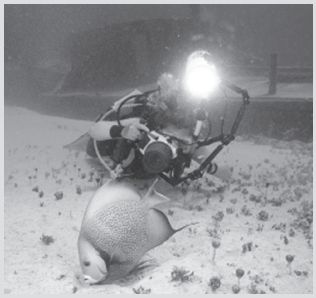

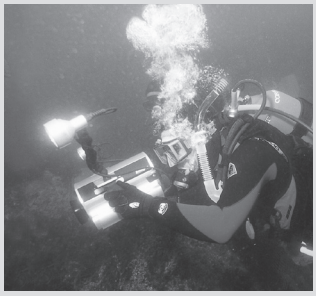

Underwater Videographer

Specialty Course
Instructor Outline

Product No. 70237 (Rev. 5/05) Version 1.05

PADI®
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Legend

Note to instructors:	Points for the instructor to consider that give additional qualifying information about conducting the course. Not intended to be read to students.
Note to students:	Required information. Read to students as printed.
By the end of this session, you will be able to: • Objective • Objective • Objective	Important information. Read to students. Objectives always precede individual Academic Topics and open water dives.

PADI®

Underwater Videographer Specialty Course Instructor Outline

Published by
International PADI Inc.
30151 Tomas St.
Rancho Santa Margarita, CA 92688

Printed in USA
Product Number 70237 (Rev. 5/05) Version 1.05

Please read this first.

Qualifying To Teach PADI Specialty Diver Courses

To apply for a Specialty Instructor rating, an individual must be certified as a PADI Underwater Instructor or higher. There are two ways to qualify to teach PADI Specialty Diver courses: 1) Attend a Specialty Instructor Training Course conducted by PADI Course Directors, or 2) apply directly to PADI.

Specialty Instructor Training Course attendance is *highly recommended* and *encouraged.* These courses provide hands-on training, technique demonstrations, course marketing information, current PADI Standards information and, when applicable, instructor-level open water training.

Application made directly to PADI requires either: 1) use of a PADI standardized Specialty Course Instructor Outline (this document), or 2) the submission of a self-generated specialty course outline for review. To speed outline approval, reduce liability exposure and ensure educational validity of your specialty courses, it is highly recommended that PADI standardized Specialty Course Instructor Outlines be used for courses they have been developed for. The Specialty Course Instructor Application is to be used whether attending a Specialty Instructor Training Course or applying directly to PADI.

> *Important Note: Prior to promoting or teaching a PADI Specialty Diver course, written confirmation of instructor certification in that specialty must first be received from PADI.*

For more information on certification as a PADI Specialty Instructor, please refer to the "General Standards and Procedures" section of the PADI *Instructor Manual.* If you still have questions after reading this section, call your PADI Office.

COURSE STANDARDS AND OVERVIEW

This course is designed to introduce student divers to the selection, use and care of underwater videography equipment, and the basic principles of underwater video production.

Prerequisites

To qualify for the Underwater Videographer course, and an individual must:

1. **Be certified as a PADI Open Water Diver, Junior Open Water Diver or have a qualifying certification from another training organization.**
2. **Be at least 10 years old.**

The Underwater Videographer Dive from the PADI Adventures in Diving program may be counted toward the certification requirements of this specialty at the discretion of the instructor conducting the specialty course.

Instructor Supervision

Underwater Videographer course may be conducted by a Teaching status PADI Underwater Instructor or PADI Instructor with higher rating who has been certified as a PADI Underwater Videographer Specialty Instructor.

The maximum student diver-to-instructor ratio for open water training is eight students per instructor (8:1).

Considerations for Open Water Training

The Underwater Videographer course includes three open water training dives. It is recommended, but not required, that the first two dives be conducted on one day and the last on the second day. This allows students to practice basic handling and shooting skills on the first day, then apply those skills to producing a video on the second.

Training dives may be conducted at night for divers who have completed the Night Adventure Dive or the first dive of the PADI Night Diver specialty course, or have qualifying night diving experience.

After the training dives, student divers are required to log their dives in their personal log books. The instructor conducting the specialty course signs each student's log entries.

COURSE OVERVIEW

The course covers the knowledge and skills of underwater videography. The minimum recommended course hours is 12. **The PADI Underwater Videographer Specialty course must include:**

1. **The selection, maintenance, care and handling of underwater video equipment.**
2. **Safe diving practices while using underwater video equipment.**
3. **Exposure, focus, and maintaining color with video equipment.**
4. **Shot types, lengths and camera moves**
5. **Developing a story line and shot sequencing**
6. **The planning, organization, procedures, techniques and problems of underwater videography.**

CERTIFICATION PROCEDURES

The certifying instructor completes Underwater Videographer certification by submitting a completed, signed PIC to the appropriate PADI Office. **The instructor who conducts the student's final open water training dive certifies the student. The certifying instructor must ensure that all certification requirements have been met.**

KEY STANDARDS

Prerequisite Certification: PADI Open Water Diver, Junior Open Water Diver or qualifying certification
Minimum Age: 10
Recommended Minimum Course Duration: 12 hours
Minimum Open Water Training: 3 dives
Student-to-Instructor ratio: 8:1
Minimum Instructor Rating: Underwater Videographer Specialty Instructor

**For dives that include 10-11 year olds, direct supervision is required at a maximum ratio of 4:1. No more than two of the four divers may be age 10 or 11.*

Introductory Information
Underwater Videographer Diver Specialty Course Instructor Outline

Headings IV, VI and VIII in the outline "Presentation," provides information that should be presented to students prior to boarding the diving vessel used during the course. At the discretion of the instructor, the topics in this section may be *modularized* (divided into several academic presentation sessions).

Headings V, VII and IX in the outline "Video Training Dive One," provides specific information about conducting the open water dives in the course. Although open water teaching and organizational techniques are left to the instructor, read this information carefully prior to taking students in open water.

I. Course Overview

A. The purpose of the PADI Underwater Videographer Specialty Course is to familiarize the student with basic underwater video hardware, use, maintenance and diving techniques. The course has four primary goals:

1. Upon completing this program, the student should be able to select an underwater video system based on personal preferences, budget and quality requirements.
2. Upon completing this program, the student should be able to demonstrate safe diving practices while engaged in underwater videography.
3. Upon completing this program, the student should be able to properly set up, maintain and disassemble a video camera, housing and lights.
4. Upon completing this program, the student should be able to edit and produce underwater video that tells a story and demonstrates appropriate basic videography techniques and avoids basic videography errors.

B. The Elective Underwater Videography Dive from the PADI Adventures in Diving program may be counted toward Dive One of this specialty at the instructor's discretion. Similarly, Dive One of this specialty may be counted as the Elective Underwater Videography Dive in the PADI Adventures in Diving program.

C. This standardized course outline was developed so that a wide range of underwater video systems may be used to conduct this program. The focus is on developing basic knowledge and skills for the beginner or novice videographer.

1. Where appropriate, you're encouraged to update and/or expand topics to cover changes in hardware and other technology (video changes rapidly).
2. You're encouraged to elaborate beyond the detail in this outline to accommodate:
    a. the needs/interests of your students, especially more experienced ones.
    b. specific equipment and/or environment requirements.

D. The knowledge development portion of this program can normally be covered during predive briefings, post dive debriefings, and post dive video reviews.

1. The presentation outline and the training dives are integrated and sequenced to assist you in distributing knowledge development appropriately over the briefings and debriefings.
2. The presentation outline was developed so that it's not neces-

sary to review student video footage between training dives. This would be a common situation in remote areas and aboard some dive boats.

3. If necessary, you may move and/or combine presentations, or hold formal classroom sessions, to accommodate logistical needs. Be certain, however, that all necessary material is presented prior to the training dive in which it is practiced and applied.
4. The requirements of the Adventures in Diving program Elective Underwater Videography Dive are met by covering the material in Presentation 1 and by conducting Video Training Dive One.

II. Course Requirements

A. **Prerequisite certification: PADI Open Water Diver, Jr. Open Water Diver or have a qualifying certification from another training organization.** The instructor must insure that the student can perform the skills required of a PADI Open Water Diver.

