NAVAL WAR COLLEGE
Newport, R.I.

TACTICAL MISSILE DEFENSE
A CHINK IN THE ARMOR?

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval war College or the Department of the Navy.

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Current tactical ballistic missile defense thinking received a tremendous jolt because of Operation Desert Storm. Though classified a success, the coalition efforts against Iraqi Scuds highlighted an apparent deficiency in total theater air defense. In a matter of months after the war, the Joint Chiefs of Staff had rushed to print a new doctrine for theater missile defense and has another in development for tactics, techniques, and procedures for theater air defense in a joint arena. While the purpose is noble, the resulting doctrinal changes further fragment the air defense mission, of which tactical missile defense should be an integral but not independent part. An examination of the evolution of the tactical missile threat, both historical and future, indicates the trend is clearly toward greater numbers of more sophisticated weapons in regions of increasing volatility. An analysis of our Gulf experience reveals why the JCS reacted so quickly in directing new doctrine for missile defense, but the new doctrine is not clearly thought out and therefore does not accomplish its intended purpose. Consolidation of existing doctrine on air defense rather than adding to it (Cont)

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Current tactical ballistic missile defense thinking received a tremendous jolt because of Operation Desert Storm. Though classified a success, the coalition efforts against Iraqi Scuds highlighted an apparent deficiency in total theater air defense. In a matter of months after the war, the Joint Chiefs of Staff had rushed to print a new doctrine for theater missile defense and has another in development for tactics, techniques, and procedures for theater air defense in a joint arena. While the purpose is noble, the resulting doctrinal changes further fragment the air defense mission, of which tactical missile defense should be an integral but not independent part. An examination of the evolution of the tactical missile threat, both historical and future, indicates the trend is clearly toward greater numbers of more sophisticated weapons in regions of increasing volatility. An analysis of our Gulf experience reveals why the JCS reacted so quickly in directing new doctrine for missile defense, but the new doctrine is not clearly thought out and therefore does not accomplish its intended purpose. Consolidation of existing doctrine on air defense rather than adding to it will produce the synergism of effort the JCS intends. A similar consolidation of authority for air defense in a single commander who does not do double duty as the Joint Force Air Component Commander is needed to optimize planning for tactical missile defense. We also need to practice this phase of defense in joint and if possible combined exercises.

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INTRODUCTION

Operation Desert Storm provided millions of Americans with real time coverage of the Gulf War. We sat glued to our television sets as the Cable News Network covered the action. One of the preeminent stories which grabbed the spotlight was the performance of the PATRIOT missile system as it intercepted tactical ballistic missiles (TBMs) fired at Israel and Saudi Arabia by a desperate Saddam Hussein. The PATRIOT was another of the many weapons systems employed against Iraq which was seeing combat for the first time.

Somewhat lost amid the euphoria over the apparent success of the PATRIOT was a frustration which accompanied the inability to completely eradicate the TBM threat. Saddam Hussein was able to launch missiles, albeit greatly reduced numbers as the war progressed, right up to the time of ceasefire. Always there loomed the possibility a desperate Hussein would equip one of the missiles launched at Israel with a chemical warhead trying to provoke Israel into entering the conflict. It was the fear of such an eventuality, and its potential to fracture a somewhat fragile Arab coalition against Iraq, which quickly elevated the threat from a militarily insignificant weapon (when used with strictly conventional weapons) to one of the highest priority efforts of the war.

A more important issue which has surfaced as a result of the Gulf War

is the greater question of our approach to TBM defense. By examining how the threat of tactical ballistic missiles has evolved and continues to evolve, our preparedness to counter that threat during Operation Desert Storm, and the reactions since, it is clear that we underestimated the impact of the Scuds. More importantly, the proposed solutions continue the current trend to stratify the air defense mission into separate operations which are treated more independently than synergistically. The result may further frustrate rather than relieve the problem.

CHAPTER II

BACKGROUND

HISTORY OF THE THREAT

TBMs have been deployed for several decades by the two superpower antagonists of the cold war, yet they have never been employed by one against the other. It was not until these weapons were exported to other third world countries they saw initial combat application.[1] The Soviet R-17, or Scud as it is commonly called in the West, was first exported by the Soviet Union in 1973. Most of its clients came from the Middle East Region, Egypt, Syria, Libya, South Yemen, and Iraq.[2] Once possessed of these TBMs, it did not take long for the countries in this volatile area to demonstrate a willingness to do what the superpowers were reluctant to, employ them. On 22 Oct 1973, Egypt launched three Scuds at Israeli troops in a last gasp effort of the 1973 Middle East War.[3] Syria also used Scuds against Israel in that conflict.[4] This first employment did not yield any militarily significant benefit and had no effect on the eventual outcome of the war.

