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DXCART OPS/LIFE SUPPORT

SUBJ: MID AIR MODIFICATION OF THE CYGNUS CANOPY

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1. THE FOLLOWING TEST OBJECTIVES WERE INDICATED BY

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A. TO STUDY THE FEASIBILITY OF ADOPTING A FOUR OR SIX LINE CUT DURING DESCENT TO MAKE THE PARACHUTE STEERABLE.

B. TO MEASURE RATES OF TURN AND DESCENT WITHIN FOUR AND SIX LINE CUTS AND COMPARE TO UN-MODIFIED CANOPIES.

C. TO DETERMINE IF PILOTS IN FULL PRESSURE SUIT ARE SUFFICIENTLY UNRESTRICTED IN MOVEMENT TO PERMIT MAKING LINE CUTS.

D. TO OBSERVE ALL FACETS OF SAFETY WITH REGARD TO FUTURE USE BY PROJECT PILOTS.

2. THE FOLLOWING TESTS HAVE BEEN ACCOMPLISHED TO DATE WITH QUALIFIED PARACHUTE TECHNICIANS MAKING ALL JUMPS.

A. TOTAL 4 LINE CUT 4

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TOTAL SUCCESSFUL 4

B. TOTAL 6 LINE CUT (WITHOUT SUIT OR KIT) 7

TOTAL SUCCESSFUL 7

C. TOTAL 6 LINE CUT (WITH FULL SUIT AND SEAT KIT) 8

TOTAL SUCCESSFUL 2

TOTAL UNSUCCESSFUL 6

D. TOTAL 6 LINE CUT WITH SEAT KIT ONLY 2

TOTAL SUCCESSFUL 2

E. TOTAL TEST JUMPS 21

3. TEST FINDINGS ARE:

A. THE SIX LINE CUT GIVES OPTIMUM TURN AND SLIP PERFORMANCE. TURN RATE AVERAGED 30 SECONDS FOR A 150 DEGREE TURN. DESCENT WITH FULL SUIT AND KIT AVERAGED 52 SECONDS PER THOUSAND FEET, PRODUCING A FAVORABLE DESCENT RATE OF APPROX 19 FPS.

D. THE HIGH RATE OF UNSUCCESSFUL JUMPS WAS DUE ALMOST ENTIRELY TO LACK OF MOBILITY AND RESTRICTIONS TO MOVEMENT WHILE WEARING FULL PRESSURE SUIT AND SEAT KIT. JUMPERS WERE UNABLE TO PULL AND MOLL RISERS DOWN TO MAKE MODIFICATION CUTS. ONE FULL SUIT JUMP WAS CONSIDERED A FAILURE DUE TO THE SEAT KIT

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SEPARATING (DUE TO HARDWARE FAILURE) THEREBY PRODUCING IMPROPER
WEIGHT CONDITIONS.

C. DURING FIVE UNSUCCESSFUL JUMPS THE JUMPER WAS ABLE
TO CUT THREE LINES ON ONE RISER. IT WAS NOTED THAT WITH JUST
THREE LINES CUT THE CONTROL AND MANIPULATION SHOWED A MARKED
IMPROVEMENT.

D. ATTEMPTING THE MID AIR MOD AT ALTITUDES ABOVE 8000 FT
MAY REDUCE THE CHANCE OF SUCCESS, AS THE JUMPER'S EFFECTIVENESS
IS SOMEWHAT LIMITED DUE TO PHYSICAL EXERTION AT THESE HIGH
ELEVATIONS. JUMP ALTITUDES FOR THE TEST PROGRAM RANGED FROM
5800 FT MSL TO 12,500 FT MSL. THE TWO SUCCESSFUL FULL SUIT AND
KIT JUMPS WERE MADE AT APPROX 9000 MSL WITH CUTS MADE AT APPROX
8000 MSL BUT REQUIRED MAXIMUM EXERTION. DROP ZONE ALTITUDE WAS
4800 FT.

E. THIS SERIES OF TESTS DEMONSTRATED THAT THE SIX LINE
CUT IS DEFINITELY DESIRABLE IN THAT IT INCREASES CONTROL OF THE
CYBON'S CANOPY. HOWEVER, IT IS VERY UNLIKELY THAT A PROJECT PILOT
WOULD BE ABLE TO ACCOMPLISH THE MID AIR MOD USING THE PC-1 KNIFE
WHILE EQUIPPED BY THE PRESSURE SUIT AND SEAT KIT.

4. [REDACTED] HAVE DESIGNED A TELESCOPIC KNIFE

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WHICH WOULD PERMIT MAKING LINE CUTS WITHOUT HAVING TO PULL RIBBON
DOWN. TESTS WILL CONTINUE USING THIS KNIFE.

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