

# USAF PROPERTY

PROPERTY NUMBER	
DATE ACQUIRED	
PROPERTY TYPE	
LOCATION	
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REMARKS	
PROPERTY NUMBER	
DATE ACQUIRED	
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REMARKS	
PROPERTY NUMBER	
DATE ACQUIRED	
PROPERTY TYPE	
LOCATION	
ISSUED TO	
ISSUED BY	
REMARKS	

Lt Col Dan Brown  
 HQ AFMDA/SGPT  
 202-767-5018  
 Biological Effects RAO  
 3AS370-Box  
 Suitland Records Ctr

PREVIOUS EDITION OF THIS FORM MAY BE USED.

DATE OF RESUME 10 10 66		KIND OF RESUME D. Chang		SECURITY CLASS DI 06 66		RESUMED NO N/A		RELEASE INFORMATION FC NF		DD-DRE(AR)636	
CURRENT NUMBER/CODE 2405154 7757 01 002						PREVIOUS NUMBER/CODES 62405124 7757 01 002					
TITLE											
12. SCIENTIFIC OR TECH. AREA						13. START DATE		14. CRIT. COMPL. DATE		15. FUNDING AGENCY	
16. PROCURE. METHOD		17. CONTRACT GRANT		DATE		18. RESOURCE EST.		19. PROFESSIONAL MAN-YEARS		20. FUNDS (in thousands)	
		NUMBER				PRIORITY				N/A	
		TYPE		AMOUNT		CURRENT YR.				N/A	
19. GOV'T LAB INSTALLATION/ACTIVITY						21. PARTICIPATION					
NAME USAF School of Aerospace Medicine						22. PARTICIPATION					
ADDRESS Brooks AFB, Texas 78235						23. PARTICIPATION					
24. INDIC. (Michael J. Johnson) ERH						25. PARTICIPATION					
26. ACQUISITION DATA						27. PARTICIPATION					
<p>to technical information. The primary objective of this project is to determine the energetic and intensity of space radiation encountered in various orbits and to relate the findings to current and future orbital operations.</p> <p><u>Approach:</u> Currently available space radiation information, including data from the Apollo 11 mission, will be compiled and analyzed. This information will be presented in terms of anticipated dose rates and will include certain theoretical calculations as well as experimental results. Neutron and proton depth doses as a function of energy.</p> <p><u>(U) Progress:</u> Contacts have been established with two primary sources of space radiation information viz., the Manned Spacecraft Center (MSC) Radiation and Fields Branch and the Space Physics Laboratory of the Aerospace Corporation. Information obtained from these sources is being used on a continuing basis to update the current and radiobiological research programs.</p>											
27. COMMUNICATIONS SECURITY				28. ORG. CODE				29. BUDGET CODE			
<input type="checkbox"/> CONSEC OR RELATED <input type="checkbox"/> NOT RELATED											
31. MISSION OBJECTIVE						32. PARTICIPATION					
33. REQUESTING AGENCY						34. SPECIAL EQUIPMENT					
35. FUNDS (in thousands)						36. PARTICIPATION					

DR 1498

(Items 1-10 24 identical to NASA Form 1131)

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Continuing contacts with personnel of the Radiation and Field Branch of NASA/MSC viz. Dr Jerry Modest, Joe Hill, Carlos Warren, Bob Richard, etc. have resulted in updating our solar flare data periodically.

Contacts are also maintained with Dr Sten Freden, Dr Stephen White, and Mr Bob Pruitt of Aerospac Corp.

On my request, Dr Carlos Warren gave Seminar @ USAFSA/SMBR on 8 Dec 1966 - Topic - Apollo Space Radiation Monitoring Systems Continued follow up for planning of M66 -

Major Myrl Wilson (MOL SPO) visited to discuss both active and passive techniques for measuring space radiation

Sent Dr Berry (NASA/MSC) slides on Space Radiation environment

Work is underway to update all of our Space Radiation Environment Data

<sup>69</sup> 23 June NASA - MSC is participating in cross-calibration program with Apollo dosimetry equipment in the proton environment for several of our cyclotron field trips.

