SMALL-ARMS PULL APART
MACHINE
APE 2271
-SPAM-
Small-arms Pull Apart Machine -SPAM-
AGENDA

✓ BENIFITS
✓ HISTORY
✓ CURRENT CAPABILITY
✓ INHERITED PROBLEMS
✓ CURRENT DESIGN GOALS
✓ MACHINE MAJOR COMPONENTS
✓ APE 2271 OVERVIEW
EASES IMPACT ON THE ENVIRONMENT
- REDUCED OPEN BURN
- POWDER NOT BURNED IN DEACTIVATION FURNACE
  - Reducing overall emissions

INCREASED DEMIL PRODUCTIVITY
- ONLY PROJECTILES ARE BURNED IN DEACTIVATION FURNACE

UTILIZES R3 IDEALS
Tooele Army Depot acquired the SPAM from the Olin Ordinance Products of Marion, IL

Inherent troubles
- High reject rate.
- High mechanical failures
CURRENT CAPABILITY

✓ PROCESS 20mm AMMUNITION

✓ DEMILITARIZE 15,000 TO 18,000 ROUNDS PER 10 HR SHIFT
Initial Problems

- Inherent troubles
  - High reject rate.
    - 70% rounds rejected
  - High mechanical failures
    - Firing pin breakage
    - Projectile gripping components breaking
    - Primer functioning electrical faults
INHERITED PROBLEMS

Inherited Problems

- High Reject Rate
  - 70% of Rounds Rejected
- Mechanical Failure
  - Firing Pin Breakage
  - Projectile Gripper Failure

- PLC and Resolver Timing Problems
- Primer Function Circuit Faults
- Insufficient Spring Forces in Firing Mechanism

- Vacuum Tube Technology
- Shorting Firing Circuit
MUNITION PROBLEM

- BAD PRIMERS
  - CORRODED
    - (ELECTRICAL INITIATED)
  - PRIMER BURNING INSTEAD OF POPPING
    - PERCUSSION

- POWDER CLUMPING
UNCLASSIFIED

SOLUTIONS

✓ PRIMERS

➢ REPLACE VACUUM TUBE CIRCUIT WITH SOLID STATE ADJUSTABLE VOLTAGE CIRCUIT

➢ OPTICAL INSPECTION

✓ POWDER

➢ VIBRATOR

➢ AIR INJECTION
CURRENT DESIGN GOALS

✓ INCREASE PRODUCTION
  ➢ 20,000 TO 25,000 ROUNDS / 10 HR SHIFT

✓ INCREASE RANGE OF MUNITION
  ➢ 50 CALIBER TO 30mm MUNITION
  ➢ INVESTIGATE DIFFERENT CONFIGURED MUNITION
    • 40mm, M344 CARTRIDGE
COMPONENTS
(shown without enclosures)

UNCLASSIFIED

PRIMER FUNCTION
REJECT

POWDER
COLLECTION &
SCALE

PROJECTILE
PULL

INFEED

OPTICAL
INSPECTION

PROCESSED
BRASS
HOPPER

PROJECTILE
COLLECTION &
SCALE
APE 2271 FUTURE OVERVIEW

- ADDITION OF A UNPACK STATION
  - REDUCE MANPOWER
  - INCREASE FEED RATE

- CARTRIDGE CASE DEFORMER
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