

**ORIGINAL/COPIES OF SUBMITTED
EVIDENCE/PROPERTY CUSTODY DOCUMENTS**

NOTE:

THE UNDERLYING DOCUMENTS CONSTITUTE THE INITIAL INVENTORY OF ARTIFACTS SUBMITTED TO THE LIFE SCIENCES ARTIFACT SECTION. THESE DOCUMENTS PROVIDE THE TRACKING REGISTER OF ALL ARTIFACT PHOTOGRAPHS OF WHICH MAY BE REVIEWED IN APPENDIX-A OF THIS REPORT FOR COMPARISON. VARIATIONS BETWEEN THESE LISTINGS CAN RESULT FROM MANY CAUSES, SUCH AS DIFFERENCES IN FIELD AND LABORATORY ANALYST IDENTIFICATIONS OF THE SAME ITEM, THE SUBSEQUENT USE OF SCIENTIFIC INSTRUMENTATION LIKE MICROSCOPY TO INSPECT AND BETTER INTERPRET ARTIFACT ORIGINS, AS WELL AS THE REAL POSSIBILITY THAT (DESPITE USING VERY CAREFUL PACKING PROCEDURES), SOME BADLY DAMAGED ARTIFACTS MAY STILL HAVE BEEN FURTHER DEGRADED DURING TRANSIT, ALL OF WHICH CAN COMPLICATE FINAL ITEM CORRELATION AND TOTALS.



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Life Sciences Equipment Laboratory Life Sciences Artifact Section



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EVALUATION OF ARTIFACTS ORIGINATING FROM SOUTH EAST ASIA AIRCRAFT LOSS SITES

SUBJECT: EVALUATION OF LIFE SCIENCES EQUIPMENT ARTIFACTS

FROM: HUMAN SYSTEMS PROGRAM OFFICE
LIFE SCIENCES EQUIPMENT LABORATORY (HSW/YASML)
LIFE SCIENCES ARTIFACT SECTION
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TO: COMMANDER, JOINT TASK FORCE-FULL ACCOUNTING
P.O. BOX 64044
CAMP H.M. SMITH
HAWAII 96861-4044

ARTIFACT LOT: 1
ARTIFACT TOTAL IN LOT: 465
BATCH IDENTIFICATION: ANALYST ASSIGNED
JTF-FA REFNO CASE NUMBER: 1374
DATE ANALYSIS COMMENCED: 01 AUGUST 2001

BATCH: A
BATCH TOTAL: 1
SITE LOCATION: LAOS
DATE RECEIVED: 28 MAY 1996

INTRODUCTION:

This report contains findings of the laboratory studies accomplished upon artifacts identified by the Joint Task Force-Full Accounting as having originated from an aircraft crash site in Laos. Following field recovery, the artifacts were returned to the United States and initially segregated into different systems groups by field analyst personnel, including some trained by the Life Sciences Equipment Laboratory who specialized in life science equipment. (This equipment category encompasses most systems associated with: all types of aircrew flight ensembles, military uniforms, combat infantry equipment, aircraft fixed or ejection seats, along with other devices used for escape, survival and evasion; most special application and personnel parachute equipment, ejection seat drogue parachutes, and aircraft braking chutes; all forms of land surface terrain and water environment survival aids, including man/aircraft mounted survival kits, life rafts and personnel life preservers; avionic locators and communications devices; and numerous other items ranging from combat body armor to personnel identification tags or blood chits.)

Initial review of the laboratory submitted artifacts disclosed evidence of a fairly uniform level of damage patterning, consistent with considerable energy fragmentation from impact into the terrain. Other indications were also present to support long-term environmental exposure, including fabric color fading, heavy soil contamination, and varying levels of metallic structure corrosion. In an overall assessment of the recovered artifacts, all appeared to be of a genuine military equipment origin and representative of U.S. Air Force system types used during the South East Asia conflict period.

The artifacts were subsequently studied in greater detail, including required evidence documentation and photography, with the majority being provisionally authenticated as actually from the life sciences equipment category into which they had been classified. Those artifacts then displaying the most evidence potential were subjected to very detailed scientific review and testing, based upon an order of prioritization. The highest priority and greatest level of testing being accorded to those artifacts that would provide direct information pertaining to the status of any personnel involved in the aircraft loss under review. Other priority levels were those of artifact evidence, which dictates the utilization of some method of aircraft escape, or related systems operation by the aircraft occupant, which may, or may not reflect the final status of those involved personnel. Still other levels are assigned to artifacts that assist in substantiating the identity of other life sciences equipment items, the type of aircraft or systems into which they would be installed, or if possible even the serviceability levels of such systems at the time of aircraft loss. The methods by which the scientific examinations are conducted also involve many mediums of inspection and testing as typified by optical microscopy, energy dispersive x-ray analysis, CRT topography, or scanning electron microscopy. The use of these sophisticated instruments and equipment, allow for detailed comparison to equipment exhibits that have been authenticated to the original component, or series from which the artifacts are believed to have originated (a large collection of which are retained by the Laboratory for reference purposes).

The equipment exhibits used for reference purposes are frequently not new. Many of these items were retained from previous mishaps or acquired from military equipment surplus sources for use in current and future

investigations. As a result, the use of microscopy may reveal anomalies consistent with prolonged use or aging. However, these anomalies do not affect the overall design characteristics of such equipment exhibits or their value regarding determinations reached about a case. In addition to physical comparison, artifacts are compared to technical data, manufacturing information, military design specification, and various other forms of historical documentation. Finally, where areas of doubt still exist about evaluation results, which cannot adequately be resolved by testing or basic research action, other agencies or equipment experts are consulted to potentially locate more information, define or substantiate existing information, or acquire alternative avenues for other scientific research. This practice is applied broadly to artifact studies and frequently extends throughout the whole national military-industrial complex and into international research endeavors.

In Case REFNO 1374, many of the above procedures were employed, and a listing of other specialists and agencies contacted is attached as Appendix C; while Appendix A is of the artifact receipt condition. (Note: Supplementary laboratories were not solicited for assistance with this report. If they had been, their inputs would have been incorporated into Appendix B.)

When terms like "similar" are used, they should not be construed as meaning marginal or incorrect identification, but instead deal with the basic environmentally exposed origins of artifacts versus scientific control samples used in their evaluation. This problem of conditional differences is also not specific to South East Asia originating artifacts, but instead pertains to all aircraft mishaps and military mishap sites. Consequently, the function of such analysis is to provide unbiased scientific data that may include factors which instrumentation cannot be programmed to compensate for, such as: the individual conditions prevailing in mishaps, subsequent initial evidence tampering by indigenous personnel, or the effects of final artifact recovery operations. Accordingly, sections of artifact items like aircrew harness webbing might display such characteristics as: dynamically applied tensions or signs of abrading against other equipment in a crash situation, thermal exposure, environmental deterioration, or the effects of tampering, such as from being dug up with hand tools. These factors are therefore taken into account in the final analysis, and in fact some deterioration levels, when

carefully studied and patterned between artifacts, actually add to artifact authenticity by providing a particular site signature. This thereby reduces such potentials as their having originated from sources unrelated to that mishap site, when examined by competent scientific specialists using sophisticated instrumentation and equipment. This report also contains the evaluation results for all primary artifacts/groups studied, as dictated by the prioritization methods previously described. Also listed will be the degree of identification accuracy assigned to each artifact/group, which is normally derived from the levels of substantiation attained by direct material compositional matching to a known control sample or correlation of research data. This process is used to provide the determination categories of Identification, such as: Confirmed, Probable, Unconfirmed, or Unknown.

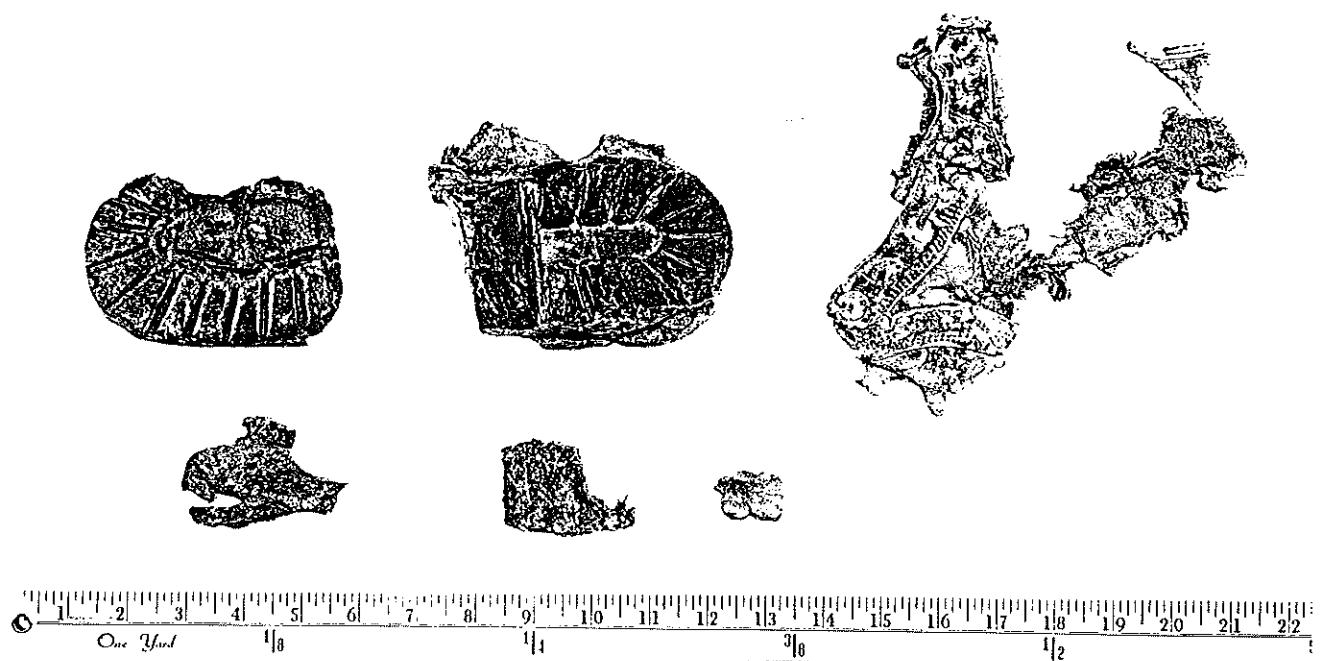
Understandably, with over four hundred and sixty-five artifacts submitted with this case, many will not be commented upon in detail, but all were never the less carefully examined. However, only those artifacts displaying directly relevant evidence, or which provided pertinent equipment determinations are discussed in great detail. All remaining artifacts generally fall within the Unconfirmed or Unknown categories. These are exemplified by small debris items originating from aircraft systems or components from the Life Sciences Equipment group, both of which are either not identified (due to small size or indistinct profiles), or had deteriorated to the point which precluded any reliable scientific testing or assessment. While all such artifacts were thoroughly examined, they will not be discussed in detail if they did not change the overall report findings.

In conclusion, artifacts not covered in detail were either unrelated to any direct equipment determinations about the status of personnel involved with this incident or crash site; merely substantiated the findings derived from other artifacts; or verified the findings obtained from other artifacts which actually provided more evidence. Finally, at the end of this report, an Overall Summation of artifact findings is included, along with a Conclusions section based upon all of the collated scientific evidence gathered.

1. BOOT, COMBAT, TROPICAL

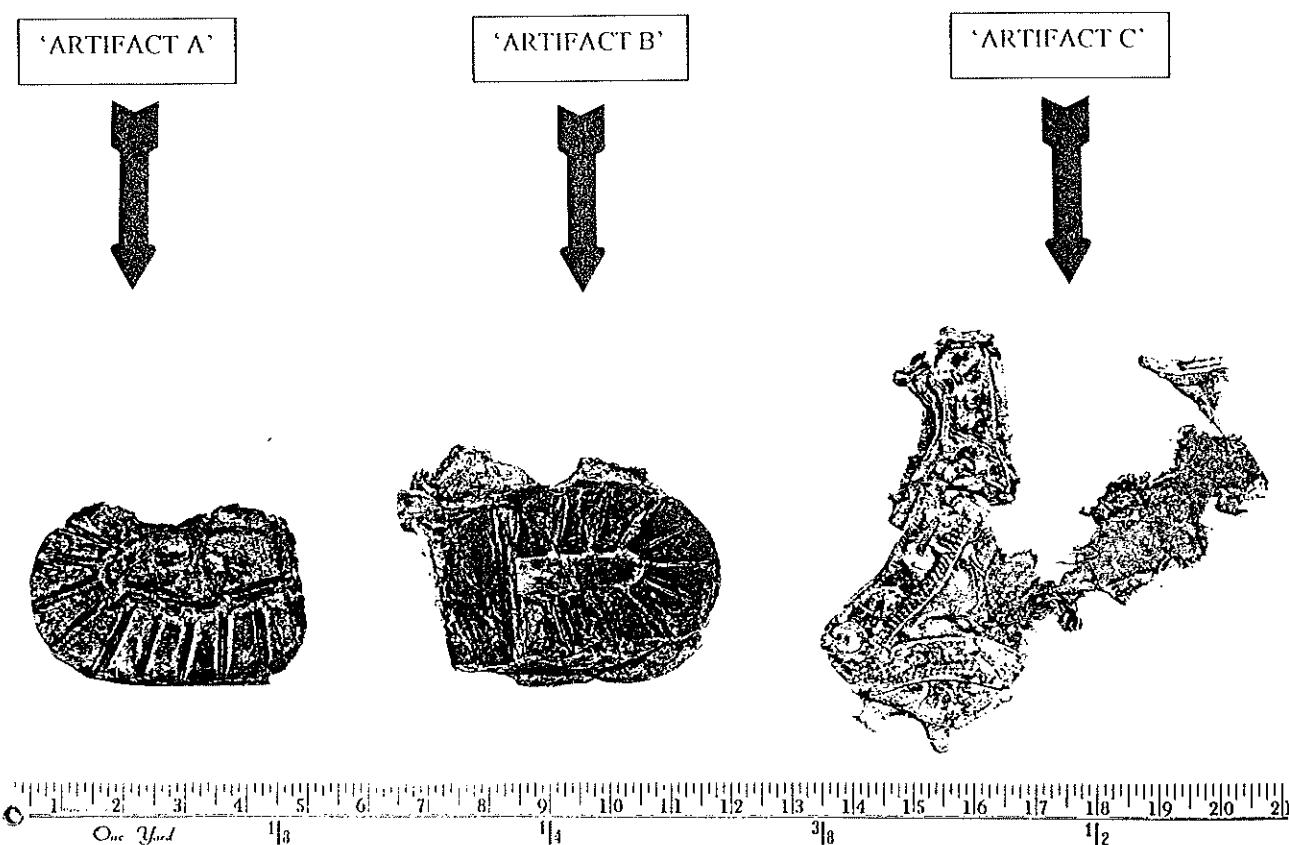
IDENTIFICATION: CONFIRMED

Six artifacts submitted for analysis (Picture 1 below) were provisionally identified as being comparable with a Boot, Combat, Tropical. The official designation for this particular type of outer foot wear is: Boot, Combat, Tropical, Mans, Leather and Nylon Duck, Direct Molded Sole, Spike Resistant, manufactured in accordance with Military Specification MIL-B-43154. (Hereafter referred to as the 'Tropical Combat Boot').

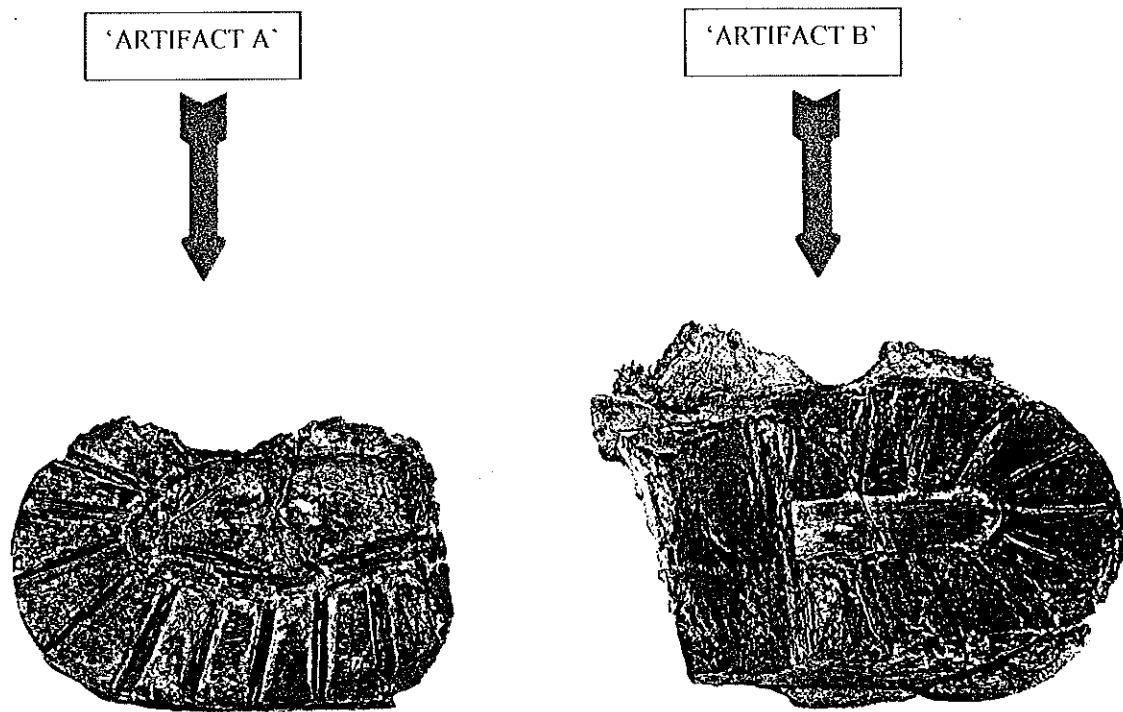
JTF-FA CASE: 1374PICTURE 1. THE TROPICAL COMBAT BOOT ARTIFACTS.

The Tropical Combat Boot was first introduced into the military in the early 1960's. It was designed for use in hot climatic conditions and featured a full cleated rubber outsole and heel that was suitable for walking through rough/wet terrain. The vamp (lower section) of the Tropical Combat Boot, as well as the area which contains the lacing loops, is constructed from durable cattle hide leather and colored black. To help prevent deterioration in damp/wet climates, the quarter panel (upper section) is fabricated out of a lightweight cotton and nylon duck material.

Picture 2 below, depicts three artifacts (from the original six artifacts sent in for analysis – refer to Picture 1, Page 1-1) that have been selected for further discussions within this section of the report. These artifacts are identified as: 'Artifact A', 'Artifact B', and 'Artifact C'.



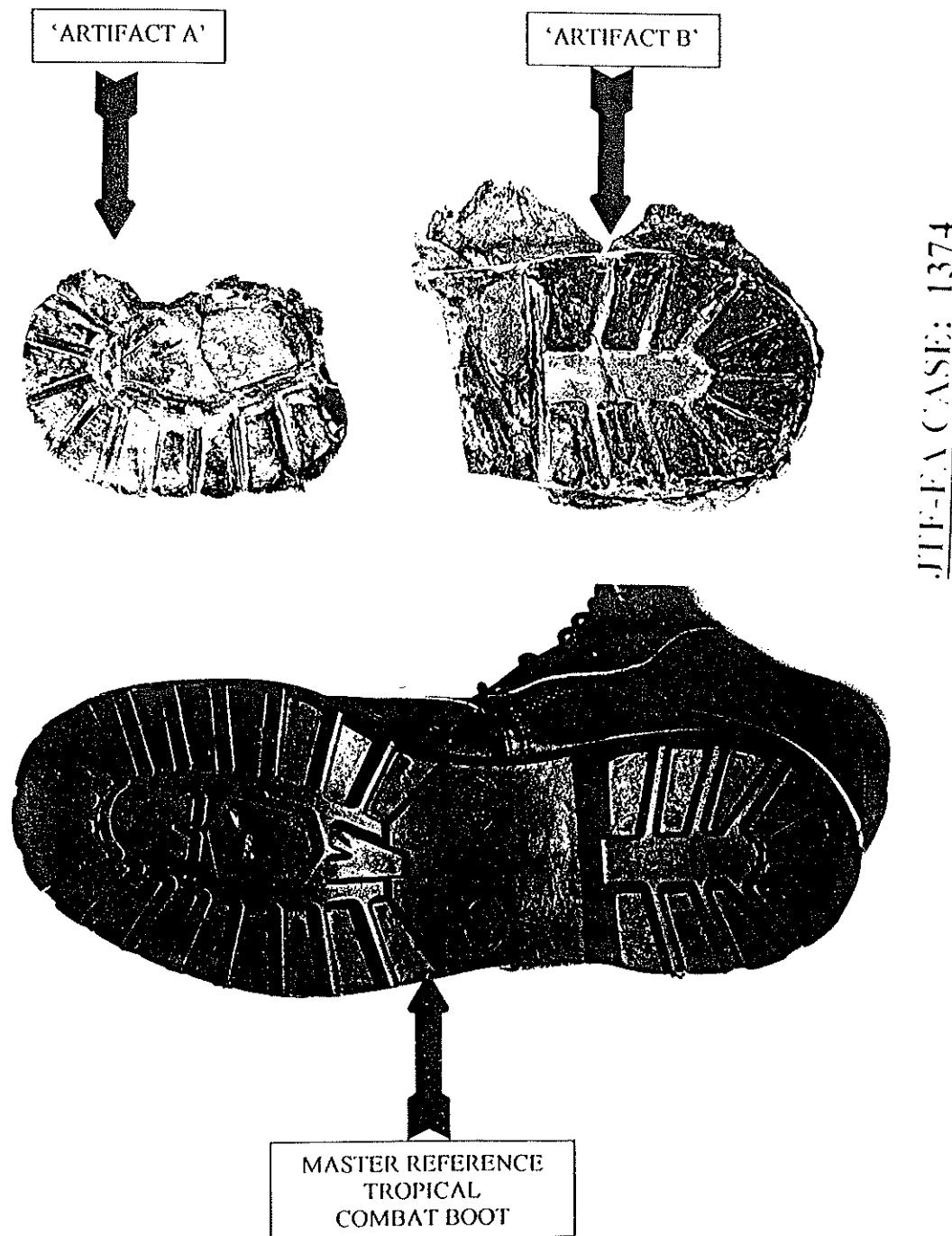
Picture 3 below, is a close-up view of 'Artifact A' and 'Artifact B' (refer to Picture 2, Page 1-2). These artifact display very distinguishable characteristics that unmistakably match the fully cleated sole and heel patterns of a Master Reference Tropical Combat Boot retained within the Life Sciences Equipment Laboratory.



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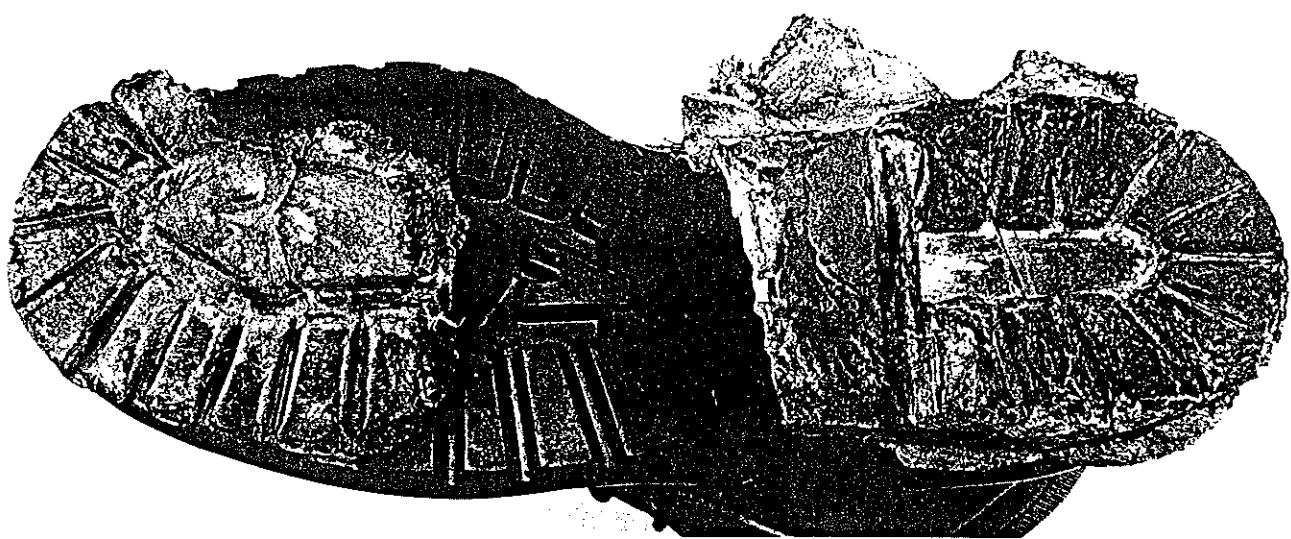
PICTURE 3. A CLOSE-UP VIEW OF 'ARTIFACT A' AND 'ARTIFACT B'.

In Picture 4 below, 'Artifact A' and 'Artifact B' are positioned adjacent to the correlating area of origin on a Master Reference Tropical Combat Boot.



PICTURE 4. A VIEW OF 'ARTIFACT A' AND 'ARTIFACT B' POSITIONED
ADJACENT TO THE CORRELATING AREA OF ORIGIN ON A MASTER
REFERENCE TROPICAL COMBAT BOOT.

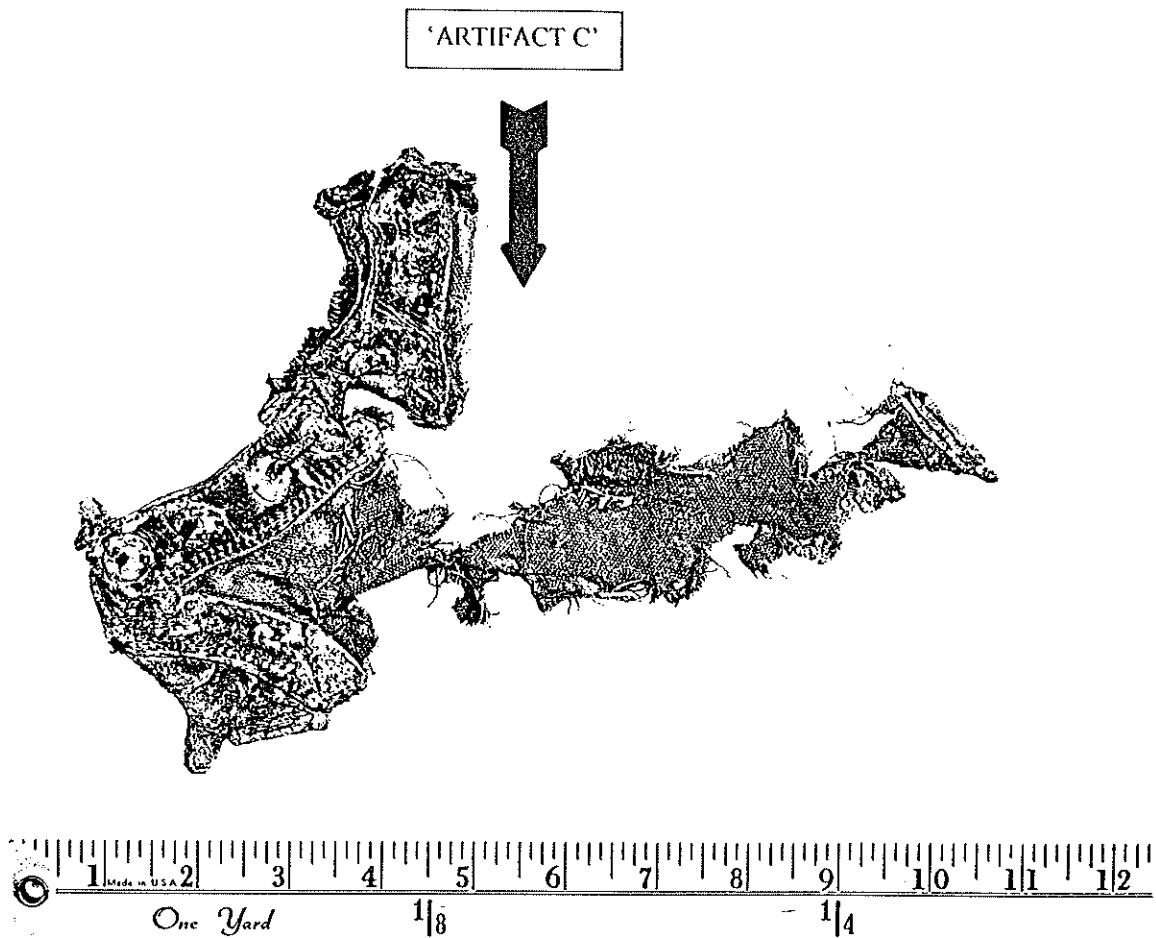
In Picture 5 below, 'Artifact A' and 'Artifact B' are overlaid onto the sole and heel region of the Master Reference Tropical Combat Boot. (These artifacts are consistent with the sole and heel of a boot that would be worn on the right foot.)



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PICTURE 5. A VIEW OF 'ARTIFACT A' AND 'ARTIFACT B' OVERLAID ONTO
THE SOLE AND HEEL REGION OF THE MASTER REFERENCE TROPICAL
COMBAT BOOT.

Picture 6 below, is a close-up view of 'Artifact C' (refer to Picture 2, Page 1-2). This artifact displays very distinguishable characteristics that unmistakably match areas associated to the vamp (lower section) portion of the Tropical Combat Boot, as well as areas associated with the lacing loop segment of the boot.



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PICTURE 6. A CLOSE-UP VIEW OF 'ARTIFACT C'

In Picture 7 below, 'Artifact C' is positioned adjacent to the correlating area of origin on a Master Reference Tropical Combat Boot.

NOTE: The black dotted ink markings on the attached Mylar overlay represent stitching patterns securing the lightweight cotton and nylon duck material of the quarter section to the leather vamp material of 'Artifact C'. These are in direct relationship to the stitch patterns visible on the Master Reference Tropical Combat Boot (also highlighted with black dotted ink markings). In addition to these highlighted stitch patterns, observe the alignment of the highlighted lacing loop grommets on 'Artifact C' in relationship to the highlighted lacing loop grommets on the Master Reference Tropical Combat Boot.



PICTURE 7. A VIEW OF 'ARTIFACT C' POSITIONED ADJACENT TO THE CORRELATING AREA OF ORIGIN ON A MASTER REFERENCE TROPICAL COMBAT BOOT.

In Picture 8 below, 'Artifact C' is overlaid onto the region of origin on the vamp segment of the Master Reference Tropical Combat Boot.



PICTURE 8. A VIEW OF 'ARTIFACT C' OVERLAI
D ONTO THE AREA OF ORIGIN
ON THE MASTER REFERENCE TROPICAL COMBAT BOOT.

Picture 9 below, displays the Master Reference Tropical Combat Boots that were used in the analysis of the artifacts for this section.



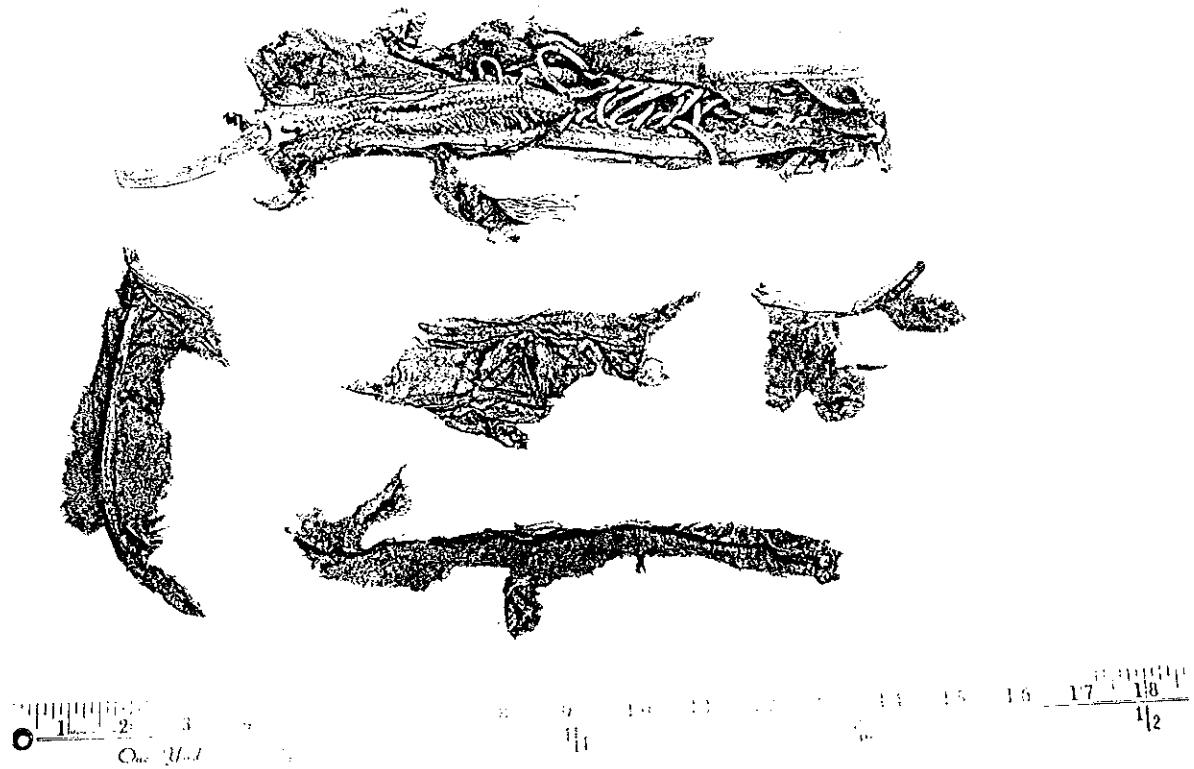
PICTURE 9. THE MASTER REFERENCE TROPICAL COMBAT BOOTS.

2. ANTI-G GARMENT, CUTAWAY, TYPE CSU-3/P

IDENTIFICATION: CONFIRMED

Several artifacts submitted for analysis were found to correlate with a set of Coveralls, Anti-G.

Picture 1 below, depicts the five artifacts that have been identified as being comparable to materials used in the construction of a Military Specification MIL-A-25892, Anti-G Garment, Cutaway, Type CSU-3/P (hereafter referred to as the "Anti-G Suit").