The eight year Iraq/Iran war between 1980 and 1988 produced more evidence of the proclivity of combatants in this region to use TBMs. Table 1 summarizes the missile attacks conducted by Iraq and Iran during their war. A second aspect of TBM use in the Iraq/Iran war was the successful efforts of both to increase TBM capabilities. Iraq was able, undoubtedly with outside help, to modify Scuds, initially by reducing the warhead and later by increasing the length of the missile, to increase the range of the

TABLE I

MISSILE ATTACKS IN THE GULF WAR 1980-1988*

	80	81	82	83	84	85	86	87	88	TOTAL
Iraqi Missiles Launches										
FROG	10	54	1		2					67
Scud			3	33	25	82		25	193	361
Iranian Missile Launches										
Oghab							19	61	104	174
Scud						14	8	18	231	271

*Figures cover missile attacks through May 1988

Source: Steven Zaloga, "Ballistic Missiles in the Third World Scud and Beyond," International Defense Review, November 1988, p. 1427.

Scud to reach more distant targets. These new derivatives of the Scud, called the al-Hussyn and al-Abbas respectively allowed Iraq to bring the Iranian capital into range. Iran on the other hand, was able to successfully produce its own TBM, the Oghab, which it began supplying to its troops in 1986.[1]

A third and significantly more alarming development in TBM employment during this eight year war was the almost exclusive use of TBMs as weapons of terror directed against civilian populations. Some might argue Iraq and Iran were forced to target cities because Scud accuracy was so poor that troops could not be effectively attacked. While the Scud is indeed terribly inaccurate, the enhancements to increase range were done to target more distant cities. These combatants could have spent the same effort

trying to improve the accuracy of the missile if they were only interested in targeting soldiers. The opposing troop concentrations occupied a very narrow engagement zone between the countries the entire war and were within range of the unmodified missiles. It was a "war of the cities" mentality driving the combatants and it produced a greatly heightened fear among the other countries of the region, particularly Israel, which could now be targeted by additional Arab foes. Israel was certainly not the only country which was concerned. The often violent ethnic and religious rivalries which have existed in the area for generations increased tensions throughout the region.

The events of the Iran/Iraq war alone should have been sufficient impetus for CINCs, particularly CINCCENT, to ensure that contingency plans for the eventuality of facing TBMs were formulated. This does not appear to be the case however. If the conflict between Iraq and Iran was not enough, there were other cases. Libya launched two Scuds against a United States Navy LORAN station on the island of Lampedusa in 1986.[6] The Soviet backed regime in Afghanistan has also employed Scuds against opposition forces.[7]

Based on this previous history it was not surprising that Iraq resorted to the use of Scuds during the war against the United Nations Coalition. Iraq once again used the missiles as terror weapons, this time meant to change the political climate in the region by targeting Israel, a noncombatant, in an attempt to escalate the war by bringing in a new and controversial player. If successful, Iraq may have been able to seriously damage the cohesive infrastructure of the coalition opposing it and

possibly turn coalition forces against one another. At the very least, causing a military response from Israel would have presented the United States with a diplomatic dilemma which could have seriously affected the ability to conduct the military operation in the most efficient manner.

WHERE THE THREAT IS HEADING

In the future, CINCs from every command will have greater reason to be concerned with and plan for defense against TBMs. The perception a potential enemy may have based on our handling of the TBM threat during Desert Storm may be a contributing factor. Despite the fact the coalition utilized a great deal of extremely sophisticated weaponry in dealing with the Scuds, it was not successful in preventing Iraq from using the TBMs. This may lead other third world countries to assume that TBMs are a weapon of merit in dealing with other regional neighbors that do not possess the complex platforms which the coalition employed.

A second reason is the extent of ballistic missile proliferation which is taking place currently. This particular aspect of the evolving threat is magnified because of the continuing research by some of these countries to gain the technology to make them real weapons of mass destruction. Table 2 shows countries which currently possess, may possess, or are trying to acquire TBMs. It also indicates those possessing or developing technologies for the use of nuclear, chemical, and biological (NBC) capabilities. It is very clear that if the TBM capability is coupled with NBC capabilities these countries will have weapons of mass destruction.

