



History of the Javelin, the Infantry Anti-Tank Missile

By Robert Sherman

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House Defense Appropriations Subcommittee

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This is a very condensed history of my Congressional involvement with Javelin. It's based entirely on my memory and computer records, and does not include hearing transcripts, news articles, editorials, etc. The prepared texts I cite may be marginally different from what was actually said.

In the '80s, on the staff of Rep. AuCoin, I drafted a hearings question for the Army Chief of Staff, asking how "Tank Breaker" was coming along. It was the Army Missile Command's preferred program to replace the infantry's outdated and user-risky Dragon anti-tank weapon. Gen. Wickham's response was, "I've never heard of Tank Breaker." At that point, I knew we had a challenge.

By 1985, it was clear that the Army had decided it wanted a technology called "Laser Beam Rider" (LBR) for its Anti-Armor Weapons System-Medium (AAWS-M). Unfortunately, it had the same fundamental problem that the Dragon weapon had—the shooter had to stay exposed to return tank fire until the munition found its target. (Dragon was a wire-guided antique) while the Laser Beam Rider required the munition to follow a beam of light to its target, a high-tech equivalent of a soldier shining a flashlight at a tank, hoping the round would reach its target before the lit-up tank fired back. "Fire and Forget" technology—which would allow a soldier to squeeze off a round and drop out of sight—had not really been considered seriously because of the not-invented-here syndrome: LBR was a US Army Missile Command (MICOM) program, while Fire and Forget technology was a Defense Advanced Research Program (DARPA) initiative.

Within Congress, such contrary sentiment as existed was in favor of the Fiber Optic Guided system—which still was wanting in operator survivability—and which at that time was in vogue among military reformers.

I then set up a briefing for Les AuCoin by DARPA on Tank Breaker. Harry Fair again did the briefing, and by the time he'd finished, Les was enthusiastic. But we needed to be sure we hadn't been given a snow job, so we went down to the Infantry School at Ft. Benning to hear what they had to say.

Gen. Foss and his deputy, Gen. Burba, weren't subtle. At dinner our first evening on the base, they made it very clear that they wanted F&F, period. In their view, F&F was the only technology that would do the job; they were willing to wait, if necessary, to get it. We were amazed at the clear decoupling between the Army's designers and users. The next day we both trained on Dragon and watched the three best students in the graduating class fire a live missile each. The Dragon, even in the hands of the class sharpy with an instructor at his elbow, went into the dirt. From that point on, neither Les nor I ever

doubted we were on the right track.

Somewhat naively, I presumed that because McDonnell Douglas had made Dragon, they would be interested in the most promising approach to its successor. So I tried to interest them in doing some work on an Fire and Forget technology, but got nowhere.

I then found that Texas Instruments had done a great deal of work on Tank Breaker's Fire and Forget technology, ultimately to be named and deployed as Javelin missile. I called in Gary Howell and urged him to press ahead with it. I told him that, so long as TI did a credible job, they'd have at least one very determined and very effective champion on our committee. Gary was very forthcoming with me about the technical challenges involved. He seemed to have been going on the presumption that it wasn't worth fighting the Army's prejudices, but he was encouraged and enthusiastic at the prospect of Les AuCoin's support.

An Army R&D hearing at about that time dramatized the difficulties we faced. When Les asked the Army about development of infantry anti-tank weapon candidates, the response was, "We're looking at the Laser Beam Rider," the witness said, beaming with approval, "and the Fiber Optic Guided system." Then, "Oh, yes, and the, uh, er, turning around to get an answer from his staff, he turned back, shuffled papers at witness table, and said, "Oh, the Fire and Forget."

Les and I knew we had to sell House Defense Appropriations Subcommittee's Bob Seraphin and House Armed Services Committee's Tony Battista, or this already uphill fight would be impossible. Both men had, by dint of strong intelligence, immense energy, and quick-trigger personalities, built up positions of great influence over the years.

So after some careful planning, we took Seraphin to lunch and laid out our case. We had less difficulty than we expected, and by the end of the lunch Seraphin, at least in this case, was convinced of the merits of Fire and Forget technology.

We then called in the Marines for a briefing on their anti-tank posture. The Marines, like the Infantry School generals, weren't subtle. For them, operator survivability was key, and F&F was the only way to get it. They were dismayed at the Army's fixation with Laser Beam Rider and would refuse to take an ACCEPT it if MILCOM bought it. Even if it took a very long time to get the funds out of their small acquisition budget, they would then develop their own Fire and Forget missile, thus breaking all precedent in which the service acquired weapons produced for the Army.

