Budget Items

FY1991 accomplishment
"completed theoretical analyses of the influence of nuclear weapon height of burst on damage expectance against hard targets to optimize fuzing"
http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA247390&Location=U2&doc=GetTRDoc.pdf

"The D5 missile is capable of carrying both the W76/Mk4 and the W88/Mk5 reentry bodies. While the W88/Mk5 was designed specifically for the D5 during the early 1980s and will not need to be immediately refurbished, the W76/Mk4 warhead and fuze carried on the Mk4 reentry body was designed in the early 1970s and began deployment in 1979 on the TRIDENT I (C4) missile with a design life of 20 years. The W76/Mk4 program was based on the older W68/Mk3 design and some of the components were carried over from that program. There are technical and programmatic issues that require both a refurbished warhead and a refurbished fuze for the W76/Mk4. The Department of Energy and the Navy are executing a refurbishment program for the W76/Mk4 reentry body. The Navy's refurbishment of the W76/Mk4 fuze is supported in the Navy's FY 2004 WPN budget request."

Statement by Rear Admiral Charles B Young, Director, SSP, before the strategic subcommittee of the Senate Armed Services Committee 8 April 2003.
http://www.globalsecurity.org/wmd/library/congress/2003_h/youngcharles.pdf

Selected Acquisition Reports, 31 December 2001 (SAR-011231) -
"reports $361 million as the revised estimate for replacing Mark-4 reentry vehicle parts and the arming, fuzing & firing systems (AF&F). Although the W76 is going through a life extension program conducted by the DOE, it appears that the modification referred to in SAR-011231 is in connection with providing a surface burst capability which, although not as destructive as an earth-penetrating bomb, would be more deadly to hardened targets than the present air burst of the W76 warhead. "..in FY2001 Sandia calculated contact fuze electromechanical operation, warhead designated W76-1, main modification appears to be contact fuse in AF&F. "That assembly is likely the re-entry vehicle part referred to in SAR-011231 that needs replacing".

19 W76 AF&Fs were disassembled, inspected and put through product acceptance testing and an age aware model of the fire set was completed and electronic subcomponent models developed and most AF&F hostile environment testing complete for the W76 dual revalidation, by December 1999.
http://armed-services.senate.gov/statemnt/2000/000225tg.pdf

"We have baselined design and production of the W88 arming, fuzing and firing (AF&F) system and used that data to commit to cost targets for replacing the W76 AF&F." Use COTS where possible
The W76/Mk4 entered Phase 6.3 last year (2000) with a FPU of FY2007
Paul Robinson http://armed-services.senate.gov/statemnt/2001/010425cpr.pdf

FY1996 : RSAP:
Initiated tasks to sustain capabilities in critical areas as identified by the readiness application assessment completed in FY 1995. Task areas included manufacturing technology, deployment systems, fuze and RF systems, antenna window materials, re-entry physics codes and system models, hardening and ground testing.

Designed formulation and requirements definitions to evaluate instrumentation and test concepts for re-entry vehicle service life extension and accuracy maintenance assessments
http://www.finance.hq.navy.mil/FMB/98pres/RDTEN/RDTEN_BA_7_book.pdf

FY 1999 plan – "Initiate feasibility of low-cost replacement candidate for aging Mk4 AF&F"
http://www.dtic.mil/descriptivesum/Y2000/Navy/0101221N.pdf

FY 1999 Accomplishments: "Initiated feasibility of low-cost replacement candidate for aging Mk4 AF&F"
http://www.globalsecurity.org/military/library/budget/fy2001/navy-peds/0101221N.pdf

FY1999 Accomplishments:
Demonstrated developed AF&F instrumentation
Initiated feasibility of low cost replacement candidate for aging Mk4 AF&F
FY2000 plan -
Evaluate AF&F flight data
http://www.finance.hq.navy.mil/FMB/01pres/RDTEN/RDTEN_BA_7_book.pdf

FY2000 accomplishments
Evaluated AF&F flight data
FY2001 plan -
Identify and evaluate low cost design approaches and components include COTS for A&F applicaitons
http://www.finance.hq.navy.mil/FMB/02pres/RDTEN/RDTEN_BA_7_book.pdf

