

Report

The Annual Report of the RSGB Examination Standards Committee

November 2022

This report covers the operation of the Amateur Radio Examinations during the calendar year 2021. The ESC meeting held on the 2 April 2022 at the Civil Service Club in London reviewed the reports from the various officers and sub-groups and considered a number of matters including updating the syllabus to include EMF matters and Direct to Full. On the basis of the reports received, it is concluded that as at 31 December 2021, the Amateur Radio Examinations are/were fit for purpose for the issue of UK amateur radio licences.

In 2021 the RSGB Examinations Department (ED) and the Examinations and Syllabus Review Group (ESRG), overseen by the Examinations Standards Committee have continued their main task of operating the amateur radio examinations process. The total enrolment on all examinations was 16.3% lower than in 2020, and the pass rate down by about 1% compared to 2020. Throughout 2021, covid-19 pandemic control measures were in place across the UK. The RSGB Remotely Invigilated online exams, taken at home, along with distance learning provision by some clubs and organisations allowed candidates to access training and exams during club closures. These circumstances will have inevitably affected the exam figures and so direct comparisons with previous years should be treated with caution.

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1. Introduction

The role of the RSGB Examination Standards Committee (ESC) is to ensure the examinations system is fit for purpose so that licensed radio amateurs can enjoy their hobby legally and safely, without causing interference to the public, and be good citizens on-air. In addition, that they understand how to get the best out of the hobby at whatever level they choose to operate, and that they have enough knowledge and understanding to progress to higher levels if they wish. The ESC assesses the quality of the examinations and makes sure that it is uniform across the United Kingdom so that everyone reaches the same level of attainment. The ESC also ensures that Full level is broadly aligned with HAREC so that UK amateurs can continue to benefit from reciprocal licensing arrangements.

The annual reports of the Examination Standards Committee are published on the RSGB website, <http://rsgb.org/main/about-us/committees/examination-standards-committee/>. Other relevant documents are also available on this website, including the terms of reference of the Examination Standards Committee and the agreement between Ofcom and the RSGB.

The data and analysis presented in this report covers the examination period 1 January to 31 December 2021.

2. Membership of ESC

The terms of reference and constitution of the committee are set down in the Schedule of Terms between Ofcom and RSGB. The membership of the Examination Standards Committee at the time of writing this report is as follows:

Prof. Tony Kent, G8PBH, Chairman

Paul Chapman, Ofcom

Dr. Donard de Cogan, M0KRK, Examinations & Syllabus Review Group Chairman

Dave Wilson, M0OBW, Examinations Quality Manager & Board Liaison

Nigel Barker, M0HZR, Examinations Standards Manager

Dave Taylor, Wg Cdr Rtd, M0NAV, Air Cadet Organisation

Derek Hughes, G7LFC, Train the Trainers

Steve Thomas, M1ACB, RSGB General Manager, Exam Dept representative

Prof. Hugh Griffiths, G4CNV, University College London

Dr Julian Gannaway, G3YGF

Murray Niman, G6JYB, BAE Systems AI-Labs

3. Assessment of Overall Examination Performance

The committee received reports on the management and performance of the examination processes from the Examinations and Syllabus Review Group (ESRG), the Examination Quality Assurance Manager and Examination Standards Manager (EQAM&ESM), the RSGB Examination Department (ED) and the Air Cadet Organisation (ACO). These reports are summarised in the sections below.

The Examination Standards Committee is satisfied that the Foundation, Intermediate and Full examination syllabuses effective in 2021 were/are suitable for the award of Amateur Radio licenses. Further, the examinations are compatible with the CEPT harmonised arrangements set out in Recommendations T/R 61-01 and T/R 61-02. The committee will continue to review the syllabuses and examinations to ensure compatibility with international and national requirements and to respond to developments relevant to the hobby.

4. Review of the Report from RSGB HQ Examination Department (ED)

4.1 The year in retrospect

Total number of exams administered by the RSGB Examinations Department in 2021 decreased by 16.3% compared to the previous year.

Published timescales for providing papers and results were maintained.

