

## APPENDIX A: THE PHOENIX LIGHTS.

My defense of a skeptical solution for the Phoenix Lights has failed to win over many readers. I see that I must try harder. I suspect that both popular and ufological images of the events of March 13, 1997 depend on secondhand summaries, a few vivid firsthand accounts, and illustrations of a gigantic triangular craft floating through the Arizona skies. Ufologists as well as some vocal witnesses buy into this construct and it serves as a factual basis to refute military aircraft as the stimulus for the 8 o'clock sightings and distant military flares for the 10 o'clock events. But are these accepted facts really so factual? They support one oft-repeated assertion that multiple UFOs flew over Phoenix that night, another that many of the craft were enormous solid triangular or boomerang-like objects. This appendix will supplement the previous argument with a close reexamination of witness testimony, to get a better idea of what witnesses actually said and to show that the skeptical solution fits the facts better than ufologists have admitted. My efforts will apply to the 8 o'clock events and not the 10 o'clock lights, since strong evidence already identifies the latter as flares.

### Witness Testimony

Table 1 summarizes all the observational accounts that I could find for the March 13 Phoenix Lights events. The main sources include Peter Davenport's NUFORC website (about 60 cases) and several articles he wrote about the Phoenix Lights; William F. Hamilton's book, *The Phoenix Lights Mystery*, and several of his articles; the website of Randall Fitzgerald, who researched the Phoenix Lights for a *Reader's Digest* article; and various websites where witnesses have described their sightings, such as Tim Ley and Mike Fortson. A full listing of sources appears at the foot of the table.

I have omitted detailed accounts of the flare events from about 9:50 till a little after 10:00, and summary statements devoid of details that say only the Lights appeared over a certain place or at a certain time. All locations are in Arizona except for No. 4, located in Henderson, Nevada, just outside of Las Vegas, since this report has become implicated in the Phoenix Lights episode. Other UFO reports for that night came in to NUFORC from across the country and around the world, but they appear extraneous to the Phoenix events. I have striven to eliminate duplicate reports in the table but some instances have probably escaped me. Some of the cases, by their time, place, or description, probably do not belong to the main sequence of events, where a V-formation of lights (or an object bearing lights) passed across Arizona from the northwest to the southeast. Take for example case 53, wherein a witness saw a small orb of light enter his house and disappear in a few seconds—very different from the events of the mass sightings, but included here because the witness associated his experience with the Phoenix Lights.

The table assigns each case a number and is ordered according to time. Also tabulated is place of sighting, number of lights reported, shape of the object or formation of lights, direction from which and toward which the object traveled, duration of the sighting, and a summary account of the incident. A final column provides a code for sources, sometimes multiple for each case, and the earliest date that a report went on record. In the cases between 107 and 128 no time was given.

This table consists of 128 cases. Only 128, the reader may well ask, given all the thousands of people who were said to have witnessed the Phoenix Lights? We know the people who actually report their UFO sightings amount to a tiny fraction of the total number of UFO witnesses, but in this instance the number is truly disappointing. I scoured the Internet extensively, and while I'm certain there are more hidden away in that source and in the literature, I continued past the point of diminishing returns (Lynne Kitei's book, *The Phoenix Lights* [2004] treated mostly the 10 o'clock events and rehashed familiar 8 o'clock accounts). I would prefer to work with a bigger sample, but these 128 cases comprise the sample I have and it will have to do. Disappointing as it is, it still reveals some surprising insights.

**Table 1. Phoenix Lights Events, March 13, 1997.**

Lts = number of lights reported; Sh = shape of UFO; S = source and earliest year of report.  
 Δ = triangle, delta, arrowhead (usually implies solid object)  
 V = V, boomerang, chevron, flying wing, carpenter's square (can imply formation of lights or solid object)  
 ◇ = diamond, rectangle, rhomboid, kite  
 --- = straight line  
 C = arc, crown; ov = oval; \* = see account

No.	Time	Place	Lts	Sh	Direction	Duratr	Account	S
001	5:30	Crown King	3+1	V, Δ			Family on I-17 saw 3 huge Vs hover over mtn, triangular or diamond craft joined them (1 <sup>st</sup> appeared out of thin air as amber light); jets pursued, objects assumed stack formation & collapsed into ball of light that soon disappeared.	H 02
002	6:00	Prescott	(7)	Δ	To S	3 m	Granite Mtn, 100 mi N of Ph; formation of individual craft w round white lts, not flares; fast & silent.	D 05
003	6:40	Phoenix	5	Δ	To S	15 m	Triangular obj. drifted over Ph <30 mph; lts seen over South Mtn from 51 <sup>st</sup> Ave at Indian School Rd.	D 06
004	6:55 (?)	Las Vegas/ Henderson	6	V	NW to SE		Witness reported V-shaped object size of 747 jet with 6 lights under the wing and shining like headlights; passed overhead with rushing sound. [uncertain if time is MST or PST; if latter then Ph. time is 7:55]	D 97 ?
005	7:00	Carefree (Phoenix)		Δ			Witness saw silent triangular formation over Carefree area.	D 06
006	7:00	Scottsdale	8-9	V	S to WNW	30 m	Flying wing w 8-9 soft-glowing amber lts flew over home in 5 min at 500 ft hi and 40 mph; obj like dark shadow, gave off vibrating tone. Veered slightly to WNW (witness says date was 3/17).	D 06
007	7:30	Phoenix	9- 10	*			9 or 10 lights hovered over Superstition Mtns east of Phoenix, in hexagram pattern.	O 97?
008	7:30	Why (85- 90 mi SSW of Phoenix)			To N	Sev. m	Wife driving on Hwy 86 as she and husband returned to Tucson. She noticed darkness behind, saw huge black UFO low above car; had round lts. After while UFO shot off to mtn range & disappd tow Prescott.	M 07
009	7:45	Gila Bend (ca. 40 mi S of Ph.)	2/4			20 m	5 in car saw 2 bright orange-pinkish lights 20 mi E of Gila Bend, S. of I-8; 2 lights became 3 then 4. Small lights left and returned to larger lights—lit up clouds.	D 99
010	7:45	Stanfield (38 mi S of Ph.)	5	V	S to NE	10+ m	4 witnesses saw boomerang w 4 orange lts & white front lt, in S over Table Top Mtn; no sky visible betw lts, big as football field from 1 wingtip to other, slow. Flew over Hidden Valley tow Ph, over Raceway tow Sky Harbor Airport.	D 08
011	After 7:45		5	V	N to E	10-15 m	Man & wife arrived home at 7:45, watched comet. Saw lt to N, resolved into 5 as neared; V shape, low and slow; left-side lt passed over house in a minute or so; turned E tow airport, disappeared 1 min later.	O 08
012	8:00	Kingman	5	V	In NW, to SE	6 m	James & Fawn Clemens were watching Hale-Bopp when saw fuzzy light above horizon; through binocs saw 5 intense amber or orange lts in V formation, just to right of comet. Seemed over Lake Mead. Lights motionless at 1 <sup>st</sup> , then slow, then gone. Also saw 1 light going SW at 7:30.	D H U F 97 98
013	8:00 (ca.)	Paulden	5 objs				Man reported 5 diamond-shaped objects with wispy tails.	H 97
014	8:00 (:30 ?)	Dewey/ Prescott Valley (10 mi. S of Prescott)	5	V		Sevrl mins.	Driver +5 going N on I-69 saw obj on SE side of rd moving 60 mph, 2000 ft up (lower than 1000) and soundless. Passed overhead, stopped (hovered several mins), saw 5 bright white lts in wide pted shape (boomerang?). Obj 100-150 yards wide, clenched fist at arm's length would not cover.	H O 97
015	8:00	Fountain Hills		Δ			Cecile Storer reported triangle hovering over E side of Valley; also saw 3 large luminous white spheres hovering in a line; airplane passed E of spheres.	H 02
016	8:00 (7:30 to	Phoenix	5	V	N to S	20-30 m	Witness N of Ph saw 5 lts approaching from N low on horizon like following I-17; seemed as if in straight line then rose and showed V; silent. One huge obj;	D 08

	8:30)						rose & accelerated as it passed over Ph, made turn without any curve.	
017	8:00	Phoenix	5	Δ	N to SSE	5-10 m	Obj w 5 lts in shape of arrow flew over house; came over Shaw Butte Mtn to N (15 <sup>th</sup> Ave & Cholla), last seen 13 <sup>th</sup> Ave. and Mercer.	D 99
018	8:00	Phoenix	5	V?	N to S	10 m	2 witnesses watched 5 spherical lts size of football field pass N from Camelback Mtn to S. Soundless.	D 99
019	8:00	Phoenix (Tolleson)	lts	V		5 m	Flying Wing flew over car while headed W at 67 <sup>th</sup> & I-10; got off freeway at 83 <sup>rd</sup> to follow craft. Silent.	D 00
020	8:00	Phoenix	lts	Δ	To S	brief	Looked like formation of planes w landing lts on, no noise; seen by 4 from 7777 S. Pointe Parkway.	D 02
021	8:00	Phoenix	lts	V		5 m	Teenager & mother at 35 <sup>th</sup> Ave & Deer Valley saw red lights in V formation fly slowly over house; silent.	D 08
022	8:00	Phoenix	lts	V		Sevrl m	Richard Wolfe drove W on McDowell Rd by Papago Park, saw lts in V formatn; close to ground and slow. Not perfectly formed V, independent lts like uneven formation of flying birds.	M 07
023	8:00 (?)	East Mesa/ Apache J.	1	lt		1-2 m	3 children describe white lt that circled another white lt then sped away at uncertain time.	D 97
024	8:00	Glendale	4	◇	In NW	5 m	Witness at 30 <sup>th</sup> Ave & Northern saw 4 bright white lights at 30 deg in NW; bright as landing lights; 1 or 2 mi away at 43 <sup>rd</sup> or 51 <sup>st</sup> Ave & Olive. Descended slowly and disappeared behind houses.	D 98
025	8:00 (+)	Scottsdale (N of E end of Sky Harbor)	5	V	NNW to SE		Pete Fournier walked W on Edgemont from 42 <sup>nd</sup> St, Ph; saw single row of 5 bright lts hover over Squaw Pk; saw them move to SE; called wife & got binoculars, saw soundless V formation pass W of house; appeared solid till lt on E leg shifted out of position. Bright white lights, covered 10-degree field.	H O 97
026	8:00- 10:00	Verde V. to near Luke AFB	2			2 hrs.	Bill Greiner drove his truck S, watched 2 orange lts; lts looked like toy tops or hot-air balloons, glowing fr within, encircled w red ring of lt. When he reached destination, 1 lt hung in NW, other 1-2 mi away in SW. 3 jets scrambled to intercept latter, light shot up & disappeared as jets approached.	H 97
027	8:05	Phoenix (Glendale)	lts		To S	Sevrl ms	Obj size of 2-3 jumbo jets passed slow like zeppelin; was E fr 55 <sup>th</sup> (Ave) & T-Bird; saw lts not body. Silent.	D 00
028	8:06	Chino Val.	5	Δ	NW to SE		2 witnesses saw 5 white lts in triangle; flew low from NW, went W of Chino Valley tow Prescott Valley.	H 02
029	8:10 (ca.)	N of Ph	5	V	NW to SE	20+ m	Tim Ley (wife +2 boys) saw tiny arc of lts approach fr NW; in minute or so changed to V shape; 15 mins before overhead. Saw dark outline when obj half mi away, lts rigid in relation to one another, soundless. When close saw outline of carpenter's square set at 60 degrees; tip pointed, ends of both arms squared off. Obj. spread over couple of blocks, arm 700 ft long—cldn't see whole obj in single view; 100 ft hi, went 30 mph. Tip passed directly overhead, last lt passed 15 sec. later. Dogs didn't bark. Stars betw. arms looked as if seen thru thick glass. 1 lt on far arm flickered into 2 lts; later, last lt split into 2, white & red-amber; wavy appearance lasted only sec. or 2. Lt seemed 6-7 ft wide, soft white, did not illuminate anything below. Few mins after passing overhead, obj passed betw gap in mtns; dome-shaped bulge in middle of top visible; ground lts reflected off surface of obj. Passed S & W of Squaw Pk, just fitted thru pass. Lost sight of craft among aircraft/city lights of Phoenix several minutes after passing through gap.	O D 97
030	?	N of Ph	5		NW to SE		Witness at Thomas Rd & 44 <sup>th</sup> St. saw formation of 5 lights approach from NW, in direction of Sunnyslope in Phoenix Mtns (where Tim Ley lived). Lights continued SE toward Arizona State University.	H 02
031	8:10	90 mi N of Phoenix	5				Ross Nickle (+wife & children) driving N on Hwy 89 saw 5 star-like lights approaching in tight pattern. Changed color from white to red when overhead; less than 1000 ft high, silent.	U F 97
032	8:10	Tempe	lts	Δ	N to S	5-10 m	Delta formatn of amber lts; when near, lts moved individually & heard jet engines—A-10s (9 craft)	D 02

033	8:12 :15?	Prescott	7	V		5 m	4 witnesses saw V formation of bright white lights, 4 on 1 side, 3 on other; thru binoculars saw ea light was really 2, 1 green & 1 red. Noiseless, 1000 ft hi.	D 97
034	8:13	Paulden	5	◇	To S	5 m	Denis Monroe & wife got out of car to watch 5 intense peach or orange lights fly overhead in kite-shaped formation; lights large & soft; saw stars between lights. Fist at arm's length could cover formation. Quiet, speed of helicopters; lights went out few at a time on S horizon.	U F 97
035	8:13	Prescott V.	5	V	To S/SE		Ann Baker (& Gary Dolch?) were looking at comet through telescope (binocs?). Thought Stealth bomber approached; thru binocs saw stars between 5 bright white lights when they flew overhead. Changed fr V formation to half-circle with 5 bright red lights; went from very slow to very fast toward Phoenix; soundless.	U F 97
036	8:15	Prescott	5	V	NW to NE then due S	10 m	Witness saw 5 yellow-white lights in V fly slowly NW to NE, then S. 3 front lts covered half a degree, 2 rear lts covered 1 degree; 1 trailing light moved up then dropped back.	D H 97
037	8:15	Prescott	lts	V, C	Headed SE		Couple saw V array of white lights cruise over house & head tow Ph. Lts changed to red, assembled in semicircular arc, accelerated at great speed into dist.	H 02
038	8:15	Prescott	5	V	WNW to S	5+ m	Lights in WNW seen from Hidden Valley Dr; red, green & white, colors changed; 2 or more separate objs. Saw 3 lights in trees to SW. Then saw chevron formation of 5 bright white lights in WNW, banked S and flew overhead (seen less than half min). Silent, appeared to be separate lights.	D 04
039	8:15	Scottsdale	lts	Δ	To S	5 m	Man, son & son's friend watched large craft with mostly red lights fly low, slow & silent over house.	D 97
040	8:15	Black Canyon City	5	V	To S	2 m	60 mi N of Ph on I-17 going S, witness saw white lts low on horizon near Sunset Point Rest Area. Neared, followed I-17. At 1 <sup>st</sup> formatn was apparent size of his thumb; size of fist at arm's length when passed by.	D 06
041	8:15	Prescott/Phoenix	5	V	NW to S	9+ m	Traveler headed N on I-17 saw small light 2 degrees above NW horizon, curved to S; looked like 3 lts in row, then 5 in unison; stopped; at 8:24 lts passed due W & went out of sight; saw chevron of 5 clusters of 3 lts ea, w intensity of 1 <sup>st</sup> mag. star. Below cirrus clds.	H 02
042	8:15	Glendale	7	V	Turned E	Sevrl mins.	Kelly & wife driving N on 67 <sup>th</sup> Ave. saw V with 1 lt at tip and 3 on ea. side. Stopped to watch; obj. 2-5000 ft high, moved silently at blimp speed. 1 rear lt broke formation, moved briefly toward lead light, formation turned E and faded out.	H 97
043	8:15	Phoenix	5	Δ	N to S	10 m	Airline pilot saw lts while driving N to work on I-10, appeared over Airport; did not block stars, in wide formation at high alt; each light composed of 2 lights.	D 99
044	8:15	Phoenix	5	Δ	N to S		Grounds crewman from Luke AFB reported 2 F-15s launched in response to call from Prescott Valley Airport that object had near-miss with small aircraft. At 8:32 jets encountered object over Phoenix, near 7 <sup>th</sup> Ave & Indian School Rd. Obj headed toward Sky Harbor; radar blanked out. Obj at 18000 ft, down to 10000 then went dark. Saw only lights.	D 97
045	8:15	Phoenix/Ahwatukee	5	--- Δ	NW to SE	10-15 m	At Ahwatukee witness(es) sighted red horizontal line near horizon, triangle shape apparent when near; lights brilliant white. Passed overhead, disappeared SE horizon. Silent, saw stars betw lts but formatn rigid.	D 97
046	8:15	Phoenix/Tempe	5		N/NNE	7 m	Headed N on I-10 from Chandler Blvd exit, witness saw orange lts fall to earth, then hover in place over city lights & pulsate. 2 lts moved independently of others at rt angles & in spirals; other 3 maintained steady pattern.. Vanished. Lights appeared E of Sky Harbor over Tempe.	D 98
047	8:15	Chandler	5-6	V	E to NW		Father (police officer) & several young adults saw enormous V or flying wing obj w lts on bottom in E. sky; no more than 2000 ft hi, soundless; size of city block, slow; passed overhead. Easy to see under full or nearly full moon.	M 12