This trend toward acquiring more sophisticated missiles and advancing

TABLE II

THIRD-WORLD BALLISTIC MISSILES, NUCLEAR WEAPONS, CHEMICAL WEAPONS, AND BIOLOGICAL WEAPONS

	Acquiring or trying to acquire			
Country	Ballistic Missiles?	Nuclear Weapons?	Chemical Weapons?	Biological Weapons?
Afghanistan	Yes			
Algeria	Yes*			
Argentina	Yes	Possible	Possible	
Brazil	Yes	Possible		
Burma			Likely	
Cuba	Yes*		Possible	
Egypt	Yes		Likely	
Ethiopia			Likely	
India	Yes	Yes	Likely	
Indonesia	Planned		Possible	
Iran	Yes	Possible	Likely	
Iraq	Yes	Possible	Yes	Likely
Israel	Yes	Yes	Likely	
Korea, North	Yes	Possible	Likely	Likely
Korea, South	Yes		Likely	
Kuwait	Yes*			
Libya	Yes	Possible	Likely	
Pakistan	Yes	Likely	Likely	
Saudi Arabia	Yes		Possible	
South Africa	Yes	Likely	Possible	
Syria	Yes	Likely	Likely	
Taiwan	Yes		Likely	Likely
Thailand	Possible		Possible	
Vietnam	Possible		Likely	
Yemen	Yes		Likely	

*Short-range (less than 100 kilometers) missiles only

Source: Steve Fetter, "Ballistic Missiles and Weapons of Mass Destruction," International Security, Summer 1991, p. 14.

technologies in NBC capabilities is not likely to diminish of its own accord. The market is established for advanced generation missiles including cruise missiles and countries such as the former Soviet Union and China have demonstrated the willingness to fill the role of supplier. Other countries are also interested in becoming suppliers in the world's arms market. A real problem with controlling NBC proliferation is verification, particularly with chemical weapons. There are legitimate commercial uses for chemicals particularly to enhance agricultural production. Unfortunately, the same plants which produce fertilizer can be easily transformed to produce chemical weapons. Nuclear capability also has legitimate civilian energy production potential. World cooperation would be required to control this problem, and that cooperation is currently not apparent.

The current situation in the former Soviet Union is perhaps a more disturbing and certainly more immediate problem. Because of its need for hard currency it may make newer missile versions available on the open market, despite the efforts of its most vocal leader Mr. Yeltsin. Additionally, the risk of technology transfer for ballistic missiles and NBC weapons from the former Soviet Union to third world countries is greatly increased as its citizens seek a better standard of living outside its borders.*

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* A report on CNN Headline News 24 Jan 1991, indicated that the United States is considering employing former Soviet Union citizens with knowledge in technologies it does not want exported to other third world countries rather than have these people seek employment elsewhere (Libya and Iraq mentioned).

