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Los Alamos

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21 October 1997

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Albuquerque Operations Memo #16 7/31/98

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Derived From: *CGUS 1998*
(Gather Source Document & Source Date)

1 - Weapon Specific PD

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Category

Direct
Support

Title

WBS

PI

W88

Pit Manufacturing
*Process Coordination

Pits

M. Palmer

1.5.4.2.1

W88

Rebuild/Surveillance
Analytical Chemistry

Pits

B. McKerley

1.5.3.3

W88

Pit Casting Issues

Pits

K. Axler

1.5.4.2.5

W88

Supercritical CO2 Cleaning

Pits

C. Taylor

1.5.4.2.4

W88

Pyrochemical Processing

Pits

J. Williams

1.5.4.2.6

W88

Pit Materials Compatibility

Pits

M. Moy

1.5.4.2.7

W88

Pit Analytical Standards

Pits

M. Moy

1.5.4.2.3

W88

Pit Manufacturing
Analytical Chemistry

Pits

C. Leasure

1.5.4.2.2

W87/B61

Detonator Production
Definition

High
Explosives

T. Turner

1.5.6.1

W76

Time Dependent Behavior
of W76 AFT Supports

Nonnuclear
Components

TBD

1.5.8

Old/W76

Pit and Container Storage
at Pantex

Assembly/
Disassembly

T. Vidlak

1.5.2.4

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2 - Continuous Improvement

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Preparatory Support

Category

Title

PI

WBS

W78

Canned Subassemblies

Forming and Evaluation of a Special CSA Material

L. Wang

1.5.5.4

DOE
b(3)

SMRI

Canned Subassemblies

U Process Chemistry

J. Nielsen

1.4.2.4

W80

Tritium and Reservoirs

Tritium Plan & Personnel Exchange

R. Nolen

1.5.7.1

W87

Tritium and Reservoirs

NTTL Target Development

S. Black

1.5.7.3

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DOE
1 b(3)

Category

Title

PI

WBS

SMRI

Canned Subassemblies

U Near Net Shape Process & Models

D. Korzekwa

1.5.5.2

W78

Canned Subassemblies

Purification of a Special CSA Material

S. Kinkead

1.5.5.3

SMRI

Canned Subassemblies

Enclosed U Operations

P. Tubesing

1.5.5.1

SMRI

Canned Subassemblies

ULISSES

J. Nielsen

1.4.2.3

W80

Tritium and Reservoirs

Tritium Storage Materials

R. Nolen

1.5.7.2

Old

High Explosives

Implementation of Base Hydrolysis/Hydrothermal Processing at Pantex

R. Flesner

1.5.6.2

High Explosives

Manufacture of Improved Detonator Powders

T. Turner

1.5.6.3

All

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4 - Advanced Crosscutting Technology PD UNCLASSIFIED

Preparatory Support

Category

Title

PI

WBS

All

Canned Subassemblies

Program Management and Integration

D. Carstens / R. Nolen

1.5.1.5

Preparatory Support

Category

Title

PI

WBS

5 - Enterprise Integration

SMRI

Enterprise Modeling

Complex Modeling

T. Rising

1.5.1.2

W87

Enterprise Modeling

Integrated Programmatic Scheduling System (IPSS)

L. Dilsaver

1.1.7.2

All

Business Practices

Product Realization Training

S. Cohen

1.5.1.3

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WBS PI Title

Category

1.5.1.4	K. Franklin	Requalification at Pantex	Product Qualification and Acceptance	W78/W80
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United States Government

Department of Energy

memorandum

Albuquerque Operations Office

DATE: FEB 18 1998

REPLY TO
ATTN OF: WPD:JC

SUBJECT: Supplemental AL Workload Planning Guidance (AWLPG) Information (u)

TO: Those on Attached List

This memorandum provides supplemental guidance to the AWLPG 98-0 document that should be used in formulating Stockpile Life Extension Program budget forecasts as required in the Fiscal Year 2000 Budget Call.

Table 1 provides a listing of products and assemblies, by program, that constitute the workload cases to be analyzed and forecast. Where additional detail or definition is required, production sites should contact appropriate design agency systems personnel for assistance. As soon as possible, production sites should submit a listing of the product and assembly assumptions utilized in their budget analysis to Weapon Programs Division. Reference Table 2 for a matrix identifying points of contact.

Table 3 provides yearly, ultimate use Start I schedules, by program and workload case, that should be used in the generation of budget forecasts. Table 4 provides the same type schedule information for Start II levels. Production sites should assume a 3 month lead time for first order delivery requirements. Higher order delivery requirement lead times should be negotiated with the receiving site and documented as a cost study assumption.

Guidance contained in this memorandum supersedes information included in AWLPG 98-0.

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1ST REVIEW DATE: 6/12/95	DETERMINATION (CIRCLE NUMBER(S))
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NAME: L. C. Phillips	6. CLASSIFIED INFO BRACKETED
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Patricia E. O'Guin
Deputy Director
Weapon Programs Division

Albuquerque Operations
Memo #H. 7/31/98

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Att. 3

98SA20C000128

Addressees - Memorandum dated FEB 18 1998

Steve Henry, DP-22, HQ
Steve Goodrum, AAO
Dave Gurule, KCAO
Wayne Richardson, SR
Mark Livesay, OR
Tom Todd, LAAO
Mike Zamorski, KAO
Henry Vigil, MS-A102, LANL
Larry Witt, MS-F630, LANL
Paul Cunningham, MS-A102, LANL
Bob Henderson, MS-F660, LANL
Frank Villareal, MS-0107, SNL/NM
Don McCoy, MS-0453, SNL/NM
Leonard J. Martinez, MS-0869, SNL/NM
Al Stroupauer, MS-0423, SNL/NM
John Arfman, MS-0423, SNL/NM
Jim Woodard, MS-1233, SNL/NM
Vic Johnson, MS-0634, SNL/NM
Larry Altbaum, MS-L125, LLNL
Rodney Skelton, MHC
John Hudson, MHC
Kathleen Herring, MHC
Larry Mayes, MHC
Steve Beeler, AS-FM&T/KC
John Clayton, AS-FM&T/KC
Michelle Stine, AS-FM&T/KC
Dale Basham, AS-FM&T/KC
Linda Williamson, MS-8223, LMES
Jim Stout, MS-8208, LMES
Margaret Morrow, MS-8016, LMES
Bill Reis, MS-8016, LMES
Pam Kennedy, WSRC
Dennis Hayes, WSRC
Earl Whiteman, OTSP, AL
Kathy Carlson, ONDP, AL
Pat O'Guin, SPD, AL
Stan Hearn, TDD, AL
Ralph Levine, WQD, AL
John Garberson, WQD, AL
Mark Baca, WSD, AL
Richard Glass, WPD

Addressees - Memorandum dated FEB 18 1998

Mike Echart, WPD, AL
Dan Rose, WPD, AL
Luis Paz, WPD, AL
Curt Kenagy, WPD, AL

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TABLE 1

PROGRAM LIFE EXTENSION OPTIONS

PROGRAM	CASE 1	CASE 2	CASE 3
61-3/4/10	Common Nose (Includes MC4033) Misc Pads, Plastic Parts, Foams, O-rings	Neutron Generators (Small Tube) ECA Power Supply	Neutron Generators (Small Tube) ECA Power Supply Acom Programmer Fwd & Aft Cases NEP Plastic Parts IHE Cables
61-7/11	Trajectory Sensing Signal Generator Junction Box (with LAC) Preflight Controller ICU MET CSA Function Select Switch Cables Misc. Pads, Plastic Parts, Foams, O-rings (FIELD)	Neutron Generators (Small Tube) Parachute (FIELD)	Neutron Generators (Small Tube) Parachute Acom Programmer NEP Plastic Parts IHE Cables Misc. Pads, Plastic Parts, Foams, O-rings
62		Neutron Generators (Large Tube) Fuze (SNL design) Firing Set (CDU with CAP-like features) Stabber Battery Bulkhead Dets Programmer/Controller Acom and valve LAC NEP Supports Misc Pads, Plastic Parts, Foams, O-rings	Same as Case 1

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TABLE 1
PROGRAM LIFE EXTENSION OPTIONS

