

WESTERN UNION C.R.C.
MCLB DRAWER 38
ALBANY GA 31704 18AM

Western
Union Mailgram



4=000502A199 07/18/90 ICS DODCRSR ABN SACB
00419 DOD CRC ALBANY GA 180631Z JUL 90/199

► CAL DEPT OF FORESTRY AVIATION
3460 BUSINESS DR SUITE 150
SACRAMENTO CA 95814

1 R RUCIFRDS427 1990602 DA=BDCVBA
R 172030Z JUL 90 ZEX
FM CDR AVSCOM ST LOUIS MO //AMSAV-X80F//
TO RUCLRFA/CALIFORNIA DEPARTMENT OF FORESTRY AVIATION 3460 //
BUSINESS DR SUITE 150 SACRAMENTO CA 95814//
DA=BDCVBA

UNCLAS

SUBJECT = AVIATION SAFETY MESSAGE, UH-1H/V AND EH-1H/X AIRCRAFT,
COLD WEATHER USE OF HUB MOMENT SPRING AND HUB RESTRAINT (HUB SPRING)
(UH-1-90-ASH-06).

NOTE = THIS MESSAGE IS NOT A SAFETY OF FLIGHT MESSAGE. THIS IS AN
AVIATION SAFETY MESSAGE AND HAS NOT BEEN TRANSMITTED TO UNITS
SUBORDINATE TO ADDRESSEES. REQUEST ADDRESSEES RETRANSMIT THIS
MESSAGE TO ALL SUBORDINATE UNITS, ACTIVITIES OR ELEMENTS AFFECTED OR
PAGE 02 RUCIFRDS427 UNCLAS

CONCERNED, THE RETRANSMITTAL SHALL REFERENCE THIS MESSAGE.

A. REFERENCES =

(1) MWO 55-1520-242-50-1, HUB MOMENT SPRING AND HUB RESTRAINT
RETROFIT KIT, DTD 29 JAN 88 THRU CHANGE 4, DTD 19 JUN 89.

(2) AVSCOM 132100Z NOV 89 MESSAGE, SUBJECT = SAFETY-OF-FLIGHT
MESSAGE, OPERATIONAL, RCS CSGLO-1860(R1) UH-1H/V AND EH-1H/X
AIRCRAFT, COLD WEATHER USE OF HUB MOMENT SPRING AND HUB RESTRAINT
(HUB SPRING) (UH-1-89-11) (TB 55-1520-242-20-46).

1. PURPOSE = THE PURPOSE OF THIS MESSAGE IS TO CLARIFY THE NEED FOR
THE HUB MOMENT SPRING AND HUB RESTRAINT ON THE UH-1 AIRCRAFT AND TO
REITERATE THE NEED FOR REMOVAL OF THE ELASTOMERIC SPRINGS IN COLD
WEATHER.

2. THE REFERENCED MODIFICATION WORK ORDER, MWO 55-1520-242-50-1,
INSTALLED THE HUB MOMENT SPRING AND HUB RESTRAINT RETROFIT KIT ON
THE UH-1H/V AND EH-1H/X AIRCRAFT. THE HUB SPRING WAS DEVELOPED IN
AN EFFORT TO REDUCE OR ELIMINATE THE CONDITION KNOWN AS MAST
BUMPING. IN ADDITION TO THE HUB SPRING, CHANGES TO THE OPERATORS
MANUAL TO BETTER DEFINE THE CONDITIONS LEADING TO MAST BUMPING,
DEVELOPMENT OF A MAST BUMPING TRAINING VIDEO THAT WAS WIDELY
DISTRIBUTED, AND INCREASED EMPHASIS ON MAST BUMPING AWARENESS DOING
PAGE 03 RUCIFRDS427 UNCLAS

PILOT TRAINING HAVE CONTRIBUTED TO THE REDUCTION OF MAST BUMPING
INCIDENTS.

3. THE HUB SPRING UTILIZES ELASTOMERIC (RUBBER) SPRINGS WHICH
CHANGED THE SOLID METAL TO METAL IMPACT AT A MAXIMUM HUB FLAPPING



ANGLE (APPROXIMATELY ELEVEN DEGREES) TO A GRADUALLY INCREASING, CUSHIONED IMPACT AS FLAPPING ANGLES INCREASE. A TWO (2) PER REV VIBRATION WILL OCCUR AND WILL INCREASE IN INTENSITY AS THE FLAPPING ANGLE INCREASES AND THE RUBBER SPRING IS COMPRESSED, THE INCREASE IN FEEDBACK INTENSITY WILL INDICATE THE NEED TO REDUCE THE SEVERITY OF THE MANEUVER.