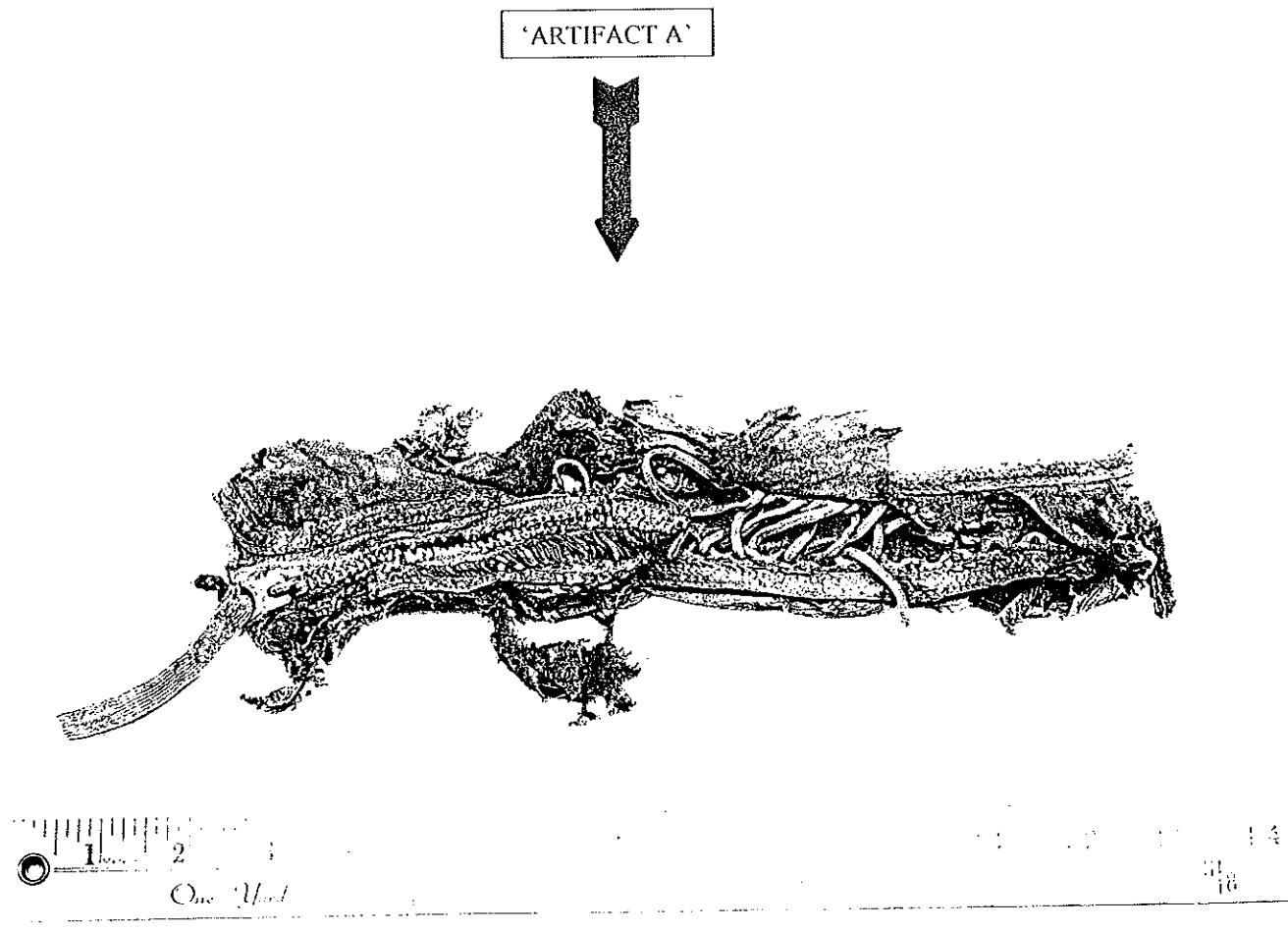


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PICTURE 1. THE ARTIFACTS ATTRIBUTED TO THE 'ANTI-G SUIT'.

The Type CSU-3/P Anti-G Suit is a wrap-around garment designed to be worn on the lower torso. It consists of inflatable bladders situated in the abdomen and the thigh regions. It is retained to the wearer by means of a singular zipper securing the garment around the waist, as well two singular zippers that run down the inner seams of each leg. The final adjustment of the garment is achieved by adjusting the internal lacing loops and lanyards located within the waist and both thigh regions.

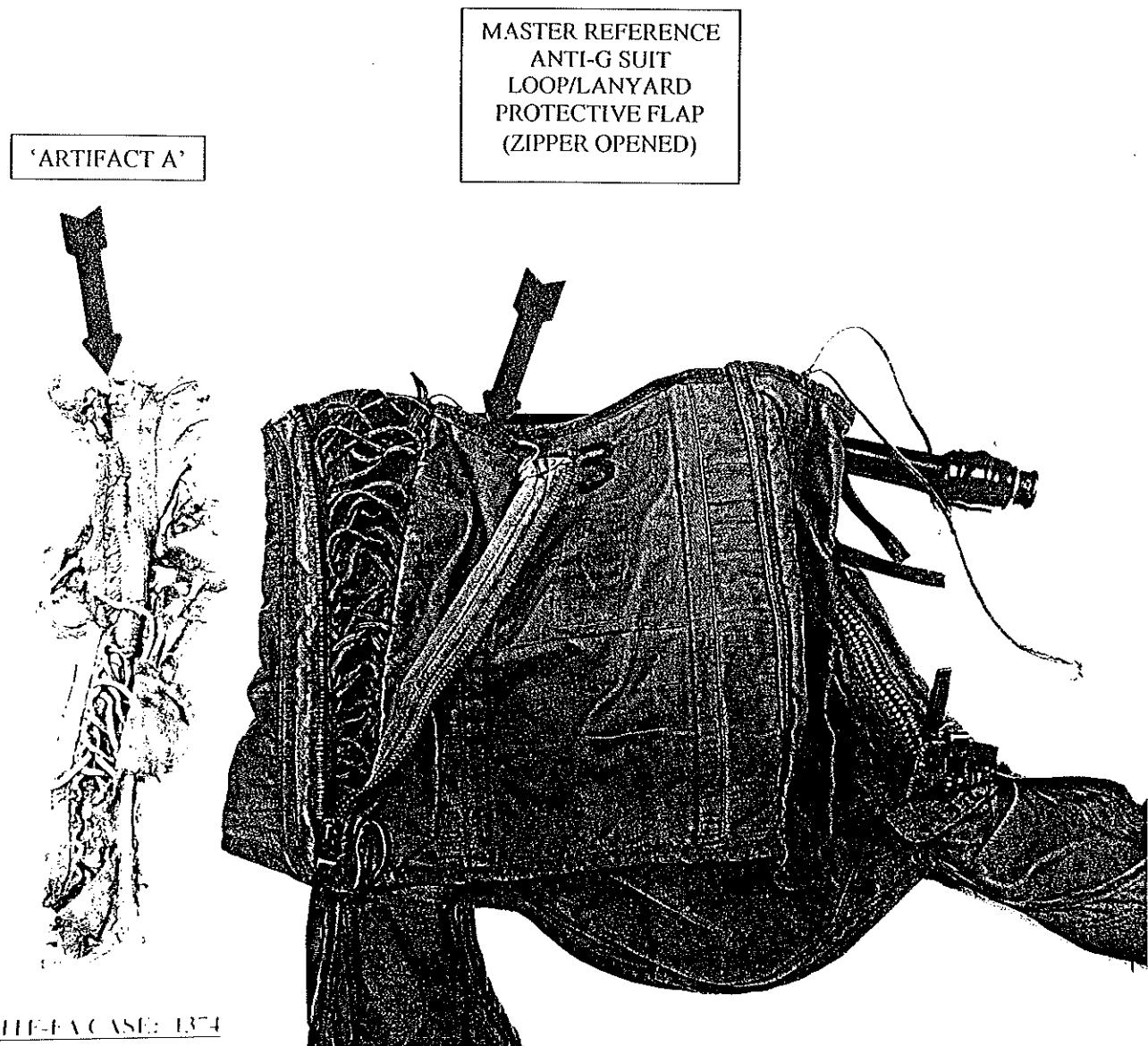
Picture 2 below, is a close up view of one of the artifacts depicted in Picture 1, Page 2-1. This artifact (identified as 'Artifact A') was selected for photographic comparisons, due to identifiable matching characteristics to a Master Reference Anti-G Suit that is retained within the Life Sciences Equipment Laboratory (LSEL).



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PICTURE 2. A CLOSE-UP VIEW OF 'ARTIFACT A'.

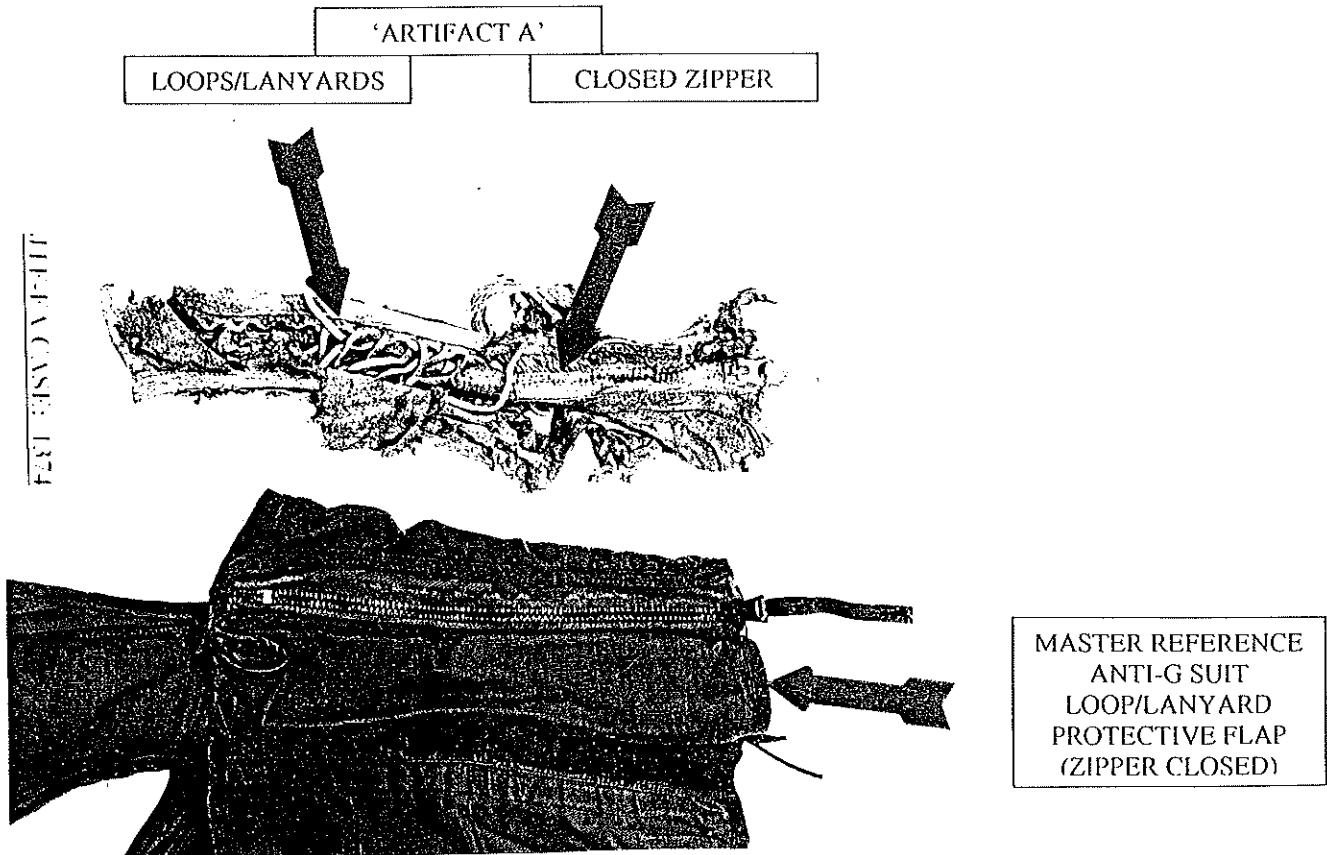
In Picture 3 below, 'Artifact A' is positioned adjacent to a correlating area of origin in the waist area of the Master Reference Anti-G Suit.



PICTURE 3. A VIEW OF 'ARTIFACT A' POSITIONED ADJACENT TO A CORRELATING AREA OF ORIGIN ON THE WAIST AREA OF THE MASTER REFERENCE ANTI-G SUIT (PROTECTIVE ZIPPER FLAP OPENED).

Picture 4 below, is comparable to Picture 3, Page 2-3 (picture rotated), in that it displays 'Artifact A' positioned adjacent to the same correlating area of origin in the waist area of the Master Reference Anti-G Suit.

- However, closer observation of Picture 3, reveals that the physical characteristic of 'Artifact A' is in contrast to the profile of the waist adjustment section of the Master Reference Anti-G suit – in that the lower half of 'Artifact' reveals a segment of adjustment lacing loops and lanyards (loops/lanyards). Under normal conditions, these loops/lanyards are concealed under the zippered protective flap (as is evident in the highlighted (red arrow) view of the Master Reference anti-g suit). This asymmetrical appearance to 'Artifact A' is the direct result of dynamic loading having been imposed on this section of the Anti-G Suit – causing the lower half of the zipper protective flap be torn away.



PICTURE 3. A VIEW OF 'ARTIFACT A' POSITIONED ADJACENT TO A CORRELATING AREA OF ORIGIN ON THE WAIST AREA OF THE MASTER REFERENCE ANTI-G SUIT (PROTECTIVE ZIPPER FLAP CLOSED).

Illustration 1 below, is a schematic drawing of a typical CSU-3/P anti-g suit. The waist adjustment area (containing the internal lacing loops and lanyards) discussed within this section of the report is highlighted in yellow.

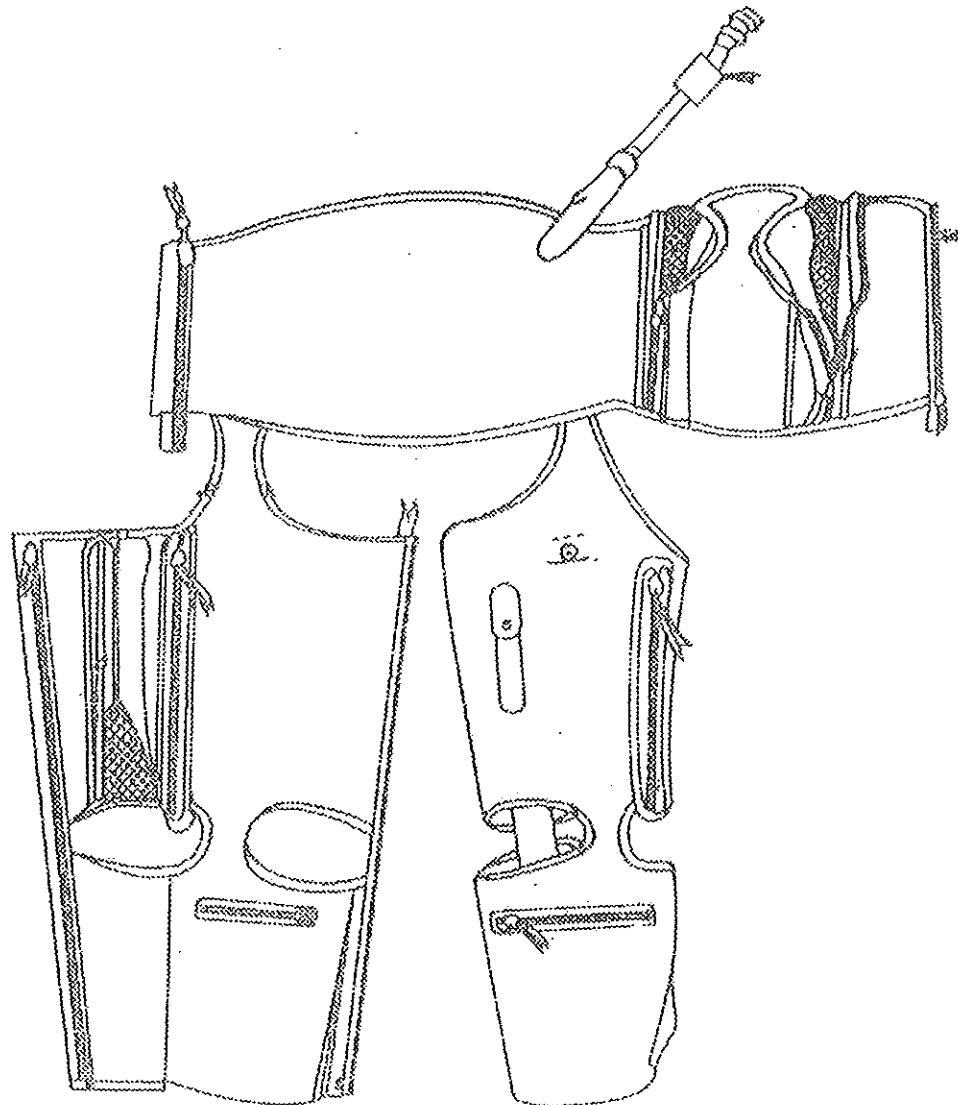
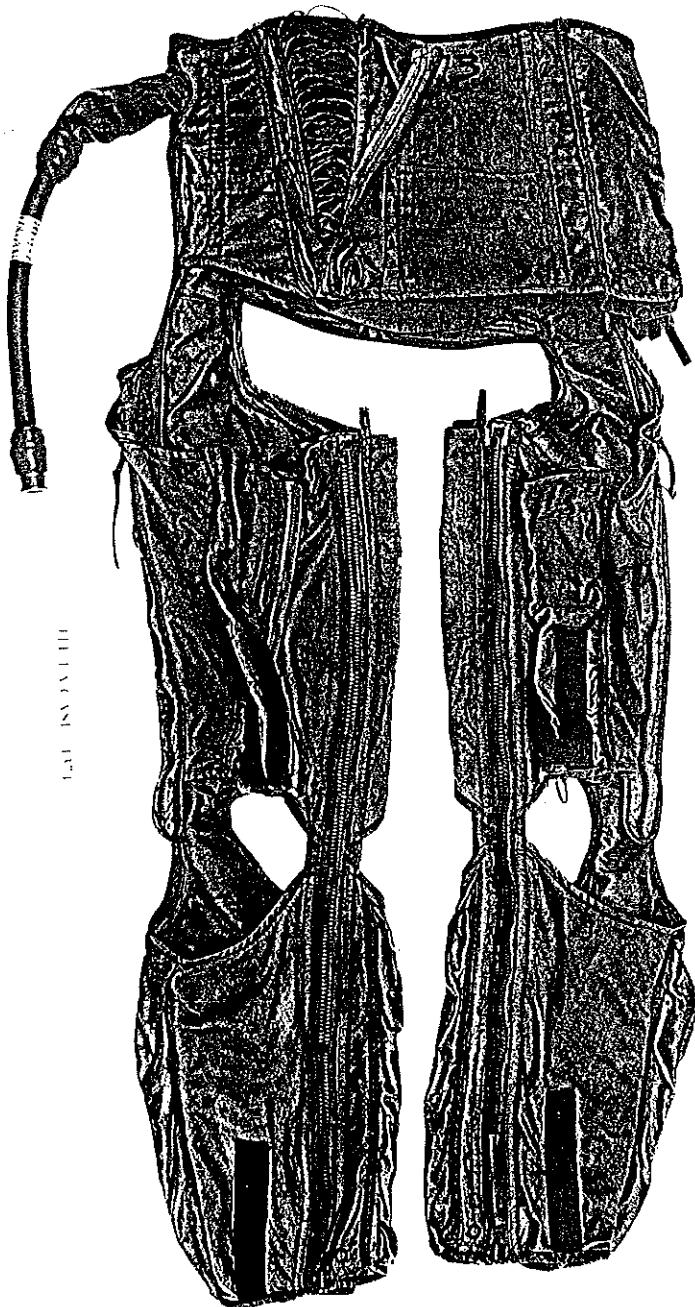


ILLUSTRATION 1. A SCHEMATIC DRAWING OF THE
ANTI-G SUIT, TYPE CSU-3/P

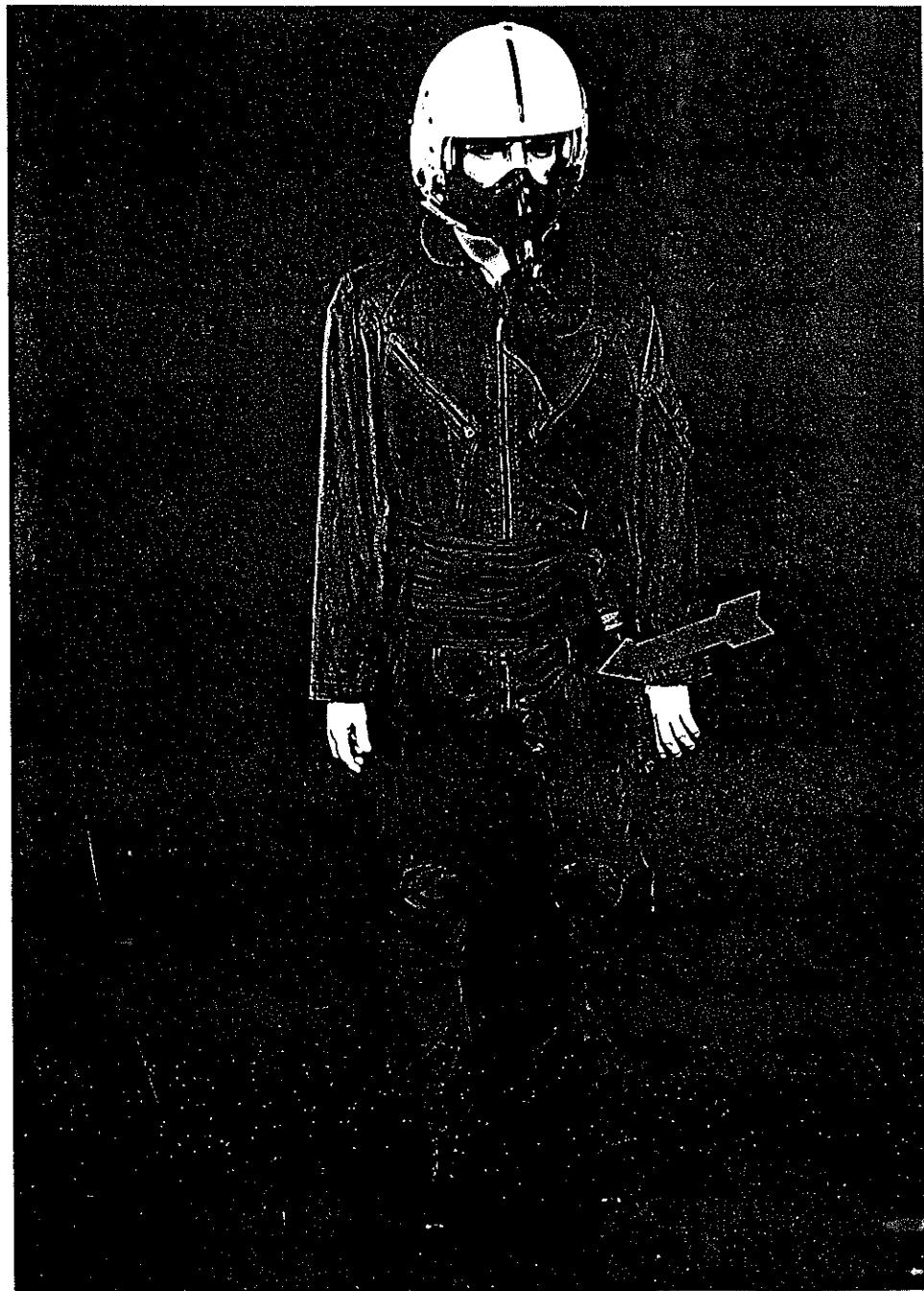
(SOURCE: MILITARY SPECIFICATION MIL-A-25892C, AMENDMENT 5,
ANTI-G GARMENT, CUTAWAY, TYPE CSU-3/P, DATED 22 MAY 1967.)

Picture 5 below, displays the Master Reference Type CSU-3/P Anti-G Suit (with the right side waist adjustment area protective zipper flap open – revealing lacing loops and lanyards) that was used in the analysis of the artifacts for this section.



PICTURE 5. A REAR VIEW OF THE MASTER REFERENCE
TYPE CSU-3/P ANTI-G SUIT.

Picture 6 below, displays a mannequin dressed in a time period flight suit, helmet and oxygen mask, tropical combat boots, and the Master Reference Type CSU-3/P Anti-G Suit that was used in this section of the report.



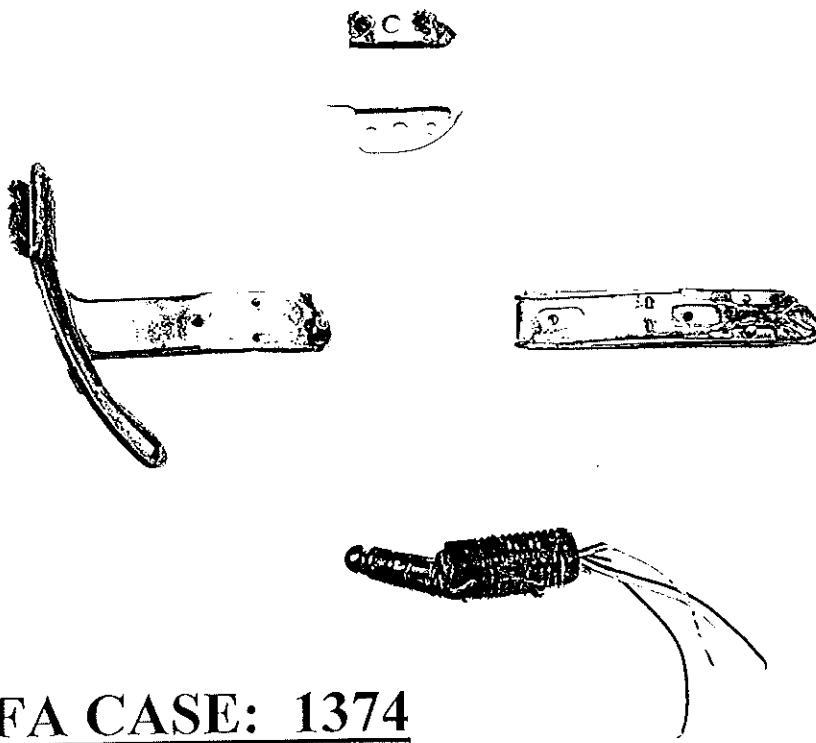
PICTURE 5. A VIEW OF A MANNEQUIN DRESSED IN A MASTER REFERENCE
TYPE CSU-3/P ANTI-G SUIT.

3. FLIGHT HELMET AND OXYGEN MASK

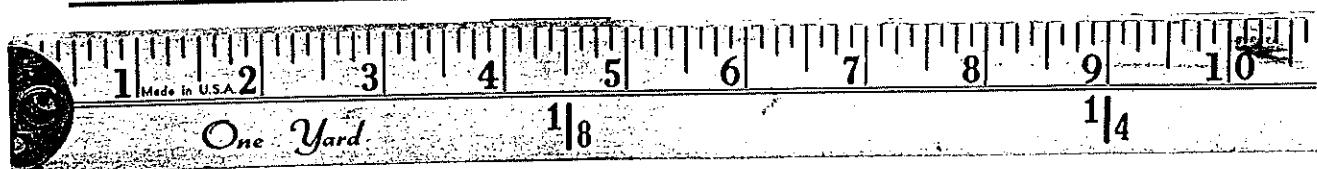
IDENTIFICATION: CONFIRMED

Four artifacts submitted for analysis (Picture 1 below) were provisionally identified as being comparable to subassemblies associated with a U.S. Air Force Flight Helmet, and Oxygen Mask.

- The flight helmet associated artifact will be discussed under sub-section 'A' of this report, under the heading: 'Type HGU-2A/P Flight Helmet'.
- The oxygen mask associated artifacts will be discussed under sub-section 'B' of this report, under the heading: 'Type MBU-5/P Oxygen Mask Assembly'.



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PICTURE 1. THE FLIGHT HELMET AND OXYGEN MASK ASSOCIATED ARTIFACTS.

A. TYPE HGU-2A/P FLIGHT HELMET

IDENTIFICATION: CONFIRMED

Picture 2 below, depicts a single artifact ('Artifact A') that has been identified as being comparable to a (one of two) receiver jaw that is used in the construction of an Oxygen Mask Retention Receiver Assembly – an integral component of the U.S. Air Force Type HGU-2A/P Flight Helmet (hereafter referred to as the 'flight helmet').



PICTURE 2. A CLOSE-UP VIEW OF 'ARTIFACT A'.

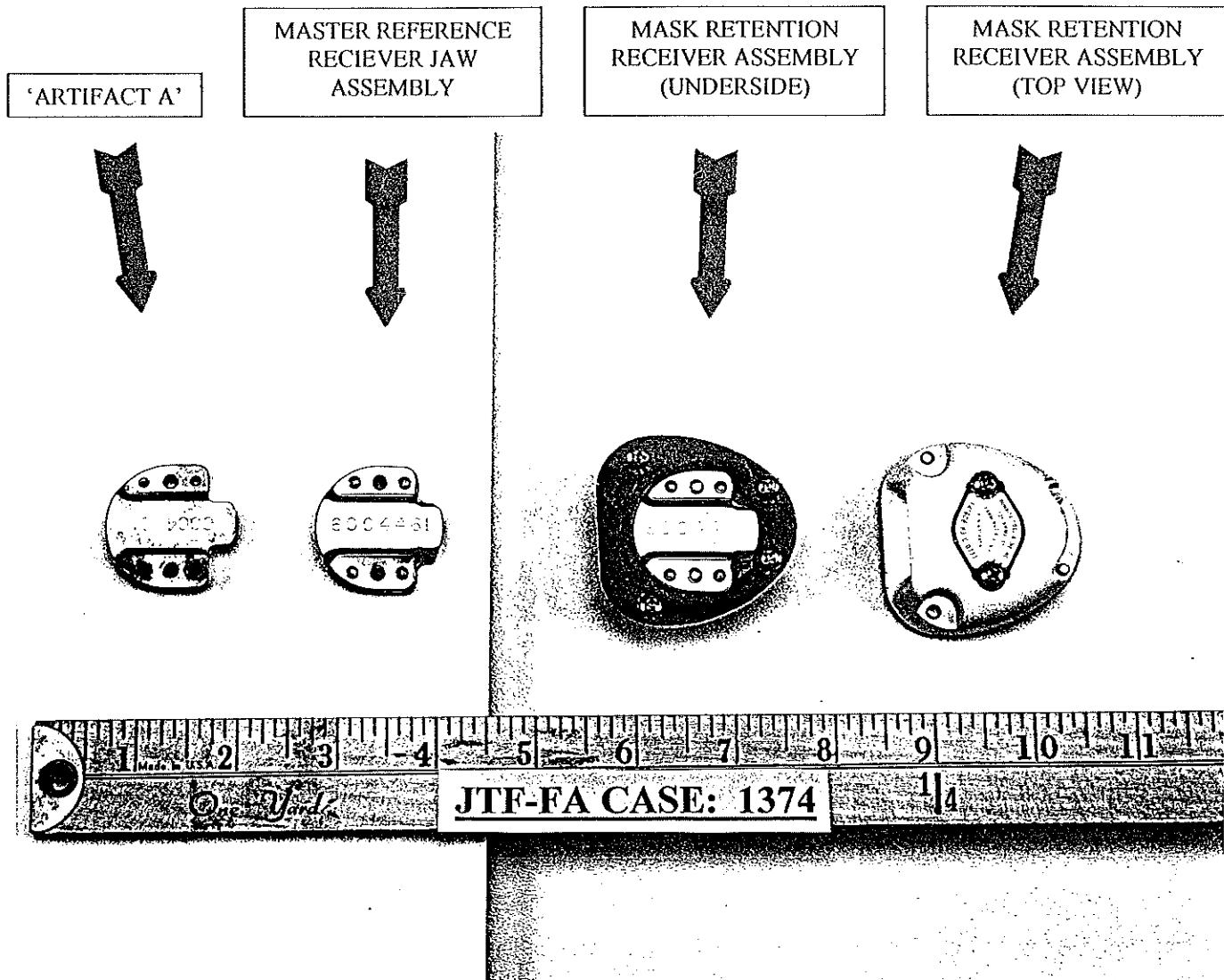
In Picture 3 below, 'Artifact A' is positioned adjacent to a Master Reference Receiver Jaw Assembly, an integral component of the Oxygen Mask Retention Receiver Assembly (hereafter referred to as the 'receiver assembly'). As depicted in this picture, both elements are similar in size, and profile. In addition to these physical similarities, both 'Artifact A', and the Master Reference Receiver Assembly, are permanently stamped with Part Number '60C4461', which positively identifies 'Artifact A' as being a subcomponent of a time period receiver assembly.



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PICTURE 3. A VIEW OF 'ARTIFACT A' POSITIONED ADJACENT TO A MASTER
REFERENCE RECEIVER JAW ASSEMBLY.

Picture 4 below, depicts a composite view of 'Artifact A' positioned adjacent to various Master Reference Receiver Jaw elements used in the analysis of this artifact.



PICTURE 4. A COMPOSITE VIEW OF 'ARTIFACT A' POSITIONED ADJACENT TO VARIOUS MASTER REFERENCE RECEIVER JAW ELEMENTS.

Illustration 1 below, is a drawing of a Type MBU-5/P Oxygen Mask Assembly that depicts the associated Flight Helmet Mounted Retention Receivers (refer to index items number 23) discussed within this section.

