**3GPP TSG-RAN WG2 Meeting #110-e *R2-200xxxx***

**Online, 1–12 June 2020**

**Agenda item: 5.3.1.1 and 5.3.2.1**

**Source: Samsung**

**Title: Report of [AT110e][013][NR15] User Plane Corrections (Samsung)**

**Document for: Discussion and Agreement**

# 1 Introduction

This is to report the result of the following email discussion in RAN2#110-e Meeting [1].

**[AT110e][013][NR15] User Plane Corrections (Samsung)**

Scope: Treat R2-2004423, R2-2004424, R2-2004940, R2-2004942, R2-2005555, R2-2005557. R2-2005471, and possibly in part 2 R2-2005556, R2-2005558, R2-2005559, R2-2005560, R2-2005561, R2-2005472 (proponents are responsible to explain and drive)

Part 1: Decision whether to make corrections or not, identify agreeable corrections. Deadline: June 4, 0700 UTC.

Part 2: Others: For agreeable parts, continuation to agree CRs. Deadline: June 10, 0700 UTC.

# 2 Discussion

## 2.1 Obtaining of PH values

The following contributions were submitted to capture the missing parts (i.e. LTE PH from E-UTRA MAC entity) from the existing text:

[R2-2004423](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004423.zip) Clarification on obtaining of PH values Samsung CR Rel-15 38.321 15.8.0 0738 - F NR\_newRAT-Core

[R2-2004424](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004424.zip) Clarification on obtaining of PH values Samsung CR Rel-16 38.321 16.0.0 0739 - A NR\_newRAT-Core

**Question 1: Do you agree with the proposed change?**

|  |  |  |
| --- | --- | --- |
| Company | Agree with CR? | Additional comments/suggestion |
| Samsung | Yes | The CR merely tries to correct the mistake, so it would not result any NBC issue. |
| OPPO | Yes |  |
| Nokia, Nokia Shanghai Bell | Yes |  |
| Google | Yes |  |
| vivo | Yes | This correction is fine to us. |
| Ericsson | Yes |  |
| HW | Yes | Not sure whether “the corresponding uplink carrier” is applicable to E-UTRA Serving Cell for the following sentence:  the obtain the value of the Type 1 or Type 3 power headroom for the corresponding uplink carrier |
| LG | Yes |  |
| Qualcomm | Yes |  |
| Apple | Yes |  |
| ZTE | Yes |  |
| MediaTek | Yes |  |
| DOCOMO | Yes |  |
| ASUSTeK | Yes |  |
| Lenovo | Yes |  |
| Intel | Yes |  |
| CATT | Yes |  |
| Fujitsu | Yes |  |

**Conclusion:**

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## 2.2 Preamble selection for beam failure recovery

The following contributions were submitted to change the existing behaviour for preamble selection when dedicated preamble is configured for beam failure recovery:

[R2-2004940](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004940.zip) Clarification on preamble selection for beam failure recovery Google Inc. CR Rel-15 38.321 15.8.0 0749 - F NR\_newRAT-Core

[R2-2004942](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004942.zip) Clarification on preamble selection for beam failure recovery Google Inc. CR Rel-16 38.321 16.0.0 0750 - A NR\_newRAT-Core

**Question 2: Do you agree with the proposed change?**

|  |  |  |
| --- | --- | --- |
| Company | Agree with CR? | Additional comments/suggestion |
| Samsung | No | RAN2 already discussed the issue long time back, and concluded to perform CBRA if no beams meet the condition, as in the current specification. |
| OPPO | No |  |
| Nokia, Nokia Shanghai Bell | No | Agree with Samsung. |
| Google | Yes | For the case no SSB and CSI-RS have RSRP above the thresholds RAN2 has not disagreed or agreed whether UE is allowed to use a dedicated preamble for beam failure recovery or not. In addition to CBRA that has been allowed in current MAC spec, we think UE should be allowed to use that dedicated preamble because that is the purpose of the dedicated preamble. Whether CBRA or CFRA should be used is left to UE implementation. |
| Vivo | No | The proposed solution is an optimization, instead of a correction. |
| Ericsson | No | Samsung explained it well. |
| HW | No | Agree with Samsung, the UE shall perform CBRA in this case and thus CBRA preamble should be selected. |
| LG | No |  |
| Qualcomm | No |  |
| Apple | No |  |
| ZTE | No |  |
| MediaTek | No | Share same view with Samsung. |
| DOCOMO | No |  |
| ASUSTeK | No |  |
| Lenovo | No |  |
| Intel | No | Agree with Samsung. |
| CATT | No |  |
| Fujitsu | No | Our understanding is that the current spec is based on agreement in RAN2#100 meeting. The agreement says that the UE only uses CBRA if there are no SSB and CSI-RS that have RSRP above the threshold:  3: The UE uses contention free when there is a beam associated to a dedicated “preamble/resource” and the beam is above a threshold. Otherwise use contention based. |