PROGRAM	CASE 1	CASE 2	CASE 3
76	<p>CHE</p> <p>Dets and Holddowns</p> <p>Cables</p> <p>Misc. Pads, Plastic Parts, Foam, O-rings</p>	<p>CHE</p> <p>Dets and Holddowns</p> <p>Cables</p> <p>Misc. Pads, Plastic Parts, Foam, O-rings</p> <p>New AF&F</p> <p>CSA</p> <p>Backup Ring</p> <p>AN Support & Cover</p> <p>Seal Cover</p> <p>Cables</p> <p>Misc. Pads, Plastic Parts, Foams, O-rings</p>	<p>CHE</p> <p>Dets and Holddowns</p> <p>Cables</p> <p>Misc. Pads, Plastic Parts, Foams, O-rings</p> <p>New AF&F</p> <p>CSA</p> <p>Backup Ring</p> <p>AN Support & Cover</p> <p>Seal Cover</p> <p>Cables</p> <p>Misc. Pads, Plastic Parts, Foams, O-rings</p>
78	<p>CSA</p> <p>Schrader Valve</p> <p>Desiccant</p> <p>Tapered Tapes</p> <p>LACS</p> <p>Misc. Pads, Plastic Parts, Foams, O-rings</p>	<p>CSA</p> <p>Schrader Valve</p> <p>Desiccant</p> <p>Tapered Tapes</p> <p>LACS</p> <p>Misc. Pads, Plastic Parts, Foams, O-rings</p> <p>Firing Set Modification</p> <p>CHE</p>	<p>CSA</p> <p>Schrader Valve</p> <p>Desiccant</p> <p>Tapered Tapes</p> <p>LACS</p> <p>Misc. Pads, Plastic Parts, Foams, O-rings</p> <p>Firing Set Modification</p> <p>CHE</p>
80	<p>Desiccant</p> <p>Neutron Generators (Small Tube)</p> <p>Schrader Valve</p> <p>1K Valve</p> <p>Area Mount (Mod 0 only)</p> <p>Misc. Pads, Plastic Parts, Foams, O-rings</p>	<p>Desiccant</p> <p>Neutron Generators (Small Tube)</p> <p>Schrader Valve</p> <p>1K Valve</p> <p>Area Mount (Mod 0 only)</p> <p>Misc. Pads, Plastic Parts, Foams, O-rings</p> <p>Trajectory Sensing Signal Generator</p> <p>Interconnect Control Box (ICCB)</p> <p>Firing Set (with Det Safing & MET features)</p> <p>WES Cover</p> <p>Cables</p> <p>Function Select Actuators</p> <p>IHE & Dets</p> <p>Acom</p>	<p>Desiccant</p> <p>Neutron Generators (Small Tube)</p> <p>Schrader Valve</p> <p>1K Valve</p> <p>Area Mount (Mod 0 only)</p> <p>Misc. Pads, Plastic Parts, Foams, O-rings</p> <p>Trajectory Sensing Signal Generator</p> <p>Interconnect Control Box (ICCB)</p> <p>Firing Set (with Det Safing & MET features)</p> <p>WES Cover</p> <p>Cables</p> <p>Function Select Actuators</p> <p>IHE & Dets</p> <p>Acom</p>

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TABLE 1

PROGRAM LIFE EXTENSION OPTIONS

PROGRAM	CASE 1	CASE 2	CASE 3
83-1	R2 & R3 Valves Actuators CF Cables Bends (FIELD)	Neutron Generators (Small Tube) Main Filter Pack Preflight Controller CF Cables	Neutron Generators (Small Tube) Main Filter Pack Preflight Controller CF Cables Detonator/Booster Det Cable
83-0	R2 & R3 Valves Actuators CF Cables Bends (FIELD)	Neutron Generators (Small Tube) Main Filter Pack Preflight Controller CF Cables	Neutron Generators (Small Tube) Main Filter Pack Preflight Controller CF Cables Mod 0 to 1 Conversion Alt 752 Product (Common Radar) Detonator/Booster Det Cable
87			Acorn
88			Acorn

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TABLE 2

AWLPG/SLEP POINTS OF CONTACT

<u>PROGRAM</u>	<u>ORGANIZATION</u>	<u>POC</u>	<u>PHONE #</u>
SLEP	DOE/AL-WPD	John Clayton	505-845-4257
	Pantex	John Hudson	806-477-5988
	Oak Ridge Y12	Bill Reis	423-576-8265
	Kansas City Plant	Dale Basham	816-997-3652
	SNL Mfg.	Vic Johnson	505-284-2412
	LANL Mfg.	Bob Henderson	505-665-5866
B61 Tact.	DOE/AL-WPD	Cheryl Post	505-845-6386
	SNL	Aaron Hillhouse	505-844-3976
	LANL	Roberta Idzorek	505-665-8421
B61 Strat.	DOE/AL-WPD	David Blake	505-845-4454
	SNL	Aaron Hillhouse	505-844-3976
	LANL	Roberta Idzorek	505-665-8421
W62	DOE/AL-WPD	Renee Ballard	505-845-4263
	SNL	Ken Mitchell	510-294-2125
	LLNL	Roger Logan	510-423-4872
W76	DOE/AL-WPD	Dan Rose	505-845-5179
	SNL	Wayne Ledger	505-845-8378
	LANL	Dave Harris	505-667-0852
W78	DOE/AL-WPD	Rich Cameron	505-845-6361
	SNL	Dennis Helmich	505-844-5980
	LANL	Zeke Aragon	505-667-6300
W80	DOE/AL-WPD	Traci Pellegrino	505-845-5137
	SNL	Phil Hoover	505-844-4661
	LANL	Dave Trujillo	505-667-7336
B83	DOE/AL-WPD	Cindy Longenbaugh	505-845-4557
	SNL	Roger Everett	510-294-2736
	LLNL	Larry Altbaum	510-422-9012
W84	DOE/AL-WPD	Traci Pellegrino	505-845-5137
	SNL	Mike Foley	510-294-3087
	LLNL	Larry Altbaum	510-422-9012
W87	DOE/AL-WPD	Wendy Baca	505-845-6340
	SNL	Bob Anderson	510-294-2554
	LLNL	Jack Robbins	510-422-7060
W88	DOE/AL-WPD	Dennis Umsler	505-845-4740
	SNL	Karen Shin	505-844-3502
	LANL	Mike Haertling	505-667-0592

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United States Government

Department of Energy

memorandum

Albuquerque Operations Office

DATE: January 07, 1998

REPLY TO
ATTN OF: WPD:CKK

SUBJECT: Albuquerque Workload Planning Guidance (AWLPG) 98-0 Transmittal

TO: Those on Attached List

Transmitted for your use is the AWLPG 98-0 document. The AWLPG contains the information necessary for your organization to complete schedule 10 of the Special Schedules in the AL FY2000 Budget Call. If you have any questions please contact Curt Kenagy, of my staff, at (505) 845-5075.

Kathleen A. Carlson
Assistant Manager for
National Defense Programs

Attachment (SFRD)

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
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Al Stroupauer, MS 0423, SNL/NM
John Arfman, MS 0423, SNL/NM
Jim Woodard, MS 1233, SNL/NM
Larry Altbaum, MS L125, LLNL
Rodney Skelton, MHC
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Steve Beeler, AS-FM&T/KC
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Stan Hearn, TDD, AL
Ralph Levine, WQD, AL
John Garberson, WQD, AL
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**STOCKPILE
LIFE EXTENSION
PROGRAM**

**ALBUQUERQUE WORKLOAD
PLANNING GUIDANCE**

98-0
(u)

Approved for Release:

K A Carlson

Kathleen A. Carlson
Assistant Manager for Defense Programs

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1. Introduction

a. Purpose.

The purpose of the AWLPG is to document and provide a common set of planning assumptions and schedules to be used by the nuclear weapons complex to estimate long term costs to implement the Stockpile Life Extension Program (SLEP). The information contained in this document is for planning purposes only, and is in no way directive to the complex.

This is the first SLEP AWLPG to be issued to the complex. It is expected to be updated as required and issued on an annual basis with the annual budget call.

b. Stockpile Life Extension Program (SLEP)

DOE DP has established the Stockpile Life Extension Program (SLEP) to develop a single, unifying, integrated program to maintain the safety, reliability, and performance of the U.S. nuclear deterrent under a Comprehensive Test Ban Treaty (CTBT) and without the complete systematic replacement of aging warheads. It is designed to address weapons stockpile concerns by defining current work and probable future requirements for the nuclear weapons complex; in essence, providing the detailed information necessary to develop the grand strategy

The SLEP provides the planning process for evaluating the components in each weapon of the enduring nuclear weapons stockpile by focusing on each component's contribution to weapon long-term reliability, performance, and safety. The program places particular emphasis on components whose degradation might cause a reduction in weapon performance or safety and provides the framework for evaluating weapon refurbishment actions in light of these concerns. A key element of the SLEP is the development of an assessment and risk management process to establish priorities for potential component replacement or refurbishment. These priorities will lead to the development and recommendation of specific life extension options (LEOs) for each weapon in the stockpile. These LEOs focus on resolution of the concerns involving weapon performance or safety, and also provide component replacement or refurbishment concepts to resolve emerging concerns, provide enhancements, and support new performance requirements for the nuclear weapons stockpile.

The SLEP has five fundamental goals.