Statement of Operation		Signature	Date
Lt Col DAN BROWN	Obtain 2 Signatures)	Read and Understand (Obtain 2 Signatures)	
HQ AFMDA/SGPT	Date	Signature	Date
202-767-5018		Address	
Biological Effects RAO			
3A5310-BOY	Date	Signature	Date
Suitland. Records Ctr		Address	

4 Oct 68 As a follow-up to our proton cross-calibration with NASA-MSL, a one day trip was made to MSL to set-up a cross-calibration on 606 and 137 Cs.

21 Oct 68 Bob Richmond NASA-MSL was contacted in regard to Apollo 7 flight badges. He agreed to send any left over powder to SAM for cross-calibration on our TLD reader.

5 Nov 68 Mr Bob Pruitt of Aerospace and Mr Don Robbins of NASA-MSL were contacted in regard to a solar proton event on 30 Oct 1968. Mr Pruitt said this was largest flare of S.C. #20 followed by several smaller flares through first of Nov. Mr Robbins said although this was largest RF Burst never recorded the solar proton event was less than  $10^6$  p/cm<sup>2</sup>.

7 JAN 69 Apollo 7 passive dosimeters were read out and compared with the NASA Dose determinations. Agreement was within 10%.

13 Feb 69 Apollo 8 passive dosimeters were read out and it was found that our readings were a factor of 2 ~~higher~~ lower.

Lt Col DAN BROWN  
HQ AFMDA/SGPT  
202-767-5078  
Biological Effects RAO  
3AS 370-Box

Suitland. Records etc

Signature _____	Date _____
2 Signatures) Read and Understand (Obtain 2 Signatures)	
Date _____	Signature _____
Address _____	Date _____
Date _____	Signature _____
Address _____	Date _____

than the NASA results.

15-25 April 69 The solar proton simulator was checked out at NASA-SREL for two different flare models.

10 July 69 Contacted RG Richmond NASA-MSC and arranged to have all subsequent Apollo THD material sent to us for analysis

15 Aug 69 The NASA <sup>60</sup>Co source was calibrated with SAM R chambers. Results were extremely good.

18-19 Apr 70 The SAM THD system was taken to NASA to backup their system for Apollo 13 dosimetry measurements. Doses of 300-420 mRAD were determined.

19-22 May 70 NASA personnel were here for 1 week testing instruments on the LINAC. Problems were encountered with the collimator which the NASA personnel had designed and built

Lt Col Dan Brown  
HQ AFMJA/S6PT  
202-767-5078  
Biological Effects RAD  
WAS 37D-304

Suitland Records Ctr

Signature _____	Date _____
Read and Understand (Obtain 2 Signatures)	
Date _____	Signature _____
Address _____	Date _____
Date _____	Signature _____
Address _____	Date _____

