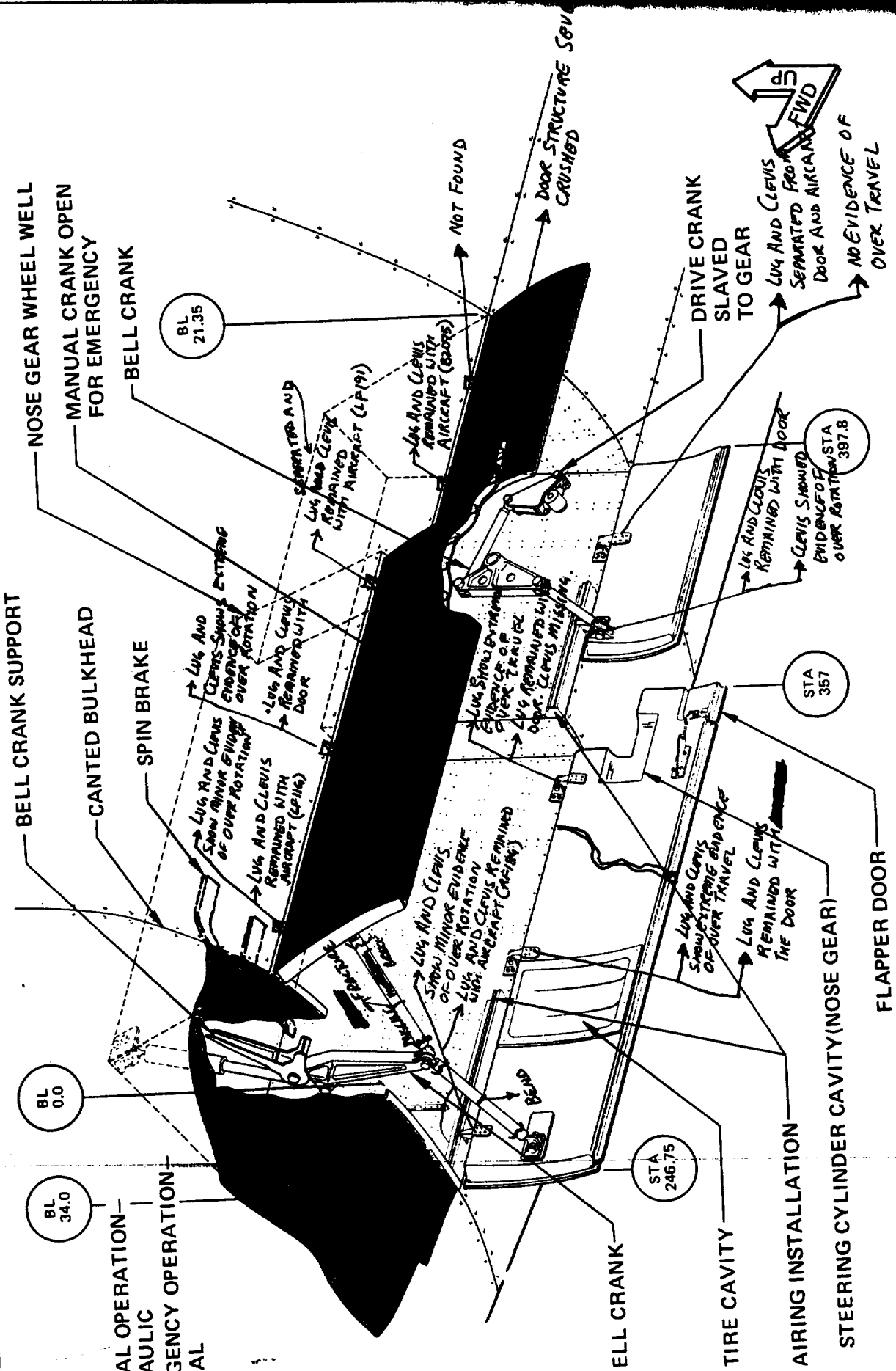


[Signature] 4-12-97
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ear Doors



BL 34.0

BL 0.0

BL 21.35

STA 246.75

STA 357

STA 397.8

NOSE GEAR WHEEL WELL
 MANUAL CRANK OPEN FOR EMERGENCY

BELL CRANK

BELL CRANK SUPPORT

CANTED BULKHEAD

SPIN BRAKE

LUG AND CLEVIS SHOW MINOR EVIDENCE OF OVER ROTATION
 LUG AND CLEVIS REMAINED WITH AIRCRAFT (SP16)

LUG AND CLEVIS REMAINED WITH AIRCRAFT (SP19)
 LUG AND CLEVIS REMAINED WITH AIRCRAFT (BOOPS)

LUG AND CLEVIS SHOW MINOR EVIDENCE OF OVER ROTATION
 LUG AND CLEVIS REMAINED WITH AIRCRAFT (SP16)

