

The Air Force is expending its precision weapons almost as quickly as it receives them.

A year after the Air Force first admitted it was running perilously low on precision guided munitions, the service is still struggling to get production ramped up. It must boost inventories to meet the immediate needs of commanders fighting ISIS and have enough weapons available to fight a peer adversary, if called on to do so.

The shortage is so acute that, for the moment, at least some US allies that want to buy American PGMs, including some coalition partners in the fight against ISIS,

# EMPTY RACKS

By John A. Tirpak, Editorial Director



are being turned away. Rebuilding the supplies will take time, money, and the cooperation of Congress—three things also in short supply.

The service won't give specifics when it comes to how many bombs it has on hand or how short of weapons it really is. This strategic information could benefit an enemy looking to attack US interests in a region where there aren't enough weapons to mount a sustained response. But one USAF field commander told *Air Force Magazine*, "It's true; there are some empty igloos," the term used to describe

USAF photo by TSgt. Robert Cloys



**SSgt. Chris White loads a GBU-54 laser JDAM guided bomb at Bagram AB, Afghanistan. Stocks of JDAMs and precision munitions have been heavily drawn down for operations in Iraq, Syria, and Afghanistan. USAF is trying to boost production, but this requires the orchestration of money, contracts, and suppliers.**

weapons storage bunkers at forward and stateside combat bases. "We have been borrowing heavily" from stocks in other theaters to sustain the air campaign in Syria and Iraq, he said.

Asked for a formal comment, the service said through a spokesman, "The Air Force has moved munitions from other COCOMs [combatant commander areas of responsibility] as well as from CONUS [the continental US] depots to support the war in the Middle East." He said, "Our munitions inventory levels are lower in all locations since the war started."

## BDA IN 48 HOURS

A telling comment about how just-in-time the supply has become was offered in September by Jeffrey Meywes, who runs production at Boeing's St. Charles, Mo., facility, where Joint Direct Attack Munition tailkits—the brains that make an otherwise dumb bomb smart—are built.

Meywes, showing reporters around the facility, casually noted that after a truckload of tailkits and Small Diameter Bombs leaves the facility, "we often get bomb damage assessment within 48 hours." Meaning that within 48 hours, the weapons are trucked to the airport, flown nine time zones to the Middle East, unloaded, assembled, taken to the flight line, mounted on a combat jet, programmed, flown to the target area, and released, after which the pilot returns and debriefs the mission, and USAF forwards to the company an assessment of how well the bomb worked.

They work very well, by the way. JDAMs routinely deliver better than 95 percent reliability and an even better percentage in accuracy. This is what puts them among the preferred munitions in the fight against ISIS. The rules of engagement for Operation Inherent Resolve set commanders and pilots a goal of no civilian casualties or collateral damage—unintended destruction. This is why PGMs are the default choice. Not only are the weapons accurate, but using them is nearly foolproof: They can be loaded with precise target coordinates before the mission and reprogrammed in-flight by the pilot to respond to targets of opportunity.

Lt. Gen. Arnold W. Bunch Jr., top uniformed deputy to Air Force acquisition chief Darlene Costello, said in an interview precision is essential because

"any strike you make today could have strategic implications." Hitting a hospital by mistake, or destroying a civilian neighborhood when the aimpoint was an enemy command post, for example, can turn international opinion against the US.

"And those are all things that the combatant commander and the CFACC [combined force air component commander] ... weigh as they employ and decide what kind of weapons they want to drop," Bunch said.

One former OIR air leader said, until recently, there were no American tanks, artillery, or attack helicopters in the fight, so anytime ground forces had to go through an obstacle, "the only tool was a bomb delivered by a plane." That reality caused PGMs to be expended at an unpredicted and unsustainable rate.

A decision to deploy more artillery and Army Apache helicopters to the anti-ISIS fight was announced by Defense Secretary Ashton B. Carter in April 2016, and it was not until June that they began to play a significant role in operations. That will take some of the pressure off the PGM pipeline, but "we also have to figure a way to decrease the appetite" for PGMs, the former OIR air commander said.

The alarm was quietly sounded last year by former Chief of Staff Gen. Mark A. Welsh III, who observed to some reporters that USAF was expending munitions "faster than we can replenish them." A service spokesperson later elaborated that because much of the replenishment money comes from the Overseas Contingency Operations funding lines rather than base budget, different rules apply to those monies, creating "large delays, up to four years, in recovering the munitions inventory expended in combat." One spokeswoman said the shortage affected not only PGMs but gravity bombs and air-to-air and standoff weapons, too.

