
RTTY Contesting
High-Rate Efficient Operating

Presentation Goals

- Describe operating details
- Increase competition
  - Participation
  - Skill
- Adapt ideas for other modes

RTTY Contesting History

- 2004 RU Pacific Division SOHP plaque
- P49X SOHP World Records
  - 2006 RU by 19%
  - 2007 RU by 24%
  - 2007 WPX by 38%
- Mar 2007 NA Sprint win
- Mediocre results: 2005 RU, Sprints, NAQPs
- Future: 2007 CQWW RTTY M2 @ HC8N

My RTTY Contesting Objectives

- Fun
- Maximize score
- Minimize fatigue
  - Reserve for unknowns

Synergistic Objectives

Planning & Preparation

Specific Contest

- Contest rules
- Prior results
- Propagation forecast
- Band plan
- Preparation
- Strategy
- Tactics

Contesting in General

- Station design
- Skills
- Strategies
- Tactics

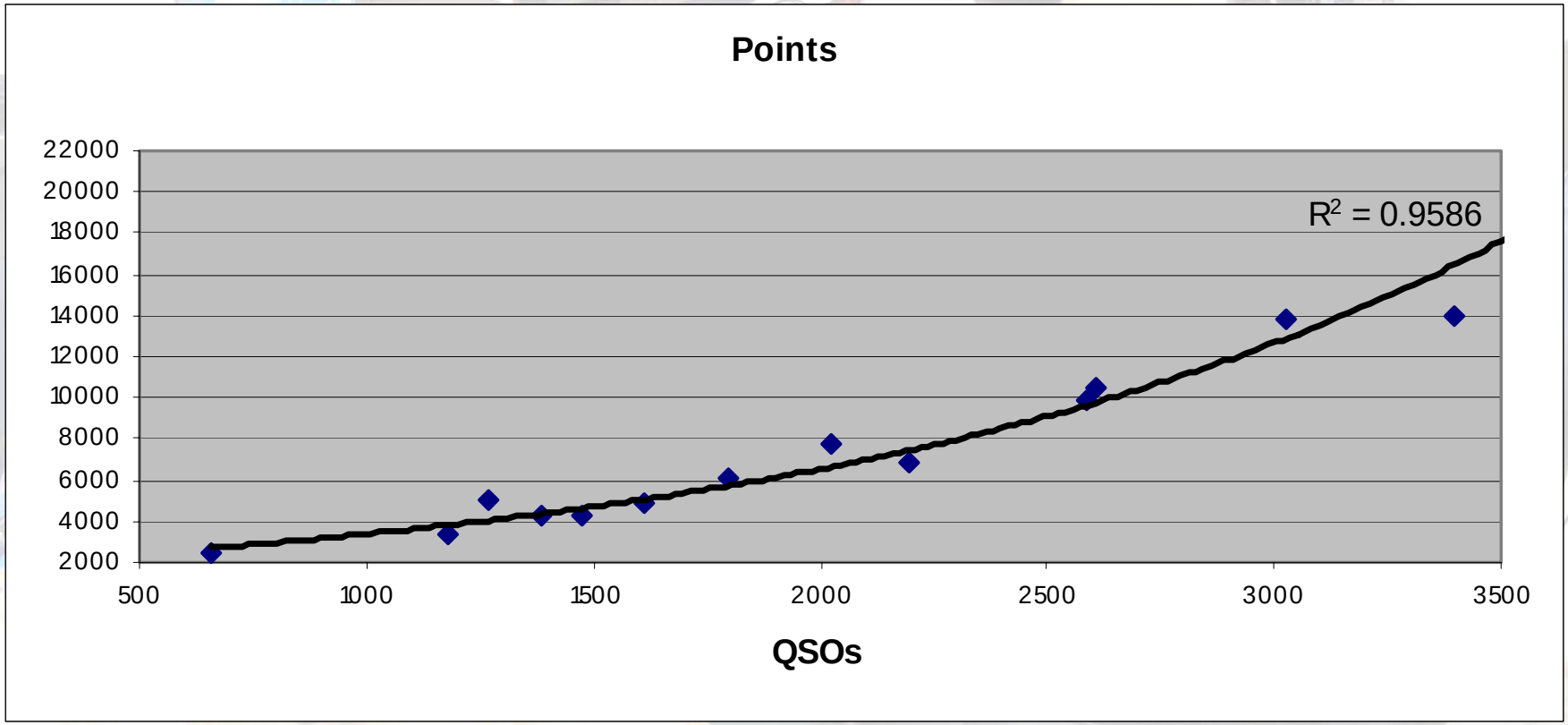
Contest Rules

- ARRL RTTY Round-Up & CQWW WPX RTTY
  - Mults once; multi-band contacts
  - Select off-times
  - CQWW WPX RTTY only:
    - Packet
    - Low-band points
- NCJ NA Sprint RTTY
  - Legal dupes → increases arrival rate
  - Forced QSY