048	8:15	ca. 20 mi SE of Prescott	5	V	(To S)	2 m	Lights stayed to left of car, flying over southbound part of Interstate. 1 light at tip, 2 on ea side of V; lights white and slightly yellowish.	U 06
049	8:16	Paulden	4-5 +1	V	To S		Policeman and family driving N saw cluster of 4-5 red-orange lts in wedge or boomerang shape; 1 light followed, appeared to stand back from others. Watched with binoculars; each light seemed to consist of 2 points of orange light. Disappeared to S.	D U O 97
050	8:17 +	Prescott Valley	lts	Δ	WNW to SE	2-3 m	John Kaiser outside w wife & sons saw cluster of lts in triangular pattern to WNW, red except nose lt was white. Watched w binocs as passed overhead, banked right. Disappeared SE of Prescott V. Low & silent.	D 97
051	8:20 (just before)	Paradise Valley (NE Ph.)	lts	Δ or V	To S		Max & Shahlia Saracen, driving W on Deer Valley Rd saw formatn of lts moving slowly S toward them; 2 mi wide, 1-2000 ft up. She saw row of windows at apex and figures inside. Obj. moved silently, 20-30 mph; lts white; 2 fists held up to sky wld cover obj; was metallic, blocked stars, no visible structure.	H U F 97 02
052	8:20 (before)	Just past Casa Grande, toward Tempe/Chandler	7	-- & ◊	NW to S	40 m total (20?)	Dr. Bradley Evans, wife Kris +2 drove N on I-10 toward Tempe, saw row of bright orange-red lts NW, 15 degr above horizon. Seemed stationary, thought were transmission tower lts on South Mtn. Drove farther & saw lts E of S. Mtn & W of Camelback. Witnesses approached Chandler just S of Mesa & Tempe at 8:20:25 & lts became yellow-wh and assumed diamond formatn over W edge of Gila River Reservation, moved S along I-10. Saw bkground stars betw lts; lts overhead 5-10 mins, 1500 (1800) ft up & silent; formation 300 yds long & symmetrical, moved S toward Casa Grande.	H U 97 02
053	8:20	Phoenix				2,10 s	Small orb of light entered man's house.	D 04
054	8:20	Phoenix		V	N to S	4-8 m	Seen from SW corner of valley, V of lights came fr N, hovered near Camelback Mtn, moved over Sky Harbor, disappeared behind South mountains.	D 06
055	8:20	Tempe (NW)	5	V	N to S	15 m	Bree Crownover & 4 friends at their workplace a few mi E of Airport, saw red-orange lts in Nern horizon on flight path intersecting air traffic; seemed lower in altitude; 3 lts in front, one each behind on ea side; no body, only lts. Formation so large when overhead witnesses had to shift eyes to see it all. 1 light trailed; lights moved slowly to S.	D U F 97
056	8:25	Buckeye	3-5		W	5 m	Witness driving W from Ph on I-10 saw lights near Estrella Mtns; lights moved 20 mi W of Estrellas; 3 lts, streaking obj came from 1 & disappeared to NW. Witness gives time as 7:25-7:30.	D 97
057	8:28	Scottsdale (N)	5	V	N to S	(42 s)	Terry Proctor captured only known video of the 8 o'clock Phoenix Lights from 56 <sup>th</sup> (57 <sup>th</sup> ) St. and Carefree Hwy. Footage lasts 42-43 secs; taken from his back yard. Shows small V formation of 5 faint lts. Last lt on W side begins to trail others; sides of "V" bowed slightly outward. (Formation follows I-17 southward?).	O F U 97
058	8:28	Scottsdale	5	V			Alan Morey (MUFON investigator) and Steve LaChance (Pan Am pilot) watched formation pass overhead. Lights appeared pale orange at 1 <sup>st</sup> , but through binoculars saw small red light to port of each large orange light. Lights were 5 independent objects in delta wing configuration, saw stars between lights. 1 light lagged behind, then formation tightened. Lights covered area 2ce size of fist at arm's length.	F U 97
059	8:28 (ca.)	Scottsdale	5	V			Mitch Stanley viewed lights through 10-inch telescope and saw ea lt was 2 lts on aircraft w squared wings.	F O 97
060	Before 8:30	N of South Mtn.	5	V	To S		Witness saw 5 lights in V formation, moving S along Rte. 51, a little E of it, moving toward South Mountain.	H 97
061	8:30	Chino Valley	5	Δ	NW to SE	3-5 m	3 white lts in front, two to rear, approached at low level, rose as approached, lts went out as passed over	D 97

							as if obscured by edge of craft; slow. Went from Kingman toward Prescott Valley (witness says 11:33).	
062	8:30 (:15)	Gila Bend	lts	V		20 m	Security officer at Gila Bend Auxiliary Field saw flares of unknown origin dropped, gave off white smoke; gives 8:15 as time.	D 99
063	8:30	Lake Pleasant	lts	cr	Moved S	8+ m	Lee was night fishing when saw yellow & red lts forming crown shape, hanging over Prescott Valley for 8 mins, then moved S.	H 02
064	8:30	Fountain Hills	11		In ESE		JoAnn looked to Four Peaks area of Superstition Mtns and saw 10 lights + 1 red light hovering.	H 02
065	8:30 (6:30?)	Phoenix	10-13	V	NNW-SSW	20 m	2 witnesses driving E thru Ph saw what looked like line of commercial aircraft approaching Sky Harbor. Left I-10 at Riggs Rd, went E, saw lights closer; was solid V structure w multiple lights, extinguished & re-lit, blocked fr view by edge of craft. Silent, huge (half mile), 30 deg. above horizon; went 15-20 mph along I-10 toward Casa Grande.	D 00
066	8:30	Phoenix	lts	Δ	(To S)	3-4 m	AF veteran & wife watched lights on triangular black craft move toward Sky Harbor. Object long as 3-4 airliners end-to-end, silent.	D 97
067	8:30	Phoenix		Δ			Gov. Symington said he saw giant and silent delta-shaped object over Squaw Peak.	O 07
068	8:30-8:40	Phoenix	4	◇	NNE to S	5+ m	Just after sundown 4 bright orange lights in trapezoid formation appeared 30 (deg) elevation; very slow moving, much larger than plane. Smaller white lights appeared around orange lights.	D 97
069	8:30	Ahwatukee	5	Δ	N to S		Bruce Gerboth, near SE corner of South Mtn near Elliott and 40 <sup>th</sup> sts, saw 5 amber lts in triangular formation; thought lts attached to solid structure. Disappeared over Gila R. Indian Res. Near 10 pm saw 7 amber lts WSW set slowly behind Estrellas.	H 97
070	8:30	Phoenix--SE Squaw Pk, 1 mi S Camelback Mtn.	7	V	N to S	(6 m)	Sue and Erin Watson saw 7 bright white lts in boomerang formation approaching home from over Camelback, slow & soundless. Craft appeared 10 fists in size, underside lit w amber color; saw no stars through it; disappeared fast to S.	U F 97
071	8:30	Goodyear	Lts, obj			(5 m)	High school cheerleaders saw grp of lts like street-lights w/o poles; moved toward them; dark obj 500 ft wide, 100 ft up and silent; moved slowly into distance. (Davenport has lts flew overhead in format, 200-300 ft high.)	M D 09
072	8:30	Chandler	lts	C ?		3-10 m	As witness drove N from Gila R. Indian Res. on I-10, before Chandler Blvd, object (circular?) bigger than 2-3 football fields and 200-300 ft high passed overhead, blocked out stars. Had several orange lights.	D 05
073	8:30	N. Phoenix	5	V	To SW, then W	3 m	N. Ph (Tatem Highlands, Tatem & Jomax). Woman walking dog SW tow Ramuda, witness saw approach of 4 evenly spaced red lts & 5 <sup>th</sup> that lagged, in wide V; came SW then turned W. Lights not too bright; object changed altitude, soundless; saw no stars between lts.	D 00
074	8:30	Tempe	lts	C, V		20 m	1 <sup>st</sup> seen over SE end of airport, orange-red orbs of light made semicircle 5 mi wide, formed into V; independent movement among orbs. Made banked turn; same or lower elevation than South Mtn range.	D 09
075	8:30	Tempe	5-7			5 m	Group of Arizona State students saw group of lights in the sky; seemed to stay in the same place.	D 97
076	8:30	Chandler	3+5	V	N to S	15 m	Mike Fortson, at home 23 mi SE of Sky Harbor, saw 3 big bright white lts, angled down and low to N (tow Ph), going S along Alma School Rd; called for wife, they saw black chevron obj w 3 bright white beams projecting from front, 5 red-amber lts trailed on side & rear; all lts angled tow ground. Craft turned translucent as it passed in front of moon to W; moon changed wh to yellow, also saw ripple effect. Saw 737 pass over obj W-E. Obj under 1200 ft hi, mile long, appeared 30 inches long at arm's length (8 fists); half to mile & half away; 30-40 mph, silent. Faded off into distance to S, toward Tucson.	H D F U O 97
077	8:30	Tucson/	5	V	N or NNW	15 m	Rick Litchfield & wife Lori drove N on Hwy 79 from	H

		Mesa			to S		Oracle Jctn (40 mi S of Florence); saw group of bright red lights low on horizon NNW. Nearer, lights made V, seemed solid; they stopped to look. Stars passed betw lights. 5 red lights, oval & pulsating, soundless. V moved to Oro Valley & Tucson; lights accelerated and moved relative to one another.	02
078	8:35	Ahwatukee	5-7	Δ	N to S		Witness near 42 <sup>nd</sup> St & Ray Rd saw triangular group of 5-7 lts in N; saw relative motion among lts as they passed S overhead. Lights disappeared 1 by 1.	H 97
079	8:30-8:50	Phoenix	lts	V	N to S		Mary Lou Farrar at house near 32 <sup>nd</sup> St and Shea saw bright white lights in boomerang formation, low and silent; could not tell if lights connected.	H 02
080	8:35	Phoenix (Ahwatukee & S. Mtn.	lts	V	NW to S		R. Hawkins & husband drove from 43 <sup>rd</sup> Place tow S. Mtn Park when they saw lts approaching from over South Mtn. Saw huge V pass overhead going slow & silent to E, then banked to SE tow Tucson, parallel to I-10. Saw no stars as object passed over them.	O 07
081	8:35	Scottsdale	lts	ov	To SE		Ozma Linderman and friend Willie saw solid object w lights that blocked out stars; moving to SE, descended, stopped a second; configured in oval, turned red, shot straight up; 4 times size of Boeing 747.	H U 97
082	8:37	Ph (S of hills near Squaw Pk.		Δ	To S?		Terry Mannsfield perceived something wrong w stars then saw big triangle; had satiny dark gray surface; went S. on Hwy 51(?).	U
083	8:40	Phoenix	7	--- V, ---	N (NW)	4 m	On I-10 going from Chandler Blvd, saw 5, then 6, then 7 lights in N, 1 <sup>st</sup> in line then in V, then line; blinked out in NW [witness gave time as 7:40].	D 00
084	8:40	Mesa	5	V	NW to SSW	2-3 m	At Mesa Community College, witness saw large triangular obj w dim amber lights in V, slow moving [time 8:30-8:50].	D 97
085	8:42 (not 8:20)	Tucson/Casa Grande hills	5-7	Δ	NW to SE	mins	Stacey Roads (Rhodes) (+mother, daughter, driver +1) rode (N)W on I-10 from Tucson; first saw 3 orange-yellow lts approaching; then black triangle w 3-5 lts on its nose and 1 lt on ea. back corner, fly E over freeway. When close they saw metallic mass w white lts; 2 mi span, blocked stars, no sound. Panels on underside, craft thin. Took 2 mins to pass under obj tho driving 80 mph. Flew SE tow Tucson. Could have held up open newspaper to sky and not covered obj. Few 1000 ft up. She checked time on car clock.	H U D 97 02
086	8:45	Phoenix (South)	3	Δ	E to SE	3 m	Witness S of Ph in Ahwatukee; saw bright white lights against Superstition Mtns.	D 97
087	8:45	Saddlebrook (N Tucson)	lts	◇	N to S		Witness saw diamond-shaped formation of slow-moving golden-yellow lights flying S. toward Tucson.	H 97
088	8:50-9:10 (8:45)	Chandler	7	Δ			Don & Grace saw silent giant triangle with 7 orange lights on forward section; gray panels on underside. 1 light detached, went to right, returned & re-docked; brilliant white light with red glowing trail followed main object. Neighbor woman said daughter saw beam of light travel through bedroom.	H 97
089	9:00	Prescott	5	Δ	N to SE	30 s	Witness saw V-formation of 5 lights brighter than aircraft lights, flew fast; formation broke when light at back & below slowed. Group rotated left 90 deg., went S of Mingus Mtn; heard rustling sound.	D H 97 02
090	9:00	N. Phoenix	5	V	W to S	20-30 m	Driving S from Sedona to Ph on I-17, 30 mi N of Ph saw 5 lights in V formation to W and overhead; lights flew S along highway same speed as car. No visible object between lights.	D 07
091	9:00	Phoenix	6+	V	To S	2-5 m	6 or more bright orange lights in V-formation moved S over Squaw Peak; was 1-2 miles E of witness's home.	D 05
092	9:00	Phoenix	5	Δ	N to S	4 m	Man & wife on S. side of South Mtn when 5 lights along edge of black triangle a mile wide came over mountain, 500 feet high, heading S at slow speed.	D 02
093	9:00	Phoenix	lts	V			Witness saw V-shaped object with lights on bottom (date not certain)	D 07
094	9:00 (?)	Phoenix	5-6				4 people saw 5-6 bright lights (mile long); darted back & forth; too fast for helicopters in formation.	D 97
095	9:15	Phoenix	(20)	V	In SSE,	10 m	20 rectangular objects in V formation performed	D