B. **Minimum age: 10 years**

C. **Student to instructor ratio: 8:1, to certified assistant 4:1. It is recommended that you have a certified assistant accompany each buddy team.**

> **Note**
> *For dives that include 10-11 year olds, direct supervision is required at a maximum ratio of 4:1. No more than two of the four divers may be age 10 or 11.*

D. Confined water sessions are not required, but you may add them at your discretion to provide predive video and skill practice and/or to assess student dive skills.

E. Dive data

1. Three training dives

2. Dive depths

> **Note**
> *For 12-14 year olds, Adventure Dive maximum depth is 18 metres/60 feet or 21 metres/70 feet if they have taken the Adventure Deep Dive. For 10-11 year olds, the maximum depth is 12 metres/40 feet.*

a. The recommended depth range is 5 metres/15 feet to 18 metres/60 feet.

b. The maximum depth is 30 metres/100 ft. *Note: It is recommended that dives this deep be made only if an unusual and*

outstanding video subject requires it. Videography is time consuming and the short duration of deep dives may make it difficult for students to accomplish all dive objectives. Time pressure and task loading affect student concentration and video quality. It is recommended that training dives deeper than 18 metres/60 feet be made with students certified to the Advanced Open Water Diver level or above, with Deep Diver certification highly desirable.

F. All dives will be planned as no decompression (no stop) dives within the limits of the Recreational Dive Planner or each student's dive computer. When appropriate, dives will be planned to include a safety stop of three minutes or longer at 5 metres/15 feet.

III. Equipment

A. Student equipment

1. All personal equipment required by the local environment including:
   a. Mask, fins and snorkel
   b. Suitable exposure suit
   c. Weight system
   d. Dive knife/tool (if allowed by law)
   e. BCD with low pressure inflator
   f. Regulator with submersible pressure gauge
   g. Depth gauge, compass and timing device. Dive computers may be used to accomplish these functions, but encourage your students to wear backup gauges, too
   h. Alternate air source
   i. Whistle or other surface signaling device
   j. Slate and pencil
   k. Log book (PADI Adventure Log recommended)
2. Video system
   a. One video system per student or buddy pair is recommended
   b. One video system per team of up to four students is acceptable. Each student should have adequate access to individually meet all learning objectives.

B. Instructor equipment

1. Personal equipment as required for students
2. Safety equipment including:
   a. First aid kit and emergency oxygen
   b. Dive flag and surface floats as required by the local dive environment
3. Video equipment

a. Spare/backup parts for student systems
b. Spare tape/batteries
c. Post production editing equipment if post production editing will be used following Training Dives Three and Four.

4. Teaching materials
   a. Student Record Files, Statement of Understanding, Liability Release and Assumption of Risk, and Medical Statement
   b. Log book (professional Adventure Log recommended)
   c. PADI *Instructor Manual*
   d. Slates and dive roster
   e. PIC envelopes and wall certificates

> **Note**
> *The following presentations and training dive outlines make up the actual course conduct. The presentation outlines are designed as your presentation notes. Notes to you are in brackets. Training dive outlines cover skill objectives and dive sequence, and are not intended to be presented to students. The curriculum was developed for maximum flexibility; notes will guide you to options in conduct and sequence.*

IV. Presentation One

[This presentation is designed to precede all training dives and any optional confined water video sessions.]

A. Introductions

1. [Introduce yourself and course assistants.]
2. [Have students introduce themselves and talk about their interest in underwater videography. Encourage a relaxed, informal atmosphere.]

B. Course Goals

The goals of this program are:

1. To enable you to select an underwater video system that meets your needs,
2. To allow you dive safely while making underwater videos
3. To enable you to properly maintain an underwater video system
4. To enable you to shoot a short underwater video that tells a story, employs good basic video techniques and avoids common video errors.

C. Course Overview

1. Schedule [Explain how the course will be scheduled, including times and locations for all presentations, optional confined water sessions, review sessions, editing sessions and dives.]

2. Dives. You will make at least three video training dives.
    a. The first training dive will familiarize you with learning the controls and handling of video equipment while diving.
    b. The second dive will focus on basic shooting techniques.
    c. During the third dive, you will shoot video to produce and edit a short video that tells a story.
3. Post production session. [Skip this if students will produce their video with incamera editing.] After Dive Three, we'll have a session during which we'll edit together your video.
4. Certification
    a. Upon successful completion of the course, you'll receive the PADI Underwater Videographer specialty certification. This recognizes your achievements and the ability to enjoy this satisfying underwater activity.
    b. Certification means that you'll be qualified to:
        - Plan, organize make and log underwater videography dives in conditions generally comparable to or better than those you're trained in.
        - Apply for the Master Scuba Diver rating if you are a PADI Advanced Open Water Diver (or have a qualifying certification from another organization) and a PADI Rescue Diver (or have a qualifying certification from another organization) with certification in four other PADI Specialty ratings.
5. Class requirements
    a. Course costs [explain all course costs]
    b. Equipment and material requirements [explain what students are expected to provide]
6. Administration

    [Complete paperwork, including enrollment forms, Standard Safe Diving Practices Statement of Understanding, PADI Medical Statement, Liability Release and Assumption of Risk Agreement — the PADI Student Record File contains all of these.]

D. Underwater Video Systems

Learning Objectives.

After this discussion, you'll be able to answer the following questions:

- *What are the most common underwater video formats, and what are advantages and disadvantages of each?*
- *What are six basic features you should look for when choosing a videocamera for underwater use, and why is each option important?*
- *What six basic features should you consider in an underwater video housing and why?*
- *What three basic differences should you consider in choosing underwater video lights?*

You will also be able to:

- *Identify and demonstrate the operation of video camera functions, such as turning the power on and off, changing batteries and tapes, record/pause, zoom and focus.*
- *Identify and demonstrate the operation of video camera functions in a housing, such as turning the power on and off, record/pause, zoom and focus.*

1. The most common videocamera formats used underwater are: [If possible, have examples of these cameras and tapes.]
   a. VHS — the most common, familiar video tape, with a moderately high quality image (S-VHS has high quality image)

      Advantages

      - widely available
      - anything you shoot plays in a standard VHS deck
      - long record time — up to two hours on one tape

      Disadvantages

      - size — VHS cameras are big and require big housings, causing underwater drag and inconvenient transportation
      - not the highest quality format

   b. VHS-C — a compact version of VHS, with about the same image quality (S-VHS-C comparable with S-VHS)

      Advantages

      - plays in a standard VHS deck (with an adapter)
      - compact camera size
      - same quality as standard VHS
      - housing readily available

      Disadvantages

      - short record time — maximum 20 minutes to a tape

   c. 8 mm — a format developed specifically to be compact and portable

Advantages

- compact camera size
- housings readily available
- good record time — up to two hours

Disadvantages

- incompatible with VHS deck — playback through camera or 8 mm deck
- lowest quality image of common underwater formats

d. Hi 8 — An upgraded 8 mm format with superior image quality

Advantages

- compact camera size
- housings readily available
- good record time — up to two hours
- highest image quality of compact camcorder formats; suitable for some professional uses

Disadvantages

- incompatible with VHS — playback through camera or Hi 8 deck
- costs more than comparably featured VHS-C or 8 mm cameras

e. Professional/commercial formats — Sony Betacam SP and others have the highest resolution and quality

Advantages

- commercial quality — necessary for many professional applications
- edits well due to quality
- maximum image control

Disadvantages

- cost (for example, an underwater Beta system would cost more than $20,000 US)
- size — commercial cameras are very large and bulky (for example, it takes two people to lift many underwater Beta systems)

Commercial format is beyond the scope of this course.

f. [Discuss any other formats common to the local area, or any new formats in underwater videography.]