LUG SHOWS EXTENSIVE EVIDENCE OF OVER TRAVEL
 LUG REMAINED WITH AIRCRAFT (SP16)

DOOR STRUCTURE SEVERELY CRUSHED

BELL CRANK

TIRE CAVITY

AIRING INSTALLATION

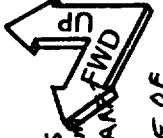
STEERING CYLINDER CAVITY (NOSE GEAR)

FLAPPER DOOR

DRIVE CRANK SLAVED TO GEAR

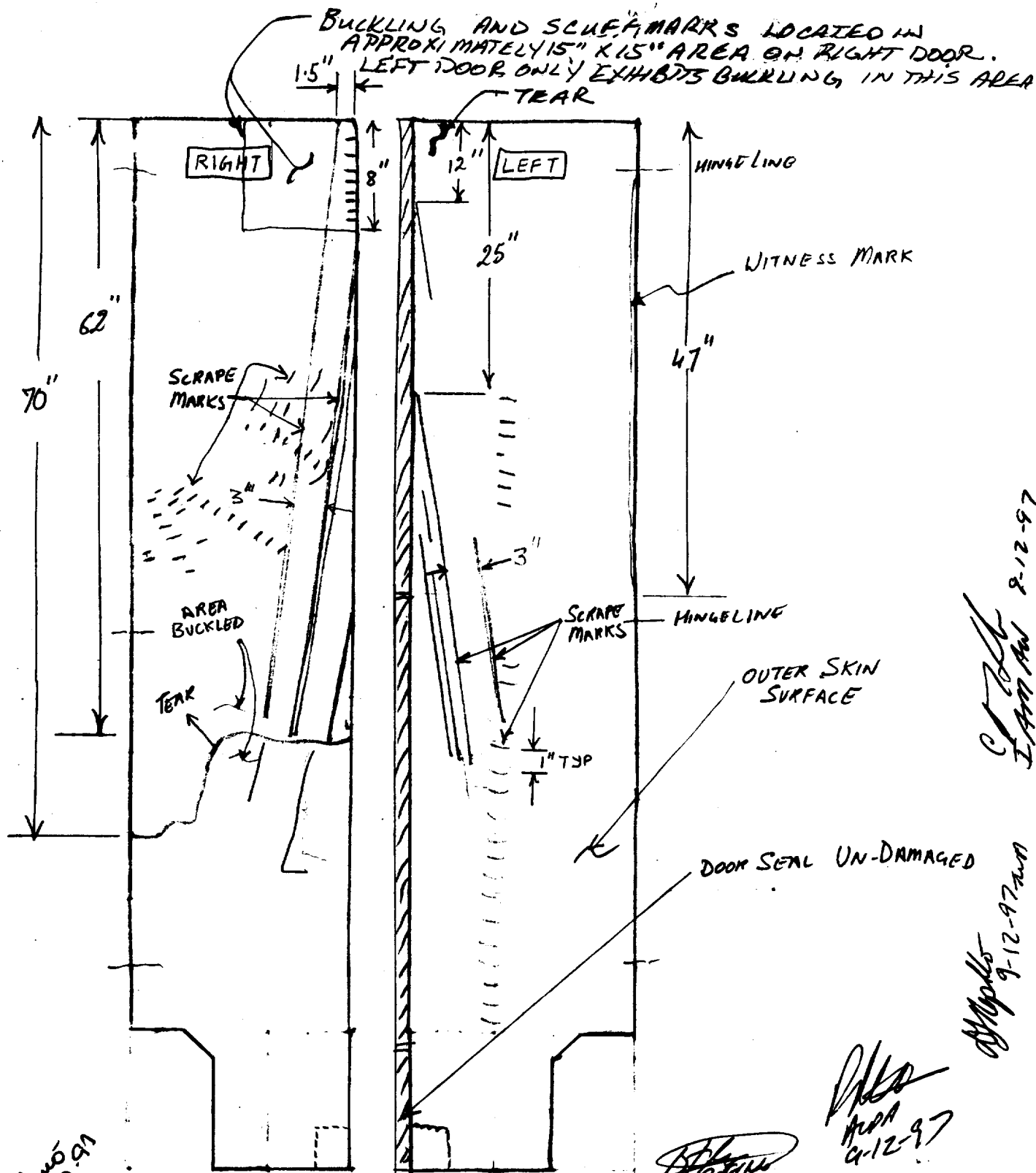
LUG AND CLEVIS SEPARATED FROM DOOR AND AIRCRAFT
 NO EVIDENCE OF OVER TRAVEL

LUG AND CLEVIS REMAINED WITH DOOR
 CLEVIS SHOWS EVIDENCE OF OVER ROTATION



NLG FWD DOOR. (OUTER SURFACE)
VIEW LOOKING-UP

(NOT TO SCALE)