4. AN UNDESIRABLE SIDE EFFECT OF THE HUB SPRING HAS BEEN THE INTRODUCTION OF A NEW LOAD TO THE MAST WHICH HAS DECREASED THE LIFE OF THE MAST FROM UNLIMITED TO 1500 HOURS. AS OUTSIDE AIR TEMPERATURE DECREASES, THE RUBBER SPRINGS BECOME STIFFER, THUS INCREASING THE LOAD ON THE MAST. WHEN THE TEMPERATURE FALLS BELOW ZERO DEGREES FAHRENHEIT THE FATIGUE LIFE OF THE MAST IS DECREASED EVEN FURTHER. THE COLDER THE TEMPERATURE, THE GREATER THE DECREASE IN LIFE. AT TEMPERATURES OF AROUND FORTY BELOW ZERO THE RUBBER SPRING BECOMES SO HARD THAT IMPACT AT EVEN LOW FLAPPING ANGLES (I.E., FIVE DEGREES) CAN RESULT IN STRUCTURAL DAMAGE TO THE MAST.

PAGE 04 RUCIFR05427 UNCLAS

OPERATION AT ANY TEMPERATURE BELOW ZERO FAHRENHEIT IS UNACCEPTABLE. REMOVAL OF THE RUBBER SPRINGS WHEN A TEMPERATURE BELOW ZERO DEGREES IS ANTICIPATED AS ESSENTIAL TO ASSURE SAFE OPERATION FOR THE FULL 1500 HOUR LIFE. THE RUBBER SPRINGS SHOULD BE REINSTALLED WHEN THE THREAT OF BELOW ZERO DEGREE TEMPERATURES IS PAST.

NOTE

WHEN REMOVING THE RUBBER SPRINGS DUE TO COLD TEMPERATURES, REMOVE ONLY THE RUBBER SPRINGS AND THE ATTACHMENT BOLTS. DO NOT REMOVE THE HUB SPRING MOUNTS FROM THE MAST.

5. WHEN THE RUBBER SPRINGS ARE REMOVED FROM THE AIRCRAFT ALL MECHANICAL PROTECTION AGAINST MAST BUMPING IS GONE. WHEN OPERATING THE AIRCRAFT UNDER THIS CONDITION, EXTREME CARE SHOULD BE TAKEN TO OPERATE WITHIN THE OPERATORS MANUAL GUIDANCE AND WITHIN THE PRESCRIBED FLIGHT ENVELOPE. IT SHOULD ALSO BE NOTED, THAT WITH THE RUBBER SPRINGS REMOVED THE CREW WILL NOTICE METAL TO METAL CONTACT OF THE HUB AND MAST DURING RUN UP AND COAST DOWN, ESPECIALLY DURING WINDY CONDITIONS (WIND LIMITATIONS ARE SPECIFIED IN THE -10 MANUAL). THIS IS NORMAL AND ALSO OCCURRED PRIOR TO INSTALLATION OF THE HUB SPRING MWO. HUB TO MAST CONTACT DURING THESE CONDITIONS (LOW RPM) IS NOT DETRIMENTAL TO THE AIRCRAFT.

PAGE 05 RUCIFR05427 UNCLAS

6. PROPER STORAGE OF REMOVED PARTS PERTAINING TO THIS MWO IAW DA PAMPHLET 738-751 SHOULD BE COMPLIED WITH TO AVOID LOSS OF TIME WHEN REINSTALLING ON THE AIRCRAFT.

7. IN SUMMARY, THE HUB SPRING IS A SAFETY IMPROVEMENT TO THE UH-1 AIRCRAFT AND IT SHOULD BE FULLY INSTALLED TO PROVIDE AN INCREASED MARGIN OF SAFETY AGAINST MAST BUMPING. WHEN THE RUBBER SPRINGS ARE REMOVED DUE TO COLD WEATHER, THE GUIDANCE GIVEN IN PARA 5 ABOVE WILL ASSURE SAFE OPERATION.

8. POINTS OF CONTACT -

A. TECHNICAL POINT OF CONTACT FOR THIS MESSAGE IS MR. FRED KERSHAW, AMSAV-ECH, DSN/AUTOVON 693-1683 OR COMMERCIAL 314/263-1683.