2. Camera features for underwater videography.

a. Underwater videography almost exclusively employs *camcorders,* that is, cameras with an integrated video recorder. The vast majority of popular videocameras on the market are camcorders.

b. Look for the following when selecting a videocamera (camcorder) for underwater use:

- small size — the smaller the camera, the smaller the housing, affording less drag underwater Note: A video housing can be too small, however, if it doesn't have enough weight and bulk to help you hold it steadily; at a point, optimum size is a function of personal preference.
- housing availability — shop for cameras and housings *together*; manufacturers routinely make housings for some models, but you may have trouble finding housings for others (more about housings later)
- batteries — look for cameras that accept long duration batteries so you don't run low on power in the middle of a dive
- wide angles lens — look for the widest lens angle possible or even better, an attachable wide angle lens; this is important for the best color and clarity possible (more about this later)
- flying erase heads — eliminates picture disturbances between scenes (standard equipment on most modern camcorders)
- low light operation — look for a low lux (light) number; the lower the lux number, the less light the camera needs to operate

c. Look for other features based on your preferences and intended use. For example, if you plan to produce highly-edited shows with background music, you may want a camcorder with Hi-Fi sound. For incamera editing, edit, titling and fade functions are useful.

d. Video camera function [Ensure that students know how to attach and remove the battery, turn power on and off, eject tape, record, zoom, focus/autofocus and playback. If necessary, have students practice these operations with the cameras they'll be using during the course.]

3. Housings

a. Often you can get housings and cameras as a single package. This assures compatibility and that all the necessary components are present.

b. Housing for a popular camera may be available from several manufacturers. Although it's the same camera, what controls you have underwater may vary with the housing.

c. Consider the following features when selecting a housing for your video camera.

- material — metal is durable, rugged and has good

handling characteristics; plastic is noncorrosive and light; clear plastic makes it easy to spot leaks and check controls

- controls — at a *minimum,* you should be able to turn power on and off, and (of course) operate the record/pause switch; most housings also offer zoom control; other camera controls are available on some housings
  - mechanical controls penetrate the housing; they're versatile and inexpensive, but require maintenance to prevent leaks
  - electronic controls do not penetrate the housing; they plug into camera's remote control outlet, and do not create potential leak points
  - some housings have both mechanical and electronic controls
- buoyancy — some housings sink, some float and some can be adjusted to float or sink; in either case, the housing should only be slightly positive or negative or it will be hard to hold steady underwater
- viewing — you should be able to look through the camera viewfinder; some models use an LCD color monitor to make viewing really convenient
- dome port — you'll generally want a dome port to ensure good color and sharpness (more about dome ports later)
- accessory compatibility — be sure the housing accepts any internal and external accessories you may want, such as video lights and color correcting filters

d. Functions of the video camera in the housing [Show students how to turn power on and off, record/pause, zoom, and operate other functions of camera in housing. *Note that installing camera in housing will be covered later.* Have students practice these operations with the system they'll use during the course.]

4. Underwater video lights
   a. [Tell students whether they will or will not be using video lights. Video light use isn't required to meet the course objectives, but present information on them in either case.]
   b. With today's low light videocameras and other methods of restoring color underwater (more about these later), underwater video lights are optional.
   c. Video lights have three selection considerations:
      - light quality — you want the lights to cover a wide angle and not have any hot spots

- burn time — you want sufficient battery power to provide lighting for all your intended shooting
- battery location — batteries in the housing make a streamlined package, but create another potential place for the housing to leak; batteries attached to the light or externally on housing avoid this; large battery packs offer the longest/brightest burns, but are bulky, frequently worn on the diver and connected to the light by a wire

E. Underwater Video Principles

Learning Objectives.

After this discussion, you'll be able to answer the following questions:

- ***How does water affect the apparent sharpness of video?***
- ***How does water affect color?***
- ***Why does the combination of a dome port and wide angle lens help you with focus, color and sharpness underwater?***
- ***How do you set the camera focus when using a dome port?***
- ***What are two ways to improve video color underwater without using video lights?***
- ***How do you position underwater video lights to obtain proper lighting?***
- ***What are four ways to get maximum effectiveness out of underwater video lights?***
- ***How should you hold a video camera underwater?***
- ***What is the best general angle and position for shooting underwater?***
- ***What are four common errors to avoid while shooting videos underwater?***

1. Water's Effect on Sharpness and Color
   a. Light traveling through water gets scattered as it hits suspended particles, reducing visual sharpness. The further light travels, the more it is scattered.
   b. As you may recall, water absorbs color from light: first red, then orange, yellow, and green. Red is almost totally absorbed after light passes through 10 metres/30 feet of water. The more water the light passes through, the bluer the light becomes as other colors are lost.
   c. Therefore, you get the best sharpness and color by reducing the water between the camera and your subject, i.e., by getting as close as possible.
      - a wide angle lens lets you get close and still see the entire subject; the wider the lens, the closer you can get (Many cameras accept adapters to make the lens extra wide.)
      - flat ports reduce lens angle, but a *dome port* allows

a wide angle lens to retain its full angle of view so you can get much closer (Flat ports are best suited for macro videography or for a lens that cannot be used behind a dome port, or for use with an external filter that you can remove during the dive if desired.)

- the combination of wide angle lens and dome port has a great depth of field — that is the distance range that is in focus; usually .3 metres/1 foot to infinity is in focus, so you don't need to focus at all for general shooting
- dome ports have an optical effect that changes the focus point to approximately .3 metres/1 foot in front of the lens; some camera lenses require an add-on correction lens to focus this close (With some systems, you may end up with both a wide angle adapter and a correction lens when using your video camera underwater. A few systems cannot be used with a dome port at all.)

d. Besides getting close to your subject two methods improve video color underwater without using video lights.
    - Stay shallow — the shallower you are, the less color is absorbed
    - Use a color correcting filter — filters cannot replace lost color, but they can help make the color that's left visible by reducing the stronger blues; most videographers consider a color correcting filter standard equipment when not using video lights

e. Video lights actually replace lost color. When using video lights, follow these steps.
    - Set lights so they're on the subject from above or at the side at an angle. Don't put them close to the lens, or particles will reflect into the camera, creating a snowstorm effect called *backscatter*.
    - Set lights for even lighting. With a single light, the best location is usually above the lens angled down to the subject. With two lights, from the sides at 45 degree angles is usually best; be careful to avoid a *hot spot* — a small area lit brighter than the rest — where the beams overlap. [If students will be using video lights, show them how to position the lights on the systems they'll be using.]
    - For maximum effectiveness with video lights:
        – Do *not* use a color correcting filter. Video lights do not need correcting like natural light.
        – Set the camera for indoor or outdoor lighting (if your camera has such a setting) according the light manufacturer's directions. If in doubt, the outdoor setting is usually preferred during the day, and indoor preferred during night dives.

- Turn off the lights when not shooting to save batteries. Left on continuously, most video light batteries will run down before video camera batteries.
- Assemble your system so that with lights in place, it is comfortably balanced and trimmed for underwater use. It shouldn't be a strain to keep it upright and level.

• Some video lights can only be turned on underwater; turning them on out of water can cause them to overheat and melt or catch fire.

2. Videography Techniques — Camera Handling and Basic Shooting Principles
   a. It's important to hold the video system steady; all motion should be smooth.
   b. Hold the housing in front of you, arms locked straight or bent as necessary to see the viewfinder clearly. Some divers learn to estimate what the camera sees, and look over the housing rather than into the viewfinder.
      • You can use this position while sitting, standing, kneeling, lying or swimming midwater.
      • When making contact with the bottom, be cautious to avoid damage to sensitive parts of the environment.
   c. The best general position for all-round underwater videography is close to and slightly below the subject, shooting with an upward angle. This gives the best possible color and helps separate the subject from the bottom.
   d. For best results, avoid these common errors:
      • Failure to hold the shot — The viewer needs time to identify what he's seeing. Hold a shot at least four or five seconds; count to yourself if necessary — it seems longer than it is when you're shooting.
      • Holding the shot too long — After 10 to 12 seconds, the viewer gets bored with a static scene. You can hold a shot longer if there's lots of action. Shots that are too long can be shortened in post production editing, however. (More about post production editing later.)
      • Rapid camera motion — When moving the camera during a shot, the move should be slow and smooth.
      • Shotgun videotaping — Don't swim around mindlessly videotaping everything you see. Think about each shot and how it fits in with what you've already shot and plan to shoot. [Explain that Dives Two and Three will deal with this aspect of shooting in detail.]

F. Underwater Video System Assembly, Disassembly and Maintenance

Learning Objectives.

