

2012

# Challenges in Korean War Identifications

*Three Examples from "The Punchbowl"*



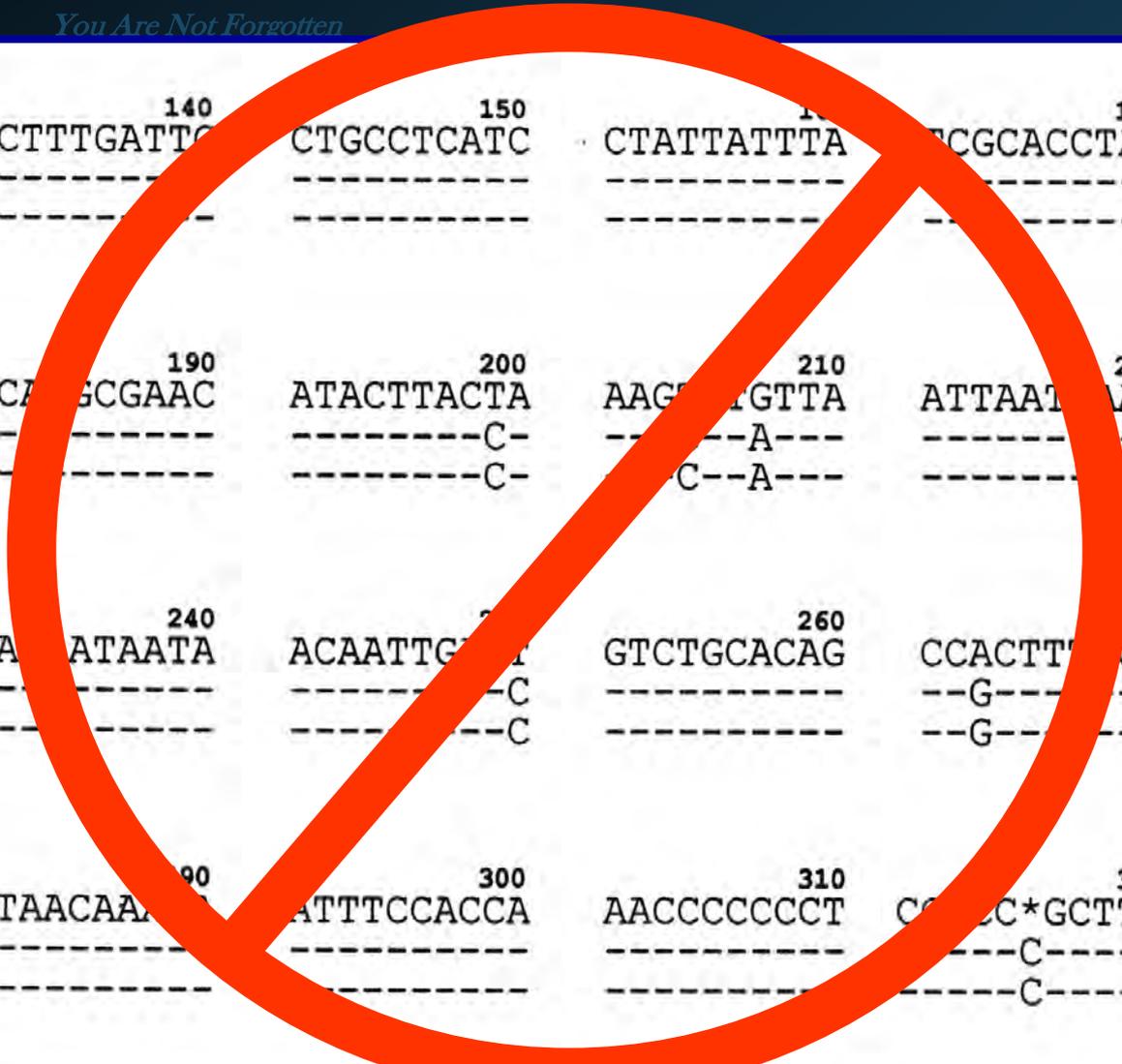
Thomas D. Holland, PhD, DABFA

Scientific Director, Central Identification Laboratory

Joint POW/MIA Accounting Command



# No DNA From The "Punchbowl"

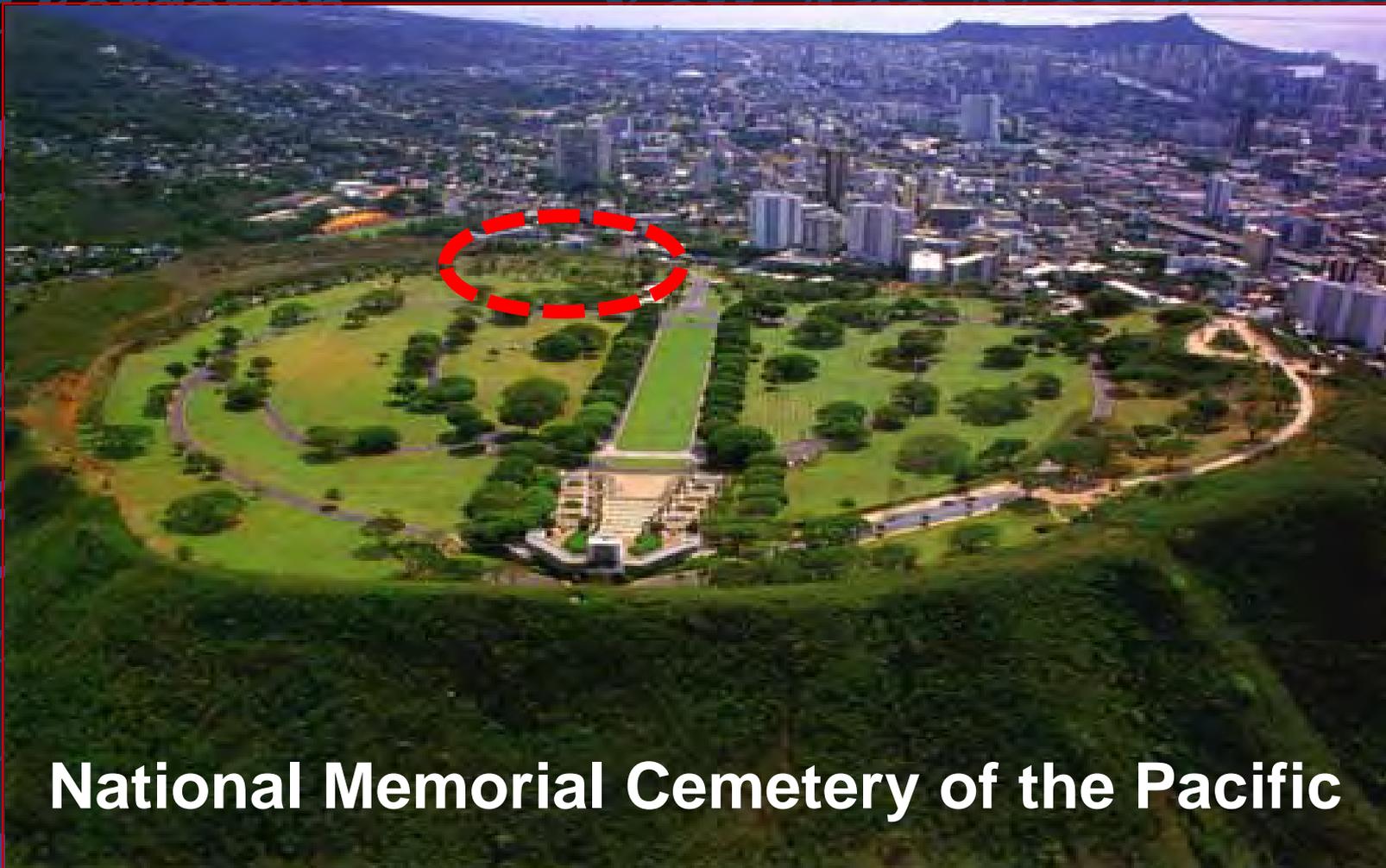


The image shows a DNA sequence grid with a large red prohibition symbol overlaid on it. The grid contains the following sequences:

