

Sugarloaf Key EF0 Tornado  
Friday Afternoon, June 1<sup>st</sup> 2007  
Survey Report

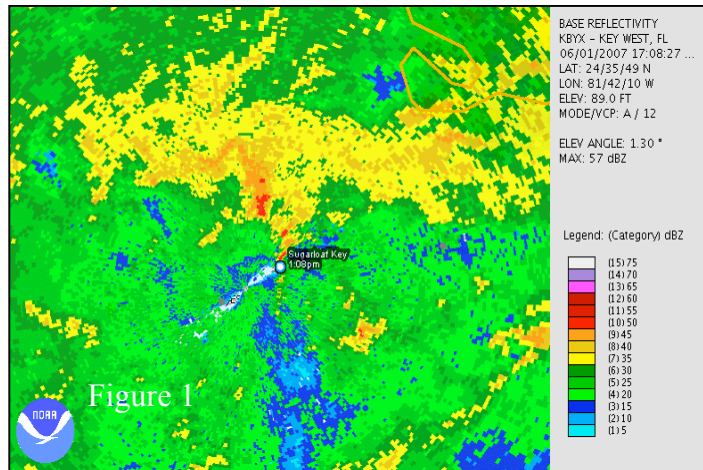
**Summary**

At 2:30pm EDT WFO Key West received a call from Jerry O’Cathey of Monroe County Emergency Management reporting a possible tornado touchdown on Sugarloaf Key. The tornado reportedly occurred at 1:12pm. Radar analysis later showed that the tornado most likely occurred around 12:55pm. Mr. O’Cathey received the report from the Florida Division of Emergency Management Area Seven Coordinator, Al Howell. The original report was of a waterspout coming ashore and causing minor damage to one residential structure located at 1107 Hawksbill Lane on Sugarloaf Key. At 6:42pm WFO Key West received a report of damage from Peggy Mira at 19342 Mira Road on Sugarloaf Key. She reported a 30 foot Ficus tree on her property downed, items stored beneath her home had been scattered around her property, and a screen porch being built on her property was damaged.

At 2:53pm, the WFO Key West attempted to contact the MIC, Matt Strahan, and the SOO, Andy Devanas. Neither could be reached at the time. At approximately 4:00pm, Andy Devanas was informed of the possible tornado while he was in route to Key West and was able to detour to Sugarloaf Key to investigate the report. After surveying the affected structure and surroundings, it was concluded the damage was most likely caused by an EF0 tornado.

**Meteorology**

Tropical Storm Barry was forming in the east central Gulf of Mexico, and would be named a tropical storm at 5pm. Moderate to heavy rainfall was covering much of the Florida Keys (Fig 1). The Key West morning upper air sounding showed a saturated lower troposphere with low CAPE and high shear. The 0 to 3 km helicity was near 250 m<sup>2</sup>/s<sup>2</sup>. Base reflectivity data showed a family of cells oriented south to north in the vicinity of Sugarloaf Key. A small mesocyclone was evident in the SRM data at the time of the reported tornado.



### Survey and Analysis

Upon arrival at the property on Hawksbill Lane, it was found that several Deputy Sheriffs, the property owners, as well as local residents were in the process of removing the debris and working towards securing the damaged roof (Fig 2). The damaged house is located on a canal that runs south to north, on the northern end of Sugarloaf Key. Given this orientation, the front of the house



Figure 2

faces westward, and the back, which is towards the canal, faces east. There are houses on either side of the house, one to the north and one to the south. On the west side of Hawksbill Ln. there are no structures, and mangroves run the length of the western side of the road. Directly across the canal from the affected structure is an empty lot, which at the time of the survey sat two older boats, around 20 feet in length each.

The damage done to the roof of the residence was substantial, and most likely the roof will need to be replaced. The roof was metal overlain on wood framing. Damage was heaviest on the



Figure 3

northeast corner of the house where the metal roofing had been peeled away and the underlying framing damaged, and a patio running the length of the back of the house was completely destroyed. Insulation from the roof was found embedded in the screen porch

of the house next door (Fig 3), but no damage was found to neighboring structures. Debris from the roof was found in a small area of mangroves on the other side of the canal just north of the empty lot. The owner of the house just north of the empty lot, across the canal and to the northeast of the affected structure on Hawksbill,

reported feeling a dramatic pressure change at the time of the tornado, and added that all the windows buckled inward but none broke. This description of windows buckling inward is very similar to descriptions received by this investigator during other tornado surveys.



It is unclear how the aforementioned patio was attached to the roof, and whether the destruction of the patio leads to the roof damage (Fig 4). This may have occurred if the patio roof was improperly secured to the main roof structure. Since there was not access to the roof during this survey, it is not possible to make a determination on this matter.

### Conclusion

No other structures on Hawksbill Ln. reported any significant damage. Additionally, the two boats on trailers opposite the impacted structure had not been disturbed, even though neither boat was secured to the ground or other structure. Debris from the affected structure was found on the other side of the canal, and a report from that side of the canal confirms a sudden change in pressure occurring concurrently with the damage on the Hawksbill house.

Since the structures that were within 30 feet of the north and



south side of the affected house received no damage, and the boats on the other side of the canal were not moved, a convective downburst event was ruled out as a cause of the damage. On Key West Doppler radar imagery, a shallow mesocyclone was detected moving from south to north over the eastern portion of Sugarloaf Key at the same time as the damage was reported to have occurred. Both Mira Rd. and Hawksbill Ln. were directly under the path of the mesocyclone. Therefore, the reported damage was most certainly caused by a tornado touchdown. The damage uncovered in the survey is consistent with an EF0 tornado. Thus, it is the conclusion of this survey that the structure at 1107 Hawksbill Ln., and likely the house at Mira Rd., was impacted by an EF0 tornado. It is entirely possible, and consistent with tropical cyclone induced tornados, that the tornado may not have been on the ground through the entire path of the mesocyclone over Sugarloaf Key, which would explain the relative lack of damage to neighboring structures. The distance between the affected structures on Mira and Hawksbill is 0.55 miles. Without further evidence, the track of the tornado must be assumed to be that length, with the possibility of having lifted at some point in that track. The diameter of the tornado, assuming the tornado could not have been larger than the distance from the patio at Hawksbill to the boats across the canal, and most likely was around half that length, could not have been more than 0.01 to 0.02 miles, or 50 to 100 feet (and possibly smaller). Figure five shows the estimated mesocyclone path over Sugarloaf Key, and the touchdown locations in red indicators.

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**Addendum:** Discussion with the contractor that repaired the structure on Hawksbill (in November 2008) revealed that indeed the patio was improperly secured to the roof, and this contributed to the major damage done to the roof.