After this discussion, you'll be able to answer these questions:

- *What are three ways to avoid condensation inside a camera housing?*
- *How should you check the assembled video system prior to diving?*
- *What postdive care should you give to an underwater video system?*
- *How do you recharge nicad batteries so as to avoid nicad memory problems?*

You'll also be able to:

- *Demonstrate how to remove, clean and replace an O-ring.*
- *Demonstrate how to assemble and disassemble an underwater video system.*

1. Underwater video system assembly [System assembly is specific to the camera and housing being used. Show your students how to assemble the system they'll be using. They should do this themselves under your guidance. This demonstration and practice should completely prepare the housing for use, including focus control, exposure on automatic, filter placement (if used) and other settings as appropriate for the system. The following discussions should be integrated into your demonstration and student practice:]
   a. Proper O-ring care
      - Immediately accessible O-rings should be removed, cleaned and lubricated every time the housing is opened.
      - To remove the O-ring, hold it firmly with one finger while tracing along its length with another so that it stretches slightly, forming a bulge you can grasp. Gently lift the O-ring from its groove.
      - Gently clean the O-ring with a clean soft cloth; avoid excessive stretching or pulling
      - Clean the O-ring groove with a cotton swab.
      - Inspect the O-ring for any nicks or abrasion. Replace it if it shows any damage or wear.
      - Lubricate the O-ring with a thin coat of silicone grease. It should appear wet, with no globs of grease.
      - Replace the O-ring in the groove. Check the entire groove, O-ring and opposing cover for lint, hair or debris that could cause a leak.
      - Replace the cover.
      - Less accessible O-rings, such as on control shafts,

should be serviced and replaced periodically per manufacturer instructions.

b. Avoiding condensation in the housing
   - Condensation occurs when warm moist air in the housing condenses against the cooler walls and ports when the housing's immersed.
   - Condensation can obscure the lens port and trigger the camera's moisture alarm.
   - The following steps can help prevent condensation:
     – Tape silica gel packs or other dissicant in place inside the housing to absorb moisture.
     – Open and close the housing in a dry air environment, such as an air conditioned room.
     – Use a *gentle* stream of scuba tank air (which is very dry) to purge moist air. Do this when you're ready to close the housing by directing the gentle stream into the housing for a minute or so, then quickly replacing the cover.

c. Predive check
   - After assembly, you should check the system for proper operation and leaks.
   - Test all camera functions and be sure they work.
   - Check for leaks
     – First, visually inspect all seals for damage or dirt.
     – Immerse the housing, preferably in fresh water with the lens port down so that if it leaks, water will accumulate in the port.
     – A steady bubble stream indicates a possible leak.
     – Move all controls to check whether they leak when used.
     – Remove the housing from the water, still with the port down. Confirm that there's no water in the port.
     – If a leak is suspected, postpone video shooting until the housing is professionally serviced.
     – If the housing seems secure, store in a cool, safe place out of the sun with the power off until ready to use.

2. Video system disassembly [Video system disassembly is also specific to the camera and housing being used. Show students how to take their systems apart and have them demonstrate under your guidance. The following discussions should be integrated into your demonstration and student practice:]

a. Post dive care
    - *Immediately* after exiting the water, rinse the system in fresh water. Preferably, immerse it in fresh water and gently agitate it back and forth for 30 seconds to a minute. If that can't be done, a *gentle* freshwater spray will work, concentrating on nooks and crannies where salt can be trapped.
    - If you cannot immediately rinse the system with fresh water, leave everything sealed and keep it wet in salt water until you can. Allowing salt water to dry on it is worse than leaving it in salt water.
    - Confirm that there's no water in the housing and dry it before opening. Do not open the housing or lights where spray, moisture or other equipment being thrown about can get water inside on the camera or other electronics.
    - If diving again, change the battery and tape as needed, maintain the O-ring, take steps to prevent condensation and reassemble as before.
    - Leave the system in a cool, shady place away from other equipment or any hazards.
b. Recharging nicad batteries
    - If not recharged properly, nicad batteries develop a *memory* that reduces the charge they'll hold.
    - To prevent a nicad memory, *fully* discharge batteries before recharging them. Use partially discharged batteries to rewind tape and playback until fully discharged.
    - Do not over discharge batteries; once the battery warning comes on in the camera, it's time to recharge. Overdischarging can destroy a battery, requiring replacement.
    - Some chargers properly discharge batteries before recharging them.
    - Consult manufacturer instruction for specific charging information about your camera and/or video light system(s)

G. Diving with a Video System

Learning Objectives.

After this discussion, you'll be able to answer these questions:

- ***How should you enter and exit the water with a video system?***
- ***How does a video system camera affect buoyancy and drag underwater, and, therefore, air consumption?***
- ***How frequently should you check your air, depth and dive time when diving with a video system as compared to diving without one?***
- ***What should you do with a video system in a diving emergency?***
- ***What should you do when you get these video camera warnings: moisture alarm, low battery?***
- ***What should you do if your video housing floods?***

1. Entries and exits
   a. Entries and exits can damage video systems unless they're handled carefully.
   b. Entries/exits from boats
      - Have someone who you've shown how to handle the system hand it to you after you're in the water, and take it from you before you exit.
      - Lower the system on a line below the boat to be picked up after you enter. If the system is positively buoyant, put a weight on the line so it doesn't float up against the hull. Reattach it at the end of the dive to pull up after you're aboard.
        – avoid if conditions are rough — jerking up and down can damage the system
        – many divers suspend at 5 metres/15 feet so they can reattach during their safety stop
      - In calm water, you can also set the system on a low swim step, and retrieve after entering. Put on swim step at end of dive before exiting water.
   c. Beach entries/exits
      - Be sure the system is as streamlined as possible if entering through surf — may be a good time to omit lights.
      - Use a wrist lanyard to avoid loss.
      - Cover the lens port to protect it. Do not remove until beyond any surf, and replace before returning through any surf.
      - Do not set the system down in sand. The O-rings will pick up sand, which could damage seals and cause leaks.

- Don't hesitate to leave the video system ashore if conditions look too bad. You may miss taping something, but you'd miss taping if you lost or flooded the system anyway.

2. Buoyancy, drag and air consumption
   a. Depending upon its characteristics, a video system makes you slightly more positively or negatively buoyant.
      - Compensate for small variations by adjusting your personal buoyancy. However, you should have proper buoyancy without the system.
      - If the system is significantly negative or positive, make adjustments on the system (add weight or flotation), not your personal buoyancy.
   b. Even relatively compact video systems add drag.
   c. Because of buoyancy and drag, you may use air faster than usual.
   d. Concentrating on video shots makes it easier to lose track of depth, direction and time.
   e. Therefore, you should check your air, depth, time and direction about twice as often as when diving without a video system.
   f. Some divers find a tendency to hold their breath to help hold the camera steady. Do not do this. Instead, exhale slowly during a shot.
   g. Be cautious of the environment with a video system. Because it can affect your buoyancy, take extra care to not kick sensitive parts of the environment.
3. Diving emergencies with video system.
   a. In any emergency underwater, the rule is to ditch the video system. Video systems are expensive, but they're not worth risking your or your buddy's safety or health.
   b. Many divers prefer a video system to have slight positive buoyancy so that if it is ditched, there's a chance of recovery on the surface.
4. Video emergencies underwater.
   a. No video malfunction, no matter how severe, is grounds for compromising diver safety.
   b. Moisture warning
      - If your camera shows a moisture warning, it indicates condensation or a possible leak.
      - Turn the housing lens port down so any water will accumulate there and make a normal ascent.
      - Hand the system aboard (if boat diving), instructing the receiver to keep it lens port down.

