

ACIS Verification Summary Report

Specification:	ACIS Contract End Item Specification
Requirement Number/Title:	3.2.3.1.2 On Orbit Life (VRSD3.2.3.1.2)
Requirement Statement: The instrument shall be designed for an minimum on-orbit life of five (5) years. The ACIS instrument shall be capable of performance as specified herein under a combination of all worst-case environmental (except for on orbit irradiation environment which for purposes of this paragraph is nominal only) and operational conditions.	
Verification Method:	<i>Analysis</i>
Procedure Number:	<i>N/A</i>
Configuration: <i>Full ACIS instrument. Analysis of Limited Life list.</i>	
Cycle Time:	
Verification Discussion/Results:	
<i>The Limited Life Items list (36-01420, Rev A) defines all ACIS items with a finite life. Table I shows that the limiting element is the Fe^{55} sources used for internal and external calibration. Fe^{55} has a half-life of 2.7 years. The intensity of the installed sources has been adjusted for a late 1998 launch and 5 years on-orbit operation.</i>	

William Mayer
ACIS Cognizant Engineer

6/11/97
Date

REVISIONS

Letter	ECO No.	Description	Checked	Approved	Date
A	36-926	INITIAL RELEASE	BK	WFM	6/4/97

	NAME	DATE	MASSACHUSETTS INSTITUTE OF TECHNOLOGY CENTER FOR SPACE RESEARCH			
Drawn:	<i>P. Tappan</i>	<i>6/3/97</i>	LIMITED LIFE ITEMS LIST			
Checked:	<i>Brian Klatt</i>	<i>6/4/97</i>				
Approved:	<i>W. Mayer</i>	<i>6/4/97</i>				
Released:	<i>D. Sage</i>	<i>9/4/97</i>				
			Size	Code Identification No.	Drawing No.	Rev.
			T	80230	36-01420	A
			Scale: NONE		Sheet: 1 of 3	

LIMITED LIFE ITEMS LIST

DR SPA11

1. SCOPE

This DR provides a list of hardware categorized as having "limited life"; i.e., items which degrade or drift with age or use. Data on Allowable, Required, and Available Life are included in tabular form.

2. APPLICABLE DOCUMENTS

Data Procurement Document: 728

3. REQUIREMENTS

3.1 Definitions

3.1.1 Allowable Life The time, cycles, and/or age that is permitted.

3.1.2 Required Life The time, cycles, and/or age that must be remaining prior to conducting each major milestone test and launch.

3.1.3 Available Life The time, cycles, and/or age that is remaining prior to conducting each major milestone test and launch.

3.2 Justification The rationale and assumptions used to define required life shall be presented.

3.3 Maintenance The list shall be maintained, by page revision and/or complete reissue, to reflect the latest program changes and hardware configuration. The document shall be updated following each SIM and observatory test and prior to the AXAF-I Flight Readiness Review.

4. LIMITED LIFE ITEMS LIST Table 1 contains a list of all known "limited life" items of hardware and their allowable, required and available lives. The rationale and assumptions used to define required life are indicated in the table and expanded in the footnotes to the table.

Table 1: Limited Life Items List dated 6-3-97

Name of Item	Allowable Life	Required Life	Justification	Available Life
O-Rings	20 years	5.0 years	1.	18
Fe55 Sources	8.1 years	5.0 years	1.	7
Door Actuator	100 cycles	21 cycles	2.	70
Valve Actuator	100 cycles	21 cycles	2.	70

Justification:

1. Mission Requirement
2. The mission requires one (1) opening after launch, therefore, 21 cycles is sufficient margin over mission requirements and includes sufficient cycles for testing at LMA, MIT, XRCF, BASD, and TRW.