					moved S to N		circular spin, formed 2 circular configurations. Lights blinked out as airliner approached. Seen from near 43 <sup>rd</sup> Ave. & Peoria Ave. (date uncertain)	07
096	9:24	Phoenix	3+	Δ		20+ m	Man & wife at 2385 W. Turney Ave watched TV when neighbors called out, saw triangle obj over Camel Hump Mtn; obj hovered 20 mins, then 3 lts came up on his right, changed from triangle shape to dancing balls of lt in sky; little lts came out & big ones dimmed out, assumed diff shapes then disappd back into the big set of lights.	M 09
097	9:30	45 min fr Phoenix	6-7	Δ	To W		18-yr old witness & friends saw orange colored fire-ball abt 9; then half hour later saw 6-7 lts in triangular formation above municipal airport; hummed.	M 08
098	9:30	I-17	10	V			Bill traveled S on I-17 when he saw 10 lights in V formation; thought lights separate; slow and silent.	H 02
099	9:50	Gila River	lts	C			Arc pattern of lights appeared over Gila River area.	
100	10:00	Phoenix	lts	C	SW		Second appearance of arc formation of lights seen over Gila River area or behind Estrella Mtns; videos	
101	10:00	Tucson	lts	C, Δ	N to SE	10 m	Witness & friends pulled over to watch motionless crescent formation of bright white lights to N; shifted into triangle formation, then into straight line; color changed to red; moved quick & silent to SE, disapp'd. (date uncertain)	D 06
102	10:00	Phoenix	lts	Δ, C		30 m	Group saw several silent yellow-orange lights on separate solid craft; craft made up large triangle shape, shifted to oval; craft moved up & down, back & forth but not very far; then lts turned off & craft disapp'd.	D 05
103	10:00	Casa Grande	lts	---		8 s	3 witnesses in car on Hwy 87 saw row of 5 silent lts; each light went out 1 at a time, then all 5 came on again briefly then blanked out together; lights did not move (witness gave date as 3/15).	D 05
104	10- 10:45	Glendale (N of Thunder- bird Rd.)	lts	Δ	To E		Janet Garbero saw triangle to N of Thunderbird Rd as she drove home. Obj. had wide wings & yellow-white lights on wingtips & apex; made engine sound, had V-shape indentation at rear; headed E.	H 02
105	10:20 till 10:40 (?)	Scottsdale	lts	V	N(W) to S	20 m (40)	Son (+2 friends) of Trig Johnston (retired airline capt) called his attention to V-formatn of bright amber lts approaching fr NW. Est. 5000 ft hi, speed 100 knots. Solid obj, suspected outline, had area of 1 sq mi or more. Obj. continued to Camelback Rd, made slight right turn, flew S along Scottsdale Rd, flew over Sky Harbor, faded fr sight & disappeared. When reached Shea Blvd, could no longer see top; semi-transparent gondola underneath, nearly dragging ground. Stars dimmed, looked wavy as object passed.	H D U O 98 00 02
106	2 am 3/14	Rainbow Valley	lts	V			Hovering lights in V formation reported at Rainbow Valley.	O 97?
107	early	Douglas		Δ	To N	30 m	Triangular craft covered whole sky and barely moved; seen at Douglas before seen at Ph [date uncertain].	D 05
108		Chino Valley	5	Δ	To SE		John Widener saw 5 lights in triangle pattern pass slowly N and E of Prescott airport & head toward Ph.	U F 97
109		Chino Valley		V	To S		Flight instructor and student flying over Chino Valley saw lights go out below; soon realized that giant chevron blocked out lights as they flew over top of it; mile long; went S toward Phoenix.	O 06
110		Prescott Valley		V			Family of 5 at Dairy Queen on Hwy 69 saw huge V craft pass overhead low and slow.	O 06
111		Prescott Valley	5	cr	NW to SW		Tony's children saw 5 lights forming a crown; slow and silent.	H 02
112		Prescott Valley	lts	V			Michael Rainwater +3 friends comet-watching; thru binoculars saw white lights were actually 2 lights, red and green. Appeared to be 1000 ft high.	F 97
113		Southeast Valley	10	---	N		Pattie and Clark saw 10 lights in a [line] N of Allied Signal.	H 02
114		Dewey/ Humboldt				15 m	Seth Adams saw enormous object; changed shape then left very fast and soundlessly.	U 09
115		Black	5				Iness saw 5 lights coming W of the draw from Verde	H



		Canyon City					Valley; floated over her house with no sound.	02
116		New River	lts	V			On Carefree Hwy going toward Table Mesa, Richard saw slow & silent V of lights lower than 5000 ft.	H 02
117		Cave Creek	lts	V			Fran stood on the side of Black Mtn when she saw V formation of yellow lights low & motionless in sky.	H 02
118		Paradise Valley Mall	5-6	V	From NW		Sondra Hickman said she & 15 teachers saw V formation of 5-6 lights, larger than 4 airliners in line. Not sure if formation of lights or one object.	H 02
119		N. Phoenix	5	V	To S	5+ m	Southwest Airlines pilot Greg Aguirre & wife driving home from dinner when saw V formation of lights; 2 (fists) at arm's length would cover. Stopped to watch. Saw no navigation lights, traveled at blimp speed, too slow for aircraft; noiseless; looked like single object. Passed over at 3-6000 ft; disappeared over mtns to S.	F U 97
120		N of Phoenix	5	V			Pilot Larry Campbell, co-pilot John Middleton, flying America West 757 to Las Vegas saw V-formation of 5 bright white lights when just N of Phoenix. Plane was at 17,000 ft and formation a little above; traffic control identified flight of CT-144s at 19,000 ft. Pilot from that flight identified self as Canadians headed for Davis-Monthan AFB; questions about why flying in show formation with landing lights on.	F U 97
121	Soon after sunset	10 mi NNW of Ph, near Mesa Dr.	lts	V	N to S	20-25 + m	Witness was boy at aunt's house when others called his attention to V of lights 5000 ft high, yellowish; not bright, appeared as if seen through fog. Left for home 5 mins later, watched it while going S; almost under obj for while, saw fewer lts as if edge blocked. From home watched it cross city.	O 13
122		Phoenix	lts			2 m	Phoenix Lights seen from Ray Rd (same as no. 81?).	D 03
123		Phoenix	(5)				Dana Valentine & his father saw outline of mass behind lights, like a gray & wavy distortion of the night sky. 500 feet high.	U F 97
124		Phoenix (valley)	5	V	N to S		David Holthouse ( <i>New Times</i> writer) saw 5 bright yellow-white lights attached to boomerang object; high, slow and soundless.	O 97
125		Phoenix (valley)	5	V	N to S		Michael Kiefer ( <i>New Times</i> writer), in separate part of valley from Holthouse, saw 5 bright yellow-white lights at high altitude, not connected, slow & silent.	O 97
126		Mesa	0	Δ			Woman and husband saw gigantic lightless triangle pass swiftly.	H 02
127		Casa Grande	3	Δ			Charles Painter saw 3 silent lights in triangular formation.	O 97
128	(late)	80 m S of Phoenix	lts				Gary Morris drove his concrete truck on I-10 when he saw what he compared to flock of geese with flash-lights in their mouths.	F 97

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### **Descriptive Features of Phoenix Lights Reports**

Table 2 draws out several key descriptive characteristics reported by witnesses, and some data useful in understanding those reports. Table 3 provides totals and percentages for several features.

**Table 2. Descriptive Elements from Phoenix Lights Reports.**

# = case number

[Descriptions of UFO]:

**obj** = described as solid object with lights

**lts** = described as formation of independent lights

**?** = witness uncertain if object solid or group of lights

[shape code same as Table 1; U = unknown or unstated]

**why** = reason for choice of interpretation [ob = saw object; frm = saw formation of lights; lts = saw only lights; stz = saw stars between lights; nost = no stars seen between lights; sep = lights appeared to act independently; ch = change in shape; strc = structure visible; jstl = just lights seen; edge = edge of craft blocked lights; spob = spinning object]

**out** = outlier (not part of 8 o'clock Phoenix event?) [t = time of day or date; d = description; l = location; ac = aircraft; Fl = flares]

**Light behavior** = cases in which a light broke formation, shifted position, lagged, or showed independent movement; cases in which a light separated from and returned to a craft; cases of lights that circled/orbited one another, or blinked or blacked out.

**C(olor)** of lights: a(mber), g(reen), o(range), p(ink), r(ed), w(hite), y(ellow) [“-“ = mixed, eg, red-orange; “/” indicates change of color during sighting; “,” means different colors of lights, such as white in front and red in back; 3 letters together indicates 3 colors seen at once, eg, wrg = white, red, and green]

**Light division** = cases of single lights appearing as two, or splitting into 2 (or 3 or 4)

**Turn (direction)** = direction UFO goes in cases when witnesses report a noticeable change of direction

**Ldmk** = landmark the UFO passes in some reports [SMtn = South Mountain; SqPk = Squaw Peak; CBM = Camelback Mountain; SBM = Shaw Butte Mountain; TTM = Table Top Mountain; SprM = Superstition Mountains; EstM = Estrella Mountains; LkMd = Lake Mead; SkyH or SH = Sky Harbor Airport]. These landmarks include the house of the witness [street name].

**Size** = usually indicated as the size of a fist at arm's length (1f, 2f, etc.), in degrees, or some other comparison (+).

**R(eport)** = date of report, either early (1997) or later (+).

#	obj	lts	?	why	out	Light behv	C	Light divisn	Turn (dir)	Ldmk	size	Where	When	dur	R
001	VΔ			ob	t,d		a				huge	Crwn K	5:30		+
002	Δ			ob	t		w					Prescott	6:00	3	+
003	Δ			ob	t					SMtn		Phoenix	6:40	15	+
004	V			ob	t					ov	jet	Hender.	6:40		97
005			Δ	frm	t							Crfree	7:00		+
006	V			ob	t		a		WNW	ov		Scottsd	7:00	30	+
007		*		lts	t							SprM	7:30		+
008	U			ob	l						huge	Why	7:30	sm	+
009		U		lts		1s&r	o-p	2>3>4				Gila Bd	7:30	20	+
010	V			ob			w,o			TTM	field	Stanfld	7:45	10+	+
011			V	lts					E			Ph?	7:45+	<15	+
012			V	lts			a			LkMd		Kingmn	8:00	6	97
013	◇			ob	d							Paulden	8:00		97
014	V			ob			w			ov	>1f 150y	Dew/ Presc V	8:00/ 8:30	sev m	97
015			Δ	o/l			w			Vall.		Ftn Hill	8:00		+
016	V			ob					?		huge	Phoenix	7:30- 8:30	20- 30	+
017	Δ			ob						SB/ov		Phoenix	8:00	<10	+
018			V	lts						CBM	field	Phoenix	8:00	10	+
019	V			ob						67/I10 /ov		Tollesn	8:00	5	+
020		Δ		frm						35/DV		Phoenix	8:00	br	+
021		V		lts			r			ov		W. Ph	8:00	5	+
022		V		lts		unevsn						Phoenix	8:00	sm	+
023			lt	lts	d	orbit	w					E Mesa	8:00?	1-2	97
024		◇		lts			w			43/Ol		Glendal	8:00	5	+
025		V		lts		1 shft	w			SqPk	10°	Scottsd	8:00+		97
026			lts	l/o	d,t		o					Phoenix	8-10	2h	97

027			lts	o/l						jets	Glendal	8:05	sm	+	
028		Δ		lts			w				Chino V	8:06		+	
029	V			ob			w,r	1=2		SqP/ov	700'	Sunnysl	8:10	20+	97
030		V		lts								N. Ph	?		+
031			lts				w/r			H89/ov		N of Ph	8:10		97
032		Δ		lts	ac	sepmv	a					Tempe	8:10	<10	+
033		V		lts			wrg	1=2				Prescott	8:12	5	97
034		◇		stz			o			ov	1f	Paulden	8:13	5	97
035		V		stz			w/r			PrV/ov		Presc V	8:13		97
036		V		lts		rr fr/bk	y-w				½/1°	Prescott	8:15	10	97
037		V		l/ch			w/r			Pres./ov		Prescott	8:15		+
038		V		sep	d		rgw		S	ov		Prescott	8:15	5+	+
039	Δ			ob			r			Scts/ov		Scottsd	8:15	5	97
040		V		frm			w				1f	Blk CC	8:15	2	+
041		V		lts				5 of 3	S			Pres/Ph	8:15	9+	+
042		V		frm		rr mv			E			Glendal	8:15	sm	97
043		Δ		stz				1=2		SkyH		Phoenix	8:15	10	+
044		Δ		lts	(d)					7/ISR		Phoenix	8:32		97
045		Δ		stz			r/w			Ahw/ov		Ahwatu	8:15	<15	97
046			lts		lts	d	2 indp	o		SH		Ph/Tem	8:15	7	+
047	V			ob						ov	huge	Chandlr	8:15		+
048		V		lts			y-w					SE Pres	8:15	2	+
049		V		lts		1 lags	r-o	1=2				Paulden	8:16		97
050		Δ		lts			r,w		to rt	ov		Presc V.	8:17	2-3	97
051	Δ			stre			w				2 mi	N. Ph	8:20		97
052		◇		stz			r-o/ y-w			SM/CB/ ov	300 yds	To Chandlr	8:20 -:25	20- 40	97
053					d							Phoenix	8:20	<1	+
054		V		lts						CB/SH		Phoenix	8:20	4-8	+
055		V		jstl		1 lags	r-o			SH/Tm/ ov	+	Tempe	8:20	15	97
056			lts		lts	t,d	emit			EstrM		Buckeye	8:25	5	97
057		V		lts		1rr lag					sml	Scottsd	8:28	<1	97
058		V		stz		1 lags		1=2		Scts/ov	2f	Scottsd	8:28		97
059		V		sep	ac			1=2				Scottsd	8:28		97
060		V		lts						SMtn		Phoenix	<8:30		97
061	Δ			edge	t	blink						Chino V	8:30	3-5	97
062		V		lts	Fl					PresV		Gila Bd	8:30	20	+
063		cr		lts			r,y					Lk Plsnt	8:30	8+	+
064			lts				(r)			SupM		Ftn Hill	8:30		+
065	V			edge	t	blink		10-13			½mi	Phoenix	8:30	20	+
066	Δ			ob							4jet	Phoenix	8:30	3-4	97
067	Δ			ob						SqPk	huge	Phoenix	8:30		+
068		◇		lts			o,w	1=1+			>jet	Phoenix	8:30+	5+	97
069	Δ			ob			a					Ahwatu	8:30		97
070	V			nost			w			CBM	10f	NE Ph	8:30	6	97
071	ob			ob	d						500'	Goodyr	8:30	5	+
072	C			nost			o			I10/Ch/ ov	3flds	Chandlr	8:30	3- 10	+
073	V			nost		1rr las	r		W			N. Ph	8:30	3	+
074		CV		lts		ind mv	o-r		?	SkyH		Tempe	8:30	20	+
075			lts									Tempe	8:30	5	97
076	V			ob			w,r	3+5			8f	Chandlr	8:30	15	97
077		V		stz		ind mv	r					Tu/Mes	8:30	15	+
078		Δ		lts		ind mv				42/Ray/ ov		Phoenix	8:35		97
079			V	lts			w					Phoenix	8:30+		+
080	V			nost					SE	SM/ov	huge	S. Ph	8:35		+
081	ov			nost	d		?,r					Scottsd	8:35		97
082	Δ			str	d						big	Phoenix	8:37		?
083		V		lts	t							S. Ph	8:40	4	+
084	V			ob			a				lrge	Mesa	8:40	2-3	97
085	Δ			ns/st			o-y /w	3-5 frnt		ov	open nwsp	Tucson/ Casa Gr	8:42	sev m	97
086		Δ		lts			w			SupM		Ahwatu	8:45	3	97
087		◇		frm			y-w								97
088	Δ			str		1 s&r,	o;	7				Chandlr	8:50-		97