Bunch said in an interview that PGM production is being ramped up, but until field commanders reach a greater comfort level with available stocks, foreign military sales of JDAMs to certain countries is being withheld.

"I won't go into details, [but] we have had some countries approach us [about JDAM and] we've said no." But that "no" is more of a "not right now," he said. "We need to work with what we have."

Bunch acknowledged that most of the US partners in the coalition conducting an

An F-16 of the Arizona ANG Air Reserve Test Center fires a Hydra rocket fitted with an Advanced Precision Kill Weapon System II seeker in July 2016. USAF is pursuing new precision munitions like the APKWS.



ANG courtesy photo

air campaign against ISIS use American PGMs, but “we need to wait” in supplying some of them. “We are working with all our partners ... who are dropping these type weapons to ensure that we’re meeting the immediate need. And [looking] into the future as well.”

How did the Air Force get into this munitions hole? The deficit really started to take hold in 2011, when the Air Force, already fighting in Afghanistan and Iraq, was tasked to undertake an air campaign in Libya. It did so, but Congress never got around to providing funding for the Libya operation, and while it approved replacements for weapons used in Afghanistan and Iraq, it didn’t specifically fund a restock for those used in Libya. Moreover, during the Libyan campaign, many NATO partners and other coalition allies quickly exhausted their supplies of American-made precision weapons and had to borrow from the US.

Funding of replacements was slow, and at the NATO Warsaw summit in July, alliance commanders said the restock is still plodding along, five years later, despite a clearly growing threat from Russia.

### VORACIOUS DEMAND

Pentagon acquisition, technology, and logistics chief Frank Kendall, talking with reporters in October about progress in speeding up the acquisition system, said the Defense Department has “the balancing act in every budget of trying to fund within the constraints that we have.” Responding to a question from *Air Force Magazine*, he said it’s “probably fair to say that traditionally and historically, munitions have tended to be a bill payer in that process. We’re addressing that as we go through building this [Fiscal 2018] budget, to see if we can

USAF photo by TSgt. Jeff Andrejick



Airmen attach JDAM tailkits to bomb bodies. Last June, the Air Force’s Life Cycle Management Center upgraded Boeing’s 2014 \$1.7 billion contract to make JDAM kits to \$3.2 billion.

make some corrective action, there.” He said some effort was made to bump up munitions production “going back two or three years” but added, “I don’t think we foresaw the usage rates that we’re seeing right now.”

An Air Force spokesman said the Air Force and Navy buy JDAMs “cooperatively,” but the two services don’t share inventories. When other countries run short of bombs and USAF lends them some, it prefers to receive “replacement-in-kind” with new JDAMs bought by those countries. Such lending is done when it is “required to meet the schedule and is in the best interest of the United States,” he said.

Then there is the voracious demand of the war against ISIS. The combined air and space operations center at US Air Forces Central Command, in its August summary of activity, said the coalition had, in 2016, released between 2,052 and 3,160



USAF photo by SrA. Benjamin Gonsler



USAF photo by MSGt. Lance Cheung

weapons a month against ISIS targets in Iraq and Syria, for a total of 19,623 weapon releases. At that rate, it would have exceeded, by November, the whole-year 2015 total of 28,696 weapons released. The peak weapons-release months were November and December of 2015 and June of 2016. Those months averaged more than 100 weapons drops every day.

Elizabeth R. Kluba, Boeing Military Aircraft’s vice president of weapons and missile systems, told reporters in September that the company is working with the Air Force to increase JDAM and Small Diameter Bomb production. As recently as July, production was at about 110 to 120 tailkits per day, but is now ramping up to 150 per day, with the addition of a second shift at the St. Charles plant. The Air Force wants Boeing to make 36,500 guidance kits per year by the end of 2017.

A company spokeswoman said that during the period 2015-17, JDAM production will have trebled. The 300,000th JDAM tailkit will be produced sometime in early 2017.

Not all the weapons being expended are JDAMs, of course—the list of preferred munitions also includes the Small Diameter Bomb and the Hellfire missile, the latter being the typical



USAF photo by TSgt. James Hodgman

**Top:** SSgt. Stefano Cothran loads JDAMs on a B-52 at Barksdale AFB, La., for a 2014 exercise. **Middle:** SSgt. Randy Broome loads Small Diameter Bombs on an F-15E at RAF Lakenheath, UK, in 2006. **Bottom:** An airman loads pallets of bomb bodies onto a C-17 headed for al Udeid AB, Qatar.



