

DNA RESULTS AND RECOMMENDATIONS FOR PHASE II AND PHASE III ACTIVITIES

**ADDENDUM TO REPORT OF THE INVENTORY OF THE MEMORIAL
OSSUARY, NEVESINJE (ICMP.FSD.AA.685.3.DOC)**

Distribution:

Restricted

Sarajevo, 22 January 2015

ICMP.FSD.AA.685R.3.ADD1.W.doc

Table of Contents

I.	EXECUTIVE SUMMARY	3
II.	BACKGROUND.....	4
III.	TESTING OF BONE SAMPLES	5
IV.	EXPECTED PHASE II ACTIVITIES	5
	4.1. Re-associations	5
	4.2. Possible historic cases	6
V.	ORGANISATION OF PHASE II ACTIVITIES.....	6
VI.	PHASE II AND PHASE III WORKFLOW	7
	ANNEX 1: Cases by status category and recommendations for further work	9

I. EXECUTIVE SUMMARY

1. The NN review at Nevesinje followed the procedure detailed by the Trebinje Prosecutor. A report describing the aims and objectives, organization, methods, undertaken activities, and preliminary results was completed for submission to the District Prosecutor's Office (DPO) in Trebinje. This addendum to the main report is compiled to provide an update on case status following DNA testing of previously submitted bone samples, and outlines further necessary examination, re-association, and identification activities to be undertaken.
2. During the inventory at Nevesinje, 57 of the total of 61 body bags were thoroughly examined and reviewed. The remaining four cases were listed as previously officially identified through DNA. They were visually examined for inconsistencies in the final week of examinations; no inconsistencies were recorded and these cases are not included in the analyses pertaining to Nevesinje NN case review. The status of each body bag was determined. The body bags were found to contain a total of 94 distinguishable bodies and/or body parts. Some of the bags contain remains of multiple individuals. Two bags (3.5%) had not apparently been sampled before. 30 new DNA samples were taken. There are also 18 reserve samples previously taken by Dr. Karan, the pathologist in charge of these cases, that ICMP recommends be sent for DNA analysis.
3. As a result, 26 DNA profiles were successfully obtained. Of these, 8 (30.8%) have positive matches with blood reference samples, and 18 (69.2%) have profiles but there are no matches to reference blood samples.
4. Positive matches provided 1 new identity. There are no re-associations to this individual. There are 6 other re-associations with cases previously identified through DNA.
5. The reason 69.2% of samples did not have a match with reference blood samples is either due to these remains not being related to the conflict of the 1990s, or because there are no living relatives to provide a blood reference sample, or because families did not provide a reference blood sample because their missing family member was identified by presumptive "traditional" means.
6. There were 4 bone samples that failed to provide DNA profile (13.3% of all samples). These will be re-examined to determine if the cases can be re-sampled.
7. With the obtained DNA results, further examination measures can be undertaken as phase II of the NN case review. These consist of re-examinations and reviews of the case review form, anthropological examination data, autopsy notes, and additional investigative information.
8. The DNA results obtained so far provide the basis for 19 re-associations of body parts and bodies (including those described in 4 above). Of these, 7 re-associations are straightforward matches within the same examined case, while 12 others are between different cases. These will require additional anthropological examination and processing, including the re-exhumations of cases, where needed.
9. Of the 19 re-associations, 7 relate to cases already identified/named through DNA. There is no information on burial status of these 7 DNA identified/named cases for which re-associations will need to be performed. As the NNWG had not found cases pertaining to these missing persons in the Memorial Ossuary Nevesinje, there is an assumption that these individuals are buried. If this assumption proves to be correct, then these families should be notified to

determine next steps, which may involve exhumation and requisite court orders. Re-exhumed cases are likely to need DNA sampling if it is determined that there are mis-associated body parts present.