						1 fol	w,r	front					9:10		
089		Δ		frm	(t)	rr lags			SE?	MingM		Prescott	9:00	<1	97
090		V		noob	(t)					ov		N. Ph	9:00	<30	+
091		V		lts			o			SqPk		Phoenix	9:00	2-5	+
092	Δ			ob						SMtn	1mi	S. Ph	9:00	4	+
093	V			ob	t							Phoenix	9:00		+
094			lts	lts	t,d	dart					1mi	Phoenix	9:00?		97
095		V		spob	t,d	spins						Phoenix	9:15	10	+
096		Δ		lts	d	lts s&r		lg/sm		CBM		Phoenix	9:24	20+	+
097		Δ		lts								fr Ph	9:30		+
098		V		sep								I-17	9:30		+
099					Fl							Gila Rv	9:50		
100					Fl							Phoenix	10:00		
101		Δ		lts	t		w/r					Tucson	10:00	10	+
102	Δ			ob			y-o				lrge	Phoenix	10:00	30	+
103			lts	lts	t							Casa Gr	10:00	<1	+
104	Δ			str			y-w					Glendal	10:45		+
105	V			str	t		a		S	SkyH	sq mi	Scottsd	10:30	20+	+
106		V		lts	t							Rnbow	2 am		97
107	Δ			ob	t						huge	Douglas	early	30	+
108		Δ		frm						PresAP		Chino V	?		97
109	V			ob	d						huge	Chino V			+
110	V			ob							huge	Presc. V			+
111		cr		lts								Presc. V			+
112		V		lts			wrg	1=2				Presc. V			97
113		V		lts								SE Val.			+
114	ob			ob	d						huge	Dw/Hmb		15	+
115			lts	lts								Blk C C			+
116		V		lts								New Rv			+
117		V		lts			y-w					Cave Ck			+
118			V	lts							4jets	PV Mill			+
119	V			ob							2f	N. Ph		5	97
120		V		lts	ac		w					N of Ph			97
121	V			edge		block	y-w					N. Ph	sunset	<25	+
122			?	lts								Phoenix		2	+
123	ob			ob								Phoenix			97
124	V			ob			y-w					Phe. val.			97
125		V		sep			y-w					Phe. val.			97
126	Δ			ob	d						huge	Mesa			+
127		Δ		lts								Casa Gr			97
128			lts	sep								S of Ph	(late)		97

**Table 3. Totals for Shape, Number of Lights, Direction of Travel, and Attributed Nature.**

Feature	No. of Reports w. Feature	Percentage
<b>Shape</b>	<b>n = 109</b>	
V, boomerang, chevron, flying wing, carpenter's square	61	56
Triangle, delta, arrowhead	34	31
V + Triangle	95	87
Diamond, rectangle, rhomboid, hexagon, kite	6	5
Arc, curve, crown, oval, circle	6	5
Line	2	2
<b>Number of Lights</b>	<b>n = 80</b>	
1-4	9	11
5	54	68
6	2	3
7	8	10
8+	7	9
<b>Direction of Travel</b>	<b>n = 84</b>	
To S (no direction of origin specified)	21	25
N to S	20	24

NW to SE, S	17	20
NW to SW	3	4
NE to S	1	1
NW to NE then S	1	1
W to S	1	1
From or in N (no heading specified)	5	6
To N or S to N	5	6
In or to E	3	4
N to E	1	1
E to NW	1	1
E to SE	1	1
To W, SW	3	4
To SW then W	1	1
<i>Totals: All cases indicating southerly heading</i>	66	79
<i>All cases indicating north to south heading</i>	45	54
<i>All cases indicating northerly heading</i>	6	7
<i>All cases indicating westerly heading</i>	5	6
<i>All cases indicating easterly heading</i>	5	6
<b>Attributed Nature</b>	<b>n = 125</b>	
Object (solid structure bearing lights, blocked stars)	46	37
Lights (group or formation of lights, independent lights)	68	54
Deny seeing object	37	(35)
Acknowledge seeing only lights	31	(25)
Uncertain	11	9

Several unmistakable patterns emerge from a simple tally of the numbers:

1. An overwhelming majority (87%) of witnesses who specify a shape for the lights (109) describe it as V-shaped or triangular (95). The remaining 14 cases describing the lights as linear or in a diamond or curving shape could result from viewing a V-formation edge-on at a distance or at an angle sufficiently parallel to the plane to obscure the V. Whatever the Phoenix Lights were, they presented a V-like configuration to almost every witness.

2. A second strong pattern is the presence of 5 lights in 54 out of 80 cases in which numbers are given, or 68% (this total includes a few cases where the witness was uncertain but included 5 as a possibility).

3. The direction of travel also qualifies as a consistency in the reports. According to 66 witnesses in 84 cases with direction given, the lights headed in a southerly direction (S, SE, or SW), 79% of the total. In 45 cases (54%), the witnesses specified a general north-to-south passage. A heading to the north, east, or west occurs in only 11 cases (19%).

4. Witnesses divided over whether the Phoenix Lights belonged to a huge dark craft or existed solely as a formation of independent lights. In 46 out of 125 cases (37%) the report indicates a solid object, while in 68 cases (54%) the reports mention only lights, while in 11 cases (9%) the witness could not decide whether the lights were attached or independent. The bare numbers are somewhat misleading. Witnesses who reported a solid object usually gave a positive reason—they saw a dark form or the appearance of structure, some unseen object blotted out the stars, the lights blinked at some point as if the edge of a craft eclipsed them, or the lights kept their relative positions so perfectly that they had to be attached to a solid object. Out of 68 witnesses who did not report an object, only 37 provided assertive reasons for regarding the lights as separate. The most common reasons were independent movement among the lights, or a light broke formation, or stars appeared between the lights. In other instances the lights seemed separate, no object was visible, or the lights changed in arrangement. The term “formation” often occurred to describe the lights, and while in 5 instances the reference seemed to mean separate lights flying together, in others the meaning appears informal, a way to indicate a group of lights without prescribing the nature of their association. Where 37 witnesses deny the presence of an object, 31 others report that they saw lights and not an object. If they thought an object was present, they did not say so and limited their statements to the lights they actually saw.

Some 35 cases present questions about their place in the Phoenix Lights events of March 13, 1997. Of these, 21 are doubtful because of their stated date or time. Peter Davenport corrects some of the reported dates and times out of a sense that the reports belong to this night and a certain time even if the witness is uncertain. Case 8, located in the town of Why, far to the southern part of the state, could not be a part of the same events that the witnesses between Prescott and Phoenix observed. Eighteen cases (counting some overlap with time/date problems) qualify as “outliers” because of deviant descriptions. In case 26 the witness watched two lights like hot-air balloons for two hours; one of these lights sped upward out of sight when interceptor jets approached. Some children saw one white light circle another (23), cheerleaders saw both lights and a dark object (71), a witness reported 20 rectangular objects in a V formation that changed to two circular configurations (95). The given descriptions do not share the characteristics of the mainstream reports.

The most common color for the lights was white, 25 out of the 66 cases that include a color. Red was second with 20 cases, 11 for orange, 9 for yellow-white, 8 for amber, and 3 for green. This count of individual colors adds up to more than 66 because some lights changed color and because some formations included lights of two or three colors. A thicker atmosphere due to distance and a low angle of elevation could explain a red, orange, or amber appearance that turned to white as the lights neared, as in cases 45, 52, and 85, but in other cases white lights turned to red (31,35,37,101). The witness in case 50 described the triangle of lights as red except for a white nose light, while the witness in case 76 said three white beams projected from the front while five red-amber lights followed. Witnesses in three separate cases in the Prescott area reported red, green, and white lights together (33,38,112). In 22 cases the witnesses describe the lights as bright while only six use terms like soft, dim, or faint, though these designations leave a lot of room for subjectivity since the benchmarks for comparison of lights termed “bright” ranged from first-magnitude stars to aircraft landing lights.

Noteworthy motions by individual lights in the formation occur in 17 cases. Nine reports describe a light that lagged briefly behind the rest of the formation, moved up then dropped back, or separated from the group then returned (25,36,42,49,55,57,58,73,89). In each case the laggard appears to have been one of the rearmost lights. This independent movement indicates a formation of lights rather than a solid craft, but in cases 56 and 96, the witnesses speak of a craft emitting a light, while in 88 a light separated from the craft then returned. In cases 36, 49, and 89 reports of the light breaking formation came from the Prescott/Paulden area; cases 25, 57, and 58 occur in Scottsdale, 73 in northern Phoenix, 96 somewhere in Phoenix, 55 in Tempe, 88 in Chandler, 42 in Glendale, and 56 in Buckeye. A few other cases of errant motions of lights have a questionable relationship to these consistent cases. In no. 9 multiple small lights departed from and returned to larger lights, in no. 23 one light circled another light; but the time of the former is hard to reconcile with the Phoenix Lights and only children witnessed the latter. In case 46 two lights moved at angles and in spirals apart from the others; in 94 several lights darted back and forth, while in 95 rectangular objects appeared to spin in circles. These reports deviate far enough from the descriptive norm to raise doubts that their observational source was the Phoenix Lights.

Another suggestive motion appears in 11 cases where witnesses report that the Lights as a group changed direction during a sighting. Only four or possibly five make much sense in terms of course direction: Two reports from Prescott (38, 41) and possibly a third (50) have the lights turning directly southward, presumably toward Phoenix. No. 89 would fit here were the time about an hour earlier than the stated 9 p.m. Two witnesses (79,105) turn the UFO to the SE or S from Phoenix, possibly aiming toward Tucson. Two others (6,73) send the Lights off in wrong directions while three others (11,16,74) lack either the location of the witness or the direction of the turn. The number is thin and the timings have to be wrong in several instances, but accounts of shifting lights and changes of direction suggest that independent witnesses observed the same alterations in the movement of the Phoenix Lights.

In 14 cases apparent single lights resolve into double or multiple lights on nearest approach or with optical aid. Seven of the instances of multiplying lights mention that a single light resolved into two (29,33,43,49,58,59,112), while in one case (68) the witness said only that a single light became more than one. Two lights became three then four in case 9, while in case 41 the witness reported 5 clusters of 3 lights. Cases 65, 76, 85, and 88 are possible examples of this phenomenon, since the witnesses describe the standard triangular UFO but add to the number of lights near the front. When lights divide some color differences may become apparent—descriptions include white and red-amber (29), green and red (33,121), orange and red (58), orange and white (68). A possible explanation for this multiplication of lights will accompany a discussion of the aircraft hypothesis.

Witnesses in 74 cases provided a value for how long they observed the UFO. Table 4 summarizes these durations and shows that 40 sightings lasted six minutes or less while 28 continued 10 minutes or more. The minimum was less than a minute while the maximum was 30-40 minutes. Perhaps the most important variables in the duration of a sighting are when the witness first noticed the UFO in the sky and how clear a view the witness had. Some witnesses did not see the Lights until they were nearly overhead while others made them out as faint, distant twinkles while watching the comet. Those witnesses at higher altitude and with unobstructed lines of sight had a better chance of following the Lights for a longer span of time. Other considerations will arise in later discussions.

**Table 4. Duration of Phoenix Lights Sightings.**

Minutes	<1	1-4	several	5-6	7-9	10-15	16-20	>20
<b>Cases n = 74</b>	53, 57, 89, 103	2,23,40, 48,50,61, 66,73,83, 84,86,91, 92,122	8,14, (20), 22,27, 42,85	12,19,21, 24,33,34, 38,39,54, 56,68,70, 71,75,119	17,32,41, 46,63,72,	3,10,11, 18,36,43, 45,55,76, 77,95, 101,114	9,62, 65,74	6,16,26, 29,52, 90,96, 102,105, 107,121
<b>Totals</b>	<b>4</b>	<b>14</b>	<b>7</b>	<b>15</b>	<b>6</b>	<b>13</b>	<b>4</b>	<b>11</b>

Sociological questions surround every UFO report but they circle in flocks around the Phoenix Lights. With many witnesses and much publicity, stories spread and images circulated, witnesses had motivation to share their sightings, non-witnesses perhaps felt pressure to invent a story, and observers who saw something unlike the Phoenix Lights might have spoken up to participate in the excitement where otherwise they would have remained silent. Media attention created expectations while social pressures influenced accounts and shaped memories, or so we might expect. The available data do not address these issues directly, but the last column of Table 2 separates the 53 accounts that investigators gathered in 1997 soon after the event from the 71 accounts that have trickled in over the intervening years down to the present. This division creates a variable that allows a few comparisons of content elements to explore possible social effects on narratives. Differences in the 124 useful cases may hold clues to the working of some human element in the reports.

**Table 5. Phoenix Lights Identified as Objects or Lights, V-Shaped, and Deviant in Time or Description, Separated by Early or Late Date of Reporting.**

Reported Feature	Reported in '97 (n=53)	%	Reported after '97 (n=71)	%
Saw Phoenix Lights as objects	17	32	27	38
Saw Phoenix Lights as lights	33	62	36	51
Uncertain if object or light	3	5	8	11
Saw Phoenix Lights as V or triangle	40	75	56	79
Report deviant in time or description	10	19	24	34

Not much difference distinguishes the reports collected in 1997 from the later reports. A similar high percentage of witnesses saw the Lights to have a V or triangular shape, reinforcing the supposition that this configuration has an observational basis. The percentage of witnesses describing the lights as attached to a dark object grew slightly and the percentage of witnesses who reported a formation of lights, or who said they saw only lights, diminished slightly between the early and the later reports, possibly reflecting growth in the popular status of the Phoenix Lights as a UFO. The small percentage of people who were not certain if they saw an object or lights also increased in the later reports, so we cannot conclude that publicity for UFOs emboldened every witness to turn more definite in their statements. Deviant reports, those that contrast significantly from the usual descriptions of the Phoenix Lights, nearly double in the later sample. Why this difference appears could be because accurate memory decayed with time, because some people rethought an odd but extraneous experience and decided it must have been the Phoenix Lights, or because some people wanted to think that they too shared in this well-publicized event. In any case the real numbers are small and do nothing to change the overall impression, based on the data tabulated here, that no social cause had a major influence on either of these target samples of reports.



### Size and Altitude

We are fortunate to have size estimates in 42 cases of the Phoenix Lights, and more fortunate still that investigators had the foresight to collect some of these estimates in terms of a standard reference. In informal witness terms the UFO was huge (1,8,16,47,67,80,107,109,110,114,126), large (84,102), or big (82). Some witnesses compared the object to the size of a jet liner (4), larger than a jet (68), the size of two to three jets (27), or four jets (66,118); others said the object was the size of a football field (10,18) or three fields (72). Those who used units of measure for their estimates cited 150 yards (14), 500 feet (71), 700 feet (29), 300 yards (52), half a mile (65), one square mile (105), one mile (92,94), and two miles (51). In only one case is the UFO described as small, and then in reference to a video image rather than the object as it appeared in the sky (57).

Statements that the UFO was a mile long or as big as several football fields conveys a sense of enormity, but such descriptions are subjective in the absence of a point of reference or knowledge of the actual distance. One more useful estimate uses degrees, with the full moon a benchmark with its diameter a half-degree across; another compares the UFO to a fist at arm's length. The triangle formed by the extension of the UFO as seen from eye to arm's length is congruent with the triangle formed by the extension of the object at its actual distance from the eye. A ratio of the apparent extension at arm's length to the distance from eye to arm's end equals the same ratio as the actual extension of the object to its actual distance from the eye, or:

$$\frac{\text{Fist size}}{\text{Arm's length}} = \frac{\text{Object size}}{\text{Object distance}}$$

My fist measures four inches across the knuckles and my arm's length is 26 inches. Assuming an object one fist long in apparent size, at 1,000 feet the object is 154 feet long; at one mile, 812 feet long. An object one mile long would have to be six and a half miles away for one fist to just cover it. Not all fists or arm's lengths are the same, and the following table shows the effects of several variations.

**Table 6. Actual Size of UFO Described in Terms of a Fist Held at Arm's Length.**

Fist size (inches)	3.5	3.5	3.5	4	4	4	4.5	4.5	4.5
Arm length (inches)	24	26	28	24	26	28	24	26	28
Size of object (in feet) at a distance of:									
1000 ft.	146	135	125	167	154	143	188	173	161
2000 ft.	292	270	250	334	308	286	375	346	321
5280 ft. (1 mile)	770	711	660	880	812	754	990	914	849
2 miles	1540	1422	1320	1760	1624	1508	1980	1828	1697
19,000 feet	2774	2558	2375	3167	2923	2714	3563	3288	3059
5 miles	3850	3555	3300	4400	4062	3770	4950	4570	4245
5.3 miles							5280		
5.8 miles								5280	
6.2 miles									5280
6 miles				5280					
6.5 miles					5280				
7 miles						5280			
6.9 miles	5280								
7.4 miles		5280							
8 miles			5280						

Table 2 lists twelve cases with sizes given in terms of fists or degrees:

No. 36. Seen at Prescott, 3 lights at front of triangle covered one-half degree, the two lights at the rear covered one degree. At most, then, the UFO appeared the length of three full moons.

No. 14. Dewey/Prescott Valley. A clenched fist would not cover the object. It passed overhead 2000 feet high (or lower than 1000), and was 100-150 yards wide. Witness estimates fit expected size (308 ft. at 2000 ft.).