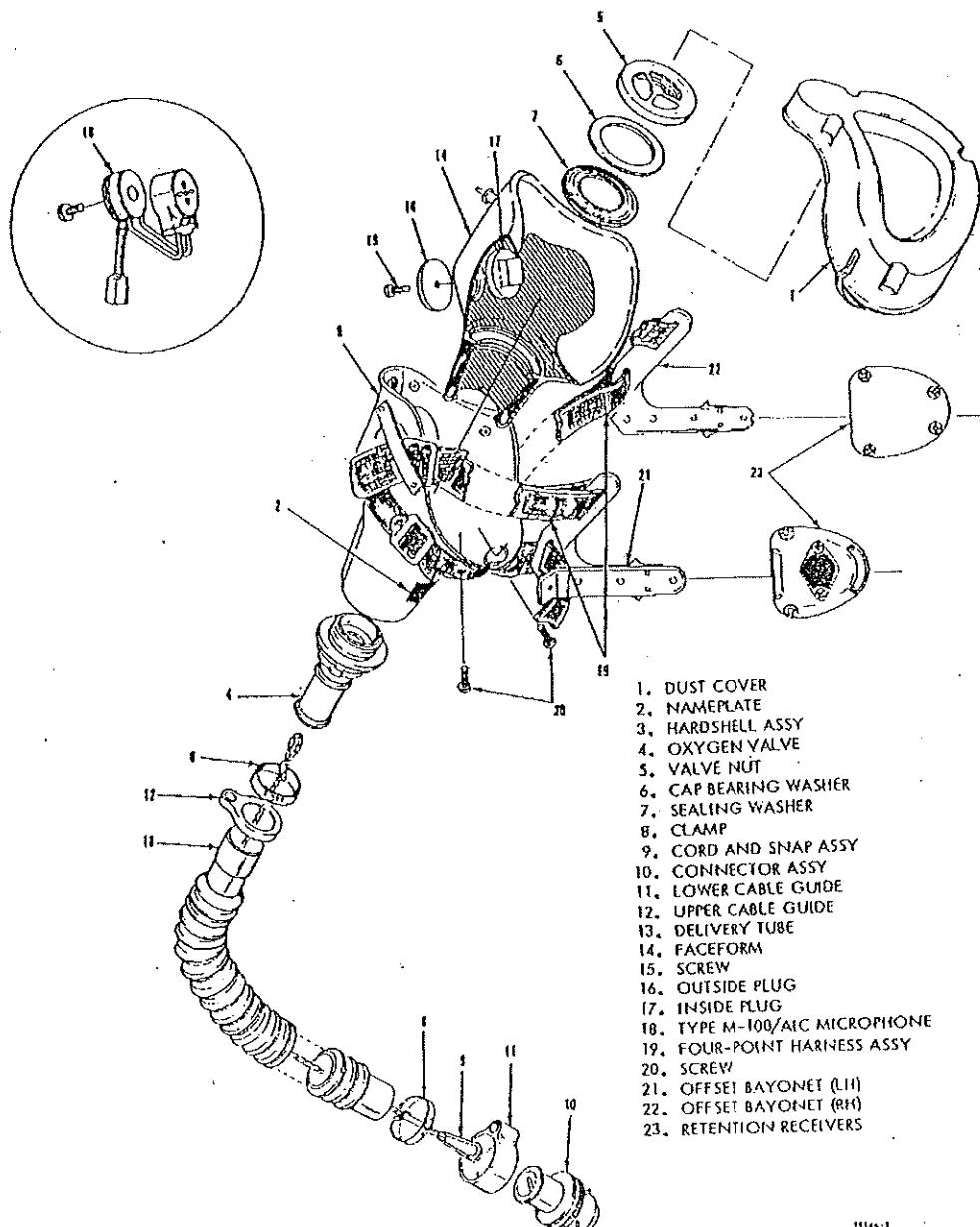
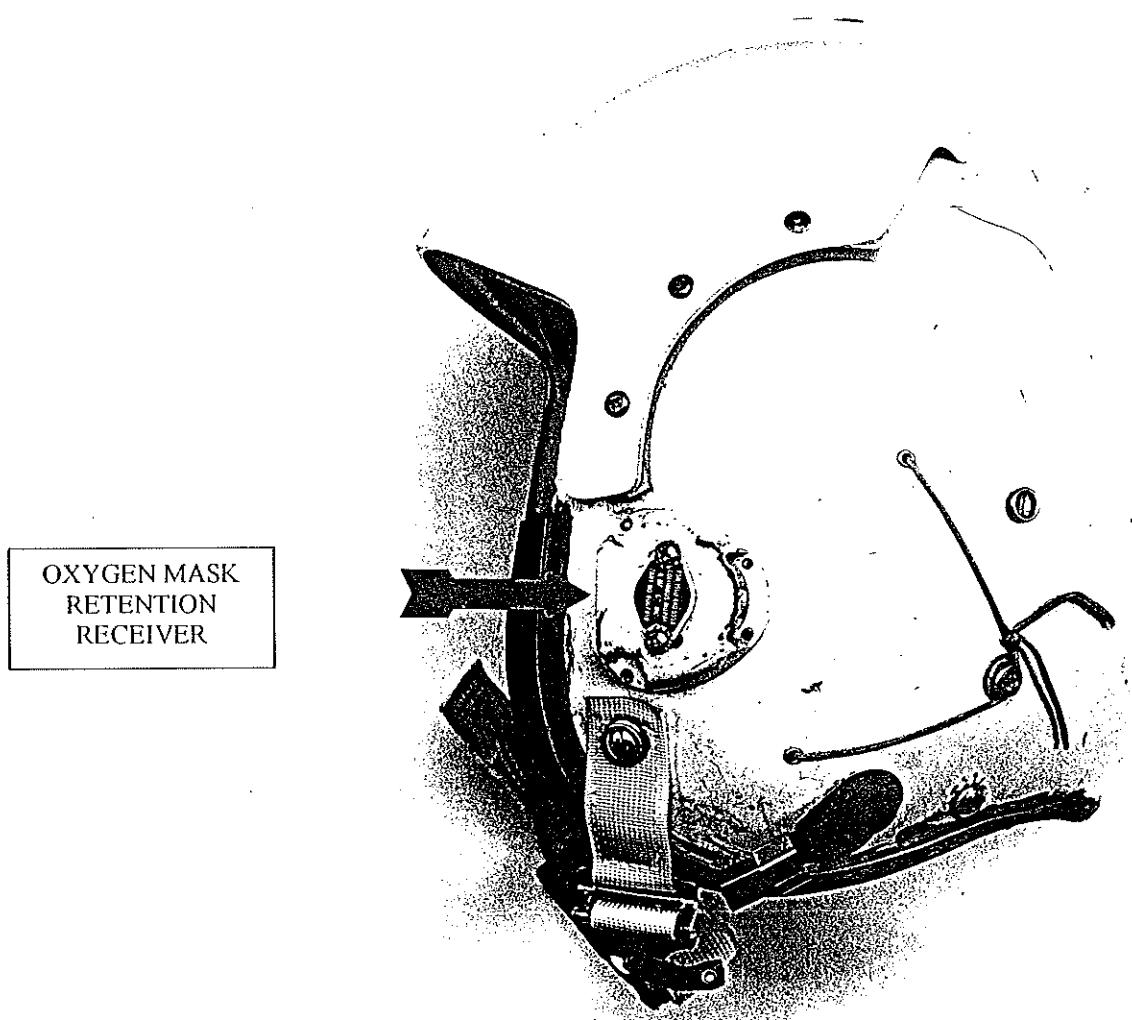


ILLUSTRATION 1. A DRAWING OF A TYPE MBU-5/P OXYGEN MASK ASSEMBLY THAT DEPICTS THE ASSOCIATED FLIGHT HELMET MOUNTED RETENTION RECEIVER.

(SOURCE: TECHNICAL ORDER 15X5-4-4-13, ILLUSTRATED PARTS BREAKDOWN - PRESSURE DEMAND BREATHING OXYGEN MASK, TYPE MBU-5/P, DATED 15 SEPTEMBER 1976.)

Picture 5 below, depicts the Master Reference Oxygen Mask Retention Receiver Assembly (positioned on a Type HGU-2A/P Flight Helmet) that was used in the analysis of the artifact covered within this section of the report.



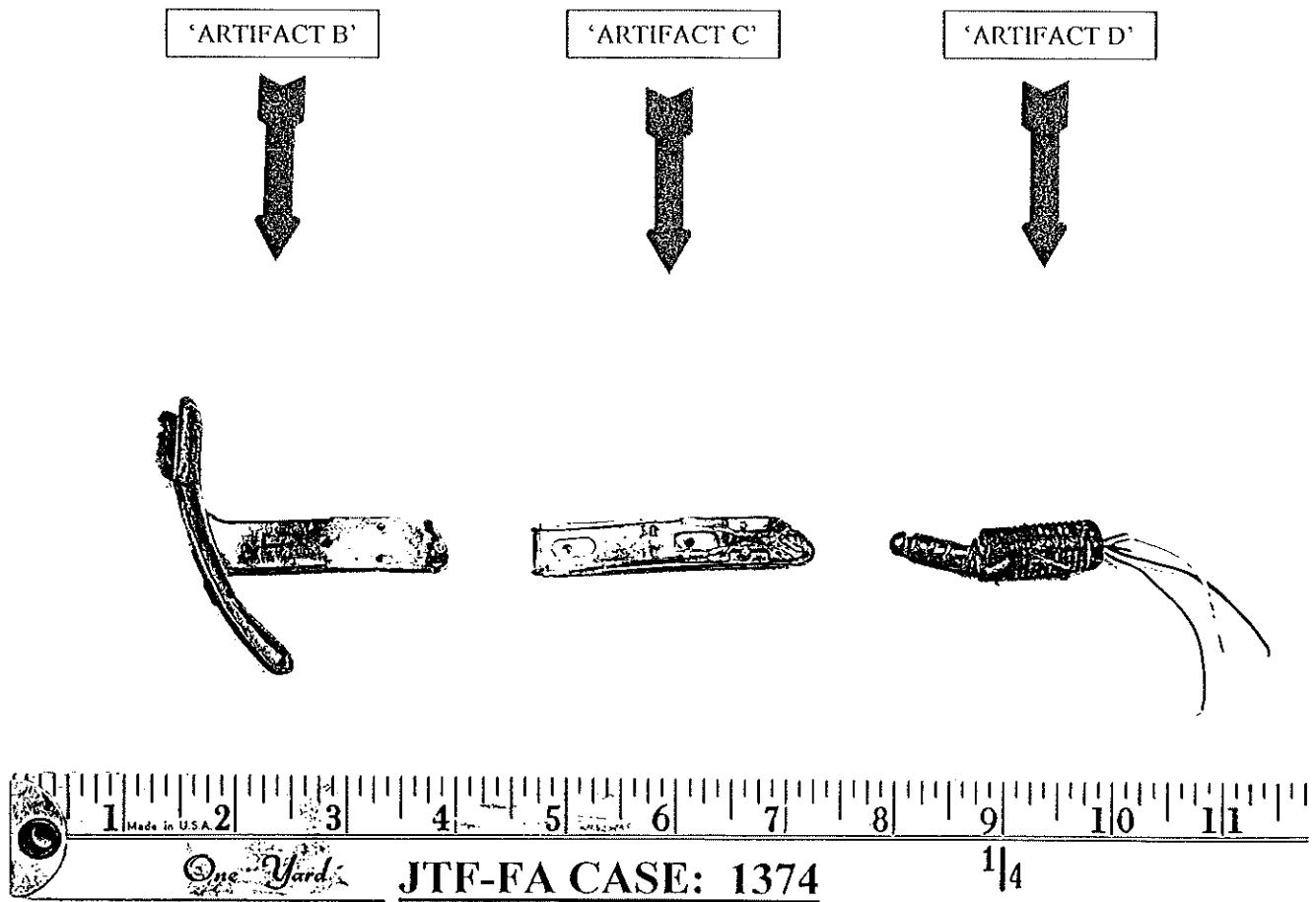
PICTURE 5. AN OXYGEN MASK RETENTION RECEIVER ASSEMBLY
POSITIONED ONTO A TYPICAL U.S. AIR FORCE TYPE HGU-2A/P
FLIGHT HELMET.

B. TYPE MBU-5/P OXYGEN MASK ASSEMBLY

IDENTIFICATION: CONFIRMED

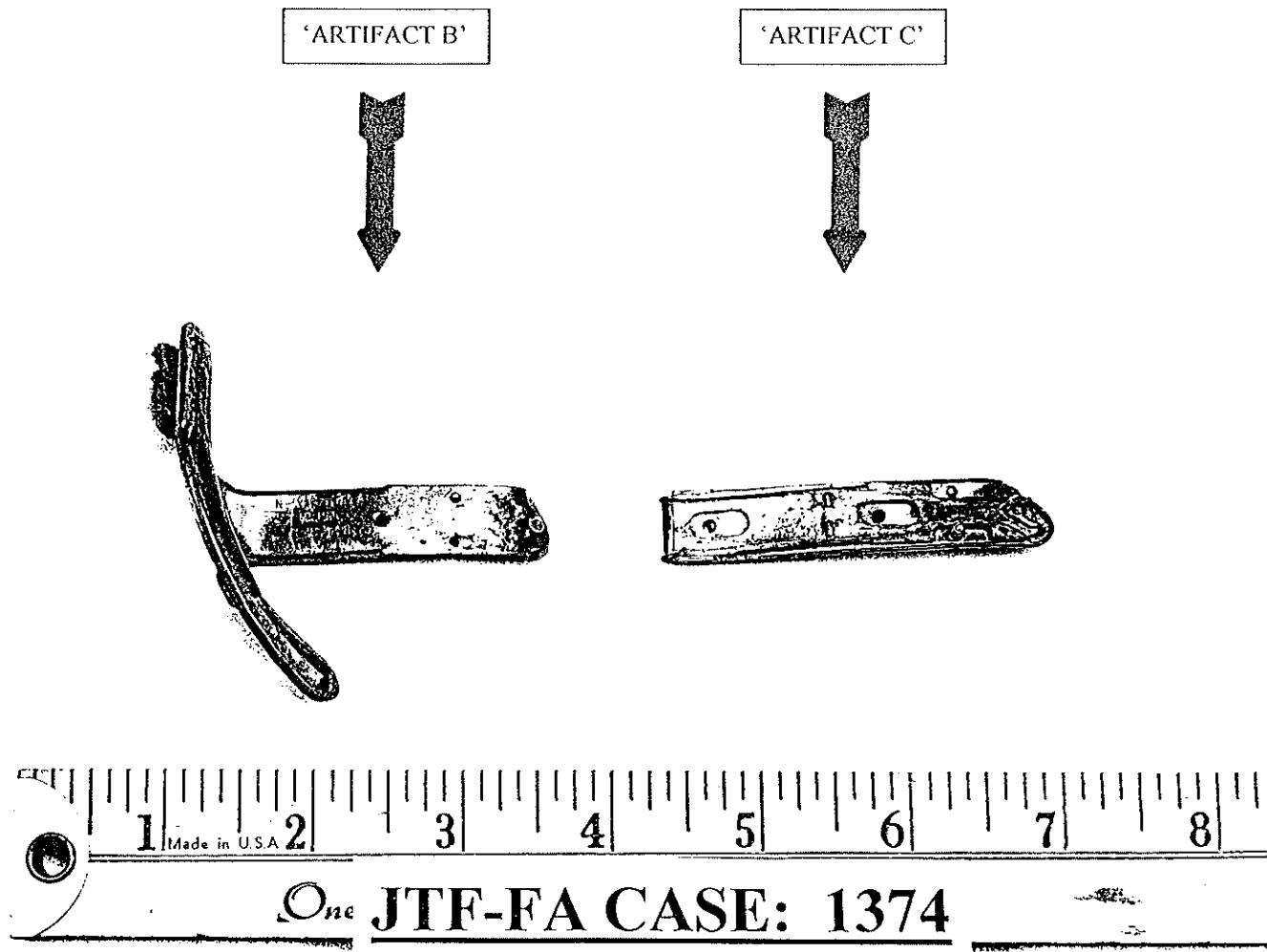
Picture 6 below, depicts three artifacts that have been identified as being comparable to sub-assemblies associated with a U.S. Air Force Type MBU-5/P Oxygen Mask Assembly (hereafter referred to as the 'oxygen mask'). The proper terminologies of these artifacts are:

- ‘Artifact B’, and ‘Artifact C’: Oxygen Mask Retaining Bayonet Fitting, Part Number ‘63D4228’.
- ‘Artifact D’: Communication Cord Jack, Part Number ‘U-174/U’



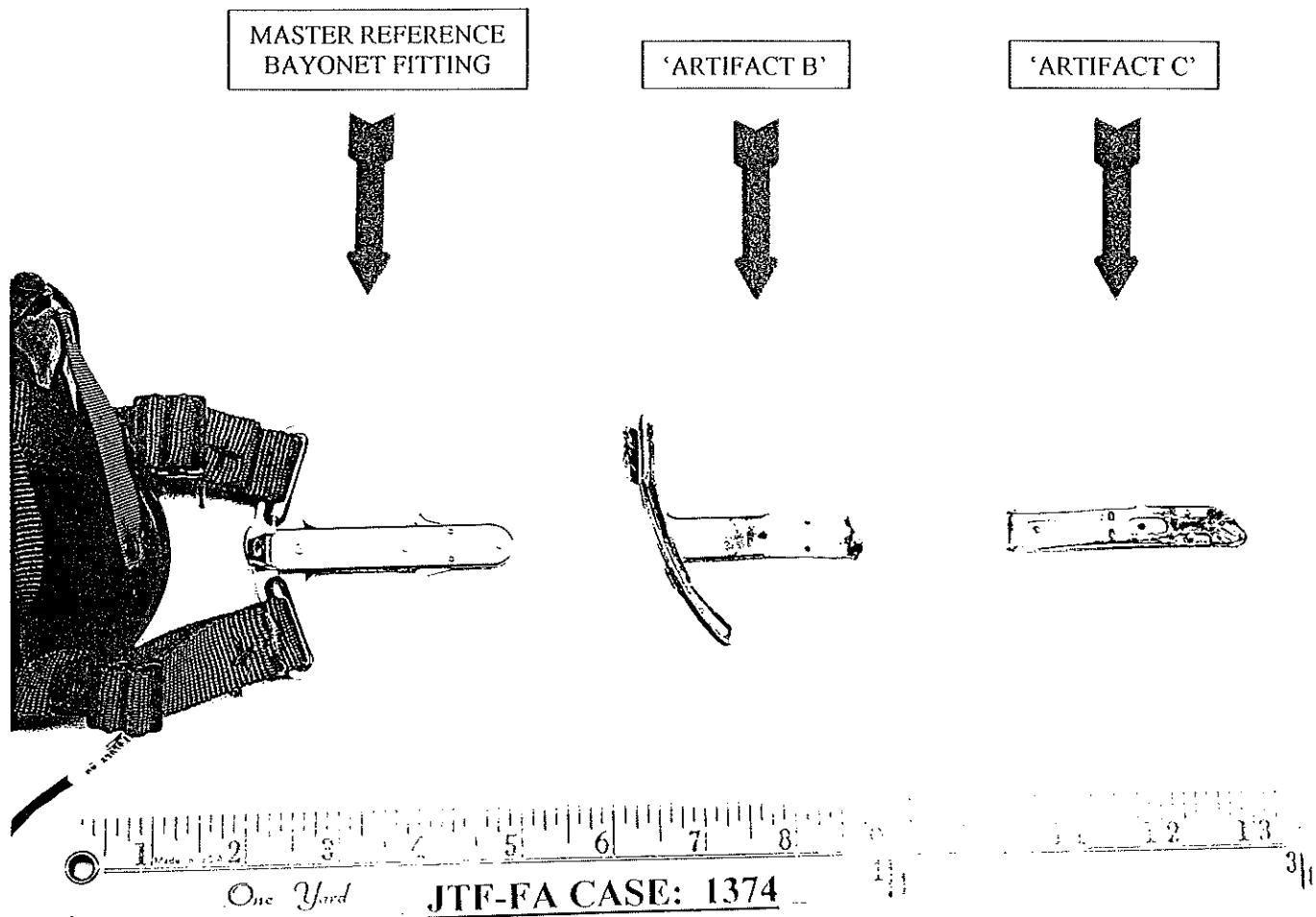
PICTURE 6. THE ARTIFACTS ATTRIBUTED TO A U.S. AIR FORCE ISSUED TYPE
MBU-5/P OXYGEN MASK ASSEMBLY.

Picture 7 below, depicts an in-line view of two artifacts ('Artifact B', and 'Artifact C') that have been identified as being comparable to the Oxygen Mask Retaining (T-style) Bayonet Fitting (hereafter referred to as the 'bayonet fitting'), an integral component to the oxygen mask assembly. In the assembled state, these two artifacts are co-linked to form a single bayonet fitting.



PICTURE 7. A CLOSE-UP VIEW OF 'ARTIFACT B' AND 'ARTIFACT C'.

In Picture 8 below, 'Artifact B' and 'Artifact C' are positioned adjacent to a Master Reference (T-style) Bayonet Fitting. As depicted in this picture, all elements are similar in size, and profile. In addition to these physical similarities, both 'Artifact B', and the Master Reference Bayonet Fitting, is permanently stamped with Part Number '63D4228', which positively identifies 'Artifact B and C' as being subcomponents of a time period bayonet fitting.



PICTURE 8. A VIEW OF 'ARTIFACT B' AND 'ARTIFACT C' POSITIONED ADJACENT TO A MASTER REFERENCE (T-STYLE) BAYONET FITTING.

Illustration 2 below, is a drawing of a Type MBU-5/P Oxygen Mask Assembly that depicts the associated Oxygen Mask (Offset Style) Bayonet Fittings (refer to index items number 21 and 22) discussed within this section. (Note: This Illustration depicts an 'offset style' bayonet fitting (current model) that replaced the 'T-style' fitting represented by the artifact.)

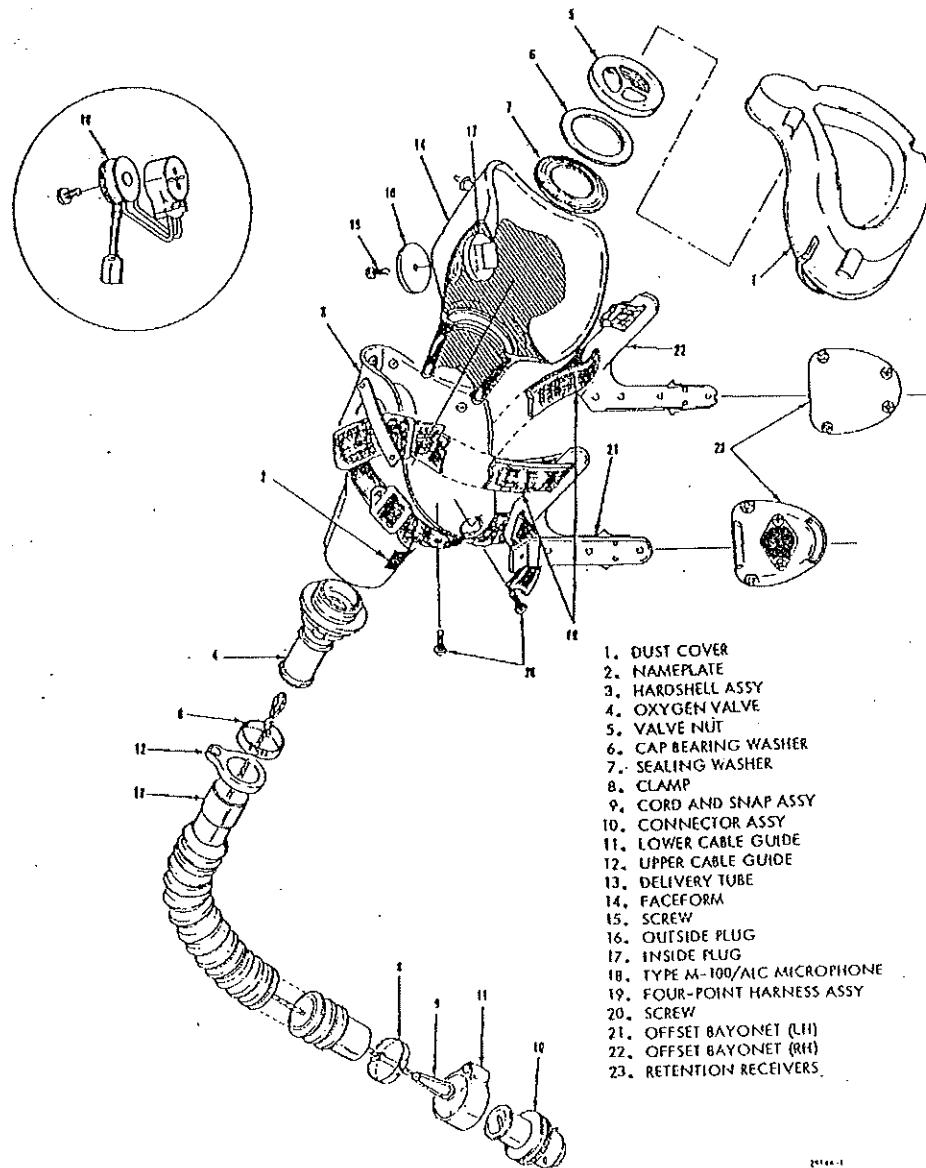
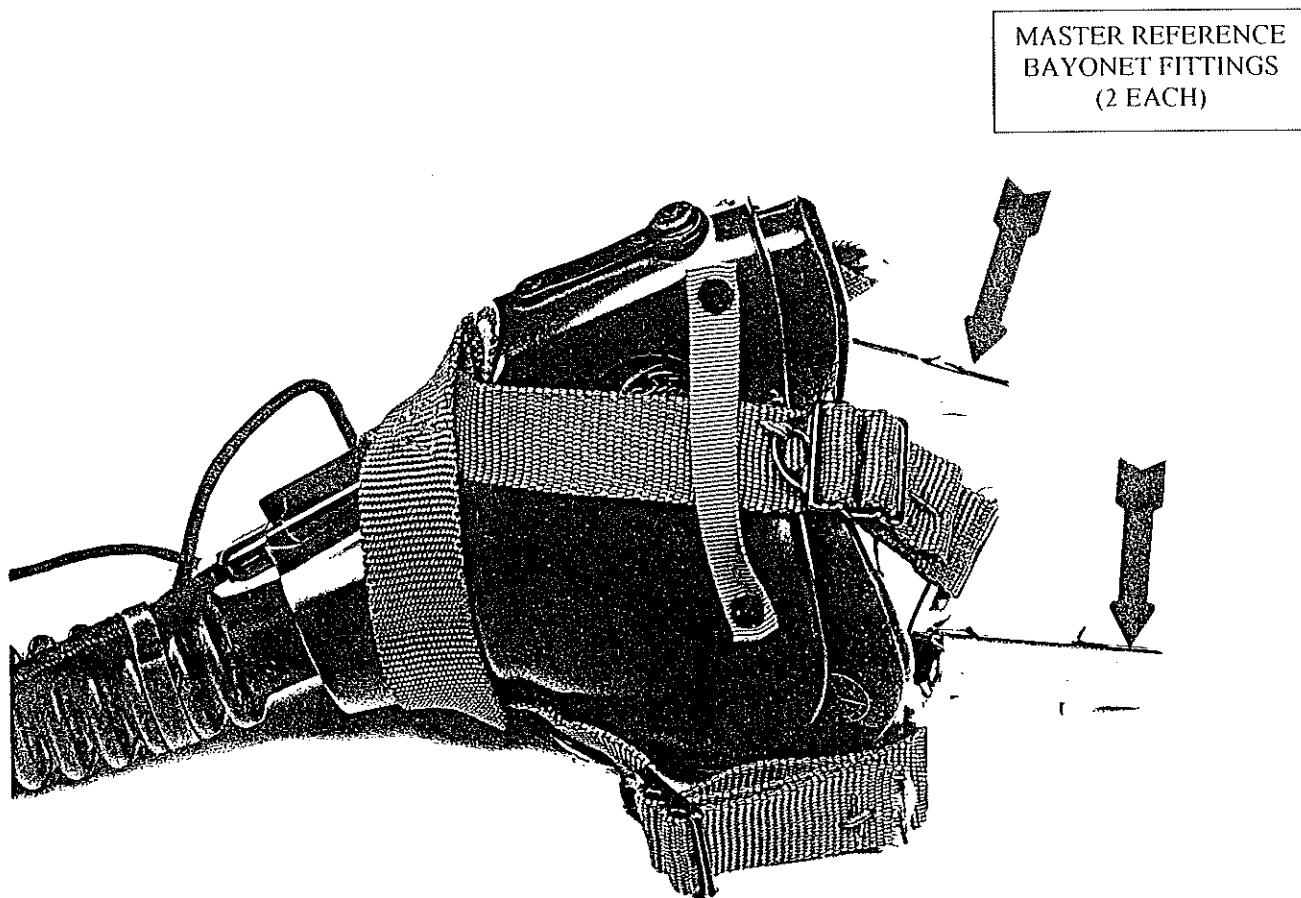


ILLUSTRATION 2. A DRAWING OF A TYPE MBU-5/P OXYGEN MASK ASSEMBLY THAT DEPICTS THE ASSOCIATED OXYGEN MASK (OFFSET) BAYONET FITTINGS.

(SOURCE: TECHNICAL ORDER 15X5-4-4-13, ILLUSTRATED PARTS BREAKDOWN – PRESSURE DEMAND BREATHING OXYGEN MASK, TYPE MBU-5/P, DATED 15 SEPTEMBER 1976.)

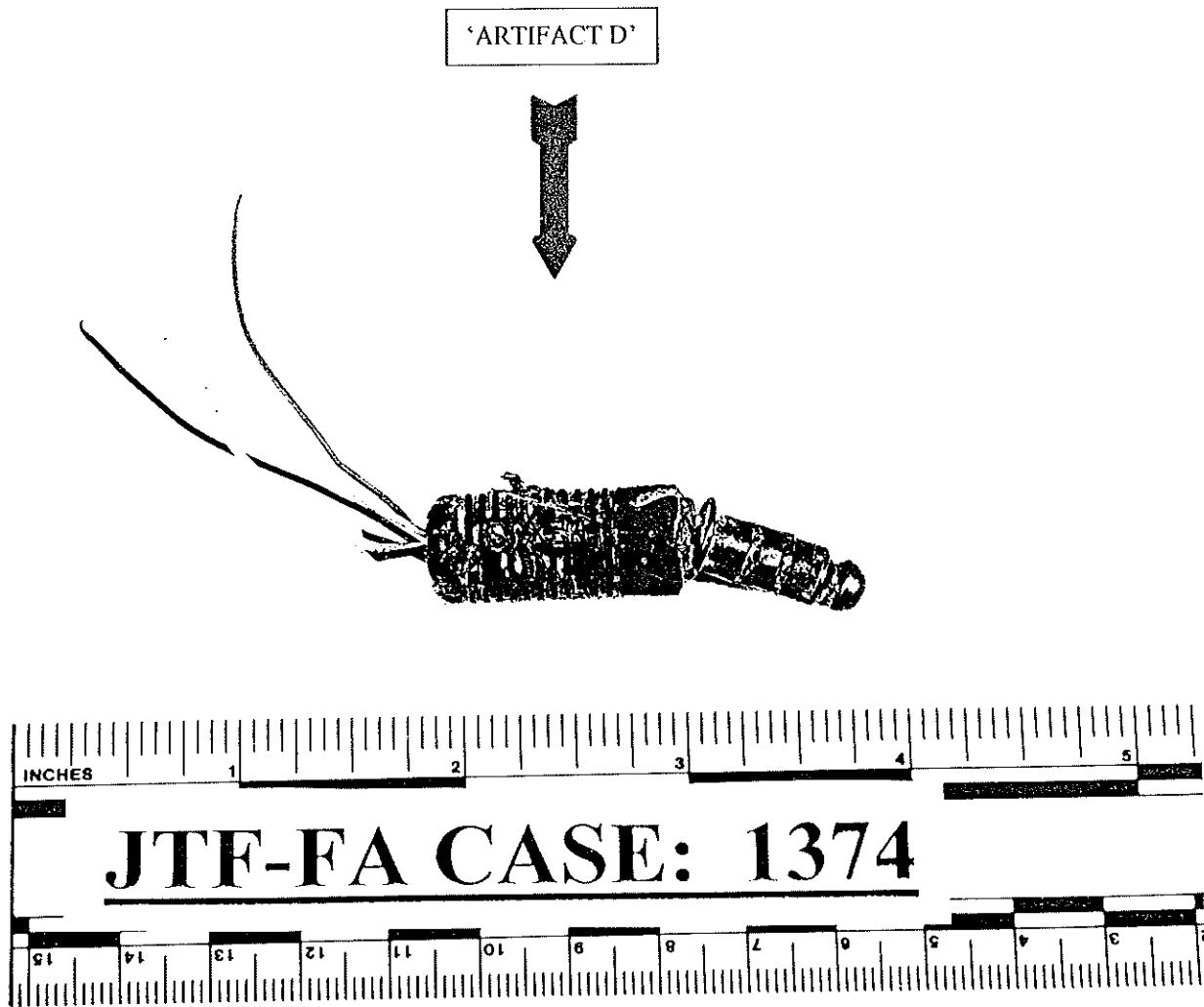
Picture 9 below, depicts the Master Reference Oxygen Mask Retaining (T-Style) Bayonet Fitting (positioned on a Type MBU-5/P Oxygen Mask Assembly) that was used in the analysis of the artifact covered within this section of the report.



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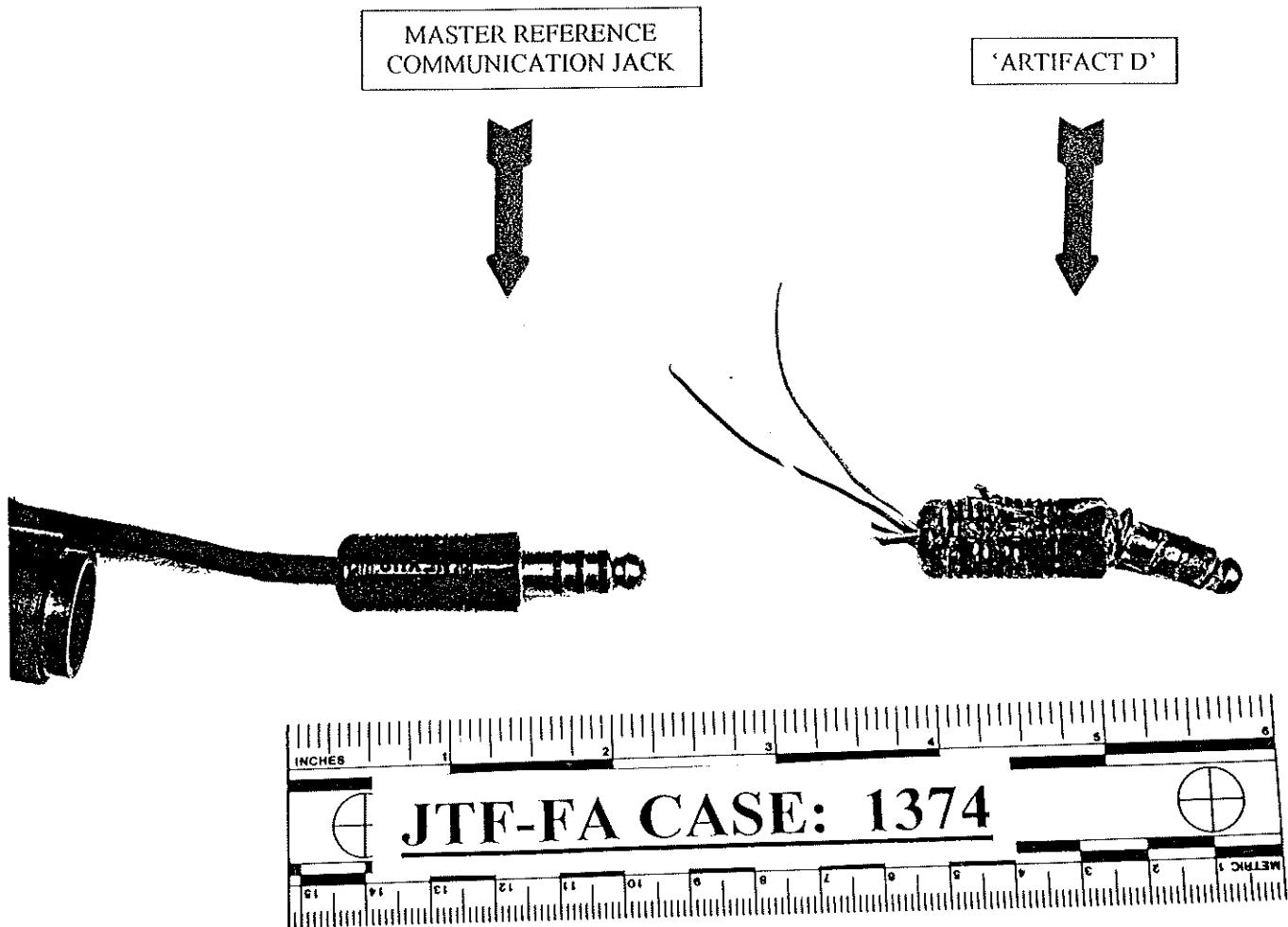
PICTURE 9. A VIEW OF THE MASTER REFERENCE OXYGEN MASK RETAINING
(T-STYLE) BAYONET FITTINGS
(POSITIONED ON A TYPE MBU-5/P OXYGEN MASK ASSEMBLY).