10. The initial case review phase at Nevesinje determined 5 possible historic cases. No matches with blood reference samples have been made to these cases for which DNA samples have been taken and processed. Policy should be established on mechanisms for potential case closure of probable historical cases, which might be informed by additional scientific approaches such as C14 or stable isotope analyses.
11. Once re-associations of cases with DNA match reports are undertaken and completed, identifications can be made and identified persons returned to families. The total number of such cases is yet to be determined.
12. Phase II activities need to be undertaken as per the agreed plan (see section VI below), to re-associate and review cases based on the DNA results. Following the completion of all activities related to phase II, a summary of the weekly findings will be produced and a final Annex to the main report will be submitted.

II. BACKGROUND

13. Under the instruction of the Chief Prosecutor of BiH and the order of the Chief Prosecutor of the Federation of BiH, the DPO in Trebinje undertook a review of cases stored at the Memorial Ossuary in Nevesinje with the support of the NNWG. A report describing the aims and objectives, organization, methods, undertaken activities, and preliminary results was produced for the Head of War Crimes Department of DPO in Trebinje by the International Commission on Missing Persons (ICMP).
14. The strategy and process for the inventory which was developed by ICMP based on the analysis of case status and issues found at Podrinje Identification Project (PIP), Krajina Identification Project (KIP), and Sutina, Mostar facilities was followed after the agreement with the Trebinje Prosecutor. The review revealed an under-estimate of total cases (bodies and body parts) housed at the facility due to the fact that many body bags contain more than one case of human remains. Certain cases which were previously named/identified were found to contain unrelated skeletal elements or elements that were previously mis-associated. This finding further complicates all subsequent activities related to these mortal human remains.
15. During the inventory at Memorial Ossuary in Nevesinje, 57 of the total of 61 body bags were thoroughly examined and reviewed. The remaining four cases were listed as previously identified through DNA. They were visually examined for inconsistencies in the final week of examinations; no inconsistencies were recorded and these cases are not included in the analyses pertaining to Nevesinje revision. The Missing Persons Institute (MPI) and the Prosecutor had been following the practice of counting one body bag as one "case." The status of each body bag was determined and 29 (50.8%) required an immediate change of case status due to the inventory review.
16. The body bags were found to contain a total of 94 distinguishable bodies and/or body parts. Some of the body bags contain remains of multiple individuals. Two bags (3.5%) had not apparently been sampled before, and 30 new DNA samples were taken. An additional 18 reserve

bone samples were previously taken by Dr. Karan. It is recommended these samples be submitted for DNA testing.

III. TESTING OF BONE SAMPLES

17. 26 DNA profiles were successfully obtained from the bone samples, with the following results:
 - 8 (30.8%) have positive matches with blood reference samples, and DNA match reports have been issued relating to named missing persons; and
 - 18 (69.2%) have profiles but there are no matches to reference blood samples.
18. Within the positive matches, the following results were obtained:
 - 1 new identity;
 - 0 re-associations with this new name; and
 - 7 re-associations to cases previously identified using DNA matches.
19. The main reasons for bone samples having no matches are:
 - the remains are not related to the conflict of the 1990s;
 - there are no living relatives to provide a blood reference sample;
 - families did not provide a reference blood sample because their missing family member was identified through presumptive identification utilizing “traditional” means, and his/her mortal remains were repatriated to the family and buried.
20. Four bone samples failed to provide a DNA profile, a 13.3% failure rate (of all submitted samples). Re-submission of samples will depend on the expert assessment by the pathologists and anthropologists during the physical review of cases in question during phase II.

IV. EXPECTED PHASE II ACTIVITIES

21. Thanks to the very encouraging results from the testing, phase II will require a fairly large amount of work (the workflow is described further in section VI) in order to be able to assess and work out requirements for closing or updating the status of each individual case. This will require re-examination of cases, including the data from DNA analysis, the case review forms, anthropological examination data, autopsy notes, and additional investigative information. This work will result in re-association of cases or parts of cases, separation of cases, exclusion of cases from investigation, while certain cases will remain open but with recommendations for further activities.