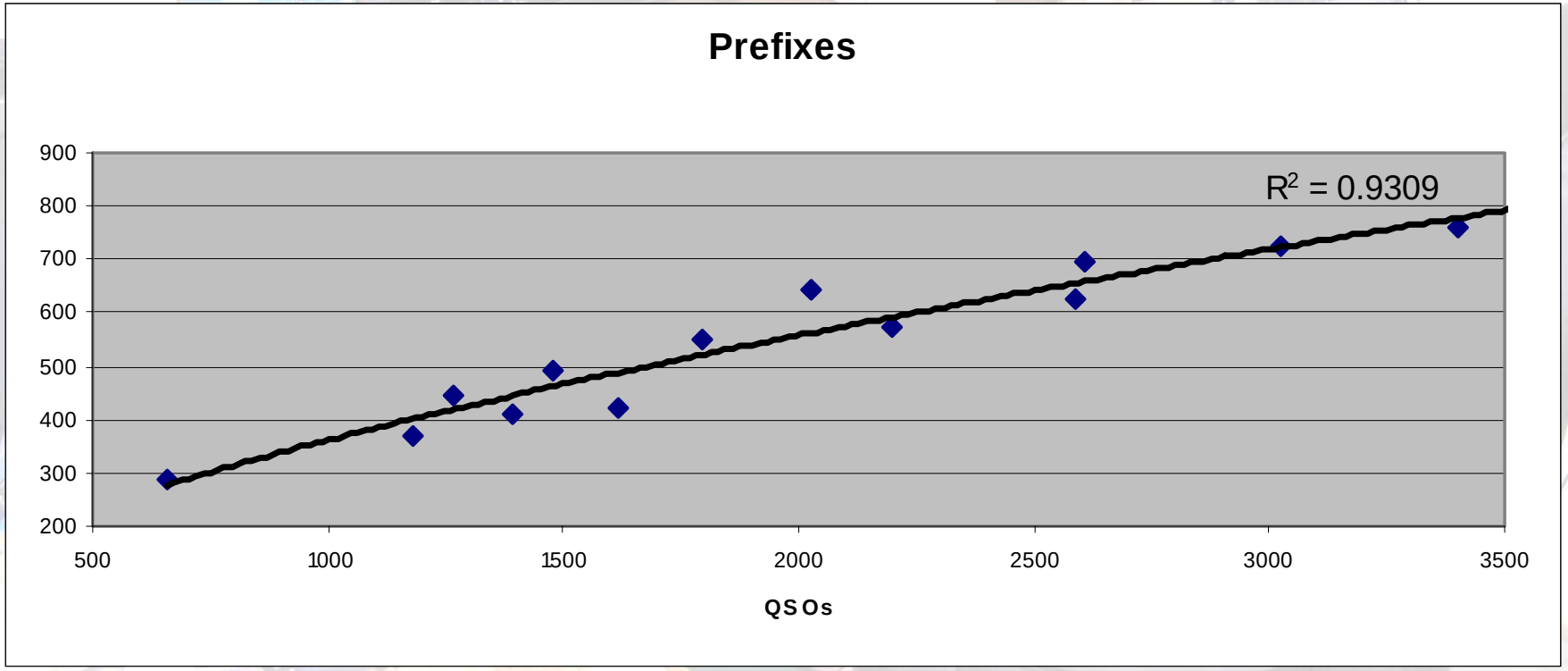
WPX RTTY SOHP Winners

Year	Call Sign	QSOs	Points	Ratio	Pref	Ratio	Score	
2007	**P49X**	**3023**	**13806**	**4.6**	**723**	**0.24**	**9,981,738**	**actual**
2007	**P49X**	**3400**	**14000**	**4.1**	**760**	**0.22**	**10,640,000**	**goal**
2006	P40G	2609	10422	4.0	696	**0.27**	7,253,712	
2005	9Y4W	2026	7710	3.8	644	**0.32**	4,965,240	
2004	P40G	2585	9889	3.8	626	**0.24**	6,190,514	
2003	HP1/DJ7AA	2195	6859	3.1	574	**0.26**	3,937,066	
2002	K4GMH	1476	4260	2.9	491	**0.33**	2,091,660	
2001	P43P	1798	6076	3.4	552	**0.31**	3,353,952	
2000	CT3BX	1268	4994	3.9	445	**0.35**	2,222,330	
1999	KF3P	1614	4946	3.1	423	**0.26**	2,092,158	
1998	K3MM	1389	4234	3.0	408	**0.29**	1,727,472	
1997	K3MM	1183	3430	2.9	371	**0.31**	1,272,530	
1996	XQ8ABF	660	2467	3.7	289	**0.44**	712,963	