RESEARCH AND TECHNOLOGY WORK UNIT SUMMARY				CRITICAL PROCESSING CONTROL ENTRIES			REPORTS CONTROL SYMBOL	
01. AGENCY ACCESSION #		02. DATE OF SUMM YY MM DD		04. KIND OF SUMM REPORT		DD - R & SCAR# 436		
DF385312		691201		D. Change				
10. SEC	03. DATE PREV SUMM YY MM DD	05. SUMM SEC #	06. WORK SEC #	07. REGRADING #	DISTRIBUTION INSTRUCTIONS			09. LEVEL OF SUMMARY
AF1	690916	U	U		08.01. 1ST CODE	08.02. 2ND CODE	08.03. CONTX ACCESS XX YES <input type="checkbox"/> NO	A - WORK UNIT
PRIMARY NUMBER / CODE #				GENERAL USE (Do not punch)				
10.01. PROG ELM	10.02. PROJECT NUMBER	10.03. TASK AREA	10.04. WORK UNIT NUMBER					
62401F	7757	01	002					
SECOND CONTRIBUTING NUMBER / CODE #				THIRD CONTRIBUTING NUMBER / CODE #				
10.01. PROG ELM	10.02. PROJECT NUMBER	10.03. TASK AREA	10.01. PROG ELM	10.02. PROJECT NUMBER	10.03. TASK AREA			
01. TITLE - PRECEDE WITH SEC CODE IN PARENTHESIS - #								
(U) Interagency Comparison Cross Calibration of Dosimetry Technics								
SCIENTIFIC AND TECHNOLOGICAL AREA CODES #			13. W/U START DATE YY MM	14. W/U EST COMPL DATE YY MM	FUNDING AGENCIES		16. PERFORMANCE METHOD	
10.0. PRIM	10.1. 2ND	10.2. 3RD	6507	Cont	DF		C. In-house	
012300	014100	001900						
CONTRACT / GRANT DATA								
17.01. EFF DATE YY MM	17.02. EXPR DATE YY MM	17.03. CONTRACT / GRANT NUMBER #	17.04. TYPE	17.01. PART	17.02. AMOUNT	17.03. KIND OF FUND	17.04. CUMULATIVE AMT	
PRECEDING F / Y RESOURCES ESTIMATE				CURRENT F / Y RESOURCES ESTIMATE				
18.1. YEAR YY	18.10. PROF MAN YEARS	18.15. FUNDS IN THOUSANDS	18.2. YEAR YY	18.20. PROF MAN YEARS	18.25. FUNDS IN THOUSANDS			
69	1.0	15	70	1.0	15			
19. ORGANIZATION NAME #								
USAF School of Aerospace Medicine								
19.01. ORGANIZATION ADDRESS #								
Brooks AFB, Texas 78235								
19.02. NAME OF RESPONSIBLE INDIVIDUAL						19.03. PHONE		
Mitchell, J C						512 536 x 3511		
20. ORGANIZATION NAME #								
USAF School of Aerospace Medicine								
20.01. ORGANIZATION ADDRESS #								
Brooks AFB, Texas 78235								
20.02. NAME OF PRINCIPAL INVESTIGATOR				20.03. PHONE		20.04. SSAN		
Mitchell, J C				512 536 X3511				
20.05. ASSOCIATE INVESTIGATOR				20.06. 2ND ASSOCIATE INVESTIGATOR				
Allen, S J								
22. KEYWORDS - PRECEDE EACH WITH SECURITY CODE IN PARENTHESIS AND SEPARATE WITH A SEMICOLON								
(U) Space radiation (U) dosimetry (U) solar flare (U) electrons (U) protons								
23. TECHNICAL OBJECTIVE OR SCIENTIFIC ABSTRACT. # 24. APPROACH. 25. PROGRESS - IDENTIFY EACH PARAGRAPH BY NUMBER AND PRECEDE TEXT WITH SEC CODE IN PARENTHESIS								
<p>23. (U) The biological hazards of radiation which might be encountered on any aerospace mission will be assessed through the use of "on board" radiation monitoring instrumentation and the use of biological response data previously obtained through ground based laboratory experiments. The technical objective of this work unit is to provide an accurate correlation between the "Rad" dose measured during an aerospace mission and the "Rad" dose used in the ground based radiobiological research program.</p> <p>24. (U) This objective is accomplished through, (1) a series of cross calibration experiments using the NASA and USAFSAM radiation sources and dosimetry systems, and (2) the analysis, simulation, and measurement of specific mission oriented dose spectra.</p> <p>25. (U) Space radiation environmental data compilation and analysis are continuing and progress has been made in relating the NASA empirical data to the USAFSAM radiobiological research program. Part of the Lithium Fluoride powder from the flight badge dosimeters of Apollo 7, 8, and 10 was received from NASA and processed in the Radiation Science Laboratory. USAFSAM personnel will also participate in the readout and analysis of all flight badge dosimeters subsequent to Apollo 11. The NASA 12 curie <sup>60</sup>Co source was calibrated with USAFSAM (NBS calibrated) R-chambers. Measurements agreed with NASA calibrations within the instrument accuracy of ±5%. The recently developed solar flare proton simulator was used to successfully simulate two solar flare proton dose spectra.</p>								

