it was late in the twelve-day exercise before they were airlifted to the objective area. Some designated weather elements were not moved at all. The result: limited weather support. It made little difference. The weather was ideal. Corps and division officials therefore did not begin to use or tax the limited weather support capability available, and it was recommended that the number of people assigned to both corps and division weather teams be cut. No Army units provided surface observations, and no Pilot Reports (PIREP) were received from Army crews. Administrative support by the Army was acceptable, but non-meteorological logistical support "ranged from very poor to excellent, depending on the availability of the items and the persistence and dogged determination of the weather personnel to obtain them [author's italics]." <sup>22</sup> Logistical support to AWS units could not be fully evaluated because the equipment required in changes to TOEs had not been received at the corps and divisions. Even then, corps and division Standard Operating Procedure (SOP) did not provide for administrative and logistical support of AWS weather teams. Communications were totally inadequate--some authorized TOE equipment was unavailable, and substitutes were inadequate; power sources were unreliable, causing excessive teletype outages; alternate power sources were authorized weather teams at corps level but not at division; back-up tactical communications were overloaded and use of them caused delays so that the perishable weather data was obsolete before it could be delivered to those needing it; communications between division airfields and the division command posts was unreliable (the radios authorized--AN/PRC-9--by appropriate TOEs did not have enough range); common-use telephone circuits were either out of commission or overloaded; and one sole-user weather communication circuit between the corps and division weather teams was commandeered for operational use. Vehicles were either not provided or did not run. Some AWS personnel were not proficient in taking surface and upper-air observations under field conditions.

In summary, the Swift Strike III test report concluded in general that more reliable weather communications was required below corps level, all authorized TOE equipment must be available, and AWS people needed more field training. <sup>23</sup>

## CHAPTER 2 - THE TET OFFENSIVE, 1968

### Background

The ground war fought in Vietnam in the 1960s and early 1970s differed from most other major wars the Army was involved in in the Twentieth Century in that the conventional use of division-sized units or larger gave way to seesaw warfare featuring smaller elements, platoons and squads, and the individual soldier--the "dogface," the "grunt." It lacked well-defined battle lines characteristic of most conventional conflicts. Commanders on both sides were unable to trace neatly drawn lines of battle on daily situation maps; unable to point to the unique symbols of Army hieroglyphics denoting corps flanked by corps, division flanked by division along a "front." All of the Republic of Vietnam was a "front," vulnerable to attack. Few areas were secure. Some were controlled by the "friendlies" by day--or--season--and by the "unfriendlies" by night. Such factors as political constraints, terrain, and the nature of the enemy's doctrine contributed to the difference, but the fact remained that the ground war was fought by units of battalion size or smaller rather than by divisions. It was characterized for the most part by isolated skirmish or ambush, rather than by huge "frontal" assaults. The ubiquitous enemy seldom marshalled large forces for sustained periods, preferring instead to concentrate small forces in widely dispersed areas to attain local superiority. The tactics of the inimical forces were mostly hit and run; ambush, strike, and retreat. The enemy could be a farmer by day and a soldier by night, uniformed or non-uniformed, armed or unarmed. Fought during the second generation of the Atomic Age, it was a strange war that featured crude booby traps and snares and bamboo punji sticks on the one hand, and sophisticated electro-optical weaponry and earth-orbiting satellites on the other.<sup>1</sup>

The basic concept employed by the Army to counter the enemy in the Republic of Vietnam was airmobility. Fundamentally, being airmobile meant that a division's "maneuver" elements were capable of being airlifted to selected battle areas, generally by helicopters. Their resupply, reinforcement and, if need be, withdrawal, were also accomplished by both fixed-wing aircraft and helicopters organic--assigned permanently--to the division. Enough aircraft and helicopters were assigned to permit the simultaneous airlift and employment of about a third of an airmobile division.<sup>2</sup>

The test case of the airmobility concept in combat was the deployment of the 1st Cavalry Division (Airmobile) and its 440 helicopters to the Republic of Vietnam in the summer and early fall of 1965. The test was considered a success by the Army and, as a result, all divisions subsequently deployed to the theater conducted search-and-destroy, or clear-and-secure operations using the airmobile concept.<sup>3</sup> Air mobile operations in Vietnam revolutionized Army tactics.

By July 1966, in addition to the 1st Cavalry Division (Airmobile) and an airborne brigade already there, the United States had committed to service in the Republic of Vietnam the 1st and 25th Infantry Divisions, the 1st Brigade of the 101st Airborne Division, and the 1st and 3d Marine Divisions. They represented 51 maneuver battalions, 38 combat support battalions, and 30 construction battalions. During fiscal

1966 Army units engaged in over 350 battalion-sized or larger operations, making contact with the enemy 290 times; the enemy was encountered over 1,650 times in company-size or smaller unit operations. To support those operations, the overall Army helicopter inventory rose by over 1,200, to some 5,500, by mid-1966, and there were more helicopters in Vietnam than any other type aircraft.<sup>4</sup>



*The heart of Army airmobility in 'Nam.*  
(USAF Photo)

When the 1st Cavalry Division (Airmobile) arrived in the Republic of Vietnam, its original plan was to operate with the division headquarters at a main base, An Khe, and the three brigades dispersed to different air strips. The brigades would move from strip to strip every five or six days because intelligence estimated that it took the enemy that long to marshal forces and materiel for an operation. After its arrival, however, the division decided to locate both its headquarters and the three brigades at An Khe permanently. For each engagement, one or more of the brigades and an advanced headquarters were moved to the field for the period of the operation. Conversely, the 25th Infantry Division changed its mode of operation after arriving in theater to that originally used by the 1st Cavalry Division (Airmobile).<sup>5</sup>

Organizationally, by mid-1966, most Army units in the Republic of Vietnam were under United States Army Vietnam (USARV), which was the equivalent of a field army and acted as the Army component of the United States Military Assistance Command, Vietnam (USMACV). Under USARV were two corps-level units, identified as I Field Force and II Field Force, each responsible for specific geographical areas.<sup>6</sup>

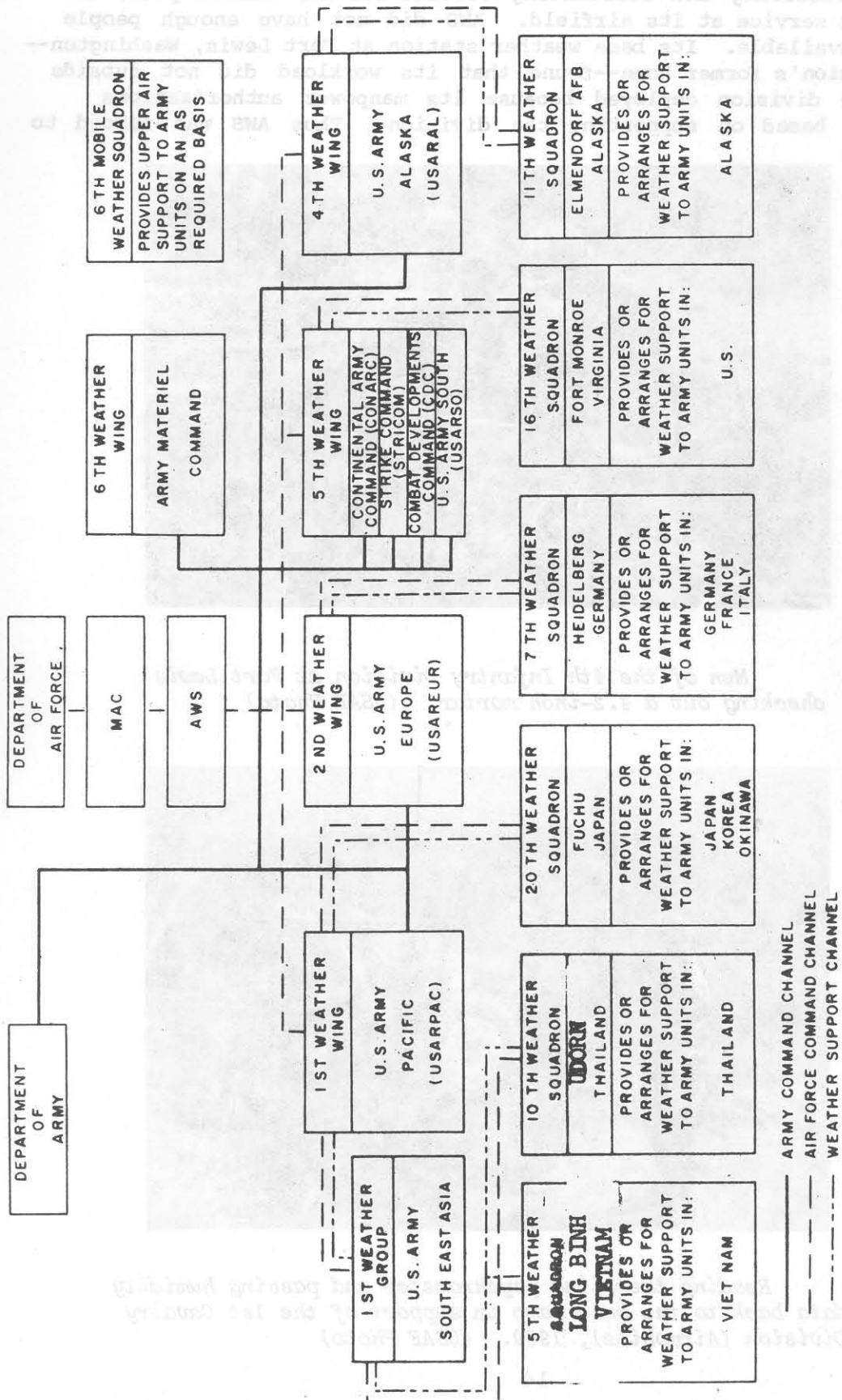
To support USMACV's forces in Southeast Asia, AWS established a weather support group--the 1st Weather Group--and three subordinate weather squadrons in theater in mid-1966. The mission of two of the squadrons, the 10th and the 30th, respectively located in Thailand and

Vietnam, was to support Seventh Air Force units.

The mission of the other squadron, 5th Weather Squadron, was to support USARV and its various elements. The commander of the 1st Weather Group acted as staff weather officer to USMACV while the 5th Weather Squadron commander served as staff weather officer to USARV through the G-2 (Intelligence) staff section. A detachment subordinate to the 1st Weather Group, Detachment 14, located with the Headquarters Seventh Air Force at Tan Son Nhut Air Base, served as the theater weather center and prepared centralized products and area forecasts for use by units of all three weather squadrons. Beneath the 5th Weather Squadron were seven weather detachments, basically, one each with Headquarters I and II Field Forces, and one at each of five permanent Army airfields in Vietnam that operated independently of either field force. The airfield detachments were typical base weather stations. Subordinate to each of the two detachments at the field force--corps--level were five or six operating locations whose missions were to support divisions and, in some instances, independent brigades or regiments. Although not formally designated units, three-man weather observing teams from the division weather unit were attached to each brigade. Thus, AWS people were located with Army troops at all echelons from the field army, corps, and division level; and observing service was furnished at division and brigade level routinely, and in some instances to regiments. Essentially, AWS' organization structure for support of the Army in the Republic of Vietnam remained as described, although with the introduction of the XXIV Corps in 1968, a separate 5th Weather Squadron detachment was activated to support it.<sup>7</sup>

United States force levels in Southeast Asia reached their zenith in 1969 when about a half-million were in theater, of which some 94,000 were Air Force personnel, and 349,000 were Army. At that time AWS had about 680 personnel in Southeast Asia, of which some 180--about 26 percent--were assigned with the 5th Weather Squadron in the Republic of Vietnam for support of the Army.<sup>8</sup>

After a year of tests as an air assault unit, the 1st Cavalry Division (Airmobile) was formally activated at Fort Benning, Georgia, on 1 July 1965. Before it shipped to the Republic of Vietnam in 1965, the Army submitted a formal statement of requirements asking for twenty AWS weathermen--four forecasters and sixteen observers--to support the division in theater. Misunderstandings over the requirement delayed its staffing. Then there was a weather manpower ceiling in Vietnam to be dealt with which, when coupled with inherent lags in the personnel system, meant that permanently assigned weathermen were not identified in time to accompany the new division when it shipped in August. Reservations were made by the division for the twenty weathermen aboard ship, but the 16th Weather Squadron was only able to send three people with it on temporary duty--an officer (lieutenant) and two enlisted men. They had received no combat training, and they arrived in Vietnam sans weather equipment and field gear. The balance of the manpower support the division needed was scavenged from AWS personnel assigned permanently in theater. Because the ranking AWS officer insisted that the weathermen receive some combat training before going into action, it was mid-November 1965 before the first weather observing teams deployed forward with the division's brigades in offensive operations. Single sideband and FM radios furnished the teams were ineffective because of their limited range and the hilly terrain between the brigades and the division headquarters. Consequently, the weather observations were never received back at An Khe. The division also brought a weather teletype with it to An Khe. It was December 1965 before Army Signal Corps personnel could get it working.<sup>9</sup>



**AWS Army Support Structure**

1969

— ARMY COMMAND CHANNEL  
 - - - AIR FORCE COMMAND CHANNEL  
 . . . WEATHER SUPPORT CHANNEL

A short while later, when the 4th Infantry Division arrived in Vietnam, it asked for staff weather officer service to its headquarters, 24-hour observing and forecasting service for its command post, and observing service at its airfield. AWS did not have enough people readily available. Its base weather station at Fort Lewis, Washington--the division's former home--found that its workload did not subside after the division deployed because its manpower authorizations were not based on supporting the division. Thus AWS was forced to



*Men of the 4th Infantry Division at Fort Lewis checking out a 4.2-inch mortar. (USAF Photo)*



*Reading the sling psychrometer and passing humidity data back to the base camp in support of the 1st Cavalry Division (Airmobile), 1969. (USAF Photo)*



meet the division's requirements with people rushed in temporarily until a formal statement of requirements was processed through channels, spaces allocated by the Air Staff, and weathermen stateside were selected and reassigned to the theater. "The most important lesson the Air Weather Service has learned from the Vietnam conflict," wrote the AWS chief of staff in 1968, "is that in order to properly support US Army ground operations in combat, a weather support unit must be in being, fully trained, and capable of being deployed with the Army tactical unit when it deploys."<sup>10</sup>

### Operations

Under its airmobile concept, the Army was heavily dependent upon air support, not only helicopters and fixed-wing aircraft for airlifting troops into and out of the battle area, but on close air tactical support. Weather often hamstrung air activity and in many instances the Army's ground operations had to be cancelled because air support could not be delivered. There were repeated instances where Air Force tactical aircraft flew in extremely hazardous weather to support Army units under attack, but the Army generally found that close air support was not as responsive in bad weather as artillery.

Nor were the Army's helicopters immune to Vietnam's weather. They could not operate in zero-ceiling and zero-visibility conditions. The crew had to see the target. Helicopter gunships were not equipped to deliver ordnance through clouds or heavy haze. As long as there were 500-to-1,000 foot ceilings or visibility, the gunship pilots could acquire the target and deliver ordnance. AH-1G Cobra helicopters were most effective if the firing pass began at 1,500 feet or above, with target engagement at between 500 and 1,500 feet. The UH-1B/C Iroquois helicopter gunships operated better at a lower altitude. Whatever, poor weather drove helicopter gunships to lower levels where they were more vulnerable to enemy ground fire.

The battles of 1966 which follow, as well as the highly publicized Tet offensive of 1968, were selected for discussion because they are representative of the effect weather had on ground operations throughout the imbroglio of the Vietnam war, as well as the nature of the support the weathermen of AWS tendered the Army in combat. It is not to suggest that the effects of weather support and weather did not vary from battle to battle, unit to unit, area to area, season to season, and from year to year. They did. But the weather communications problems experienced with the 1st Cavalry Division (Airmobile) in November 1965 (in particular communications between the division main base and weather observer teams deployed with brigades), for instance, became a fact of life right up to the 1973 ceasefire. And the weather that forced the 1st Infantry Division commander, Major General DePuy, to terminate operation Birmingham prematurely in 1966, was no different from the protective canopy of adverse weather that permitted the enemy to hang onto Hue in 1968 twice as long as necessary (had there been blue skies), or the low cloud ceilings and visibilities that shielded the North Vietnamese invasion of Quang Tri Province in the spring of 1972--despite the fact that there were a host of battles in the intervening years upon which weather and weather support were negligible factors.

Looked at in some depth below, therefore, are the weather and weather support aspects of the battles at Hue, Khe Sanh, and the A Shau Valley during the communist Tet offensive of 1968. Tet was significant because at no time beforehand in the prolonged conflict, and only once thereafter (the spring 1972 invasion of Quang Tri Province), did the enemy marshal so many forces for so long on so broad a front. It was a major change in his strategy. He selected the time of

his attack to coincide with the adverse northeast monsoon weather and the relaxed alert posture the South Vietnamese forces would be in during the traditional Tet holidays. Acknowledged is the fact that there were other battles than those covered below, that the resilient communists generated a second so-called "mini" Tet offensive early that same summer, and that at every juncture they were beaten back and suffered heavy losses. Yet while the Tet offensive represented a dreadful drubbing militarily for the communists, it was eclipsed by the fact that it was *the* most significant event of the war because the enemy's resoluteness and resiliency crumbled the American will to continue the protracted war. The Tet offensive of 1968 was the iceberg that spelled the beginning of the end for the *Titanic* that was the American presence in Southeast Asia.

Operations Masher and Jim Bowie of 1966 are cursorily looked at below, not only because the 1st Cavalry Division (Airmobile) was the embodiment of the Army's neophyte airmobile concept, and hence a favored son, but its combat record was unmatched by any other Army division in that war. Its commanders and staffs throughout its tour in the theater seemed to harbor a greater appreciation for how weather could hurt them, and how weather support could offset or minimize weather's adverse effects on airmobile operations. And cameos of operations Birmingham and Attleboro are offered because the 1st Infantry Division commander, Major General DePuy, was so impressed with the weather support he received, that he did not forget it a decade later when, as a full general commanding TRADOC, he was in a position to influence the outcome of the bedrock issue for AWS of whether its support to divisions should be direct or indirect.

1966

#### Operation Masher

Operation Masher involved the 2d and 3d Brigades of the 1st Cavalry Division (Airmobile), and commenced when the latter brigade began search-and-destroy operations in late January 1966 on the coastal plain and adjacent hills immediately north of Bong Son in the Republic of Vietnam. On 3 February, the 2d Brigade moved from the division's main base at An Khe to Bong Son. The following day it established an advanced command post twenty miles north, but left its assigned AWS weathermen at Bong Son. Located in hilly terrain, the command post became enveloped with persistent fog. The situation soon prompted the brigade's Intelligence officer to state emphatically, "I want my weather team up here now!"<sup>11</sup> A CH-47 Chinook helicopter was immediately dispatched to pick up the weathermen. On arrival the observers radioed back that the command post was located on the downwind side of a hill at the base of an orographic cloud, thus explaining the inclement weather.

Later, portions of the 2d Brigade moved into the Kim Song Valley and operated from there for ten days. The valley was highly susceptible to intensive fog, and observations by the weathermen deployed with the brigade were invaluable in preparing weather forecasts for the area. The Intelligence officer was reported to have said later that he would never again operate without his weathermen at his side. It was also believed to have been the first time during that war that AWS had a complete weather forecasting element deployed forward with an Army unit.

#### Operation Jim Bowie

The 1st Brigade of the 1st Cavalry Division (Airmobile) was scheduled to begin a search-and-destroy mission in rugged, mountainous

terrain twenty-five miles northeast of An Khe on 10 March 1966. The operation was codenamed Jim Bowie. It was to be an airmobile affair because the entire area was inaccessible by roads. Operation Jim Bowie was delayed for three consecutive days because of adverse weather in the landing zone--conditions accurately forecast by the division's staff weather officer, Captain Charles E. Hill, who was subsequently awarded the Air Medal for his efforts.<sup>12</sup>

The operation finally commenced on 13 March. Two days later, two AWS enlisted weather observers were airlifted to the brigade's command post atop a 2,600-foot ridge. The terrain was so steep and rugged that two 500-gallon fuel bladders and a 105-millimeter howitzer were lost when their tethers broke and they rolled downhill. The two weathermen dug protective trenches around their pup tent to keep from rolling downhill while asleep. The final phase of the operation ended on 28 March.

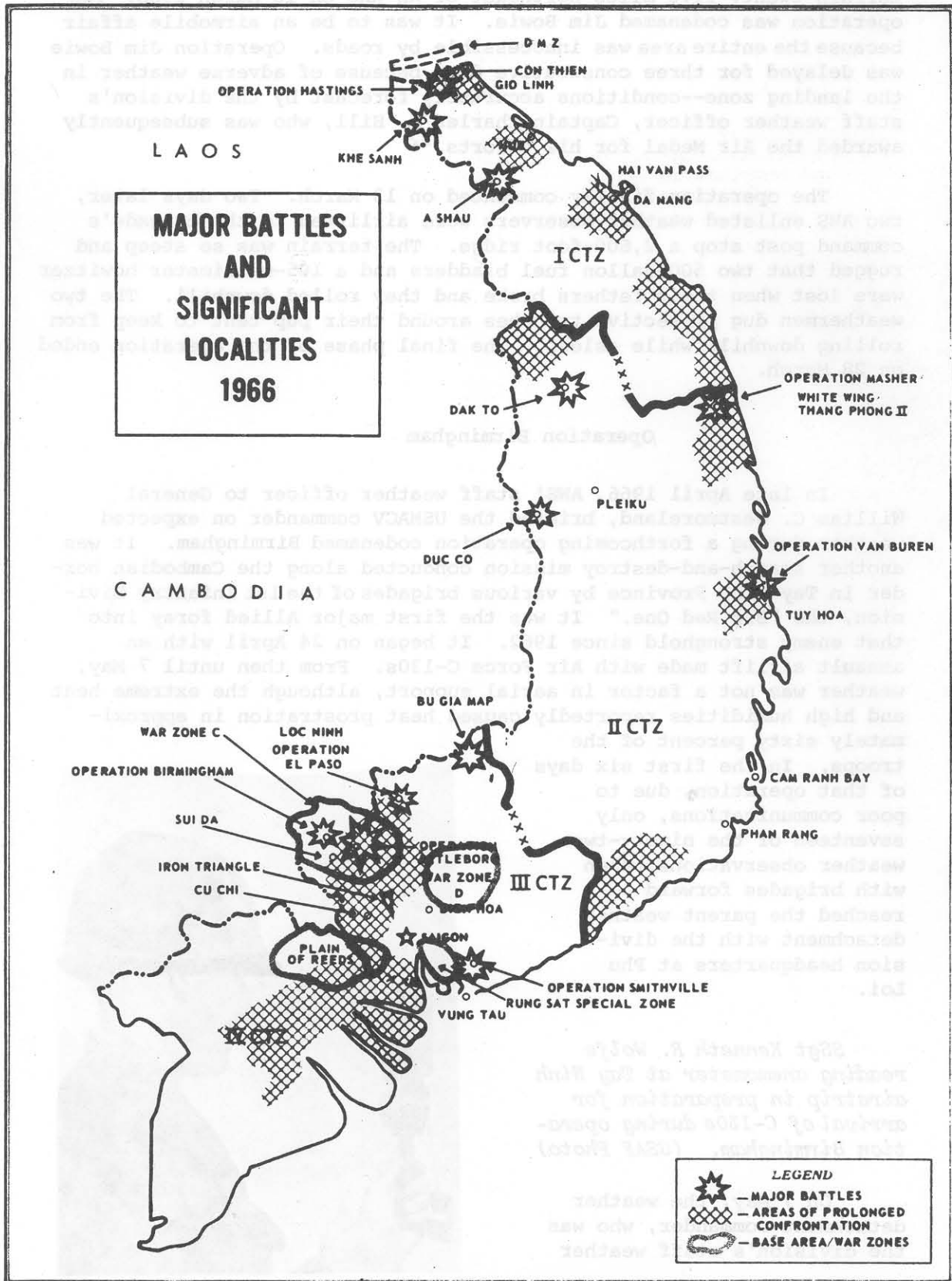
### Operation Birmingham

In late April 1966, AWS' staff weather officer to General William C. Westmoreland, briefed the USMACV commander on expected weather during a forthcoming operation codenamed Birmingham. It was another search-and-destroy mission conducted along the Cambodian border in Tay Ninh Province by various brigades of the 1st Infantry Division, the "Big Red One." It was the first major Allied foray into that enemy stronghold since 1962. It began on 24 April with an assault airlift made with Air Force C-130s. From then until 7 May, weather was not a factor in aerial support, although the extreme heat and high humidities reportedly caused heat prostration in approximately sixty percent of the troops. In the first six days of that operation, due to poor communications, only seventeen of the ninety-two weather observations taken with brigades forward reached the parent weather detachment with the division headquarters at Phu Loi.

*SSgt Kenneth R. Wolfe reading anemometer at Tay Ninh airstrip in preparation for arrival of C-130s during operation Birmingham. (USAF Photo)*

On 7 May, the weather detachment commander, who was the division's staff weather





officer, was asked by the division Intelligence officer to go immediately to a nearby site from where a brigade was to be airlifted by helicopter into the battle area the following day. After one battalion from the brigade was airlifted, the weather officer briefed the division commander, Major General William E. DePuy, that heavy rain would blanket the landing zone for approximately two hours. The airlift was halted. Nearly two hours later, with the rain still falling as forecast, DePuy decided to extract the battalion already deployed as quickly as possible because he could not reinforce it if it got into trouble. The battalion was subsequently successfully moved, and Operation Birmingham terminated on 16 May.<sup>13</sup>

#### Operation Attleboro

On 4 November 1966, the 1st Infantry Division deployed to support elements of the 25th Infantry Division engaged in heavy fighting with the Viet Cong 9th Division near Dau Tieng. Some 22,000 American and Allied troops were employed in what was the largest battle to that time. The Viet Cong were eventually pincered and the operation, codenamed Attleboro, was reportedly the most successful to date in the area northwest of Bien Hoa in terms of Viet Cong losses in men (over 1,100 killed), materiel, and base camps. The value of the weather support tendered to the operation was underscored by the fact that, in a reportedly "unprecedented" act, General DePuy approved the award of the Bronze Star Medal to all eighteen members of the 5th Weather Squadron units supporting his division at Phu Loi for "exceptionally fine weather support" during Attleboro.<sup>14</sup>

Of note also was that many of the men from that weather unit--and others supporting the Army--had qualified as door gunners in Army helicopter gunships. In addition to their normal duties as observers and forecasters, many of the men volunteered to fly special weather reconnaissance missions in light Army aircraft and helicopters to obtain on-the-spot information on operationally significant weather. Since a non-fighting observer on many of the missions was a luxury, the weathermen qualified as door gunners. Despite the fact that AWS authorities officially frowned on such extra-curricular activities, they generally looked the other way; and, in fact, had a hand in writing the justification for the Air Medals won by several of the door-gunner weathermen from the unit supporting General DePuy's 1st Infantry Division.

#### 1968: The Tet Offensive

Following Allied successes in Vietnam in 1967, North Vietnam decided to change its strategy from guerrilla warfare and small unit actions to the use of major forces, according to General Westmoreland. All North Vietnamese forces that could be marshalled were moved south for a major offensive in 1968. It concentrated first in the Saigon area, and secondly, in the area immediately south of the demilitarized zone near the Seventeenth Parallel. North Vietnam's objective, to the general's way of thinking, was to create a public uprising, to precipitate mass defections among South Vietnamese forces, and to effect de facto partition in the Republic of Vietnam--particularly in the two northern-most provinces, which North Vietnam hoped to seize by force and there set up a liberation government.<sup>15</sup> The offensive was timed to coincide with the poor weather of the northeast monsoon, and with the traditional Vietnamese Tet celebration ushering in the lunar new year--29 January 1968 was new year's eve and it, together with new

year's day and the following day, were the most important of a week-long holiday.

