

Assignment of the Available Radio Spectrum In the 900 MHz and 1800 MHz Bands

Statement of the Telecommunications Authority

4 July 2008

INTRODUCTION

The Telecommunications Authority (“TA”) published a Spectrum Release Plan (“SRP”) in April 2007 to inform the industry of the potential supply of radio spectrum which may be made available to the market in the following three years through an open bidding or tendering process. In the SRP, it is indicated that the earliest release date of the frequencies in the 885 – 890/930 – 935 MHz band (“900 MHz band”) and 1780.1 – 1785/1875.1 – 1880 MHz band (“1800 MHz band”) for the provision of public mobile service will be 2007/2008.

2. On 18 January 2008, the TA issued a consultation paper entitled “Assignment of the Available Radio Spectrum in the 900 MHz and 1800 MHz Bands” (“the Consultation Paper”) to seek comments from the industry and interested parties on the assignment of the available radio spectrum.

Submissions in response to the Consultation

3. In response to the Consultation Paper, the TA received a total of 6 submissions (“the Submissions”) from the following parties (listed in alphabetical order).

- (1) China Mobile Peoples Telephone Company Limited (“PEOPLES”)
- (2) Hong Kong CSL Limited and New World PCS Limited (“CSL”)
- (3) Hutchison Telephone Company Limited (“HTCL”)
- (4) MTR Corporation Limited (“MTR”)
- (5) PCCW Mobile HK Limited (“PCCW”)

(6) SmarTone Mobile Communications Limited (“SmarTone”)

The full submissions can be downloaded from OFTA’s website¹.

4. After considering the Submissions received, the TA sets out in this Statement his views on the Submissions and his decisions on the assignment of the available radio spectrum in the 900 MHz and 1800 MHz bands.

THE USE OF THE 900 MHz and 1800 MHz BANDS

5. As mentioned in the Consultation Paper, most of the available radio spectrum has already been assigned and used for providing mobile coverage in country parks and remote areas. There is good public interest reason for the Government to continue to give priority to and assign the available radio spectrum for extending mobile radio coverage in country parks and remote areas. To encourage mobile network operators (“MNOs”) to further improve the service coverage in the country parks/remote areas, the TA will continue to apply the Government policy of charging no Spectrum Utilisation Fee (“SUF”) for use of radio spectrum for such applications.

6. In April 2008, the Executive Council has agreed that MTR be asked to proceed with further planning and design of the Hong Kong section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (“XRL”), which is a new railway system between Hong Kong and the Mainland of China. The detailed planning and design will be completed by the end of 2008 while the construction work will start in 2009 and be completed in 2014/2015. The Mainland Authorities have adopted the GSM-R standard² and reserved 4 MHz x 2 (885 – 889 MHz paired with 930 – 934 MHz) for their railway communications systems. There is a need to adopt the same communication standard and operating frequencies along the whole XRL from the Mainland of China to Hong Kong to ensure safe, seamless and reliable operations. Due to the importance of this railway system, the TA indicated in the Consultation Paper his intention to assign the same radio spectrum to the future XRL operator through an administrative process.

¹ <http://www.ofa.gov.hk/en/report-paper-guide/paper/consultation/20080225/table.html>

² GSM-R standard stands for “GSM for Railways (GSM-R)” and is a wireless communication standard for signalling and inter-communications for railway operations.

7. The TA also considered that the available radio spectrum, after a significant portion of the 900 MHz band has been reserved for the XRL, might not be sufficient for a new entrant to build a network that could compete with the incumbent MNOs in terms of system capacity, coverage or quality of service. The TA therefore proposed to make available the remaining radio spectrum only to the incumbent MNOs³.

8. Interested parties were asked for their views on the following question :

Question (1): Do you agree that the available spectrum in the 900 MHz band and 1800 MHz band be made available to the incumbent MNOs only?

Views and Comments from Respondents

9. All the respondents supported that radio spectrum in the 1800 MHz band be made available to the existing MNOs. Regarding the radio spectrum in the 900 MHz band, all the MNOs except HTCL supported the proposal. HTCL was of the view that the 900 MHz band should be reserved for IMT-2000 applications.