No. 34. One fist would cover the formation of lights that flew overhead at Paulden.

No. 40. Black Canyon City. Object the apparent size of a thumb at arm's length when first seen grew to fist size when it passed by.

No. 25. Scottsdale. Formation of lights passed west of house, covered 10-degree field (20 full moons, each about a quarter-inch at arm's length, so five inches total).

No. 58. Scottsdale. Formation of lights covered area of two fists.

No. 119. North Phoenix. Lighted object two fists in size passed over, 3-6000 feet high.

No. 29. Sunnyslope. Tim Ley does not provide a comparison to a standard reference, but his illustrations show a boomerang craft covering many degrees of the sky, perhaps equivalent to 30 inches or more at arm's length.

No. 76. Chandler. Craft with lights appeared 30 inches long at arm's length (8 fists). Witness described object as under 1200 feet altitude, a mile long, and from one half to one-and-a-half miles away. Distance estimate works for a mile-long object about 4,900 feet away.

No. 55. Tempe. Formation of lights was so large when overhead the witnesses had to shift their eyes to take in all of it (so, at least a yard at arm's length).

No. 70. Squaw Peak/Camelback Mountain. Formation of lights appeared 10 fists in size.

No. 85. Casa Grande Hills. Craft so large an open newspaper at arm's length would not cover it passed overhead; object a few thousand feet high.

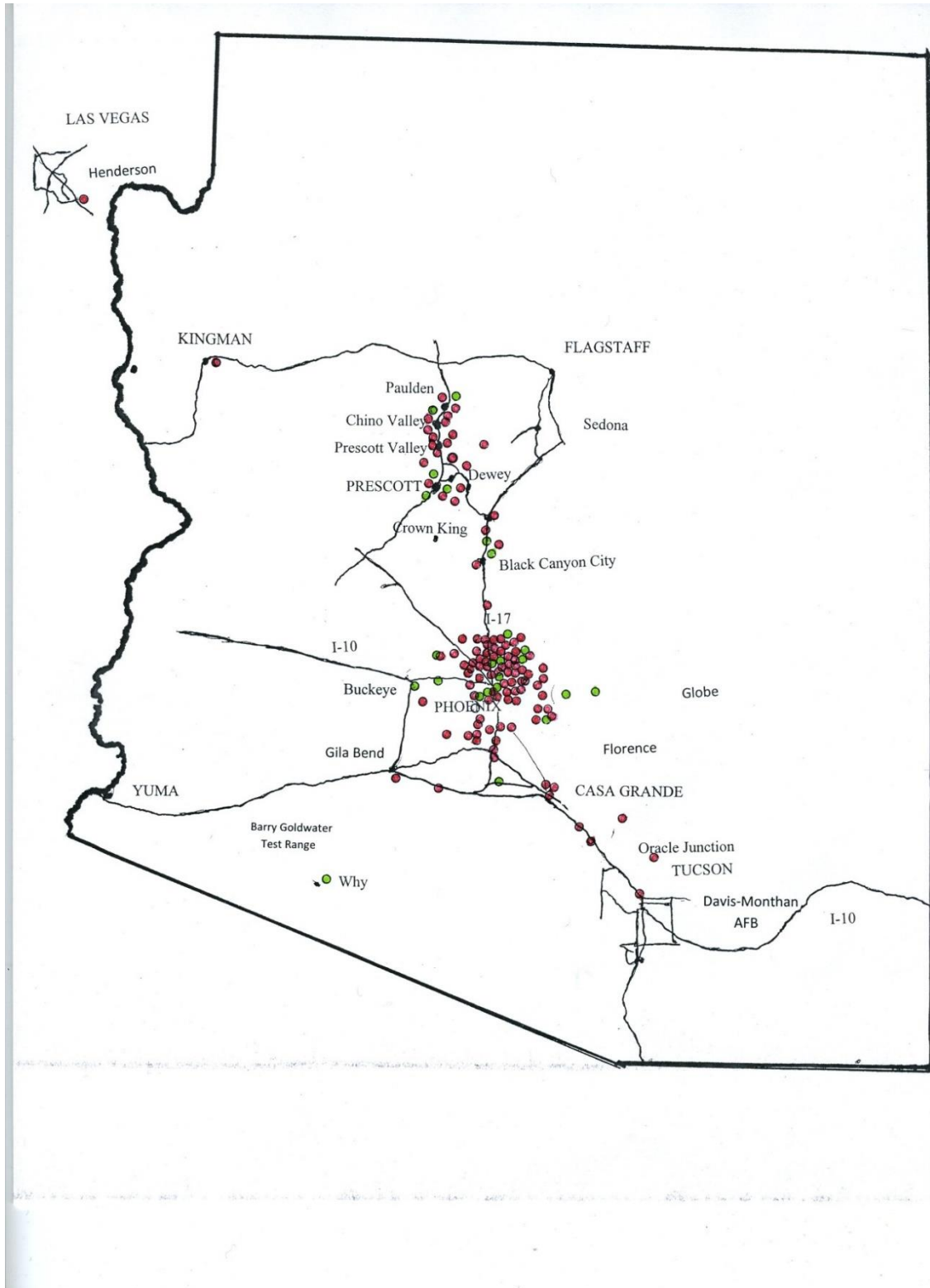
A noteworthy pattern emerges from these descriptions: The Phoenix Lights appeared significantly smaller north of Phoenix than over the city proper. When seen at Prescott, Paulden, Dewey, and Black Canyon City, the UFO was fist-sized or smaller. That size increased to two fists in Scottsdale and northern Phoenix, then grew enormous, 30-40 inches in apparent length from just north of downtown to the southern suburbs and southward past Casa Grande. A significant descent could explain this change, with a nine-fold decrease in altitude necessary to enlarge a 4-inch apparent length to 36 inches. If the lights were truly a mile in length, their altitude would be 6.5 miles at Prescott and 3,813 feet over southern Phoenix. An expansion of the distances between the lights provides an alternative if they were separate, but this solution will not work for a solid object.

### **Time and Place**

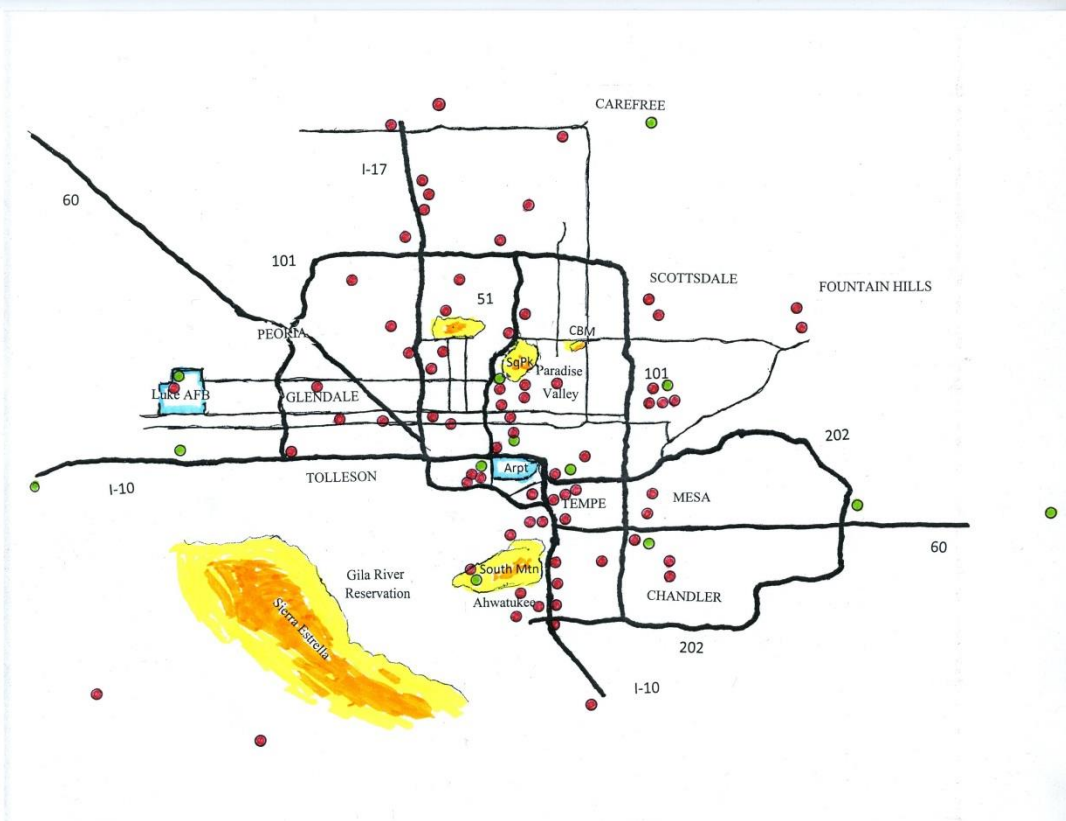
It is a generally accepted attribute of the Phoenix Lights that they followed a course across Arizona from the northwest to the southeast. Similar reports from the Prescott area as well as Phoenix and its surroundings uphold this impression, while scattered reports northwest of the Prescott area, along the way from Prescott to Phoenix, and southeast of Phoenix to Tucson also fit this pattern. The ufological explanation does not need this path but UFOs observed to travel over a lengthy distance enhance the credibility of the case. The skeptical case quite simply requires such a course if aircraft are to prove a viable solution.

A plot of the reports from Table 1 on a map of Arizona appears in Map 1. The red and green dots indicate the approximate position of witnesses for each report. Red dots represent standard Phoenix Lights cases while green dots indicate cases questionable for date, time, location, or description. Map 2 provides a close-up of the Phoenix metropolitan area and the sightings reported there, along with major highways and significant landmarks like Sky Harbor Airport, Camelback Mountain, Squaw Peak, and South Mountain.

Map 1. Phoenix Lights Sightings Across the State of Arizona, March 13, 1997.



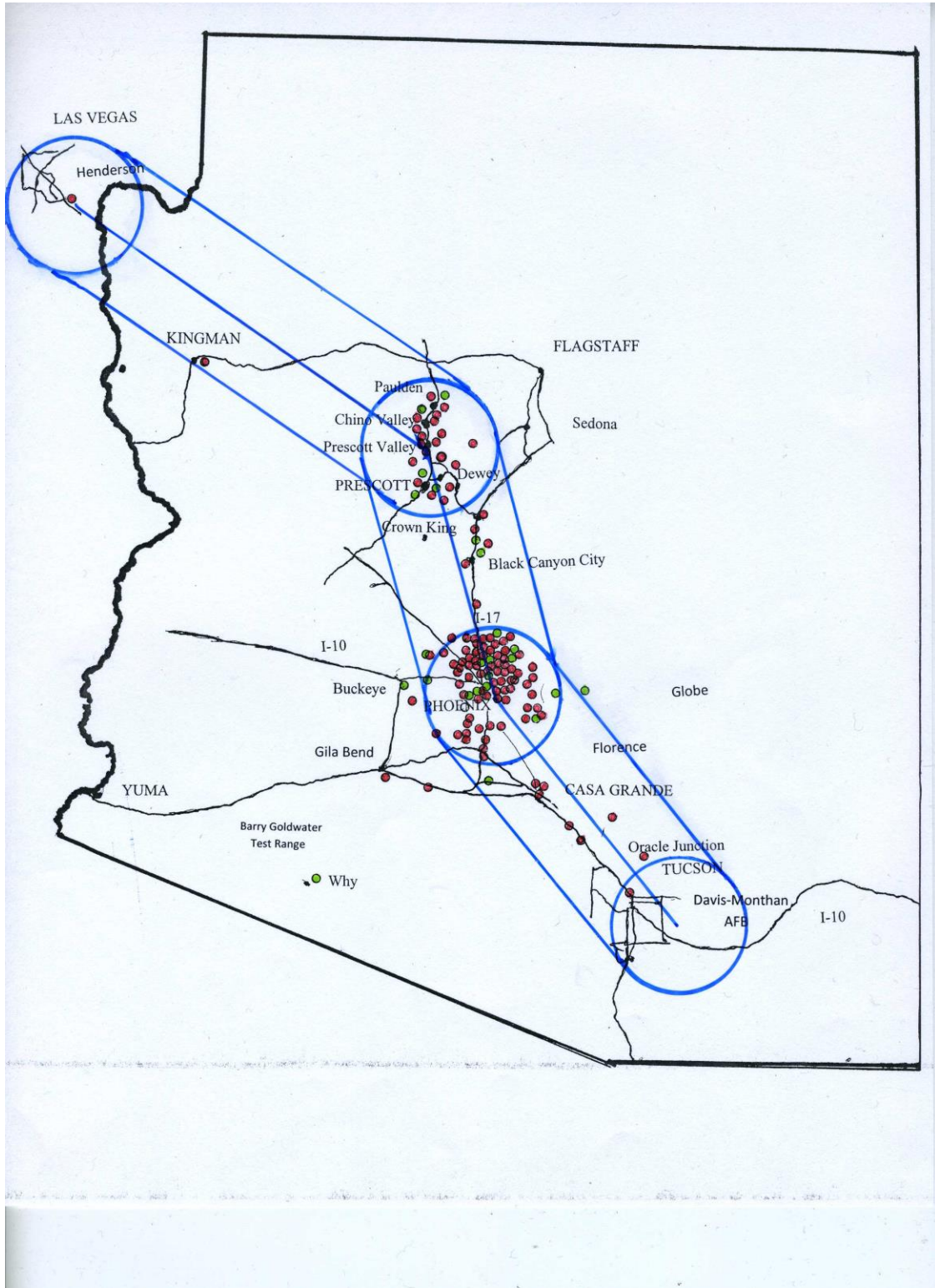
**Map 2. Phoenix Lights Sightings in Phoenix and Surrounding Communities, March 13, 1997.**



The general north-south alignment in sightings of the Lights shows clearly in the first map, with concentrations in the Prescott and Phoenix areas—where, of course, the population is densest. One surprise in light of the usual narrative of events results from the scarcity of sightings in the Tucson area. The population is dense there and another cluster of reports should have resulted if the Lights, whether UFOs or aircraft, had passed over the city. This predictable occurrence failed to materialize and poses a new question in need of an answer.

Map 3 includes the overlay of a corridor about 30 miles wide along the presumed flight path of the Phoenix Lights through the state. This span covers the great majority of sightings in the Prescott, Phoenix, and Tucson areas as well as in all points between. The image emphasizes the narrowness of the course and how the great majority of sightings, whatever their cause, adhered to a purposeful route that included turns southward from Prescott toward Phoenix then southeastward from Phoenix toward Tucson.

