CIL 2009-149-I-01
Capt Thomas Edward CLARK
U.S. Air Force

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19. Consultant Comments (Levine); dtd May 18 2011
20. Consultant Comments (Rathbun); dtd 9 May 2011
21. Consultant Comments (Willey); dtd 11 April 2011

CIL 2009-149-I-01
Capt Thomas Edward CLARK
U.S. Air Force

Joint POW/MIA Accounting Command
Central Identification Laboratory
310 Worchester Avenue
Hickam AFB, HI 96853

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JOINT POW/MIA ACCOUNTING COMMAND
310 WORCHESTER AVENUE
JOINT BASE PEARL HARBOR-HICKAM, HAWAII 96853

CIL
1771
Ser: 070-11
3 Jun 11

MEMORANDUM

From: JPAC Central Identification Laboratory
To: Air Force Mortuary Affairs Operations Center
AFMAO/MA
116 Purple Heart Drive
Dover AFB, DE 19902

Subj: Identification of CIL 2009-149-I-01

Encl: (1) Case File CIL 2009-149-I-01

1. Forwarded is the JPAC-CIL case file establishing the following identification:

Capt Thomas Edward CLARK, 174-28-1870, U.S. Air Force

2. Enclosed reports and documents in the CIL case file have been checked for accuracy and completeness and represent those documents deemed relevant and probative. One copy is for your retention, and the other is for the casualty individual's family. All presentations are marked appropriately on the inside cover of the booklet. For administrative questions, please contact Ms. Deborah Larkins, (808) 448-1742.

3. Please provide this office with disposition instructions. Point of contact for the identification process is Dr. William Belcher, (808) 448-1729.

William R. Belcher

WILLIAM BELCHER, PhD, D-ABFA
Deputy Laboratory Director

JOINT POW/MIA ACCOUNTING COMMAND
310 WORCHESTER AVENUE
JOINT BASE PEARL HARBOR-HICKAM, HAWAII 96853-5530

3 June 2011

MEMORANDUM FOR THE RECORD

Subj: IDENTIFICATION OF CIL 2009-149-I-01

1. Background and Acquisition

a. On 8 February 1969 Captain Thomas E. CLARK was attacking an anti-aircraft artillery position in Savannakhet Province, Laos, when his F-100D Super Sabre was struck by enemy fire and crashed. The pilots of the other three American aircraft involved in the mission reported seeing no parachute or any other indicator that Capt CLARK had successfully exited the aircraft or survived the impact. The loss was designated Reference Number (REFNO) 1374, and Capt CLARK initially was placed in the status of Missing In Action. Subsequently, a military review board amended his status to Killed In Action.

b. On 12 February 1991 a joint U.S./Lao People's Democratic Republic (L.P.D.R.) team investigated the REFNO 1374 loss in Savannakhet Province. The team interviewed a middle-aged Laotian ex-soldier who reported witnessing the crash of an American jet (which he identified as an F-100 from a photograph shown to him by the team) in the early spring of 1968 [*sic*]. The man indicated that he had visited the crash site in 1974, at which time he found an American-made revolver. [Note: The purported revolver was never accessioned at the CIL and was not analyzed by the CIL staff; however, .38-caliber revolvers were standard issue to USAF pilots during the Vietnam War.] He also indicated that local villagers subsequently had scavenged the site for scrap metal. The team then traveled to the site and located fragments of an aircraft engine consistent with those installed on various U.S. aircraft, including the F-100. Based on the location and the eye-witness account, a tentative association was made between the crash site and the REFNO 1374 loss.

c. In late 1991 a Thai citizen turned over to U.S. officials in Thailand human remains as well as a military identification tag and a partial military identification card both bearing Capt CLARK's name. The source claimed to have received them from an unnamed Laotian national. The remains and other material evidence were accessioned at the CIL on 11 February 1992 as CILHI 0017-92. Subsequent laboratory analysis showed that the remains turned over to the officials were not those of Thomas CLARK and likely represented an indigenous Southeast Asian. These remains are not discussed further in this memorandum.

d. From 16-23 February 1992 another joint U.S./L.P.D.R. team excavated the suspected REFNO 1374 crash site in Savannakhet Province and recovered aircraft wreckage—including items installed exclusively on the F-100D model aircraft—and pilot life-support items. The team did not, however, recover any human remains. Additionally, the team interviewed a Laotian national living near the site who claimed to have previously recovered human remains, as well as a military identification tag and a fragment of a military identification card, from the area. [Note:

While the identity of the Laotian source of the CILHI 0017-92 remains and identification media is unknown, it is assumed that this individual and the Laotian national interviewed at the site are one and the same.] While at the site, a another local Laotian villager turned over to the team a second military identification tag bearing Thomas E. CLARK's name. [Note: The second tag subsequently was consolidated into CILHI 0017-92.]

e. On 31 October 2005 a joint U.S./L.P.D.R. team re-investigated the REFNO 1374 crash site excavated in 1992. The team recovered a fragment of suspected bone as well as a fragment of an aircraft survival kit. Similarly, a local villager turned over to the team a tooth fragment that he had allegedly found near the site. The suspected remains and survival-kit fragment were accessioned at the CIL on 16 November 2005 as CIL 2005-174. Subsequent laboratory analysis demonstrated that the suspected bone fragment was non-osseous, i.e., not part of a human skeleton, and the tooth fragment was non-human.

f. From 20 October through 14 November 2009 another joint U.S./L.P.D.R. team re-excavated portions of the REFNO 1374 crash site and recovered a fragment of human tooth as well as additional pilot life-support items. The remains and selected non-biological material evidence were accessioned at the CIL on 17 November 2009 as CIL 2009-149. The human remains subsequently were sub-designated CIL 2009-149-I-01. (Note: For administrative purposes, the identification media accessioned as CILHI 0017-92 were consolidated into CIL 2009-149.)

2. Summary of Analysis

a. The pilots of other U.S. aircraft involved in the 8 February 1969 mission witnessed Capt CLARK's F-100D aircraft crash into a mountainside in Savannakhet Province, Laos. No parachute was observed. A crash site located within 100 meters of the map coordinates noted by these pilots was investigated and excavated in 1991, 1992, 2005, and 2009. The site yielded wreckage exclusive to that of an F-100D aircraft. The U.S. Air Force Life Sciences Equipment Laboratory (LSEL) confirms that the life-support equipment found at the site is consistent with the pilot being on board at the time of impact, and in the LSEL's opinion, the crash was non-survivable. Historical records indicate that the REFNO 1374 aircraft is the only unaccounted-for F-100 that crashed within 40 kilometers of the crash site. Furthermore, identification media purportedly found at the site by Laotian nationals living nearby (originally accessioned as CILHI 0017-92) consist of two military identification tags that correlate to Thomas E. CLARK by name, service number, blood type, and religious preference; and a partial military identification card bearing Capt CLARK's service number. Based on aircraft type and location, the crash site investigated and excavated in 1991, 1992, 2005, and 2009 can be correlated to the 1969 loss of Capt Thomas E. CLARK to the exclusion of all other reasonable possibilities.

b. CIL 2009-149-I-01 consists of a crown fragment from a human left maxillary canine (tooth #11). The tooth was unrestored and lacks any morphological characteristics that would allow for individualization.

c. Analysis of stable isotopes in the enamel from the tooth fragment—specifically, carbon and oxygen—reveals typical western values consistent with those seen in individuals raised in the United States. The maxillary canine completes its crown formation by approximately age six; thus, isotopes present in the enamel reflect exposure (through diet) to these isotopic ratios during this early period of growth. Conversely, the isotopic values differ significantly from those seen in indigenous Southeast Asians. Based on this analysis, it is inferred that the human tooth fragment is that of a Westerner (e.g., American) and did not derive from an indigenous native to Laos.

d. The size of the tooth fragment precludes DNA testing given the current state of that technology.

3. Summary and Conclusions

Available evidence establishes that Capt Thomas E. CLARK died on 8 February 1969 when his F-100D Super Sabre crashed in Savannakhet Province, L.P.D.R. In 1991, 1992, 2005, and 2009, U.S. personnel investigated and excavated an F-100D crash site in Savannakhet Province that can be correlated to Capt CLARK's loss by aircraft type and location. Life-support items found at the site confirm that Capt CLARK was on board the aircraft at the time of impact and that the crash was non-survivable. A fragment of a human tooth can be circumstantially attributed to Thomas E. CLARK to the exclusion of other reasonable possibilities.