140 TCTTTGATTC ----- -----	150 CTGCCTCATC ----- -----	160 CTATTATTTA ----- -----	170 TCGCACCTAC ----- -----
190 ACGTCGAAC ----- -----	200 ATACTTACTA -----C- -----C-	210 AAGTGTTA -----A- -----C--A-	220 ATTAATAT ----- -----
240 CAATAATA ----- -----	250 ACAATTG -----C -----C	260 GTCTGCACAG ----- -----	270 CCACTTCA -----G- -----G-
290 ATAACA ----- -----	300 ATTTCCACCA ----- -----	310 AACCCCCCT ----- -----	320 CC*GCTTC -----C- -----C-



# The "Punchbowl"



**National Memorial Cemetery of the Pacific**

**10 (11) Men Identified in 2011**



# **“Operation Glory”**

**31 August – 9 November 1954**

**4167 Remains Turned Over by  
Communist Forces**

**3751 Identified  
416 “Unknowns”**



# National Memorial Cemetery of the Pacific



**848 Unknowns Interred 1956**  
**(866 Unknowns by the 1960s)**



**Remains X-124**

**U.S. Military Cemetery**

**Masan, South Korea**

**Originally Buried on 19 October 1950**

**AGRS Recovered Remains from "Bloody Gulch"**

**BTB Sergeant from 90<sup>th</sup> FA Bn**

**Sent to CIU in Kokura, Japan, in 1951**

**Caucasoid Male, >35 yoa, 69-71 Inches Tall**

**No Identification Made**



# JPAC-CIL 2011

## Historical Records: 9 Men Unaccounted-for from “Bloody Gulch”

1 Captured = 8 Possibilities  
5 Too Young = 3 Possibilities  
1 was Cpl = 2 Possibilities



**Unaccounted-For From “Bloody Gulch”: 9**

**Historical Records Narrow to 8**

**Biological Profile Narrows to 3**

**Material Evidence  
Narrows to 2**

**N = 2**

**(Sergeants in the FA—90<sup>th</sup> and 555<sup>th</sup> Bns)**



# JPAC-CIL 2011

## Anthropology

(23-33-yaoa Caucasoid Male 65.1"-72.1")

Consistent with Both Men  
(69"-70" 32-yaoa Caucasian)

No Documented Anomalies  
No Dental Remains

N = 2



*You Are Not Forgotten*

*You Are Not Forgotten You*

*You Are Not*

*Not Fo*

*otto*

*You*

*Not Fo*

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*You A*

*You Are N*

*n*

*You Are Not Forgotten*

*You A*

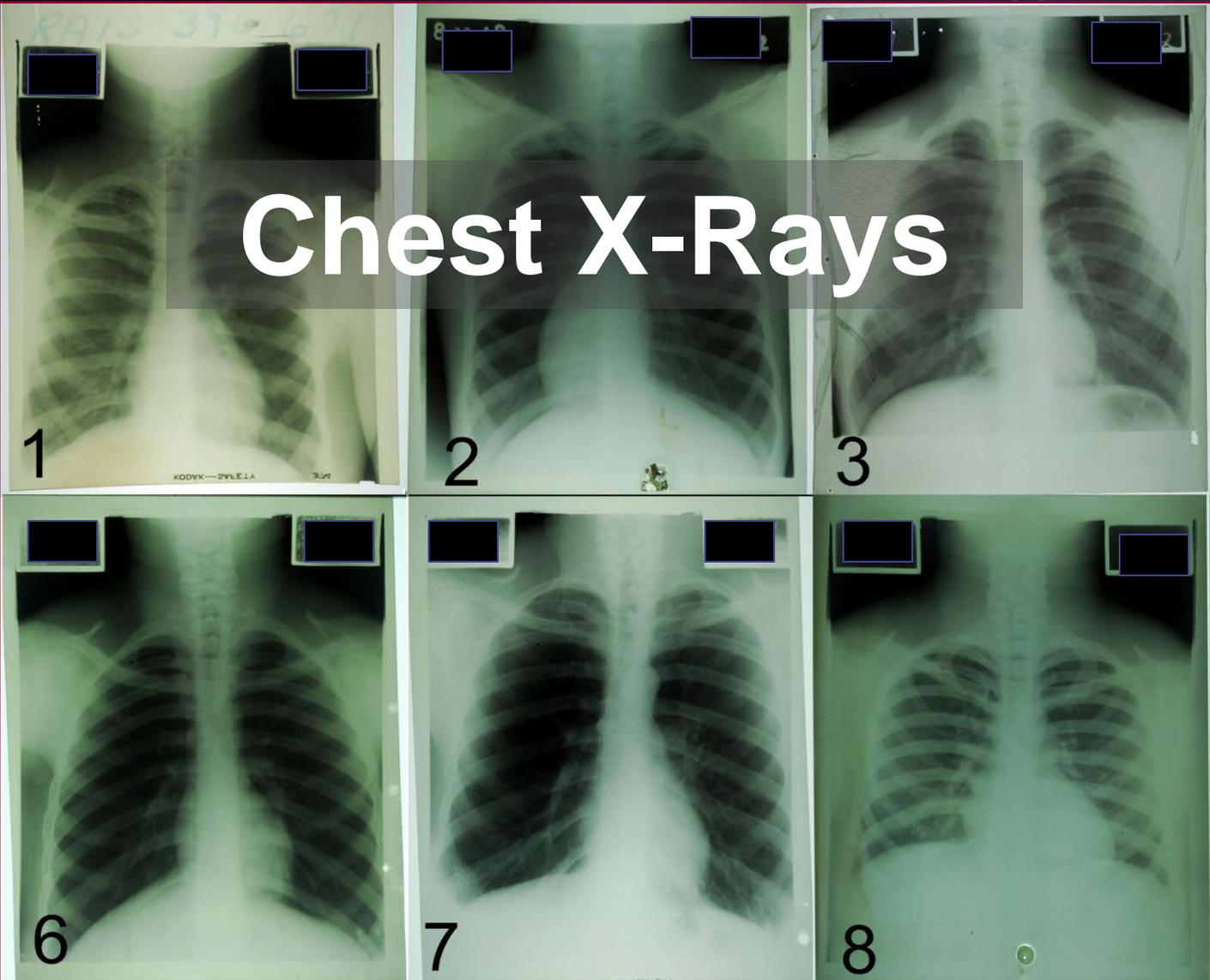
*gotten*

*ttten*

*gotten*

*Fo*

*otten*



# Chest X-Rays



*You Are Not Forgotten*  
*You Are Not Forgotten*  
*Not Forgotten*

*You Are Not Forgotten* *You*  
*You Are Not Forgotten*  
*You Are Not Forgotten*