FY2001 plan
"Identified and evaluated low-cost design approaches and components for arming and fuzing applications"
FY2002 – continue evaluation of low cost design approaches & components for A&F applications.
FY2003 – Downselect low cost design approaches & components for A&F applications
http://www.finance.hq.navy.mil/FMB/03pres/RDTEN/RDTEN_BA_7_book.pdf

FY2005 – Initiate development of low cost replacement In Flight Disconnect (ISD) connector for the Mk4A Reentry System.
Navy budget RDTEN BA7 FY2005

Funding sought for FY2008 for "Phase 2 and risk reduction analysis and preliminary development of a follow-on Arming, Fuzing and Firing (AF&F) subsystem for all weapons associated with the Mk5 aeroshell"
http://docs.google.com/viewer?a=v&q=cache:yrA25OCIloYJ:www.fas.org/sgp/crs/nuke/RL32929.pdf+%22follow+on+arming%22&hl=en&gl=uk&pid=bl&srcid=ADGEESjzywSFftVhLvMb4vuJIXxj35Zgvheavgbd7pqN2vBw3PqVWiAm8CenEUKIilCT-tesoq68n5JySHXEJs0rg7oNKoOCOYoLzy6wMMmnKmAi1xi6Cyu0DSnOZ6bVMevwYrOzBC3Z&sig=AHIEtbS-JgH1PnNdmI2CLoP00EAyyxVYEg

Targets vulnerable to Mk4A but not Mk4 (SSPK)

46P0 destruction of concrete or stone wharves, piers and quays

46P8 national nuclear weapon storage bunker
46L8 SS11 silo, MOE for D5 Mk4A

W76-1 JTA1

New AF&F includes diagnostic and one JTA output. New JTA1 transmits this data.

For instance, electronic circuits to monitor performance of the arming, fuzing, and firing (AF&F) system are being embedded within the system itself. Dept. 2331 is responsible for designing the instrumentation assembly that will provide the AF&F diagnostic information to the telemetry for retransmission. Using one interface for digital information instead of the previous approach of individual channels and circuits has helped shrink the data acquisition components.

Less than two square inches

The new W76-1 JTA1 will also include a distributed telemetry module. This module allows the gathering of accelerometer data using a digital interface. The module contains the signal-conditioning circuitry, analog-to-digital conversion, control logic, digital interface, and power-conditioning circuits. All of the electronics cover less than two square inches of board space.

The overall volume of the new telemetry assembly takes up less than two-thirds the volume of the most current telemetry package in the W76 Type 2F. In two instances, three printed wiring boards have been shrunk to just one; that occurred with both the terminal data analyzer and the integrated telemetry processor. The processor is not only smaller, it will record more than double the previous number of channels (250 instead of about 100).

http://www.sandia.gov/LabNews/LN01-24-03/key01-24-03_stories.html

W76-1 JTAs 1, 2, 7

http://209.85.229.132/search?q=cache:RH_O1JfrZKwJ:nnsa.energy.gov/infrastructure/documents/Y-12_TYSP_2009-2018_final.pdf+jta1+joint+test+assembly&cd=13&hl=en&ct=clnk&gl=uk

W76-1 JTA 2 – Development started in FY2002 budget, for use in surveillance tests.

W76-1 production delay:

"The design issue related to the AF&F components was addressed through a design modification," LaVera said when announcing that first W76-1 had been delivered to Navy in August 2009.
http://blogs.knoxnews.com/munger/2009/11/w76_production_rate_better_tha.html

W76 Replacement AF&F
The SWPP Project was created to support the reconstitution of the DOE capability to design, develop, certify and produce radiation hardened strategic war reserve reentry systems and subsystems. Under that umbrella, the SWPP Advanced AF&F Project was created
Start Date 010797; Project completion date 300905; last update 2000. Sandia Albq
Funding:
1997 DP0101017 $6k 1998 DP0101017 $6.9m 1999 DP0101017 $3.4m; Project P/SNL--4487
http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA247390&Location=U2&doc=GetTRDoc.pdf