Les and I were delighted at that -- both on the substance and because we now had a Final Solution to the Army's closed-mindedness, if such were needed:

If the Army chose one of the other AAWS-M contenders, we would try to:

- 1) zero out AASM-M entirely, the army's budget line for "Advanced Anti-Tank Weapons System-Medium (AWSM),
- 2) reduce the Army R&D budget by that amount,
- 3) increase the Marine Corps R&D budget by the same amount,
- 4) let the Marines develop and begin procurement of a new F&F missile, and
- 5) let the Army piggy-back on the Marine program.

In the end, we didn't need to go that far.

Instead, we (1) required a shoot-off among AAWS-M candidates, (2) required the Marine Corps to have a part both in setting requirements and in selection, and (3) told the Army to get on with it. The 27-month competition began in 1987.

By 1988, two problems emerged: First, the AAWS-M/AAWS-H interaction was becoming troublesome because there was just one AAWS appropriation line; the H was over cost and soaking up too much funding. Second, the hired-gun lobbyists for MILAN and BILL had convinced a number of well-meaning Congressional staff reformers that they could replace Dragon sooner and cheaper than AAWS-M could.

We dealt with the AAWS-H problem by having Seraphin work behind the scenes to shift funds from the H to the M.

We also worked with Tony Battista on this and, in one sense, got more success than we wanted. After hearing our pitch on the M/H issue and also going through the detailed merits/demerits of the M candidates, Tony became fully converted and, as was his style, decided on radical surgery. In the HASC bill, he zeroed AAWS and replaced it with a line labeled "Tank Breaker". This provision, which the HASC reported to the floor, effectively pre-judged and killed the competition, and gave F&F the green light. But when we checked deeper with the Army and TI, we found that this process would increase costs and introduce more delay than would finishing the competition. So Les passed a floor amendment that returned AAWS to the budgeted amount and continued the competition. We regretted having to reverse some of Tony's enthusiasm, but we did it in a tactful way that left no hard feelings.

Critical Juncture: We also inserted an appropriation, at Tony's suggestion, for the DARPA second-source focal plane array initiative which was to be beneficial down the road.

MILAN/BILL proved to be a more difficult problem. Rep. Charles Bennett (D-FL), a very sincere senior House Armed Services Committee member, was fully committed to them as was his staff. Defense News also wrote several editorials in favor of them. I was able to show them that there was substantive merit in AAWS-M, and that this wasn't just a matter of greedy contractors and stupid military services. They also understood that, as an appropriator, Les AuCoin could blue-pencil any MILAN/BILL funding they put in. Nevertheless, I was unable to persuade them to turn the project off entirely.

A problem also arose with regarding Dragon 3. In a reversal of our previous position, we were now allied with the Army and opposing the Marine Corps. I described the situation to Les, and proposed a solution, in this memo:

*Performance is far below the AAWS-M level. The warhead is better, there's a night sight, exposure is shorter, and range is a bit longer, but these deficiencies remain:*

*According to Army testimony, warhead is still inadequate for T-64 or later from the front. Top attack is the only answer.*

*While the Marines are getting good accuracy in tests, they freely admit this won't hold up in combat, with the operator under fire. There's no getting around the flinch factor.*

*Smoke penetration on D3 is almost nonexistent. It's excellent on Tank Breaker,*

proven in successful test.

If line of sight is broken by a hill, vegetation, or whatever during missile flight, D3 goes as blind as the earlier Dragon. Tank Breaker and FOG, flying at 400-500 ft altitude, are relatively immune to this.

Exposure time -- critical to operator survivability -- is still an order of magnitude worse than Tank Breaker.

Range is still far below AAWS-M. Also, at outer edge of range the accuracy goes to pot on Dragon, whereas on Tank Breaker and FOG it's almost unaffected by range, since the tank image enlarges as the missile gets closer. Weight is about 52 pounds, vs 40 for Tank Breaker.

Launch signature is immense, unreduced from the original Dragon. This is one of the key factors in making any Dragon a suicide missile.

Because of lack of soft launch, Dragon can only be fired from a sitting position or from a foxhole. No standing, no prone, no firing from out a window. Try to shoot this thing from within a room and the backblast will kill you.

Marines have two problems:

1. Quantitative medium anti-tank shortfall in early nineties.
2. Concern that AAWS-M will not be fire and forget and will therefore not meet their needs.

But Dragon 3 has programmatic problems:

1. Will only be ready 2 years before AAWS-M.
2. Will require new production for an interim system, if done on the scale the Marines want.
3. Will draw funds from and endanger AAWS-M. This is why the Army is dead set against it.

Solution:

The quantitative problem:

Give the Marines the FMS Dragons from the warehouse in Alabama, refurbished to Dragon 2 standards.