Points vs. QSOs



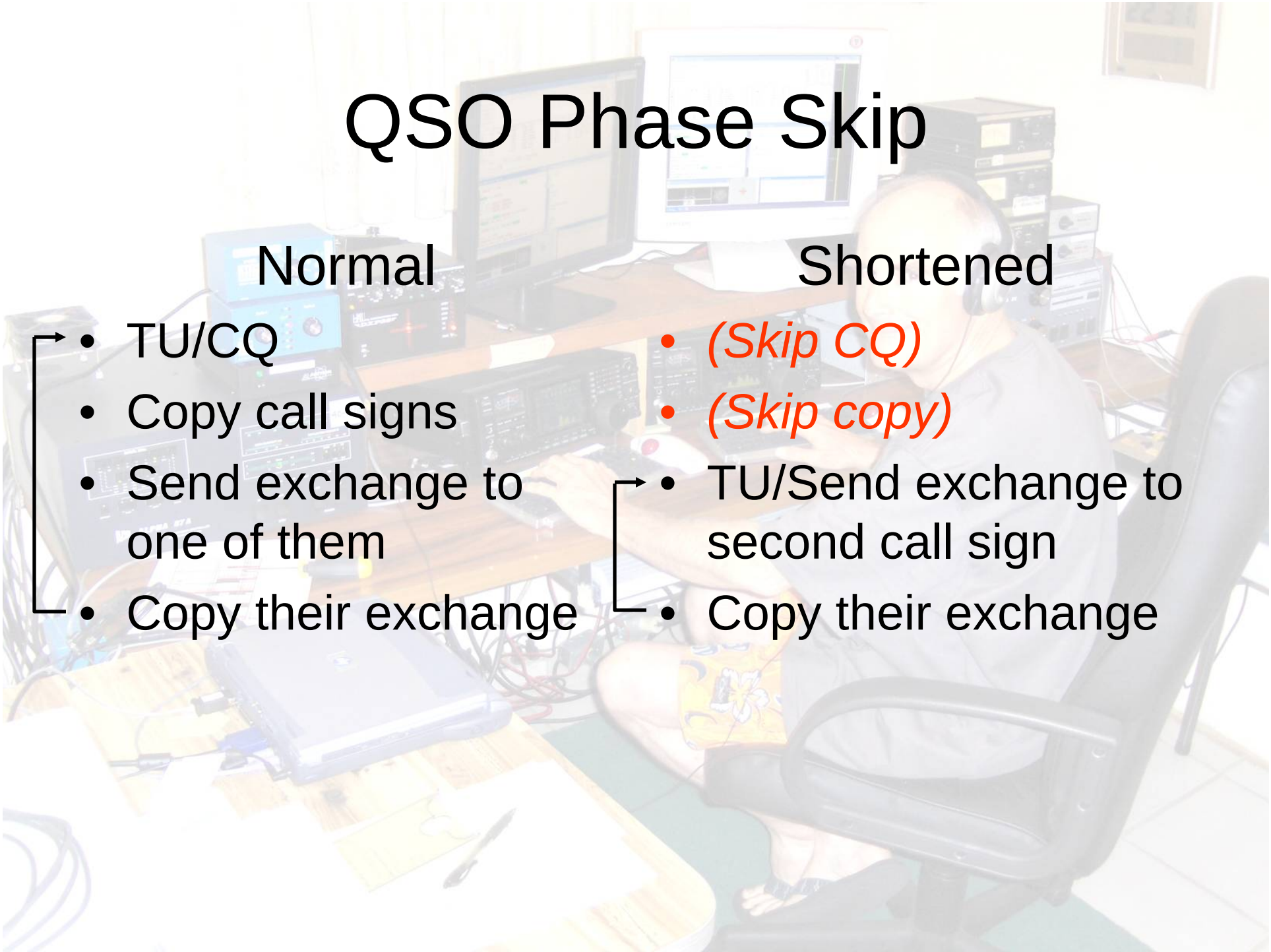
Prefixes vs. QSOs



Optimizing Rate

- Arrival rate
  - Strong signal to/from population centers
  - Sought after (contest mult or rare entity)
  - High contest participation
  - “Self-spot” other radio
- Service rate
  - Quickly grab call signs from pile-up
  - Short exchanges
  - QSO phase skips
  - 100% transmit SO2R

QSO Phase Skip



Normal

- TU/CQ
- Copy call signs
- Send exchange to one of them
- Copy their exchange

Shortened

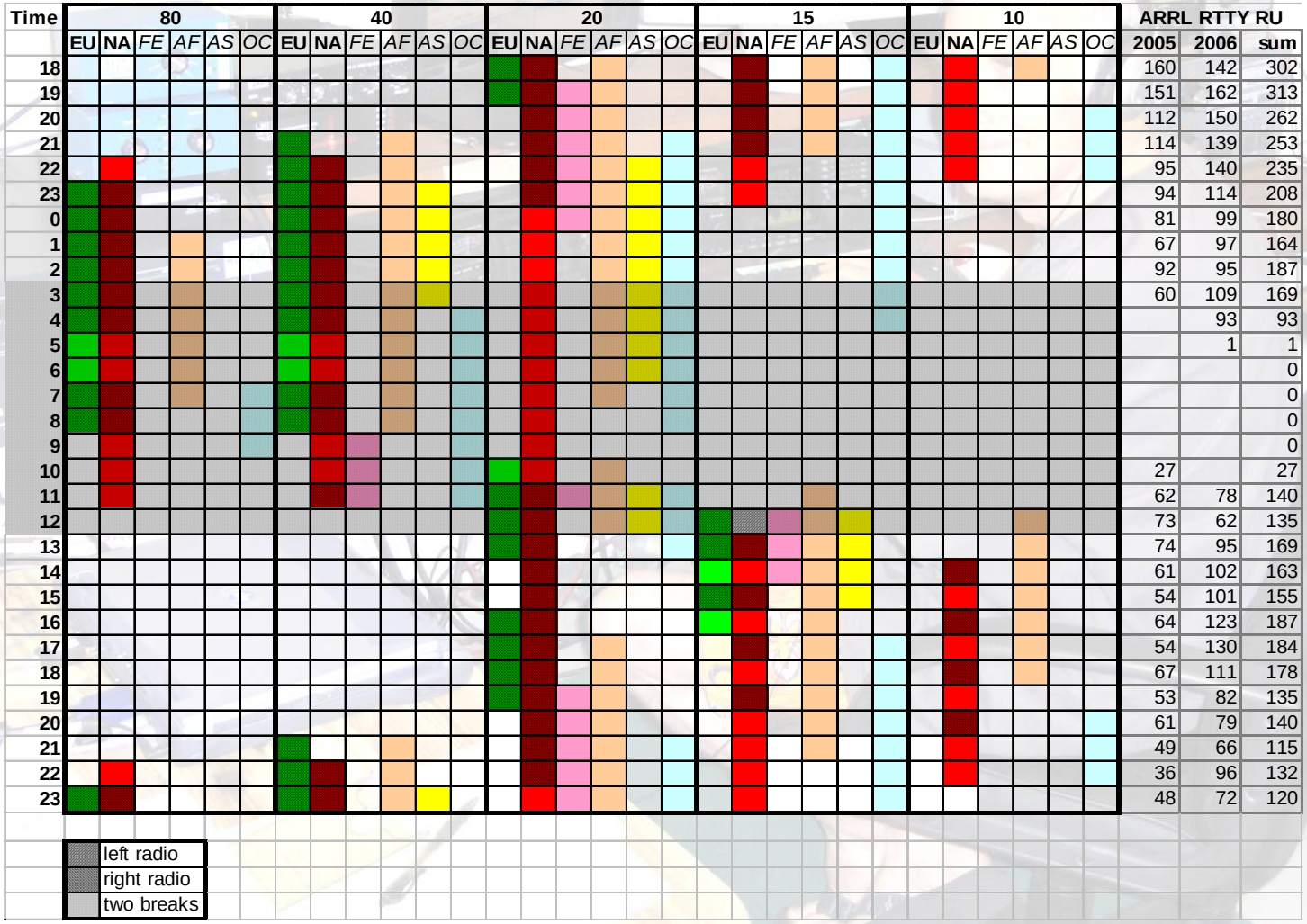
- *(Skip CQ)*
- *(Skip copy)*
- TU/Send exchange to second call sign
- Copy their exchange

ARRL Antenna Handbook CD

Jan., Neth. Antilles, for SSN = Very Low, Sigs in S-Units. By N6BV, ARRL.