4. Finding

In my opinion, the results of laboratory analysis and the totality of the circumstantial evidence made available to me establish the remains designated CIL 2009-149-I-01 as those of

Capt Thomas Edward CLARK, 174-28-1870, U.S. Air Force

THOMAS D. HOLLAND, PhD, DABFA
Scientific Director, JPAC-CIL

21 Encls

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4. Material Evidence Report: CIL 2009-149-A-01 Through 04; dtd 19 April 2010
5. MSG JCRC Liaison Bangkok TH, 271259Z FEB 91, SUBJ: Interview with Resident of Ban Poung Village During Crash Site Survey in Laos (REFNO 1374)
6. MSG CDR JCRC Barbers Point HI, 050802Z JUL 91, SUBJ: Analysis of Wreckage, Survey Site One, BTB REFNO 1374

7. MSG CJTF FA Det One Bangkok TH, 270922Z FEB 92; Subject: Detailed Report of Recovery: Case 1374
8. MSG CDR JTF-FA Honolulu HI, 110802Z AUG 92; SUBJ: Life Support Wreckage Analysis Report, REFNO 1374
9. MSG JPAC Annex Camp Smith HI, 302102Z Mar 06; SUBJ: Detailed Report of Investigation of Case 1374 (Site LA-00435) Conducted During the 91st Joint Field Activity (06-1L) in the Lao People's Democratic Republic
10. MSG JPAC Annex Camp Smith HI, 271849Z Jun 06; SUBJ: Analysis of Material Evidence Associated with Case 1374
11. Final Search and Recovery Report CIL 2009-149, an F-100D Crash Site Associated with REFNO 1374, Ban Phoun Village, Vilabouli District, Savannakhet Province, Lao People's Democratic Republic, 20 October Through 14 November 2009; dtd 29 December 2009
12. [U.S. Air Force, Life Sciences Equipment Laboratory] Executive Summary, Subject: Life Sciences Equipment Findings for Artifacts of JTF-FA REFNO Case 1374; undtd
13. Relevant Personnel Records
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19. Consultant Comments [Levine]; dtd May 18 2011
20. Consultant Comments [Rathbun]; dtd 9 May 2011
21. Consultant Comments [Willey]; dtd 11 April 2011

J2 Report: Case 1374
Savannakhet Province, Lao People's Democratic Republic

by

Mr. Sompatana Phisayavong
Mr. Robert C. Maves

Intelligence Directorate (J2)
Joint POW/MIA Accounting Command
310 Worchester Avenue
Joint Base Pearl Harbor-Hickam, HI 96853-5530

25 April 2011

J2 Report: Case 1374
Savannakhet Province, Lao People's Democratic Republic

Intelligence Directorate (J2)
Joint POW/MIA Accounting Command

25 April 2011

INDIVIDUAL ASSOCIATED

Name	Social Security Number	Rank	Posthumous Rank	Branch of Service	Date of Loss	Status
CLARK, Thomas E.	174-28-1870	Capt	N/A	USAF	8 February 1969	KIA/BNR

HISTORICAL BACKGROUND*

On 8 February 1969 Captain (Capt) Thomas E. CLARK was flying an F-100D aircraft (tail number: 56-3562; call sign: Sun Valley 34) of the 416th Tactical Fighter Squadron, 37th Tactical Fighter Wing, Phu Cat Air Base, Republic of Vietnam (R.V.N.) in a flight of four on a combat mission over Laos. The flight, controlled by an F-4 Forward Air Controller (FAC), engaged a 23mm Anti-Aircraft Artillery (AAA) battery in the vicinity of grid coordinates (GC) 48Q XD 177 598. Capt CLARK's aircraft was hit by rounds from the AAA battery, burst into flames, and crashed. No parachute was observed. Aircraft in the area conducted visual and electronic searches, with negative results. Approximately one hour after the crash, a voice transmission was received on an emergency frequency and was reported as being Asian. No further information, including the location from which the transmission originated, was available and there was no evidence to suggest this was related to Capt CLARK's loss. Subsequent to the incident the U.S. Air Force determined Capt CLARK to be Killed in Action (KIA), Body not Recovered (BNR).[1]

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* The historical background and investigation sections were compiled, unless otherwise noted, from information owned and published by the Department of Defense.

[1] DD Form 1300 Report of Casualty, CLARK, dated 4 Oct 1973.

INVESTIGATION

From 1989 through 1991 Joint Casualty Resolution Center (JCRC) Debriefer's obtained information from refugees and Thai nationals which pertained to Case 1374. Many of them provided information on the crash site, identification (ID) tags, or ID tag rubbings for Capt CLARK.[2]

On 12 February 1991 during the Joint Field Activity (JFA) 91-2L, a joint U.S./Lao People's Democratic Republic (L.P.D.R.) team investigated and surveyed a crash site at GC 48Q XD 138 601, believed to be Case 1374 in Ban (Lao word for village) Poung, Xepon District, Savannakhet Province. The team interviewed a witness who in 1974 visited a crash site where he saw the front portion of the aircraft and a rusted revolver, but did not see any remains. At the team's request, he turned over the revolver to the team for further analysis. Witness statements and wreckage correlated with Case 1374.[3] JCRC analysis of the wreckage found at the crash site was only used on J-57 type aircraft engines. This engine was used on the F-100 and several other aircraft. JCRC records indicate that no other aircraft with a J-57 engine was lost within 15 km of the surveyed GC's.[4]

On 24 November 1991 a JCRC Debriefer interviewed Major (MAJ) Robert Borja, U.S.A. who was attached to the Joint U.S. Military Advisory Group (JUSMAG), concerning Case 1374 in Bangkok, Thailand. He turned over human remains, one of Capt CLARK's ID tags, and his partially burnt ID card. MAJ Borja stated that he received these items from a Thai citizen who

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[2] Memorandum JCRC-LNO Bangkok, Thailand JCRC RPT T89-004 dated 25 January 1989; Subject: *Report of Four Remains in Laos (U)*; Message JCRC LIAISON BANGKOK TH 060955Z MAR 89; Subject: *JCRC RPT T89-053; Hearsay Concerning Recovery of Remains in Laos (U)*; Message CDR JCRC BARBERS PT HI 191732Z JUL 89; Subject: *Evaluation of RPT T89-053*; Message JCRC LIAISON BANGKOK TH 171004Z AUG 89; Subject: *JCRC RPT T89-314; Hearsay of American Remains Found in Southern Laos (U)*; Message CDR JCRC BARBERS PT HI 191812Z OCT 89; Subject: *Evaluation of RPT T89-314*; Message JCRC LIAISON BANGKOK TH 120613Z SEP 89; Subject: *Re-interview and Follow-up Concerning American Remains Found in Southern Laos (U)*; Letter of Transmittal JCRC-LNO dated 20 September 1989; Subject: *JCRC RPT T89-329; Reference: JCRC LIAISON 120613Z SEP 89*; Message CDR JCRC BARBERS PT HI 301902Z MAR 90; Subject: *Evaluation of RPT T89-329*; Message JCRC LIAISON BANGKOK TH 200955Z DEC 89; Subject: *JCRC RPT 89-406; Dog Tag Information Reported by Thai Citizen (U)*; Message CDR JCRC BARBERS PT HI 191932Z APR 90; Subject: *Evaluation of RPT T89-406*; Message JCRC LIAISON BANGKOK TH 191211Z JAN 90; Subject: *JCRC RPT T89-495; Hearsay of Remains of Two Missing Americans (U)*; Letter of Transmittal JCRC-LNO dated 29 January 1990; Subject *JCRC RPT T89-495; Reference: JCRC LIAISON 191211Z JAN 90*; Message CDR JCRC BARBERS PT HI 051832Z MAY 90; Subject: *Evaluation of RPT T89-495*; Message JCRC LIAISON BANGKOK TH 200633Z JAN 90; Subject: *JCRC RPT T89-503; Follow-up with Thai MIA Hunter in Sakon Nakon, Thailand (U)*; Message CDR JCRC BARBERS PT HI 292302Z MAY 90; Subject: *Evaluation of RPT T89-503*; Message JCRC LIAISON BANGKOK TH 151220Z MAY 91; Subject: *JCRC RPT T91-161; American Remains Found in Khammouan Province, Laos (U)*; Message CDR JCRC BARBERS PT HI 132312Z DEC 91; Subject: *Evaluation of RPT T91-161*; Message JCRC LIAISON BANGKOK TH 291117Z JUL 91; Subject: *JCRC RPT T91-228; Identification Media of Alleged Americans Reported by Lao Resistance (U)*; and Message CDR JCRC BARBERS PT HI 132302Z DEC 91; Subject: *Evaluation of JCRC RPT T91-228.*

