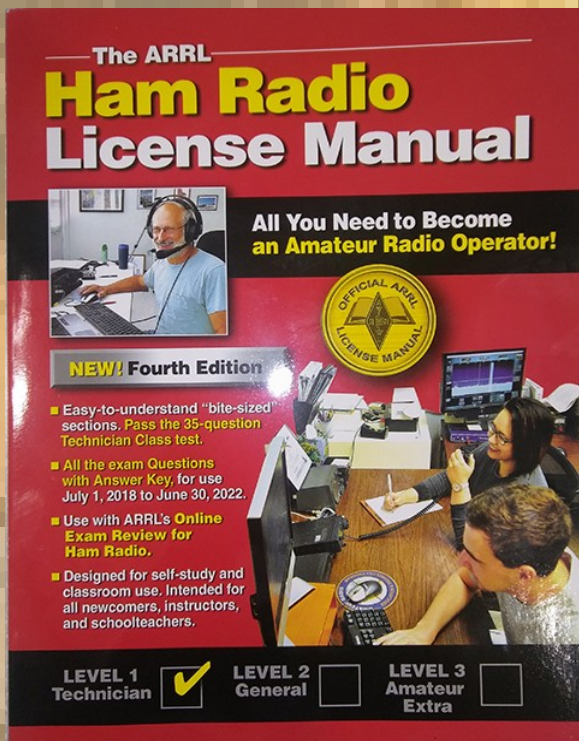


# FCC Technician License Course



## 2018-2022 FCC Element 2 Technician Class Question Pool

Presented by:

Tamiami Amateur Radio Club (TARC)



# W E L C O M E

- To the final, 3-hour class presented by TARC to prepare you for the FCC Technician Class Amateur Radio Service license test.
- Today we will cover Chapters 7,8 and 9 of the ARRL Ham Radio License Manual, 4th Ed.
- Everything you need to know is in this manual

# Meet Your Instructors



Andy Durette  
KB1HIP  
Extra Class



Paul Nienaber  
KN4BAR  
Extra Class



Chet Fennell  
KG4IYS  
Extra Class

# Course Outline

- **Welcome to amateur radio**
- **Radio and Signals Fundamentals**
- **Amateur Radio Equipment (HT & 2M, 70cm)**
- **Electricity, Components and Circuits**
- **Propagation, Antennas and Feedlines**
- **Communicating with other hams**
- **Amateur Radio Equipment (HF)**
- **Licensing regulations**
- **Operating regulations**
- **Safety**
- **Test preparation and review**

# •Courtesy and Common Sense

With only a few exceptions that may seem silly, the rules are basically common sense

- No music (except from NASA)
- No payment, unless you are teaching in a school
- No profanity or obscenity, no exceptions!
- In a life or property threatening emergency, just about anything goes.

# •Control Operator

**Control Operator:** An amateur operator designated by the licensee of a station to be responsible for the transmissions from that station to assure compliance with the FCC rules.

- Generally, that means YOU
- You can allow another licensed amateur to use your station equipment and call sign

# • Third Party Communications

Third Party Communications: A message from the control operator (1st party) of an amateur station to another amateur station control operator (2nd party) on behalf of another person (3rd party)

- Be sure there is a 3rd party agreement between the US and the other station's country before handling 3rd party traffic.



# • Maximum Transmitter Power

- In HF Technician Bands, 200 watts Peak Envelope Power (PEP)
- In most other bands, 1500 watts PEP except for some restrictions on Technician class.
- In all cases, ***use the minimum power required to make a reliable contact.***



# • Station Identification

- FCC rules require amateur stations to identify every 10 minutes and at the end of transmissions
- NOT necessary to ID at the end of every exchange in a QSO
- Do not make unidentified transmissions, (with some exceptions, like for Radio Controlled toys.)