24

RESEARCH AND TECHNOLOGY WORK UNIT SUMMARY			CRITICAL PROCESSING CONTROL 1 - RIC (at time of all entries)			REPORTS CONTROL SYMBOL			
			01. ACCT ACCESSION*	02. DATE OF SUMM*	03. KIND OF SUMM REPORT	DD-R&E(AR)636			
			DF385312	691106	D. Change				
04. DATE PREVIOUS	05. SUMM ISS*	06. WORK SEC*	07. REGRADING*	08. DISTRIBUTION INSTRUCTIONS			09. LEVEL OF SUMMARY		
A51 690916	U	U		0801. 1ST CODE	0802. 2ND CODE	0803. CONTR ACCESS		A - WORK UNIT	
				NL		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
PRIMARY NUMBER / CODE*									
1001. PROJ ELM			1002. PROJECT NUMBER		1003. TASK AREA		1004. WORK UNIT NUMBER		
62401E			7757		01		002		
SECOND CONTRIBUTING NUMBER / CODE*									
1001. PROJ ELM			1002. PROJECT NUMBER		1003. TASK AREA		1004. WORK UNIT NUMBER		
THIRD CONTRIBUTING NUMBER / CODE*									
11. TITLE - PRECEDE WITH SEC CODE IN PARENTHESIS*									
(U) Interagency Comparison-Cross Calibration of Dosimetry Technics									
12. SCIENTIFIC AND TECHNOLOGICAL AREA CODES*									
1201. PRIM			1202. 2ND		1203. 3RD		12. W/ U START DATE		
012300			014100		001900		6507		
							14. W/ U EST COMPL DATE		
							Cont		
15. FUNDING AGENCIES									
1501. PRIM			1502. 2ND		1503. 3RD		15. PERFORMANCE METHOD		
DF			VN				C. In-house		
CONTRACT / GRANT DATA									
1701. EFF DATE		1702. EXPR DATE		1703. CONTRACT / GRANT NUMBER*			1704. TYPE		
1705. PART									
1706. AMOUNT									
1707. RND OF AWAR									
1708. CUMULATIVE AMT									
PRECEDING F / Y RESOURCES ESTIMATE									
1801. YEAR YY		1802. PROF MAN YEARS		1803. FUNDS IN THOUSANDS		1804. YEAR YY		1805. PROF MAN YEARS	
69		1.0		15		70		1.0	
CURRENT F / Y RESOURCES ESTIMATE									
1801. YEAR YY		1802. PROF MAN YEARS		1803. FUNDS IN THOUSANDS		1804. YEAR YY		1805. PROF MAN YEARS	
69		1.0		15		70		1.0	
1901. ORGANIZATION NAME*									
1902. ORGANIZATION ADDRESS*									
1903. NAME OF RESPONSIBLE INDIVIDUAL									
1904. PHONE									
2001. ORGANIZATION NAME*									
USAF School of Aerospace Medicine									
2002. ORGANIZATION ADDRESS*									
Brooks AFB, Texas 78235									
2003. NAME OF PRINCIPAL INVESTIGATOR*									
Mitchell, John C.									
2004. PHONE									
512 536 X3511									
2005. 1ST ASSOCIATE INVESTIGATOR									
Allen, Stewart J.									
2006. 2ND ASSOCIATE INVESTIGATOR									
22. KEYWORDS - PRECEDE EACH WITH SECURITY CODE IN PARENTHESIS AND SEPARATE WITH A SEMICOLON.									
(U) Space radiation (U) dosimetry (U) solar flare (U) electrons (U) protons									
23. TECHNICAL OBJECTIVE OR SCIENTIFIC ABSTRACT. 24. APPROACH. 25. PROGRESS - IDENTIFY EACH PARAGRAPH BY NUMBER AND PRECEDE TEXT WITH SEC CODE IN PARENTHESIS.									
<p>23. (U) The biological hazards of radiation which might be encountered on any aerospace mission will be assessed through the use of "on board" radiation monitoring instrumentation and the use of biological response data previously obtained through ground based laboratory experiments. The technical objective of this work unit is to provide an accurate correlation between the "Rad" dose measured during an aerospace mission and the "Rad" dose used in the ground based radiobiological research program. This work includes dose determinations of the Apollo flight dosimeters in conjunction with NASA.</p> <p>24. (U) This objective is accomplished through, (1) a series of cross calibration experiments using the NASA and USAFSAM radiation sources and dosimetry systems, and (2) the analysis, simulation, and measurement of specific mission oriented dose spectra.</p> <p>25. (U) Space radiation environmental data compilation and analysis are continuing and progress has been made in relating the NASA empirical data to the USAFSAM radiobiological research program. Part of the Lithium Fluoride powder from the flight badge dosimeters of Apollo 7, 8, and 10 was received from NASA and processed in the Radiation Science Laboratory. USAFSAM personnel will also participate in the readout and analysis of all flight badge dosimeters subsequent to Apollo 11. The NASA 12 curie <sup>60</sup>Co source was calibrated with USAFSAM (NBS calibrated) R-chambers. Measurements agreed with NASA calibrations within the instrument accuracy of ±5%. The recently developed solar flare proton simulator was used to successfully simulate two solar flare proton dose spectra.</p>									