1. Develop and maintain an integrated weapons program schedule. This schedule will identify all critical elements of weapons-related support activity for the weapons complex. With an integrated, complex-wide plan, DP can address and resolve capacity, scheduling, and resource issues. The surety, reliability, and performance of the stockpile will then be maintained in a cost-effective and efficient manner

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2. Develop a standard methodology to review weapons for refurbishment actions on a recurring basis. This methodology will utilize a risk management process to assess the reliability of weapon components using an objective, analytical approach, and determine the vulnerability of each component to aging phenomena. This process provides a means to identify and separate those components where the greatest concerns from aging effects exist and whose failure/degradation would have the most deleterious effect on weapon performance from those components having minimal impact or no known aging effects. Once components are segregated and prioritized from most to least risk to stockpile performance for each weapon type, LEOs will be created for each warhead/bomb.

3. Provide the basis for coordinating with the DoD. The DoD must have a full understanding and confidence in DOE's analysis of component degradation including the basis for these analyses, and the impact the degradation will have on a weapon's reliability, performance, and safety. Once this understanding is achieved, efforts can focus on coordinating the specifics and detailed scheduling for the implementation of LEOs

4. Provide the basis for redefining the DOE acquisition process throughout the weapons complex by establishing programmatic controls for the implementation of LEOs. The DOE Phase One through Phase Seven Nuclear Weapon Development Process, while suited for an environment that emphasizes new weapon design and production, must now be adapted to focus on refurbishment activities and accommodate new concepts, e.g., concurrent design and manufacturing processes, rapid prototyping, etc.

5. Establish a multiyear, requirements-based, program planning, budgeting and execution system for DP. A multiyear program plan to identify requirements and associated resources to satisfy the requirements is the key output of SLEP. To accomplish this activity, DP plans to develop and implement a Programming Planning, and Budgeting Execution System (PPBES) to focus on multiyear program planning, while meeting single-year OMB and Congressional budget submission requirements.

c. Program and Planning Directive (P&PD) Guidance

P&PD 98-0 provides the following Budgeting and Programming Guidance:

"SLEP has developed a set of proposed LEOs by weapon type. The LEOs represent DOE's best assessment of current and future workload expectations. The charts are to be used for planning and budgeting purposes only. These LEOs are to provide the basis for the Albuquerque Workload Planning Guidance. These LEOs should be used for budget submissions at a START I stockpile level. To bound expected cost, a START II stockpile without reactivation should also be

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costed, as START II with reactivation essentially equals a START I cost. The LEOs do not constitute an Alteration or Modification until approved by the appropriate Project Officers Group."

d. AWLPG Description

This document contains the following elements needed for the weapons complex to estimate long range budgets:

- (1) Life Extension Options (LEOs) for each weapon system
- (2) Schedules for implementing the LEOs, for both START I and START II scenarios
- (3) Cost estimating guidelines
- (4) Assumptions, constraints, and emerging issues

2. Assumptions, Constraints, and Goals

a. Assumptions

- (1) Stockpile Quantities (START I & START II) from P&PD 98-0
- (2) AWLPG covers FY 2001 through FY 2015 (15 years beyond budget call)
- (3) Dismantlement backlog complete in FY 2002 (START I)
- (4) Currently approved programs (such as Master Nuclear Schedule Vol. III or approved Mods or Alts already in process) are not included in this AWLPG.

b. Constraints

- (1) SSMPEIS capacities used as a starting point only
 - (a) Maximum of two weapon mods simultaneously
 - (b) 300 total mods per year
- (2) Schedules are requirements-driven as opposed to load leveled for convenience

c. Goals

- (1) Identify LEO costs by weapon system
- (2) Identify "phased costs" associated with multi-program activity
- (3) Identify potential capacity (facility and/or personnel) shortages associated with planning workload
- (4) Identify research and development timelines and activities leading to production

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3. Life Extension Options

This section provides details on the LEOs for individual weapon systems. For each system, a narrative paragraph describes the potential LEOs for that system, indicating which component replacements are considered hard or soft drivers, and any emerging issues associated with that system. Finally, a spreadsheet (Table 1) lists each replacement component with notional engineering development, production, and weapon refurbishment start and stop dates, along with production rates and total quantities, and the location (field or Pantex) of the replacement action.

a. B61-3/4/10

The potential B61-3/4/10 LEOs, schedules, and quantities are shown in Table 1. None of the LEOs have been approved by the B61 POG. Pertinent comments and emerging issues are as follows:

1. The ALT 335/339 Add-On consists of additional ALT 335/339 conversions for the remainder of the Active Stockpile.
2. The common radar upgrade is the replacement of the current radar with the B83/B61 common design. Production is a continuation of the B83 radar production, with application to the B61-7/11 first, then to the B61-3/4/10. Current radar production uses sunset technology parts, and there are not enough parts to complete production for all B61s. Therefore, some engineering development is needed.
3. The hard drivers for the B61-3/4/10 are the neutron generator and the power supply. The power supply life was recently extended, so that the first units will expire in 2011.
4. The Excursion Case includes an ACORN transfer system for increased performance margin. Replacement of the NEP plastics causes the Excursion Case LEO to be done at the Pantex Plant.

b. B61-7/11

The potential B61-7/11 LEOs, schedules, and quantities are shown in Table 1. None of the LEOs have been approved by the B61 POG. Pertinent comments and emerging issues are as follows:

1. The common radar upgrade is the replacement of the current radar with the B83/B61 common design. Production is a continuation of the B83 radar production, with application to the B61-7/11 first, then to the B61-3/4/10. Current radar production uses sunset technology parts, and there are not enough

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Table 1. -- START I Life Extension Options

App Sys	LEO / Driver	Components	MC	Intrusion Level	Labs		Plants		Pantex		LEO Description / Remarks	
					FSED	End	Begin	End	Begin	End		
D61-3,4,10	A. All 335/339 AS Add-on	TSSG		2	1999	2001	2002	2003	(Field)		Done in conjunction with LLCE	
		Junction Box (incl. LAC)										
		Preflight Controller										
		Filter Pack (Cover Plate)										
		Cables										
		Misc. Pads, Plastic, Foams, O-Rings										
		Common Rdr				1997	2002	2003	2009	(Field)		Applied after B83 & B61-7
		Misc. Pads, Plastic, Foams, O-Rings										
		NGs (New Small Tube)	MC3535			2007	2009	2011	2018	(Field)		
			MCxxxx			2008	2010	2011	2018			
D61-7,11	A. Common Rdr	Excursion: NGs & UC above plus:		4	2004	2009	2011	2018	2012	2019	Must be done @ PX due to NEP Plastics & IHE	
		ACORN	MC 7									
		Programmer	MC3152									
		Fwd/Aft Cases	MC3791/...									
		NEP Plastics										
		IHE										
		Cables										
		Misc. Pads, Plastic, Foams, O-Rings										
		Common Rdr				1997	1999	2000	2003	(Field)		Extend B83 production & apply to B61s
		Misc. Pads, Plastic, Foams, O-Rings										
D61-7,11	B. TSSG & CSA	TSSG	MC3640	2	2000	2002	2003	2007	(Field)		ITSSG & CSA Refurbishment	
		Junction Box w/ LAC	MC3616									
		Preflight Controller	MC3619									
		ICU	MC3638									
		CSA	561									
		MET	All 339-like									
		Function Sol. Switch										
		Cables										
		Misc. Pads, Plastic, Foams, O-Rings										
		Mod-1 carryover										
D61-7,11	C. NGs	Excursion: NGs above plus:		4	2007	2009	2012	2017	(Field)		Mod-1 carryover	
		ACORN	MC 7									
		Programmer	MC3637									
		NEP Plastics										
		IHE										
		Cables										
		Misc. Pads, Plastic, Foams, O-Rings										
		Common Rdr				2004	2009	2012	2017	2012	2017	Must be done @ PX due to NEP Plastics & IHE
		Misc. Pads, Plastic, Foams, O-Rings										

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Table 1. -- START I Life Extension Options