	80 Meters							40 Meters							20 Meters							15 Meters							10 Meters							
UTC	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	UTC
0	9	-	9+	8	8	-	9+	9+	5	9+	9+	9	1	9+	6	8	9+	8	9	9	9+	-	-	9+	1	-	8	-	-	-	6	-	-	-	-	0
1	9	-	9+	9	8	-	9+	9+	2	9+	9+	9	4	9+	6	6	9+	4	8	8	9	-	-	8	-	-	6	-	-	-	6	-	-	-	-	1
2	9	-	9+	9	6	-	9+	9+	-	9+	9+	9	8	9+	7	3	9+	9	5	9	9	-	-	6	-	-	4	-	-	-	5	-	-	-	-	2
3	9	-	9+	9	6	5	9+	9+	-	9+	9+	9	9	9+	3	3	9+	8	7	9	9+	-	-	6	-	-	3	-	-	-	5	-	-	-	-	3
4	9	-	9+	9	-	8	9+	9+	1	9+	9+	8	9	9+	8	3	9+	8	7	9	9+	-	-	6	-	-	2	-	-	-	5	-	-	-	-	4
5	9	-	9+	9	-	8	9+	9+	4	9+	9+	7	9+	9+	1	7	9	9	9	9	9+	-	-	6	-	1	1	-	-	-	5	-	-	-	-	5
6	9	-	9+	9	-	9	9+	9	7	9+	9	4	9+	9+	-	8	9	9	9	9	9+	-	-	6	-	1	-	1	-	-	6	-	-	-	-	6
7	9	-	9+	9	-	9	9+	9	8	9+	9	4	9+	9+	6	8	9	9	9	8	9+	-	-	6	-	-	-	4	-	-	6	-	-	-	-	7
8	9	6	9+	8	-	9	9+	9	8	9+	9	7	9+	9+	7	6	9	4	8	9	9+	-	-	6	-	-	-	4	-	-	6	-	-	-	-	8
9	4	6	9+	4	-	9	9+	8	9	9+	8	7	9+	9+	7	5	9	5	8	8	9+	-	-	6	-	-	-	1	-	-	6	-	-	-	-	9
10	1	6	9+	-	-	8	9+	8	9	9+	7	7	9+	9+	8	6	9	9+	8	8	9	-	1	6	-	1	-	-	-	-	6	-	-	-	-	10
11	-	1	9+	-	-	8	9+	4	8	9+	2	6	9	9+	9+	9	9+	9+	9	9	9+	5	3	6	9	6	-	-	-	-	5	1	-	-	-	11
12	-	-	9+	-	-	5	9	1	8	9+	-	6	8	9+	9	9	9+	9	9	9+	9+	9	9	7	9	9	4*	2	-	-	5	8	2	-	-	12
13	-	-	9+	-	-	-	4	-	1	9+	-	-	7	9	9	8	9+	7	7	8	9+	9	9+	9	9+	9	-	9+	1	3	5	8	1	-	-	13
14	-	-	9+	-	-	-	-	-	-	9+	-	-	6	8	8	7	9+	6	6	6	9+	9	8	9+	9	9	4*	9	-	-	5	8	-	-	6	14
15	-	-	9+	-	-	-	-	-	-	9+	-	-	2	2	8	3	9+	8	5	-	9+	9	5	9+	9	6	-	9+	-	-	5	7	-	-	8	15
16	-	-	9+	-	-	-	-	-	-	9+	-	-	-	1	8	1	9+	8	7	8	9+	9	4	9	9	-	-	8	-	-	5	6	-	-	8	16
17	-	-	9+	-	-	-	-	-	-	9+	-	-	-	1	9	6	9+	9	6	8	9+	6	1	7	9	-	8	9	-	-	5	6	-	-	8	17
18	-	-	9+	-	-	-	-	2	-	9+	-	-	-	4	9	4	9+	9	2	6	9+	-	-	8	9	-	9	9	-	-	5	8	-	4	7	18
19	-	-	9+	-	-	-	-	5	-	9+	4	-	-	6	9	2	9+	9	3	4	9+	-	-	9	9	-	9	9	-	-	5	9	-	5	6	19
20	-	-	9+	-	-	-	1	8	-	9+	7	-	-	9	7	6	9+	9+	5	4	9+	-	-	9+	9+	-	9	9+	-	-	5	1	-	6	8	20
21	4	-	9+	1	-	-	7	9	1	9+	9	8	1*	9+	7	9	9+	9+	7	9	9+	-	-	9+	9	-	9	9+	-	-	5	-	-	7	8	21
22	8	-	9+	6	1	-	9	9	6	9+	9+	8	1	9+	7	9	9+	9+	9	8	9+	-	1	9+	8	-	9	9	-	-	5	-	-	8	4	22
23	9	-	9+	8	6	-	9+	9+	6	9+	9+	9	-	9+	7	9+	9+	9+	8	9	9+	-	3	9+	8	-	9	9	-	-	6	-	-	5	-	23
	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	