CHAPTER III

THE GULF WAR EXPERIENCE

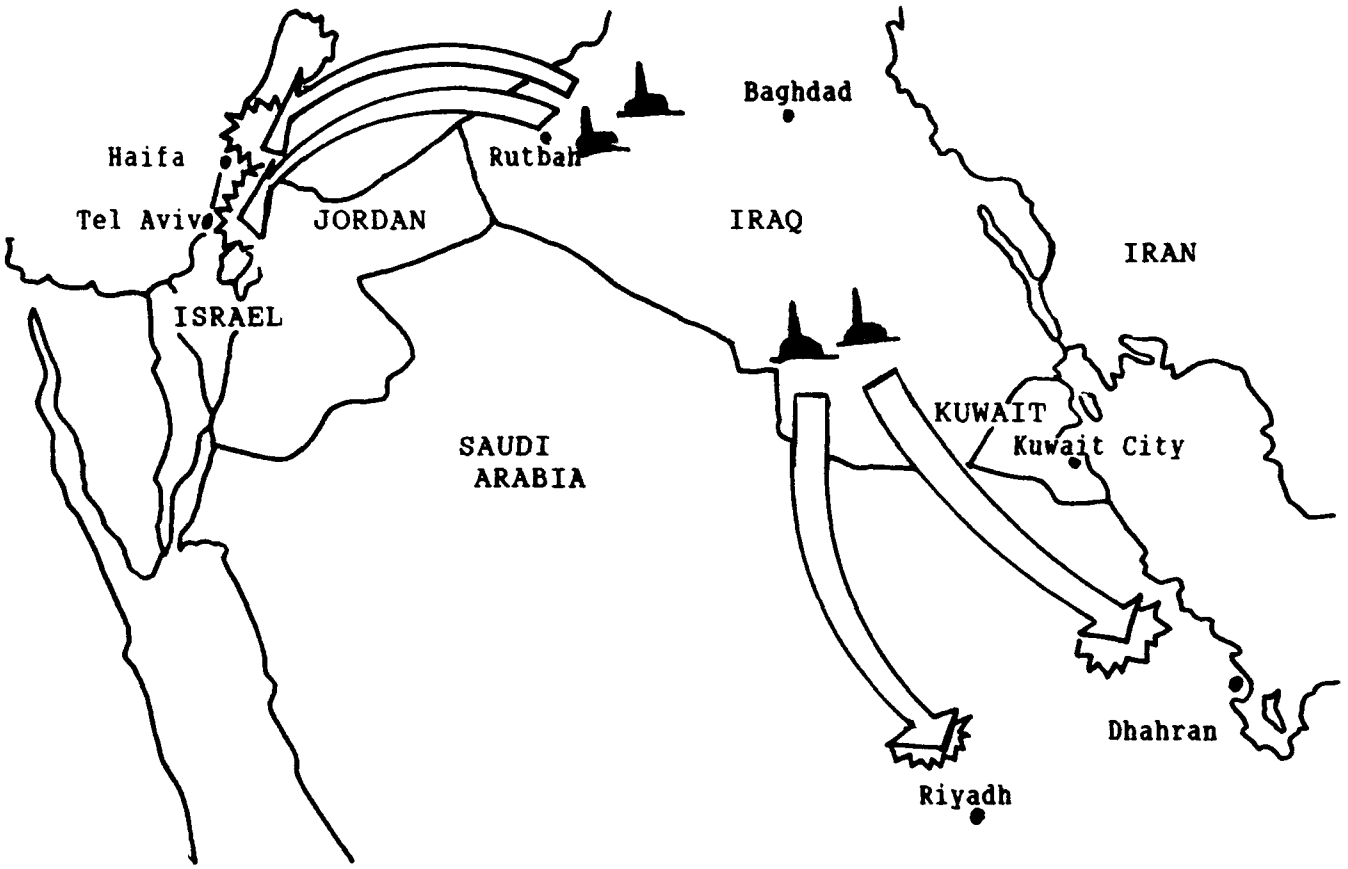
THE FIREPOWER

When hostilities commenced in the Gulf War on 17 January 1991, the coalition forces achieved almost instantaneous air supremacy. Saddam Hussein was not able to offer any credible military resistance to the coalition air onslaught. What he chose to do instead is launch Scuds at Israel and Saudi Arabia. He continued to do so right up through the cessation of hostilities. Figure 1 depicts the rough geographic locations from which the missiles were launched and the numbers which were fired at Israel and Saudi Arabia during the six weeks of the war. These TBMs were launched from both fixed and mobile launchers. As Gen Colin Powell, Chairman, Joint Chiefs of Staff, stated in a Pentagon press briefing on 23 January 1991, "the most significant problem we have right now are the Scuds -- there's no doubt about it."[1] In the same briefing Gen Powell also stated "...we devoted more effort than we initially thought we might have to go after the Scud targets...we are finding that it's taking more effort on our part to go after those Scuds than we had anticipated."[1]

The headline grabber in the coalition's efforts against the Scud was the PATRIOT, an anti-air, medium-to-high altitude surface-to-air missile (SAM) system. CNN had spectacular footage of PATRIOTs intercepting Scud's bound for Israel and Saudi Arabia. After the initial intercept, ABC news commentator Sam Donaldson reported, "that's only one Scud missile intercepted, but so far, PATRIOTs batting a thousand."[1] After that

FIGURE 1

Scud ATTACKS



Israel		Saudi Arabia	
1st Week	13	1st Week	20
2nd Week	12	2nd Week	5
3rd Week	3	3rd Week	1
4th Week	3	4th Week	2
5th Week	5	5th Week	3
6th Week	3	6th Week	14