RESPONSIBLE ORGANIZATION  
PERFORMING ORGANIZATION

RESEARCH AND TECHNOLOGY WORK UNIT SUMMARY				CRITICAL PROCESSING CONTROL EN				REPORTS CONTROL SYMBOL	
01. AGENCY ACCESSION #		02. DATE OF SUMM #		04. KIND OF SUMM REPORT				DD - R & STAR# 434	
DF 385312		700914		H. Termination					
03. DATE PREV SUMM	08. SUMM SEC #	06. WORK SEC #	07. REGRADING #	DISTRIBUTION INSTRUCTIONS				09. LEVEL OF SUMMARY	
691106	U	U		08.1. 1ST CODE 08.2. 2ND CODE 08.3. CONTR ACCESS				A - WORK UNIT	
08.1. 1ST CODE NL		08.2. 2ND CODE		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO					
PRIMARY NUMBER / CODE #				GENERAL USE (Do not punch)					
10.1. PROJ ELM	10.2. PROJECT NUMBER	10.3. TASK AREA	10.4. WORK UNIT NUMBER						
62202F	7757	01	002						
SECOND CONTRIBUTING NUMBER / CODE #				THIRD CONTRIBUTING NUMBER / CODE #					
10.1. PROJ ELM	10.2. PROJECT NUMBER	10.3. TASK AREA	10.1. PROJ ELM	10.2. PROJECT NUMBER	10.3. TASK AREA				
11. TITLE - PRECEDE WITH SEC CODE IN PARENTHESES #									
12. SCIENTIFIC AND TECHNOLOGICAL AREA CODES #									
12.1. PRIM	12.2. 2ND	12.3. 3RD	13. W/U START DATE	14. W/U EST COMPLE DATE	15. FUNDING AGENCIES			16. PERFORMANCE METHOD	
			YY MM	YY MM	15.1. PRIM	15.2. 2ND	15.3. 3RD		
CONTRACT / GRANT DATA									
17.1. STP DATE	17.2. EXPR DATE	17.3. CONTRACT / GRANT NUMBER #	17.4. TYPE	17.1. PART	17.2. AMOUNT	17.3. 2ND OF FUND	17.4. CUMULATIVE AMT		
YY MM	YY MM								
PRECEDING F / Y RESOURCES ESTIMATE					CURRENT F / Y RESOURCES ESTIMATE				
18.1. YEAR YY	18.1a. PROF MAN YEARS	18.1b. FUNDS IN THOUSANDS	18.2. YEAR YY	18.2a. PROF MAN YEARS	18.2b. FUNDS IN THOUSANDS				
70	1.0	15	71	0.5	5				
19. ORGANIZATION NAME #									
19a. ORGANIZATION ADDRESS #									
19c. NAME OF RESPONSIBLE INDIVIDUAL						19d. PHONE			
20a. ORGANIZATION NAME #									
20b. ORGANIZATION ADDRESS #									
20c. NAME OF PRINCIPAL INVESTIGATOR #						20d. PHONE			
20f. ASSOCIATE INVESTIGATOR						20g. 2ND ASSOCIATE INVESTIGATOR			
22. KEYWORDS - PRECEDE EACH WITH SECURITY CODE IN PARENTHESES AND SEPARATE WITH A SEMICOLON.									