4.2 Exam statistics

Overall, there were total of 706 fewer candidates across all exam levels last year. 784 fewer at Foundation, 118 fewer at Intermediate and 196 more at Full level. However, candidate numbers in 2021 compare favourably with those in 2019, with an increase in Foundation candidates of 38.32%. The pass rate decreased at all levels, but a total of 3056 candidates were successful.

We understand that 57 candidates passed the Air Cadet exam, with 30 requesting a candidate number from the RSGB for Foundation equivalence. Those figures are included in the statistics.

Level	2021				2020		2019	
	Candidates vs 2020	Candidates vs 2019	Candidates	Pass Rate	Candidates	Pass Rate	Candidates	Pass Rate
Foundation	-25.4%	+38.32%	2303	88.7%	3087	90%	1665	83.1%
Intermediate	-13.6%	+0.13%	750	85%	868	87.4%	749	91.3%
Full	+51.9%	-10.31%	574	64.9%	378	68.2%	640	60%
Total			3627		4333		3054	

Table 1 Numbers of candidates registered for the exams at each level for 2021 compared with previous two years.

Generally, the uptake of online exams has dropped. The early winter months were still busy, but once the better weather came, all levels showed a decrease around April and May.

Following the decision to no longer include practical assessments as part of the examination, the requirement for Registered Assessors is now not required.

No international Amateur Radio Exams were administered in 2021. However, online examinations have made it possible for candidates to sit the exam remotely in other countries. During 2021, we are aware of 26 Foundation, 9 Intermediate & 13 Full examinations took place in countries outside the UK. There are others that provided a UK address but were physically sat in another country whilst taking their exam.

4.3 Trends

Looking at the number of exam candidates, top left chart in Figure 1, 2021 saw a decrease in the number of Foundation candidates compared to 2020. This was, perhaps, to be expected as there had been a sharp increase in candidates during the covid-19 lockdowns. However, the 2021 numbers are still significantly above the pre-covid-19 years. The numbers of candidates for Intermediate and Full have returned to near 2019 levels.

