Submission to the ACA in response to its discussion paper:

"A Review of Amateur Service Regulation" August 2003.

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CQVK

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Introduction

The Australian Communications Authority (ACA), the regulator of the amateur radio service in Australia, released a discussion paper entitled "A Review of Amateur Service Regulation" in August 2003, canvassing views of the community on issues related to amateur radio licensing in Australia, particularly:

- changes consequent to the recent World Radiocommunication Conference 2003 (WRC-03);
- introduction of a new entry level licence; and
- possible outsourcing of some amateur service related functions (eg examinations, issue of certificates of proficiency, callsign allocation, station location registry).

In recent years, the WIA has made representations to government regarding changes to the licence structure and for a new entry level licence similar to the UK Foundation Licence.

Response

References in braces {} are references quoted from or referring to the ACA discussion paper: "A Review of Amateur Service Regulation". Text in **purple** is directly quoted from that discussion paper.

{5.1} Prohibition of international communications under certain conditions

The ACA proposes to:

- maintain the substance of subsection 5(3) of the Amateur LCD.

Response:

- Agreed.

{5.2} Content of amateur communications

The ACA proposes to:

- maintain the substance of section 6 of the Amateur LCD; and
- require that 'Transmissions between amateur stations shall not be encoded for the purpose of obscuring their meaning, except for control signals exchanged between Earth command stations and space stations in the amateur-satellite service.'

Response:

- to the maximum extent that is practicable, communications that support the aim of the amateur service described by the ITU should be permitted;
- in general, communications should be open, and should not be encoded with the effect of obscuring the content to other than a closed group of users with access to some information or device that is not generally available (whether or not obscuring the content was the principal reason for such encoding);
- notwithstanding that, there are, and will be, applications where it is in the public interest to permit limited use of crypto techniques to:
  - obscure very small messages exclusively for an identification and authentication regime without obscuring the session payload generally (eg digitally signed messages, secure remote logon to infrastructure), (eg a satellite, remote repeater) for the purposes of controlling or configuring the infrastructure);
  - obscure part or all of the payload of a communications session (eg to create a secure session with remote infrastructure for the purposes of controlling or configuring, or monitoring the infrastructure.

We recommend that the use of use of crypto techniques to obscure session payload must be formally approved by the ACA with such measures and conditions that satisfies (and continues to satisfy) the ACA that the communications are exclusively in support of the aim of the amateur service as defined by the ITU).

(These provisions are intended to generally allow the limited use of cryptology to permit digital signatures and digital key challenge authentication, but not to permit encrypted sessions (including WLAN) or the transmission of an encrypted or "password protected" file other than under a formal specific permit from the ACA.)

{5.3} Third party communications

The ACA proposes to:

- maintain the substance of subsections 5(1) and 5(2) of the Amateur LCD; and
- amend subsection 5(4) of the Amateur LCD to remove the prohibition of third party communications.

Response:

- On the surface of it the provisions of the existing LCD seem to exclude the carriage of third party traffic as is common practice in various community support activities such as those often conducted by WICEN. If that is the case, then we recommend formalising approval for the use of amateur radio to provide third party communications for community activities where:
  - the activity provides significant training and experience that would be of value in an emergency situation; and
  - provided that such an activity is strictly not-for-profit; and
  - no participants are remunerated for the services; and
  - all other licence conditions were observed.
- The existing LCD 5(1) provides for exemption only in the case of a "natural disaster", and should be widened to include any declared state of emergency, or any life threatening situation.
- Otherwise, agreed.

{5.4} Morse code below 30 MHz

The combination of the AOCP and AOLCP grades would require the ACA to renegotiate the reciprocal licensing arrangement with the European Conference of Postal and Telecommunications (CEPT). It could also require the ACA to renegotiate any bilateral reciprocal licensing arrangements that fall outside of the CEPT arrangements. Renegotiating bilateral arrangements needs to be undertaken at the government-to-government level rather than between administrations such as the ACA and its counterparts. Bilateral agreements can take several years to finalise. This matter is discussed in section {6}.

The ACA proposes to:

- discontinue the Morse code requirement in the bands below 30 MHz; and
- combine the AOCP and AOLCP grades, and the NAOCP and NLAOCP grades.

The ACA seeks comment and suggestions about:

- how early removal of the Morse code requirement could be implemented without causing inefficiencies in the implementation of new regulatory arrangements.

Response:

- Agreed, the CQVK Morse Survey (1-5 August 2003) explored views on the possible removal by the ACA of the requirement to prove proficiency in Morse code telegraphy for all existing grades of amateur licence independently of any other licence reform; and without removing any licensed operator's right to use Morse code. The result was overwhelming support (92% of 336 respondents) for immediate removal of the Morse requirement. We are not aware of any other such studies in Australia in recent times (or at all), and consider that the CQVK Morse Survey results are a compelling case for early regulatory change.

- We consider that the ACA should be convinced that there is strong support for the removal of the Morse requirement. If the ACA makes a decision that it will remove the Morse requirement, there would be benefit to the amateur community in the earliest announcement and implementation of that decision in the following three ways:
  - decoupling the Morse issue from the rest of the licence reform agenda;
  - early access to the extended operating privileges for existing Limited Intermediate, and Novice Limited licensees; and
  - increased attractiveness to qualify for unrestricted access without needing to qualify at Morse code proficiency;
- We recognise the potential for additional costs if the Morse requirement is removed in advance of the more comprehensive licensing reform that is being considered. Making the observation that wasting money is not in the ACA's, taxpayer's or the amateur community's benefit, we suggest that the ACA makes the very simplest interim determination allowed under the law which does not create scope for issue of new licences or issue of new callsigns and which has no impact on international agreements pending the more comprehensive reform of amateur licensing and the issue of a comprehensive LCD. We suggest that an addendum could be issued to the existing LCD making provision that:
  - Intermediate and Limited licences (requiring AOCP equivalent theory and amounting to about 28% of all existing individual licensees) be allowed the same operating privileges (as under the current LCD) as an Unrestricted Licence; and
  - Novice Limited licences (requiring NAOCP equivalent theory and amounting to about 3% of all existing individual licensees) be allowed the same operating privileges (under the current LCD) as a Novice Licences; and
  - for avoidance of doubt, nothing in this interim determination changes the qualifications required for any grade of licence (under the *Radiocommunications (Qualified Operators) Determination No. 1 of 1993*); or the callsign template associated with each grade of licence; or implies any different international recognition.

{5.5} Amateurs must be qualified—minimum competence level

The ACA proposes to:

- continue to verify the operational and technical qualifications of any person wishing to operate an amateur station, in accordance with Article 25.

Response:

- Agreed.

{5.6} Operating parameters—purity and stability of emitted frequency, and maximum power

The ACA proposes to:

- continue to impose limits on the purity and stability of emitted frequencies, and maximum power limits on amateur stations in accordance with the ITU's requirements for transmitting stations.

Response:

- Agreed.

{5.7} Use of callsigns

The ACA proposes to:

- maintain the substance of sections 8, 37 and 44 of the Amateur LCD.

Response:

- Agreed, further comment at {6.3} below.

{5.8} Amateur communications during disasters

The ACA proposes to:

- make no changes to current regulatory arrangements in regard to amateur communications during a natural disaster.

Response:

- It is in the community interest that the LCD provides more generally for disaster or emergency situations, and should be widened to include any declared state of emergency, or any life threatening situation, and genuine training for such possibilities.
- Otherwise, agreed.

{5.9} Overseas amateurs may operate without a licence

Paragraph 25.9B of Article 25 states that administrations can determine whether to permit overseas amateurs to operate without obtaining a licence. Currently, overseas amateurs in Australia cannot do this. For such an arrangement to be consistent with the legislative requirements of the Act, the ACA would have to issue a class licence that authorised overseas amateurs to transmit in Australia. It would also be necessary to have the new Australian class licence recognised under CEPT Recommendation T/R 61-01. This is discussed in section {6.4}.

Response:

- Comment at {6.4} below.

{5.10} Amateur-satellite service

The ACA proposes to:

- make no changes to current regulatory arrangements in regard to interference to other stations by stations in the amateur-satellite service.

Response:

- No comment.

{6.1} What are we going to license?

As discussed in section {5.4}, the removal of the Morse code requirement in the bands below 30 MHz would lead to a reduction in the number of certificates of proficiency from four to two. This has an effect on five of the current amateur licensing options (see Table {5}).

Table {5}: Post WRC-03 minimum qualification required for amateur licensing

Minimum qualification required	Licensing option				
	Unrestricted	Intermediate	Limited	Novice	Novice Limited
AOCP/AOLCP	Yes	Yes	Yes		
NAOCP/NLAOCP		Yes		Yes	Yes

The ACA would have the opportunity to combine the Unrestricted, Intermediate and Limited licensing options, and the Novice and Novice Limited licensing options. No change is foreseen for the amateur repeater and amateur beacon licensing options.

The ACA seeks comments about:

- the above future licensing options for amateurs, including amalgamation of licensing options and the possible introduction of a Foundation licence.

Response:

Agreed that the removal of the Morse requirement of itself effectively collapses the licence structure to two grades, Unrestricted and Novice.

A new entry level licence

It has been argued that there is need for a new lower level licence to facilitate entry to amateur radio, indeed the CQVK Licence Reform Survey reported 78% of 276 respondents voted in favour of introduction of a new entry level licence below that of the existing Novice licence.

The CQVK Discovery Licence Proposal at Attachment A is a detailed, risk managed design for an entry level licence that is designed to encourage interested persons to "discover" amateur radio, and provides a set of privileges balanced against limited but growing knowledge to provide the experiential environment for development and progression to more fully embrace the range of amateur radio. The Discovery Licence is designed to be especially attractive to senior school students who can use amateur radio as a practical environment for exploring their own interest in science and technology, and may lead them into satisfying and rewarding careers in those fields.

The CQVK Discovery Licence Proposal is significantly different from the WIA's entry level licence proposal, and the two should not be confused with each other.

Unrestricted Licence

The Unrestricted Licence should be the minimum standard for access to the full set of privileges. It is doubtful that the regulatory environment is appropriate to award of advanced level licences. That is not to prevent amateur associations making optional awards for assessment of particular proficiencies, be they technical or operating skills (eg Morse proficiency).

The Unrestricted Licence is the "full" standard, not an advanced qualification, and should be the goal of all amateurs. On the ACA's published figures for June 2003, 87% of licensed amateurs

have been recognised at the AOCP theory level.

There is a strong case that the Australian Unrestricted Licence should be of similar standard to common practice internationally, and that equivalence should be recognised through formal reciprocal licensing agreements, preferably multilaterally or if necessary, on a unilateral basis. Table {1} states that the existing Unrestricted Licence has achieved HAREC Level A recognition, and the existing Intermediate and Limited Licences have achieved HAREC Level B recognition.

The international recognition of the AOCP theory based grades, and the lack of such recognition of the NAOCP theory based grades is evidence that:

- the AOCP theory standard is adequate for an Unrestricted licence; and
- the NAOCP theory is not adequate for an Unrestricted licence.

Further evidence of the gap between the NAOCP theory and the AOCP theory is the Australian Qualifications Framework Recognition of Prior Learning (RPL) where:

- the holder of a NAOCP level certificate can gain a full exemption from the theory component of a Certificate of Electrotechnology I; and
- the holder of an AOCP level certificate can gain full exemption from theory component of a Certificate of Electrotechnology II.

This linkage to the vocational education system is a great selling point for amateur radio as a bridge from school education to vocational education and a possible career in science and technology. Credit goes to Fred Swainston for his considerable work to make these cross recognitions possible, an investment that should not be idly devalued!

See also Attachment C: Ron Bertrand's Overview of the Radio and Electronics School programs for entry to amateur radio. The Radio and electronics school trains approximately 500 students a year, around 80% of whom successfully obtain an amateur qualification.

Any proposal to grant Unrestricted Licences to existing Novices, whether as a one-off measure, or ongoing, is clearly an unprincipled expedient and should be dismissed.

Middle Level Licence

The gap between the Discovery Licence and the Unrestricted Licence is large and sufficient to represent a hurdle to progression. The gap is sufficient to warrant an intermediate level that serves:

- as a stepping-stone for those who would like to progress to the Unrestricted Licence; and
- as an achievable licence grade for those who find the more quantitative approach of the AOCP to be beyond their reach.

The Middle Level Licence should:

- be midway between the Discovery Licence and the Unrestricted Licence standards, perhaps a little lower than the current Novice standard and more relevant to progression from Discovery to Unrestricted;
- have a set of privileges well above that of the Discovery Licence commensurate with the higher knowledge standard;
- have at least all the privileges of the current Novice Licence; and
- be renewable.

The current Novice syllabus and examinations are at about the correct level for the Middle Level Licence. Importantly, there is an existing Recognition of Prior Learning (RPL) arrangement where the holder of a NAOCP level certificate can gain full exemption from the theory component of a Certificate of Electrotechnology I.

The Middle Level syllabus would benefit from minor adjustment in content rather than level (and without compromising its RPL status) so that it is more centrally on the learning path to the Unrestricted qualification. The continuation of linkage to the vocational education system provides an incentive to students, and a valuable external benchmark of the standards of the amateur certificates.

The assessment method used for the existing Novice Licence is quite suitable for the Middle Level Licence and should be continued. As part of a regular and ongoing review process, syllabus content and assessment methods should be reviewed and adjusted to remain effective and relevant.

Transmitter output power

The licensee must operate a Middle Level station using a transmitter output power of no more than 100 Watts pX.

Rationale
100W pX is not a very high power level; it allows the licensee to purchase a radio that they will still find fully useful when they graduate to a higher licence; the radio instrumentation is effective (whereas running 10W from a 100W radio commonly means that the ALC metering etc is so far downscale, and they may be peaking 100W anyway); it is enough power to experience the effects of bad station earthing and feedline common mode problems; it allows Middle Level Licensees to communicate on equal footing (ie similar receive signal strength both-ways) with other stations that most commonly use a 100W radio on HF (have you tried working HF on 5W where you are at a 2 S-point disadvantage over 100W stations?); few amateurs run more than 20-50W on VHF FM even though they can... it is quite adequate, and Middle Level stations will probably do the same.

Permitted frequency bands and emission modes

The licensee must operate a Middle Level station to transmit only on a frequency in a frequency band in the Permitted Frequency Band column of Table 1. The licensee must not operate an amateur Middle Level station in a frequency band mentioned in the Permitted Frequency Bands column of Table 1 unless it is operated using one of the emission modes mentioned in the Permitted Modes column of that item.

Table 1 Middle Level Licence - Permitted frequency bands and emission modes

Item	Permitted Frequency Bands	Permitted Modes

1	3.500 MHz-3.700 MHz 7.100 MHz-7.200 MHz 21.000 MHz-21.450 MHz	200HA1A 2K00H3E 2K00J3E 2K00R3E 4K00A3E 4K00H3E 4K00J3E 4K00R3E 6K00F3E	6K00G3E 8K00A8E 1K12F1A 1K12F1B 1K12F1D 1K12G1B 1K12G1D 1K12J2D
2	28.00 MHz-29.700 MHz	200HA1A 2K00H3E 2K00J3E 2K00R3E 4K00A3E 4K00H3E 4K00J3E 4K00R3E 6K00F3E 6K00G3E	8K00A8E 1K12F1A 1K12F1B 1K12F1D 1K12G1B 1K12G1D 1K12J2D 16K0F3E 16K0G3E
3	50.000 MHz-54.000 MHz 144.000 MHz-148.000 MHz 420.000 MHz-450.000 MHz (subject to 420 - 430 restriction in the Perth Area)	200HA1A 2K00H3E 2K00J3E 2K00R3E 4K00A3E 4K00H3E 4K00J3E 4K00R3E 6K00F3E 6K00G3E 8K00A8E	1K12F1B 1K12F1D 1K12G1B 1K12G1D 16K0F1B 16K0F1D 16K0G1B 16K0G1D 16K0F3E 16K0G3E

Rationale

- A selection of bands that offer an opportunity to experience a wide range of propagation modes on well populated allocations to encourage participation in the wider amateur community:
  - 3.500 MHz-3.700 MHz (night time HF), 7.100 MHz-7.200 MHz (day time HF): Both of these bands provide an experience of low HF propagation, effect of F layer, D layer behaviour. The 7MHz allocation is limited so as to not exacerbate congestion that occurs (albeit for a short window);
  - 21.000 MHz-21.450 MHz, 28.00 MHz-29.700 MHz: Both of these bands provide an experience of the higher bands daytime F2 layer, sporadic E);
  - 50.000 MHz-54.000 MHz: Sporadic E, tropo, F2, F2 backscatter;
  - 144.000 MHz-148.000 MHz: Line-of-sight, tropo, ducting, participation in local community through repeater and simplex channels.;
  - 420.000 MHz-450.000 MHz Ducting, tropo refraction, participation in local community through repeater and simplex channels;
- A reduced set set of modes that is in balance with the required theory standard (essentially the modes as permitted under the existing Novice licence).

Transitional arrangements

The proposed Unrestricted Licence would be based on the current AOCP theory standard. Existing Unrestricted, Limited and Intermediate licensees would become Unrestricted Licensees (ie their qualifications would be recognised as acceptable for an Unrestricted Licence). At June 2003, 87% of licences were in this category. Existing block allocation of callsign space to Unrestricted, Limited and Intermediate should be allocated for the Unrestricted Licence so that there is no need for callsign change.

The proposed Middle Level Licence would be based on a theory standard no higher than the current NAOCP, possibly a little lower, and possibly shifted "sideways" a little to put it more directly on the path from Discovery to Unrestricted. Existing Novice and Novice Limited licensees would become Middle Level licensees (ie their qualifications would be recognised as acceptable for a Middle Level Licence). At June 2003, 13% of licences were in this category. Existing block allocation of callsign space to Novice and Novice Limited licensees should be allocated to the proposed Middle Level Licence so that there is no need for callsign change.

Name for the middle level licence

We have deferred naming the middle level licence. Whilst it is widely spoken about as an "intermediate" licence, the use of such a name would be confusing in the context of the existing Intermediate Licence, and all uses of the term would need to be qualified as "old" Intermediate Licence or "new" Intermediate licence... the proposed middle level licence is quite different from the existing Intermediate Licence and should not be so named.

The proposed middle level licence is similar to the existing Novice Limited Licence, but we consider that the label "Novice" may be demeaning to those who will find progression to the Unrestricted Licence beyond their reach and will enjoy amateur radio and contribute at the middle level for a long time. We strongly recommend the use of a label that is appropriately respectful to a middle level status.

CQVK recommends that at least for the interim, the new middle level licence be known as the Restricted Licence.

Age issues

The ACA recently regulated compliance with new EMR standards when it gazetted the Radiocommunications Licence Conditions (*Apparatus Licence) Determination 2003* (EMR requirements). The EMR requirements are in response to community concern for protection of persons' health from undesirable effects of high intensity radio waves.

We believe that the government has a responsibility to ensure compliance with the Determination, and the EMR standards, and that as part of that responsibility, the government needs to ensure that persons who are authorised to establish and operate radio transmitters in the community have:

- sufficient knowledge to understand and apply the requirements of the Determination; and
- the capability to recognise the potential harm which may result from non-compliance with the Determination.

In the light of the changed regulatory environment, we recommend a minimum age of 12 years be a requirement for the issue of all new licences of all grades.

Attachment B: Age, Responsibility, and Accountability is an analysis of issues related to accountability and responsibility of young licensees.

Licence grade structure

A three tier structure is described by the licence grades set out above. The licence grades facilitate progression from the Discovery Licence to the Unrestricted Licence for those who will follow that course. The structure proposed is a result of the design of a set of licence grades, rather than an artificial constraint on a suitable set of licence grades.

CQVK does not propose that any licence qualification is a prerequisite for a higher qualification, but there may be advantage in recognising a qualification as part of a higher level assesment.

The ACA's Mark Loney has commented in public meetings on the cost differential of three tiers versus two tiers, to the effect that in the circumstance where the ACA continues to provide the licensing administration (it not outsourced), there would be only a marginal effect on the ACA's administration costs.

{6.2} How are we going to license?

The ACA seeks comments about:

- the future licensing regime (class or apparatus) for amateurs.

Response:

Amateurs and the ACA will each have requirements of the licence regime. The selection from the existing regimes or if none is sufficiently suited, the design of a suitable regime can only be done in the knowledge of all of the requirements and their relative importance. In the absence of the big picture, we can only suggest a limited perspective.

The following is a partial list of the features of a suitable amateur licence regime:

- support common conditions to apply to all licences in general or all licences of a particular grade, similar to the existing LCDs;
- support essentially the same conditions as the existing LCD, subject to amendments as a result of this reform process, including, but not limited to:
  - the requirement for qualified operators;
  - use of non type-approved equipment
  - scope for and of experimentation;
  - flexibility;
  - reciprocal licensing;
  - interference resolution and management;
- provide ready public access to information about a licensed station, including:
  - grade of licence;
  - identification of the licensee;
  - allocated callsign;
  - normal fixed station location (street address, and preferably latitude / longitude);
  - any special licence conditions (if they can be attached to a station under a class licence) that should be public knowledge;
- provide enforceable individual accountability for compliance with the the *Radiocommunications Act 1992* and all licence conditions;
- can be cleanly modularised with well defined interfaces that would allow possible outsourcing;
- provide the necessary features and services at best value to amateurs, the ACA and taxpayers;

If the ACA's apparent preference for a class licence can sustain all of the features that are desirable (or at the very least necessary) to an amateur licensing regime, and can do that in a reliable, efficient and more cost effective way, then it is an opportunity that should be seized. Wasting amateur's, the ACA's or taxpayers money is not in anyone's best interest.

{6.3} Examinations, certificates, callsigns and station location

The current Australian callsign template includes a state indicator digit which means that when an amateur moves interstate, they are required to apply for a new callsign with the relevant state indicator. One possibility is to replace the state indicator with an arbitrarily assigned number 0–9, which would make callsigns portable and allow a callsign to be permanently issued to an amateur.

The reservation of two-letter callsigns (VK#aa) for Unrestricted amateurs could remain, but the division of all other callsigns into blocks based on the licensing option could be discontinued. This would mean that callsigns used in transmissions would not readily indicate the type of amateur licence held by the operator. However, this will be of limited or no significance if there are only two grades of amateur operation – Foundation and Unrestricted.