Picture 10 below, depicts a single artifact ('Artifact D') that has been identified as being comparable to a "Communication Cord Jack" (hereafter referred to as the 'communication jack'), an integral component to a U.S. Air Force Type MBU-5/P Oxygen Mask Assembly.



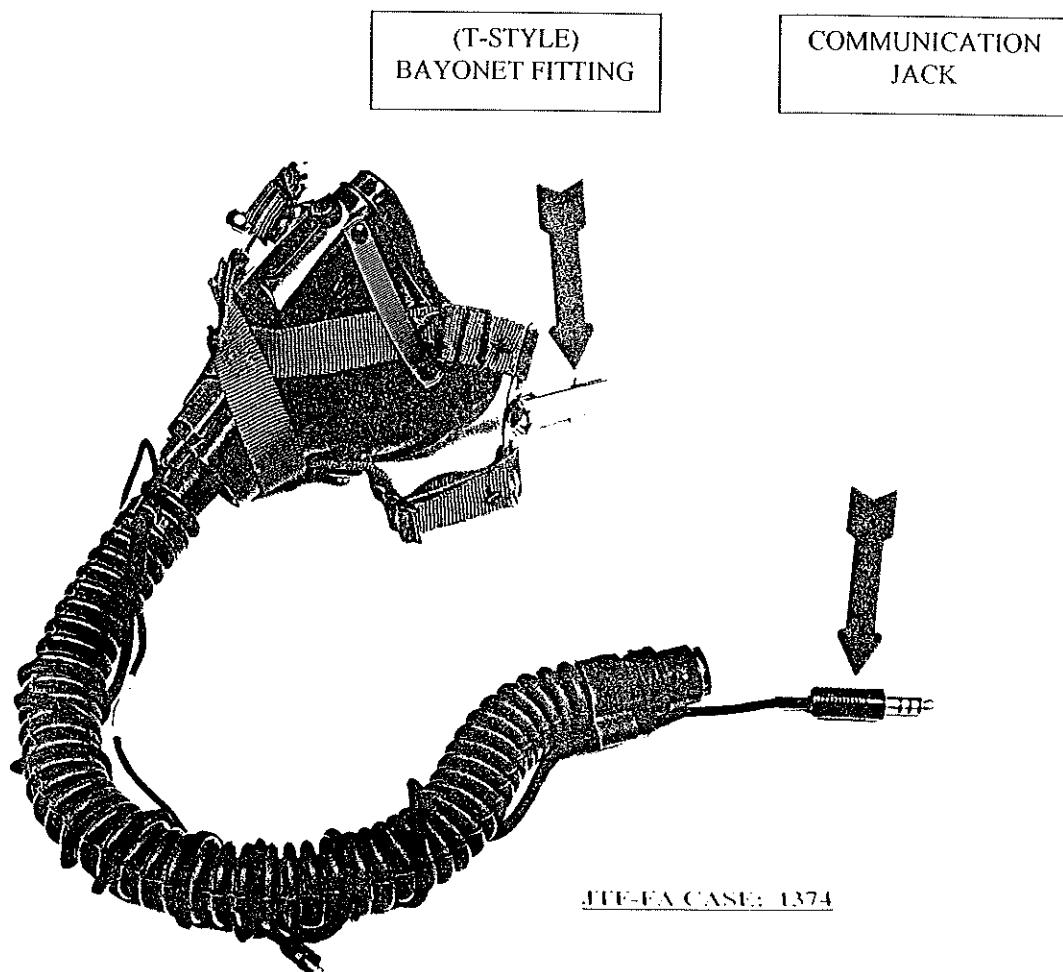
PICTURE 12. A CLOSE-UP VIEW OF 'ARTIFACT D'.

In Picture 11 below, 'Artifact D' is positioned adjacent to a Master Reference Communication Jack. As depicted in this picture, both elements are similar in size, and profile. In addition to these physical similarities, both 'Artifact D', and the Master Reference Communication Jack, are permanently imprinted with Part Number 'U-174/U', which positively identifies 'Artifact D' as being a subcomponent of a time period Communication Cord Assembly.



PICTURE 11. A VIEW OF 'ARTIFACT D' POSITIONED ADJACENT TO A MASTER REFERENCE COMMUNICATION JACK.

Picture 12 below, depicts the Master Reference Type MBU-5/P Oxygen Mask Assembly that was used in the analysis of the artifacts for this section. Highlighted within this Picture are the Oxygen Mask Retention (T-Style) Bayonet Fitting and the Communication Jack that were discussed within this report.



PICTURE 12. A VIEW OF THE MASTER REFERENCE
TYPE MBU-5/P OXYGEN MASK ASSEMBLY.

Picture 13 below, is an overall side view of the Master Reference Type MBU-5/P Oxygen Mask Assembly, and the Type HGU-2A/P Flight Helmet Assembly used in this section. In this Picture, the oxygen mask is secured to the flight helmet retention receivers by means of the (T-style) bayonet fitting.



PICTURE 13. AN OVERALL SIDE VIEW OF THE MASTER REFERENCE TYPE
MBU-5/P OXYGEN MASK, AND THE TYPE HGU-2A/P FLIGHT HELMET
USED IN THE ANALYSIS OF THIS REPORT.

4. SURVIVAL VEST AND .38 CALIBER SERVICE REVOLVER IDENTIFICATION: CONFIRMED

Four artifacts submitted for analysis (Picture 1 below) were provisionally identified as being comparable to a U.S. Air Force Survival Vest, and a .38 Caliber Service Revolver. Each element will be discussed in more detail in the following sub-sections of this report:

- The Survival Vest artifacts will be discussed under sub-section 'A' of this report, under the heading: 'Type SRU-21/P Survival Vest'.
- The Service Revolver artifacts will be discussed under sub-section 'B' of this report, under the heading: '.38 Caliber Smith and Wesson Model 15 Combat Masterpiece Revolver'.



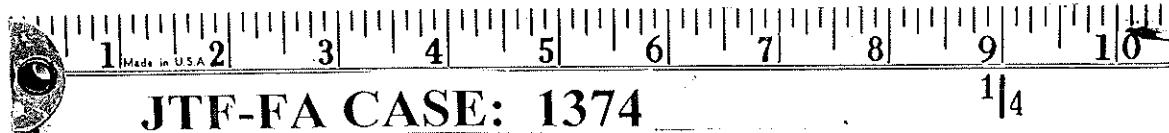
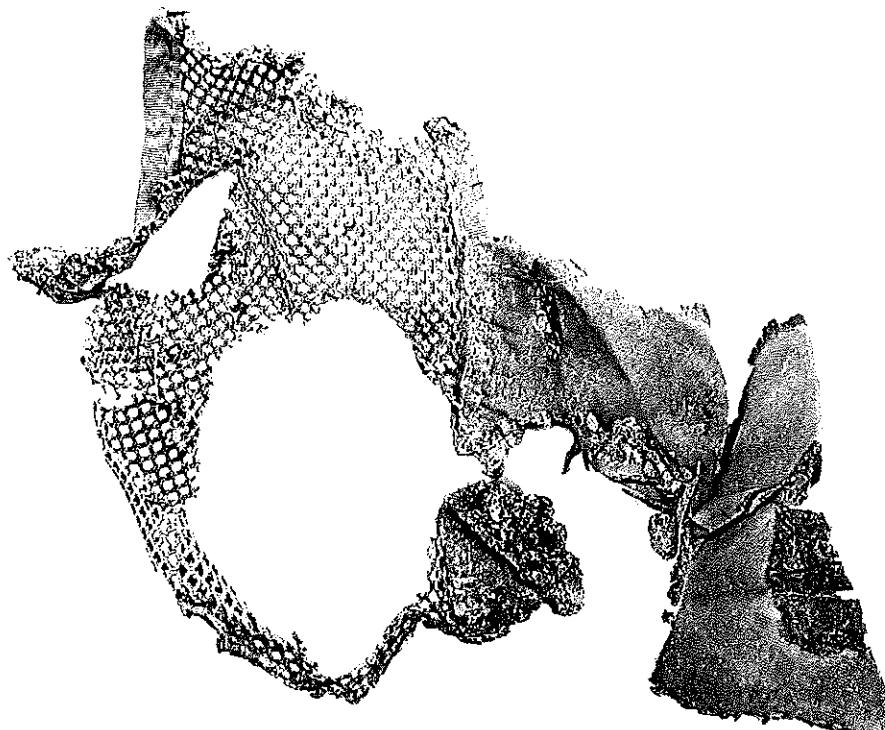
PICTURE 1. THE SURVIVAL VEST AND .38 CALIBER REVOLVER ARTIFACTS.

A. TYPE SRU-21/P SURVIVAL VEST

IDENTIFICATION: CONFIRMED

Two artifacts submitted for analysis were identified as originating from a Type SRU-21/p Survival Vest. The Type SRU-21/P Survival Vest hereafter referred to as the 'survival vest') was introduced into the Air Force during the Vietnam War and was designated for use by all aircrew personnel. The vest is fabricated out of nylon cloth mesh material and has a self adjustment fitting segment incorporated into the back area region. It has twelve pockets (10 outside, 2 inside), for stowage of a variety of survival items – as designed by mission, and/or area command requirements. It is also equipped with a leather holster for the stowage of a service revolver (pistol).

Picture 2 below, is a close up view of one of the artifacts (identified as 'Artifact A') depicted in Picture 1, Page 4-1. This artifact was selected for photographic comparisons, due to identifiable matching characteristics to a Master Reference Type SRU-21/P Survival Vest (hereafter referred to as the 'Master Reference Survival Vest') that is retained within the Life Sciences Equipment Laboratory (LSEL).



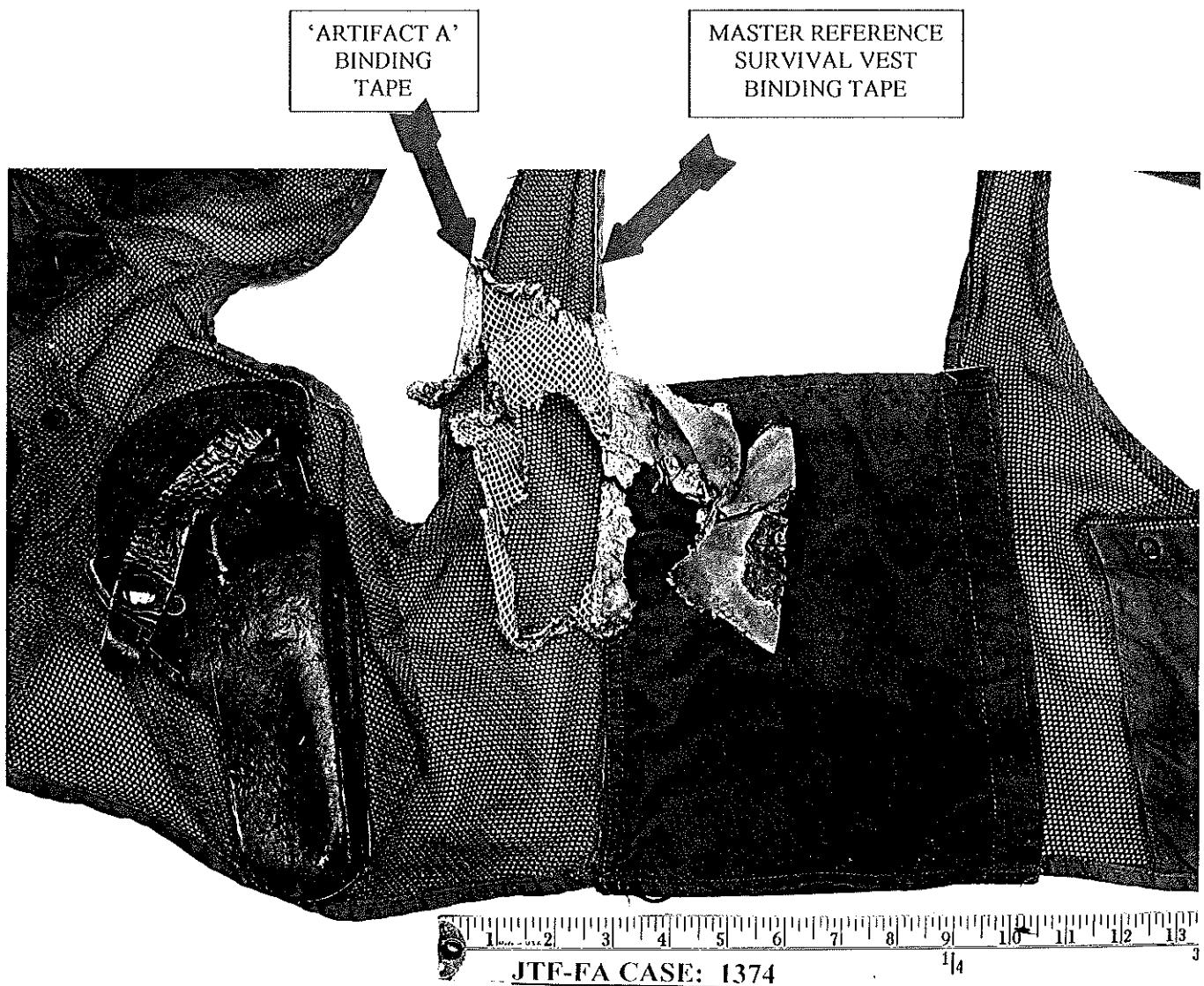
PICTURE 2. A VIEW OF 'ARTIFACT A' WHICH IS ATTRIBUTED TO THE SURVIVAL VEST.

Picture 3 below, depicts a full view of the self adjustment fitting segment in the back region of a Master Reference Survival Vest. In this picture, the 'adjustment lacing loop closure flap' is closed (concealing the adjustment cord and lacing loops) and secured by matching Velcro tapes. (Refer to Picture 5, Page 4-5 for a view of this region with the 'closure flap' open, revealing the adjustment cord and lacing loops.)



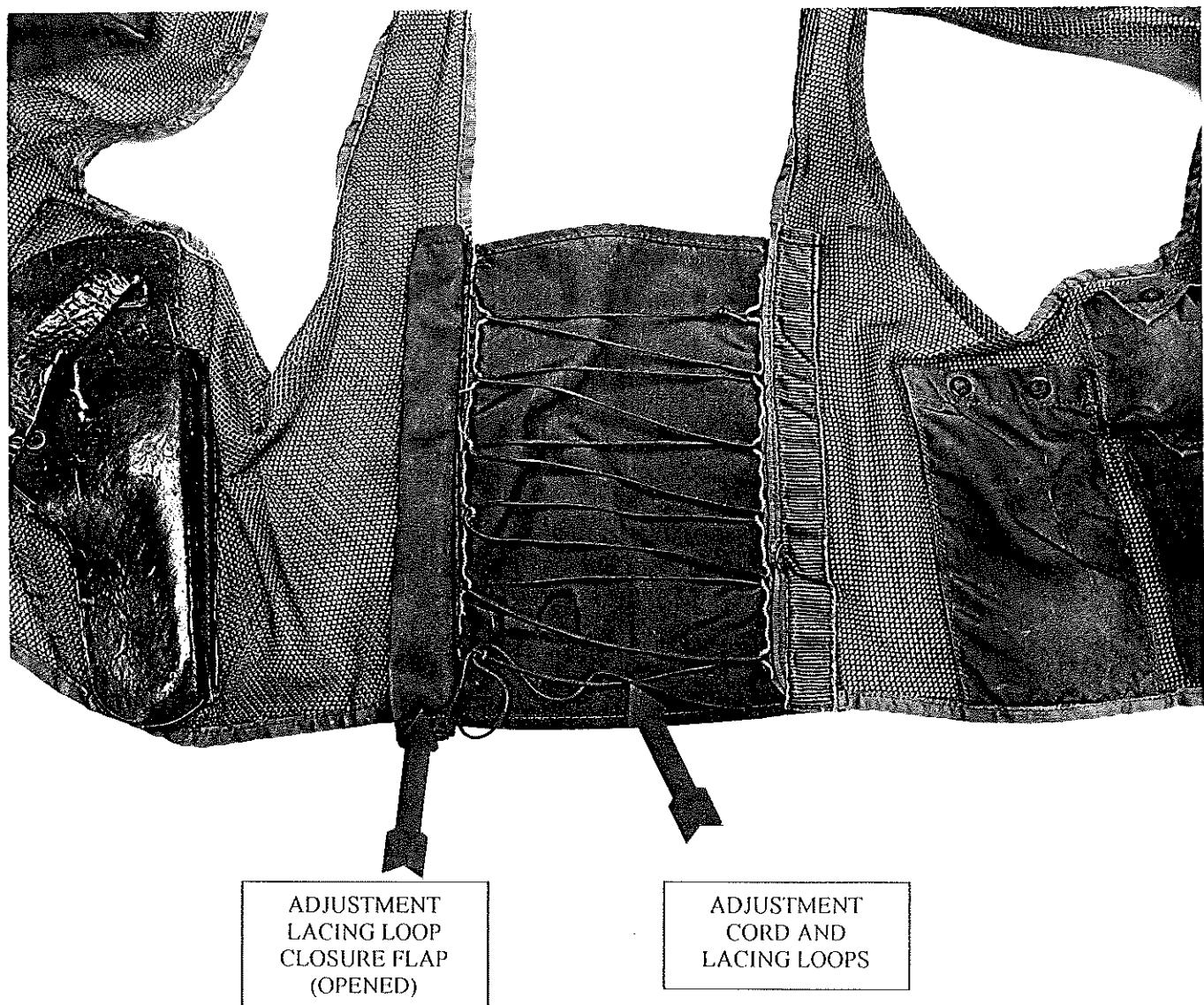
PICTURE 3. A VIEW OF THE BACK REGION OF THE MASTER REFERENCE SURVIVAL VEST WITH THE 'ADJUSTMENT LACING LOOP CLOSURE FLAP' CLOSED (CONCEALING THE ADJUSTMENT CORD AND LACING LOOPS).

In Picture 4 below, 'Artifact A' is positioned adjacent to the correlating area of origin near the adjustment lacing loop closure flap (closed) of the Master Reference Survival Vest. Note the presence (and similarity of locations) of binding tape on 'Artifact A', as well as on the Master Reference Survival Vest.



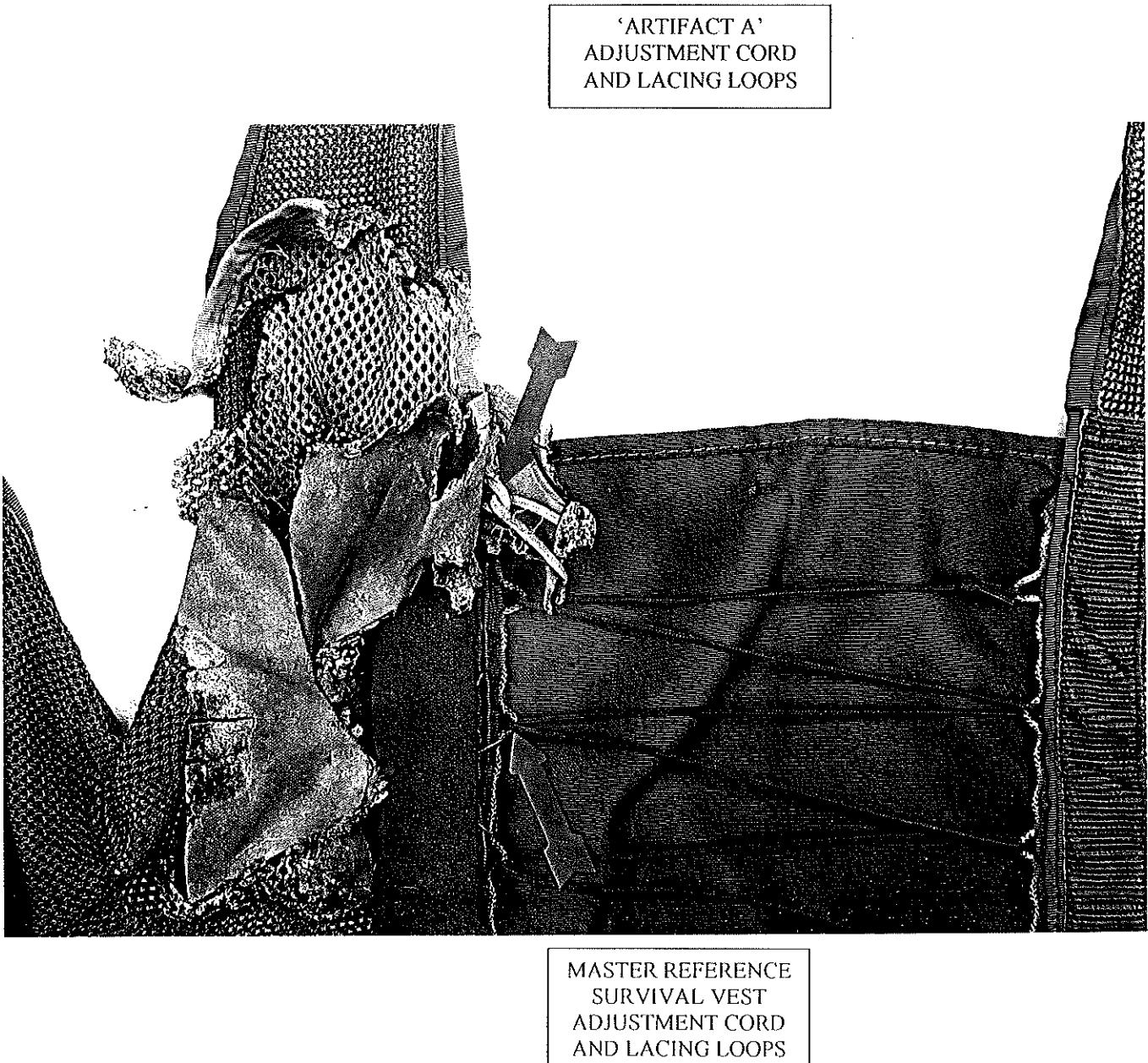
PICTURE 4. A VIEW DISPLAYING THE PRESENCE OF BINDING TAPE ON 'ARTIFACT A' AS WELL AS ON THE MASTER REFERENCE SURVIVAL VEST.

In Picture 5 below, the 'adjustment lacing loop closure flap' on the Master Reference Survival Vest is opened (revealing the adjustment cord and lacing loops). (Refer to Picture 3, Page 4-3 for a view of this region with the 'closure flap' closed, obscuring the adjustment cord and lacing loops.)



PICTURE 5. A VIEW OF THE BACK REGION OF THE MASTER REFERENCE SURVIVAL VEST WITH THE 'ADJUSTMENT LACING LOOP CLOSURE FLAP' OPENED (REVEALING THE ADJUSTMENT CORD AND LACING LOOPS).

In Picture 6 below, 'Artifact A' is positioned adjacent to the correlating area of origin near the adjustment lacing loop closure flap (opened) of the Master Reference Survival Vest. Note the presence (and similarity of locations) of the adjustment cord and lacing loops on 'Artifact A', as well as on the Master Reference Survival Vest.



PICTURE 6. A VIEW DISPLAYING THE PRESENCE OF ADJUSTMENT CORD
AND LACING LOOPS ON 'ARTIFACT A', AS WELL AS ON THE MASTER
REFERENCE SURVIVAL VEST.

Picture 7 below, displays the Type SRU-21/P Master Reference Survival Vest that was used in the analysis of the artifacts for this section.



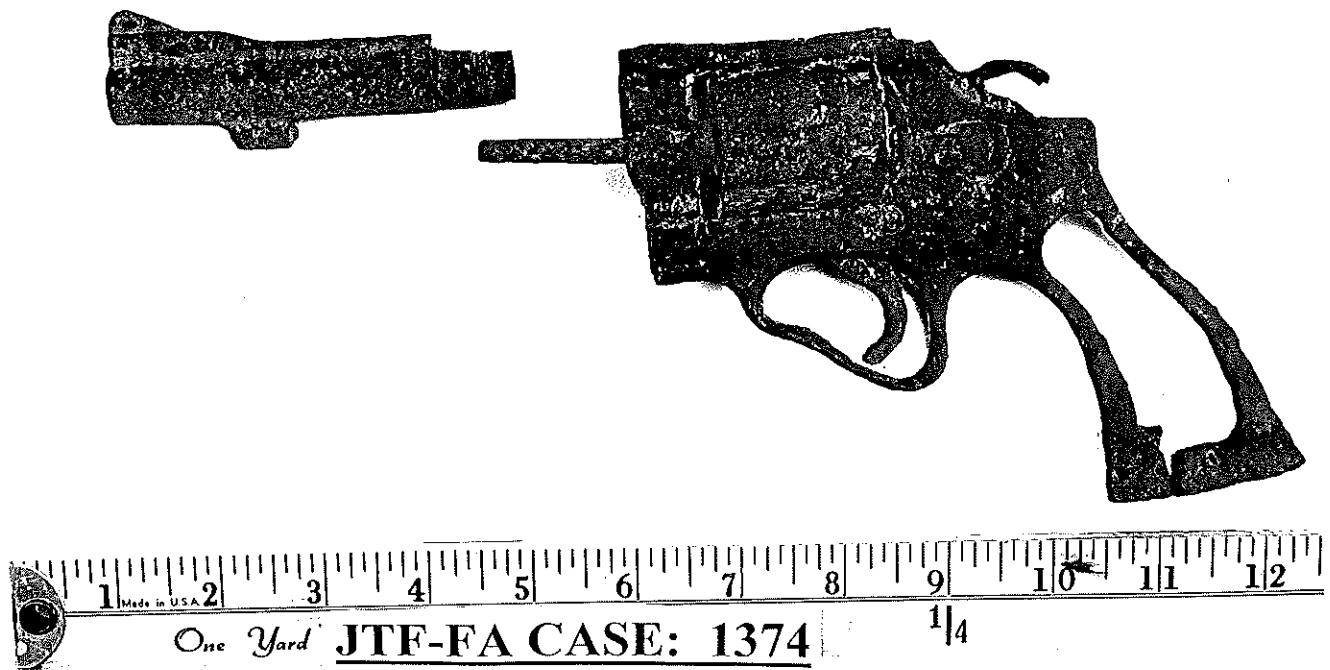
PICTURE 7. A VIEW OF THE TYPE SRU-21/P MASTER REFERENCE SURVIVAL VEST.

A. .38 CALIBER SERVICE REVOLVER

IDENTIFICATION: CONFIRMED

Two metallic artifacts submitted for analysis were identified as originating from a .38 Caliber Service Revolver. The artifacts correlate specifically with a .38 Caliber Smith and Wesson Model 15 Combat Masterpiece Revolver (hereafter referred to as ‘.38 caliber revolver’), which was a standard issue firearm that was issued to U.S. Air Force aviators during the Vietnam War. The .38 caliber revolver is a six shot breech-loading hand weapon. It has a solid frame with a swing-out type cylinder, having six chambers around a central axis so that six shots may be fired before reloading.

Picture 8 below, is a close up view of the two .38 caliber revolver artifacts depicted in Picture 1, Page 4-1. These artifacts match the characteristics of a Master Reference .38 Caliber Revolver that is owned by an analyst assigned to the Life Sciences Equipment Laboratory (LSEL).



PICTURE 8. A CLOSE-UP VIEW OF THE TWO .38 CALIBER REVOLVER ARTIFACTS.

In Picture 9 below, the two .38 caliber revolver artifacts are positioned adjacent to the Master Reference .38 Caliber Revolver.



PICTURE 9. A VIEW OF THE .38 CALIBER REVOLVER ARTIFACTS
POSITIONED ADJACENT TO THE MASTER REFERENCE
.38 CALIBER REVOLVER.

Illustration 1 below, is a drawing of the Cylinder and Extractor Group of a the .38 Caliber Smith and Wesson Model 15 Combat Masterpiece Revolver.

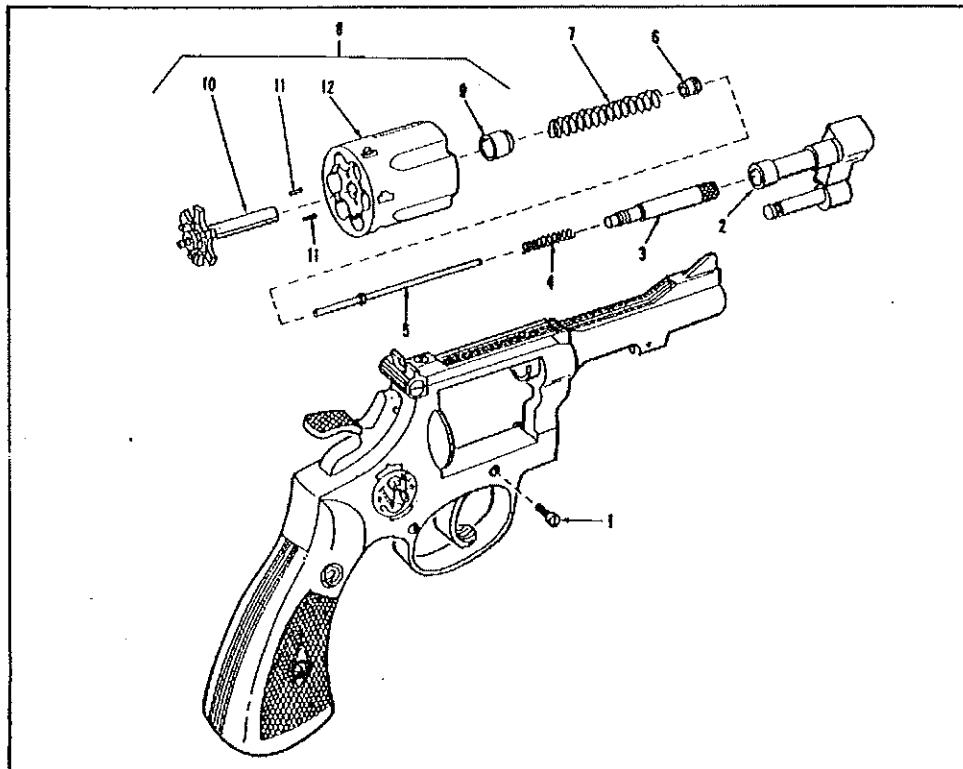


Figure 6-1. Cylinder and Extractor Group

Figure & Index Number	Part Number	FSCM	Description							Units Per Assy	Usable On Code	SMR Code
			1	2	3	4	5	6	7			
6-1.	No Number		CYLINDER AND EXTRACTOR GROUP									
-1	5049		PLATE SCREW, Crowned.....							2		PAOZZ
-2	5023		YOKE.....							1		PADZZ
-3	5020		ROD, Extractor							1		PADZZ
-4	5008		SPRING, Center pin.....							1		PADZZ
-5	5006		PIN, Center							1		PADZZ
-6	5629		COLLAR, Extractor rod							1		PADZZ
-7	5022		SPRING, Extractor							1		PADZZ
-8	5086		CYLINDER ASSEMBLY (Consisting of cylinder, extractor, pins, and gas ring)...							1		ADDDZ
-9	5030		RING, Gas							1		PADZZ
-10	5009		EXTRACTOR							1		PADZZ
-11	5014		PIN, Extractor							2		PADZZ
-12	No Number		CYLINDER							1		X

ILLUSTRATION 1. A DRAWING OF THE CYLINDER AND EXTRACTOR GROUP OF THE .38 CALIBER SMITH AND WESSON MODEL 15 COMBAT MASTERPIECE REVOLVER.

(SOURCE: TECHNICAL ORDER 11W3-4-2-51, OPERATION AND SERVICE INSTRUCTION WITH ILLUSTRATED PARTS BREAKDOWN, CALIBER .38 REVOLVER MODEL NO. 15, DATED 31 MARCH 1983.)

Illustration 2 below, is a drawing of the Rear Sight Assembly, Frame Assembly and Barrel Group of the .38 Caliber Smith and Wesson Model 15 Combat Masterpiece Revolver. (As depicted in this drawing, the barrel (index 16), is capable of being separated from the frame assembly (index 17) – as is representative of the artifacts presented in this case).