23. TECHNICAL OBJECTIVE OR SCIENTIFIC ABSTRACT. # 24. APPROACH 25. PROGRESS - IDENTIFY EACH PARAGRAPH BY NUMBER AND PRECEDE WITH SEC CODE IN PARENTHESES.

25. (U) The following information covers the period from 1 December 1969 to 31 August 1970. Assistance was given to the NASA Manned Spacecraft Center in reading out the Apollo 12 Dosimeters. The USAFSAM Thermoluminescent Dosimetry reader was taken to NASA/MSC for several days in support of this work. A series of special calibration experiments was performed for NASA/MSC using the USAFSAM Electron Linear Accelerator. Electron beams of 4, 5, 6, and 7 Mev were set up and field maps, dose rate, and rate vs distance determinations were made at each of these energies for the NASA experiments. This work unit is being discontinued due to diminished responsibilities in support of the Space program.

UNCLASSIFIED

SNRP

RESEARCH AND TECHNOLOGY RESUME		1.	2. GOVT ACCESSION	3. AGENCY ACCESSION DF385312	REPORT CONTROL SYMBOL DD-DRE(AR)636
TE OF RESUME 24 04 68	4. KIND OF RESUME D. Change 10 10 66	5. SECURITY U RPT	7. REGRADING N/A	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME A. Work Unit
CURRENT NUMBER/CODE 6240515F 7757 01 002		10. PRIOR NUMBER/CODE 62405154 7757 01 002			
11. TITLE: <i>Determination of the Characteristics of Radiation in Space</i>					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER c. TYPE d. AMOUNT	18. RESOURCES EST. a. PRIOR FY b. CURRENT FY	19. PROFESSIONAL MAN-YEARS	20. FUNDS (In thousands)	
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME ADDRESS RESP. INDIV. TEL:		20. PERFORMING ORGANIZATION NAME ADDRESS INVESTIGATORS PRINCIPAL ASSOCIATE TEL TYPE			
21. TECHNOLOGY UTILIZATION			22. COORDINATION		
23. KEYWORDS					
24.					
26. Progress: (U) Space radiation environmental data compilation and analyses are continuing and work is progressing to relate NASA empirical data to the USAFSAM radiobiological research program. Three of the flight qualified Apollo radiation monitoring devices, z., (1) Personnel Radiation Dosimeter (PRD); (2) Radiation Survey Meter (RSM), and (3) Allen Belt Dosimeter (VABD) were calibrated in a joint NASA/MSD and USAFSAM cross-calibration program conducted at the Oak Ridge Isochronous Cyclotron Facility 7-9 April 1968. The threefold objective of this program was to (1) determine their proton energy response characteristics at a dose rate less than 75 rads/hr. for five different energies in the range between 10 and 40 Mev; (2) calibrate the VABD to dose rates up to 1000 rads/hr. and (3) to perform saturation curves on the VABD ionization chambers. Minor difficulties with the Transmission Ion Chamber (TIC) and cyclotron operation (vacuum fluctuation, RF stability, and beam stop) were encountered but the test objectives were met within our allotted/scheduled time.					
25.					
27. COMMUNICATIONS SECURITY <input type="checkbox"/> a. COMSEC OR COMSEC RELATED <input type="checkbox"/> b. NOT RELATED		28.	29. OSD CODE	30. BUDGET CODE	
31. MISSION OBJECTIVE			32. PARTICIPATION		
REQUESTING AGENCY		34. SPECIAL EQUIPMENT			
33. FUNDS (In thousands)		35.			
CFY41					

DD FORM 1498  
1 AUG 64

(Items 1 to 26 identical to NASA Form 1122)

