**Best Track Committee Re-Analysis Comments for 1955**

General comments:

1. The committee has concerns about the use of non-synoptic time central pressures at the synoptic times, especially in those cases where the pressure is not being interpolated from one observation across the synoptic time to a second observation. Please review all such cases and remove the current/proposed central pressures from HURDAT if they are not appropriate.

**Agreed.**

1955 Storm #1, Brenda:

1. The committee concurs with the earlier proposed genesis.

**Agreed.**

2. Is there a pressure associated with the Navy aircraft fix at 2105 UTC 31 July? The aircraft obs appear on the 2100 UTC microfilm maps for that day, but it is unclear which one was the actual center fix.

**The 2105Z observation for this fix does not have a pressure value attached to it.**

3. On the third microfilm map for 0000 UTC 1 August, there are two ship reports with what look like hurricane-force winds. The second of these, from the “Geo McDonald”, has a pressure of 998.7 mb and appears to be close of the center of Brenda. Are these obs at 0000 UTC? Are these ships in COADS, and can they be quality controlled? If it turns out they are correct, then Brenda may have been a hurricane. However, they are not in good agreement with the aircraft fix that appears to be about the same time. They need to be added to the ship highlights at the appropriate date and time.

3a. Even if these ships are not absolutely correct, they suggest that the original HURDAT winds may be better than the proposed winds.

**The first ship – “Gulf Caribbean” - showing SW 85 kt and 1011 mb does not appear to have valid winds. A ship from COADS, either the same ship or one very nearby, indicates SW 45 kt and 1010 mb at the same time. Two other separate ships in the vicinity also have substantially weaker (30 and 35 kt) winds. However, the Geo McDonald’s observations of 999 mb with S 80 kt are not so easily discounted. The pressure value suggests maximum winds of at least 45 kt from the Brown et al. pressure-wind relationship. Using a compromise between the aircraft and ship observations, an intensity of 60 kt is now analyzed at 00 and 06Z, indicating a quick intensification. This is the same peak value as that shown in HURDAT. However, it is possible that Brenda reached hurricane intensity.**

4. What data is available from the Mississippi coast? Connor mentions observations at Bay St. Louis, and it is possible they were observations at Keesler Air Force Base and the Gulfport airport. Have these been found? How about any observations from Slidell, Louisiana?

**Hourly observations were obtained via the EV2 website for Keesler Air Force Base, Gulfport Airport, Burrwood, New Orleans Airport, Naval Air Station New Orleans, and Baton Rouge (Slidell is unavailable). These do not add any significant information to the reanalysis, but the low pressures obtained have been included within the daily summary and the excel database.**

5. (Comments from Richard Pasch): The downward adjustments in intensity on 1 August are not really justified by the ship and aircraft observations. For example, the intensity is reduced from 55 kt to 45 kt at 0000 UTC 1 August yet there is a ship observation of 45 kt at this time. Surely some higher wind speeds occurred somewhere else within the circulation. Also, recommend starting the system as a 30-kt depression at 0600 UTC 31 July.

**Agree to retain higher intensity early on the 1st as detailed above. Agree to begin system at 06Z on 31st.**

1955 Storm #2, Connie:

1. On the microfilm map for 1800 UTC 3 August, the ship with 1005 mb and NW winds 10 kt has the call sign of KFDH. Is this the call sign for the SS Mormacreed mentioned in the daily metadata? Or is the call sign for that ship KFDE, which is a call sign mentioned in the Annual Tropical Storm Report (ATSR) excerpt? Please clarify this

**It appears that African Sun is ship KFDH on the microfilm map and is ship 2801 in COADS. “KFDE” in the ATSR report may be a typographical error for “KFDH”. The specific observations from the Mormacreed are not available.**

2. The ATSR excerpt for 4 August mentions that the recon flight that day reported a “false eye” 75 n mi northeast of the fix position, which likely was the true eye. Does this position agree with the proposed track? The committee notes in some puzzlement that the microfilm map for 1800 UTC 4 August shows the plotted aircraft data, and one observation (G-11) was very close to the actual center. Can it be determined how the fix position (G-12) wound up being so far from the actual center?

**A position 75 nm northeast of the fix position would be roughly 17N 51.5W which is still southwest of the proposed position. The position at that time had placed significant weight on the 12Z ship observations, though it is acknowledged that ship positions were often as problematic as aircraft positions in this era. The 18Z position has been moved back to the original HURDAT position, which offers a reasonable compromise of the 12Z ship positions and the “false eye” position from aircraft around 18Z.**

3. What is the observation seen near the center of Connie on the 1800 UTC 5 August microfilm map? Is it a ship or an aircraft observation?

**This is the 90 kt maximum surface wind reported by the aircraft reconnaissance mission.**

4. On 5 August, an aircraft report mentioned a “measured” wind of 92 kt at 600 ft northwest of the center. Using today’s standards for reduction, this would yield a surface wind of about 70 kt. However, it is unclear whether that standard should be applied to this datum, and the issue is complicated by the uncertainty of whether the aircraft sampled the strongest winds. Would 70 kt fit the central pressure better than the proposed 75 kt?

**As discussed in previous seasons, flight-level winds in this era were mainly subjectively determined and not reliable at all for hurricane force winds. It was not until 1976 with the advent of the NOAA Orion P-3 did flight-level winds become accurate in hurricane conditions.**

5. Please better explain the rationale for the intensities on 6 August. Why was 100 kt chosen for the intensity at 1800 UTC when the wind pressure relationships show lower winds?

**At 18Z, an aircraft penetration made a center fix measuring a central pressure of 968 mb and a surface wind of 125 kt is reported. A central pressure of 968 mb yields 92 kt in the pressure-wind relationship south of 25N and 93 kt south of 25N intensifying. Placing some slight weight on the 125 kt surface wind estimate, an intensity of 100 kt is selected for 18Z on the 6th making Connie a major hurricane, but down from 125 kt originally in HURDAT.**

6. Are the land highlights in the 7 August daily metadata necessary?

**Agreed to remove.**

7. On the 2100 UTC 7 August microfilm map, there is what appears to be an ob with west winds in excess of 100 kt. Is this a ship report or an aircraft report?

**This observation is the 125 kt surface wind estimate from the aircraft reconnaissance.**

8. Please review the assessment of the radius of maximum wind (RMW) and the peak intensity on 7 August. First, while the aircraft reported a 38 mile wide eye, it is unclear whether this was statute or nautical miles. Second, the aircraft report stated that the eye was shaped like an inverted cone, with the surface calm 8 miles in diameter and the 38 mile diameter occurring at 500 mb. This suggests that the 30 n mi RMW used in assigning the peak intensity could be too large. If the size of the RMW cannot be properly assigned from the available data, please leave it out of the intensity estimation at this time.

**Agreed that the RMW cannot be determined with sufficient accuracy to assist in the intensity determination. A central pressure of 944 mb yields 117 kt south of 25N and 119 kt south of 25N intensifying. An intensity of 120 kt is selected for 18Z on the 7th, down from 125 kt originally in HURDAT (but up from the 115 kt proposed in the draft reanalysis). 120 kt is also the peak intensity for the lifetime of hurricane Connie.**

9. Is the source of the original 936 mb pressure used in HURDAT known?

**Unfortunately, no. However, the lowest central pressure of 944 mb is documented in all available sources (advisories, microfilm, ATSR, and MWR).**

10. One of the microfilm maps for 1800 UTC 9 August shows the details of the aircraft fix at 2248 UTC. It mentions that the 700 mb height is 9180 ft (2798 m), which using today’s extrapolations formulas yields a range of pressures from 960-979 mb. Please note this in the daily metadata and metadata summary.