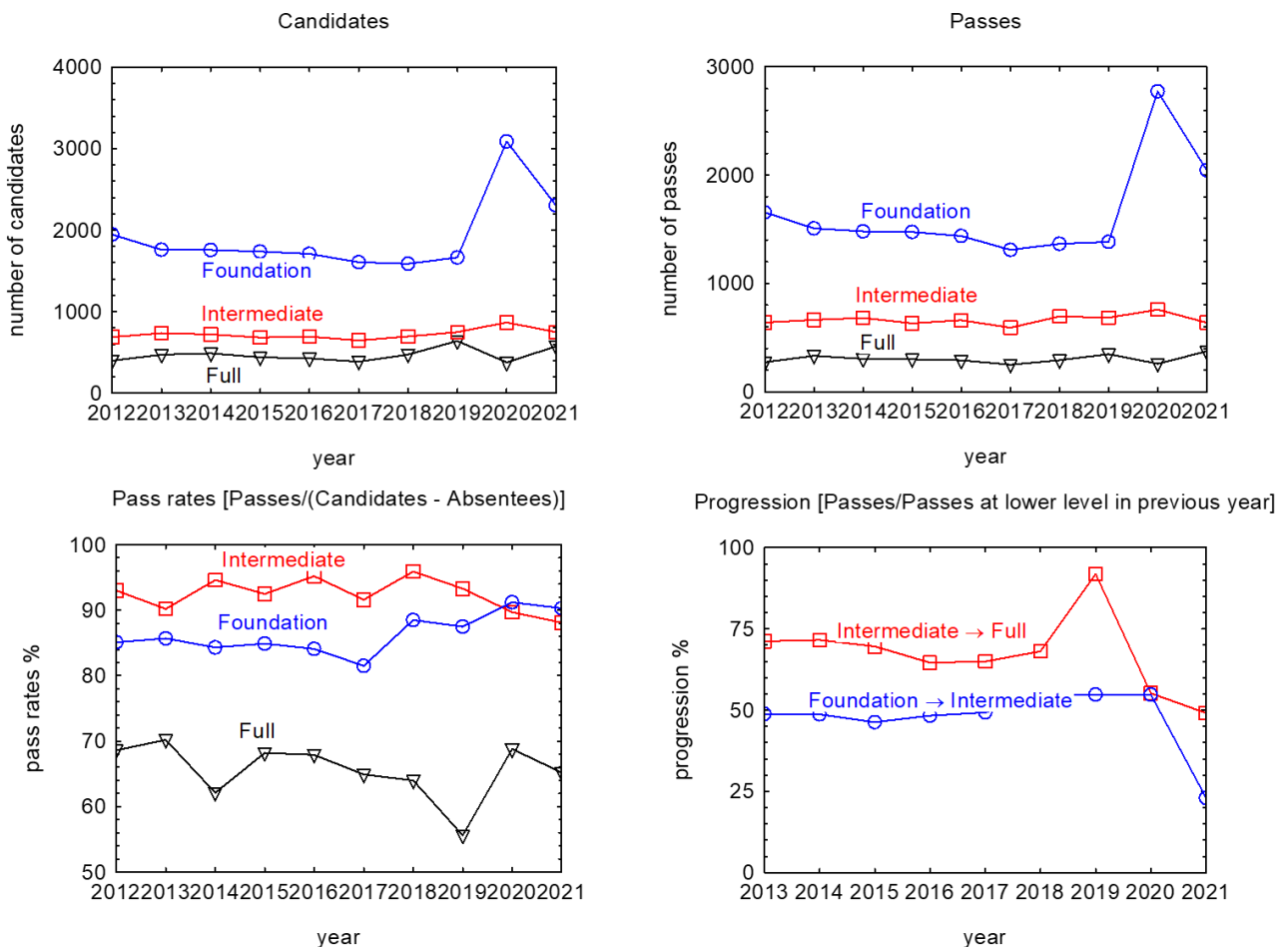


Figure 1 Exam statistics for past 9 years including the latest data from calendar year 2021 (the data presented for 2012 is the average of the 5 years to 2012)

Numbers of passes and pass rates are shown in the top right and bottom left charts in Figure 1, respectively. The data for pass rates excludes candidates that enrolled but did not sit the exam (which explains the small differences with Table 1). The progression rates shown in the bottom right chart in Figure 1, are calculated as the ratio of the number of passes at the higher level to the number of passes at the lower level in the previous year (it is understood that some candidates

pass both levels in the same year and some take a lot longer to progress, but it has been difficult to keep track of individual candidates, and the method used still provides a useful indication of progression). The progression from Intermediate to Full appears to be levelling off after the sharp fall in 2020, but is still lower than in 2019. The sharp drop in the progression from Foundation to Intermediate may be the combined effect of the strong increase in Foundation passes in 2020 and individuals returning to their normal work and leisure activities as the covid-19 restrictions were ended.

This is the second full year of statistics following the implementation of the new syllabus in September 2019. The two years, 2020 and 2021 were both affected by covid-19 measures, which means comparison with previous years should still be treated with some caution. There have also been other major changes to the exams: removal of practical assessments and introduction of remote invigilated exams, which are likely to have had an impact on numbers. However, compared to 2018, the last full year prior to the introduction of syllabus 2019, we see: (1) the pass rate is increased for Foundation, so it appears the adoption of the new syllabus did not raise the entry bar; (2) the pass rate is reduced at Intermediate, reflecting the movement of some material from Full to Intermediate, which took place in the syllabus review; (3) the pass rate at full is slightly increased, which could suggest candidates are better prepared after passing intermediate.

5. Review of the Report from the Examinations and Syllabus Review Group Chair

Throughout 2021 the Examinations and Syllabus Review Group (ESRG) held two 1-hour Zoom meetings per week. Although these regular meetings have allowed the group to get through a considerable volume of work, it has meant that the social cohesion of the Group is not as strong as it should be and it is hoped to return to having some face-to-face meetings soon.

