

Position Classification Standard for Dental Laboratory Aid and Technician Series, GS-0683

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SERIES DEFINITION

This series covers positions that involve technical work in the fabrication and repair of dental prosthetic appliances on prescription of a dentist. This work requires a technical knowledge of dental anatomy and skill in the use of dental laboratory materials and equipment.

This standard supersedes the standard for the Dental Laboratory Technician Series, GS-0683, issued in June 1959.

EXCLUSIONS

The following kinds of work are excluded from this series:

1. Positions that involve the practice of dentistry. Such positions are classified to the [Dental Officer Series, GS-0680](#).
2. Positions that involve prophylactic dental treatment or giving instruction in oral hygiene. Such positions are classified to the [Dental Hygiene Series, GS-0682](#).
3. Positions that involve chairside assistance to the dentist in the course of restorative dentistry or oral surgery. Such positions are classified to the [Dental Assistant Series, GS-0681](#).
4. Positions that involve fabrication of extra-oral maxillofacial and other rehabilitative body restorations. Such positions are classified to the [Health Aid and Technician Series, GS-0640](#).

OCCUPATIONAL INFORMATION

Dental laboratory technicians in the Federal service fabricate dental appliances such as complete dentures, removable partial dentures, crowns, fixed partial dentures, or combinations of fixed and removable partial dentures. Some dental laboratory technicians also make special dental appliances such as orthodontic appliances, maxillary and mandibular splints, and obturators, or special prostheses such as metal mandibular implants or intraoral maxillofacial restorations.

At full performance levels this work requires a thorough knowledge of the form, structure, and function of teeth, and the anatomic and functional characteristics of surrounding tissue and supporting muscle and bone. These knowledges, together with a thorough knowledge of the characteristics of dental laboratory materials, and skill in the use of dental laboratory equipment, are essential to the fabrication of dental appliances that (1) conform to the dentist's prescription, (2) restore mastication, (3) facilitate normal speech, (4) maintain or correct facial dimension and contour, (5) are natural in appearance, and (6) can be worn or used with maximum comfort.

These positions are located in dental clinics, or hospital dental service laboratories, or in central dental laboratories that serve a number of clinics and hospitals.

TITLING

Approved titles for nonsupervisory positions covered by this standard are:

- *Dental Laboratory Aid*, GS-1 through GS-3;
- *Dental Laboratory Technician*, GS-4 and above.

The term "Supervisory" should be prefixed to the title of those positions that include supervisory responsibilities of such significance as to require supervisory qualifications.

COVERAGE OF THIS STANDARD

The classification criteria that follow apply to nonsupervisory dental laboratory aid and technician work. Supervisory dental laboratory technician positions are classified by reference to the [General Schedule Supervisory Guide](#).

CLASSIFICATION CRITERIA

There are two factors which together provide the basis for classifying dental laboratory aid and technician positions. These are (1) Nature of Assignment and (2) Level of Responsibility. These are discussed briefly below:

Nature of Assignment

This factor measures the relative difficulty of the work in terms of:

- the nature of the duties assigned, and
- the knowledges and skills required.

Work assignments range in difficulty from simple repetitive tasks requiring no special knowledges or skills to assignments requiring the application of an intensive knowledge of (1) normal and abnormal dental anatomy, (2) oral and related maxillofacial structure and function, (3) the properties and methods of working metal alloys, acrylic resins, porcelain, and other dental laboratory materials, (4) ability to visualize the structure, function, and appearance of completed oral prosthesis, and (5) ability to work to very exacting specifications and extremely close tolerances in fabricating highly complex or unique oral prosthetic appliance.

Level of Responsibility

This factor measures the dental laboratory aid's or technician's responsibilities in relation to his assignment. It includes consideration of:

- the supervisory controls exercised over the work, and
- the nature of the dental laboratory aid's or technician's responsibility for the fabrication of dental prosthesis.

Supervisory controls over the work vary from close and direct supervision with each assigned task, to general instructions and spot check of completed work. Personal work contacts are not a significant element in most positions in this occupation.

NOTES TO USERS OF THIS STANDARD

1. Nonsupervisory positions having duties and responsibilities that clearly and significantly exceed the GS-9 level described in this standard, may be classified by extension of this criteria and the application of sound classification principles.
2. No attempt has been made to describe the many combinations of tasks or work situations that may be found in individual dental laboratory technician positions. Some assignments, typically those in hospital dental service or clinic laboratories, may be organized along "generalist" lines, while centralized laboratory assignments may reflect varying degrees of "specialization."