**Map 3. Sightings of the Phoenix Lights Showing Presumed Flight Path and Corridor of Passage.**



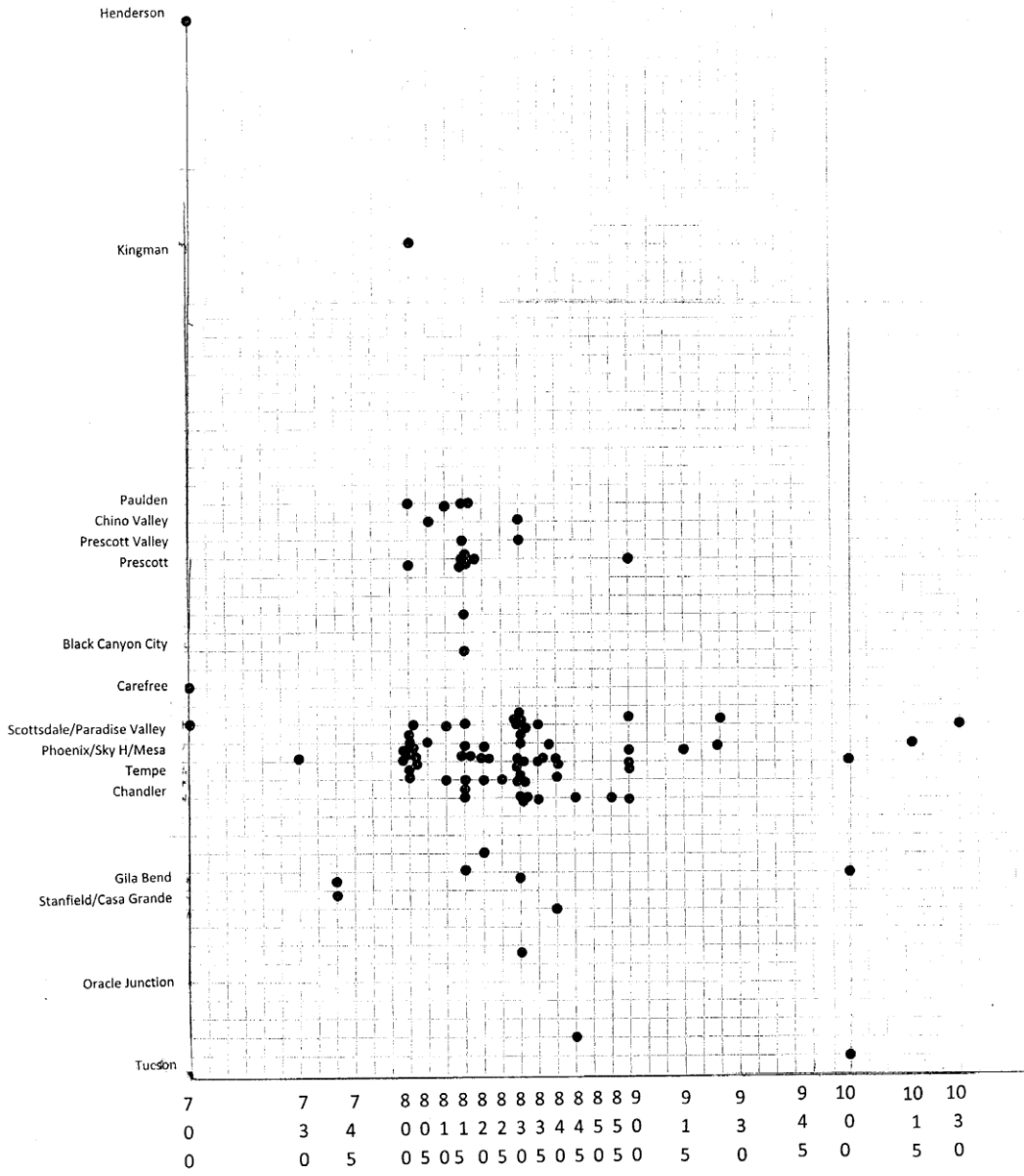
If a superficial glance at geography suggests a smooth north-south passage, introducing the times of sightings throws this neat image into confusion. Table 7 indicates the number of sightings for places along a southward course and the given times reported. The course remains generally north to south over the night, but if the times are accurate, the passage was anything but smooth.

**Table 7. Key Sighting Locations North to South and Times.**

Location	No. n=91	<7	7-7:59	8-8:10	8:11-8:16	8:17-8:25	8:26-8:35	8:36-8:45	8:45-8:59	9-9:59	10+
Henderson	1	1									
Kingman	1	1									
Paulden	3			1	2						
Chino Valley	2			1			1				
Prescott Valley	1				1						
Prescott	9	1			6	1				1	
Dewey	1			(1)							
Black Canyon City	1				1						
Phoenix (total)	63	1	3	16	8	5	18	3	0	7	2
Phoenix (unspecified)	25	1	1	7	4	2	3	1		6	
Ph (NE): Carefree	5		1	2			1			1	
Scottsdale	8		1	1	1		4				1
Fountain Hills	2			1			1				
Paradise Valley	1					1					
Squaw Pk/Camelback	2						1	1			
Ph (NW): Glendale	4			2	1						1
Ph (SE): Tempe	4			1		1	2				
Mesa	2			1				1			
Ahwatukee	3				1		2				
Chandler	3				1		2				
Ph (SW): Tolleson	1			1							
Goodyear	1						1				
Buckeye	1					1					
South Mountain	1						(1)				
Gila Bend	3		1		1		1				
Stanfield	1		1								
Tucson-Mesa/Tempe	2					1		1			
Tucson-Casa Grande	1							1			
North Tucson	1								1		
Tucson	1										1

These same data plotted on a graph (Graph 1) of place and time confirm the general north-to-south course, with a cluster in the Prescott area around 8:15 and another cluster in Phoenix around 8:30, with the few more southerly sightings a bit later. Beyond this general consistency, the sightings in Phoenix in particular create a messy image with cases spread from 8:00 till 9:00 and distinctive concentrations at 8:00, 8:15, 8:30, and 9:00. The data do not comply with a simple diagonal line from Prescott to Tucson, and if left at face value, the evidence could support an argument for multiple objects.

**Graph 1. Plot of Place Versus Time for Phoenix Lights.**



Some good reasons come to mind not to take the times at face value. A clustering of reports around “benchmark” times—on the hour and half-hour, and on the quarter-hours—is apparent in these reports. Witnesses are often good observers but poor timekeepers. They know the event happened after 8:00 and before 9:00 but rarely checked a clock for an exact time, while excitement and attentiveness to observation may have distorted subjective time perception. We should expect considerable human error in the stated values, and consider the clusters around benchmarks as evidence for the use of approximations.

Another source of confusion is the assignment of a point in time for an observation that extended anywhere from a few minutes to 15 or 20 or more. In most cases we have no way of knowing if the assigned time represents the beginning of the sighting, a halfway point, the time of closest approach, or some other incident during the course of the observation. Also troublesome are uncertainties about the exact location of the witness in some cases, especially if traveling on the road or otherwise away from a fixed and familiar location. The many sightings attributed to 8 o’clock and scattered over a wide range of localities may serve as evidence for multiple flying objects, but inaccuracies in given times offer another alternative.

If we knew how fast the Lights traveled, the time of their passage by a given point would be secure. Several reports furnish enough information to anchor the timings on a factual basis: Sightings from the Paulden/Prescott Valley/Prescott area cluster around 8:10-8:17 (31,33,34,35,36,37,38,49,50), and several accounts state that the lights passed overhead at the time of passage (14,31,34,35,37,38,50). This group of reports provides a sound starting-point. Tim Ley’s report (no.29) provides a second useful point for the estimate. He said that his family began watching distant lights a little after 8 and the UFO passed overhead 15 minutes later, so probably 8:20-8:25. A third helpful clue comes from Stacy Roads (no.85), who checked her car clock and saw the time was 8:42 as the UFO flew overhead as she drove northwest of Tucson toward the Casa Grande hills. Not knowing her exact position at the stated time undercuts its value, but the Prescott, Ley, and Roads cases offer firm numbers to work with.

Table 8 shows the arrival times for a UFO traveling from the Prescott area through Phoenix and farther southward toward Tucson, given three hypothetical speeds and three departure times from the Prescott area. Distances from Prescott are direct miles, not highway mileage.

**Table 8. UFO Arrival Times from Prescott to Points South at Different Starting Times and Speeds.**

	BCC	Care-free	Sunny-slope	Scotts-dale	Sky Harb	Tempe	Chdlr	Casa Grande	Tucson
Miles from Prescott	33	56	63	69	75	81	88	122	188
240 mph (4mi/min)									
8:10	8:18	8:25	8:26	8:28	8:29	8:30	8:32	8:41	8:57
8:15	8:23	8:30	8:31	8:33	8:34	8:35	8:37	8:46	9:02
8:20	8:28	8:35	8:36	8:38	8:39	8:40	8:42	8:51	9:07
300 mph (5mi/min)									
8:10	8:17	8:21	8:23	8:24	8:25	8:26	8:28	8:34	8:48
8:15	8:22	8:26	8:28	8:29	8:30	8:31	8:33	8:39	8:53
8:20	8:27	8:31	8:33	8:34	8:35	8:36	8:38	8:44	8:58
360 mph (6mi/min)									
8:10	8:16	8:19	8:20	8:21	8:23	8:24	8:26	8:30	8:43
8:15	8:21	8:24	8:25	8:26	8:28	8:29	8:31	8:35	8:48
8:20	8:26	8:29	8:30	8:31	8:33	8:34	8:36	8:40	8:53

Some supplemental time points draw on cases flagged in Table 2 to indicate that the Lights flew overhead or over a key landmark; 47 of 51 reports are potentially useful by providing a time and location. Seven examples come from the Prescott area and one, the Stacy Roads case, from south of Phoenix. Twenty reports attributed only to the general Phoenix area describe the Lights overhead or over a familiar landmark at times too early or too late (before 8:10, after 8:40) to fit the course hypothesized in Table 8, or describe a direction or landmark incompatible



with this scheme. Only 18 Phoenix cases offer possibly helpful times, and only 12 of these (29,52,54,55,58,60,67,70,72,74,78,80) offer plausible times.

**Table 9. Times Tied to Passage of UFO Overhead or Over a Landmark.**

Place	Time	Overhead	Landmark	Overhd (off-time/place)	Lndmk (off-time/place)
Prescott, Dewey, Prescott Valley	8:10- 8:17	14,31,34, 35,37,38, 50		84	62
Phoenix				4,6,17,19,21	3,7,10,15,18,20,24,25, 64,86,89,91,92,96,105
Sunnyslope	8:20- 8:25	29			
Scottsdale	8:15 8:28	39 58			
SqPk, CBM	8:10 8:20 8:20+ 8:30	52	29 54 67, 70		
Sky Harbor	8:15 8:20 8:30		43 55 74		
SMtn, Ahwat.	8:15 8:30 8:35	45 78	60 80		
Chandler	8:15 8:30	47 72			
Tucson/Casa Gr	8:42	85			

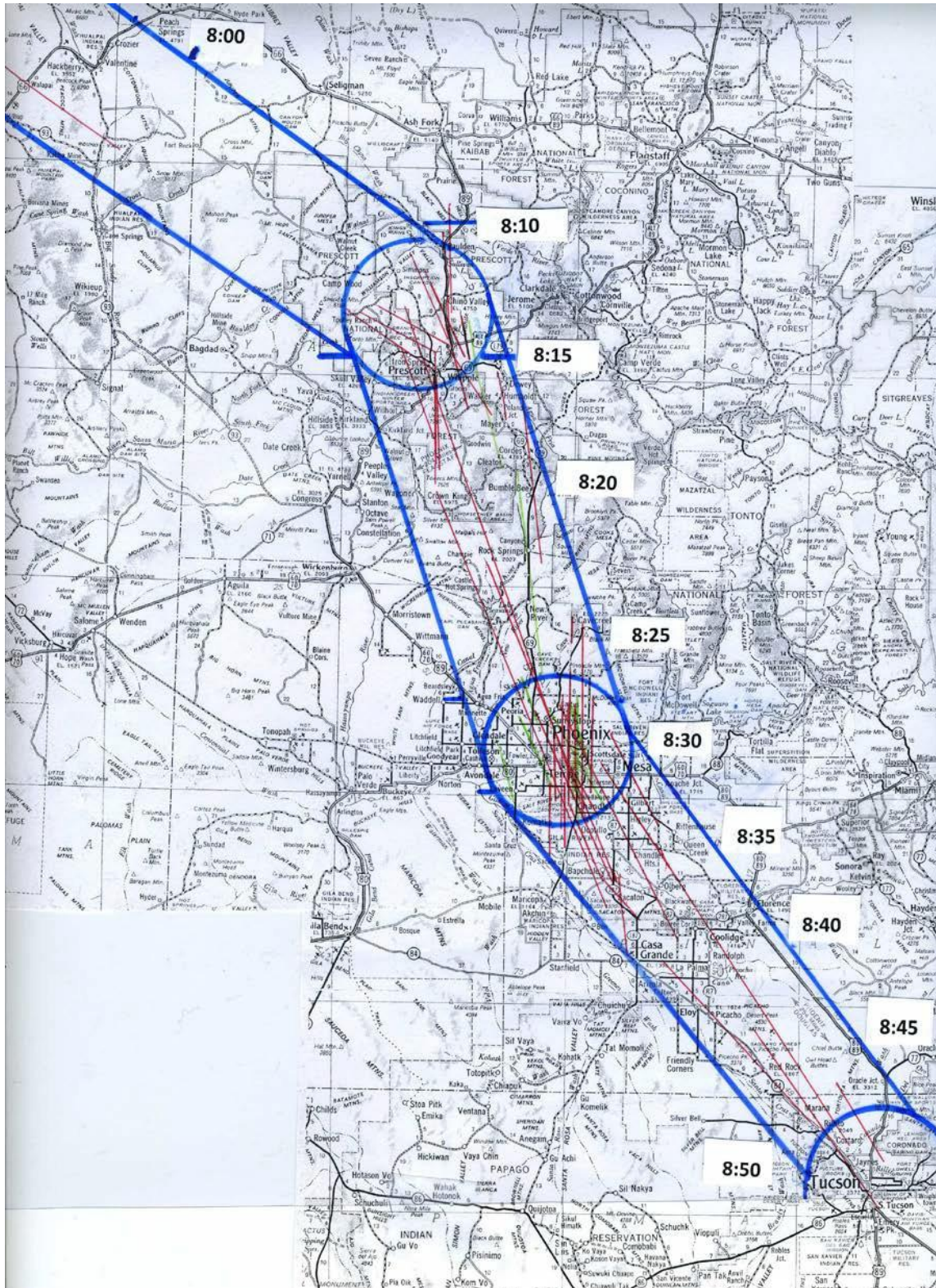
The best matches for speed and time of departure are 240 mph leaving the Prescott area at 8:10, or 300 mph leaving Prescott at 8:10 or 8:15 and allowing Stacy Roads to be a little farther south of Casa Grande at the time of her 8:42 sighting. In practical terms a speed somewhere between 240 and 300 probably characterizes the Phoenix Lights. This estimate also assumes a constant speed and does not consider any time added by a slight turn toward Tucson made just south of Phoenix. The Kingman sighting northwest of Prescott at 8:00 fits only approximately, because at 300 mph the UFO would travel 75 miles between 8 and 8:15, while the actual distance is 100 miles. The Henderson sighting does not fit at all if 6:55 is the right time, since the UFO should travel the 75 miles from Henderson to Kingman in 15 minutes, not 65. If 7:55 is the right time, five minutes is too little time to cover the distance. If these sightings truly belong to the sequence, the times are inaccurate.

One loose end to consider is how lights moving 300 mph could stay in sight for fifteen minutes before passing overhead, as in the case of the Tim Ley sighting. Airplane landing lights are visible from a distance as great as 100 miles (“Landing Lights,” [http://en.wikipedia.org/wiki/Aircraft\\_landing\\_lights](http://en.wikipedia.org/wiki/Aircraft_landing_lights)). A fine clear desert night like March 13, 1997, provided ideal conditions for viewing any sort of aerial lights, and lights of sufficient brightness should have been visible to Ley even when they were in the Prescott/ Paulden area, 63-75 miles away. The 8:10-8:15 timing also conforms to Ley’s report. Other reports describe a distant light low on the horizon that resolved into multiple lights and altered from a linear or arc configuration into a triangle as the object drew nearer (for examples of all or part of this phenomenology, see cases 11,12,16,29,40,41,45,52,55,63,65,76,77,83,85,101,105). Some witnesses note that the lights appeared reddish or orange at a distance then white when near, which would indicate visibility through denser atmosphere at the beginning. Concerns about the curvature of the earth blotting out a light at long distance are unwarranted. For an observer at ground level, the distance of the horizon (in miles) is approximately equal to 1.22 times the square root of the height of the observed object (in feet). A light one mile in altitude would be blocked by the horizon only at a distance of about 89 miles (“Horizon,” <http://en.wikipedia.org/wiki/Horizon> ).

