PRINCIPLE, SPIRIT & INTENT: Odontology evidence is analyzed and documented in an organized manner conducive to replication and verification.

PURPOSE & SCOPE: This SOP outlines the procedures for forensic odontology at the CIL and applies to all odontologists. In the absence of specific procedures or in the case of conflicting procedures, the principle, spirit & intent will be met (SF(12)7.1.2 F-41).

GENERAL PRINCIPLES & GUIDELINES: The Scientific Director establishes identifications after reviewing and analyzing multiple lines of evidence, including the results of forensic odontological comparisons.

The forensic odontologists are assigned cases involving dental remains by Laboratory Management, and typically produce as a result of their testing the Forensic Odontology Report (FOR). The FOR reports general descriptions of the dental remains (inventory, condition, trauma, etc.) along with characterization of any dental restorative work apparent in the remains. Comparisons of dental remains to records of missing persons are made at the request of Laboratory Management, who defines the list of reasonable candidates for identification using all available lines of evidence (A4.1.5a).

Location: Dental tests are performed in designated locations in the CIL. The process may also occur at other locations where appropriate equipment and technology are available (e.g., medical examiner's office) (A5.3.1, A5.3.2, F6.2.1, F6.2.3). If the process occurs in other locations, deviation from this SOP is explained in the analytical notes. See JPAC Laboratory Manual, SOP 1.8 (Consult Case Management) for more details regarding off-site testing.

Evidence Handling & Preservation: Generally, evidence subjected to dental testing is usually robust in nature and not easily affected by handling, or by the ambient environment in the CIL. Usually, no special precautions or specimen preparation are required, however, in some cases adherent material may require removal for accurate testing to be performed. In these cases, the remains should be cleaned with tap water, a soft bristle brush (e.g., toothbrush), and allowed to air-dry. Any special treatments of remains during the testing process, such as reconstruction, should be discussed with the assigned forensic anthropologist prior to the treatment and reflected in the analytical notes once complete (A5.3.1, A5.3.2, F6.2.1, F6.2.3). Further guidance on evidence handling and preservation are found in JPAC Laboratory Manual, SOP 3.3 (Taphonomic Effects & Evidence Conservation).

Definitions: For the purpose of this SOP, the following definitions apply:

- **Dental Remains**: Teeth and/or supporting skeletal elements (i.e., maxilla and mandible) and prostheses.
- **Apices**: Plural of apex, the end of the tooth root.
- **Paralleling (Right-Angle) Technique of Film Placement/Cone Angulation**: Where radiographic film is placed parallel to long axis of the teeth, and the central beam is directed at right angles to the teeth and film. To achieve this parallel orientation for maxillary teeth, it is often necessary to position the film away from the tooth, toward the midline of the palate.
- **Cone**: An accessory device on a dental x-ray machine, designed to indicate the direction of the central axis of its x-ray beam and to serve as a guide in establishing a desired source-to-film distance.
- **Impulse**: Unit of measurement of exposure time. Exposure time is the interval of time during which x-rays are produced in a series of bursts or pulses.
- **Kilovoltage Peak (kVp)**: Controls the speed of the electrons. Increasing the kVp increases the energy or quantity of x-rays produced.
- **Milliampere (mA)**: Controls the number of electrons produced per second. Increasing the mA increases the quantity of x-rays produced.
- **Radiolucent**: The portion of the radiograph that is dark or black due to passage of radiant energy with relatively little attenuation of the x-ray beam. The radiographic image of radiolucent materials ranges from shades of gray to black.
- **Radiopaque**: The portion of the radiograph that is light or white. The x-ray beam is either absorbed or its passage is resisted by the radiopaque structure. The image on a radiograph of such materials is relatively light because less radiation passes through, which prevents the exposure of the film in the area.
3.0 TESTING PROCEDURES: The following testing procedures are used by CIL odontologists. Additionally, odontologists adhere to the applicable provisions of JPAC Laboratory Manual, SOP 3.3 (Taphonomic Effects & Evidence Conservation) for documenting and reporting MNI, taphonomic observations, reconstruction of evidence, etc.