# X-124 Remains



*On*  
*No*  
*to*  
*You*  
*You*  
*II*

*You Are Not Forgotten*

*You Are Not Forgotten*



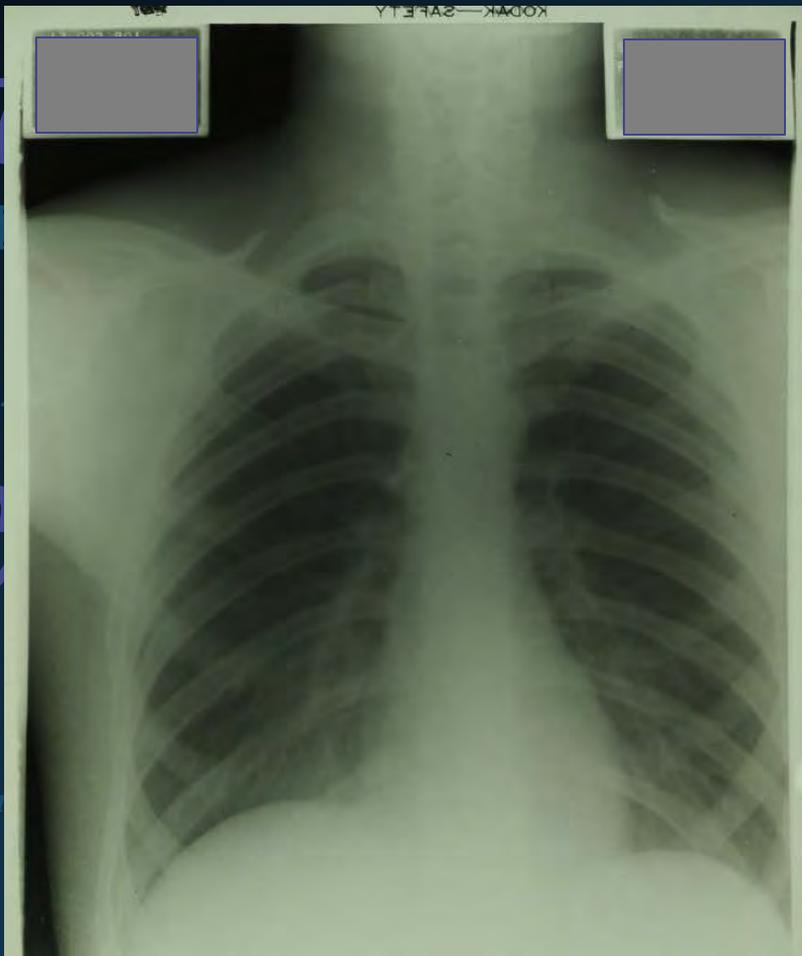
*You Are Not Forgotten*

*You Are Not Forgotten You*

*You Are Not Forgotten*

*You Are Not Forgotten*

# Antemortem Chest Films For Both Men



*You Are Not Forgotten*

*You Are Not Forgotten*

You Are Not Forgotten

You Are Not Forgotten

You

You Are

Not

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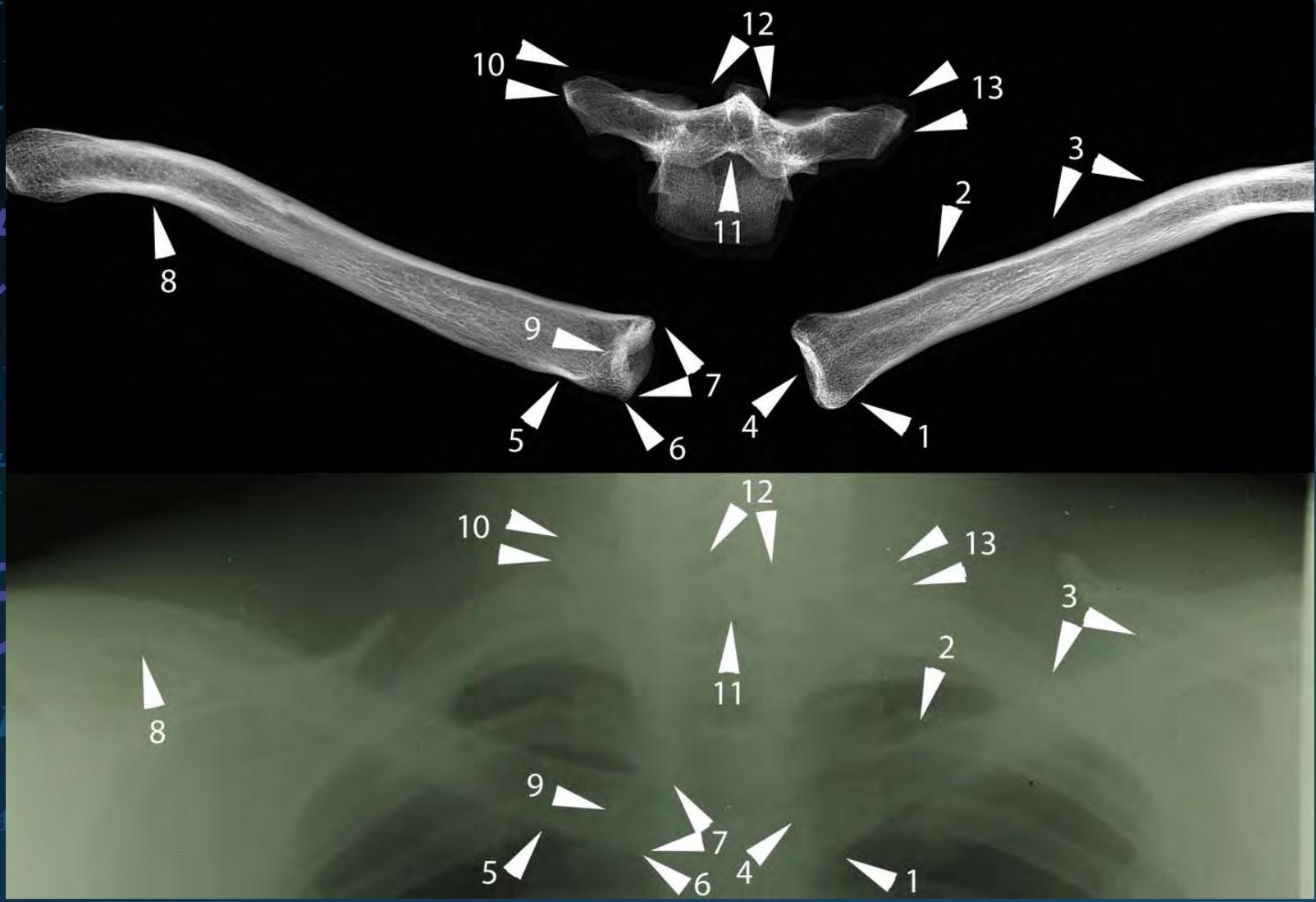
You

You A

n

You Are Not Forgotten

You



Only One of the Two Men Matches



**Unaccounted-For From “Bloody Gulch”: 9**

**Historical Records Narrow to 8**

**Biological Profile Narrows to 3**

**Material Evidence  
Narrows to 2**

**Chest X-Rays  
to 1**

**N = 1**

**(Exhumed 14 October 2011; Identified 29 November 2011)**



**Remains X-88**

**U.S. Military Cemetery**

**Masan, South Korea**

**Originally Buried on 19 October 1950**

**AGRS Recovered Remains from "Bloody Gulch"**

**Sent to CIU in Kokura, Japan, in 1951**

**"Caucasoid" Male, 19-21 yoa, 68.5-69.0 Inches Tall**

**No Identification Made**



# JPAC-CIL 2011

## Historical Records:

9 Men Unaccounted-for from  
“Bloody Gulch”

1 Captured = 8 Possibilities

4 Too Old = 4 Possibilities

3 Dental Mismatch = 1 Possibility



**Unaccounted-For From “Bloody Gulch”: 9**

**Historical Records Narrow to 8**

**Biological Profile Narrows to 4**

**Dental Profile Narrows to 1**

**N = 1**



# JPAC-CIL 2011

## Anthropology

(18-21-ya **Caucasoid Male 68.5"**)

**Consistent with Missing Man**

(21.5 yoa **Caucasian Male 69.5"**)

**No Documented Anomalies**

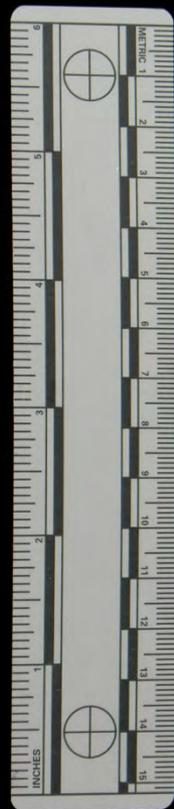
**N = 1**



*You Are Not Forgotten*  
*You Are Not Forgotten*  
*Not Forgotten*

*You Are Not Forgotten* *You*  
**X-88 Remains**  
*You Are Not Forgotten*

(a)



(b)



(c)