During 2020/2021 the major effort of the group was taken up with the preparation of the Direct-to-Full (D2F) syllabus including analysis of the consultation with the RSGB membership. The response was so great that for quite some time the members of ESRG felt daunted as they attempted to digest the advice that was being offered. There was an overwhelming majority of respondents who were in favour with what the Group was doing and how they were doing it. The issues were with the outliers, with almost equal numbers, believing that the syllabus content was not tough enough or was too high a barrier. While digesting the responses to the questionnaire the Group worked hard on the addition of questions to the bank, so that there was never any 'down-time'.

The Group also had to respond to criticisms about the mock examinations which were on the RSGB website for which they felt they were being held responsible, even though historically it had not been part of the Group's purview. With the agreement of the ESC, questions were drawn from the banks for the three levels and these have now replaced those that had been there for some time.

One thing that has kept ESRG busy has been the external changes that have been made to rules and definitions (e.g. maritime mobile and IET wiring regulations) and they have had to work hard to ensure that the ripples emanating from these changes are reflected in both syllabus and examination content.

Perhaps the major example of this has been the consequences of the rule changes relating to electromagnetic fields (EMF). This has necessitated the preparation of a new syllabus (v1.5) which meant that the momentum that was maintained with the development of the D2F syllabus was lost. Views were sought from professionals and these along with comments from other interested parties were incorporated and the pre-publication syllabus, along with a change document was passed to ESC for approval. It should be stressed that with the exception of the EMF components the syllabus was identical to v1.4 in terms of learning points, although the opportunity to undertake some editorial improvements was taken. After the first pass ESC made some additional comments which were accepted and incorporated and the final version of v1.5 has been published and becomes examinable in September 2022. The Group's ongoing task in this area is to prepare and add to the banks appropriate EMF-related questions that reflect these changes.

As 2021 drew to a close the Group turned its attention back to the D2F syllabus. The Group finished the first iteration and will now return to it, taking account of the consultation comments. Once we have done this the draft syllabus will be passed to ESC for their comments.

During 2021 ESRG has considered twelve cases of issues relating to examinations. Of these five were either direct or indirect queries, meaning issues that were either raised by an invigilator or by EQAM. There were a total of seven Challenges of which one was upheld and action taken. The others might not have arisen if candidates had had access to clubs/tutors, as they were very much of the form "I have failed my examination for the n-th time and want to challenge this" Analysis of the examination performance of these candidates generally indicated lack of appropriate preparation. These views were conveyed in a sympathetic and encouraging tone in the Chair's follow-up letters.

The current situation regarding the question population in the exam question banks is shown in Table 2.

Syllabus	Status	Foundation	Intermediate	Full
v1.4	in bank	1229	1314	1106
	minimum	406	715	1148
	short	3	42	301
v1.5	in bank	1245	1344	1214
	minimum	413	715	980
	short	9	38	120

Table 2. Population of Exam question banks. Note: the minimum assumes each syllabus item holds just sufficient questions. In reality some are well over the minimum and others are short.

During 2021 9 Foundation, 31 intermediate and 94 Full questions were created, vetted and added to the bank.

Finally, we must note our indebtedness to all members of the ESRG, without whose efforts the examinations system could not work. It has not been easy for the Group to maintain this momentum during/after lock-down and for some, external factors have made things even more difficult. A considerable amount of work has been done and much achieved during this period.

However, this must be tempered with caution: the number of active ESRG members has been reducing, and the addition of new members to share this load during the next few years is imperative.

6 Review of the Report from the Examination Quality Assurance Manager (EQAM) & Examinations Standards Manager (ESM)

6.1 Examination results 2021

Number of candidates – refer to 2021 Examination Department Report

After the huge increase in candidate numbers during 2020, not unexpectedly, the 2021 numbers reduced somewhat, down to a grand total of 3,627 (4,333).

Pass Rate – refer to 2021 Examination Department Report

Overall the pass rates reduced slightly with Foundation dropping some 1.3%, down to 88.7%, Intermediate down 2.2% to 85.2% and Full dropping 3.3% to 65%.