Give them another two or three thousand Dragons transferred from the Army.

The qualitative problem:

Let them do the Dragon 3 R&D, to protect their options against AAWS-M failure. By the time the R&D is finished in 1990, we'll know whether AAWS is a go.

Marines must pay the whole bill, minus the Egyptian contribution. It's rank injustice to require the Army to pay for a weapon it opposes but the Marines insist on having.

Explicit Appropriations report language that this is not leading to production unless AAWS-M fails or slips prohibitively.

The Marines accepted our solution. But as it happened, they soon found that McDonnell Douglas was unacceptably behind schedule and over cost on Dragon 3, so they canceled the program.

We then got an update briefing from the Army and were appalled at the light weight assigned to survivability in its selection criteria. So I wrote this language, which was accepted by the Appropriations conference for the FY89 bill:

*Combat experience with the Stinger missile in Afghanistan has demonstrated that a highly capable shoulder-fired missile, because of its concealability, can devastate a force of large, expensive weapons vehicles. The Committee believes there is a considerable prospect that AAWS-M will be as effective against tanks as Stinger has been against helicopters and fixed-wing close support aircraft. But the available evidence suggests that no weapon will be heavily used in combat unless the operator has confidence that its use is not an act of suicide. Therefore, the Committee directs the Army to designate operator survivability as a primary requirement in AAWS-M selection.*

By 1989 the source selection had been made, and the Army transformed from troublesome opponent to very enthusiastic supporter. But the AAWS-H and MILAN/BILL interactions continued to be troublesome.

On the AAWS-H issue, and to pre-empt hostile questions about source selection, Les and I wrote up this hearings question for Gen. Vuono, and prepared him in advance:

*You have two advanced anti-tank weapons in development: a medium and a heavy. I understand that you need both. But of the two, which do you need most urgently right now? Answer: "AAWS-M. Our deficiency in medium missiles is a lot more serious than in heavy.*

*On the MILAN/BILL issue, Congressman Bennett recognized that we had the power to zero-fund them, so he authorized a requirement to test AAWS-M against MILAN and BILL. As appropriators, we could not delete the authorization bill's requirement for a test. But we asked these questions of Gen. Pihl at the Army R&D hearings (expected answers in italic), and got productive answers:*

*There are some who say we should buy an interim medium anti-tank weapon as a gap-filler until AAWS-M comes along. Specifically, the European MILAN 2 and the Bofors BILL have been mentioned.*

- 1. Would either of these systems offer a significant schedule advantage over AAWS-M? (No.)*
- 2. Are these true medium systems, or are they more comparable to TOW in the sense of portability on a real-life battlefield? (They are too heavy for one-man-per-missile use.)*
- 3. Are these both proven systems, or did they have major reliability problems in your tests? BILL is not yet in production and was extremely unreliable in the Army's tests.)*

*What about countermeasure resistance? Are these missiles resistant to countermeasures? (MILAN can be totally guidance-disrupted by any bright light or heat source, including the tank's shining its searchlight at the gunner. The manufacturer promised to fix this, but has not demonstrated the fix.)*

*On balance, how does the probability of kill per shot at 1000 meters of these systems compare to Dragon 2? (an order of magnitude lower)*

*What would be the added cost of buying either of these interim systems, as opposed to PIPping the Dragons we already have to Dragon 2 and then going to Fire and Forget technology at the earliest opportunity? (Very high, because we'd have to set up a separate support structure a system that doesn't meet our needs.)*

*In late 1989, a potentially fatal problem arose out of David Chu's attempt to destroy AAWS-M by requiring a non-executable series of tests. Acting on the top-attack principle, Les and I prepared these questions for Cheney's hearing:*

*The last Administration and now in your first year, has done outstanding work on the new man-portable anti-tank weapon, AAWS-M. Five years down the road, this is going to be at least as revolutionary a weapon as Stinger is today.*

*The Army position, and the Marine Corps position, is that our foot soldiers have an urgent need for a medium anti-tank weapon that works against every tank from every aspect, and nothing less than AAWS-M can meet that need. So long as the program is coming along well technically, which it is, and there's no undue cost growth, both the Army and the Marines say it's essential that we keep this program on the orderly development schedule it now has, leading to deployment at the earliest possible time.*

*Do you agree with this?*

*Affirmative answer*

*I'm glad to hear that. There's one man in OSD -- I won't name him because I don't want to personalize this -- who doesn't have the foggiest understanding of the problems the infantryman faces. He doesn't understand the need for a medium anti-tank weapon, and he's tried to sabotage the program by disrupting the schedule with frivolous testing requirements. So far, you haven't let him do any serious damage; I commend you for that and urge you to keep up the good work.*