3.1 Assessment of Condition of Dental Remains & MNI: The overall condition of the dental remains, to include DNA potential, should be generally described in the preliminary assessment (see JPAC Laboratory Manual, Evidence Management & Security), analytical notes, and the FOR. Descriptors and their definitions are:

- **Excellent**: The dental remains are in essentially perfect condition being devoid of fractures or loss of tooth structure. The elements are hard and dense and can withstand protracted storage and repeated handling during analysis. The likelihood of obtaining a mtDNA sequence from the teeth is very high due to quality and/or quantity of the remains.

- **Good**: The dental remains are devoid of significant material loss due to fracture, attrition, abrasion, or erosion. Mild loss of crown morphology or root cementum is evident. However, general anatomical features of the teeth are still present and confident categorization is possible. The remains largely retain their density and hardness, although they may be rarified in spots, but they can withstand protracted storage and repeated handling during analysis. The teeth are most likely to yield a mtDNA sequence.

- **Fair**: There is moderate material loss of the dental remains, especially of tooth structure, due to fracture, attrition, abrasion, erosion and/or other taphonomic processes. Loss of crown and/or root anatomy is evident which may hinder categorization. The remains may display loss of density and some brittleness requiring careful storage and delicate handling during analysis. The teeth may or may not yield a mtDNA sequence.

- **Poor**: There is significant loss of tooth structure, due to fracture, attrition, abrasion, erosion and/or other taphonomic processes. It may be difficult or impossible to categorize the tooth. The remains may display significant loss of density, be extremely friable, and may require special storage and extra careful handling during analysis to preclude damage or degradation. It is unlikely that a mtDNA sequence may be obtained from the dental remains.

- **None**: Only applies to mtDNA. The dental remains are of such quality or quantity that extracting a mtDNA sequence is not possible.

The condition of the dental remains may be expressed as a combination of excellent, good, fair, and poor if the appropriate caveats and descriptions are included (e.g., the remains range from fair to excellent with the posterior dentition generally being in better condition).

Additionally, the minimum number of individuals (MNI) represented by the dental remains should be described in the preliminary assessment and the analytical notes. The reasoning for the determination should be noted (e.g., duplicated teeth or gnathic portions). MNI need not be mentioned in individual reports as these by definition only describe a single set of dental remains. MNI of the group remains should be described in the Group report.

3.2 Dental Comparisons: Dental remains are examined physically and radiographically in order to compare the ante- and postmortem dental information. Dental remains are radiographed and the images stored on the JPAC network in accordance with (CIL-HQ Dental Radiography) of this SOP. Comparison tables should be used whenever practical.

3.2.1 Records Based Analysis: A dental records comparison is utilized when relevant radiographs are unavailable. The examination may include the following:

- Descriptions of the dental remains are entered on appropriate forms.
- Dental charts are completed noting all dental conditions.
- When indicated, information obtained from the physical examination is transferred onto a comparison sheet/table containing information on all thirty-two teeth.
- Antemortem dental charts are created by screening the dental records of the name association(s). The antemortem dental charting is then transferred to a comparison sheet/table, if applicable.
- In cases where a name association(s) is not available, a CARIS (Centralized Accounting Repository and Information System) search may be performed to produce a list of possible associations. A circle search can also be performed (using the software program “Bright Light”) on the location where the remains were recovered to produce a list of possible individuals.
- The antemortem and postmortem information is compared for similarities and discrepancies. Discrepancies may be explainable or non-explainable depending on the overall context of the case. In cases where a discrepancy can be explained, identification may be possible. If the
discrepancy is totally unexplainable or dentally impossible, and error has been ruled out, the result is exclusion (see below). Possible explainable and unexplainable discrepancies may include, but are not limited to:

- Dental procedures completed after the last documented record entry, or preexisting restorative/extraction treatment not listed within military dental records.
- Clerical charting errors.
- Different interpretations of teeth present or missing in a patient’s dentition. Differences potentially due to “mesial drift.”
- Teeth restored in the antemortem evidence yet unrestored in the remains, to also include different restored surfaces.
- Teeth listed as missing in the antemortem evidence yet present in the remains.
- Third molars marked as “missing” without the use of dental radiographs.
- Written records and/or radiographs within a patient’s antemortem evidence which belong to another individual.