#### Hue

On the evening of 30-31 January 1968, the communist Tet offensive began with attacks on a hundred places from the demilitarized zone to the Mekong Delta and the Ca Mau Peninsula. No target was too big or too impossible. In regular North Vietnam Army uniforms, and in the characteristic black peasant pajamas worn by the Viet Cong, the enemy struck at nearly forty major towns and cities. In their largest offensive to date, about 84,000 of the 200,000 North Vietnamese and Viet Cong troops south of the Seventeenth Parallel attacked thirty-six of the forty-four provincial capitals in the Republic of Vietnam, including Hue.<sup>16</sup>

Hue, the ancient imperial capital of Vietnam, populated by 140,000 inhabitants, was the third largest city in the Republic of Vietnam. It was situated 100 kilometers south of the demilitarized zone, some ten kilometers in from the coast. Employing seven-to-ten battalions, the enemy carefully selected the time of his attack. In addition to the fact that most military units were at reduced strength because of the Tet holidays, the weather favored the attackers. Under concealment of low fog, enemy regular units comprised of Viet Cong and North Vietnamese troops, were able to infiltrate the city with the help of accomplices inside. By daybreak, 31 January, the enemy controlled all but the city's northern corner. In addition, Hue was isolated. The enemy cut Highway 1 from the Hue-Phu Bai area south to Da Nang.<sup>17</sup>

United States military operations in the northern provinces of the Republic of Vietnam came under control of the III Marine Amphibious Force--the equivalent of a corps--commanded by Lieutenant General Robert E. Cushman, Jr. His principal ground units were the 1st and 3d Marine Divisions, headquartered, respectively, at Da Nang and Dong Ha. Anticipating the enemy offensive, General Westmoreland decided to reinforce Cushman by moving in some 45,000 United States Army troops--about the strength of a corps. Included were the headquarters and two brigades of the 1st Cavalry Division (Airmobile), under command of Major General John J. Tolson, III, and elements of the 101st Airborne Division. The 1st Brigade of Tolson's division bivouacked near Quang Tri, and his 3d Brigade was between Quang Tri and Hue. In late January 1968, Tolson's headquarters moved from An Khe to Camp Evans, fifteen kilometers south of Quang Tri near Phong Dien. One battalion of the 101st moved by air to Phu Bai, and another moved by sea to Da Nang, before the division headquarters moved in early March 1968 to Camp Eagle, between Hue and Phu Bai, about a mile off Highway 1.<sup>18</sup>

Action was taken immediately to relieve the pressure on Hue. Three Marine and eleven South Vietnamese battalions, accompanied eventually by four battalions from the 1st Cavalry Division (Airmobile), became involved. Some of the most furious combat of the war ensued--much of it house-to-house fighting reminiscent of World War II battles. Aided by atrocious weather, the enemy shuttled in reinforcements to the point where, before the battle ended, some sixteen North Vietnamese battalions were identified in and around Hue.

During the early hours of the battle, the weather was reasonably good; but 2 February proved to be a turning point, and weather conditions thereafter became increasingly worse. Temperatures fell into



the fifties--unseasonably cool for there. The prevalent misty drizzle occasionally turned into a cold drenching rain. As clouds closed in and heavy ground fog developed, it became difficult to use heavy fire support properly. Tactical air operations were hamstrung. The majority of fire support missions fell to the howitzer batteries and ships offshore. Although less restricted by poor visibility than aircraft, artillery fire had to be precise. Even then the forward ground observers were occasionally required to radio corrections to firing batteries based on sound rather than sight.<sup>19</sup>

While cloud ceilings were generally 150-to-200 feet at best, Major General Tolson nevertheless claimed that his helicopters kept airlifting troops close to the assault positions, even if they were unable to make actual air assaults. "Air strikes were very difficult to call in because of the bad weather and low ceilings," he later wrote; "most of our helicopter operations were at an altitude of about 25 feet." "I think it was at this time," he continued, "that General Creighton W. Abrams [the deputy USMACV commander who replaced General Westmoreland at mid year] said that any previous doubts that he had had about the ability of the helicopter to fly in marginal weather were removed."<sup>20</sup>

Bitter fighting continued at Hue until 25 February 1968, when the last enemy position was overrun. The Marines lost 142 killed; the South Vietnamese 384. Some 5,000 enemy soldiers were killed within the city and another 3,000 in the environs. Loss of life among the civilian population was heavy--about 5,800. More than 2,800 of those were found later in single or mass graves--many of them victims (due to their official positions or loyalty to the Saigon government) of a systematic purge by the communists during the twenty-six days they occupied the city.<sup>21</sup> General Cushman estimated afterward that with a break in the weather, the battle for Hue could have been fought and won in half the time.<sup>22</sup>

#### Khe Sanh

Key to the northern provinces in the Republic of Vietnam was Khe Sanh. It was a remote and isolated outpost off Highway 9 held primarily by a reinforced regiment of United States Marines. With its capture, North Vietnam would possess an almost unobstructed invasion route through the A Shau Valley to the northern provinces. They then could outflank American positions.

On 21 January 1968, the North Vietnamese unleashed a heavy rocket, artillery, and mortar attack on Khe Sanh, and began assaulting its outlying defenses. Anticipating the attack, General Westmoreland, backed by the Joint Chiefs of Staff, chose to make a stand for strategic and psychological reasons, believing the Marines could be sustained by air power.<sup>23</sup>

General Westmoreland made his decision knowing full well that, as he phrased it, "we were in the midst of the northeast monsoon with no prospect of relief from bad weather until the end of March"; and that "poor visibility. . . because of low clouds and persistent ground fog, made helicopter movement hazardous if not impossible much of the time" and "posed major problems for close air support and supply by air."<sup>24</sup> "The weather at Khe Sanh," he wrote,<sup>25</sup>

was of some concern. The mists, low-lying fogs, and drizzling rains of the *crachin* last from October through April, and Khe Sanh is on the dividing line between the *crachin* and generally clear weather that prevails during the same period over the Ho



Chi Minh Trail in Laos. While taking advantage of the weather in Laos, our aircraft would be handicapped at Khe Sanh, but B-52s, artillery, and tactical aircraft bombing by radar could make up for much of the disadvantage. The weather actually provided another argument for holding Khe Sanh--to prevent the enemy from taking advantage of the *crachin* and infiltrating the populated coastal region as he did in going through the A Shau Valley to Hue.

Because Highway 9 to Khe Sanh had been cut by the enemy since August 1967, the most valuable piece of real estate to the besieged defenders at Khe Sanh was their 3,900-foot airstrip. Some 1,500 feet above sea level, it was surrounded by mountains towering 5,581 feet on the north, and an average of 3,000 feet in other directions. A ravine off the runway's east end dropped about 800 feet. It acted as a trough. Through it the prevailing winds channeled warm, moist air to the cooler airstrip causing a virtual "fog factory" during the northeast monsoon.<sup>26</sup>

Climatology furnished General Westmoreland's staff by the 1st Weather Group indicated that ceilings below 2,000 feet and visibilities less than 2.5 miles could be expected at Khe Sanh on more than half the mornings through April; conditions at mid-day would typically improve, with average ceilings in the early afternoon rising to about 3,000 feet.

The data proved reasonably accurate for the siege at Khe Sanh, except that conditions in February were far worse. For any one day the best weather during the siege lasted only six hours, when clouds were in a scattered-to-broken condition between 1,000 and 2,500 feet. Visibilities were never much better than five miles. In the early morning, afternoons, and late evening weather and fog reduced visibilities to less than a mile.<sup>27</sup>

Under cover of the heavy fog, some audacious North Vietnamese gun crews positioned their antiaircraft weapons just off the runway's eastern end and fired in the blind whenever they heard the drone of incoming aircraft. Several planes were hit while on final approach and completely in the fog.

On those occasions when the sun finally managed to burn through, cloud ceilings raised slightly but still hovered low enough to prevent the unrestricted use of airborne artillery spotters and strike aircraft. It was during those periods, when the overcast was between 100 and 500 feet, that enemy artillery, rocket, and mortar fire was heaviest. The North Vietnamese forward observers, perched along the lower slopes of the surrounding hills, called in and adjusted barrages with little fear of retaliation against their own gun positions. Later in the afternoon, when the fog rolled in again and obscured the enemy's view, the incoming fire tapered off.<sup>28</sup>

The Marines adjusted their schedule accordingly. They usually worked under the cover of haze in the morning, went underground during the midday shelling, and returned to their duties later in the afternoon. While the extremely low cloud cover occasionally befriended the men at the base, it constantly plagued pilots whose mission it was to resupply them. Weather greatly affected helicopters also. When the "choppers" were grounded, life became hard on the Marines manning the perimeter. One period of weather when they could not fly persisted for nine days. Such a water shortage developed that one small position was authorized to conduct a two-hour march to obtain water

from the nearest stream. The patrol surprised a group of enemy soldiers and killed many of them in a firefight.<sup>29</sup>

During the siege of Khe Sanh, Air Force C-130s and C-123s airlifted nearly 11,000 tons of "beans, bullets, and bandages" to the 6,680 Marines, and moved 3,387 troops or other passengers in or out.<sup>30</sup> But stocks were never seriously depleted because, out of respect for the weather, a twenty-day supply of all essential items had been laid in. Yet, more could have been done had not fog kept the runway closed about forty percent of the time.

With the transition in monsoon seasons in March 1968 the weather at Khe Sanh gradually began breaking up. General Westmoreland ordered the 1st Cavalry Division (Airmobile) to reopen Highway 9--reasonably secure in the knowledge that tactical air support could keep the North Vietnamese at bay with better weather. He was anxious to re-establish ground contact with the Marines yet, as he wrote, "a study of weather in the region over the preceding ten years revealed that not until about the first of April could I count on good weather for airmobile operations."<sup>31</sup>

Preparations for the relief of Khe Sanh, an operation codenamed Pegasus (or Lam Son 207A) got underway in late January, but it was 1 April 1968 before the drive kicked off. The bad weather that day lingered to taunt the Army for the week it took to reach Khe Sanh.

To do the job, Major General Tolson had nearly 500 helicopters and 19,000 men from his 1st Cavalry Division (Airmobile), plus 10,000 Marines and three South Vietnamese battalions--some 30,000 troops in all. The operation launched from Landing Zone Stud, a forward operating base with a bunker complex and 1,500-foot airstrip eleven miles northeast of Khe Sanh near Ca Lu. Seldom were Tolson's helicopters able to begin operations before 1 p.m. because of the weather. "Good weather," Tolson wrote, "was considered to be any condition where the ceilings were above 500 feet and the slant range visibility was more than a mile and a half."<sup>32</sup>

Ground fog, haze, and low hanging clouds were a way of life during Pegasus. Still, enemy resistance was light and contact with the defenders at Khe Sanh was first made on 6 April. Two days later the relief of Khe Sanh was effected, although operation Pegasus did not officially terminate until 15 April 1968. Tolson's forces suffered 983 casualties, including 125 killed, while the retreating North Vietnamese left behind 1,304 dead on the battlefield. Summarizing Pegasus, Tolson wrote later that,<sup>33</sup>

for the first time, the [1st] Cavalry [Division (Airmobile)] had made an air assault as a division entity; every committed battalion came into combat by helicopter. In fifteen days, the division had entered the area of operations, defeated the enemy, relieved Khe Sanh, and been extracted from the assault--only to assault again four days later into the heart of the North Vietnamese Army's bastion in the A Shau Valley.

With the relief of Khe Sanh, the two and one-half month siege came to an end. American casualties during the period were light: 199 killed and 1,600 wounded. Best available estimates were that the communists suffered in excess of 10,000 casualties.<sup>34</sup>

Writing later, General Westmoreland added an interesting post-script to the effort and resources expended at Khe Sanh in 1968. He was reassigned at mid-year and one of the first actions taken by his



*Maj Gen Tolson (center) conferring over map at LZ Stud. (U.S. Army Photo)*



*Loading 1st Cavalry Division (Airmobile) helicopters at LZ Stud for relief of Khe Sanh. (Photos by Capt Taylor)*

successor as USMACV commander, General Abrams, was to abandon Khe Sanh. Four years later, when the North Vietnamese invaded Quang Tri Province in the spring of 1972, the South Vietnamese had nobody at Khe Sanh, and the valleys leading down from the Khe Sanh plateau, into the populated coastal regions eastward provided convenient avenues for the invaders.<sup>35</sup>

#### A Shau Valley

As Major General Tolson noted, General Westmoreland approved a plan for the 1st Cavalry Division (Airmobile) to immediately turn south from Khe Sanh and join with the 101st Airborne Division for a drive into the A Shau Valley.

Abutted against South Vietnam's border with Laos, the valley was situated between two mountain ranges with peaks rising over 1,000 meters. Three abandoned airfields lay on its floor, which ran northwest to southeast. North Vietnamese forces had been in control of the valley since overrunning a Special Forces camp on the southern end in March 1966. In the interim they had constructed a major logistics base for infiltrating people and supplies from North Vietnam into South Vietnam's northern provinces. The object of the A Shau Valley operation, code-named Delaware (or Lam Son 216), was to prevent the enemy from massing to launch further attacks in the vicinity of Hue.

On 10 April 1968, without warning, Tolson was ordered to immediately begin plans for extracting his division from Khe Sanh and prepare for a helicopter assault ("reconnaissance in force") on the A Shau Valley. The sense of urgency was predicated upon a long-range forecast prepared by the 1st Weather Group's Detachment 14 (the weather center) which indicated that a short period in April held out the last possible time for weather favoring an assault operation in the valley before the onset of heavy monsoon rains.<sup>36</sup>

The operations plan for the A Shau Valley operation was published on 16 April. D-day was tentatively set for the seventeenth. However, Major General Tolson determined that D-day would be contingent on having three continuous days of favorable weather in the valley for some of his helicopters to perform reconnaissance for selecting flight routes, pinpointing enemy antiaircraft and artillery positions, and developing targets for tactical air and B-52 strikes. "They rushed us in because of weather," Tolson remarked later, and it was "a very important part of our discussion" on the operation.<sup>37</sup> By the sixteenth Tolson had not had the three days of good weather so his recommendation that D-day be slipped to the nineteenth was approved.<sup>38</sup>

On 19 April 1968, in the wake of extensive artillery fire and B-52 bombing, operation Delaware kicked off with the initial air assault by two brigades of the 1st Cavalry Division (Airmobile) and a South Vietnamese infantry regiment. Despite the preparatory fire, enemy antiaircraft fire was intense.

During the first few days of operation Delaware the weather was worse than forecast. It was characterized by low cloud ceilings, fog, and thunderstorms. Coupled with heavy enemy antiaircraft fire, "the unbelievably bad" weather, as Major General Tolson described it, made helicopter assaults and Air Force C-130 resupply missions extremely hazardous.<sup>39</sup> The weather was not only bad in the A Shau Valley but at the launch base, Camp Evans, as well. It forced helicopter pilots to climb up through the overcast on instruments, reassemble a formation

on top of the clouds, fly to the target area, and then search for a hole in the clouds to make a descent. "What should have been a simple twenty-minute flight was usually an hour and twenty minutes of stark terror," Tolson wrote; "the operation was a phenomenal piece of flying, but from a commander's viewpoint it was sheer agony to see what my people had to go through to accomplish the mission."<sup>40</sup>

C-130 pilots faced the same problems but, unlike the helicopters, generally could not pick holes in the clouds for their descents. They were vectored to the A Shau Valley by the intersection of radials from two radio stations on the Vietnam coast. From there they began an instrument approach into the valley for the air drops. On-board radars were used to avoid the mountains. "No matter how reliable the gauges," noted Tolson, "it takes a lot of guts to poke your airplane nose into clouds that are full of solid rock!"<sup>41</sup> Not all were successful. On 26 April a C-130 took antiaircraft fire after breaking out of the overcast too far south of a landing zone in the valley. Attempting to crash land, and losing altitude rapidly, it came under more small arms fire, crashed and burned. When the weather was good, the operation progressed; when it was bad, the campaign lagged.

With a general improvement in the weather conditions on 22 April, the 1st Cavalry Division (Airmobile)'s two brigades were able to consolidate and improve their positions in the A Shau Valley. Enemy resistance lessened as the buildup of Allied forces continued through the end of the month. By 3 May, C-130s were able to land on one of the valley's three airstrips, A Luoi airfield, where Major General Tolson moved his division's forward command post. During the next few days many major enemy supply depots were uncovered, and a partial list of captured equipment included a tank, three track vehicles, 67 wheeled vehicles, 137,757 rounds of small arms ammunition, 1,680 hand grenades, and 2,500 individual weapons.<sup>42</sup>

With all major objectives achieved, the problem then became one of extracting troops from the A Shau Valley before the monsoon rains became too intense. In many ways extraction proved more difficult than the assault. Rain washed out enough of the A Luoi airstrip to halt C-130 traffic, so all of the men and supplies were airlifted out by Army helicopters. Extraction began on 10 May and Delaware was officially terminated on 17 May 1968.<sup>43</sup>

The enemy suffered 839 casualties during the A Shau Valley campaign.<sup>44</sup> According to Major General Tolson, the 1st Cavalry Division (Airmobile) lost 21 helicopters in the operation;<sup>45</sup> according to Major Peter N. Micale, who was the 5th Weather Squadron operations officer at the time, the Army lost 33 helicopters during Delaware (roughly seven percent of the number possessed by Tolson's division), primarily because low cloud ceilings increased their vulnerability to 12.7 millimeter antiaircraft fire.<sup>46</sup>

Major General Tolson, a paladin of the Army's airmobility concepts and doctrine being tested by fire in Vietnam, delved unusually long on the weather and weather support aspects of the A Shau Valley campaign. "While the 1st Cavalry Division lost twenty-one helicopters in this operation," he wrote in 1973,<sup>47</sup>

the fact that they were able to make a major move into such an area in the face of this [antiaircraft] threat and under the worst possible weather conditions is a tribute of the soundness of the airmobile concept. Some of the helicopters that were lost ignored clear warnings of intense enemy concentrations that had been uncovered by prior reconnaissance. At times the weather

gave an additional aid to the enemy by channelling helicopters into certain flight paths to go underneath the clouds. The enemy, of course, adjusted his fire to the obvious approaches.

From the Allied point of view, Operation Delaware brought out one important consideration. Weather had been the key planning factor on the timing of this operation from the beginning. The urgency to terminate Operation Pegasus in order to go into the A Shau Valley was based on inches of rain to be expected after the month of April, not *ceilings* and *visibilities* which would prove so critical. In other words, the forecast monsoon rains (which did occur) never produced the terrible flying conditions of low ceilings and scud which preceded them in April. An air cavalry division can operate in and around the scattered monsoon storms and cope with the occasional heavy cloudbursts far better than it can operate in extremely low ceilings and fog. The monsoon rains did, in fact, wash out the hastily constructed [A Luoi] airfield but our capability for airmobile operations improved during the period. *The lesson learned, then, was that one must be very careful to pick the proper weather indices in selecting an appropriate time for an airmobile operation* [author's italics]. An inch of rain that falls in thirty minutes is not nearly as important as a tenth of an inch which falls as a light mist over 24 hours. According to the long range forecast based on old French records, April was supposed to have been the best month for weather in the A Shau Valley. As it turned out, May would have been a far better month--but you don't win them all.

Notwithstanding the helicopter's weather limitations, Army authorities were convinced it had once more proved indispensable during the Tet offensive. Referring to the relief of Khe Sanh and the A Shau Valley campaign, General Westmoreland proclaimed that "American forces achieved a degree of co-ordination and sophistication with flexibility and mobility of airmobile warfare never before known."<sup>48</sup> "The helicopter was the work horse of the Vietnam War," Westmoreland's one time deputy for operations concluded; "despite the helicopter's sensitivity to weather conditions, its versatility gave it great value in combat operations."<sup>49</sup>

#### The Results

By mid-February the communist Tet offensive of 1968 began petering out, a fortnight after it began, and by 1 April, with the thrust to reopen Highway 9 to Khe Sanh, the initiative shifted and Allied forces throughout the Republic of Vietnam moved to the offensive. "In the main," General Westmoreland wrote, "the Tet offensive was a Vietnamese fight," and the South Vietnamese withstood the burden well.<sup>50</sup>

Between 29 January and 11 February 1968, the communists lost 32,000 killed and 5,800 captured--nearly half of the 84,000 committed to their offensive. The Americans lost 1,001 killed; South Vietnamese and Allied forces 2,082. By the end of February, as Allied forces swept the environs of the towns and cities, the enemy death toll rose to 37,000--a loss in one month of more men than the United States had lost since 1961. During the first six months of 1968, the communists lost an estimated 120,000 men--over one-half of their strength at the beginning of the year, and enough to man more than twelve communist divisions. In the same interval the ratio of enemy to Allied casualties

was about 5.6-to-one.<sup>51</sup> By the close of 1968, when the United States had dropped more tons of bombs on Vietnam than fell on Germany and Japan in World War II, American casualties exceeded 30,000 dead and 100,000 wounded.

Militarily and politically the Tet offensive of 1968 was a major setback for the communists in the Republic of Vietnam. President Lyndon B. Johnson, who with his closest advisors followed the Tet offensive's developments on a daily--sometimes hourly--basis, labeled it a North Vietnamese debacle, and "by any standard a military defeat of massive proportions."<sup>52</sup> Allied forces quickly stemmed the tide and, for the most part, Viet Cong and North Vietnamese elements turned tail to go lick their wounds. Politically, the expected uprising among the South Vietnamese failed to materialize. On the contrary, the people rallied to the Saigon government, and the Tet offensive became not a Dien Bien Phu but, as General Westmoreland assessed it, a Pearl Harbor.<sup>53</sup>

However, while the North Vietnamese suffered military defeat in Vietnam, they won a resounding psychological victory in the United States by undermining American will to continue the fight--much as they had the French after Dien Bien Phu fourteen years earlier. "By demonstrating that after years of effort the United States and South Vietnam could not even safeguard Saigon, the Tet offensive shook the faith in [President] Johnson's policy," concluded three of the nation's preeminent historians who, in a textbook used as a primer in classrooms across the country, tagged it "the Vietnam quagmire."<sup>54</sup> On 31 March 1968, in yet another attempt to get Hanoi to negotiate a ceasefire in Southeast Asia, President Johnson announced his decision to suspend the bombing of North Vietnam north of the Twentieth Parallel--as well as his decision not seek re-election that year.<sup>55</sup> \* Richard M. Nixon won the November election, one of his campaign promises being to end American involvement in Southeast Asia. Thus, at places like Saigon, Hue, and Khe Sanh in 1968 the communists sowed seeds of discontent and disillusionment in the field of American public opinion--fertilized by the generally pessimistic reporting of the fourth estate--that eventually grew into the abandonment of South Vietnam under a misnomered "peace with honor."

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\* While the president was reaching his decision, Secretary of State Dean Rusk pointed out to him that, by limiting air strikes in North Vietnam to targets south of the Twentieth Parallel, the United States would not be making a major military concession because the monsoon weather would pretty well hamstring attacks in the Hanoi-Haiphong area anyway. (Johnson, *The Vantage Point*, pp. 399-400.)

General William W. Momyer, whose Seventh Air Force conducted the bombing, knew that North Vietnam's weather would probably be poor for another month, during April 1968, but then would improve markedly during the southwest monsoon. "Thus, although I had no confidence that we could achieve a negotiated settlement at that time," Momyer wrote, "I supported the proposal for a bombing halt because I realized that the weather alone would probably cause us to cancel all but a few hundred sorties and because we were not being permitted to strike the most valuable targets in any case." Momyer believed that a cessation of bombing north of the Twentieth Parallel during April would have minimum effect on his air campaign; but, if North Vietnam displayed no intention to de-escalate the war in South Vietnam, he advocated a resumption of bombing with no restrictions, and the mining of Haiphong harbor. See Momyer, *Air Power in Three Wars*, p. 27.

## The Weather Support

The initial scope and intensity of the communist Tet offensive of 1968 prompted General Westmoreland and other American authorities to try various means to neutralize weather's impediments or turn them to advantage. With the aid of ground radars, B-52s were able to bomb the Khe Sanh perimeter areas through solid cloud cover; and tactical airlift aircraft were able to get close enough to the Khe Sanh runway to release their loads on target, without landing, in weather that proved a blessing because it forced enemy anti-aircraft batteries to fire in the blind. To help detect the enemy's movement, seismic and acoustic sensors were implanted around Khe Sanh, and gravel munitions--both noisemaker and a variety powerful enough to wound a man or puncture a truck tire--were carefully laid in patterns designed to filter enemy traffic through the sensor fields. Still, weather, in particular warm fog, was a hindrance, and efforts to disperse warm fog at Khe Sanh by dropping salt from C-123s out of Da Nang on fifteen different missions were a failure--as AWS experts had warned anxious theater decision makers they would be.<sup>56</sup>

### Rainmaking

The weather modification efforts at Khe Sanh during the Tet offensive were conducted in extreme secrecy, as were efforts by AWS at rainmaking--or rainfall enhancement or augmentation, as the purists and orthodox within AWS preferred referring to it.

In 1967, based on tests conducted by the Defense Department and the Navy over Laos the previous year, AWS was assigned three WC-130s specifically for conducting rainmaking operations over portions of the Ho Chi Minh Trail winding from North Vietnam through Laos and Cambodia into South Vietnam. The theory went that, if the normal monsoon season (particularly the southwest monsoon) could be extended, the resultant mud from increased rainfall on the main lines of communication from North Vietnam would measurably reduce the flow of men and materiel to the enemy.<sup>57</sup>

The WC-130s and crews utilized were assigned permanently to AWS' 54th Weather Reconnaissance Squadron at Andersen AFB, Guam. From there they were rotated (one WC-130 was rotated about every 20 days) to, and operated from Udorn Air Base, Thailand. While at Udorn, the aircraft and crews were assigned temporarily and administratively to the 1st Weather Group's Operating Location 2, and came under the operational control of Seventh Air Force--actually, the 1st Weather Group commander, wearing his Seventh Air Force staff weather officer "hat." Evidently because ramp space, maintenance and living facilities were at a premium, no more than two WC-130s and 50 men were permitted at Udorn simultaneously. Carrying flare racks capable of dispensing 104 silver or lead iodide flares (a 40 millimeter aluminum photoflash-type cartridge case with primer and a candle assembly), the WC-130s were expected to generate at least one sortie per day, or approximately 220 hours per month. Cloud seeding sorties were flown at the freezing level, which was generally about 18,000 feet. Two RF-4Cs based at Udorn were also specially configured and used on the rainmaking project--they could carry 104 flares in their photo cartridge compartments--and were also expected to maintain a sortie rate of one per day.<sup>58</sup>

The first operational rainmaking missions were flown in March 1967 under a project labeled variously as Popeye, Intermediary, Compatriot, and, by AWS, Motorpool. Some 591 rainmaking sorties were flown by the unarmed and unescorted WC-130s and RF-4Cs in 1967, and 737 in 1968



(during which 6,570 flares were expended in 1967, and 7,420 in 1968) over Laos, North Vietnam and, specifically, the A Shau Valley. Particularly, during the Tet offensive, AWS WC-130s were flown on 47, 34, 31, 30, and 33 rainmaking sorties in the months of January through May 1968, respectively. During those missions the WC-130 crews also made occasional dropsonde releases and relayed both vertical and horizontal observation data in the clear to the 1st Weather Group's weather center at Tan Son Nhut, Detachment 14.<sup>59</sup>

General Westmoreland was one of only four general officers in Southeast Asia during the Tet offensive who were privy to the details of the tightly controlled rainmaking missions, and in memoirs he published in 1976 he asserted that the operation resulted in "no appreciable increase" in rain over the Ho Chi Minh Trail.<sup>60</sup> Indeed, one of the project's most difficult aspects was quantitatively determining how much, if any, additional rain fell over and above the climatological average to be expected. However, using empirical and theoretical techniques, it was estimated by experts that rainfall was increased in limited areas up to thirty percent and, subjectively, that it contributed to slowing the enemy's flow of supplies into South Vietnam along the trail. Not only that, but at a cost of \$3.6 million annually, rainmaking was less costly than traditional air interdiction methods, and, more important, it was more humane because it saved lives.<sup>61</sup>

The very nature of the project led it to be cloaked with an armor of secrecy, and raised interesting possibilities. The few civilian officials in the State and Defense Departments with access to the project considered it extremely sensitive politically. The potential existed for disrupting the area's delicate ecological balance. Moreover, the international legal implications were staggering if Thailand, for instance, alleged that its rice paddies were unlawfully denied the water precipitated over Laos by the operation--a form of aerial riparian rights. Thus, the governments of Thailand, Laos, and South Vietnam were not informed about the operation, nor were the American ambassadors to those countries.<sup>62</sup> \*General Westmoreland and his deputy at USMACV for Intelligence knew, as did the Seventh Air Force commander, General William W. Momyer, and his deputy for Intelligence. About half a dozen in the 1st Weather Group knew, in addition to the crews flying the

\* In March 1971, nationally-syndicated columnist Jack Anderson broke a story about Air Force rainmakers in Southeast Asia. It opened the floodgates. Three months later various versions of the so-called *Pentagon Papers* were published, portions of which confirmed Anderson's scoop. Following in relatively close order was an article on Air Force rainmaking in the magazine *U.S. News & World Report*, and one by Seymour Hersh, the reporter generally credited with first making public some of the details surrounding the Army's First Lieutenant William L. Calley and the infamous My Lai or "Pinkville" massacre in Vietnam.