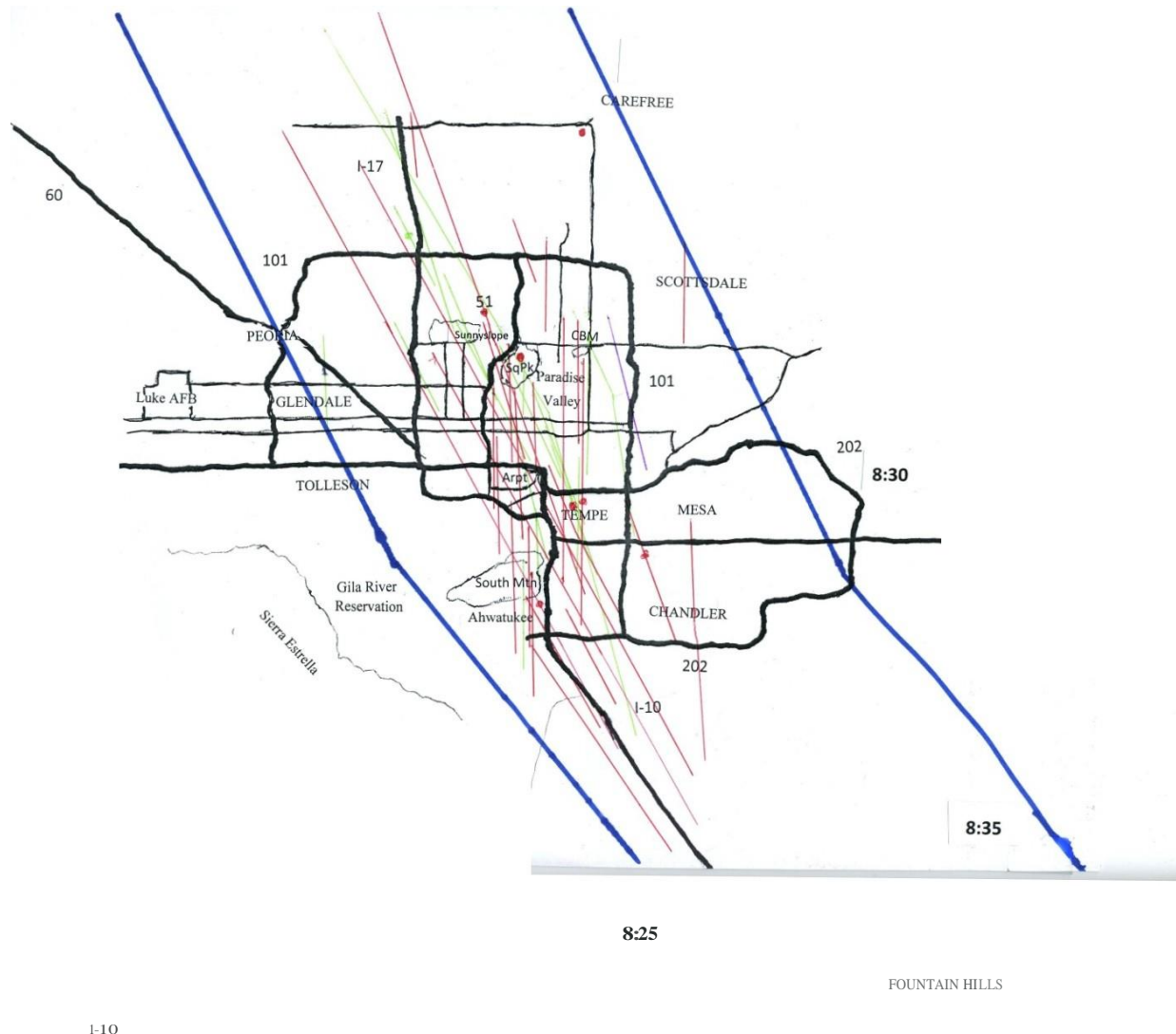
Taking into account the duration, direction, and distance of travel for the Phoenix Lights fills out a one-dimensional picture that shows the sightings as simple points in time. Maps 4 and 5 depict this more realistic representation by plotting the paths of the Phoenix Lights in cases where the report includes duration, direction, time, and position, whether over some landmark or in some identified area. The length of the line approximates the distance covered at 300 mph. Red lines reflect timings that work for the 240-300 mph speed, meaning about 8:10-8:15 for the Prescott area and 8:20-8:35 for Phoenix. Green lines represent times outside these values, or deviant descriptions of the UFO and its behavior.

The courses for reports show the approximate distance the Lights traveled while a witness watched, up to a hundred miles or more for a 15-20 minute observation. Given directions of travel often fit neatly within the hypothetical course, though some witnesses describe the direction as strictly north to south and such a course seems to violate that neat pattern. An assumption that these witnesses resorted to approximate directions could explain the deviations. While the timings of sightings conform well to expectations even when given as points in time, an image of the events as extended in time reinforces the case for a single formation or object passing over Phoenix in rapid flight.

**Map 4. Approximate Courses and Durations of Phoenix Lights Sightings along the Main Corridor through Arizona.**



**Map 5. Approximate Courses and Durations of Phoenix Lights Sightings in the Phoenix Area.**



### **The Identity of the Phoenix Lights**

With the facts in hand insofar as this small sample allows us to see them, the time has come to bring the evidence together and draw some conclusions about what the Phoenix Lights were, and were not. Two explanations contend for the identity of the Lights: On the ufologists' side, some sort of UFO was responsible for the sightings. The mystery object might have been an alien spaceship or a secret military aircraft, one object or a multitude of objects; but in any case something large and remarkable and unknown crossed the Arizona skies at low altitude and slow speed on March 13, 1997. The most thoroughly considered ufological explanation is Bill Hamilton's argument that seven distinctive UFO types account for the Phoenix sightings. Based on witness descriptions, some of the UFOs were formations of 5-7 separate lights while others were V-shaped solid craft of varying width, and one craft was disk-shaped with lights. Most ufologists have let go of the 10:00 cluster of sightings as probably due to flares.

On the skeptics' side, the 10 o'clock sightings were flares but this solution no longer applies to the 8 o'clock events. The physical cause was a flight of five military aircraft crossing the state from the Las Vegas area to Tucson, probably to Davis-Monthan Air Force Base. These aircraft, most likely A-10s or CT-144s, flew at several

miles' altitude at a normal jet speed of 300-400 mph, and displayed landing lights. Social causes also contributed to the sightings—a warm spring evening and many people outside looking for the Hale-Bopp comet furnished a large audience for the aircraft as they flew over, and subsequent publicity of the sightings as a “UFO” event convinced many people that an unusual sight was in fact an otherworldly visitation. No documentation confirms the presence of the necessary aircraft, but an observer with a telescope identified the lights as belonging to aircraft and a video shows the lights flying in an irregular formation, as separate aircraft would.

*Issue no. 1: The number of UFOs observed.* Ufologists counter the skeptics' aircraft explanation with the argument that not one but multiple UFOs created the sightings of the Phoenix Lights. If true, the aircraft explanation cannot work; but much evidence opposes the multiple-UFO argument.

In one superficial sense the ufologists are right. The evidence gathered here makes clear that more than one stimulus provided witnesses with their Phoenix Lights experience. A sighting at Why occurred nearly 100 miles SSW of Phoenix and relates to the 8:00 event only insofar as the sighting happened on the same night (8). Bill Greiner watched luminous objects for two hours as he drove through Phoenix, but his account cannot apply to the object that flew across the city in a few minutes (26). A police officer stated that a giant flying wing passed from the east to the northwest, counter to the prevailing course described in the great majority of reports (47). A driver described lights that moved in right angles and spirals (46), another witness saw 20 rectangular objects moving in circular configurations (95). The witnesses in these cases saw something, but whatever these “somethings” were, they come to us either as gross distortions of the mainstream V-formation of lights or as examples of distinct aerial objects. If the latter possibility is true, then the claim for multiple objects is correct though not very important. These exceptions remain idiosyncratic observations reported by single individuals, testimonials to human error or isolated oddities rather than to the existence of multiple unknowns participating in an organized flyover and confirmed by multiple independent witnesses.

Against the argument for multiple UFOs stand the recurrent descriptions of the Phoenix Lights as a V-shaped configuration (87%), the visible presence of five lights (68%), and southward movement of the lights (79%). Multiple witnesses confirm course changes in the Prescott area and again over the southern part of Phoenix. Multiple witnesses also describe the right rear light lagging behind then catching up with the formation. In a great many reports the course of the UFO conforms to a narrow path from the Prescott area to Phoenix, across several landmarks on the eastern side of the city, and along I-10 toward Tucson. An overwhelming sum of coherent descriptive testimony, alike down to small details, confirms that most witnesses shared observations of the same object.

The strongest evidence for multiple UFOs relies on the scattered times of the sightings in this sample. Starting as early as 5:30 p.m. on March 13 and continuing till 2 a.m. on the 14th, with a cluster of sightings up and down the state between 8 and 9 p.m., the given times taken at face value require the activity of multiple UFOs. Yet an alternative way of looking at the times emphasizes their pattern of succession as the lights crossed the state and the city, and in these terms the evidence swings back in favor of a single UFO. With multiple sightings around Prescott at 8:15 or soon before, a clear passage across Phoenix from 8:20 to 8:35, and sightings farther southward toward Tucson minutes later, many separate reports link together into a meaningful pattern of progression. Fifty-seven out of 102 cases (56%) conform to within a few minutes of the expected time of passage—a remarkable conformity, given human looseness with timing, and evidence that the event was striking enough for many witnesses to note and remember the time. Times for the 45 cases that do not fit this pattern scatter over several hours and no distinctive separate pattern of appearance or behavior emerges. The dozen or so 8:00 sightings give an exact time but range up and down the state, meaning the UFO had to be everywhere at once or, and more likely, the timings cluster around a temporal “benchmark” and are inaccurate. What holds true for times holds true for other descriptive outliers. For instance, the few cases of lights traveling in directions other than southward or southeast follow no coherent alternative route but remain one-off exceptions to the rule.

One particularly compelling case, no. 105, seems at first sight to suggest a giant V-shaped craft returned to Phoenix two hours after its well-observed predecessor. Trig Johnston, a retired airline captain, and three other witnesses watched with him as a solid V-shaped craft with lights approached from the northwest. He estimated it had an area of one square mile or more and flew at a speed of 100 knots at a height of 5,000 feet. The craft made a slight turn south and flew over Sky Harbor. In every detail the description sounds appropriate for the UFO crossing Phoenix from 8:20 to 8:35, only Johnston gave the time of his observations as 10:20 lasting till 10:40. He insisted

that as a pilot he paid attention to the time as a matter of habit, and by implication, his stated time is not a mistake. If so, then here is a genuine example of a separate V-shaped craft over Phoenix. The problem is that no one else saw this object even though it was enormous and flying over the airport and heavily populated areas of the city. Either this sighting remains as evidence for a second UFO over Phoenix, or the given time is off by two hours after all. The simpler choice, as in all cases that deviate from the mainstream, points to likely errors rather than to multiple UFOs.

*Issue no. 2: Formation of independent lights, solid craft, or both?* This problem continues the previous issue but restates the question in more pointed form. As the Phoenix Lights passed over the city between 8:20 and 8:37, witnesses divided over whether they saw a formation of independent lights or lights attached to a dark V-shaped craft. Including times given as 8:15, 18 witnesses in Phoenix state that they saw only lights while 15 declare they saw a solid object.

This nearly-equal division carries impressive circumstantial evidence on both sides. Witnesses decided the lights were separate because they saw irregularities in the formation, or one light that dropped back or moved forward relative to the rest of the group, or saw stars appear between the lights and no framework to bind the lights together. Other witnesses stated with equal certainty that they observed a craft because the lights maintained a perfectly rigid order as if attached to a solid object. Some cited as direct evidence that a dark frame blocked out the stars as it passed, or a translucent material dimmed the stars or distorted the moon. Others reported a visible framework with sharp edges or structures, while one witness even saw windows with human figures behind them (no.51). In several cases witnesses interpreted the edge of the craft eclipsing one or more lights as the reason for their fading as the craft flew by.

Despite near-identical similarities in general configuration, the Phoenix Lights inhabit the testimony of witnesses in two distinctive types. No one can accept this testimony at face value and deny the implication that two types of UFO flew almost side by side across Phoenix. But where is the visual evidence for this juxtaposition? Given that the time frame is brief and the corridor of travel is narrow for the Lights as they crossed the city, given too that they stayed in sight for up to 15 or 20 minutes, surely some witnesses should have seen the two types simultaneously or in close succession, yet any such reports are conspicuous by their absence. Only six or seven cases suggest two UFOs (1,15,38,88,95,96,97), most of them outliers in description or reports that a second object appeared a half hour or so later than the first. The evidence that two objects flew across Phoenix at about the same time is both scarce and unconvincing.

In addition to the accumulated evidence that favors a single object, this final fact poses the most straightforward and compelling argument of all—every Phoenix witness reported only a single triangle of lights during the 8:20-8:35 period, even though those witnesses divided over whether those lights were independent or features of a craft. Bill Hamilton's explanation of the Phoenix Lights attempts to save every nuance of witness testimony, not only the outlier cases but also descriptions of independent lights, solid craft, and distinctions in the shape of the craft, by multiplying the types of UFOs into distinctive designs to cover each deviation in time, place, and description. This recourse explains differences but cannot answer how one witness could see a formation of lights and one a solid object when both observed at the same time and looked toward the same part of the sky. Witnesses deserve to be taken seriously and an effort to adhere to their statements is admirable, but not always viable. The assumption of multiple objects simply does not work in this case and has to be abandoned. Our only hope to read the full message of the evidence is to sacrifice the letter of testimony in favor of a judicious interpretation based on comparison of reports in search of patterns. Part of this process includes rejection of some reports as extraneous to a coherent mainstream event and allowance for distortions due to human error.

In the end there was one. The question now is whether the one UFO was separate lights or a solid craft. The identities differ greatly but the visual evidence is often subtle, while the criteria for a decision must depend on separating descriptions which have alternative explanations from those which do not, that is, from those observations that seem fundamental and not subject to reinterpretation. Some eyewitness testimony will have to be challenged and not everyone can be happy with the outcome. The answer has to be winner-take-all, and no politic compromise can satisfy both sides of the issue.

Some observations attributed to a craft may resolve into appearances often associated with bright lights against a dark sky. The contour illusion that connects empty spaces with an apparent solid body provides a plausible

source for the dark object behind the lights. The disappearance of stars as the lights passed could result from the brightness of the lights overwhelming the dimmer stars, with no need for a solid body to obscure them. Apparent distortions of the stars or moon could be due to changes in the frame of reference provided by the moving lights, making fixed stars appear to flutter or wave; while contrast effects from the lights could seem to dim the stars or change their color. The attribution of structural features, hull panels, windows, or even occupants to objects—for example in the Zond IV reentry of 1968—has occurred often enough in UFO history to raise no eyebrows in this case, while the lights may have kept a steady course long enough to show no noticeable deviation from position during the course of some witnesses' observations, even without the help of a fixed frame. Every element of positive evidence for a solid craft has at least the possibility of an alternative source.

The evidence for a formation of lights lends itself less readily to reinterpretation. A witness might overlook a dark framework even though it was there, but if a frame was truly present, many witnesses would have had to suffer from the same error to think they saw stars between the lights if no stars were actually visible. The appearance of irregularities in arrangement of the lights provides strong evidence that the lights in fact moved independently, and a video corroborates these eyewitness descriptions. Instances of a light falling out of formation and returning again are consistent enough, even to the point of identifying the right rear light in several cases, to say with some confidence that witnesses shared the same sight. In case 88 the witnesses reported that a light detached from a giant triangle then returned to it. Rather than support the cause of the solid object, this observation taken in context with the other reports of a wayward light seems to indicate the same visual phenomenology interpreted in terms of a craft rather than a formation.

Whereas all descriptions indicative of a solid craft lend themselves to reinterpretation in terms of just lights plus an element of human error, descriptions indicative of a formation of lights appear irreducible. Only by dismissing the witnesses of just lights as dismal observers, unable to see the frame of the craft blot out the stars or emit a ball of light, can we force their descriptions to conform to reports of a craft. The craft emerges as a product of interpretation, of concepts and illusions added to observation; the formation of lights depends more closely on fundamental observation, and for reasons of simplicity deserves to win the verdict as the true form of the Phoenix Lights.