There is a reservation period of two years on the re-allocation of the callsign of a deceased amateur. The reservation period comes into effect from the expiry of the licence, which means that in some cases a callsign will not be available for up to seven years for a five-year licence. The reservation period was originally introduced to allow relatives or close friends enough time to gain an amateur qualification to be able to use the callsign. The two-year reservation period could be maintained, reduced, or eliminated.

The proposed amalgamation of licensing options may result in competition for existing twoletter and the new four-letter callsigns. It is necessary that competitive access to these callsigns be managed equitably. Considering that decisions cannot yet be made on associated matters addressed in this paper, such as outsourcing of callsign management (see section {6.3.1}) and the removal of Morse code requirements, until appropriate alternative arrangements have been decided, the following will apply:

- with the exception of temporary allocations for special events, four-letter callsigns will not be issued; and
- the issue of two-letter callsigns will be restricted to applicants for Unrestricted licences who contest Morse code examination requirements.

The ACA seeks comments about:

- the administration of amateur callsigns, including whether the current Australian amateur callsign template should be changed to reflect Article 19 post WRC-03.

Response:

- We urge all to carefully consider the application of the new "extended" call sign templates that may be incompatible with some existing software. For example, AX.25 Link Access Protocol V2.2 does not provide for encoding a call sign with more than 6 characters, and although that may be fixed in time, there is a unsupported legacy of equipment that is unlikely to be upgraded. In respect of the above AX.25 incompatibility, we reject the suggestion by some that stations should just make up a callsign of their own for packet use, in all cases stations should use their allocated callsign to identify transmissions in accordance with the Amateur LCD.

- There is benefit in continuing the division of the callsign space into blocks based on licence grade, particularly as we are proposing a three tier grade structure with different frequency and mode access.
- Existing block allocation of callsign space to Unrestricted, Limited and Intermediate should be allocated for the Unrestricted Licence so that there is no need for callsign change.
- Existing block allocation of callsign space to Novice and Novice Limited should be allocated to the proposed Middle Level Licence so that there is no need for callsign change.
- The Discovery Licence proposes use of the new four character suffix for that licence grade.
- If the state (or more correctly geographic) significance of the digit in the callsign template drives increasing cost through reissue of callsigns and licences on more frequent "interstate" station relocations as suggested in the discussion paper, this seems a case of cost that is mandated on all licensees because some may prefer the "state" significance of the call sign. It is quite doubtful that we need the very coarse location information in the callsign. A way ahead may be to:
  - to discontinue the mandatory state significance except in the case of the existing VK0 and VK9 call areas (ie to allow relocation of an existing licence to a new state subject to notification of the change of location and without requiring a change of station callsign); and
  - to continue to allow stations to request a callsign change to a callsign that includes the digit that was historically associated with the state (or geographic area).
- The majority view of the licensees should guide a solution to the issue of state significance of callsigns. CQVK will conduct an online survey of licensees early in November 2003 to gauge opinion, and will make the analysis available publicly on the CQVK website.
- The measures of four character suffix for the Discovery and discontinuation of mandated state significance should reduce the demand on callsign space for a considerable time, and in that case, continuation of the current reservation policy is supported.
- The ACA discussion paper raises the issue of "desirability" of certain callsigns. Within the constraints above of block allocation on licence grade and the existing reservation scheme, all callsigns should be available on a first come, first served basis. In no event should revenue be raised from additional charges for premium or desirable callsigns.
- The interim policy is agreed.

The ACA seeks comments about:

- the possible outsourcing of amateur examinations, certificates, callsigns and, if class licensing proceeds, station location information.

Response:

The success of an outsourced arrangement depends to a great extent on the quality of the contractual arrangements, especially the detail of "what is to be done", the service levels, and the consequence of failure to meet the contracted service levels. Outsourced work is commonly won on price and executed on cost, meaning that the lowest price wins the job, and the contractor is almost entirely focussed on minimising cost.

We have not seen published performance information on the existing examination outsourced arrangement, but there is no shortage of considerable time delays and other administrative "hiccups" in the process. Anecdotal evidence suggests that the time to score an examination runs from one to three months, which is a long time in contrast to the four to five weeks for a beginner to complete the entire Novice course at the Radio and Electronics School.

Perhaps the amateur community and the ACA need to do more work to adequately define the

services, service levels, consequence of failure, and open reporting of performance to stakeholders applied to the current outsourced scope before considering more widespread outsourcing.

Where a case is established that outsourcing is good value for amateurs and taxpayers, the ACA should endeavour to engage competitive contractors. If the market does not sustain competition, then the outsource contractual arrangements should make special provision to ensure:

- best value to all customers of the services;
- that the contractor does not have a potential conflict of interest between the outsourced business and related business; or
- that where there is a potential conflict of interest, that separate financial and reporting structures provides transparency and confidence that the contractor does not misuse market power.

{6.4} Reciprocal licensing

The ACA seeks comments about:

- the possibility of Australia participating in CEPT Recommendation T/R 61-01; and
- the consequential class licensing of overseas amateurs.

Response:

Australia should not participate in CEPT Recommendation T/R 61-01 (which we understand would require class licensing of "reciprocal" licencees in Australia, whether they were short term visitors or longer term residents) unless:

- all Australian (individual) amateur stations were class licensed; and
- the qualification standards and conditions applying to reciprocal licensees were no more favourable than those applied to Australian amateurs.

{6.5} Interference protection for other radiocommunications services

A feature of domestic environments is the widespread use of radiocommunications equipment such as television, radio and regulated non-broadcasting transmitters, including those used for the amateur service. Examples of domestic equipment include televisions, video cassette recorders, digital television set top boxes, stereo systems, cordless and wired telephones, security alarm systems, and computers.

Interference to domestic television and radio receivers can often arise from the operation of nearby amateur transmitters. Such interference generally occurs in domestic equipment because of their inability to reject unwanted amateur transmissions, even though those transmissions are on different frequency bands from those used for radio and television stations. Less frequently, interference occurs as a result of faults in amateur transmitters.

Licensing conditions ensure that amateur transmitters meet certain emission requirements; however, radio and television receivers vary in quality and many do not have a high level of immunity from interference. The Act defines interference in relation to radiocommunications as:

> Interference to, or with, radiocommunications that is attributable, whether wholly or partly and whether directly or indirectly, to an emission of electromagnetic energy.

Section 197 of the Act also provides:

> A person is guilty of an offence if:
>
> (a) the person engages in conduct; and
>
> (b) the person is reckless as to whether the conduct will result in:
>
> (i) substantial interference with radiocommunications; or
>
> (ii) substantial disruption or disturbance of radiocommunications.

The ACA interprets ‘substantial interference’ as that level of interference that degrades domestic television and radio reception, under normal conditions, by a considerable degree. The operation of an amateur station, which is essentially a hobby, should not disturb another person’s activities, such as television viewing or radio listening, or affect commercial activities.

The ACA is considering the introduction of a ‘no interference’ policy for amateur operators. This policy would mean that an amateur must not cause interference to other radiocommunications services. If causing interference to another service, the obligation will be on the amateur to resolve the problem, possibly by:

- moving the location of their transmitter;
- coming to a mutually agreed arrangement with the complainant regarding the costs associated with fitting a filter to the domestic television or radio;
- reducing the output power of their transmitter; or
- restricting their hours of operation to outside peak viewing times for television reception.

Response:

Section 197 of the *Radiocommunications Act 1992* appears so general as to apply not only to an amateur station's emission of electromagnetic energy, but also to emission of electromagnetic energy from other devices, including "domestic equipment" that are often the source of disruption to radio communications, eg:

- roughly modulated harmonics of high power oscillators such as:
  - television and computer / video monitor horizontal line oscillators; and
  - switched mode power supplies widely employed in computers and other "domestic equipment"
- broadband noise from brush electric motors, electric welders, light dimmers and other phase variable power controllers, lawnmower ignition noise etc.

The meaning of the term "cause" as in "an amateur must not cause interference" is important to fully understanding the ACA's non-interference proposal. The extract from the Act above seems to imply that "cause" would have the meaning of "engage in conduct that results in" irrespective of whether the amateur station is for example, technically defective.

The argument that "operation of an amateur station, which is essentially a hobby, should not disturb another person’s activities, such as television viewing or radio listening, or affect commercial activities" is biased in that it does not make the balanced observation that "television viewing or radio listening" are also essentially recreational activities. One should not have precedence over the other on the basis of the recreational aspect.

The ACA proposes to:

- introduce a 'no interference' policy for amateur operators in relation to interference caused to domestic equipment.

Response:

The discussion paper, having quoted the authority under which the ACA has the power to manage interference to "radio communications services", subtly introduces a definition of "domestic equipment" which is much wider than "radio communications services" and includes examples of equipment that does not incorporate any functional requirement for, or dependence on radiocommunications.

It then proposes the above "'no interference' policy for amateur operators in relation to interference caused to domestic equipment", which would seem to depend on the meaning of "with" in "Interference to, or with, radiocommunications" to mean associated with, rather than to be disruptive of radiocommunications for the power to manage interference where the equipment subject to the interference does not incorporate any functional requirement for, or dependence on radiocommunications.

The leap from "radio communications services" to "domestic equipment" creates some confusion in understanding the ACA's full intention.

It is not clear from the quotes in the discussion paper that the ACA currently has any power under the *Radiocommunications Act 1992* to manage interference that does not affect or disrupt radiocommunications, and interference to a fixed telephone, for example, would appear to be outside the ACA's enforcement capability.

The ACA's proposal that "If causing interference to another service, the obligation will be on the amateur to resolve the problem..." denies natural justice.

The community requires an ongoing service to investigate radiocommunications interference incidents whether they involve commercial broadcast services, emergency services, Safety Of Life At Sea (SOLAS), or other allocated or unallocated licensed services. It would seem logical that the ACA as spectrum manager should continue to be the provider of an independent, technically and legally authoritative service to assist affected parties in the resolution of radiocommunications interference incidents.

Indeed, we welcome the ACA's Mark Loney's clarification of the ACA's position in an interview on QNEWS 28/09/03 when he stated "in the paper we talk about setting up an Amateur Registration Board" ... " but we did not suggest that that organisation would be responsible for investigating interference issues. Interference management is a core responsibility of the ACA".

The ACA has provided a valuable role as an independent expert with regulatory power to serve the community (amateurs and others) in investigation and resolution of interference incidents. We believe that there is a continuing need for those services, and recognise that with the Government's approach to resourcing activities, users of services must expect to make a financial contribution to the cost of delivery of those services.

There is a lack of public information about interference incidents that involve amateurs as the subjects of interference, or as the source of electromagnetic energy that is associated with interference experience by others. Information on the incident rate, whether and what defects were found, what remedies were proposed, and costs of investigation would help in formulating a

solution.

We are aware that members of the public are often inclined to jump to a premature conclusion about the source of interference that they experience, and blame it on a nearby amateur principally because of visibility of an antenna, and often with no further association or verification than that.

Anecdotal evidence is that there are a relatively small number of incidents that involve amateurs (beyond prejudiced initial reports), perhaps around 25 per year. It is not as if operation of an amateur station in a residential precinct is inherently incompatible, tens of thousands of amateur stations operate without apparent escalation of interference incidents. Issues are the lack of application of adequate EMC standards to "domestic equipment", and on the amateurs' side, the experimental nature of the activity that permits the use of equipment that has not been independently tested to a standard.

We urge amateurs to think seriously of the value of the ACA's existing service as an independent authority in incidents that are most commonly, a dispute with a neighbour in a residential precinct, where it is most desirable or even essential that the the amateur and the neighbour find a solution that is acceptable to both and does not compromise neighbourhood harmony.

The way forward is to find a solution that allows the ACA to manage the risks of:

- frivolous interference reports;
- malicious interference reports;
- lack of technical competence or experience of some amateurs;
- cavalier attitudes of some amateurs;
- breaches of licence terms, especially power limits and EMR requirements; and
- costs of investigation.

Perhaps, the solution is a system where:

- complainants pay a charge to the ACA to lodge a complaint (irrespective of the outcome) and accept liability for potential further charges;
- both parties assist and cooperate with the investigator;
- the investigator gathers information, conducts tests, and analyses the information to recommend a solution that may include:
  - identification of defects to be corrected (a defect may be for example a measured non-compliance with a standard or licence condition, or in the investigator's reasonable opinion, a fault, equipment in poor state of repair, equipment that is unusually susceptible to interference compared to commonly available equipment of that type);
  - orders for remedial action or conditions of operation;
  - recommendations for circumvention;
- where a defect is found by the investigator in the installation of only one of the parties; then that party pays the balance of the cost of the investigation;
- where defects are found by the investigator in the installations of both parties; then that parties share the cost of the investigation in a proportion determined by the investigator;
- where no defects are found by the investigator in the installations of either parties and it is established that operation of the amateur station results in interference, then that parties share the cost of the investigation in a proportion determined by the investigator.

This approach is consistent with good risk management practice of transferring the risk the the parties who are best able to control the risk. The risk to most amateurs of charges for

investigation of interference complaints involving their station would be quite low, and would encourage compliance with licence power limits, EMR requirements, and common sense in location of antennas to minimise field strength and coupling to near neighbours electronic infrastructure.

{6.6} Amateur satellite networks

The ACA proposes to:

- introduce a reduced fee of $6 600 for considering requests to file amateur satellite networks with the ITU.

Response:

- We understand that the fee is a substantial reduction of an existing fee (rather than "introduction" of a fee). In that case, agreed.

{6.7} Amateur Internet linking systems

The ACA seeks feedback about:

- the clarity of the policy documented in the AILS consumer fact sheet {Appendix F}.

Response:

- References to iLink are outdated, it has been replaced by a similar system called Echolink.
- The AILS fact sheet should spell out more clearly obligations of the controller of a transmitter, in particular the licensee's ultimate responsibility that the transmitter is operated in compliance with all legal and regulatory requirements;
- The AILS fact sheet should deal more thoroughly with the risk of unlicensed access, risk management and remedies.
- The AILS fact sheet should clearly advise amateurs who may connect to a remote transmitter in another jurisdiction of their obligation to comply with all requirements of that jurisdiction in addition to the ACA's requirements.

Where to from here?

We applaud the ACA's commitment to stakeholder consultation, and in this case, the decision to resource a considerable open public consultation that should assist in the formulation of a quality solution that has popular support.

The challenge for the ACA will be to build on that work with further adequate representation of wider community views, and to be seen by the wider community to be doing that.

Both the ACA and the community should strive for a solution that is as close to optimum as possible, but just as the ACA cannot forgo the right to make changes at any time in the future, the amateur community must not concede the possibility of needing to request changes in the future. Amateur radio operates in the midst of rapidly advancing technology. Locking down the conditions etc for a mandatory period (eg the ten years that has being suggested at the ACA public meetings) is naive, and is a one-sided recipe for anachronistic, inappropriate and possibly irrelevant licensing arrangements.

The CQVK team offers to assist in any reasonable way, the further development and refinement of reform of amateur licensing in Australia.

Attachments

- Attachment A: CQVK Discovery Licence Proposal - a proposal for a new entry level licence.
- Attachment B: Age, Responsibility, and Accountability - an analysis of issues related to accountability and responsibility of young licensees
- Attachment C: Radio and Electronics School - An Overview - September 2003
- Attachment D: CQVK Licence Reform Survey - May 2003
- Attachment E: CQVK Morse Survey - August 2003

References

- ACA discussion paper: "A Review of Amateur Service Regulation" - August 2003
- Radiocommunications Licence Conditions (Amateur Licence) Determination No. 1 of 1997 (Amateur LCD)
- WIA web site
- Amateur Radio (Foundation) Licence Information Sheet by the UK Radiocommunications Authority describes the UK Foundation Licence.

Registration of support

An opportunity to register support for the CQVK response to the ACA discussion paper will be extended on the CQVK website for a limited period from about 18 to 27 October 2003.

Glossary

Term	Meaning
ACA	Australian Communications Authority.
Act	*Radiocommunications Act 1992*
AILS	Amateur Internet Linking System.
AQF	Australian Qualifications Framework.
CEPT	European Conference of Postal and Telecommunications.
EMR	Electro-Magnetic Radiation.
Foundation Licence	An entry level licence recently introduced in the UK, see Amateur Radio (Foundation) Licence Information Sheet, and used also by the WIA to describe their proposed variant, see the WIA web site.
HAREC	Harmonised Amateur Radio Examination Certificate
ITU	International Telecommunications Union.

LCD	Licence Conditions Determination, see Radiocommunications Licence Conditions (Amateur Licence) Determination No. 1 of 1997.
QNEWS	Australia's foremost source of Amateur Radio news.
RPL	Recognition of Prior Learning.
WIA	Wireless Institute of Australia.
WICEN	Wireless Institute Civil Emergency Network.
WLAN	Wireless Local Area Network.
WRC-03	World Radiocommunication Conference 2003.

Change History

The following table is a history of revision of this document.

Version	Date	Comment
1.01	12/10/2003	Draft release
1.02	17/10/2003	Revisions: {5.8} disaster communications; {6.1} Unrestricted Licence: international recognition; {6.1} middle level licence: name; {6.1} licence structure: no prerequisites; {6.2} special conditions {6.3} state significance of callsigns

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The CQVK submission was compiled by the small team of Owen Duffy (VK1OD), Ron Bertrand (VK2DQ), Greg Parkhurst (VK1AI), with contribution to the Discovery Licence component by Fred Swainston (VK3DAC) in the interests of Amateur Radio, to enhance discussion and consideration of the issues raised in the ACA discussion paper and the WIA's entry level licence proposal by the Amateur Radio community.

Register your support for this submission to the ACA

Subscribe for email notification of CQVK updates and news.

For more on Amateur Radio Licence Reform, go to the CQVK Licence Reform home page.

Can't find it? Search CQVK.

I appreciate your comments on this web, and advice of any problems that you may have encountered, email the webmaster.

Attachment A: CQVK Discovery Licence Proposal - a proposal for a new entry level licence.

CQVK

Discovery Licence Proposal

The ACA is exploring major reform of the Amateur Radio licensing arrangements in Australia, and has issued a discussion paper titled "A Review of Amateur Service Regulation". This Discovery Licence Proposal identifies objectives for an entry level licence and a practical risk managed design to meet those objectives, and is intended to form part of an independent submission being developed in response to the ACA's discussion paper.

Summary

The WIA has argued the need for a new entry level licence for Amateur Radio. The recent CQVK Amateur Licence Reform Survey confirmed community support for an entry level licence, with 87% of respondents in favour.

This paper proposes and describes a new middle-of-the-road entry level licence which is designed to extend an opportunity to interested persons to "discover" Amateur Radio. For the purpose of identification, this proposal is known as the "Discovery Licence".

This proposal is independent of the WIA proposal to the ACA for the introduction in Australia of arrangements similar to the UK Foundation Licence.

The challenge in designing an entry level licence is:

- to match a limited set of operating privileges with a minimal knowledge that allows and encourages the licensee to:
  - experience a subset of Amateur Radio;
  - reinforce study of electronics and radio;
  - progress to a higher licence grade; and
  - to become an active member of the Amateur Radio community; and
- to make it attractive and marketable to people who are likely to find Amateur Radio enjoyable and rewarding;
- to create a bridge between high school education and a possible career in science and technology; and
- retaining the quintessential nature of Amateur Radio.

The Discovery licence provides a generous set of privileges for a candidate with basic knowledge in anticipation of their growth and progression to higher levels of amateur licence. The basic knowledge must be sufficient to ensure that the licensee can establish and operate a station with adequate safety for themselves, those in the immediate vicinity of their station, other radio communications users and other amateur spectrum users.

The Discovery Licence is not a basis for long term low level involvement in the fringe of amateur radio, the so called "Communicator" as is evidenced on CB or the VKS737 network for instance.

Background

ACA discussion paper

The ACA issued a discussion paper titled "A Review of Amateur Service Regulation" on 24 August 2003 which canvasses a wide range of very important issues on regulation of the amateur service in Australia, among those issues, the introduction of an entry level licence:

> "The WIA has proposed the introduction in Australia of arrangements similar to the UK Foundation licence (see section 3.4.1). The following discusses some issues relevant to that proposal."

The WIA does not appear to have published any details of its foundation licence proposal, though it appears to prefer to copy the UK foundation licence as far as possible. (RA, the UK's radio communications regulator, describes the UK Foundation Licence in the Amateur Radio (Foundation) Licence Information Sheet .) WIA Director David Jones explained in QNEWS 31 August 2003:

> "**New Entry License Level:**
> The WIA first commenced consideration of such an opportunity some three years ago, and after consideration in a formal sense at the 2002 Federal Convention, it progressed to policy position as a result of the 2003 Convention motion. This sought a relatively low-powered entry level, with access to a majority of bands, such bands to be determined in consultation with the ACA. No more than that, as such a brief gave room for negotiation with the ACA without binding anyone to a position which may require rescission of motions passed in order to progress the matter."

Notwithstanding that, many of us are keenly interested in the objectives, standard, and implementation of an entry level licence. This paper is to propose a middle of the road entry level licence for the purpose of providing a tangible model sufficiently detailed to facilitate and encourage discussion and a sharing of ideas in the community, in the hope of improving the quality of responses to the ACA discussion paper, and the likely reform of Amateur Radio licensing in Australia.

Demographics

Numbers

Some observers have suggested that Amateur Radio is in decline and at serious risk of dying out.

The ACA discussion paper showed at Appendix C, a history of the number of licenses over the period 1996 to 2003. By fitting the number of licenses at June from 1996 to 2003 to a logarithmic curve (ie geometric decline), the statistics indicate a compound rate of decline of 2.5% pa.

If the decline continued at the present rate, it would take thirty years (30) for the number of licensees to fall to the level of the early 1970s (~5000) prior to explosive growth of CB and the Novice Licence (which were touted then as the stimulus for rapid expansion of Amateur Radio).