Tom Podino
9-12-97

[Signature]
9/14/97

[Signature]
9-12-97

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9-12-97

[Signature]
9-12-97

NOSE GEAR DOORS L&G

RIGHT FWD

RH FWD DOOR - THIS DOOR IS SEPARATED INTO TWO SEGMENTS BY A ~~COMPRESSION~~ FRACTURE BETWEEN THE CENTER AND AFT HINGES. THERE IS EVIDENCE OF COMP. BUCKLING, ON INNER SKIN ~~ADJACENT~~ IN THE VICINITY OF FRACTURE.

DOOR ACTUATION ROD - CONTAINS TENSION FRACTURES AT BOTH ENDS and BENDING COMPONENT AT DOOR END
- CONTAINS 15° DOWNWARD BEND AT MID LENGTH WHICH CORRESPONDS WITH NESTED DEFORMATION FROM CONTACT WITH THE UPPER SURFACE OF THE DOOR AT BLD 0 APPROXIMATELY 5 INCHES AFT OF THE DOOR STOP.

DMG
9-9-97
JMT

AKA
9-10-97

UPWARD DEFORMATION (≈ 1 INCH) OF THE LEADING EDGE FAIRING FLANGE FROM RBL 2 - RBL 18 AND ~~DOWNWARD~~ DEFORMATION OF THE FWD RIB AT ≈ RBL 11 IS ASSOCIATED WITH PILLOWING OF THE LOWER SURFACE. APPROXIMATELY A 15" X 15" AREA ON OUTER FWD SURFACE IN ADDITION TO THE WRINKLING ADJACENT TO THE DOOR SEGMENT FRACTURE, THE UPPER SURFACE ALSO DISPLAYS SLIGHT WRINKLING OF THE WHEEL CAVITY.

FWD HINGE - THE HINGE LUG, RIB ATTACH TEE w/ CAPTURED BOX WEBB, AND THE AIRFRAME CLEVIS, REMAIN ATTACHED TO CRUMPLED DOG HOUSE STRUCTURE DATED 8/3/86 - 145 (RF-184)

- THE RIB ATTACH TEE CONTAINS LATERALLY SHEARED RIVET SEGMENTS IN THE TWO CENTER HOLES. THE UPPER RIVET HOLE CONTAINS A SLOTTED PULL-AWAY FRACTURE.
- THE UPPER AND LOWER STRAPS CONTAIN SLOTTED PULL-AWAY FRACTURES. OUTWARD DEFORMATION OF THE BOX WEBB AND DOWNWARD DEFLECTION (≈ 45 MAX) OF THE OUTBOARD FAIRING FLANGE ARE LOCAL TO THE HINGE AREA.

OFF BOEING
9/10/97
W. HESS marks
on clevis

Tom Tedmo Fan
8-22-97

CENTER HINGE - THE HINGE LUG AND AIRFRAME CLEVIS REMAINS WITH THE DOOR SEGMENT

- AIRFRAME CLEVIS IS INTACT, STILL PLAT ATTACH PAD.
- LUG CONTAINS WITNESS MARKS ON UPPER FLANGES FROM OVER ROTATION (CLOSING).

CLR
FWD HOLE
AREA
BENT

Dennis Santoro
8-22-97
2 AM

- THERE IS EVIDENCE OF DOOR OVER-TRAVEL IN THE OPENING ^{DIRECTION.} ON THE DOOR OUTER SKIN EDGE FROM THE AIRFRAME CLEVIS

AFT HINGE - THE HINGE LUG AND BEARING ~~W/~~ PIVOT BOLT REMAIN WITH THE DOOR SEGMENT

- WITNESS MARKS ARE PRESENT ON THE UPPER FLANGES OF THE LUG FROM OVER ROTATION (CLOSING).

THE OUTBOARD BOX WEB CONTAINS AN UPWARD PENETRATION FROM SOME SERRATED ITEM. THE HOLE IS 3 INCHES FROM OF AFT HINGE.

THE CABLE CLEVIS IS BROKEN ~~FORWARD~~ INWARD.

Tom Todman FMA
8-22-97

[RF 184, 186 & RF 150 are NLG wheel well RHS structure segments)

FWD - WITNESS MARKS OF OVER ROTATION IN BOTH OPENING AND CLOSING DIRECTIONS ON LUG AND CLEVIS
(RF-184)

CTR - CLEVIS ATTACH
HINGE - NUT PLATE COLLARS (THREADED) MISSING
(RF 186)

AFT HINGE - UPPER AND NUT PLATE COLLAR MISSING
ON (RF-50) LOWER FWD NUT PLATE COLLAR PARTIALLY FRACTURED
LOWER AFT NUT PLATE DAMAGED. HALF OF THE COLLAR MISSING.
UPPER REAR NUT PLATE STRIPPED.