The examples of assignments included at each grade level reflect the level of difficulty, responsibility, and the knowledge and skill requirements that typify work at that grade level. Whether the assignment involves one duty, or a combination of several duties described at a given grade, does not alone determine the grade of the position. The final grade-level determination should be made by the use of sound classification judgment based on an analysis of the total work assignment in relation to the grade-level concepts provided in this standard.

3. The decision as to whether GS-1 or GS-2 dental laboratory aid positions should be classified to this series or to the appropriate series in a trades and labor job family requires particular care. This decision should take into account both the duties and responsibilities assigned to the position and its place in the career ladder. Only those positions clearly intended to provide developmental training and experience toward higher level dental laboratory technician work should be classified to this series.

DENTAL LABORATORY AID, GS-0683-01

Nature of assignment

GS-1 dental laboratory aid positions require no previous experience. Tasks are simple, repetitive, and readily learned. They require the application of specific instructions. Positions include training in tasks of the GS-2 level. The following tasks, performed under very close supervision, are illustrative:

- Checks for presence of dentist's prescription. Packs master models and completed dentures or other dental prosthesis for shipment to the dental service or clinic from which the case originated. Makes or attaches address labels.
- Receives and unpacks incoming cases. Checks shipping containers for evidence of damage and reports damaged shipments to the supervisor.
- Performs a variety of "helper" tasks in the laboratory, such as replenishing supplies, or cleaning, stacking, or shelving laboratory equipment.

Level of responsibility

Dental laboratory aids receive specific guidance and instruction in all phases of their assigned tasks. Their responsibilities are limited to carrying out specific assignments. Their completed work is reviewed for thoroughness and conformance with instructions. Tasks are carefully selected to provide the Dental Laboratory Aid GS-1 with an introduction to dental laboratory work and acquaintance with the materials, equipment, and terminology used in the laboratory.

DENTAL LABORATORY AID, GS-0683-02

Nature of assignment

GS-2 dental laboratory aid positions differ from those at GS-1 in the greater variety of tasks assigned and in the wider range of procedures and instructions to be learned. GS-2 assignments are planned to provide a basic knowledge of laboratory equipment and materials to prepare the Dental Laboratory Aid GS-2 for training in technician work.

The following tasks are illustrative of typical GS-2 assignments:

- Matches dentist's prescription with master casts or completed cases by checking patient's name, case number, or other control symbol. Packs cases for shipment to or from a central dental laboratory.
- Posts control records indicating dates of receipt or shipment of cases and the number and status of cases in process.

- Checks quantities of laboratory supplies and materials to be sure that stocks are available. Replenishes supplies as necessary. Notes and follows manufacturer's or other instructions regarding the storage of laboratory materials.
- Checks to insure that volatile materials are not stored near flame, that liquid compounds that are subject to evaporation are tightly covered, and that materials with a time limited shelf life are removed and replaced as necessary.
- Measures and mixes dental laboratory materials and compounds.

Level of responsibility

Dental Laboratory Aids GS-2 work under the supervision of a dental laboratory technician or laboratory supervisor who provides detailed instructions with new assignments and who spot checks all work to insure understanding of and adherence to instructions. The supervisor closely observes the measurement and mixing of dental laboratory materials and instructs the dental laboratory aid in apothecary and metric measurements used in mixing dental laboratory compounds.

DENTAL LABORATORY AID, GS-0683-03

Nature of assignment

GS-3 dental laboratory aid positions are distinguished from those at GS-2 in that GS-3 assignments require understanding of general laboratory policies and practices. Dental Laboratory Aids GS-3 receive intensive training in selected methods, procedures, and techniques. This training is to provide them with a working knowledge of the characteristics of such laboratory materials as plasters, artificial stones, investment compounds, and waxes.

Many Dental Laboratory Aids GS-3 learn the techniques of making or reproducing casts or models of the patient's mouth, making impression trays, investing models for cast metal frame-works, and similar tasks. These tasks are not technically complex, but require accuracy and careful attention to detail since the completed work affects subsequent processes in the construction of dental prosthetic appliances.