*O*  
*No*  
*to*  
*Yo*  
*You*  
*h*



*You Are Not Forgotten*

*You*

*You Are Not Forgotten*

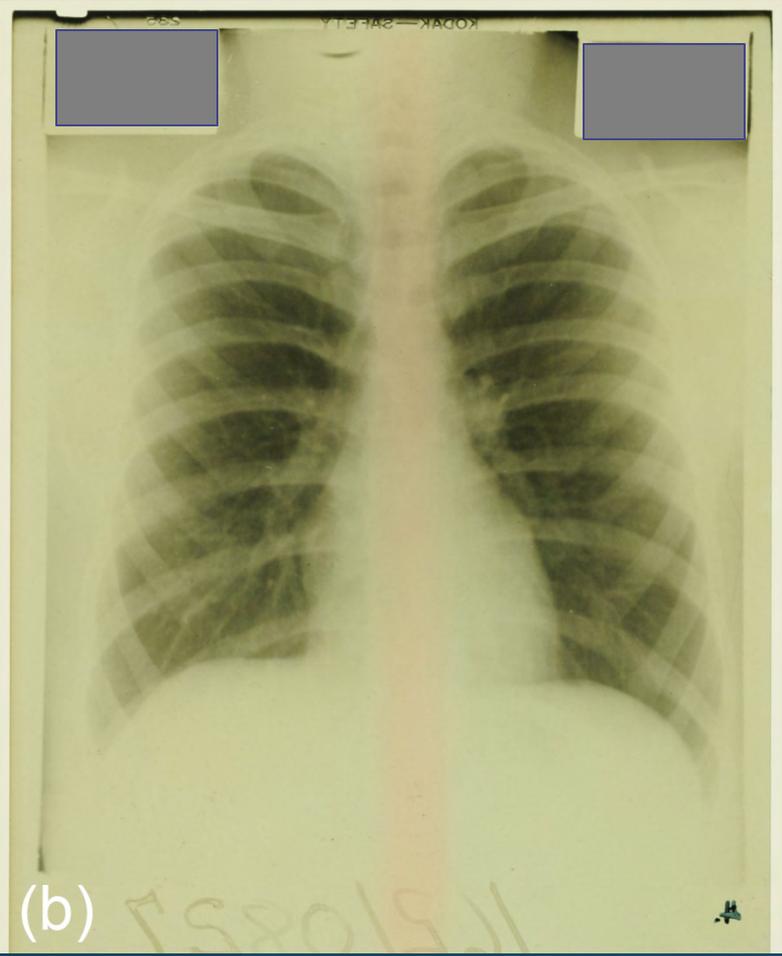
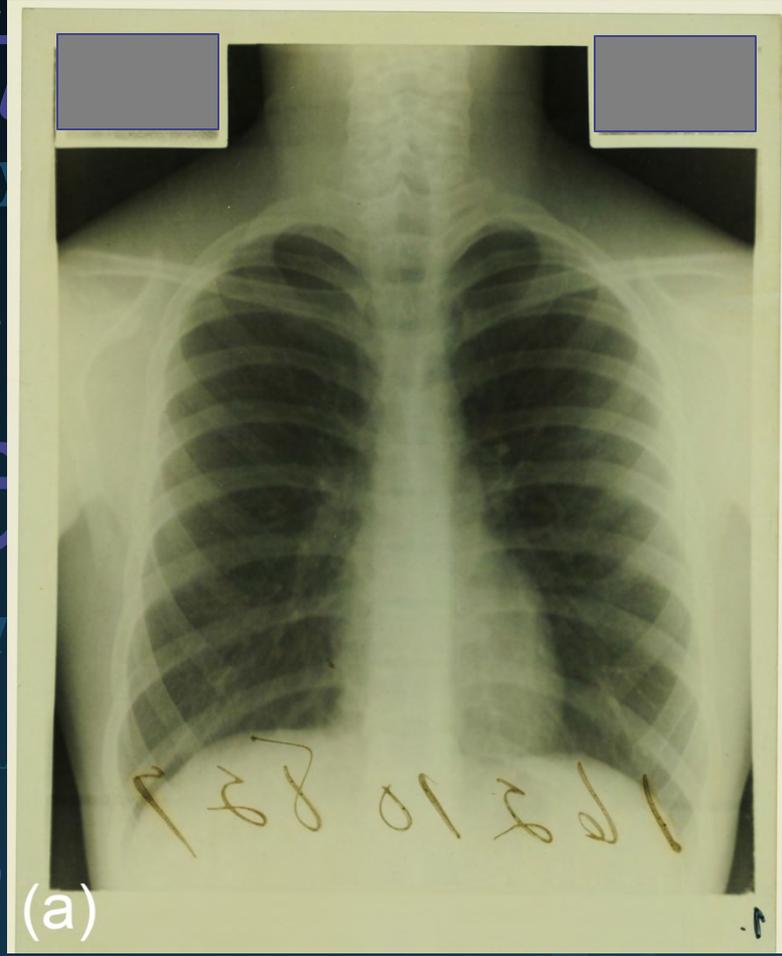
*You Are Not Forgotten You*

*You Are Not Forgotten*

*You Are Not Forgotten*

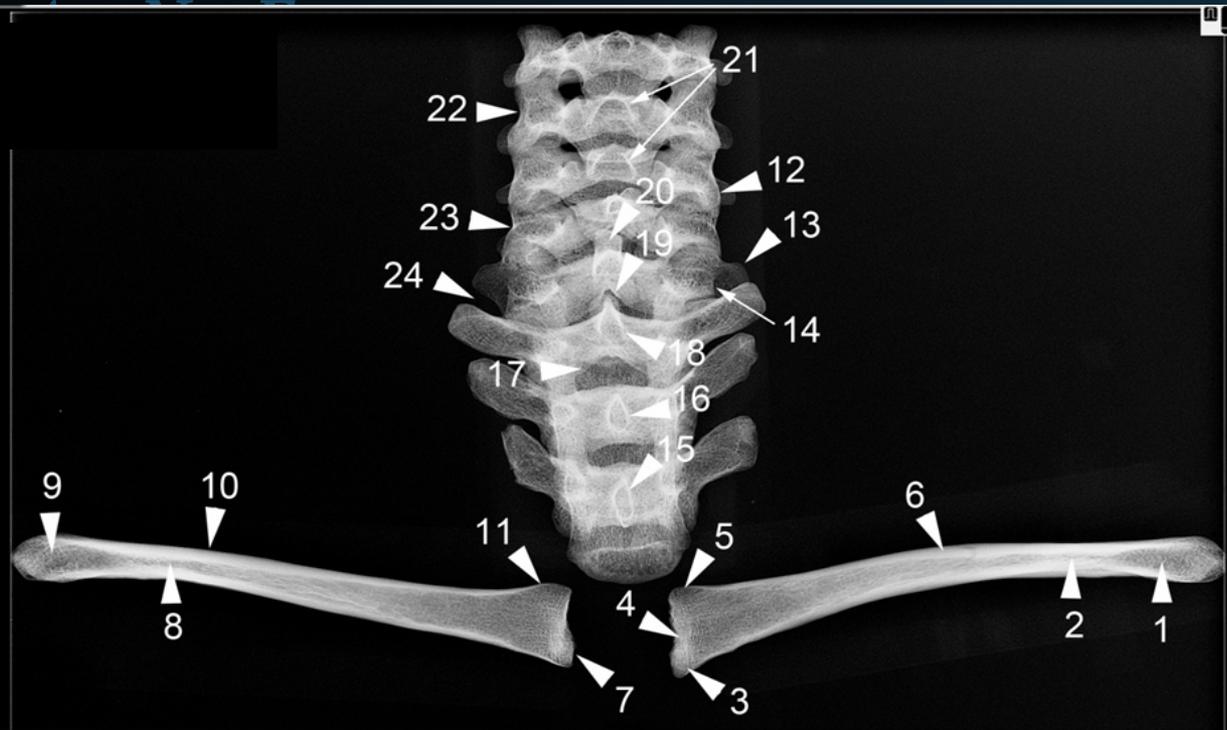
# Antemortem Chest Films For Missing Man