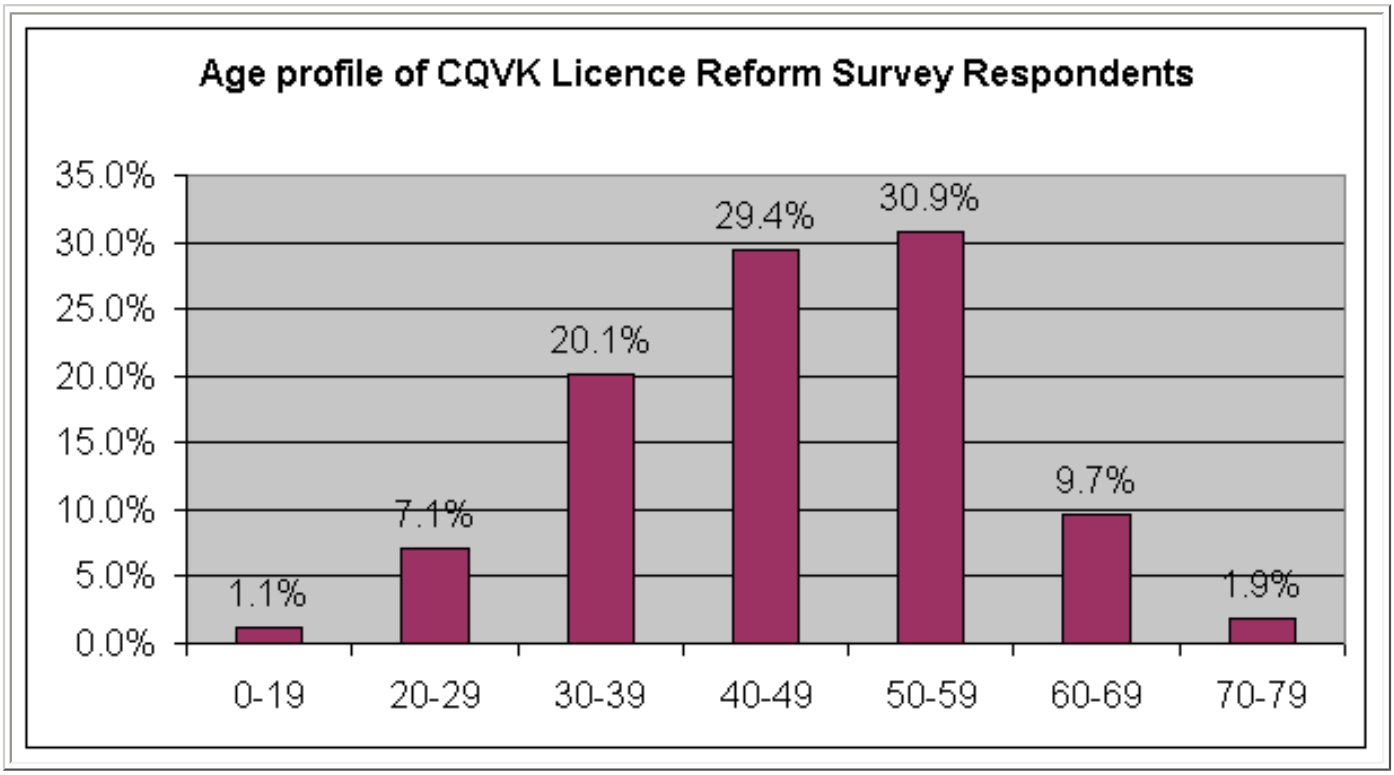
Those of us who experienced Amateur Radio when the Amateur population was 5000 remember it as a strong, vibrant activity. There is nothing inherently bad in less numbers than currently exist, the "right" number for 1973 might be quite different to the "right" number for 2003, and an increase in numbers isn't necessarily better.

Age distribution

Anecdotal evidence is that as a group, we Amateurs are getting older, and that Amateur Radio is not as attractive to younger people as it was through the 1960s and 1970s, and although everyone has theories, no one really knows - we have not set about objectively finding out about ourselves.

The age profile of Amateurs is not objectively known, but observation suggests that there is a lack of representation of younger people. The recent CQVK Amateur Licence Reform Survey included questions on the demographic, Figure 1 is a summary of the age profile of respondents that provided their age.

Figure 1: Age profile of respondents to the CQVK Amateur Licence Reform Survey who gave their age.



Making Amateur Radio appealing to younger people likely to develop a long term interest and commitment to Amateur Radio is key to to a sustainable outcome.

We must must move forward carefully, searching for sustainable gains, making sure that we do not create explosive growth for growth's sake, and ruining Amateur Radio in a greedy search for numbers as a goal in itself.

Quintessential Amateur Radio

As we consider change to Amateur Radio, it is important to identify the set of things that characterise Amateur Radio, that differentiate it from similar activities, and to keep those things that are the essence of amateur radio in mind when redesigning a path to Amateur Radio.

Whilst Amateur Radio has many facets, and we are free to exercise those facets that particularly interest each of us, it is the combination and balance of the key facets that defines Amateur Rradio.

Essential features of amateur radio include the following:

- it is a body of people;
- participants are keenly interested in the technology of radio communication (eg electronics, transmission lines, antennas, propagation, modulation);
- it is experimental;
- it is the practical aspect of self development and learning of the technology;
- it is the vehicle for sharing of knowledge of the technology and learning; and
- it is non-professional (ie it is not directly an income earning activity).

Amateur Radio licences

An Amateur Radio licence is the community's method of managing ordered access to valuable shared resources. If there is value in differentiating levels of licence, it can only be in matching a minimum capability of the applicant with a set of licence privileges. There is no real need for an "advanced" or elitist level of licence, the highest grade of licence should be no more and no less than the community should expect for access to the full set of resources.

Having said that there may, however, be benefit in creating some steps that allow an applicant with lower capability to access limited resources that will assist and nurture their further learning and growth for the purpose of progression to the Unrestricted Licence. This is a progressive approach and there is a risk that some individuals will 'park', having reached the limit of their own capability, interest or commitment.

Today, individual Australian amateur licences are differentiated on two levels of theory examination and three levels of Morse code proficiency (giving 5 levels of licences). Many of us believe that there should no longer be a requirement to demonstrate Morse code proficiency for any level of Amateur Radio licence, the recent CQVK Morse Survey indicated 92% of respondents supported the immediate removal of that requirement. If the ACA is convinced of public support for removal of the Morse requirement, then they may in time remove it. (The ACA has had the power to do so since WRC03 amended Article s.25.) The removal of Morse would leave just two individual licence levels, Unrestricted and Novice.

The WIA argues that a new lower level licence is needed "to facilitate entry into the Amateur Radio Service".

To design a new licence, we need to consider its objectives, and the minimal set of operating privileges that supports those objectives, and the very least qualifications that provide a sufficient support for those privileges.

Discovery licence

The Discovery licence is designed to be a vehicle for a person who is likely to find Amateur Radio an interesting and engaging long term activity to:

- discover what Amateur Radio is about;
- reinforce theoretical learning with practice and experimentation;
- learn from and participate in the Amateur Radio community; and
- experience the benefits of their personal effort and achievement

with a view of progression eventually to an Unrestricted Licence.

Whilst the Discovery Licence should be of general appeal in the community, properly pitched and marketed, it should be attractive to high school students in particular and others with an interest in physics and mathematics and who may use Amateur Radio as a bridge into further education and a career in science and technology.

Objectives

The objectives of the Discovery licence are to:

- provide an entry point for a person to access Amateur Radio with minimal experience and understanding of the theoretical aspects of the activity;
- allow the person to develop skills and knowledge through experiential learning so that they progress to higher levels of amateur licence;
- provide a real opportunity for a person to experience aspects of the electro-technology industry with the aim that the experience may lead to a career path in the industry; and
- provide a link between the amateur radio learning experience and main-stream vocational education.

Privileges

Transmitter output power

The licensee must operate a Discovery station using a transmitter output power of no more than 100 Watts pX.

Rationale
100W pX is not a very high power level; it allows the licensee to purchase a radio that they will still find fully useful when they graduate to a higher licence; the radio instrumentation is effective (whereas running 10W from a 100W radio commonly means that the ALC metering etc is so far downscale, and they may be peaking 100W anyway); it is enough power to experience the effects of bad station earthing and feedline common mode problems; it allows Discovery Licensees to communicate on equal footing (ie similar receive signal strength both-ways) with other stations that most commonly use a 100W radio on HF (have you tried working HF on 5W where you are at a 2 S-point disadvantage over 100W stations?); few of us run more than 20-50W on VHF FM even though we can... it is quite adequate, and Discovery stations will probably do the same.

Permitted frequency bands and emission modes

The licensee must operate a Discovery station to transmit only on a frequency in a frequency band in the Permitted Frequency Band column of Table 1. The licensee must not operate an amateur Discovery station in a frequency band mentioned in the Permitted Frequency Bands column of Table 1 unless it is operated using one of the emission modes mentioned in the Permitted Modes column of that item.

Table 1 Permitted frequency bands and emission modes

Item	Permitted Frequency Bands	Permitted Modes

1	3.500 MHz-3.700 MHz 7.100 MHz-7.150 MHz 21.000 MHz-21.450 MHz	200HA1A 2K00H3E 2K00J3E 2K00R3E 4K00A3E 4K00H3E	4K00J3E 4K00R3E 6K00F3E 6K00G3E 8K00A8E
2	28.00 MHz-29.700 MHz	200HA1A 2K00H3E 2K00J3E 2K00R3E 4K00A3E 4K00H3E 4K00J3E	4K00R3E 6K00F3E 6K00G3E 8K00A8E 16K0F3E 16K0G3E
3	52.000 MHz-54.000 MHz 146.000 MHz-148.000 MHz 433.000 MHz-435.000 MHz 438.000 MHz-440.000 MHz	16K0F3E	16K0G3E

Rationale

- A selection of bands that offer an opportunity to experience a wide range of propagation modes on well populated allocations to encourage participation in the wider amateur community:
  - 3.500 MHz-3.700 MHz (night time HF), 7.100 MHz-7.150 MHz (day time HF): Both of these bands provide an experience of low HF propagation, effect of F layer, D layer behaviour. The 7MHz allocation is limited so as to not exacerbate congestion that occurs (albeit for a short window);
  - 21.000 MHz-21.450 MHz, 28.00 MHz-29.700 MHz: Both of these bands provide an experience of the higher bands daytime F2 layer, sporadic E);
  - 52.000 MHz-54.000 MHz: Sporadic E, tropo, F2, F2 backscatter. The FM only segment protects satellite and weak segment working which warrant higher technical and operational skills;
  - 146.000 MHz-148.000 MHz: Line-of-sight, tropo, ducting, participation in local community through repeater and simplex channels. The FM only segment protects satellite and weak segment working which warrant higher technical and operational skills;
  - 433.000 MHz-435.000 MHz, 438.000 MHz-440.000 MHz: Ducting, tropo refraction, participation in local community through repeater and simplex channels. The FM only segment protects satellite and weak segment working which warrant higher technical and operational skills;

- A basic set of modes that allows operation in interactive mode with a minimum of technical skills and measuring equipment:
  - Radiotelephony and hand keyed radiotelegraphy only, providing best opportunity for interaction with other amateurs, access to on-air mentors and help with problem resolution, immediacy of feedback on possible transmission quality problems, simple modes that are not technically challenging, require only basic level of technical knowledge to setup and operate commercial off-the-shelf (COTS) equipment correctly.
  - Excludes some other modes that commonly call for operation on shared channels (eg APRS), and minimises the risk of non-compliant stations disrupting shared channel operations.

Control of equipment

The licensee must ensure that a Discovery station is only operated by a qualified operator.

Rationale
"Attended" operation allows setup and operation of a station with a minimum set of skills; and No unqualified operators (so called second operators).

Equipment

The licensee of a Discovery station must only transmit using a transmitter that is commercial off-the-shelf (COTS) equipment that is in good working order and properly adjusted.

Rationale
Minimises the technical skills measurement equipment required to setup and operate equipment correctly; and Home brewing of transmitter equipment usually involves construction, internal alignment or adjustment, measurement and testing to specification and potentially design, and is the province of a more advanced amateur.

Callsign

Discovery stations must use a distinctive callsign. A Discovery station should be issued with a unique callsign following the template VKnxxxx where n is numeric, and xxxx is four characters issued sequentially.

WRC-03 amended the template for formation of amateur station callsigns, Article 19 now provides that the formation of amateur station callsigns is:

- one character (provided that it is the letter B, F, G, I, K, M, N, R, or W) and a single digit, followed by a group of not more than four characters, the last of which shall be a letter; or
- two characters and a single digit, followed by a group of not more than **four** characters, the last of which shall be a letter; and

- on special occasions, for temporary use, administrations may authorise use of callsigns with more than the four characters referred to above.

Rationale

• Distinctively identifies Discovery Licensees:
  ◦ so that other amateurs know them to be Discovery licensees and to readily lend a hand to assist them; and
  ◦ for clear identification of restriction of licensed modes and bands;
• The exclusion of AX.25 modes from the entry licence (proposed here) provides the freedom to issue Discovery licenses a callsign under an extended format as provided for under the revised Article 19 (some of the new formats will not work with the existing AX.25 specification which requires a more restrictive callsign format); and
• Usage of the new formats will not exacerbate the shortage of callsign address space in the larger states (though there are other measures that may relieve that problem).

Age restrictions

The holder of a Discovery licence must be at least 12 years of age.

Rationale
An amateur radio licence is to provide a managed environment in which a person can safely experiment in radio communications. The licensee needs to be of sufficient age to be able to comprehend and responsibly observe safety rules (eg electrical and legislated / regulated EMR requirements) for the benefit of themselves and others.

Training and Assessment

Learning Style

Competency based training is proposed for the Discovery Licence. It offers the following advantages:

- it is acceptable and familiar to most students;
- of continuity with the Australian vocation education system;
- it minimises the skill levels of trainers and assessors;
- it is simple in administration; and
- substantial gains could be made in application of automation to assessment.

Learning Pathways

The Discovery Licence has been designed to integrate with existing high school education, other licence grades, and vocational education (including existing recognition of the AOCP) to allow the stream from Discovery Licence to an Unrestricted Licence to be a component within the national competency based learning and development structure.

Syllabus

The following is an outline of the proposed syllabus. The topics are not in order of priority or importance, but rather in a logical development as would be followed in a course:

- technical
  - electronics (voltage, current, power, Ohms law, DC/AC, frequency);
  - radio transmitters and receivers at system block diagram level;
  - antenna system - antennas, feeders, earth systems, ATU, filters (an overview to enable selection, site design, installation and test of some basic "standard" antenna systems for HF and VHF);
  - good connections (cables, connectors, continuity, physical security, handling, testing);
  - propagation (LOS, ionospheric (F,D), diurnal effects, other);
  - basic measurement (essential instruments, safe use, using transceiver internal instrumentation (ALC, power, VSWR);
- operations;
  - licence conditions;
  - operating practices and procedures (on air protocols, recognising common modes, channel bandwidth requirements, ascertaining a clear channel, frequency calibration, band plans);
- interference;
  - electromagnetic compatibility;
  - avoidance;
- safety;
  - electrical;
  - EMR;
  - interference to other radio communications services;
- resources (where to find more information / help);
  - on-air;
  - books;
  - Internet;
  - local amateur community (local amateurs, radio clubs, WIA etc).

The syllabus is designed to deliver the minimum set of technical and operational knowledge that is necessary to equip a licensee to establish and operate a simple amateur station at up to medium power levels with safety to themselves, others in the immediate vicinity, other radio communications services, and all others in the community, whilst allowing flexibility in the choice of equipment and station configuration. Further work is need to develop the syllabus and to develop lesson plans and support materials.

A formal course covering the syllabus to appropriate level (including some practical demonstrations) should take around 20 hours of tuition for students with no prerequisite knowledge. Students with some relevant prior knowledge, or particular ability may be able to progress more quickly.

Though the temptation exists to "make a ham in a day" as is the expectation of the UK Foundation Licence (~10 hours of training), it is likely to be at the expense of retention of knowledge. There is nothing proposed in the syllabus that isn't essential to safe operation of a station, and so lack of retention due to an accelerated learning program cannot be tolerated. At best the program could be presented in a weekend, but would be better presented as four half-day sessions.

Assessment

Applicants would qualify for the issue of an Discovery Licence by obtaining a minimum of 70% correct answers in a multiple choice exam that covered the topic areas of the syllabus to consistent and adequate depth.

The production of randomised individual tests and scoring of test results should be automated to improve the validity of the test results as an indicator of subject matter knowledge, reduce the costs of operation, and minimise the latency of results, subject to strong security and authentication controls.

Candidates could apply to sit the Discovery License test with no prerequisite qualifications, but must have attended 100% of a formal classroom course that covered at least the syllabus outlined above. The examination would be conducted within a week of completion of the formal program, usually as the last module of the program. If a candidate fails a Discovery Licence examination, they would be able to resit the test once only not less than four weeks later and not more than six weeks later, otherwise they would need to re-attend the course to be eligible for examination.

For the avoidance of doubt, there would be no requirement to demonstrate proficiency in the Morse code as part of the qualification requirement for a Discovery Licence.

Term

Discovery licences would be issued for a term of three years upon passing the examination and would not be renewable. In the event that a Discovery Licence expires, the holder would not be prevented from qualifying again under the then prevailing licence regime.

Rationale
The Discovery licence is a transitional licence offering the opportunity for phased entry to the world of amateur radio, and the privileges package anticipates rapid growth in the licensee. If the licensee does not progress within a reasonable time, then they have not demonstrated that rapid growth and must requalify to demonstrate that they have not 'parked' and stagnated.

Progression

The Discovery licence is intended to be a stepping stone to a higher grade of licence.

The Discovery license could provide advanced standing to an applicant for a higher grade of licence, but the Discovery licence should not be a prerequisite for any other Amateur Licence.

Risk management

The risks of introduction of of an entry level licence include:

- it may redefine Amateur Radio by setting a new standard for acceptance as an Radio Amateur, and that higher licence grades are regarded as advanced and elitist;
- the ACA (as regulator) may set licence conditions or deal with Amateurs in general based on the lowest standard of any licence grade (eg interference handling);
- it may become a substitute for other radio spectrum access, eg Citizens Band, four wheel drive radio clubs, outpost radio, commercial fishing vessels (significant intruders on HF bands today) etc;
- entry level licensees by virtue of their more limited knowledge and experience are more likely to cause interference;
- it may encourage a sub-culture of participants who lack the capability, commitment, or intention to embrace Amateur Radio more fully;
- Amateur Radio may become bottom heavy, where entry level licensing is not an effective feeder to the Unrestricted Licence, and masses of entry level licensees without a real interest in Amateur Radio drive existing Amateurs from active participation;
- it may lead to an increase in transmitting equipment held by unlicensed persons, particularly equipment that is disposed of by entry level licensees who have lost interest, resulting possibly in unlicensed operation or worse, malicious interference; and
- an excessive load on trainers and assessors.

Some of these risks are ones that exist to some extent under the existing licensing regime. Nevertheless we should strive to ensure that a new entry level licence does not create problems worse than the value of recruitment of additional unrestricted Amateurs.

The Discovery licence seeks to mitigate these risks by:

- setting the standard for an entry level licence to be sufficiently high to signal to would be participants that Amateur Radio is a technically based activity, founded on self learning and experimentation;
- requiring adequate operations and technical content in the syllabus and examination;
- limiting the period of validity of an examination;
- providing a framework for adjustment of the standard without creating a long term legacy of licensees qualified under a deprecated standard; and
- depending on a simple, competency based model that requires minimal skills on the part of trainers and assessors, and an assessment method that could be readily automated for cost and time savings.

It is argued that there is a risk of not introducing an entry level licence, that Amateur Radio is in decline and will die out. It would appear from the ACA's published statistics that the population of amateurs is declining at about 2.5% pa over recent years. On the surface of it, this does not seem a seriously rapid rate of decline, in that it will take 25 years for numbers to halve at that rate. The size of the decline in the numbers of licensed Amateurs should not be equated to changes in membership of the WIA.

Feedback

An opportunity to register support for the Discovery Licence proposal will be extended on the CQVK website for a limited period from about 21 September 2003. This delay is to allow for possible minor changes to the proposal before enlisting support.

Change History

This is a living document, it may evolve as discussion and comment identifies worthwhile improvements in the design. The following table is a history of revision of the document.

Version	Date	Comment
1.01	12/09/2003	Initial release
1.02	18/09/2003	Changed to reflect the most common feedback themes: - 6m allocation changed to 52MHz-54MHz, FM only; and - expansion of rationale for the minimum age limit of 12 years.

The Discovery Licence was compiled by the small team of Owen Duffy (VK1OD), Ron Bertrand (VK2DQ), Greg Parkhurst (VK1AI), and Fred Swainston (VK3DAC) in the interests of Amateur Radio, to enhance discussion and consideration of the issues raised in the ACA discussion paper and the WIA's entry level licence proposal by the Amateur Radio community.

Register your support for the Discovery Licence Proposal. 

Subscribe for email notification of CQVK updates and news. 

For more on Amateur Radio Licence Reform, go to the Licence Reform home page.

Can't find it? Search CQVK.

I appreciate your comments on this web, and advice of any problems that you may have encountered, email the webmaster.

Attachment B: Age, Responsibility, and Accountability - an analysis of issues related to accountability and responsibility of young licensees

CQVK

Age, Responsibility, and Accountability

Overview

The ACA recently regulated compliance with new EMR standards when it gazetted the Radiocommunications Licence Conditions (*Apparatus Licence) Determination 2003* (EMR requirements). The EMR requirements are in response to community concern for protection of persons' health from undesirable effects of high intensity radio waves.

We believe that the government has a responsibility to ensure compliance with the determination, and the EMR standards, and that as part of that responsibility, the government needs to ensure that persons who are authorised to establish and operate radio transmitters in the community have:

- sufficient knowledge to understand and apply the requirements of the determination; and
- the capability to recognise the potential harm which may result from non-compliance with the determination.

The first point is of particular relevance to the amateur service because amateurs enjoy a great deal of freedom to configure their station without needing external review.

The second point is of importance if the EMR standards are to be enforceable, and operators who breach them are able to be held to account.

There are two broad areas where age of a person may impact their accountability:

- criminal action for breach of provisions of the *Radiocommunications Act 1992* (the Act); and
- action in tort as a result of a breach of duty leading to liability for damages.