[3] Message JCRC LIAISON BANGKOK TH 271259Z FEB 91; Subject: *Interview with Resident of Ban Poung Village during Crash Site Survey in Laos (REFNO 1374).*

[4] Message CDR JCRC BARBERS PT HI 050802Z JUL 91; Subject: *Analysis of Wreckage, Survey Site One, BTB REFNO 1374.*

received them from a Lao farmer.[5] On 11 February 1992 the U.S. Army Central Identification Laboratory, Hawaii (CILHI) received the human remains and Capt CLARK's ID media and assigned them accession number CILHI 0017-92.[6]

From 16 to 23 February 1992 during the JFA 92-3L, a joint U.S./L.P.D.R. team excavated the Case 1374 crash site near Ban Poung at GC 48Q XD 1380 6005. The team recovered several pieces of parachute harness, two pieces of a burned boot sole, a piece of survival vest, and a piece of an upper boot indicating that the pilot was in the aircraft upon impact. The team did not recover any remains. On 18 February 1992 the team interviewed Mrs. Khamsai, who reported finding an identification (ID) tag, a portion of a burnt military ID card, and a pocket knife at the crash site. (Note: The team did not confirm that she previously gave these items to a Thai Citizen who turned them over to Major Borja.)[7] On 22 February 1992 during the excavation, a Ban Poung villager, Mr. Chandi, discovered a second ID tag associated with the pilot, and handed it over to a Lao Team member who turned it over to a U.S. team member. Mr. Chandi stated that he found the ID tag at the crash site that morning.[8] Joint Task Force-Full Accounting (JTF-FA) life support wreckage analysis indicated several pieces of aircraft wreckage with part numbers identifying the aircraft as an F-100D. A grid search revealed Case 1374 is the only F-100 associated with unaccounted-for Americans lost within 20 km of the crash site. JTF-FA analysis of the recovered material evidence indicates that the pilot was in the aircraft at the time of impact.[9]

On 1 September 1993 the Socialist Republic of Vietnam (S.R.V.) provided JTF-FA researchers with a document entitled "Downed Aircraft-Record of Enemy Aircraft Shot Down from 1965 to 1975." This document was compiled by the People's Army of Vietnam (PAVN) Group 559, the group responsible for logistics and communications support for the Ho Chi Minh Trail. In this document on "Page 28/Line 39 c4 c106/591; 8:45 8 FEB 69; 37mm-1 F-100; -; 150;-;-;-;." JTF-FA analysis is that this possibly correlates with Case 1374 based on the incident date and aircraft type.[10]

On 1 January 1998 the CILHI changed its accession numbering system and CILHI 0017-92 was re-designated CILHI 1992-017.[11]

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[5] Message JCRC LIAISON BANGKOK TH 290607Z NOV 91; Subject: *JCRC RPT T91-382; Remains and ID Media of Alleged Missing American Recovered from Laos (U),* and Message CDR JCRC BARBERS PT HI 072012Z FEB 92; Subject: *Evaluation of JCRC RPT T91-382.*

[6] JPAC Centralized Accounting Repository and Information System (CARIS 7.1.17).

[7] Message JCRC LIAISON BANGKOK TH 290607Z NOV 91; Subject: *JCRC RPT T91-382; Remains and ID Media of Alleged Missing American Recovered from Laos (U),* and Message CDR JCRC BARBERS PT HI 072012Z FEB 92; Subject: *Evaluation of JCRC RPT T91-382.*

[8] Message CDR JTF-FA DET ONE BANGKOK TH 270922Z FEB 92; Subject: *Detailed Report of Recovery: Case 1374.*

[9] Message CDR JTF-FA HONOLULU HI 110802Z AUG 92; Subject: *Life Support Wreckage Analysis Report, REFNO 1374.*

[10] Message CDR JTF-FA HONOLULU HI 130012Z DEC 93; Subject: *Analysis of Vietnamese Group 559 Documentation Titled "Downed Aircraft-Record of Enemy Aircraft Shot Down from 1965 to 1975."*

[11] JPAC Centralized Accounting Repository and Information Systems (CARIS 7.1.17).

On 17 November 1999 the Vietnamese Office for Seeking Missing Persons (VNOSMP) provided Detachment Two, JTF-FA 16 reports of unilateral investigations concerning loss incidents in Vietnam and in PAVN-controlled areas of Cambodia and Laos. The team obtained information from a retired PAVN Senior Colonel, who was the political officer for the 591st Regiment. He stated that AAA units attached to the 591st Regiment had shot down an "F-101" near Ban Thamo, Laos (GC 48Q XD 142 599). JTF-FA files reveal 11 aircraft loss incidents within 15 km of Ban Thamo, and the Case 1374 aircraft was the only century-series "(F-1xx)" loss within Ban Thamo.[12]

On 22 December 2001 the Life Sciences Equipment Laboratory (LSEL) analyzed the material evidence recovered during the JFA 92-3L recovery effort. LSEL reported that the artifact evidence supported the involvement of an F-100 series aircraft with one individual in the aircraft at the time of impact.[13]

On 3 January 2002 the VNOSMP provided Detachment Two, JTF-FA 14 reports of unilateral investigations concerning loss incidents in Vietnam and in PAVN-controlled areas of Cambodia and Laos. The VNOSMP team interviewed several witnesses concerning Laos Case 1374, but the second-hand witnesses only knew that there was an aircraft shot down. They did not know the exact location of the aircraft crash site or the fate of the pilot.[14]

On 1 October 2003 the Joint Task Force-Full Accounting and the CILHI merged to form the Joint POW/MIA Accounting Command (JPAC). At that time the JPAC Central Identification Laboratory (JPAC-CIL) again revised its accession numbering system, and CILHI 1992-017 was re-designated as CIL 1992-017.[15]

On 31 October 2005 during the JFA 06-1LA, a joint U.S./L.P.D.R. team re-investigated Case 1374 in Vilabouli District. A local villager guided the team to the previously excavated crash site (GC 48Q XD 13754 60166) and provided further information about the crash site. The team searched and re-surveyed the crash site, finding possible osseous material, a life support item, and numerous pieces of serialized aircraft wreckage. A villager turned over possible dental remains that he found at the site.[16] On 16 November 2005 the JPAC-CIL received the possible dental remains and assigned them accession number CIL 2005-173; the possible osseous remains, life support material and other material evidence were assigned accession number CIL 2005-174.[17] JPAC analysis of the life-support material indicated that the pilot was in the

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[12] Message CDR JTF-FA HONOLULU HI 020812Z FEB 00; Subject: *Translation and Analysis of Vietnamese Document: Report of Unilateral Investigation of Incidents Involving the 22nd Air Defense Battalion.*

[13] Report Life Sciences Equipment Laboratory, Brooks AFB, TX, dated 21 December 2001; Subject: *Life Sciences Equipment Findings for Artifacts of JTF-FA REFNO Case 1374.*

[14] Message CDR JTF-FA HONOLULU HI 030742Z APR 02; Subject: *Translation of Vietnamese Document: Report of Unilateral Investigation of Cases 0833 and 1374.*

[15] JPAC Centralized Accounting Repository and Information System (CARIS 7.1.17).

[16] Message JPAC ANNEX CAMP SMITH HI (UC) 302102Z MAR 06; Subject: *Detailed Report of Investigation of Case 1374 (Site LA-00435) Conducted During the 91st Joint Field Activity (06-1L) in the Lao People's Democratic Republic.*

[17] JPAC Centralized Accounting Repository and Information System (CARIS 7.1.17).

aircraft at the time of impact and the items recovered and photographed at the site correlated to Case 1374 incident. JPAC files indicated that there are no other F-100 aircraft crash incidents involving unaccounted-for Americans within 15 km of GC 48Q XD 13754 60166.[18]

From 20 October through 14 November 2009 during JFA 10-1LA, a joint U.S./L.P.D.R. team excavated the Case 1374 crash site near Ban Poung (GC 48Q XD 13711 60058). The team recovered possible human remains, possible life-support material, possible material evidence, and aircraft debris. On 12 November 2009 the Recovery Leader/Anthropologist (RL/A) closed the excavation area and recommended no further excavation at this location.[19] On 17 November 2009 the JPAC-CIL received the possible human remains, possible life support materials, and material evidence, and assigned them accession number CIL 2009-149.[20] JPAC analysis of the recovered material evidence indicates the pilot was in the aircraft at the time of impact.[21]