Illustrative examples of typical GS-3 assignments include the following:

- Inspects impressions for bubbles, broken segments or other deficiencies. Refers any defects noted to the supervisor.
- Beads and boxes impressions by applying a beading wax to the perimeter of the impression and building side walls with boxing wax or metal strips to retain the plaster or stone mix. Mixes and pours plaster on dental stone to form a positive cast of the patient's mouth. Vibrates mix during the pouring process to eliminate air bubbles. Removes casts from impressions and inspects for defects.

- Mixes, pours and attaches plaster bases to casts to permit them to be mounted on the articulator (a mechanical device on which the casts of the patient's upper and lower jaws may be mounted in their natural relationship).

Level of responsibility

Dental Laboratory Aids GS-3 work under close supervision. A dental laboratory technician of higher grade, or the laboratory supervisor, provides specific instruction with each assignment, spot checks the work at various stages, and carefully inspects completed work. The supervisor preselects and controls assignments to provide the Dental Laboratory Aid GS-3 with training and practical experience in working with a variety of materials and techniques. He observes the aid's progress in mastering the measurement, mixing, and handling of materials, and in the techniques of handling equipment. He provides initial instruction in oral anatomy by explaining the topography of the mouth as reflected in impressions or in master casts.

DENTAL LABORATORY TECHNICIAN, GS-0683-04

Nature of assignment

GS-4 dental laboratory technician assignments differ from those of Dental Laboratory Aids GS-3 in that at the GS-4 level they are expected to carry out routine, standardized tasks with a minimum of supervision. In contrast, all technical tasks performed by Dental Laboratory Aids GS-3 are closely supervised.

Dental Laboratory Technicians GS-4 build on their knowledge of and skill in working with commonly used dental laboratory materials (acquired in GS-3 level assignments) by applying them to selected steps in the construction of dental prostheses. At this level they learn, and closely observe the conditions required to insure the correct mixing, pouring, heating, cooling, or molding of these materials. They also must extend their knowledge of oral anatomy as this relates to tasks typical of the GS-4 level, and to visualize the relationship of their assigned tasks to the completed dental appliance. They learn to recognize and avoid those errors in technique and procedure that could result in a nonfunctional prosthesis. They work to close tolerances and use hand tools and small torches. In addition, they receive instruction and training in the laboratory methods, procedures, and techniques described at the GS-5 level.

Illustrative examples of typical GS-4 assignment include the following:

- Checks impressions for bubbles or broken segments. Joins broken impressions with sticky wax. In the event of questions about the impression, discusses the case with the supervisor or with the dentist, prior to pouring the master cast. Beads, boxes, pours, checks, and trims casts. When stone has set, examines cast for completeness and accuracy. Carefully trims excess stone to avoid damaging the reproduction of tissue or teeth. Positions upper and lower casts on the articulator in their natural relationship to

each other. Cuts locks in master cast bases to insure accurate repositioning of casts on the articulator.

- Fabricates duplicate casts or refractory casts for use in the study, design, or construction of the denture.
- Reproduces rugae (the ridges and grooves in the roof of the mouth). Exercises care to avoid air bubbles. When plastic sets, trims impression to correct size. Spreads glue on interior of refractory cast. Places refractory cast in the impression to transfer plastic rugae pattern to the cast and seals edges in wax.
- Makes duplicates of master casts for use in fabricating dental appliances. Uses any one of several duplicating impression materials, and any one of several types of plaster, stone or investment to pour the cast. After the material has set, removes duplicate cast from the flask, trims, and removes any adhering impression material.
- Constructs base plates, bite rims, and individualized impression trays. Blocks out any undercuts in the cast. Applies material to the cast. Trims and rounds borders for precise and comfortable fit in the patient's mouth. Places spacers for construction of the impression tray if indicated. Molds, contours, and positions the occlusion rim on the base plate. (This rim is used by the dentist in establishing the vertical relationship of the upper and lower jaws. It is also used for other purposes such as lip length, arch form, etc.)

Level of responsibility

Dental Laboratory Technicians GSA engaged in fabricating casts, reproducing rugae, or constructing base plates, bite rims, or impression trays, work under general supervision. Typically, they do not receive specific preliminary instructions with such assignments.

The supervisor spot checks the work in progress and is available to provide advice or assistance if unusual problems arise. The supervisor, or the dentist, checks completed work for exactness of detail and quality of workmanship.

The supervisor explains training assignments in detail. He demonstrates techniques, points out the crucial steps in the processes involved in the assignment, and explains how these affect subsequent steps in the construction of the appliance. He observes the work of the Dental Laboratory Technician GS-4 and offers suggestions regarding the manipulation of tools and materials, as appropriate. The supervisor provides information about the characteristics of oral tissue as revealed in the cast, and explains the structure and function of teeth.