If an antemortem/postmortem dental match is considered, an attempt to quantify the match with the OdontoSearch Program (Adams 2003a, 2003b) may be attempted. OdontoSearch assists in determining the relative frequency of a postmortem dental restorative pattern in comparison to appropriate databases, thereby estimating the frequency of this pattern in various populations. The statistical analysis, with appropriate confidence interval estimation, may add further support that the recovered remains are indeed the person in question and not, through chance, the remains of another individual. OdontoSearch is particularly useful when sufficient postmortem and antemortem dental evidence is available. However, if the postmortem or antemortem evidence is scant, comparisons may not provide useful results and are therefore not indicated. When indicated, use the following procedures:

- Access the OdontoSearch program through the JPAC network.
- Follow the instructions as written within the website for performance of a comparison.
- Print the results of the comparison and add to notes.

Special Instructions Regarding Caries: Dental caries are generally not a strong or useful tool when comparing antemortem to postmortem dental records and should only be used in limited cases. The detection and diagnosis of a carious lesion reflect the opinion of the odontologist which is based on his/her training, experience, equipment available (e.g., instrumentation, lighting, dental chair, X-ray machine), as well as the environment (e.g., clinical or field setting). Further, the diagnosis of caries on remains is complicated by taphonomic effects including, but not limited to, the dehydration and loss of pulp tissue. This results in a change in the appearance of a tooth and may possibly alter the tactile feel of coronal grooves, pits, fissures, and the appearance of the carious lesion itself.

Altogether, these factors may often result in significant inter-observer variability amongst dental professionals as to the actual presence/absence, degree, and severity of a carious lesion. Consequently, it typically is not possible to objectively determine the presence or absence of charted antemortem caries that are not verified radiographically. The odontologist may choose to chart carious lesions on dental remains but should limit them to those that are visually or radiographically large in size.

3.2.2 Radiographic Based Analysis: A dental radiographic comparison is utilized when relevant archived radiographs are available.

The radiographic examination at CIL-HQ includes the following:

- Radiographs are prepared in CIL-HQ in accordance with Annex A (CIL-HQ Dental Radiography) of this SOP.
- The antemortem radiographs used for the comparison are scanned by appropriate computerized software designed for scanning images or digitally photographed on a x-ray viewer.
- The scanned antemortem radiograph and the postmortem digital radiograph are imported into a word processing document or Powerpoint where they can be pasted adjacent to each other and visually compared. A comparison can also be made by visually comparing the postmortem digital images with the antemortem radiograph.
- Initial comparison may reveal the need for adjustment of the angle and rotation of the dental remains so that subsequent postmortem radiograph(s) more closely approximate the antemortem radiograph(s). A subsequent comparison is then made.
- Ante- and postmortem radiographs are analyzed for patterns that have similar features. Comparisons are made on the basis of these features which include, but are not limited to:
Overall morphology of the teeth including shape, pulp chambers, root canal systems, and other anatomical features.
- Shape/size/radiopacity of the restorative treatment/material.
- Osseous anatomical landmarks and trabecular patterns.
- Anomalies (e.g., pulp stones, changes in density of the osseous tissue).
- Pathology, such as osseous and periapical lesions.
- Presence and absence of teeth.
- Socket morphology.

Radiographic based analysis at CIL-OF is conducted using the same process as at CIL-HQ.

3.2.3 Professional Opinions: While the odontologist does not identify individuals, the odontologist may express a professional opinion based on interpretation of the observed characteristics. Significant characteristics for basing an opinion are noted in the Forensic Odontology Report (FOR). The odontologist should arrive at one of five below opinions based on the antemortem to postmortem comparison, although in rare instances cases may require the use of other descriptors:

- **Positive Identification:** The comparison of the postmortem dental remains to the antemortem dental records exhibits multiple similar unique restorative and/or anatomic features, or radiographic comparative matches which support the positive identification of the individual. In the opinion of the odontologist, the antemortem and postmortem dental information are from the same individual, i.e., the dental remains are those of the individual in question. There are no irreconcilable discrepancies present, which would exclude the individual in question.

- **Probable Identification:** The comparison of the postmortem data to the antemortem records exhibits similar unique restorative and/or anatomic features which support the identification of the individual. There are enough concordant features to determine that the remains are probably (i.e., more likely than not) those of the individual depicted in the antemortem records, although not enough to be completely certain. No unexplainable discrepancies are present which would exclude the individual in question.