JPAC research indicates there are eleven F-100 aircraft crash sites within 50 km of GC 48Q XD 13754 60166: Case 1374, Case 1732, Resolved Case 1477, and eight operational losses (two of which were U.S. Navy). The Case 1732 F-100 aircraft was one of a flight of two attacking a column of T-54 tanks traveling on Route 9 east of Muang (Lao word for District) Xepon under the guidance of a FAC who witnessed the Case 1732 aircraft throughout its attack run until it crashed 100 m north of Route 9, over 40 km from these GC.[22] The site excavated as the Case 1374 aircraft at GC 48Q XD 13754 60166 is within 100 m of the record loss location (GC 48Q XD 138 601). JPAC research, therefore, indicates that Case 1374 is the only F-100 aircraft crash involving unaccounted-for Americans within 40 km of the excavated site.[23]

ANALYTICAL SUMMARY

From 1989 through 1991 Joint Casualty Resolution Center Debriefers obtained information from refugees and Lao nationals which pertained to Case 1374. Many of them provided information on the crash site, ID tags, or ID tag rubbings for Capt CLARK. Joint teams investigated Case 1374 twice and excavated the crash site twice. JPAC and LSEL analysis of the life-support material indicated that at least one person was in the aircraft at the time of impact, and the items recovered and photographed at the site exclusively correlate to the Case 1374

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[18] Message JPAC ANNEX CAMP SMITH HI (UC) 271849Z JUN 06; Subject: *Analysis of Material Evidence Associated with Case 1374.*

[19] Message JPAC ANNEX CAMP SMITH HI (UC) 302303Z NOV 09; Subject: *Excavation Summary Report of Case 1374 (Site LA-00435) Conducted During Joint Field Activity 10-1LA (111th JFA) in the Lao People's Democratic Republic.*

[20] JPAC Centralized Accounting Repository Information System (CARIS 7.1.17).

[21] Message JPAC ANNEX CAMP SMITH HI (UC) 201953Z JAN 10; Subject: *Analysis of Material Evidence Associated with Case 1374 (Site LA-00435).*

[22] Message JPAC ANNEX CAMP SMITH HI (UC) 012108Z MAY 09; Subject: *Detailed Report of Investigation of Case 1732 Conducted During Joint Field Activity 09-2LA (107th JFA) in the Lao People's Democratic Republic.*

[23] BRIGHTLIGHT 2000 database, 40 kilometer radius UTM Box Grid Search.

incident based on the team obtaining Capt CLARK's ID tags. JPAC research indicates that the excavated site (GC 48Q XD 13754 60166) IS WITHIN 100m of the Case 1374 record loss location, and the Case 1374 aircraft was the only F-100 aircraft crash involving unaccounted-for Americans within 40 km of the excavated site.

Mr. SOMPATANA PHISAYAVONG
Research Analyst/Lao Linguist

Mr. ROBERT C. MAVES
Chief, Southeast Asia Research and Investigation Branch

FORENSIC ODONTOLOGY REPORT:
CIL 2009-149-I-01

JPAC CENTRAL IDENTIFICATION LABORATORY

5 February 2010

DENTAL REMAINS

The dental remain of CIL 2009-149-I-01 consists of an unrestored coronal fragment (incisal one-third) from tooth #11 (maxillary or upper left canine). The dental remain is very brittle, fragile, and in a poor state of preservation. Digital photographs (Figure 1) and a digital radiograph were taken of the dental remain.

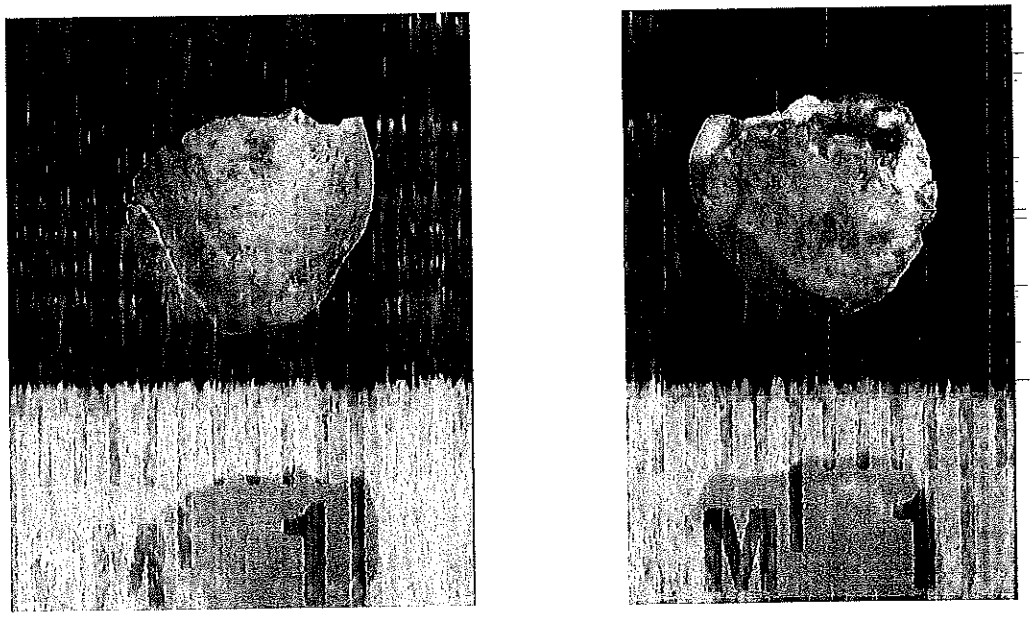

Figure 1. CIL 2009-149-I-01 dental remain tooth #11; facial view (left) and lingual view (right).

ANTEMORTEM DENTAL INFORMATION

This case is associated with an aircraft loss in Southeast Asia with one crewmember aboard. The available antemortem dental evidence for the associated casualty, Captain (Capt) Thomas E. CLARK, consists of:

1. Photocopied image of two bitewing radiographs labeled *CLARK. THOMAS E.* dated *24 JAN 68*.
2. Standard Form 603 (HEALTH RECORD DENTAL) labeled *CLARK, THOMAS EDWARD*, dated *JAN 30 1967* and containing a dental chart with entries dated *30Jan67* through *26Nov68*. The form is signed by a dental treatment provider.
3. Standard Form 88 (REPORT OF MEDICAL EXAMINATION) labeled *CLARK, THOMAS EDWARD*, dated *24 January 1968*, and containing a dental chart. The form is signed by two Medical Corps Officers.
4. Standard Form 88 (REPORT OF MEDICAL EXAMINATION) labeled *CLARK, THOMAS EDWARD*, dated *30 January 1967*, and containing a dental chart. The form is signed by two Medical Corps Officers and a Dental Corps Officer.
5. Standard Form 88 (REPORT OF MEDICAL EXAMINATION) labeled *CLARK, THOMAS EDWARD*, dated *22 Mar 1966*, and containing a dental chart. The form is signed by two Medical Corps Officers and a Dental Corps Officer.
6. Standard Form 88 (REPORT OF MEDICAL EXAMINATION) labeled *CLARK, THOMAS EDWARD*, dated *18 March 1965*, and containing a dental chart. The form is signed by two Medical Corps Officers and a Dental Corps Officer.
7. Standard Form 88 (REPORT OF MEDICAL EXAMINATION) labeled *CLARK, THOMAS EDWARD*, dated *11 Mar 1964*, and containing a dental chart. The form is signed by two Medical Corps Officers and a Dental Corps Officer.
8. Standard Form 88 (REPORT OF MEDICAL EXAMINATION) labeled *CLARK, THOMAS EDWARD*, dated *26 Oct 62*, and containing a dental chart. The form is signed by two Medical Corps Officers and a Dental Corps Officer.
9. Standard Form 88 (REPORT OF MEDICAL EXAMINATION) labeled *CLARK, THOMAS EDWARD*, dated *6 Jan 59*, and containing a dental chart. The form is signed by two Medical Corps Officers and a Dental Corps Officer.
10. Air Force Master List I003.081A labeled *CLARK THOMAS E*, dated *68 04 01* and containing a dental record.
11. Unknown form labeled *CLARK, THOMAS E.* dated *300167* and containing a dental record.

COMPARISON

Comparison of the dental remain of CIL 2009-149-I-01 to the antemortem dental evidence of Capt CLARK exhibits a single point of concordance with unrestored tooth #11 (Table 1). There are no discrepancies in the comparison.

Table 1. CIL 2009-149-I-01 antemortem and postmortem dental comparison.		
Tooth #	**Capt CLARK**	**CIL 2009-149-I-01**
11	V	V
Key: Green shade = concordance; V = tooth unrestored.		