Age and the criminal law

The statutory minimum age of criminal responsibility in Australia is 10 years. Between the ages of 10 and 14, a further rebuttable presumption (known at common law as *doli incapax*) operates to deem a child between the ages of 10 and 14 incapable of committing a criminal act. A child in this age bracket can only be convicted if the prosecution can show that he or she was able, at the relevant time, to adequately distinguish between right and wrong.

In the case of an operator of an amateur station aged between 12 and 14 years who is prosecuted for one or more offences contrary to section 197 of the Act (unlawful interference), for example, the prosecution must demonstrate that a reasonable observer would have regarded the risk of harm as substantial at the time the risk was taken. The child operator would not be convicted of an offence unless the prosecution can prove that he or she was able to understand that there was a substantial risk factor of some harmful result involved in his or her conduct. In the absence of consciousness of the risk, the case would be one of negligence at most.

The CQVK Discovery Licence proposes a minimum age of 12 years.

Age and tort

A person ceases to be a minor in Australia on attaining the age of 18 years.

With regard to a minor's liability in tort, account is taken of his or her age in determining the standard of care in an action in negligence.

In terms of assessment of the standard of care expected of a minor, such a person is required to observe only that degree of care to be expected of a person of similar age, experience and intelligence.

With regard to a personal injury (eg RF burns from contact with an antenna at low height) caused by an Amateur station operated by a minor, the injured party would need to establish that the child understood that:

- he or she had a duty of care to his or her neighbour; and
- the risk of a person being injured by the operation of the station was reasonably foreseeable.

The younger the child, the more difficult it would be to succeed in an action, simply due to the increasing difficulty in proving that the child understands his or her responsibilities at common law.

A parent may, in certain situations, incur responsibility for failing in his or her duty to control the child's activities. The standard of responsibility at common law is that of reasonable care with regard to the practices prevailing in the community. When tolerating participation in dangerous activities, parents must at the very least ensure that their child receives proper instruction in safe practices, so that the child understands such instruction, and is physically capable of following those instructions safely.

The CQVK proposal of restricting the minimum age of Discovery Licence holders to 12 years would seem appropriate, in the light of the common law position as outlined above, especially when taken together with the recent requirements of the *Radiocommunications Licence Conditions (Apparatus Licence) Determination 2003* (EMR requirements) with which Amateur licensees are now expected to comply. We estimate that, generally, children below 12 years of age would not have sufficient capacity to properly understand the common law duty of care obligation and the concept of foreseeability, in combination with the technical aspects of the ACA's new EMR requirements.

Age Discrimination

The Commonwealth Government is developing legislation to prohibit discrimination on the basis of age. The *Age Discrimination Bill 2003* was introduced in the Winter 2003 sittings of Federal Parliament.

The Bill seeks to eliminate unfair discrimination and promote equal opportunity for Australians of all ages.

The CQVK proposal for a minimum age of 12 years for all Amateur licence classes would not breach the Government's proposed Age Discrimination legislation. Section 39 of the Age Discrimination Bill 2003 provides that it is not unlawful to discriminate on the basis of age if the discrimination is in direct compliance with one of the Acts or a regulation or any other instrument mentioned in Schedule 1 of the Bill. The *Radiocommunications Act 1992* is listed in Schedule 1.

Comparision with other similar level licences

The ACA has determined a minimum age of 16 years for marine operators licences required by recreational mariners to operate VHF or HF marine (MROCP, MROVCP).

Summary

The government and those who permit or encourage a person to establish and operate a radio transmitter has a responsibility to ensure that the person:

- has sufficient knowledge to understand and comply with the safety requirements; and
- is accountable at law for his or her conduct.

Change History

This is a living document, it may evolve as discussion and comment identifies worthwhile improvements in the design. The following table is a history of revision of the document.

Version	Date	Comment
1.01	12/10/2003	Draft release
1.02	15/10/2003	Added age discrimination consideration

Can't find it? Search CQVK.

I appreciate your comments on this web, and advice of any problems that you may have encountered, email the webmaster.

Attachment C: Radio and Electronics School - An Overview - September 2003

Processes and Pathways for Students

An overview of the R&E School.

Full details of the courses offered by the R&E School can be found at school website at http://www.radioelectronicschool.com. When a student applies to the school they are directed to read and have to acknowledge that they have read "About the Course" and the "FAQ" Frequently asked questions.

The School comprises of a Manager and approximately 25 Facilitators (tutors). Whilst we cannot quote figures for students trained outside of the school it is believed with high confidence that the R&E School is responsible for the training of somewhere between 80-90% of newcomers to Amateur Radio.

You will notice from the website that the school has in place an efficient system of student feedback. All students are invited to submit a mid and end of course evaluations. That is we ask them to evaluate us with a view to identifying problems and improving what we do.

The Courses Offered.

1. AOCP Theory
2. NAOCP Theory
3. Regulations
4. Australian Radio Certificate Scheme

Very few students enrol for regulations alone. If a student enrols for either theory course and regulations then this is one enrolment. If a student enrols in regulations alone (rare) then this is one enrolment.

The school runs a supportive Maths/Calculator course for those that need this. There is provision for students with impairments and disabilities.

The courses use by the school have been written and used in isolation by the now School Manager for 30 years in various forms - for example as videos via the Gladesville Amateur Radio Club and as the material in hundreds conventional type "upfront" classes.

The School keeps a record of each students enrolment records and where possible the student outcomes. Due to the increasing volume of students a student identification number was introduced four years ago. This number identifies the course the student is doing, the year they enrolled, the incremented student number for that year. These details and other enrolment details are transmitted to all course facilitators. In other words record keeping is transparent and shared with all those involved in the school. The school has a privacy policy on the web site.

If the next enrolee is for the AOCP course then this student will be allocated that student ID: A1889-419RB. This means the students sequential number since the system was introduced is 1889, he or she is studying 'A' AOCP, the is 419th enrolment for 2003. 'RB' is the facilitator's initials.

As you see the student enrolment for this year stands at 418. This is expected to reach about 550 by then end of this year. Enrolment last year was 456. Enrolment is 1889 since this system was introduced about 4 years ago. Some students are returning students. For example have done Novice and then return to do AOCP.

The ratio of NAOCP enrolees to AOCP enrolees approximately is 2.5 :1. The success rate of the Multimedia Fast Track course is in the region 80% and for those that complete the course and contest the exam the success rate is close to 100%. Exact figures are not available as not all students advise the school of their exam pass. However we are very confident of this figure.

In the order of 30-40% of NAOCP students re-enrol for AOCP.

The pass rate for the students who complete the AOCP course approaches 100%. The drop out rate for the AOCP is 35% but varies from year to year. Of those that do drop out about one third return and successfully complete the AOCP course.

Enrolment Screening.

Although the courses are available to everyone without any prerequisite knowledge there is a screening process in the enrolment. Enrolees are asked a little about themselves, there interests, their hobbies, the work they do. They are also directly asked questions about there math skills and the use of a calculator. If it appears that a student may have

difficulty with the AOCP course - and this is often the case - they are encouraged to do the NAOCP course first. However the student does not have to follow this recommendation - though most do.

AOCP Theory Course

For specific course details see "About the Course" on the School website.

AOCP students require one-on-one full time tuition - via distance education - over the net for about 6-8 months. I estimated the time requirement for **facilitators** for an AOCP student is a minimum of 40 hours and up to 60 for students that require a lot of help and supplementary support - e.g. mathematics.

Students of the AOCP are advised that they will need to devote 3-4 hours per week to the course.

All student resources are supplied via the website. There are 43 Readings making up a comprehensive reference of about 500 A4 pages. In addition there are numerous supplementary readings and tutorials (Supplementary Downloads) that the facilitator will direct the student to for either problems areas or requests for deeper understanding.

The AOCP theory student is required to complete 20 assignments. Each assignment comprises on average 20 questions. The questions are answered in essay form. Many questions are phrased to test for understanding of the subject. Whilst return dates for assignments are flexible within reason a student return date of one week is strongly encouraged. Return dates longer than two weeks indicates a problem and the student may (forced) be change to the NAOCP course.

The facilitator will review and return all student assignments within 24 hours. The student may ask as many questions as they require and can expect a rapid response. All students can participate in the schools student message board. This enables general communication between students and technical course discussion. This board currently has 730 members comprising past and current students and facilitators.

Following the 20 course assignments the student does revision. Revision time varies from student to student but is typically a minimum of 3 weeks and up to 6 weeks. In the final stages of revision the student will do up to seven trial exams each with a 24 hour marking/comment turn around.

The AOCP prepares for the regulations using a multimedia CD Rom or via the assignments/reading method.

The total student commitment to this course is between 60 and up to 100 hours.

NAOCP Course

The NAOCP course is delivered via Multimedia CD Rom. For specific details click on "Novice Fast Track Course" at the top of the About Course page on the School website.

The course is designed for the beginner and can be completed in 4-5 weeks. In fact is highly desirable that the course take no longer than this time. The drill software is time limited to ensure student commitment to this time frame.

The course can be successfully completed and an exam pass (Theory and regulations) almost assured if the student does 30-60 mins a day over 4-5 weeks. The student is not assigned a facilitator and does not need one. The Novice course is not a one-on-one course. However the student does have access to the school manager for any questions or problems via email or telephone. The student is expected to sit the exam at the end of the course (not several weeks later).

The success rate in this course is extremely high. Certainly better the 80% for all NAOCP students and approaching 100% for those that complete the course.

Continuing Education

Some students see amateur radio as a way of establishing or at least enhancing a career path opportunities in radio communications technology. The school actively encourages this. The School, through its association with Trainsafe Australia (a registered training organisation) can provide bridging courses for students wanting to be awarded a certificate in Electrotechnology.

Using the RPL (recognition of prior learning) a holder of a Novice Certificate can gain a full theory exemption for the theory component of a Certificate of Electrotechnology 1. The AOCP theory is recognised as equivalent to the theory component of a Certificate of Electrotechnology II. Much work has be done particularly by Fred Swainston to make these cross recognitions possible.

The School believes it is in the interests of Amateur Radio and the Australian Community to maintain these cross recognitions of qualifications and indeed to encourage other RTO's to recognised amateur radio qualifications as giving exemptions to at least the theory component of some vocational certificates.

For more information go to http://www.radioelectronicschool.com and click on "Opportunities / Careers"

Australian Radio Certificate Scheme (ARCS)

This is a Certificate scheme administered by the R&E school for all ages (9 years +) to engage in the learning experience of physics with a radio slant. ARCS is popular in Schools and leads to the award of a glossy high quality certificate. The objective of ARCS is to provide education via experiments for all ages and to encourage the progression to a Novice Amateur Licence. Since the inception of this Scheme 3 years ago 600 certificates have been issued.

Certificates are awarded through School Principals and Science Teachers. Often local retailers are approached for value added coupons/prizes to be presented with the Certificate.

This is the tip of the iceberg. This Scheme has great potential to expand particularly in schools. Expansion has stalled due to the introduction of an Entry Level Licence. This scheme may be modified to encompass the requirements of an entry level licence.

For more information on ARCS visit http://www.radioelectronicschool.com/arcs.html

Licence restructure.

The School exists and operates now in the real world. We cannot afford the luxury of experimenting with the AR licensing structure and have such changes fail as we may end up stuck with them. There are many issues. However to the school a central issue for our operations is the number of tiers - which we see as manageable steps along a pathway.

The School considers it vital for educational purposes to have an middle tier between the proposed Discovery Licence and the Unrestricted licence. The current Novice could be "promoted" to this middle tier and enjoy extra privileges but retaining an incentive to upgrade to Unrestricted.

If the School is left with the task of assisting persons to upgrade from Discovery Licence to Unrestricted level with no middle step then I believe we will fail many. I also believe that many will not attempt the transition. Many because they will not want to as they will be happy with the Discovery Licence privileges. The Discovery Licence will serve as an

end licence for many - for example outback travellers and holiday makers. Mariners will flock to a discovery licence and it will provide for all their needs of HF comminations at sea.

Another group will not upgrade due to an inability to do so. Lack of education, learning and language problems will make an Unrestricted unattainable for them. Many of our current Novices have been Novices for many years because they are not able to upgrade for various reasons.

The resources supplied by the R&E school are without match in Australia. Any talk of resource issues and the number of tiers is as more a concern to us than anyone. Surely if the School as the recognised primary trainer can deal with and welcome three tiers then another organisation can manage the administration of exams and certificate licence issue for three tiers.

Ron (Bertrand) VK2DQ

Manager - Radio & Electronics School.

18 September 2003

Attachment D: CQVK Licence Reform Survey - May 2003

CQVK Licence Reform Survey

This report is an analysis of the CQVK Licence Reform Survey conducted in May 2003.

My thanks to all those who contributed to the survey, and also to those who assisted me with review of the survey questions and report.

Executive summary

An independent survey was conducted to obtain the views of licensed amateurs and would be amateurs on two key WIA policy announcements made in a Media Release dated 6 April 2003 that stated that:

- "it be WIA policy that it seek implementation of an Entry Level Licence with access to a majority of bands to the determined, all modes with low power, to facilitate entry into the Amateur Radio Service"; and
- "the WIA also supports a two-tier licence system in Australia, an Unrestricted licence, and an Entry Level Licence".

The survey was an interactive online survey conducted on the Internet over the period 20 May 2003 to 3 June 2003. Respondents completed electronic forms and submitted their response, which was stored in a database and later extracted, summarised and analysed.

In respect of the two central issues raised by the policy announcement:

- there is strong support overall for introduction of an Entry Level Licence;
- there is a strong preference overall for a three-tier structure - Entry Level, Novice and Unrestricted ; and
- there is opposition overall, and strong opposition by holders of AOCP level theory qualifications to grant of an Unrestricted Licence on the basis of NAOCP theory while the large majority of holders of NAOCP level theory supported issue of an Unrestricted Licence on the basis of NAOCP theory.

Other key results from the survey are:

- the NAOCP theory standard is seen by a large number of respondents as being higher than desirable suggesting that review of the knowledge standard, the learning processes, and assessment method may be warranted;
- respondents overall were in favour of a considerable increase in access to band allocation for Novices on all bands;
- respondents did not generally favour an increase in power available to Novices;
- respondents overall were in favour of access to 30% to 50% on all bands, depending on the band, for Entry Level Licences;
- respondents favoured a quite low limit (10W PEP) on power available to Entry Level Licences; and
- respondents favour limiting the tenure of an Entry Level Licence.

The results from this survey should not dictate the way ahead, but rather should serve as input to the formulation of a detailed proposal that is likely to be supported by most, or at least the majority of each of the stakeholder groups.

The results should indicate to the WIA as developers of the proposal, and the ACA as regulator, that there are aspects of the proposal set out in the media release following the 2003 Federal Convention that have strong opposition, most particularly an Entry Level / Unrestricted two tier licence structure.

Introduction

Background

The Wireless Institute of Australia (WIA) in a Media Release dated 6 April 2003 stated that:

- "it be WIA policy that it seek implementation of an Entry Level Licence with access to a majority of bands to the determined, all modes with low power, to facilitate entry into the Amateur Radio Service"; and
- "the WIA also supports a two-tier licence system in Australia, an Unrestricted licence, and an Entry Level Licence".

The media release also stated that "The WIA will now consult with the amateur radio fraternity on its policy, before going to the ACA with a detailed request that an Entry Level Licence be introduced, as soon as possible."

Why this survey

The framing of the multiple versions of "official" surveys released on various divisional websites leaves one concerned as to whether an unbiased view of a cross section interested persons will be obtained. This survey was to solicit the views of interested persons (whether or not WIA members, whether or not licensed amateurs) on issues related to the WIA policy stated in their media release as quoted above.

This was an independent survey and is not sponsored by the WIA or any of its divisions. This survey attempted to be objective and unbiased, and to provide opportunity for expression of a range of responses from no support to full support for questions that are relevant to possible solutions to reform of the Australian amateur licence structure.

Is this about Morse Code

It is almost certain that proficiency in sending and receiving Morse Code telegraphy will be removed before the end of 2004 as a mandatory requirement for any level of Amateur Radio Licence. This survey assumes that outcome and explores views on the licensing structures after (or from) the removal of the mandatory Morse Code licence requirements. This survey is not about the removal of mandatory Morse Code requirements.

The Survey

The survey was published on the Internet as an interactive application that contained 22 questions, and was open for exactly two weeks from 20:00 on 20 May 2003.

The questions were structured in four areas:

- identification;
- standard of existing theory qualifications and privileges;
- proposed new entry level licence; and
- licence structure.

Identification

This section contained questions to confirm acceptance of the conditions of the survey,

to identify the class of licence that the respondent was entitled to hold, age, period licensed and personal identification for possible validation of respondents and notification of results.

Standard of existing theory qualifications and privileges

This section contained questions exploring views on the standard of the AOCP and NAOCP theory for unrestricted and novice licences, and respondent's views on band access and maximum power levels for novice licences.

Proposed new entry level licence

This section contained questions exploring the proposed new entry level licence. In view of the lack of firm detail of the WIA's proposal, and in the light of the promotion of the UK Foundation Licence, respondents were referred to the UK Radiocommunications Agency's (the UK radio communications regulator) document the Amateur Radio (Foundation) Licence Information Sheet and asked for opinions on the introduction of such a licence in Australia, including an appropriate package of band access and maximum power level.

Licence structure

The last section asks respondents to rate acceptability of various two and three tier licence structures, and to rate the importance of each of a set of factors that might be considered in designing a new licence structure.

Survey results analysis

Demographics

The IARU website carries information on the number of Amateur licences issued in Australia, and the WIA membership for the years 1999 and 2000. For 2000, it states that there were 15,328 individual (ie non club) licences issued (down 3.4%on 1999) and the WIA had 4449 licensed members (down 6.8% on 1999), ie 29% of individual licensees were WIA members. The IARU statistics are roughly consistent with the numbers reported in the ACA's Annual Report for 2002.

There were 276 responses that answered Yes to Q1: "Have you read and do you accept the survey conditions? If you respond NO to this question, your entire response will be discarded." Two responses that answered No to this question were excluded from the results. The survey captured only a very small percentage of licensed amateurs, around 1.5% of the 15,000.

The recorded data included the responses to the questions, the time submitted, completion status, and the IP address used for submission. An informal review of the data indicates that it is unlikely that there there were multiple "completed" responses from the same individual.

The first questions in the survey asked for information that would assist in identifying whether responses were significantly different for different age groups or qualification levels.

References to AOCP or NAOCP in this document refer only to the theory qualification and not Morse Code proficiency.

Figure 1 shows the age profile of respondents by theory qualification level. There is not a great deal of difference in the age profile of any of the groups identified. Note that most but not all respondents answered the optional Q4 - "What is your age".

There is not a great deal of difference in the age profile of any of the groups identified.

Figure 1

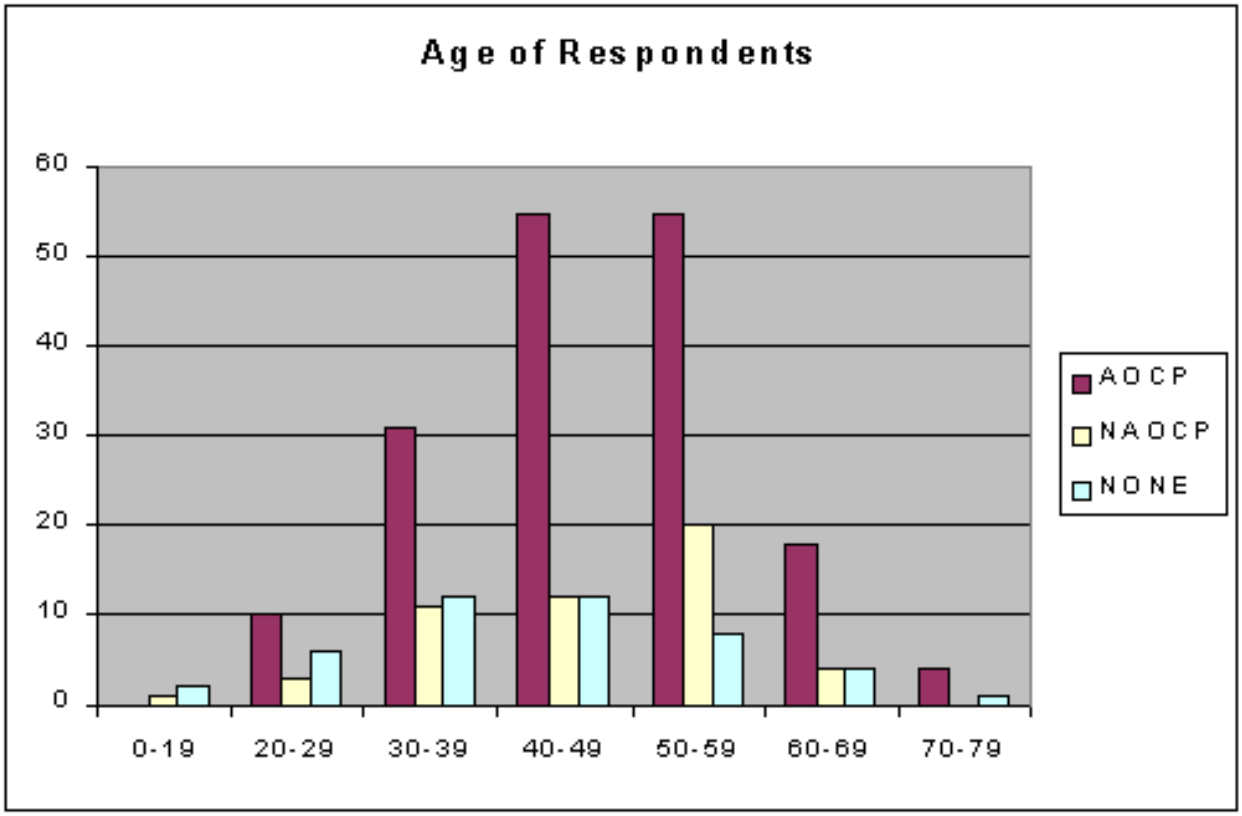
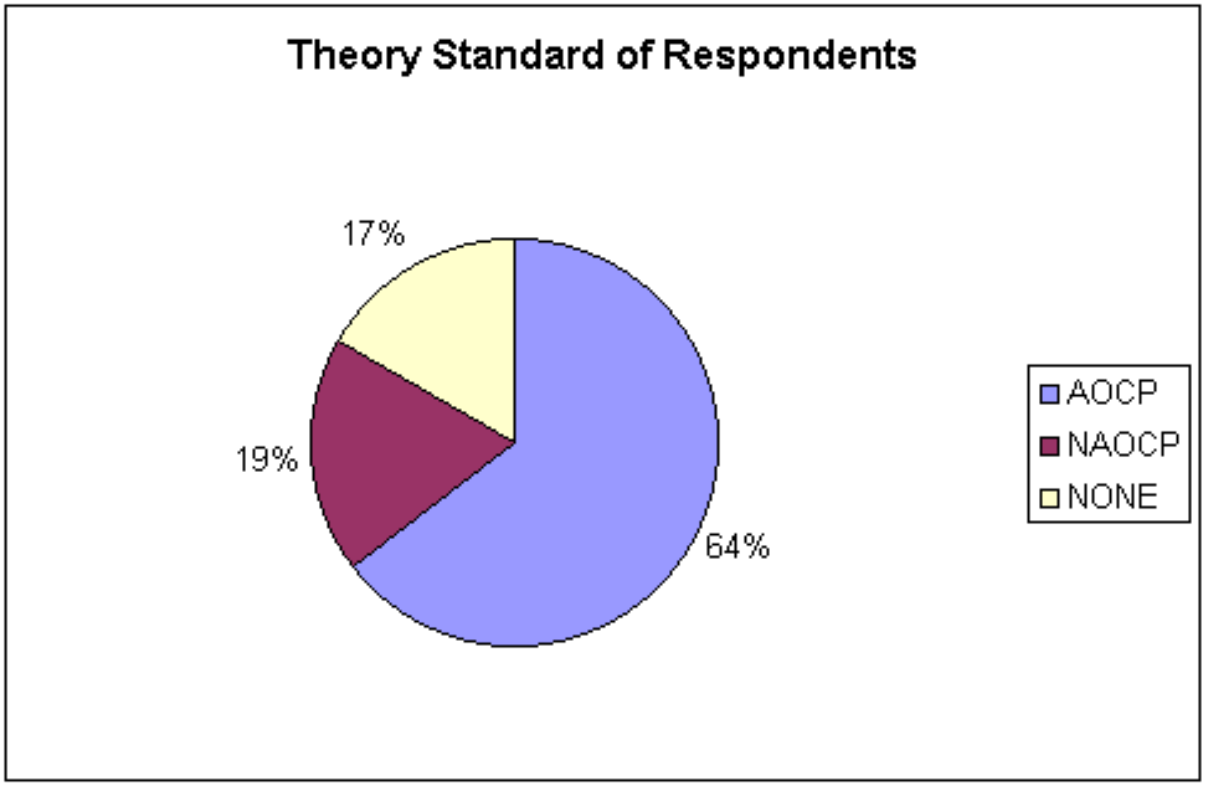


Figure 2 shows the profile of the theory qualification level of respondents.