Source: "Scud Attack!," Air Defense Artillery, March-April 1991, p. 7.

initial success, PATRIOT went on to hit 45 of the 47 TBMs which were fired within the deployed PATRIOT's engagement window. Another 39 TBMs were aimed at targets outside this envelope according to the Army and not a threat.[4]

In the effort against the TBMs, the PATRIOT was the last line of defense. The Air Force eventually flew 2,493 sorties in the attempt to destroy the Scud launchers both fixed and mobile and the Scud-support infrastructure.[5] The scope of this task was originally thought to be 30 fixed and 36 mobile launchers and between 500 and 1000 missiles, which shows the disproportionate amount of effort which went into this Scud search.[6] Almost every one of the Air Force's high tech weapons platforms used in the Gulf eventually took part in the sorties flown against the Scuds as well as American and British special operations forces (SOF) which operated deep behind enemy lines searching them out and calling in airstrikes.[7]

Obviously the mobile launchers created the greatest problem for the Coalition. The United States possesses some very sophisticated spy satellites and aircraft reconnaissance systems. These were also employed, however, they were not able to locate all the mobile launchers. Satellites only pass over a specific area of the earth two or three times a day, therefore, moving targets cannot be tracked unless they are moving at the time the satellite is viewing the area. They are also not particularly effective if there is significant cloud cover which was the case in Iraq during part of Operation Desert Storm. Reconnaissance aircraft also have limitations, particularly with range and weather. These spy systems could

also be frustrated by rather low tech actions on the part of the Iraqis, including use of decoys, quick fueling, and hiding launchers in civilian areas.[1]

In reality the amount of firepower which was used in the attempt to destroy all the Scuds and their launchers was considerably out of proportion to the kind of damage which might have been expected. In fact, the 13 missiles which were fired at Israel before the PATRIOT batteries were operational damaged 2,698 apartments and injured 115 people while the damage by 11 Scuds which the PATRIOTs intercepted was 7,778 apartments and 168 injured with at least one death.[1] This increased damage was the result of Scud debris falling in a wider pattern after breaking up. While any damage to civilian populations and property is regrettable, it is also generally a part of war. In terms of real damage and casualties, Iraq could have been much more successful if it could have employed conventional bombing techniques. The Scuds however had a "terror" factor which is far less quantifiable in terms of military significance. Additionally, the persistent threat of Iraq equipping a Scud with a biological or more probably a chemical warhead, made the immense effort seem justifiable. The American public would have expected no less from our forces.

THE PLAN?

The success of the application of all the firepower used, at least from a preparedness to fight perspective, is somewhat suspect. Additionally, the coalition with all its massive technologically advanced weapons did not succeed in eliminating the Scud menace. This was the first

time the United States, and in this instance its coalition partners, squared off against an opponent with the capability and the inclination to use TBMs. Did we go into the war with an integrated plan to deal with this particular scenario? There is evidence that advance planning for the defense against TBMs was not as effective as it might have been.

The most telling evidence comes from the man charged with creating that plan. Lt Gen Horner, the Joint Force Air Component Commander and also Area Air Defense Commander stated:

> I underestimated the political impact of the Scud intermediate-range ballistic missile. It is a lousy weapon, a terror weapon. It was a miscalculation that was defused only by the success of...PATRIOT anti-aircraft missiles in destroying most of the Scuds before they hit the ground. But the PATRIOT's success also has exposed a hole in the allied arsenal. The PATRIOT is a point defense weapon and the areas to be defended in Saudi Arabia are concentrated in a few small clusters. If the allied military targets had been spread out, there wouldn't have been enough PATRIOTs in the world to defend them all....[10]

The PATRIOT as successful as it may or may not have been, was not designed for the mission which it was given. Originally, developed for defense against enemy aircraft, it was not until 1985 that the PATRIOT was modified to engage short-range ballistic missiles, but only at ranges of a few miles rather than its range against aircraft which can exceed 40 miles.[11] This limited range makes its effective in the defense of specific assets, a point defense, however, it is less effective in the defense of population centers, an area defense. Yet it is this area defense mission or theater strategic defense which the PATRIOT was eventually called upon to perform in reaction to Scud attacks on Israeli and Saudi Arabians civilians.[12]