DENTAL LABORATORY TECHNICIAN, GS-0683-05

Nature of assignment

Dental laboratory technician positions GS-5 are distinguished from those at GS-4 by the added technical complexity of the procedures and techniques employed, and the additional knowledges required. At the GS-5 level, they learn and apply a knowledge of the working characteristics of metals such as chrome cobalt. They gain further experience in working with acrylic resins. They become fully familiar with the techniques of mixing acrylics and recognize that stage at which the acrylic is ready to be packed and processed. They continue to develop the hand-eye coordination essential to doing precise work, and develop the color sense necessary to mixing shades of acrylic to simulate or match natural tissue of the oral cavity.

In addition, most GS-5 dental laboratory technicians receive training and instruction in methods, procedures, and techniques that are representative of the next higher grade level.

The following are illustrative of typical GS-5 level assignments:

- Waxes, invests, boils out, cures, and deflasks acrylic bases for partial and complete dentures using any one of several technical procedures. For example, melts, forms, and trims wax to fit the pattern marked on the cast. Soaks cast and fits to lower half of the flask. Mixes and pours investment material to cover metal parts. Applies a separating medium to the plaster and fills the remainder of the flask with investment material. After the investment material has set, places the flask in boiling water to soften the wax. Separates flask and lifts out softened wax. Eliminates all wax residue and dries mold. Measures and mixes acrylic resin and trial pack the acrylic "dough" into the mold until the correct amount is in place. Processes acrylic by immersing sealed flask in temperature controlled water for a specified period of time. Controls cooling to minimize shrinkage of the acrylic. Carefully removes case from the flask to avoid damage to clasps or other delicate parts of the framework.
- Waxes acrylic bases for partial dentures. Melts wax and forms it to fit the pattern marked on the mast cast. Trims edges, builds, and smooths wax to achieve prescribed thicknesses. Uses a small flame torch and heated spatula to shape and contour the wax and to simulate the anatomy of the mouth.

Level of responsibility

Dental Laboratory Technicians GS-5 engaged in fabricating acrylic bases for partial or complete dentures work under general supervision. The supervisor spot checks the work in progress and is available to provide advice if unusual problems arise. The supervisor, or the dentist, check completed work for accuracy and workmanship.

The supervisor explains training assignments in detail. He provides instruction in those aspects of oral anatomy and function that are important to the fit and function of denture bases, and to

the stability, retention, and function of metal frameworks for partial dentures. He observes the work in progress and explains the reasons for the various steps in the processes involved. The supervisor provides suggestions about the techniques of handling materials and the use of instruments and laboratory equipment. He checks completed work for conformity to the dentist's prescription, for accuracy of detail, and for quality of workman-ship.

DENTAL LABORATORY TECHNICIAN, GS-0683-06

Nature of assignment

Dental Laboratory Technicians, GS-6, are distinguished from those at GS-5, in that at the GS-6 level they (1) block out master casts, (2) wax complete dentures for try in, (3) wax metal frameworks and finish cast metals for partial dentures, or (4) repair partial or full dentures. Dental Laboratory Technicians GS-5 on the other hand, receive specific training and instruction in such assignments.

Dental Laboratory Technicians GS-6 apply a knowledge of the configuration of the upper and lower jaw bone, and the relationship of the tongue to the gums and the roof and floor of the mouth, in waxing full dentures, and in blocking out master casts for partial dentures. This work is not typical of GS-5 level assignments. They apply a knowledge of the casting characteristics of metals in waxing partial dentures and in grinding, finishing, and polishing castings.

These knowledges are similar to those required at GS-5 in that the understanding of the relationship of the wax-up to the casting characteristics of the metal is required at both levels. However, Dental Laboratory Technicians GS-6 must know the physical properties of the metal involved to avoid damaging its structural properties in grinding and finishing the casting. In addition, they must understand the natural relationships of the biting surfaces of teeth to wax frameworks for casting, and to verify the occlusion of the completed framework.

Many Dental Laboratory Technicians GS-6 also receive training in methods and techniques that are typical of the next higher grade level.