With such publicity, congressional inquiries began, spearheaded by Senator Claiborne Pell. The Rhode Island Democrat had a resolution passed expressing the sense of the Senate that the United States seek a treaty banning environmental (weather and climate) modification as a weapon of war. Until 1974, when Pell finally consented to listening to a top secret Defense Department briefing on the Air Force's rainmaking in Southeast Asia (which the solon promptly placed in the public domain), State and Defense Department officials refused to comment publicly on the allegations by the press.

In July 1974, over Defense Department objections, and in connection with the strategic arms limitation talks (SALT), the United States and Russia issued a joint communique from Moscow announcing their intention to conduct talks on banning environmental warfare. In August 1975 the

seven-day forecasts; they did so primarily because Army and USMACV authorities insisted on them.<sup>66</sup> The long range forecasts were over and above routine severe weather warnings the center issued; 24-hour operational plain language forecasts to support naval operations along the Vietnamese coast; a bulletin containing a verbal description and interpretation of the latest weather satellite data; special climatological studies; a 24-hour operational area forecast for the Republic of Vietnam issued four times daily; and a plain language forecast discussion (popularly referred to as the "streamline analysis") issued twice daily to explain the synoptic situation and outlook for the following forty-eight hours.

Prognoses by the center's forecasters were predicated upon surface and upper air observations from a host of sites throughout Southeast Asia (excluding North Vietnam, of course) and from United States Navy vessels in the Gulf of Tonkin; climatological data; weather satellites; weather radars; weather reconnaissance; pilot reports; selected charts and bulletins transmitted via facsimile from AWS' Asian Weather Central in Japan; and data available from teletype circuits through weather relay centers at Kadena Air Base, Okinawa, and Clark Air Base in the Philippines. Forecasters at Detachment 14 in 1968 found the most successful prognostic technique to be continuity--i.e., forecasting yesterday's weather for today, and today's weather for tomorrow.<sup>67</sup>

Beginning 18 February 1968, to assure that only one forecast was used, the weather center assumed the responsibility for issuing 24-hour terminal forecasts twice daily for Khe Sanh, Hue, and Phu Bai.<sup>68</sup> Until late July, it was required to pass its Khe Sanh forecast to the senior weather officer with the Joint Chiefs of Staff.<sup>69</sup> Six days later, on 24 February, it began issuing terminal forecasts for the A Shau Valley. However, confusion resulted when Detachment 14 transmitted the forecasts under the operation's codename--Delaware--because weather personnel in the field did not know the codename, and therefore, knew not where the forecast was for. Eventually, the 1st Weather Group sent a classified message revealing the location. The center continued issuing the A Shau Valley forecasts until 17 May 1968.<sup>70</sup>

The center did not have a capability to transmit any of its products via facsimile, and there were no facsimile receivers at any weather units supporting Army tactical units; most of the sixty-word-per minute weather teletypes the Army furnished 5th Weather Squadron units had a receive only capability; and the teletype circuits to them were either out of commission or saturated, particularly during the Tet offensive.

It made little difference. Few 5th Weather Squadron units in the field had any use for, or confidence in, the weather center's forecasts; and the forecasters at Detachment 14 reportedly cared less, by and large. A captain who manned the current operations officer position at the 1st Weather Group during the Tet offensive reported that Detachment 14's role and mission was never understood by field weather units; there was "extremely poor rapport" between the weather center and the field units; and that,<sup>71</sup>

Det 14 operated under the concept that their mission was to make out-of-country target forecasts [forecasts for targets to be struck by air in North Vietnam, Laos, and Cambodia]; secondly, they expected field units to brief their products without question. Invariably almost all the field forecasters could recite cases of poor forecasting and poor attitude by Det 14 personnel. No one could pinpoint the reason for this, and it has been given command attention; however, it is still a problem.

His opinion was supported by the operations officer of the 30th Weather Squadron, the unit furnishing service to Seventh Air Force aircraft flying tactical missions during the Tet offensive. "Detachment forecasters had little or no faith in the center's product," he reported, because of a "credibility gap" caused by Detachment 14 forecasters seeing their primary mission as a briefing facility for USMACV and Seventh Air Force authorities rather than as an actual forecast center for the entire theater.<sup>72</sup> "There is no centralized product being produced in Vietnam strictly for Army dissemination," wrote Major Micale, the 5th Weather Squadron operations officer,<sup>73</sup>



*Major Peter N. Micale*

and upon which all the division weather teams base their forecasts. The teams at the headquarters level of USARV and the . . . corps equivalent Field Forces are not manned and do not have the comm [-unications] to put out a centralized product. It must simply be stated as a fact of life that the SEA WECEN [Southeast Asia Joint Operations Weather Center--Detachment 14] is producing products for the AF out-of-country air war over North Vietnam.



*Maj Gen Tolson (center) being briefed during Operation Pegasus. (U.S. Army Photo)*

Until 18 February 1968, the responsibility for issuing terminal forecasts to Army division commanders and their staffs, and forecasts for operations such as Pegasus and Delaware, rested with the forecasters at the individual 5th Weather Squadron unit (operating location) supporting them. That was an extremely significant prerogative for the local forecaster because, as Captain Thomas E. Taylor reported, in his role as staff

weather officer to the 1st Cavalry Division (Airmobile), Major General Tolson and his staff tended "to be doubtful of the weather forecaster until he had proven himself and his ability to forecast for his particular area of operations."<sup>74</sup>

Major General Tolson was highly thought of by both Captain Taylor and his boss, Lieutenant Colonel William H. Shivar, the 5th Weather Squadron commander. Shivar, who knew the general personally before Vietnam, said "he's the best war fighter I've run into," and that the success of his division in Vietnam was widely recognized.<sup>75</sup> A West Pointer (class of 1937) who logged numerous combat jumps (including the recapture of Corregidor in 1945) with a parachute infantry regiment in the southwest Pacific during World War II, Tolson had a background in Army aviation. He had a hand in the Army's development of the C-7, pulled two tours commanding the Army's aviation school or center at Fort Rucker, Alabama (one as assistant commandant, and the other as commandant), and was a qualified helicopter and fixed-wing pilot. As such he was "highly sensitive about weather support," Shivar opined; "he's probably one of the most weather conscious commanders I've ever known," and Tolson fully supported both Shivar and Taylor.<sup>76</sup>

"In my opinion, he was the epitome of what a general officer ought to be," Taylor said of Major General Tolson eleven years later; the 1st Cavalry Division (Airmobile) commander "was the closest thing I ever found to a god," he offered out of profound respect and admiration.<sup>77</sup> In Taylor's view, the 52-year old general was deeply concerned with the welfare of his troops--some 26,000 of them in the division, equipped with about 500 helicopters--especially the younger, lower-ranking enlisted men. The general was constantly touring the battle area, not to harrass or second-guess his company commanders, but to let his young fighting men see him and know he was aware of, and empathized with, their plight. With each day's casualty reports, the North Carolina native inquired of the artillery section responsible for fire support what more might have been done to keep the names of his young men off the death rolls.<sup>78</sup>

To find one of Major General Tolson's units that would feed and shelter his men, Captain Taylor--who was a slim and trim bachelor--was forced to locate his weather operations in a tent and bunker complex about a mile and a half from the division command post. On 19 May the entire weather complex was leveled by shock and blast waves from exploding ammunition in a huge dump hit by enemy mortar and rocket fire. Reconstruction by Taylor's men commenced immediately, and three days later they had their complex back in operation.

Captain Taylor and his two forecasters rarely briefed individual helicopter pilots, and gave scant attention to the division airfield because "choppers" were the division's means of maneuverability. They did, however, brief Major General Tolson twice daily with twelve-hour forecasts for the division's area of operations, and they briefed his staff on climatology each month--or more frequently if the tactical situation warranted it.

Captain Taylor dealt directly with Major General Tolson in such affairs, not through the division Intelligence officer, and the two shared excellent rapport. Major Micale, the 5th Weather Squadron operations officer, observed that of all the Army divisions the squadron supported during the Tet offensive, the rapport with the 1st Cavalry Division (Airmobile), through Taylor, was best.<sup>79</sup> In "all

major operations such as . . . the relief of Khe Sanh and . . . the A Shau Valley the planned starting dates of both were based on forecast weather," Taylor wrote.<sup>80</sup>

Notwithstanding Major General Tolson's displeasure with Detachment 14's climatological forecast, which prompted General Westmoreland to sanction a drive into the A Shau Valley in mid-April instead of May, he was extremely weather conscious, and made extensive use of Captain Taylor, his forecasters, and his observers. On flights to the battle areas the general often found it to his pleasure to take Captain Taylor along for a form of "weather reconnaissance." When the 1st Weather Group found it out, Taylor was ordered to stop. Just prior to the A Shau Valley sweep, Taylor declined an invitation by Tolson to join him on flights into the area. In reply to the general's amazement, Taylor explained the group's edict, which was based on a fear of weathermen becoming casualties unnecessarily. Shortly thereafter, Taylor was telephoned by the group with instructions to resume his "weather reconnaissance" flights--Taylor later learning through the grapevine that Tolson personally called the group commander, Colonel Griffin H. Wood, explaining that he operated under the concept that Taylor and his weathermen were his to do with as he saw fit, operationally speaking; and, if that was not the case, then the 1st Weather Group could damn well recall Taylor and his men immediately because he had no use for them.<sup>81\*</sup>

Tolson had made it quite lucid to Taylor that he would be fired if his forecasts were no good. Under such pressure, Taylor opted to send some of his observers into the A Shau Valley with Tolson's forces. The general concurred. H-hour for the A Shau Valley "reconnaissance in force" was delayed two days due to a 48-hour forecast Taylor briefed to Tolson. On the operation's eve, Taylor also personally briefed both Tolson and the commander whose brigade spearheaded the sweep. Once the operation was in progress, Taylor made frequent helicopter trips into the valley, and he briefed current and forecast weather to Tolson or his staff every four hours, 24 hours a day.<sup>82</sup>

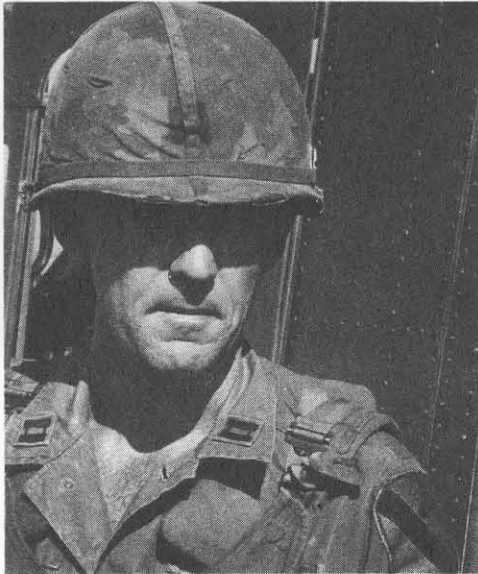
Taylor stressed that he functioned primarily as a weather briefer, that the weather forecasts the 1st Cavalry Division (Airmobile) used were actually prepared by the two forecasters assigned him: First Lieutenant James P. Reilly and Chief Warrant Officer Wilbur Sunday, who had served as a gunner on B-17s in World War II. About midway through the Tet offensive Mr. Sunday rotated and his replacement was Staff Sergeant John R. Fix. "NCO forecasters in the field are the ones who carried Air Weather Service while we were there," Taylor asserted.<sup>83</sup> Fix and Reilly were responsible for the prognoses used during operations Pegasus and Delaware. During the former operation they passed the forecasts via FM radio to Taylor's weather observer team with one of the division's brigades at Quang Tri; in turn, the observers passed the forecasts to Taylor, who remained at Landing Zone Stud through the relief of Khe Sanh.

The prognoses prepared by Captain Taylor and his forecasters were written in longhand and called to the three-man teams of enlisted weather observers he had at the headquarters or command posts of each 1st Cavalry Division (Airmobile) brigade. Because there were no teletype or facsimile machines at the brigades, and because of AWS directives prohibiting enlisted observers from interpreting weather reports, the forecasts and forecast amendments were copied verbatim and passed

\* Col Wood's prohibition against his people flying combat missions was discussed during a visit to Vietnam by the 1st Weather Wing commander in June 1968. Within a month of that visit, Wood rescinded his edict.



*Maj Gen John J. Tolson, III  
(US Army Photo)*



*Captain Taylor, Vietnam,  
1968. (USAF photos)*

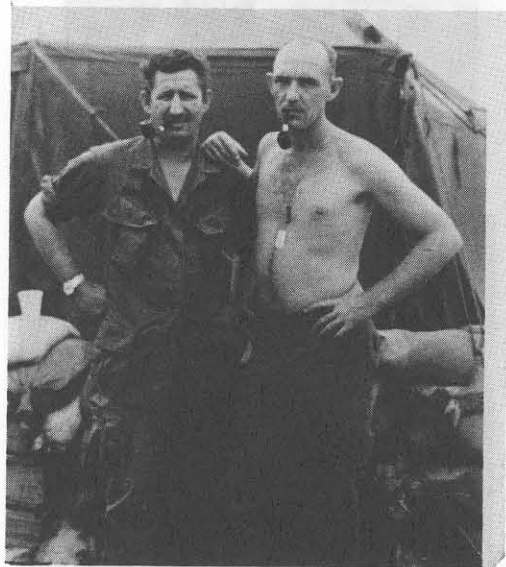


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Above, Capt Taylor with weather map and briefing board used to brief Maj Gen Tolson.

Right, at Camp Evans in 1968, are Capt Taylor (right) and his chief observer, TSgt Robert L. Smith.



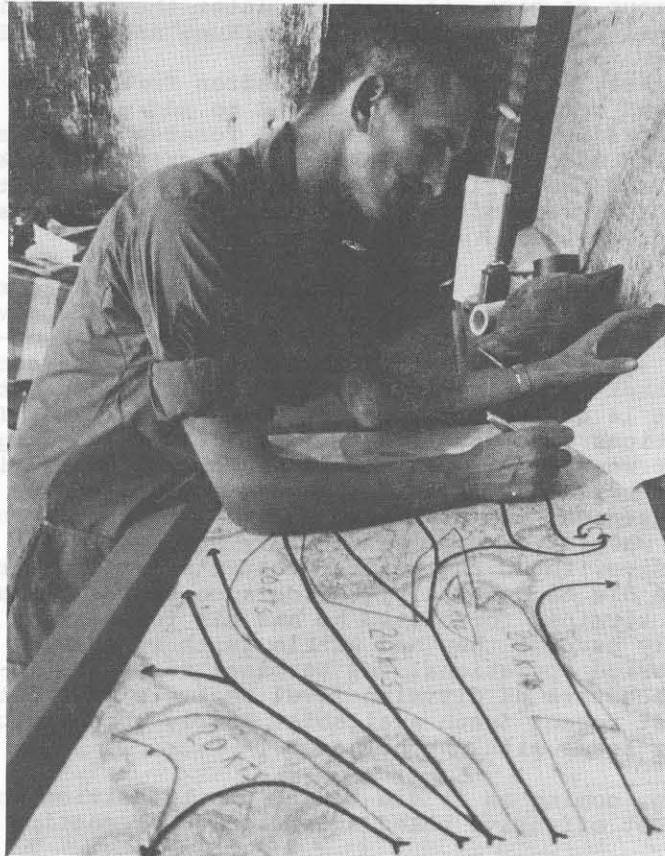
Capt Taylor's accommodations. (Photos by Capt Taylor)



Capt Taylor, Vietnam, 1968. (RMF photos)



Above left, at Camp Evans in 1968, are 1/Lt Reilly (left) and SSgt Fix. (Photo by Capt Taylor) Above right, front row, at Camp Evans in 1968, are CWO Sunday (left) and TSgt Smith. (Photo by Lt Col Shivar) Below, SSgt Fix prepares chart Capt Taylor used to brief Maj Gen Tolson. (USAF photo)





to the brigade Intelligence officer for briefing the brigade commander-- a policy that irked Taylor no little bit.<sup>84</sup>

Actually the 5th Weather Squadron was aware of cases where, when the fighting was intense and communications back to forecasters with the division broke down, weather team observers were tendering on-the-spot forecasts to the brigades they supported, based on the latest half-dozen or so hourly observations they had taken. Under such circumstances the squadron was disinclined to make an issue of the practice, especially when no complaints were aired by the divisions or brigades.<sup>85</sup>

However, one serious drawback with such latitude in forecasting discipline during periods of intense and relatively prolonged fighting, when the weather was miserable and the attention of theater decision makers was more attuned to it, was that it quickly surfaced an age-old bugaboo of AWS--conflicting forecasts from different of its units supporting various tactical elements engaged in the same area of operations. Forecasts funneled General Westmoreland or his staff at USMACV by Detachment 14 might be at odds with forecasts the 5th Weather Squadron was filtering to USARV, or those its detachments were passing to I and II Field Forces; and forecasts promulgated by staff weather officers at one division might vary substantially from those being used at higher echelons, or from those distributed by a fellow forecaster with a sister division jointly engaged in the same operations. In Captain Taylor's case, during operations Pegasus and Delaware, he spoke frequently over the FM radio to his counterpart twenty miles south with the 101st Airborne Division at Camp Eagle, Captain Ronald W. Clarke, coordinating the forecasts they were passing to units of both divisions. But elsewhere the problem was of sufficient seriousness to prompt the 1st Weather Group to give its weather center the responsibility for issuing terminal forecasts for Khe Sanh, Hue, and the A Shau Valley.

Nevertheless, most 5th Weather Squadron forecasters at division headquarters and command posts continued to add personal "body English" to those Detachment 14 terminal forecasts that somehow filtered through despite the weather communications breakdown discussed below; and they all functioned under the premise that "official" terminal forecasts were often not necessarily the same as daily operational forecasts.

Actually, 5th Weather Squadron staff weather officers and forecasters supporting Army divisions during the Tet offensive operated pretty much in a vacuum, and had to get by with "seat-of-the-pants" or rule-of-thumb (single station) forecasting techniques because, not only were weather communications constantly disrupted between them and Detachment 14 or their parent detachments at I and II Field Forces, but communications were equally insufferable, by and large, between them and their weather observer teams deployed forward with various of the divisions' brigades or regiments engaging the enemy. Captain Taylor, for instance, who estimated that his teletype connection to Detachment 14 was out of commission sixty percent of the time during the Tet offensive, found the weather center's gridded streamline analysis to be his biggest help; the balance of the center's products, including the terminal forecasts, he and his forecasters used as guidelines only because they had little faith in them.<sup>86</sup> Often, therefore, short-period operational and terminal forecasts (3-to-24 hours) issued by forecasters at division level became a mere extension of the half-dozen most recent (when available) hourly observations taken by their observer teams with the brigades.

Even then, coming as it did toward the transition in monsoon seasons, the Tet offensive posed a difficult forecasting problem so

that forecasting today's weather for tomorrow (persistence forecasting) which might be the only alternative, was not necessarily the safest thing to do. It was easier to forecast in the middle of a monsoon season when the weather was predominately good or bad (depending on the locale), and not in the gray areas of the fringes. Climatological tables were of less value at such times. It was why it was extremely difficult for Captain Taylor to assure Major General Tolson three continuous days of favorable operational weather before launching the A Shau Valley sweep.

In the northern provinces, where fighting was heaviest, the battle area to be forecast for was relatively small, but the valleys and surrounding mountains rising 3,000-to-4,000 feet added to the perplexity. The Khe Sanh-Quang Tri-Phu Bai-A Shau Valley area was roughly a rectangle, with sides 50 and 70 miles long. It was approximately 35 air miles from Major General Tolson's headquarters at Camp Evans to either Khe Sanh or the A Shau Valley, and 23 miles to Hue. From Camp Eagle, near Hue where the headquarters of the 101st Airborne Division was located, it was about 20 air miles to the A Shau Valley and 55 miles to Khe Sanh. So areas and distances to be forecast for were not excessive, but it was difficult to forecast when each day's ground-hugging fog and scud would burn off enough in the valleys to permit helicopter or tactical air support operations, and when it would settle back down to choke off air support.

The forecasting problems were further compounded by the fact that most forecasters were unproficient in tropical meteorology, and those with the 5th Weather Squadron directly supporting I and II Field Forces, the permanent airfields, and the divisions were inexperienced.<sup>87</sup>

AWS had taken steps by 1968 to run forecasters through either a two or a six week course in tropical meteorology on their way to assignments in Southeast Asia. But classes were small and, because of the one-year tour, the demand was large. Consequently, many arrived in theater without training or background in tropical meteorology. Many of those who received the training, or were experienced, were commandeered and pooled at the Detachment 14 weather center.

After he arrived at his duty station the forecaster's services were often of little use for another sixty to ninety days until he became adjusted to local weather regimes and the peculiarities associated with forecasting for units engaged in combat in the tropics. That process was further aggravated because, in many instances, there was no overlap in tours between the forecaster and the man he replaced. Thus, continuity broke down and experience had to be gained first hand. Then too, because of the one-year tour, forecasters never worked the same season twice.

The majority of those assigned to the 5th Weather Squadron's units had no prior experience in Army support. They had not studied Army doctrine at Fort Leavenworth or Carlisle Barracks, nor observed Army tactics and field operations at Fort Bragg or Fort Bliss; they learned about the Army in bunkers and sand-bagged, shrapnel-riddled tents, with flak vests and "tin pots" and steel-plated combat boots on, an M-16 rifle in one hand and an entrenchment tool in the other. When their initial one-year tour in Southeast Asia was over, extremely few AWS officers volunteered for consecutive or second tours in the theater.\* So the experience level suffered further.

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\* A person could, however, voluntarily extend his tour in Southeast Asia by six months, for which he received an additional seven-day

Of the fourteen 5th Weather Squadron detachments and operating locations in Vietnam during the Tet offensive, two were commanded by first lieutenants, twelve by captains.† Not that company grade officers could not do the job, but more experience would have afforded philosophical padding to the rigors, and field grade officers would have been accepted more readily by Army staff officers. Instead, AWS field grade officers experienced in both command and forecasting were siphoned off for duty with the 1st Weather Group's two other squadrons who supported Seventh Air Force elements in Thailand and the Republic of Vietnam.†† Most company grade forecasters had less than three years commissioned service in weather, including basic and advanced training. At division level AWS company grade officers served as staff weathermen to major generals commanding 16,000 or more men; at corps level (I and II Field Forces) they responded to questions\* from three-star Army generals about meteorological matters.

When the communists opened their Tet offensive, the staff weather officer at I Field Force had been in Vietnam seven weeks, while his contemporary at II Field Force had been on duty three weeks; Captain Taylor, 28 years old at the time with three and one-half years of forecasting experience, but no command experience, had been in Vietnam as Major General Tolson's staff weather officer less than two

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\* (Cont) R&R (Rest and Recouperation) out of theater and a free thirty day leave. Again, however, few AWS officers elected to do so. One who did was Captain Herbert Weigl, Jr, who served as staff weather officer (Operating Location 1, Detachment 32, 5th Weather Squadron) to the 1st Infantry Division from June 1967 to January 1969. (Telephone interview by author on 19Jun79 with Maj Weigl.)

† By comparison with the other two AWS squadrons supporting the Army exclusively at the time, of the twenty-five 16th Weather Squadron detachments and operating locations headed by officers, one was commanded by a lieutenant colonel, 6 by majors, 16 by captains, and 2 by first lieutenants; of the twelve 7th Weather Squadron detachments and operating locations headed by officers, 2 were commanded by lieutenant colonels, 4 by majors, and 6 by captains.

†† The seven detachments of the 1st Weather Group's 10th Weather Squadron in Thailand were commanded by 2 lieutenant colonels, 4 majors, and a captain; the group's 30th Weather Squadron had ten detachments in the Republic of Vietnam, five commanded by majors and five by captains.

\*\* The 5th Weather Squadron detachments at Headquarters I and II Field Forces were each commanded by captain forecasters who were responsible for large numbers of men--upwards of eighty or more, including subordinate operating locations. By comparison, the 16th Weather Squadron had lieutenant colonel staff weather officers with the XVIII Airborne Corps at Fort Bragg and III Corps at Fort Hood, neither of which had to contend with the command or administration of subordinate units. The same held true for the 7th Weather Squadron's staff weather officers with the V and VII Corps--a major and a lieutenant colonel, respectively.

The 7th and 16th Weather Squadrons were commanded by colonels, the 5th Weather Squadron by a lieutenant colonel.

months\*--as had his counterpart to the 101st Airborne Division, Captain Clarke. Prior to Vietnam, Clarke pulled a tour supporting the Army aviation school at Fort Rucker, where Tolson was commandant. Although he reported directly from a one-year tour in Thailand, where he served as a forecaster supporting Seventh Air Force elements at Nakom Phanom, Taylor had not been involved in direct Army support beforehand.† His forecasters at Camp Evans had not either, nor had they experience or training in tropical meteorology. His enlisted forecaster, Staff Sergeant Fix, like most other AWS enlisted forecasters with the Army in Vietnam, was relegated to plying his trade behind the scenes because, as was the case with most other Army commanders, Major General Tolson preferred to receive his weather briefings from officers.<sup>88</sup>

Few forecasters, enlisted or officers, had been trained to survive in combat prior to being assigned in Vietnam. It was not surprising, therefore, that the 1st Weather Group, through its parent 1st Weather Wing, respectfully declined an AWS suggestion in 1968 to assign volunteer forecasters to Vietnam directly out of basic meteorology school, noting that the enthusiasm and zeal the eager young officers evidenced could not possibly offset the liability of inexperience during a one-year combat tour.

Under such handicaps, therefore, the paramount question was how good, how accurate, and how useful were the forecasts for ground and air support operations during the Tet offensive?

Speaking subjectively, because verification was difficult, and referring primarily to weather forecasts for targets in North Vietnam, Colonel Edwin E. Carmell, the 1st Weather Group commander until mid-January 1968, believed his forecasters did "darn well";<sup>89</sup> his successor, Colonel Griffin H. Wood, believed differently and, looking back over nearly thirty years' service, decried the lack of improvement in AWS' ability to accurately predict occurrences of both short and long range weather phenomena.<sup>90</sup>

Colonel Carmell served as the staff weather officer to both the USMACV commander, General Westmoreland, and the Seventh Air Force commander, General Momyer, but spent about seventy-five percent of his time in Air Force support and twenty-five percent in Army support. He had no experience in joint staff work prior to Southeast Asia, and he had "little or none" (in his words) previous experience in Army weather support--factors he saw as detriments in tackling his job in Vietnam, especially for such a short period.<sup>91</sup> Although he reported to, and responded through, Momyer's deputy for operations, he dealt with the Seventh Air Force commander daily, primarily through the rainmaking operation. He had infrequent contacts with Westmoreland--about once a month. Instead, for joint staff matters, he dealt with Westmoreland's deputy for Intelligence, whom he saw at least once a week.

Initially, due to his unfamiliarity, Colonel Carmell experienced difficulty gaining access to, and acceptance by, the USMACV staff. "Every now and again," the colonel said later,<sup>92</sup>

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\* Tolson himself only commanded the 1st Cavalry Division (Airmobile) from April 1967 to July 1968, after which he took command of the XVIII Airborne Corps at Fort Bragg.

† Qualified as a parachutist, Taylor specifically asked for the staff weather officer job with the 1st Cavalry Division (Airmobile) so he could make parachute jumps and keep his rating current.

we would participate with regard to a particular [USMACV] decision. Toward the end of my tenure, when I began to realize how much more we could do, we were participating more in a planning factor where climatology entered into the play; where we could recommend to the commander, MACV, that perhaps he ought to start his sequence of battle action in the south rather than in the north as he had first started, just because prevailing weather was going to be to his advantage. And we participated in this regard much more fully toward the end of our first year [late 1967 and early 1968], and subsequent to that action, than we ever did in the first part of it.

And this was a situation where we really had to take the initiative because the [Army] commanders were just not aware that this information was available to them quite as readily as it was.

The USMACV staff was dominated by Army officers, and they did not appreciate the value of weather support, Colonel Carmell said, because weather's significance had not been stressed to them in peacetime. "I think the Army began there," Carmell opined, "to appreciate the worth of weather in its planning." "We got our foot in the door" in Vietnam, he continued; "the Army began to appreciate that using weather was beneficial and cost effective to their planning," but he confessed that it was a reincarnation, really, a realization among Army commanders reborn with each war but buried during peacetime. 93



*Col Edwin E. Carmell*

Colonel Carmell emphasized that General Westmoreland insisted on being provided a seven-day forecast, and he said that, of necessity, such prognoses were hedged with extremely vague predictions.