Further evidence that our TBM defense had to be reactive rather than proactive is the initial deployment of the original version of PATRIOTs to

the Gulf. These units were equipped with its enhanced guided missile known as PAC-1. The PAC-1 missile is designed for intercepting aircraft not TBMs and employing it against TBMs would have questionable success.[13] The PAC-2 version of the missile, provides additional hardware and software designs which enable it to be more effective against TBMs but there were only three pre-production models and these were not through the testing procedure when the Gulf crisis erupted. Despite the lack of complete testing, the PAC-2 missile production was accelerated and the first production run was completed in just two weeks and rushed to the Gulf where it received additional testing under fire, certainly not a situation a Commander wants.[14]

Based on the statements of the JFACC and the vast numbers of sorties used, the mission of finding and destroying the Scud launchers also appeared to be an ad hoc effort. Even then it was an effort that was only made possible by Iraq's nonexistent aircraft threat. Air Force assets like the A-10 and F-16 were not suited for the mission either although they were used in the "more is better" approach, which was taken. An integrated plan to maximize the efficiencies of the assets available was not present.

DOCTRINE

All the joint publications that deal with air defense (JCS Pub 3-01 series) recognize the threat from TBMs as a subset of air defense; however, the focus clearly was on the Soviet aircraft threat. JCS Pub 0-2 provides specific direction for the Air Force, Army, and Navy:

> To organize, train, equip, and provide forces for appropriate air and missile defense and space control operations, including provision of forces as required for the strategic defense of the United States, in accordance with joint doctrine.[15]

The Army approach to Air Defense (which includes TBM defense) is designed primarily for the protection of its ground forces and certain theater assets which are primarily deep strike resources. To accomplish this, air defense assets are apportioned to division, corps and echelons above corps, each with a different mission and organization as well as different way of fighting the air battle.[16] The necessary coordination with the Air Force is also complicated and has the tendency to create a natural competition for air sorties. The Army has not entirely endorsed the new mission of defending population centers. These centers are of limited military significance and not considered the best use of limited air defense assets because they are located far removed from the ground troops and cannot provide air defense deemed necessary for freedom of maneuver.[17]

The Air Force includes tactical missile defense in its counterair mission, but air superiority/supremacy is the primary objective. In fact JCS Pub 3-01.3 states, "the initiative must be maintained in the offense....Air defense activities must therefore, when interference is encountered, accommodate to friendly offensive activities."[18] The situation in the Gulf was unique in that there was no air threat from Iraq other than Scuds. If the situation were different, and Saddam Hussein had used his aircraft in conjunction with the missiles, a competition for air sorties would have existed and in all likelihood, the Air Force belief that air superiority comes first, would have greatly changed the coalition

approach. Coupled with what Lt Gen Horner stated about his underestimation of the Scuds, sortie allocations to hunt Scuds may not have been as readily available and Iraq may have been able to fire many more missiles.

In the aftermath of the Gulf War and based on the increasing threat from TBMs in virtually every conceivable theater, the Joint Chiefs of Staff established four committees to evaluate and assess the mission areas of theater missile defense; interceptor (active) defense, attack operations, passive defense and command and control. The purpose as stated by Col. Jack Garris, chief of the Pentagon's Joint Doctrine and Allied Interoperability Division, "We need to make sure our joint commanders have a base line for war planning and preparation."[11] The resultant JCS Pub 3-01.5, "Doctrine for Joint Tactical Missile Defense," is currently in final draft form. This new JTMD document still includes tactical missile defense under the larger umbrella of air defense; however, by focusing on missile defense discretely it requires CINCs to prepare plans for this mission which will integrate all the service components into an integrated team which best utilizes the capabilities of each. It also expands the traditional division of air defense into four rather than two missions. In addition to active and passive defense which existed previously, attack operations and command, control, communications, computer, and intelligence (C'I) have been added as tasks within the JTMD mission. Figure 2 depicts the various service functions which the CINC can call on when preparing war plans for JTMD. As Figure 2 depicts the JTMD tasks and the service functions which may be called on to perform them are designed to assure