**Conclusion:**

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## 2.3 BWP inactivity timer operation

The following contributions were submitted to clarify whether *bwp-InactivityTimer* is started (or not) if the MAC entity receives PDCCH which results BWP switching (to default BWP):

[R2-2005555](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005555.zip) Discussion on clarification of BWP inactivity timer operation ASUSTeK discussion Rel-15 NR\_newRAT-Core

[R2-2005556](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005556.zip) Clarification of BWP inactivity timer operation ASUSTeK CR Rel-15 38.321 15.8.0 0753 - F NR\_newRAT-Core

**Question 3: Do you agree with the proposed change?**

|  |  |  |
| --- | --- | --- |
| Company | Agree with CR? | Additional comments/suggestion |
| Samsung | No | From the discussion paper, interpretation b is correct (i.e. not to (re-)start *bwp-InactivityTimer* if the MAC entity receives PDCCH, which results BWP switching to default/initial BWP. However this behaviour is obvious from the existing text, and thus no changes are needed. |
| OPPO | No | The spec is already clear that when PDCCH indicating BWP switching, and if the active BWP after switching happens to be default or initial BWP, UE does not start bwp-InactivityTimer |
| Nokia, Nokia Shanghai Bell | No | We can confirm understanding b in chairman minutes. |
| Google | No | When receving the PDCCH with BWP switching indicator and downling assignment or uplink grant, MAC will first switch to the target BWP and then receive downlink data or transmit uplink data on the target BWP. If that is correct, there is no need to clarify the spec. |
| vivo | No | Obviously, the *bwp-InactivityTimer* is only associated with the non-initial/default DL BWP. In this sense, the current spec is quite clear. Anyway, we are okay to have a clarification in chairman minutes. |
| Ericsson | No |  |
| HW | No | Interpretation b is correct, and the current text is clear. |
| LG | No | We think that not (re)starting *bwp-InactivityTimer* is correct UE behaviour because BWP swiching should be performed first and then determine whether to start *bwp-InactivityTimer.* |
| Qualcomm | No | Either interpretation would have impact on UE behavior, since default BWP does not have data inactivity time. |
| Apple | No | We are fine to confirm b) in chairman notes, and think current spec is clear. |
| ZTE | No |  |
| MediaTek | No | *bwp-InactivityTimer i*s used for non-default/non-initial BWP to perform BWP switching. Therefore, the operation of *bwp-InactivityTimer* for default/initial BWP is “don’t care”*.* Thus, no clarification is needed. |
| DOCOMO | No | Our understanding is that b) is correct and we are also fine to confirm b) in chairman notes |
| ASUSTeK | - | We don’t think the current spec describes interpretation (b) because current spec seems to check whether to start/restart the timer “before” BWP switching take place (as described in the discussion paper):  2> if a PDCCH addressed to C-RNTI or CS-RNTI indicating downlink assignment or uplink grant is received on the active BWP; or  2> if a PDCCH addressed to C-RNTI or CS-RNTI indicating downlink assignment or uplink grant is received for the active BWP; or (Note: This is for cross-carrier scheduling case)  Therefore, if all companies agree that (b) is the intended behavior, at least capturing such understanding in chairman’s note is necessary. |
| Lenovo | No | Clarification in chairman minutes is sufficient. |
| Intel | No | We also think interpretation b is the correct behaviour and there is no need for specification change. |
| CATT | No | Interpretation b is correct and we reckon there is no need to clarify the spec. |
| Fujitsu | No, but… | The interpretation of the spec pointed out by ASUSTeK is possible. In this case, the UE (re)starts the *bwp-InactivityTimer* in the active BWP and then switches to the default BWP. Then the *bwp-InactivityTimer* is still running in the serving cell because there is no text saying e.g. *bwp-InactivityTimer* shall be stopped.  However, what the problem is to keep running *bwp-InactiityTimer* when the UE has switches to the default BWP. In addition, given that the purpose of the *bwp-InactiityTimer* is to cause the UE to switch the default BWP when it expires, sensible UE implementation will stop *bwp-InactiityTimer* even if there is no clear specification statement. Therefore, there seems to be not big problem with the current specification. |