*We recognized, of course, that Cheney wouldn't have any idea what we were talking about. But we also knew that raising the issue at the highest level would create a powerful trickle-down. As expected, Cheney mumbled something vaguely affirmative but inconclusive. Also as expected, the members of the HAC/DEF were amused and intrigued at the heat with which Les denounced this person he wouldn't name. Also as expected, within a few days the grapevine brought us pleasant reverberations of concern within the Puzzle Palace.*

*We followed up with this letter to Cheney:*

*October 30, 1989  
Hon. Richard Cheney  
Secretary of Defense*

*Dear Dick:*

*Since there will be an Executive Review on the AAWS-M program on November 20, presumably before the Defense Appropriations Conference has finished, I'm writing you now to continue the train of thought begun at your testimony before the Defense Subcommittee.*

*I have been closely involved with this program for about five years. The intellectual*

root of my involvement was the DARPA Tank Breaker program, which has always impressed me as an elegant solution to a previously insoluble problem. The emotional root was my service in the infantry, where I was uncomfortably aware that, should I and a Soviet-bloc tank some day meet on unfriendly terms, there was no weapon I could carry with me that would be much help. As to who should build the missile or where it should be built, neither question interests me so long as the job is done competently. My only preference is that subcontracts NOT be placed in Oregon, so that I can continue to deal with this program without parochial complications.

Anyone who has any familiarity with ground combat understands the unequivocal need for a medium anti-tank weapon. Light weapons such as LAW and AT-4 lack range and the lethality for head-on shots; heavy weapons such as TOW lack the portability, dispersibility, and concealability the infantry requires.

The Marine Corps and the Army Infantry School at Ft. Benning have always believed that the only effective way to build a medium anti-tank missile is with true fire and forget, imaging infra-red guidance -- that is, the DARPA Tank Breaker concept. While competing designs using laser beam-riders or fiber optics are less technologically adventurous and therefore less risky, both the Marines and the Infantry School believe them to be inadequate. They regard fire and forget as by far the most cost-effective solution, both in dollars per tank destroyed and in operator casualties per tank destroyed. I strongly agree, and would have had difficulty supporting AAWS-M had one of the less effective technologies been chosen.

As a result of its competitive testing which finished last year, the Army has come to the same conclusion. It is now developing fire and forget AAWS-M, and the program is coming along well in every respect.

Its only problem lies with one of your assistant secretaries. Again, I will not name him because I have no interest in personalizing the issue. If he continues his present efforts to undermine the program, his identity will become evident to you.

He believes that medium anti-tank weapons are a waste of money, and that we should have heavy weapons only. Unable to kill the program outright, he has sought to give it cancer by imposing frivolous requirements for premature testing. He has also suggested that he may seek to re-open the competition between fire and forget versus inadequate alternatives. In these efforts, he shows a clear understanding of the bureaucratic fact that any move which causes delays or cost increases in a state-of-the-art program such as this may well end the program.

Unfortunately, his understanding of ground combat is not on the same level. I am convinced that he is fundamentally mistaken on this issue, both in purpose and in tactics. The Army and the Marine Corps are also convinced that he is in error, and that there is no substitute for AAWS-M as it is presently defined. To send soldiers without fire and forget AAWS-M into combat against tanks would be like sending them without Stingers into combat against helicopters.

I am particularly concerned that, now that the Army is doing something right with a major acquisition, it must divert time and effort to countering harassment from within its own building.

Dick, I suggest three propositions to you:

- (1) that you require that any change imposed by OSD on the AAWS-M schedule must be signed off by you personally;
- (2) that before accepting any such change, you give the acquisition managers of the Army and the Marine Corps the opportunity to make their case to you, fully and in direct debate against AAWS-M's opponent;
- (3) that if, after (2) you are still inclined to slow, complicate, reduce, or eliminate the AAWS-M program, you will give me a chance to sit down with you and review the situation.