As seen in Figure 2 and 3, the coronal morphology of the dental remain is consistent with the incisal one-third of an intact tooth #11 including the general shape and contours. Please note, the subtle differences seen between the dental remain and the intact tooth may be explained by the natural coronal variations between different individuals and wear that occurred during life.

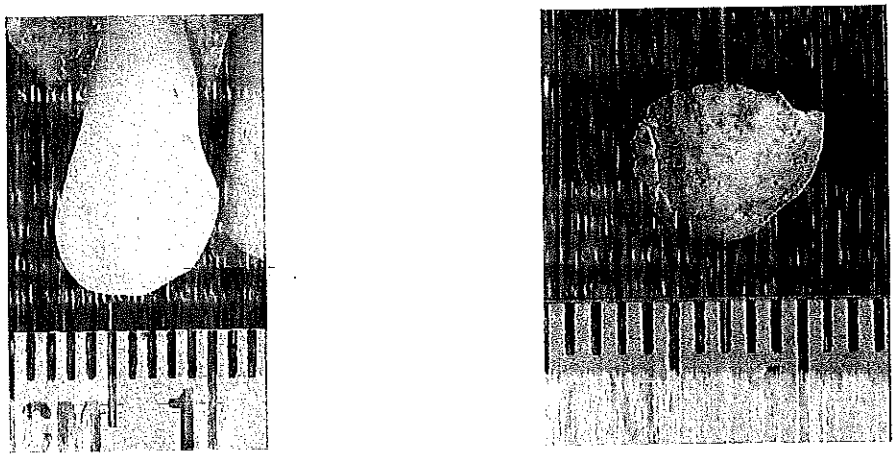

Figure 2. Dental morphology comparison; facial view of an intact tooth #11 (left—laboratory exemplar) and dental remain CIL 2009-149-I-01 (right).

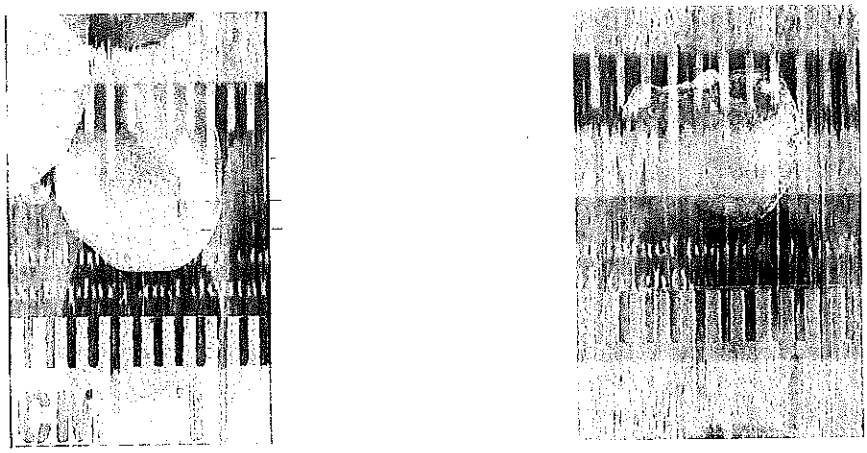

Figure 3. Dental morphology comparison; lingual view of an intact tooth #11 (left—laboratory exemplar) and dental remain CIL 2009-149-I-01 (right).

OPINION

Based on comparison of the recovered dental remain of CIL 2009-149-I-01 to the available antemortem dental evidence of Capt CLARK, a single concordant point is present involving unrestored tooth #11. As there are no discrepancies, it is my opinion that the dental remain of CIL 2009-149-I-01 is possibly that of:

Captain Thomas E. CLARK, 174-28-1870, U.S. Air Force.

for

LISA A. FRANKLIN, DDS, MS
LTC, DC, USA
Odontology

DEPARTMENT OF THE ARMY
ARMED FORCES MEDICAL EXAMINER SYSTEM
1413 RESEARCH BLVD, BLDG 102
ROCKVILLE MD 20850-3159

19 Apr 11

MEMORANDUM FOR THOMAS HOLLAND, PH.D.
Scientific Director, JPAC-CIL
Building 45
310 Worchester Ave
Hickam AFB HI 96853

FROM: MCMR/MEI
1413 Research Blvd, Bldg 102
Rockville MD 20850

SUBJECT: Stable Isotope Interpretation Consult, re: CIL 2009-149

A stable isotope interpretation consultation was performed at the request of Dr Gregory Berg, Joint POW/MIA Accounting Command-Central Identification Laboratory, to determine if a tooth fragment belongs to an individual of either Southeast Asian or Western (American) descent. Enamel from a tooth labeled as specimen CIL 2009-149 was processed at the University of Florida, Department of Geology, for the stable isotopes of carbon (C), oxygen (O), strontium (Sr), and lead (Pb). The quantitative data generated by the University of Florida were provided to this investigator for interpretation.

BACKGROUND

Stable isotope analyses can assist in determining the geolocational origins of skeletal material. Since chemical reactions are largely determined by the ionic or atomic electron configuration, the varying isotopes of an individual element have the same chemical properties. Different isotopes of a single element have different kinetic and thermodynamic properties when they undergo chemical reactions because of differences in reaction rates and heat capacity influenced by their different atomic masses (Urey 1947). While isotopes of a like element react the same chemically, they react at different rates due to their different atomic masses and sizes. Different metabolic and chemical processes therefore change the ratios between the isotopes in a characteristic manner (van der Merwe 1982).

Measurements of stable (i.e., non-radioactive) isotopic ratios are performed by a mass spectrometer, which determines the relative abundances of different isotopic masses in a variety of elements (Thirlwall 1997). For light isotopes such as those of carbon and oxygen, the isotopic ratio is compared against a universal, element-specific standard and categorized with δ (delta) notation and measured in parts per mil (‰) (van der Merwe 1982). The heavy isotopes of strontium and lead are not generally normalized to a conventional standard, but results are expressed directly as ratios (Herz & Garrison 1998), and the standards are used for mass spectrometer calibration adjustments. Combined, the stable isotopes examined for CIL 2009-149

account for cultural dietary practices, climate and geography of natal areas, and the underlying geology of where an individual was reared.

The values generated from the enamel of CIL 2009-149 were compared to previous work utilizing similar isotopic ratios derived from the enamel of a modern Western (American) cohort and individuals believed to be of East Asian origin. The enamel of the East Asian population was collected from 61 individuals from the Joint POW/MIA Accounting Command-Central Identification Laboratory's (JPAC-CIL) "Mongoloid" hold collection, spanning the period from World War II to the Vietnam War. The associated isotope values of these samples were compared to those of the enamel from the extracted third molars of 228 recent, living patients of the United States Air Force Academy, Department of Oral and Maxillofacial Surgery. The least squares means for all isotope values examined exhibited significant differences between the Western and East Asian cohorts based on a conservative multivariate analysis of variance (Regan 2006).

Carbon isotope ratios reflect the photosynthetic pathways of ingested plants and echo cultural food preferences. Individuals who have subsisted on a traditional, rice-based (C_3 plant) Southeast Asian diet display more depleted $\delta^{13}C$ values than their Western counterparts, due to a high preponderance of corn and sugar (C_4 plants) in the Western diet. What makes carbon isotope analyses so powerful is that the ranges of C_3 plants and C_4 plants do not overlap (van der Merwe 1982; Ambrose & Norr 1993; Ambrose *et al.* 1997; Hart *et al.* 2003) and this appears to hold true even after isotopic fractionation during carbon incorporation into human tissues. In the comparative study (Regan 2006), the least squares means of the two groups were significantly different, with a p-value of <0.0001 and no overlap of the range of carbon values.

Oxygen values are dependent upon a variety of interrelated environmental factors such as latitude, temperature, altitude, distance inland, precipitation patterns, and humidity (Iacumin 1996; Hertz & Garrison 1998; Kendall & Coplen 2001). Oxygen is primarily incorporated into body tissues via atmospheric oxygen, water, and oxygen bound in food (Sponheimer & Lee-Thorp 1999). Because the $\delta^{13}O$ value of atmospheric oxygen is relatively constant, it is believed that oxygen isotopic signatures are primarily representative of imbibed water and to a lesser extent the macronutrients found in foodstuffs (Sponheimer & Lee-Thorp 1999). Regan (2006) found that the East Asian and Western samples significantly differed with respect to their mean $\delta^{18}O$ values with a general linear model p-value of 0.0092. While the values between the two groups patently overlap, the East Asian samples cluster much more tightly. The Western samples completely encompass this distribution and extend out roughly 2‰ on either side.

