RO A6 b

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SN 5 IMPACT LOCATION & RELATED DATA

Figure 1 summarizes the available information on the RV SN5 impact location. The STC BFE (best fit ephemeris) prediction and the MWC BFE prediction represent trajectory simulations which terminate at 50,000 ft. with no simulation of RV recovery system sequencing. The differences in the results are assumed to be differences in the two computer programs (integration technique, atmospheric density model, etc.). The reported drogue impact location came from the recovery aircraft. The estimated drogue release point was obtained by integrating the drogue trajectory backwards using available data for winds in the recovery area. The estimated RV impact point was obtained by integrating an RV alone trajectory (drogue separated and main chute assumed to contribute no aerodynamics due to failure) from the estimated drogue release point to impact. The EPPD (estimated point of parachute deployment) is based on bearings reported by the various recovery aircraft at ETPD (estimated time of parachute deployment) and is assumed to be in error in view of its disagreement with other available data and information.

The following position and velocity vector data represent a point in the trajectory shortly after retrograde burn out. These data are from the MWC BFE trajectory simulation.

Time = 76270.6 sec (systems time = Greenwich mean time in hours, minutes and seconds from midnight, converted to seconds)

Altitude = 613080.5 ft.

Latitude (geocentric) = 58.163 deg N

Longitude = 152.509°W

Inertial velocity = 25283.8 fps

Inertial geocentric flight path angle = -1.745 deg

Inertial geocentric azimuth = -167.823 deg

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The RV vehicle weight is 1334.81 lbs. at this point and remains constant until ablation weight loss begins during entry. The table reflecting accumulative ablator weight loss (function of altitude) is as follows:

Altitude Ft	W Lbs
400,000	0
330,000	0
230,000	2.
120,000	17.
50,000	20.

Aerodynamic drag is computed as Drag = C_D 1/2 ρ V^2S where ρ is the atmospheric density in slug/ft^3, V is the RV air speed in ft/sec and S is the aerodynamic reference area of 17.72 sq. ft. C_D is a constant (2.824) above 400,000 ft. altitude. From 400,000 ft. to 125,000 ft., C_D is a function of altitude. From 125,000 ft. to 50,000 ft., C_D is a function of Mach number (actually a function of Mach number to S.L. if the recovery system sequencing is not simulated). The C_D data are tabulated on attached sheets. No recovery system aerodynamics are included in these data.