TA's Considerations and Decisions

10. Respondents generally supported the proposal to make the available radio spectrum to existing MNOs. The TA has also noted the comments of HTCL that the 900 MHz band should be reserved for IMT-2000 deployment. ***As there is no regulatory constraint prohibiting incumbent 2G MNOs from using their assigned radio spectrum for IMT-2000 applications, the point made by Hutchison should be a non-issue. He therefore decides to make available the radio spectrum in the 1800 MHz band spectrum to existing MNOs.*** The scope of service to be provided under the concerned spectrum will be the same as that stipulated in their existing mobile carrier licences. ***For the reasons given in paragraph 33 below, the TA decides that the available radio spectrum in the 900 MHz band will not be released at this stage.***

³ The incumbent 2G GSM/Personal Communications Service (PCS) mobile carrier licensees are China Mobile Peoples Telephone Co. Ltd., the consortium of Hong Kong CSL Ltd. and New World PCS Ltd., Hutchison Telephone Co. Ltd., PCCW Mobile HK Limited and SmarTone Mobile Communications Ltd.

11. As stated in paragraph 5, the TA will continue to give priority to and assign the available radio spectrum in the 900 MHz and 1800 MHz bands for use by base stations serving country parks and remote areas. Assignment of the same radio spectrum to operators to provide service outside the country parks and remote areas⁴ would be subject to the condition that the use shall not interfere with the operation of the base stations serving country parks and remote areas. To avoid unnecessary dispute over the potential harmful interference problems, *the TA will develop guidelines and/or technical code of practice to ensure that there will be no harmful interference between the base stations serving the country parks and remote areas and the base stations serving the rest of the territory. Details will be given nearer to the time of the auction.* MNOs should take this into account when they consider bidding for the radio spectrum.

VALIDITY PERIOD OF THE ASSIGNMENT

12. At present, each incumbent MNO is granted a 2G mobile carrier licence that has a common expiry date on 29 September 2021. For administrative convenience, the TA proposed that the period for the frequency assignment of this exercise should be coterminous with the remaining period of validity of these licences i.e. until the expiry date of these licences on 29 September 2021.

13. Interested parties were asked for their views on the following question :

Question (2): Do you agree that the frequency assignment should be valid until 29 September 2021?

Views and Comments from Respondents

14. HTCL considered that the need for radio spectrum by MNOs was independent of the type of network (2G, 3G or both) they were operating. For this reason, HTCL proposed the term should be aligned with the licence held by an existing MNO which has the earliest expiry date, which should be

⁴ The exact boundary of these areas will be specified in the bidding document issued nearer to the time of auction.

22 October 2016 being the expiry date of the 3G licences.

15. Apart from HTCL, other respondents agreed to the TA's proposal.

TA's Considerations and Decisions

16. The TA considers while not every incumbent MNO possesses a 3G mobile carrier licence, each of them has a mobile carrier licence originally issued for the Personal Communications Service ("PCS") networks. The mobile carrier licences for the PCS networks contain the same set of licence conditions and have a common expiry date of 29 September 2021. The TA also considers that the period of the frequency assignment should be sufficiently long for the operators to recoup their investment in radio spectrum, infrastructure, business planning/development etc. The expiry date of mobile carrier licence for PCS is the latest among all existing mobile carrier licences. ***The TA therefore decides that the validity period of the assignment of the proposed radio spectrum should be coterminous with the remaining period of PCS licences i.e. 29 Sept 2021 and the successful bidder(s) will be authorised to use the frequencies under his existing mobile carrier licence(s) for PCS up to that date.***

SPECTRUM ASSIGNMENT METHOD

17. According to the Spectrum Policy Framework ("SPF"), a market-based approach will be used for spectrum assignment wherever the TA considers that there are likely to be competing demands from providers of non-Government services, unless there are overriding public policy reasons to do otherwise.

18. Interested parties were asked for their views on the following question :

Question (3): Do you agree that auction be used to determine to whom the concerned spectrum should be assigned?

Views and Comments from Respondents

19. CSL considered that there were unlikely to be competing demands in this spectrum assignment exercise. If there was mutual agreement amongst all the 2G MNOs, the radio spectrum could be assigned equally to all the 2G licensees without the need of an auction process.