The following are illustrative of typical GS-6 level assignments:

- Waxes trial full dentures so that the dentist may check final tooth arrangement, appearance, speech, and function, in the patient's mouth. Shapes wax to the contours desired in the final denture and to the thickness required to maintain facial contours, insure comfort, and provide proper fit. Carves and contours wax to duplicate the appearance of natural oral tissue. Removes excess wax, smooths and polishes surfaces. Exercises care at all stages not to disturb the position of the artificial teeth that have been placed in their anatomically correct relationships by a technician of higher grade.
- Blocks out master casts for partial dentures. With soft boxing wax blocks out undercuts and cast irregularities, also places relief wax on tissue saddle areas (areas to be filled in or covered so that the denture will fit correctly and comfortably). Uses torch and spatula

to mold wax to cast, and sharp instruments to remove wax from clasp areas. Uses surveyor arms to remove excess wax from undercut areas.

- Waxes outlines of metal framework for partial dentures or other dental prostheses. Studies clasp, bar, rest, space retainer, or other designs indicated on the master model. Applies performed wax patterns, or softens and applies wax freehand, to conform to the outline on the model. Determines appropriate locations for and attaches wax spruces. Carefully checks thickness and evenness of the wax to be sure that the metal framework will not have thin spots when it is cast.
- Invests cases to be cast in metal. Uses the materials and investing techniques required for the specific metal to be cast. Checks the waxed areas to be sure that there are no raised or thin spots, and that the waxed spruces are in place and firmly attached. Places investment in high heat furnace to melt out the wax and heat soaks the investment to minimize the expansion or contraction of material during casting. Estimates the amount of metal required and places case in the casting machine. Heats and casts metal and bench cools the case.
- Repairs dentures. Selects, positions, contours and fits replacement teeth. Bends, adapts, and welds wrought wire to replace broken components. Solders cast clasps to the framework. Replaces or adds acrylic to repair or rebase dentures.

Level of responsibility

Dental Laboratory Technicians GS-6 engaged in waxing full dentures, blocking out master casts, waxing metal frameworks, or finishing metal frameworks for partial dentures, carry out such assignments under general supervision. Completed work is inspected to insure conformity to the dentist's prescription and for quality of workmanship.

The supervisor explains training assignments in detail. He provides instruction in those features of anatomy and function that are important consideration in setting artificial teeth. The supervisor observes the work in progress and provides suggestions regarding techniques. He checks completed work for accuracy of detail, proper occlusion of teeth, and for conformity to the dentist's prescription.

DENTAL LABORATORY TECHNICIAN, GS-0683-07

Nature of assignment

GS-7 dental laboratory technician assignments differ from those at GS-6 in that at this level they independently perform the full range of functions required to construct fixed or removable partial dentures, or complete dentures for cases that do not involve acute abnormalities of the mouth. In contrast, GS-6 dental laboratory technicians independently carry out some, but not all, of the techniques and procedures involved.

Dental Laboratory Technicians GS-7 apply a thorough knowledge of the variations in tooth form and the anatomy and function of the normal mouth to (1) interpret the dentist's prescription, (2)

apply the design of partial dentures, and (3) set teeth for full or partial dentures. These assignments are not typical of lower grade levels.

GS-7 dental laboratory technicians must have a thorough knowledge of dental laboratory materials, and skill in their use. They must be able to use laboratory tools and equipment such as dental laboratory drills and lathes and surveying instruments, with skill and precision. They must be able to visualize spatial, anatomical, functional, and esthetic relationships at all stages of the construction of the prosthesis, to produce a finished product that meets the dentist's requirements.

Dental Laboratory Technician GS-7 are responsible for preserving the horizontal and vertical bite relationships established by the dentist, and for matching prescribed tooth colors. Such assignments are not typical of grade GS-6.

Some Dental Laboratory Technicians GS-7 also receive further training in such specialized techniques as ceramic work or the construction of special dental appliances such as splints or obturators.