4.1. Re-associations

22. Through the DNA testing of bone samples, anthropological assessments, and case investigation, it has been determined that 19 re-associations of body parts and bodies can be performed as the initial result of the review. Of these, there are:
 - 7 simple re-associations which require photography and updates of records;
 - 11 complex re-associations which require additional anthropological examination, and updates of records;
 - 1 re-association with remains stored in Sutina, Mostar. ICMP recommends an

assessment to be made in order to determine where skeletal remains will be housed until identification, as the case has obtained a DNA profile but there is no match with blood reference samples. Additionally, the MPI investigator Ms. Muratović has stated that there are investigative leads to suggest a possible identity associated to this case. Further investigation should be instigated to ascertain the accuracy of this information.

23. Within these 19 re-associations, there is a possibility that there are associations with already identified and buried cases. The number of re-associations with already identified and buried cases can be determined only after additional information is provided on the status of the remains of the 7 identified individuals for whom DNA re-associations were discovered. If further investigation indicates that some of the 7 persons for whom the DNA reports were generated are identified and buried, then re-exhumations would permit assessment of buried cases and further re-examinations and re-associations. If mis-associations and mis-identifications are observed or suspected, further DNA sampling and case investigation will be needed.
24. Identifications can be performed following the completion of relevant re-associations of cases with DNA match reports. Families will be able to receive the identified remains of their loved ones. The number of such cases is not yet known, as there are many variables which will determine case status, as described above (also see Annex 4 of the main *Report of the Inventory of the Memorial Ossuary, Nevesinje, ICMP.FSD.AA.685.3.doc*).
25. In order to conduct scientific re-associations with cases that have been buried, the cases will have to be re-exhumed, assuming family permissions and court orders. Those buried cases will need re-examination and comprehensive analysis of all records in order to determine the recommended actions. These can include DNA sampling, adding, replacing, or removing skeletal elements. Based on previous experience of cases with this status, additional bone sampling is often required to verify associations of skeletal elements.

4.2. Possible historic cases

26. The initial case review phase at the Memorial Ossuary in Nevesinje determined that there are 5 possible historic cases. Out of these, 2 bone samples were taken from one previously un-sampled case, to account for the possibility that this case was in fact conflict-related. However, these samples provided no matches, further supporting the probability that they are historic, rather than missing persons cases. Additionally, 1 case which was previously tested has been re-sampled in order to confirm the connection of a previously taken bone sample DNA code to this case. The DNA analysis has confirmed the connection.
27. A discussion is needed regarding these cases to ascertain whether further testing can add more certainty to their status as cases not related to the 1990-1995 conflict, as well as to determine what level of evidence is required by the Prosecutor's Office, pathologists, and MPI to stop considering them as potential missing persons cases.

V. ORGANISATION OF PHASE II ACTIVITIES

28. The ICMP will provide assistance in the undertaking of re-examinations, and related re-association activities within the scope of the agreed process (see section VI below) under the direction of the prosecutor, together with MPI, pathologists, and the police. The team can use

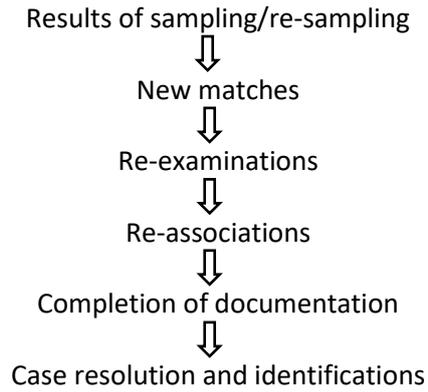
the same work space used during phase I.

29. All updated case details on examined cases will be entered into a database, so that findings can be more easily managed, analyzed, and updated.
30. Re-exhumation of cases, with the permission of the families and under a court order, should be coordinated by the prosecutor, MPI, and pathologists. This can be described as phase III. It should be noted that the re-exhumed bodies may be complex cases with one body bag containing multiple individuals.
31. The time frame for phase II activities is likely to be 1-2 weeks dependent on the availability of cases and available NNWG staff. It is likely that cases that are re-exhumed as part of phase III activities will not be available for re-examination during phase II. The team will likely need to return to the facility over time to complete all re-examinations and further activities.
32. A summary of the weekly findings of phase II activities should be generated to show the number of examined cases, their status, and samples taken. Cumulative tables like those in the Annex below should be included in reports following the completion of phase II activities.
33. Case records should be updated when changes are made. It is recommended the Prosecutor's Office oversees and regularly checks case status and progress through a managed database system.
34. Cases categorized by status are listed in Annex 1, together with recommendations for further work. Case labels with tested bone codes are listed in tables so it is clear what needs to be done to resolve each of case.
35. It is not recommended that further work be undertaken without appropriate staff, otherwise arising issues may be compounded.