FIGURE 2

COMPONENT THEATER MISSILE DEFENSE FUNCTIONS

	ACTIVE DEFENSE	PASSIVE DEFENSE	ATTACK OPERATIONS	C4I
ARMY	ANTIAIR WARFARE ANTISATELLITE	STRATEGIC WARNING TACTICAL WARNING DECEPTION HARDENING DISPERSAL RECONSTITUTION RECOVERY AIRSPACE OPERABILITY COUNTER TARGETING COUNTER SURVEILLANCE	FIRE SUPPORT COUNTERFIRE MANEUVER EW	C4 INTEL
AIR FORCE	DEFENSIVE COUNTERAIR		STRATEGIC ATTACK AIR INTERDICTION OCA EW SEAD	C4 INTEL AEROSPACE SAR
NAVY	ANTIAIR WARFARE COUNTERAIR SEW		NAVAL SURFACE FIRE SUPPORT STRIKE WARFARE ANTISUBMARINE WARFARE SEW	C4 SURVEIL INTEL INDICATION & WARNING
MARINE CORPS	ANTIAIR WARFARE COUNTERAIR		FIRE SUPPORT OFFENSIVE AIR SUPPORT MANUEVER	C4 INTEL AIR RECON
SOF			DIRECT ACTION PSYOP SPECIAL RECON TARGETING	SPECIAL RECON UNCONVEN WARFARE

C4I INCLUDES INTERNAL C4I NETWORKS WITHINBOTH ACTIVE DEFENSE AND ATTACK OPERATIONSAND EXTERNAL BETWEEN THE TMD COMPONENTS

Source: U.S. Department of Defense, Doctrine for Joint Tactical Missile Defense, JCS Pub 3-01.5 (Initial Draft), Washington: 1991, p. II-13.

planners consider the effects of the TBM threat before, during and after attack.

Passive defense will seek to degrade the enemy's ability to target effectively, attempt to limit vulnerability of friendly assets, and make sure that loss of combat capability is minimized. Active defense will deal with air threat once airborne. That threat can come from surface-to-surface sources or from aircraft employing air-to-surface missiles. Attack operations will counter missile assets on the ground. C'I is an integral part of the JTMD mission and therefore must be interoperable with existing theater communication networks to allow for near real time warning and assessment capability yet allow for autonomy in the event necessary links are destroyed or degraded.

The new doctrine for JTMD maintains the unity of command concept which is present in all "joint" doctrines by charging the Joint Force Commander (JFC) with the responsibility for establishing guidance and objectives for the mission. He uses component commanders, component staffs and joint staffs to carry out the mission. The JFC may assign the overall air defense responsibility to an area air defense commander (AADC). This individual will normally be the Air Force component commander in accordance with JCS Pub 1-02. The JFC will normally execute and control active missile defense operations through the AADC. An additional new joint doctrine is in development. JCS Pub 3-01.6, "Joint Tactics, Techniques, and Procedures for Air Defense Operations/Joint Engagement Zone(JADO/JEZ)," deals with incorporation of new technology. The purpose for JCS Pub 3-01.6 is "to increase the efficiency of air defense systems through integration

of identification systems....The JADO/JEZ concept will allow engagement of hostile aircraft by air and ground air defense systems working concurrently, but not redundantly."[18]

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

WHAT CAN WE CONCLUDE?

Based on the evidence reviewed, we were fairly successful in our first real encounter against tactical ballistic missiles. Unfortunately, it could also be concluded that we were very fortunate. The situation in the Gulf was one that was ideal for a first attempt at defending against TBMs. Saddam Hussein's Scuds presented the only air threat to our forces; therefore, weapon systems like the PATRIOT were able to concentrate on a single threat rather than having to deal with a sky full of targets with differing speeds, threat axes, and national origin. Iraq also had only a limited quantity of launchers and was not able to mount attacks in sufficient numbers to tax the ability of the PATRIOTs to track and intercept them. The level of technology which we will likely face in the future will be greatly enhanced. The predictability of the Scud made even a hastily prepared defense successful. In the future CINCs will have to be prepared to deal with missiles which can come from the entire 360 degree spectrum. This will greatly complicate both the defensive arrangement of assets and our ability to discover and target the launchers. Finally, the fact the Coalition did not have to battle for air superiority in the Gulf War made available the almost 2500 air sorties to look for Scud launchers. Those sorties would have been in a priority struggle against other counterair missions otherwise.

An almost knee-jerk reaction to this "new" threat was the rush to

print of a new doctrine to deal with it. Clearly tactical ballistic missiles have been a viable threat since the early 1970s in some regional areas. Despite this threat, we chose to concentrate our doctrine almost exclusively on the Soviet threat and then on the aircraft threat rather than missiles. Given the fact that the former Soviet Union had always exhibited restraint regarding the use of missiles, probably based on assessments of the escalatory nature of ballistic missiles, this approach to air defense is understandable.