*You Are Not Forgotten*

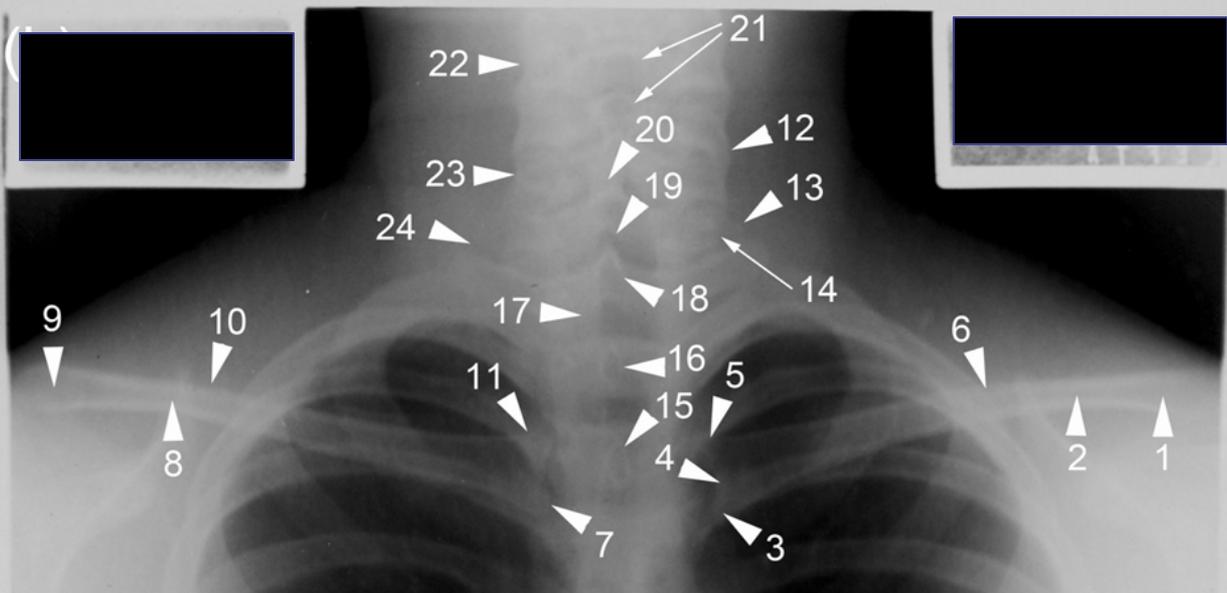


*You Are Not Forgotten*

*You Are Not Forgotten*



**Matches at  
Multiple  
Points with  
No  
Mismatches**



**Unaccounted-For From “Bloody Gulch”: 9**

**Historical Records Narrow to 8**

**Biological Profile Narrows to 4**

**Dental Evidence  
Narrows to 1**

**Chest X-Rays  
to 1**

**N = 1**

**(Exhumed 25 October 2011; Identified 17 January 2012)**



**Remains X-14514**  
**Operation Glory**

**[POW] Camp 5, Pyoktong**

**Chinese Associate the Remains to  
Corporal "John Doe"**

**Sent to CIU in Kokura, Japan, in 1954**

**"Negroid" Male, 18-20 yoa, 70.0 Inches Tall  
Dental Mismatch to Cpl "Doe"**

**No Identification Made**



# JPAC-CIL 2011

**Historical Records:  
492 Men Unaccounted-for from  
Camp 5**

**Biological Profile (17-22-yoa Black  
Male) = 10 Possibilities**



**Unaccounted-For From Camp 5: 492**

**Biological Profile (17-22-ya  
Black Male) Narrows to 10**

**N = 10**



# JPAC-CIL 2011

## Anthropology

(18-23-ya Negroid Male 71.1")

Consistent with 5 Missing Men

Dental Pattern Consistent with  
4 of the 5 Missing Men

N = 4



**Unaccounted-For From Camp 5: 492**

**Biological Profile (18-23-ya  
Black Male 71") Narrows to 5**

**Dental Profile Narrows to 4**

**N = 4**



*You Are Not Forgotten*

*You Are Not Forgotten*

*Not Forgotten*

*You Are Not Forgotten*

# X-14514 Remains

*You Are Not Forgotten You*  
*You Are Not Forgotten*

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*Y*  
*Not*  
*te*  
*You*  
*You Ar*  
*n*

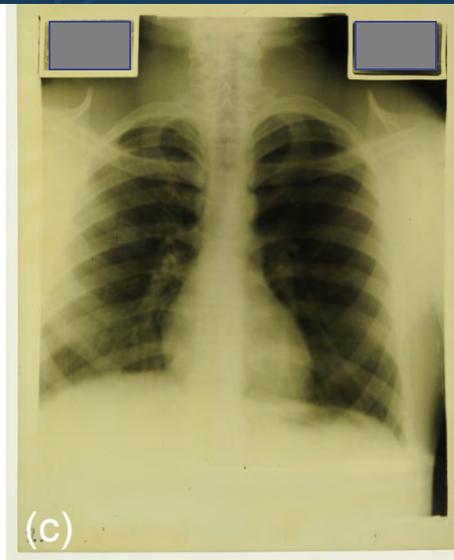
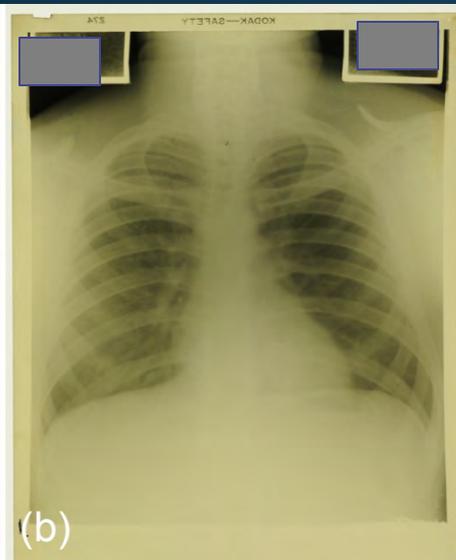
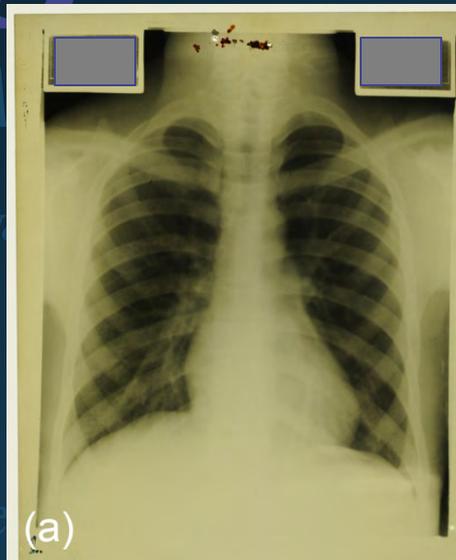
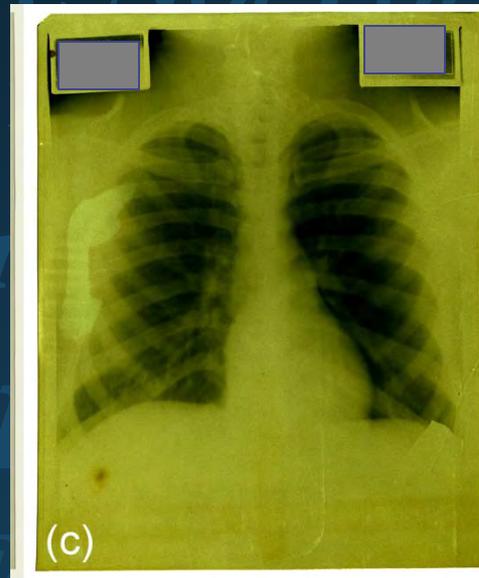


*You Are Not Forgotten*

*You*



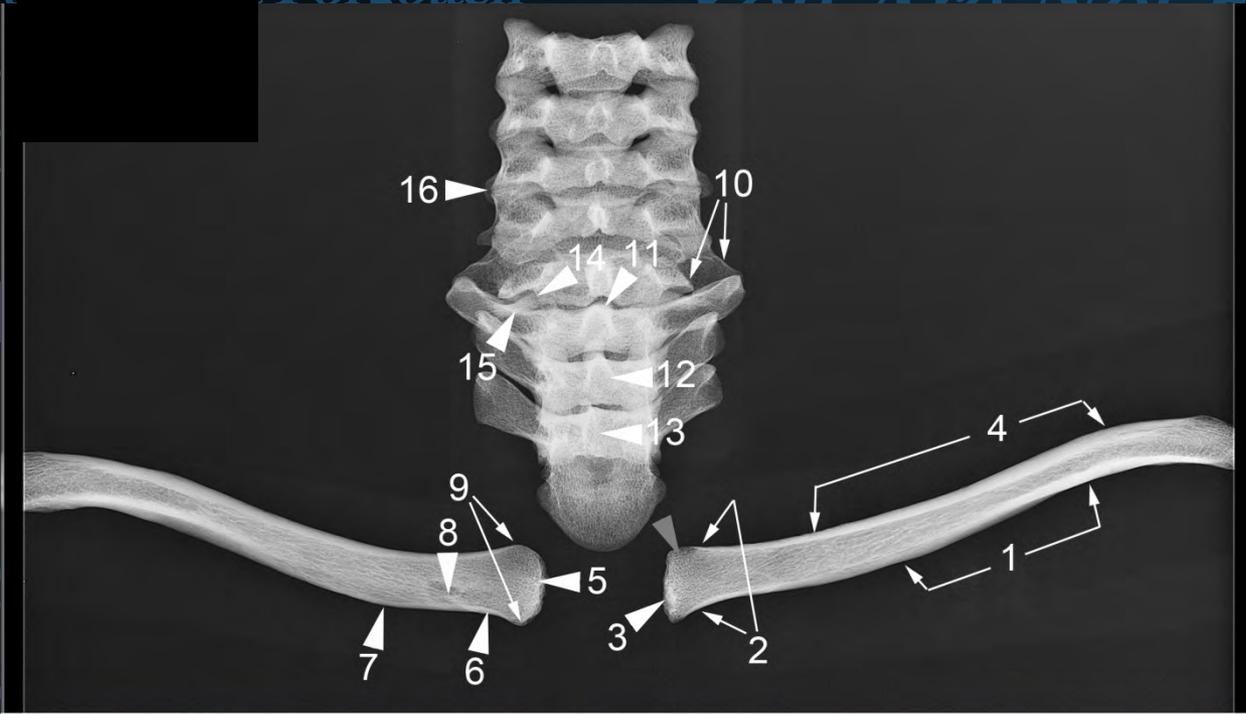
# Antemortem Chest Films For Missing Four Men