**Agreed.**

11. What is the source of the 954 mb pressure quoted in the Monthly Weather Review (MWR) and used as the central pressure at 1800 UTC 9 August? The proposed best track discards three higher aircraft pressures (including the one in point 10) in favor of the MWR value without good justification. Please either find the source of this pressure or re-compute the best track intensities using the observed pressures.

**It is unknown the source of the 954 mb quoted in MWR. At 1440Z and 20Z, aircraft center fixes reported central pressures of 959 and 961 mb, respectively. Moreover, while the 2248Z fix had no central pressure, they mention that the 700 mb height is 9180 ft (2798 m), which using today’s extrapolations formulas yields a range of pressures from 960-979 mb. It is noted in the MWR article on Connie a central pressure late on the 9th was 954 mb. However, given the consistency of the 1440Z, 20Z, and 2248Z information, a central pressure of 959 mb is indicated at 12Z and 961 mb at 18Z. A central pressure of 961 mb yields 94 kt north of 25N and 90 kt weakening north of 25N according to the pressure-wind relationship. At 1440Z, an eye diameter of 35 miles is reported. This indicates an RMW of about 25 nm, which is near the average of 22 nm from climatology. The cyclone is also moving at a relatively slow 8 kt. Complicating the analysis was the 135 kt surface wind estimate at the 2248Z fix. Weighting the surface wind estimate only slightly, an intensity of 95 kt is selected for 18Z on the 9th, down from 125 kt originally in HURDAT, a major change.**

12. The committee is puzzled by the differences between the Air Force and Navy reported central pressures on 10 August. However, it notes that the 700 mb heights reported by the Air Force planes are consistent with the pressures reported by the dropsondes.

**It is unknown why there are differences in the Air Force and Navy reported central pressures.**

13. On one of the 0600 UTC 11 August microfilm maps, there is a note about the Navy plane orbiting in the eye around 1050 UTC. The plane is reporting a 850-mb height of 4000 ft (1219 m), which yields an extrapolated surface pressure of 978 mb. Since this appears reasonable compared to the other fixes, please include it in the daily metadata and the spreadsheet.

**Agreed.**

13. Can it be determined if Fort Macon was inside the eye during the North Carolina landfall? Are any observation available from Cape Hatteras? They are missing in both the submission and the data table in the Climatological Data National Summary.

**Fort Macon is unavailable from NCDC’s EV2 website, though Hatteras is available. Hatteras indicates a lowest pressure of 979 mb at 2049Z on the 12th with fastest mile of 49 kt SE at 13001Z.**

14. There are two conflicting factors to be considered in the North Carolina landfall intensity. First, Connie may have evolved into a storm similar to Irene (2011) or Igor (2010) where the normal wind pressure relationships don’t apply. Irene, for example, had a landfall pressure of 952 mb and winds of 75 kt in North Carolina. On the other hand, the central pressure of Connie fell 15-20 mb as the center approached the coast and the eye contracted, suggesting the storm was strengthening. Please re-evaluate the landfall intensity in light of this and the various observations.

**It is clear that Connie’s central pressure decreased about 15 mb in the 24 hours before landfall. However, it appears that the inner core size (measured by the eye diameter) actually increased. These somewhat contradictory pieces of information complicate the intensity estimate.**

14a. Please clarify the landfall RMW. In the metadata summary, one section states that the RMW based on aircraft data was 15 n mi. In the next paragraph, it states that Ho et al. used a 38 n mi RMW. Which of these are you using for the landfall intensity estimate and which (if either) best fits the observations?

**The 15 nm RMW was from the 11th almost a day before landfall. The last aircraft reconnaissance into Connie at 09Z on the 12th indicated an eye diameter of 40 nm as did the Hatteras radar at 0647Z. These support an RMW of 30 nm, which is used here and is a bit smaller than the Ho et al. estimate. When Connie made landfall, it was moving at around 8 kt, rather slow for this latitude. An intensity of 85 kt is selected for 12Z and at landfall at 15Z on the 12th based upon a near average size and slower than usual translational speed. This intensity is an increase from 70 kt as originally shown in HURDAT and makes Connie a low end Category 2, which is a decrease from the Category 3 originally.**

15. How much of the MWR and ATSR excerpts following the 15 August daily metadata are truly necessary? Please delete the parts that aren’t.

**Agreed to remove most of the excerpts.**

16. Please also re-examine the intensity on 14-15 August. Are any ship reports available from the Great Lakes to help with this?

17. What is the basis for saying in the metadata summary that the central pressures originally shown in HURDAT on 13 August are likely too low?

**The central pressures originally shown in HURDAT from 00Z to 18Z on the 13th are not from specific observations, but are instead analyses. As these look reasonable given available measurements, these are retained.**

18. The July 1957 Mariners Weather Log has an article on tropical storms affecting the Great Lakes. This mentions that on 14 August Connie caused winds of up to 50 mph on Lake Erie and Lake Ontario, and winds of up to 40 mph on Lake Huron. Unfortunately, it does not mention specific observations, and the microfilm maps show no ship reports from the Great Lakes on 14 August. Could you please check COADS and whatever other sources might contain such reports to see if specific observations can be found?

**Sustained tropical storm force winds were obtained for New England in a few land stations via the EV2 website: Buffalo, Mitchell Air Force Base, and Stewart Air Force Base. These were all on the 13th, however, not on the 14th and only Buffalo is on one of the lakes (Erie). COADS, unfortunately, did not have any ships available within the Great Lakes. Based upon this report from MWL and the Buffalo observations, the winds are boosted up late on the 13th until dissipation early on the 15th.**

19. (Comments from Richard Pasch). The original HURDAT showed a minimum central pressure of 936 mb at 1800 UTC 8 August. This value is disregarded, the reason given that: “A central pressure of 936 mb is originally shown in HURDAT at 18Z but the corresponding advisory shows that it was 944 mb at this time.”. This is not sufficient justification; what was the source of the 936 mb value?

**It is unknown the origin of the 936 mb value. However, a lowest central pressure of 944 mb is documented in all available sources (advisories, microfilm, ATSR, and MWR).**

1955 Storm #3, Diane:

1. Please better state the basis for the track changes on 7 August. It is not readily obvious from the various maps for that day.

**The significant changes in the positions on the 7th are due to the (one) available ship observation, that indicates the cyclone – if it existed – had to have been farther southeast than indicated in HURDAT.**

2. The daily metadata form 10-11 August are confusing as to when the first gales were reported. The 10 August entry says no gales or low pressures, then has a mention of 35 to 45 mph ship reports at 1930 EST. Could that passage be better placed in the 11 August metadata?

**Agreed.**

3. According to the Climatological Data National Summary, Wilmington, North Carolina reported a minimum pressure of 986.1 mb at 10:30 AM 17 August. Please work this into the metadata where appropriate. Also, please obtain detailed observations from this station, if but for no other reason to determine the maximum sustained wind observed there.