20. Apart from CSL, other respondents either agreed or had no objection to the TA's proposal.

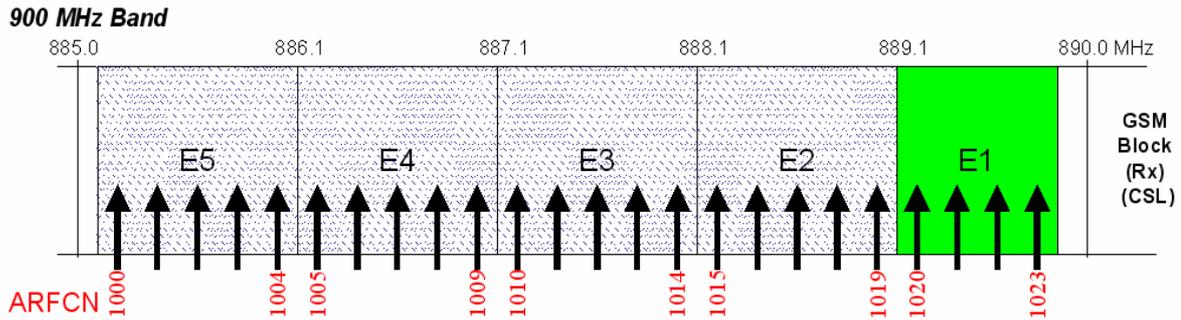
TA's Considerations and Decisions

21. As stated in the SPF, the guiding principle for spectrum management is that a market based approach will be used whenever the TA considers that there are likely to be competing demands.

22. The TA notes that the majority of the respondents agree to the proposal to assign the available radio spectrum by auction. The TA also notes from the Submissions that the amount of radio spectrum required by each MNO may differ. These suggest that there are likely to be competing demands among the MNOs for the radio spectrum. ***The TA therefore decides that auction will be used for the assignment of the available radio spectrum in this exercise.***

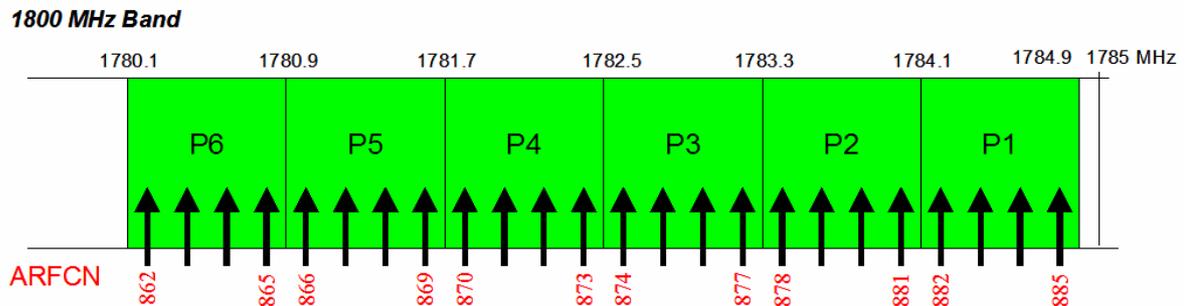
SPECTRUM PLAN IN THE 900 MHz and 1800 MHz BANDS

23. In the Consultation Paper, the TA proposed to divide the available radio spectrum into one 900 MHz block and six 1800 MHz blocks each with a block size of 0.8 MHz x 2. Each bidder may apply for 1 to 7 frequency blocks (E1 and P1 – P6) and there will not be any restriction on the number of frequency blocks that a successful bidder can acquire. The proposed division of frequency blocks are showed in Figures 1 and 2.



- Only the Uplink Frequencies are shown here for clarity purpose

Figure 1 shows the 900 MHz band



- Only the Uplink Frequencies are shown here for clarity purpose.

Figure 2 shows the 1800 MHz band

24. Interested parties were asked for their views on the following question :

Question (4): Do you agree that the radio spectrum in the 900 MHz band (889.1 – 889.9 MHz paired with 934.1 – 934.9 MHz) and the 1800 MHz band (1780.1 – 1784.9 MHz paired with 1875.1 – 1879.9 MHz) be divided into one (1) and six (6) blocks respectively for assignment?

Views and Comments from Respondents

The 900 MHz band

25. MTR commented that the XRL was a strategic railway linking the Mainland of China and Hong Kong and it was therefore crucial to have

exclusive coverage within the vicinity of the railway in order to maintain safe and reliable train services.