- **Possible Identification:** The comparison of the postmortem dental data to the antemortem records exhibits similar restorative and/or anatomic features, but due to the quality of either the postmortem remains or the antemortem evidence, or lack of unique characteristics, it is not possible to definitively establish dental identification. There are enough similar features to determine that the remains could be those of the individual depicted in the antemortem records. No unexplainable discrepancies are present which would exclude the identification of the individual in question.

- **Exclusion:** The comparison of the postmortem data to the antemortem records yields restorative and/or anatomic features that are different and inexplicable. No reasonable explanation is possible for the differences. The remains are not those of the individual in question.

- **Insufficient Evidence:** The odontologist is unable to arrive at an opinion due to the lack of dental information.

3.3 Bite Mark Analysis. CIL odontologists may occasionally be called upon to offer opinions to law enforcement personnel on pattern injury analysis and comparison/association to potential suspects. Specific procedures for such testing are beyond the scope of the SOP, but Dorion (2004), Johansen and Bowers (2000), Bowers and Bell (1997), and the American Board of Forensic Odontology (ABFO) web site are recommended for further information and more detailed procedures. Professional opinions resulting from analysis are also found on the ABFO website. Bite mark cases are usually consult cases and the below guidance, as appropriate, applies. JPAC Laboratory Manual SOP 1.8 (Consult Case Management) should be consulted prior to engaging in bite mark analysis.

3.4 Dental Prosthetics & Appliances: Analysis of dental appliances and prosthetics is conducted as part of dental testing and results in a FOR written in a format modified from that found in Annex B (Forensic Odontology Reports) of this SOP. Required descriptive information for dental prosthetics and appliances includes, but is not limited to:

- Type of appliance.
- Location of teeth replaced and restored.
- Material(s) from which the appliance is made.

In such cases, a material evidence section is included in addition to the dental remains and other sections. When dental prosthetic materials are recovered in the absence of biological remains, only the material evidence and other pertinent sections of the FOR are completed.

3.5 Special Instructions for Consult Cases: Instructions for consult case management are found in JPAC Laboratory Manual, SOP 1.8 (Consult Case Management) (A4.4). The following special procedures apply to odontological consult cases:
Once the case is reviewed, accepted, and assigned to an odontologist by Laboratory Management, the lead odontologist arranges with the customer to perform the dental testing. An on-site visit to the customer’s facility is preferred over having to perform the case work at the CIL. If testing is performed at the CIL, it should be completed in a single day with a customer representative present in order to avoid accessioning evidence into the CIL (see SOP 1.8).

The consult case team is comprised of two odontologists. One odontologist serves as the analyst, the other the peer reviewer.

Prior to meeting with the customer, a case file should be prepared to include the Management Review Checklist and a completed Understanding of Consultation Responsibility for signature by the customer. The latter is signed prior to starting any analytical work.

Both odontologists separately examine the remains and dental records. The analyst assesses all the antemortem and postmortem evidence, complete the forms, and perform comparisons and other tests, as appropriate.

As part of the documentation of the testing, the postmortem dental radiographs are either printed or burned onto a CD. All relevant images are included in the case file.

The analyst renders a professional opinion (see above) and prepares the Dental Identification Summary Report in accordance with Annex B (Forensic Odontology Reports) to this SOP.

The peer reviewer performs the peer review as with any other FOR. Once the peer review is completed and concurrence achieved, the analyst finalizes and signs the report. Only the analyst’s signature appears on the report.

The original Dental Identification Summary Report and the analytical notes are left with the customer. Copies of the completed Understanding of Consultation Responsibility form, signed by the customer, are also given to the customer.

Prior to departing the customer location the analyst ensures the following documentation (either originals and/or copies, see above) is present in the case file:

- Antemortem Dental Record form.
- Antemortem radiographs.
- Postmortem Dental Record form.
- Postmortem radiographs and photographs.
- Dental Identification Summary Report.
- Peer Review documents.
- Management Review Checklist.
- Understanding of Consultation Responsibility form (signed by the customer).
- Any other pertinent notes or documents.

Upon return to the CIL, the analyst writes the close-out memorandum for signature by the Scientific Director. This closes out the case. A close-out memo template is available on the JPAC network.

