

GENERAL  ELECTRIC

SPACE SYSTEMS DIVISION

GENERAL ELECTRIC COMPANY • VALLEY FORGE SPACE CENTER • P.O. BOX 8555 • PHILADELPHIA, PENNSYLVANIA 19101 • (215) 354-1000

November 15, 1985

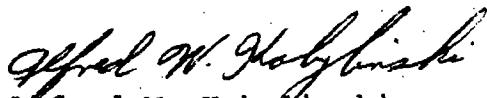
Dr. Edwin A. Wurtz  
Radiation Specialist  
U.S. Nuclear Regulatory Commission  
Nuclear Materials Section B  
631 Park Avenue  
King Of Prussia, Pa. 19406

Dear Dr. Wurtz:

Per your request, attached are copies of the total release calculations for all the Krypton-85 propulsion system leak tests conducted by G.E. Space Systems Division in 1984 and 1985 at the the King of Prussia facility and at Cape Canaveral, Fl. There were a total of 2 tests conducted in 1984 (one in King of Prussia and one at Cape Canaveral) and 5 in 1985 (3 in King of Prussia and 2 at Cape Canaveral).

On an unrelated topic, could you please send me two application forms for the January Health Physics Review Course being held at the NRC's Region 1 Headquarters.

Sincerely,

  
Alfred W. Kobylinski  
Senior Industrial Hygienist  
Radiation Safety Officer

Copies: T.P. Handley  
C.B. Chilton

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NOV 18 1985

B13

# OFFICIAL TEST COPY

4-4-84

## DSCS III B6

DSCS-TPR-04001-44  
February 1984

# OFFICIAL TEST COPY

Data Sheet 3. He/KR-85 Gas "K" Bottle Condition

Gas Cylinder Initial Conditions	1st Cylinder	2nd Cylinder	3rd Cylinder
Helium/Krypton 85 gas cylinder S/N	<u>10579P</u>	<u>54566T</u>	<u>6035957</u>
Tracer Gas Concentration (refer to cylinder log)	<u><math>0.527 \times 10^{-6}</math></u>	<u><math>0.527 \times 10^{-6}</math></u>	<u>Ci/cc <math>0.527 \times 10^{-6}</math></u>
Cylinder Initial Pressure, P1 =	<u>2000</u>	<u>1500</u>	PSIG <u>1725</u>
Cylinder Initial Activity, S1	<u>2.94</u>	<u>2.94</u>	Ci <u>2.90</u>

### Gas Cylinder Final Conditions

Cylinder Final Pressure, P2 =	<u>1900</u>	<u>1550</u>	PSIG <u>1300</u>
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Activity Removed from Cylinder S2

1st CYLINDER

$$S_2 = (P1 - P2) (S1/P1) Ci$$

$$S_2 = (2000 - 1900) (2.94/2000)$$

$$S_2 = (100) (.00147) = \underline{0.147} \text{ Ci}$$

2nd CYLINDER

$$S_2 = (1500 - 1550) (2.94/1500)$$

$$S_2 = (-50) (.00196) = \underline{-.098} \text{ Ci}$$

3rd CYLINDER

$$S_2 = (1725 - 1300) (2.94/1300)$$

$$S_2 = (425) (.00226) = \underline{.961} \text{ Ci}$$

$$\text{TOTAL: } 0.147 - .098 + .961 = \underline{0.773 \text{ Ci}}$$

correction 1.010

TEST CONDUCTOR:



DATE:

4-4-84

TEST CONTROLLER:



OFFICIAL TEST COPY

III A2

6-2-84

DC3-TP-61  
6 June 1

Data Sheet 5.6. He/KR-85 Gas "K" Bottle Condition

<u>Gas Cylinder Initial Conditions</u>	<u>1st Cylinder</u>	<u>2nd Cylinder</u>	
Helium/Krypton 85 gas cylinder S/N	<u>23298T</u>	<u>5035905</u>	
Tracer Gas Concentration (refer to cylinder log)	<u><math>5.69 \times 10^{-7}</math></u>	<u><math>5.69 \times 10^{-7}</math></u>	cc/cc mCi/cc
Cylinder Initial Pressure, P1 =	<u>2150 PSIG</u>	<u>2100 PSIG</u>	PSIG psia
Cylinder Initial Activity, S1	<u>2.9</u>	<u>2.9</u>	mCi Ci

Gas Cylinder Final Conditions


Cylinder Final Pressure, P2 =	<u>2050 PSIG</u>	<u>2100</u>	PSIG psia
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Activity Removed from Cylinder S2

$$S_2 = (P1 - P2) (S1/P1) \text{ mCi Ci}$$

$$SS_2 = (2150 - 2050) (2.9 / 2150)$$

$$S_2 = (100) (.0013) = \underline{0.13} \text{ mCi Ci}$$

 6/2/84

Cape Canaveral

TP-WPC-00

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2-27-85

# OFFICIAL TEST COPY

TPR-04001-44  
Revision A  
May 1984

Data Sheet 3. He/KR-85 Gas "K" Bottle Condition

Gas Cylinder Initial Conditions	1st Cylinder	2nd Cylinder	3rd Cylinder
Helium/Krypton 85 gas cylinder S/N	<u>54566T</u>	<u>5085905</u>	<u>23298T</u> CWA
Tracer Gas Concentration (refer to cylinder log)	<u>2.94</u>		Ci/cc <u>242618</u>
Cylinder Initial Pressure, P1 =	<u>1650</u>	<u>2050</u>	PSIG <u>2050</u>
Cylinder Initial Activity, S1	<u>2.94</u>	<u>2.99</u>	Ci <u>2.95</u>

### Gas Cylinder Final Conditions

Cylinder Final Pressure, P2 = 2000 1600 PSIG 1950

Activity Removed from Cylinder S2 - **TOTAL FROM ALL 3 CYLINDERS**

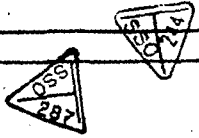
$$= (P1 - P2) (S1/P1) Ci$$

$$= (5750 - 5550) (8.88/5750)$$

$$= (200) (.0015) = \underline{0.309} \quad Ci$$

TEST CONDUCTOR: \_\_\_\_\_  
TEST CONTROLLER: \_\_\_\_\_

DATE COMPLETED: 2-27-85



# DSCS III B4 OFFICIAL TEST COPY

4-17-85

DSCS-TPR-04001-44  
Revision B  
March 1985

## Data Sheet 3. He/KR-85 Gas "K" Bottle Condition

Gas Cylinder Initial Conditions	1st Cylinder	2nd Cylinder	
Helium/Krypton 85 gas cylinder S/N	<u>92917</u>	<u>43775 T</u>	
Cylinder Initial Pressure, P1 =	<u>1950</u>	<u>1950</u>	PSIG
Cylinder Initial Activity, S1	<u>2.95</u>	<u>2.97</u>	Ci

### Gas Cylinder Final Conditions

Cylinder Final Pressure, P2 = 1940 1765 PSIG

Activity Removed from Cylinder S2

$$S_2 = (P1 - P2) (S1/P1) C1$$

$$S_2 = (3900 - 3705) (2.96/3900)$$

$$S_2 = ( 195 ) (0.00759) = \underline{0.148} \text{ Ci}$$

TEST CONDUCTOR: \_\_\_\_\_

TEST CONTROLLER: \_\_\_\_\_



DATE: 4-17-85

-24-85

# DSCS III B5 OFFICIAL TEST COPY

DSCS-TPR-04001-44  
Revision B  
March 1985

Data Sheet 3. He/KR-85 Gas "K" Bottle Condition

Gas Cylinder Initial Conditions	1st Cylinder	2nd Cylinder	Total
Helium/Krypton 85 gas cylinder S/N	<del>437757</del> 57205	92917	
Cylinder Initial Pressure, P1 =	1750	1900	PSIG
Cylinder Initial Activity, S1	2.97	2.95	Ci