The bread and butter for Colonel Carmell and his weather center at Tan Son Nhut were not the seven-day forecasts, nor forecasts for ground operations, but target forecasts for air strikes by Seventh Air Force aircraft--particularly for targets in North Vietnam. It was where Detachment 14's primary interests lay, and on them it kept tab.

During February, March, and April 1968, Detachment 14 issued 3,332 short-range forecasts for targets in North Vietnam, of which 88.6 percent verified.<sup>94</sup> More significant was the fact that, of the 9,242 sorties scheduled for Seventh Air Force aircraft against targets in North Vietnam during those three months, 609 (6.5%) were cancelled due to weather, and 3,906 (42.2%) were ineffective against their primary target due to weather; by contrast, of the 18,592 sorties scheduled for Seventh Air Force aircraft against targets in South Vietnam in the same period, only 259 (1.4%) were cancelled due to weather, and only 518 (2.8%) were ineffective against their primary target because of weather.<sup>95</sup>

The cardinal point to be understood was that Detachment 14's forecasts had very little impact on air strikes against targets in South Vietnam. Fighter and B-52 bombing missions in all kinds of weather were vectored over targets by ground control AN/MSQ-77 radars. All tactical air strikes in close support of ground forces were handled by airborne Air Force Forward Air Controllers (FAC). If the FAC could identify and mark the primary target it was struck; if it was obscured by weather he did not clear it to be attacked, but simply moved to secondary or tertiary targets free of weather, or passed the strike aircraft to other FACs who had workable, weather-free targets. And the potential value of recovery forecasts for fighter aircraft was negated by the fact that a bevy of tanker aircraft was normally available for mid-air refueling, and there were a score of accessible and suitable bases in South Vietnam and Thailand where they could recover if air controllers advised returning pilots that home base weather was prohibitive. Thus, when considering the close air support mission in South Vietnam, forecasters at Detachment 14 were more dependent on FACs and fighter pilots for weather information than vice versa.<sup>96</sup>

The same held true for tactical airlift missions in support of ground forces. Regardless of Detachment 14's terminal forecasts for places like Khe Sanh or the A Shau Valley, C-7 or C-123 or C-130 pilots launched--unless home base was nearly totally socked in by weather. And if the weather at Khe Sanh or the A Shau Valley precluded landings, techniques using vectors from ground-based radars had been developed whereby considerable accuracy was experienced by air dropping supplies. "Weather slowed down, but seldom stopped air deliveries" in South Vietnam, concluded one expert in tactical airlift operations.<sup>97</sup>

Even then, there was substantial customer dissatisfaction with Detachment 14's forecasts. In January 1968 the Seventh Air Force deputy for operations, Major General Gordon F. Blood, expressed misgivings to Colonel Carmell about the seven-day forecast weather center briefers were presenting Generals Westmoreland and Momyer. Blood said Carmell's forecasters were too vague and hedged too much. He wanted more statistics and detail. Another general officer on Momyer's staff personally kept statistics on the long-range forecasts, and could not understand why Detachment 14 did so poorly.<sup>98</sup> Because of the uncertainty of such long-range prognoses, Carmell and the weather center commander acknowledged that the forecasts were vague, and tended to be pessimistic in an effort to play it safe and avoid censure by busting one.<sup>99</sup> The forecasters were scientists, not clairvoyants.

Armor at long last came into acceptance during the Tet offensive,<sup>\*</sup> and Army authorities were concerned about the effects of

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\* The generally unsuccessful experience of French armored forces in Vietnam through 1954 convinced the American military that armor

rainfall on trafficability, as well as land-line communications. They were interested in forecasts--with as much lead time as possible--of two inches of rain or more in a twelve-hour period, but Detachment 14 forecasters did poorly predicting such phenomena.



*Test of U.S. Army motorized vehicles in Thailand in the monsoon season, in 1962. (U.S. Army Photo)*

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\* (Cont) could not be employed there because of the monsoon climate, the jungle, and the rice paddies. Thus, for some time after 1965, Army planners saw little or no need for armor in the United States force structure in Vietnam.

In 1967, almost two years after the first Army ground combat units arrived in Vietnam, an Army study group investigated the use of armor there and concluded that tanks could move with organic support in 61 percent of the country during the dry season, and in 46 percent during the wet season. Armored personnel carriers could move in 65 percent of the country year-round. The Tet offensive ended the Army's long ambivalence toward armor in Vietnam, and convinced it that armored forces had utility in counterinsurgency and jungle warfare there.

In early 1969 the Army introduced a new tank to its armored forces in Vietnam, the M551 Sheridan. It was found that it had two disadvantages in combat: its combustible-case ammunition could be detonated by a mine blast or a rocket propelled grenade; and during the wet season its electrical fire-control system broke down repeatedly. See General Donn A. Starry, U.S. Army, *Mounted Combat in Vietnam*, from *Vietnam Studies* (Wash, DC: Dept of the Army, 1978), pp. v-vi, 9-13, 115-16, 136-37, and 145.

During the transition between monsoons in the spring of 1968, high-ranking USMACV and Seventh Air Force officers repeatedly asked the weather center briefers whether or not the southwest monsoon (generally unfavorable weather for ground operations in South Vietnam, but favorable weather for air strikes against North Vietnam) was upon them. "All decision makers from the Commander in Chief in the White House to the company commander in the field constantly need extensive information concerning the enemy, terrain, and weather," wrote General Westmoreland's deputy for Intelligence: "their desire for information is insatiable."<sup>100</sup> In the case of the monsoon determination they wanted a yes-or-no answer from the weathermen, not a technical discussion. Yet in the fringe area between monsoons, center forecasters found it impossible to say when the onset definitely arrived. The requirement to forecast such phenomenon four-to-six weeks in advance stimulated research activity in long-range forecasting techniques, but interim instructions from AWS and the parent 1st Weather Wing were that<sup>101</sup>

care must be taken to insure that research results are not prematurely espoused to personnel in the operational environment and misinterpreted as an operational forecast.

If used operationally, these untested techniques may have an unexpectedly high failure rate which lowers the prestige of AWS in the eyes of the customer. Of more importance, these inaccurate forecasts can impair the effectiveness of military operations. Therefore monsoon forecasting techniques will not be used as official AWS products until approved by Hq AWS, and monsoon forecasts referred to in official correspondence will be labeled as untested, experimental, or some other appropriate term.

Yet while Detachment 14 forecasters tended to be extremely cautious and pessimistic with their long-range prognoses, once the southwest monsoon set in, General Momyer's successor\* in August 1968 told them that their forecasts of isolated-to-few thunderstorms for targets in North Vietnam were putting him out of business--implying that numerous thunderstorms were actually being encountered by his pilots and were hampering mission accomplishment.<sup>102</sup>

Once, when General Momyer vented similar frustrations to a Detachment 14 forecaster, Colonel Carmell went to see the Seventh Air Force commander the same day, saying he wished he could do something more by way of weather support to air operations. "Well, Ed," Momyer responded, according to Carmell, "it isn't the weather support that I'm frustrated about, it's the actual weather that's happening."<sup>103</sup> By way of summation, Carmell said that weather was not a primary consideration by Momyer in the target selection process; that the general sent his air armadas to North Vietnam twice a day, morning and afternoon, like clockwork, not because of a lack of confidence in Detachment 14's

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\* General George S. Brown, who later caused the AWS leadership a lot of headaches with his subjective utterances before audiences of four-star Air Force generals to the effect that AWS weather support in Southeast Asia was conspicuous only by its inadequacy. Brown went on to become the Air Force chief of staff before being appointed by President Nixon in 1974 as chairman of the Joint Chiefs of Staff--where subsequently he twice embarrassed the administration of Gerald R. Ford with remarks about Jewish influence in America, followed two years later by comments about Israel being a military burden to the United States. See Vol I, "Narrative," pp. 230-36, 760-62, of "History of Air Weather Service," 1Jul70-30Jun71 (S);



forecasts,<sup>†</sup> but because the targeting process rarely left him the option of choosing tactics or timing based on forecast weather.

However, Seventh Air Force and Army decision makers in Vietnam urgently needed weather forecasts for very small areas and pinpoint targets, and Detachment 14 forecasters lacked the tools and skills in mesoscale forecasting to adequately meet those requirements. Weather center forecasters could predict gross changes in the weather, but not the specifics for a road, a ford, a hamlet, or a valley. Subjectively, therefore, since Detachment 14 did not verify them, the conclusion drawn was that the terminal forecasts issued by the center during the Tet offensive were not consistently accurate, nor was much faith placed in them, or use made of them, by either the 5th Weather Squadron forecasters and staff weather officers or the Army commanders and staffs they supported in the field.<sup>104</sup>

The support tendered Headquarters USARV at Long Binh by personnel assigned Headquarters 5th Weather Squadron consisted primarily of climatological inputs to staff studies, daily general weather forecasts for South Vietnam, and the weekly seven-day forecast given to the deputy commanding general and his staff. Such information was used as a long-range planning guide, and only rarely was it used in making go, no-go decisions.<sup>105</sup>

In early 1968 AWS was not uniformly or officially looking at forecasting accuracy from the standpoint of operational effectiveness--that was, ascertaining precisely what weather elements affected the operators weapons and tactics, and then keeping score on its ability to forecast those thresholds in a parlance operators understood. Such a program was what Major General Tolson obliquely referred to earlier, and would have negated his heartburn about the A Shau Valley forecast: it verified, but it sent the general's 1st Cavalry Division (Airmobile) in at the wrong time because it did not take into account the tactics and weapons used in airmobile operations.

The 1st Weather Group fostered a Product Evaluation Program (PEP), designed to measure the technical effectiveness of forecasts issued by its units--accuracy measured against standards for criteria AWS established.<sup>106</sup> It also attempted to monitor and

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\* (Cont) and Vol I, "Narrative," pp. 5, 14, 80, 151-52, and 209 of "History of Air Weather Service," 1Jul72-30Jun74 (S). Info used (U).

<sup>†</sup>Some of Momyer's actions suggested otherwise, however. "As much as terrain or political restraints, weather was a key factor in planning and executing the air campaign," the general subsequently wrote. During the northeast monsoon in particular, it severely handicapped F-4 and F-105 success rates against targets in the Hanoi and Haiphong areas. Despite the weather center's forecasts, and despite the availability of timely, high-resolution pictures from weather satellites (which Momyer once described as "the greatest innovation of the war"), Momyer found it necessary to launch F-4 weather scouts two to three hours in advance of each strike to report prevailing weather conditions over targets in those areas. "The [air strike] force commander had a minimum of time to decide whether to abort the mission because of poor weather or to shift to the secondary target," Momyer wrote. "Many times during the northeast monsoon the weather would appear satisfactory when the force was less than 30 miles from the target, yet in the immediate vicinity of the target, a broken condition with 7/8 cloud cover was present. We had no way of predicting these rapid changes in conditions,

evaluate the technical effectiveness of its units' forecasts through staff assistance visits, and by periodically publishing technical notes. PEP gave each participating unit an opportunity to compare technical performances with the three-, six-, twelve-, and twenty-four hour forecasts.

But only half--seven--of the 5th Weather Squadron's units participated in PEP. Its detachments at I and II Field Force did not take part, nor did its operating locations with the divisions engaged in the fighting in the northern provinces during the Tet offensive. Its detachments at the Army's permanent airfields in Vietnam did, and their forecasting performance compared favorably with other participating 1st Weather Group units in the six categories evaluated. The problem was that their forecasts in 1968 had very little bearing on the go, no-go decisions affecting the Army aviation battalions and companies they supported at the airfields.<sup>107</sup>

The 5th Weather Squadron's detachment commanders at the Headquarters of the I and II Field Forces in 1968, who did not verify their forecasts, were at odds over the utility made of them. Weather service tendered II Field Force, which was responsible for Army operations in the southern portions of South Vietnam, was used primarily for long-range planning. The commanding general was interested in light data, especially moonlight, general trends, rainfall accumulation, tropical storms and typhoons, and, as a matter of curiosity, forecasts of tomorrow's weather. "At this level," the detachment commander reported, "weather support did not have much effect on specific combat operations."<sup>108</sup> Conversely, his contemporary at I Field Force, whose area of responsibility included the northern provinces where fighting was heaviest during the Tet offensive, noted that, as the helicopter increasingly became the lifeline to troops engaging the enemy, Army commanders became more concerned with the weather. "Go/no-go decisions based on the weather forecast occurred almost daily during periods of bad or marginal weather," he wrote, singling out specifically the 1st Cavalry Division (Airmobile) and the 4th Infantry Division as two who relied heavily on weather support.<sup>109</sup>

Differences in the Army's interest and use of weather forecasts could be explained to a great degree by the variance in the intensity and duration of fighting during the Tet offensive between the southern and northern provinces; by the fact that the northeast monsoon weather was generally less prohibitive to operations in the southern provinces; and by the fact that the Army's only airmobile division--and its life-sustaining helicopters--in the country was operating in the northern provinces.

At Lai Khe, for instance, fifty miles north of Saigon, where the 5th Weather Squadron's staff weather officer to the 1st Infantry Division

†(Cont) so I counted on my strike force commanders to make the right decision when they saw the actual weather in the target area."

Also, weather would have been less a factor had it not been for restraints placed on Momyer's forces for positive visual identification of targets. The best weather for visual identification of targets in the Hanoi area during the northeast monsoon occurred between 1000 and 1500 hours, thus dictating strike times. Once Washington okayed a target, Momyer normally launched an air armada with all deliberate speed despite the weather forecast, because "pressures were strong at all command levels to hit a target once it was released for attack." See Momyer, *Air Power in Three Wars*, pp. 176-82, 219, 225, and 227-31.



At far left in top photo is Capt Herbert Weigl, Jr, staff weather officer to the 1st Infantry Division, together with three of his men in front of AN/MMQ-2 weather van at Lai Khe, 1968. Bottom photo is of the division's G-2 (Intelligence) office at Lai Khe. (Photos by Lt Col William Shivar, USAF)

said his forecasts were fundamentally based on climatology and single station forecasting techniques, his prognoses were relatively accurate, he claimed, but the commanding general did whatever he wanted to anyway because the weather in his area of operations was stable.<sup>110</sup>

At Camp Evans, on the other hand, Captain Taylor said that his forecasts, which he believed were generally accurate, were used extensively and exclusively by Major General Tolson and the brigades of his 1st Cavalry Division (Airmobile) in successfully accomplishing established objectives at Khe Sanh and the A Shau Valley.<sup>111</sup> One of Taylor's forecasters, First Lieutenant Reilly, said later that their forecasts were not all that good, but that they were no worse than forecasts being passed by other 5th Weather Squadron forecasters to Army commanders and staffs elsewhere--and, of paramount importance, they were useful to division operations.<sup>112</sup> Tolson confirmed it. "I had A-Number-One support from Taylor and the Air Force all during that time," the general later recalled; "it was terrific," and "I would have been in one hell of a fix if I hadn't had it." The prognoses Taylor and his forecasters furnished were "a major consideration every time," Tolson offered, and they were "damn good forecasts."<sup>113</sup>

Both the 5th Weather Squadron commander and his operations officer were of the opinion that the prognoses issued by their forecasters at the divisions, based somewhat on persistence, were very good, under the circumstances, because they generally covered very short periods--one out to twelve hours.<sup>114</sup> And what their forecasters lacked in experience, they made up for in competency, aggressiveness, and innovativeness.

#### Communications and Logistics

Timely weather observations were the basic building blocks upon which forecasts in support of tactical operations were made; and adequate, two-way tactical weather communications were absolutely indispensable to both the forecasting and observing functions. Without communications both functions died on the vine. Without communications, observations were of little benefit to anyone, save maybe the climatologist. Without communications, forecasters had no raw material to work with, and no workable means of disseminating the fruits of their labor to those who could use them.

Since facsimile service was unavailable to 5th Weather Squadron units, the primary method of exchanging weather data was the sixty word-per-minute teletype system furnished and maintained by the Army. The minimum acceptable standard for teletype effectiveness (in commission rate for send or receive--or both--circuits and machines) established by the Air Force Communications Service for 1st Weather Group units was 95 percent. In January 1968, the overall teletype effectiveness rate at 5th Weather Squadron locations was 93 percent; it decreased to 85 percent in February, and there was little improvement in the poor rates in either April or May 1968.<sup>115</sup> During February 1968 seven out of twelve of the squadron's units had their teletype equipment and, or, circuits available less than 90 percent of the time in either the send or receive mode, or both.<sup>116</sup> "More than half of the teletype circuits to our units supporting and being supported by the Army do not meet the minimum standard monthly teletype efficiency," wrote the 1st Weather Group communications officer.<sup>117</sup> Squadron units with the worst rates were the operating locations with divisions--as the accompanying chart for five of them depicts.

5th Weather Squadron Teletype Effectiveness\*

(Percent In Commission)

1968

Unit	February		March		April	
	Send	Receive	Send	Receive	Send	Receive
OL-1, Det 32 Lai Khe/Phu Loi (1st Infantry Div)	59.3	58.2	86.7	78.9	50.3	80.2
OL-2, Det 32 Cu Chi (25th Infantry Div)	99.0	89.0	93.0	86.0	82.0	73.0
OL-3, Det 32 Bearcat (9th Infantry Div)	N/A	91.0	N/A	68.2	N/A	81.0
OL-2, Det 31 Camp Evans (1st Cav Div, A)	N/A	92.0	(Unavailable)		N/A	42.0
OL-6, Det 31 Camp Enari (Americal Div)	N/A	92.0	N/A	92.3	N/A	91.0

Most menacing to the weather teletype effectiveness rates were circuit outages caused by breaks and damage from the heavy fighting and widespread mortar and rocket attacks. In addition, the sixty word-per-minute circuits, barely able to handle traffic in periods of good weather, were quickly overloaded and saturated during the bad weather in February and March 1968. Finally, formal Army programming procedures for equipment and circuit installation were too inflexible to be responsive to the moves the divisions and their brigades made.

Captain Taylor estimated later that the receive-only teletype system he had with the 1st Cavalry Division (Airmobile) at Camp Evans was out of commission sixty percent of the time during the Tet offensive--and, even then, he believed the Army did an outstanding job maintaining the antiquated machine and the vulnerable circuits.<sup>118</sup> Because of Major General Tolson's personal interest, within three days after his division moved to Camp Evans from An Khe in late January 1968 Army signalmen had a teletype installed and on line for Taylor. On 1 February, aware of the Army's unresponsiveness, the 1st Weather

\* The figures presented represent the percent of time the teletype equipment and, or, circuits were in commission. Outages were attributable to malfunctioning circuits, machines, or power sources. An "N/A" on the chart indicates the unit's teletype had a receive-only capability. Chart sources: ltr Col Joseph M. Tyndall, ch, ops div, 1WG, to 1WW (OC), "Consolidated Weather Communications Report," 13Mar68; ltr Lt Col Shivar, comdr, 5WS, to HQ USARV (Signal Officer), "Weather Teletype Communications Effectiveness," 25Mar68; ltr Shivar to HQ USARV (ACofS, C-E), "Teletype Communications Effectiveness," 21May68; and ltr Maj Micale, ops officer, 5WS, to HQ USARV (ACofS, C-E), "Teletype Communications Effectiveness," 12Jun68.

Group petitioned the Seventh Air Force to immediately install a transmit capability on the teletype at Camp Evans to permit Taylor to forward forecasts, as well as surface and upper-air observations, via the weather communications net to the weather communications relay center at Tan Son Nhut.<sup>119</sup> It was June before a new, full-duplex, send and receive teletype circuit was installed between Camp Evans and the weather relay center;<sup>120</sup> but problems immediately cropped up with the send side of the circuit, and by the fall of 1968, when the division moved once again, Camp Evans still did not have a teletype send capability.<sup>121</sup> During the Tet offensive it meant that Taylor, as well as Captain Clarke with the 101st Airborne Division, and some other division staff weather officers, had to disseminate their hourly observations, and the twelve-hour terminal forecasts they made twice daily, by telephoning the most accessible 1st Weather Group unit that had a transmit capability for relay under the appropriate bulletin heading.<sup>122</sup>

Captain Clarke did not fare nearly as well with the 101st Airborne Division as Captain Taylor did with the 1st Cavalry Division (Airmobile). Unlike Taylor he did not enjoy the confidence and support of the division commander, Major General Olinto M. Barsanti. "He was a very difficult personality," reflected Clarke later, "a very difficult guy for everybody" on his division staff.<sup>123</sup> As a consequence, Clarke never interacted with Barsanti on a personal basis. He, therefore, had to go by the "book," and worked through the division Intelligence and Signal officers, and the headquarters and headquarters company personnel. His relationship with them was strained. Rapport was lacking.

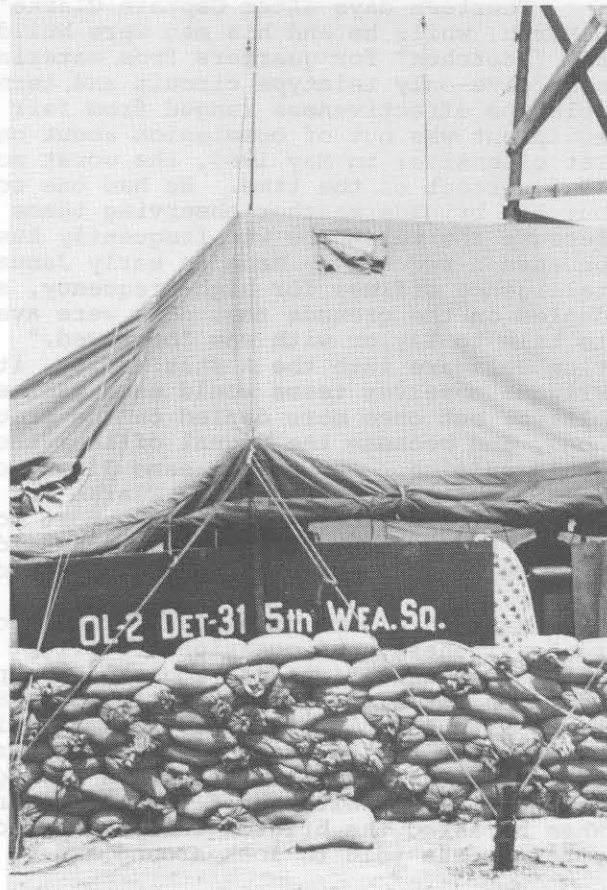
Fourteen days after Captain Clarke's unit moved to Camp Eagle on 5 March, while he and his men were building a weather station bunker and "hootches" for quarters from material scavenged or bartered for, a receive-only teletype circuit and terminal was in operation. Teletype effectiveness ranged from fair to poor. The circuit or the equipment was out of commission about one-fifth of the time during the Tet offensive; in May 1968, the worst month, they were inoperative 47.5 percent of the time. He had one common-user telephone available, but his brigade weather observing teams had trouble contacting him because the telephone was frequently busy. It was a severe handicap because a request he made in early January 1968 to the division Intelligence officer for high-frequency, single sideband radios was denied on the grounds that none were available. The FM radio he had to talk to Taylor with was "borrowed." During the planning for operation Delaware into the A Shau Valley, it was determined that the brigade observer teams would need radios. A formal request was submitted, but once more denied on the grounds that the division had none, and because the Signal officer thought telephone communications would suffice. It was the same Signal officer who abruptly replied "tough shit" to a request by Clarke for a sole-user telephone in the interest of effective weather support to the 101st Airborne Division.<sup>123</sup> By the time Clarke rotated back stateside in late November 1968 his brigade weather observer teams still did not have radios.

Captain Clarke continually ran into a wall of indifference, unresponsiveness, and occasional outright hostility in attempting to obtain communications and logistical support from the 101st Airborne Division for his men and his mission. Support of his weather observer teams with the division's 1st and 3d Brigades was generally good. It was poor at the 2d Brigade where, on his first visit during the Tet offensive, he found his observers living and working in a hole in the ground with a shelter-half for a roof and no means of communications. When he asked the brigade Intelligence officer about the lack of support, he was told to look around and he would find a lot of other troops



Above, Capt Clarke's weather station bunker at Camp Eagle, 1968, supporting the 101st Airborne Division.

Right, Capt Taylor's weather station bunker at Camp Evans, supporting the 1st Cavalry Division (Airmobile). (USAF Photos)



living no better than Clarke's observers. Clarke got them a tent and a telephone. <sup>124</sup>

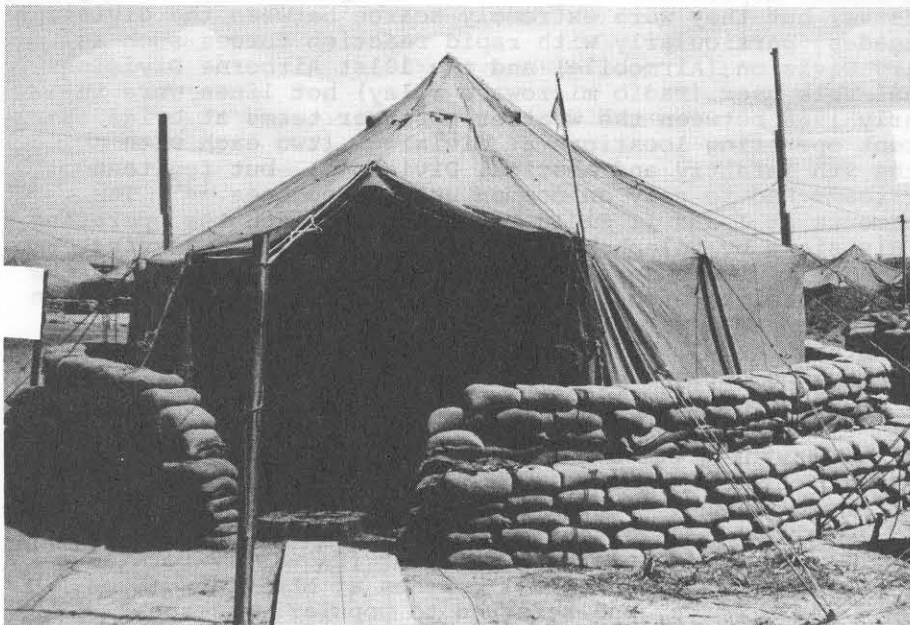
The 1st Weather Group and 5th Weather Squadron interpreted the joint regulation to mean that the Air Force was responsible for weather communications support, long-line termination and equipment to the two squadron detachments directly supporting I and II Field Forces (the corps level--a concession, even then, in that the Army was to provide it at corps level and below); and that it was the Army's responsibility for communications support to the squadron's operating locations directly supporting divisions. Furthermore, in their interpretation of the directive, the Air Force would see to the weather equipment needed by squadron weathermen, while the Army was to furnish them logistical support. Army logistical support in Vietnam varied from division to division, and was dependent on a number of variables such as the Army unit commander's interest in weather support, priorities assigned weather team needs, and rapport between the weathermen and the Army unit they supported. Supply and repair of the Army teletypes in the combat areas was poor. "Logistics support provided by the Army," reported the group to the parent 1st Weather Wing in 1968, "has proven inadequate to insure continuous operations at 5th Weather Squadron units."<sup>125</sup> Some supplies for the weathermen through Army channels were simply unavailable for requisition. They survived by requisitioning equipment and expendable supplies from the nearest Air Force unit.

Telephone and sole user or hot line voice circuits between operating locations at division level and their parent detachments and the weather relay center at Tan Son Nhut were normally available during the Tet offensive; but they were extremely scarce between the divisions and their brigades, particularly with rapid reaction forces such as the 1st Cavalry Division (Airmobile) and the 101st Airborne Division. Four additional sole user (radio microwave relay) hot lines were installed in early 1968 between the weather observer teams at brigades and their parent operating locations at division (two each with brigades of the 9th Infantry and Americal Divisions), but fourteen other weather teams had to rely on common user telephones.<sup>126</sup> The weather detachments at I and II Field Forces could reach the operating locations at divisions by telephone, but not the weather observing teams at brigades. In the case of the 101st Airborne Division, as the accompanying chart depicts, two-thirds of the 3,259 observations taken at Camp Eagle--which had a receive only weather teletype installed--from February through July 1968 were not transmitted to the outside world due to telephone outages.