**The Surface Weather Observations for Wilmington were obtained from the NCDC EV2 website. These show that the fastest mile winds were (only) 36 kt NE at 0848Z and that the lowest pressure was 986 mb (with 15 kt SE winds) at 1415Z. This has now been incorporated into the analyses.**

4. Are more detailed observations available from Frying Pan Shoals, North Carolina?

**Unfortunately, no.**

5. Was Diane actually a hurricane at landfall? The wind-pressure relationships suggest that it was. However, the evolution of the cyclone and the broad nature of the inner core raise a caution flag. Also, the aircraft monitoring the storm were reporting at best 65 kt winds before landfall, and there are no reports of sustained winds anywhere close to hurricane force. Can any data be found from Morehead City or other stations between Wilmington and Cape Hatteras? Is the current 60 kt in HURDAT a better landfall intensity than 65 kt?

**The Morehead City Surface Weather Observations were obtained from the EV2 website. However, no observations were taken there on that date, likely because of the hurricane warning for the coast. The same is true for Jacksonville/New River. Elizabeth City and Hatteras were obtained which showed 48 kt SE (peak hourly fastest mile) and 43 kt E (peak fastest mile), respectively. It is agreed that a 60 kt intensity at landfall at 11Z would be a better assessment.**

6. Pending the resolution of point 5, the 1200 UTC 17 August intensity should be a little weaker than the landfall intensity since the position is inland.

**Given that the large system had just been inland for an hour after landfall and the radius of maximum wind likely still along the coast, 60 kt is selected to be the intensity at 12Z as well.**

7. In the 19 August daily metadata, there is a reference to a 40 kt ship near 34.4N 76.2W. Is this ob truly relevant to Diane?

**Agreed, this observation is not relevant to Diane and has been removed.**

8. (Comments from Richard Pasch). What is the basis for the revised best track showing a decrease in intensity from 75 to 70 kt for one six-hour period around 14 August 1800 UTC? Obviously, the data aren’t good enough to justify this alleged 5-kt fluctuation.

1955 Storm #4, Edith:

1. On the 1200 UTC 21 August Historical Weather Map (HWM), there are three ships with south to southwest winds near 10N between 40W-42W. Why was the one at 10N 41W used for the track adjustment? Also, do these ships suggest the possibility that the genesis location is south of the current HURDAT?

**Agreed to move the track southward as well as westward based upon three ships.**

2. While the intensity changes on the data sparse days of 21-23 August appear logical, there is no data to support them. As bad as the old values look, please use them unless some evidence can be found to justify changing them.

**Agreed. The intensity is retained as is on the 21-23.**

3. In the 26 August daily metadata, please mention the pressure from the ship Rincon Hills even if it appears to be bad.

**Agreed.**

4. While the aircraft data on 26 August does not agree with the current 75 kt HURDAT intensity, is it conclusive enough to justify a decrease to 60 kt – a value below that of the wind pressure relationships – and to tropical storm status? The committee suggests using 65 kt instead of 60 kt.

**Agreed.**

5. One of the 0000 28 August microfilm maps has the fix form for the 0250 UTC 28 August recon mission. On it, there appears to be dropsonde data with a splash pressure of 991 mb. If this is a central pressure, please include it in the write-up.

**It appears to be a central pressure, as it is consistent with previous and subsequent central pressure readings.**

6. A microfilm map for 0000 UTC 29 August shows a recon fix at 2012 UTC 28 August. First, this fix needs to be included in the daily metadata. Second, the central pressure is confusing. The form says a dropsonde reported 984 mb, but a written note indicates the plane had an error in the 500 mb height and thus the pressure should be 990 mb. The latter value is used in the metadata summary. Please clarify this pressure, and if necessary determine what kind of surface pressure error in a dropsonde would result from a 120 ft error in 500 mb height.

**Done. At 500 mb, a 120 ft error would translate to about 5 mb, consistent with what was done operationally with the fix.**

7. One of the microfilm maps for 1800 UTC 30 August has a form that looks like the old Supplementary Vortex Message that contains detailed observations of wind and other data. It mentions measured 105 kt winds about 40 miles southeast of the eye. Regardless of the flight-level, this strongly suggests that Edith was a hurricane at that time, and this may be the source of the original 80 kt HURDAT intensity. The message also mentions a D-value of -1300 ft at an altitude of 1000 ft inside the eye, which may be usable to obtain a central pressure. Please find the decoding form for this message and obtain as much information from it as possible.

**Most of the format has been decoded. It indicates that the 105 kt “measured” wind was from the south (170 degrees) at 1616Z on the 30th at 35.6N 57.7W. The D-value of -1300 ft corresponds to 967 mb central pressure, which was recorded at 1450Z at 35.7N 59.0W. These do indicate that Edith was a substantial hurricane on this date.**

8. Please review the proposed TC-ET-TC transition sequence from 30 August to 3 September. While such back and forth transitions have occurred, it is troubling by the speed of the proposed transition from a likely extratropical system at 0600 UTC 1 September to a tropical cyclone 12 h later. Is it possible that the cyclone was a decaying baroclinic low on 1-3 September? What evidence is there, other than the temperature gradient, that the cyclone regained tropical characteristics? Is it possible that both the old and new HURDAT positions are wrong in respect to the frontal system?

**It is agreed that the system from the 1st onward was a decaying baroclinic low which had occluded but did not show reintensification through non-baroclinic processes.**

9. (Comments from Richard Pasch). I do not support downgrading this system from a hurricane to a tropical storm. The lowest central pressure was at most 987 mb and there were aircraft reports of hurricane force winds. The evidence that Edith was not a hurricane is not strong enough.

**Agreed to retain Edith as a hurricane.**

1955 Storm #5, Unnamed:

1. Has Perez been contacted for information on why this is considered a tropical storm in Cuba? Other than that, the evidence for calling this a tropical storm prior to 26 August is quite thin.

**Perez has been contacted to see what evidence he had access to that indicated the system was a tropical storm in Cuba. However, he has not responded to our request as of yet.**

1a. Indeed, the data suggests that this system may have been an elongated low pressure area on 23-24 August, and even on 25 August several microfilm maps show multiple centers. Is it possible that genesis was delayed until the system consolidated at the north end of the elongation on 25 August? Please re-examine the proposed track to see if dropping the 23-24 August portion – or making it a low instead of a tropical depression - makes sense.

**Making the 23-24 August portion of the track a “low” designation is not consistent with current best track methodology of only indicating “low” once a well-defined center has formed. Given that this struggled to maintain a well-defined center until the 25th, genesis is now indicated to have begun at 18Z on the 25th.**

2. Please obtain the detailed observations from the New Orleans area to see if the 1000 mb pressures were measured in the center.

**The Surface Weather Observations were obtained for the New Orleans Naval Air Station, the Weather Bureau Airport Office, and the Weather Bureau City Office, though these did not have complete hourly reports. None listed the 1000 mb, nor did either provide the 35-40 kt reported. The National Climatological Data Summary did indicate that the 1000 mb was observed at the New Orleans Naval Air Station. So it is unknown whether the 1000 mb was measured in the center of the system.**

3. (Comments from Richard Pasch). The surface observations are not unequivocal that this system lacked a closed circulation from 0000 UTC 25 August through 1200 UTC 25 August. The southwest quadrant was not sufficiently well observed to support this. Also, if Perez had indicated that this was a tropical storm landfall in western Cuba, he very likely had observations to support that; therefore I disagree with the downgrade in intensity on 24-25 August.