*Issue no. 3: Size, altitude, and speed.* Most witnesses described the Phoenix Lights formation or craft as enormous, the size of a football field or several football fields, as long as several airliners, or covering a mile or more in area. Few witnesses called the Lights fast-moving. Almost every description of their speed called them slow or “blimp-like” (e.g., 12,14,21,22,27,29,39,42,47,51,52,65,68,70,71,80,84,92, 110,119,124,125). Also commonplace was the estimate of a low altitude for the lights, ranging from a few thousand (42,47,51,52,76,85) to a few hundred feet (31,72) or even as little as 100 feet (29,71). Only in rare instances did witnesses give a figure as high as one mile (105,119,121).

Eyewitness estimates of these three variables are common in UFO reports but have a poor reputation for accuracy. The night sky lacks a point of reference and without this basis any values are necessarily subjective. We are fortunate to have multiple independent witnesses because they provide an objective basis to nail down one variable, the speed the Phoenix Lights traveled. Assuming that a single formation of lights flew northwest to southeast across Arizona, or at least from the Prescott area through Phoenix and beyond, an estimate based on the time the Lights passed various known points indicates a speed of approximately 300 mph. A little less is possible, a little more not out of the question, but five miles a minute suits the pattern of progression drawn from reports with the most credible timings.

An estimate of 300 mph contradicts the nearly unanimous statements of witnesses that the lights traveled slowly. They were not at all slow; and while the witnesses have to be mistaken in their interpretation, yet they can be quite right in their observations if in fact the stimulus traveled at high altitude. The lights that would flash by in moments at a few hundred feet overhead would appear to pass in unhurried stateliness if several miles high. Two other bundles of evidence support this supposition: First, the long distances and extended durations that witnesses saw the lights are easier to understand for a stimulus at a higher elevation. Second, the large angular measure of the Lights, from one fist to the size of an open newspaper held up to the sky, suggests an extensive object taken at face value, but the truly giant sizes assigned to the Lights work only if they are higher than the witnesses thought. For example, an object the size of a fist at arm's length (four-inch fist, 26-inch arm) needs to be six and a half miles high to be a mile in length, while a mile-long object that appeared a yard long at arm's length would be about 3,800 feet

high. The witnesses committed typical errors in their reckonings of speed and altitude, but their size estimates may not have been too far off the mark after all.

*Issue no. 4: Aircraft or UFO?* The ultimate question of identity revolves around two proposals to explain the Phoenix Lights: Were they military aircraft or genuine UFOs?

The case for a genuine UFO suffers from the loss of mass sightings for multiple objects. One object passing across the state accounts for most of the sightings and the remainder consists of idiosyncratic observations without apparent pattern or connection. For example, in case 26, a truck driver reported watching two lights for some two hours. Neither the actions nor the appearance of these lights have anything in common with the mainstream Phoenix Lights. In case 8 the witnesses reported a huge black object with lights over their car, but despite a superficial descriptive relationship, the time and place set this sighting far apart from the Phoenix events.

A second blow to the UFO explanation comes from the likelihood that the Phoenix Lights were separate lights rather than features of a large rigid craft. Despite considerable witness testimony in favor of a craft, equally sound testimony denies it, and alternative explanations can account for the appearance of a craft but not for the independence of the lights. Moreover, the fact seems inescapable that both the craft and the formation of lights should have shared the sky over Phoenix at the same time, yet no one reported seeing both. The formation of lights remains the only mystery to explain.

Several accounts describing jet interceptors pursuing the Phoenix Lights have circulated repeatedly as evidence for a UFO event. One is case 26 again, where the witness said that jets scrambled to intercept the mystery lights but they shot upward and disappeared as the jets approached. Another is case 44: According to a Luke AFB ground crewman, F-15s headed toward Prescott Valley where a triangular object nearly collided with a small airplane. At 8:32 jets pursued the object over Phoenix, heading toward Sky Harbor. The object descended from 18,000 feet to 10,000 then went dark, and radar blanked out. An impressive testimony that does not involve interceptors is case 109. A flight instructor flying with a student passed over a mile-long craft below him and saw it block out lights on the ground. The first case comes from a known witness but his lights do not resemble the Phoenix Lights and we have no confirmation of the jet scramble. The second case is hearsay and, again, corroboration is lacking for all of these spectacular assertions. The third report arrives secondhand and late (2006), with no chance for an investigator to question the instructor or the student. All of these stories are impressive if true, but they leave doubts about their accuracy and more.

Much of the positive case for a UFO as the source of the Phoenix Lights has evaporated. To reach this conclusion has required the uncomfortable step of denying a considerable mass of credible and sincere eyewitness testimony, but persuasive evidence has driven a series of reinterpretations that has simplified and clarified the events of March 13, 1997. Good reasons back the assumption that a single formation of lights crossed the state of Arizona at about 300 mph and passed over the city of Phoenix. A UFO explanation without any compelling positive evidence applies only as a default in the absence of any viable alternative, and the aircraft solution offers just such an alternative.

Reasonable alternatives explain the evidence for a solid craft while no solution short of dismissing fundamental observations, both testimonial and video, explains the evidence for independent lights.

Positive evidence for aircraft begins with the well-known report of Mitch Stanley, who observed the Lights with a telescope and resolved each light into two lights on aircraft with squared wings (case 59). These craft are usually identified as A-10 Warthogs. Other reports specify aircraft as the source of the Lights:

20. Witness stated that the lights looked like a formation of planes with their landing lights on.

32. Witness heard jet engines and identified the source as nine A-10 aircraft.

Case 120 is especially informative. Larry Campbell and John Middleton, the pilot and co-pilot of an America West 757 flying at 17,000 feet saw a V-formation of bright white lights when just north of Phoenix. Traffic control identified the source as a flight of CT-144s at 19,000 feet; a pilot of that flight responded that they were Canadians flying to Davis-Monthan AFB in Tucson. Stanley and the America West airmen presented their accounts in interviews soon after the event.



Secondary evidence suggestive of aircraft includes every instance of irregular formation (22,38,57, 58,74,77,78,89,98,125,128; maybe 40,46,94) and the cases of one light lagging behind then catching up again (9,25,36,49,55,57,58,73,88,89, maybe 46,56,96). Reports of single lights splitting or resolving into two or more lights when the V was nearest provide naked-eye or binocular-assisted confirmation of the appearance Mitch Stanley observed through his telescope (29,33,43,49,58,59,112; possibly 9,41,65,68,76, 85,88,96). The formation turning in the Prescott area then again in southern Phoenix sounds like the course changes of aircraft aiming for Phoenix then Tucson, while the few reports of sounds from the Phoenix Lights could mean that several witnesses heard the engines of the passing jets (4,6,32,97,104).

A plausible scenario based on the assumption of aircraft might begin with a flight of five jets leaving from the Las Vegas area and passing near Kingman at 8:00. For a certainty, the flight arrived in the Prescott area around 8:10-8:15, observed by many people. The aircraft turned southward toward Phoenix and appeared over the northern part of the city at about 8:20 or 8:25, flew over Sunnyslope and passed southward near Sky Harbor Airport then followed I-10 out of the city and southeastward to Tucson, perhaps to arrive at Davis-Monthan AFB by 8:50-8:55. The visible element consisted of a single bright light for each aircraft, bright enough to be seen from elevated spots in Phoenix even when as far away as Prescott, a distance of more than 60 miles. At a distance the lights appeared as a single light or a tight cluster of small stars low on the horizon; when a bit nearer the lights assumed a crescent or rectangular shape because the witness saw the aircraft nearly horizontal to their plane of travel. As the flight drew close the lights rose into the sky and the witness viewed them from underneath, with eyes perpendicular to the plane, to see a V of five lights as the jets flew in formation. Judging from descriptions, the front three jets maintained a relatively tight triangle while the other two stayed a little farther back, one on each side to extend the legs of the V.

The formation followed a linear, seemingly purposeful course for hundreds of miles. Most witnesses located the lights within a narrow course from Prescott and through Phoenix, all as we might expect for military aircraft. The speeds for an A-10 Warthog ranges from a minimum of 138 mph to a maximum of 439 mph, with a typical cruising speed of 340 mph ([https://en.wikipedia.org/wiki/Fairchild\\_Republic\\_A-10\\_Thunderbolt\\_II](https://en.wikipedia.org/wiki/Fairchild_Republic_A-10_Thunderbolt_II)). A speed of 300 mph determined for the Phoenix Lights falls close to this typical speed. If the altitude of the formation was 19,000 feet or more, the lights would be visible for a great distance and the movement of the jets would appear slow even as they passed at five miles a minute. At 19,000 feet a formation the apparent size of a fist would be nearly 3,000 feet long. I do not know the typical spacing for A-10s or other military jets flying in formation, but one reference states that "in a combat spread formation modern jet-engine fighters may be several hundred metres apart" ("Formation Flying," <https://www.britannica.com/technology/formation-flying>). The size of the Phoenix Lights fits this estimate, and we might expect wide spacing for safety's sake in jets flying at night as a formation only in an informal sense, without combat considerations or any display purposes.

Some reported facts do not fit well with the aircraft hypothesis, or at least appear puzzling in its context. One is why the supposed aircraft flew with their landing lights on for hundreds of miles. The America West pilots (120) questioned this peculiarity when they wondered why Canadian CT-144s were flying in show formation with lights activated at the observed time and place. Landing lights serve to illuminate the ground when an aircraft is low, at takeoff and landing; they increase the visibility of an aircraft for other pilots and may be used when flying below 6,000 feet, in crowded airspaces, when changing flight levels, or within ten nautical miles of an airport ("Landing lights," [https://en.wikipedia.org/wiki/Landing\\_lights](https://en.wikipedia.org/wiki/Landing_lights)). Such lights would not normally continue in use throughout an entire flight or on aircraft cruising at several miles' elevation, but would be used over Phoenix near Sky Harbor, and possibly near the Prescott airport. The unusualness of a formation of aircraft with landing lights on display throughout a flight across the state may explain why so many people took notice in the first place, and while such lights must be familiar on an everyday basis to people living near the airport, perhaps a formation of lighted aircraft posed a rarer and stranger sight.

Navigation lights offer another possible source. A red light on the left wingtip, a green one on the right, and a white light at the rear, either of the aircraft itself or of each wingtip comprise the basic navigation lights for commercial aircraft (not certain about military). High-intensity white strobes and a red or white rotating beacon serve anti-collision purposes ("Navigation light," [http://en.wikipedia.org/wiki/Navigation\\_light](http://en.wikipedia.org/wiki/Navigation_light)). Since white and red lights comprise the colors most often reported for the Phoenix Lights, the idea that witnesses saw aircraft navigation lights sounds at least superficially plausible. If this solution is true then for a southbound flight witnesses east of the craft should see the red navigation light and those west of it should see the green, but no simple pattern takes shape. People on both sides of the flight path saw red and white, orange and amber. No one saw green except

in three cases in the Prescott area. The description of the lights as bright, and the distance of their visibility, seems against the possibility of navigation lights. Anti-collision beacons are bright, but rotating, regularly flashing, or pulsating lights occur only once in Phoenix Lights descriptions (77). It is tempting to think that the three observers of green colors saw navigation lights because they also reported red and white. If so, navigation lights might have replaced the landing lights over some stretches of the trip, and once media publicity began some witnesses might have assigned a new significance to lights they dismissed at first as ordinary.

Aircraft lights offer an appealing solution for the Phoenix Lights, only the details do not always provide a comfortable fit. Landing and navigation lights, atmospheric distortion of color and brightness, human error and media influence might combine in ways to allay any doubts. The resolution of one light into two or three of different colors with optical aid or when the lights drew nearest also calls for an answer—do military aircraft like the A-10 carry such lights close together? Someone with expertise on the lighting of military aircraft is needed to address these points, and the answers can settle whether or not the aircraft explanation represents a stretch or a close fit after all.

Another problematic element in the reports is the change in apparent size of the UFO between Prescott and Phoenix. The one-fist comparison is consistent in the Prescott area but enlarges up to something like ten fists—say, a yard—in Phoenix and south of it. This change poses a problem for any interpretation. If the Phoenix Lights event is continuous from Prescott to Phoenix then we have to account for how the formation grew in apparent size. One solution reverts to the multiple-UFOs hypothesis and exchanges the Prescott UFO for something much larger in Phoenix. One simpler solution calls for the formation to widen, another for the formation to hold its size but drop in altitude over Phoenix, from several miles high to 3,500 feet for a mile-long formation, about 2,000 feet for a 3,000-foot long formation.

A descent of the formation over Phoenix carries a bonus consequence, an explanation for the brightness of the lights if they were landing lights at relatively low altitude. This same supposition raises problems of its own, like why the lights continued to move slowly in the eyes of the witnesses. This alleged slowness may exist more in subjective than objective reality, since Table 4 shows that in 40 cases, a little over half of the total giving a duration, witnesses reported that the supposedly slow-moving lights stayed in sight for less than six minutes. Other questions have no ready answers. If the formation descended, this fact would contradict the identification of the lights as military aircraft at 19,000 feet, and resurrect the question of radar contact, or lack of it. The supposed absence of radar contact with five aircraft would make sense if they were high-altitude military aircraft, in which case a transponder in the lead aircraft would satisfy regulatory requirements; but bring those jets down to low altitude where they might entangle with Sky Harbor traffic, then lack of radar contact with each aircraft becomes both irregular and hazardous. The comparison estimates of size seem too substantial and too consistent to dismiss out of hand, but the prospect of a formation of military jets swooping low over the city seems hard to credit as well.

If the formation spread out over Phoenix, the “object” would appear to enlarge without incurring the difficulties that would accompany a descent to low altitude in a busy airspace. The aircraft would have to separate a great deal yet still maintain their triangular formation to comply with the descriptive evidence, and the brightness of the lights would not increase, though if landing lights were the source they would appear bright even at several miles of altitude. Another possibility would be a combination of spreading formation and partial descent. According to the narrator of case 44 the UFO descended from 18,000 to 10,000 feet; and while the credibility of this report is questionable, the alleged ground crewman might have picked up some garbled information about the actions of a formation of aircraft. As things stand we have no evidence to support either the descent or the enlargement of a formation of aircraft, only a conclusion that the latter assumption poses the fewest problems.

A third curiosity to consider is the scarcity of reports from the Tucson area. If the jets headed toward Davis-Monthan AFB as their destination with landing lights ablaze, we should expect many sightings along the I-10 corridor from Phoenix to Tucson, and a new concentration of sightings as the flight passed over the densely populated areas of Tucson. In fact sightings were few beyond the southeastern borders of Phoenix and very scarce south of Casa Grande. Only one case in my sample (87) indicates a UFO in the Tucson area around the expected arrival time. Perhaps the aircraft extinguished their landing lights or took a roundabout course that kept them away from populated areas; perhaps they had another destination entirely, or perhaps Tucson sightings never entered the record. In any case this apparent disappearance of the jets from their expected route casts some doubt on the aircraft explanation.

The aircraft solution is not perfect. It does not answer every question posed by the Phoenix Lights evidence with an airtight and satisfying response. It certainly enjoys no popularity with witnesses who thought they saw a giant UFO, or among those ufologists who regard this case as one of the best ever. But on the strengths of direct observational evidence, consistency of description, speed, and behavior, the aircraft explanation offers a persuasive and conventional solution that accounts for the great majority of testimony on record for the Phoenix Lights. To know the identity of the flight, if such it was, would hold particular value, but that information has not appeared so far and probably will not at this late date. Expert knowledge may clear up the remaining doubts, or it might completely overthrow the argument that I have laid out here. Still, in my eyes the cumulative evidence strongly favors the conventional solution, and the direction of the outcome becomes clear as soon as we look at a sizable sample of cases, rather than an impressive and tendentious few. Drawing out basic patterns of what people saw, how the Lights appeared, and their course of travel only solidified the likelihood that this event was not as mysterious as it first appeared. With due consideration the more sensational reports resolve into witnesses making honest efforts to convey their descriptions and understandings of an unfamiliar appearance, but misled by perceptual errors, expectations, and publicity to favor the exotic over the conventional. The aircraft solution answers far more questions than it raises. A determined defender of the Phoenix Lights as an unknown can hang onto the lingering doubts, but only against a strong current of opposing evidence.