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\* In what was anything but a unique practice, Captain Taylor and his men bartered to obtain Army supplies--whiskey and rifles being the principal items of trade. Though rationed, beer was plentiful at Camp Evans; but Major General Tolson refused to allow any of his officers and men to have hard alcohol there. Taylor frequently rotated a portion of his men down to the beautiful beaches at Nha Trang (home of Headquarters I Field Force, and referred to popularly as the "Riviera of South Vietnam") for brief interludes of in-country "R&R" to relieve personal "pressures." Before returning, they purchased all of the cheapest whiskey they could, it being a legal commodity there. It was brought back to Camp Evans in laundry or B-4 bags or such. Taylor then sought out senior platoon sergeants, freshly returned from combat patrols, and bartered the booze for captured communist-made AK-47 rifles--which were in long supply. One bottle of Old Granddad, for example, might bring three or four AK-47s--depending on how long the sergeant and his men had been out in the





In photo at top is weather bunker at Dak To, in support of the 9th Infantry Division's 1st Brigade in 1968, while the bottom photo is of the weathermen's tent at Dak To. (Photos by Lt Col Shivar)

Captain Taylor was one of those who did not routinely have available telephones or hot lines to his weather observer teams at the brigades, so they relied heavily on jeep-mounted, FM radios for communications. The 1st Cavalry Division (Airmobile) staff weather officer estimated that eighty to eighty-five percent of the hourly observations taken by his observers at the brigades got back to him in a timely manner via the FM radios.<sup>127</sup> The FM radios worked extremely well so long as his brigade weather teams were within line-of-sight of him. However, during the relief of Khe Sanh and the "reconnaissance in force" into the A Shau Valley, the use of FM communications was impossible, and telephone or hot line communications were almost non-existent.<sup>128</sup>

5th Weather Squadron Telephone Effectiveness†  
February - July 1968

Unit	Total Obs Taken	Telephone Outage	Obs Not Transmitted	Remarks
OL-1, Det 32				1st Infantry Div
Lai Khe	3,087	1.8%	54	
Phu Loi	5,293	1.1%	58	
Quon Loi	3,210	2.0%	64	
OL-2, Det 32				25th Infantry Div
Cu Chi	5,065	6.1%	302	
Dau Tieng	2,609	5.0%	130	
Tay Ninh	2,514	4.2%	100	
OL-3, Det 32				9th Infantry Div
Bearcat	5,263	15.0%	786	
Dong Tam	1,633	40.0%	653	1Apr-31Jul68
Tan An	1,271	50.0%	636	1May-31Jul68
OL-2, Det 31				101st Airborne Div
Camp Eagle	3,259	66.6%	2,149	
Phouc Vinh	1,598	7.2%	114	1May-31Jul68

\* (Cont) "boondocks" without a drink. In the same personal luggage, the AK-47s were taken to Cam Ranh Bay where the demand among Air Force personnel for the popular war souvenir was great--C-123 and C-130 crews paid \$20 to \$30 per rifle. Then, after a twenty-mile trip north, more cheap whiskey--about \$3 a bottle--was purchased at Nha Trang with the profits. Booze was then bartered at Camp Evans for extra tents and plywood, boots and bullets, or survival essentials not authorized on weather unit TOEs such as machine guns and grenades. Thus, it was the fecund and surreptitious triangle trade in whiskey and enemy rifles that kept Taylor and his men afloat in Vietnam, not formal Army supply channels. (Telephone interview by author on 19Jan79 with Maj Taylor.)

† Unless otherwise specified, the data were compiled from 1 February through 31 July 1968. Telephone outages were attributable to either lack of ground power or telephone failures. Chart source: Capt Daniel R. Gornell, comdr, Det 32, 5WS, Long Binh AI, RVN, "Justification for Motor Generators and Single Side Band (SSB) Radios," n.d. (circa Aug68).



*One of Capt Taylor's men, A1/C David B. Gittens, with his foot on the FM radio in the weather station bunker at Camp Evans in 1968. (Photo by Capt Taylor)*

### Observing

While communications were the life blood of effective weather support, enlisted weather observers were the backbone--particularly with the fluid division and brigade-level operations in Vietnam when it was often impractical or impossible to install much tactical meteorological observing gear.

As 1968 opened, the 5th Weather Squadron was undermanned, especially in the critical weather observer specialty. With 153 men assigned as of 31 January, the outfit was manned at 82 percent of its authorized strength. It was very low in observers--110 assigned versus 144 authorized. By comparison, its sister 10th and 30th Weather Squadrons were fully manned in observers, at or near 100 percent of their authorized levels. On top of that, with the stepped-up enemy activity, it was committed for up to six weather observer teams over and above the normal levy of troop commitments. Fortunately, both Captain Taylor with the 1st Cavalry Division (Airmobile), and Captain Clarke with the 101st Airborne Division, had enough observers throughout the Tet offensive. Most of the 20-to-22 men assigned Taylor's unit (operating location) were observers. Neither the squadron commander, Lieutenant Colonel Shivar, nor his operations officer, Major Micale, believed the observer shortage had any adverse effect on mission accomplishment.<sup>129\*</sup>

\*Shivar offered the view that overwork, rather than overmanning, was better for his troops from a morale standpoint. Morale suffered

The reason for the observer shortage was that increases in the 5th Weather Squadron's manpower authorizations had only recently been approved (in November 1967), and the personnel system was in the process of catching up with assignments as the Tet offensive kicked off. During February the squadron was brought up to authorized strength with the arrival in Vietnam of thirty-three additional men. Still, the manpower and equipment increases, coupled with the fluidness of Army units in combat from one end of South Vietnam to the other, resulted in a nearly impossible command and control problem for squadron authorities.<sup>130</sup>

When General Westmoreland moved most of the 1st Cavalry Division (Airmobile) and the 101st Airborne Division into the northern provinces in late January 1968, operating locations of the 5th Weather Squadron accompanied them to Camp Evans and Camp Eagle. In fact all division moves, and most of those by their brigades or regiments, were accompanied by squadron units and weather observer teams--a total of thirty-nine moves in all by the weathermen between January and June 1968.<sup>131</sup> In some instances, such as the siege at Khe Sanh, individual observers were deployed.

During the siege at Khe Sanh, qualified United States Marine Corps observers at the beleaguered outpost were taking hourly weather observations every day, except during periods of heavy fighting--a frequent occurrence. They were transmitted via AN/TRC-75 radio and then relayed by telephone to the 1st Weather Group's base weather station at Da Nang. There they were entered into the weather teletype circuits to the weather relay center at Tan Son Nhut for editing and further dissemination.

The problem with such circuitous routing was that the Marines were not meeting the 1st Weather Group's criteria for timeliness--surface observations were to be entered on the weather communications network not later than five minutes after time of observation. Additionally, Da Nang experienced trouble receiving the Khe Sanh observations, as well as those at other sites near the demilitarized zone the Marines were responsible for at the time, such as Dong Ha, Hue, Phu Bai, and Chu Lai. From December 1967 through 15 January 1968, an average of only ten observations per day were received at Da Nang from Khe Sanh;<sup>132</sup> during the first thirteen days in February 1968, an average of fifteen observations per day were received from Khe Sanh.

Teletype circuits linked Khe Sanh and the weather relay center at Tan Son Nhut, but there was no terminal equipment at Khe Sanh. In early January 1968 the 1st Weather Group formally expressed a need for a full-duplex, send and receive teletype capability between the two points, which was responded to in the form of an Air Force Communications Service mobile teletype van and team that arrived at Khe Sanh about a week after the North Vietnamese attacked there. On 8 February, the team was ordered out of Khe Sanh because it was not supporting an Air Force operation. Referred to Lieutenant General Cushman's III Marine Amphibious Force by USMACV, the group was advised in mid-March by the Marines that it would investigate the idea of installing terminal teletype equipment at Khe Sanh. However, higher priority operations preempted the project until well after Major General Tolson's 1st Cavalry Division (Airmobile) had cleared Highway 9 and lifted the siege in mid-April.<sup>133</sup>

During the interlude, on 26 February, the 1st Weather Group dispatched Sergeant Celestino G. Martinez, an observer from the Da Nang

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\* (Cont) when men had too much spare time on their hands.

base weather station, into Khe Sanh to see about getting the Khe Sanh observations passed to the Tan Son Nhut weather relay center via a tactical command teletype circuit from Khe Sanh to Nakhon Phanom, Thailand.<sup>134</sup> But few observations found their way to Tan Son Nhut that way either. And 1st Weather Group authorities were of the opinion that, not only were the Marines misfiling the observations at Khe Sanh, their observations were inaccurate.<sup>135</sup>

Seventh Air Force's 834th Air Division at Tan Son Nhut also brought to the attention of the 30th Weather Squadron (whose mission included support to the tactical airlifters) that Marine observers at Khe Sanh were supplying erroneous altimeter settings (through the Marine air traffic controllers controlling all missions into and out of the garrison) to its C-7, C-123, and C-130 crews. It caused errors in altitudes while flying approaches there. When the Khe Sanh runway was closed by enemy action or weather (fog kept it closed forty percent of the time during the siege), low-altitude cargo extraction methods were used, and precise altitudes were an absolute must if the supplies were to fall into friendly hands instead of the enemy.\*

The 30th Weather Squadron arranged through the 1st Weather Group to send a 5th Weather Squadron observer into Khe Sanh.<sup>136</sup> A call for volunteers was issued. One immediately stepped forward, who was within three days of completing a six-month extension to his one-year tour. Taking only a barometer and an AN/PMQ-7 with him by way of weather equipment, together with his side arm and an M-16 rifle, he was flown into Khe Sanh about the time Major General Tolson began his drive to relieve the outpost. He worked for days, with a minimum of sleep, to keep a steady stream of altimeter settings and observations coming out of Khe Sanh.\*\*

On 1 April 1968, Captain Taylor took a three-man weather observer team with him to Landing Zone Stud where he briefed Major General Tolson on the forecast weather for operation Pegasus--the relief of Khe Sanh, which kicked off the same day. Taylor remained at Stud throughout the operation, trying to answer questions from the 1st Cavalry Division (Airmobile) commander and his staff about when the fog and scud would burn off each day enough to permit helicopter assault and support operations. Taylor alternated four observers to crew the three-man team: Sergeants Victor Bertoni, Kenneth G. Flett, Alton J. Keel, Jr, and Donald R. Toay. As the Marines and various elements of the division moved along Highway 9 to Khe Sanh the observers moved with them. Most of their time the first week or so was occupied by soldiering and surviving. Few observations were taken. They returned to Camp Evans the day Pegasus rolled up, 15 April.<sup>137</sup>

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\* The low altitude parachute extraction system used to deliver construction material to Khe Sanh called for the pilot to fly his C-130 at 130 knots down the runway centerline at an altitude of just five feet! The modified container delivery system used to parachute supplies required a C-123 or C-130 pilot to traverse the Khe Sanh runway centerline at 130-to-135 knots at a specific altitude--typically, 400 feet. For an excellent discussion of those delivery systems see Nalty, *Air Power and the Fight for Khe Sanh*, pp. 42-59.

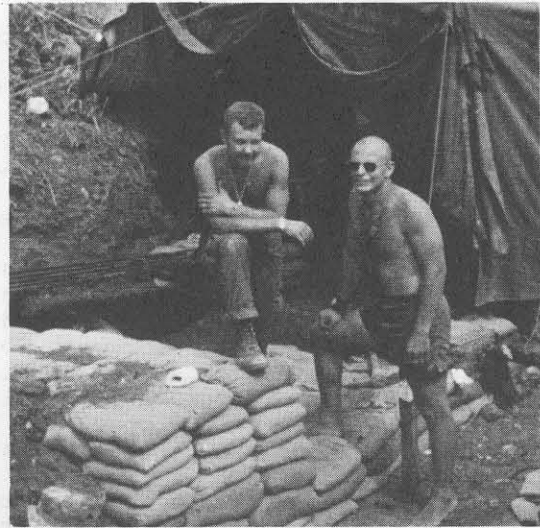
\*\* Sources available to the author in 1979 revealed conflicting information regarding the implant of weather observers at Khe Sanh during the siege of 1968. During a 25Jun79 telephone interview, Maj Taylor said there were 5th Weather Squadron observers at Khe Sanh during the siege, but they were not his. However, the following day, while going over with the author, some photographs he took in Vietnam, he

Four days later, when the 1st Cavalry Division (Airmobile) launched its "reconnaissance in force" into the A Shau Valley, Captain Taylor and two of his observers went into the valley's northernmost extremities with the 3d Brigade's initial air assault and deployment. Taylor gave the final, jumping-off weather briefing to Major General Tolson and his 3d Brigade commander, Colonel Hubert S. Campbell. On 22 April, Captain Clarke put a weather observer team at fire support base Bastogne, some seventeen air miles east of the valley on Route 547, to support the 101st Airborne Division's 1st Brigade, whose job it was to seal off enemy routes of withdrawal and reinforcement into the area. Taylor stayed in the valley only until a 3d Brigade forward headquarters was secured--although he subsequently made trips in and out by helicopter with Tolson. His two observers there were David B. Gittens and David B. Miller, both with the rank of airman first class. They were armed with 38-caliber pistols, M-16 rifles, and grenades, and equipped with sling psychrometers, an AN/PMQ-4 manual meteorological station, and an FM radio.<sup>138</sup>

However, contact with the two airmen could not be maintained by FM radio so, beginning on 23 April, Captain Taylor kept another pair of similarly equipped observers in the A Shau Valley. Although three sergeants were used (Bertoni, Stanley Dzula, and Robert F. Cunningham), they spelled each other off so that only two were working in the valley at a time. They situated themselves with an artillery battery on the side of a hill overlooking the valley and remained there until 16 May, the day before operation Delaware was officially terminated. Gittens and Miller relayed their hourly observations with the FM radio to the sergeants on what became referred to as Signal Hill. The sergeants then passed those observations, and their own hourly observations (most taken in daylight hours only), to Camp Evans. From Camp Evans the A Shau Valley observations were then telephoned to Da Nang for entry onto the teletype circuits down to the Tan Son Nhut weather relay center. Such a cumbersome process meant that it was often an hour or more after the official time of the observation before the data was on the teletype lines.<sup>139</sup>

"It was muddy and wet up at the top of the barren mountain," Sergeant Cunningham was quoted later in describing his experience in the A Shau Valley.<sup>140</sup> Their position was near a pass leading into the valley, used by the helicopters. They provided information on visibility, wind speed and direction used by the pilots to help determine the safest flight path through the mountains to the valley.

\*\* (Cont) remembered that Sgt Robert A. Ballard went into Khe Sanh--on a Marine CH-46 helicopter. Lt Col Shivar, in a telephone interview on 22Jun79, did not recall any observers from his squadron being at Khe Sanh during the siege. In a telephone interview with Col Micale three days later, the former 5th Weather Squadron operations officer related the story about the volunteer who had only three days more to complete eighteen months in theater. He remembered two observers going into Khe Sanh during the siege in a C-7. Yet in his end of tour report filed ten years earlier (included as Tab 33 of Fuller, ed, "End of Tour Reports," 15Apr70), Micale referred to just a single observer going into Khe Sanh during operation Pegasus--aboard a C-123! Col Tommy D. Guest (vice commander of the 3d Weather Wing), operations officer at the 30th Weather Squadron during the Tet offensive, during a telephone interview with the author on 28Jun79, recalled that a single 5th Weather Squadron observer was flown into Khe Sanh during the siege. The official 1st Weather Group, 5th and 30th Weather Squadron histories for the period make no mention of the subject.



Above, left, weather station at LZ Stud, with banner atop whip antenna for FM radio.

Above, right, Sgts Toay (left) and Bertoni at LZ Stud weather station. The weathermen slept under dirt and sand bags at picture's lower left. (Photos by Capt Taylor)

Left, at LZ Baldy in 1968, left to right: Sgts Keel and Gary R. Nunn, and Lt Col Shivar. (USAF Photo)



Above left, Sgt Cunningham (right) and unidentified observer with him supported 1st Brigade, 1st Cavalry Division (Airmobile) in 1968.

Above right, Sgt Flett at Camp Evans, 1968.



Right, A1C Gittens at Camp Evans, 1968. (Photos by Capt Taylor)





Army intelligence estimated that a full enemy battalion surrounded the weathermen, and contact was made several times. The observers arose each morning an hour before first-light to take weather readings and relay them to division headquarters. It continued until dark when they took turns with other men, sleeping and standing guard. When movement was spotted they threw grenades. Mortar crews then peppered the area. "One time, I saw movement only about 25 feet or so from my foxhole," Cunningham recounted,\*

I heaved a couple of "frags" [fragmentation hand grenades] and the mortars chopped up the immediate area. We made no attempt, however, to check the area afterwards. We were under orders not to fire our rifles as the flash would give our exact position away. It was, all in all, quite an experience--one that I'll never forget.

There was another way weather observations from the A Shau Valley were relayed. A combat control team from the 834th Air Division moved into the valley with the 3d Brigade's initial elements. It directed C-7, C-123, and C-130 airlift support. In early May, after the A Luoi airfield was secured, the team operated from there. It was equipped with high-frequency, single sideband radios, with which it could not only direct incoming airlift traffic, but could reach the air division's command center at Tan Son Nhut. Because operation Delaware developed so rapidly, and due to a dearth of intelligence, the 30th Weather Squadron had insufficient time to respond, so the team was relied upon for limited weather observations. It was not unusual. Most combat control teams had received training in observing wind speeds and direction, visibility, basic cloud data, temperature, and of course absolute pressure for altimeter settings. The team began taking observations the first day of the operation. They were transmitted by radio to the command center at Tan Son Nhut, telephoned from there to the squadron's base weather station, and then entered onto the weather teletype circuit. The air division's minimum needs were fulfilled by the limited observations taken by the combat control team, which had no contact with either of Captain Taylor's weather observer teams in the A Shau Valley.<sup>141</sup>

It was such occurrences that helped prompt Major Micale, the 5th Weather Squadron operations officer, to recommend scrapping the concept of furnishing weather observer teams to brigades. First of all, he mistakenly concluded that the concept had no legal footing in the joint regulation. Secondly, he highlighted the problems of communicating with the brigade observer, correctly pointing out that most of the problems could be laid at AWS' doorstep, and that they lingered despite mistakes that had been made, and acknowledged, in hundreds of exercises and maneuvers in the past, or in shooting scrapes like Korea or the Dominican Republic crisis. The brigade commander and his Intelligence officer could get their forecasts via radio from the staff weather officer at division--where the observers should be, maintaining a weather watch at the division airstrip, instead of being middlemen or second guessers for questions from the brigade staff. In the A Shau Valley the combat control team filled the bill,

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\* *Ibid.*

Micale offered, and during the relief of Khe Sanh the observers were too busy surviving to take observations. "About half of the observers of the squadron were not working as observers," Micale continued,<sup>142</sup>

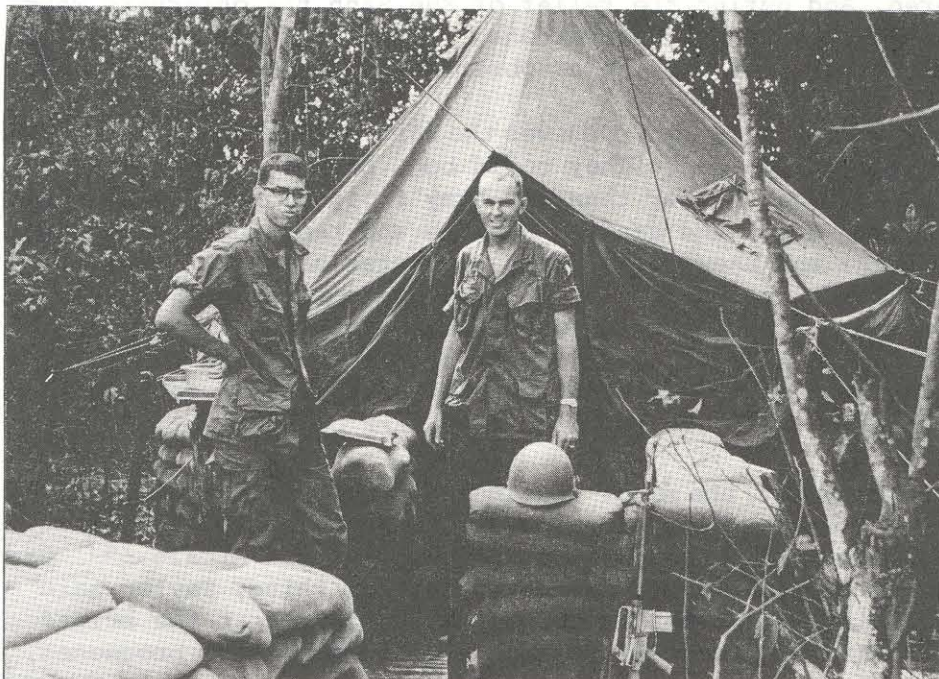
but yet, almost to a man, this was the best gathering of young, ingenious American men. They could beg, borrow, scrounge and "requisition" better than any Army trooper; they could dig, scrape, build and sandbag bunkers and tents better than any Marines; and they could build hot water showers, three holers, and NCO clubs--run at a profit--equal to any Seabee. There were no harder working or longer working men in all of SEA [Southeast Asia]. Their exploits will be legend in AWS for years to come, perhaps not as observers, but as redblooded American males who were experts at the art of survival.

But that was the point, the major concluded: though technically qualified, observers with brigades were mis-employed. Micale echoed the views of others before him in Vietnam; others afterward echoed Micale.<sup>143</sup> Captain Clarke did, but Captain Taylor did not. For one thing, Taylor said that a lot of times the observations taken by his men at the brigades were the only data his forecasters had to go on for their prognoses, teletype communications being in the sad state of repair they were during the Tet offensive.<sup>144</sup> Micale's recommendation was considered by AWS, but scuttled, primarily because the Army liked the idea of weather observers being with its brigades.

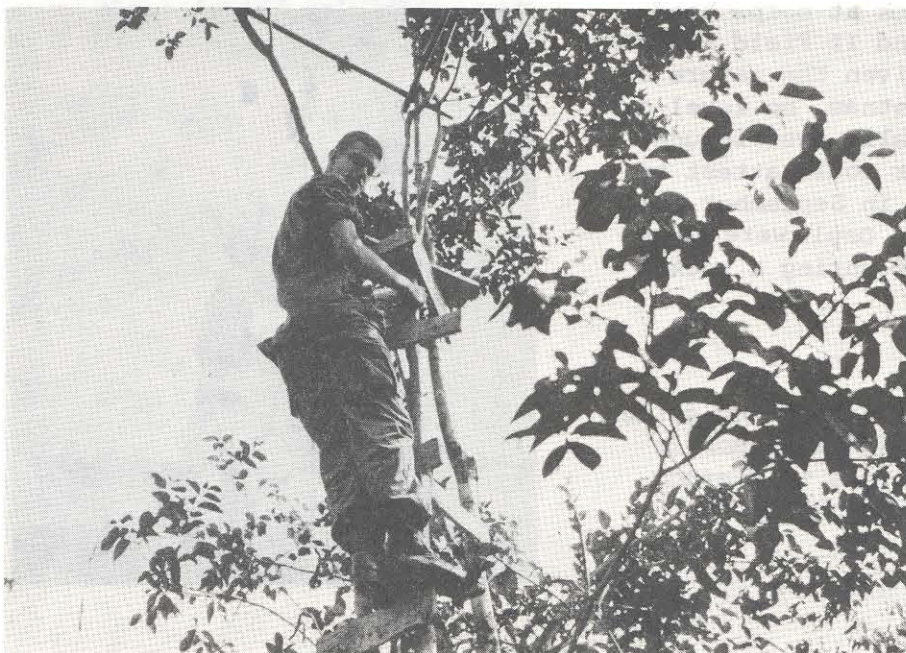
Another reason Major Micale opposed the concept was that, being mis-employed as he believed they were, weather observers at brigade level were being unnecessarily exposed to the perils of combat. Life with the Army in combat was hazardous, more so at the brigade level than back at corps headquarters (I and II Field Forces) --although, given the nature of the war in Vietnam, no level or locale was really ever immune. Captain Taylor could attest to that, because in September 1968 he and Sergeant Dzula were wounded by shrapnel during a rocket

*Sgt Dzula tightening guide wires atop an AN/MMQ-2 mobile meteorological van in Vietnam in 1968. (USAF photo)*





Above, Sgts Paul J. Dvorak (left) and Leroy P. Jordan, of OL-4 Det 32, in front of their quarters and weather station at Song Be in support of 1st Brigade, 101st Airborne Division, 1968. Below, Sgt Dvorak uses their representative observation site--chosen to observe three helipads and a fixed airstrip. (Photos by Lt Col Shivar)



attack on Camp Evans.\* And the weather center itself, Detachment 14, withstood a Viet Cong rocket and mortar attack on Tan Son Nhut as the Tet offensive opened.<sup>145</sup> In the confused fighting that morning, rounds of countering fire from United States troops whistled by Colonel Carmell's head right in front of the Tan Son Nhut officers club.<sup>146</sup>

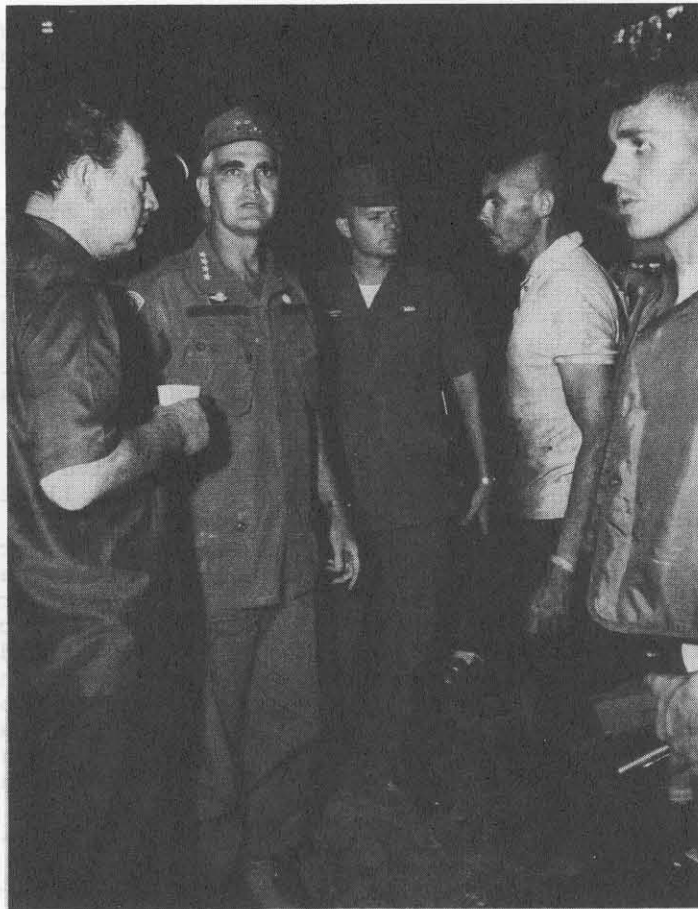
During January 1968 alone, there were forty-seven attacks (rocket, mortar, or assaults) by inimical forces on twenty-one Army installations supported by men of the 5th Weather Squadron.<sup>147</sup> In the early morning hours of 4 January, for instance, Sergeant Ballard incurred a flesh wound during a mortar attack that left over 100 shrapnel holes in Captain Taylor's weather station bunker at An Khe; and on 20 January a weather observer team supporting elements of the 101st Airborne Division at Song Be was fired on by snipers while detailed to get drinking water inside the base camp.