Strontium signatures theoretically depend on local geology, since they reflect the underlying bedrock of a particular area. Strontium isotopic ratios vary with the age and type of bedrock underlying the soil. Older soils are more enriched compared to younger soils (as are calcium-rich soils compared to calcium-poor soils). Limited forensic analyses have utilized strontium isotopes for determining geolocational origins (Beard & Johnson 2000; Juarez 2008). The means of the strontium ratios in the comparative study for the East Asian study group and the Westerners differed significantly, with a calculated p-value of 0.0013 (Regan 2006). The East Asian samples had a much broader range with values flanking either side of the Western samples. The Western samples displayed a great deal of uniformity, even though the United

States varies considerably geomorphologically, likely due to importation of food products (further addressed in the Discussion section).

Lead values not only reflect the underlying bedrock but environmental contamination due to mining operations, waste dumps, emissions from lead smelting, coal combustion, and leaded gasoline (Åberg *et al.* 1998). Lead particles are thought to enter the body through ingestion, either through food stuffs/fluids or lead objects or inhalation (Gulson 1996). Lead ratio means varied significantly between the East Asian and Western sample groups (Regan 2006). The ranges of each of the lead isotope ratios for the East Asian samples encompassed and extended beyond the Western samples in both directions, but the two populations clustered along different slopes.

Teeth are especially useful in isotopic studies because of their robustness and ability to survive in environs where bone would normally degrade. Unlike bone, tooth enamel tends to be highly inert in terms of mineral exchange with the environment (Price *et al.* 2002; Lee-Thorp & Sponheimer 2003). Because enamel is non-cellular and heavily mineralized, it withstands the effects of diagenesis very well and long preserves an accurate biogenic isotopic signal (Lee-Thorp & Sponheimer 2003). The inorganic nature of enamel, and specifically the apatite, reflects the whole diet of the individual (van der Merwe 1982; Harrison and Katzenberg 2003). Moreover, since teeth are genetically conservative, there is little variation in the development and specifically the period of mineralization of the tooth (Fanning & Brown 1971; Hillson 1996). Once enamel formation (amelogenesis) ceases, there is no further exchange of elemental material with the environment. Examining the permanent enamel therefore, provides a snapshot of the nutritional ecology of that individual during the period of crown mineralization for that specific tooth and can assist in determining the natal origins of that individual.

RESULTS

The results for CIL 2009-149 fall within the range of Western carbon values and over two standard deviations outside of the East Asian value range. The CIL 2009-149 sample oxygen values fall within the overlapping ranges of the Western and East Asian oxygen values, but it is closer to the mean of the Western samples than the mean of the East Asian samples. The submitted sample strontium value is outside of the Western range by two standard deviations and is within the range of East Asian values. The CIL 2009-149 values for $^{206}Pb/^{204}Pb$ and $^{207}Pb/^{204}Pb$ fall within the overlapping ranges of both the Western and East Asian study groups. The $^{208}Pb/^{204}Pb$ value is outside of the ranges of both the Western and East Asian study groups, although it is within one standard deviation of the East Asian cohort (see Table 1).

Table 1. CIL 2009-149 sample values compared to Western and East Asian sample ranges (from Regan 2006).

	CIL 2009-149	Western Sample				East Asian Sample			
Isotopes	Value	Min	Max	Mean	Std Dev	Min	Max	Mean	Std Dev
Light*									
$\delta^{13}C$ (‰)	-9.14/-9.14	-12.88	-7.77	-9.97	0.81	17.25	11.60	14.25	1.00
$\delta^{18}O$ (‰)	-5.54/-5.49	-12.57	-3.14	-6.88	1.63	10.61	5.04	-7.45	0.90
Heavy‡									
$^{87}Sr/^{86}Sr$	0.715403	0.707449	0.711186	0.709273	0.000883	0.706811	0.721172	0.710995	0.002938
$^{206}Pb/^{204}Pb$	18.6403	17.681000	19.049300	18.595094	0.280822	16.991700	19.620500	18.090809	0.435832
$^{207}Pb/^{204}Pb$	15.6724	15.556800	15.674900	15.631292	0.022565	15.528800	15.695800	15.603740	0.040095
$^{208}Pb/^{204}Pb$	38.7077	37.398300	38.616500	38.268931	0.225698	37.176100	38.883700	38.074157	0.355069

*run twice (‰ vs VPDB [Pee Dee belemnite, Vienna Convention])
‡Data relative to the following standard values: sample error 9.1E-06
Sr: NBS 987 87/86=0.71024 (+/-0.00003);
Pb: NBS 981 206/204=16.937 (+/-0.004); 207/204=15.490 (+/-0.003); 208/204=36.695 (+/-0.009)

DISCUSSION

Carbon isotopes, reflecting dietary practices, were the most discriminatory of the four elements examined in the Regan (2006) study. The Western values were more enriched, indicating a heavier C_4 component to the diet, likely due to considerable corn and/or sugar consumption. The East Asian values were more indicative of a C_3 diet, undoubtedly related to their dietary reliance upon rice. The CIL 2009-149 $\delta^{13}C$ value of -9.14 ‰ indicates a diet rich in C_4 foodstuffs, and is typical of Western food preferences. This value falls completely outside of the range of values for the East Asian cohort, indicating that CIL 2009-149 is not from the remains of an individual who subsisted on a rice-based diet.

The CIL 2009-149 $\delta^{18}O$ values of -5.54 and -5.49 for each respective run overlap both the Western and East Asian cohorts. The CIL sample value more closely aligns with the mean for the Western study group and is near the upper limit of the East Asian range of values. Even though the latitudinal gradient for the two regions is fairly disparate, according to the International Atomic Energy Agency (2001) overlays for weighted annual $\delta^{18}O$ for Asia and North America, the annual $\delta^{18}O$ for precipitation is quite similar for East Asia and the majority of the continental U.S. This similarity limits the ability of oxygen isotopes to discriminate individuals between these two locales.

When interpreting heavy isotope values, the impact of anthropogenic effects upon isotopic signals bears mentioning. Worldwide food importation and industrial pollution are implicated in the changing of isotopic values when contemporary populations are compared to paleological assemblages and can outright alter or mask the isotopic signatures. This complicates analyses and leads to false conclusions if not identified.

While the strontium value for the CIL 2009-149 sample is outside of the Western range by several standard deviations, it does fall within the range of East Asian values. Even so, I do not believe that Western origin can be excluded. The Western study sample participants were individuals who were primarily born during the 1980s and grew up eating global food imports. Assuming that the individual to whom the analyzed tooth sample belonged died during the

Vietnam conflict, that individual would have been born and undergone tooth formation sometime prior to the mid-1960s. For strontium to have utility as a geolocational indicator of natal origin, it must reflect locally grown food stuffs. Prior to the Vietnam War, food was grown and consumed more locally within the United States and worldwide, thus the proxy data for the Western cohort is likely skewed. This is substantiated by modern American strontium values in the Regan (2006) study displaying a distinct trend toward homogenization, with the mean value for $^{87}Sr/^{86}Sr$ varying only slightly from that of seawater. This indicates that the widespread importation of foodstuffs into the United States has had a dramatic effect upon population strontium ratios.

The lead isotope ratios found in CIL 2009-149 are indeterminate when compared to the Western and East Asian comparative samples. Similar to the strontium values, the modern American sample may not be an adequate proxy for lead values of individuals who died during the Vietnam conflict because of lead control measures enacted in the United States such as removing lead from paints, gasoline, and batteries and reduction of mining operations, soldering, and coal combustion.

Regan (2006) developed a linear discriminant function that had correct cross-validated classification rates of 95% or greater, separating individuals into either Western or East Asian origins. This equation cannot be utilized for the CIL 2009-149 case due to missing data for the isotopic ratios of $^{207}Pb/^{206}Pb$ and $^{208}Pb/^{206}Pb$.

CONCLUSIONS

This comparison sought to determine if the dental remain labeled CIL 2009-149 was from an individual who grew up in the United States or of someone from East Asian ancestry (assuming the tooth is from one of these two groups). Isotopic analysis demonstrates carbon values within the expected Western ranges that are two standard deviations different from East Asian values. Likewise, oxygen values are more similar to the Western mean than the East Asian mean. Strontium and lead values are equivocal. Therefore, the quantitative stable isotope data support the conclusion that the tooth sample from CIL 2009-149 is most likely from an individual of Western (American) origin.