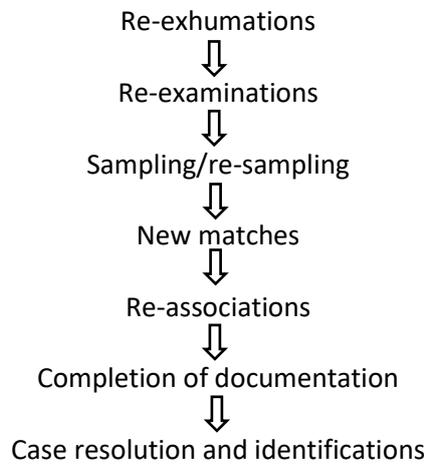
VI. PHASE II AND PHASE III WORKFLOW

36. Phase II workflow is outlined below. It is subject to the approval of the prosecutor and other NNWG participants, and will include the implementation of decisions regarding the NN human remains following the phase I case review and inventory. It will lead to phase III and the necessary re-exhumations.

Phase II summary



Phase III summary



ANNEX 1: Cases by status category and recommendations for further work

1. Bone samples gathered by Dr. Karan (pathologist) that should be DNA tested

During the revision, it was determined that some DNA samples, taken by Dr. Karan from relevant cases, had not been sent for DNA analysis. According to information given by the District Prosecutor’s Office in Trebinje, Dr. Karan took these samples as reserve samples, to be used in case the original samples failed DNA testing; nevertheless, these should be tested, as certain cases need skeletal association confirmation due to insufficient anatomical-morphological connection between skeletal elements.

NOTE: ICMP has not taken new DNA samples from these cases, as the aforementioned samples exist, and in order to avoid further invasive sampling of these skeletal elements.

Case number	DNA sample code	Skeletal element
[REDACTED]	[REDACTED]	MAXILLARY TEETH
[REDACTED]	[REDACTED]	TEETH
[REDACTED]	[REDACTED]	L FIBULA
[REDACTED]	[REDACTED]	SKULL
[REDACTED]	[REDACTED]	MANDIBULAR TEETH
[REDACTED]	[REDACTED]	R TIBIA
[REDACTED]	[REDACTED]	R HUMERUS
[REDACTED]	[REDACTED]	SKULL FRAGMENT
[REDACTED]	[REDACTED]	L FEMUR
[REDACTED]	[REDACTED]	L RADIUS
[REDACTED]	[REDACTED]	R FEMUR
[REDACTED]	[REDACTED]	TEETH
[REDACTED]	[REDACTED]	SKULL FRAGMENT
[REDACTED]	[REDACTED]	TEETH
[REDACTED]	[REDACTED]	SKULL FRAGMENT
[REDACTED]	[REDACTED]	L FEMUR
[REDACTED]	[REDACTED]	R FEMUR
[REDACTED]	[REDACTED]	MAXILLARY TEETH

Table 1:

Samples taken as “reserve samples” that should be forwarded for DNA testing in order to check the association of skeletal elements and/or other inconsistencies found.

➤ **Recommendation**

Test the listed samples in order to obtain results that can guide further work on these cases.

2. Probable historic cases unrelated to the recent 1992-1995 conflict

Probable historic cases are considered to be those that have clear indications of being unrelated to the recent conflict, and therefore fall outside of the scope of the search for missing persons. Various indicators have been taken into consideration, including personal belongings and clothes, prior information about the exhumation site, as well as bone taphonomy (post-mortem damage) that can

indicate the age of these skeletal elements. Initial review and examination determined that there are 5 cases which fall into this category.