Bronze Star Medals were earned in the Tet offensive by two observers assigned the 5th Weather Squadron's Detachment 11 at Vinh Long--one of the Army's permanent airfields in Vietnam--for their efforts during a five-day siege by Viet Cong. A mortar barrage and infantry assault opened the attack, and Viet Cong mortar, recoilless rifle and machine gun fire continued five days. The weathermen helped defend the installation by arming rockets, resupplying helicopter gunships, and caring for casualties--nine Americans were killed, including the airfield commander. Staff Sergeant Larry D. Scoggins, the detachment chief observer, and Sergeant Ronald Maxemchuk proceeded under fire at one point to rescue a wounded soldier. Sergeant Barton J. Whalen remained at his post taking observations and assisting control tower personnel under flying shrapnel and heavy small arms fire in the opening stages of the attack. Not an observation or forecast was missed during the siege. Sergeants Maxemchuk and Scoggins were awarded Bronze Star Medals with V (Valor) Device by the Air Force; due to a mixup within Army channels, Whalen never received the Bronze Star for which he was nominated.<sup>148</sup>

Between January and June 1968 the 1st Weather Group had ten men wounded in action--all of them enlisted, most were observers, and all from the 5th Weather Squadron, including Airman First Class (promoted to Sergeant during the interval) Miller, who absorbed a minor shrapnel wound during a mortar attack on Camp Evans on 7 February.<sup>149</sup> The group also had four men killed in action during that period--the only combat fatalities AWS suffered in that war from 1961 through 1976. All four were weather observers, three of them from the 5th Weather Squadron.†

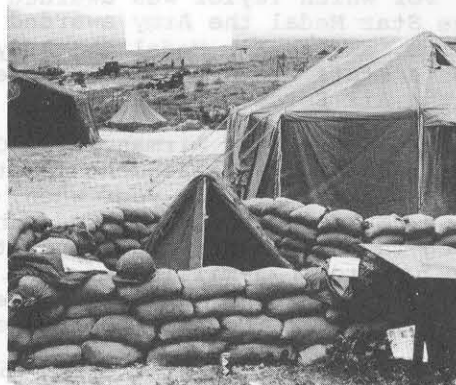
\* For which Taylor was awarded the Purple Heart, to go with the Bronze Star Medal the Army awarded him for his role in the A Shau Valley campaign, and an Air Medal the Army bestowed on him for his tour as Tolson's staff weather officer. He also earned a Bronze Star Medal from the Air Force for his tour in Southeast Asia.

† The fourth was Airman First Class Kenneth E. Baker, Jr, of the 30th Weather Squadron's Detachment 13 at Binh Thuy Air Base. He had been in Vietnam a little over a year when, on 22 March 1968, during the early morning hours, the base came under hostile artillery fire. Baker had been working in the weather observing station about an hour when it took a direct hit from a 75-millimeter recoilless rifle. He was killed instantaneously. Msg 632 CSG (BDP) to CSAF, *et al.*, info CINCPACAF (DPSP), *et al.*, "Casualty Report, Complete Death Report, Battle," 260520ZMar68.



*Gen Westmoreland with military personnel at American embassy in Saigon on 31Jan68 following abortive siege by Viet Cong. (Army photo by SP5 Edgar Price)*

*Below left in 1968 is weather bunker at Landing Zone Baldy. Individual tent used by weatherman at Landing Zone El Paso is shown at right. (Photos by Lt Col Shivar)*



On 4 March 1968, at about 0300 hours, the Army's permanent airfield at Ban Me Thout came under enemy 82-millimeter mortar attack. Assigned to the 5th Weather Squadron's Detachment 10, most of the weathermen there were asleep in their hootch when the second mortar round penetrated the roof and detonated before they could take cover. Staff Sergeant Reese J. Wardell, a forecaster, was seriously wounded, and was later evacuated stateside. Staff Sergeant Thomas L. Banes was also wounded. Staff Sergeant James C. Swann and Sergeant Edward W. Milan both suffered multiple, penetrating, shrapnel wounds. Swann died instantly. Milan was taken by helicopter to a field evacuation hospital at Tuy Hoa Air Base. He died enroute, having never regained consciousness. Swann and Milan were both married. Milan had been in theater a little over seven weeks.<sup>150</sup>

Exactly two weeks later, on 18 March, Staff Sergeant Eduardo Garcia, Jr, was a passenger in a jeep heading north, approximately five miles north of Landing Zone Baldy on Highway 1 in Vietnam. Married and the father of two sons, Garcia was assigned to Operating Location 6 of the 5th Weather Squadron's Detachment 31 at Chu Lai in support of Americal Division elements. The jeep party Garcia was with passed a burning village. They turned around and were ambushed. Garcia received mortal wounds from an AK-47 assault rifle while exchanging gunfire with inimical forces. Last rites were administered by an Army chaplain. Garcia's tour of duty in Vietnam had begun on 19 February 1968.<sup>151</sup>

It was in March 1968, amidst the Tet offensive, that a shadow of shame was cast across America's conscience when an element of the Americal Division's 11th Infantry Brigade, under command of First Lieutenant William L. Calley, Jr, murdered a number of unarmed South Vietnamese civilians at the hamlet of My Lai. What became commonly referred to as the "Pinkville Massacre" pointed out, among other things, one of the basic frustrations faced by United States troops in what had been essentially a guerrilla war: clad in native attire as they blended with the local populace, how to distinguish the Viet Cong from friendly South Vietnamese.

An incident in early January 1968 at a 5th Weather Squadron unit illustrated that frustration. As in wars past, the G.I.s in Vietnam had soft spots in their hearts for children--particularly the orphans--caught up in the war's whiplash. A remote weather station of the squadron near An Khe was visited daily by children who sold fruit and Vietnamese souvenirs. The weathermen enjoyed the visits from the always smiling children--until one day when a seven-year old boy whipped a grenade out of his pocket and tossed it at them. Fortunately, the child was a novice at terrorism. He forgot to pull the arming pin. He acted as he did, he said, because he feared for the life of his family who were being threatened by the Viet Cong.<sup>152</sup>

#### The Problems

The problems encountered from the start in providing weather support to the 1st Cavalry Division (Airmobile) were typical of those faced by AWS personnel until the last Army soldier left the Republic of Vietnam some eight years later. The surge of Army units into Vietnam in 1965 and 1966 was so rapid and of such proportions that peacetime procedures requiring formal statements of requirements for weather support could not keep pace. Officials at Headquarters AWS insisted on following formal time-consuming procedures, while senior AWS officials in theater needed more people "right now," as one squadron commander emphatically phrased it. "Perhaps the single greatest

deterrent to mission accomplishment for the weathermen in Southeast Asia" during 1965, read the official AWS account, "were the peace-time programming procedures adhered to at higher echelons of command for men and materiel needed . . . 'right now' in the war zone."<sup>153</sup>

A fundamental problem faced by AWS weathermen in Vietnam was that Army commanders in general were unaware of the service available to them through AWS, or did not know how to utilize it to benefit their operations, and, once advised of its nature by an aggressive staff weather officer or enlisted man, were happy with whatever they got. During one of the weekly weather briefings given him by an AWS briefing officer in early 1967, General Westmoreland remarked that "no other U.S. military commander ever had the advantage of the outstanding weather support that I have had at my disposal."<sup>154</sup> A year later, Westmoreland's successor as USMACV commander, General Abrams, signed a letter of commendation to the 1st Weather Group in which he wrote that "never in the history of warfare have weather decisions played such an important role in operational planning as they have here in Southeast Asia," specifically pointing out the battles at the Sanh and the A Shau Valley as examples.<sup>155</sup> Such glowing statements were a tribute to senior AWS officers who persisted in "selling" themselves and their services to USMACV, because in the beginning, USMACV officials, just as at I Field Force and elsewhere, were not interested in the weather and were generally unaware that it was AWS' mission to support them.<sup>156</sup> \*

Some of the AWS officers and senior enlisted men supporting Army units in Vietnam reported that the Army was aware of, and used, their services; but twice as many indicated the Army was unaware, and, or had little use for them.<sup>157</sup> "It has been my experience," wrote the 5th Weather Squadron commander in 1970, "that the Army is happy with any support you give them."<sup>158</sup> "Adequate weather support to the Army," reported the 1st Weather Group commander in 1970, in summarizing the question,<sup>159</sup>

is still a problem. The Army personnel are not trained or experienced in use of weather in their operations. Our people coming over are not, in most cases, familiar with Army operations. So it is sometimes difficult to get the two together. Once Army personnel get a sample of the support available they are most eager to continue getting the support. They are the easiest customers to please because, not knowing what is available, they are happy to get practically anything.

Notwithstanding their gratitude for what they received, the Army believed that "weather support . . . provided by the Air Force was inadequate" in Southeast Asia, according to the officer who commanded the 1st Weather Group in 1971, because AWS could not, or would not, give it what it wanted.<sup>160</sup> The long range, seven-day forecast was a case in point.

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\* "Most Army operations personnel said glowing words about AF weather support," reported the captain who served as the 1st Weather Group's current operations officer during the 1968 Tet offensive; but they "seldom knew the locations of weather units serving their commands nor anything about how they supported it." (Captain Hilton, current ops officer, 1WG, 4Feb68 to 4Feb69, "End of Tour Report," n.d., p. 3, included as Tab 42 of Fuller, ed. "End of Tour Reports," 15Apr70.

If the Army was uninformed or uneducated about the support AWS was decreed to provide it, much of the responsibility could be laid at AWS' doorstep. Most of AWS' people assigned to Army support in Vietnam had no training or experience with the Army or its operations. With the one-year tour in effect in Vietnam, many were not eager to absorb themselves totally in supporting the Army because it took too much of their tour to get acquainted and comfortable with the Army way of life; rather than expend the necessary effort and not be around to reap the fruits of their labors, they went through the motions until they could get back stateside in the mainstream of Air Force life. "I doubt if AWS makes an adequate effort to find out what the Army is all about," reported Lieutenant Colonel William E. Cummins, II, the 5th Weather Squadron commander in 1969, in offering further insight into the phenomenon. Cummins spent much of his AWS career before and after 1969 associated directly or indirectly with Army support, including a tour with the 7th Weather Squadron in Europe, and was intimately knowledgeable about the topic. "If we do not understand Army operations," he continued,<sup>161</sup>

we will have very limited success in identifying weather requirements. Pushing the experience clock back to '62-'65 period, I offer the reason why we were not getting the job done at the time. A number of AWS officers assigned to the 7th Wea sq, especially SWO's [staff weather officers] in sensitive positions, felt that their tour with the Army put them on the "second team." Their general concern was, "when do I get back to the Air Force." With such a perspective they had little incentive to learn the Army language, no enthusiasm to learn the Army well enough to identify weather requirements, and very importantly, they were not inclined to establish the rapport needed to get the job done.

"We don't see the real Army tactical combat mission," echoed Colonel Keith R. Grimes. An expert in weather support to Army Special Forces, Grimes went on to say in an interview that,<sup>162</sup> \*

We have never welded our support to say, "Okay, these are the things we can provide you. These are the ways your operations are impacted and these are the ways we can reduce the impacts." We sit on the flight lines and we think: "This is Army support"--when it's only a very peripheral mission. . . . You've got to really understand the role, say, of a mechanized infantry brigade and their combat tactics, before you can figure out what it is meteorologically that influences them one way or another, and how this can be reduced for them. How many people in Air Weather Service can tell you what an airborne brigade's concept of operation is, how its tactics unfold; what an armored cav unit does in combat, where its significant weather impacts are? . . . [AWS] hasn't rooted out these missions.

\* Jump qualified, and certified as a forward air controller, Grimes worked with Army Special Forces during numerous exercises stateside, and in the Dominican Republic during the crisis of 1965; set up a weather observing and reporting network in northern Laos in 1965 to support air operations in Southeast Asia; and served as the Air Force liaison officer to the Army--and was the project weatherman--for the daring raid on the prisoner of war camp at Son Tay, North Vietnam, in 1970.



These problems, and others, were formally identified in AWS' input to an Air Force project in the late 1960s and early 1970s designed to evaluate the effectiveness of airpower in Southeast Asia and document the lessons learned. Initially, it was difficult to make accurate tactical forecasts, particularly for engagements in forward battle areas with company or battalion-sized elements that did not have AWS weather observing teams attached to provide vital observations. USMACV suggested to the Department of the Army in mid-1966 that, in accordance with the joint regulation, the Army furnish the weather observers needed forward of division headquarters,<sup>163</sup> and one of the more profitable solutions was for the 1st Weather Group to train men from the Army's 5th Special Forces Group (Airmobile), who were strategically deployed throughout the theater, to take and relay basic weather observations.<sup>164</sup> \* Supplies and equipment authorized by division or brigade TOEs were often unavailable or in short stock, the staff weather officer to the 1st Cavalry Division (Airmobile) writing in 1966 that "the Army had very little to give their own and consequently we received the same."<sup>165</sup> Even when AWS units got what they were authorized, and the facilities furnished by the Army were adequate, life with the Army did not measure up to the comforts enjoyed by sister AWS units supporting the Air Force in Southeast Asia. Rank carried more weight in the Army than in the Air Force, thus making it difficult for AWS enlisted men at brigade level, or company-grade officers at division level, to compete for services, supplies, and facilities. Most of the Air Force tactical weather observing equipment used was too sophisticated for continuous use and, because of its complexity, required maintenance support that was unavailable in the field. The AN/MMQ-2 tactical meteorological station, and the AN/TMQ-14 and AN/TMQ-25 tactical ceilometers, were examples of equipment that proved impracticable in Vietnam, while older, cheaper, and more basic gear like the AN/PMQ-1 and AN/PMQ-4 manual meteorological stations of Korean War vintage were more reliable in theater tactical operations.

"We had a jolly time trying to live with the Air Force system of centralization in an Army environment," reported Colonel Cummins, the 5th Weather Squadron commander, because "the Army is quite decentralized."<sup>166</sup> At each Air Force base a single "housekeeping" unit was responsible for things like personnel matters, housing, messing, etc., while each unit of any size at an Army post had its own dining hall, quarters, motor pool, etc. Since a weather unit was assigned by Air Force orders to a specific installation, a problem arose as to which Army unit would provide it messing, billeting, supply, and administrative support. In addition, Army units supported by AWS moved too often within their corps area for official Air Force movement orders to keep up. Since the Army used a single Army Post Office (APO) number for their address it did not matter where they were located; but each time the AWS unit moved with them it took three or four months for official orders to be processed and in the meantime, official correspondence was misrouted and supplies forwarded to the old location were lost, in many cases. Through all the inconveniences, hardships, and hazards, however, the morale among the weathermen supporting the Army was excellent, and it was due mostly to actually being exposed to combat.

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\* Ironically, after some of their detachments sustained heavy casualties because weather precluded their being exfiltrated by helicopter or receiving close-air support, most Army Special Forces units paid closer attention to the 1st Weather Group's forecasters. See Col Francis J. Kelly, U.S. Army, *U.S. Army Special Forces: 1961-1971*, from *Vietnam Studies* (Washington DC: Dept of the Army, 1973).



Checking the hourly weather log beside an AN/MMQ-2 observing van surrounded by a revetment of sand-filled oil drums is Sgt Michael Connell, a weather observing team chief assigned to OL-2 of 5WS's Det 31 at Phuoc Vinh, working in support of the 1st Cavalry Division's (Airmobile) 1st Brigade in 1968. Atop the van is Sgt Bernard L. Brezee, relaying weather data via HF radio to unit headquarters. "We get a very deep sense of satisfaction working with the 'Cav,'" Connell was quoted when asked how it felt being stationed with the division in 'Nam, "because

it is a division noted for its success against the enemy" and "the information we obtain and pass on plays a vital role in the planning of each operation." (USAF Photo)

At Phu Loi, Republic of Vietnam, in September 1968, Lt Col Cummins (left) discusses AN/TMQ-14 tactical ceilometer with Col Ralph G. Suggs, the AWS vice commander. (USAF Photo)



Paradoxically, three of the four AWS weathermen that were killed in action in Vietnam (all enlisted men) were assigned to 5th Weather Squadron units supporting the Army, as were the majority of those weathermen wounded in action.<sup>167</sup>

#### Communications

Of all the problems facing weathermen supporting the Army in Vietnam, the most serious involved communications. In addition to the problems discussed above associated with support to the 1st Air Cavalry Division (Airmobile), common-user telephone circuits between brigades and divisions were often out of order. Dedicated Army command-and-control circuits between brigades and divisions were available when the action was light, but when the fighting intensified weather information was preempted by higher-precedence traffic. Terminal teletype equipment and circuits at division base camps were frequently out of commission. And power sources were often unstable or generated fluctuating power.<sup>168</sup>

Although the joint regulation stipulated that the Air Force would provide long-line weather communications, in Southeast Asia it was the Army's responsibility for providing, operating, and maintaining all long-haul circuits. Long-lines were prone to corrosive failure in the humid and salty air of Vietnam, and were also subject to cuts by the enemy or by vehicular traffic. The major problem in weather teletype circuit outages was isolation of the affected areas.<sup>169</sup>

With the buildup of United States forces in Southeast Asia in 1965-66, existing sixty word-per-minute teletype circuits could not handle the increased traffic volume. They were cited as a deterrent to mission accomplishment by both Pacific Air Forces (PACAF) and Air Force inspector general teams in early 1965 and 1966. Formal paperwork to upgrade the circuits and terminal equipment to a 100 word-per-minute capability, including those with AWS units supporting the Army, was initiated by the weather squadron in Vietnam in early 1965. It was September 1970 before the 100 word-per-minute teletype system in Vietnam was completed, just as the Army was beginning to go home.<sup>170</sup> Considering that the United States was involved in World War I for about a year and a half, in World War II for a little over three and one-half years, and for three years in Korea, the five-year reaction to such a critical tool as communications--the life blood of military meteorological service--was a trifle excessive.

In August 1966 the 5th Weather Squadron formally expressed a requirement for a facsimile capability at its units down to operating-location level in support of the Army's fixed airfields and division base camps. Again, the first circuits and machines were installed in 1970, just as the Army was going home. Inside a year, therefore, efforts began to remove the facsimile equipment.

An analysis of the facsimile and teletype-upgrade efforts in Southeast Asia uncovered several shortcomings in weather communications concepts and support in a combat arena. AWS' weathermen were spoiled by peacetime niceties such as 100 word-per-minute teletypes and full facsimile service to the point where many believed they could not provide adequate service to the Army in a combat theater without them. Yet in the case of facsimile at Army sites, for instance, their opinions vacillated--due in part to the one-year tour policy whereby the opinion of a particular 5th Weather Squadron detachment commander differed from that of his predecessor and, or, his successor. In early 1969, in

taking a position opposite that of the commander he succeeded, Colonel Cummins believed that his 5th Weather Squadron units could meet the Army's combat support requirements without facsimile. His boss, the 1st Weather Group commander, took exception but, in turn, his boss, the 1st Weather Wing commander, aligned himself with Cummins!<sup>171</sup> Nor was the Army immune from wavering policy. A lieutenant colonel at USARV kept assuring Cummins that the Army would provide 100 word-per-minute teletypes on a permanent basis, while to his Army superiors in Hawaii and Washington he indicated that the weather teletypes would be on a "temporary loan."<sup>172</sup> The formal process for acquiring weather communications service was cumbersome and unresponsive due to the degree of "coordination" required. It was not uncommon for a weather communications request to have been "coordinated" at four or five different echelons within seven or eight various commands or services. Adding needless confusion, whether by design or accident, was the vague, confusing, cryptic, and contradictory language used in the formal weather communications requests. It was the basis for the Army's considering the entire weather teletype issue (in particular maintenance) an Air Force responsibility--a position agreed to by the Air Staff over the repeated objections of the Air Force Communications Service (AFCS). And finally, the Army in Vietnam, and the 5th Weather Squadron units supporting it, simply moved too frequently for the inflexible communications request process to keep pace. It led to pleas by Air Force communications agencies to clamp a "mandatory freeze" on changes to basic requests, and one by AFCS' Pacific unit for AWS to "stabilize" its Army weather communications support requirements in Vietnam.<sup>173</sup> The pleas fell on deaf ears. AWS was determined to support the Army, and the Army units moved often.

### CHAPTER 3 - ARMY (AND AWS) ORGANIZATION, 1970s

As the 1970s dawned, and the United States presence in Vietnam subsided, AWS could look back on some three decades of supporting the Army, through three shooting wars, and conclude that it still faced numerous perplexing problems with that portion of its mission, many of which had become traditional in nature. The fundamental question was who should provide the support, the Army or the Air Force? There were still enough--within the Army and on the Air Staff and in AWS--who thought the Army should, to keep the issue alive. If it was to continue to be AWS, then AWS saw a problem--as it had from at least 1943--in getting the Army to formally state its requirement for weather support. The Army thought it had; but changes in tactics and weapons and organization sired new requirements, and there were differences in its requirements between peace and war, garrison and field, units stateside and overseas, and between functions. The Air Force sought to apply manpower standards; yet the role (and, hence, its composition and weather support requirements) of an armored cavalry regiment in Korea differed from one in Germany or at Fort Hood. An airmobile division required support apart from that needed by an infantry or airborne division, and how was the rising role of Army aviation to be handled? Through the endless succession of drawdowns through the years, and on the horizon, where would the manpower come from to support mushrooming Army requirements? Should AWS' policy continue to treat Air Force weather support requirements first and the Army second? Pertinent directives were habitually out of date, in particular the joint regulation, and there were problems in streamlining procedures for updating them. The directives needed to specify clearly who was to provide and maintain weather communications gear at each echelon of Army support; who was to furnish the administrative and supply support to AWS personnel supporting the Army, and who was to provide the meteorological equipment needed. There was a lack of coordination between AWS and the Army over research and development and the acquisition of meteorological equipment for Army support. There was disenchantment by AWS personnel assigned to support the Army--such problems as life in the field, career progression, and the belief that the Army was more formal and rank conscious than the Air Force. There was the ongoing problem of having to educate key personnel of both the Army and AWS on the need and use of weather support. How, where, and when would AWS' centralization and computerization concepts dovetail with or enhance Army weather support? Lastly, how should AWS organize to support the Army? Should there be a weather wing devoted exclusively to Army support? Should AWS organize its support of the Army on a geographical or functional basis, or should it continue with a mixture of the two?<sup>1</sup>

To provide adequate weather support to Army elements, AWS personnel had to have more than a passing familiarity with the Army's basic organization. Because of sundry influences, the Army of the 1970s was changed. Like the Air Force, its organizational structure was affected by the shrinking defense dollar, the ominous Russian threat, advances in technology, a changing social fabric at home, the all-volunteer force in the "zero-draft" era, the total force concept, and the need to have a strategic striking force ready to meet United States commitments on a world-wide basis. Tight budgets forced the Army to shorten and consolidate training courses (it provided all

basic helicopter training for Air Force personnel), close bases, stabilize tours, and cut back support forces and streamline its headquarters structures to increase its "teeth-to-tail" ratio.

The Army was completely reconfigured in the 1970s. Its two major elements were the Department of the Army headquarters and the field commands. The headquarters component consisted of two parts: the secretary of the Army and the Army staff. During fiscal 1974-75, the Army staff underwent a major reshuffling, lopping off some 1,300 spaces. In the same period, as discussed below, the headquarters of seven major Army field commands, or Army component commands of unified commands in specific theaters, were eliminated. Headquarters manning levels worldwide were cut eighteen percent, by nearly 5,000 spaces, as the Army, under a congressionally imposed active-duty military strength of 785,000 men, sought to raise and equip a 24-division force--16 active Army divisions and eight reserve.<sup>2</sup>

To provide for Military Occupational Specialty (MOS) areas where applicable, Army officer personnel and units were identified by branches. Branches were grouped into combat arms, combat support, and combat services support. The combat arms (infantry, armor, artillery) were those branches whose primary mission was combat. The engineers, Intelligence, and Signal functions were combat support branches. The combat services (Quartermaster Corps, Ordnance Corps, etc.) were those branches whose primary mission was combat service support and, or, administration of the Army as a whole. Certain branches had primary missions in both fields. In reductions the services were not sacrosanct either.<sup>3</sup>

#### Army Met Function

With the advent of the 1970s, the Army had people involved in its meteorological function at nearly every echelon of command, from small field units to the Department of the Army staff. It was a confusing arrangement for many AWS people because, unlike AWS, which was basically the single manager for all operational meteorological activities in the Air Force, the Army's meteorological elements were spread horizontally through its organizations. No single organization had responsibility for all Army meteorological activities; numerous agencies and functions had a piece of the pie.

#### Dept of Army Staff

At the Department of the Army, six staff functions influenced all Army meteorological activities--personnel, equipment, research, development, testing, and evaluation. The Assistant Chief of Staff for Intelligence (DA/ACSI) had general staff responsibility for Army meteorological activities, and served as the focal point for all Army operational met activities, including AWS support to the field army. That responsibility was handled primarily by a lieutenant colonel. Under the Chief of Research and Development (subsequently redesignated as the Deputy Chief of Staff for Research, Development, and Acquisition) was an office manned by two meteorologists who were the action officers, respectively, for meteorological research (Mrs. Frances Whedon, a very familiar name in AWS circles, as discussed below) and development. In the late 1960s the Assistant Chief of Staff for Communications and

Electronics (DA/ACSC-E) assigned communications frequencies for all electromagnetic systems used by all Army meteorological units--a responsibility assumed by the Army Communications Command in the 1970s. The Assistant Chief of Staff for Force Development (DA/ACSFOR) in the late 1960s, and then the Deputy Chief of Staff for Research, Development, and Acquisition in the 1970s, was responsible for long-range planning which influenced what new met equipment and systems would be developed and how much money would be used to equip the field army with new gear.<sup>4</sup>

AWS had no liaison people assigned with, nor did it have direct access to, those Department of the Army staff elements. AWS' channel to them on key matters like the joint regulation was through MAC to the Air Staff. Until the summer of 1978, the Air Staff focal point for meteorological matters was the office of the assistant for weather (AF/PRW), Deputy Chief of Staff for Programs and Resources, (AF/PR). A reorganization of the Air Staff in mid-1978 abolished the AF/PRW office. Its function was transferred to the Deputy Chief of Staff for Operations, Plans and Readiness (AF/XO), Headquarters USAF, where one officer, a lieutenant colonel (with the office designation of (AF/XOOTF) began shouldering the workload formerly handled by four, including three colonels.<sup>5</sup> The Army staff dealt directly with AF/PRW or AF/XOOTF; indirectly with AWS.

AF/PRW was headed by a colonel with a weather Air Force Specialty Code (AFSC), meaning he had spent most of his Air Force career within AWS. The AWS commander, with the concurrence of the MAC commander, nominated individuals for the AF/PRW position, but the Air Staff's Deputy Chief of Staff for Programs and Resources, a three-star general, had final approval authority. He controlled the billet, and he was AF/PRW's reporting official. That command relationship was an important one because, due to different personalities and experience and points of view, the AF/PRW stance on weather support to the Army--and other matters--was not always in gee with the AWS commander's<sup>6</sup>--as issues addressed below vividly demonstrate.

#### Artillery Met Sections

The biggest meteorological units in the field army were the artillery met sections--about seventy of them were scattered throughout the world and at their technical headquarters at the Army Artillery and Missile Center at Fort Sill, Oklahoma. That center was a part of Continental Army Command (CONARC), headquartered at Fort Monroe, which had the responsibility for training people and developing field procedures for Army equipment.<sup>7</sup> Through its 16th Weather Squadron, and then its 5th Weather Squadron, the 5th Weather Wing operated a detachment at Fort Sill, but it was primarily involved in supporting Army aviation at the airfield there.

#### AMC's (DARCOM's) ASL

Most research, development, testing, and evaluation in the Army was done through the Army Materiel Command (AMC), which was one of the Army's major field commands, with headquarters in Washington, DC. The Army Materiel Command was redesignated as the United States Army Materiel Development and Readiness Command (DARCOM) on 23 January 1976.

Under the Army Materiel Command were several commands, centers, laboratories and facilities, many of which had Army meteorologists assigned. Perhaps the most important subordinate unit of AMC, from the standpoint of meteorological research and development, was the Atmospheric Sciences Laboratory (ASL) of AMC's United States Army Electronics Command.\*

Formed in 1965, and originally located near Fort Monmouth, New Jersey, ASL also had major offices at Fort Huachuca, Arizona, and at the White Sands Missile Range in New Mexico. The workload from ASL's meteorological research and development mission was about evenly divided between Fort Monmouth, White Sands, and Fort Huachuca. Through Army meteorological teams working under the Electronics Command's Meteorological Support Activity at Fort Huachuca, ASL also provided met service to all Army research, development, test, and evaluation activities<sup>8</sup>--a mission similar to AWS' 6th Weather Wing which supported Air Force research and development activities.

In point of fact, for that reason AWS support to Headquarters AMC was furnished by Headquarters 6th Weather Wing--until late 1971 when the responsibility was transferred to the 5th Weather Wing. The 5th Weather Wing, or units subordinate to it, retained that responsibility through 1978.† Yet because AWS had no charter for involvement in Army research and development, support to AMC was wispy. It was generally handled by a single officer on an additional-duty basis. Service was tendered when AMC asked for it. For the most part, AWS kept the channel to AMC open to stay abreast of the Army's research and development activities.