3.6 Special Instructions Regarding Dental Restorations & Restorative Materials: The design of dental restorations and their elemental composition may vary from country to country. The characteristics most frequently observed in non-U.S. style dentistry from the Korean War era and prior include:

- Prefabricated crowns.
- Swage crowns.
- Non precious metal crowns.
- Crowns with low gold content.
- Full coverage or open faced crowns on unprepared teeth.
- Irregular shaped pontics and cantilevers designed to close inter-proximal spaces.

The above general characteristics may assist the odontologist in identifying non-U.S. remains. The odontologist must use care; however, not to inadvertently exclude an individual as there is an overlap in restorative care between countries (e.g., swage crowns and prefabricated crowns were commonly used in the U.S., but the teeth were prepared prior to crown insertion; Japanese dentistry during the WWII era included gold foils and amalgam restorations, both common restorative materials in the U.S.).

4.0 DOCUMENTATION: Analyses and results are recorded in the analytic notes in accordance with JPAC Laboratory Manual, SOP 3.0 (Analytical Notes & Documentation). The interpretation of the dental records is explained in the FOR. Preparation of the FOR is discussed in Annex B (Forensic Odontology Reports) to this SOP. Templates for the FOR and other forms of documentation are found on the JPAC network.

For case consolidations that have been previously radiographed, change the Patient Information in the Schick CDR program to reflect the current CIL number.

5.0 SURETY: The final FOR, to include consult cases, is peer-reviewed in accordance with JPAC Laboratory Manual, SOP 4.1 (Peer Review). All analytical notes, including stored digital radiographs, are made available to the peer reviewer at the time the report is reviewed. Dental tests and documentation are also subject to internal and...
external audits in accordance with JPAC Laboratory Manual, 4.3 (Audits).

6.0 SAFETY: All dental remains are handled in accordance with appropriate safety procedures. There are no inherent safety hazards involving testing of dry-bone skeletal and dental remains. Wet-bone and dental remains, i.e., remains with fresh adherent soft tissue are handled with appropriate caution as detailed in JPAC Laboratory Manual, SOP 1.4 (CIL Safety Program). Appropriate radiation hygiene measures are taken to minimize exposure to ionizing radiation.
Annex A (CIL-HQ Dental Radiography)

A1.0 PURPOSE & SCOPE: This annex outlines radiographic techniques to be used for the testing of dental remains accessioned into CIL-HQ. Radiographic techniques are limited to those using the Schick CDR System located in Room 128.

A2.0 APPARATUS & MATERIALS: Dental radiographs in CIL-HQ are typically prepared in Room 128, located adjacent to the Identification Laboratory. Room 128 has capabilities for digital radiography and digital scanning of conventional dental radiographs. All equipment is turned off when not in use and the room secured.

Dental remains are usually radiographed using digital imaging media. The standard x-ray unit is the Dent-X Endo DC (Dent-X Corporation, Elmsford, New York). The control panel for the unit, 16-inch x-ray cone, and computer system are located inside the x-ray room (Room 128). A Computed Dental Radiography (CDR) sensor is the most commonly used sensor. The Schick CDR sensor is an electronic diagnostic system, consisting of both hardware and software components that acquire, display, print, and store digital radiographic images.

The x-ray machines and x-ray room are surveyed every three years in accordance with the Dent-X Maintenance Guide. The Medical Maintenance staff (Tripler Army Medical Center) evaluates the x-ray unit and performs all preventive maintenance requirements at least annually. The walls of Room 128 are shielded with lead.

A3.0 GENERAL PROCEDURES: The following procedures apply:

- For digital radiographs, the Dent-X system is typically set for 4 mA, 65 kVp, and an impulse of 0.10 seconds. The condition of the remains (e.g., density) may require alterations in these exposure parameters.
- The dental remains should be placed on/near the Schick sensor in an anatomically correct manner.
- Whenever possible, the paralleling technique of positioning the sensor/subject/cone is recommended (Figure 1). This technique involves placement of the sensor parallel to the long axis of the tooth (teeth) with the radiation source (cone) placed perpendicular to the long axis of the tooth/sensor. The x-ray source should be located relatively close to the teeth to minimize the magnification and increase the definition.
- The dental remains are positioned between the X-ray cone and digital sensor in a manner that approximates the alignment of the remains in a living individual. Alignment and position of the remains may be stabilized by any available radiolucent medium (usually dental wax) that can safely hold the remains in a stationary position. The digital sensor is then exposed and the resulting image is displayed on the attached computer screen.
- Loose teeth or prosthodontic appliances may be radiographed by placing the remains on the sensor. If necessary, stabilize the position of the remains (see above).