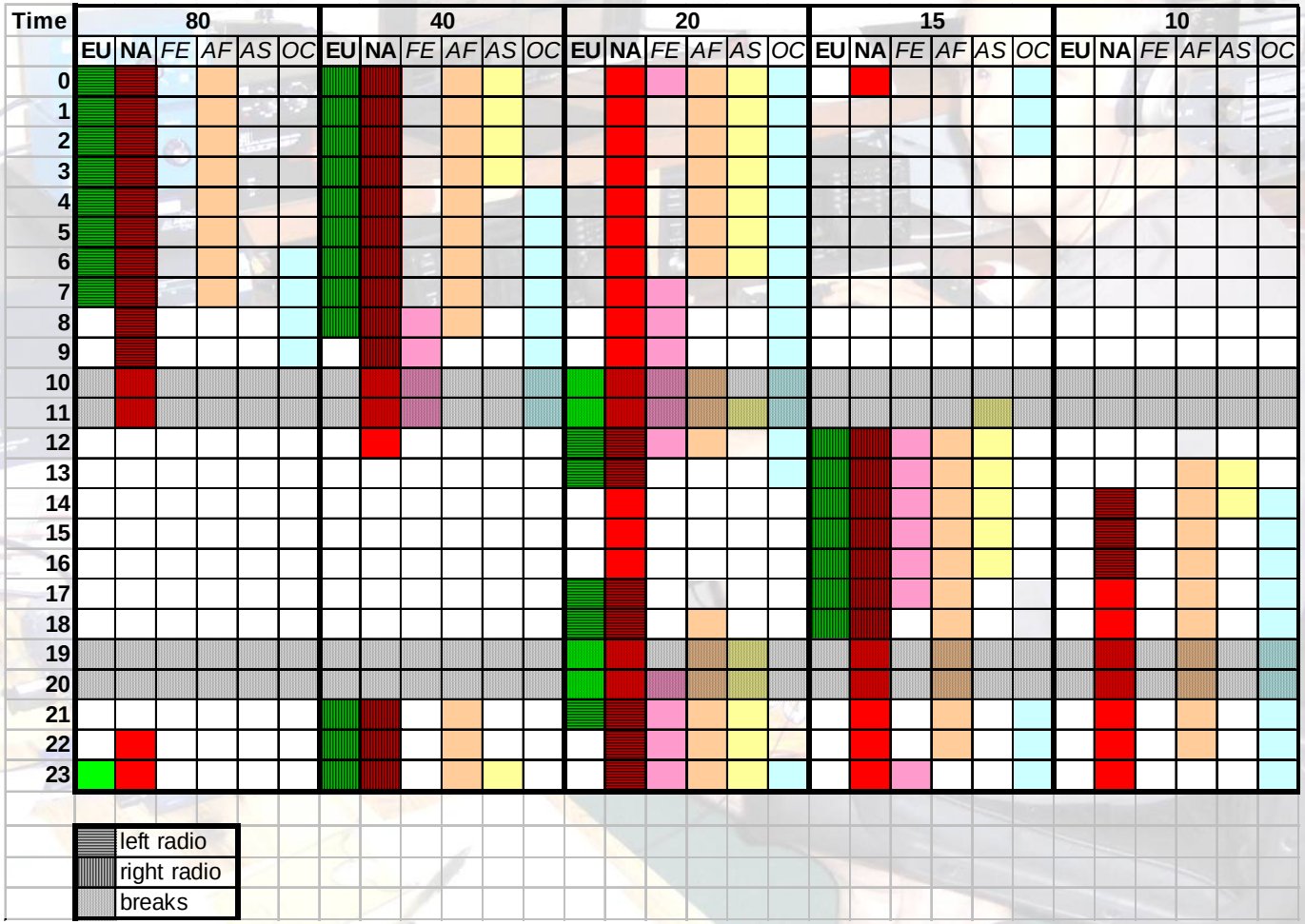
Band Plan – 2007 ARRL RU

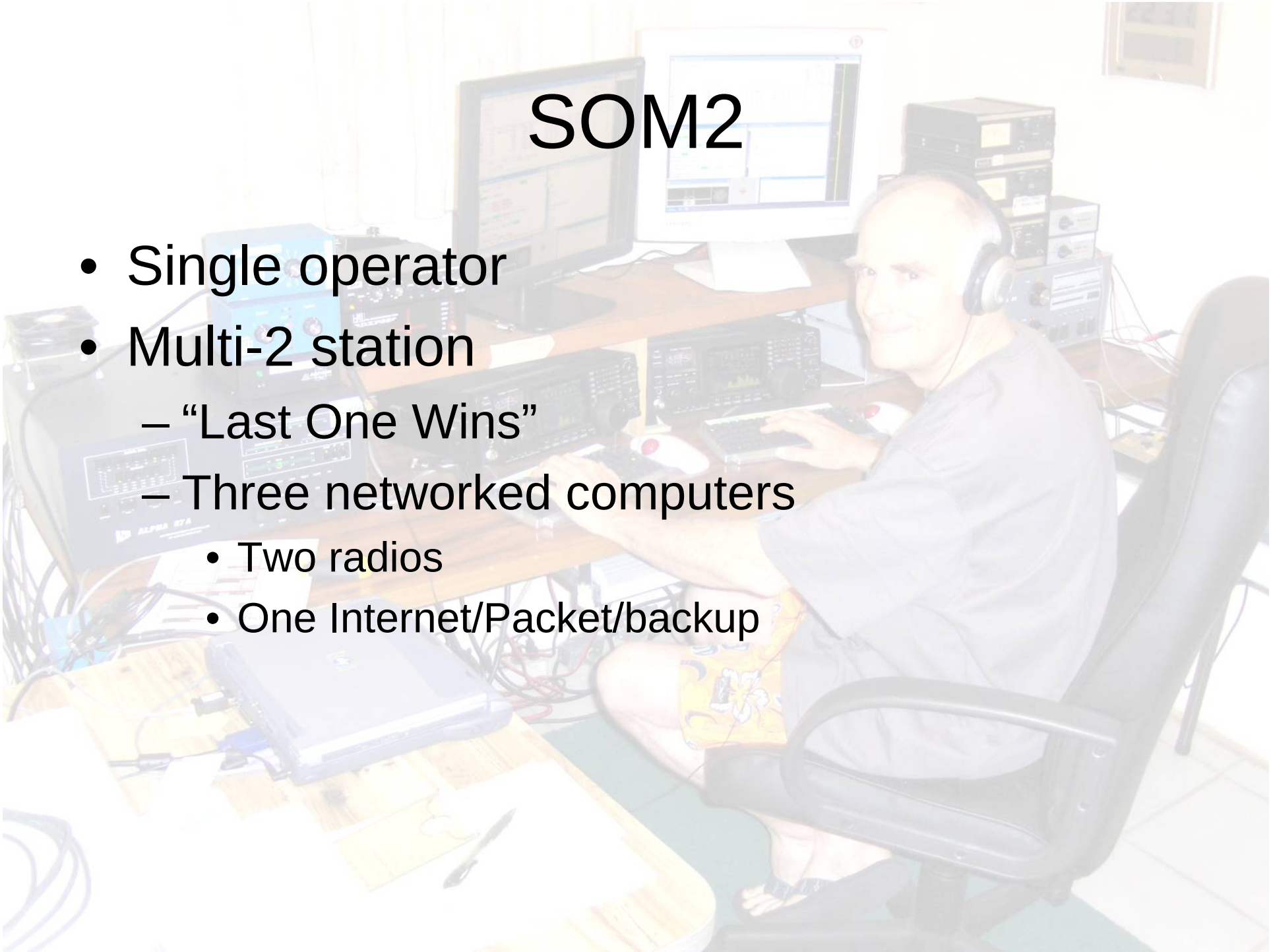


Time	80						40						20						15						10						ARRL RTTY RU		
	EU	NA	FE	AF	AS	OC	EU	NA	FE	AF	AS	OC	EU	NA	FE	AF	AS	OC	EU	NA	FE	AF	AS	OC	EU	NA	FE	AF	AS	OC	2005	2006	sum
18																															160	142	302
19																															151	162	313
20																															112	150	262
21																															114	139	253
22																															95	140	235
23																															94	114	208
0																															81	99	180
1																															67	97	164
2																															92	95	187
3																															60	109	169
4																																93	93
5																																1	1
6																																	0
7																																	0
8																																	0
9																																	0
10																															27		27
11																															62	78	140
12																															73	62	135
13																															74	95	169
14																															61	102	163
15																															54	101	155
16																															64	123	187
17																															54	130	184
18																															67	111	178
19																															53	82	135
20																															61	79	140
21																															49	66	115
22																															36	96	132
23																															48	72	120