**Conclusion:**

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## 2.4 Presence of IEs in BeamFailureRecoveryConfig

The following contributions were submitted to clarify whether network should always configure *rsrp-ThresholdSSB* and *rach-ConfigBFR* (which contains *powerRampingStep*, *preambleReceivedTargetPower*, *preambleTransMax*, and *ra-ResponseWindow*) in *BeamFailureRecoveryConfig* for CFRA BFR:

[R2-2005557](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005557.zip) Discussion on presence of Ies in BeamFailureRecoveryConfig ASUSTeK discussion Rel-15 NR\_newRAT-Core

[R2-2005558](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005558.zip) Clarification on presence of Ies in BeamFailureRecoveryConfig ASUSTeK CR Rel-15 38.331 15.9.0 1679 - F NR\_newRAT-Core

[R2-2005559](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005559.zip) Clarification on presence of Ies in BeamFailureRecoveryConfig ASUSTeK CR Rel-16 38.331 16.0.0 1680 - A NR\_newRAT-Core

**Question 4: Do you agree with the proposed change?**

|  |  |  |
| --- | --- | --- |
| Company | Agree with CR? | Additional comments/suggestion |
| Samsung | No | The proposed changes are correct: both *rsrp-ThresholdSSB* and *rach-ConfigBFR* should be present for CFRA BFR. However, it is already clear from the field descriptions of RRC and the procedures in MAC (e.g. MAC simply says ‘*ra-ResponseWindow* configured in *BeamFailureRecoveryConfig*’ for CFRA BFR without condition). |
| OPPO | No | We actually think network will not always configure these parameters as they are optional in current 331. So, we prefer to clarify that if these parameters are not configured in BeamFailureRecoveryConfig, UE can use those configured in RACH-ConfigCommon. It seems the CRs in 2.5 are reasonable. |
| Nokia, Nokia Shanghai Bell | No | Agree with the intention but according to the specifications, it seems clear the NW should configure it like this. |
| Google | Yes | We think this clarification is needed to align RRC and MAC. |
| Vivo | No | In our opinion, the NW would always configure all the above-mentioned parameters in the very first configuration of BFR-config. Based on this, we think the issue raised in the paper should be regarded as the erroneous NW configuration issue. Furthermore, we don’t see the need to specify the NW ehaviour in the RRC spec. |
| Ericsson | No | It is clear from the specifications. |
| HW | No | It was discussed in RAN2#105 and the conclusion is not change to mandate and assume the parameters should be configured otherwise it is false condition. |
| LG | Yes | We agree with the proposal and think that this can be clarified only in RRC. |
| Qualcomm | No | Agree with Vivo and Huawei |
| Apple | Yes | We are fine to make it clear that NW always configures both parameters, or confirm it in chairman notes. |
| ZTE | NO |  |
| MediaTek | No | We share same view with vivo. Change to MAC or RRC spec is not needed, but we are fine to have some clarification captured in Chairman notes. |
| DOCOMO | Yes | Agree with Google. |
| ASUSTeK | Yes | It is not clear in RRC spec that NW will always configure the necessary parameters and we prefer to clarify it in RRC spec. |
| Lenovo | No |  |
| Intel | No | Agree with vivo and Huawei. |
| CATT | No | Agree with vivo and HW. |
| Fujitsu | No | The current field description is clear to us. |

**Conclusion:**

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## 2.5 Handling on absence of IEs in BeamFailureRecoveryConfig

The following contributions were submitted to clarify which values would be used if *rach-ConfigBFR* (which contains *powerRampingStep*, *preambleReceivedTargetPower*, *preambleTransMax*, and *ra-ResponseWindow*) and/or *rsrp-ThresholdSSB* is not configured in *BeamFailureRecoveryConfig* (i.e. to use the values in *RACH-ConfigCommon*):

[R2-2005560](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005560.zip) Handling on absence of Ies in BeamFailureRecoveryConfig ASUSTeK CR Rel-15 38.321 15.8.0 0754 - F NR\_newRAT-Core

[R2-2005561](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005561.zip) Handling on absence of Ies in BeamFailureRecoveryConfig ASUSTeK CR Rel-16 38.321 16.0.0 0755 - A NR\_newRAT-Core