- Exit, dry off yourself and the housing.
- Open the housing and remove the camera.
  - If there's no sign of leakage, it was probably a condensation problem.
  - If there was leakage and you can't find the cause, or if in doubt, the housing will need to be professionally serviced before being used again.
- Reseal the housing (leaving the camera out) and rinse the system properly.
- If you suspect condensation, use silica gel, an air conditioned room or scuba air to prevent it on the next dive.
- IMPORTANT: If unable to determine the problem, DO NOT take the system underwater. Have it checked out by a professional service technician.

c. battery warning
   - This is an inconvenience, not an emergency.
   - You may be able to finish taping by turning the power off (instead of using standby) between shots to save batteries.
   - Otherwise, you'll need to surface to change batteries.
   - Always change batteries properly: rinse the system, dry yourself and the housing and open in a safe environment. Trying to make a quick battery change on the fly is an easy way to damage a system by flooding or salt spray.

d. flooded housing — minor (a small amount of water coming in that has not gotten the camera substantially wet as far as you can tell)
   - If you detect a trickle of water coming into the housing, immediately turn the housing lens port down.
   - Ascend as rapidly as possible, but do not exceed the ascent rate specified by your computer or the RDP.
   - Remove the housing from the water keeping the lens port down.
   - Dry off yourself and the housing and remove the camera. Do not reuse the housing until it has been serviced.
   - Shut off camera and allow any damp air or moisture to dry out in an air conditioned room.
   - After several hours, check the camera for proper function. If it is water damaged, unfortunately it is probably beyond repair.

e. flooded housing — major (substantial water in housing; camera is very wet)

- Make a normal ascent and a safety stop. There's no hurry — the camera is ruined or, if is repairable (extremely unlikely), a few more minutes in the water will have little effect.
- Open the housing carefully away from people — wet electronics, especially batteries, put off gases that may make it pop or burst open
- Have the housing serviced before using it with a new camera.
- Almost all floods, minor or major, are caused by user error — failure to maintain the O-rings properly, and failure to carefully check the seals before entering the water.

V. Video Training Dive One

Performance Requirements.

By the end of this dive, the student should be able to:

- ***Properly assemble an underwater video system for use.***
- ***Perform a predive check of an underwater video system.***
- ***Enter the water properly with a video system.***
- ***Maintain proper buoyancy while diving with a video system.***
- ***Check air supply, depth, time and direction at appropriate intervals while diving with a video system.***
- ***Demonstrate basic underwater video shooting techniques, including holding the camera steady while standing, sitting, lying, kneeling and swimming; making smooth camera movements; avoiding the common shooting errors discussed in Presentation One; and using the best "general" shooting angle.***
- ***Exit the water properly with a video system.***
- ***Give an underwater video system proper postdive care.***
- ***Properly disassemble an underwater video system.***

A. Video system preparation [Have students assemble their video systems under your supervision and give it a predive check. This can be done ahead of time, before arriving at the dive site or boarding the dive boat.]

B. Briefing

1. Evaluate conditions
2. Dive site/boat facilities
3. Entry technique to be used, including video system handling method

4. Exit technique to be used, including video system handling method
5. Bottom composition, topography and dive site description
6. Depth range and maximum dive depth
7. Dive time limit, air supply monitoring and limit, and distance limits
8. Communications review, including special signals for dive [If two or more divers share a system, have them carry a slate. They should write their names on the slate and video tape it momentarily when they take turns with the camera so you can tell who was shooting when you look at the tape.]
9. Review emergency procedures
10. Buddy/video team assignments
11. Overview dive objectives [Emphasize that this dive develops rudimentary video handling, video diving and very basic shooting skills. Students shouldn't concern themselves too much about shooting technique beyond those listed in the objectives. Explain that shooting skills will be developed further in subsequent dives. Depending upon the environment and logistics, you may assign video subjects or let students choose their own.]

C. Predive procedures

1. Prepare personal equipment
2. Don equipment
3. Predive safety check — Begin With Review And Friend
4. Entry — retrieve video system

D. Video Training Dive One

1. **Descent**
2. **Shooting with video system (assigned or student-selected subjects; all students should practice each of the following)**
    a. **Standing**
    b. **Sitting**
    c. **Kneeling**
    d. **Lying**
    e. **Swimming**
    f. **Holding steady — at all times**
    g. **Staying close to subjects, using upward angle**
    h. **Holding takes five to twelve seconds, depending on subject — all shots**
    i. **Camera motion very slow and steady — all camera moves**
3. Checking depth, time, air supply and location frequently

— throughout dive

4. Maintaining proper buoyancy — throughout dive
5. Ascent — safety stop three minutes at 5 metres/15 feet

E. Post dive procedures

1. Secure/hand up video system
2. Exit water
3. Remove and stow personal equipment
4. Rinse video systems

F. Video system disassembly — in secure, dry environment

1. Dry housing and system
2. Open housing and change batteries/tape as necessary for next dive; recharge batteries
3. If no other dive same day, properly stow system [In situations where students will be making a second dive, but there's no appropriate environment for opening the housing, assuming they have sufficient battery power and tape, you may omit opening the housing between dives.]

G. Debriefing

1. Shooting technique, dive skills [Debrief students about their techniques based on what you and your assistants observed.]
2. (Optional) Review student video tape [Debrief students based on what you see on tape that relates to steadiness, motion, shot length and angle.]

3. Students log dive for your signature.

VI. Presentation Two — Underwater Video Principles Continued

[This presentation is intended to precede Video Training Dive Two, preferably after Video Training Dive One. If, however, logistics make this difficult, this presentation may be combined with Presentation One. It's recommended that you review the key points just prior to Dive Two if you combine presentations.]

A. Presentation Introduction — The previous discussions and training dive focused on developing your familiarity with the technical side of underwater video: hardware use and care, dive skills and basic shooting mechanics. This discussion will begin developing your skills with the artistic side of videography: video composition, types of shots, camera moves, and basic shot sequencing

B. Video Composition

Learning objectives.

After this discussion you'll be able to answer the following questions:

- ***What is* composition*?***
- ***What are four goals of good video composition?***
- ***How much of the video frame should your subject fill?***
- ***What three points should you keep in mind regarding foregrounds and backgrounds?***
- ***What three points should you keep in mind regarding action and video composition?***

1. Composition is the arrangement of objects in the video frame
2. Good video composition seeks to:
   a. Clearly identify the central subject
   b. Eliminate distractions
   c. Connect with previous and following shots so the audience can follow the story.
   d. Enhance the desired effect on the audience (i.e., awe, mystery, beauty, fear, etc.)
3. Elements of good composition
   a. Framing
      - Your subject dictates the framing.
      - Get close enough so that your subject fills at least one third of the frame.
      - The guideline is that the closer the shot, the more of the frame your subject should fill.
   b. Backgrounds and foregrounds add depth to composition. Keep these points in mind:
      - Avoid any distractions in front of or behind your subject. Foregrounds/backgrounds should compliment the subject, not compete with it.
      - Frame so your subject stands apart (has good separation from) the foreground and background. The low, upward angle you already learned does this well.
      - Good foregrounds have a bit of color or action (e.g., fish, or soft coral undulating in the current); good backgrounds tend to be neutral (e.g., blue water or a distant reef)
   c. Action affects composition. Keep these points in mind:
      - It's usually best to avoid action away from camera. (e.g., Fish/divers should swim across the frame, toward camera, or diagonal across the frame toward camera.)

- Complete action; don't leave the audience hanging. Any action has a sense of completeness; (e.g., A fish swims into frame, the audience expects it to exit frame) hold shots until complete.
- A video without interaction is dull; show interaction between divers and aquatic life, different aquatic life, divers and each other, etc. (Note: Action between divers and aquatic life should be passive. Avoid chasing, capturing or harming creatures for the sake of a video.)

4. Composition is an art; there is no right or wrong apart from whether it pleases the audience. The guidelines help you develop a sense of composition, but as you develop a feel for composition, you will learn that they're not absolute, unbreakable rules.

C. Video Shots

Learning Objectives.