LAURA A. REGAN, Lt Col, USAF, Ph.D.
Deputy Chief Forensic Anthropologist

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MATERIAL EVIDENCE REPORT:
CIL 2009-149-A-01 Through 04

JPAC CENTRAL IDENTIFICATION LABORATORY

19 April 2010

BACKGROUND

This case involves material evidence and associated human remains recovered from excavations and unilateral turnovers near the village of Ban Phoun, Vilabouli District, Savannakhet Province, Lao People's Democratic Republic (L.P.D.R.). The crash site excavated (LA-00435) is correlated to REFNO 1374, which involves the 8 February 1969 loss of Capt Thomas E. Clark while aboard an F-100D aircraft that crashed during a combat mission over Laos.

In 1992, excavation of the crash site by a Joint Task Force-Full Accounting (JTF-FA) recovery team yielded possible life support items and material evidence (REF: RMG/CDR JTF-FA, Detachment One, Bangkok Thailand, 270922ZFEB92, SUBJ: Detailed Report of Recovery: Case 1374, Conducted During Joint Field Activity 92-3L in the L.P.D.R.). Additionally, identification tags and a partial identification card were unilaterally turned over to the Recovery Team (RT) by local villagers; the identification media was allegedly found in the area excavated by the JTF-FA team. All of the material evidence was accessioned as CILHI 0017-92.

Additional excavation of the crash site was conducted by a JPAC RT during the 10-1LA Joint Field Activity (JFA) from 20 October through 14 November 2009. The material evidence and possible human remains recovered from the 10-1LA excavations were transported to the JPAC Central Identification Laboratory (CIL) and accessioned as CIL 2009-149 on 17 November 2009. On 8 March 2010, the material evidence originally accessioned as CILHI 0017-92 was consolidated into CIL 2009-149.

MATERIAL EVIDENCE

The material evidence analyzed within this report consists of identification media, a coin, and a wrist watch fragment. The items range from poor to good condition; generally, the evidence displays some erosion and damage, but overall is identifiable and inscriptions are at least partially legible. A soft-bristled brush and warm water were used as necessary to remove adhering soil, but the evidence did not require extensive cleaning.

The material evidence accession number and associated provenience information is listed in Table 1. Note that the material evidence from the 1992 excavations, which was originally accessioned as CIL 1992-017, was stored in a single bag with only the accession number labeled.

For this reason, and because the unilateral turnover was allegedly found in the same location as the 1992 JTF-FA excavation, these items are considered to be derived from the same provenience.

Table 1. Consolidated list of material evidence, CIL 2009-149-A.

Consolidated Accession Number (CIL)	Original Accession Number	Provenience	Material Evidence	n =	Figure
2009-149-A-01	CILHI 0017-92	1992 unilateral turnover/excavation	Tag, Identification, Personnel and necklace fragment	3	1
2009-149-A-02	CILHI 0017-92	1992 unilateral turnover/excavation	U.S. military identification card fragment	1	2
2009-149-A-03	CIL 2009-149	2009 excavation, 492N-484E, 0-20 cm	Wrist watch back, DTU-2A/P MIL-W-3818B	1	3
2009-149-A-04	CIL 2009-149	2009 excavation, 496N-488E, 0-10 cm	U.S. Lincoln Memorial reverse penny	1	4

CIL 2009-149-A-01 **Tags, Identification, Personnel and necklace fragment** **n = 3**

CIL 2009-149-A-01 is composed of two identification tags and a bead type necklace fragment (Figure 1). The silver-colored tags consist of a rectangular plate with rounded edges and a suspension hole on the right side. The edge of the metal is folded over to create a rim on the reverse side. The silver-colored necklace fragment consists of a portion of a bead type chain, broken on both ends but including the intact splicing link.

Overall, this accession is in good condition. Both identification tags are complete, although they are slightly dented, bent, and scratched. Only a short segment of the necklace is present, and some soil adheres to the splicing link. The tags are 50.7 mm long, 28.6 mm wide, and 0.8 mm thick, and they have a mass of 4.6 g. The suspension hole is 3.9 mm in diameter. The necklace fragment is 12.2 mm long, 2.3 mm thick, and it has a mass of 1.5 g; the splicing link is 9.9 mm long and 3.0 mm thick.

The following information is stamped into the metal of both identification tags in a capitalized serif font (description in parentheses):

CLARK,	(family name of individual)
THOMAS E.	(given name and middle initial)
FR69945	(service number)
A POS	(blood type)
CATHOLIC	(religious preference)

The form and format of the identification tags is consistent with the "Tags, Identification, Personnel" issued to U.S. military service members during the Vietnam War era (Department of Defense 1967). The necklace fragment is consistent with the bead type often used for suspension of military identification tags (Department of Defense 1965).

Figure 1. CIL 2009-149-A-01 Tags, Identification, Personnel and necklace fragment. Scale is in cm.

CIL 2009-149-A-02 U.S. Military Identification card fragment n = 1

CIL 2009-149-A-02 consists of a U.S. Air Force active duty identification card fragment (Figure 2). The item is composed of a plastic-like card with a clear laminate over it. It is in poor condition and less than a third of the card (only the right side) is present. The item appears originally to have been white or beige, but it is now a faded brown and has several darker stains. The laminate protects the inner card and creates an approximate 1.8 mm border along the card's

edge; the laminate is also discolored. The item is cracked and torn and appears to be heat damaged. The identification card fragment is 58.0-x-33.0 mm, 1.0 mm thick, and it has a mass of 1.4 g.

Although portions of the text and design on the card are visible, the fragmented nature of the item precludes full legibility. Also, the text and design are somewhat blurred, possibly due to water damage. The card has a decorative green border with the partial serif text: "RETURN POSTAGE GUARANTE" printed sideways along the right edge. On the main portion of card, the following is visible: "D STATES" (green *serif* font) above "UNITED STATES", "AIR FORCE", and "ACTIVE" (green *sans serif* font). Below this, there is a circular seal (consistent with the U.S. Air Force heraldic device) and the partially legible text "POSTMASTER", "TO", "HQ USAF", and "WASHINGTON" (green *sans serif* font).

On the lower portion of the card, the text "EXPIRATION DATE" (green *sans serif* font) appears above "INDEFINITE" (black *serif* font). Below this, the partial text "ERVICE" (green *sans serif* font) appears above "FR69945" (black *serif* font), indicating the service number of the individual. On the reverse side of the card there are two fingerprints (possibly thumbprints) pressed under the laminate.

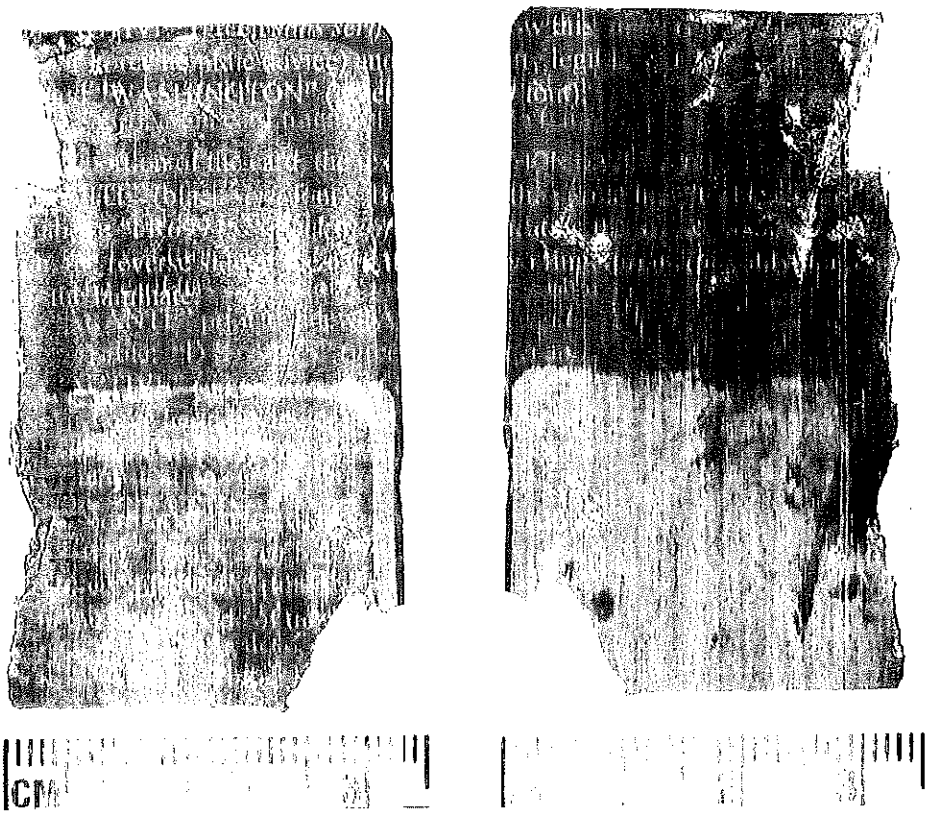

Figure 2. CIL 2 **y identif** **service number (left, fr** **(ri** **t, back)**

CIL 2009-149-A-03 Wrist watch **back, DTU-2A/P MIL-W-3818B** **n = 1**

CIL 2009-149-A-03 consists of the complete back portion of a watch (Figure 3). The silver-colored, metal item is round with solid lugs protruding for the attachment of a watch band; however, no remnants of a watch band are present. The entirety of the interior movement and the watch face are missing, but there is a very faint impression of a gear and some scratching on the interior surface which appears to be an impression of the absent mechanical movement. The crown (manual wind) is also missing.