26. While the respondents generally agreed the relevant portion of the frequency spectrum in the 900 MHz band should be reserved for the XRL system, some respondents considered that shared use of the radio spectrum should be feasible in the Golden Bowl Area and exclusive assignment to the XRL might not be necessary if there was good coordination between the XRL operator and the MNOs.

27. PCCW considered that the co-assignment or sharing arrangement would allow radio spectrum to be employed more effectively with interference to the XRL system totally avoided. PCCW and CSL were of the view that the available radio spectrum in the 900 MHz band could be made available for auction as one integrated 4.8 MHz x 2 block instead of only one 0.8 MHz x 2 block.

28. HTCL held a similar view that co-assignment with the XRL system was possible but suggested that the 900 MHz block should not be assigned at this stage. HTCL considered that there would be significant market demand to have one integrated block of radio spectrum with around 5 MHz x 2 in bandwidth for supporting WCDMA/UMTS in the 900 MHz band in the future. Although the radio spectrum had been assigned for use in country parks and reserved for the future XRL, HTCL considered that there was room for the 900 MHz band to be deployed by the MNOs in the Golden Bowl Area.

29. PCCW also proposed that the TA should, from a broader policy perspective, address the issue of re-distribution of the 900 MHz spectrum in Hong Kong. It made reference to a recent consultation exercise conducted by the UK regulator on the appropriate measures to liberalize the use of radio spectrum in the 900 MHz and 1800 MHz bands so as to allow the radio spectrum to be used for 3G and potentially other technologies.

The 1800 MHz band

30. HTCL and PCCW considered the proposal to divide the available radio spectrum in the 1800 MHz band into six 0.8 MHz x 2 frequency blocks might be useful for existing 2G applications, but it would be less useful for

future 3G data applications. They proposed that the whole 1800 MHz spectrum be auctioned as one block, and the winner would take the entire block.

31. PEOPLES, CSL and SmarTone in general supported the TA's proposed band plan which allowed the relevant licensees to use the radio spectrum in the most technically efficient way. PEOPLES pointed out that the available radio spectrum would be used for improvement of its existing service operation.

32. SmarTone advised that there were a few situations under which temporary assignment of additional radio spectrum was needed to satisfy public needs during special events. In this connection, SmarTone considered some of the frequency blocks might be reserved for this purpose for the time being.

TA's Considerations and Decisions

The 900 MHz band

33. The TA notes the comments expressed by PCCW and HTCL that the 900 MHz spectrum reserved for XRL may be used by MNOs outside the immediate vicinity of the railway routes. The TA agrees that subject to judicious coordination between the users, it should be technically feasible for the MNOs and the XRL to share use of the same radio spectrum. However, as the exact design of the XRL remains to be determined, there are uncertainties at this stage to define the protection zone required for the XRL and the geographical areas in which MNOs may not operate if the same radio spectrum is to be shared with XRL operations. In light of these considerations, ***the TA decides to defer the decision on the release of the available radio spectrum in the 900 MHz band. He will re-assess the market demand and the technical feasibility of sharing/co-assignment of the radio spectrum after the completion and finalization of the detailed design of the XRL. He will then consult the industry again in 2009/2010 on the assignment of the available radio spectrum in the 800/900 MHz band⁵.***

⁵ Other spare spectrum includes 832.5 – 837.5 MHz and 877.5 – 882.5 MHz. See the Spectrum Release Plan 2008/09 to 2010/11 at www.ofta.gov.hk/en/freq-spec/spr.html

34. Regarding PCCW's comment on the re-distribution of the 900 MHz spectrum in Hong Kong, the TA notes that the band is currently assigned to the three GSM operators with licence expiry dates in the 2020/2021 timeframe. He takes the view that there is a lack of good public interest reasons for him to withdraw the frequencies which have already been assigned to MNOs. The situation in Hong Kong is very different from that in the UK because the incumbent 2G licensees are not prohibited from using their assigned radio spectrum for 3G or other more advanced services. ***The TA considers that there is no merit in PCCW's proposal. Having said that, the TA would consider any joint proposal from the relevant licensees for voluntary swapping of their assigned spectrum which will bring about better spectral efficiency.***

The 1800 MHz band

35. The TA notes that PCCW and HTCL are in favour of having one integrated block of the 1800 MHz spectrum while the rest of the respondents support the proposed band plan. The TA also notes from the Submissions that some MNOs have a need to acquire more radio spectrum for capacity expansion.