**The majority of the committee indicated a preference to begin genesis late on the 25th. Given that this struggled to maintain a well-defined center until the 25th, genesis is now indicated to have begun at 18Z on the 25th. Perez has been contacted to see what evidence he had access to that indicated the system was a tropical storm in Cuba. However, he has not responded to our request as of yet.**

1955 Storm #6, Flora:

1. Please re-examine the aircraft-reported central pressures at 0200 and 0230 UTC 6 September. A passage in the metadata summary states that the 977 mb pressure (presumably provided by the ATSR) appears unreliable, with a possible reason that the fix was made from 500 mb. One of the microfilm maps for 0000 UTC 6 September shows the fix forms. The 0200 UTC fix was made from 700 mb and reports a 700 mb height of 9480 ft or 2890 m. This corresponds to a range of pressures from 970-989 mb according to today’s extrapolation formula. While not conclusive, it does suggest that the 977 mb pressure is reasonable. Please better state why it is unreliable, or re-calculate the intensity using the 977 mb value. The 0230 UTC fix was apparently made at 500 mb.

**Agreed that the 977 mb may indeed be reasonable and have incorporated that into the reanalysis.**

2. On one of the 1800 UTC 7 September microfilm maps, there is a note that the aircraft fix found a minimum 700 mb height of 9420 ft or 2874 m. This corresponds to a range of pressures from 968-987 mb according to today’s extrapolation formula. Please note this at the appropriate parts of the submission.

**Agreed.**

3. Please make a better case for the extension of the track into 10 September. The system looks like an open wave at 0000 UTC that day, while the 0600 UTC and 1200 UTC maps suggest the possibility it was still closed. However, the best evidence that the circulation was still closed – a ship report of SE winds 20 kt and 1007 mb on the 0600 UTC analysis – is in poor agreement with another nearby ship. Have these ships been quality controlled?

**It is agreed that the evidence is too ambiguous to continue the track of the system as an extratropical on the 10th. (Comparison of the ships makes it unknowable which one is reliable with regards to wind direction at 06Z on the 10th.)**

4. (Comments from Richard Pasch). The changes in intensity in both the original and revised HURDAT on 3-4 September are not very realistic. The storm is shown to strengthen quite rapidly, from 45 to 65 kt from 0000 to 1200 UTC on 3 September and then just levels off at 65 kt for 30-36 hours. Are there any data to support a more gradual increase in strength on 3 September, i.e. not becoming a hurricane so quickly?

**It is agreed that the intensity variations in HURDAT on the 3rd and 4th (unchanged in the reanalysis) are somewhat unlikely. There is essentially no data on the 2nd through 06Z on the 3rd, so no changes can be implemented then. From 12Z on the 3rd through 18Z on the 4th, the data available are consistent with the existing HURDAT, so no changes are thus made. These comments are now included within the metadata writeup.**

1955 Storm #7, Gladys:

1. Please re-examine the genesis of the cyclone. While a low pressure area was evident on 2-3 September, what would be the factors that would show it was a tropical depression at any given time? Perhaps 1800 UTC 3 September would be a better time?

**Agreed to indicate genesis at 18Z on the 3rd, as the system appeared to have a well-defined center at that time.**

2. Please contact the Meteorological Service of Mexico for detailed observations for the passage of the system over Tampico.

**The EV2 website and the Meteorological Service of Mexico were contacted. Unfortunately, the archives for Tampico were lost and are unavailable.**

3. One of the microfilm maps for 1500 UTC 5 September has a form for what appears to be an additional aircraft center fix at 1510 UTC that day. Is this the fix mentioned in the daily metadata at 1615 UTC? If not, please add it to the appropriate places in the metadata.

**Yes, this is a center fix which is now included in the daily summary.**

4. What is the source of the 996 mb pressure mentioned in the ATSR excerpt in the 5 September daily metadata?

**The message in the microfilm for the 1510Z fix indicated a central pressure of “19” mb (an obvious error), but the ATSR book mentioned 996 mb in the same context of the 80 kt, so the 996 mb is likely the correct value measured during this penetration fix.**

5. The committee does not concur with the proposed downgrade to a tropical storm at this time. While the aircraft pressure does not support hurricane intensity, the nature of the 80 kt observation (surface or flight-level) needs to be determined. For now, it is suggested to reduce the peak intensity to 65 kt, which would be more reasonable given the central pressure.

**Agreed. The 80 kt aircraft wind observation does not specify, though these were usually based upon the visual sea surface estimate. Given the small size of the cyclone and providing some weighting on the visual estimate of 80 kt, intensity is analyzed to be 65 kt at 12Z and 18Z on the 5th. This intensity is also the peak for the system.**

6. What is known about the “civilian plane” that reported 81 mph winds from this system?

**Unfortunately, nothing more is known about this observation.**

7. Please move the discussion on the disturbed weather in the northwestern Gulf of Mexico to the appropriate Additional Systems section.

**Agreed.**

8. (Comments from Richard Pasch). Can the newly added track of this system for 2-3 September be modified a bit to make it more aesthetically pleasing? As it is, the center virtually retraces its path after the above days. Certainly the data would allow for a little wider loop as opposed to a “bobby pin”.

**As genesis is now indicated to be at 18Z on the 3rd, the initial motion is westward and no bobby pin loop is shown.**

1955 Storm #8, Ione:

1. Please better explain the basis for the large changes in position on 10-12 September, as the data appear too scarce to justify them. It is notable that an aircraft reported an “eye” near the original track positions on 11 September. What was the basis for ignoring this?

**A mistake was made on the plotting of the synoptic map at 18Z September 11th in that the longitudes were indicated 5 degrees too far west. Correcting this provides consistency between the recon with the original best track late on the 11th. The position on the 10th is still adjusted southeastward, but not as much as done in the first draft.**

2. The data does not make a very good case that Ione was a tropical storm on 10-13 September. Is the coverage sufficient that the 35-kt intensities should be reduced?

**The observations are quite sparse on the 10th and 11th. The aircraft reconnaissance mission did estimate 35 kt NE surface winds around 12Z on the 12th, which is consistent with the existing 35 kt in HURDAT at that time. Thus no changes are made to the intensities on these dates.**

2a. Is the 1008 mb aircraft report on 12 September a central pressure? It appears to have had a simultaneous 10-kt wind on the 1800 UTC microfilm map.

**Agreed. We had already used this as a 1007 mb central pressure.**

3. On the 0000 UTC 14 September microfilm map, there is a ship with S winds 30 kt and 998.6 mb. Is this ship in COADS, and was it used in the re-analysis? If there is some reason to believe it is wrong, please mention why somewhere in the metadata.

**The ship (no name available) is not in COADS. The pressure looks to be considerably too high in comparison with neighboring ships. Indeed, the microfilm has a “?” next to the pressure value as well as a “086?”, suggesting that the forecasters in 1955 thought that it might be 10 mb too low.**

4. One of the microfilm maps for 1800 UTC 14 September shows an aircraft fix at 2030 UTC that is not included in the metadata. The 700 mb height appears to be 10160 ft (3097m), which would correspond to a range of pressures from 992-1013 mb using today’s formulas.

**This fix was included in the excel database, but given that a 1000 mb central pressure was measured at 1830Z this was added into HURDAT and emphasized.**

5. On 14 September, what is the basis for using intensities above those of the wind-pressure relationships at 1200 and 1800 UTC? Given the large circulation and broad inner core area, wouldn’t intensities at or below those of the wind-pressure relationships be more appropriate?

**Agree to reduce down slightly the winds at 18Z to 50 kt, but to keep the winds at 12Z at 50 kt. These are based on a blend of the pressure-wind relationship (45 kt) and the visual winds (60 kt).**

6. The microfilm version of the aircraft fix at 1052 UTC 15 September (one of the maps for 1200 UTC that day) is unreadable. Is there any information on it that could lead to a central pressure? The same is true for several other aircraft data forms for this storm.