The heightened concern over TMD is well overdue and the new doctrine is designed to require CINCs and JFCs to plan for contingencies where we may again have to counter an enemy with tactical ballistic missile capability. Based on the proliferation of missiles in the third world and the concurrent attempts to gain technologies for nuclear, biological, and chemical weapons, TMD should be one of the primary concerns for our CINCs regardless of the theater involved. Once integrated planning is instituted by the CINCs they will also be able to better define and recommend technology enhancements to the Chairman, Joint Chiefs of Staff and the Secretary of Defense. With shrinking defense budgets precluding services from pursuing independent tracks for meeting the needs of missile defense, joint planning can allow for prioritizing to optimize the dollars spent by the DOD.

Conversely, the new doctrine does not satisfy one of the requirements for which it was intended, to sort out the various roles of the service components. These latest additions to the air defense doctrine family tend to fragment the principle objective, "air defense," even further than it

was previously. In lieu of making each of the various facets spokes in the big wheel that is air defense, current doctrine which JCS Pubs 3-01.5 and 3-01.6 continue, considers each facet almost independently.

WHAT SHOULD WE DO?

Three recommendations are offered. The first is the establishment of a single Joint Force Air Defense Commander (JFADC) that is not the Joint Force Air Component Commander (JFACC). The second is for adoption of the current proposal for the consolidation of the air defense JCS Pub 3-01 series.[1] This consolidation would stop the proliferation of doctrine which contains redundant and overlapping responsibilities and require development of an integrated plan which deals with theater air defense as "the single objective," with all the various aspects working synergistically toward that objective. The last is conduct of joint or combined exercises.

There are unique functions which the services bring to any one aspect of air defense, and there are common functions that can apply to more than one air defense task. In the past this has created a natural competition for those assets which do multiple duty. The creation of the Joint Force Air Component Commander was an attempt to establish a form of honest brokerage of the air assets which have multiple roles. Air defense has a similar problem dealing with more than aircraft. Air defense assets from the Army can fulfill the roles of air defense over friendly forces and protection of theater assets. Similarly, Navy resources have roles for air defense at sea and can provide additional air defense ashore. A single

JFADC would have operational control of air defense assets not controlled by the JFACC and be charged with constructing the plan for air defense. That plan would of necessity have annexes for passive defense, active defense, C'I, and in coordination with the JFACC recommendations for attack operations. In such an arrangement, both the JFACC and JFADC can concentrate on their respective areas of expertise. The JFADC would be tasked with insuring the proper allocation of the ground air defense systems and the JFACC could concentrate on the air assets. With proper coordination between the two commanders, the aircraft needed to support the air defense requirements would be identified early so the JFACC can make the necessary allocations.

Our doctrine does not need proliferation but consolidation. One of the purposes for joint doctrine is to form a basis for planning which maximizes the capabilities of the service components in achieving that goal. Joint doctrine for tactical missile defense should be an annex or section of the doctrine for air defense. As such it would lay out the unique aspects of joint theater missile defense and how we will deal with them, but more importantly it should clearly show the areas of air defense which currently overlap between the services and how this duplication of effort will be avoided. Air defense doctrine should clearly describe the command relationships between the JFADC and the other commanders of service components and the JFACC including coordination requirements of the various staffs.

Finally, the CINCs need to be concentrating on tactical missile defense right now, regardless of any doctrinal changes. The single best

way to accomplish this is through joint and if possible combined exercises. Certainly the value of utilizing a separate JFADC and JFACC can be tested through exercises. The CINCs should also establish, either on a permanent basis or as a minimum for the purpose of contingency planning, a new joint tactical missile defense staff. In addition to dealing with current resource allocation problems through contingency planning, the CINC can use the staff planning to make force and technology recommendations to the JCS. Exercises are a way to validate those recommendations. Finally, exercises can provide a measure of deterrence by demonstrating our ability to counter the tactical missile threat.

NOTES

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5. Zaloga, p. 1425.

6. Ibid, p. 1427.

7. Olson, p. 6.

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1. Letter from Office of the Chief of Naval Operations (OP-607), to Naval War College, 16 January 1992.

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