![Figure 1. Paralleling technique aligning the long axis of the tooth parallel to the film surface. Cone (source) is to the left, with the x-ray beam directed perpendicular to the long axis of the tooth and the film surface.](image)

A4.0 DOCUMENTATION: Radiographs are saved on the T-Drive and occasionally migrated to the J-Drive.

Radiographs of the dental remains are initially captured and saved on the JPAC networks T-drive. The T-drive access is limited to those individuals who are trained in dental radiography (dentists and dental assistants). Dental radiographs are documented on the T-drive as follows:

- Radiographic images are saved on the Schick CDR generated fields labeled as, “Last Name, First Name, ID#” as follows:
For South East Asia (SEA):
- Last Name: CIL number
- First Name: SEA
- ID#: REFNO

For other losses:
- Last Name: CIL number
- First Name: Conflict (WWII, Korea, etc.)
- ID#: Location (e.g., PNG, Irian Jaya, MACR#, etc.)

Scanned antemortem films are saved into the “FOR” folder of the CIL Case Files. These scanned images are saved with adequate documentation, including the individual’s last name, antemortem/postmortem exposure, type of image, and if known, the date of the original exposure. The scanned image can then be imported from the folder to the Schick program.

Radiographic images may be used by anthropologists to age dental remains. Since anthropologists do not have access to the T-drive, select dental radiographs may be placed on the J-drive. These radiographs are saved into the “FOR” folder of the CIL Case Files. These images are saved with a general description of the dental remains (e.g., third molar radiographs, radiograph of tooth #32, etc.).

A5.0 SURETY: Analysts should prepare radiographs to the following standards:
- Minimize distortion.
- Capture all relevant dental information as an image.
- Maximize resolution.

The mA, kVp, and impulse (time) settings of the Dent-X system affect the quality of the image. The Schick CDR and Adobe Photoshop programs may also be used to enhance image quality.

The radiographic images placed into the FOR are considered to be analytical notes and are peer reviewed in accordance with JPAC Laboratory Manual, SOP 4.1 (Peer Review). These digital radiographs are made available to the peer reviewer at the time the report is reviewed. The provisions of this SOP are also subject to internal and external audits.

A6.0 SAFETY: The following safety precautions regarding dental radiography are in effect:
- Room 128 is designated with a standard radiation hazard sign and is lead shielded to eliminate x-ray exposure to the adjacent work areas.
- The Dent-X system should be operated only by trained personnel who have been instructed in radiation safety and in operating instructions set forth in the user’s manual. Any assigned dental officer or dental assistant/technician can provide instruction in proper dental radiographic techniques.
- Dental radiographs are taken at the lowest possible setting necessary to produce a quality digital image (approximately 4 MA and 65 kVp for 0.10 seconds). To further limit radiation exposure, the operator is required to remain outside the room during the exposure process.
- The Dent-X system and Room 128 are subjected to radiation protection surveys every three years. Quality Assurance keeps the results of the surveys.
- Periodic training is offered concerning radiation safety.
Annex B (Forensic Odontology Reports)

(A5.10.1, A5.10.2a-k, A5.10.8, F7.3.2, SF(12)7.3.2 F-66, F7.4.1, SF(12)7.4.1 F-67, 7.4.2a-g, F7.4.4)

**B1.0 PURPOSE & SCOPE:** This annex outlines the basic formats and procedures used by analysts when writing forensic odontology reports (FORs).

**B2.0 GENERAL:** FORs are typically written in the laboratory or office setting. These reports document the findings of the analyst(s) after examining dental evidence.

Although the audience for FORs is diverse (e.g., other professionals, family members, casualty officers), its first goal is to provide a competent and professional presentation of the test results. However, with such a diverse audience, analysts should avoid excessive and unnecessary use of jargon or obfuscating technical phrases.

If exceptional circumstances dictate, deviations from the JPAC Laboratory Manual, Appendix 5.2 (Style Guide) are allowed.

**B3.0 REPORT TYPE & CONTENTS:** A template example of the FOR format is found on the JPAC network. The analyst should start with a clean report template for each new report to ensure the currency of the template.