	left radio
	right radio
	two breaks

Band Plan – 2007 WPX RTTY





SOM2

- Single operator
- Multi-2 station
  - “Last One Wins”
  - Three networked computers
    - Two radios
    - One Internet/Packet/backup

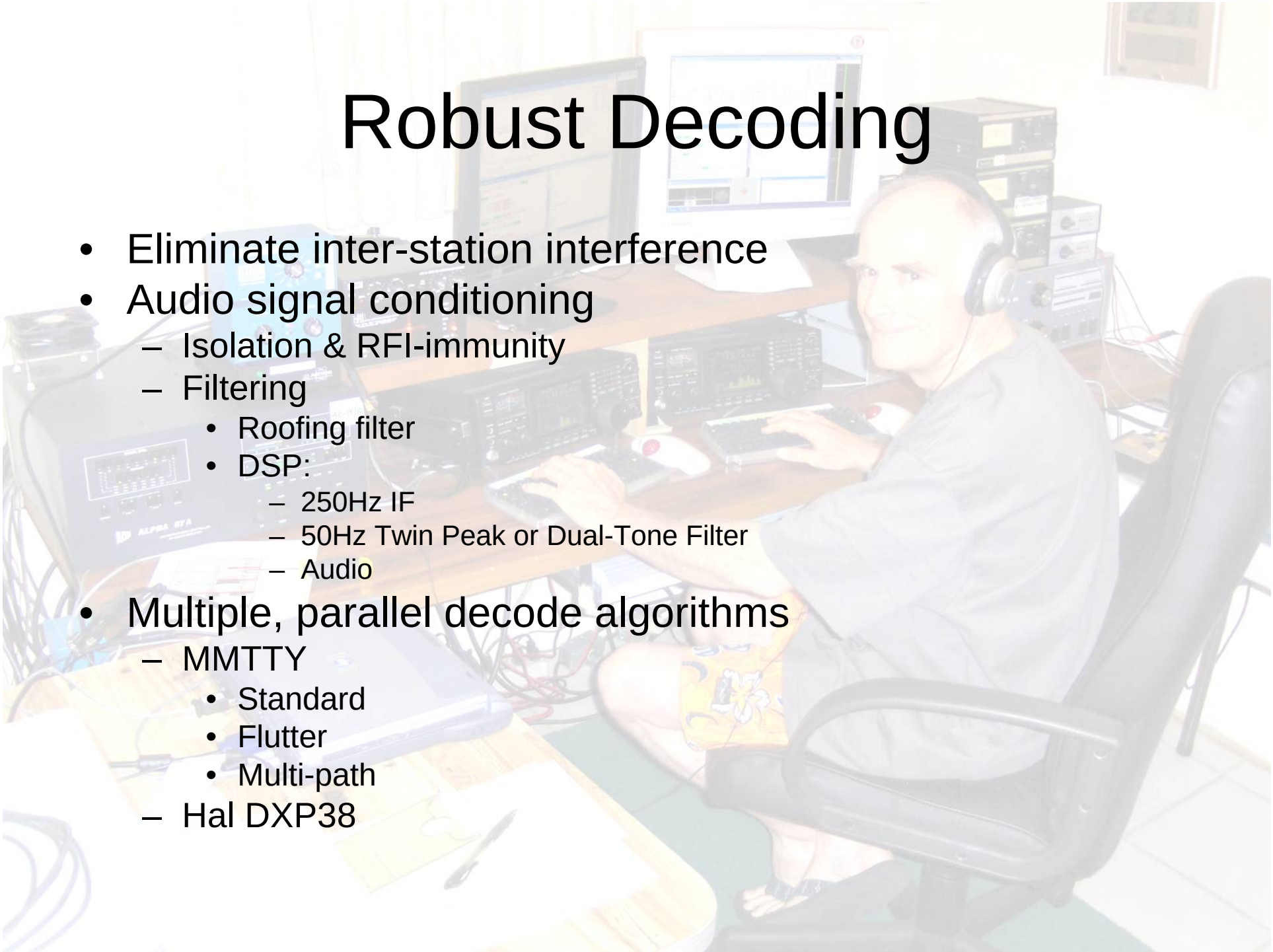
Strategy – RU & WPX

- Run continuously on two bands
- RU:
  - First break when rate drops during “night”
  - Work Asia/Oceania on 40/80/20 at 8Z
  - Second break after 1-2 hours
- WPX:
  - Maximize low bands: 21/30 hours (1650/3100 QSOs)
  - Break when low band rate drops below 50
  - Work highest rate daytime hours, leaving time for remaining Saturday night low band hours
  - Packet for mults only (but, didn’t chase)

Strategy - NA Sprint

- Transmit 100% (one radio or the other!)
- QSY rule (set 4 VFOs >5KHz apart):
  - While sending exchange
    - Check each VFO on inactive radio for “pounceability”
    - QRX to pounce
  - While receiving exchange, pounce or CQ on inactive radio
  - Swap active VFOs; inactive radio QSO (now “active”)
    - Repeat, unless …
    - No QSO on (now) active radio, so start tuning. Then, pounce on inactive radio or call CQ.