Figure 2



The two central issues

The two central issues in the WIA media release were:

- implementation of a proposed new entry level licence; and
- support for a two-tier licence system (Entry Level and Unrestricted).

The questions that most directly addressed the two central issues were:

- Q13 - Do you support such an Entry Level licence at a standard below that of Novice and that could be readily achieved with no prerequisite knowledge and 10 hours of formal training?
- Q20 - On a scale of 1 to 5 (were 1 is least acceptable), rate your support for three licence structure options.
- Q21. Do you support granting Unrestricted Licences on the basis of the NAOCP?

A number of tests were performed on the data to discover whether responses to the most direct questions on the two central issues were related to age or qualification level of the respondent. The following is an analysis of the responses to those questions.

Q13 - Do you support such an Entry Level licence at a standard below that of Novice and that could be readily achieved with no prerequisite knowledge and 10 hours of formal training?

There was no significant correlation between respondent age and the response to Q13.

Table 1: Support for Entry Level Licence - Q 13.

Entry Level Needed	AOCP	NAOCP	NONE	Total
No	22.5%	19.2%	21.7%	21.7%
Yes	77.5%	80.8%	78.3%	78.3%

Table 1 sets out a summary of the response to Q13 by qualification level. There is little difference in the responses of the three groups. Overall, the responses indicate strong support for introduction of an Entry Level Licence.

There is strong support overall for introduction of an Entry Level Licence.

Q20 - On a scale of 1 to 5 (were 1 is least acceptable), rate your support for three licence structure options.

There was no significant correlation between respondent age and the response to Q20.

There was a significant difference in response by NAOCP level respondents to Q20. The other respondent groups indicated a strong preference for a three-tier structure, whereas NAOCP respondents preferred a two-tier structure slightly over the three tier structure. Overall, there is a strong preference for a three-tier structure - Entry Level, Novice and Unrestricted.

There is a strong preference overall for a three-tier structure - Entry Level, Novice and Unrestricted.

Q21. Do you support granting Unrestricted Licences on the basis

of the NAOCP?

There was no significant correlation between respondent age and the response to Q21.

AOCP level respondents were strongly opposed to the grant of an Unrestricted Licence on the basis of NAOCP theory. AOCP level licensees might reasonably regard that such a grant of licence, whether as a transitional arrangement or ongoing, establishes in principle that the Unrestricted Licence requires no higher than NAOCP level theory.

NAOCP holders might reasonably read the WIA policy to mean that introduction of a new entry level licence and pursuit of a two tier licence structure would result in them being issued automatically with an unrestricted licence. This expectation of something for nothing is probably the reason why NAOCP holders have voted overwhelmingly in favour of the grant of an Unrestricted Licence on the basis of NAOCP theory.

Table 3: Support for grant of an Unrestricted Licence on the basis of NAOCP theory - Q21.

Response	AOCP	NAOCP	NONE	All
No	70.2%	19.2%	34.8%	54.7%
Yes	29.8%	80.8%	65.2%	45.3%

There is opposition overall, and strong opposition by holders of AOCP level theory qualifications to grant of an Unrestricted Licence on the basis of NAOCP theory.

The large majority of holders of NAOCP level theory supported issue of an Unrestricted Licence on the basis of NAOCP theory.

Standard of existing theory qualifications and privileges

This section explored opinions on the appropriateness of the existing standards of the AOCP theory and NAOCP theory for Unrestricted and Novice Licences. The intention

was to asses the standard of knowledge, not the learning process or assessment.

Q8. What is your opinion of the standard of the AOCP theory as qualification for an Unrestricted Licence?

The AOCP was regarded as "about right" by 64.5% of respondents, and by 76.4% of AOCP respondents. AOCP holders might be regarded to demonstrate a better understanding of the standard of the AOCP and the relevance of that level of theory in pursuit of the hobby.

Q9. What is your opinion of the standard of the NAOCP theory as qualification for an Unrestricted Licence?

Overall, the majority (54.7%) of respondents (and 67.5% of AOCP respondents) thought that the NAOCP was either "too low" or "much too low" for an Unrestricted Licence.

Q10. What is your opinion of the standard of the NAOCP theory as qualification for a Novice Licence?

Overall, the majority (52.5%) of respondents thought that the NAOCP was "about right" for a Novice Licence. A large number of respondents (43.9%) considered the NAOCP was "too high" or "much too high" for a Novice Licence.

The NAOCP theory standard is seen by a large number of respondents as being higher than desirable suggesting that review of the knowledge standard, the learning processes, and assessment method may be warranted.

Q11. What is your preference for band access for a Novice Licence? Indicate your preference by clicking the relevant rating column for access to each band category.

Respondents generally favoured much more band access for Novices than under the existing licence determination.

On average, respondents favoured:

- access to 50%++ of full band allocations (but excluding CW only, DX, satellite and weak signal segments) on 80m, 15m, 10m, and 6m;
- most of 2m, and 70cm (but excluding CW only, DX, satellite and weak signal segments); and
- a little less than 50% (but excluding CW only, DX, satellite and weak signal segments) of the full allocation on the other bands.

Respondents overall were in favour of a considerable increase in access to band allocation for Novices on all bands.

Q12. What maximum power level should be available to Novice licences?

The question sought selection of a preferred power limit from 10W PEP, 50W PEP, 100W PEP, 200W PEP, and 400W PEP.

The most popular (45.7%) response was 100W PEP, with most others selecting 50W PEP (25.0%) or 10W PEP (19.9%).

Respondents did not generally favour an increase in power available to Novices.

Proposed New Entry Level Licence

Q13. Do you support such an Entry Level licence at a standard below that of Novice and that could be readily achieved with no prerequisite knowledge and 10 hours of formal training?

There was strong, support for a new Entry Level Licence, with 78% in favour of a licence similar to the UK Foundation Licence (Q13 is discussed in detail under Two central issues above).

Q14. In principle, do you support imposition of special

conditions on such Entry Level Licences, where those conditions are difficult to enforce, or not likely to be enforced?

This question was intended to discover acceptability of special licence conditions that were difficult to enforce, eg restrictions on "home brewed" equipment, and repair, alignment, internal adjustment and modification of equipment. The responses were split at 47.1% in favour and 52.9% against.

Q15. If such an Entry Level Licence were introduced, what is your preference for band access for such an Entry Level Licence? Indicate your preference by clicking the relevant rating column for access to each band category.

Respondents generally were generous in allocation of band access for Entry Level licensees, indeed more than Novices enjoy under the existing licence determination.

On average, respondents favoured:

- access to 30%++ of full band allocations (but excluding CW only, DX, satellite and weak signal segments) on 160m to 12m, 6m and 23cm and above;
- access to 50%++ of 2m, and 70cm (but excluding CW only, DX, satellite and weak signal segments); and
- around 30% (but excluding CW only, DX, satellite and weak signal segments) of the full allocation on the other bands.

Respondents overall were in favour of access to 30% to 50% on all bands, depending on the band, for Entry Level Licences.

Q16. Should such Entry Level Licences be permitted to use voice repeaters?

Respondents were strongly in favour (87.3%) of Entry Level Licences being permitted to use voice repeaters.

Q17. Should such Entry Level Licences be permitted to use repeaters and the like, other than voice repeaters? (packet,

APRS, Echolink)?

Respondents were strongly in favour (71.0%) of Entry Level Licences being permitted to use non-voice repeaters.

Q18. What maximum power level should be available to such Entry Level licences?

The question sought selection of a preferred power limit from 10W PEP, 50W PEP, 100W PEP, 200W PEP, and 400W PEP.

The majority (51.4%) response was 10W PEP, with most others selecting 50W PEP (26.4%) or 100W PEP (18.5%).

Respondents generally favoured a quite low limit (10W PEP) on power available to Entry Level Licences.

Q19. Should the period of currency of the examination for such an Entry Level Licence be limited to a maximum period, which would mean re-examination to obtain or renew a licence after expiration of that period. Select the period of currency that you support:

Only 41% of respondents overall, and 39.9% of AOCP respondents supported no time limit on the tenure of an Entry Level Licence. The most popular option was 2 years (44.6%).

Limiting the tenure of licences raises some practical issues, as well as administrative issues:

- the Entry Level Licences must be promoted as a stepping stone;
- an applicant must be aware up front of the limited tenure and accept that it is a stepping stone;
- the privileges package must be balanced with the knowledge and skills requirement for issue and the limited tenure;
- there must be a framework for progression;
- there must be an opportunity for a person to resume the path to a higher licence grade at a later time.

To mitigate the risk of "qualifying" a pool of "permanent" Entry Level Licensees at too low a level, the following proposal may provide a solution. An Entry Level Licence would:

- be obtained only by demonstrating sufficient knowledge and skill at a formal examination, irrespective of whether the applicant had previously held or currently holds an Entry Level License, and no recognition of equivalent qualifications or prior learning;
- be issued for a fixed period of two years (non-renewable); and
- offer no assurance or expectation that it would serve as a qualification for issue of any grade of licence in the future.

Such a mechanism would allow:

- withdrawal or modification of the Entry Level Licence if it does not achieve the desired results, and a maximum of 2 years for all existing licences based on that standard, terms and conditions to naturally expire;

Respondents favour limiting the tenure of an Entry Level Licence.

Licence structure

Q20 - On a scale of 1 to 5 (were 1 is least acceptable), rate your support for three licence structure options.

There is a strong preference overall for a three-tier structure - Entry Level, Novice and Unrestricted (discussed in more detail under Two central issues above).

Q21. Do you support granting Unrestricted Licences on the basis of the NAOCP?

There is opposition overall, and strong opposition by holders of AOCP level theory qualifications to grant of an Unrestricted Licence on the basis of NAOCP theory. (discussed in more detail under Two central issues above).

Q22. On a scale of 1 to 5 (were 1 is not important through to 5 for very important), how important are the following factors in

formulation of a licence structure.

This question explored opinions on the relative importance of a number of factors in the design of a licence structure.

The average rating of all nine factors was fairly similar.

Three of the factors had greater variance in responses than the others, which might indicate they are the more contentious factors than the others:

- Growth in number of licences;
- Incentive to progress to Unrestricted Licence; and
- Retention of permission to use non type-approved equipment.

Q23. Enter any additional comments: (Do not identify yourself in this answer, it may be published in the report.)

The responses to the freeform comments:

- are difficult for one to summarise without leaving one's self subject to criticism for selective interpretation;
- need to be carefully cleansed of identifying data for privacy reasons (many respondents identified themselves or others in their responses); and
- many were critical of organisations and could not be reported without exposing myself to risk of litigation.

For these reasons, I have left them out of the report at this time.

Summary of responses to each question

The response to questions 3, 4, 5, 6, 7, and 23 cannot be published as they may breach privacy.

The following are summaries of responses to each of the remaining questions overall, and from the major groups of respondents.

- All respondents; and
- AOCP respondents.
- NAOCP respondents.

Author: Owen Duffy

V1.06

I appreciate your comments on this web, and advice of any problems that you may have encountered, email the webmaster.

CQVK Amateur Licence Reform Survey - May 2003

Identification

1. Have you read and do you accept the survey conditions? If you respond NO to this question, your entire response will be discarded.

Yes	100.0%	(276)
No		(0)
TOTAL	**100.0%**	**276**

2. Identify the level of amateur station licence that you are qualified to hold.

Unrestricted	28.6%	(79)
Intermediate	15.6%	(43)
Limited	20.3%	(56)
Novice	8.0%	(22)
Novice Limited	10.9%	(30)
None	16.7%	(46)
TOTAL	**100.0%**	**276**

Standard of existing theory qualifications and priveleges

There are two standards of theory exam for the range of existing licences:
- the Amateur Operators Certificate of Proficiency; and
- the Novice Amateur Operators Certificate of Proficiency.

(The regulations exam is identical for all existing grades of licence.)

8. What is your opinion of the standard of the AOCP theory as qualification for an Unrestricted Licence?

Much too low	0.7%	(2)
Too low	6.2%	(17)
About right	64.5%	(178)
Too high	18.8%	(52)
Much too high	9.8%	(27)
TOTAL	**100.0%**	**276**

9. What is your opinion of the standard of the NAOCP theory as qualification for an Unrestricted Licence?

Much too low	16.3%	(45)
Too low	38.4%	(106)
About right	33.3%	(92)
Too high	7.6%	(21)
Much too high	4.3%	(12)
TOTAL	**100.0%**	**276**

10. What is your opinion of the standard of the NAOCP theory as qualification for a Novice Licence?

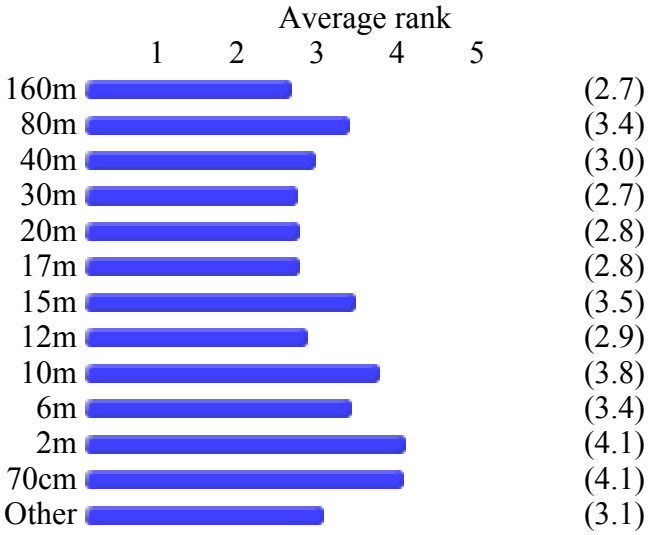
Much too low	0.4%	(1)
Too low	3.3%	(9)
About right	52.5%	(145)

Too high	37.0%	(102)
Much too high	6.9%	(19)
TOTAL	**100.0%**	**276**

11. What is your preference for band access for a Novice Licence? Indicate your preference by clicking the relevant rating column for access to each band category.

Ratings:

1. **No access**
2. **30% of allocated band**
3. **50% of allocated band**
4. **All allocated band except CW only, DX, satellite and weak signal segments**
5. **Full access**



12. What maximum power level should be available to Novice licences?

10W PEP	19.9%	(55)
50W PEP	25.0%	(69)
100W PEP	45.7%	(126)
200W PEP	5.8%	(16)
400W PEP	3.6%	(10)
TOTAL	**100.0%**	**276**

Proposed New Entry Level Licence.

A new Entry Level Licence based strongly on the UK Foundation Licence has been proposed for Australia by the WIA.

RA, the UK's regulator, describes the Foundation Licence in the Amateur Radio (Foundation) Licence Information Sheet and sets out an expectation of 10 hours of training to achieve a Foundation Licence.

13. Do you support such an Entry Level licence at a standard below that of Novice and that could be readily achieved with no prerequisite knowledge and 10 hours of formal training?

Yes	78.3%	(216)
No	21.7%	(60)
TOTAL	**100.0%**	**276**

14. In principle, do you support imposition of special conditions on such Entry Level

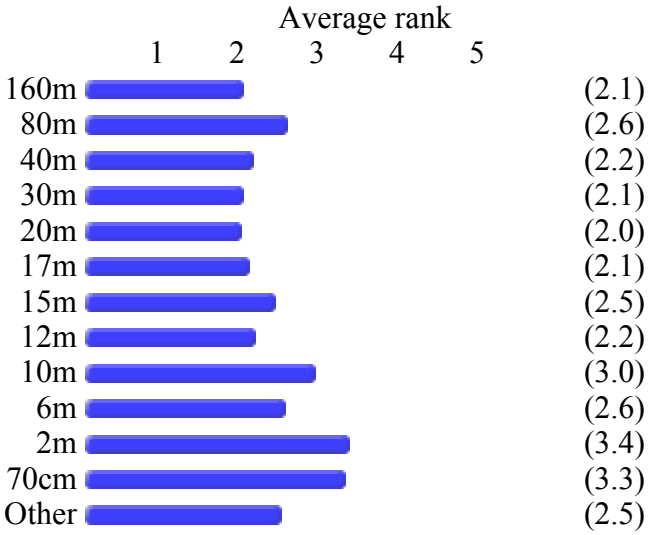
Licences, where those conditions are difficult to enforce, or not likely to be enforced?

Yes	47.1%	(130)
No	52.9%	(146)
TOTAL	**100.0%**	**276**

15. If such an Entry Level Licence were introduced, what is your preference for band access for such an Entry Level Licence? Indicate your preference by clicking the relevant rating column for access to each band category.

Ratings:

1. **No access**
2. **30% of allocated band**
3. **50% of allocated band**
4. **All of allocated band except CW only, DX, satellite and weak signal segments**
5. **Full access**



16. Should such Entry Level Licences be permitted to use voice repeaters?

Yes	87.3%	(241)
No	12.7%	(35)
TOTAL	**100.0%**	**276**

17. Should such Entry Level Licences be permitted to use repeaters and the like, other than voice repeaters? (packet, APRS, Echolink)?

Yes	71.0%	(196)
No	29.0%	(80)
TOTAL	**100.0%**	**276**

18. What maximum power level should be available to such Entry Level licences?

10W PEP	51.4%	(142)
50W PEP	26.4%	(73)
100W PEP	18.5%	(51)
200W PEP	1.4%	(4)
400W PEP	2.2%	(6)
TOTAL	**100.0%**	**276**

19. Should the period of currency of the examination for such an Entry Level Licence be limited to a maximum period, which would mean re-examination to obtain or renew a licence after expiration of that period. Select the period of currency that you support:

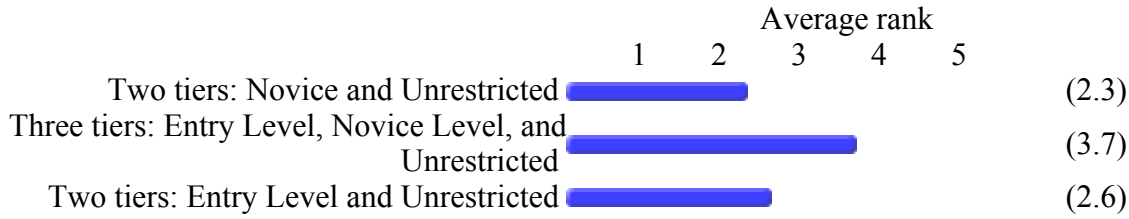
2 years	44.6%		(123)
5 years	11.6%		(32)
10 years	2.2%		(6)
No limit	41.7%		(115)
TOTAL		**100.0%**	**276**

Licence structure

If (when) the Morse Code requirement is removed, the differentiation between existing hams will be that some have the AOCP theory qualification or equivalent, and the others have NAOCP theory qualification.

This would seem to justify no more than two classes of licence, Unrestriced and Novice.