Wpn Sys	LEO / Driver	Components	MC	Intrusion Level	Labs		Plants		Plantex		LEO Description / Remarks	
					FSED	End	Begin	End	Begin	End		Begin
W62	A. LES Opt.#3	NGs (New Large Tube) Fuze (SNL Design) CDU FS w/ CAP-like features Stabber Battery Bulkhead Dets Interface Programmer/Controller ACORN / Valve LAC NEP Supports Misc. Pads, Plastic, Foams, O-Rings		3 - 4	2002	2006	2007	2013	2007	2013	Minimal & Existing Cases are the same FS includes a new Inert Stronglink W62 is included for schedule interaction with other programs; not to be costed.	
					1999	2006						
					1999	2006						
W76	A. C.I.E	CHE Dets & Det Holddowns Cables Misc. Pads, Plastic, Foams, O-Rings New AF&F w/ CAP-like features New Follow-on AF&F CSA Backup Ring Aft Support & Cover Seal Cover Cables Misc. Pads, Plastic, Foams, O-Rings		4 - 5	2008	2011	2011	2021	2012	2022	Returb. a. Estimated HE and-of-life Aft Support destroyed during disassembly	
					2003	2006			2012	2022		
					2007	2011			2012	2022		
W78	A. C.I.A	CSA Schrader Desiccant Tapered Tapes LACs Misc. Pads, Plastic, Foams, O-Rings Misc. Pads, Plastic, Foams, O-Rings CHE FS Modification (to existing SFE FS)		3, 4 & 5	2004	2006	2007	2012	2007	2012	if new FS required, cost be similar to W62 new FS. Returb. based on Dealcoat End-Of-Life (EOL could also ±2 years)	
					2004	2006	2006	2011				
W100.1	A. All. lth	Desiccant NGs (New Small Tube) MC4532 Schrader 1K GTS Valve Area Mount (Mod-0 only) Misc. Pads, Plastic, Foams, O-Rings Misc. Pads, Plastic, Foams, O-Rings TSSG ICCB New FS w/ Det Saling & MET features WES Cover Misc. Pads, Plastic, Foams, O-Rings Cables Func. Sel. Actuators IHE & Dets ACORN		3 - 4	1997	2003	2004	2011	2005	2012	On-going valve refurbishment Mod-1 is done before Mod-0s (ACORN FPU concern - See discussion in W80 text description)	
					1996	1997	2006	2011	2005	2012		
					1996	1997	2006	2011	2005	2012		
							2004	2011				
							1998	2003				
							1999	2003	2004	2011		
							1999	2003	2004	2011		
							1998	2003	2004	2011		

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Table 1. -- START I Life Extension Options

Wpn Sys	LEO / Driver	Components	MC	Intrusion Level	Labs		Plants		Refurbishment		LEO Description / Remarks			
					FSED	End	FPU	End	Begin	End				
EPL-1	A	Valves Actuators CF Cable Bends	MC3251-like MC3753-like CF2512-like	2	2000	2006	2006	2008	(Field)		Refurbish Mod-1s before Mod-0s			
					2006	2006								
B	NGS	NGs (New Small Tube) Main Filter Pack Preflight Controller CF Cables	MC3466-like MC3505-like MC3496-like CF2516-like	3	2008	2009	2010	2014	2011	2015	Refurbish Mod-1s before Mod-0s			
					2009									
					2009									
					2009									
Excursion: NGs above plus: Detonator / Booster Det Cable					2009	2014	2010	2014						
EPL-0	A	Valves Actuators CF Cable Bends	MC3251-like MC3753-like CF2512-like	2	2000	2006	2008	2010	(Field)		Refurbish Mod-0s after Mod-1s			
					2000									
					2006									
					2006									
					2008	2009	2014	2017	2015	2018	Refurbish Mod-0s after Mod-1s			
					2009									
					2009									
					2009									
					Excursion: NGs above & Convert Mod-0's to Mod-1's plus: OIP Alt.752 Detonator / Booster Det Cable					2010	2012	2010	2017	
					2011	2013								
2010	2012	2013	2017											
2010														
W87	A	NGs (New Small Tube) NGs above plus:	MC3421 MC	2 or 3	2009	2009	2010	2012	2011	2013	For planning only: use cost estimates for B61 equivalent comp's.			
					2006	2010	2010	2012	2011	2013	W84 is included for schedule interaction with other programs; DQJ to be costed.			
W87	A	Alt.342 FS J108 cover/barrier FS mounting screws Seal Off valve Cable Tie Block Misc. Hwdr & O-Rings CSA	5	1996	1998	1999	2004	1999	2004	2004	All 342 as currently defined			
B	Excursion:	ACORN	2	1997	2009	2009	2014	(Field)		Continuous LLC activity beginning in 2010				
C	Excursion:	IHE	4			2034	2039	2035	2040	Continuous LLC activity beginning in 2009				
						2008	2012	(Field)						
W88	B	NGs (New Small Tube) NGs above plus: CHE Dets CSA Misc. Pads, Plastic, Foams, O-Rings	MC4562	3 4-5 4 4 5	2002	2008	2008	2012	2020	2024	Continuous LLC activity beginning in 2009			
									2020	2024				
									2020	2024				

Only item to be costed for the W87 is ACORN

Only item to be costed for the W88 is ACORN

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parts to complete production for all B61s. Therefore, some engineering development is needed.

2. There are no hard drivers on the B61-7/11. The soft drivers are the TSSG and the CSA. CSA refurbishment is included because of the CSA age. The B61-7/11 CSAs were originally fielded in the B61-1.

3. Neutron generators and parachutes will be refurbished or replaced as part on normal LLCE.

4. The Excursion Case includes an ACORN transfer system for increased performance margin. Replacement of the NEP plastics causes the Excursion Case LEO to be done at the Pantex Plant.

c. W62

1. The W62 will not be costed as part of this AWLPG. The W62 LEO shown in Table 1 is included for purposes of schedule interactions with other programs. The W62 POG has a Life Extension Study in progress, and the complex has already provided cost estimates.

d. W76

The potential W76 LEOs, schedules, and quantities are shown in Table 1. None of the LEOs have been approved by the W76 POG. Pertinent comments and emerging issues are as follows:

1. The conventional high explosive (CHE) is a soft driver for the W76. Los Alamos has put forth a "rolling" lifetime for the CHE, which has an approximate 10 year window from the present. 2012 was selected as a reasonable start date.

2. The POG is studying potential changes to the W76 as part of the Strategic Warhead Protection Program (SWPP). A new AF&F is being developed under SWPP. The first design iteration will be complete in 2006, and the second iteration in 2011. The 2011 date is consistent with the 2012 date selected for the CHE.

3. ACORN and replacement neutron generators are already in development for the W76.

e. W78

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The potential W78 LEOs, schedules, and quantities are shown in Table 1. None of the LEOs have been approved by the W78 POG. Pertinent comments and emerging issues are as follows

1. The CSA is included as a soft driver. The Fireset Assembly is included as a soft driver since a shortage of firesets will eventually prevent surveillance rebuilds.
2. For AWLPG purposes, a fireset modification is proposed instead of a new fireset design. The modification consists of modifying existing stocks of firesets from W68 and W76 and using them in the current W78 fireset. The cost of a new design fireset will be estimated in the W62 Life Extension Study.
3. The W78 POG is conducting a Joint Life Extension Study in FY 1998.

f. W80-0/1

The potential W80-0/1 LEOs, schedules, and quantities are shown in Table 1. Pertinent comments and emerging issues are as follows:

1. The desiccant is a hard driver in the W80, with the first units reaching end of life in 2006. A study is underway to more accurately predict the end of life, which may be extended by as much as 2 years. The W80 POG is already considering a LEO to replace the desiccant (ALT 346), and the POG set a date of 2004 for refurbishment to begin. However, Los Alamos has proposed an ACORN for the W80, with an FPU of 2006. For AWLPG purposes, the LEO date used is 2005, assuming that either the desiccant life can be extended or Los Alamos can pull up the ACORN FPU date.
2. The Excursion Case includes addition of MET into the W80. For MET to be a useful addition, the Air Force will have to modify aircraft electronics, to which they have not yet agreed.

g. B83-1

The potential B83-1 LEOs, schedules, and quantities are shown in Table 1. None of the LEOs have been approved by the B83 POG. Pertinent comments and emerging issues are as follows:

1. The R2/R3 field retrofit is planned for the B83, with the Mod 1s done before the Mod 0s.
2. The neutron generator is a hard driver in the B83-1, with the first units to be replaced in 2011. Neutron generators must be replaced at Pantex.

h. B83-0

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The potential B83-0 LEOs, schedules, and quantities are shown in Table 1. None of the LEOs have been approved by the B83 POG. Pertinent comments and emerging issues are as follows:

1. The R2/R3 field retrofit is planned for the B83, with the Mod 1s done before the Mod 0s.
2. The neutron generator is a hard driver in the B83-0, with the first units to be replaced in 2014, after completion of the Mod 1s. Neutron generators must be replaced at Pantex.
3. The Excursion Case includes replacement of the detonators, cables, and booster. For AWLPG purposes the B83-0 Excursion Case includes conversion of the Mod 0s to Mod 1's.

i. W84

1. The W84 will not be costed as part of this AWLPG. The W84 LEO shown in Table 1 is included for purposes of schedule interactions with other programs. Both the neutron generators and the power supply are hard drivers for the W84. However, comparable cost estimates for these components will be derived from the B61-3/4/10 LEOs.

j. W87

1. The W87 is currently undergoing a Life Extension Program defined as ALT 342. The W87 LEP shown in Table 1 is included for purposes of schedule interactions with other programs. The only item to be costed for the W87 in this AWLPG is the addition of an ACORN as indicated in the Excursion Case.

k. W88

The potential W88 LEOs, schedules, and quantities are shown in Table 1. None of the LEOs have been approved by the W88 POG. Pertinent comments and emerging issues are as follows:

1. The only LEO to be costed for the W88 in this AWLPG is the addition of an ACORN. The remaining LEOs are beyond the timeframe for the AWLPG.
2. The POG is studying potential changes to the W88 as part of the Strategic Warhead Protection Program (SWPP).