GARMIN

SN 5 IMPACT
LOCATION SUMMARY

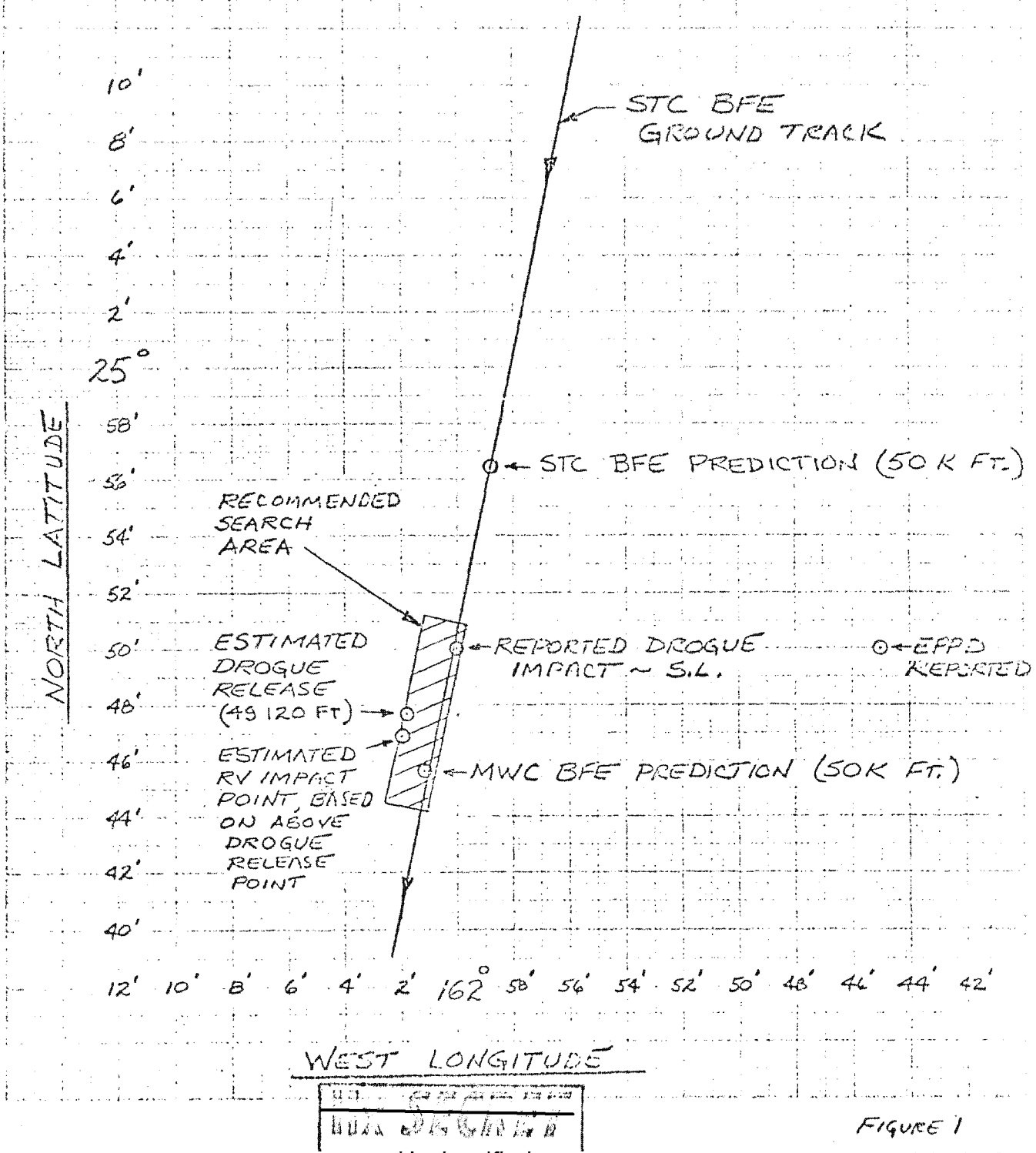

FIGURE 1

BIF077/001W- 1452-71

DATA BASE INPUT

FROM

DATE 2 APR 1971
14 May 1970

1A
BLOCK NAME 'CDCURV

(For V6LK's only)
FILE NO.
REC. NO.

BASE COMPOOL COMSYS MR

TYPE	COMPOOL DEFINED NAME	ENTRY NO OR ARRAY DIMEN-SION	VALUE	UNITS	FLAG	COMMENTS
I	'MINNT1		400000.	FT.	A	MIN ALT. FOR CONSTANT C_D
I	'MINNT2		125000.	FT.	A	MIN ALT FOR C_D VS ALT.
I	'MINNT3		50000.	FT.	A	MIN ALT FOR C_D VS MACH
T	'ALTCD1	0	125000.	FT.	A	VALUES OF ALTITUDE
		1	150000.			
		2	175000.			
		3	200000.			
		4	213000.			
		5	225000.			
		6	238000.			
		7	250000.			
		8	263000.			
		9	275000.			
		10	285000.			
		11	291000.			
		12	297000.			
		13	302000.			
		14	305000.			
		15	308000.			
		16	311000.			
		17	313000.			
		18	316000.			
		19	319000.			
		20	322000.			
		21	325000.			
		22	331000.			
		23	338000.			
		24	350000.			
		25	363000.			
		26	375000.			
T	'ALTCD1	27	400000.	FT.	A	
T	'DRGCD1	0	.69	N.D.	A	VALUES OF $C_D = f(M)$
		1	.711			
		2	.731			
		3	.751			
		4	.780			
		5	.816			
		6	.865			
		7	.931			
		8	1.005			
		9	1.098			
	'DRGCD1	10	1.210	N.D.	A	

TYPE I = simple item
T = table item
A = array item

FLAG T=typical value
A=actual value
U=will require preflight update

FORM OCP-DBM-3

MF077/001V2 11[illegible]

DATA BASE INPUT

FROM

DATE 2 April 1971
~~14 May 1970~~

DATA BLOCK NAME 'CDCURV

(For VOLK's only) FILE NO. REC. NO.

BASE COMPOOL COMSYS WR

TYPE	COMPOOL DEFINED NAME	ENTRY NO. IN ARRAY (ENTER-ED ON)	VALUE	UNITS	FLAG	COMMENTS
T	'DRGCD1	11	1.300	N.D.	A	
		12	1.400			
		13	1.510			
		14	1.6			
		15	1.7			
		16	1.8			
		17	1.9			
		18	2.0			
		19	2.13			
		20	2.245			
		21	2.358			
		22	2.5			
		23	2.6			
		24	2.684			
		25	2.725			
		26	2.76			
	'DRGCD1	27	2.824	N.D.	A	
T	'MACD2	0	0.0	N.D.	A	VALUES OF MACH
		1	.6			
		2	.67			
		3	.74			
		4	.80			
		5	.90			
		6	1.00			
		7	1.10			
		8	1.2			
		9	1.3			
		10	1.36			
		11	1.4			
		12	1.45			
		13	1.55			
		14	1.65			
		15	1.75			
		16	1.85			
		17	2.0			
		18	2.25			
		19	2.5			
		20	2.75			
		21	3.			
		22	3.5			
	'MACD2	23	4.	N.D.	A	

TYPE I = simple item
T = table item
A = array item

FLAG T=typical value
A=actual value
U=will require preflight update

FORM OCP-DBI-3

FIGURE 1

DIF077/001W 1152-71

DATA BASE INPUT

FROM [redacted]

DATE 2 APRIL 1971 ~~14 May 1970~~

NAME .A CDCURV

(For VBLK's only) FILE NO. REC. NO.

BASE COMPOOL CONSYS WR

TYPE	COMPOOL DEFINED NAME	ENTRY NO. OR ARRAY DIMENSION	VALUE	UNITS	FLAG	COMMENTS
T	'MACD2	24	4.8	N.D.	A	
T		25	5.5		A	
T	'MACD2	26	35.	N.D.	A	
T	'DRGCD2	0	.31	N.D.	A	VALUES OF C_D = f(MACH)
		1	.31			
		2	.312			
		3	.323			
		4	.340			
		5	.383			
		6	.45			
		7	.548			
		8	.666			
		9	.77			
		10	.808			
		11	.82			
		12	.829			
		13	.84			
		14	.843			
		15	.84			
		16	.833			
		17	.82			
		18	.794			
		19	.77			
		20	.753			
		21	.74			
		22	.722			
		23	.71			
		24	.698			
		25	.69			
T	'DRGCD2	26	.69	N.D.	A	

TYPE I = simple item
T = table item
A = array item

FLAG T=typical value
A=actual value
U=will require preflight update

[redacted]

FORM OCP-DCT-3