After this discussion, you will be able to answer these questions:

- ***What do* sequence *and* shot *mean?***
- ***What are the three basic types of video shots, and what is the general purpose of each?***
- ***What is the basic shot sequence for general purpose videography?***
- ***What is a* cut*?***
- ***What is a* clean cut*, and how do you accomplish one?***
- ***What are* rough *and* jump *cuts, and what are three ways to avoid them?***

1. Overview
   a. A *shot* is an uninterrupted view recorded on camera. A *sequence* is several shots put together to show a complete action and part of the story.
   b. Good videos are built from shots in a sequence edited together to form a story. To have material you can edit, you need to plan shots and sequences.
   c. During later presentations and Video Training Dive Three you will learn about basic editing. For now, you'll be concentrating on gathering the raw material you edit.
2. Video shots
   a. Long shot (LS)
      - A distant wide shot
      - Establishes the scene for the audience
   b. Medium shot (MS)
      - A closer, intermediate distance shot

- Establishes a point of interest from within a previous LS

c. Close up (CU)
   - A tight shot
   - Establishes detail from a previous MS

3. Sequencing
   a. A proper shot sequence leads the audience naturally through the story
   b. Even though you can edit, shooting in sequence makes editing later easier. You'll be shooting in sequence during Video Training Dives Two and Three.
   c. The *basic* sequence is
      - LS to establish the scene
      - MS to bring audience to action
      - CU to show action in detail
      - MS to leave action
      - LS to set up next scene
   d. You can have more than one shot at each stage in the sequence (e.g., several CU shots to reveal action).
4. Cuts
   a. A *cut* is the transition from one shot to the next.
   b. It is important to have *clean cuts,* which means a smooth transition from one shot to the next. Otherwise, the audience may be confused, startled or uncomfortable. To get a clean cut:
      - Change shot distance. (e.g., Follow an LS with a MS, or MS with a CU, or MS with an LS, etc.)
      - If following an LS with an LS, or a CU with a CU etc., change angle significantly.
      - Hold each shot the right length, (usually five to 12 seconds, depending on the shot and the action)
   c. *Rough cuts* are undesirable. To avoid rough cuts, avoid:
      - Sequencing two only slightly different shots together. These can make the subjects appear to suddenly jump within the frame, resulting in a *jump cut.*
      - Following an LS with a CU, or a CU with an LS.
      - Cutting a shot too soon.
5. Example of a smooth shot sequence
   a. LS of two divers swimming along a reef
   b. MS of divers, first diver pulls out a fish ID slate
   c. MS, different angle, divers in foreground, fish visible swimming by
   d. CU, first diver watching fish intently

e. CU, second diver watching fish
f. MS, first diver pulls up slate and shows to other diver
g. CU, first diver's finger pointing to illustration of fish
h. MS, divers nod, agree that that's the same fish
i. LS, one diver points, signalling other diver they should go that way
j. LS, divers entering new scene; this sets up new sequence

D. Camera moves

Learning Objectives.

After this discussion, you'll be able to answer the following questions:

- ***What are four purposes of camera moves?***
- ***What is meant by* pan, tilt, dolly, truck, lead *and* follow *shots?***

1. Underwater videography lends itself to shots in which the camera moves.
2. Use camera moves to:
   a. Establish a scene that's too big for the camera frame
   b. To reveal something to the audience that has been off camera, usually as a surprise
   c. Keep up with action that continues beyond stationary camera range
   d. Make a transition from one shot sequence to the next (e.g., camera moves with divers from one reef to the next)
3. Basic camera moves
   a. Pan — Camera remains in one place and turns left to right or right to left. Useful for establishing a large scene, such as a shipwreck, or following action.
   b. Tilt — Camera remains in one place and tilts up or down. Useful to establish depth or a vertical scene, such as a wall, or to follow vertical action.
   c. Dolly — Camera moves toward or away from subject. Useful to go from an LS to MS, or an MS to CU, or the reverse, in a continuous shot.
   d. Truck — Camera moves right or left while staying on subject. Useful to change shot angle in a continuous shot.
   e. Follow — Camera moves with the subject, from behind, usually to one side or slightly above or below. Follow shots cause audience to focus on the approaching scene as well as the subject.
   f. Lead — Camera moves with the subject from ahead, usually to one side or slightly above or below. Lead shots cause audience to focus on the subject and less on the receding scene.

VII. Video Training Dive Two

Performance Requirements.

By the end of this dive, the student should be able to:

- ***Continue to demonstrate the skills mastered in Video Training Dive Two.***
- ***Demonstrate an understanding of good composition principles by shooting underwater video that applies those principles.***
- ***Shoot a basic video sequence with clean cuts: establishing LS, MS, CU, MS and LS.***
- ***Demonstrate as part of a sequence, or apart from a sequence for practice, the following camera moves: pan, tilt, dolly, truck, follow, lead.***

A. Video system preparation [Have students assemble their video systems under your supervision and give it a predive check. This can be done ahead of time, before arriving at the dive site or boarding the dive boat. This is omitted if this dive closely follows the previous training dive and it was unnecessary/undesirable to open the video systems.]

B. Briefing

1. Evaluate conditions
2. Dive site/boat facilities
3. Entry technique to be used, including video system handling method
4. Exit technique to be used, including video system handling method
5. Bottom composition, topography and dive site description
6. Depth range and maximum dive depth
7. Dive time limit, air supply monitoring and limit, and distance limits
8. Communications review, including special signals for dive [If two or more divers share a system, have them carry a slate. They should write their names on the slate and video tape it momentarily when they take turns with the camera so you can tell who was shooting when you look at the tape.]
9. Review emergency procedures
10. Buddy/video team assignments
11. Overview dive objectives [Emphasize that this dive develops their ability to shoot sequences, and that they're expected to continue to demonstrate skills mastered in the previous dive. You may assign specific subjects and sequences, or you may allow students to seek out their own.]

C. Predive procedures

1. Prepare personal equipment
2. Don equipment
3. Predive safety check — Begin With Review And Friend
4. Entry — retrieve video system

D. Video Training Dive Two

1. Descent
2. **Shooting with video system (assigned or student-selected subjects; all students should practice each of the following)**
    a. **Shot sequence**
    b. **Pan**
    c. **Tilt**
    d. **Dolly**
    e. **Truck**
    f. **Follow**
    g. **Lead**
3. Ascent — safety stop three minutes at 5 metres/15 feet

E. Post dive procedures

1. Secure/hand up video system
2. Exit water
3. Remove and stow personal equipment
4. Rinse video systems

F. Video system disassembly — in secure, dry environment

1. Dry housing and system
2. Open housing and change batteries/tape as necessary for next dive; recharge batteries
3. If no other dive same day, properly stow system [In situations where students will be making a second dive, but there's no appropriate environment for opening the housing, assuming they have sufficient battery power and tape, you may omit opening the housing between dives.]

G. Debriefing

1. Shooting technique, dive skills [Debrief students about their techniques based on what you and your assistants observed.]
2. Review student video tape [This may be done away from the dive site if necessary. If you were unable to review the tape from the first training dive between dives, do so now. Debrief students based on what you see on tape that relates to dive objectives.]
3. Students log dive for your signature

VIII. Presentation Three — Producing a Short Video

[This presentation should precede Video Training Dive Three.]

A. Presentation Introduction

Now that you have mastered basic video handling, diving and shot sequencing skills, you're ready to put together a complete video by creating a story line and by editing. During the next video training dive, you will shoot and produce a short underwater video story.

[Depending on logistics, you may direct students to accomplish this in several ways:

1. If two or more students are sharing a video system, the video may be a *team* effort. In this case, all team members should get a copy of the video to keep.
2. You may have students use incamera editing, or post production editing. In either case, the material on both methods should be presented.
3. In some instances, students may not be capable of producing their video stories in a single dive. If this is the case, assign additional dives as necessary to complete the production.]

B. Video story line

Learning Objectives.

After this discussion, you'll be able to answer the following questions:

- ***What is a* story line*, and why do you need one for underwater videos?***
- ***How do you develop a story line?***
- ***What tool should you use to keep track of your story line during shooting?***

1. Why you need a story line.
   a. A *story line* is the outline of what your underwater video shows the audience.
   b. Without a story line, a video is nothing more than an assortment of random shots, which can bore an audience.
   c. You need a story line to make a video interesting by giving it structure and direction.
2. Developing a story line
   a. Creating a story line is simply a matter of making up the story you want to show
   b. Keep it simple, such as "two divers explore a wreck"
   c. A story line should be written down as list of shot sequences you need to tell the whole story.

d. Example story line

[You may want to copy this on the board ahead of time, or create a handout for students]

Diving the *Chickasaw* Wreck

Surface

Divers arrive at marina

Divers board and load dive boat

Boat leaves dock

Boat arrives at dive site

Crew anchors boat

Divers prepare to dive

Divers enter water

Underwater

Divers descend anchor line

Divers arrive on *Chickasaw* wreck

Divers explore wheelhouse

Divers find moray eel

Divers explore deck

Divers ascend

Divers make safety stop

Surface

Divers climbing aboard

Crew pulls anchor

Divers relax on sun deck as boat heads home

Credits

3. Using the story line
   a. Write the story line on a slate and keep it with you throughout the shoot.
   b. As you finish each shot sequence, consult the story line and plan a clean cut/transition into the next sequence.
   c. Be flexible. If you discover something unusual worth shooting, add it to your story line. Just be sure to have a clean transition into and out of it.
   d. Check off sequences as you complete them so you'll know if you missed any.
   e. You don't have to complete the entire sequence on a single dive. What looks like one dive on the finished video may be shot during several dives.