6.2 Examination breakdown 2021

The 3 charts below show the distributions of the marks achieved by candidates taking the examinations in 2021:

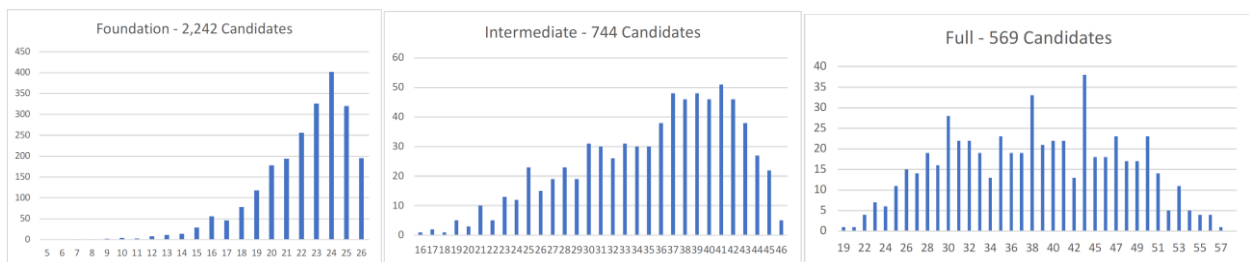


Figure 2. Marks distributions for the three levels

The broad distribution of marks for Full could be indication that some candidates are attempting the exam before they are fully prepared.

The breakdown by region, Table 3, shows a good spread of candidates across the UK:

Month	Foundation														Grand Total	Month	Intermediate														Grand Total	Month	Full														Grand Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14			1	2	3	4	5	6	7	8	9	10	11	12	13	14			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Jan-21	12	7	42	30	23	5	9	5	32	42	16	19	18	3	263	Jan-21	9	2	14	14	11	2	2	5	10	14	7	6	9	105	Jan-21	5	4	4	10	9	6	1	3	7	6	5	6	2	1	63	
Feb-21	7	7	33	34	30	4	10	10	24	46	27	26	29	1	288	Feb-21	4	8	9	6	11	5	5	2	14	8	8	9	10	99	Feb-21	3	4	6	10	7	1	1	9	11	1	11	2	1	67		
Mar-21	9	12	39	34	27	6	18	12	39	48	27	26	15	5	315	Mar-21	5	5	16	10	23	5	2	4	13	17	9	11	5	1	126	Mar-21	5	1	8	6	3	2	1	3	7	4	12	2	1	54	
Apr-21	12	15	30	17	26	2	12	7	27	36	18	22	24	4	252	Apr-21	4	2	12	9	9	2	1	1	12	7	8	7	1	83	Apr-21	2	1	7	5	4	2	1	7	11	5	3	1	48			
May-21	9	8	23	18	23	4	5	13	15	26	23	15	9	1	192	May-21	2	6	7	5	6	1	1	2	20	10	5	3	6	2	76	May-21	4	7	8	4	1	1	8	10	3	5	1	2	53		
Jun-21	5	6	17	13	23	2	6	3	18	24	15	13	11	1	156	Jun-21	4	4	6	3	4	1	3	3	2	9	7	6	1	1	54	Jun-21	1	4	7	8	5	1	2	6	14	3	11	4	2	61	
Jul-21	2	7	18	15	18	3	5	5	16	16	12	12	9	2	140	Jul-21	2	2	5	4	1	1	2	20	10	5	3	6	2	46	Jul-21	2	4	15	7	12	2	2	3	13	11	7	5	3	85		
Aug-21	1	1	17	9	7	1	5	2	19	25	7	11	8	3	116	Aug-21	1	1	1	7	1	2	1	3	4	3	5	2	1	30	Aug-21	1	3	4	3	2	1	3	6	2	4	1	3	32			
Sep-21	5	4	18	11	12	1	7	5	9	16	6	14	10	1	119	Sep-21	5	2	5	6	1	1	3	7	4	3	3	1	37	Sep-21	1	4	3	1	1	1	3	5	1	1	19						
Oct-21	10	5	19	21	6	5	7	4	19	15	5	16	7	2	141	Oct-21	1	1	1	4	4	1	1	5	2	3	3	5	28	Oct-21	1	2	3	1	2	1	1	1	3	4	5	2	2	28			
Nov-21	5	6	12	14	16	3	5	2	18	21	14	18	13	2	149	Nov-21	2	2	2	7	3	1	3	3	2	1	3	29	Nov-21	3	3	1	2	1	1	2	1	2	1	2	6	1					
Dec-21	2	4	5	11	12	7	3	3	13	23	12	10	7	2	111	Dec-21	3	1	4	5	1	1	3	1	5	2	3	2	1	31	Dec-21	1	1	3	3	4	1	2	1	5	6	2	7	36			
Grand Total	79	82	273	227	223	36	94	71	249	338	182	202	160	26	2242	Grand Total	37	37	76	78	83	17	17	23	92	99	60	66	50	9	744	Grand Total	21	21	68	68	53	11	10	12	67	91	39	76	19	13	569