**While we were previously able to obtain the time, location and maximum winds (66 kt) from this vortex message, there is no information available (heights, d-value, or pressure) that can be used to provide a central pressure.**

6a. Is there a source for the 990 mb pressure used in HURDAT at 1200 UTC 15 September (such as the afore-mentioned aircraft fix)? If not, please remove it from HURDAT.

**Given that the pressure is reasonable and that it might have been provided by the aircraft reconnaissance, it would be prudent to not remove the value from HURDAT.**

7. One of the microfilm maps for 1500 UTC 15 September shows a fix from a Navy aircraft at 1652 UTC that day, with a pressure of 992 mb a few miles away. Please add this fix to the metadata and, if necessary, re-evaluate the intensity at 1800 UTC.

**Agreed. A penetration fix at 22.9N 65.1W at 1652Z with 992 mb minimum pressure at 23.0N 65.0W and with 993 mb (simultaneous) with 70 kt surface winds at 22.5N 64.7W (no time) have been added. It appears that because of the differing positions between the wind center and the 992 mb pressure minimum as well as the 70 kt with 993 mb observations that 992 mb is not a central pressure.**

8. Similar to point 5, what is the basis for using intensities above those of the wind-pressure relationships on 16 September? Given the large circulation and broad inner core area, wouldn’t intensities at or below those of the wind-pressure relationships be more appropriate?

**Agree to reduce down slightly the winds at 12Z to 75 kt, based on a blend of the pressure-wind relationship (71 kt) and the visual winds (80 kt).**

9. In the metadata summary, “An intensity of 105 mb…” should be “An intensity of 105 kt…”.

**Corrected.**

10. What is the basis for the 950 mb central pressure in HURDAT at 1200 UTC 17 September? Is it just interpolation of the 971 and 938 mb values on either side temporally? If so, this is likely too uncertain to use. Please remove this value if a source cannot be found.

**A 950 mb central pressure is present in the original HURDAT at 12Z and while there were no specific observations to corroborate it (though it may be from aircraft), this value is retained as it is reasonable based on the rapid intensification the hurricane was going through on this day.**

11. Please re-evaluate the intensities from 0000 UTC 18 September until landfall in North Carolina. During this time, Ione was a large and weakening system, and (like Connie) it is possible that the winds and pressures may have resembled those of Irene and Igor instead of the more ‘average’ cyclones the wind-pressure relationships imply.

**Ione certainly evolved from an extremely intense hurricane late on the 17th with 938 mb central pressure, maximum sustained winds around 120 kt, and RMW near 12 nm to what is analyzed to have occurred at landfall nearly two days later. (Landfall, as suggested below, was 955 mb central pressure, 90 kt sustained winds, and 25 nm RMW.) Unfortunately, in between these times, the only indication of the intensity was the 943 mb central pressure at 1340Z on the 18th and no indication available of the inner core size. Given this information, a gradual weakening of the intensity is indicated from the 120 kt at 18Z on the 17th until 90 kt at 12Z on the 19th.**

12. Please re-write the 19 September daily metadata to include the information from the data table in the Climatological Data Summary. In particular, the report from Cherry Point, North Carolina of 65 kt sustained winds with a gust of 93 kt needs to be included.

**Agreed.**

13. In the metadata summary, the section regarding the landfall intensity in North Carolina needs to be re-done. First, it is not correct to assume a 960 mb pressure just because a 960 mb pressure was reported inside Ho’s estimated RMW. As shown by the 1947 Fort Lauderdale hurricane, a significant pressure gradient can exist across a large eye. Second, the Ho RMW seems to have been used without any explicit checking to see if it is justified by the observations. Please determine both the central pressure and RMW based on the observations and then re-evaluate the landfall intensity. Can it be determined if the RMW passed over Cherry Point? If so, the 65 kt peak wind reported there is another factor to use for the landfall intensity.

**The NCDC EV2 website was searched for Surface Weather Observations. Unfortunately, only Cherry Point was available near the landfall location. Ione reached the North Carolina coast around 11Z on the 19th making landfall between Morehead City and Beaufort near 34.7N 76.7W. Unofficial minimum pressure readings were 960 mb at Morehead City and 958 mb at Beaufort. The US Marine Corps Air Station at Cherry Point registered their minimum sea level pressure of 962 mb simultaneously with 50 kt ENE sustained winds at 1130Z (~30 minutes after landfall about 15 nm from the center). The station was inside the RMW as their peak winds (65 kt sustained and 93 kt gust) were recorded at 1034Z, suggesting an RMW of about 25 nm. (This is very similar to the Ho et al. estimate of 22 nm RMW.) Runs of the Schloemer equation give 957 mb central pressure using the Beaufort pressure and 950 mb from the Cherry Point pressure. A blend of this gives a central pressure of about 955 mb at landfall in North Carolina. This pressure yields 96 kt north of 25N weakening and 93 kt north of 35N according to the Brown et al. and Landsea et al. pressure-wind relationships. The estimated RMW of 25 nm is about the same as the 27 nm from climatology, the outer closed isobar is a near average 1013 mb, and the translational speed of Ione at landfall was a slow (for this latitude) 11 kt. Based upon near average size, average OCI, but slow speed, an intensity of 90 kt is selected at landfall and 12Z, up from 65 kt originally shown in HURDAT, a major change.**

14. What was the basis for the original classification of NC3, given that HURDAT has a landfall intensity of 65 kt?

**From Landsea et al. (2008): “Another methodological concern is that the winds in HURDAT just before a hurricane landfall in the United States often do not match the assigned Saffir–Simpson hurricane scale. C. J. Neumann and J. Hope developed the first digital HURDAT records with 6-hourly position and maximum wind estimates in the late 1960s (Jarvinen et al. 1984), before the Saffir–Simpson scale was devised (Saffir 1973; Simpson 1974). The U.S. Saffir–Simpson scale categorizations for the twentieth century werefirst assigned by Hebert and Taylor (1975), based primarily upon central pressure observations or estimates at landfall. It was not until the late 1980s that the use of the Saffir–Simpson scale categorization was based upon the winds exclusively, which is the current standard at NHC (OFCM 2005).”**

15. Can it be determined from the Elizabeth City, North Carolina obs if the station was inside the RMW?

**The Surface Weather Observations were obtained for Elizabeth City. These hourly observations indicate a minimum sea level pressure of 978 mb with 17 kt ESE at 0330Z. Ione passed just a few nm east of the city and a central pressure of 976 mb is estimated at the time. Elizabeth City was inside the RMW, but the broad nature of the wind field several hours after landfall suggests an RMW at that time of about 60-75 nm in the front quadrant of the storm.**

16. Please re-check the reported central pressure for the Navy recon flight near 0000 UTC 21 September. The various metadata report a central pressure of 976 mb at 0245 UTC 21 September. However, the form on one of the microfilm maps for 0000 UTC 21 September suggests the pressure was measured on a penetration fix at 2115 UTC 20 September, and that the 0245 UTC fix was by radar. Please correct this if necessary.

**Agreed and corrected.**

17. The committee concurs with the extended life of Ione as an extratropical cyclone pending the resolution of two issues. First, the 24 September HWM shows two lows, a strong system just southeast of Iceland and a small system just southwest of Iceland. Is the data clear enough to say that the first low is the former Ione? Second, the 26 September HWM shows a low pressure area north of Iceland in the area where the former Ione was supposed to be on 25 September. If this low is not the former hurricane, what happened to it and where are the remnants?