C. Editing

Learning Objectives.

After this discussion, you will be able to answer the following questions:

- ***Why do you need to edit a video?***
- ***What is* incamera editing *and what are its advantages?***
- ***What is the basic shooting technique when incamera editing?***
- ***What is* post production editing, *and what are its advantages?***
- ***What are the four minimum pieces of equipment you need to post production edit?***
- ***What is the basic shooting technique when post production editing?***
- ***How does editing in music improve a video?***
- ***What are three considerations when editing music into a production?***

1. The need for editing
    a. Editing is the process of eliminating unwanted material and assembling the video in the desired sequence to create the final video the audience will see.
    b. Without editing, the story line may be incomplete, contain unwanted shots and/or be out of sequence.
    c. You need to edit to reliably create a video the audience will enjoy.
    d. Editing can be either incamera editing or post production editing
2. Incamera editing
    a. Incamera editing is the technique of shooting the entire video in sequence, with each shot properly timed and with bad shots eliminated so that when you're done shooting, you have a finished video. The entire process is done in the camera, hence the name.
    b. Advantages of incamera editing
        - Requires no editing equipment
        - Eliminates the need for post production editing if done properly
        - Maintains quality because the finished video is first generation (not copied)
    c. Disadvantages
        - Requires precision and planning to be effective — no chance to correct later.
        - You cannot take the same shot two or three ways and then choose the one you like best later.
        - Special effects and titles are limited to the camera's capabilities.

- Requires extra shooting effort (e.g., If you have a sequence that starts in front of a diver, cuts behind the diver, then returns to the front of the diver, you have to swim back and forth to shoot in that order. With post production editing, you could shoot both of the front shots, then the back and put them in order later.)

d. Technique
   - Plan the video very carefully and with as much detail as possible.
   - Shoot each shot in sequence; if you have a bad shot, back up and record over it (many systems have special features to assist with this)
   - Allow for the camera when timing shots.
     – most cameras have a slight delay when you start recording, so begin recording early
     – most stop instantly when you stop, or even back up a few frames, so hold the shot just a little bit long

e. Even if you plan to use post production editing, use incamera editing techniques as much as possible. It will make post production editing easier.

3. Post production editing
   a. Post production editing is the technique of shooting video footage required by your story line, then choosing and sequencing that footage in a separate edit session.
   b. Advantages of post production editing
      - You have leeway for error because you can cut out mistakes later.
      - Although editing is easier the more you shoot in sequence, you can shoot out of sequence to make the dive easier and resequence during editing.
      - With sophisticated editing systems, you can take advantage of special effects that add professionalism to your video.
      - If unsure the best way to shoot something, you can try several ways and pick the best one later.
      - Shot length can be timed perfectly.
   c. Disadvantages of post production editing
      - Requires additional equipment — a VCR (preferably with flying erase heads) and television monitor at a minimum.
      - Can be time consuming.
      - Quality loss because you copy your original footage to another tape as you edit.
   d. Post production editing equipment

- At a minimum, post production editing requires:
  - playback unit (may be video camera) to play footage you shot
  - record unit (may be a standard VCR) to record the footage you want to be in your edited video
  - monitor (may be a regular television) so you can see where you are on each tape
  - transfer cords (RCA video cables) to connect the playback unit to the record unit

e. Basic technique
- You don't need to plan the video as tightly as for incamera editing, unless you plan to shoot out of sequence a lot. In that case, make a list of shots and check them off as you take them so you don't leave any out.
- Start each shot a bit early and hold it a bit long to give room to edit later.
- If you're not satisfied with a shot, don't back up and record over it, just reshoot it. Later, you may find you like the first one better anyway.
- To edit, play your original footage in the playback unit, recording onto a second tape in the record unit. Eliminate unwanted footage, determine exact shot length and fast forward/rewind your original footage as necessary to put it into the required sequence. (This is why it's still desirable to shoot in sequence when possible.)

f. Advanced post production equipment
- For professional results, special editing equipment makes your job easier
- Editing decks — advanced VCRs designed specifically for editing with these features:
  - flying erase head
  - audio dub for adding music and sound effects
  - variable speed search
  - synchronized editing, which makes both the playback and record deck start at the same time
  - split screen feature, which allows you to see each tape on a different monitor
- Edit controller — operates edit decks from a single unit
- Video processors and special effects — special units that allow audio dubbing, fades, titles, color enhancement and other effects

4. Music editing
    a. Adding music is usually done after editing, either post production or incamera.
        - The edited video is copied to another tape with music replacing original sound (music over) or subtly behind (music under) original sound
        - Alternatively, special editing equipment and higher quality tape decks have audio dub features to allow adding music to the video without copying — preserves image quality.
    b. Music enhances a video by helping the audience experience the intended emotions (serenity, adventure, suspense, etc.)
    c. Three considerations when using music:
        - Mood — Ask yourself what you want the audience to feel and select the music accordingly.
        - Timing — Be sure music comes in and out, fades etc. in harmony with the image. There should be unity between what the audience sees and hears.
        - Rights — Remember that commercial music is copyrighted; you cannot use copyrighted music without permission if your tape will be sold or shown publicly.
        - [Tell students whether they will be incamera editing or post production editing. Note that post production editing usually benefits from some incamera editing. If post production editing, give them an overview of the equipment and its capabilities. Under your supervision, students should be able to edit together a finished video, but it is beyond the scope of the course to get into detailed professional editing.]

IX. Video Training Dive Three

Performance Requirements.

By the end of this dive, the student should be able to:

- ***Continue to demonstrate the skills mastered in Video Training Dives One and Two.***
- ***Demonstrate the development and shooting of a story line.***
- ***Produce a video that follows a planned story line by using incamera or post production editing, as assigned***

A. Story line development [Brief students on the planned dive site, then have the students develop story lines and write them on slates for reference. Review the story lines to be sure they're com-

plete and can be accomplished. You may suggest and assist with story lines, but do not assign them. Developing their story lines themselves is a skill objective.]

B. Surface shooting [Allow the time and logistics necessary for any predive/above water shot sequences required by story lines]

C. Video system preparation [Have students assemble their video systems and give them a predive check. This should require only minimal assistance by you or teaching staff. This can be done partially ahead of time, however final assembly may have to wait until after surface shooting.]

D. Briefing Video Training Dive Three

1. Evaluate conditions
2. Dive site/boat facilities
3. Entry technique to be used, including video system handling method
4. Exit technique to be used, including video system handling method
5. Bottom composition, topography and dive site description
6. Depth range and maximum dive depth
7. Dive time limit, air supply monitoring and limit, and distance limits
8. Communications review, including special signals for dive
9. Review emergency procedures
10. Buddy/video team assignments
11. Overview dive objectives [Emphasize that they're putting their new skills together now to shoot a video. If students are sharing a system and creating a single video, remind them that every student must have a turn shooting sequences.]

E. Predive procedures

1. Prepare personal equipment
2. Don equipment
3. Predive safety check — Begin With Review And Friend
4. Entry — retrieve video system

F. Video Training Dive Three

1. Descent
2. Shooting planned story line sequences with video system (all students should shoot video sequences)
3. Ascent — safety stop three minutes at 5 metres/15 feet

G. Post dive procedures

1. Secure/hand up video system
2. Exit water

3. Remove and stow personal equipment
4. Rinse video systems

H. Video system disassembly — in secure, dry environment

1. Dry housing and system
2. Disassemble video systems and stow properly.

I. Debriefing

1. [Debrief students about what you and your assistants observed. Find out how much of their story line they accomplished.]
2. Students log dive for your signature.