OVER

UNCLASSIFIED

RESEARCH AND TECHNOLOGY WORK UNIT SUMMARY				CRITICAL PROCESSING CONTROL ENTRIES			REPORTS CONTROL SYMBOL	
01. AGENCY ACCESSION # DF385312		02. DATE OF SUMM YY MM DD -690916		03. KIND OF SUMM REPORT D. Change		DD - R & E (ARI) 839		
04. DATE PREV SUMM YY MM DD -680424	05. SUMM SEC U	06. DORK SEC U	07. REGRADING	DISTRIBUTION INSTRUCTIONS			08. LEVEL OF SUMM A - WORK UNIT	
08. 1ST CODE NL				08. 2ND CODE		08. CONTR ACCESS YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		
PRIMARY NUMBER / CODE				GENERAL USE (Do not punch)				
10. 1. PROG ELM 62401F	10. 2. PROJECT NUMBER 7757	10. 3. TASK AREA 01	10. 4. WORK UNIT NUMBER 002					
SECOND CONTRIBUTING NUMBER / CODE				THIRD CONTRIBUTING NUMBER / CODE				
10. 1. PROG ELM	10. 2. PROJECT NUMBER	10. 3. TASK AREA	10. 1. PROG ELM	10. 2. PROJECT NUMBER	10. 3. TASK AREA			
11. TITLE - PRECEDE WITH SEC CODE IN PARENTHESES								
12. SCIENTIFIC AND TECHNOLOGICAL AREA CODES								
12. 1. PRIM 012300	12. 2. 2ND 014100	12. 3. 3RD 001900	13. W/U START DATE YY MM 6507	14. W/U EST COMPL DATE YY MM Cont	15. FUNDING AGENCIES		16. PERFORMANCE METHOD C. In-house	
17. CONTRACT / GRANT DATA								
17. 1. EFF DATE YY MM	17. 2. EXPR DATE YY MM	17. 3. CONTRACT / GRANT NUMBER	17. 4. TYPE	17. 5. PART	17. 6. AMOUNT	17. 7. END OF YEAR	17. 8. CUMULATIVE AMT	
18. PRECEDING F / Y RESOURCES ESTIMATE				18. CURRENT F / Y RESOURCES ESTIMATE				
18. 1. YEAR YY 69	18. 1a. PROF MAN YEARS 1.0	18. 1b. FUNDS IN THOUSANDS 15	18. 2. YEAR YY 70	18. 2a. PROF MAN YEARS 1.0	18. 2b. FUNDS IN THOUSANDS 15			
19. ORGANIZATION NAME								
19. ORGANIZATION ADDRESS								
19. 1. NAME OF RESPONSIBLE INDIVIDUAL						19. 2. PHONE		
20. ORGANIZATION NAME								
20. ORGANIZATION ADDRESS								
20. 1. NAME OF PRINCIPAL INVESTIGATOR				20. 2. PHONE		20. 3. SSAN		
20. 1. ASSOCIATE INVESTIGATOR				20. 2. 3RD ASSOCIATE INVESTIGATOR				
22. KEYWORDS - PRECEDE EACH WITH SECURITY CODE IN PARENTHESES. SEPARATE WITH A SEMICOLON								
(U) Space radiation (U) <del>satellite data</del> (U) solar flare (U) electrons (U) protons								
23. TECHNICAL OBJECTIVE OR SCIENTIFIC ABSTRACT * 24. APPROACH 25. PROGRESS (CONT. BY EACH PARAGRAPH BY NUMBER AND PRECEDE TEXT WITH SEC CODE IN PARENTHESES)								
<p>25. (U) Report period April 68 thru August 69. Space radiation environmental data compilation and analyses are continuing and progress has been made in relating the NASA empirical data to the USAFSAM radiobiological research program. Part of the Lithium Fluoride powder from the flight badge dosimeters of Apollo 7, 8, and 10 was received from NASA and processed in the Radiation Science Laboratory. USAFSAM personnel will also participate in the readout and analysis of all flight badge dosimeters subsequent to Apollo 11. The NASA 12 curie <sup>60</sup>Co source was calibrated with USAFSAM (NBS calibrated) R- chambers. Measurements agreed with NASA calibrations within the instrument accuracy of ± 5%. The recently developed solar flare proton simulator was used to successfully simulate two solar flare proton dose spectra</p>								