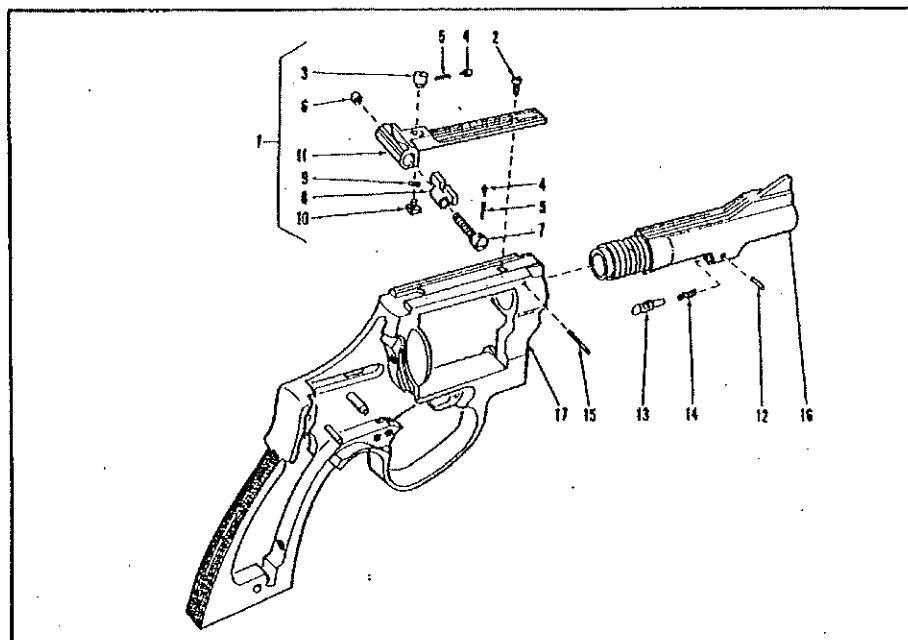


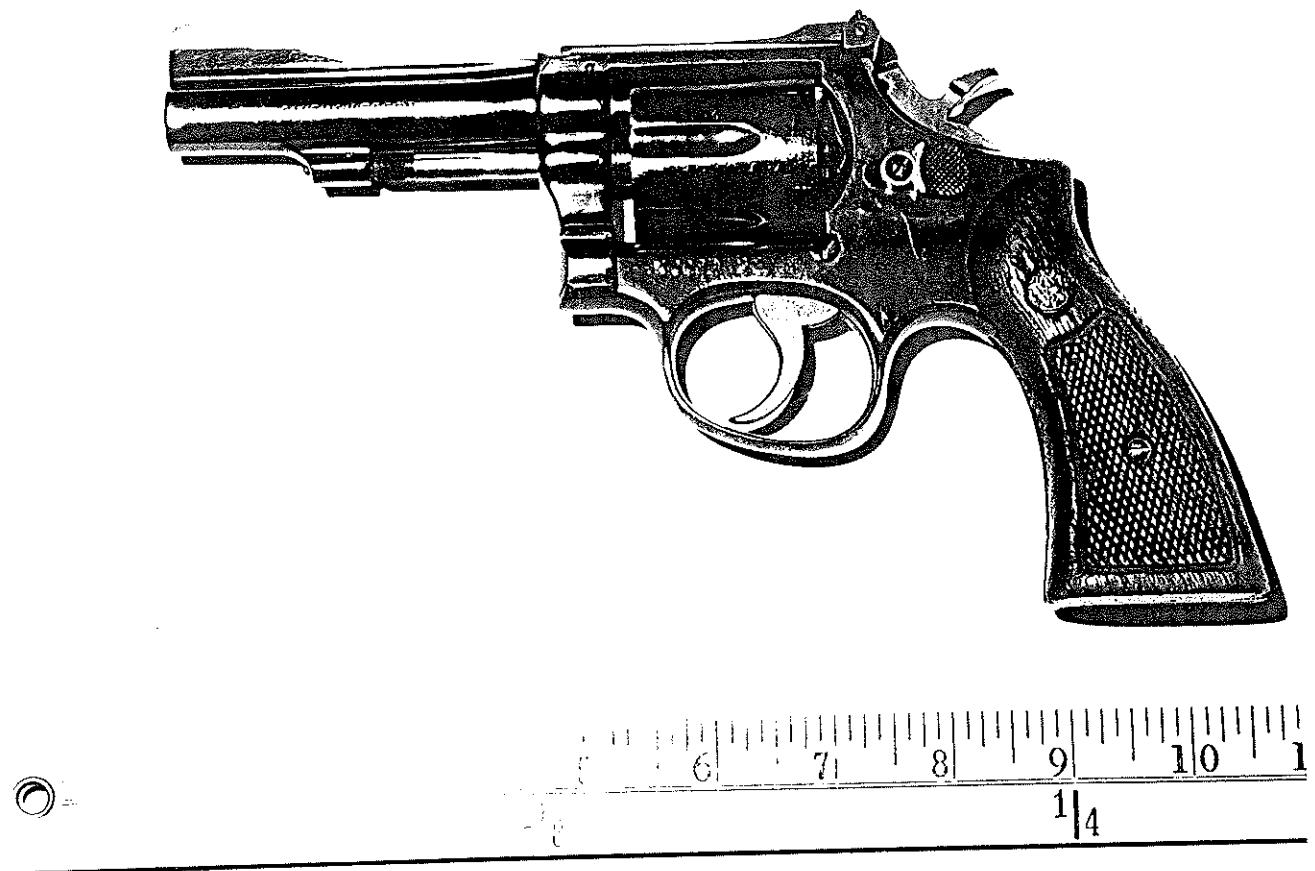
Figure 6-3. Rear Sight Assembly, Frame Assembly and Barrel Group

Figure & Index Number	Part Number	FSCM	Description							Units Per Assy	Usable On Code	SMR Code
			1	2	3	4	5	6	7			
6-3-	No Number		REAR SIGHT ASSEMBLY, FRAME ASSEMBLY AND BARREL GROUP									
	5100		REAR SIGHT Assembly							1		PAOZZ
	5155		SCRBW, Rear Sight Leaf							1		PAOZZ
	5102		NUT, Elevation, Rear Sight							1		PAOZZ
	5104		PLUNGER, Rear Sight							2		PAOZZ
	5103		SPRING, Plunger, Rear Sight							2		PAOZZ
	5107		NUT, Windage, Rear Sight							1		PAOZZ
	5108		SCREW, Windage, Rear Sight							1		PAOZZ
	5109		SLIDE, Rear Sight							1		PAOZZ
	5105		CLIP, Spring, Rear Sight							1		PAOZZ
	5106		STUD, Elevation, Rear Sight							1		PAOZZ
	5101		LEAF, Rear Sight							1		PAOZZ
	5044		PIN, Locking Bolt							1		PADZZ
	5043		BOLT, Locking							1		PADZZ
	5045		SPRING, Locking Bolt							1		PADZZ
	5002		PIN, Barrel							1		PADZZ
	5757		BARREL, 4-Inch							1		PADZZ
	5381		FRAME ASSEMBLY (with Studs, Bushing and Lug)							1		XA

ILLUSTRATION 2. A DRAWING THE REAR SIGHT ASSEMBLY, FRAME ASSEMBLY AND BARREL GROUP OF THE .38 CALIBER SMITH AND WESSON MODEL 15 COMBAT MASTERPIECE REVOLVER.

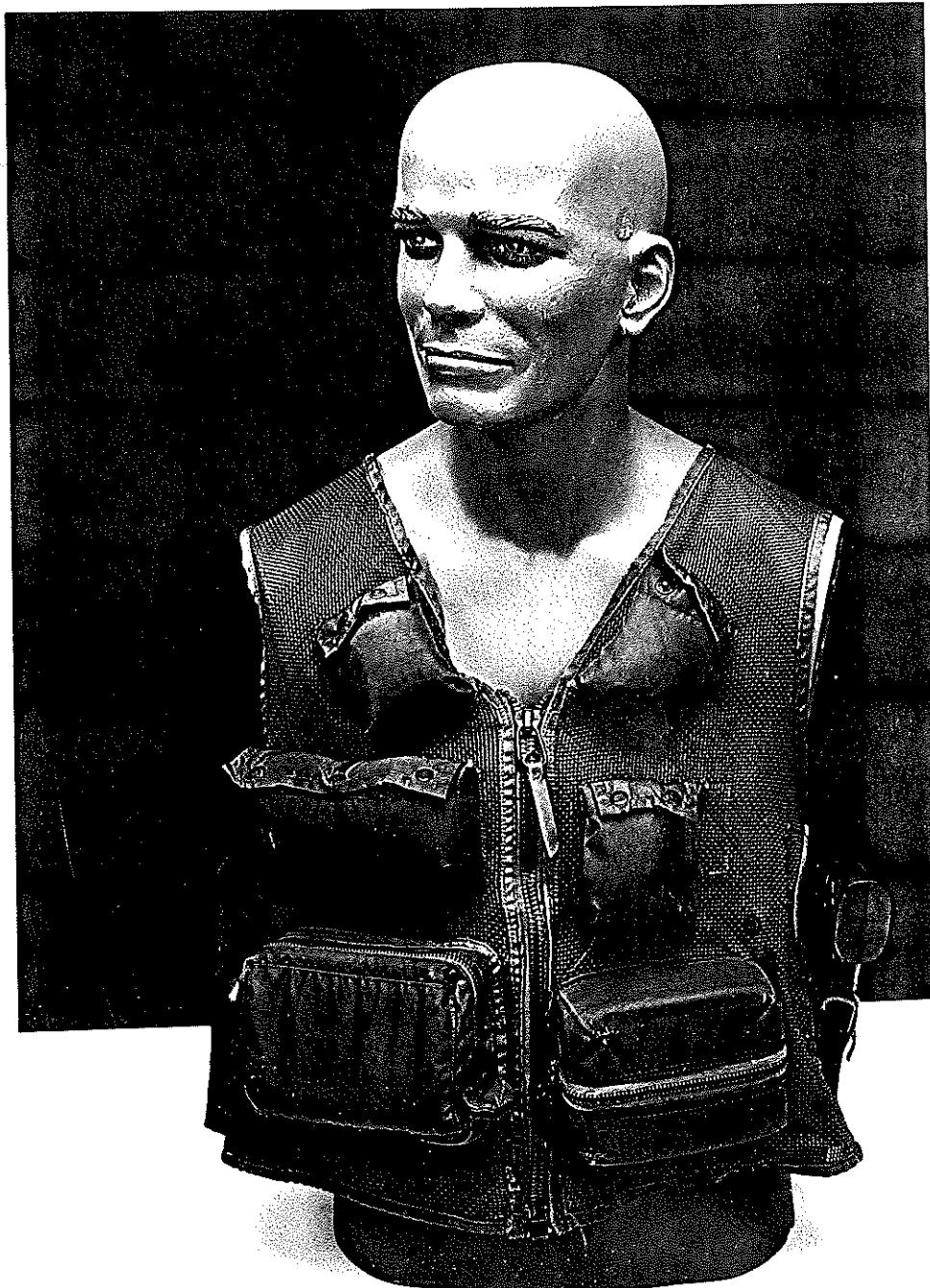
(SOURCE: TECHNICAL ORDER 11W3-4-2-51, OPERATION AND SERVICE INSTRUCTION WITH ILLUSTRATED PARTS BREAKDOWN, CALIBER .38 REVOLVER MODEL NO. 15, DATED 31 MARCH 1983.)

Picture 10 below, depicts the Master Reference .38 Caliber Smith and Wesson Model 15 Combat Masterpiece Revolver that was used in the analysis of the artifacts for this section.



PICTURE 10. A VIEW OF THE MASTER REFERENCE .38 CALIBER SMITH AND WESSON MODEL 15 COMBAT MASTERPIECE REVOLVER.

Picture 11 below, is a donned (worn) view of the Master Reference Type SRU-21/P Survival Vest, and a representation of a .38 Caliber Smith and Wesson Model 15 Combat Masterpiece Revolver used in analysis of artifacts for this section. In this Picture, the representation of a .38 caliber revolver is positioned in the leather holster which is secured to the survival vest.



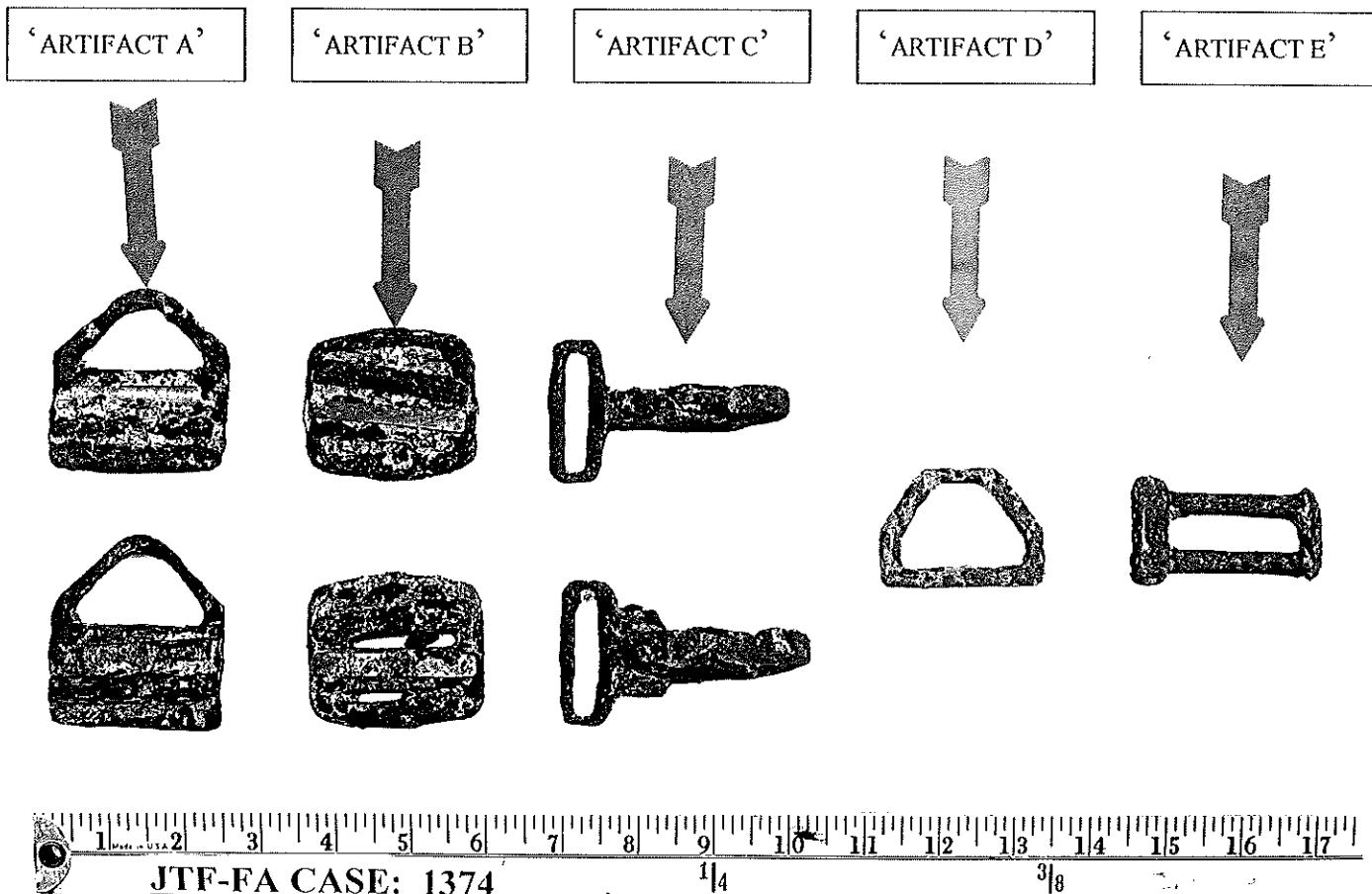
PICTURE 11. A DONNED (WORN) VIEW OF THE MASTER REFERENCE TYPE SRU-21/P SURVIVAL VEST, AND THE TYPE .38 CALIBER SMITH AND WESSON MODEL 15 COMBAT MASTERPIECE REVOLVER (HOLSTERED).

5. PARACHUTE HARNESS ASSEMBLY

IDENTIFICATION: CONFIRMED

Eight artifacts submitted for analysis (Picture 1 below) were provisionally identified as being comparable to Military Standard V-Rings, Adapters, Ejector Snaps, Accessory Rings, and Speed Links commonly used in the construction of a Back Style Parachute Harness Assembly. These artifacts are identified as:

- 'Artifact A' (2 each) – Ring "V", Quick Fit, Parachute Harness (tension)
- 'Artifact B' (2 each) – Adapter, Reversible, Quick Fit (tension spring)
- 'Artifact C' (2 each) – Snap, Parachute Harness Ejector
- 'Artifact D' (1 each) – Ring, Parachute Harness, Accessory Attaching
- 'Artifact E' (1 each) – Link, Parachute Removable Connector, Speed



PICTURE 1. THE PARACHUTE HARNESS ASSEMBLY ARTIFACTS.

Artifacts "A" through "E" (refer to Page 5-1) are all components used on the Type 50C7024 (Series) Automatic Back Style Parachute Assemblies that was used by the U.S. Air Force during the Vietnam War to include use on the F-100 aircraft series. All of the 50C7024 (series) parachute assemblies incorporate many of the same components, such as the:

- Harness and Pack Assembly
- Recovery Parachute Canopy
- Pilot Parachute Assembly
- Quarter Deployment Bag

However, variants to these particular series (50C7024) parachutes can be driven by certain aircraft, or ejection seat usage parameters. When ever a variant was introduced, the series part number took on an identifier dash number (such as: 50C7024-21, or 50C7024-27, etc.). As an example, the time period 50C7024 series parachute could be equipped with various opening devices (depending on usage parameters). Records indicate that the 50C7024 series parachutes had four known variants – peculiar to the incorporated Automatic Ripcord Releases:

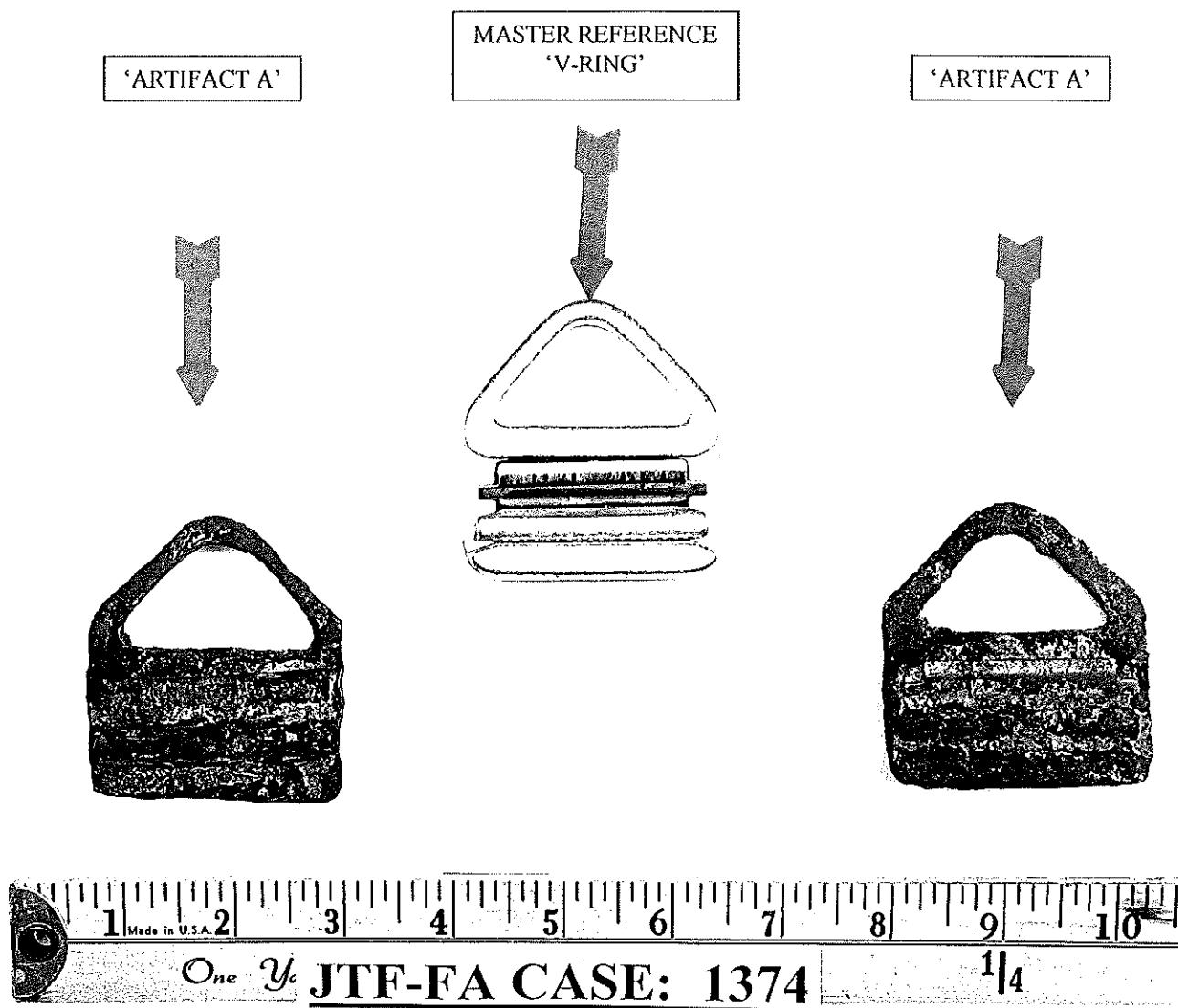
- 50C7024-21 utilized an F-1B Automatic Ripcord Release.
- 50C7024-22 utilized a Model 7000 Automatic Ripcord Release.
- 50C7024-25 utilized a Model 11000 Automatic Ripcord Release.
- 50C7024-27 utilized a Scot, Incorporated Automatic Ripcord Release.

Once the usage parameter is established, the configured parachute assembly takes on another part name and number. In these cases (because of the ripcord release variants), the units became known "Back Style Automatic (BA) Parachute Assemblies" with the following number and designator changes:

- 50C7024-21 becomes a "BA-21 Back Style Automatic Parachute".
- 50C7024-22 becomes a "BA-22 Back Style Automatic Parachute".
- 50C7024-25 becomes a "BA-25 Back Style Automatic Parachute".
- 50C7024-27 becomes a "BA-27 Back Style Automatic Parachute".

There are three Quick Fit, Parachute Harness (tension spring) V-Rings, (hereafter referred to as the 'V-Ring') secured to the Type 50C7024 (Series) Parachute Harness Assembly. One is attached to each leg strap (for a total of two), and one is attached to the chest strap. Each V-Ring is used as the anchor hardware for the Snap, Parachute Harness Ejector. (Refer to Illustration 1, Page 8, for area location of V-Rings.)

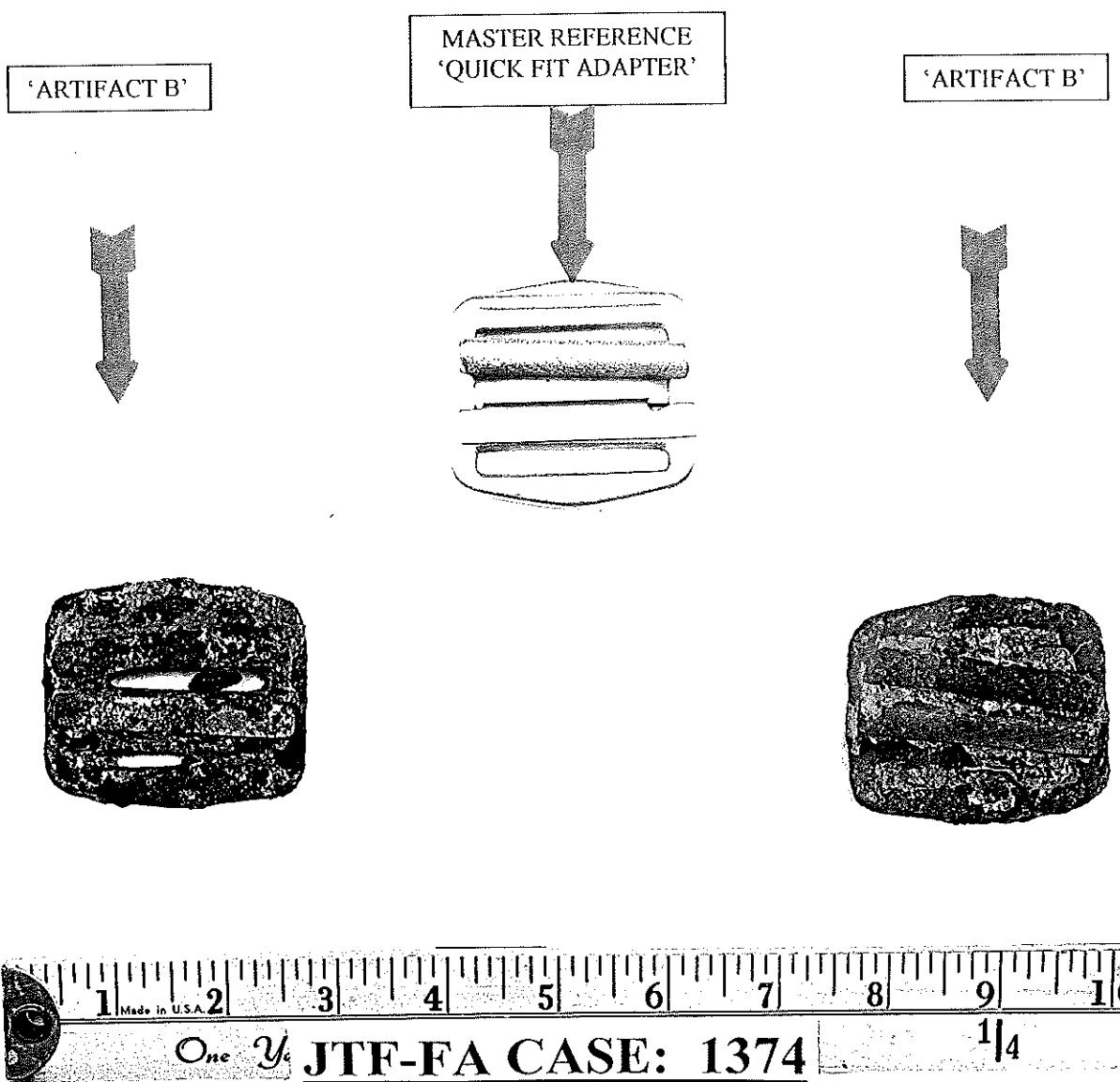
Picture 2 below, depicts both artifacts ('Artifact A') positioned adjacent to a Master Reference V-Ring.



PICTURE 2. A VIEW OF THE TWO ARTIFACTS ('ARTIFACT A') POSITIONED ADJACENT TO A MASTER REFERENCE V-RING.

There are two Reversible, Quick Fit (tension spring) Adapters (hereafter referred to as the 'Quick Fit Adapter') secured to the Type 50C7024 (Series) Parachute Harness Assembly. Both are attached to the waist/body adjustment straps and are used to aid the crewmember in adjusting the overall fit of the harness assembly. (Refer to Illustration 1, Page 8, for area location of Quick Fit Adapters.)

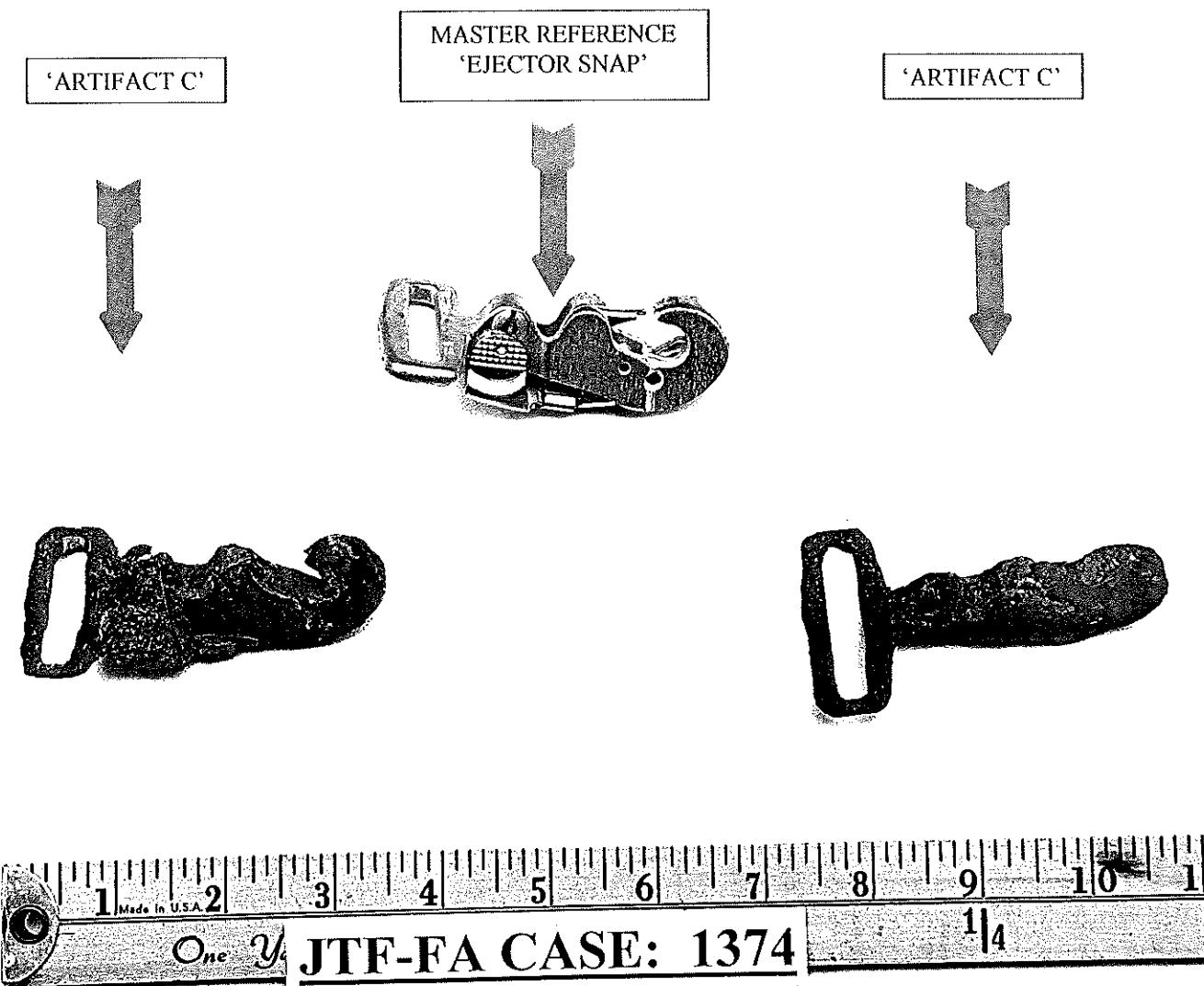
Picture 3 below, depicts both artifacts ('Artifact B') positioned adjacent to a Master Reference Quick Fit Adapter.



PICTURE 3. A VIEW OF THE TWO ARTIFACTS ('ARTIFACT B') POSITIONED ADJACENT TO A MASTER REFERENCE QUICK FIT ADAPTER.

There are three Snap(s), Parachute Harness Ejector (hereafter referred to as the 'Ejector Snap') secured to the Type 50C7024 (Series) Parachute Harness Assembly. One ejector snap is secured to each waist/body adjustment straps (for a total of two), and one ejector snap is attached to the chest strap. Each Ejector Snap anchors to the V-Ring and retains the crewmember within the harness assembly. (Refer to Illustration 1, Page 8, for area location of Ejector Snaps.)

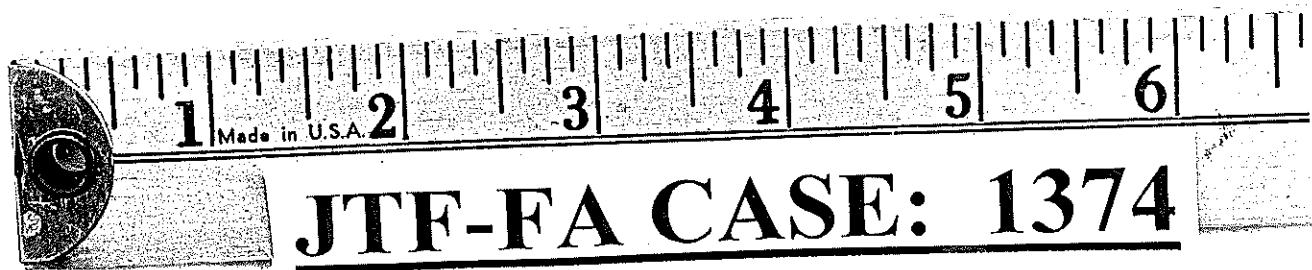
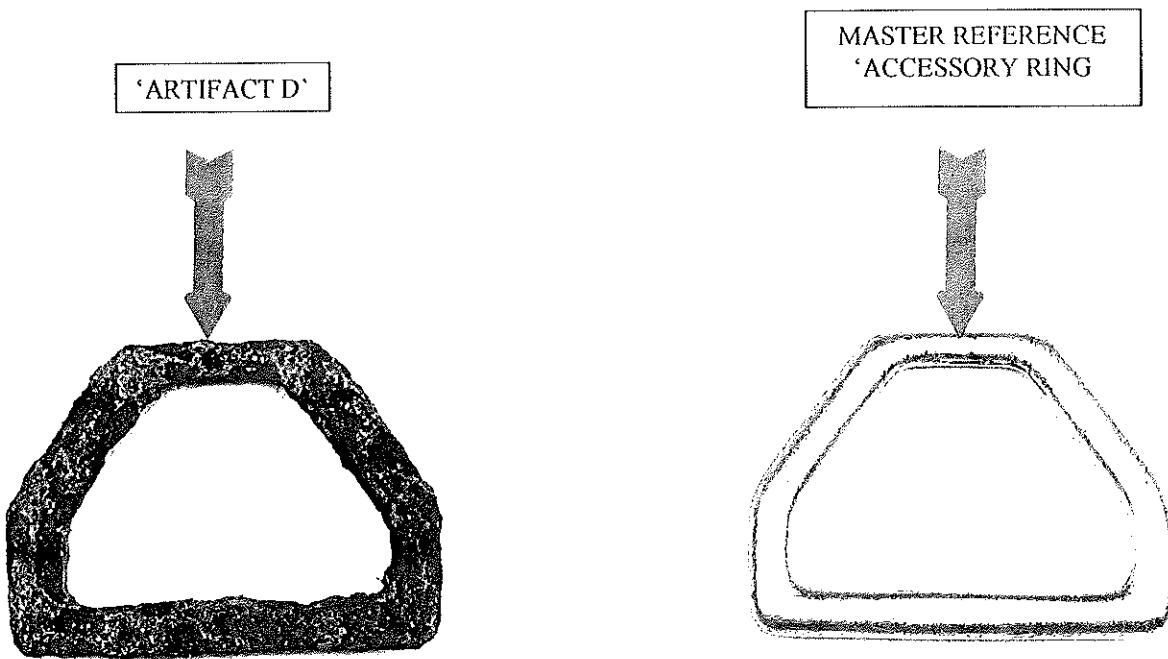
Picture 4 below, depicts both artifacts ('Artifact C') positioned adjacent to a Master Reference Ejector Snap.



PICTURE 4. A VIEW OF THE TWO ARTIFACTS ('ARTIFACT C') POSITIONED ADJACENT TO A MASTER REFERENCE EJECTOR SNAP.

There are two Ring(s), Parachute Harness, Accessory Attaching (hereafter referred to as the 'Accessory Ring') secured to the Type 50C7024 (Series) Parachute Harness Assembly. Both accessory rings are secured to the thigh area of the seat sling strap and are used to retain the survival kit assembly to the harness assembly. (Refer to Illustration 1, Page 8, for area location of the Accessory Rings.)

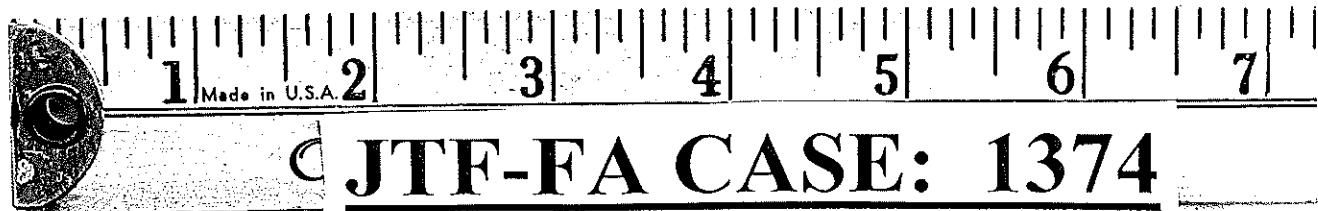
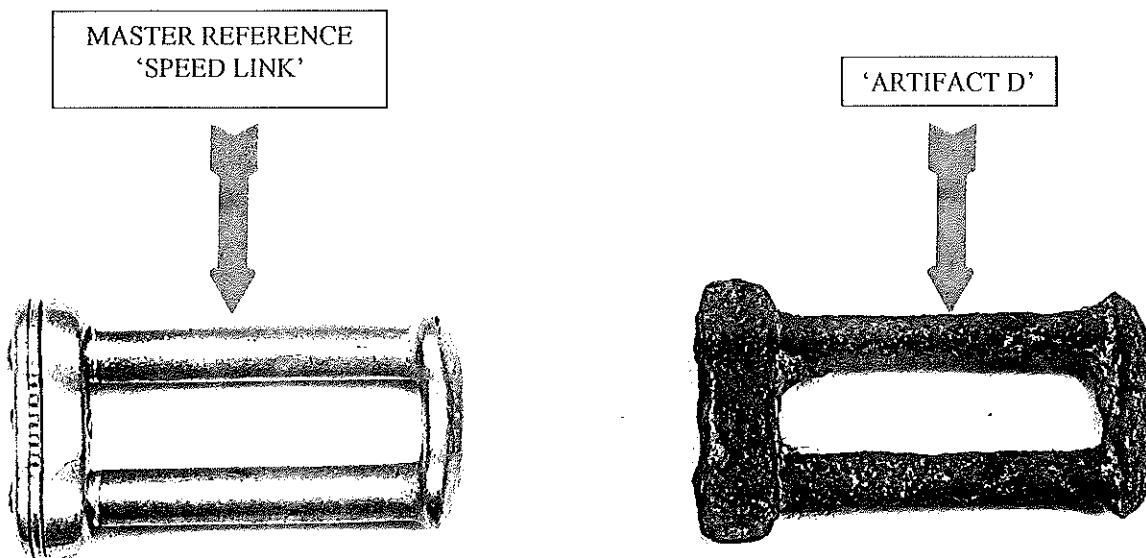
Picture 5 below, depicts 'Artifact D' positioned adjacent to a Master Reference Accessory Ring.