Does this sound reasonable?  
Sincerely,

LES AuCOIN  
Member of Congress

The next step was to sledgehammer the phony-test maneuver. We inserted this language into the FY90 Defense Appropriations conference report:

*The conferees commend the Army for its excellent management of the Advanced Anti-Tank Weapon System-Medium (AAWS-M) program which, for the first time in the history of land warfare, promises to give the single foot soldier the means to defeat any tank from any aspect. The conferees regard the fire and forget AAWS-M as the only satisfactory man-portable means of meeting either the present or the future tank threats. It is the intention of the conferees, assuming unforeseen technical or cost problems do not arise, that this weapon proceed on an accelerated basis to deployment at the earliest possible time. The conferees find that the schedule proposed by the Army is consistent with this objective, and should not be distorted.*

*Specifically, the conferees regard any attempt to require operational testing (force on force/survivability testing) before completion of adequate development testing to be unrealistic and counterproductive. Since the Department of Defense did not originally schedule operational testing at this point in the program, the only missile components available for such testing are damaged and deteriorated scraps recovered from the completed Proof of Principal tests. Operational testing of these known defective components would yield little or no useful information about the system to be deployed. Additionally, the conferees believe that the conduct of operational testing prior to the completion of adequate developmental testing would require the diversion of critical contractor and government assets away from necessary AAWS-M development. The conferees believe that operational testing is essential, but that it should be performed only after adequate developmental testing.*

*Therefore, the conferees direct that no funds may be obligated or expended for operational testing of AAWS-M until the Assistant Secretary of the Army (Research, Development, and Acquisition) certifies to the Congress that all required developmental testing necessary to adequately prepare the AAWS-M for operational testing has been completed.*

*Further, the conferees direct that no funds may be obligated or expended without prior Congressional approval for development of AAWS-M missiles not incorporating true fire and forget capability.*

In 1990, the major problem was MILAN/BILL, and the Congressman Bennett's authorizing requirement for a shoot-off between those missiles and AAWS-M.

At the annual Army appropriations hearing, we fed these questions and got co-operative answers for the record:

What's your #1 development priority for the infantry? (AAWS-M)

As you know, the FY1990 Defense Authorization Act requires you to test the Bofors BILL against Dragon 2, and I understand you will ask to finance this by reprogramming from AAWS-M. If it were not for the Congressional mandate, would



you have proposed this test? (No)

I'm not just talking about getting the money out of AAWS-M. For the moment, forget about the source. Suppose Congress were to increase the defense budget by whatever amount you'd need for the test. In your professional judgment, would this test be a rational and productive use of the taxpayers' money?

We already know BILL has better range than Dragon 2 but is heavier and harder to carry. Do you see this test as offering any useful information beyond that? (None whatever. It's a waste of time and money.)

In the face of all reason, MILAN/BILL continued to enjoy support among Congressional reformers and at Defense News. So we sent this article to that publication:

*Only One Way to Break Tanks*  
By Les AuCoin

*A successful medium anti-tank weapon is a device a single infantryman can carry to the site of conflict, use to kill any hostile tank from any angle at any time of day or night, and live to tell about it the next day. It must do to tanks what Stinger does to helicopters: present the crew of the large, expensive opposing vehicle with the terrifying prospect of an no-warning lethal strike from a source too small, far away, and well concealed to be detected.*

*Such a weapon doesn't exist, in our ground forces or anyone else's. It never has. It may in the hands of our troops by early 1994. But it's essential to understand that there's only one way to get there.*

*Begin by considering our presently deployed attempt at a medium anti-tank weapon, the collection of horrific deficiencies called Dragon. This device weighs about 73 pounds all-up, ensuring that its operator arrives at the scene in less than prime condition. When he sees a hostile tank approaching, he can't do anything until it gets within 1000 meters, because that's Dragon's maximum range. He'd better not be in a bunker or room; he can't fire a Dragon from there because the backblast would kill him. He'll have to fire the missile from a sitting position because it's too clumsy to fire standing, and the exhaust will make rump roast if he tries to fire it prone.*

*Once he sits down and fires the missile, the excitement begins. The flash and bang of the Dragon launch advertises his presence to everyone in the neighborhood. He must then sit like a duck for about 20 seconds, moving his shoulder to hold the sight on the target and guide the missile while the hostiles are trying with everything they have to send him into instant oblivion.*

*If he's killed, wounded, jostled, or forced to flinch from a nearby explosion, his missile will miss. If he loses line of sight to the tank due to terrain or smoke, this too will cause a miss. And even if he is lucky and scores a hit, his probability of penetrating a T-64 or later tank from the front where the armor is thickest is poor at best, nil if the tank has reactive armor. The bottom line on Dragon is that firing it in combat is riskier for the operator than for the target.*

*Tank Breaker. Beginning in the Carter Administration, DARPA began a Fire and Forget technology project called Tank Breaker to remedy Dragon's deficiencies.*

*The key to Tank Breaker is a true self-contained fire-and-forget imaging infra-*

red guidance system. The operator looks through a sight in the missile that is, in effect, a day\night television screen. He locks a box on the target, fires, and the missile is on its own. It homes on the image in the box, constantly re-educating itself as the image changes aspect, while the operator is immediately free to leave the scene, duck down, or reload. Because the seeker is in the missile and terminal-homes, accuracy does not significantly decrease with range.