Robust Decoding



- Eliminate inter-station interference
- Audio signal conditioning
  - Isolation & RFI-immunity
  - Filtering
    - Roofing filter
    - DSP:
      - 250Hz IF
      - 50Hz Twin Peak or Dual-Tone Filter
      - Audio
- Multiple, parallel decode algorithms
  - MMTTY
    - Standard
    - Flutter
    - Multi-path
  - Hal DXP38

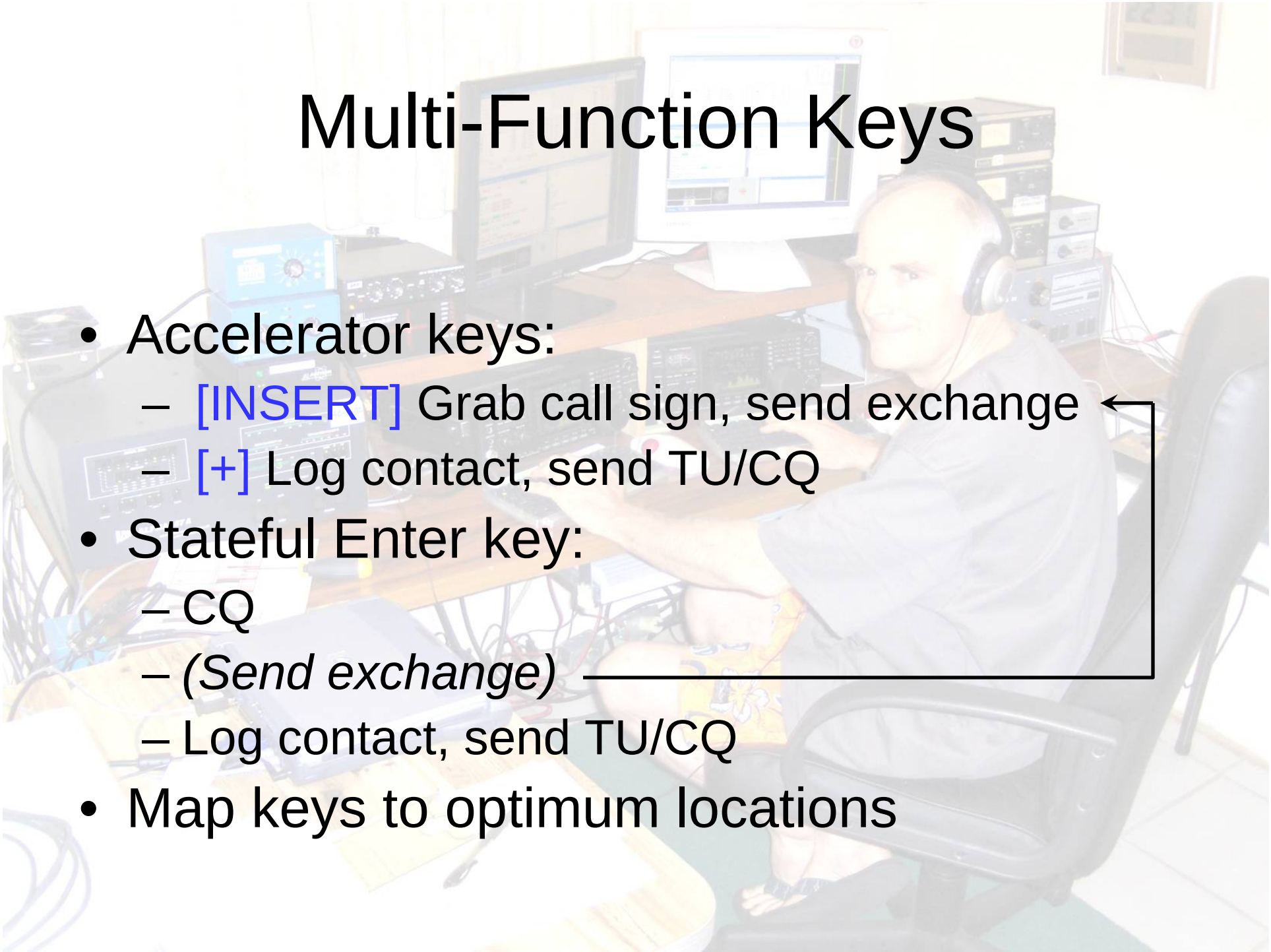
Ergonomic User Interface

- Comfortable heights, reaches, layout
- Right-sized keyboard
  - Fn keys template
  - Marked multi-function keys
- Trackball
- Bose QC2 phones
  - Minimal volume
  - Stereo