PICTURE 5. A VIEW OF 'ARTIFACT D' POSITIONED ADJACENT TO A MASTER REFERENCE ACCESSORY RING.

There are four Link(s) Parachute Removable Connector, Speed (hereafter referred to as the 'Speed Link') used on the Type 50C7024 (Series) Parachute Harness Assembly. One cross-bar of the speed link is used to retain the suspension lines of the main parachute canopy. The other cross-bar of the speed link is secured to the end of the parachute riser assembly. (Refer to Illustration 1, Page 8, for area location of Speed Links.)

Picture 6 below, depicts 'Artifact E' positioned adjacent to a Master Reference Speed Link.



PICTURE 6. A VIEW OF 'ARTIFACT E' POSITIONED ADJACENT TO A MASTER REFERENCE SPEED LINK.

Illustration 1 below, is a drawing of a typical Type 50C7024 (Series) Back Style Automatic Parachute Assembly. Highlighted with arrows are the hardware accessories (V-Rings, Adapters, Ejector Snaps, Accessory Rings, and * Speed Links) discussed within this section. (* NOTE: The Speed Link is an internal part of the Parachute Assembly and would not be visible on a fully packed parachute assembly, as depicted in this drawing.)

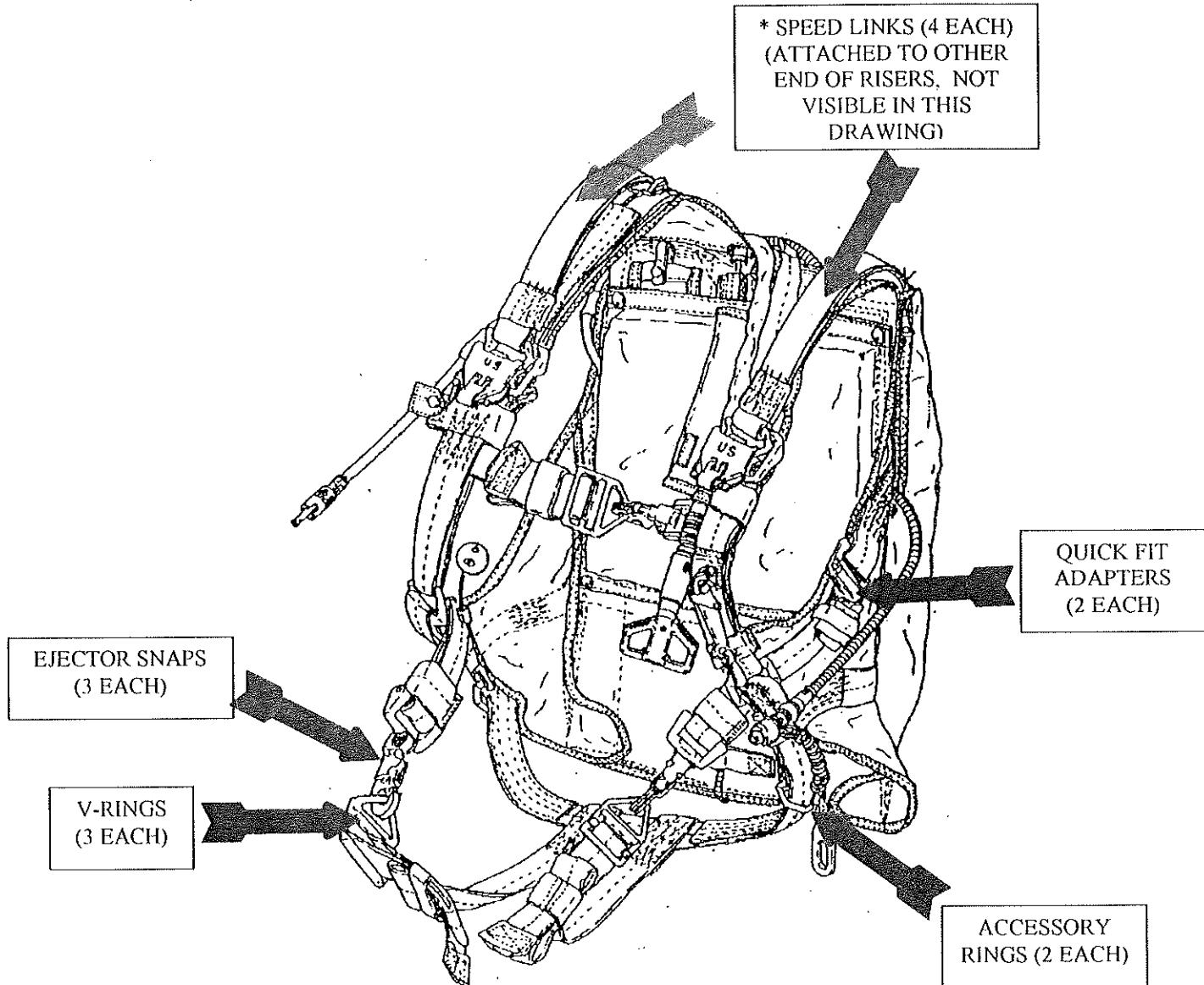


ILLUSTRATION 1. A DRAWING OF A TYPE 50C7024 (SERIES) BACK STYLE AUTOMATIC PARACHUTE ASSEMBLY.

(SOURCE: TECHNICAL ORDER 14D3-11-1, OPERATION, INSPECTION, MAINTENANCE AND PACKING INSTRUCTIONS FOR EMERGENCY PERSONNEL RECOVERY PARACHUTES (CHEST, BACK, SEAT STYLE AND TORSO HARNESS), WITH ILLUSTRATED PARTS BREAKDOWN, DATED 16 JANUARY 1989.)

Picture 7 below, is an overall view of the Master Reference Type 50C7024 (Series), Parachute Harness and Pack Assembly used in the analysis of the artifacts for this report.

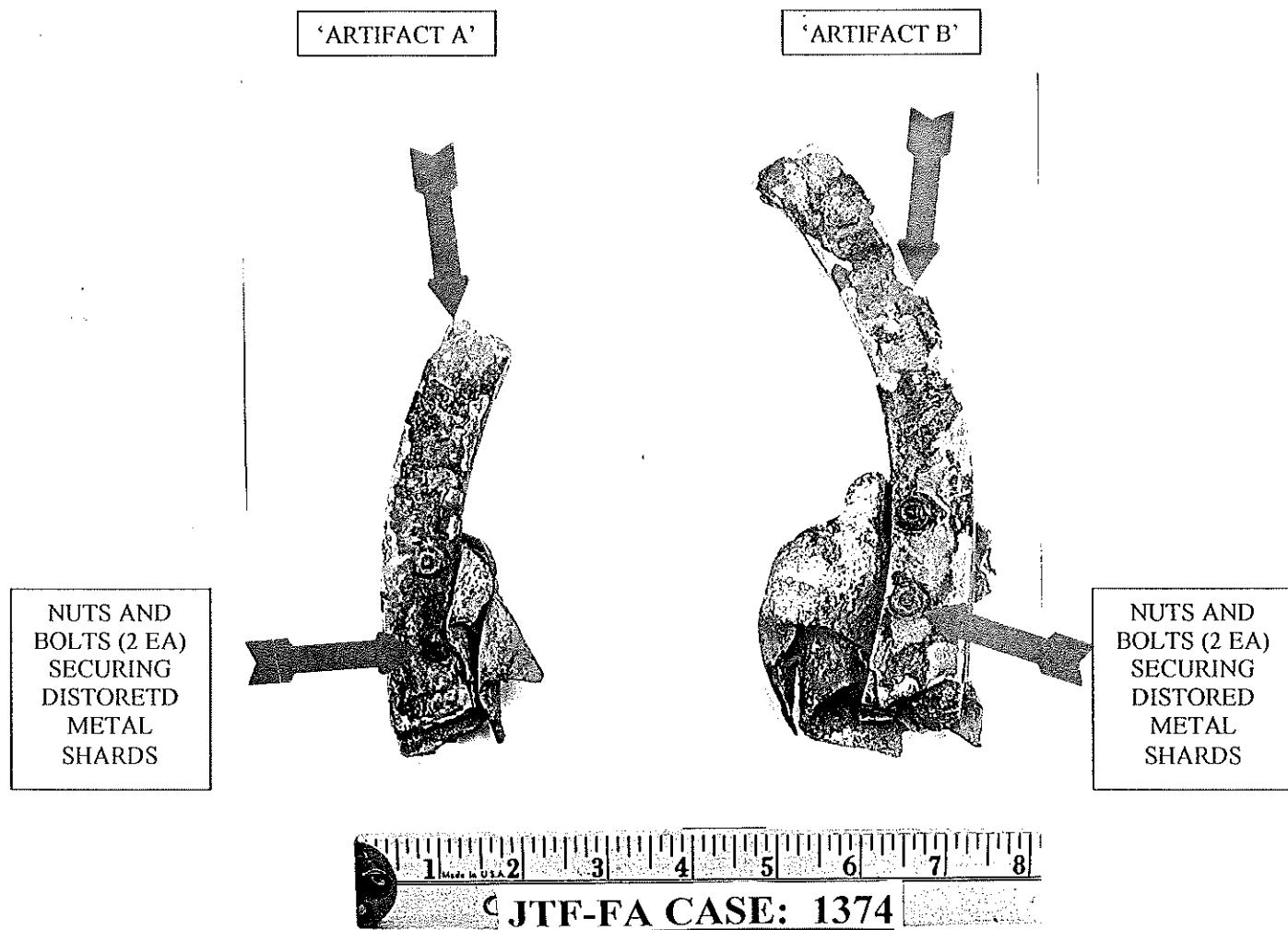


PICTURE 7. AN OVERALL VIEW OF THE MASTER REFERENCE 50C7024 (SERIES)
PARACHUTE HARNESS AND PACK ASSEMBLY
USED IN THE ANALYSIS OF THE ARTIFACTS.

6. EJECTION SEAT

IDENTIFICATION: CONFIRMED

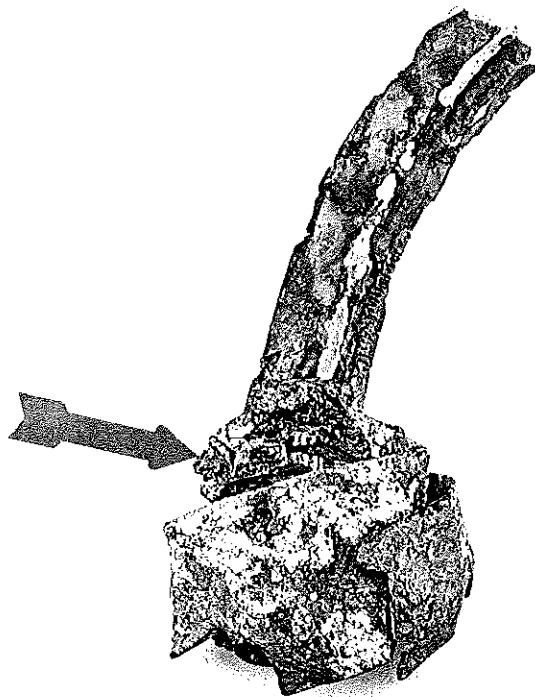
Two arc shaped amalgamated artifacts (identified as 'Artifact A' and 'Artifact B') submitted for analysis (Picture 1 below) were correlated to an Ejection Seat. The artifacts are dimensionally similar in size and shape, and both contain the same compositional makeup. As highlighted in this picture (with red arrows), both artifacts contain opposing nut and bolt patterns (2 each) which secure distorted metal shard remnants. In all appearances, these artifacts represent a mirror image of one another.



PICTURE 1. THE AMALGAMATED EJECTION SEAT ARTIFACTS SUBMITTED FOR ANALYSIS, WITH OPPOSING NUT AND BOLT HARDWARE SECURING DISTORTED METAL SHARD REMNANTS.

Under closer examinations of the submitted artifacts, it was discovered that a fabric remnant was lodged within the folds of the distorted metal shards attached to 'Artifact B'. Picture 2 below (an opposing view of 'Artifact B' – as shown in Picture 1, Page 6-1), depicts this lodged fabric remnant.

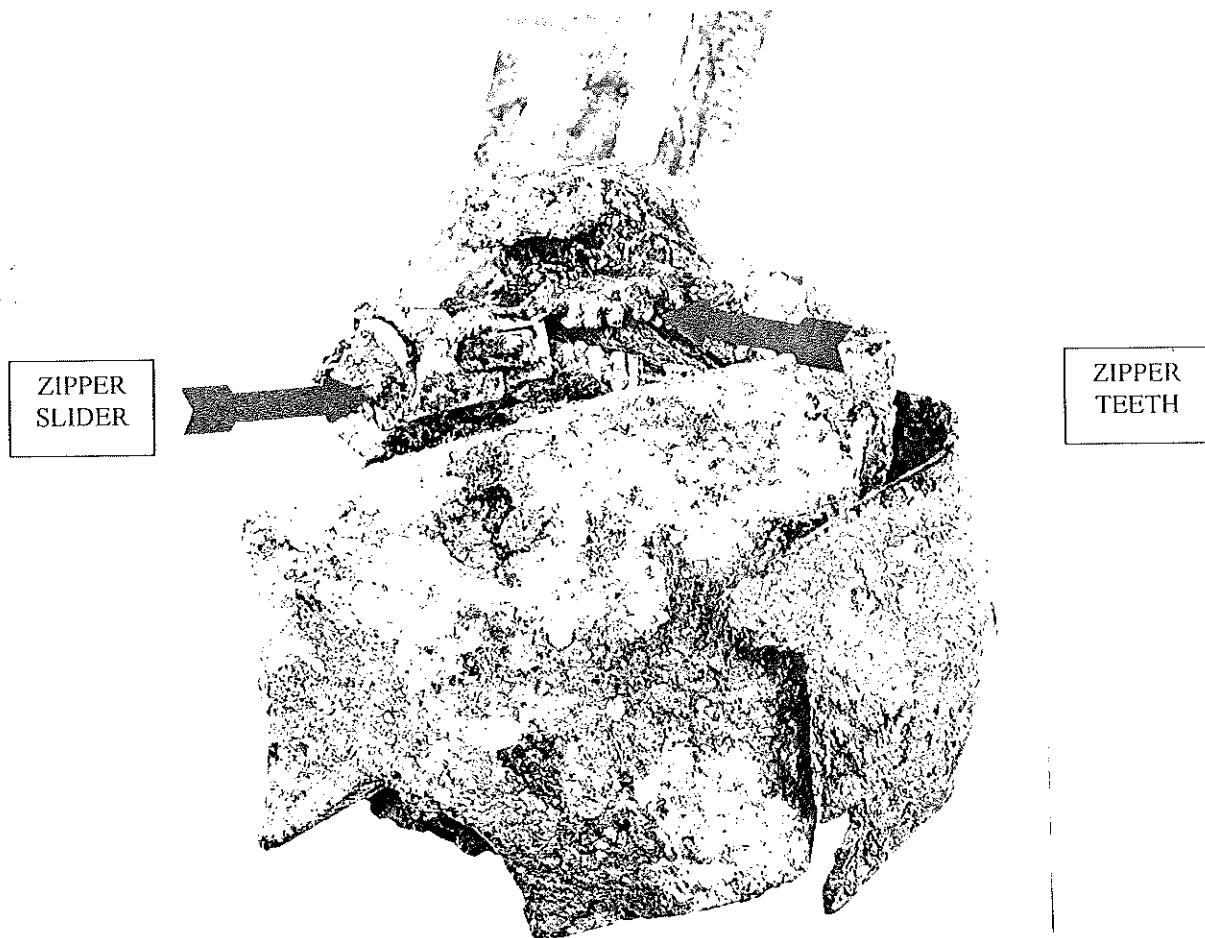
FABRIC
REMNANT
LODGED
WITHIN FOLDS
OF METAL
SHARDS



PICTURE 2. A VIEW OF 'ARTIFACT B' DEPICTING A FABRIC REMNANT LODGED WITHIN THE FOLDS OF THE DISTORTED METAL SHARD REMNANTS.

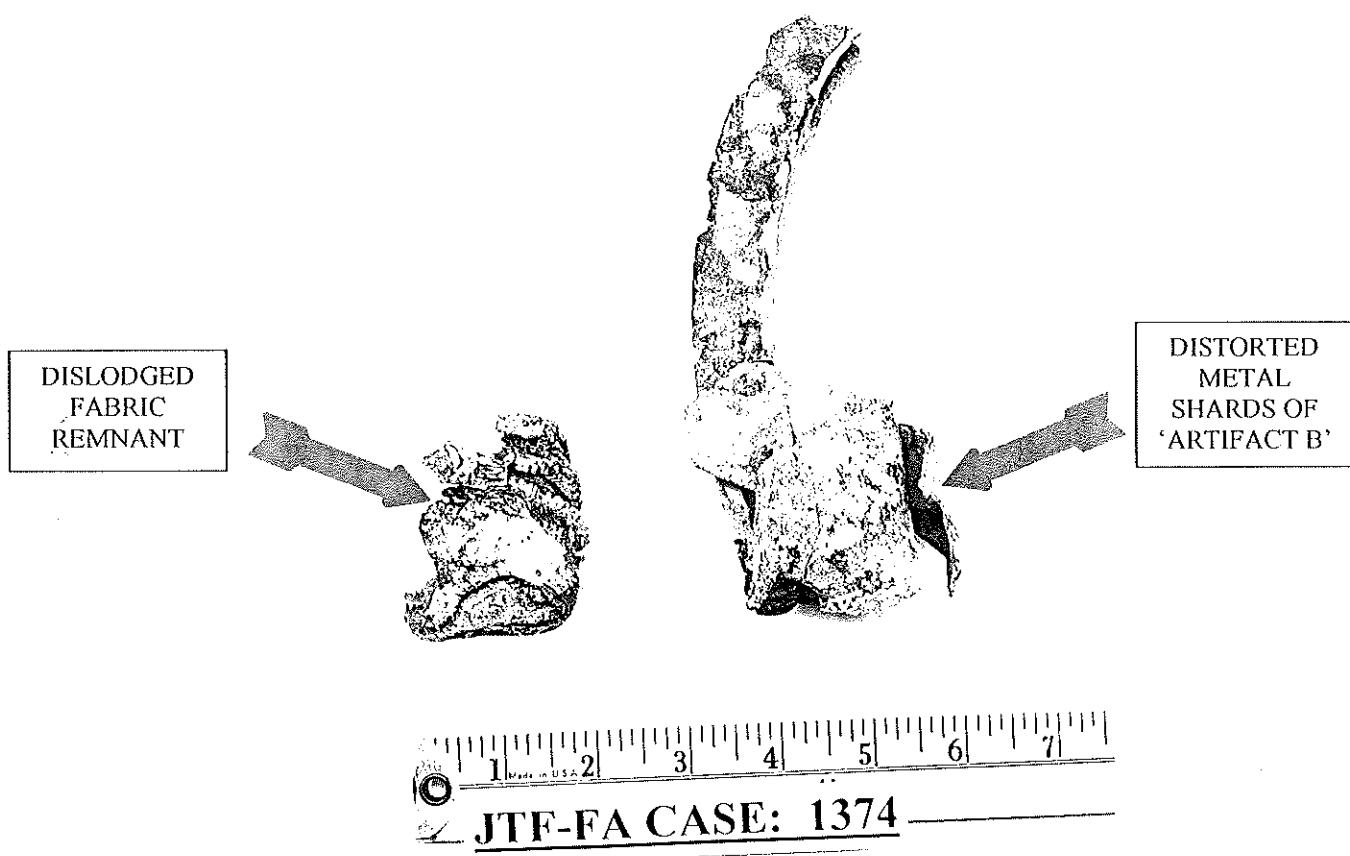
During a systematic examination of this piece of fabric (still retained within the confines of the distorted metal shards), it was discovered that remnants of zipper teeth, and a zipper slider were present.

Picture 3 below, is a close-up view of the lower section of 'Artifact B' (refer to Picture 2, Page 6-2) depicting the fabric remnant lodged within the confines of the distorted metal shards. Highlighted in this picture, are the aforementioned zipper teeth, and zipper slider remnants.



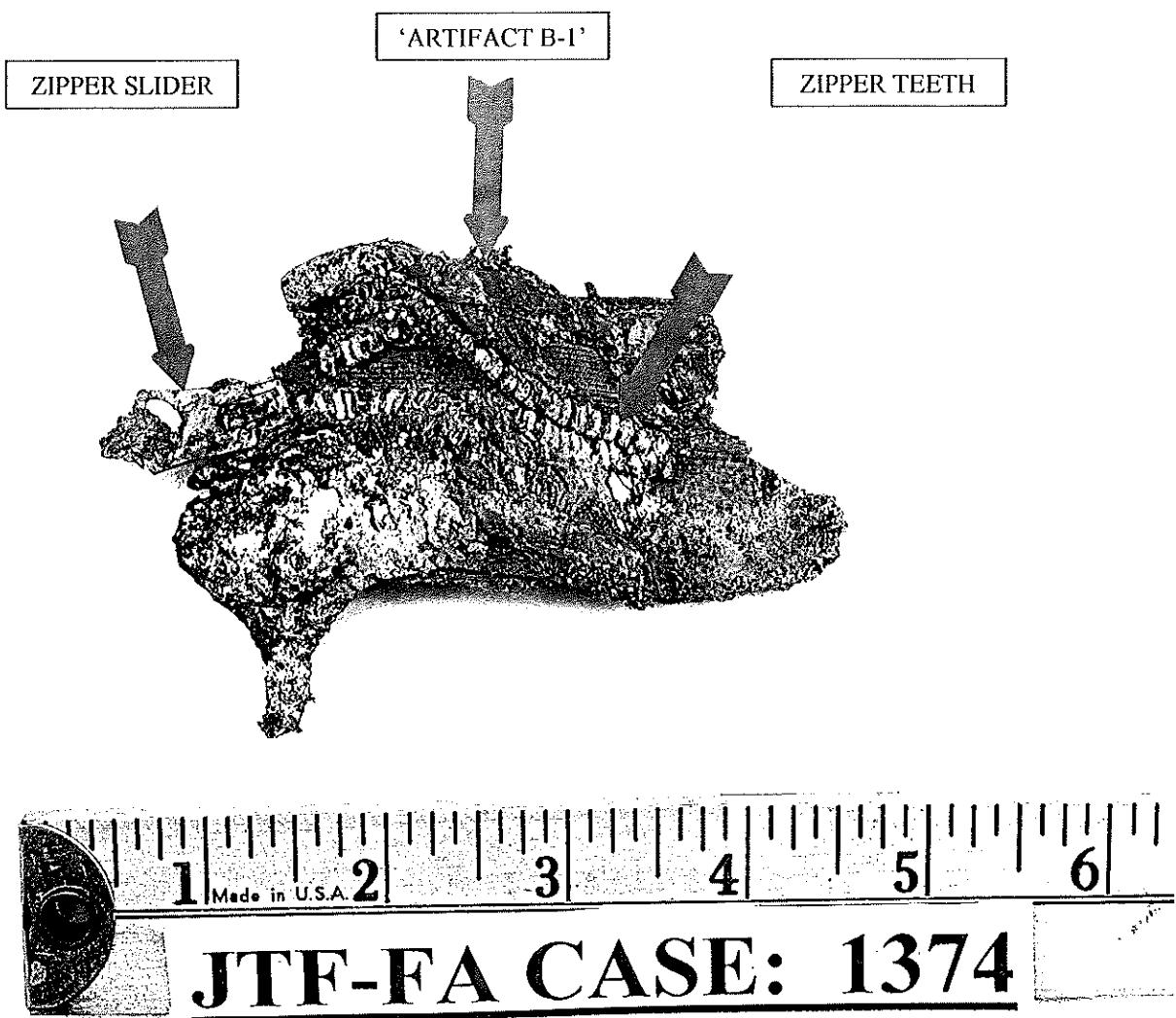
PICTURE 3. A CLOSE-UP VIEW OF 'ARTIFACT B' HIGHLIGHTING THE
PRESENCE OF ZIPPER TEETH AND A ZIPPER SLIDER
ON THE FABRIC REMNANT.

The fabric remnant was carefully dislodged from 'Artifact B' and is displayed in this picture – directly adjacent to the area where it had been lodged between the distorted metal shards.



PICTURE 4. THE REMOVED FABRIC REMNANT DISPLAYED NEXT TO
'ARTIFACT B'.

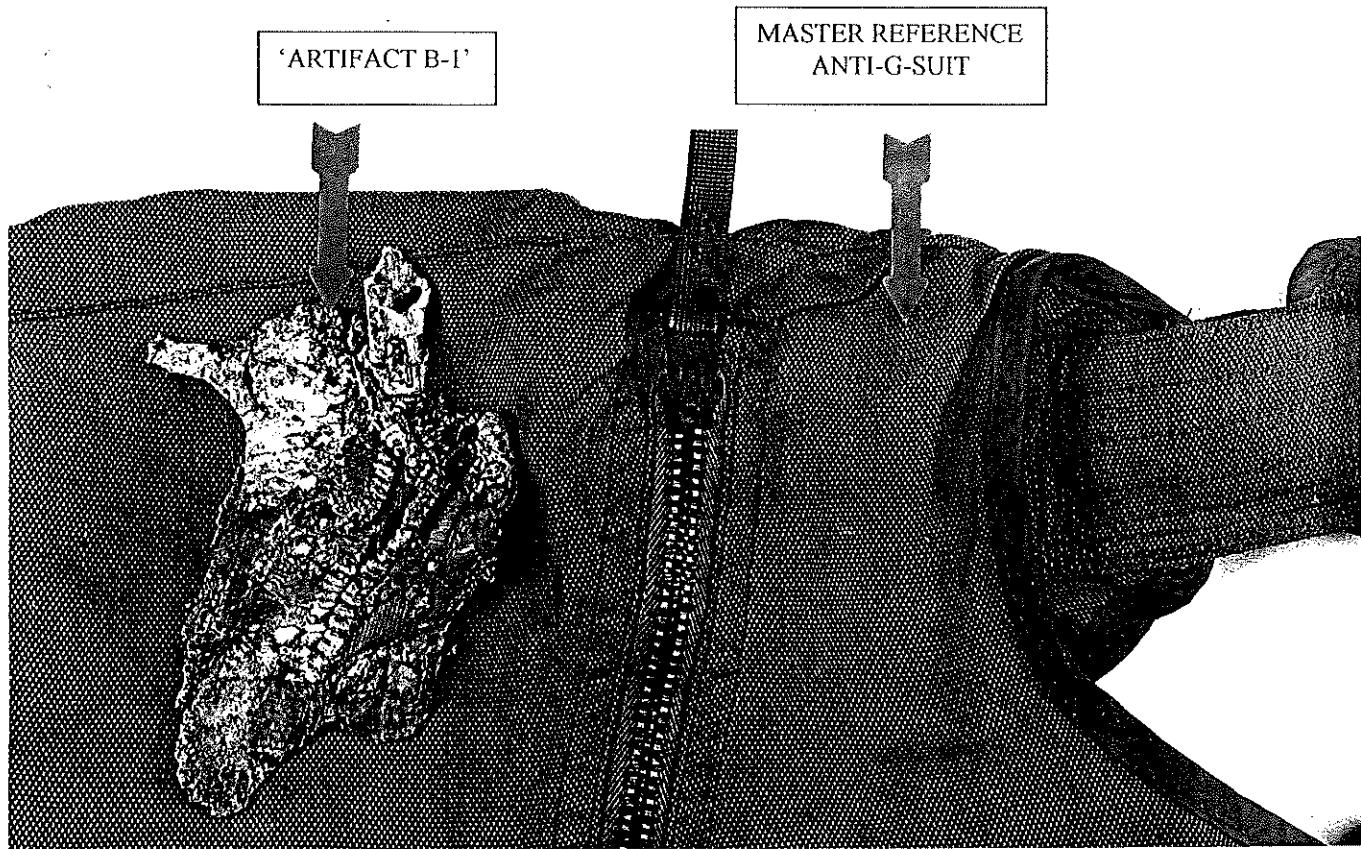
Picture 5 below, is a close-up view of the fabric remnant (identified as 'Artifact B-1') that was removed from within the folds of the metal shards attached to 'Artifact B'. In this picture, 'Artifact B-1' is unfolded and displayed in its full flattened shape (as opposed to the folded shape displayed in Picture 4, Page 6-4 – as it was removed from 'Artifact B'). Highlighted (with red arrows) is the zipper slider, and zipper teeth discussed earlier.



PICTURE 5. A CLOSE-UP VIEW OF THE FABRIC REMNANT ('ARTIFACT B-1') THAT WAS REMOVED FROM 'ARTIFACT B'.

A comparative analysis was conducted on 'Artifact B-1' to ascertain its true origin. At the start of this analysis, known life sciences equipment – such as time period flight suits, anti-g suits, survival vests, etc. – were selected for review. The findings of this study, revealed that the fabric materials of 'Artifact B-1' (including the compositional make-up of the zipper remnants) matched that of materials used in the construction of a Military Specification MIL-25892, Anti-G Garment, Cutaway, Type CSU-3/P (hereafter referred to as the "Anti-G Suit"). This finding, provided conclusive evidence that during the massive, and total structural destruction, of the ejection seat, a crewmember wearing this style anti-g suit was seated in the ejection seat.

In Picture 6 below, 'Artifact B-1' is positioned adjacent to the zippered pocket on the lower right leg segment of the Master Reference Anti-G Suit that was discussed in detail in Section 2 (Anti-G-Garment, Cutaway, Type CSU-3/P) of this report.



PICTURE 6. A VIEW OF 'ARTIFACT B-1' POSITIONED NEAR AN AREA OF ORIGIN ON THE LOWER RIGHT LEG SEGMENT OF A MASTER REFERENCE ANTI-G SUIT.

The final assessment of the submitted artifacts, established that their original area of origin can be traced to components used in the construction of an Ejection Seat manufactured by the North American Aviation Company. In particular, both artifacts match the physical shape, profile, and material composition of a 'Guard, Pilot's Ejection Seat Handle' used on F-100 series aircraft flown by the U.S. Air Force.

Illustration 1 below, is a schematic of the 'Pilot's Forward (and Aft) Ejection Seat Leg Guard Assembly'. Index item numbers 33 (Part Number 7037363-01 – right-hand) and 7037363-02 (left-hand)) portrays the 'Guard, Pilot's Ejection Seat Handle', which matches the artifacts sent in for analysis.