The second major Tank Breaker advance is a low-power launch motor which allows firing from any position or indoors, and which nearly eliminates launch signature. The third major advance is shaped trajectory; the missile flies up high and comes down on the tank from the top, thus nearly eliminating the effects of terrain and smoke, and striking where the armor is thin.

For reasons which don't bear close examination, Tank Breaker languished in the early 1980s. But now the Army and the Marine Corps have taken it up with enthusiasm as their Advanced Anti-tank Weapon System--Medium (AAWS-M). They have taken the Tank Breaker technologies and packaged them in a 45-pound weapon that has demonstrated overmatch against any tank from any angle, even against triple reactive armor at 2000 meters. It will probably work at 3000. They've added a flat-trajectory switch for use against under-cover targets, and are working on an electronic safety interlock to prevent unauthorized use.

All of this may sound too good to be true. But in Proof of Principle tests conducted in 1988, Tank Breaker performed as advertised. Development is now proceeding on cost and on schedule. The troops who have used AAWS-M have taken to nicknaming it "AWESOME."

In light of all this, I find it disturbing that some commentators have tended to treat AAWS-M as an impossible dream, while regarding various "interim" devices as sensible real-world solutions. In fact, the reverse is true.

The interim non-solution.

Indisputably, Dragon is inadequate and AAWS-M will not come into the force as soon as desirable. From these premises, some have concluded that we should buy an off-the-shelf foreign weapon as a gap-filler, or as a hedge against failure in the AAWS-M program. This might be warranted if there were an available device clearly superior to what we already have, but this is not the case.

The best of the off-the-shelf weapons is the Swedish Bofors @MDBO-BILL@MDNM, which has longer range and better lethality than Dragon against non-reactive armor. But BILL shares all other Dragon deficiencies -- including zero counter-reactive armor capability. And its limited improvements are achieved by the unremarkable expedient of adding size and weight: It weighs 118 pounds and its shape is intolerably awkward for carrying. In sum, BILL is a medium-heavy weapon using Dragon vintage technology. It could most appropriately be called Fat Dragon. If we want a more lethal anti-tank weapon that can't be readily carried by the foot soldier, we already have TOW.

If AAWS-M were to develop a technical show-stopper -- which is not happening -- the logical fall-back would not be BILL, but one of the two highly capable (fiber-optic or laser-beam-rider) weapons which performed adequately in the AAWS-M shoot-off, losing out only to the superiority of Tank Breaker's fire-and-forget. I find it impossible to make the case for U.S. procurement of Fat Dragon as either an interim or a fall-back.

At this point I am usually asked in horror: "Do you mean you want our soldiers

to be stuck with inadequate anti-tank weapons for another four years?" As a former infantryman, there are few things I want less. But what we want and what we can do are not always the same thing. We're stuck with a major anti-tank deficiency until 1994, and we should not pretend Fat Dragon can help. It can't.

Not every problem has a solution. Stopping tanks with less than AAWS-M technology is that kind of problem.

But for the first time in the history of warfare, it appears that stopping tanks with a one-man-portable weapon will be possible. AAWS-M is the only road that gets us there, and we should not deviate from it.

In April, Les gave a talk to an Army War College class in which he cited AAWS-M as an example of successful Congressional micromanagement. If I do say so myself, it was a heck of an interesting speech, still applicable today. I can share the whole text with you if you're interested, but for now here's the AAWS-M excerpt:

We know Dragon's missile's deficiencies; we have for many years. In the Carter Administration, DARPA began the Tank Breaker program that developed a whole range of technologies to replace Dragon: fire-and-forget guidance, top attack, soft launch, and so forth. A few years ago I asked the Army what it was doing with Tank Breaker, and I got the verbal equivalent of a blank stare. So my committee got involved in this program in a very big way. We lit a very big fire under the Army and now the Army's glad we did. Tank Breaker has become AAWS-M, and in a few years our infantrymen will become the first in history with a one-man weapon able to stop any tank from any direction. Without my committee's micromanagement, this wouldn't have happened.

Also in April of that year, Defense News ran a highly slanted article that presented MILAN/BILL as a laudable and intellectually rigorous reform effort. We responded with this letter. Here we stressed the term DRAGON as much as possible, to highlight the fact that these missiles weren't any more advanced than Dragon, just bigger. This was psychologically and politically the critical point, since supporters of MILAN/BILL assumed newer was better, without actually analyzing the capabilities of the missiles.

Letters Editor  
Defense News  
Springfield, VA 22159

Your lead article (*Congress to Army: Start Missile Tests, April 2*) suggests that there is useful information to be gained by further U.S. testing of the European BILL and MILAN anti-tank missiles, that these missiles have merit, and that Congress is united in demanding further tests. All three propositions are open to very serious question.