Table 3. Candidate numbers by region

The age and gender statistics in table 4 show that in 2021 the 40 – 59 age range accounted for just over 55% (53% in 2020) of candidates taking the examinations. The number of youngsters taking

the examinations, 139, dropped in 2021 compared with 2020 (268). The % female to male candidates remains disappointingly poor at less than 4%. Of the 2,242 candidates taking the Foundation exam in 2021 only 102 were female (4.5%), with 13 out of 744 (1.7%) at Intermediate and only 13 out of 569 (2.3%) at Full.

Age	Total		Male		Female	
0-9	2	0.1%	2	0.1%	0	0.0%
10-14	51	1.4%	39	1.1%	12	9.4%
15-19	86	2.4%	80	2.3%	6	4.7%
	139	3.9%	121	3.5%	18	14.1%
20-29	226	6.4%	212	6.2%	14	10.9%
30-39	535	15.0%	513	15.0%	22	17.2%
40-49	769	21.6%	727	21.2%	42	32.8%
50-59	1192	33.5%	1171	34.2%	21	16.4%
60-69	526	14.8%	518	15.1%	8	6.3%
70-79	159	4.5%	156	4.6%	3	2.3%
80+	9	0.3%	9	0.3%	0	0.0%
	3555		3427		128	
	Foundation	Intermediate	Full			
	2242	744	569			

Table 4. Candidate age and gender

6.3 Challenges & Appeals

Once again, no challenges were received in respect of the manner in which examinations were run i.e. using remote invigilation – on the contrary many candidates praised the RSGB for the way they'd made examinations available etc. However, there were a very small number of candidates who for reasons outside their and the RSGB's control had technical issues, the temporary loss of an internet connection being the most common. The vast majority of those were resolved at the time i.e. the internet connection returned and invigilators were able to resume the examination. Where the internet connection didn't re-connect in a timely manner, candidates were offered a free re-sit at a time to suit them.

A small number of "informal" challenges were received in respect of examination questions, with no appeals as to the outcome of those challenges.

6.4 Progression

As mentioned in Section 4.3, the traditional method of monitoring progression, while giving an indication is less than ideal. In 2020 monitoring progression by actually tracking candidates was trialled and this was continued in 2021.

In 2021 a total of 293 new Foundation candidates (ie they took their Foundation examination in 2021) sat and passed the Intermediate examination in 2021. This represents approximately 39.4% of candidates taking the Intermediate examination.

In a similar way of those 293 a total of 97 new Foundation candidates (ie. they took their Foundation examination in 2021) sat and passed both the Intermediate and Full examinations in 2021. This represents some 17% of all Full level candidates taking the examination.

A total of 98 Intermediate candidates took the Full examination in 2021 – these had all taken their Foundation examination in 2020 ie. using remote invigilation.

6.5 Inspections

As part of the remote invigilation process all online examinations are recorded in case of challenges etc. with recordings being deleted after 5 working days. At its peak in 2020 a team of 35 remote invigilators were invigilating over 500 examination sessions per month. In 2021 a team of 27 remote invigilators invigilated on average 300 exam sessions per month. As in 2020 at least 5 recordings per week are reviewed. In mitigation unlike the situation were invigilators in clubs often have a connection with candidates, remote invigilators have no previous connection with candidates other than on the prep call which takes place a few days prior to the examination taking place. Additionally, each candidate taking an online examination has a different set of questions.