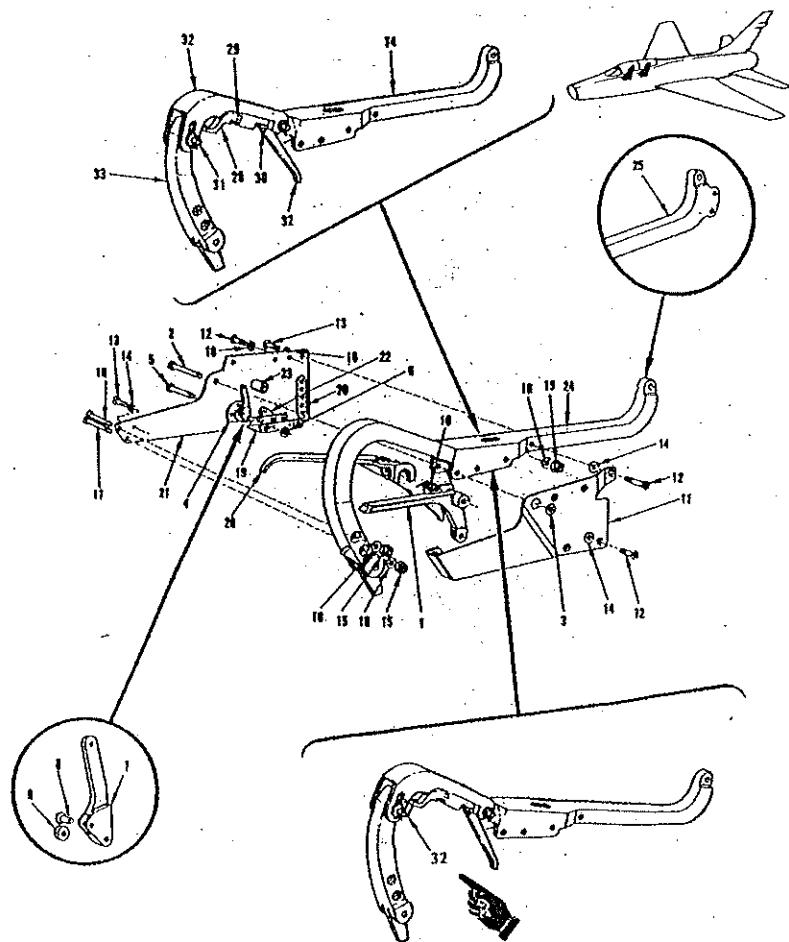
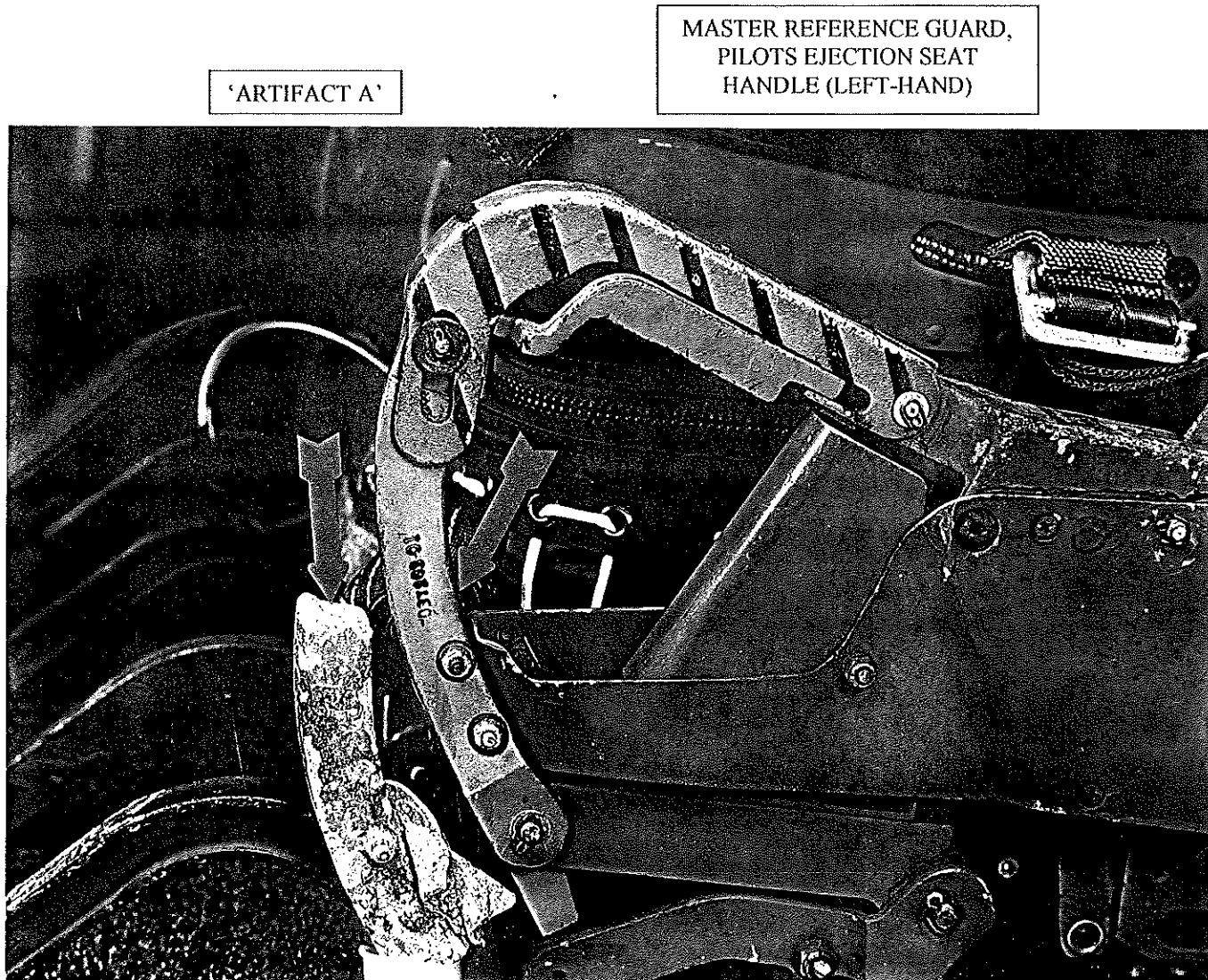


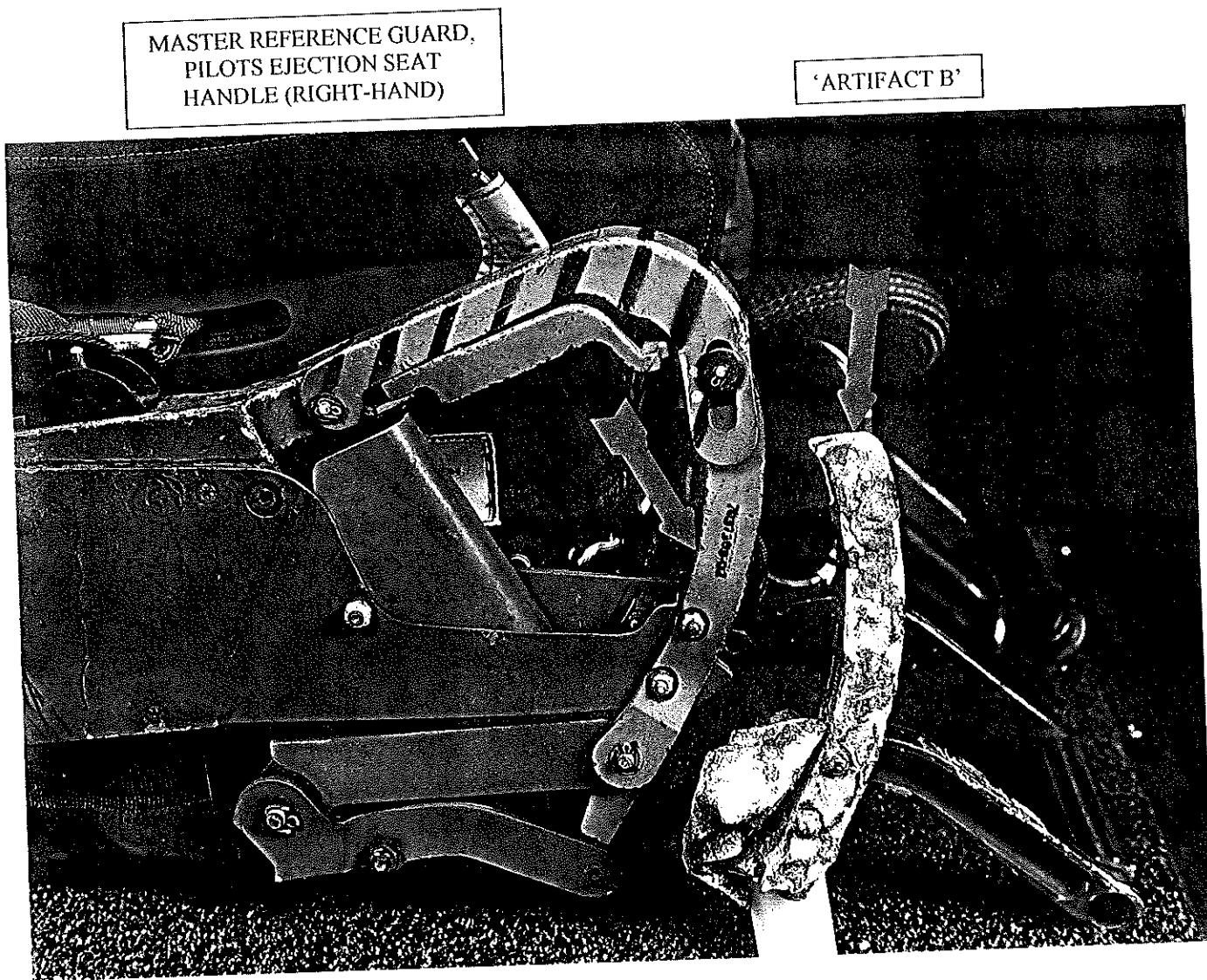
ILLUSTRATION 1. A DRAWING OF THE F-100 AIRCRAFT SERIES PILOT'S FORWARD (AND AFT) EJECTION SEAT LEG GUARD ASSEMBLY.
(SOURCE: TECHNICAL ORDER T.O. 1F-100F(I)-4, ILLUSTRATED PARTS BREAKDOWN, AIRCRAFT AND EJECTION SYSTEMS, DATED CIRCA 1968.)

In Picture 7 below, 'Artifact A' is positioned adjacent to a Master Reference Guard, Pilot's Ejection Seat Handle (Part Number 7037363-02 – left-hand), which is affixed to the forward section of an F-100 aircraft series Ejection Seat (manufactured by North American Aviation Company).



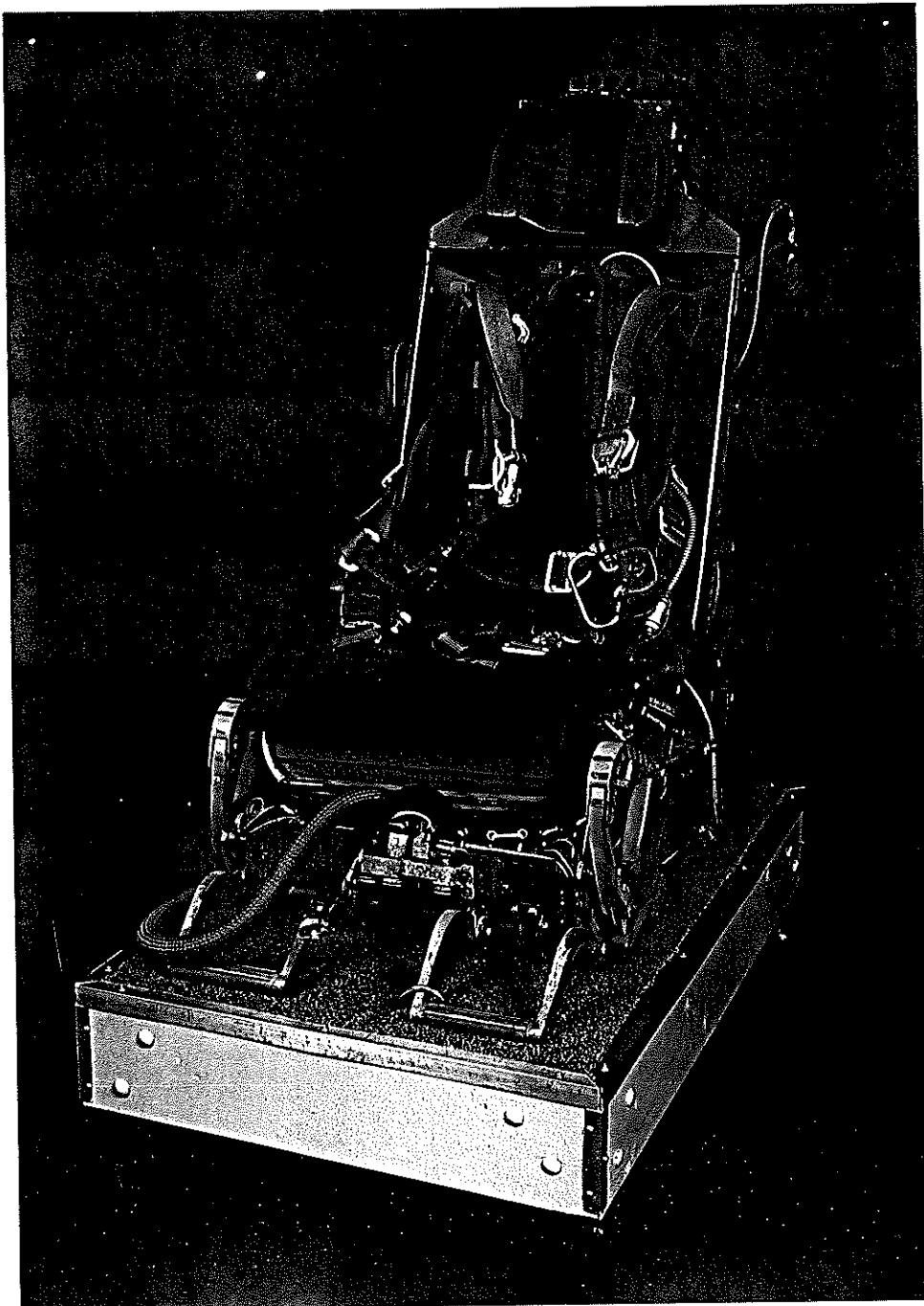
PICTURE 7. A VIEW OF 'ARTIFACT A' POSITIONED ADJACENT TO A MASTER
REFERENCE GUARD, PILOT'S EJECTION SEAT HANDLE
(PART NUMBER 7037363-02 – LEFT-HAND).

In Picture 8 below, 'Artifact B' is positioned adjacent to a Master Reference Guard, Pilot's Ejection Seat Handle (Part Number 7037363-01 – right-hand), which is affixed to the forward section of an F-100 aircraft series Ejection Seat (manufactured by North American Aviation Company).



PICTURE 8. A VIEW OF 'ARTIFACT B' POSITIONED ADJACENT TO A MASTER
REFERENCE GUARD, PILOT'S EJECTION SEAT HANDLE
(PART NUMBER 7037363-01 – RIGHT-HAND).

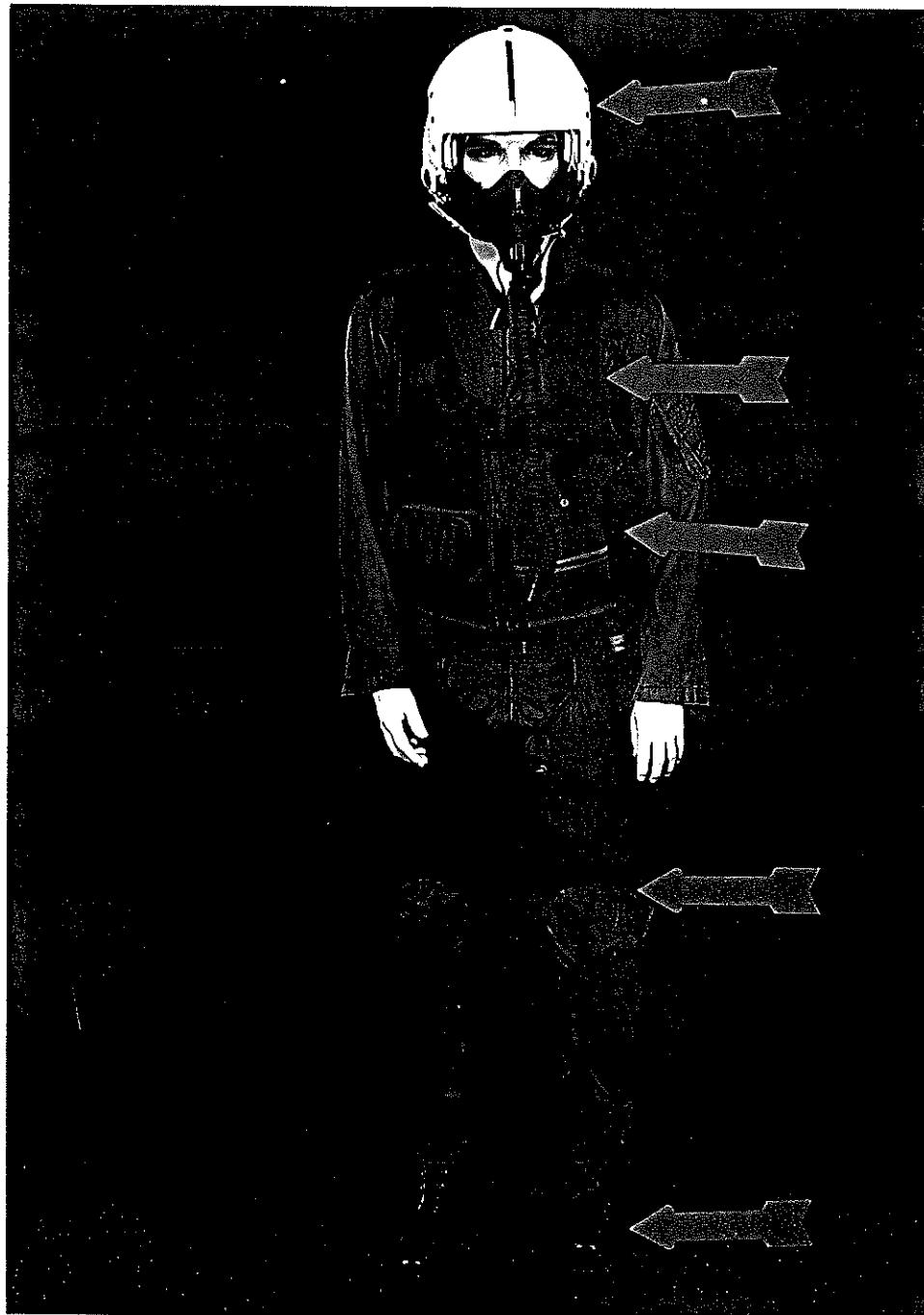
Picture 9 below, is an overall view of the Master Reference F-100 Aircraft Series Ejection Seat used in this section.



PICTURE 9. AN OVERALL VIEW OF THE MASTER REFERENCE F-100 AIRCRAFT SERIS EJECTION SEAT USED IN THE ANALYSIS OF THIS REPORT.

**THE SYSTEM LOCATION OF IDENTIFIED ARTIFACTS
ENCOMPASSED WITHIN THIS REPORT**

If the various artifacts reported upon within this report are positional located onto their respective host structures, an overall pattern forms of their total system encompassment. The report reviewer should also recognize that many critical evidence areas were not recovered or analyzed, due to many complex reasons. First, most of the important life sciences equipment, like aircraft seats or related components, could potentially be removed from the site for salvage value purposes. Other more flammable or weaker fabric structures like early cotton flight suit types or wool socks are easily consumed by fire, or can environmentally disintegrate over many years. Still other artifacts, which are more interesting in meaning or profile, like an aircrew helmet, personal weapons, or survival aids like radios, are frequently removed for their souvenir value. These factors are not just regional problems isolated to the locale of this crash site, but instead are typical of just about any aircraft loss site in the South East Asia region. This critical limiting factor has been experienced by field investigators all over the world, but is definitely more prevalent in third world nations. However, the recovered artifact/equipment parts do create a specific host structure pattern that correlates to the study results obtained from the artifacts submitted in support of REFNO Case 1374. The photographs that follow depict the typical flight equipment patterns as disclosed by the artifacts.



HELMET AND
OXYGEN MASK

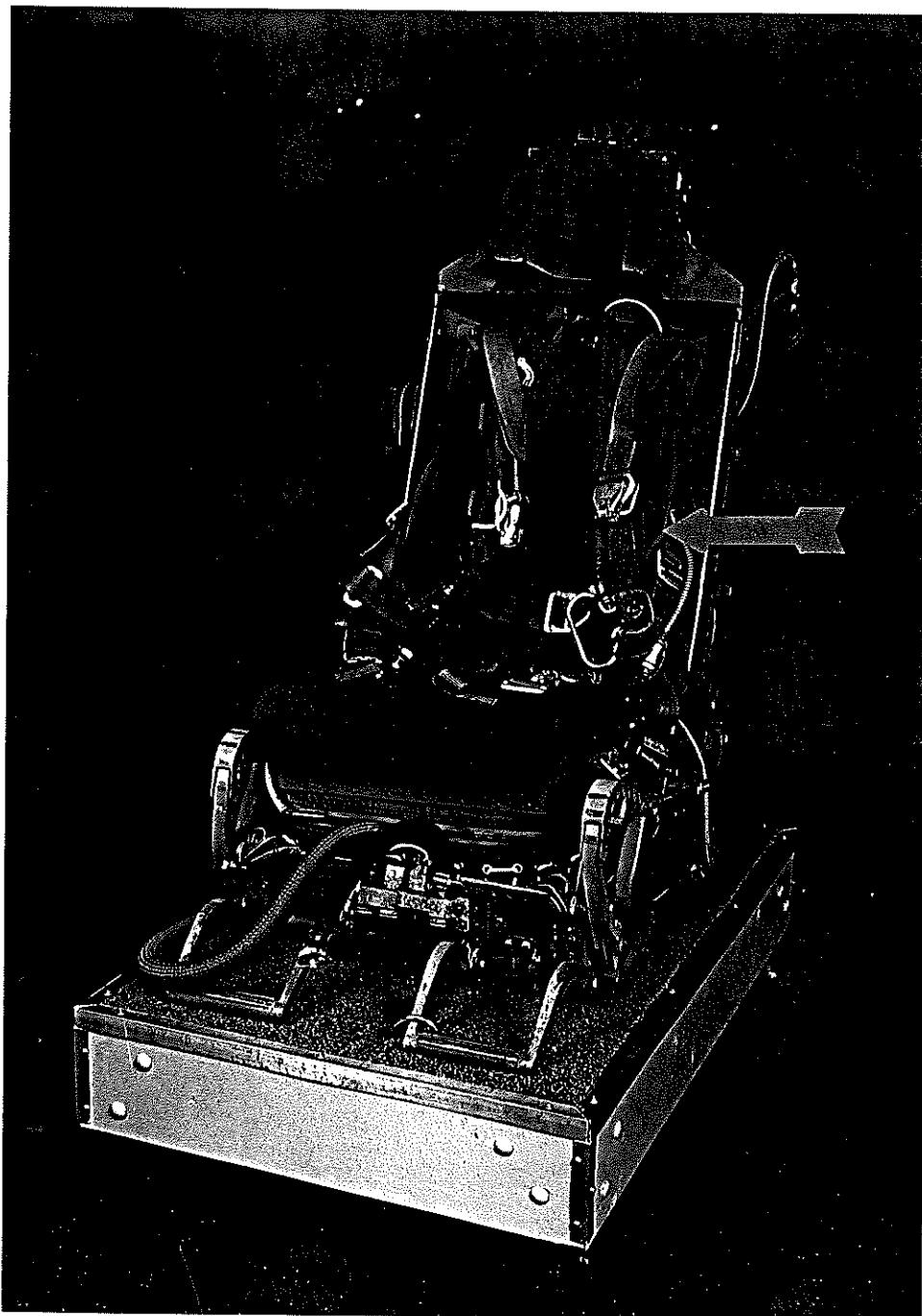
SURVIVAL
VEST

REVOLVER

ANTI-G
SUIT

FLIGHT
BOOTS

PICTURE 1. A TYPICAL U.S. AIR FORCE F-100 AIRCREW FLYING ENSEMBLE
FROM THE SOUTHEAST ASIA CONFLICT TIME PERIOD.



PARACHUTE
ASSEMBLY

PICTURE 2. A TYPICAL U.S. AIR FORCE F-100 AIRCRAFT EJECTION SEAT
USED DURING THE SOUTHEAST ASIA CONFLICT TIME PERIOD.

CONCLUSIONS

Prior to examining the Conclusions contained within this report, it is considered important that any reviewer understand what they are based upon, and who was involved in their formulation. Over the past fifty years, very significant advancements have been made in aviation, with much of this technology focusing around demands for higher airspeed and greater maneuverability. However, with such advancements and an accompanying increase in transposed energy levels, came the ability for the flight regime to exceed human physiological capabilities, especially in military aviation. In consequence, with the higher onset of G-force rates, force levels could be attained, which would render a crewmember unconscious, or even, prevent such personnel from physically accomplishing some aircraft escape action. Likewise, from electronic technology came levels of data input being presented to a crewmember that could involve problems in mental task saturation, from being unable to process it quickly enough. These forms of problem essentially centered around the man-machine interface, and when suspected of being involved in the loss of an aircraft, were frequently described as the **Human Factor**. (While various definitions exist, human factors or ergonomics may be defined as the technology concerned to optimize the relationships between people and their activities by the systematic application of the human sciences, integrated within the framework of system engineering.) Accordingly in such mishap situations, which were often accompanied by high levels of prevailing energy, (and sometimes further complicated by the explosion of aircraft borne military ordnance), this could result in very significant levels of destruction for both the aircraft and personnel within. It therefore became increasingly difficult for investigators to identify often-subtle causes for aircraft losses, and to also provide accurate information about the presence or whereabouts of any involved personnel.

For more than a fifteen years the Life Sciences Equipment Laboratory, now formally part of the Human Systems Program Office, has developed some of the internationally recognized procedures and forms of training for specialists involved in such complex mishap investigations. Consequently, the Conclusions reached within this report are based not only upon the scientific evaluation of submitted artifacts attributed to REFNO Case 1374, but are also based upon a culmination of the experience gained

from the results of conducting hundreds of aircraft mishap investigations. Similarly, any determinations reached about crew survival, conform to the same standards as those applied in determining the survival status of any personnel involved in current day aircraft losses, where again only minimal site evidence might be recovered.

The actual analysis of life sciences equipment artifacts from REFNO Case 1374 was primarily accomplished by personnel assigned to the Life Sciences Equipment Laboratory (LSEL), its adjunct Life Sciences Artifact Section (LSAS) and other scientific personnel from peripheral support laboratories. To ensure that an objective analysis of all case artifacts is reached, upon receipt they are initially assigned to a primary LSAS staff analyst, who is then responsible for the continuous tracking of studies completed upon them, as well as the final coordination of all their study inputs. In consequence, each case is investigated by a group of specialists, rather than by any one individual. This group possesses expertise in numerous scientific disciplines and equipment fields, which in most instances can counter peculiar investigative problems. Within this context, it must be appreciated that some aircraft series used in Southeast Asia were often flown by different services, such as the F-4 by the USN/USMC/USAF; the OV-10 by the USAF/USN; and the UH-1 helicopter by all of the major services, making many items like fixed or ejection seats basically compatible across the board; while smaller items like a USAF survival radio, might be acquired for use in the field by US Army personnel, in preference to their more bulky US Army issued equipment! Thus, by having artifacts examined by a group of investigators with different background specialization, such anomalies can normally be resolved, or more serious inconsistencies, such as those involved with artifacts/equipment emanating from some site supporting the wrong systems, aircraft, or service, can also be identified. (Currently the LSEL/LSAS is staffed by personnel who accumulatively have over three hundred (300) years of previous military service, aircraft mishap investigation, and systems experience, in the life sciences equipment types now being investigated as artifacts, that were previously used by all of the major American Military Services engaged in the Southeast Asia conflict period; and some hold Southeast Asia veteran status.) Therefore, the final **Conclusions** provided below are based upon: the amalgamated findings of all evidence contained within this report; the result of all examinations and scientific studies conducted upon the artifacts; and is a consenstaneous

outcome, based upon the regular review of all artifact evidence being compiled in REFNO Case 1374 by its investigative team, the primary members of which have signed this report.

1. Scientific evaluation of all artifacts submitted substantiated that they were of equipment types synonymous with items originating from a military aircraft crash site, and no indications were found of any attempt to tamper with or alter the artifact evidence.
2. While the evidence derived from the life sciences equipment artifacts submitted for study could not specifically confirm the loss of a U.S. Air Force F-100D type aircraft, they are representative of types used by U.S. Air Force tactical/fighter aircrew members (including that of F-100 series type aircraft). Similarly, the equipment types conformed to the time frame circa 1969, that REFNO Case 1374 occurred.
3. The artifact fragments specifically selected for detailed study were all articles of personnel flight apparel and survival equipment or parachute components that is worn by, or attached to, the crewmember. Furthermore, no evidence was found to indicate that any of these artifacts were removed from the crewmember in a normal manner following some escape action. Instead, the observed levels of artifact fragmentation - and their overall condition, all supported that the artifacts had been donned and were within the aircraft during its crash impact into the terrain.
4. Various artifact fragments bore clear evidence of sustaining intense dynamic energy loading, followed by long-term environmental exposure. This evidence is consistent with severe aircraft crash impact forces, and prolonged exposure to the environment. Accordingly, the level of force sustained by the artifacts were also evaluated and determined to be of a non-survivable nature, which would have culminated in the immediate demise of the aircraft occupants who are evidenced as having been associated with the submitted artifacts.

REPORT RELEASED BY:

ON: 21 DECEMBER 2001

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APPENDIX A

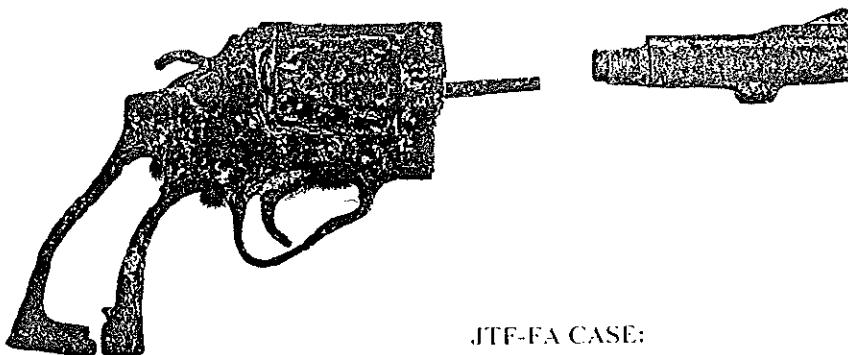
ARTIFACT CONDITION UPON RECEIPT AND PRIOR TO LABORATORY ANALYSIS

JTF-FA CASE: 1374

The photographs incorporated within this section were taken prior to any laboratory analysis being performed. The Artifact Bag designators, such as 'Artifact Bag: Number - 3A', and/or 'Artifact Bag: Number - 6D' etc., were established during custodial acceptance of the artifacts by the Life Sciences Equipment Laboratory analyst assigned to the case. The artifacts, as received from JTF-FA, were stowed in nine (9) separate plastic bags and contained no excavation grid locations identifiers or other significant markings that could be utilized as a custodial reference data foundation. Hence, the establishments of alpha-numerical identifiers for each artifact bag.

JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 1

Item	Fragment Quantity
.38 Caliber Special Revolver Frame and Cylinder	1
.38 Caliber Special Revolver Barrel	1



JTF-FA CASE:
1374

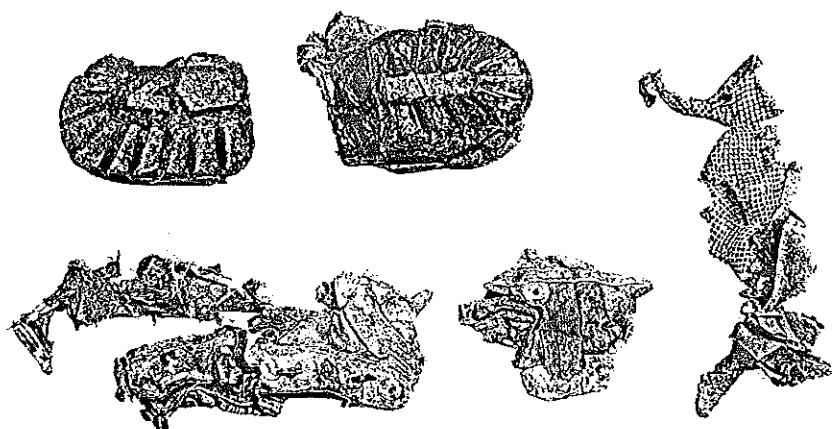
ARTIFACT BAG:
NUMBER - 1



PICTURE 1. ARTIFACT BAG: NUMBER 1.

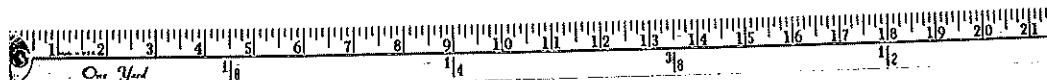
JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 2

Item	Fragment Quantity
Flight Boot Sole	1
Flight Boot Heel	1
Leather from Side of Flight Boot	1
Nylon Fabric with Grommet	1
Mesh Fabric from Survival Vest	1
Leather Remnants	2



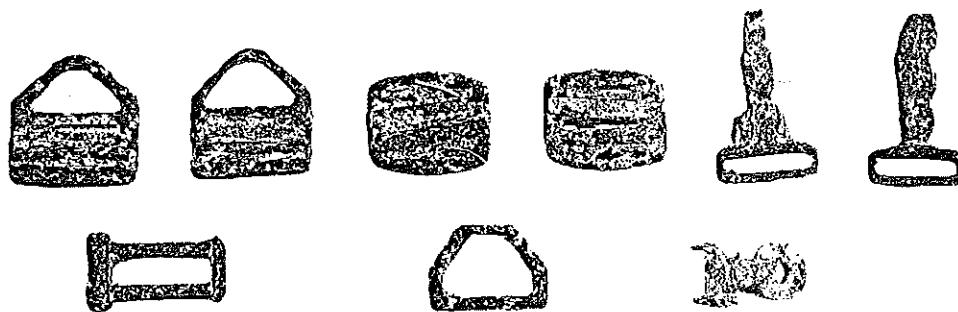
JTF-FA CASE:
1374

ARTIFACT BAG:
NUMBER - 2



PICTURE 2. ARTIFACT BAG: NUMBER 2.

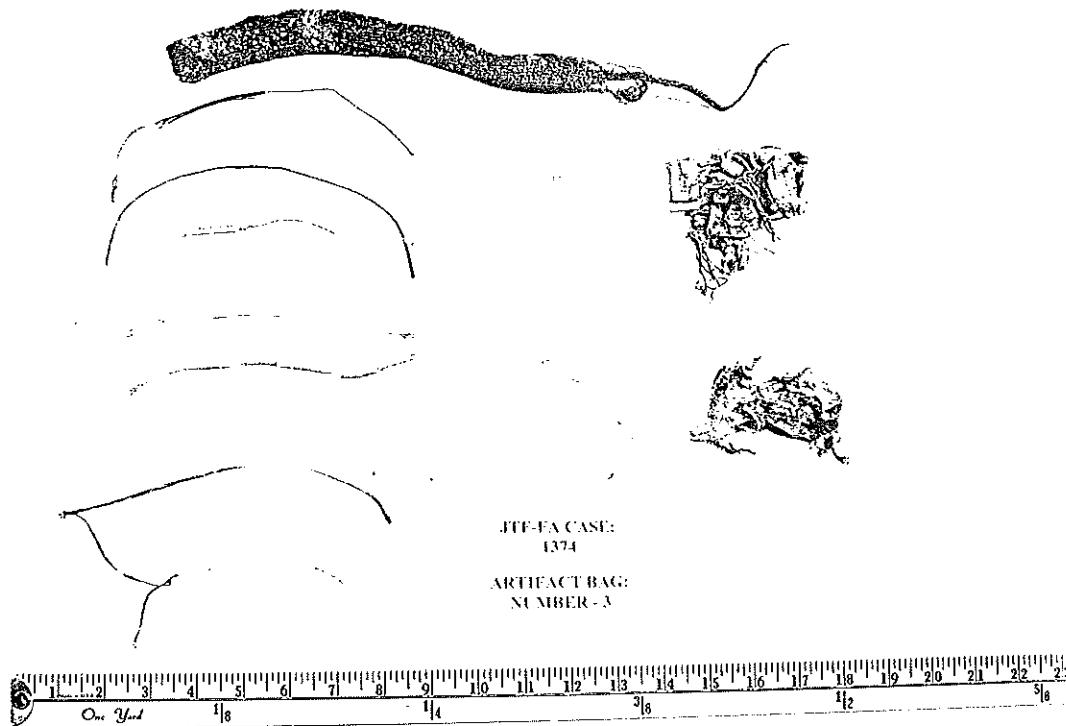
JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 2A	
Item	Fragment Quantity
Parachute Harness V-Ring Adjusters	2
Parachute Harness Adapters	2
Parachute Harness Ejector Snaps	2
Parachute Harness Connector Link	1
Parachute Harness Accessory Link	1
Sighting Element from Lensatic Compass	1

JTF-FA CASE:
1374ARTIFACT BAG:
NUMBER - 2A

PICTURE 3. ARTIFACT BAG: NUMBER 2A.