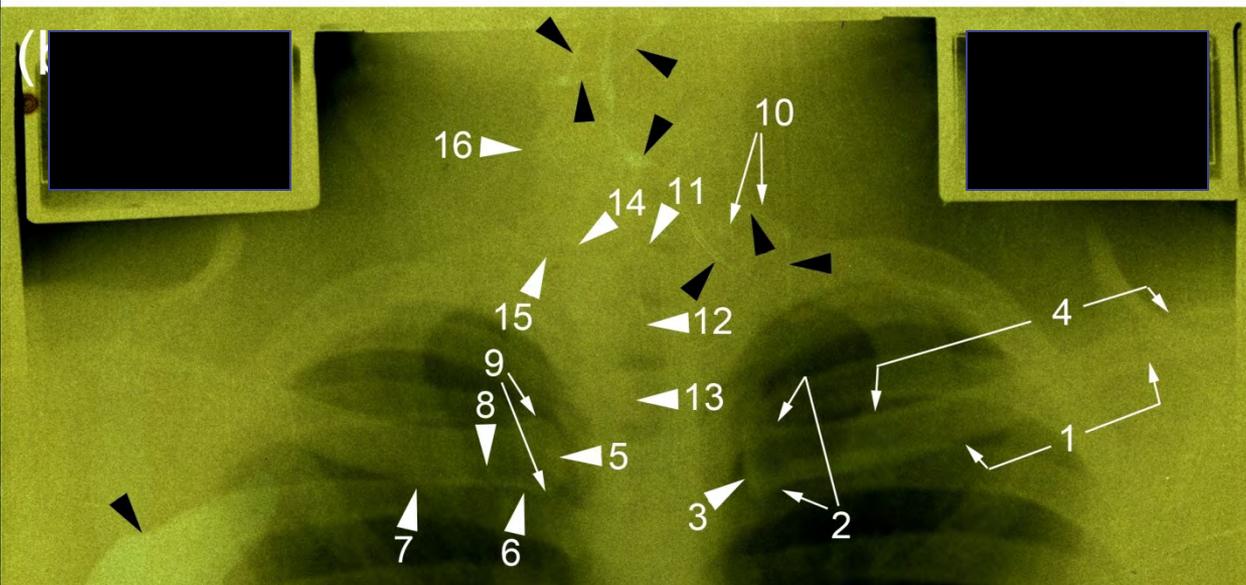
You Are Not Forgotten

You Are Not Forgotten

You Are Not Forgotten



**Only One of the Four Men Matches**



**Unaccounted-For From Camp 5: 492**

**Biological Profile (18-23-ya  
Black Male 71") Narrows to 5**

**Dental Profile Narrows to 4**

**Chest X-Rays  
to 1**

**N = 1**

**(Exhumed 25 October 2011; Identified 9 December 2011)**



You Are Not Forgotten

You Are Not Forgotten

# 26 Exhumed 22 Identified



*You Are Not Forgotten* *You Are Not Forgotten* *You*  
*You Are Not Forgotten* *You Are Not Forgotten*  
*Not Forgotten* *You Are Not Forgotten*  
*otter* *You Are Not Forgotten* *You*  
*You Are Not Forgotten* *You Are*  
*Not Forgotten* *You Are*  
*ten* *You Are Not Forgotten*  
*You Are Not Forgotten* *You Are*  
*You Are Not Forgotten* *You Are Not Forgotten*  
*n* *You Are Not Forgotten*  
*You Are Not Forgotten* *You*