### Gas Cylinder Final Conditions

Cylinder Final Pressure, P2 = 1800 1650 PSIG

Activity Removed from Cylinder S2

$$S_2 = (P1 - P2) (S1/P1) Ci$$

$$S_2 = (3650 - 3450) (5.92/3650)$$

$$S_2 = (200) (0.00162) = \underline{0.324} \text{ Ci}$$

Total

Char

Y2 =

Leal

L =

=

=

Whe:

F1n

Y =

Z =

L =

TES

TES

TEST CONDUCTOR:



TEST CONTROLLER:



DATE: 4-24-85

# OFFICIAL TEST COPY

85

B4

DC3-TP-6421  
31 May 1985

Data Sheet 5.6A. He/KR-85 Gas "K" Bottle Condition

<u>Gas Cylinder Initial Conditions</u>	<u>1st Cylinder</u>	<u>2nd Cylinder</u>	<u>3rd Cylinder</u>
Helium/Krypton 85 gas cylinder S/N	AS17110	43775T	9291
Tracer Gas Concentration (refer to cylinder log)	$0.53 \times 10^{-6}$	$0.53 \times 10^{-6}$	Ci/cc
Cylinder Initial Pressure, P1 =	2000	1600	psig 1675
Cylinder Initial Activity, S1	2.95	2.38	Ci 2.47

Gas Cylinder Final Conditions

Cylinder Final Pressure, P2 =	2000	1450	psig 1480
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Activity Removed from Cylinder S2

$$S_{2I} = (P1 - P2) (S1/P1) C1$$

$$S_{2I} = (2000 - 1450) (2.38 / 1600)$$

$$S_{2I} = (150) (0.0015) = 0.225 \text{ Ci (S/N 43775T)}$$

$$S_{2II} = (1675 - 1480) (2.47 / 1675) = 0.288 \text{ Ci (S/N 9291)}$$

TOTAL LOSS IN ACTIVITY

$$= S_{2I} + S_{2II} = 0.225 + 0.288 = 0.513 \text{ Ci}$$

FINAL ACTIVITY:

$$\text{S/N 43775T} = 2.38 - 0.225 = 2.16 \text{ Ci}$$

$$\text{S/N 9291} = 2.47 - 0.288 = 2.18 \text{ Ci}$$

Cape Canaveral

Unclassified

OFFICIAL TEST COPY

(85)

B5

DC3-TP-6421  
31 May 1985

Data Sheet 5.6F. He/KR-85 Gas "K" Bottle Condition

<u>Gas Cylinder Initial Conditions</u>	<u>1st Cylinder</u>	<u>2nd Cylinder</u>	
Helium/Krypton 85 gas cylinder S/N	<u>AS17110</u>	<u>43775T</u>	
Tracer Gas Concentration (refer to cylinder log)	<u><math>0.53 \times 10^{-6}</math></u>	<u><math>0.53 \times 10^{-6}</math></u>	ci/cc
Cylinder Initial Pressure, P1 =	<u>2000</u>	<u><math>\frac{1800}{2000 \text{ T.M.}}</math></u>	psig
Cylinder Initial Activity, S1	<u>2.95</u>	<u>2.97</u>	ci

Gas Cylinder Final Conditions

Cylinder Final Pressure, P2 = 2000 1590 psig

Activity Removed from Cylinder S2

$$S_2 = (P1 - P2) (S1/P1) \text{ ci}$$

$$S_2 = (1800 - 1590) (2.97 / 1800)$$

$$S_2 = ( 210 ) ( .00165 ) = \underline{0.347} \text{ ci}$$

*Cape Canaveral*

~~*Cape Canaveral*~~

Unclassified