The watch back is in overall fair condition, with minor scratching and wear. However, the sturdy metal watch case is substantially warped, especially the two bottom lugs. The inner portion of the bezel is covered with green corrosion product, but there is very little corrosion or soil on the watch body. The item is 33.9 mm in diameter and 4.4 mm thick. The lugs extend 6.2 mm from the circular watch body, and the wrist watch back has a mass of 13.7 g.

On the reverse side of the watch, the following *sans serif* text is inscribed at center: "CONT.NO.; FMW-75608-1/2; SERIAL NO.; 41104; DATE; JAN 1965". There is also an outer circle on the reverse side that has the following *sans serif* text curved along the top: "WRIST WATCH DTU-2A/P MIL-W-3818B". Along the curve of the sides and bottom is the *sans serif* text: "FED. STOCK NO. 6645-066-4279 U.S. MFG. PART NO. XZ73065". This item is consistent with U.S. military wrist watches issued during the Vietnam War era (Olive-Drab 2010; Seung 2010).

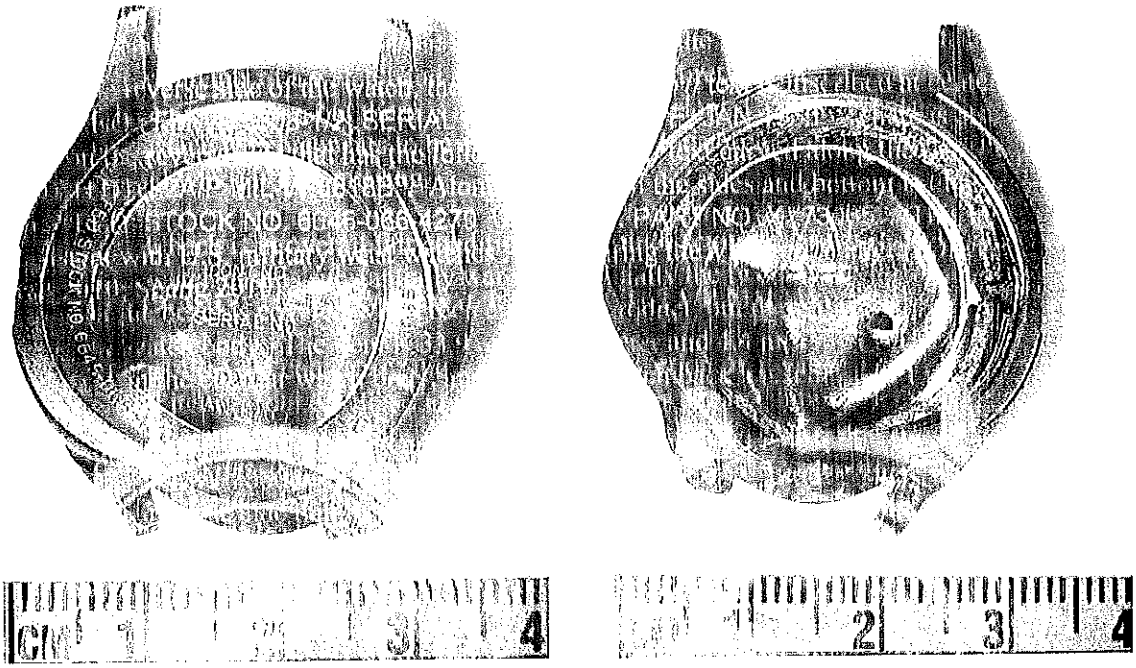

Figure 3. CIL 2009-149-A-03, wrist watch back, DTU-2A/P MIL-W-3818B, front (right) and reverse (left) views.

CIL 2009-149-A-04 **U.S. Lincoln Memorial reverse penny** **n = 1**

CIL 2009-149-A-04 consists of a Lincoln Memorial reverse penny in fair condition (Figure 4) (Yeoman 2008:58). The coin is manufactured from a copper-colored metal and is slightly warped such that the coin no longer lies flat. Green and yellow corrosion product adheres to the surface on both sides, partially obscuring the design and text. The obverse of the coin bears the right-facing bust of Abraham Lincoln with "LIBERTY" to the left, the mint date "1967" to the right, and "IN GOD WE TRUST" along the top. The reverse bears the Lincoln Memorial with "UNITED STATES OF AMERICA" along the top and "ONE CENT" along the bottom. The text "E·PLURIBUS·UNUM·" appears above the Lincoln Memorial, but this is largely obscured by corrosion product. The coin has a diameter of 18.9 mm and is 1.5 mm thick. It has a mass of 2.8 g.

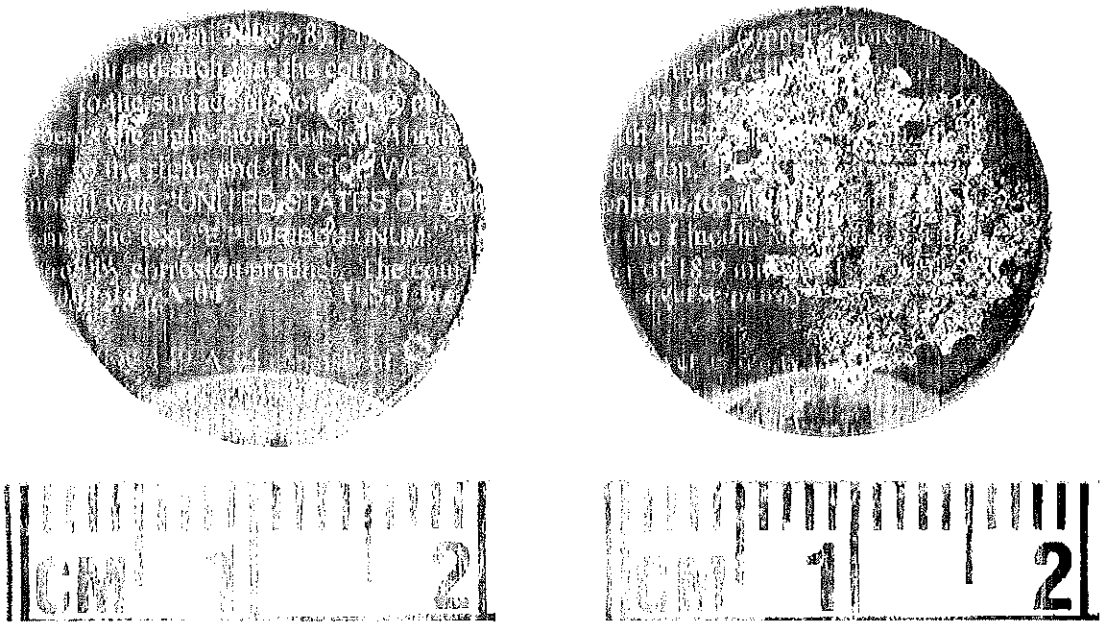

Figure 4. CIL 2009-149-A-04, U.S. Lincoln Memorial reverse penny, obverse (left) and reverse (right) shown.

FINDINGS

The material evidence associated with REFNO 1374 is generally consistent with a U.S. military loss. The name, service number, and additional identifying information on the personnel identification tags (CIL 2009-149-A-01) and the service number on the U.S. military identification card fragment (CIL 2009-149-A-02) are consistent with records for U.S. service member Capt Thomas E. Clark.

The 1967 U.S. penny (CIL 2009-149-A-04) provides a *terminus post quem* in accord with the incident loss date of 8 February 1969. The wristwatch fragment (CIL 2009-149-A-03) provides an additional date (1965) consistent with the REFNO 1374 incident. Overall, the material evidence in this accession is consistent with the type of personal items carried by U.S. military personnel during the Vietnam War era.

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