DOOR INNER SURFACE :-

Dennis Lutz
8-22-97 IAM

- THERE IS NO EVIDENCE OF ANY IMPACT MARKS WITH NLG STOWING ACTUATOR OR TIRE
- NO INDICATION OF CONTACT/INDENTATION ^{ON DOOR AFT-STOP.} ~~AT DOOR STOP.~~

DOOR OUTER SURFACE :- LIGHT

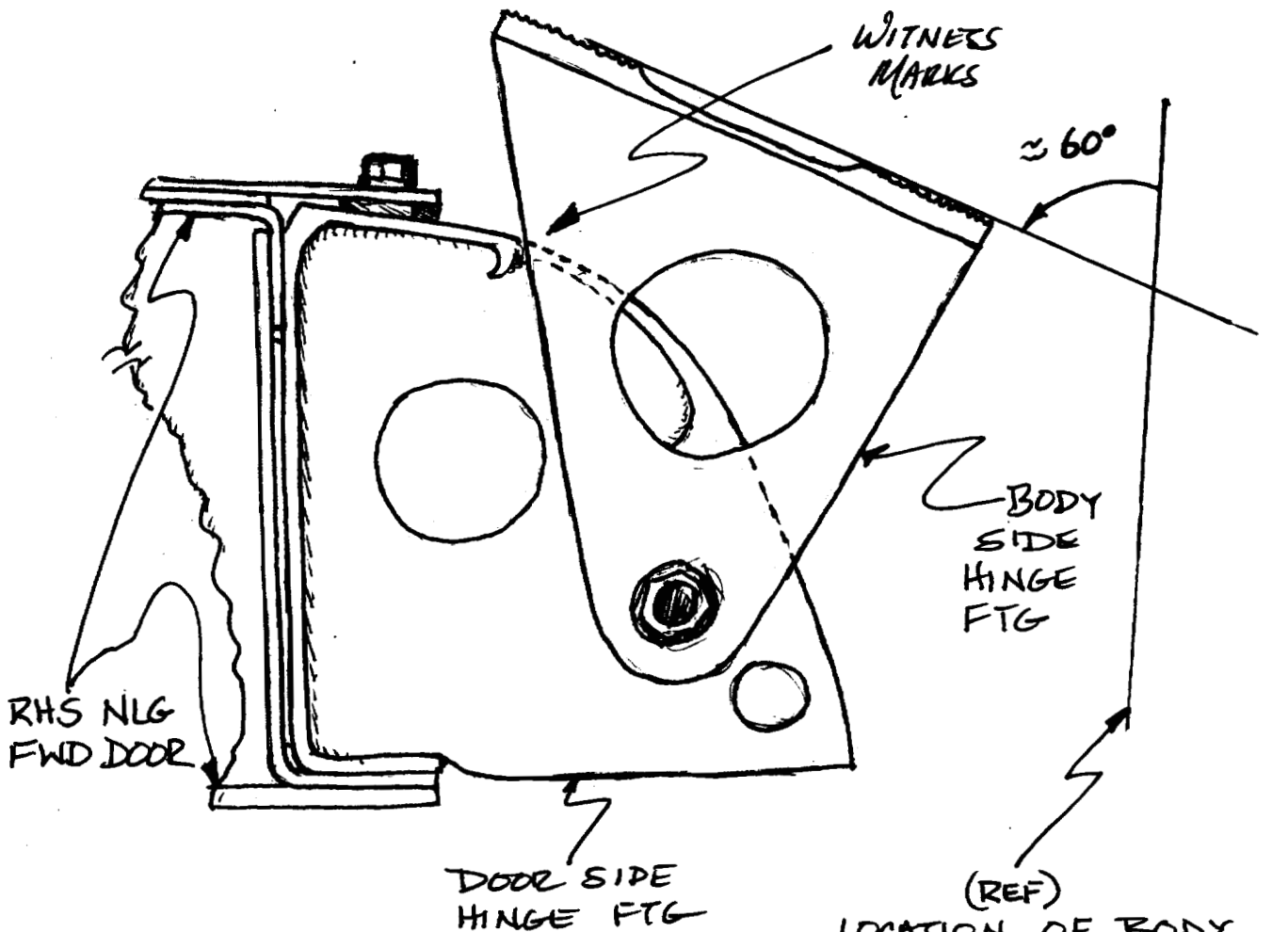
- THERE IS EVIDENCE OF LIGHT SCRATCH MARKS ON THE SKIN.
- WITH DOOR HANGING DOWN, THE SCRATCH MARKS WILL BE // TO THE GROUND. (SEE SKETCH).

off/lyalls
9-9-97

TNT
R. J. ...
9-10-97

off/lyalls
9-10-97

NLG RHS FWD DOOR - MID HINGE



BOEING / *Sketch*
8/24/97

Apple
9-9-97
TWA
Apple
9/10/97

(REF)
LOCATION OF BODY
SIDE HINGE FTG
RELATIVE TO DOOR
SIDE HINGE FTG
WITH DOOR IN
CLOSED POSITION.