Our present man-portable anti-tank weapon, the 73-pound Dragon, is deficient in range, accuracy, lethality, launch stealth, portability, operator survivability, and smoke resistance. It requires continuous line-of-sight; it is completely lacking in reactive armor penetration and the ability to fire from an enclosure. The new 45-pound AAWS-M (Advanced Antitank Weapon System-Medium) is coming along well in development and promises to remedy all these deficiencies, but will not be in operation for four years. This gap is unpleasant, but at this point it's unavoidable.

In the interim, we can upgrade some of our Dragons to the marginally more lethal Dragon 2, or we can buy new BILLS or MILANs. All three solutions are inadequate. The main difference is that the European missiles, which use Dragon-generation technology and could be accurately described as "Fat Dragons", cost about 120 (MILAN) or 180 (BILL) times as much per unit as a Dragon 2 upgrade.

Fat Dragons share all the defects of Dragon 2 except range, and their range improvement is achieved by a massive weight gain which renders the missile non-portable by a single man. A BILL weighs as much as a Dragon 2 and an AAWS-M combined! A competitive test would merely demonstrate that Fat Dragons have longer range and higher weight than Dragon 2, and we already know that. In the words of the Marine Corps Commandant, Gen. Alfred Gray, such a test would be "a waste of time and money."

It's true that the FY 1990 Defense Authorization Act mandates the test, and the law should be obeyed. But testing within the specified time frame is unachievable, and later testing would require a specific appropriation. In the current fiscal climate, it's difficult to see why the House Defense Appropriations Subcommittee will or should waste the American people's time and money on Fat Dragons.

Sincerely,

LES AuCOIN  
Member of Congress

A month later, Defense News ran an editorial supporting BILL, to which we responded:

Letters Editor  
Defense News  
Springfield, VA 22159

After spending the last several years immersed in the search for a new man-portable anti-tank weapon, I must disagree with both the general thrust and the specific assertions of your May 14 article on AAWS-M.

It's true that the fire-and-forget design was selected by the Army and the Marine Corps over other "technologies that were less expensive and risky." But if unit cost minimization were our only goal in anti-tank weapons we would stick with the present Dragon or, better yet, simply issue our troops a bag of rocks.

Bean-counting shouldn't obscure the fact that the less ambitious technologies don't do the job as well, or don't do it at all. The relevant measures are dollars per tank killed and dollars per operator who fires and survives; by either standard, fire-and-forget is by far the cheapest solution.

Your cost figures seem inconsistent and incorrect. You say "The Army and Marine Corps plan to spend more than \$1 billion to purchase about 60,000 AAWS-M missiles. Each missile is expected to cost between \$41,000 and \$50,000." But 60,000 missiles for \$1 billion defines a unit cost of \$16,667.

In fact, the program is on schedule and the Army projects average unit cost at about \$22,000. This still isn't cheap. But as a liberal Democrat committed to reducing the defense budget, I believe that in this case we have no alternative.

The Swedish Bofors BILL, in behalf of which you have written several editorials and news articles, is flat-out inadequate. It weighs 118 pounds all-up, vs. AAWS-M's 52 pound first flight hardware, 47 pound current design, and 45 pound requirement. Unlike AAWS-M, BILL can't be fired under cover, has a terribly revealing launch signature, requires the operator to risk his life by maintaining continuous line of sight to the target, and loses accuracy with range or operator flinch.

Most importantly, BILL has zero lethality against the reactive armor which before long will adorn most of the threat. In contrast, AAWS-M has demonstrated high lethality against triple reactive armor.

You are certainly correct that "the Pentagon cannot afford to field weapons that do not work." BILL is clearly in that category; the design just isn't up to the mission.

*It's possible that AAWS-M may yet wind up in the no-work category as well, in the sense that any major step forward involves some technical challenges. But at this point the show-stoppers don't exist.*

*Sincerely,*

*LES AuCOIN  
Member of Congress*

In June of that year, Dan Morgan of the Washington Post, who covered Appropriations Committee matters from a political perspective but who was not a defense expert, wrote a phenomenally gullible article in which he swallowed the MILAN/BILL story hook, line, and sinker. We then wrote a tactful response:

*Letters Editor  
The Washington Post  
1150 15th St. NW  
Washington, D.C. 20071*

*Permit me to add a few observations to your June 13 article on "Arms and the Congress: Anti-Tank Weapons." The Gorbachev-catalyzed world is moving away from heavy offensive military forces and toward "defensive defense." This requires reducing the number of tanks and increasing the effectiveness of anti-tank weapons. There can be no better deterrent to armed invasion than a large number of missiles light enough to be carried and concealed by one man, but powerful enough to stop any tank from any angle.*