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4. Schedules

The following schedules are a combined overlay of all the weapon LEOs based roughly on the throughput capacity at Pantex and Y-12. There is one set of schedules based on START I, and one set of schedules based on START II without reactivation. A description of the schedules is as follows:

Table 2 is a summary, by weapon system, of the production and refurbishment start and stop dates, production rates, and total quantities from Table 1.

Figure 1 is the basic LEO schedule laid out to show program overlaps.

Figure 2 is the basic LEO schedule with Full Scale Engineering Development (FSED) and plant production added, along with the AWLPG timeframe.

Figure 3 is the potential Pantex workload based on the START I stockpile and the Excursion Case LEOs as described in Chapter 3. It includes both hard and soft drivers.

Figure 4 is the potential Y-12 workload based on the START I stockpile and the Excursion Case LEOs as described in Chapter 3. It includes both hard and soft drivers.

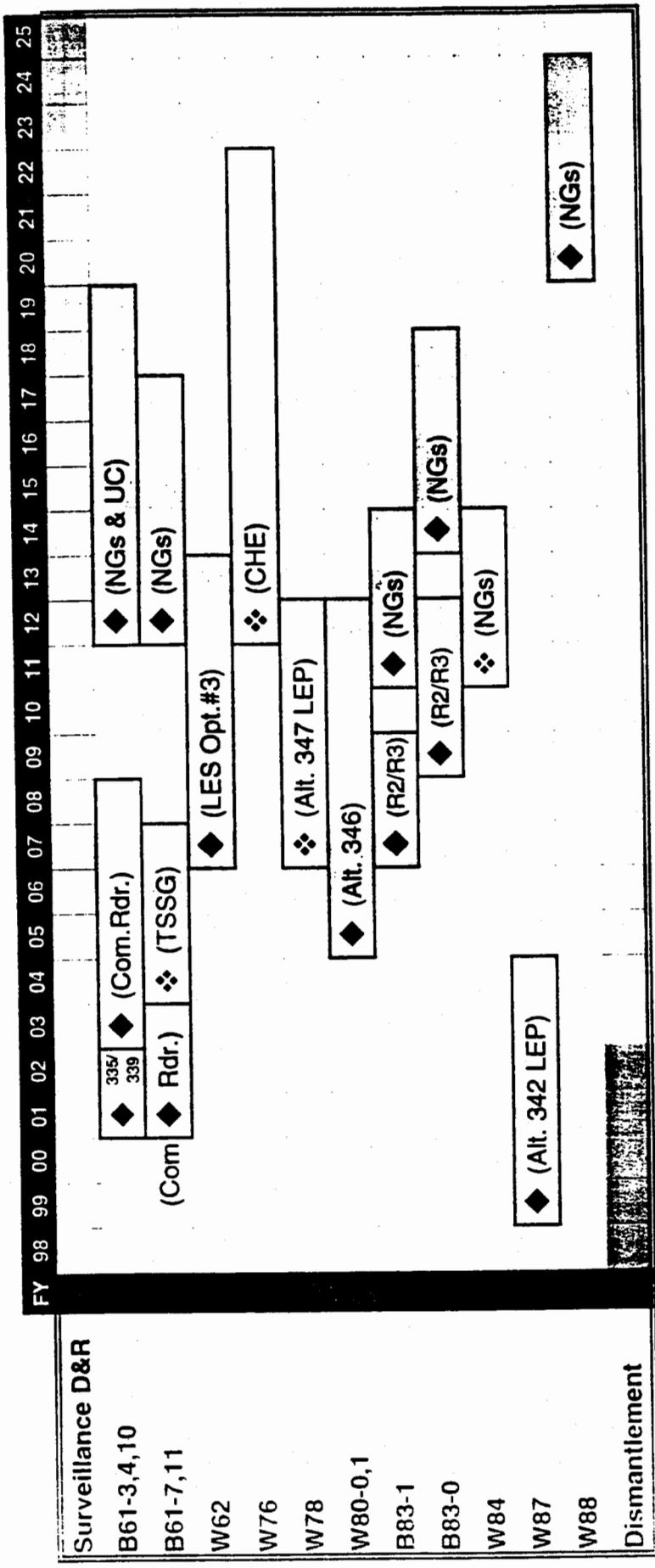
Table 3 is a summary, by weapon system, of the production and refurbishment start and stop dates, production rates, and total quantities to support START II without Augmentation.

Figure 5 is the potential Pantex workload based on the START II stockpile without Augmentation, and the Excursion Case LEOs as described in Chapter 3. It includes both hard and soft drivers.

Figure 6 is the potential Y-12 workload based on the START II stockpile without Augmentation, and the Excursion Case LEOs as described in Chapter 3. It includes both hard and soft drivers.

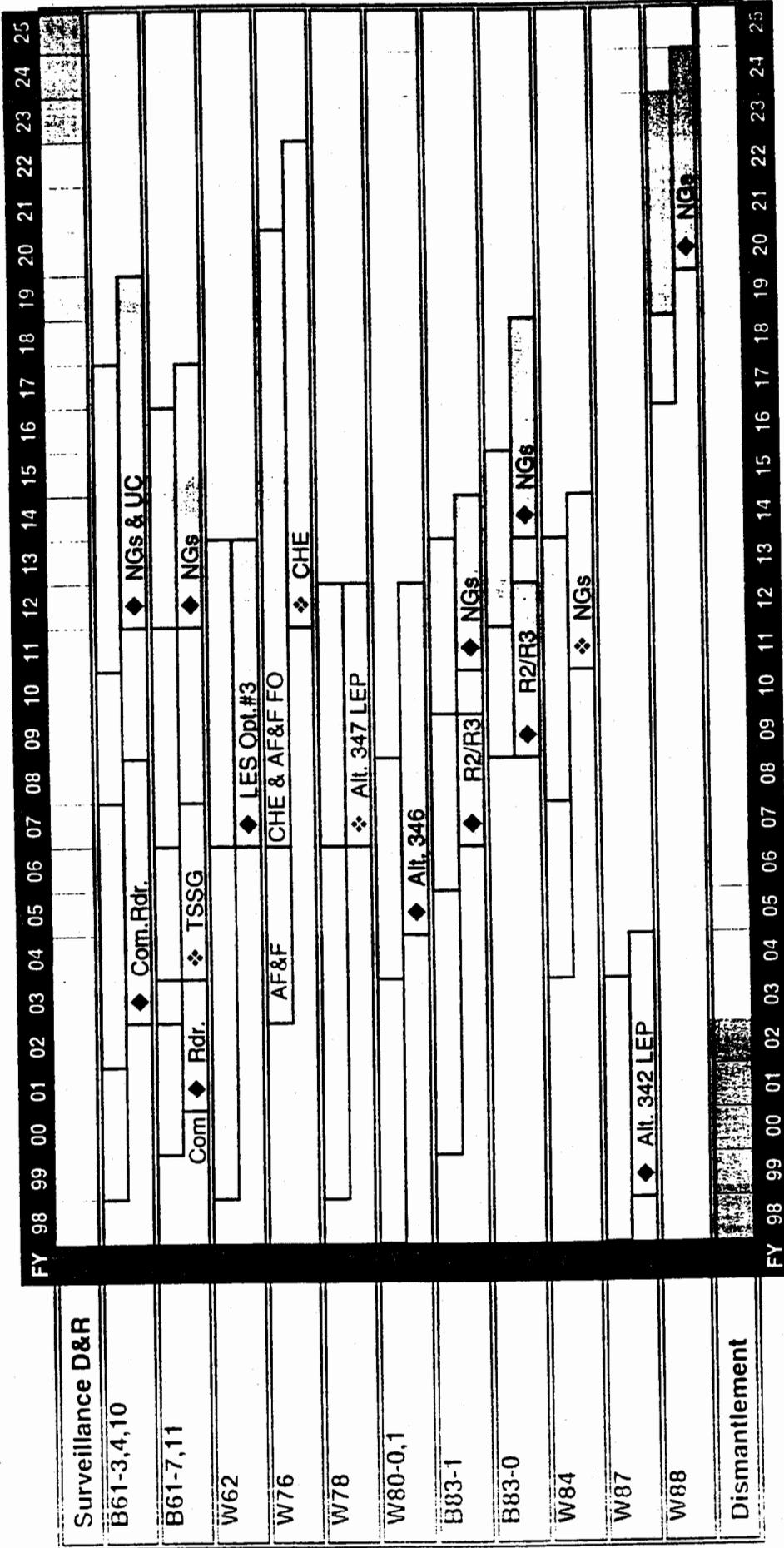
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Figure 1. -- Refurbishment Schedule



Begin refurbishment action: ◆ (Hard Driver)
 ◆ (Soft Driver)