Headquarters ASL moved to the White Sands Missile Range in the 1970s. AWS did not maintain a unit at White Sands, and until November 1971, it did not have a unit at Fort Huachuca either. When ASL headquarters was at Fort Monmouth, AWS liaison was furnished on an additional duty basis by Lieutenant Colonel Malcolm Reid, who commanded an operating location there under the 16th Weather Squadron--until May 1971, when it was transferred to the 5th Weather Wing.\*\*

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\* The Army's Electronics Command succeeded the old Army Signal Corps--a unit quite dear to AWS because AWS' commonly accepted birth-date was 1Jul37, when the mission of providing weather service to the Army air arm was transferred from the Army Signal Corps to the Army Air Corps. The Electronics Command was reorganized, effective January 1978, to form three new commands: U.S. Army Electronics Research and Development Command (ERADCOM), Communications Research and Development Command, and Communications-Electronics Materiel Readiness Command.

† OL-G, 5WW, was established at Fort Belvoir on 1Sep71 to support the Army's Combat Development Command (USACDC). Commanded by Lt Col Malcolm Reid, the unit's mission also included tendering meteorological support to HQ AMC on an additional-duty basis when it was asked for. Before then, support to HQ AMC had been handled by HQ 6WW on the same basis. On 15Jul72, OL-G became OL-H, HQ AWS, at Fort Belvoir. OL-H retained the responsibility of supporting HQ AMC until, with USACDC's demise on 1Jul73, OL-H was inactivated and the responsibility for supporting HQ AMC was through HQ 16WS and its Det 2 at Fort Belvoir. When 16WS was inactivated on 1Oct76, the responsibility for supporting DARCOM (formerly AMC) was transferred to Det 2, 5WS, 5WW, at Fort Belvoir--which discharged that duty, on an as-required basis, through 1978.

\*\* Until 1Sep70 it was designated as OL-8, 16WS, at Fort Monmouth. Afterward, it became OL-F, 16WS, and remained so until 1May71, when it



On 15 November 1971, when the Army transferred the Combat Developments Command's meteorological function from Fort Monmouth to Fort Huachuca, the AWS operating location at Fort Monmouth moved to Fort Huachuca also, as discussed below.

#### USACDC

With headquarters at Fort Belvoir, Virginia, the United States Army Combat Developments Command's (USACDC) mission was to study and recommend how the Army would fight, be organized, and be equipped. Documents produced by it and its subordinate elements provided the authority to develop new meteorological equipment.<sup>9</sup>

Until September 1971, AWS furnished liaison support to Headquarters USACDC through the commander of Detachment 2, 16th Weather Squadron, at Fort Belvoir. The detachment's mission included support to the Military District of Washington, the Army Materiel Command, and to Army aviation at Davison Army Airfield where it was actually located. On 1 September 1971, because of the detachment's physical separation from Headquarters USACDC, AWS established Operating Location G of the 5th Weather Wing at Fort Belvoir for liaison with Headquarters USACDC, the Army Materiel Command, and USACDC's Intelligence and Control Systems Group (USACDC-INCSG).

Command of Operating Location G was assumed by Lieutenant Colonel Malcolm Reid who moved to Fort Belvoir from Fort Monmouth, replacing Lieutenant Colonel Marion L. Hershberger who was transferred to Fort Huachuca. In the late 1960s Reid had served with the 7th Weather Squadron in Germany as staff weather officer to V Corps. As it had been at Fort Monmouth, Reid's work was extremely critical to the doctrinal aspects of AWS' Army support mission. He was responsible for managing the development within USACDC of all conceptual, doctrinal, and materiel aspects of the Army's weather support requirements--including weather satellites, weather communications, weather modification, computers, tactical weather equipment, weather TOEs, weather studies, and weather support manuals and regulations and other doctrinal literature.<sup>10</sup> On 15 July 1972, Operating Location G became Operating Location H of Headquarters AWS, at Fort Belvoir, and it retained that designation until, with USACDC's demise the previous month, it was inactivated on 1 August 1973. Reid retired from the Air Force that summer after doing an outstanding job in his liaison role with the Army through USACDC.†

#### Met Function to Ft Huachuca (Intelligence)

Effective 15 November 1971, the Army's meteorological function at Fort Monmouth, under USACDC's Communications Electronics Agency, was transferred to the Intelligence Agency (USACDC/INTA) of USACDC's Intelligence and Control Systems Group at Fort Huachuca.<sup>11</sup> Later, in

\*\* (Cont) was redesignated as OL-A, 5WW. OL-A, 5WW, remained at Fort Monmouth until 15Nov71 when it was relocated to Fort Huachuca.

† Col Leonard V. Gillespie, one-time commander of the 7th Weather Squadron who spent much of his AWS career in Army support, singled out Reid in early 1972 for his yeoman work in getting meteorological requirements into Army concept and doctrine statements. Gillespie believed that Reid's inputs to Army documents would have a great impact

1973, USACDC/INTA became the United States Army Intelligence Center and School (USAICS), at Fort Huachuca, and it retained that designation through 1978. For years the chief meteorologist at USAICS was Mr. James D. Rustenbeck, who made many contributions to Army meteorology.

The 5th Weather Wing's Operating Location A at Fort Monmouth, under Lieutenant Colonel Reid's command, which had been supporting the Army meteorological function with USACDC's Communications Electronics Agency, was also moved to Fort Huachuca, effective 15 November 1971, to continue that support. Between November 1971 and October 1976, the unit's formal designation changed twice, but then reverted to the original one of Operating Location A, 5th Weather Wing. It retained that designation and remained at Fort Huachuca through 1978.

As mentioned above, Lieutenant Colonel Reid did not go to Fort Huachuca with Operating Location A; instead, he transferred to Fort Belvoir to command the operating location there and serve as liaison officer to Headquarters USACDC and its Intelligence and Control Systems Group. Commanding Operating Location A at Fort Huachuca from 15 November 1971 until late 1972 was Lieutenant Colonel Marion L. Hershberger, the man Reid replaced at Fort Belvoir. Hershberger was followed by Lieutenant Colonel James C. Owens, who held the position until he retired from the Air Force and was succeeded, as of 1 September 1976, by Lieutenant Colonel Owen Y. Macy. Macy retained command of Operating Location A at Fort Huachuca through 1978.

Acting as liaison between AWS and USACDC/INTA (or USAICS), and between AWS and the Atmospheric Sciences Laboratory's office at Fort Huachuca, Operating Location A's mission was also very critical to AWS' support of the Army. It encompassed preparing USACDC studies involving concepts for AWS support of tactical Army operations, Army requirements for tactical weather support, and AWS requirements for Army tactical communications, logistical, and administrative support; providing inputs to USACDC combat development studies, troop tests, and field evaluations; and reviewing and preparing Army field manuals on weather support, Army regulations, and TOEs based on approved USACDC concepts and doctrine.<sup>12</sup>

#### CACDA, Ft Leavenworth

After the combined arms segment of USACDC's mission was transferred from Fort Belvoir to the Combined Arms Combat Development Activity (CACDA) of TRADOC (Training and Doctrine Command) at Fort Leavenworth on 1 July 1973, AWS established Operating Location E of the 16th Weather Squadron at Fort Leavenworth, effective 1 August 1973, for liaison to CACDA. The liaison role of the Fort Leavenworth operating location was every bit as important to the doctrinal phase of AWS' support to the Army as was Operating Location A at Fort Huachuca, and as had been Lieutenant Colonel Reid's unit at Fort Belvoir. Operating Location E was under command of Lieutenant Colonel

† (Cont) on the shape of AWS' support to the Army for years to come. See memo for record, and 3 atch, Col William E. Cummins, II, asst DCS Ops, HQ AWS, "Army Support Forum," 21Apr72, p. 3.

\* OL-A, 5WW, became OL-D, HQ AWS, at Fort Huachuca, effective 15Jul72. On 1Aug73, OL-D, HQ AWS, became OL-A, 16WS, at Fort Huachuca, and retained that designation until 1Oct76, when 16WS was inactivated and the jurisdiction of OL-A reverted back to 5WW.

Dell V. McDonald from 1 August 1973 until 13 August 1976, when he was reassigned to Headquarters MAC. McDonald's replacement was Lieutenant Colonel Darrell T. Holland, who retained command of Operating Location E through 1978.

#### TRADOC and FORSCOM, 1973

In a major reorganization of its field command structure, the Army, effective 1 July 1973, replaced its Continental Army Command (CONARC) and its Combat Developments Command (USACDC) with the Training and Doctrine Command (TRADOC) and the Forces Command (FORSCOM) at, respectively, Fort Monroe, Virginia, and Fort McPherson, Georgia. TRADOC and FORSCOM were both commanded by four-star generals. The reorganization was made in the hope of improving readiness, management, schools, and combat development activities. It was also made to reduce the number and size of headquarters, to cut back support units, and to eliminate activities of marginal utility to produce manpower for three new divisions--the 7th and 24th Infantry Divisions, and the 5th Infantry Division (Mechanized)--at no overall increase in the Army's authorized manpower. CONARC personnel formed the nucleus for TRADOC, and personnel from the Third Army at Fort McPherson, which was dissolved and consolidated under the First Army, formed FORSCOM's nucleus. The remaining three numbered armies stateside--the First, Fifth, and Sixth--were assigned to FORSCOM and assumed responsibility for all Army Reserve and Army National Guard units within their respective geographical areas. TRADOC's mission was individual training, education, and combat development, and it was given command of all Army training centers, service schools, combat development centers, and training oriented installations. FORSCOM served as the Army component of the United States Readiness Command (REDCOM), and its mission included land defense of the United States, and the training and readiness of all deployable active and reserve components stateside--to include corps, divisions, and their supporting forces.<sup>13</sup>

Most important of TRADOC's centers, from AWS' standpoint, was the Combined Arms Center of CACDA at Fort Leavenworth, discussed above, which oversaw both the Intelligence (USAICS--United States Army Intelligence Center and School) and Signal schools, located, respectively, at Fort Huachuca and Fort Monmouth. The Signal school was subsequently moved to Fort Gordon, Georgia.

To support the Army reorganization, AWS made some changes. Under its basic charter of supporting the Army stateside, the 5th Weather Wing's 16th Weather Squadron at Fort Monroe assumed the task of furnishing weather service to both TRADOC and FORSCOM. The squadron commander, a colonel, served as staff weather officer to the TRADOC commander, while a four-man operating location under the squadron at Fort McPherson, headed by a lieutenant colonel, served as staff weather officer to the FORSCOM commander. Because the missions of the three numbered armies were greatly diminished (dealing primarily with Army Reserve and Army National Guard matters), direct staff weather officer support to their respective headquarters was discontinued, and indirect staff support was provided them on an as-required basis by the nearest squadron unit until 1978. In 1978, a one-year test involved using mobilization augmentees from the Air Force Reserve as staff weather officers to the three numbered armies, but it was concluded that the workload was too much for one officer. As discussed above, Operating Location A at Fort Huachuca, supporting USAICS, was transferred to the squadron from Headquarters AWS.

The divergence in missions between TRADOC and FORSCOM, coupled with an increase in activity and geographical scope of responsibility for the latter command, soon presented span-of-control and management problems for the 16th Weather Squadron. As a result, AWS reactivated the 5th Weather Squadron (last inactivated in the Republic of Vietnam on 1 May 1972) under the 5th Weather Wing at Fort McPherson on 1 January 1975 to support FORSCOM.<sup>14</sup> For the first time, therefore, AWS had two weather squadrons stateside devoted exclusively to support of the Army, both assigned to the 5th Weather Wing.

The arrangement was shortlived, however. On 1 October 1976, under orders from the MAC commander to reduce itself by about 400 manpower spaces, AWS inactivated the 16th Weather Squadron--at a net savings of six manpower spaces! The 16th Weather Squadron's Operating Location A at Fort Huachuca, and Operating Location E at Fort Leavenworth, were assigned directly to the 5th Weather Wing; a third operating location, and the squadron's seven detachments, were transferred--together with the mission of supporting TRADOC--to the 5th Weather Squadron.<sup>15</sup> By 1978, with twenty subordinate units and 303 people assigned\* the 5th Weather Squadron had grown into the largest of AWS' sixteen squadrons.

Activated also on 1 October 1976, at Fort Monroe, was Operating Location C of the 5th Weather Wing. It was commanded by the former 16th Weather Squadron commander, Colonel Walter R. Brett, who retained the mission of staff weather officer support to Headquarters TRADOC. The commanders of Operating Locations A and E reported through Brett to the 5th Weather Wing. Brett remained as Operating Location C commander until September 1978 when he was replaced by Colonel William E. Cummins, II.

#### Army Liaison To HQ AWS

For years AWS had been unsuccessful in efforts to get an Army liaison officer assigned to its headquarters, but by early 1977 the Department of the Army had relented, and directed TRADOC to assign one.<sup>16</sup> The officer selected was Lieutenant Colonel Charles J. Swayne, who assumed that duty at Headquarters AWS effective 1 July 1977. Swayne, formerly assigned as a deputy Intelligence officer at III Corps and Fort Hood, was assigned to TRADOC but reported directly to the Department of the Army as well as to the TRADOC commander. Within AWS, Swayne was directly responsible to the AWS commander. AWS found him to be a welcome addition to the staff.

#### Other

There were numerous other Army reorganization actions in the early 1970s, but none as significant to AWS as those highlighted above. For example, the Army Air Defense Command (ARADCOM) was inactivated; and, effective 31 January 1977, the United States Army Missile Research and Development Command and United States Army Armament Research and Development Command were established. Overseas,† other than the phase out of Army units and personnel from

\* Just eight less than the 311 people authorized AWS' smallest wing, 1st Weather Wing.

† The U.S. Army, Alaska (USARAL), and U.S. Army Forces Southern Command (USARSO) were also eliminated, effective 1Jul74, and control

Southeast Asia, the major change in the Army organization structure was the disestablishment of USARPAC (United States Army, Pacific) in Hawaii on 31 December 1974, and the activation there of the United States Army CINCPAC [Commander in Chief, Pacific Command] Support Group, USACSG. With USACSG's establishment, the requirement for staff weather support decreased significantly and was handled on an additional duty, part-time basis by officers from Headquarters 1st Weather Wing at Hickam AFB.<sup>17</sup>

#### Echelons Above Division (EAD), 1973

Another action by the Army, which was more a conceptual arrangement than a formal organization change, was its Echelons Above Division (EAD) decision of July 1973 which eliminated the field army and made the EAD corps (normally commanding two to five and two-thirds divisions--the two-thirds being an armored cavalry regiment and a separate brigade) the highest tactical element within any given theater of operations. The 16th Weather Squadron saw TRADOC and FORSCOM adopting new techniques to make up for the Army's inferiority in numbers of people and equipment (techniques that foreshadowed tighter control of divisions by the corps), and as a result, "it could be that weather support at corps can have more impact on decisions than in the past."<sup>18</sup> Whatever, weather doctrine set forth in directives such as the joint regulation were immediately antiquated by the EAD decision because, for one thing, it raised the question of who would be responsible for weather communications above and below the corps level. Before that, the weather team or unit at the field army level had been the key element between higher echelon weather centers (the Air Force Global Weather Central, for instance) and the AWS weather teams or units at corps and division level.<sup>19</sup>

#### Echelon Above Corps (EAC), 1977

In May 1977, Lieutenant Colonel Macy, from Operating Location A at Fort Huachuca, reported that the Echelon Above Corps (EAC) concept was receiving increasing attention by the Department of the Army, and that there was no approved Army doctrine for weather support to the EAC, although there were field army level organizations in both Europe and Korea. However, weather support doctrine could not be ironed out until the Army defined the EAC's function.<sup>20</sup> On 23 October 1978, the Department of the Army published a draft field manual for the EAC concept which it passed to TRADOC for guidance. Macy reported that the manual's weather support section was "very poorly done, with gross conceptual and doctrinal errors," which he planned to rewrite before TRADOC prepared the final doctrinal manual.<sup>21</sup>

#### An Army Met Service?

Through over three decades following World War II, there flickered a faint flame of hope within certain elements and echelons of the Army, as well as the Air Force, that the Army should furnish *all* of the

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†(Cont) of Army elements in Alaska and the Canal Zone reverted to FORSCOM. U.S., Congress, House, Subcommittee on Dept of Defense of the Committee on Appropriations, *Hearings, Department of Defense Appropriations for 1975*, 93d Cong, 2d Sess, Pt 1, 1974, pp. 608-09.

meteorological service it needed, not just that provided for in the joint regulation--i.e., artillery, research and development, and soil trafficability and flood forecasting. It was AWS' belief, from the late 1950s through the early 1970s, that in the Army that school of thought was centered in the person of Mrs. Frances Whedon on the Department of the Army staff, and "certain highly placed personnel" within the Signal Corps.<sup>22</sup>

High-level Air Staff officials, periodically from the late 1950s through 1974, also objected to AWS' supporting the Army. In 1958 certain Air Staff officials opposed the idea, as discussed above; and in late 1971, the Air Force vice chief of staff, a four-star general, in a report of his trip to various Air Force units around the world, asked, "why should not [the] Army provide its own service?"<sup>23</sup> The question was passed to the Air Staff's Assistant for Weather (AF/PRW), who believed AWS' support to the Army was too extensive and who, according to the AWS vice commander, did not care whether the Army formed its own meteorological service.<sup>24</sup> In mid-1973, while presenting findings from its "wall-to-wall scrubdown" of AWS to the Air Force chief of staff, the MAC briefing team, led by the MAC commander who had ordered the "scrubdown," mentioned that MAC had considered the idea of transferring to the Army AWS' mission of supporting it--an alternative MAC was disinclined toward because it would require the Army to form a weather service. But the Air Force chief of staff believed AWS was devoting too many Air Force resources to the job, and he asked, "why are you supporting the Army" in the first place?<sup>25</sup> A few weeks later, in late July 1973, and again in late March 1974, the Air Staff's Assistant for Weather (AF/PRW) informed AWS officials that AWS "is one of the largest, if not *the* largest, giver of gratis support to the Army," a fact that concerned "the senior people of the Air Force [who] are wondering why they have to provide people [and] resources . . . to support another service." However, "as for the Army seeking to set up their own weather service," he continued, "we [the Air Staff] don't see that as a viable alternative."<sup>26</sup>

Despite pockets of disagreement among its senior officers, the AWS leadership, for the most part, likewise did not see an "Army Meteorological Service" as a viable alternative to the problem of supporting the Army adequately in the "Era of the Drawdown"--as one AWS commander, Brigadier General William H. Best, so prophetically tagged the decade of the Seventies. In 1970, for instance, the vice commander of the 1st Weather Group in Vietnam thought "both services would be better off if the Army provided the bulk of its own weather support."<sup>27</sup> "Further fragmentation is not the answer," Best responded.<sup>28</sup> In early 1972, following a trip to Europe, an officer from Best's staff relayed the opinion of both the 2d Weather Wing and 7th Weather Squadron commanders that AWS was furnishing mere "token support" to the Army in Europe, and that AWS should support the Army fully or get out of the business.<sup>29</sup> Best agreed that improvements were in order, and that AWS could do better if it had more resources; but he believed there were still people in the Army who wanted to create an "Army Meteorological Service," an idea he opposed, saying that "austerity and the money crunch [shortage] should be pushing us in the direction of *fewer* metro agencies, not *more*."<sup>30</sup>

Brigadier General Thomas A. Aldrich, General Best's successor as AWS commander in mid-1973, believed the time had come for the Air Force and AWS to assume *all* of the Army meteorological support mission. For one thing, there was a new Air Force chief of staff. He had informed the MAC commander that, in line with Defense Department instructions that the service chiefs cooperate to reduce the military's size, he would not be parochial when it came to consolidating like functions

between the military's three branches.<sup>31</sup> Thus, Aldrich envisioned a "new era." Before Congress once more asked the Defense Department why it had three different services developing meteorological equipment, it was time for AWS to propose that the Army's meteorological research and development mission be transferred to the Air Force (the Air Force Systems Command's Air Force Cambridge Research Laboratories--AFCRL-- and Electronic Systems Division--ESD) and its operational meteorological mission--to include artillery observations and soil trafficability and flood forecasting--be assumed by AWS. But the "real reason," he confessed to his staff, for making such a pitch, was that Mrs. Frances Whedon had retired in January 1971.<sup>32</sup> She had been the "chokepoint" on the Army staff whenever the idea surfaced of the Air Force assuming the entire Army meteorological support job. She believed the Army had the wherewithal to form the nucleus of an Army Meteorological Service that could handle all of the Army's requirements.<sup>33\*</sup>

Indeed, the Army had a nucleus of people working in meteorology--over twice as many as AWS devoted exclusively to Army support! In 1968 approximately 3,000 men and women were engaged in meteorological service or support to the Army--some 1,100 Army people in 68 artillery meteorological sections (including 500 in Vietnam); 900 from AWS; and the balance were Army people on the staffs at various echelons devoted to training, combat studies, and research and development.<sup>34†</sup> By comparison, excluding the weather reconnaissance function in both services, the Navy had about 3,000 engaged in weather operations, and AWS had 8,100 people assigned--excluding the 900 engaged in Army support.

In the 1970s, like AWS, the Army meteorological function was pared by about one-third until, by October 1975, there were only 376 people in 26 Army artillery met sections.<sup>35</sup> Army funds for meteorological operations and supporting research were also trimmed. Yet, while its expenditures for meteorological operations were only about four-to-five percent of the Air Force's, the Army invested twice as many dollars as the Air Force did for supporting meteorological research--a fact that sometimes captured the eyes of Congressmen wanting to know why the Army sought funds in an area covered by other federal meteorological agencies.<sup>36</sup>

It was in late September 1975 that the new AWS commander, Colonel Berry W. Rowe, came face to face with the scope and influence of the Army's meteorological research and development function. The Army had invited him to a meeting of its Intelligence Advisory Group at Fort Huachuca to help resolve the issue of whether a division's command post (formally labeled the Division Tactical Operations Center--DTOC) would be given direct or indirect weather support by AWS, as discussed in further detail below. At the 5th Weather Wing's suggestion, an AWS tactical weather support concepts conference was convened at Headquarters AWS in mid-September, the purpose of which, among other goals, was to develop AWS' position for the Fort Huachuca meeting. Having been in command of AWS for just five weeks, Rowe used the conference to issue policy guidelines on the problem of Army support. He said AWS had to mesh its efforts in the tactical support area into one

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\* Memo and atch Lt Col Malcolm Reid, staff weather officer to USACDC, to Col William H. Shivar, 16WS comdr, "Army Meteorological Activities," 20Mar71.

† The figures cited did not include Army personnel in Special Forces or aviation units in Vietnam who took limited observations on a part-time basis.

united effort; no longer could AWS afford the luxury of separate concepts, organization, and operations for Air Force and Army tactical support; and that AWS had to give equal and due emphasis to Army support.<sup>37</sup>

DoD Met Resources\*

(Money and Manpower)

	Operations (Funds)			Supporting Research (Funds)			Manpower		
	AF	Army	Navy	AF	Army	Navy	AF	Army	Navy
FY70	157,340	8,318	44,206	4,960	9,868	2,305	10,125	1,199	2,804
FY71	167,089	10,975	40,284	3,200	9,057	1,335	10,039	1,154	2,896
FY72	148,449	8,745	34,839	5,425	9,164	1,325	11,099	970	2,695
FY73	143,947	6,113	35,926	4,625	8,525	1,370	10,417	597	2,465

The Fort Huachuca meeting was an eye-opening baptism by fire for Colonel Rowe in the Army support game, at which he was not only unable to carry the AWS position, but he decided to side with the Army meteorological research and development community--as manifested in its Atmospheric Sciences Laboratory (ASL)--instead of trying to subdue it or have it absorbed by the Air Force. The specter of an Army Meteorological Service arose and confronted Rowe at Fort Huachuca, but he decided AWS would remain neutral.

"Air Weather Service is fairly small now, and we've probably got as many people as we're going to get," Colonel Rowe informed his staff in early October 1975 upon returning from Fort Huachuca, and "therefore, it behooves us not to look for missions." He said that AWS would not get involved in a missions and roles fight with the Army over their possible development of an Army Meteorological Service. Moreover, he said that for at least five years, the Army had been talking about developing an automatic weather sensing capability for the battlefield. He favored it, he said, because it dovetailed with his tactical weather support concepts, and because it would save the Air Force from developing a similar system. "We need to help those people," continued Rowe, referring to ASL,<sup>38</sup>

develop the right thing. . . . They're reading Army requirements, and Army requirements are different than Air Force requirements. . . . But if they can do it, why should we waste

\* Figures in this chart were extracted from the fiscal 1971 (pp. 19, 36), 1972 (pp. 9, 45) and 1973 (pp. 11, 40) versions of U.S., Dept of Commerce, NOAA, *The Federal Plan for Meteorological Services and Supporting Research*. Except for fiscal 1973, the funds cited represent Total Obligational Authority (TOA) appropriated/approved by Congress. The fiscal 1973 funds were those requested by DoD. Funds are presented in thousands of dollars. In the case of the Navy, the manpower figures represent man-years of effort, since many functions were performed as part time tasks by personnel assigned to other primary jobs.



Air Force money to do it? . . . It might be time to rethink the Army support area a little bit . . . and try to get the Army to do things which they can do best . . . This is the direction I feel I must go.

Rowe was cautioned by his staff that such a policy might surface opposition at the Air Force Systems Command, that if AWS encouraged ASL to go all out with research and development on meteorological equipment it could possibly put AFSC's AFCRL out of business. Rowe countered by saying AWS and the Air Force must cooperate with ASL, and that it did not necessarily follow that such competition would spell AFCRL's end. "They've got a pot full of money," Rowe went on, referring to ASL.<sup>39</sup>

I believe the people in the United States Army are honorable, well-intentioned people, contrary to some of the vibes [vibrations] I've gotten in Weather Service. . . . Maybe I need to write down firmly a policy statement along these lines. . . . It may be a little bit of a reversal of previous [AWS] policy, to some degree. . . . Looking at the future possible resources of the Air Weather Service it looks to be clearly the way to go. . . . Let's get them to develop something we can use, . . . even though it may be a Pinto [model Ford compact automobile] instead of a Cadillac.