B. MESSAGE POINT OF CONTACT IS MR. DONG K. NGUYEN, AMSAV-XSOF, DSN/AUTOVON 693-9089 OR COMMERCIAL 314/263-9089.

C. FOREIGN MILITARY SALES (FMS) RECIPIENTS REQUIRING

WESTERN UNION C.R.C.
HCLB DRAWER 38
ALBANY GA 31704 18AH

WESTERN
UNION MAILGRAM



4-000512A199 07/18/90 ICS DODCRSE ABN BESA
00423 DOD CRC ALBANY GA 180633Z JUL 90/199

▶ USDA FOREST SERVICE AVIATION FIRE MGMT
3905 VISTA AVE
BOISE ID 83705

1 R RUCIFR05427 1990602 DA-BDCVBA
R 172030Z JUL 90 ZEX
FM CDR AVSCOM ST LOUIS MO //AMSAV-XSDF//
TO RUCLRFA/USDA FOREST SERVICE AVIATION FIRE MGMT
//3905 VISTA AVE BOISE ID 83705//
DA-BDCVBA

UNCLAS

SUBJECT - AVIATION SAFETY MESSAGE, UH-1H/V AND EH-1H/X AIRCRAFT,
COLD WEATHER USE OF HUB MOMENT SPRING AND HUB RESTRAINT (HUB SPRING)
(UB-1-90-ASH-06)

NOTE - THIS MESSAGE IS NOT A SAFETY OF FLIGHT MESSAGE. THIS IS AN
AVIATION SAFETY MESSAGE AND HAS NOT BEEN TRANSMITTED TO UNITS
SUBORDINATE TO ADDRESSEES. REQUEST ADDRESSEES RETRANSMIT THIS
MESSAGE TO ALL SUBORDINATE UNITS, ACTIVITIES OR ELEMENTS AFFECTED OR
PAGE 02 RUCIFR05427 UNCLAS
CONCERNED. THE RETRANSMITTAL SHALL REFERENCE THIS MESSAGE.

A. REFERENCES -

(1) MWO 55-1520-242-50-1, HUB MOMENT SPRING AND HUB RESTRAINT
RETROFIT KIT, DTD 29 JAN 88 THRU CHANGE 4, DTD 19 JUN 89.

(2) AVSCOM 132100Z NOV 89 MESSAGE, SUBJECT - SAFETY-OF-FLIGHT
MESSAGE, OPERATIONAL, RCS CSGLO-18601R11 UH-1H/V AND EH-1H/X
AIRCRAFT, COLD WEATHER USE OF HUB MOMENT SPRING AND HUB RESTRAINT
(HUB SPRING) (UH-1-89-11) (TB 55-1520-242-20-46).

1. PURPOSE - THE PURPOSE OF THIS MESSAGE IS TO CLARIFY THE NEED FOR
THE HUB MOMENT SPRING AND HUB RESTRAINT ON THE UH-1 AIRCRAFT AND TO
REITERATE THE NEED FOR REMOVAL OF THE ELASTOMERIC SPRINGS IN COLD
WEATHER.

2. THE REFERENCED MODIFICATION WORK ORDER, MWO 55-1520-242-50-1,
INSTALLED THE HUB MOMENT SPRING AND HUB RESTRAINT RETROFIT KIT ON
THE UH-1H/V AND EH-1H/X AIRCRAFT. THE HUB SPRING WAS DEVELOPED IN
AN EFFORT TO REDUCE OR ELIMINATE THE CONDITION KNOWN AS MAST
BUMPING. IN ADDITION TO THE HUB SPRING, CHANGES TO THE OPERATORS
MANUAL TO BETTER DEFINE THE CONDITIONS LEADING TO MAST BUMPING,
DEVELOPMENT OF A MAST BUMPING TRAINING VIDEO THAT WAS WIDELY
DISTRIBUTED, AND INCREASED EMPHASIS ON MAST BUMPING AWARENESS DURING
PAGE 03 RUCIFR05427 UNCLAS

PILOT TRAINING HAVE CONTRIBUTED TO THE REDUCTION OF MAST BUMPING
INCIDENTS.

3. THE HUB SPRING UTILIZES ELASTOMERIC (RUBBER) SPRINGS WHICH
CHANGED THE SOLID METAL TO METAL IMPACT AT A MAXIMUM HUB FLAPPING

To reply by Mailgram Message, see reverse side for Western Union's toll-free numbers.

WESTERN
UNION MAILGRAM

ANGLE (APPROXIMATELY ELEVEN DEGREES) TO A GRADUALLY INCREASING, CUSHIONED IMPACT AS FLAPPING ANGLES INCREASE. A TWO (2) PER REV VIBRATION WILL OCCUR AND WILL INCREASE IN INTENSITY AS THE FLAPPING ANGLE INCREASES AND THE RUBBER SPRING IS COMPRESSED. THE INCREASE IN FEEDBACK INTENSITY WILL INDICATE THE NEED TO REDUCE THE SEVERITY OF THE MANEUVER.