X. Post Production Edit Session (not required if students use incamera editing)

[Assist students in editing their videos. Emphasize shot selection, putting in sequence and shot length, all of which can be accomplished with their cameras and a VCR. If you have more sophisticated editing equipment, you may at your discretion, give an overview of how such equipment aids the editing process, and assist students in putting some professional touches on their productions.]

XI. Graduation Ceremony

[Have a final meeting of the class and encourage students to invite their friends. Consider serving refreshments and making the meeting an upbeat social event. Show all the finished videos, and issue certification credentials. You can add to the fun by showing a tape of funny sequences from the students' video footage, your own footage or from previous video classes.]

Name _____ Date _____

Underwater Videographer Knowledge Review

1. Explain why the combination of a wide angle lens and dome port gives you the best sharpness, color and focus.

2. What is the best general angle for all-round underwater videography?

3. List four common errors to avoid while shooting underwater videos:

4. Describe how to prepare and check an underwater video system.

5. Describe post dive care for an underwater video system.

6. Explain how to enter/exit the water with a video system.

7. Explain how video systems may affect buoyancy, drag and air consumption.

8. Describe how often you should check your gauges when shooting underwater videos.

9. Explain what you should do with a video system in a diving emergency, such as having to assist a buddy who's out of air.

10. Explain what to do if a video system has a major flood, and why.

I have had explained to me and I understand the questions I missed.

Student Signature _____ Date _____

Name _____ Date _____

Underwater Videographer Knowledge Review Answer Key

1. Explain why the combination of a wide angle lens and dome port gives you the best sharpness, color and focus.

   Dome allows wide lens to stay wide, you get close and reduce amount of water light travels through preserving sharpness and color. Wide lens have great depth of focus, so you don't need to focus them much or at all.

2. What is the best general angle for all-round underwater videography?

   Get close to and slightly below your subject, shooting with an upward angle.

3. List four common errors to avoid while shooting underwater videos:

   1. Failing to hold the shot.
   2. Holding a shot too long.
   3. Moving the camera rapidly.
   4. Shotgun videotaping everything without thought.

4. Describe how to prepare and check an underwater video system.

   [The answer will be specific to the system to some degree, but should include maintaining o-rings and settings for focus, exposure and filters.] Check by operating all functions and immersing and watching for bubbles or moisture in the housing.

5. Describe post dive care for an underwater video system.

   Immediately immerse the system in fresh water, agitating gently for 30 seconds to 1 minute. If making another dive, change the battery and tape if needed, and maintain O-rings. If not, disassemble and store in a cool, safe place.

6. Explain how to enter/exit the water with a video system.

   From boats, have someone hand you the system after you enter, or suspend it from a line to retrieve after you enter. You can also put it on the swim step. After the dive, hand the system up, put on the line for retrieval after you're aboard, or put on the swim step. From shore, use a wrist lanyard and cover the lens port. Do not set the system down in the sand. If conditions are bad, don't take the system diving.

7. Explain how video systems may affect buoyancy, drag and air consumption.

   They may make you more buoyant or less buoyant, and they add drag. This can make you use your air faster as you swim around with the system.

8. Describe how often you should check your gauges when shooting underwater videos.

   You should check your air, depth, time and direction about twice as often when diving with a video system as when diving without one.

9. Explain what you should do with a video system in a diving emergency, such as having to assist a buddy who's out of air.

   In an emergency, ditch the video system.

10. Explain what to do if a video system has a major flood, and why.

    Make a normal ascent. There is no urgency because a flooded camcorder is usually beyond repair.

I have had explained to me and I understand the questions I missed.

Student Signature _____ Date _____

Adventure Dive: Underwater Videographer

Skills Overview

- Video system preparation
- Briefing
- Suiting Up
- Predive Safety Check — Begin With Review And Friend
- Entry — retrieve video system
- Shooting with video system (assigned or student-selected subjects: all student should practice each of the following)
  - standing
  - sitting
  - kneeling
  - lying
  - swimming
  - holding steady — at all times
  - staying close to subjects, using upward angle
  - holding takes five to twelve seconds, depending on subject — all shots
  - camera motion very slow and steady — all camera moves
  - checking depth, time , air supply and location frequently — throughout dive
  - maintaining proper buoyancy — throughout dive
- Ascent
- Safety stop
- Exit
- Post dive procedures
- Video system disassembly
- Debriefing and review video
- Log Dive — Complete Adventures in Diving Training Record Sheet
- Exit
- Post dive procedures
- Video system disassembly
- Debriefing and review video
- Log Dive — Complete Adventures in Diving Training Record Sheet

PADI Adventure Dive Training Record

Adventure Dive:

UNDERWATER VIDEOGRAPHY

Skills Overview

- Video system preparation
- Briefing
- Suiting up
- Predive Safety Check (BWRAF)
- Entry – retrieve video system
- Shooting with video system
  - standing
  - sitting
  - lying
  - swimming
  - holding steady - at all times
  - staying close to subjects, using upward angle
  - holding takes five to twelve seconds depending on subject - all shots
  - camera motion very slow and steady - all camera moves
  - checking depth, time, air supply and location frequently - throughout dive
  - maintaining proper buoyancy - throughout dive
- Ascent – Safety Stop
- Postdive procedures
- Video system disassembly
- Debrief and review video
- Log Dive – Complete Training Record

Instructor Statement

"I verify that this student has satisfactorily completed the Knowledge Review and Performance Requirements (as described in PADI's Adventures in Diving Program Instructor Guide) for this PADI Adventure Dive. I am a renewed, Teaching status PADI Instructor for the current year."

Instructor Name _____
First Middle Initial Last

Instructor Signature _____

PADI No. _____ Dive Completion Date _____
Day/Month/Year

Instructor Contact Information (Please Print)

Instructor Mailing Address _____

City _____ State/Province _____

Country _____ Zip/Postal Code _____

Phone/FAX/email _____

Student Diver Statement

"I verify that I have completed all of the Performance Requirements for this Adventure Dive. I realize that there is more to learn about underwater videography and that completion of a PADI Underwater Videographer course is highly recommended. I also agree to abide by PADI Standard Safe Diving Practices."

Diver Signature _____ Date _____
Day/Month/Year

PADI Specialty Training Record

Underwater Videographer

I verify that this student has satisfactorily completed the academic performance requirements as outlined in Presentation 1 of the standardized PADI **Underwater Videographer** Specialty course outline. I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI#_____

Instructor Signature _____ Completion Date_____

Dive One

Skills Overview

- Video system preparation
- Shooting with video system: standing, sitting, kneeling, lying, swimming, holding steady, staying close to subjects, using upward angle, holding takes, camera motion slow and steady, checking depth, time, air supply and location frequently, maintaining proper buoyancy.
- Video system disassembly
- Debriefing and review video

I verify that this student has satisfactorily completed Video Training Dive One as outlined in the standardized PADI **Underwater Videographer** Specialty course outline. I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI#_____

Instructor Signature _____ Completion Date _____

I verify that this student has satisfactorily completed the academic performance requirements as outlined in Presentation 2 of the standardized PADI **Underwater Videographer** Specialty course outline. I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI#_____

Instructor Signature _____ Completion Date _____

Dive Two

Skills Overview

- Shooting with video system: shot sequence, pan, tilt, dolly, truck, follow, lead.
- Video system disassembly
- Debriefing and review video

I verify that this student has satisfactorily completed Video Training Dive Two as outlined in the standardized PADI **Underwater Videographer** Specialty course outline. I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI#_____

Instructor Signature _____ Completion Date _____

I verify that this student has satisfactorily completed the academic performance requirements as outlined in Presentation 3 of the standardized PADI **Underwater Videographer** Specialty course outline. I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI#_____

Instructor Signature _____ Completion Date _____

Dive Three

Skills Overview

- Developing video story line
- Video system preparation
- Shooting planned story line sequences with video system (all students should shoot video sequences)
- Video system disassembly
- Debriefing and review video

I verify that this student has satisfactorily completed Video Training Dive Three as outlined in the standardized PADI **Underwater Videographer** Specialty course outline. I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI#_____

Instructor Signature _____ Completion Date _____