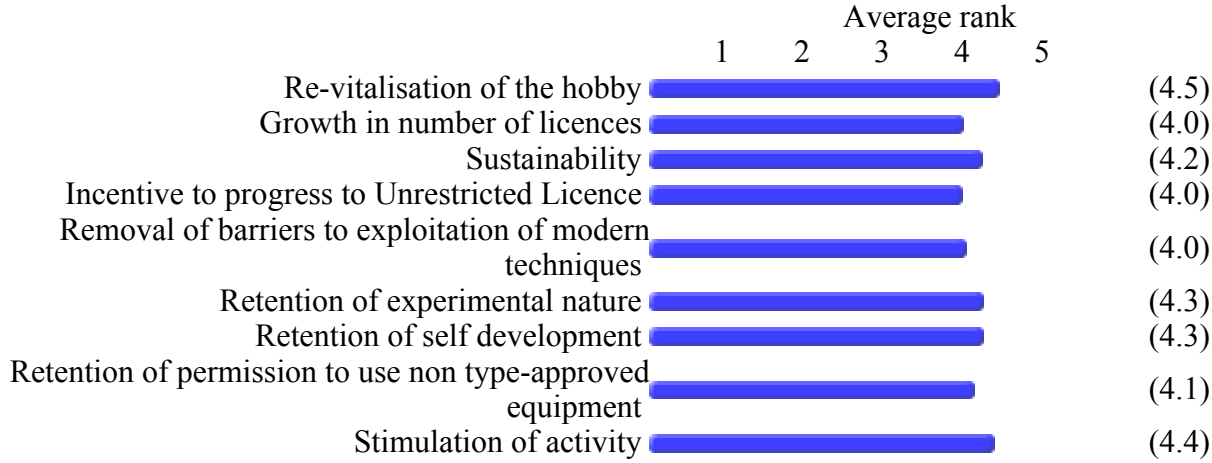
20. On a scale of 1 to 5 (were 1 is least acceptable), rate your support for the following structures:



21. Do you support granting Unrestricted Licences on the basis of the NAOCP?

Yes	45.3%		(125)
No	54.7%		(151)
TOTAL		**100.0%**	**276**

22. On a scale of 1 to 5 (were 1 is not important through to 5 for very important), how important are the following factors in formulation of a licence structure.



CQVK Amateur Licence Reform Survey - May 2003

Cross analysis on QID: 212

Identification

1. Have you read and do you accept the survey conditions? If you respond NO to this question, your entire response will be discarded.

Yes	100.0%	(178)
No		(0)
TOTAL	**100.0%**	**178**

2. Identify the level of amateur station licence that you are qualified to hold.

Unrestricted	44.4%	(79)
Intermediate	24.2%	(43)
Limited	31.5%	(56)
Novice		(0)
Novice Limited		(0)
None		(0)
TOTAL	**100.0%**	**178**

Standard of existing theory qualifications and priveleges

There are two standards of theory exam for the range of existing licences:
- the Amateur Operators Certificate of Proficiency; and
- the Novice Amateur Operators Certificate of Proficiency.

(The regulations exam is identical for all existing grades of licence.)

8. What is your opinion of the standard of the AOCP theory as qualification for an Unrestricted Licence?

Much too low	1.1%	(2)
Too low	8.4%	(15)
About right	76.4%	(136)
Too high	11.8%	(21)
Much too high	2.2%	(4)
TOTAL	**100.0%**	**178**

9. What is your opinion of the standard of the NAOCP theory as qualification for an Unrestricted Licence?

Much too low	19.7%	(35)
Too low	47.8%	(85)
About right	27.5%	(49)
Too high	3.9%	(7)
Much too high	1.1%	(2)
TOTAL	**100.0%**	**178**

10. What is your opinion of the standard of the NAOCP theory as qualification for a Novice Licence?

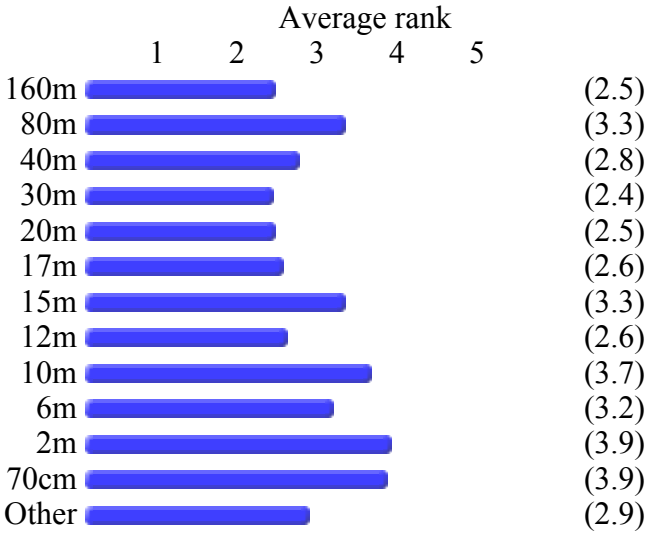
Much too low	0.6%	(1)

Too low	4.5%	(8)
About right	59.6%	(106)
Too high	31.5%	(56)
Much too high	3.9%	(7)
TOTAL	**100.0%**	**178**

11. What is your preference for band access for a Novice Licence? Indicate your preference by clicking the relevant rating column for access to each band category.

Ratings:

1. **No access**
2. **30% of allocated band**
3. **50% of allocated band**
4. **All allocated band except CW only, DX, satellite and weak signal segments**
5. **Full access**



12. What maximum power level should be available to Novice licences?

10W PEP	22.5%	(40)
50W PEP	26.4%	(47)
100W PEP	45.5%	(81)
200W PEP	1.7%	(3)
400W PEP	3.9%	(7)
TOTAL	**100.0%**	**178**

Proposed New Entry Level Licence.

A new Entry Level Licence based strongly on the UK Foundation Licence has been proposed for Australia by the WIA.

RA, the UK's regulator, describes the Foundation Licence in the Amateur Radio (Foundation) Licence Information Sheet and sets out an expectation of 10 hours of training to achieve a Foundation Licence.

13. Do you support such an Entry Level licence at a standard below that of Novice and that could be readily achieved with no prerequisite knowledge and 10 hours of formal training?

Yes	77.5%	(138)
No	22.5%	(40)

TOTAL		**100.0%**	**178**

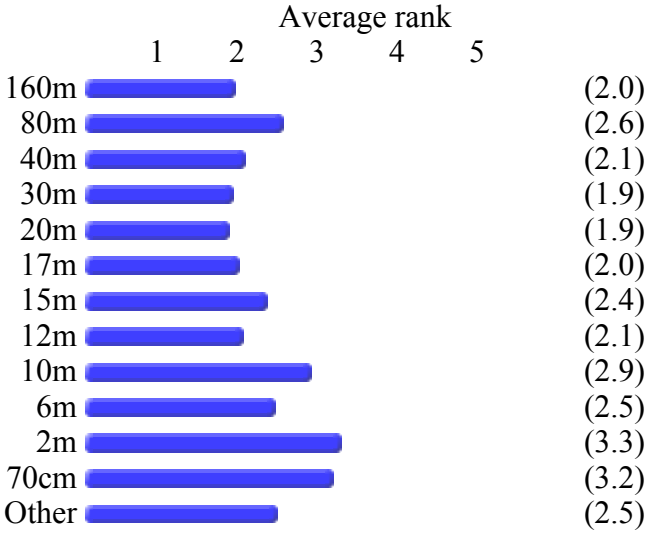
14. In principle, do you support imposition of special conditions on such Entry Level Licences, where those conditions are difficult to enforce, or not likely to be enforced?

Yes		43.3%	(77)
No		56.7%	(101)
TOTAL		**100.0%**	**178**

15. If such an Entry Level Licence were introduced, what is your preference for band access for such an Entry Level Licence? Indicate your preference by clicking the relevant rating column for access to each band category.

Ratings:

1. **No access**
2. **30% of allocated band**
3. **50% of allocated band**
4. **All of allocated band except CW only, DX, satellite and weak signal segments**
5. **Full access**



16. Should such Entry Level Licences be permitted to use voice repeaters?

Yes		87.6%	(156)
No		12.4%	(22)
TOTAL		**100.0%**	**178**

17. Should such Entry Level Licences be permitted to use repeaters and the like, other than voice repeaters? (packet, APRS, Echolink)?

Yes		69.1%	(123)
No		30.9%	(55)
TOTAL		**100.0%**	**178**

18. What maximum power level should be available to such Entry Level licences?

10W PEP		56.2%	(100)
50W PEP		23.6%	(42)
100W PEP		17.4%	(31)
200W PEP		0.6%	(1)
400W PEP		2.2%	(4)
TOTAL		**100.0%**	**178**

19. Should the period of currency of the examination for such an Entry Level Licence be

limited to a maximum period, which would mean re-examination to obtain or renew a licence after expiration of that period. Select the period of currency that you support:

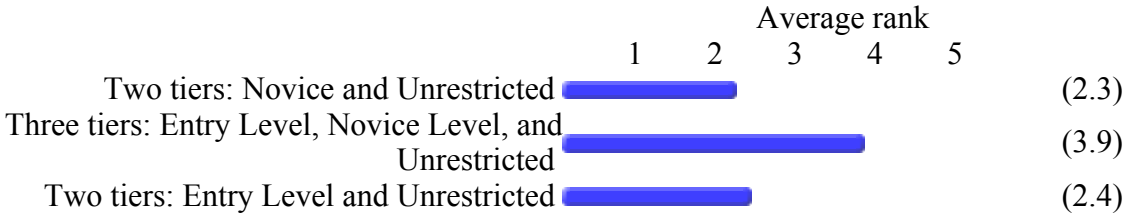
2 years	45.5%	(81)
5 years	12.4%	(22)
10 years	2.2%	(4)
No limit	39.9%	(71)
TOTAL	**100.0%**	**178**

Licence structure

If (when) the Morse Code requirement is removed, the differentiation between existing hams will be that some have the AOCP theory qualification or equivalent, and the others have NAOCP theory qualification.

This would seem to justify no more than two classes of licence, Unrestriced and Novice.

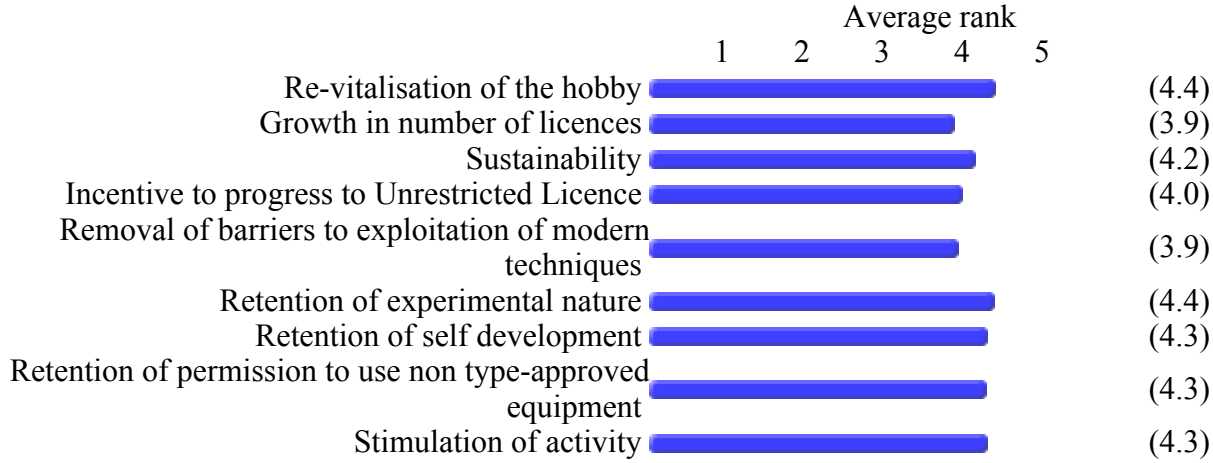
20. On a scale of 1 to 5 (were 1 is least acceptable), rate your support for the following structures:



21. Do you support granting Unrestricted Licences on the basis of the NAOCP?

Yes	29.8%	(53)
No	70.2%	(125)
TOTAL	**100.0%**	**178**

22. On a scale of 1 to 5 (were 1 is not important through to 5 for very important), how important are the following factors in formulation of a licence structure.



CQVK Amateur Licence Reform Survey - May 2003

Cross analysis on QID: 212

Identification

1. Have you read and do you accept the survey conditions? If you respond NO to this question, your entire response will be discarded.

Yes	100.0%	(52)
No		(0)
TOTAL	**100.0%**	**52**

2. Identify the level of amateur station licence that you are qualified to hold.

Unrestricted		(0)
Intermediate		(0)
Limited		(0)
Novice	42.3%	(22)
Novice Limited	57.7%	(30)
None		(0)
TOTAL	**100.0%**	**52**

Standard of existing theory qualifications and priveleges

There are two standards of theory exam for the range of existing licences:
- the Amateur Operators Certificate of Proficiency; and
- the Novice Amateur Operators Certificate of Proficiency.

(The regulations exam is identical for all existing grades of licence.)

8. What is your opinion of the standard of the AOCP theory as qualification for an Unrestricted Licence?

Much too low		(0)
Too low	1.9%	(1)
About right	38.5%	(20)
Too high	38.5%	(20)
Much too high	21.2%	(11)
TOTAL	**100.0%**	**52**

9. What is your opinion of the standard of the NAOCP theory as qualification for an Unrestricted Licence?

Much too low	11.5%	(6)
Too low	25.0%	(13)
About right	51.9%	(27)
Too high	7.7%	(4)
Much too high	3.8%	(2)
TOTAL	**100.0%**	**52**

10. What is your opinion of the standard of the NAOCP theory as qualification for a Novice Licence?

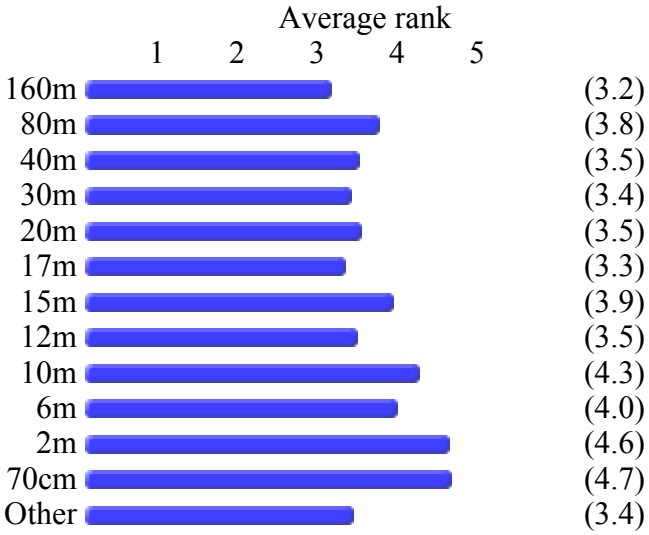
Much too low		(0)

Too low	1.9%	(1)
About right	40.4%	(21)
Too high	46.2%	(24)
Much too high	11.5%	(6)
TOTAL	**100.0%**	**52**

11. What is your preference for band access for a Novice Licence? Indicate your preference by clicking the relevant rating column for access to each band category.

Ratings:

1. **No access**
2. **30% of allocated band**
3. **50% of allocated band**
4. **All allocated band except CW only, DX, satellite and weak signal segments**
5. **Full access**



12. What maximum power level should be available to Novice licences?

10W PEP	11.5%	(6)
50W PEP	15.4%	(8)
100W PEP	51.9%	(27)
200W PEP	17.3%	(9)
400W PEP	3.8%	(2)
TOTAL	**100.0%**	**52**

Proposed New Entry Level Licence.

A new Entry Level Licence based strongly on the UK Foundation Licence has been proposed for Australia by the WIA.

RA, the UK's regulator, describes the Foundation Licence in the Amateur Radio (Foundation) Licence Information Sheet and sets out an expectation of 10 hours of training to achieve a Foundation Licence.

13. Do you support such an Entry Level licence at a standard below that of Novice and that could be readily achieved with no prerequisite knowledge and 10 hours of formal training?

Yes	80.8%	(42)
No	19.2%	(10)

TOTAL	**100.0%**	**52**

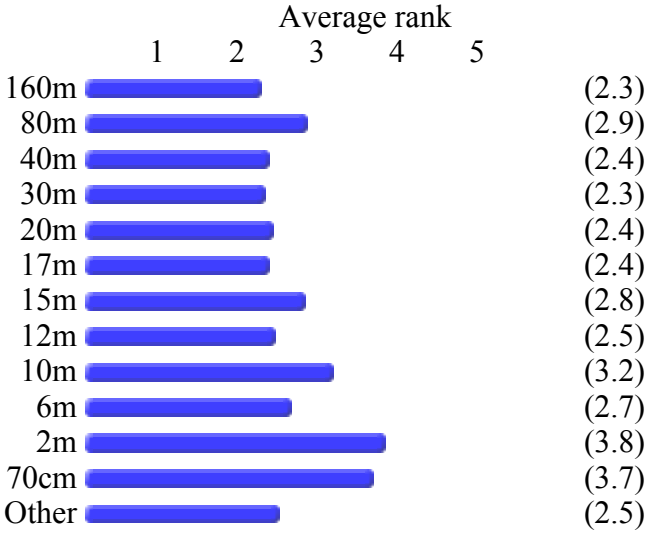
14. In principle, do you support imposition of special conditions on such Entry Level Licences, where those conditions are difficult to enforce, or not likely to be enforced?

Yes	57.7%	(30)
No	42.3%	(22)
TOTAL	**100.0%**	**52**

15. If such an Entry Level Licence were introduced, what is your preference for band access for such an Entry Level Licence? Indicate your preference by clicking the relevant rating column for access to each band category.

Ratings:

1. **No access**
2. **30% of allocated band**
3. **50% of allocated band**
4. **All of allocated band except CW only, DX, satellite and weak signal segments**
5. **Full access**



16. Should such Entry Level Licences be permitted to use voice repeaters?

Yes	92.3%	(48)
No	7.7%	(4)
TOTAL	**100.0%**	**52**

17. Should such Entry Level Licences be permitted to use repeaters and the like, other than voice repeaters? (packet, APRS, Echolink)?

Yes	76.9%	(40)
No	23.1%	(12)
TOTAL	**100.0%**	**52**

18. What maximum power level should be available to such Entry Level licences?

10W PEP	44.2%	(23)
50W PEP	28.8%	(15)
100W PEP	25.0%	(13)
200W PEP		(0)
400W PEP	1.9%	(1)
TOTAL	**100.0%**	**52**

19. Should the period of currency of the examination for such an Entry Level Licence be

limited to a maximum period, which would mean re-examination to obtain or renew a licence after expiration of that period. Select the period of currency that you support:

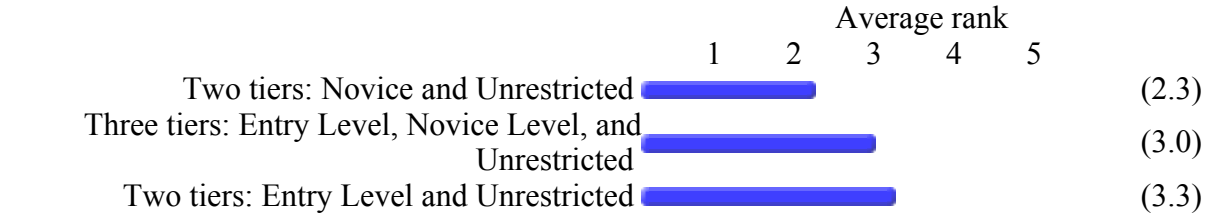
2 years	38.5%	(20)
5 years	5.8%	(3)
10 years	1.9%	(1)
No limit	53.8%	(28)
TOTAL	**100.0%**	**52**

Licence structure

If (when) the Morse Code requirement is removed, the differentiation between existing hams will be that some have the AOCP theory qualification or equivalent, and the others have NAOCP theory qualification.

This would seem to justify no more than two classes of licence, Unrestriced and Novice.

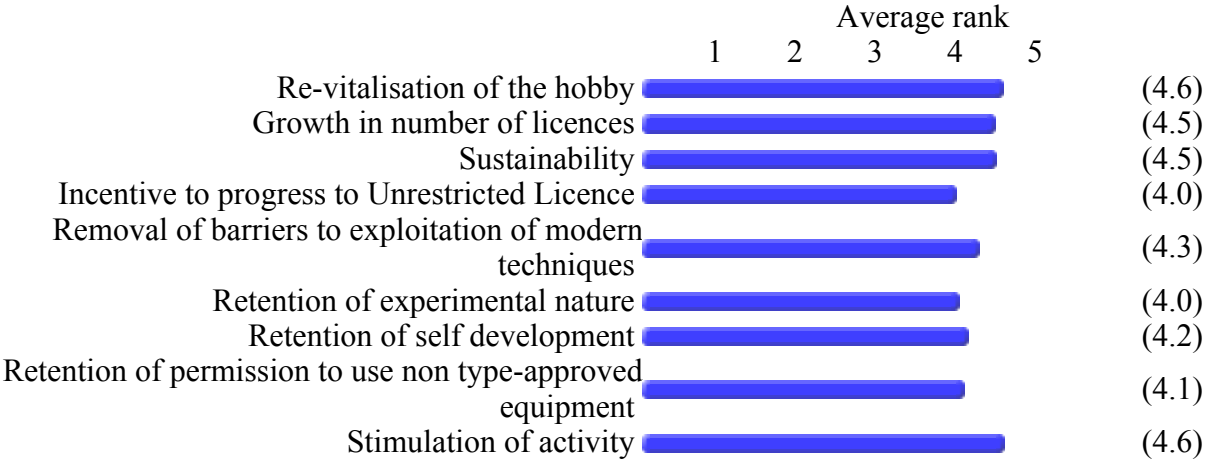
20. On a scale of 1 to 5 (were 1 is least acceptable), rate your support for the following structures:



21. Do you support granting Unrestricted Licences on the basis of the NAOCP?

Yes	80.8%	(42)
No	19.2%	(10)
TOTAL	**100.0%**	**52**

22. On a scale of 1 to 5 (were 1 is not important through to 5 for very important), how important are the following factors in formulation of a licence structure.



Attachment E: CQVK Morse Survey - August 2003

CQVK Morse Survey

This report is an analysis of the CQVK Morse Survey conducted in August 2003.

My thanks to all those who contributed to the survey, and also to those who assisted me with review of the survey questions and report.

Executive summary

This independent survey was conducted to explore views on the possible removal by the ACA of the requirement to prove proficiency in Morse code telegraphy for all existing grades of amateur licence:

- independently of any other licence reform; and
- without removing any licensed operator's right to use Morse code.

The survey was an interactive online survey conducted on the Internet over the period 01 August 2003 to 05 August 2003. Respondents completed electronic forms and submitted their response, which were stored in a database and later extracted, summarised and analysed.