**The stronger low southeast of Iceland has good continuity with extratropical Ione from the previous synoptic times. Additionally the secondary low just southwest of Iceland is quite weak and may not be a real feature. It is agreed to continue the former Ione through the 26th as an extratropical cyclone. The system is now dissipated by 06Z on the 27th.**

18. (Comments from Richard Pasch). On 20 September, why is the (revised) intensity of 70 kt lower for a 976 mb pressure at 0000 UTC than the intensity of 75 kt for a 982 mb pressure at 1800 UTC? Interaction with land at the earlier time?

**Yes, because the hurricane was overland at the earlier time. This is now clarified in the summary.**

1955 Storm #9, Hilda:

1. On the microfilm map for 1500 UTC 11 September, there is a ship report of 1004.8 mb and calm winds near 16.5N 64.5W. Has this ship been quality controlled? In addition, several microfilm maps show reconnaissance data that is not acknowledged in the daily metadata.

**There are no additional observations from this ship, but the 1005 mb and calm at 15Z is consistent with the 1006 mb and 10 kt SE wind from the recon mission at 1840Z.**

1a. The 1800 UTC 11 September microfilm map shows what looks like an observation of 1006 mb from the aircraft while it was north of the Virgin Islands. Is this a correct interpretation of the map? Also, a station in the Virgin Islands (St. Thomas?) is showing 1008.1 mb. Was this the minimum pressure for the station, and what could the station’s winds tell us about the where and when of genesis?

**Yes, the 1006 mb observation from the recon is now incorporated into the analysis. Only synoptic observations were available for this station (St. Thomas) and the 1008 mb at 18Z was lowest. Given that the winds shifted from northerly to southerly at the same time of this minimum suggests that the system was closest to the island at that time and that it may have had a closed circulation at that time.**

1b. Pending the resolution of the two data issues noted above, the committee concurs with the proposed later time of genesis. Indeed, since the Navy plane reported an open wave on the afternoon of 11 September, is it possible 0000 UTC 12 September is a better time?

**Agreed to delay the time of genesis to 00Z on the 12th due to the lack of a closed circulation until that time.**

2. Hilda seems to have strengthened rapidly on 12 September. This suggests that the 996 mb ship pressure at 1445 UTC should not be used as the 1200 UTC central pressure. Please remove this from HURDAT.

**Agreed. Instead a special 15Z best track point is now added (format available within HURDAT2) to capture this central pressure within the database.**

3. There appear to be two observations near the center on the 1900 UTC 12 September microfilm map. However, it is not clear whether they are ship or aircraft data, and they are not mentioned elsewhere in the metadata. Please clarify what these data points are and any importance they have for the best track.

**These are ship observations, but it appears that one was overwritten. The one that is clear is 30 kt SW with 999 mb. This is now included within the daily summary.**

4. One of the microfilm maps for 1200 UTC 13 September shows two aircraft fixes on 13 September – one at 1530 UTC with 986 mb and the other at 1747 UTC with 986 mb. The daily metadata mentions the latter fix while the metadata summary mentions the former fix. Please fix the various metadata sections to properly reflect both fixes.

**Agreed.**

5. Have the Meteorological Services of Cuba, Grand Cayman, and Mexico been contacted for additional information on this system?

**Yes, however, none of them have been able to provide any additional information beyond what has already been obtained.**

6. How certain is it that the 1004 mb pressure reported by the aircraft on 14 September was a central pressure, since the plane said it could not locate a circulation center? Perhaps it was a peripheral pressure?

**Agreed that the uncertainty with this observation precludes indicating it to be a central pressure.**

7. Is the Swan Island data in the 15 September land station highlights necessary? It is not very informative about the location or intensity.

**Agreed.**

8. Please re-examine the proposed revised intensities on 18-19 September. While the 85 kt intensity at 1200 UTC 18 September and the landfall intensity on 19 September look good, would it be possible to perform some smoothing in between? What is the basis of 12 hours of 105 kt winds before landfall?

**There was no information available on the intensity between the 14Z fix on the 18th and landfall in Mexico around 11Z on the 19th, so the values in between are somewhat arbitrary. Agreed to smooth these more and indicate 105 kt intensity only about six hours before landfall.**

9. (Comments from Richard Pasch). Since the genesis of Hilda is delayed by a day in the revised HURDAT, and this seems to be justified, it is now storm #9 instead of Ione, which formed earlier. This is correctly shown in the metadata, but the track map still shows Hilda as #8 and Ione as #9. Please correct this. Also, the amount of weakening shown while this cyclone crossed the relatively flat terrain of northern Yucatan seems excessive.

**Agreed to swap the order of Hilda and Ione because of the change in genesis. Agreed to boost the intensity above the Kaplan and DeMaria model because of the very flat terrain of Yucatan.**

1955 Storm #10, (new):

1. The Committee accepts this new system into HURDAT pending some significant revisions to the genesis time and proposed intensities. It is disturbing that a similar, though perhaps stronger, system was included in the original 1955 MWR wrap-up and this system was not.

**Agreed. It would be nice knowing more of the thought processes of the forecasters back in 1955.**

2. The evidence that the system was a tropical storm in the eastern Atlantic is a bit thin, to say the least. While there are several reports of low pressures, none of the associated winds are close to tropical-storm force. This suggests that the cyclone was likely a broad low pressure area at that time.

**Agreed that the system is to be described as a broad low from the 19th through the 22nd. However, the possibility that it was a tropical cyclone on these dates is mentioned.**

2a. The first time the data strongly suggests the system is a tropical cyclone is at 1200 UTC 23 September, when there are ship reports of 1006-1007 mb pressures and 20-30 kt winds near 20N 44W. The Committee suggests delaying the genesis until sometime on 23 September.

**Agreed.**

3. The Committee also suggests keeping the cyclone as a depression on 23-25 September, then subsequently using the proposed intensities that show the cyclone strengthening into a tropical storm. The winds and pressures at 1200 UTC 23 September suggest the possibility the system was a tropical storm at the time, but they are not definitive. After that, there is nothing to suggest the cyclone was a tropical storm until the ship reports on 26 September.

**Agreed.**

4. Given their importance in adding this marginal system to HURDAT, have the ships that reported on 23 and 26 September been quality controlled?

**A time series of the ship #5051 in COADS (30 kt at 12Z on 23rd) was analyzed and no obvious irregularities appear in the time series or in comparison with other ships. The ship “Ricnelieu” (35 kt at 12Z on 26th) only had one other report at 18Z on the 25th and both appear reasonable given the other observations nearby. The “GCTF” (40 kt at 18Z on the 26th) and the “GBEF” (35 kt at 00Z on the 27th) only reported once.**

5. (Comments from Richard Pasch). I concur with the inclusion of this system in the revised HURDAT as a new tropical storm.

**Agreed.**

1955 Storm #11, Janet:

1. Please contact the meteorological services of Barbados, St. Vincent, Grenada, and Mexico for any additional information they have on Janet.

**The meteorological services of Barbados, St. Vincent, Grenada, and Mexico have been contacted but have not been able to provide any additional information regarding this system.**

2. The ASTR excerpt in the 21 September daily metadata mentions the ship Robin Hood that encountered the pre-Janet tropical wave on 18 September. This ship is not referenced in any other part of the submission or included in the spreadsheet. Is data from this ship available?

**It appears that the ship Robin Hood shows up on the HWM 12Z map with 15 kt E and 1014 mb near 38W.**

3. Please re-examine the track near Barbados. The information in the Monthly Weather Review suggests that the RMW passed over the southern part of the island, so the track need to be close enough to the island to allow the passage of an 8 n mi RMW. Also, please explicitly mention that this is a hurricane strike on Barbados.