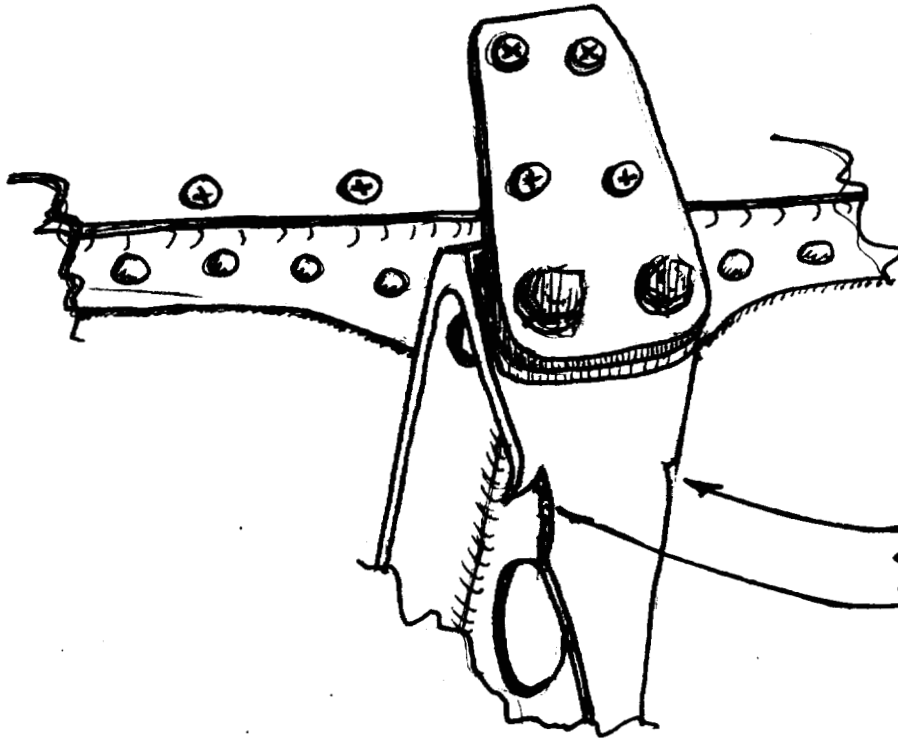
THE WITNESS MARKS ON THE NLG FWD DOOR HINGE ASSEMBLIES ARE CONSISTENT WITH RELATIVE ROTATION APPROXIMATELY 60° BEYOND THE CLOSED POSITION.

THE ROTATION IS CONSISTENT WITH THE DOORS MOVING IN AN UPWARD DIRECTION.

Tom Todaro
FAX 9-11-97

Dennis Hartings
8-22-97 JIA 70

NLG RHS FWD DOOR - MID HINGE



WITNESS
MARKS ON
NLG DOOR
SIDE HINGE
FITTING

(IMPACT WITH BODY
SIDE HINGE FTG
CLEVIS)

THE RHS MID HINGE SHOWN SHOWS THE MOST OBVIOUS MARKS DUE TO IMPACT WITH BODY SIDE HINGE FITTING CLEVIS. MARKS COMMON TO THE DOOR SIDE FITTINGS AT THE OTHER HINGE LOCATIONS SHOW SIMILAR AMOUNTS OF RELATIVE ROTATION (EXCEPT AT THE RHS FWD DOOR AFT HINGE).

Dennis Jortaga
8-22-97 JAM

S. Chiskoln
BOEING 8/20/97

J J J
EWA

9-10-97

Tom Todaro
FAA 9-11-97

NOSE LANDING GEAR DOOR

LEFT FWD

LG 6 LH FWD DOOR

ACTUATION ROD - CONTAINS A DOWNWARD BEND FRACTURE AT MID LENGTH AND WITNESS MARKS OF ~~TRIPLE IMPACT~~ TRIPLE IMPACT WITH THE DOOR BOX \approx 2 INCHES AFT OF THE DOOR STOP
- THE ROD HALF REMAINS ATTACHED TO THE DOOR

RIB #1 - CONTAINS A WITNESS MARK OF THE AIRFRAME DOOR STOP DRAG DOWN THROUGH THE FAIRING FLANGE ON THE INBOARD END ON THE FWD FACE.