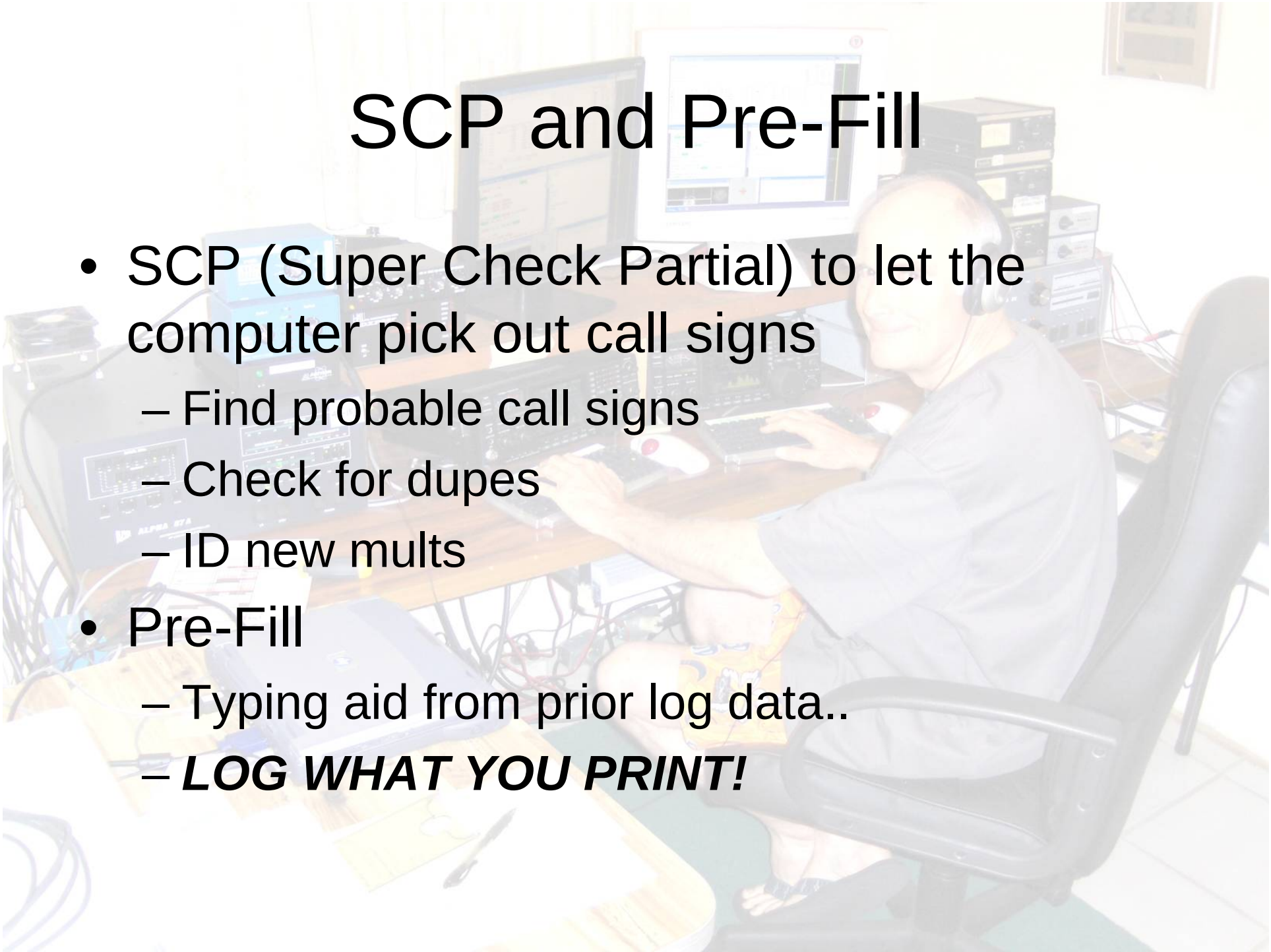
Right-Sized Keyboard

Multi-Function Keys

- Accelerator keys:
  - [INSERT] Grab call sign, send exchange
  - [+] Log contact, send TU/CQ
- Stateful Enter key:
  - CQ
  - *(Send exchange)*
  - Log contact, send TU/CQ
- Map keys to optimum locations



SCP and Pre-Fill



- SCP (Super Check Partial) to let the computer pick out call signs
  - Find probable call signs
  - Check for dupes
  - ID new mults
- Pre-Fill
  - Typing aid from prior log data..
  - ***LOG WHAT YOU PRINT!***

Disciplined Run and S&P

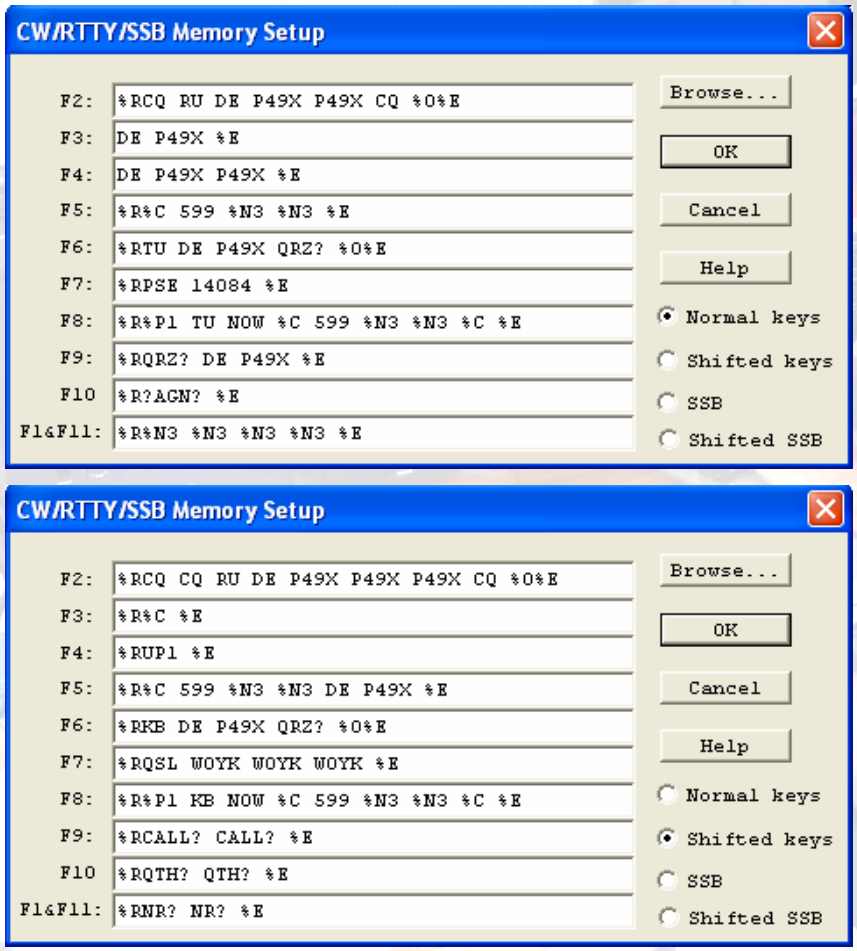
- Repetitive keystroke sequences
  - “Normal” contact
  - Repeats
  - Fills
- Sequence:
  - Enter (either CQ or TU/CQ)
    - AGN? or Enter
  - Insert (grab call sign, send exchange)
    - Exch or # or CA or ED
    - AGN? or NR? or QTH? or NAME?
  - Enter (log contact, send TU/CQ)
    - F7 (QRV message)
    - Log and F8 (send TU & exchange for next contact)

Self-Spotting

- QRV message prior to QSL message
  - Auto-detect band-need (SW enhancement)

QRV 7057
TU P49X CQ

Tight Message Buffers



- Beginning CR
- Ending space
- Clear RIT
- Minimum characters
- Ending CQ (no QRZ)
- Ending his-call (optional)
- Two call sign calls (DE and not)

RTTY Contesting Can Be …

- Fun
- Challenging
- Rewarding