**B3.1 FOR (Long Version):** The long version of the FOR typically contains the following sections:

- **Title Block:** The title block on the first page is in Times New Roman Font and contains:
  - Report title at the top centered, bold, 16 pt, all caps and in Times New Roman. An example includes:
  - Organization centered, bold, first letter in caps, 14 pt, in Times New Roman.
  - Date (month and year) centered, bold, 14 pt, with the first letter in caps, in Times New Roman.
  - An example of the above guidance includes:

  FORENSIC ODONTOLOGY REPORT:  
  CIL 1991-097  
  JPAC Central Identification Laboratory  
  22 January 2007  

- **Dental Remains:** This section includes:
  - Description of dental remains (e.g., condition, restored/unrestored, type of restoration, etc.).
  - Radiographs taken and radiographic specifications.
  - Dental photographs taken.

- **Dental Material Evidence:** If applicable, include:
  - Type of appliance.
  - Location of teeth replaced and restored.
  - Material(s) from which the appliance is made.

- **Antemortem Dental Information:** This section includes:
  - Listing of all relevant antemortem dental records, specifically:
    - Form type and number.
    - Name that is present on the form.
    - Note if the initial exam is signed or initialed by a dental officer or left unsigned.
    - Date the form was initiated.
    - First and last entry dates or dates of pertinent treatment on the form.
  - Antemortem dental radiographs: Note condition of the radiographs and how they were found (where located/labeled).
  - Dental casts/models/photographs.
  - Laboratory prescriptions.
  - Any additional evidence that aids in determining an individual’s dental status.

- **Comparison:**
  - Detail the comparisons made regarding:
    - Dental radiographs.
    - Charting/record comparison.
    - Photographs.
    - Study models.
  - Describe and explain any inconsistencies.

- **Opinion:** The opinion of the odontologist is expressed.

- **Signature Block:** The name(s), function(s) and signature(s) of the person(s) authorizing the test report are indicated.

**B3.2 FOR (Dental Prosthetics & Appliances Only—No Remains):** The format for FORs dealing only with material evidence (i.e., no remains present) is as follows:
• Title: Forensic Odontology Report: CIL ########-A-01 (or A-01 to A-0X) (in accordance with SOP 3.6, dental appliances and other unique forms of identification are assigned the first artifact numbers).

• Section titled Dental Material Evidence (vice Dental Remains): Describe dental appliances/prosthetics and provide photograph(s).

• Section titled Antemortem Dental Information: Provide a list of all antemortem dental records of every individual involved in the related incident (similar to a group remains report).

• Section titled Comparison: as above.

• Section titled Opinion: as above.

B3.3 FOR (Short Form): Also called the Dental Identification Summary Report, this is an abbreviated version of the FOR used primarily for consult cases. The report is a fill-in-the-blank form that can be hand-written, signed and presented to the customer. Required fields for completion include:

• Case number (include both the CIL number and the customer agency case number).
• Name of deceased.
• Odontologist/analyst name.
• Customer agency and place of examination.
• Comparison/Compatibility Table.
• Remarks (include information on how the opinion was reached).
• Opinion.
• Signature of analyst.
• Date of examination.

B3.4 Miscellaneous Considerations: The following are considerations relating to the FOR text organization, structure, and inclusions:

• Correct and consistent nomenclature and terminology should be used throughout the FOR including section headings, figure captions, and in the descriptive text.

• Section headings should be in 14 pt font while descriptive text should be in 12 pt, all in Times New Roman.

• Describe any accession consolidations, as necessary.

• Appropriate photographs and radiographs, prepared in accordance with relevant SOPs, documenting the remains must be included in the report and referenced in the text. For example, “the draining sinus on the left lower tibia shows new bone formation (see Figure 1).” Because it is ultimately scanned, authors should avoid putting images on the signature page of the FOR since a significant decrease in image quality occurs.

• The following guidance applies to figure and photograph captions:

  o When displaying an item(s) being tested, the figure caption should include the CIL accession number and the item description.
  o Graphic or photographic exemplars should be clearly identified.
  o Scale increments should be indicated in the caption.
  o An example of the above guidance includes:

   Figure 1. CIL 1993-236-I-01, dental remains, occlusal view of mandible. Scale is in centimeters.

• Include any table(s) that may be appropriate for the documentation of the biological materials.