# • About Your Call sign



- Amateur call signs in the US begin with the letters A, K, N or W
- Each call sign contains a one-digit number, zero through nine (0 – 9)
- The arrangement of letters indicates license class, with shorter calls going to higher license classes (W3ABC is legit!)
- Licenses are good for 10 years
- There is a 2 year grace period for renewal



- ITU “International Telecommunications Union” **Region 2 is North America!!!**



# • Technician class - Band Privileges



- All amateur bands 50 MHz and above
- All available modes
- No power restrictions
- ONLY CW PRIVILEGES ON FREQUENCIES BELOW 50 MHz!
- **The ARRL is considering recommending rule changes to the FCC to allow more phone privileges on HF bands.**

## What is an amateur station control point? (T1E05)

- A. The location of the station's transmitting antenna
- B. The location of the station transmitting apparatus
- C. The location in which the control operation function is performed
- D. The mailing address of the station licensee

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**Under what conditions is an amateur station authorized to transmit music using a phone emission? (T1D04)**

- A. When incidental to an authorized retransmission of manned spacecraft communications
- B. When the music produces no spurious emissions
- C. When the purpose is to interfere with an illegal transmission
- D. When the music is transmitted above 1280 MHz



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**What, if any, are the restrictions concerning transmission of language that may be considered indecent or obscene? (T1D06)**

- A. The FCC maintains a list of words that are not permitted to be used on amateur frequencies
- B. Any such language is prohibited
- C. The ITU maintains a list of words that are not permitted to be used on amateur frequencies
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**What are the frequency limits of the VHF spectrum? (T3B08)**

- A. 30 - 300 kHz
- B. 30 - 300 MHz
- C. 300 - 3000 kHz
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**Which of the following is an acceptable language for use for station identification when operating in a phone sub-band? (T1F04)**

- A. Any language recognized by the United Nations
- B. Any language recognized by the ITU
- C. The English language
- D. English, French or Spanish

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**What method of call sign identification is required for a station transmitting phone signals? (T1F05)**

- A. Send the call sign followed by the indicator RPT
- B. Send the call sign using CW or phone emission
- C. Send the call sign followed by the indicator R
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## What is the FCC Part 97 definition of a space station? (T1A07)

- A. Any multi-stage satellite
- B. An Earth satellite that carries one or more amateur operators
- C. An amateur station located less than 25 km above the Earth's surface
- D. An amateur station located more than 50 km above the Earth's surface

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**For which license classes are new licenses currently available from the FCC? (T1C01)**

- A. Novice, Technician, General, Advanced
- B. Technician, Technician Plus, General, Advanced
- C. Novice, Technician Plus, General, Advanced
- D. Technician, General, Amateur Extra