No	Case number
1	[REDACTED]
2	[REDACTED]
3	[REDACTED]
4	[REDACTED]
5	[REDACTED]

Table 2:
List of cases determined as unrelated to the recent conflicts.

➤ **Recommendations**

Further investigation of prior background information about the exhumation site is needed in order to reach final conclusions and case status resolutions. Further scientific inquiry can be undertaken (e.g. C-14 and stable isotope testing of bones), provided there is funding available, and permission from the Prosecutor is obtained. Two of these cases originate from the same exhumation site; therefore, only one of the two can be scientifically tested, and the results and subsequent conclusions can be applied to the other related cases as well.

3. Cases with skeletal elements which need to be re-associated

As aforementioned based on the DNA results 19 re-associations of skeletal elements need to be carried out.

No	Case number	DNA Sample code	DNA Sample Code	Basic information
1	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. DNA reports with the name of the missing person can be obtained from the MPI.
			[REDACTED]	
			[REDACTED]	
2	[REDACTED]	[REDACTED]	[REDACTED]	Re-association within the case.
			[REDACTED]	
3	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. Bone samples have a generated DNA profile but no match in the missing persons database.
			[REDACTED]	
			[REDACTED]	
4	[REDACTED]	[REDACTED]	[REDACTED]	Re-association within the case. Bone samples have a generated DNA profile but no match in the missing persons database.
			[REDACTED]	

No	Case number	DNA Sample code	DNA Sample Code	Basic information
5	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. Bone samples have a generated DNA profile but no match in the missing persons database.
			[REDACTED]	
			[REDACTED]	
6	[REDACTED]	[REDACTED]	[REDACTED]	Re-association within the case. DNA reports with the name of the missing person can be obtained from the MPI.
7	[REDACTED]	[REDACTED]	[REDACTED]	Re-association within the case.
			[REDACTED]	
8	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. DNA reports with the name of the missing person can be obtained from the MPI.
			[REDACTED]	
9	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. Bone samples have a generated DNA profile but no match in the missing persons database.
			[REDACTED]	
10	[REDACTED]	[REDACTED]	[REDACTED]	Re-association within the case. Bone samples have a generated DNA profile but no match in the missing persons database.
11	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. Bone samples have a generated DNA profile but no match in the missing persons database.
12	[REDACTED]	[REDACTED]	[REDACTED]	Re-association within the case. Bone samples have a generated DNA profile but no match in the missing persons database.
13	[REDACTED]	[REDACTED]	[REDACTED]	Re-association within the case. Bone samples have a generated DNA profile but no match in the missing persons database.

No	Case number	DNA Sample code	DNA Sample Code	Basic information
14	[REDACTED]	[REDACTED]	[REDACTED]	Re-association within the case. Bone samples have a generated DNA profile but no match in the missing persons database.
15	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. Bone samples have a generated DNA profile but no match in the missing persons database.
			[REDACTED]	
			[REDACTED]	
16	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. DNA reports with the name of the missing person can be obtained from the MPI.
17	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. DNA reports with the name of the missing person can be obtained from the MPI.
			[REDACTED]	
			[REDACTED]	
18	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. Bone samples have a generated DNA profile but no match in the missing persons database.
			[REDACTED]	
19	[REDACTED]	[REDACTED]	[REDACTED]	Re-association between different cases. Bone samples have a generated DNA profile but no match in the missing persons database.

Table 3:

List of cases for which re-associations are required.

NOTE: the ICMP does not have information on the storage of these cases. Therefore, it is not possible to give an estimate on the number of re-associations which will be performed in Phase II. While performing these activities, the NNWG will need to update the cases in accordance with DNA results. The District Prosecutor's Office will be notified in the event of a case not being accessible for re-associations, so that they can undertake activities for locating these cases.

➤ **Recommendations**

Re-examine the cases and accompanying documentation, and update all information. Where possible, perform re-associations in accordance with obtained DNA results. Re-associations should be performed in the presence of an anthropologist/osteologist from the NNWG so that the activities performed on these cases can be properly documented. It will be possible to provide more thorough recommendations for resolution of these cases only after the necessary activities have been performed.