**“Until  
They’re  
Home...”**

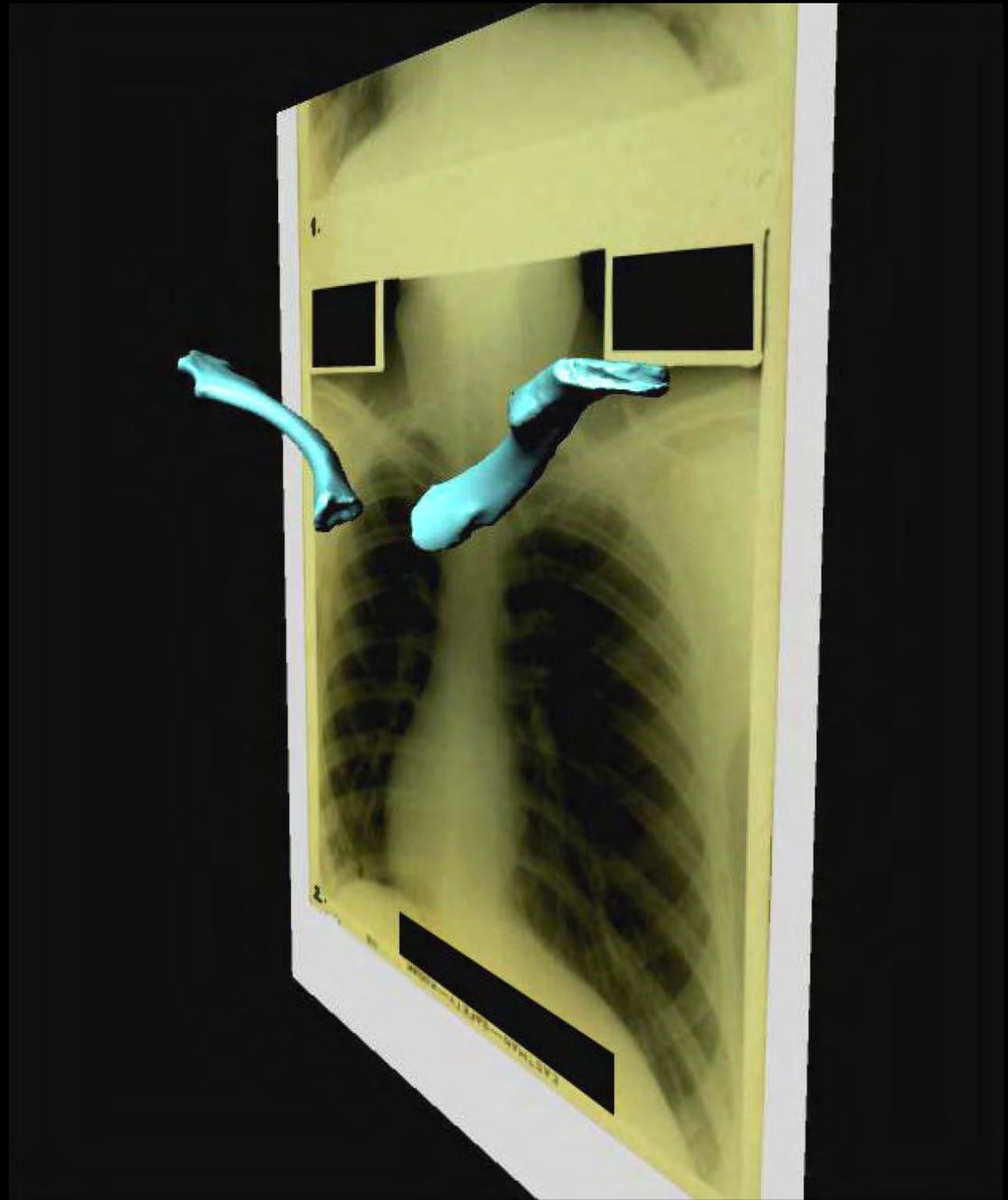


# Computer Automated Radiograph Search Capability



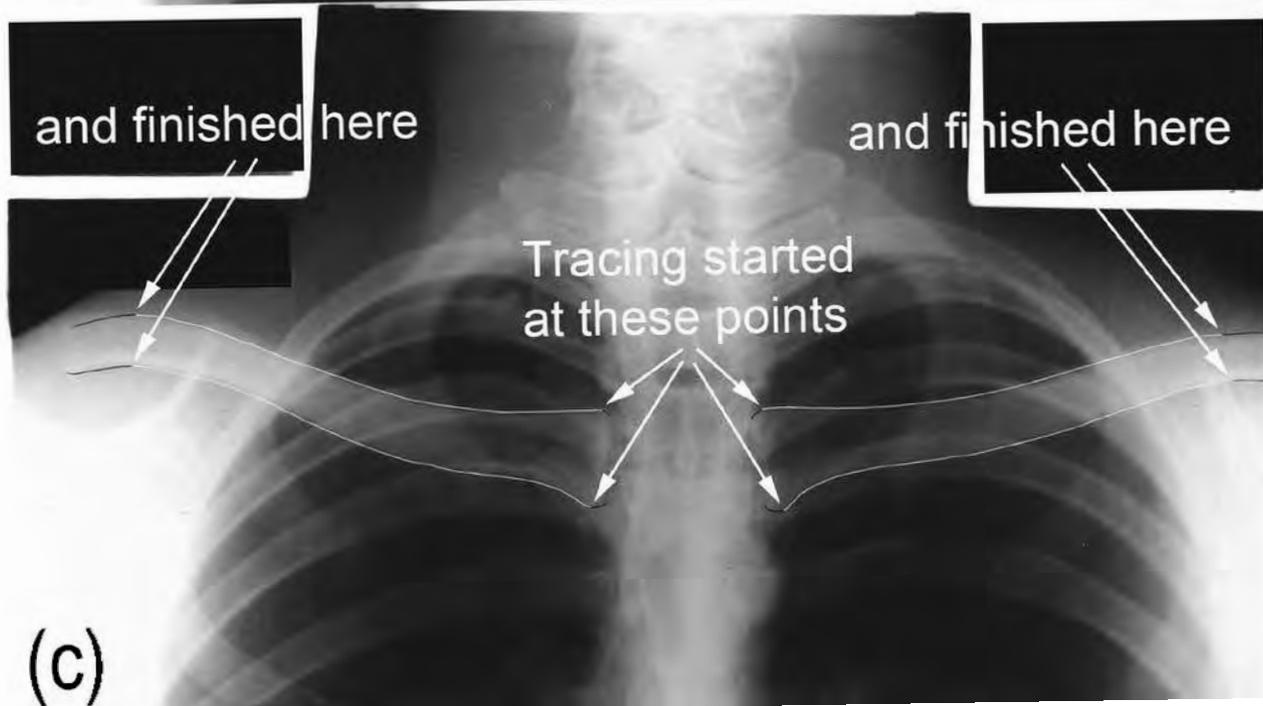
Carl Stephan, PhD

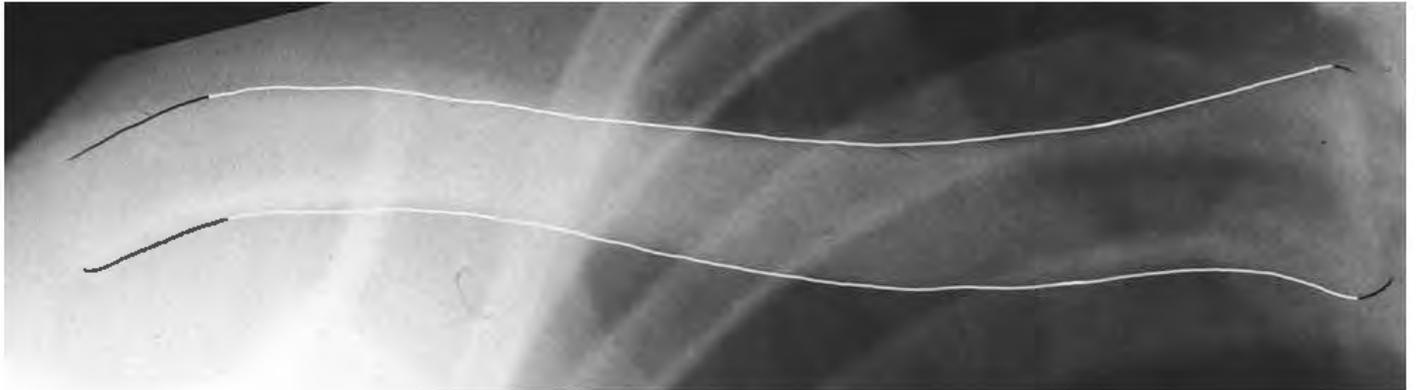
351856

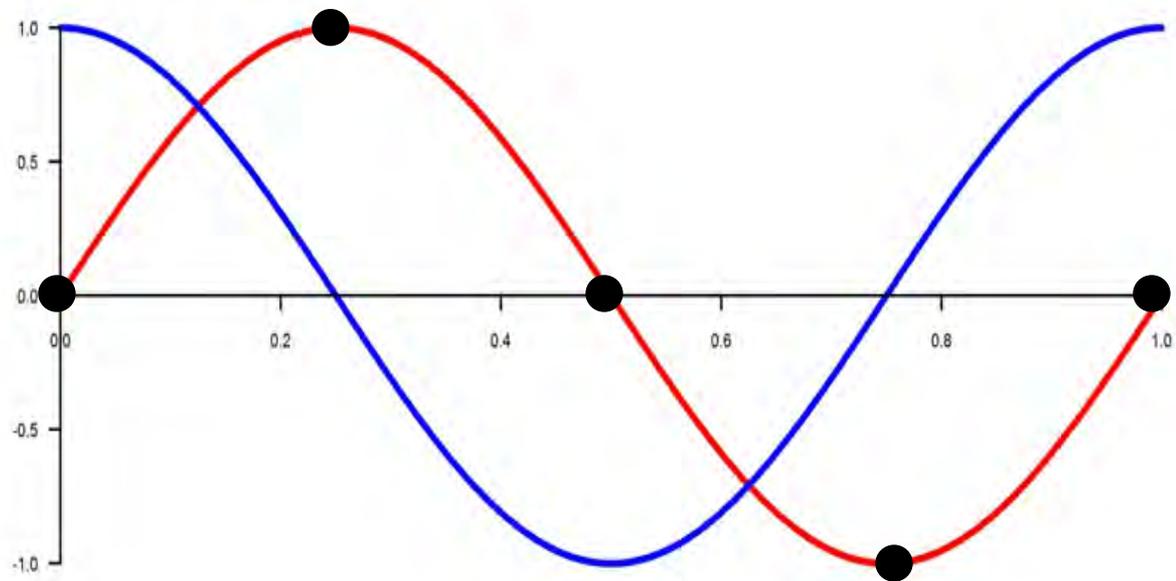
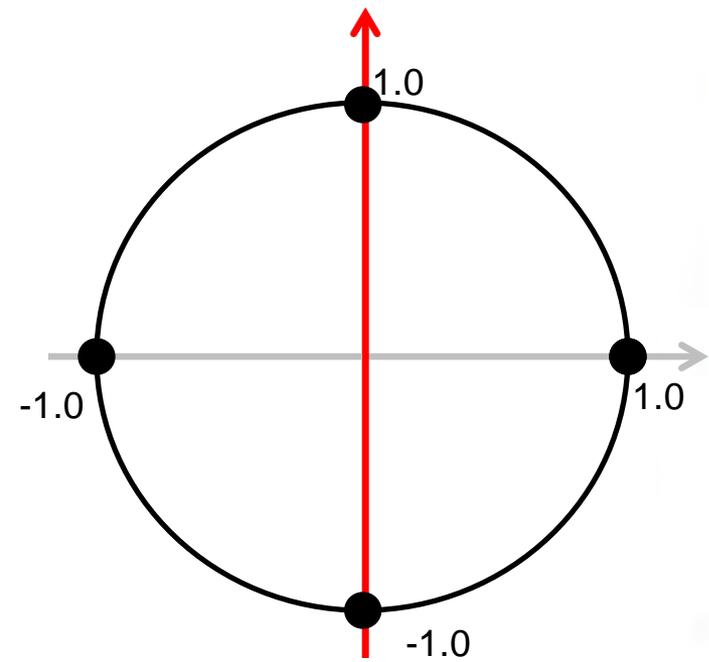