In respect of the Morse issue:

- there is very strong support (92%) for removal by the ACA of the requirement to prove proficiency in Morse code telegraphy for all existing grades of amateur licence, independently of any other licence reform, and without removing any licensed operator's right to use Morse code.

Introduction

Until recently, an international treaty required administrations to mandate Morse code proficiency for issue of amateur licences for the HF bands.

The recent WRC03 made changes to ITU radio regulation Article s25. As a result, the ACA is now free to determine whether or not applicants for an amateur radio licence need to prove proficiency in Morse code telegraphy.

At the same time, the WIA has also been developing a proposal for reform of the amateur radio licence structure, including an entry level licence.

These two issues seem to have become entwined, with some people thinking that removal of the mandatory Morse requirement is linked to acceptance of a new entry level licence. This was a theme of some responses to the recent CQVK Licence Reform Survey.

I wrote to the ACA on 30 July 2003 suggesting that the results of the consultation (via the proposed discussion paper) would be improved by decoupling the Morse issue. To quote:

> You may recall that I conducted a survey to discover opinions on some of the issues related to the WIA's proposed reform of amateur radio licensing in Australia.
>
> One of the things that I discovered in the free form comments of responses, in separate direct emails expanding on the issues, and to some extent in the other parts of the responses, was the inability of many people to separate the removal of the Morse code requirement for licences and the licence reform proposal in development.
>
> I believe that the ACA could eliminate this confusion by issuing an interim ruling that:
>
> - licences that require AOCP equivalent theory (Intermediate and Limited) be allowed the same operating privileges (under the current LCD) as an Unrestricted Licence; and
> - licences that require NAOCP equivalent theory (Novice Limited) be allowed the same operating privileges (under the current LCD) as a Novice Licence pending the resolution of the licence reform proposal and issue of a comprehensive Licence Conditions Determination for amateur stations.

The ACA promptly replied on 31 July 2003 in part:

> As the removal of the Morse code requirement is a major change to the regulation of the amateur service, we want to ensure that any amendments to the service reflect public opinion. As such, we will consider an early introduction of the amendments you have suggested once the discussion paper has been released for public comment and all submissions have been received.
>
> If the public consultation process indicates support for the early implementation of interim plans to extend the operating privileges of certain amateur licence holders as you describe in your email, the ACA will endeavour to do so as quickly as possible. However, this will require changes to legislation, and could take several months to achieve.

This is quite encouraging and is consistent with the ACA's sensitivity to its Customer Groups as stakeholders.

Why this survey

This survey is intended to quickly gain a reliable indication of support for removal of the mandatory Morse code requirement, independently of the reform agenda. Such an indication may give the ACA the confidence to make an early policy statement on the removal of the mandatory Morse code requirement even if the machinery of notification takes some further months.

Such a policy statement would be of greatest benefit is it were issued before the discussion paper was released, or very shortly thereafter, so that the discussion focuses on the important structural changes to qualification levels, assessment, and privileges without the recurring Morse "noise" confusing the reform.

So, this survey was to solicit the opinions of interested persons (whether or not WIA members, whether or not licensed amateurs) on the possible removal by the ACA of the requirement to prove proficiency in Morse code telegraphy for all existing grades of amateur licence, independently of any other licence reform, and without removing any licensed operator's right to use Morse code.

The perceived need for the survey was, to some extent, an apparent lack of recent formal consultation and evidential support for the proposed change; and the determined view by some that there is no place for democracy in the representation process.

This was an independent survey and was not sponsored by the WIA or any of its divisions.

Was this about removal of Morse code as a mode of operation

No.

This survey was to explore views on the possible removal by the ACA of the requirement to prove proficiency in Morse code telegraphy for all existing grades of amateur licence:

- independently of any other licence reform; and
- without removing any licensed operator's right to use Morse code.

Was this about proposed new entry level licences

No.

The WIA has been developing a proposal for some time, although firm details are scant.

The ACA has stated that it will issue a discussion paper during August, soliciting the views of the amateur fraternity on issues related to proposed licence reform.

The Survey

The survey was published on the Internet as an interactive application that contained 8 questions, and was open for four days from 06:00 on 1 August 2003 AEST. A total of 364 responses were received.

Of the 8 questions, 7 were related to the demographic and for verification, just one question was directly to the Morse issue.

Identification

This section contained questions to confirm acceptance of the conditions of the

survey, to identify the class of licence that the respondent was entitled to hold, age, period licensed and personal identification for possible validation of respondents and notification of results.

Removal of the Morse qualification requirement

A single question was asked on the Morse issue.

Survey results analysis

Demographics

The IARU website carries information on the number of Amateur licences issued in Australia, and the WIA membership for the years 1999 and 2000. For 2000, it states that there were 15,328 individual (ie non club) licences issued (down 3.4%on 1999) and the WIA had 4449 licensed members (down 6.8% on 1999), ie 29% of individual licensees were WIA members. The IARU statistics are roughly consistent with the numbers reported in the ACA's Annual Report for 2002.

There were 364 responses that answered Yes to Q1: "Have you read and do you accept the survey conditions? If you respond NO to this question, your entire response will be discarded." There were no responses that answered No to this question. The survey captured only a very small percentage of licensed amateurs, around 2.4% of the 15,000.

The recorded data included the responses to the questions, the time submitted, completion status, and the IP address used for submission. An informal review of the data indicates that it is unlikely that there there were multiple responses from the same source (known as slamming).

Figure 1 shows the age profile of respondents. Note that most, but not all respondents answered the optional Q4 - "What is your age".

Figure 1

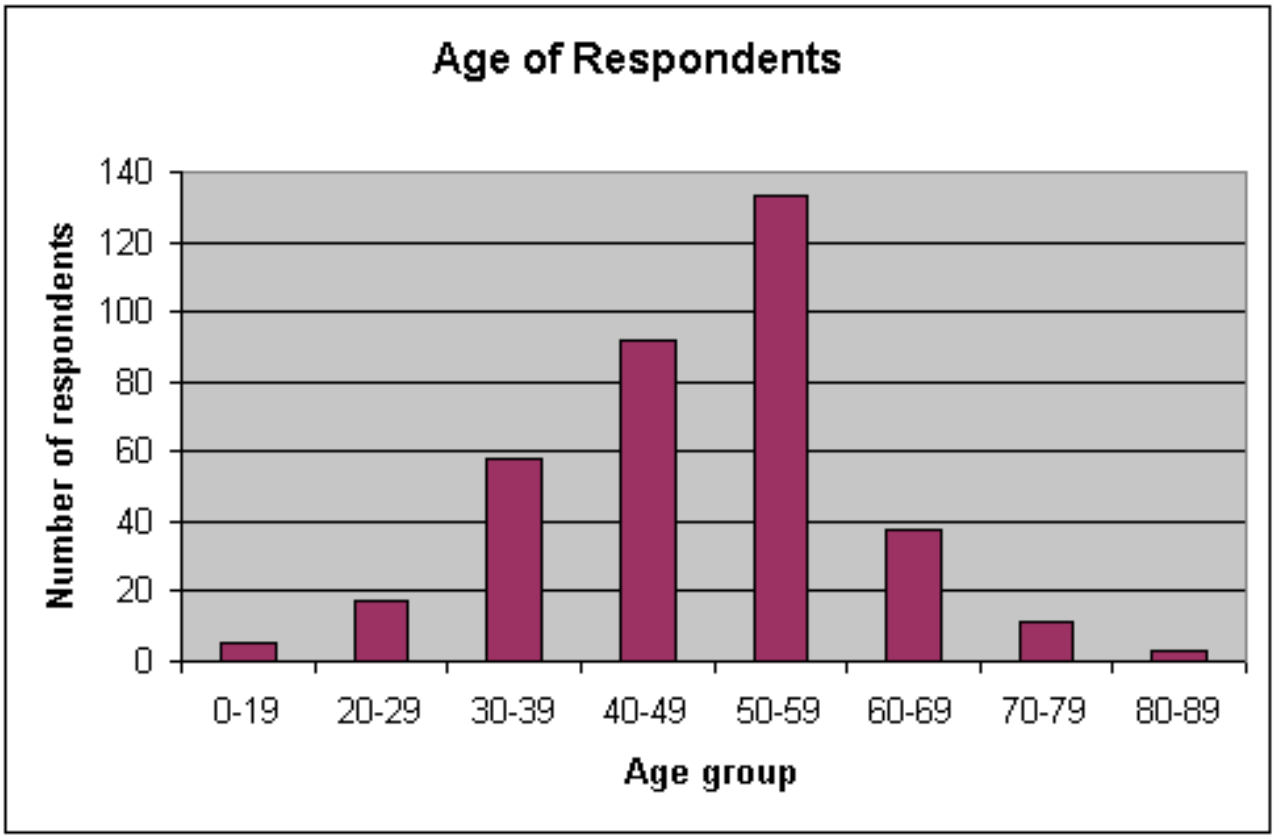
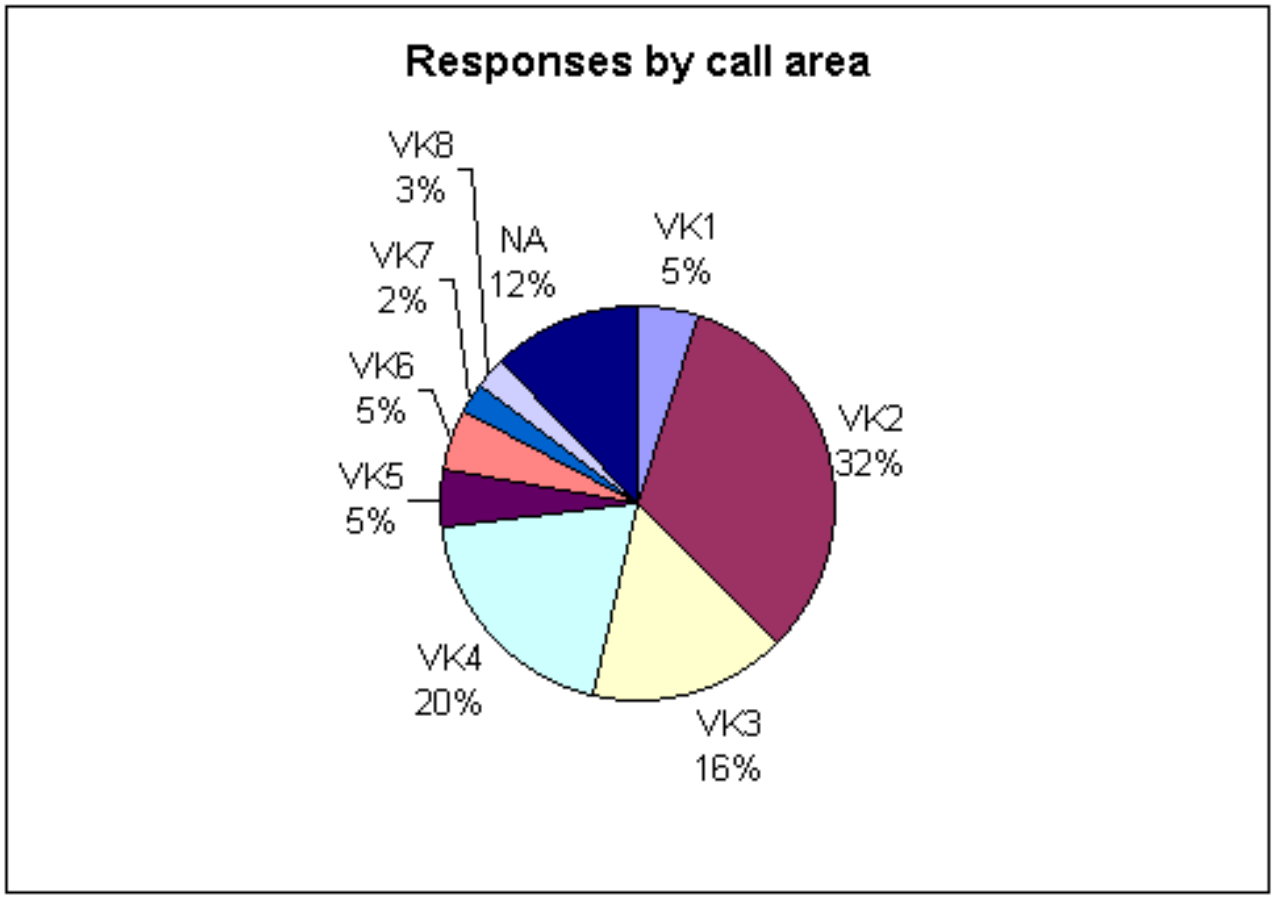


Figure 2 shows responses by call area. Eight eight percent of respondents supplied a call sign, where no call sign was supplied, responses were counted in the NA category.

Figure 2



The Morse issue

A single question was asked on the Morse issue.

Q8 - Do you support the removal by the ACA of the requirement to prove proficiency in Morse code telegraphy for all existing grades of amateur licence, independently of any other licence reform, and without removing any licensed operator's right to use Morse code?

Table 1: Support for removal by the ACA of the Morse qualification requirement for Amateur Radio licences - Q 8.

Licence Category	No	Yes	Yes (%)
Unrestricted	17	95	85%
Intermediate	2	42	95%

Limited	3	117	98%
Novice	3	12	80%
Novice Limited	1	28	97%
None	2	42	95%
Total	**28**	**336**	**92%**

Table 1 sets out a summary of the response to Q8 by licence level (as supplied in Q2). Overall, the responses indicate strong support for removal by the ACA of the requirement to prove proficiency in Morse code telegraphy for all existing grades of amateur licence, independently of any other licence reform, and without removing any licensed operator's right to use Morse code

Statistically, the mean YES response is 92% +/- 1.4% (mean +/- se; n=364). Overall, if the responses to the survey are an unbiased selection from the community, it can be stated with 95% confidence that the support for removal of the Morse qualification requirement for all Amateur Radio licences is between 90% and 95%.

There is very strong support for removal of the Morse qualification requirement for all existing Amateur Radio licences.

Moving forward

Although most of us support the change, there are some of us that did not. It is time to recognise the support for the change, accept the change, and regroup to shape the proposed reform of amateur radio licensing in Australia.

The ACA discussion paper anticipated within just weeks is an opportunity to contribute that we should maximise, irrespective of whether some in our fraternity regard us as "democratic dipsticks".

If the Morse qualification requirement is to be removed, and there is very strong support for its removal, then Morse is not relevant to the debate on the proposed licence reform and a clear announcement of the removal of the Morse requirement will assist the debate on the proposed licence reform.

Author: Owen Duffy

V1.01.

I appreciate your comments on this web, and advice of any problems that you may have encountered, email the webmaster.

Addendum 1: Attachment F: NAOCP / NAOLCP and HAREC

CQVK

NAOCP / NAOLCP and HAREC

Overview

This document considers whether the Australian NAOCP / NAOLCP amateur radio operator syllabus and examination standard are compliant with the CEPT HAREC standard.

It is a supplement to the CQVK work on Amateur Radio licence reform and is consistent with the higher level statements and recommendationsin the CQVK submission to the ACA in response to its discussion paper: "A Review of Amateur Service Regulation" August 2003.

HAREC

The European Conference of Postal and Telecommunications Administrations (CEPT) is an organisation fostering common positions relating to postal and telecommunications matters, and in support of that objective, develops and publishes standards.

Among the CEPT publications is Recommendation T/R 61-02 E (Chester 1990, revised in Nicosia 1994 and The Hague 2001) HARMONISED AMATEUR RADIO EXAMINATION CERTIFICATES. The T/R 61-02 E document contains at Annex 6, an Examination Syllabus for HAREC LEVEL A AND / OR B for the guidance of the Administrations so that they may prepare their national [amateur radio] examinations for the CEPT Harmonised Amateur Radio Examination Certificate (HAREC). (The difference between HAREC LEVEL A and LEVEL B is only that LEVEL B does not have a Morse code proficiency requirement.)

A Harmonised Amateur Radio Examination Certificate (HAREC) may be issued by a participating non-CEPT Administration. In order to issue a HAREC certificate the candidate must demonstrate by examination to have complied with the Examination Syllabus of HAREC A or B as specified in the document T/R 61-02 E.

Australia participates in T/R 61-02 E, as set out in this extract from the Amateur Operator Certificates of Proficiency information page on the ACA web site:

Reciprocal arrangements with European Conference of Postal and Telecommunications (CEPT) were finalised in 2000. Australia's qualifications are now recognised under CEPT Recommendation T/R 61-02 which makes it possible for participating administrations to issue Amateur licences that are mutually recognised. This is underpinned by a common qualification arrangement known as the Harmonised Amateur Radio Examination Certificate (HAREC).

This benefits Australian Amateurs because, by the establishment of the T/R 61-02 agreement with CEPT, other participating countries recognise Australian Amateur qualifications and licences, without the need for Australia to establish and maintain bilateral reciprocal licensing arrangements.

In order to simplify this process, from 1 September 2000, the ACA will introduce new certificates of proficiency superseding the AOCP and AOLCP. They are called:

- AOCP/HAREC Level A; and
- AOLCP/HAREC Level B.

Note that the ACA does not issue HAREC certificates for NAOCP or NAOLCP level

Approach

Recommendation T/R 61-02 E states "The Recommendation as approved in 1990 makes it possible for CEPT Administrations to issue a Harmonised Amateur Radio Examination Certificate (HAREC). The HAREC document shows proof of successfully passing an amateur radio examination which complies with the Examination". The analysis required is to consider whether the actual NAOCP / NAOLCP examinations consistently and adequately examine the full content of the syllabus at Annex 6 to T/R 61-02 E.

Ron Bertrand has decades of involvement in Amateur Radio Education in Australia and has been the Manager of the Radio & Electronics School, Australia's foremost trainer of new amateurs, for the last 5 years. The Radio & Electronics School expects to train in excess of 500 students this year, most of whom should successfully gain an amateur qualification.

Ron, an employee of the ACA at the time, reviewed most of the current amateur examinations for the ACA for the purpose of determining compliance with the ACA's amateur syllabi. This experience places Ron in a unique and informed position to comment on NAOCP / NAOLCP compliance with the HAREC syllabus. Ron Bertrand performed the analysis in the next section entitled NAOCP.

The following analysis identifies topic areas from T/R 61-02 E Annex 6 where the NAOCP / NAOLCP examinations clearly fail to consistently and adequately examine the full content. Where there is doubt about non-compliance, the possible non compliance is not identified below, so that on more detailed examination, non-compliance may be greater than reported below.

NAOCP

The following topics from T/R 61-02 E Annex 6 are not dealt with adequately in the current NAOCP / NAOLCP examinations (additional comments are {within braces}, coloured distinctively, and are *italicised*):

INTRODUCTION

c) - powers of ten, exponentials

d) Candidates must be familiar with the formulae used in this syllabus and be able to transpose them.

i) Technical, operational and regulatory matters

a) TECHNICAL CONTENT

1. ELECTRICAL, ELECTRO-MAGNETIC AND RADIO THEORY

1.1 Kirchhoff's Laws

1.3 Electric field

Electric field strength
The unit volt/metre
Shielding of electric fields

1.4 Magnetic field

Shielding of magnetic fields

1.7 Non-sinusoidal signals

Audio signals
Square wave
D.C. voltage component

1.8 Modulated signals

Amplitude modulation *{lightly covered}*
Phase modulation, frequency modulation and single-sideband modulation {some coverage at block diagram level *{little signal information knowledge required}*
Frequency deviation and modulation index
Carrier, sidebands and bandwidth
Waveform *{no modulated waveform identification (except for key clicks)}*
Equation for modulation index

1.9 Power and energy

Power ratios corresponding to the following dB values: 0 dB, 3 dB, 6 dB, 10 dB and 20 dB [both positive and negative] *{coverage of positive 3 and 6 dB only}*
The input/output power ratio in dB of series-connected amplifiers and/or attenuators
Matching [maximum power transfer] *{Jacobi's theorem not covered}*
The relation between power input and output and efficiency
Peak Envelope Power [p.e.p.]

2. COMPONENTS

2.1 Resistor

Positive and negative temperature coefficients [PTC and NTC]

2.2 Capacitor

The relation between capacitance, dimensions and dielectric. (Qualitative treatment only)
The reactance
Phase relation between voltage and current
Characteristics of fixed and variable capacitors: air, mica, plastic, ceramic and electrolytic capacitors
Temperature coefficient

2.3 Coil

Self-inductance
The reactance
Phase relation between current and voltage
Q-factor
Skin effect
Losses in core materials

2.4 Transformers application and use

impedance ratio. (Qualitative treatment only)
Reactance equation

2.5 Diode

Use and application of diodes: *{rectification only}*
Rectifier diode, zener diode, LED [light-emitting diode], voltage-variable and capacitor [varicap] *{symbols only}*
Reverse voltage and leakage current *{PIV only}*

2.6 Transistor

PNP- and NPN-transistor *{symbols only}*
Amplification factor
Field-effect transistor [N channel and P channel, j-FET]
The resistance between gate and source
The transistor in the:

common emitter [source] circuit *{basic configuration on CE Covered in Novice}*
common base [gate] circuit
common collector [drain] circuit input and output impedances of the above circuits
method of biasing

2.7 Miscellaneous

Simple digital circuits

3. CIRCUITS *{Novice has no circuits except for basic power supply}*

3.2 Filter

Series-tuned and parallel-tuned circuit: *{basic recognition}*
Impedance
Frequency characteristic
Resonant frequency *{recognition of resonance equation only}*
Quality factor of a tuned circuit
Bandwidth
Band-pass filter
Low-pass, high-pass, band-pass and band-stop filters composed of passive elements
Frequency response
Pi filter and T filter
Quartz crystal

3.3 Power supply

Stabilisation circuits in low voltage supplies

3.4 Amplifier

Lf and hf amplifiers
Amplification factor
Amplitude/frequency characteristic and bandwidth
Class A, A/B, B and C biasing
Equations for Quality Factor.