The following are illustrative of typical GS-7 assignments:

- Finishes cast metal partial dentures. Inspects castings and compares to design on the master cast. Grinds, shapes, and polishes casting. Fits to master cast and verifies occlusion.
- Interprets the dentist's prescription and applies the design for partial dentures by (1) selecting the type and pattern of clasps, connectors, and retainers, (2) outlining the framework and occlusal rests on the model, (3) indicating desirable undercut points, and (4) completing other design features needed to provide stability, balance, function and fit, with minimum stress on supporting natural teeth or tissue.
- Fabricates inlays and full or partial crowns. Studies the dentist's prescription and the master cast. Checks for adequate occlusal clearance of the prepared abutment teeth in all positions. Outlines margins of the attachments and waxes patterns with particular attention to margins, occlusions, and contour. Invests and casts attachments and assembles, solders, fits and finishes castings. Selects appropriate facings and shapes to fit the endentulous areas so as to provide for correct occlusion and appropriate appearance.
- Sets artificial teeth for full or partial dentures. Selects prefabricated teeth of the prescribed size, shape, and color. Positions teeth in their correct anatomical relationships. Using dental lathe power tools and abrasive stones, shapes teeth to the height and contour required for correct conclusion, articulation, mastication, and balance.

Level of responsibility

Dental Laboratory Technicians GS-7 independently fabricate full or partial dentures for relatively normal cases, (that is, for cases that do not involve acute abnormalities of the mouth). The dentist, or a dental laboratory technician of higher grade, makes work assignments and is available for consultation should unusual problems arise in the course of the work. The supervisor relies on the Dental Laboratory Technician GS-7 to follow accepted laboratory practices in fabricating the appliance, with little or no spot check in the course of the work. The supervisor and the dentist inspect completed work for conformity with the dentist's prescription and for quality of workmanship.

Training assignments are accompanied by detailed instructions. The supervisor provides instruction in those features of oral anatomy that are important considerations in the design and construction of dental splints or obturators. In some instances, this includes chairside instruction as the dentist points out and explains the anatomical and functional requirements of the appliance to be constructed. While assignments of this type involve some contact with patients, they are solely for the purpose of providing the dental laboratory technician with the opportunity for first-hand observation of the problems to be treated by the dental appliance.

DENTAL LABORATORY TECHNICIAN, GS-0683-08

Nature of assignment

GS-8 dental laboratory technicians construct (1) porcelain or acrylic fixed or semi-fixed bridge restorations, (2) full or removable partial dentures, or (3) orthodontic appliances, or dental splints and obturators, when the construction of the appliance is complicated because of the unusual nature or intricacy of the design required to overcome acute abnormalities. They must apply a thorough technical knowledge of both normal and abnormal oral anatomy and dentition as these affect the design, fabrication, function, and esthetics of the dental prosthesis being constructed. They must be able to visualize the relationships of the parts to the whole at each step in the construction process, and remain constantly alert to those elements of design and construction that are essential to the fit and function of the finished appliance. In contrast, the appliances fabricated by Dental Laboratory Technicians GS-7 are conventional in design and construction.

The following are illustrative of typical GS-8 assignments:

- Surveys master casts for partial dentures to implement design prescribed by the dentist. Using a surveying instrument, assures the most favorable path for the insertion of the denture. Studies master cast to identify the undercuts and teeth to be used for retention of the denture and blocks out undesirable undercuts. Considers the number and location of missing teeth, the arch, shape, and contour of remaining natural teeth, tissue formation, and other anatomic features, in designing those portions of the dental restoration not preindicated by the dentist.

- Sets up and contours artificial teeth for full and partial dentures when this work is complicated by the acute abnormalities to be overcome.
- Surveys, interprets designs, and fabricates fixed, semi-fixed, or removable partial dentures or complete dentures for cases that involve such abnormalities as acute malocclusion, or other conditions that present particular problems in (1) providing for retention of the denture, and (2) improving or restoring mastication or other mouth functions.
- Constructs acrylic crowns, bridges, or facings, when this involves (1) forming and carving a wax pattern of the size, contour, and characteristics required, (2) investing and boiling out the pattern, (3) mixing acrylic dough of the prescribed color shades, and (4) packing, curing, characterizing (applying designated markings to simulate the appearance of the natural tooth), and finishing the case.
- Constructs stone, amalgam, or electroformed copper dies, or casts with removable dies, for use in fabricating crowns, inlays, or fixed partial dentures. This involves (1) checking and boxing the impression, (2) mixing and pouring the material from which the die is to be made, (3) processing the poured impression, or (4) electroplating and reinforcing the electroformed copper die; using the materials and sequence of techniques appropriate to the type of die being constructed. Checks completed dies for exact reproduction of the tooth to be restored, and for the exact reproduction of its relationship to surrounding and occluding teeth.
- Fabricates porcelain crowns, fixed partial dentures, or facings, when this involves (1) forming a platinum foil matrix over the die, (2) opaquing the platinum with a layer of porcelain to mask the silver color and form the base for building the porcelain tooth, and (3) firing the opaqued matrix in a porcelain furnace; or (1) making a wax pattern, (2) sprucing, investing and casting gold, (3) finishing the casting to permit the porcelain to be fused directly to the gold, and (4) opaquing and firing the opaqued gold. Mixes and blends porcelain powders with distilled water and forms an anatomically accurate reproduction of the tooth. Fires porcelain in a high temperature vacuum furnace. Trims and finishes the tooth to the precise fit and contour required and applies and bakes the final glaze.
- Fabricates acrylic or cast metal splints for the reduction or fixation of maxillary and mandibular fractures, or obturators to close an opening in the palate. The fabrication of dental splints involves (1) duplicating the cast, (2) following the dentist's prescription in fabricating the splint, (3) shipping and adapting wire hinges, and (4) waxing, flasking, packing, processing, and finishing acrylic splints; or (1) blocking out undercuts and duplicating the master cast, (2) designing, waxing, investing, casting, finishing, and polishing cast metal lingual splints. The fabrication of dental obturators involves (1) making dentist-designed individualized impression trays and the master and duplicate casts, (2) surveying, designing, blocking-out waxing, investing, casting, and finishing the framework and metal parts, and (3) packing, processing, and finishing the appliance.