- UPWARD DEPLETION (≈ 200 ^{MAX}) IS PRESENT ON FAIRING FLANGE FROM LBL 5 TO LBL 16

FWD HINGE - THE LUG AND RIB ATTACH PLATE REMAIN WITH LF 11 G

- SLOTTED FULL-THRU FRACTURES ARE PRESENT AT THE FASTENER HOLES IN THE UPPER STRAP.

- THE UPPER CHORD OF THE BOX WEB DISPLAYS OUTWARD DEPLETION ~~OF THE~~ LOCAL TO THE HINGE

- DOWNWARD DEPLETION (≈ 45 ^{MAX}) OF THE FAIRING FLANGE IS LOCAL TO THE HINGE AND PULL-THROUGH

(CONT)

light witness marks on lug and clevis due to over rotation in door when door is down

Tom Todman FAX 8-22-97

Dennis Santiago 8-22-97 IAM

[Signature]
9-9-97
JWA

[Signature] - MPA
9-10-97

[Signature]
BOEING
9/10/97

DEFLECTION OF THE FASTENER HOLES COMMON TO THE LUG IS PRESENT.

CENTER HINGE - THE DOOR LUG AND AIRFRAME CLEVIS REMAINS WITH THE DOOR.

- WITNESS MARKS ARE PRESENT ON THE UPPER FLANGE OF THE LUG FROM OVER ROTATION (CLOSING).
- AIRFRAME CLEVIS DISPLAYS SLIGHT BOWING (CONCAVE) OF THE ATTACH PAD. THE LOWER AFT CORNER OF THE ATTACH PAD DEFLECTS TOWARD DOOR.

AFT HINGE - THE AIRFRAME CLEVIS REMAINS ATTACHED TO A PORTION OF DOG HOUSE STRUCTURE DATED 8/7/96-15^(LF191). THE HINGE LUG AND ATTACH TEE ARE SEPARATE.

- SLOTTED PULL-AWAY FRACTURES ARE PRESENT AT THE FASTENER HOLES IN THE UPPER STRAP, OUTWARD DEFLECTION OF THE BOX WEB AND DOWNWARD DEFLECTION OF THE LOWER FAIRING FLANGE ARE LOCAL TO THE HINGE AREA, AND PULL-THROUGH DEFORMATION OF THE LOWER FASTENER HOLES.
- THE CAPTURED BOX WEB BETWEEN THE LUG AND RIB ATTACH TEE DISPLAYS OUTWARD^{BOARD} DEFLECTION FWD OF THE LUG AND INWARD^{BOARD} DEFLECTION AFT OF THE LUG.
- TWO CENTER RIVETS COMMON TO THE RIB REMAIN IN THE ATTACH TEE DISPLAY LATERAL SHEAR FRACTURES.
- THE ~~AFT~~^{HINGE} BOLT AND BEARING REMAIN IN THE LUG. THE BOLT IS JAMMED IN A SKEWED POSITION WITH THE BOLT HEAD (FWD) INWARD AND THE NUT (AFT END) OUTBOARD.
- THE AIRFRAME CLEVIS LEGS ARE SPREAD AND DISPLAY WITNESS MARKS FROM THE HINGE BOLT AT THE BEARING HOLES ON THE INNER SURFACES. THE MARK IS OUTBOARD ON THE AFT LEG AND INBOARD ON THE FWD LEG.

Dennis Santiago
8-22-97 3AM

Tom Tolino
EPA 8-22-97

9-9-97

9-10-97

9/10/97

SEQUENCE VALUE ^{ROD} ATTACH LUG - DISPLAYS PULL-THROUGH DEFORMATION OF DOOR STRUCTURE AT THE UPPER FASTENER AREA.

- THE REMAINING LUG AT THE LOWER FASTENERS DISPLAYS A ~~DOWNWARD~~ BENDING FRACTURE

THE LOWER FARRING FLANGE ALONG THE OUTBOARD EDGE OF THE DOOR DISPLAYS UPWARD DEFLECTION ($\approx 40^\circ$ MAX) BETWEEN FWD AND CENTER HINGES AND CENTER AND AFT HINGES.

Tom Todman
FAX-8-22-97

DOOR INNER SURFACE :-

- THERE IS NO EVIDENCE OF ANY IMPACT MARKS WITH NLG STEERING ACTUATOR OR TIRE
- THERE IS EVIDENCE OF INDENTATIONS ON THE ~~DOOR~~ DOOR AFT-STOP.
- THERE IS EVIDENCE OF ^{MINOR} LBUCKLING AT 2 LOCATION ADJACENT TO THE INBD BOX WEB.