3.5 Detector

FM detectors
Slope detector
Foster-Seeley discriminator

3.6 Oscillator

Factors affecting frequency and frequency stability conditions necessary for oscillation
LC oscillator
Crystal oscillator, overtone oscillator

3.7 Phase Locked Loop [PLL]

Control loop with phase comparator circuit

4. RECEIVERS

4.1 Types

4.2 Block diagrams *{very basic}*

FM receiver [F3E]

4.3 Operation and function of the following stages (Block diagram treatment only)

Crystal calibrator
Automatic gain control
S meter
Squelch

4.4 Receiver characteristics (simple description treatment)

Adjacent-channel
Stability
Intermodulation; cross modulation

5. TRANSMITTERS

5.1 Types

Transmitter with or without frequency translation
Frequency multiplication
FM transmitter [F3E]

5.3 Operation and functions of the following stages (Block diagram treatment only) *{very basic}*

Frequency multiplier
Output filter [pi-filter]
Frequency modulator
Phase modulator

5.4 Transmitter characteristics (simple description)

Frequency stability
RF-bandwidth
Sidebands
Audio-frequency range
Output impedance
Efficiency
Modulation index
Cabinet radiations

6. ANTENNAS AND TRANSMISSION LINES

6.1 Antenna types

End fed half-wave antenna
Folded dipole
Parabolic antenna
Trap dipole

6.2 Antenna characteristics

Capacitive or inductive impedance of a non-resonant antenna
Effective radiated power [e.r.p.]
Front-to-back ratio

Horizontal and vertical radiation diagrams

6.3 Transmission lines

Waveguide
Balun
Quarter-wave line as impedance transformer [$Z0^2$=Zin.Zout]
Open and short-circuited lines as tuned circuits
Antenna tuning units

7. PROPAGATION

Critical frequency
Sporadic E-reflection
Auroral reflection

8. MEASUREMENTS

8.1 Making measurements

Measuring errors:
Influence of frequency
Influence of waveform
DC and RF power [average power, Peak Envelope Power]
Voltage standing-wave ratio
Waveform of the envelope of an RF signal
Frequency Resonant frequency

8.2 Measuring instruments

Making measurements using:
Multi-range meter
Reflectometer bridge
Frequency counter
Absorption frequency meter
Dip meter
Oscilloscope

9. INTERFERENCE AND IMMUNITY

9.1 Interference in electronic equipment

Blocking
Intermodulation
Detection in audio circuits

9.2 Cause of interference in electronic equipment

Field strength of the transmitter
Spurious radiation of the transmitter [parasitic radiation, harmonics] *{not parasitics}*

9.3 Measures against interference

Measures to prevent and eliminate interference effects:
Filtering *{simple}*
Decoupling
Shielding

10. ELECTRICAL SAFETY

{Improvement required to reflect current EMR standard and contemporary OH&S practice.}

ii) Sending and receiving MORSE code signals

The only difference between the HAREC LEVEL A and LEVEL B is that LEVEL A requires Morse code proficiency at 5 words per minute whereas the LEVEL B does not require Morse code proficiency. The NAOLCP does not comply with the Morse code requirement of HAREC LEVEL A.

Conclusion

This analysis shows that the NAOCP / NAOLCP examinations could not be considered compliant with the CEPT Recommendation T/R 61-02 E HAREC Level A and Level B standards, and the extent of that non compliance is major. The NAOCP / NAOLCP examinations are considered substantially lower in standard than CEPT Recommendation T/R 61-02 E HAREC Level A and Level B.

References

- Recommendation T/R 61-02 E (Chester 1990, revised in Nicosia 1994 and The Hague 2001) HARMONISED AMATEUR RADIO EXAMINATION CERTIFICATES dated 6 March 2001
- NAOCP / NAOLCP Syllabus

Change History

The following table is a history of revision of this document.

Version	Date	Comment
1.01	21/10/2003	Initial release

Can't find it? Search CQVK.

I appreciate your comments on this web, and advice of any problems that you may have encountered, email the webmaster.

Addendum 1: Attachment G: Registrations of support for this submission

Registrations of support for the CQVK submission to the ACA in response to its discussion paper: "A Review of Amateur Service Regulation" August 2003.

CQVK provided an online facility for readers to register their support for the CQVK submission. The online registration facility was opened on 17 October 2003 and closed on 30 October 2003.

Respondents were asked:

> Do you grant permission to submit your registration response to the ACA; and for the ACA to make your registration response public if that is their wish?
>
> If you respond "No" to this question, your entire response will be discarded.

Responses that replied NO to the above question were discarded.

Respondents were asked for their name, callsign if licensed, and optionally free form comments.

The responses are detailed below.

Aurimas Dumcius

Comment: Hope to see some changes for the better soon

Adam Jaroszuk VK4KSS

Comment: I agree strongly that:- There should be a three tier licensing system, and that the CQVK model for an entry level licence be considered in preference to any other submissions being proposed by any other organisations. I do not agree with the proposal by some, to merge NAOCP and AOCP licence levels. This would be unfair to those that have taken the time to study for the AOCP theory and may result in some unrestricted licencees "paying out on" those that were promoted without actually studying for the higher classification. That Morse code should be discarded as an examinable subject prior to any other changes taking affect in the future. The sooner the better.

Alan Peake

Comment: While I prefer the CQVK approach, I do not regard the WIA response as necessarily bad. I hope that whatever the ACA decides, it will benefit Amateur Radio.

Alan Roger Wills	VK4YAR
Aleksandar Petkovic	VK6APK
Alex McDonald	VK4TE

Comment: I have printed the CQVK document and would like to sincerely thank those responsible for their efforts on behalf of all Australian amateurs. 73 VK4TE Alex

Allan Bannister

Allan Mason	VK2GR

Comment: Great work

Andy Beckmann	vk5ntt

Comment: Worth voting just for the proposed "non interference" policy alone. If we are going to classed as mere appliance operators ; why do we need to have any technical knowledge at all ? 73 Andy

Anthony Cleary	VK2BTC

Comment: I Don't know if my comments are of any great relevance but I will give them anyway. I am a high level quadriplegic and have been using amatuer radio as a form of rehabilitation. If the A.C.A. propasal of a non interferance policy gets legs than I will be probably be forced to give HF away. So you can imagine this would be a body blow to my moral. For this reason alone I support your proposal. I hope these comments are in some small way of some use.

ASHLEY WILKINSON	VK3XAT

Comment: THANK YOU FOR YOUR EFFORT SO THAT I COULD CONTRIBUTE TO THIS SURVEY A.WILKINSON

Backer, Dr. Fred	VK2JFB

Bales

Beveridge, Stephen James	VK2XWL

Comment: With respect to the Discovery licence, I agree with the proposal except that it should not be a "finite-lifetime" licence. With respect to CEPT, I do not believe we should abandon out alignment with it simply because the "middle" licence (termed a "Restricted licence" in the submission) would not meet the same standards. Overall I support this document in providing an excellent response to the ACA Discussion paper.

Binger Laurie	vk4vcn
Boddington, James	vk4xjb
Brenda Bradnam	
Brian Cleland	VK5ZMB
Brian G. Warren	VK2BX
Comment: I fully support the details proposal to the ACA.	
Brian G. Warren	VK2BX
Comment: I fully support the details proposal to the ACA.	
Carlo Gnaccarini	VK3BRZ
Chapple	VK3TND
Chris Thompson	VK2MQX
cockburn wayne	vk8zaa
Craig Hill	vk4zip
D J OAKDEN	VK6DJO
D.P. Johnstone	vk3zux
Dale McCarthy	VK4DMC
Comment: I fully support the CQVK submission in particular the sections relating to interference and three tier licencing.	
Dave Horsfall	VK2KFU
Comment: It's not often that I agree 100% with any proposal!	
David Isele	VK6DI
David Myers	VK2RD
Dunstan, Glenn	VK4DU
Comment: I am a federal councilor of the WIA.	
Eric J Buggee	VK3AX
Comment: In my opinion the position adopted by the CQVK team is a well balanced one that appears to reflect the majority view and as such has my full support. Signed Eric J Buggee. VK3AX.	
Fake, Terry	vk2nly
Gamer	VK4JVK

gary bray	vk4tgb
Gary Neilsen	VK4KNE
Geoff McCombe	VK4GB
Geoff Skinner	vk4xuk
GLEN MILLEN	VK2FC
GOLD COAST AMATEUR RADIO SOCIETY INC.	VK4WIG
Comment: The Society has resolved that this response be endorsed. Susan Tomkins VK4ST Secretary, Gold Coast Amateur Radio Society Inc. secretary@goldcoastamateurradio.com	
Graeme Harris	VK3BGH
Comment: Excellent work guys. I am concerned however that removal of the callsign state designator will preclude licensees from participating in a range of contests and awards that require this information. I look forward to participating in the forthcoming CQVK poll re this issue. 73, Graeme VK3BGH	
Graham Gaiger	vk6zgg
Comment: Excellent overall reasoning and presentation. Thanks for the hard work!	
Grant McDuling	VK4JAZ
Gregory Parkhurst	VK1AI
Comment: I consider that the CQVK submission offers a balanced, integrated package of proposals which will serve the needs of the Amateur community effectively in relation to all issues raised in the ACA's discussion paper.	
HARBOR	VK2XYP
Comment: The Quicker this happens the Better.....	
Harry Watson-Smith	VKAHWS
Heidenreich	vk4hse
Hewitson, Peter	VK4QC
jacques borthen	vk6kdx
Jamieson Phillip P.	VK6ZPP
John Elwyn Roberts	VK4TL
Comment: To balance erosion of status, full calls should be allowd extra priviliges such as more power perhaps with retention of cw as a qualifier.	

John Mackinnar	VK4AC
John Mason	VK2TUZ
Comment: The CQVK response to the ACA discussion paper mirrors my own thoughts and feelings on the subject. It is a well rounded and properly considered piece of work; the authors are to be congratulated on their clear thinking. I strongly recommend the ACA follow closely the recommendations made in the work.	
Julie McKenzie	VK4ZJJ
K. R. Matthews	VK2AGK
Katherine Vine	vk4xyl
Comment: I prefer the CQVK proposal of a three tier structure with the Discovery Licence and the proposed Middle level licence over the WIA two tier and Foundation licence proposal.	
Laurie Whelan	VK4ZLE
Lawrence Brown	VK1KLB
Comment: Agree with a logical structured progression of licence grades aimed at encouraging further learning and experimentation. Agree also with the concerns on proposed changes to interference handling - with the rapid growth in consumer electronic equipment, including potential interference causing technologies such as LIPD's and power-line data transmissions - a blanket assumption of "guilt" is not the correct approach - there will be complex interference problems in future, and some rational mechanism for resolving them is required. Thanks for your work with this submission. LB	
Lindsay HORSFALL	VK2TLH
Lyle Williams	VK1KLW
Lynch, Kristine	vk4xtc
Mark Hill	aocp
Martin Howells	VK2UMJ
Matthew Rostan	
Comment: This responce has my full support. It is also put together well and well thought through.	
meredith	vk4lq
Comment: I worked hard to get my AOCP and I object to people with lower license's given the AOCP without being tested as I was. I beleive we will have sub standard Licensing in the future if we adoft those changes proposed by the W.I.A I am throughly discusted in this prosposal by them and object most strongly.	

Merv Brough	VK6CB
Michael Bazley	VK6HD
Mike Vale	VK1VW
Nicholas David Fisher	
Noel Bensley	VK4TFC
Owen Duffy	VK1OD
Paul Hayden	VK4ZBV
Comment: I fully support the CQVK response to the ACA discussion paper Paul Hayden VK4ZBV licenced since 1958	
Paul Kinsman	VK5HAC
Peter A. DALTON	VK1XP
Comment: I support the general thrust of the CQVK submission and believe it is important to register my general support formally before the ACA however, there are some details of the CQVK proposal that I believe could be changed to give a much simplified (and I believe more balanced) amateur licensing structure and I will submit my own submission to the ACA to add my views on these matters to the discussion.	
Peter G.Langeveld	vk4dpl
Comment: Well done , was difficult when change is in the air. Peter G.	
Peter Gilbert Whellum	VK5ZPG
Peter Marchant	
Peter Sturt	vk2ztv
Phil Fraser	VK4BVM
Phillip Noble	VK2HPN
R K BAINBRIDGE	VK6XH
Raffaele Lerro	VK4XRF
Raymond Stuart	VK4YRS
Rex Pearson	VK8RH
Richard Pipe	vk5usb

Rick Warnett	VK4KRW
Comment: Well done chaps !	
ROB SEATON	VK5JSR
Robert Brown	
Comment: 1. I believe there should be 3 licence levels. 2. I would like the ACA to maintain their investigative ability and be the final arbitor in relation to interference re amateur operations.	
Robert.L.West.	VK8HRW
Rod Mineo	VK4LED
Rodney John Bradnam	VK4CRB
Rodney Sommerville	VK2URK
Comment: I would prefer not to have a time limit on the discovery licence.	
Roger Nichols	VK7HRN
Ron Bertrand	VK2DQ
Ron Jolly	VK5KEI
Ron Marschke	vk4gz
Ron May	vk1hrm
Ron Watkins	VK4ZHH
Comment: It is imperative that we encourage new people to the ranks of amateur radio. Dropping morse code is a large step in the right direction. I don't know how people can still justify it as being a requirement for an amateur licence. We (amateurs) are the only group still using this outdated method of communication. We should be encouraging all ages, sexes and anyone who has a casual interest in communication.	
Smith Alan,Richard	VK2TUI
Comment: I agree on all points. The most important being the de-linking of the Morse from the review and the immediate amalgamation of the AOCP, AOLCP to AOCP and NAOCP, NAOLCP to NAOCP. This effectively gives us a two tier structure to build on in the review. I full support your proposed three tier structure and proposed qualification level.	
Stanley David West	VK4ADW
Steve Sanger	VK6WN
Steven Pettet	VK2KXQ

Thomas M Hatton	VK4HTM
Todd, Michael	VK6JMA
Tony Bennett	VK1TB
walter ivan bachmann	vk4bib
Watt	VK2QN
Comment: The Unrestricted Licencee should be granted a maximum peak power level at the antenna of 1500W on all modes, the same as American Amateur Licencees enjoy.	
Wayne Baker	VK2JKK
Wayne Johnson	VK6EH
William McKibben	VK4AFO
William R. Hayward	VK6AOD
Comment: Concerning the ACA "No interferece from Amateurs" proposal and you comment "..... denial of natural justice" there are strong grounds for our plea of Discrimination. There are several groups of people belonging to organisations such as VKS-737, Radtel etc, who possess and use HF transceivers on a regular and continuing basis who are not concerned with the "No interference" proposal.	

Addendum 1: Attachment H: Registrations of support for the CQVK Discovery Licence

Registrations of support for the CQVK Discovery Licence Proposal.

CQVK provided an online facility for readers to register their support for the CQVK Discovery Licence Proposal. The online registration facility was opened on 18 September October 2003 and closed on 30 October 2003.

Respondents were asked:

> Do you grant permission to submit your registration response to the ACA; and for the ACA to make your registration response public if that is their wish?
>
> If you respond "No" to this question, your entire response will be discarded.

Responses that replied NO to the above question were discarded.

Respondents were asked for their name, callsign if licensed, and optionally free form comments.

The responses are detailed below.

Adam Jaroszuk	VK4KSS
Alan Baker	VK8ZAB
Alex Lysenko	
Andrew Bullock	vk4bab
Beveridge, Steve	VK2XWL

Comment: Overall, I think the "Discovery Licence" proposed is quite a positive step. The suggested power levels make sense, as the earlier idea of limited power for Novices really didn't work. Besides, who is going to monitor the power? While 100 W on HF makes sense, perhaps a 25 W limit on VHF/UHF is appropriate as this is a fairly common output power. One criticism of the model as proposed is the notion of a "finite lifetime" licence. I believe the experience of the first "Novice" licence model set up in 1976 (? - or thereabouts) is fairly clear on this matter - it doesn't work! Is it being proposed in this manner so that it will die out automatically when/if the holders do not upgrade? My preference is for a 3-tier licence structure: the Discovery to facilitate entry into the hobby; an equivalent to the current Novice (perhaps a "new" Intermediate) and Advanced (re-named AOCP theory level for want of a better term). Unless the current AOCP theory is

"dumbed down", there appears to be too great a jump from the Discovery level to the current 'full-call' theory. There would have to be some reason for Discovery licence holders to progress through the different levels.

bill keegan	vk4vhd
Brett Quinn	
Brian Cleland	VK5ZMB

Comment: I feel it would be a good idea if all Discovery Lincecees were required to be a member of an Amateur Radio Club. If their QTH is over 50 Kms from the nearest club meeting point it would not be mandatory for them to attend meetings. This would assist them in becoming intregrated into the hobby and give them access to the type of help to allow them to progress to a unrestricted licence.

brian sayer	vk6hbs
Bronte Wood	VK5AY

Comment: Would be good if they had to be a member of a club so they could receive help and advice from members.

Cleary, Anthony	VK2BTC
DAVID CUSWORTH	VK4AO
Doak Neil	vk4yke
Dunstan, Glenn	VK4DU
frederick, peter	vk3bsf

Comment: I agree in-toto with your excellent response to the ACA. It seems that the ACA have been influenced or haave influenced the WIA that removal of CW will automatically create a two tier structure. Further the no interference clause is considered to be unworkable in its present ACA format and from my observations the MAIN sticking point of the reforms. Regards Peter. PS hope to talk with you on 40 m with the vk2gp group one day.

gary r bray	vk4tgb
Geoff EMERY	VK4ZPP

Comment: With the interest in WiFi, use of 2.4GHz Amateur segment would seem appropriate incentive for people experimenting in this area who may not be attracted by HF

Geoff McCombe	VK4GB
Graeme Harris	VK3BGH
Gregory Parkhurst	VK1AI

Harvey Lewis Wickes	VK4AHW
Comment: I support the Discovery Licence proposal because I believe it will result in the injection of many young people into the Amater Radio Fraternity.	

Johnstone	vk3zux
Comment: Why do we fool around with a third layer when really we should be making a greater effort at getting younger people - read school children interested? Why would someone fool around getting a licence - any licence - when they can get a large part of the buzz from a mobile phone? In fact a lot of effort is being wasted in a way if the effort is not included in getting the big picture and making sure that a much greater effort is expended in getting the younger people involved. It did not work with the past Novice - Why is it expected if this introduced in isolation? Any effort is good, but maybe a better directed effort might be better?	

Jonathan Piper	VK2HJJ
Comment: Let licencee renew licence continuously.	

Jones Timothy	VK6EI

Julie McKenzie	VK4ZJJ
Comment: Full support - no changes	

Kim Piper	VK2ZW
Comment: I think the 40 metre allocation should be wider,eg 150 or 200kHz. I don't see the point of an age limit. I think a limited tenure just creates a potential pirate problem at the end of the term.	

Kirk John	VK4TJ
Comment: I disagree with you on a few minor points (it would be pretty incredible if we agreed on everything, wouldn't it? - should include priveleges up to at least 2.4 GHz, preferably higher, and include digital modes. I think a lot of our growth will come from the wireless lan experimenters up there. - I don't agree that callsigns should be unique. QSL cards are very expensive in Oz (compared to elsewhere). We want new hams to take pride in their call + fit in (like QSling). A call that they can take with them to the next level of licence makes way more sense. - we should add in 17 & 12 mtr priveleges. Both bands are underutilised here anyway, and are a great learning ground for propagation. - I don't think there should be ANY age limit. We all know that virtually all the child prodigy hams are offsspring of ham dads & moms anyway, so are well "elmered". I wanted to become a ham at age 6, and promptly lost interest in the hobby because I had to wait until I was 15 (Canada, way back when). - I don't think there should be an expiration. The US tried this years ago and it was a disaster. In addition, there is a sub species of ham who just gets licenced to talk to hubby, wife, kids etc. They will NEVER upgrade. ACA have made it clear that it is a numbers game, so let's give 'em numbers! Similar argument for 4x4 and yachty hams - no real interest in the hobby other than what it does for them, but they make pretty good spectrum	

neighbours. - I FULLY support 100 0ntegration with all formal education systems form grade school through TAFE (uni?). If we have to re-align the curriculum to do so, let's do it!

Laurie Whelan	VK4ZLE
Marcus Engel	
Micha Michael Lohse	VK4JHM
Michael Dunne	VK3MSA
Michael Thurgar	VK1TMT
Mitchell Robert J	VK5NZ

Comment: I don't agree that the term be limited to three years. If someone wishes to stay at that level that is their choice but I agree it would be preferable to upgrade but not mandatory.

Owen Duffy	VK1OD
Peter KOHLMAYER	vk2tpk
Peter McAdam	VK2EVB
Phil Spann	VK4KLF
Richard Duncan	VK3HRD

Comment: For me it would be great if novices could be upgraded. I just find it hard to commit to further study.

Rick WARNETT	VK4KRW

Comment: The three level license proposal is absolutely necessary at this time and in the forseeable future. Congratulations on persisiting despite the WIA's initial ideas to go for two levels. I am sure they will have to change their ideas.

Robert Brown	
Robert, Matthew	VK2TVK

Comment: I would prefer a three tier licensing system to a two-tier, however, I believe that the Discovery license needs to be implemented ASAP.

Robert.L.West	VK8HRW
Roger Nichols	VK7HRN
Roma Piper	VK2NZW

Comment: Licence should be renewable for life.

Ron Bertrand	VK2DQ

Roy Stephens	vk4ars
Sarah Piper Comment: Should not end after three years of licence.	
Terrance Priest	VK4JAA
Thomas M Hatton	VK4HTM
Vic Pisani	VK2HEW
Weatherley	VK4HWM
Comment: It seems to me that the whole of the proposal is worthwhile and sound, giving clear direction to the ACA Discussion Paper which leaves the whole Exam/Licence section up in the air. There seems to be too great a jump from Entry Level to Full Call.	
Weatherley	VK4HWM
Comment: It seems to me that the whole of the proposal is worthwhile and sound, giving clear direction to the ACA Discussion Paper which leaves the whole Exam/Licence section up in the air. There seems to be too great a jump from Entry Level to Full Call.	
Wilson Abie Comment: I have just passed the NAOCP theory. And after being a SWL for many years I can notice a big diffrence on the lack of activity on the bands. I do beleave that the discovery licence will bring life back to ham radio.	
Xavier Schneider	vk1xav
Comment: I agree with the the discovery license! i feel that we need three levels of licensing. keep up the good work!	