Figure 2. -- Workload Schedule



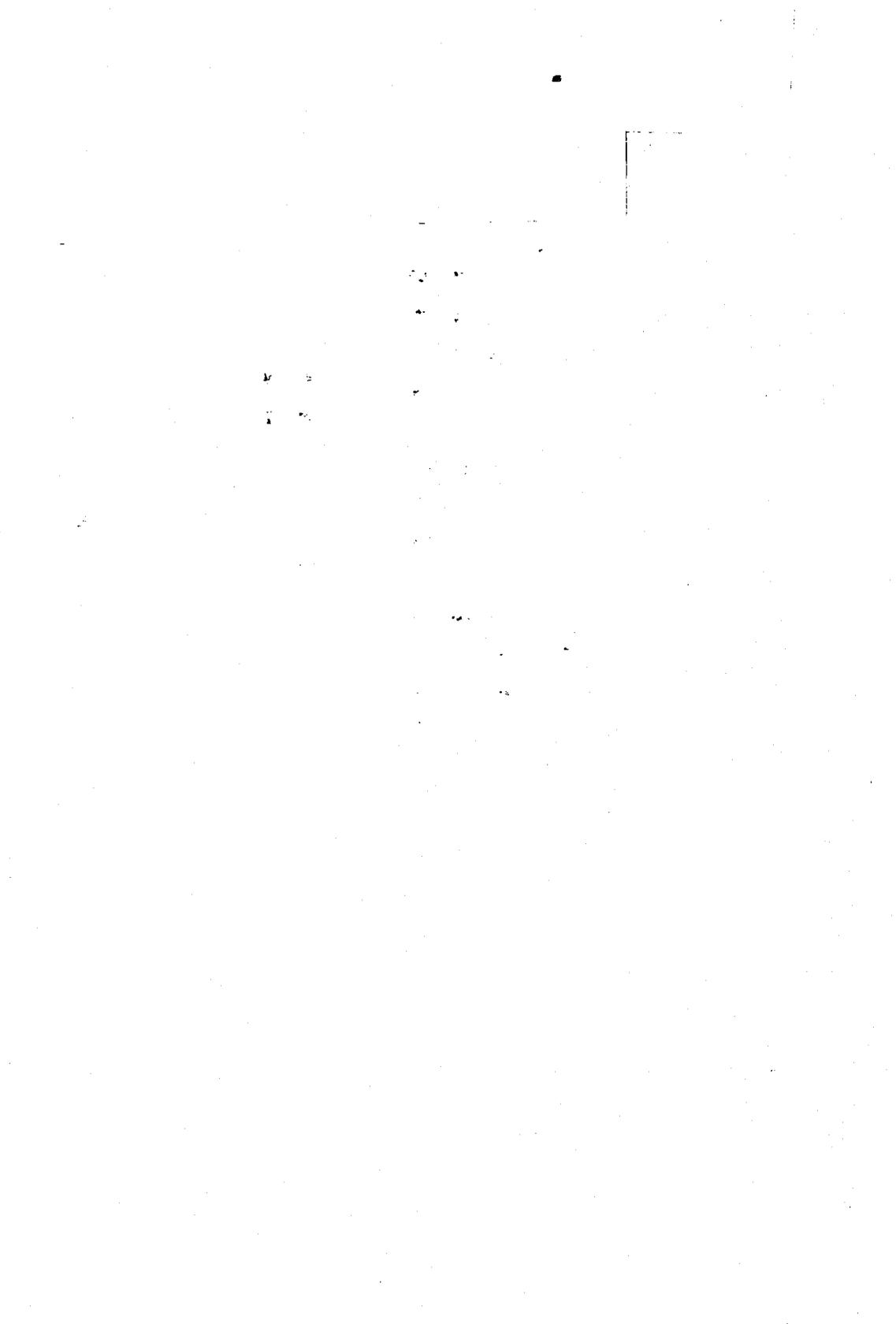
FSED
Production
Refurbishment

◆ (Hard Driver)
 ❖ (Soft Driver)

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Figure 3. -- Pantex START I Schedule



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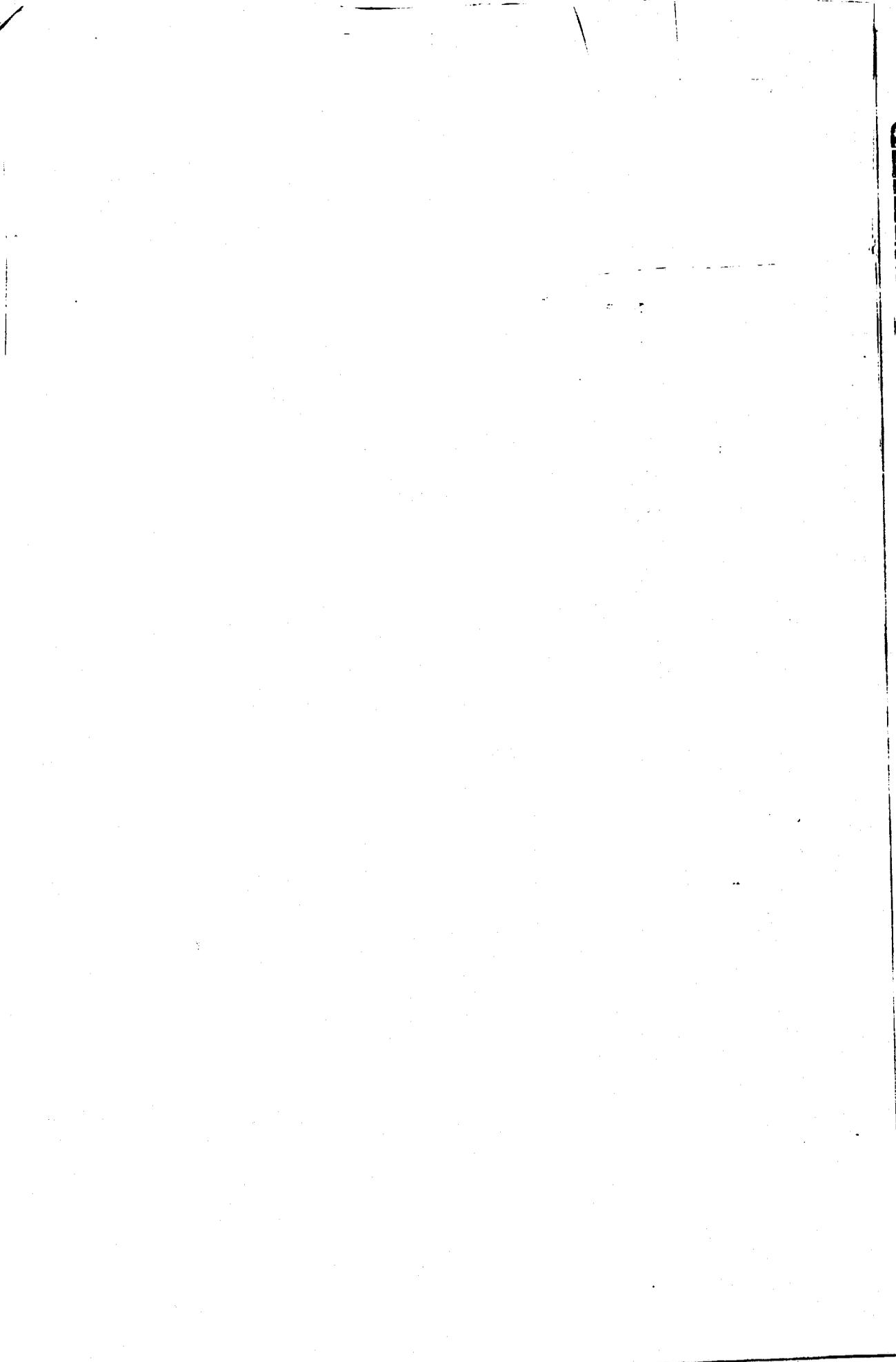
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Figure 4. -- Y-12 START I Schedule



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Table 2. -- START I Schedule