**Agreed on both points. Track adjusted slightly northward.**

4. On the microfilm map for 1500 UTC 23 September, the ship Milbank is reporting 25 kt and 999.7 mb. This ship also shows up on several other subsequent microfilm maps, with pressures that look a little low compared to other observations. These reports are not referenced anywhere in the metadata. Please quality control the data from the ship and use it in the submission if the data looks reliable.

**Comparison of the Milbank earlier (06Z 23rd) indicates that the ship was indicating around 8 mb too low. This is now mentioned in the daily summary.**

5. Please re-examine the proposed track positions near 0000 UTC 24 September to see if the track can be smoothed.

**The track has been smoothed by adjusting the position on the 24th slightly southward.**

6. Please re-examine the aircraft “penetration fix” near 1745 UTC 24 September. First, the text write-up of the ob (N-10) on one of the 1200 UTC microfilm maps appears to say that the center is in one place and the aircraft is in another, suggesting it was not a penetration fix. Second, on one of the other 1200 UTC microfilm maps, the N-10 ob is plotted with a pressure of 999.6 mb and 30 kt winds, suggesting it is not a central pressure.

**Agree that the center was likely a radar fix near 13.9N 69.2W and that the 1000 mb pressure was a peripheral value, not a central pressure.**

7. The ATSR excerpt in the 24 September daily metadata mentions a penetration fix near 2000 UTC with a central pressure of 995 mb. This pressure also appears on the 2100 UTC microfilm maps (ob N-14). The location of the fix is mentioned in the daily metadata, but not the pressure. Why is this? It is noted that the 995 mb figure is also not used in the metadata summary for this day.

**The location and 995 mb central pressure from the fix are now included in the daily summary. The 995 mb is now used in HURDAT and discussed in the metadata summary.**

8. What is the basis for the 993 mb central pressure shown in HURDAT for 1200 UTC 25 September and the 970 mb pressure for 1200 UTC 26 September? If there is no data other than interpolation to support them, please remove them.

**As these values are reasonable and it is unknown why they were included, it would be prudent at this point to leave them in.**

9. HURDAT has a pressure of 938 mb for 1200 UTC 27 September, which is presumably related to the subsequent aircraft pressure of 938 mb several hours later. Since Janet was likely deepening at a significant rate during this time, please remove this pressure from HURDAT.

**It is agreed to remove 938 mb as a 12Z September 27th central pressure in HURDAT. A special 15Z best track position is created to retain this important information within HURDAT.**

10. It should be noted that the MWR account from Swan Island suggests the maximum winds occurred about 20 minutes before the station was in the eye, with the station in the eye for about 25 minutes. With the caveat that the station was apparently near the northern edge of the eye, this suggests a fairly small RMW even with a 20 kt forward motion. Please note explicitly somewhere in the metadata that Swan Island did **not** measure a central pressure during Janet’s passage, according to the MWR and an account in Weatherwise.

**Agreed to include in this information.**

11. What is known about the 152 kt wind reported at the Chetumal Airport before the instrument failed? Was this sustained or a gust? What can be found about the height of the anemometer? If this was a sustained wind, it suggests the possibility that the proposed 150 kt landfall intensity is too low – especially since the MWR states the winds continued to increase after the instrument failed.

**Unfortunately, no additional information can be obtained regarding this observed wind. Commentary about this observation has been incorporated into the summary.**

11a. On a related note, can an RMW be calculated for the Yucatan landfall? Can any accounts be found of how long the eye lasted in the Chetumal area? The MWR suggests that the length of the calm period in Chetumal is known, although the article does not explicitly state it.

**Unfortunately, without finding out the duration of the calm or some other information, estimating the RMW cannot be done at landfall in Chetumal.**

12. Please re-examine the proposed weakening of the cyclone during its passage over Yucatan, using Dean of 2007 and Gilbert of 1988 as analogs. The current proposed intensities may be too strong. Also, please remove the 950 mb pressure in HURDAT for 1200 UTC 28 September unless some data is found to justify it.

**Gilbert made landfall with 140 kt at 15Z, three hours later (18Z) the intensity was 130 kt, at 00Z the intensity was 100 kt as the hurricane was entering the Gulf of Mexico. Dean made landfall at 0830Z with 150 kt, at 12Z was 110 kt, and at 18Z was 75 kt. Based upon these analogies, the proposed reduction is slightly high. The revised intensity is 105 kt at 12Z for Janet. As the 950 mb value is reasonable and it is unknown why it was included, it would be prudent at this point to leave it in.**

13. In the metadata summary, please use a more formal country identifier than “ABC islands”.

**Agreed.**

14. (Comments from Richard Pasch). Although the track of the hurricane is close to Barbados, is it close enough to have caused the severe conditions on the southern portion of the island, given that the inner core of Janet was very tiny at that time? The reductions of intensity on 24-25 September are so extreme – as much as 55 kt - that they should be questioned. Presumably these reductions are based on pressures, but can we be sure that the aircraft measured the minimum central pressures on those days?

**The track has been shifted slightly northward to be consistent with the reported effects upon the island of Barbados. It is agreed to bump up slightly the intensity to lightly weight the visual estimates from the aircraft. However, the consistency of the central pressure values (996, 995, 993, then 988 mb) also provide strong evidence that these values were valid and that the system was substantially weaker that the Category 3 and 4 hurricane indicated originally.**

1955 Storm #12, “Linda”:

1. The Committee does not concur with adding this system at this time. It is suggested that the write-up be moved to the Additional System sections.

**Agreed.**

2. The main evidence is a ship report of 40 kt from a ship with an apparently known low pressure bias. Have the winds from this ship been quality controlled to see if they are as dubious as the pressure?

**We are unable to calibrate the winds from this ship explicitly. However, it is the case that the winds from other ships and the Cape Verde Islands are more representative of a broad low pressure area than a tropical cyclone.**

3. There are other reports of low pressures from ships and in the Cape Verde Islands as the system passed through. However, to the Committee these appear more representative of a broad low pressure area than a tropical cyclone.

**Agreed.**

4. Has the Meteorological Service of the Cape Verde Islands been contacted to see if any tropical-storm force winds occurred there?

**The Meteorological Service of the Cape Verde Islands has no additional information available on this system.**

5. This system could be added to HURDAT if additional data comes to light. Should that occurs, the Committee does not think the use of the name “Linda” is appropriate, since it would come well before Katie chronologically. Calling it an unnamed cyclone would be better.

**Agreed.**

6. (Comments from Richard Pasch). I am dubious as to the inclusion of this system as a tropical storm in HURDAT. It is being justified by 2 observations, a 40-kt ship report and a pressure of 1004.8 from Praia in the Cape Verde Islands. However, the best track shows that the center of the cyclone was about 80-90 n mi southeast of that station at the time of this pressure reading, so something is amiss here.

**Agreed to not include the system into HURDAT.**

1955 Storm #13, Unnamed:

1. Since the MWR states that this system was associated with a tropical wave that passed through the Cape Verde Islands on 4 October, please provide binder maps and scanned material that cover back to that time.

**Agreed. However, this does not appear to indicate any earlier genesis than the 10th because of the sparse nature of the available observations. (DOUBLE CHECK – GET COADS FROM 4th to 8th.)**

2. Why do the all of the daily metadata entries state that the MWR position is not available? The MWR season summary has a track of this storm on page 325. Please correct this and add the appropriate positions.