**Question 5: Do you agree with the proposed change?**

|  |  |  |
| --- | --- | --- |
| Company | Agree with CR? | Additional comments/suggestion |
| Samsung | No | The proposed changes are correct, but the values in *RACH-ConfigCommon* are the only available values if *beamFailureRecoveryConfig* is not configured, so no ambiguity exists. |
| OPPO | Yes | See comments above. |
| Nokia, Nokia Shanghai Bell | No | To us, the specification mandates configuring those values in case *BeamFailureRecoveryConfig* is configured. |
| Google | No | It is sufficient to have gNB always configure those parameters. |
| Vivo | No | In our understanding, if NW doesn’t configure *rach-ConfigBFR* or *rsrp-ThresholdSSB* within BFR-config for CFRA-BFR, the smart UE will consider the configuration as an erroneous NW configuration (also may ignore it). We don’t see the need to handle this error case in the MAC spec. |
| Ericsson | No | The changes are not necessary. |
| HW | No | See comments above |
| LG | No | We think that this can be clarified only in RRC. |
| Qualcomm | No | Agree with vivo |
| Apple | No | NW always configure the parameters. |
| ZTE | No |  |
| MediaTek | No | Agree with vivo. |
| DOCOMO | No |  |
| ASUSTeK |  | See comments above. |
| Lenovo | No |  |
| Intel | No | Agree with vivo. |
| CATT | No | See comments above. |
| Fujitsu | No | Both *rsrp-ThresholdSSB* and *rach-ConfigBFR* are always configured for CFRA-BFR. The spec change for error case is not necessary. |

**Conclusion:**

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## 2.6 Report of RLC segment in RLC STATUS PDU

The following contributions were submitted to change the interpretation of the missing RLC SDU segment at the transmitting side of RLC AM entity in the STATUS PDU due to truncated NACK SN + SOstart + SOend:

[R2-2005471](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005471.zip) Discussion on missing RLC segment in RLC STATUS PDU Huawei, HiSilicon discussion Rel-15 NR\_newRAT-Core

[R2-2005472](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005472.zip) Clarification on the reception status of RLC STATUS PDU Huawei, HiSilicon CR Rel-15 38.322 15.5.0 0035 - F NR\_newRAT-Core

**Question 6: Do you agree with the proposed change?**

|  |  |  |
| --- | --- | --- |
| Company | Agree with CR? | Additional comments/suggestion |
| Samsung | No | The problem comes from incorrect implementation: UE shall report not-received parts as NACK. |
| Nokia, Nokia Shanghai Bell | No | The specification is clear. Transmitting entity interprets everything below ACK\_SN as received which is not explicitly NACKed. Hence, the Rx entity shall not indicate ACK\_SN of a certain SN#X if it cannot include all the missing segment information for a SN#Y < SN#X. |
| vivo | No | In our understanding, the proposed solution is intended to handle the misunderstanding about the reception status at the NW side due to bad UE implementation. In practice, a smart UE shall report RLC status with ACK\_SN=70, if all the reception status of RLC SDU segments for the RLC SDU with SN=70 cannot be transmitted via the same MAC PDU. Even if the bad UE implementation is possible, we don’t see the need to capture the potential NW implementation in the RLC spec. |
| Ericsson | No |  |
| HW | Yes | We understand the issue comes from NR RLC segmentation that is based on RLC SDU, not RLC PDU.  According to the current RLC spec as follows, our interpretation is that, the receiver side has to set the ACK\_SN to 71, not 70, as some RLC SDU seg with SN=70 have been received, and ACK\_SN shall point to the next SN, i.e. 71. In other words, ACK\_SN should be never equal to NACK\_SN. Otherwise the transmitter side may consider it abnormal case.  *- set the ACK\_SN to the SN of the next not received RLC SDU which is not indicated as missing in the resulting STATUS PDU.*  While, according to the current spec, the transmitter side has to consider “RLC SDU with SN=70” is received as ACK\_SN is reported as 71, but in fact, it is not.  *When the transmitting side of an AM RLC entity receives a STATUS PDU, it interprets that all RLC SDUs up to but not including the RLC SDU with SN = ACK\_SN have been received by its peer AM RLC entity*  So we think we need to align our understandings on the “missing RLC SDU seg” in RLC ACK PDU, and the simple clarification could be that the transmitter may consider them as “not reported”. |
| LG | No | We also think that ACK\_SN can be 70 in this case and has no problem. Please NOTE that same issue had been already discussed in Rel-15 NR as shown below:  R2-1712320 Clarification on RLC STATUS PDU construction Huawei, HiSilicon discussion Rel-15 NR\_newRAT-Core R2-1710211  => No need to change anything  => Noted |
| Qualcomm | See comment | We are proposing a common solution that’s reflected by all the comments above. The solution is to modify the current description of the ACK\_SN to:  set the ACK\_SN to the SN of a received RLC SDU which is partially indicated as missing due to status report being truncated, otherwise to the SN of the next not received RLC SDU which is not indicated as missing in the resulting STATUS PDU  this way, the ACK\_SN will indeed by 70 as suggested by the opposing companies. In addition it will resolve the issue as suggested by the supporting companies. |
| Google | No | The spec indicates that the STATUS PDU is built incrementally, starting from the lowest SN and filling the allocation till it runs out of space. So we believe the issue being discussed should should not occur. |
| Apple | See comment | We also think in this case UE can set the ACK\_SN to 70 to avoid the ambiguity. And we are fine to make it clear on ACK\_SN setting as QC suggested. |
| ZTE |  | We also think the ACK\_SN to 70 shall be included. Maybe confirm in chairminuts is enough |
| MediaTek | No, but | We can agree with Qualcomm’s suggestion to make it clear. |
| DOCOMO | No | Agree with QC and Apple. |
| ASUSTeK |  | We are fine with QC’s suggestion. |
| Lenovo | No | Fine with QC’s suggestion |
| Intel | No | The problem described by the contribution cannot happen according to the specified behaviour regarding constructing RLC status report. We don’t think any further clarification is needed. The status reporting section in NR is directly translated from LTE version (e.g. parameter name change). We don’t think there is any critical issue given that LTE has been commercialized for many years. |
| CATT | No | Agree with LG. This is a rare case and exists in LTE. It is preferred not to discuss the detailed solution in the current stage. |
| Fujitsu | No | We also think that sensible UE implementation would set the ACK\_SN to 70. Then the NW side recoginizes that 70 is not received in the UE and takes proper action. Such a communication is safer than setting the ACK\_SN to 71. |