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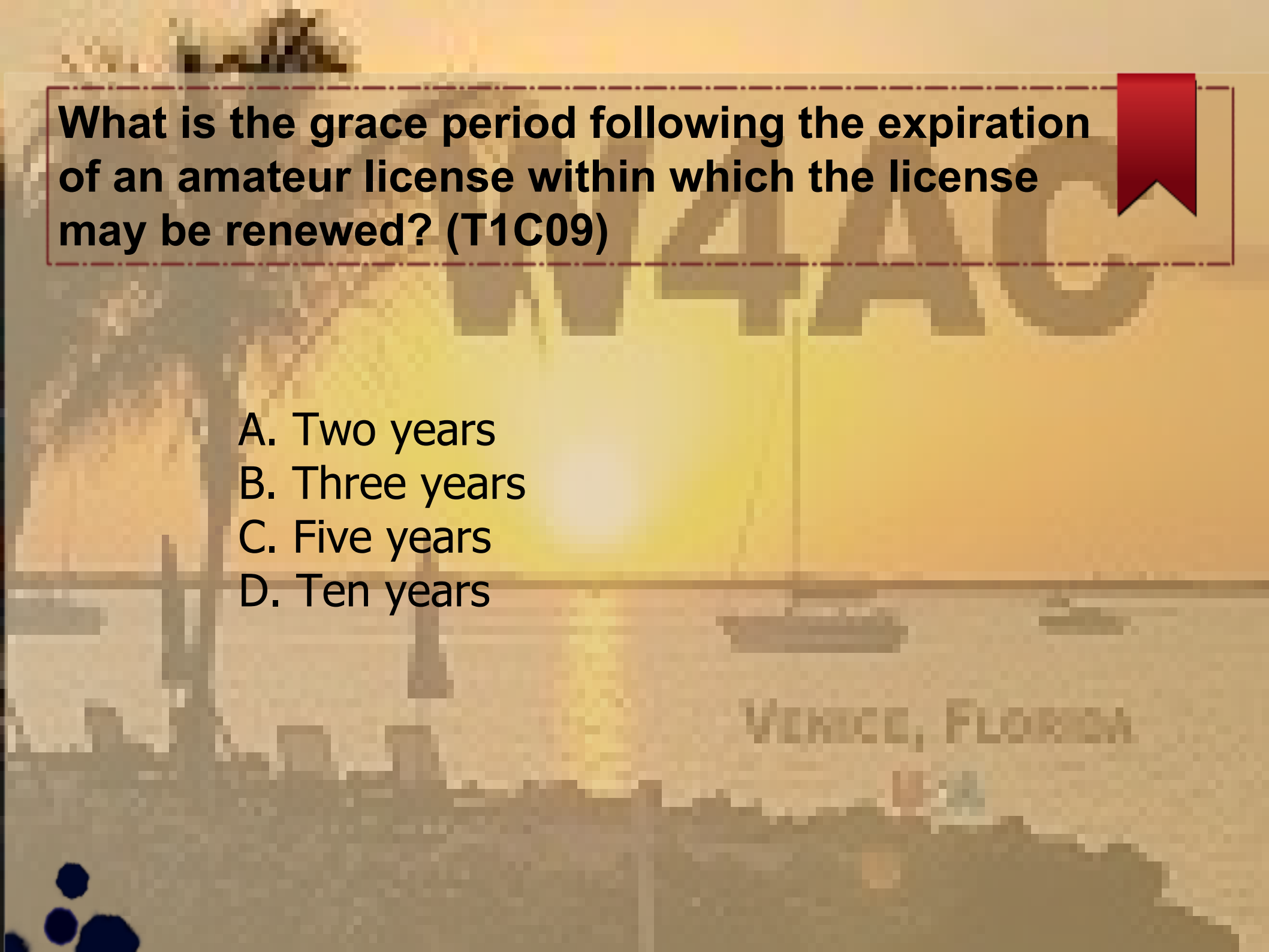
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**How soon after passing the examination for your first amateur radio license may you operate a transmitter on an Amateur Radio Service frequency? (T1C10)**

- A. Immediately
- B. 30 days after the test date
- C. As soon as your operator/station license grant appears in the FCC's license database
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**What is the grace period following the expiration of an amateur license within which the license may be renewed? (T1C09)**

- A. Two years
- B. Three years
- C. Five years
- D. Ten years



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**What is the term for an FCC-issued primary station/operator license grant? (T1C08)**

- A. Five years
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# • RF Safety

- Can't touch this.



# •2 Types of Radiation



- Ionizing
  - Gamma and X-ray
  - Can cause ionization of atomic structure
  - Not good for your DNA
- Non-ionizing
  - Radio waves
  - Can cause heating of biological tissue
  - If sufficient energy is present, can cause burns


# •RF Heating



- Radio waves can heat body tissue.
- Works exactly like your microwave oven.
- The area most likely to be injured is the eye as it lacks sufficient blood flow for cooling.
- The eye can form cataracts from repeated exposure to high levels of RF energy.
- NEVER touch an antenna or other RF source.  
You could be severely burned.

# • Controlled and Uncontrolled Environments



- Controlled Environments
    - The amateur operators household and property
    - Persons here are aware of RF risks, and have control of the transmitting equipment.
  - Uncontrolled Environments
    - Your neighbors household and property
    - Persons here are generally not aware of RF risks and have NO control over the transmitter.
- 

# • RF Exposure Averaging Times

- Controlled Environments

- The exposure averaging time is  
**6 Minutes**

- Uncontrolled Environments

- The exposure averaging time is  
**30 Minutes**



# •3 Methods of RF Checking




- Measure the RF fields
  - requires costly equipment that you don't have
- Calculate the RF fields
  - requires complex software that you don't have
- Use the charts published by the FCC
  - The charts are free
  - Fairly simple to use

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# •RF Safety for Dummies



- Install your antenna away from people, especially your neighbors. The higher the better.
  - Make sure your antenna is not near or could fall on a power line.
  - Keep your hands and other body parts away from the antenna and feed lines.
- 

# •Who is Exempt?

The RF safety regulations do not apply to:

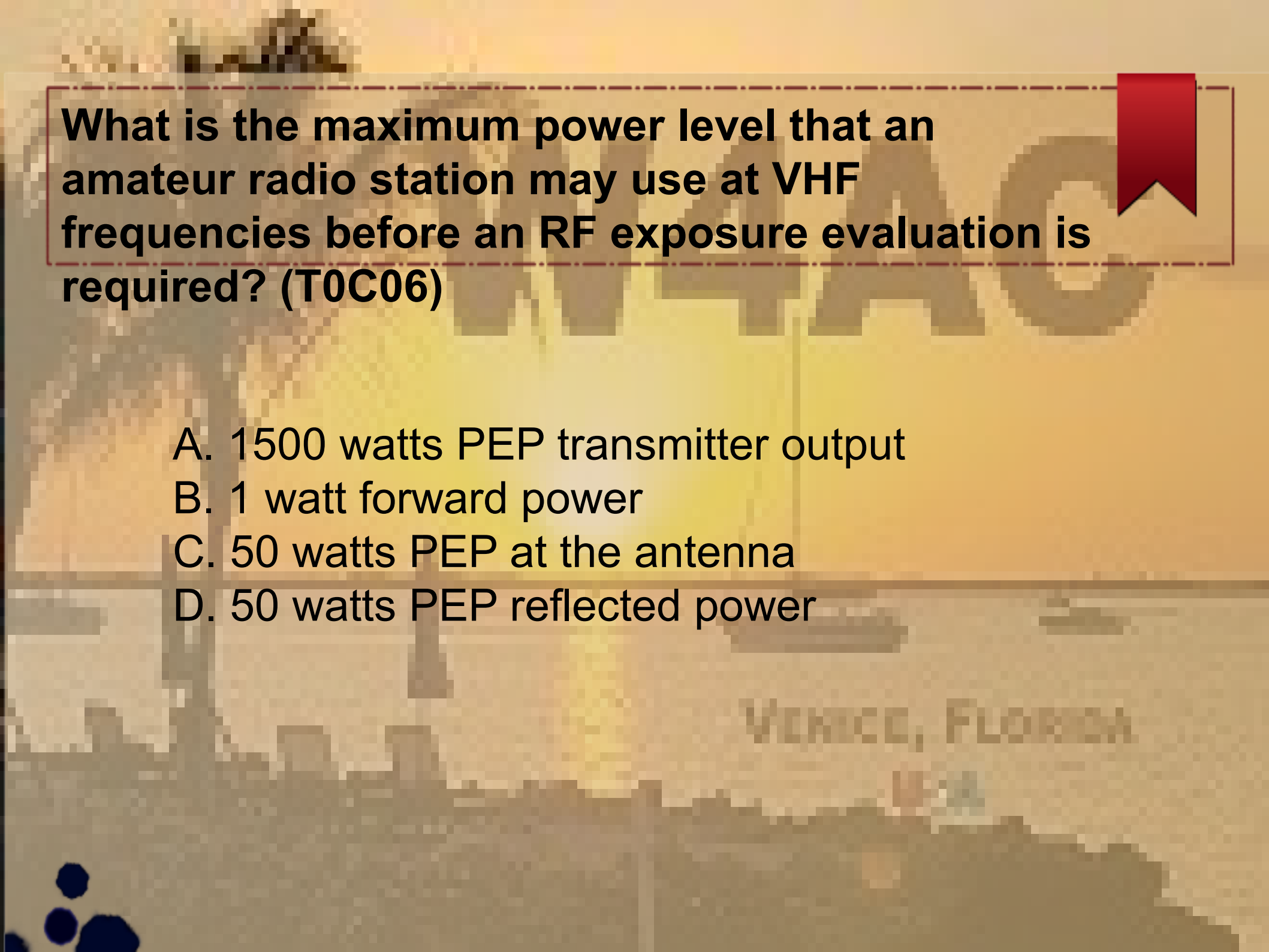
- Mobile equipment
- Hand-held radios
- Any station that produces less than 50 watts PEP

**What is the minimum safe distance from a power line to allow when installing an antenna?  
(T0B06)**

- A. Half the width of your property
- B. The height of the power line above ground
- C. 1/2 wavelength at the operating frequency
- D. So that if the antenna falls unexpectedly, no part of it can come closer than 10 feet to the power wires