6.5 In person club examinations

As restrictions began to be lifted it was recognised that some clubs were looking to resume face to face examinations in club premises. In October 2021 the examinations department announced that from the 6th October clubs would be able to resume face to face online examinations and from 1st November clubs were able to resume paper-based examinations.

The take up in 2021 was quite slow with a total of 18 exam sessions being booked, 13 of those sessions were for paper-based examinations and 5 were for examinations taken online. The breakdown of those exam sessions was as follows :-

43 candidates in total – 37 candidates took a paper-based examination, 6 took an online examination.

4 of the 18 examination sessions were inspected

13 of the 18 sessions were for Foundation examinations, 3 for Intermediate and 2 for Full examinations.

27 candidates were successful, 13 were unsuccessful and there were 3 no-shows.

7. Review of the Report from the Royal Air Force Air Cadets (RAFAC)

7.1 General

1. Once again RAFAC was restricted by Covid Regulations for the majority of 2021 hence no Foundation Training was completed for early part of the year until October, leading to this short report.
2. Some operator training had continued using Channel D, the RAFAC Voice over IP simulator and using TEAMS for remote learning however I was still loathe to allow Cadets to have NO On-Air Training during the course, a view supported by the RAFAC training team also. Any peculiarities in operating live would have brought comments from the Amateur Fraternity about poor standards amongst Cadets and I was not going to allow that to happen.

7.2 2021 Results

- Staff recommenced registering cadets for courses and hence exams in September 2021. Overall, 92 cadets were registered on the system.
 - 80 Cadets took the exam.
 - 57 candidates passed first time pass rate, (67.06%) a factor borne out by other cadet face to face training whilst cadets got used to being back into the system. 39 cadets identifying as male and 18 cadets identifying as female passed. One has to be very careful in this day and age about identifying genders.
 - There were no retakes due to RAFAC cadets being reluctant to return for further training and possible Covid exposure, heavily influenced by parental attitudes.
 - 16 complete fails therefore.
 - 1 course was cancelled – due to local Covid restrictions in force. This resulted in a further 12 exams not being taken.
 - Not enough exams were available to analyse any trends.
1. Overall, the average pass mark was lower than previous years at 76.00%.
 2. RAFAC is now returning to face-to-face training, and this has already prompted 7 courses each of 12 Cadets. The Army Cadet Force are still negotiating to restart Foundation Training for their Cadets (due to hierarchy change bringing syllabus changes) and in Scotland the Sea Cadets are joining in, on RAFAC courses.

7.3 Inspections & Irregularities

No Irregularities have been reported, 2 exams were moderated at RAF Halton and Leuchars in Dec 2021.

8. Conclusions

As in 2020, operation of the exams in 2021 was also affected by the public health measures to control covid-19. However, due to the efforts of RSGB Tutors, RAFAC Trainers, RSGB Remote Invigilators, the RSGB Examinations Department and the Examinations and Syllabus Review Group, 2045 candidates demonstrated that they had achieved the standard for a Foundation license in 2021. The number of candidates successfully progressing all the way to meet the standards for a Full license in 2021 was 373.

All the reports that were presented at the April 2021 meeting and summarised in Sections 4 – 7, above, were discussed and accepted by the Examinations Standards Committee. Overall standards were maintained in 2021 despite the difficult circumstances presented by the covid-19 pandemic and the amateur radio examinations continue to be fit for purpose.

9. Other Matters Considered at the September 2021 ESC Meeting

Although not directly relevant to the performance of the examinations system in 2021, other matters were considered by the Examinations Standards Committee in 2022:

1. **Direct to Full (D2F):** Part 1 to combine operating and licensing, but the pass mark should be set so candidates have to get at least 50% in licensing. Target Jan 23 for examining following the setting up of D2F question bank and vetting.
2. **EMF:** focus of the exams should be on understanding the compliance requirements (Ofcom requirement)
3. **Paper exams:** As these are to be phased out for all except special needs candidates, there will be a broad and sympathetic interpretation of “special needs”. Ofcom suggestion to track passes of those who declare special needs.