Wpns Sys	LEO	FSED		KCP		PX	
		begin	End	FPU	LPU	FPU	LPU
B61-3,4,10	Alt.335/339 AS Follow-on	(Soft)		2002	2003		
	Com. Rdr.	(Hard)		2003	2009		
	NGs & UC	(Hard)	✓	2011	2018	2012	2019
B61-7,11	Com. Rdr.	(Hard)		2000	2003		
	TSSG (+CSA)	(Soft)		2003	2007		
	NGs	(Hard)	✓	2012	2017	2012	2017
	LES #2,3,5	(Hard)	✓	2007	2013	2007	2013
W76	CHE	(Soft)	✓	2008	2011	2011	2021
W78	Alt. 347 LEP	(Soft)	✓	2006-07	2011-12	2007	2012
	Alt. 347 LEP plus	(Soft)	✓	2006-07	2011-12	2007	2012
W80-1	Alt. 346	(Hard)	✓	1998-04	2009	2005	2011
	Alt. 346 plus	(Hard)	✓	1998-05	2009	2005	2011
W80-0	Alt. 346	(Hard)	✓	2010	2011	2011	2012
	Alt. 346 plus	(Hard)	✓	2010	2011	2011	2012
B83-1	R2 & R3	(Hard)		2006	2008		
	NGs	(Hard)	✓	2010	2014	2011	2015
	NGs plus	(Hard)	✓	2010	2014	2011	2015
B83-0	R2 & R3	(Hard)		2009	2010		
	NGs	(Hard)	✓	2014	2017	2015	2018
	NGs plus	(Hard)	✓	2014	2017	2015	2018
	Convert to Mod-1	(Soft)	✓	2010	2024	2011	2025
W84	NGs	(Soft)	✓	2006	2010	2011	2013
	NGs plus	(Soft)	✓	2006	2010	2011	2013
W87	Alt. 342 LEP	(Hard)	✓	1999	2004	1999	2004
	ACORN	(Soft)	✓	2009	2014		
	IHE	(Soft)	✓	2034	2039	2035	2040
W88	ACORN	(Soft)	✓	2008	2012		
	NGs	(Hard)	✓	2019	2022	2020	2024
	NGs plus	(Hard)	✓	2019	2022	2020	2024

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B3

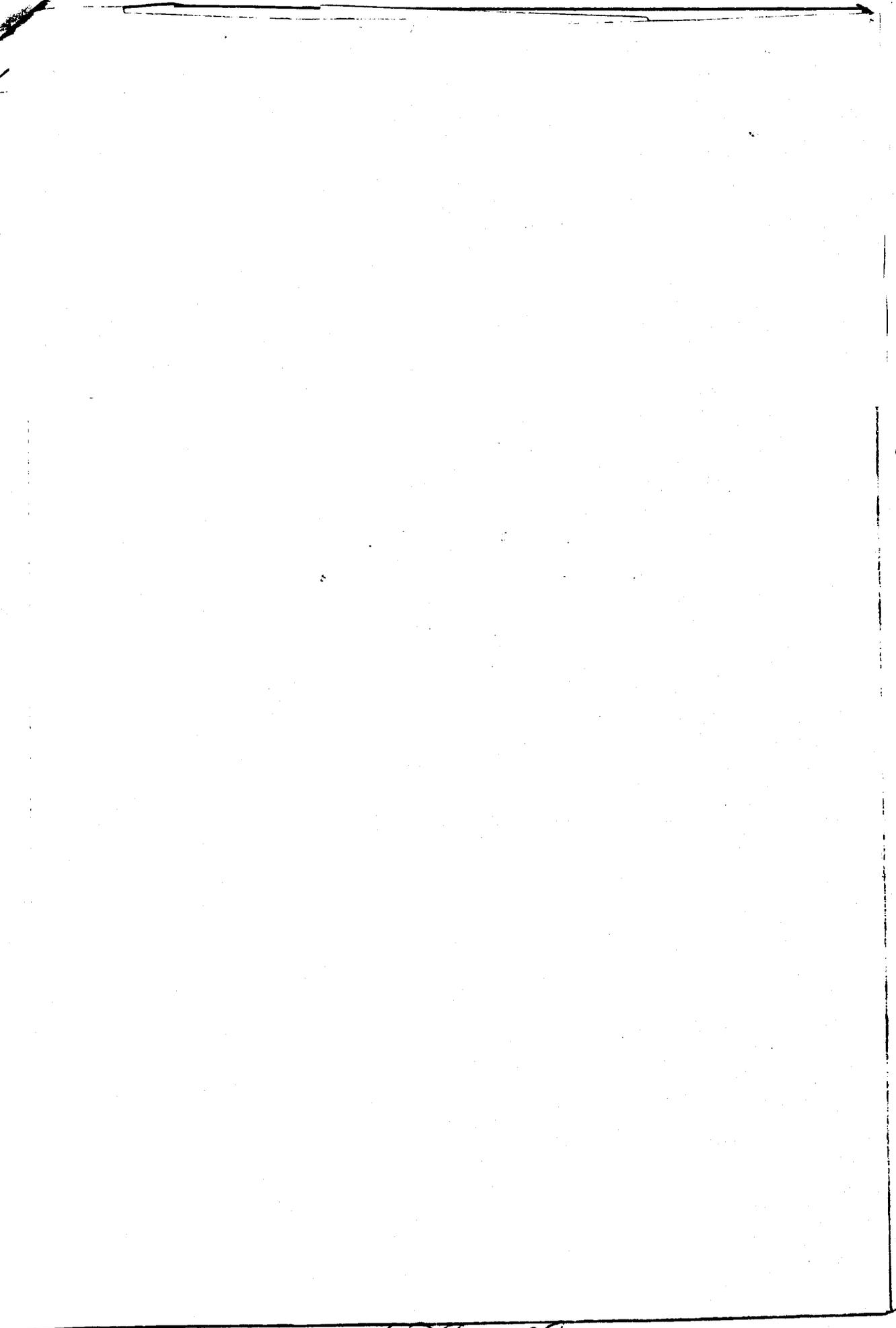
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Table 3. -- START II Schedule (with NO Augmentation)

Wpns Sys	LEO	FSED		KCP		PX	
		Begin	End	FPU	LPU	FPU	LPU
B61-3,4,10	Alt. 335/339 AS Follow-on (Soft) Com. Rdr. (Hard) NGs & UC (Hard) ✓			2002 2003 2011	2003 2009 2018		2012 2019
B61-7,11	Com. Rdr. (Hard) TSSG (+CSA) (Soft) NGs (Hard) ✓			2000 2003 2013	2003 2005 2015	2004 2006 2014	2006 2016
W62	LES #2,3,5 (Hard) ✓						
W76	CHE (Soft) ✓	2008	2011	2011	2020	2012	2022
W78	Alt. 347 LEP (Soft) ✓ Alt. 347 LEP plus (Soft)			2009 2009	2011 2011	2010 2010	2012 2012
W80-1	Alt. 346 (Hard) ✓ Alt. 346 plus (Hard)			2004 2004	2010 2010	2005 2005	2011 2011
W80-0	Alt. 346 (Hard) ✓ Alt. 346 plus (Hard)			2010 2010	2011 2011	2011 2011	2012 2012
B83-1	R2 & R3 (Hard) NGs (Hard) ✓ NGs plus (Hard)			2006 2010 2010	2009 2013 2013	2011 2011 2011	2015 2015
B83-0	R2 & R3 (Hard) NGs (Hard) ✓ NGs plus (Hard)						
W84	Convert to Mod-1 (Soft) NGs (Soft) ✓ NGs plus (Soft)	2006 2006	2010 2010	2010 2010	2012 2012	2011 2011	2013 2013
W87	Alt. 342 LEP (Hard) ✓ ACORN (Soft) IHE (Soft)			1999 2009 2034	2004 2014 2039	1999 2035	2004 2040
W88	ACORN (Soft) NGs (Hard) ✓ NGs plus (Hard)			2008 2019 2019	2012 2022 2022	2020 2020 2020	2024 2024 2024