A few months later, in early 1976, Rowe, by then a brigadier general, visited the Pentagon and, in trying to resolve some Army support problems, paid a call on intelligence officials at the Department of the Army. One was Mr. James M. Beck, a GS-13 from the Office of the Assistant Chief of Staff for Intelligence (ACSI), who was the Army counterpart to the Air Staff's Assistant for Weather (AF/PRW). An ex-AWS officer who held a pilot aeronautical rating, Beck was eager to attack the problems. On 11 March 1976, he paid a visit to the 16th Weather Squadron, which subsequently reported that, because of Beck, weather was receiving more attention at the Department of the Army level.<sup>40</sup>

The following month Mr. Beck met with TRADOC officials and proposed forming an Army Meteorological Service using Army weather personnel supporting artillery. Although TRADOC turned him off on the idea, Beck made reference to several shortfalls in Army weather support. Support to artillery was too slow, and artillery met sections were dependent on the 1940s-vintage AN/GMD-1 rawin sets; the Army lacked the capability to collect precipitation data for the engineers, and it had no weather radars; the lack of attention by the Army meteorological research and development community to user requirements resulted in unacceptable equipment and wasted dollars; regulations and directives were ambiguous and did not reflect current organization; and battlefield-scale, tactical weather forecasting was deficient, due in part to weather observations not being relayed.<sup>41</sup>

In the fall of 1976 Mr. Beck proposed the establishment of an "Army Meteorological Support System" that, (within the constraints of the joint regulation) would consolidate all Army meteorological research and development, and Army-provided meteorological support. It involved some 840 Army personnel engaged in the met function. After being briefed on Beck's proposal by his staff, Brigadier General Rowe viewed it as a threat to AWS' mission. "They're creating a foundation for an Army Meteorological Service," he cautioned them in early October 1976; "they're starting to organize." Rowe's chief of staff, Colonel Hyko Gayikian, did not see Beck's plan as ominous because most of the 840 spaces were employed below division, while AWS support was concentrated at the division level and above. But

Rowe, backed by his deputy for operations, Colonel Salvatore R. LeMole, saw 840 spaces as a sizeable force that, if properly organized, could threaten AWS. When queried by Gayikian, Rowe said he did not necessarily oppose an Army Meteorological Service per se, if his staff could convince him it was the way to go. Otherwise, it represented a duplication of effort that one day would culminate in a showdown between AWS and the Army.<sup>42</sup>

Army officials at TRADOC, CACDA at Fort Leavenworth, and USAICS at Fort Huachuca, were strongly opposed to Mr. Beck's proposed organization, according to a report from AWS' liaison officer at CACDA.<sup>43</sup> A year later, in August 1977, when the Army's Atmospheric Sciences Laboratory sought to expand the Army's role in operational weather support, that move was also beaten back, and the Army decided that it would only issue forecasts for research and development activities (by ASL) and for hydrological purposes (by the Corps of Engineers).<sup>44</sup> By late 1977, the Army had 585 people engaged in meteorological research and development with a \$13,650,000 budget; in addition, it had 485 people in meteorological operations with a budget of \$7,860,000.<sup>45</sup>

Having worked closely with Mr. Beck, Colonel William E. Cummins, II, the Air Staff's Assistant for Weather (AF/PRW) in early 1978, was of the opinion that Beck merely wanted to consolidate the various "cats and dogs" in the Army involved in meteorological research and development and operational support; he did not propose, nor did he want, an Army Meteorological Service that would supplant AWS' role.<sup>46</sup> Realistically, Beck did not see much likelihood for an Army Meteorological Service--and neither did General Rowe. "It's not an acceptable answer," the AWS commander responded when asked about the possibility in mid-1978; "neither one of us, the Air Force and the Army, can afford to go it alone in today's environment" because "the climate, politically and economically today, and for the foreseeable future, would prevent that from happening."<sup>47</sup>

Still, throughout 1978, the Army's Atmospheric Sciences Laboratory persisted with attempts to expand the Army's role in operational weather support. In connection with the XVIII Airborne Corps' efforts to integrate its weather support requirements into its exploitation of the Intelligence function on the battlefield, ASL became involved. It proposed that the Army assume the responsibility for forecasting meso-scale patterns (weather in an area from one to 100 kilometers square) for operational use because, in its opinion, AWS support did not measure up in the area,<sup>\*</sup> and because the joint regulation did not expressly forbid such a role for the Army. Seeking to clarify the issue within the Army, Mr. Beck, from the Department of the Army, posted letters in July and December 1978 iterating Army policy that the provision of weather forecasts in support of Army operations was AWS'

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\* ASL's opinion was not without foundation, as AWS had to admit, because AFGWC was cranked up to provide macroscale forecasts (areas greater than 100 square kilometers) and would not have a capability until the mid-1980s to furnish the Army tactical meso-scale forecasts. AWS position in 1978 was that it would not augment its weather observer force to take mesoscale observations in support of the Army and, in fact, was advocating that the responsibility to take observations below corps level be assumed by the Army. AWS supported the Forward Area Limited Observation Program (FALOP) and

responsibility. "In my opinion," reported Lieutenant Colonel Macy, the AWS staff weather officer to USAICS, "ASL will request a reclamation because they see the letter as a death blow to on-going ASL programs."<sup>48</sup>

(Cont) the Army's Remote Automated Weather Station (RAWS) to acquire mesoscale observations, as addressed below, but its position was that it would "not recommend that USAF R&D [research and development] agencies expend resources on unique Army needs." See position paper, Col Salvatore R. LeMole, DCS Ops, HQ AWS, "AWS Position on Delineation of Responsibilities for Satisfying Army's Requirement in the Mesoscale Range," 26Jun78, which is the second attach to ltr LeMole to LWW (DO), *et al.*, "AWS Army Support Position Papers," 26Jun78--itself included as Sup Doc #65 in Vol 4 of "History of 5th Weather Wing," Jan-Jun78.

## CHAPTER 4 - MANPOWER AND MANNING

By the 1970s there were two separate processes or systems by which AWS was authorized manpower to meet Army operational weather support requirements for peace and for war. Peacetime Army requirements were handled with formal Statement of Requirements (SORs) initiated by a particular Army unit, usually upon the advice of the unit's AWS staff weather officer. Once approved by the Department of the Army, the SOR was forwarded to the Air Staff--the Assistant for Weather, AF/PRW. After the SOR was sent to MAC and AWS for review, the Air Staff decided whether additional Air Force manpower was needed to satisfy the SOR, and where it would come from. For Army maneuvers or joint exercises, Army requirements for weather support were spelled out in appropriate operations plans and orders, and were normally met by AWS personnel authorized to meet Army peacetime requirements through the SOR process.

The AWS manpower authorized to meet Army wartime requirements was inextricably tied to the Air Force's Manpower and Equipment Force Packaging (MEFPAK) system--a computer-oriented system for establishing manpower and equipment standards for Air Force elements tasked in various contingency and war plans. In the Army's case, weather annexes to their contingency and war plans listed the support required of AWS. There were four aspects to MEFPAK: Unit Type Codes (UTC), mission capability statements, manpower requirements (Manpower Force Packaging system--MANFOR) and logistics requirements (Logistics Force Packaging system--LOGFOR). UTC was a five-character, alphanumeric code approved by the JCS to identify a type or kind of force. UTCs were used by unified commands--and Army, Air Force, and Navy components thereof--to state their requirements for both combat and support forces in plans. The mission capability statement--what a weather support force could do, for instance, and where it could be employed--was included in the MANFOR for each AWS UTC. LOGFOR was one of two major subsystems of MEFPAK, which listed the equipment and transportation required for each UTC. For AWS' purposes, insofar as Army support was concerned, as discussed in more detail below, Army TO&Es and Modified Table of Organization and Equipment (MTO&Es) equated to AWS logistics requirements (LOGFOR) in the MEFPAK system. MANFOR was MEFPAK's second major subsystem, and it listed the manpower--by function, grade (officers only), and Air Force Specialty Code (AFSC)--for each UTC. It was anticipated that initial support in time of war could be met by AWS manpower resources allocated for peacetime Army support. But, because MANFOR authorizations usually outstripped the manpower AWS was authorized through the SOR process for peacetime Army requirements, it was necessary to designate AWS augmentees to meet the manpower authorized for each MEFPAK UTC.<sup>1</sup>

Peacetime Army weather support requirements, upon which AWS was authorized and allocated manpower through the SOR process, were traditionally grouped into two categories: garrison and tactical or field. Garrison requirements were normally met by AWS detachments at

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\* The first two characters of a UTC indicated the functional break-out; e.g., all weather UTCs began with XW.



AWS was oriented to garrison support, at the Army airfield, as these 1966 scenes from the 2d Weather Wing depict. At the top is an AN/MMQ-2 mobile met van at Hohenfels Army Airfield, Germany.

At right, 7WS's SSgt Michael T. Hardyman passes latest weather observation to control tower operator at Bonames Army Airfield, Germany.



At left, at Hanau, Capt Robert W. Gossett, Jr, briefs Capt Lawrence J. Russack and CWO Marion D. Ewell of Company A, 503d Aviation Battalion, 3d Armored Division. (Photos by Maj William H. Quelch, Jr, USAF)

Army airfields, the main missions of which were to support Army aircraft operations. The detachment commander was the staff weather officer to the post and airfield commanders. For garrison requirements, AWS also had staff weather officers at the numbered army headquarters--CONARC, USACDC, USAREUR (United States Army, Europe), USARPAC (United States Army, Pacific), and USARAL (United States Army, Alaska). In theory, a field army was to be supported by an AWS squadron (its headquarters located with or near the field army headquarters) with an authorized complement of 41 men (5 officers and 36 enlisted), a reduction of 12 (5 officers and 7 enlisted) from the early 1960s. In practice, after Vietnam, only the 7th Weather Squadron in Germany and the 16th Weather Squadron at Fort Monroe (and the 5th Weather Squadron at Fort McPherson after 1974) were devoted solely to what could be termed field army support; in the case of Korea, Alaska, and elsewhere, that support was furnished by weather squadrons, or other AWS units, whose mission also included Air Force support.

Army tactical weather support requirements at corps, division, and brigade were handled by AWS weather teams--referred to in appropriate directives by the abbreviation WETM.\* The weather team structure underwent a significant alteration during Vietnam. At corps and division level, in most instances, the weather teams were formally designated detachments or operating locations; at brigade level, the weather teams were not formally designated units, and they were manned with people attached to the parent AWS detachment or operating location but separately authorized. Weather teams at the various levels differed in size and composition (enlisted men and, or, officers; observers and forecasters) depending on whether the requirement of the Army unit supported was for full (observing, forecasting, staff weather officer) or partial (observing only, for example) weather support. Prior to Vietnam, full weather support was normally provided down to division level only. However, Vietnam sired the need for observing support down to brigade level--generally handled by 3-man teams of enlisted observers if it was an airmobile brigade, two observers if it was an airfield brigade, and four observers if it was an airmobile brigade airfield. At division level, the originally authorized, 6-man division weather team (an officer and 5 enlisted men) was increased by 1970 to 14 men--2 officers and 12 enlisted. But at the corps level, weather team (detachment) authorizations were pared from 23 (4 officers and 19 enlisted) to 14--3 officers and 11 enlisted.<sup>2</sup>

With the phaseout of Army units from Vietnam in the early 1970s there was a corresponding increase in Army weather support requirements stateside and in Europe. Unfortunately, it put AWS in a bind because, with the onset of the "Era of the Drawdown," it was grappling with a series of Air Force and MAC-directed manpower cuts. "In the manpower area, austerity is the word for the future," cautioned General Best, the AWS commander, in January 1971, while addressing the second in a series of Army weather support conferences; "some cuts will be effected in both [our] Army and Air Force support" manning.<sup>3</sup> Representatives from the 5th Weather Wing--and its 16th Weather Squadron--attending that conference recommended reducing the 14-man corps and division weather teams to 6-man teams, capable of expansion to full 14-man teams when needed for contingencies or combat. They faced menacing morale problems because they could not keep a 14-man team busy when the corps or division was in garrison.<sup>4</sup> At the request of AWS, the squadron and the wing formally submitted such a proposal later that same year which, if it had been implemented, would have saved twenty-four manpower authorizations.

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\*The weather teams were referred to by various names during the years, including Organic Weather Team (OWT), Combat Weather Team (CWT), Weather Support Team, etc.

AWS wanted to use the manpower savings to meet Army SORs outstanding, particularly those for four divisions under USAREUR in Europe where AWS support was reported to be subpar.<sup>5†</sup> "It is the general belief of everyone I talked to," reported a Headquarters AWS staff officer following a trip to Europe in March 1972, that, because of insufficient manpower, "AWS is providing only 'token' support to the Army in Europe, especially in the field."<sup>6</sup> It was pointed out that: about one-third of the Army in the field was in Europe (215,000 troops), but that only about one-fourth of the AWS manpower authorized for Army support was servicing that force; the Army had 88.5% more aircraft in Europe than did the Air Force; there were 170 Army airfields and helipads in Europe, 21 of which AWS supported, including 9 with forecasting support; and that, by comparison, there were 21 Air Force bases in Europe, each provided forecasting and observing support by AWS. The AWS commander, Brigadier General Best, was apprised of the problem in person when he visited Europe four months later. His interim response was to direct the 7th Weather Squadron to solicit USAREUR emphasis on the need for Army control tower operators to maintain a stepped-up weather alert.<sup>7\*</sup>

In late May and early June 1973, the Air Staff informed the Army and MAC that it approved AWS' proposal to reduce corps and division weather teams stateside to six men while in garrison. It represented a major change to the Air Force's--AWS'--Army weather support concepts. The key feature was the establishment of what were termed "cadre" weather teams--those teams supporting each corps and division stateside in peacetime were authorized 6 people (2 forecasters and 4 observers--one officer and 5 enlisted men), to include a staff weather officer, while each division in Europe would have a 4-man (2 forecasters and 2 observers--one officer and three enlisted) "cadre" weather team authorized, which also included a staff weather officer. The variation in manpower authorizations was due to the fact that, in war in Europe, garrison operations would normally be discontinued and all support would be tactical; but stateside, when the corps or divisions deployed, garrison support would still be necessary. Garrison weather people would be cross-trained in the tactical support mission and used during peak tactical workload periods to augment the "cadre" weather teams and form a wartime weather team of fourteen people. When required, augmentees from "other" AWS units would maintain garrison operations. The "cadre" weather team concept saved six manpower authorizations, which were used to meet still another Army SOR. The Air Staff described the concept as "a more efficient use of manpower spaces," one that "will not result in decreased peacetime support and will enhance wartime, contingency and exercise weather support provided to Army units, particularly those in Europe."<sup>8</sup>

Under unrelenting pressure to reduce its manning further, AWS investigated the possibility of cutting more manpower spaces from the corps and division weather teams. Following a visit to the 16th Weather Squadron in September 1973, Brigadier General Aldrich, Best's successor as AWS commander, directed the squadron and his staff to

† They were the 3d and 4th Armored Divisions, and the 3d and 8th Infantry Divisions.

\* During his trip to Europe in July 1972, General Best was approached by some who were concerned that once they had Army support experience, most of their future jobs would be with the Army. Best directed his personnel shop to publicize his policy that Army experienced AWS personnel would not automatically continue in Army support unless they were volunteers.

look at the idea of cutting each team to three or four people, and establishing a "mobile cadre (centrally located, fully qualified unit) at one location ready for augmentation to the organic [weather] detachment that deploys."<sup>9</sup> To put the general's suggestion in context, it came immediately after the Army's EAD (Echelon Above Division) decision discussed above, and after the MAC commander's "wall-to-wall scrubdown" of AWS revealed that AWS support to the Army as a whole was equivalent in resources devoted (929 of the 6,913 AWS manpower spaces engaged in weather support were devoted to servicing the Army) to that provided a major air command. After a trip to Germany the following month, Aldrich wanted to know the status of a 2d Weather Wing request for additional forecasters in the Army Flight Support Center at Heidelberg, noting that more spaces seemed justified in view of the volume of Army aircraft traffic; on the other hand, he directed the AWS staff to look at the 7th Weather Squadron's utilization of its division weather teams (suggesting the possibility of putting one forecaster from each team in the Heidelberg center and having them deploy when needed), and proposed that AWS get a MAC manpower team to Europe to look at AWS' authorizations for Army support.<sup>10</sup> "I'm sensitive to this organic weather team business and not doing anything but training," the general informed his staff.<sup>11</sup> But in the 16th Weather Squadron's case, it was disinclined toward further reductions in division and corps weather team manning; instead, it launched a campaign to improve its support to the Army with what it had, noting a need for AWS to formulate concepts of operation because "after all these years of Army weather support we haven't truly developed them."<sup>12</sup>

Then in 1976, when the Army switched "proponency" for weather team TOE (Table of Organization and Equipment) support from Signal to Intelligence, as addressed below, a proposal was floated to AWS to increase weather team manning to seventeen at corps and to nineteen at division.

On 7 April 1976, AWS asked CACDA (TRADOC's Combined Arms Combat Development Activity at Fort Leavenworth), through the joint Army-Air Force working group on Army weather support, to furnish information on the basic meteorological services needed by each type of unit from an armored cavalry regiment and separate brigades through division and corps. The information would enable AWS to prepare weather team UTCs (Unit Type Code) tailored for each type of Army unit supported. USAICS' (United States Army Intelligence Center and School, Fort Huachuca) work with the TOEs, in switching weather team support from Signal to Intelligence, became a springboard for UTC and other MEFFPAK (Manpower and Equipment Force Packaging) revisions because they contained mission statements of the major Army tactical units, the criteria for the needed weather support, mission capabilities, work functions and locations, and TOE equipment.<sup>13</sup>

The basic work on the UTCs was completed by 5th Weather Wing,<sup>14</sup> which reported that "for the first time, AWS personnel resources were 'married' to Army resources listed on Army TOEs but dedicated to support AWS personnel."<sup>15</sup> The updated UTCs covered corps, divisions, separate brigades, and armored cavalry regiments.<sup>16</sup> Major changes in doctrine and operational concepts reflected in the revised UTCs included the Echelon Above Division (EAD) concept; the fact that "direct" (in-person staff weather officer, observing, and forecasting) support was necessary at each Army echelon addressed; that AWS personnel would operate and perform required operator maintenance on all TOE equipment authorized except HF radio teletype (Signal personnel would operate and maintain all HF radio assets); that two separate and independent modes of weather communications were needed--HF radio



and multi-channel UHF; specifics as to Army equipment needed by weather teams at each level, including weapons and vehicles; and, most significantly, the requirement to support separate brigades and armored cavalry regiments and man all work centers (forecasting, observing, and observer-forecaster support) twenty-four hours a day.

*7WS' A/3C Loid Lemelle works on weather van engine while A/2C Robert McKay and Capt James R. Chapman watch during exercise Grand Slam II in 1963. (U.S. Army photo by SP4 Franklin Mohler)*



The provision in the proposed UTC rewrites for twenty-four hour weather service down to separate brigades and armored cavalry regiments was a crucial one because it meant that additional AWS manpower would have to be authorized at each level supported. The UTCs rewritten by the 5th Weather Wing represented requirements for 17 AWS people per EAD corps (5 divisions and 2 separate brigades), 14 per European-type corps (3 divisions and one separate operating element), 19 per division, and 7 per separate brigade and armored cavalry regiment.

The proposed UTCs, together with Intelligence TOEs drafted at USAICS, were sent by the 5th Weather Wing to Major Dell V. McDonald at CACDA. McDonald drafted CACDA's reply to AWS. Dated 2 July 1976, CACDA's letter contained the draft Intelligence TOEs and the proposed UTCs. In effect, the draft TOEs spelled out the missions and specific needs for weather support at corps, corps command posts, divisions (infantry, armored, mechanized, and airborne), division command posts, brigade command posts and division airfields, separate brigades and armored cavalry regiments, as well as the equipment authorized the supporting weather teams; while the UTCs fitted the Air Force--AWS--manpower needed to meet those requirements. However, CACDA cautioned AWS that the draft Intelligence TOEs had not been approved by the Department of the Army for implementation, and that when approved they might be "significantly different" when subjected to MTOE action and "unique" SORs (Statement of Requirements) for weather support.<sup>17</sup>

Through 1977 and most of 1978 nothing concrete became of the proposal to increase weather team manning. It was due primarily to the Army's lingering look at the role and composition of the Intelligence element at division level, as well as AWS' major policy proposal in December 1977 to chop off its support at the corps level--issues

discussed at length below. It was November 1978 before the Army support UTCs were approved by MAC and the Air Staff.

Notwithstanding new UTCs, authorized corps and division weather team manning through 1978 was not uniformly altered from the "cadre" configuration outlined above, and experience with maneuvers and exercises bore out Army reservations about AWS' ability in the "Era of the Drawdowns" to bring the teams up to fourteen men during contingencies and wars. Originally, the Army was concerned that AWS' regional briefing station concept--designed to stretch withering manpower resources--would take away the people needed from base weather stations to bring the weather teams up to strength.<sup>18</sup> During an Army weather support conference at AWS in February 1974 the Army again raised the question, using the case of the XVIII Airborne Corps at Fort Bragg as an example.<sup>19</sup> While on a visit to Fort Bragg, Brigadier General Aldrich had been curtly informed by the senior commanding generals of the XVIII Corps and 82d Airborne Division about their misgivings with AWS' "cadre" weather team policy, and of their disbelief in AWS' promises of support in war. Eight months later, the joint working group on Army weather support discussed the fact that the fourteen-man weather team support concept had not been effectively evaluated because of unrealistic field testing and because the teams were never fully manned for exercises.<sup>20</sup> Despite Air Staff assurances that Army support would not suffer under the "cadre" weather team concept, the Army's concern stemmed from whether or not there were enough augmentees at "other" AWS units to balloon the teams to fourteen men. And as late as the annual Reforger exercise in Europe in the fall of 1977 there was evidence that, not only were there too few AWS augmentees to handle weather team assignments, some of them were too inexperienced in Army support to be of any value in a tactical situation.<sup>21</sup> Of the 4,720 manpower spaces authorized AWS in May 1978, 802 (17 percent) were dedicated to Army support.<sup>22</sup> A detailed examination by AWS in 1978 of reduced manpower available in base weather stations concluded that it would have problems meeting wartime requirements as long as peacetime manpower authorizations kept shrinking with no concomitant reduction in wartime tasking.<sup>23</sup>

The Army's apprehension was reinforced further when Lieutenant Colonel Swayne, their liaison officer to Headquarters AWS, visited 2d Weather Wing and 7th Weather Squadron units in Germany in November 1977 to assess AWS' support to the Army there. In a report filed with the Department of the Army, Swayne adjudged the garrison support to be acceptable, but the Army's tactical weather support requirements were not being satisfactorily met--one reason being that the 7th Weather Squadron's two-man "cadre" weather teams (operating locations) with the V and VII Corps needed beefing up.<sup>24</sup> After reviewing its weather team authorizations, the squadron's position in mid-1978 was that "we can live *today* with the four-man OWT [Organic Weather Team] at divisions and two-man OWT at ACRs [Armored Cavalry Regiment]," providing the Army's maneuver activity did not expand (an unlikelihood in view of the Army's increasing emphasis on readiness), but, "at corps the current manning is totally unacceptable."<sup>25</sup> It asked for two additional authorizations (a forecaster and an observer) for the V and VII Corps "cadre" weather teams. AWS validated the need and forwarded it to MAC for consideration in December 1978. In early 1979 MAC approved the additions,\* bringing peacetime manning of the V and VII Corps

\*As of August 1976, as addressed below, the Air Staff got involved with Army SORs only if they translated into additional Air Force manpower spaces over and above those authorized AWS for Army support at the time. Otherwise, MAC and AWS had the authority to rule on Army requirements.

"cadre" weather teams up to four people each. But in a sign of the times in the 1970s, the four extra manpower spaces came from so-called "lower priority" spaces already authorized AWS<sup>26</sup>--a case of robbing Peter to pay Paul.

A similar situation held true in Korea, where the Eighth Army represented the bulk of the Army's forces in the Pacific. In 1975 the Air Staff approved an Eighth Army Statement of Requirements (SOR) for organic weather teams with certain of its units. Headquarters Eighth Army at Yong San Reservation Army Installation was supported by a 23-man AWS detachment. The detachment served as a regional briefing station providing indirect forecasting support to a half dozen, two- or three-man "cadre" weather teams (operating locations) located with Eighth Army units through Korea. AWS determined in September 1975 that the observers then authorized the detachment, together with assigned staff weather officers, would be used to man the "cadre" weather teams--although in May 1977 AWS authorized two additional forecasters for the "cadre" weather teams at Camp Red Cloud with I Corps, and at Camp Casey with the 2d Infantry Division.<sup>27</sup> In June 1978, the Eighth Army submitted another SOR that included a request for direct forecasting support to the 2d Infantry Division (two additional forecasters) in addition to the original requirement for an organic weather team. Initially, because the status and strength of United States forces in Korea was under re-examination by the State Department and Congress, AWS and MAC balked at providing direct forecasting support to the 2d Infantry Division; while the 1st Weather Wing proposed using forecasters already assigned to Camps Casey and Red Cloud, ignoring the fact that they were authorized for the "cadre" weather teams. After the Eighth Army provided additional justification, MAC, on 27 October 1978, consented to assigning two additional forecasters at Camp Casey.<sup>28</sup> Some two weeks later a MAC Inspector General team visited AWS' detachment at Yong San and rapped AWS' knuckles because it found the unit incapable of supporting the Eighth Army and the 2d Infantry Division in war. It was not trained; it was not equipped; and it did not have the necessary organic weather teams. The inspection team recommended that AWS carefully reanalyze the way it structured and manned its Army support units in Korea.<sup>29</sup> Upon orders from the AWS and 1st Weather Wing commanders, the detachment, and its parent unit, the 30th Weather Squadron (also located at Yong San), studied the situation and concluded, in a report filed in December 1978, that support to the Eighth Army could be brought up to an acceptable level by some organizational reshuffling and by adding six manpower authorizations to the operating location at Camp Casey--including four enlisted forecasters for the "cadre" weather team.<sup>30</sup> They, like the two spaces a year earlier and the four for the 7th Weather Squadron in Germany, would have to come from manpower already authorized AWS for Army support.

#### Women in War?

With the death of conscription in 1973 (and the advent of the "all-volunteer" military force), and the increasing emphasis on equal opportunity programs within and without the military, coupled with attention to the so-called women's "liberation" movement, there was pressure in both the civil and military sectors to remove "for-men-only" job barriers and give the girls a fair shot. AWS, for example, in December 1973, much to the displeasure of General Paul K. Carlton at MAC, got its first female aircrew member in the thirty-year history of

weather reconnaissance.<sup>31</sup> In 1976, following the Navy's lead, the Air Force accepted its first women pilot trainees, and a year later it entered its first women navigator trainees.<sup>32\*</sup> In line with the other services, the Army increased the number of women used in each job specialty except for "Category I" units--units whose mission was destruction of the enemy--or close combat support positions. The Army's policy was that women could be present forward of the brigade rear boundary, and that they would be employed to accomplish unit missions throughout the battlefield so long as the combat exclusion policy was not violated.

Air Force policy prohibited AWS from assigning women to positions where there was high risk of capture or injury due to enemy fire.<sup>33</sup> Thus, in February 1975, AWS issued a policy that women could be assigned to weather teams supporting the Army except: where parachute qualification was mandatory; where weather teams were used in combat; and so long as the percentage of women used did not exceed the Army's.<sup>34</sup> In essence, therefore, AWS women could be, and were, used in Army support except where it might actually entail combat. No AWS women were used to support the Army in Vietnam.

#### Parachutists Shortage

To meet the Army's weather support requirements in contingencies and wars, certain corps and division weather team members had to be parachute qualified--be able to jump with the airborne units they supported. As of December 1972, AWS had twenty-seven jump qualified people. Most were assigned in



*Weatherwomen in Army support: Sgt. Susan J. Goodale (Det 5, 7WS, 2WW, Katterbach AAF, Germany), an observer augmentee to the 1st Infantry Division's staff weather officer, using AN/TMQ-22 to take an observation during exercise Wintex 77 in March 1977. (USAF Photo)*

\* Two of the first 18 active duty women selected for the Air Force's women's pilot training test program in 1976 were from AWS, as was one of the first six women in the Air Force's women's navigator test program.

Parachute qualified--  
 are four men in top photo  
 of Det 1, 16WS in 1962  
 from Fort Campbell where  
 they supported the 101st  
 Airborne Division:  
 kneeling are A/2C Donald  
 E. Hall and A/1C Dallas  
 F. Davis; standing are  
 1/Lt Gordon Spillinger  
 and TSgt Thomas F. Reed.



In the bottom photo,  
 Sgt Wayne E. Fuiten has  
 his straps checked  
 prior to a jump. (USAF  
 Photos.



support of the XVIII Airborne  
 Corps, or the 82d and 101st  
 Airborne Divisions, but others  
 were assigned with the 7th  
 Weather Squadron in Germany,  
 and eight were assigned with  
 the 5th Weather Wing's Detach-  
 ment 75 at Eglin AFB's Hurl-  
 burt Field in support of Air  
 Force and Army Special Forces.

In 1972 Congress insisted  
 that the number receiving para-  
 chute jump pay in the military  
 be reduced.<sup>35</sup> As a consequence,  
 the Air Staff directed the major  
 air commands to remove from jump  
 status all those possessing  
 "non-essential" Air Force  
 Specialty Codes (AFSC). While  
 the Air Staff overrode AWS'  
 formal objections to losing some  
 jump qualified slots, informally

the AWS leadership was not at all upset with the loss. "If you look at it objectively, what kinds of weather [data] do you get out of those guys?" asked the AWS chief of staff, Colonel Edwin E. Carmell, hypothetically in December 1972 in referring to Detachment 75. "I think the answer is pretty clear," he continued: "they aren't needed."<sup>36</sup> Some three years later, in March 1976, Brigadier General Rowe, the AWS commander, fledged at the idea of his people being required to jump out of airplanes to support the Army.<sup>37</sup>

The general's attention was focused on the subject by MAC Inspector General admonishments over two AWS detachments not having enough parachute qualified people assigned to meet their wartime mobility missions. One was Detachment 75 and the other supported the XVIII Airborne Corps and the 82d Airborne Division at Fort Bragg. \* "If we're going to be a member of the team," Rowe conceded, "then the [weather] people ought to be jump qualified."<sup>38</sup> The problem was that AWS could not find enough volunteers to fill the jump qualified slots. As a result, its units were habitually undermanned in jump-qualified people.

\* The problem was not new. During the Yom Kippur War of 1973, for example, when the 82d Airborne Division was placed on stepped-up alert for possible employment, AWS' Fort Bragg detachment did not have enough parachute-qualified people to meet requirements. Thus, an officer from a sister detachment supporting the Air Force at Shaw AFB, South Carolina, had to be reinstated to jump status and sent to Fort Bragg on temporary duty. See AWS Historical Study No. 6, *The Yom Kippur War, 1973: A Case History of AWS Contingency Support*, (S) Feb74, pp. 47-48. Info used (U).