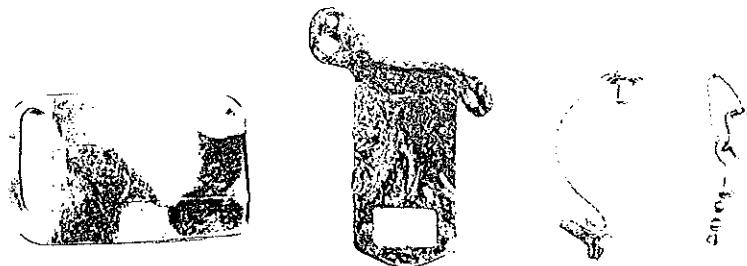
JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 3

Item	Fragment Quantity
Tubular Metallic Mesh Material	1
Electric Wire Remnants	9
Electrical Circuit Board Remnant	1
Blue Plastic Remnant	1



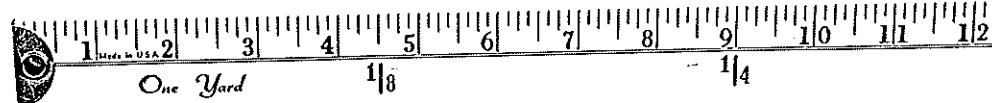
PICTURE 4. ARTIFACT BAG: NUMBER 3.

JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 3A	
Item	Fragment Quantity
3 x 2 Inch Piece of Stainless Steel	1
Engine Stand-off Bracket	1
Metal Screws Secured with Safety Wire Remnant	1
Safety Pin and Ball Chain Remnant	1



JTF-FA CASE:
1374

ARTIFACT BAG:
NUMBER - 3A



PICTURE 5. ARTIFACT BAG: NUMBER 3A.

JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 3B	
Item	Fragment Quantity
5 1/2 Inch Webbing Remnant	1
Fiber Glass Remnant	1
End Cap with Alpha/Numerical Data	1
Shielded Thermal Coupling Remnant with Alpha/Numeric Data	1
1 1/4 x 1 1/4 Inch Metal Remnant	1
Light Weight Aluminum Remnant with Alpha/Numeric Data	1



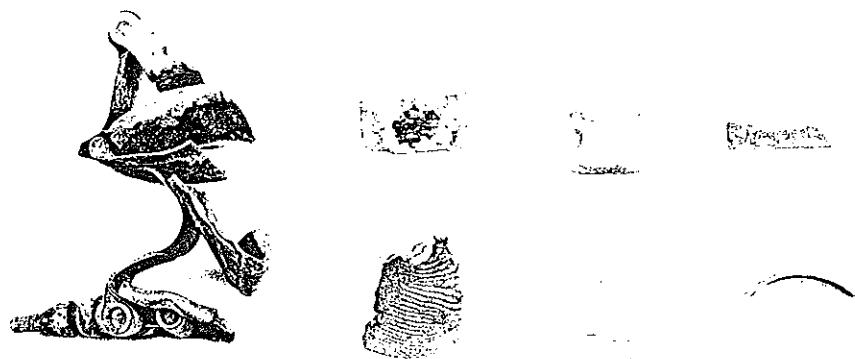
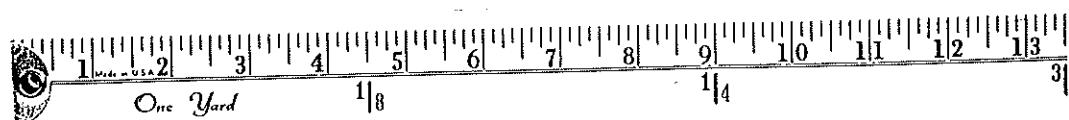
JTF-FA CASE:
1374

ARTIFACT BAG:
NUMBER - 3B



PICTURE 6. ARTIFACT BAG: NUMBER 3B.

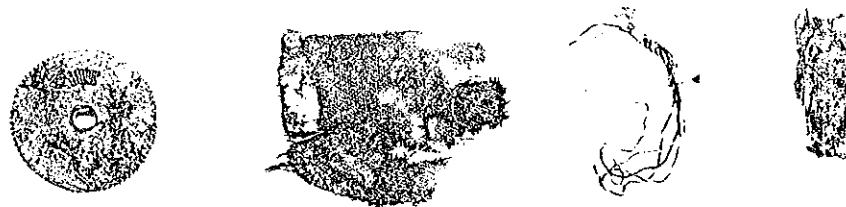
JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 3C	
Item	Fragment Quantity
Turnbuckle Clamp Device	1
1 1/2 x 3/4 Inch Metal Remnant	1
1 x 3/4 Inch Metal Remnant	1
1 x 1/4 Inch Fiberglass Remnant	1
1 x 1 1/2 Inch Webbing Remnant	1
1 x 3/4 Inch Metal Remnant	1
Blue Rubber Remnant	1

JTF-FA CASE:
1374ARTIFACT BAG:
NUMBER - 3C

PICTURE 7. ARTIFACT BAG: NUMBER 3C.

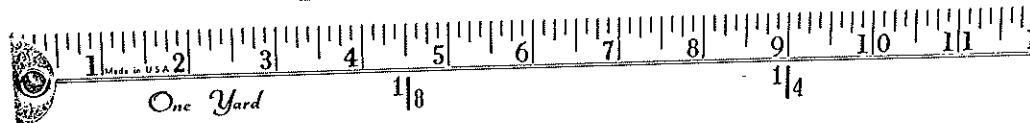
JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 3D

Item	Fragment Quantity
1 1/2 Diameter Metal Gear with Imbedded Springs	1
2 x 2 3/4 Inch Fabric Remnant	1
Wire Bundle	1
1 1/4 x 1/4 Red Rubber Remnant	1



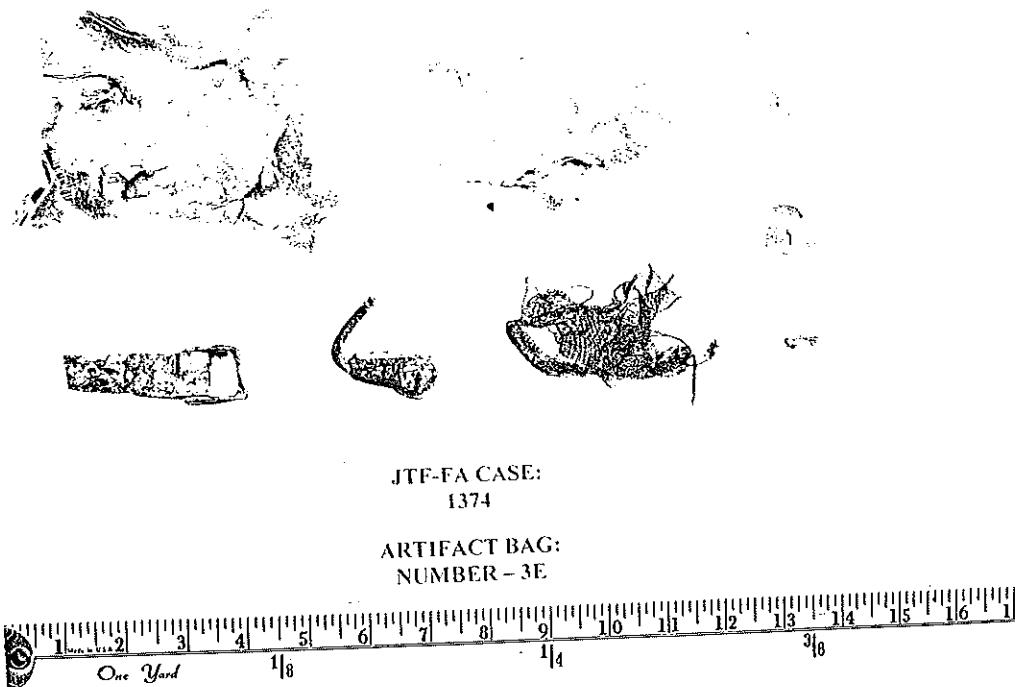
JTF-FA CASE:
1374

ARTIFACT BAG:
NUMBER - 3D



PICTURE 8. ARTIFACT BAG: NUMBER 3D.

JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 3E	
Item	Fragment Quantity
Fiberglass Fabric Material	5
Metal Tie Down Coupling	1
Strut Linkage with Alpha/Numeric Data	1
Metallic Mesh Remnant	1



PICTURE 9. ARTIFACT BAG: NUMBER 3E.

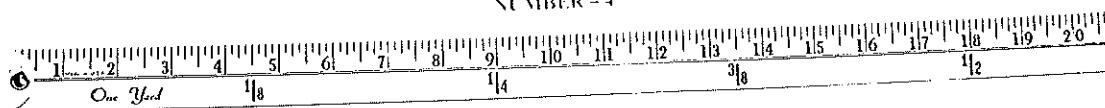
JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 4

Item	Fragment Quantity
Lap Belt Webbing Remnants	2
Possible Parachute Lowering Device	1
Pocket Remnant	
6 Inch Webbing Remnant with Box-X Stitch Pattern	1
10 Inch Webbing Remnant	1
Possible Parachute Container	1
Webbing Remnant	
Interdictor Lever	1



JTF-FA CASE:
1374

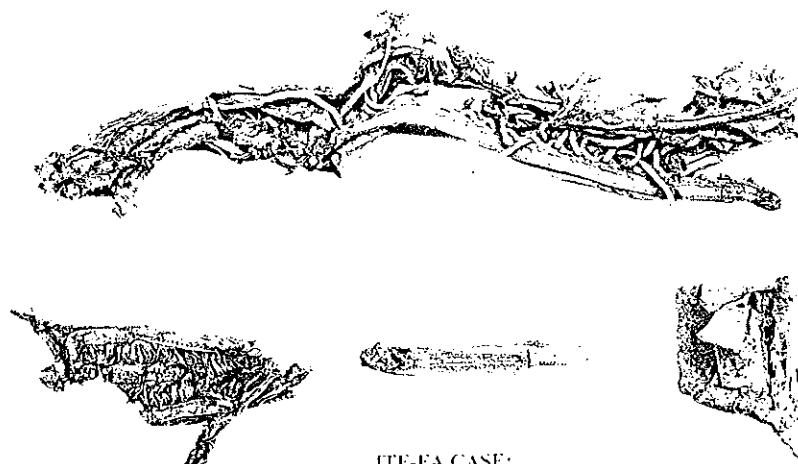
ARTIFACT BAG:
NUMBER - 4



PICTURE 10. ARTIFACT BAG: NUMBER 4.

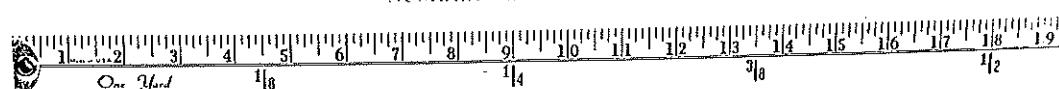
JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 4A

Item	Fragment Quantity
Possible Anti-G Suit Remnants	2
4 Inch Webbing Remnant with Tight W-W Stitch Pattern	1
Metal Remnant	1



JTF-FA CASE:
1374

ARTIFACT BAG:
NUMBER - 4A



PICTURE 11. ARTIFACT BAG: NUMBER 4A.

JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 5	
Item	Fragment Quantity
Metal Remnants	6
Hard Rubber Hose with Fabric Sleeve	1
Metal Remnants	3
5 Inch Plastic Remnant	1
Red Rubber Remnant	2
Fiberglass Remnant	1
Fabric Remnants	7
Miscellaneous Snaps, Springs, Grommets, and Small Artifacts	18



PICTURE 12. ARTIFACT BAG: NUMBER 5.

JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 5A

Item	Fragment Quantity
Metal Shards	15



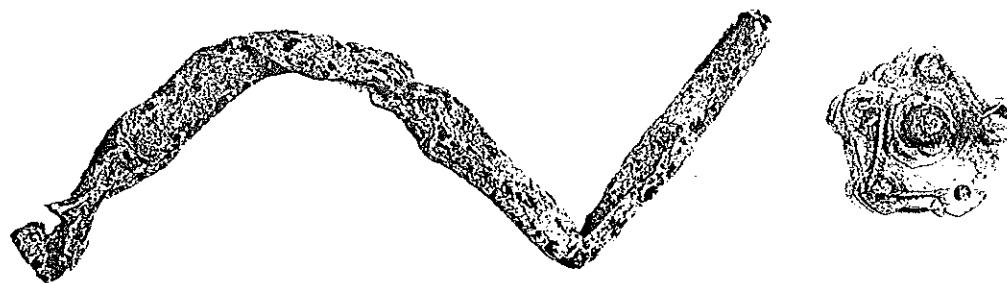
JTF-FA CASE:
1374

ARTIFACT BAG:
NUMBER - 5A



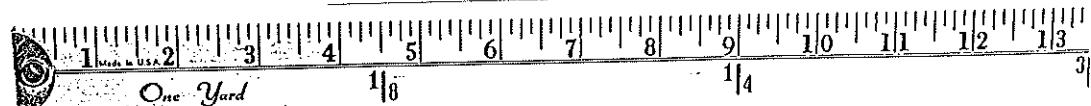
PICTURE 13. ARTIFACT BAG: NUMBER 5A.

JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 6	
Item	Fragment Quantity
10 Inch Metal Tubular Rod	1
Safety Wired Reservoir Cover	1



JTF-FA CASE:
1374

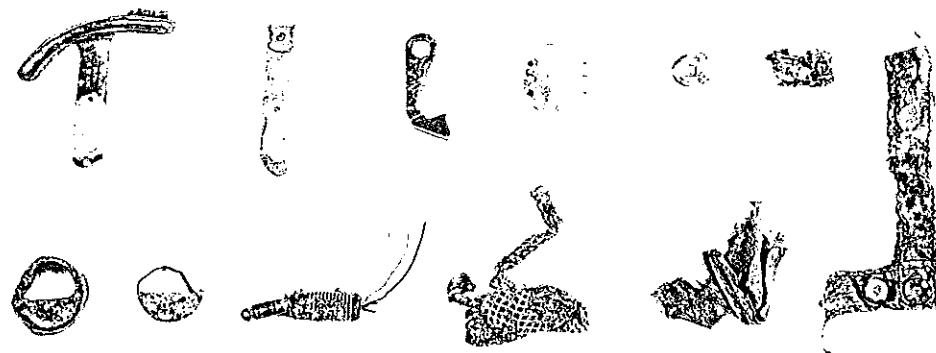
ARTIFACT BAG:
NUMBER - 6



PICTURE 14. ARTIFACT BAG: NUMBER 6.

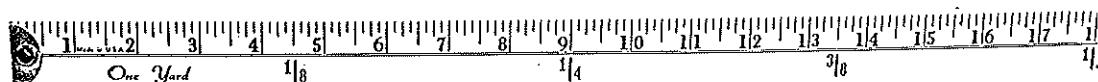
JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 6A

Item	Fragment Quantity
Oxygen Mask Bayonet Fittings	2
Possible Inertia Reel Ratchet Fitting	1
Possible Helmet Fitting	1
Snap	1
Fabric Remnant	1
Oxygen Bottle Gauge Cover	2
Helmet Communication Jack	1
Survival Vest Material	1
Parachute Container Fabric	1
Life Raft Spray Shield Material	1



JTF-FA CASE:
 1374

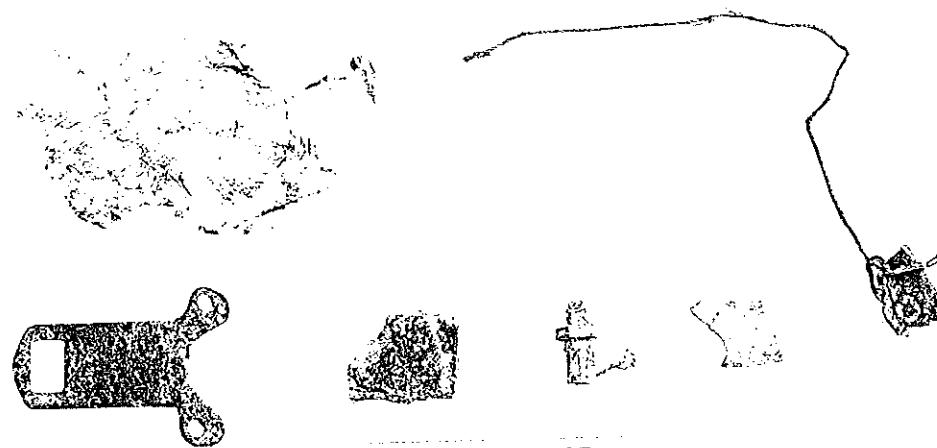
ARTIFACT BAG:
 NUMBER - 6A



PICTURE 15. ARTIFACT BAG: NUMBER 6A.

JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 6B

Item	Fragment Quantity
4 x 3 Inch Fabric Remnant	1
Wire Cable Swaged to Metal Faring	1
Engine Stand-off Bracket	1
1 1/2 x 1 1/2 Reddish Block	1
Fill Valve Assembly	1
1 x 3/4 Inch Metal Remnant	1



JTF-FA CASE:
1374

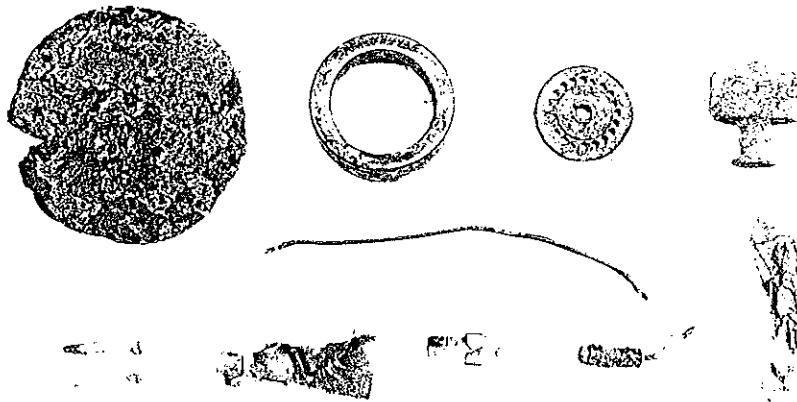
ARTIFACT BAG:
NUMBER - 6B



PICTURE 16. ARTIFACT BAG: NUMBER 6B.

JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 6C

Item	Fragment Quantity
4 Inch Diameter Metal Remnant	1
2 Inch Diameter Bearing Race	1
1 1/2 Inch Diameter Metal Remnant with Perforated Holes	1
Electrical Wire Remnant	1
Metal/Ceramic Stand-off Block	1
Light Weight Metal Clips (One With Fabric Remnant Inserted)	3
Electrical Wire Plug	1
Green Plastic Remnant	1



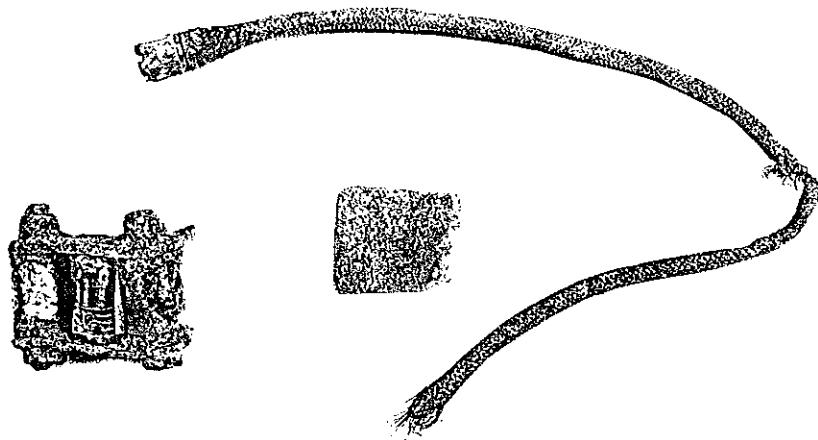
JTF-FA CASE:
 1374

ARTIFACT BAG:
 NUMBER - 6C



PICTURE 17. ARTIFACT BAG: NUMBER 6C.

JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 6D	
Item	Fragment Quantity
Metal Cylinders Secured with Metal Plates	1
1 1/2 x 1 1/2 Inch Fiberglass Remnant	1
18 Inch High Pressure Line	1



JTF-FA CASE:
1374

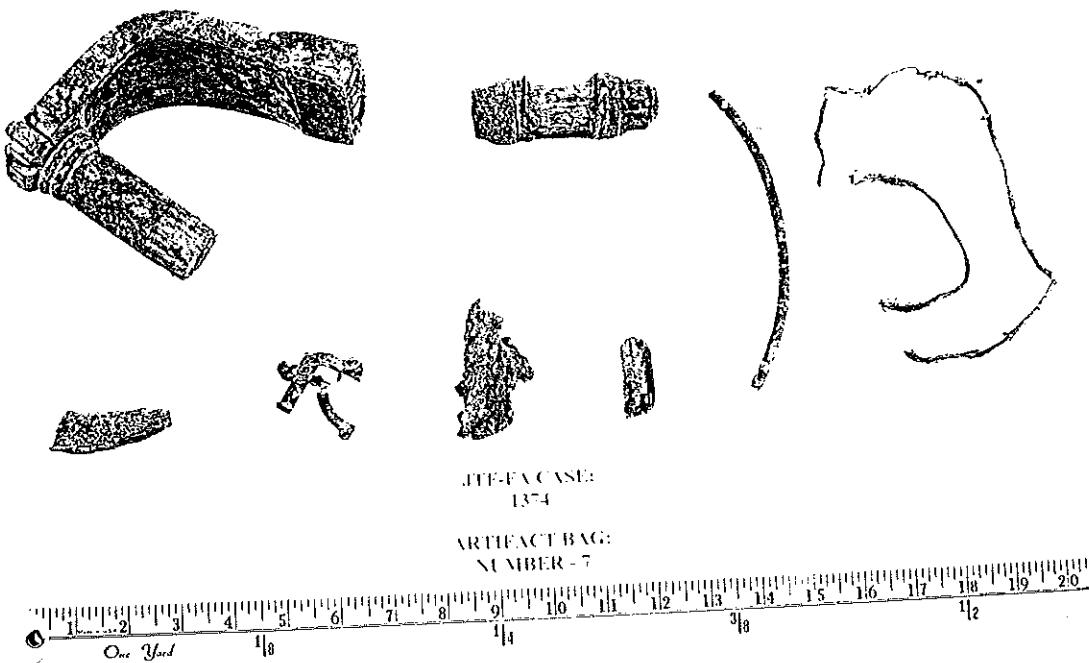
ARTIFACT BAG:
NUMBER - 6D



PICTURE 18. ARTIFACT BAG: NUMBER 6D.

JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 7

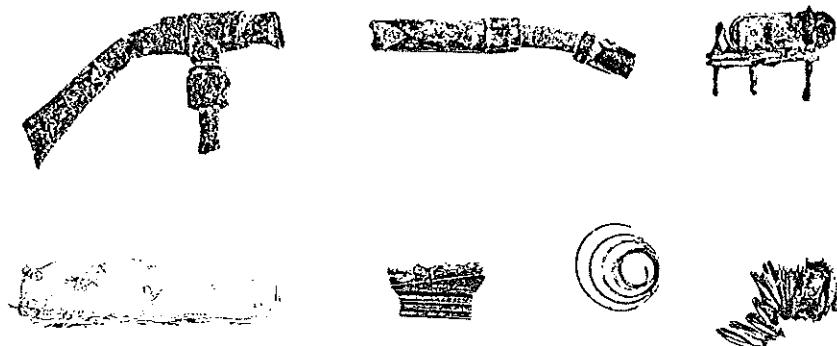
Item	Fragment Quantity
Possible Landing Gear Structure	1
Possible Wing/Tail Mounting Bolt	1
7 Inch Black Rubber Remnant	1
Electrical Wire Remnants	2
Unknown Material Composition	1
High Temperature Mounting Bolt	1
Unknown Material Composition	2



PICTURE 19. ARTIFACT BAG: NUMBER 7.

JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 7A

Item	Fragment Quantity
High Pressure Fuel Lines	2
Electrical Relay Block	1
Bulkhead Cable/Wire Insulation Pad	1
Engine Turbine Blade Remnant	1
Possible Flashlight Tension Spring	1
Bushing/Spring Assembly	1



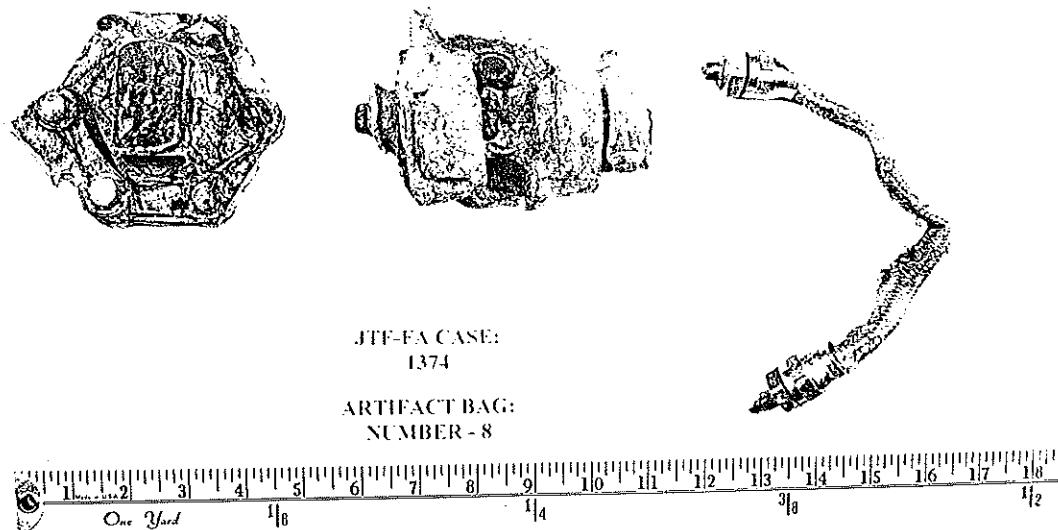
JTF-FA CASE:
1374

ARTIFACT BAG:
NUMBER - 7A



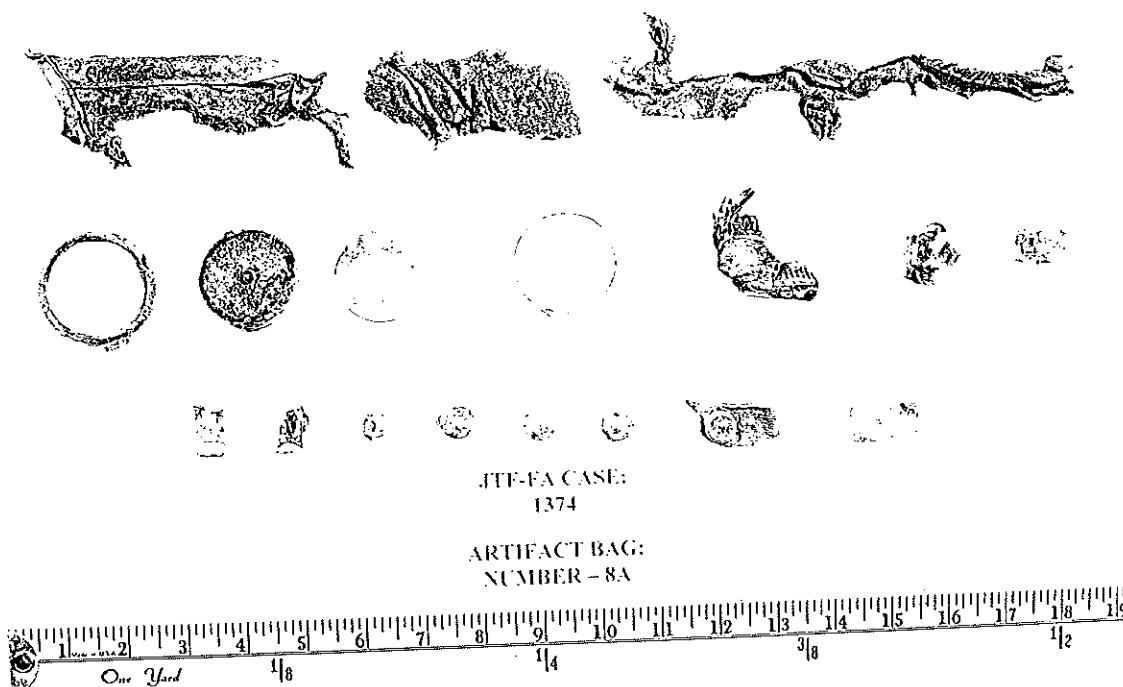
PICTURE 20. ARTIFACT BAG: NUMBER 7A.

JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 8	
Item	Fragment Quantity
Safety Wired Reservoir Cover	1
Possible Landing Gear Remnant	1
10 Inch High Pressure Line	1



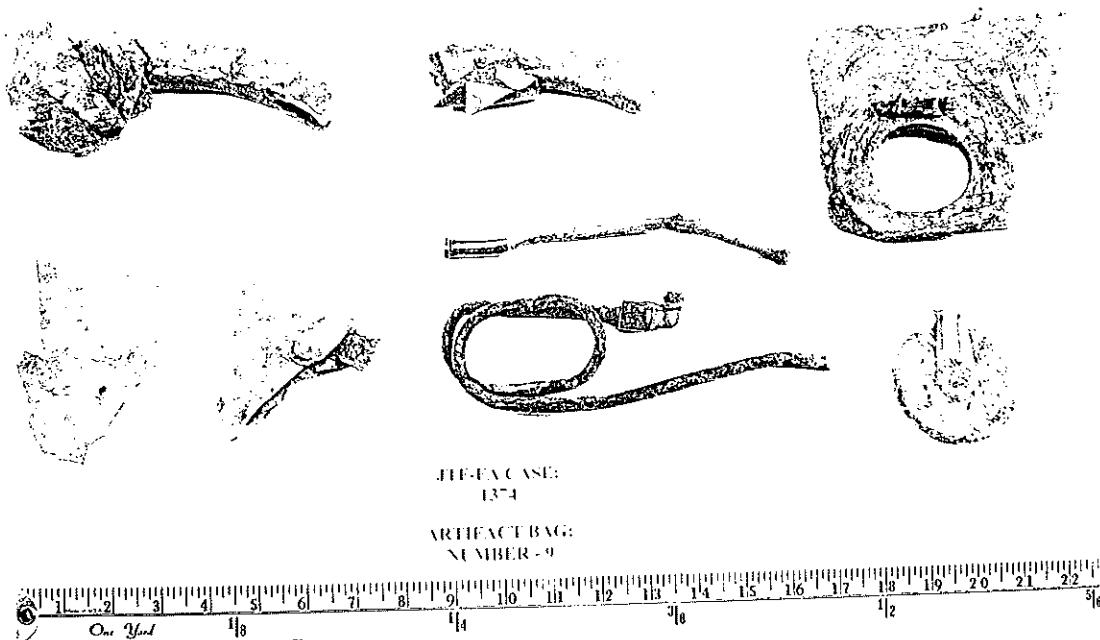
PICTURE 21. ARTIFACT BAG: NUMBER 8.

JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 8A	
Item	Fragment Quantity
Possible Parachute Container Fabric	3
Lensatic Compass Elements	2
Possible Gauge Cover	1
Wire Ring	1
Hose Clamps	2
Metal Remnant	1
Zipper Tabs, Snaps, and Fabric Remnants	8



PICTURE 22. ARTIFACT BAG: NUMBER 8A.

JTF-FA CASE 1374 ARTIFACT BAG: NUMBER 9	
Item	Fragment Quantity
Ejection Seat Handle Remnants	2
Possible Aircraft Fuselage Component with Access Hole	1
Unknown Metal Shards	2
High Pressure Lines	2
Possible Aircraft Fuselage Access Hole Cover	1

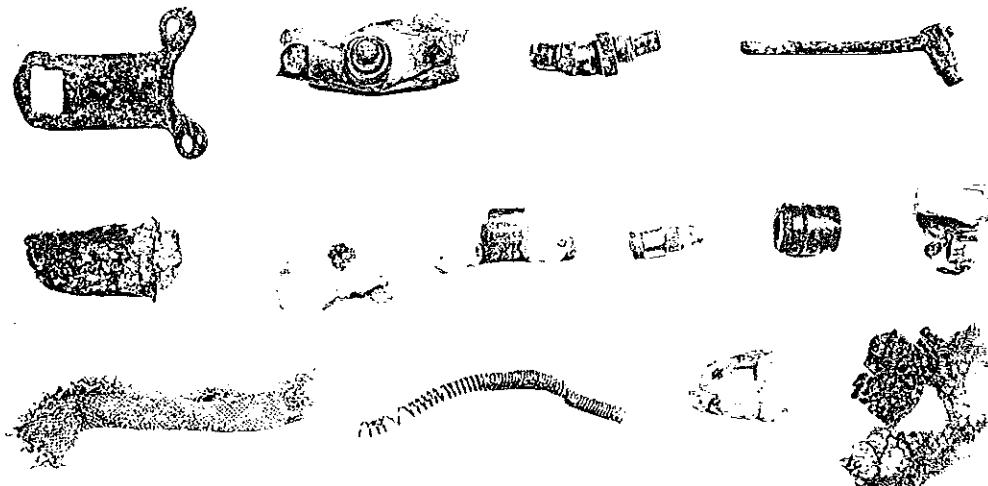
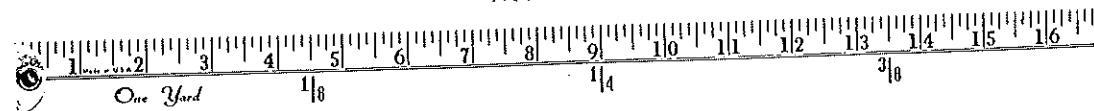


PICTURE 23. ARTIFACT BAG: NUMBER 9.

JTF-FA CASE NUMBER: 1374

JTF-FA CASE 1374
ARTIFACT BAG: NUMBER 9A

Item	Fragment Quantity
Engine Stand-off Bracket	1
Metal Links	3
Turbine Engine Blade	1
Metal Remnant	1
Metal Remnants	2
Wrench Socket	1
High Temperature Ceramic Block	1
Fabric Remnant	1
Spring	1
Metal Remnant	1
Fabric Remnant	1

JTF-FA CASE:
1374ARTIFACT BAG:
NUMBER - 9A

PICTURE 24. ARTIFACT BAG: NUMBER 9A.



APPENDIX B

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**Independent laboratory analysis was not solicited in
support of this case.**

APPENDIX C

CONSULTANTS CONTACTED DURING THE INVESTIGATION OF JTF-FA CASE 1374 ARTIFACT ANALYSIS

The following is a list of Department of Defense, Government Contractors, and Civilian Manufacturing Personnel who were consulted during the course of this investigation. Additionally, staff members associated with field of study related organizations and fraternities are also hereby recognized for their contributing expertise, wisdom, and/or reference materials. The efforts of all individuals listed below have produced the most comprehensive foundation of scientific knowledge available in the resolve of this case.

The Life Sciences Equipment Laboratory's ongoing use of the extraordinary collection of Master Reference Materials, and Library Publications, accumulated by the late Mr. Michael R. Grost, continues to provide invaluable support in the Laboratory's mission of substantiating accountability of missing American Service Personnel dating back to World War II. The Analysts of the Life Sciences Artifact Section are eternally grateful to the Estate of Mr. Grost for permitting the continual use of his personal collection in allowing them to carry out the accountability mission that he created and supported without reservation.

NAME	OCCUPATION	ORGANIZATION
Mr. Richard Switlik	President	Switlik Parachute Co. Trenton, N.J.
Mr. Dan Poynter	Author of 'The Parachute Manual'	Para Publishing Santa Barbara, CA.
Mr. Keith Polite	Flight Manual Collector	Hq. Space Command Falcon AFB, CO.