**Conclusion:**

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# 3 Conclusion

### 5.3.1 MAC

#### 5.3.1.1 Other

[R2-2004423](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004423.zip) Clarification on obtaining of PH values Samsung CR Rel-15 38.321 15.8.0 0738 - F NR\_newRAT-Core

[R2-2004424](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004424.zip) Clarification on obtaining of PH values Samsung CR Rel-16 38.321 16.0.0 0739 - A NR\_newRAT-Core

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[R2-2004940](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004940.zip) Clarification on preamble selection for beam failure recovery Google Inc. CR Rel-15 38.321 15.8.0 0749 - F NR\_newRAT-Core

[R2-2004942](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004942.zip) Clarification on preamble selection for beam failure recovery Google Inc. CR Rel-16 38.321 16.0.0 0750 - A NR\_newRAT-Core

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[R2-2005557](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005557.zip) Discussion on presence of IEs in BeamFailureRecoveryConfig ASUSTeK discussion Rel-15 NR\_newRAT-Core

[R2-2005558](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005558.zip) Clarification on presence of IEs in BeamFailureRecoveryConfig ASUSTeK CR Rel-15 38.331 15.9.0 1679 - F NR\_newRAT-Core

[R2-2005559](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005559.zip) Clarification on presence of IEs in BeamFailureRecoveryConfig ASUSTeK CR Rel-16 38.331 16.0.0 1680 - A NR\_newRAT-Core

**=> …**

[R2-2005560](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005560.zip) Handling on absence of IEs in BeamFailureRecoveryConfig ASUSTeK CR Rel-15 38.321 15.8.0 0754 - F NR\_newRAT-Core

[R2-2005561](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005561.zip) Handling on absence of IEs in BeamFailureRecoveryConfig ASUSTeK CR Rel-16 38.321 16.0.0 0755 - A NR\_newRAT-Core

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### 5.3.2 RLC

#### 5.3.2.1 Other

[R2-2005471](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005471.zip) Discussion on missing RLC segment in RLC STATUS PDU Huawei, HiSilicon discussion Rel-15 NR\_newRAT-Core

[R2-2005472](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005472.zip) Clarification on the reception status of RLC STATUS PDU Huawei, HiSilicon CR Rel-15 38.322 15.5.0 0035 - F NR\_newRAT-Core

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# 4 References

[1] R2-110e Chair Notes 20-06-01 1200 UTC.docx