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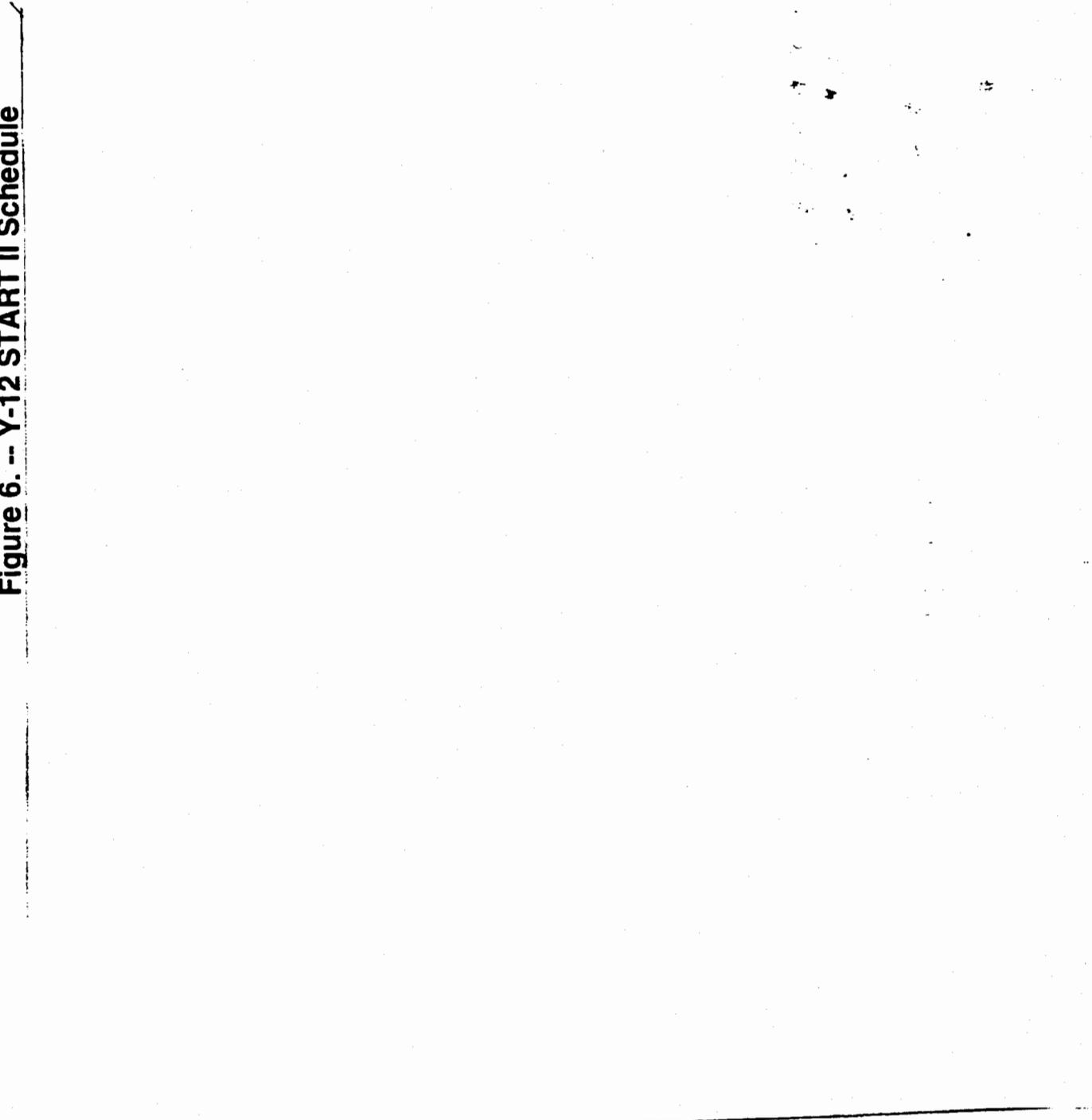
Figure 5. -- Pantex START II Schedule



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Figure 6. -- Y-12 START II Schedule



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5. Cost Estimating Guidelines

Cost estimating guidelines for the AWLPG are included with the budget call issued by BRMD, AL for the FY2000 budget. The SLEP AWLPG is Schedule No. 10 in the Special Schedules section of the budget call. The following six pages have been extracted from the Budget Call and have been included here for continuity. It is recognized that cost estimates may be less accurate with incomplete product definition and projection into the future.

Phased costs (by year) costs are to be estimated on a per year basis, not just a single total for each program.

6. Due date

Cost estimates for this AWLPG should be submitted to AL along with the normal budget call responses.

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APPENDIX B

Component Unit Costs

Direct Labor (Component Unit Basis)

This component unit cost is the procured cost, which is expended directly upon the materials comprising a finished product for fabrication, assembly and in-line inspection and evaluation. It should be developed on a component or piece-part basis, using the latest available engineered or historical direct labor hours for each component. It includes labor for nonproductive time (including annual, holiday, and sick leave), labor lost through scrap or from in-plant attrition.

Direct Support (Component Unit Basis)

This component unit cost should include all of the support costs that are variable with production. This primarily includes fringe benefits, overtime shift differential, termination costs, other manpower costs, and supplies and services related to fabrication assembly, in-line inspection and evaluation direct labor. It also includes the manufacturing operation direct support (salaries and wages, fringes, other manpower costs, and related supplies and services) that can be directly identified to a specific weapon system for fabrication, assembly, in-line inspection and evaluation and quality supervision and control.

Direct AFC (Component/Unit Basis - AFC Only)

This component unit cost should include all of the life of production allowance for change relating to base costs for direct material, direct labor, direct fringe, and direct support. The unit cost provided should represent the estimated allowance for change cost of delivering one more weapon's worth of good components to the next user.

Note: Direct labor hours should correspond with the fabrication, assembly, in-line test and inspection costs reported in direct labor costs.

The format of the CUC report follows on page B-3. Production site's or site's with touch labor work are responsible for filling in columns 8-14 for work that they will complete. DOE and the Design Laboratory(s) are responsible for columns 1-7. Each CUC will begin with columns 1, 2, 4, 5, 6, and 7, filled out by the Design Laboratory(s) with an initial review of the proposed CUC by DOE AL Weapons Production Division and Budget and Resources Management Division. The "Level Number" will not be filled in until all the CUC reports are received by DOE from the sites. The following definitions should be used to accurately report the information in columns 1-7.

Nomenclature

The nomenclature of the part should be the "street name" of the part that was developed to allow the weapons community to speak about the part without being in a classified setting. Do not use the real name of the part where a street name has been established.

Part Number

The part number refers to the MC number or Drawing Number or if these aren't available the look alike part MC number or commercial vendor name.

Production Site

The name of the site that will complete the work or procure the designated part from an outside vendor.

APPENDIX B

Component Unit Costs

User Site

This is the site that will use the part in the higher level assembly. If the part is an integral part of a completed lower level assembly that is not complete without the part then the part is a part of that lower level assembly and the user site listed should be the site that is completing the lower level assembly. In other words, the production site and user site may be the same.

Lab

Lab refers to the Design Laboratory for the specific part.

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5. Cost Estimating Guidelines

Cost estimating guidelines for the AWLPG are included with the budget call issued by BRMD, AL for the FY2000 budget. The SLEP AWLPG is Schedule No. 10 in the Special Schedules section of the budget call. The following six pages have been extracted from the Budget Call and have been included here for continuity. It is recognized that cost estimates may be less accurate with incomplete product definition and projection into the future.

Phased costs (by year) costs are to be estimated on a per year basis, not just a single total for each program.

6. Due date

Cost estimates for this AWLPG should be submitted to AL along with the normal budget call responses.

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APPENDIX B

Component Unit Costs

Component Unit Costs Reports (CUC) are prepared throughout the year for special studies leading to LEP's, production of WR like components and JTAs.

Special Studies & Price Estimates

Component Unit Cost information should summarize the cost estimate of work to be completed on each assembly, subassembly, or component of the subject weapon system, JTA, and REST activities. The level of detail included will be decided by WPD with inputs from the project group charged with conducting the study. Generally, this information will include the cost of direct material, direct labor, direct fringe, direct support, and direct allowance for change (AFC). The component unit cost will provide cost data to the project group, which will be used for design/cost trade-off's and provide increased visibility of the cost to produce a weapon system as the design evolves. Since this data will also be used for budget and program analysis purposes, the same assumptions in regard to design, first user, make/buy, etc. used in pricing out the budget should also be used in calculating the component unit cost.

On Per-Unit Basis

The CUC report will be completed on a basis of producing one more weapons worth of WR components to the next user. The component unit cost calculated by each contractor will include only its own incurred costs, including overbuild for in-plant attrition. The component unit costs will not include the cost of system-furnished material used in the manufacturing process or consumed in D-test.

GUIDANCE

Direct Unit (direct material, direct labor and direct support)

No preproduction activities: TMS, pilot production, etc.
No ETUs
No Type Ss
No qualifications
No out-of-plant activities
No actuals

Direct Tooling

Not required for this submission.

Direct Production/Process Engineering

Not required for this submission.

Definitions

Direct Material (Component Unit Basis)

This component unit cost should be developed on a component or piece-part basis, using the latest available standard for a weapon's worth of each component or piece part. (If procurement is complete on a component, then use the last price paid for the item.) It should include all material (both material for in-house fabrication and vendor-procured components) that form an integral part of a finished product and includes material lost through scrap, and in-plant attrition. Material that is needed for the completion of a product, but whose consumption with regard to product is either so small or so complex that it would be futile to treat it as a direct material, should be classified as direct support costs.

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Schedule 10

SLEP Cost Studies
Component Unit Cost Data
Total Report

<u>Nomenclature</u>	<u>Part No.</u>	<u>Level No.</u>	<u>Production Site</u>	<u>User Site</u>	<u>Lab QTY</u>	<u>Direct Material</u>	<u>Direct Labor</u>	<u>Direct Fringe</u>	<u>Direct Support</u>	<u>Subtotal</u>	<u>Direct AFC</u>	<u>Total Direct</u>
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Stockpile Life Extension Programs Budget Requirements (\$ in Thousands)

CY	Current Estimate		EOP
	CY+1	BY	
FY 97	FY 98	FY 99	FY XX

Total	Prevoius	Change
Current Estimate	Estimate	

Unit Related
Direct Labor
Direct Materials
Direct Fringes
Direct Support
Total Unit Related
AFC

System Related
Direct P&P E
Direct Tooling
Capital Equipment
T & H Gear
Direct Preproduction Activities
TMS (tool made sample)
PPI (process prove in)
Pilot Production
Qualification
Total System Related

Indirect
TOTAL

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