36. Having considered the views of the respondents, the TA sees there is merit to maintain the proposed band plan for radio spectrum in the 1800 MHz band. He also takes the view that by dividing the available radio spectrum into six (6) equal blocks and allowing bidders to bid for one or more block(s), bidders would have the necessary flexibility to acquire the amount of radio spectrum that best suits their requirements and, as a result, spectrum can be deployed most efficiently. Accordingly, ***the TA decides that the 1800 MHz band (1780.1 – 1784.9 MHz paired with 1875.1 – 1879.9 MHz) be divided into six equal blocks for bidding in the auction.***

37. Regarding SmarTone's suggestion of reserving some frequency blocks for temporary assignment during special events, the TA takes the view that the concerned radio spectrum, being a scarce resource with competing demands, should be made available to operators through market means as early as possible rather than holding them as reserves, otherwise such scarce resource would not be utilized efficiently. ***The TA therefore decides that no available spectrum in the 1800 MHz band will be reserved for temporary***

assignment.

SPECTRUM UTILIZATION FEE (“SUF”)

38. The TA proposed in the Consultation Paper to designate the frequencies concerned to be subject to SUF. In addition to the SUF based on the existing 2G SUF calculation formula⁶, the successful bidder will have to pay a one-off lump sum SUF, the amount of which will be determined by the auction. It was also proposed that the bidder will have to place bid(s) equal to or greater than the reserve price set by the Secretary for Commerce and Economic Development for each frequency block. The reserve prices for the frequency blocks will be determined and announced nearer to the time of auction.

39. Interested parties were asked for their views on the following question:

Question (5): Do you have any comments on the proposed SUF calculation methods as stated above?

Views and Comments from Respondents

40. PCCW was of the view that the proposed approach was constrained by the existing SUF payment level. In light of the drastic variation of the 3G spectrum rates around the world, PCCW considered that the reserve price of the concerned frequency spectrum could be less than the current rate level being paid by the existing 2G MNO licensees.

41. HTCL opined that the Government and the industry had recently been using an up-front lump sum payment as the method of SUF calculation.

⁶ The SUF calculation formula:

- (a) for the first 5-year period up to September 2011, annual SUF was to be calculated on the basis of HK\$145 per kilohertz (kHz) of spectrum assigned;
- (b) for the sixth year from September 2011 and thereafter, the annual SUF is \$1,450 per kHz of radio spectrum assigned, or 5% of the Network Turnover, whichever is greater. For the purpose of the SUF calculation, Network Turnover is defined as the revenue arising from or attributable to the provision of any telecommunications services over any telecommunications network using the frequency bands to which the SUF relates.

HTCL considered that the same payment method should be used in this exercise.

42. Apart from PCCW and HTCL, other respondents agreed in principle to the TA's proposal on the SUF calculation method.

43. PEOPLES suggested that, when deciding the reserve price for the spectrum, only its economic value up to the 5th year of the existing 2G licences should be considered. HTCL suggested that the reserve price be calculated with reference to a per MHz price to be determined by the Government.

TA's Considerations and Decisions

44. The TA is mindful to keep the SUF formula simple so as to minimize the costs of the MNOs and the Government involved in the administration of the SUF collection. Given that the radio spectrum to be assigned will be used under the existing 2G licences, the TA considers that the proposed arrangement will be more administratively convenient because it would otherwise be quite difficult for the MNOs to separate the accounts for calculation of the Network Turnover generated from use of the existing 2G spectrum and the Network Turnover generated from use of the newly assigned radio spectrum.

45. As regards the SUF payment level, the TA has compared the proposed SUF with the SUF in the most recent auction exercise for the CDMA2000 spectrum. It is found that the discounted SUF payable as proposed in the Consultation Paper is commensurate with that of the SUF for CDMA2000 spectrum. The TA therefore considers that the proposed SUF reflects the updated market situation.

46. Based on the above, ***the TA decides to recommend to the Secretary for Commerce and Economic Development ("the Secretary") that the SUF shall consist of two components: (a) an annual variable component based on the SUF calculation formula for the 2G spectrum under the existing 2G licences (to be paid on a yearly basis) and (b) an additional up-front lump sum component based on a sum committed by the successful bidder(s) in the forthcoming auction. The committed sum has to be equal to or greater***

than the reserve price set by the Secretary and will be paid within the specified timeframe after the successful bidder is determined in the auction exercise.