An ISIS command and control building in Raqqa, Syria, before and after being hit by 1,000-pound JDAMs dropped by F-22s on their first combat mission. Rules of engagement demand extreme precision in the anti-ISIS fight.

armament of MQ-9 Reaper remotely piloted aircraft. But in addition to feeding the war, precision munitions are expended in training, to supply certain partners, in other-area operations—notably Afghanistan and Libya—and to refill empty igloos.

In August, the Air Force said it was looking into whether more sources of comparable weapons could be found. Air Force Secretary Deborah Lee James told reporters at a Pentagon briefing that month the service is exploring options whether to simply expand production with Boeing and Lockheed Martin (principal maker of Hellfire) or look for alternative sources.

It's not as easy as simply asking handing the schematics off to another company to build—possibly competitively—more JDAMs and SDBs, Bunch said.

“When we did our acquisition” of the JDAM, for example, “we did not buy the technical data packages” that would allow the Air Force to set up another production source, he said; Boeing alone can make the JDAM. Bunch said the Air Force has not asked Boeing to consider licensing production of JDAM to another company, either domestically or overseas.

### THERE OUGHTA BE A LAW

The JDAM was developed in the early 1990s. At that time, with post-Cold War defense budgets declining, the urgency of having multiple sources for critical items was considered unnecessary and inefficient for the expected levels of production. Many laws or acquisition regulations that had been on the books for decades mandating multiple sources of items such as radars, jet engines, etc., were either waived or allowed to lapse.

Initially thought to be a silver-bullet type of weapon, it was scarcely imagined that something like JDAM would become a bread-and-butter munition used in huge numbers. Bunch said he's aware of no mandate to have a competitive or redundant source for weapons like JDAM.

The Air Force is trying to adapt more weapons to the precision category. One is the Advanced Precision Kill Weapon System—a seeker that attaches to the front of a Hydra rocket. Extremely lightweight, the combined weapon will provide high precision with extremely low chance for collateral damage. Bunch said the Air Force is “working with [contractors and the other services] to get almost triple production of those. We're putting that on the F-16 and some other aircraft.”

Moreover, building more bombs is not something that can be done like turning a faucet. In Boeing's case, it makes the bomb guidance kit, but not the explosive part of the weapon that the tailkit attaches to. The Army actually provides the

bomb bodies to the Air Force, which usually assembles the full weapon right on the flight line. So, Bunch explained, expanding weapon production is a group effort that must orchestrate the activities of prime contractors, subcontractors, often other services, and of course, money from Congress.

That last one is a sticking point. Because Congress did not approve the Fiscal Year 2017 defense budget but instead allowed merely a continuing resolution, that leaves the Air Force's various acquisition programs at their 2016 authorized levels. This in turn limits the service from increasing production of anything, including munitions.

The Air Force is still in the early stages of buying a new munition, the Small Diameter Bomb II, but Bunch said there's been no move to facilitate for massive production.

“We haven't made that leap, yet,” he said. His first priority is getting the program to “Required Assets Available”—having enough units available for it to be fielded on its threshold system, the F-15E Strike Eagle.

“We will take the lessons learned as to how many we put on contract, but we're not there yet,” Bunch asserted.

He said he would not address, as one general put it, “constraining the appetite” of field commanders for PGMs. “As the acquirer, it is a very far stretch to tell the requirer what he or she needs,” Bunch said. “Our job is to provide” the munitions demanded.

“I know there has been dialogue about what weaponry needs to be used on certain targets and all that—are there other options and alternatives that are out there,” Bunch said, but those are decisions to be made by the commanders in the field. “My job is to work with our requirers and industry partners to address that requirement as quickly as I can.”

“The lead time on production on a lot of these munitions is on the order of two years,” Kendall said. “That's really not fast enough, so we are increasing production rates in some areas. Because we do expect that the need for some of these munitions is going to continue for some time.”

Bunch is optimistic that a path to healthy inventories has been developed and that USAF will get there in the not-too-distant future.

“We're making progress,” Bunch said. “I'm very, very pleased. Since I got into the position, we have renegotiated our contract and we have upped our capacity [and] throughput.” JDAM and SDB I production have been accelerated, “we've increased Hellfire, we've brought in APKWS. ... We're attacking this on all fronts, and we're going in the right direction.” ★