*Our present weapon, the Dragon, is hopelessly inadequate. It weighs 73 pounds and lacks range and smoke-penetrating ability. It cannot penetrate the advanced armor which within the next few years will adorn most of the world's tanks. It can't be fired from a standing or prone position, nor from within an enclosure. An even greater deficiency is Dragon's requirement that its operator sit exposed and motionless, guiding the missile while every enemy in sight is pouring fire at him.*

*The U.S. Army and Marine Corps are in final development of an advanced 45-pound weapon, called AAWS-M, which cures all these problems and has performed well in tests. But it won't in the force for several years.*

*As a stopgap or possible replacement for the new device, two European manufacturers are trying to sell us their own obsolescent 118-pound anti-tank models, which share all the deficiencies of Dragon except range. To gain visibility, these concerns are lobbying heavily for a multi-million dollar test of their weapons against Dragon. The Army and Marines oppose such a test, as do I.*

*Our opposition is not, as your article suggests, based on "fear that a test would show that (the European weapons) are superior." Rather it is based on the fact that a test could only show that the European weapons offer longer range at the price of an unacceptable weight increase. We already know that, and there is no reason to spend taxpayers' money demonstrating the obvious.*

*Sincerely, LES AuCOIN*

In 1991, the focal plane array problem had arisen, and we worked with the Army to make the best of it. We asked these questions of Steve Conner in the March hearings:

*Mr. Conner, as you might expect, I'm most concerned about AAWS-M. This is a program I've actively supported from the beginning. Its requirement is indisputable, its basic technology is sound, and there's nothing else available that's even in the same ballpark.*

*But we now face severe internal problems in the program. I've read your report*

which you delivered to my office yesterday, and I want to commend you on it. You're doing exactly the right things under the circumstances. But I wonder if you can tell us more about how it happened.

First, to what degree have the problems been caused by the diversion of resources to the baseline test which was recently completed? What did it cost the program in dollars and time? (Answer: If we hadn't been required to divert resources to that test, we probably wouldn't be having this problem now.)@MD-IT

Second, in your view, was this test necessary, or was it worth the price? Would you have ordered it, if the decision had been left to you? (Answer: The test was worthless. I would never have ordered it.)

One other question, regarding the European interim weapons that some are advocating. Desert Storm was as good an opportunity as the Bofors BILL is every going to get. It may be the last tank battle in history without the reactive armor that makes BILL useless. Politically, Sweden could have scored points by sending some BILL-equipped units to Desert Storm to help the cause of civilization, and in the process demonstrated what BILL can do. Did Sweden do this? (Answer: No.)

Critical Juncture:

We then worked with the Army to restructure the program in a way that would save it rather than kill it. We inserted this language into the Appropriations conference report:

*While the Committee is concerned about the cost, technical, and schedule problems which have developed in the AAWS-M program, the requirement for this weapon remains indisputable. Program termination is not an option that should be considered at this time. All the existing alternatives to AAWS-M entail excessive weight and inadequate capability. Development of an all-new replacement would be both expensive and time-consuming. The Committee therefore directs the Department of Defense to take all possible steps to resolve the problems presently in the program and to field AAWS-M expeditiously.*

*The Committee is unconvinced of the value of the baseline test recently conducted among AAWS-M, Dragon, and TOW, and hopes that such procedures will not be repeated. It is far from clear that the benefit of this test justified the cost and delay it imposed on the AAWS-M program.*

*The Committee therefore designates AAWS-M Fire and Forget technology as an item of special congressional interest, and directs that prior Congressional approval be obtained before any major change in AAWS-M program objectives, program schedule, expenditure rate, or testing program."*

In 1992 the program was in much better shape, and emerging technologies offered the opportunity for weight and cost reduction. We got House Defense Appropriations Subcommittee and House Armed Services Committee to go along with an unauthorized plus-up of \$20M for this purpose, but it after we got it into the Chairman's mark, it turned out that only \$10M was needed, so in the markup I told the Chairman we should reduce the plus-up accordingly. This give-back caused considerable amusement in the subcommittee because no program in living memory had previously given back money.

Ultimately, Javelin prevailed in a shoot-off with other technologies, based on criteria Les developed and added to the defense appropriations bill. "Operator

Survivability" was the top priority in that list, as was accuracy, lethality. Javelin saw combat for the first time in the Balkans war.

The Army's Congressional Liaison Office presented Congressman AuCoin with a "Friend of th3e Infantry Award."