DOOR OUTER SURFACE :

- THERE IS EVIDENCE OF LIGHT SCRATCH MARKS ON THE SKIN
- WITH DOOR HANGING DOWN, THE SCRATCH MARKS WILL BE PARALLEL TO THE GROUND. (SEE SKETCH/PHOTO).
- ^{MORE SIGNIFICANT} LCOMP. BUCKLING WAS FOUND AT VARIOUS LOCATIONS ALONG THE LENGTH OF THE DOOR.
- THE DOOR IS STRAIGHT AND DOES NOT HAVE OUTWARD ^{NORMAL} CANT (FWD/AFT).
- THERE IS EVIDENCE OF WITNESS MARKS INDICATING CONTACT WITH FUS. SKIN LAP SEAM (RIVET HEADS) AROUND STR. 39.
- UPWARD DEFORMATION (≈ 1 INCH) OF THE LEADING EDGE FARRING FLANGE FROM ~~LBL 2 - LBL 18~~ AND INWARD DEFORMATION OF THE FWD RIB AT \approx LBL 11 IS ASSOCIATED WITH PILLLOWING OF THE LWR SURFACE.

Dennis Santiago
8-22-97

M. J. [Signature]
9-9-97
TWA

AVA
9-10-97

[Signature] ROBIN
9/10/97

GENERAL DESCRIPTION OF LF 116.

GENERALLY, THE PIECE IS BOWED O/B (VERTICALLY AND HORIZONTALLY AND HAS A 40" HORIZONTAL COMPRESSION WRINKLE LOCATED APPROX. MID-WAY.

AM/epk
9-9-97
JHA

Tom Todaro
FAR 9-11-97


FAR 9-10-97

Daniel Hartig
9-11-97 JAH

ADDITIONAL DOCUMENTATION OF THIS SECTION
TO SUPPORT NLG DOOR HINGE DOCUMENTATION

FWD HINGE

- THE LUG AND RIB ATTACH PLATE REMAINED WITH LF11G STRUCTURE
- THE FUS SKIN FLANGE INBD. EDGE IS DAMAGED FROM OVERROTATION OF ^{DOOR}HINGE FITTING. THIS IS VERIFIED BY DOOR SKIN WITNESS MARKS BETWEEN FRONT. CTR HINGES.
- THE BACK-UP STRUCTURE IS INTACT.
- THE FAIRING STRUCTURE HAS MOVED UP-WARDS (APPROX. 90°).
- LOCAL DAMAGE TO FAIRING STRUCTURE ABOVE HINGE LOCATION.

~~Not to be used~~

CENTER HINGE

- ONE BOLT SHANK REMAINS IN THE NUT PLATE AT THE LOWER AFT LOCATION OF THE GEAR DOOR AIRCRAFT CLEVIS FITTING.
- THE UPPER AFT AIRCRAFT CLEVIS FITTING BOLT LOCATION NUT PLATE IS PARTIALLY PULLED INBD.
- N/A
- THE BACK-UP STRUCTURE IS INTACT.
- THE FAIRING STRUCTURE HAS MOVED UP-WARDS (APPROX. 90°) and AFT
- LOCAL DAMAGE TO FAIRING STRUCTURE ABOVE HINGE LOCATION.
- THERE IS EVIDENCE WITNESS/IMPACT MARK APPROX THE LENGTH OF THE TOP EDGE OF AIRCRAFT CLEVIS FITTING ^{ABOVE} THE NORMAL CONTACT POSITION.

[Signature]
9-10-97
ALBA

[Signature]
9-9-97
TAA

Dennis Lantz
9-11-97 IAM

Tom Todman
FAA 9-11-97

AFT HINGE

(OF FWD RT. NLG. DOOR)

THE AIRFRAME CLEVIS [REMAINED ATTACHED TO A PORTION OF STRUCTURE (LF 191).

- THE BACK-UP FITTING FWD VERT FLANGE IS CRACKED IN THE RADIUS AT THE LOWER EDGE RUNNING APP. 6"
- THE AIRCRAFT CLEVIS THAT REMAINED TO LF=191 WAS RELOCATED AT SOME PREVIOUS TIME ~~DOWN~~ DOWN 1/8" (APPROX.) DISASSEMBLY OF CLEVIS SHOWN NO APPARENT STRIPPING OF SERRATION BUT THE LOWER SIDED OF BOLT HOLES WERE ~~DEFORMED~~ DEFORMED. ⊕
- THE FAIRING STRUCTURE IS NOT ATTACHED (AFT 1/3" OF THE FAIRING).
- ⊕ THE SERRATED PORTION OF CLEVIS IS SLIGHTLY BOWED ~~DOWN~~ ^{INBOARD BE-} TWEEN THE MOUNTING BOLTS.
- THE FAIRING STRUCTURE AFT OF THE AFT HINGE HAS ~~BEEN~~ SEPARATED FROM LEFT SIDE PANEL AND SHOWS UPWARD DISPLACEMENT, SHOWS WITNESS MARKS ON OUTER SKIN ~~FROM~~ FROM IMPACT WITH DOOR OUTER SKIN.