4. AN UNDESIRABLE SIDE EFFECT OF THE HUB SPRING HAS BEEN THE INTRODUCTION OF A NEW LOAD TO THE MAST WHICH HAS DECREASED THE LIFE OF THE MAST FROM UNLIMITED TO 1500 HOURS. AS OUTSIDE AIR TEMPERATURE DECREASES, THE RUBBER SPRINGS BECOME STIFFER, THUS INCREASING THE LOAD ON THE MAST. WHEN THE TEMPERATURE FALLS BELOW ZERO DEGREES FAHRENHEIT THE FATIGUE LIFE OF THE MAST IS DECREASED EVEN FURTHER. THE COLDER THE TEMPERATURE, THE GREATER THE DECREASE IN LIFE. AT TEMPERATURES OF AROUND FORTY BELOW ZERO THE RUBBER SPRING BECOMES SO HARD THAT IMPACT AT EVEN LOW FLAPPING ANGLES (I.E. FIVE DEGREES) CAN RESULT IN STRUCTURAL DAMAGE TO THE MAST.

PAGE 04 RUCIFR05427 UNCLAS

OPERATION AT ANY TEMPERATURE BELOW ZERO FAHRENHEIT IS UNACCEPTABLE. REMOVAL OF THE RUBBER SPRINGS WHEN A TEMPERATURE BELOW ZERO DEGREES IS ANTICIPATED AS ESSENTIAL TO ASSURE SAFE OPERATION FOR THE FULL 1500 HOUR LIFE. THE RUBBER SPRINGS SHOULD BE REINSTALLED WHEN THE THREAT OF BELOW ZERO DEGREE TEMPERATURES IS PAST.

NOTE

WHEN REMOVING THE RUBBER SPRINGS DUE TO COLD TEMPERATURES,

REMOVE ONLY THE RUBBER SPRINGS AND THE ATTACHMENT BOLTS.

DO NOT REMOVE THE HUB SPRING MOUNTS FROM THE MAST.

5. WHEN THE RUBBER SPRINGS ARE REMOVED FROM THE AIRCRAFT ALL MECHANICAL PROTECTION AGAINST MAST BUMPING IS GONE. WHEN OPERATING THE AIRCRAFT UNDER THIS CONDITION, EXTREME CARE SHOULD BE TAKEN TO OPERATE WITHIN THE OPERATORS MANUAL GUIDANCE AND WITHIN THE PRESCRIBED FLIGHT ENVELOPE. IT SHOULD ALSO BE NOTED, THAT WITH THE RUBBER SPRINGS REMOVED THE CREW WILL NOTICE METAL TO METAL CONTACT OF THE HUB AND MAST DURING RUN UP AND COAST DOWN, ESPECIALLY DURING WINDY CONDITIONS (WIND LIMITATIONS ARE SPECIFIED IN THE -10 MANUAL). THIS IS NORMAL AND ALSO OCCURRED PRIOR TO INSTALLATION OF THE HUB SPRING MWO. HUB TO MAST CONTACT DURING THESE CONDITIONS (LOW RPM) IS NOT DETRIMENTAL TO THE AIRCRAFT.

PAGE 05 RUCIFR05427 UNCLAS

6. PROPER STORAGE OF REMOVED PARTS PERTAINING TO THIS MWO IAW DA PAMPHLET 738-751 SHOULD BE COMPLIED WITH TO AVOID LOSS OF TIME WHEN REINSTALLING ON THE AIRCRAFT.

7. IN SUMMARY, THE HUB SPRING IS A SAFETY IMPROVEMENT TO THE UH-1 AIRCRAFT AND IT SHOULD BE FULLY INSTALLED TO PROVIDE AN INCREASED MARGIN OF SAFETY AGAINST MAST BUMPING. WHEN THE RUBBER SPRINGS ARE REMOVED DUE TO COLD WEATHER, THE GUIDANCE GIVEN IN PARA 5 ABOVE WILL ASSURE SAFE OPERATION.

8. POINTS OF CONTACT -

A. TECHNICAL POINT OF CONTACT FOR THIS MESSAGE IS MR. FRED KERSHAW, AMSAV-ECH, DSN/AUTOVON 693-1683 OR COMMERCIAL 314/263-1683.

B. MESSAGE POINT OF CONTACT IS MR. DONG K. NGUYEN, AMSAV-XSOF, DSN/AUTOVON 693-9089 OR COMMERCIAL 314/263-9089.

C. FOREIGN MILITARY SALES (FMS) RECIPIENTS REQUIRING