**The daily metadata references specifically refer to the Tracks of Lows, which was published in same month that the weather occurred. In this case, the system was too far east to be in these figures. The MWR seasonal summary track map is the same as HURDAT and thus is not mentioned.**

3. Have the ships on the 1800 UTC 10 October microfilm map been quality controlled? Given that there are two very similar reports, they are unlikely to be wrong. However, it won’t hurt to check.

**No additional observations were available for the ship “ELBJ” (not in COADS). Only one additional observation was available for the ship “GLOMDAL” (also not in COADS) at 12Z on the 11th, which looks reasonable compared with the one neighboring ship.**

4. Since the ship reports are at 1800 UTC 10 October, could the intensities for 0600 and 1200 UTC that day be reduced closer to that of the existing HURDAT?

**Agreed, though this supposes that the system was developing on the 10th. It is quite possible that the system was steady state on that date and that the two ships around 18Z represent the first information in the inner core of the cyclone.**

5. Please re-examine the dissipation of this system on 14 October. The 0600 UTC microfilm maps appears to have enough data to resolve two lows, with the tropical cyclone to the southeast of the baroclinic low. On the 1200 UTC microfilm map, there is a confusing observation southeast of the baroclinic low – a ship with 994.9 mb and apparently two wind directions with speeds near 40 kt. The first is from the northwest, while the second (which seems to be in COADS) is from the southeast. Please clarify which of these observations is correct. Then, please check if this allows the track to be continued for six additional hours as in the original HURDAT. It is noted that if the northwesterly direction is correct, it combined with the pressure suggests the tropical cyclone vortex has not yet dissipated.

**Agreed to retain the system through 12Z on the 14th. It is of note that the ship in question was listed as SSE in COADS and also plotted the same in the Historical Weather Maps, so it is likely that the NW wind is incorrect. Based upon this a final position of 40N 36W at 12Z is now estimated. The somewhat sparse observations at 18Z suggest that the tropical cyclone merged with the larger extratropical low to its northwest.**

6. (Comments from Richard Pasch). Since according to Monthly Weather Review, this storm can be traced back to a small vortex that developed in an easterly wave which passed through the Cape Verde Islands on October 4, shouldn’t the data for the period of 4-8 October also be examined to see if it can be started earlier in the revised HURDAT (which has an initial position with an intensity of 50 kt).

**Agreed. However, this does not appear to indicate any earlier genesis than the 10th because of the sparse nature of the available observations.**

1955, Storm #14, Katie:

1. Please contact the Meteorological Services of the Dominican Republic and Haiti for additional information on this system.

**The Meteorological Services of the Dominican Republic and Haiti have been contacted, but neither have any additional information regarding Hurricane Katie.**

2. In the 17 October daily metadata, it states “Radar center fix measured a pressure of 1000 mb…”. Is this correct?

**The combination of the microfilm and the ATSR clarified that there was a penetration center fix that measured a central pressure of 1000 mb and maximum surface winds of 65 kt at 21.3N 70.4W at 20Z and a separate radar center fix at 21.5N, 70.3W at 22Z.**

3. Please better state the basis for the proposed 90 kt landfall intensity. The Committee recognizes that the original HURDAT intensity is very problematic in showing a major hurricane, but it would like to see a better explanation of the proposed change.

**Katie was a small hurricane that apparently continued to intensify until landfall occurred around 05Z on the 17th on the Dominican Republic (18.0N 71.7W), near the city of Pedernales. Landfall intensity is estimated at 95 kt, a high end category 2 hurricane. This is based upon the earlier rapid intensification that was experienced as well as the descriptions of damage in the Dominican Republic. It is possible that Katie was a major hurricane at landfall, as the aircraft left the hurricane seven hours before landfall as it was rapidly intensifying.**

4. Please re-examine the proposed earlier dissipation on 19 October. The Committee does not disagree with it, but it notes that the data and the write-up are a bit confusing. For example, the 1200 UTC 19 HWM shows a ship with north 15 kt and 1007.5 mb in the warm sector of the baroclinic low, suggesting that Katie could be east of the ship. However, this ship does not show up on the corresponding microfilm maps. Also, the metadata summary makes reference to a ship AMST indicating a cyclone developing along a frontal boundary, with the relationship of this ship to either Katie or the already-analyzed baroclinic low not stated. Please clarify the situation.

**Early on the 19th, Katie began to interact with an approaching frontal boundary and large extratropical cyclone and the Katie became absorbed by 12Z. This is supported by the synoptic maps of 12Z on the 19th and 00Z on the 20th. The analyzed last position is 06Z on the 19th, 24 hours earlier than originally shown in HURDAT. (The 12Z 19th HWM map is confusing as there is a ship observation indicating weak northerlies north of the existing HURDAT position, suggesting that Katie may still exist east of this ship. This ship’s wind direction, however, is in substantial disagreement with nearby ships, making its northerly winds unreliable.) The AMST ship is irrelevant and its mention has been removed.**

5. (Comments from Richard Pasch). The ship report of 50-kt winds about 50 n mi southwest of the center of Katie 16 October suggests that this system was probably already a hurricane at that time. I recommend increasing the intensity to 65 kt at that time.

**Agreed.**

1955 Additional Notes:

1. Suspect #4: Please do some more digging for data on this system. First, if possible please find the aircraft data for the two missions mentioned in the ATSR excerpt. Second, please obtain the hourly observations from Brownsville and Corpus Christi, Texas to help determine if a center moved onshore between the six-hourly microfilm maps. Third, there is a station plotted on the 0000 UTC 6 September microfilm map for Gladys which is a) near the Texas coast (an oil rig?) and b) reporting 994.2 mb and 60 kt winds. Please find whatever information can be found about this station, which at the very least differs significantly from the nearby obs. (Comments from Richard Pasch). The northwestern Gulf of Mexico system on 5-8 September is worthy of further investigation. There was a northwesterly wind report from Brownsville on 6 September, suggesting that there was a closed circulation.

**All hourly observations were obtained from the EV2 website including the Corpus Christi Naval Air Station, the Cliff Maus Field (southwest of Corpus Christi NAS), the Port Aransas Coast Guard Station, Brownsville, Kingsville Naval Air Station, and Harlingen Air Force Base. The disturbance produced tropical storm force conditions across the northwesternmost Gulf of Mexico and along southern Texas near Corpus Christi but apparently did not develop a well-defined circulation (no southwesterly winds were observed). This is consistent with the aircraft invest missions on the afternoons of the 5th and 6th Therefore, it is not added to HURDAT. The system did not make a landfall along the coast, but instead dissipated just offshore. Tropical storm force winds were report by a ship at 18Z on the 5th (35 kt) and 00Z on the 7th (40 kt). Additionally, tropical storm force sustained winds were reported at the Corpus Christi Naval Air Station with a peak of 38 kt at 1726Z on the 6th as well as the Port Aransas Coast Guard Station with a peak sustained wind of 39 kt NE at 18Z on the 6th. The 60 kt, 994 mb, 20 ft seas ship observation plotted at 00Z on the 6th is not consistent with the numerous very close observations of much higher pressure. It turns out that this ship was dramatically misplotted in location. This ship, plotted at 28N 96.5W, should have instead been at 28N 56.5W - very close to Hurricane Flora. Such confusion of observations happens occasionally when more than one tropical system are being analyzed.**

2. The committee concurs with leaving the remainder of the suspect systems out of HURDAT.

**Agreed.**