THE AUCTION METHOD

47. In the Consultation Paper, it was proposed to use a single round sealed bid auction mechanism for the assignment of the frequency blocks in question. Each bidder might apply for any number of frequency blocks.

48. Interested parties were asked for their views on the following question:

Question (6): Do you agree that a single round sealed bid auction as described above be adopted in the auctioning of the frequency blocks?

Views and Comments from Respondents

49. PEOPLES was of the view that an “open cry auction” should be adopted because this approach was simple and transparent to all bidders for them to make well-informed bids.

50. HTCL proposed to adopt a two stage open bid auction. In stage one, the entire 1800 MHz block will be put up for auction. In the event that no MNO is willing to bid for the whole block, the spectrum will be divided into six blocks for auction in stage two.

51. PCCW was neutral to the auction method but considered the auction of the 900 MHz and the 1800 MHz blocks should be conducted separately. In addition, operators should be allowed to choose the number of frequency blocks which they want to bid.

52. SmarTone and CSL had no objection to the TA’s proposal.

TA’s Considerations and Decisions

53. While there are divided views on the auction method, the TA notes

that the respondents in general prefer an open and transparent bidding method so that the bidders will have sufficient information for them to make informed decisions on the bidding price and the number of frequency blocks they want to bid.

54. As stated in paragraph 36, the available radio spectrum in the 1800 MHz band will be divided into 6 equal blocks and bidders would be allowed to bid for 1 to 6 blocks. As the available radio spectrum in the 900 MHz band will not be made available for the auction, PCCW's proposal of conducting the auction of the 900 MHz and the 1800 MHz blocks separately is therefore a non-issue.

55. After due consideration of the views of the respondents, *the TA decides to adopt a Simultaneous Multi-Round Ascending ("SMRA") auctioning arrangement for the auction exercise.* The whole process is open and transparent, and bidders will be permitted to select and change their preferred block(s) after taking into account the price offered by their competitor bidders and their own business cases. By offering all the frequency blocks at the same time and with multiple round biddings, information is provided to participants in the form of other bidder's valuations and it will help the bidder make "informed choices". Details of the procedures and rules of the auction will be published before the auction.

SPECTRUM CAP

56. Considering that competition of the mobile service market would not be significantly lessened even if one of the MNOs acquired all the available radio spectrum offered for auction in this exercise, the TA proposed not to impose any restriction or cap on the amount of spectrum that a bidder could acquire in this exercise.

57. Interested parties were asked for their views on the following question :

Question (7): Do you agree that there will not be any restriction or cap on the amount of spectrum that a bidder can acquire during the auction?

Views and Comments from Respondents

58. PEOPLES agreed to the proposal if the assignment was based on an open cry auction. PCCW agreed to the proposal provided that the auction of the 900 MHz and the 1800 MHz blocks are conducted separately. The other respondents did not object to the TA's proposal.

TA's Considerations and Decisions

59. The TA notes that the respondents in general do not have dissenting views on this issue. PEOPLES's view of using a transparent auction format has been addressed by adopting a SMRA auctioning arrangement.

60. The TA does not find it necessary to impose a bidding restriction in the form of a spectrum cap in this auction. It is not likely that one operator will be in a more advantageous position as compared with others, or competition will be significantly lessened, after acquisition of all of the available radio spectrum. *The TA therefore decides that no spectrum cap will be applied in this auction exercise.*

WAY FORWARD

61. The TA will recommend to the Secretary for Commerce and Economic Development to enact the necessary regulation under section 32I(2) of the Telecommunications Ordinance ("TO") to determine the SUF of the 1800 MHz band by auction. The TA will also make an order under section 32I(1) of the TO designating the 1800 MHz band to be subject to the payment of the SUF. Upon completion of the relevant subsidiary legislations by the Legislative Council, the TA will publish the terms and conditions of the auction. The TA aims to complete the necessary subsidiary legislations process by end 2008 or early 2009, to publish the bidding documents or Information Memorandum in early 2009 for information of the interested parties, and to conduct the auction in the first half of 2009.

Office of the Telecommunications Authority
4 July 2008