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**What is the maximum power level that an amateur radio station may use at VHF frequencies before an RF exposure evaluation is required? (T0C06)**

- A. 1500 watts PEP transmitter output
- B. 1 watt forward power
- C. 50 watts PEP at the antenna
- D. 50 watts PEP reflected power



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**What could happen if a person accidentally touched your antenna while you were transmitting? (T0C07)**

- A. Touching the antenna could cause television interference
- B. They might receive a painful RF burn
- C. They might develop radiation poisoning
- D. All of these choices are correct



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# Why is duty cycle one of the factors used to determine safe RF radiation exposure levels? (T0C10)

- A. It affects the average exposure of people to radiation
- B. It affects the peak exposure of people to radiation
- C. It takes into account the antenna feed line loss
- D. It takes into account the thermal effects of the final amplifier

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**Which of the following actions might amateur operators take to prevent exposure to RF radiation in excess of FCC-supplied limits?**

**(T0C08)**

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- B. Relocate the transmitter
- C. Increase the duty cycle
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# •What to Expect at the Exam Session



- There will be a fee (\$15) to take as many tests or retests as you like, during any testing session, until you pass one of them.
- All the elements will be offered.
- Bring photo identification and your Social Security card. Children will need to show a birth certificate.
- The tests are not timed.
- Bring a #2 pencil.

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# •What to Expect at the Exam Session



- You can bring a calculator.
- Do not write in the test booklet.
- You can ask for scratch paper to doodle on.
- You can retest any time, but usually NOT more than once at the same session.
- The Element 2 - Technician Class Exam consists of 35 multiple choice questions,(you can miss 9) and you must answer 75% or better to pass.

# • Your new Call Sign

- You can get on the air as soon as you know your new call sign. ie: in the FCC Database!!
- Visit the Universal Licensing System on [www.ftc.gov](http://www.ftc.gov) or do a Name Search on [www.qrz.com](http://www.qrz.com), 6 - 8 days after you pass your exam.
- The FCC no longer mails licenses to licensees unless you specifically ask for one. You may printout your license on line from the ULS website.



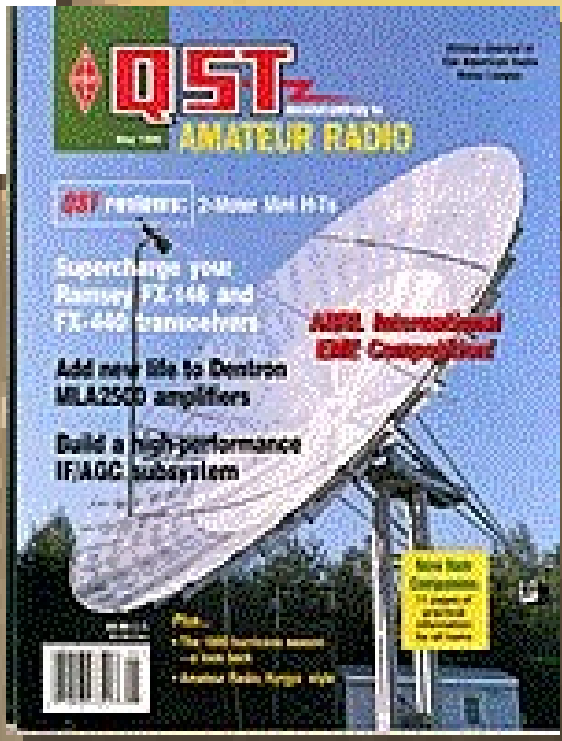
# • Now that I am a Amateur Radio Operator, What Do I Do?

- Support Amateur Radio locally. Be involved in local clubs and associations.
- Get involved in community service through your local ARES group, or the American Red Cross.
- Join the American Radio Relay League (ARRL)
- ***More importantly, get on the air and say something!***



# • Why join the ARRL?

- Since 1914 the American Radio Relay League has represented the interests of Radio Amateurs before the FCC and Congress. While there is room for policy debate, those who do not support the ARRL have virtually no voice in matters concerning ham radio. Also, the QST magazine is an excellent educational tool, full of interesting articles and fun projects.





*This Completes the Course...*

...and begins a worldwide journey that will last you a lifetime.

Enjoy your new hobby!

73, de KN4BAR, Paul  
Venice, FL