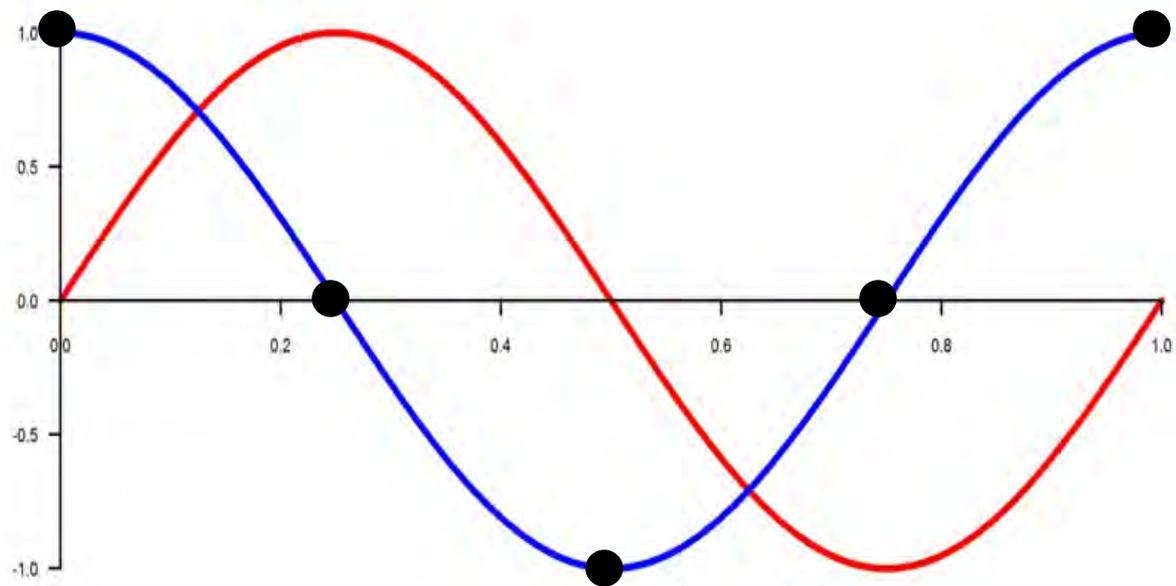
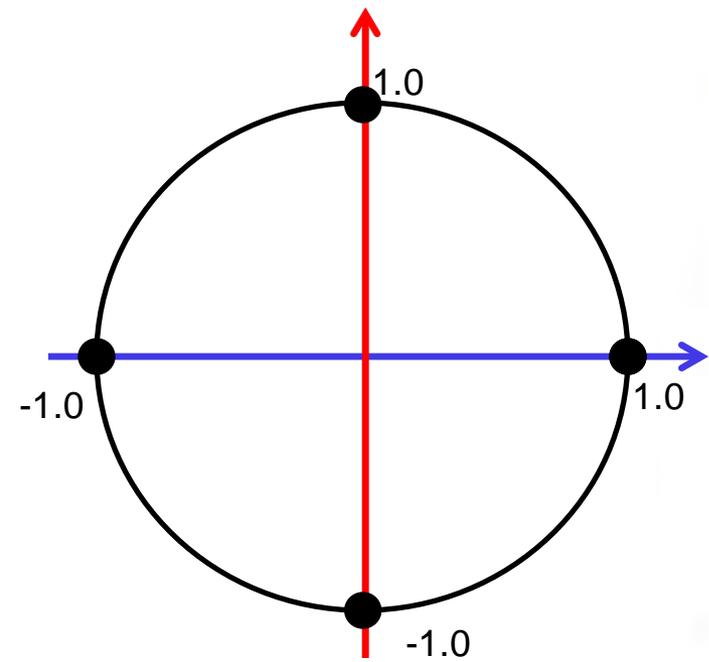












Fourier expansion for x projection:

$$x(t) = A_o + \sum_{n=1}^N \left( a_n \cos \frac{2\pi n t}{T} + b_n \sin \frac{2\pi n t}{T} \right)$$

Fourier expansion for y projection:

$$y(t) = C_o + \sum_{n=1}^N \left( c_n \cos \frac{2\pi n t}{T} + d_n \sin \frac{2\pi n t}{T} \right)$$

4 Fourier coefficients or descriptors  
for each harmonic  $n$ :  $a_n, b_n, c_n, d_n$



		Fourier Descriptors			
Harmonic	a	b	c	d	
1	1.0000000	0.0000000	0.0000000	0.1187050	
2	-0.0039116	0.0062604	-0.0108470	0.0117082	
3	0.1036958	-0.0010709	0.0239757	0.0427680	
4	-0.0041595	0.0011233	-0.0012660	0.0029026	
5	0.0311819	0.0002326	-0.0027113	0.0241881	
6	-0.0045225	0.0002727	0.0003256	0.0061827	
7	0.0149768	0.0006121	-0.0026225	0.0147796	
8	-0.0031400	0.0000184	-0.0054337	0.0032432	
9	0.0067765	0.0005494	-0.0025099	0.0126591	
10	-0.0022572	0.0009230	-0.0029103	0.0015123	
11	0.0031304	-0.0000224	-0.0014170	0.0083661	
12	-0.0026234	0.0005118	-0.0004507	0.0009124	
13	0.0015611	0.0006254	-0.0001366	0.0049092	
14	-0.0022562	0.0002082	0.0007149	0.0015805	
15	0.0006475	0.0005365	0.0008114	0.0019171	
16	-0.0016865	0.0000610	0.0003056	0.0002930	
17	0.0001278	0.0003223	0.0007957	0.0011190	
18	-0.0012189	-0.0000266	0.0006451	-0.0009118	
19	-0.0000165	0.0001613	0.0005512	0.0003006	
20	-0.0009725	-0.0001104	0.0013087	-0.0007145	
21	0.0000311	0.0001014	0.0004494	-0.0004134	
22	-0.0009966	-0.0002823	0.0010004	-0.0007916	
23	-0.0000151	-0.0001122	-0.0001888	-0.0007383	
24	-0.0008696	-0.0001835	0.0004757	-0.0009825	
25	0.0001426	-0.0002788	-0.0001889	-0.0005677	
26	-0.0005875	-0.0000069	0.0001830	-0.0010792	
27	0.0000385	-0.0002075	-0.0004380	-0.0001803	
28	-0.0004254	0.0000565	0.0000317	-0.0009040	
29	-0.0001044	-0.0000992	-0.0006031	-0.0001717	
30	-0.0003322	0.0000335	-0.0000146	-0.0005746	
31	-0.0000893	-0.0000613	-0.0003902	-0.0002532	
32	-0.0001680	0.0001170	-0.0001259	-0.0002332	
33	-0.0000182	-0.0000332	-0.0001692	0.0000714	
34	-0.0000459	0.0001814	-0.0003852	-0.0002189	
35	0.0000136	-0.0000168	-0.0002165	0.0003770	
36	0.0000391	0.0001604	-0.0003072	-0.0001891	
37	0.0000744	0.0000213	-0.0001566	0.0004334	
38	0.0000605	0.0001290	-0.0000319	0.0000288	
39	0.0001101	-0.0000036	-0.0000338	0.0002943	
40	0.0000316	0.0000892	0.0000924	0.0000747	

Microsoft Excel interface showing a spreadsheet with columns A through M. The spreadsheet contains numerical data and text labels such as 'Rank\_MI', 'Rank\_HM', 'Dist\_HM', 'EFA\_Left', 'EFA\_Right', 'JFA\_Left', 'JFA\_Right'. The status bar at the bottom indicates 'EFA\_Both' and '(2012Jan31h11m34)'.