Level of responsibility

Dental Laboratory Technicians GS-8 engaged in fabricating acrylic or porcelain crowns, bridges, or facings, work with a minimum of supervision. Typically, the dentist or a dental laboratory technician of higher grade makes work assignments and inspects completed work for precision,

workmanship, and conformity with the prescription. While the supervisor is available for consultation should unusual problems arise, dental laboratory technicians at this grade level are expected to resolve the majority of such problems independently.

DENTAL LABORATORY TECHNICIAN, GS-683-09

Nature of assignment

Dental Laboratory Technicians GS-9 (1) participate in the design and fabrication of very complex dental or intra-oral maxillofacial appliances, (2) participate in research to improve the design of such appliances, or (3) test materials to be used in their construction. Such assignments require (1) a very thorough knowledge of oral anatomy, tooth morphology and dentition, (2) a thorough knowledge of laboratory materials, tools, and equipment, and (3) a very high degree of skill in their use.

Assignments at this level are distinguished from those at GS-8 in that at the GS-9 level, dental laboratory technicians must have developed and demonstrated a degree of expertness in all aspects of the work that results in their being consulted by dentists regarding difficult design and construction problems, and in the dentist's acceptance of the value and validity of their suggestions and recommendations. It also results in their being assigned unusually novel and intricate dental prostheses, and relied upon to carry out all aspects of their fabrication independently.

The following are illustrative of GS-9 assignments:

- Fabricates unusually complex porcelain or acrylic crowns and fixed, semi-fixed, or removable bridges, or complete dentures when the severe nature of the dental abnormalities to be overcome require working to unusually close tolerances, resolving particularly difficult problems of retention, balance, reducing tension on natural teeth and tissue, and similar problems.
- Works closely with oral surgeons, prosthodontists, and other dental, medical, and laboratory specialists in the design and fabrication of intraoral maxillofacial appliances and restorations. This involves (1) working with dental and medical specialists in developing the design of the appliance, (2) personally fabricating, or overseeing the fabrication of the appliance, and (3) resolving problems in its fabrication.
- Works with dentists, veterinarians, and others engaged in dental research involving the use of laboratory animals, collaborating in the design and construction of splints, obturators, or other dental appliances for experimental purposes.
- Conducts extensive tests of the characteristics of new or modified dental laboratory materials or equipment, taking into account such considerations as tensile strength, hardness, and "workability" of metals, the stability of impression materials, or the efficiency and usefulness of new equipment.
- Designs and constructs teaching models of various dental appliances for use in illustrating (1) the principles involved in constructing the appliance, or (2) the ways in

which appliance design affects function and esthetics. Plans and conducts classroom and laboratory instruction for dental laboratory technicians of lower grade.

Level of responsibility

Dental Laboratory Technicians GS-9 work under the supervision of oral surgeons, prosthodontists, or other dentists who make work assignments and discuss the requirements of the case, but who rely on the dental laboratory technician to be ingenious and creative in resolving the construction problems involved.

Dental Laboratory Technicians GS-9 resolve difficult design and construction problems. Their advice is sought and given weight in planning and carrying out clinical or surgical procedures.