[Signature]
 9-9-97
 WA

GENERAL DESCRIPTION OF LF 191

[Signature]
 9-10-97
 ALPA
 Tom Todaro
 FAA 9-11-97
 Dennis Lutting
 9-11-97 IAM

NOSE LANDING GEAR DOOR

RIGHT AFT

LGG RH AFT DOOR

DOOR ACTUATION ROD - CONTAINS A TENSION FRACTURE AT THE UPPER ROD END CROSS HOLES.

- THE TUBE IS SLIGHTLY BENT

FWD HINGE - WITNESS MARKS ARE PRESENT ON THE LUG ARM AND CLEVIS FROM OVER ROTATION (CLOSING).

- THE CLEVIS ATTACH PAD IS FRACTURED AT THE LOWER FASTENER HOLES AND CONTAINS RESIDUAL TENSILE DEFORMATION (PULL-AWAY) AT THE UPPER FASTENER HOLES.

AFT HINGE - THE DOOR LUG AND ~~RIB~~ RIB ATTACH TEE ARE ~~SEPARATED~~.
SEPARATED.
NO FASTENER REMAINTS REMAIN IN THE ATTACHING RIB.

- SLOTTED PULL-AWAY FRACTURES ARE PRESENT ^{IN} THE ~~RIB~~ FASTENER HOLES IN THE UPPER STRAP.

- OUTWARD DEFORMATION OF THE BOX WEB IS LOCAL TO THE HINGE AREA.

- SLOTTED PULL-AWAY FRACTURES AND DOWNWARD DEFLECTION ($\approx 30^\circ$ MAX) ARE PRESENT IN THE OUTBOARD FAIRING FLANGE AT THE HINGE AREA.

(CONT... NEXT PAGE)

- THE AIRFRAME CLEVIS HALF DISPLAYS FWD DEFLECTION OF BOTH LEGS. THE HINGE BOLT AND BEARING INNER RACE REMAIN ATTACHED TO THE FWD LEG LEAVING A WITNESS MARK ON THE AFT LEG. FRACTURES OF CAPTURED STRUCTURE RUN FWD.

UPWARD DEFLECTION ($\approx 30^\circ$ MAX) OF THE OUTBOARD FAIRING FLANGE IS PRESENT BETWEEN THE FWD & AFT HINGES

THE ANTENNAE COAX CABLES ARE FRACTURED AT 8-INCH LENGTHS.

THE LOWER SKIN SURFACE DISPLAYS SLIGHT UPWARD PILLOWING FROM RIB 1 TO RIB 6 AND RBL 0 TO RBL 8 (APPROX).

RAD
9-10-97
Aft
Dennis Dentice
8/22/97

Tom Todman
8/22/97

Wally
9-9-97
WA

Alex
9/1/97

NOSE LANDING GEAR DOOR

LEFT AFT

FWD HINGE

- ROD IS BENT AND BUCKLED AND REMAINED ATTACHED TO FWD. HINGE
- SEVERE ~~THE AFT FWD HINGE~~ ~~IS~~ CRACKED
- THE FWD. HINGE CLEVIS IS FRACTURED ON THE AFT SIDE OF THE AFT CLEVIS LEG.
- BOTH PIECES OF THE CLEVIS REMAINED ATTACHED TO THE SIDE WALL PANEL
- ~~THE~~ THERE IS EVIDENCE OF OVER TRAVEL IN ~~THE~~ ^{IN-WARD} DIRECTION ON THE FWD LEG OF CLEVIS
- THE FWD. LEG. OF CLEVIS IS BENT SLIGHTLY FWD.

AFT HINGE

NOT IDENTIFIED.

DOOR STRUCTURE

THE DOOR STRUCTURE (70%) REMAINED WITH THE A/C. AND ^{AT FWD. HINGE} WAS SEVERELY CRUSHED.

- A PORTION OF DOOR STRUCTURE AND ^{AFT} ANTENNA WAS FOUND.

ALPHA
9-10-97

9997
WA

BOEING
9/10/97

Dennis Santiago

9-11-97 IAM

Tom Todaro
FAX 9-11-97

AFT HINGE CONT...

- THE BEARING HOUSING OF THE LUG IS SPLIT OPEN AT THE TOP AND DEFORMED OUTBOARD
- EVIDENCE OF OVERTRAVEL ^{NOT} IS FOUND.
- THE AIRFRAME CLOVIS IS SHIFTED UP-WARD

~~ASAP~~
9-9-97

WA

~~ASAP~~
9/11/97

~~ASAP~~
9-10-97
ACPA

Daniel Santiago
9-11-97 IFA

Tom Todman
FAA 9-11-97