

## TRC and ZodiAC Present: The Search for Terrestrial Intelligence

### Special Instruction (no gimmicks):

Welcome to today's car rallye, which is a **GPS coursemarker gimmick rallye**. The theme of this rallye is based on the delivery of the great refractor telescope to Lick Observatory in 1886. Any knowledge or expertise of the Lick Observatory (or astronomy in general), however, in no way enables you to perform better on the rallye than those with no knowledge of it. For those who are curious, ZodiAC was Emil's club when he was running rallyes in San Jose in the 70s (the capital AC stands for "Auto Club").

About 25 miles due east from the start, on the summit of Mt. Hamilton, are the domes of Lick Observatory, the first permanently occupied mountain-top observatory in the world (which you may be able to see at some points along today's route). The observatory was built as a monument to James Lick (after he was talked out of his initial idea of building a pyramid to himself larger than the one in Giza, Egypt in downtown San Francisco). Lick made his fortunes as a cabinet maker, piano builder, and real estate investor and built several properties in the bay area, including one of California's first luxury hotels, his 24-room Italianate Victorian mansion, and a mill considered the finest in the country. He was also responsible for bringing Ghirardelli chocolate to the US.

Today's rallye is a bit different than coursemarker rallyes you may have run before – you'll use a website on your phone to tell you when you encounter coursemarkers based on your GPS location. Since it's the first time we are using this technology, it's a bit of an experiment, so while on the route, please reach out to the rallyemasters if anything seems to be amiss. We appreciate any feedback you have on this rallye format!

Read all instructions very carefully. If you have questions feel free to ask the rallyemasters. There are no gimmicks (tricks) in this section or any instructions titled Special Instructions (SI).

**End SI.**

## GENERAL INSTRUCTIONS (GIs)

### DEFINITIONS:

**turn:** change of direction

**at:** as close as possible, within 50 feet. Additional words, numbers, or symbols do not invalidate a sign to execute an "at" instruction.

**Ch:** a chance to turn in the direction indicated.

**Opp:** an opportunity to turn in the direction indicated ONTO a named road by its name

**onto:** onto the road by its name. When onto, stay onto the road by its name, even if you must U to do so, until instructed off by an RI, SUPP, or SI.

**NLORBN:** no longer onto the road by name; both turn instructions and NLORBN can take you off the road by name.

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**U:** a one hundred eighty degree reversal of your direction of travel. Make U's where legal and safe but consider them made where instructed.

**complete:** execute or delete

**delete:** does not exist

**R:** make a turn to the right between approximately 15 and 165 degrees

**L:** make a turn to the left between approximately 15 and 165 degrees

**stop:** a red and white sign with the word "STOP" on it.

**character:** An arabic numeral (1,2,3,...) or a letter in the English alphabet. Symbols, emoji, images, and letters only in non-English alphabets are NOT characters.

**punctuation:** Only the following symbols are considered punctuation marks: . , ; " - ' ? : ( ) [ ] ! /

**word:** One or more characters set off by spaces and/or punctuation.

**named road:** For a roadway to be named, it must be identified by at least one word on a street naming sign and the roadway is named by all the words that exist on that sign. Street naming signs parallel to your direction of travel rename a road only from that point forward.

**CM:** coursemarker

**CP:** checkpoint

**CS:** continue straight as possible past one road at the sign indicated

**Intersection:** the meeting of exactly two differently named roads

**T:** the meeting of two named roads shaped like a T approached up the stem. L at otherwise uninstructed T's.

**forced turn:** a meeting of two differently named roadways where only one direction of travel is possible, aside from a U. Do not execute any turn instructions at a forced turn.

**speed bump:** a large bump in the road identified by a sign with the words "Speed Bump," or "Speed Hump," or "Speed Humps" preceding it.

**celebrate:** take an L at Bay to spend a little time relaxing by the waterfront

**DRI:** delete the route instruction you are currently working on

**CRI:** continue with the RI indicated, and delete all lower-numbered RI(s).

**DG:** delete the gimmick in the general instructions that caused you to reach this CM.

**DS:** delete all SUPP instructions currently in effect. Note that DS does not delete SI instructions.

**DZ:** delete the ZodiAC catalogue effect that got you here or that is in effect.

**on course:** you are doing just fine. When you are instructed "on course" execute it by taking a deep breath and saying, "Ah it is fun to be traveling in the wagon."

**faraway object:** a character that exists on a sign

**astronomical object:** an object listed in the ZodiAC Catalogue of Astronomical Objects (attached) and observed by completely passing a sign with its identifier. Additional words, numbers, or symbols do not invalidate a sign to observe an astronomical object.

**Pick up the eyepiece:** When instructed to pick up the eyepiece, you no longer see faraway objects as inverted

**Inverted:** flipped upside down (vertically) on signs (e.g., not rotated, so: W 18 becomes M 18 and b becomes P while B 31 remains B 31, D remains D, O remains O, etc.)

## GENERAL INSTRUCTIONS (Continued - Page 3 of 6)

### **ORDER OF PRECEDENCE:**

The Order of Precedence is listed below, decreasing in precedence as you move down the list. When two or more instructions of different precedence are in effect and can be executed at the same location, execute the instruction of higher/highest precedence first.

**1. *California Vehicle Code:*** OBEY THE LAW. Do not break any laws in order to follow any other instructions. You may work on other instructions while following the Vehicle Code. DO NOT SPEED. This rallye is not a race, it is a mind game on wheels.

**2. *Rallyemaster:*** Instructions provided directly by the rallyemaster(s) take precedence over all other instructions except for the law.

**3. *Special Instructions (SIs):*** Highest order of precedence other than the law and rallyemaster. There are no gimmicks on SIs. When instructed by an SI, always follow the instruction. Do not execute any other instruction when SIs are in effect (and do not look for or record CMs while executing SIs). SIs on the Route Instruction page(s) come into effect and go out of effect as instructed by that SI and are deleted immediately upon execution. SIs on the SUPP/SI page come into effect when you record a number in a blank space in your scoresheet's Route Recording Section corresponding to the number of that SI and are deleted once they are fully executed.

**4. *ZodiAC Catalogue Instructions:*** The instructions listed in the attached Catalogue of ZodiAC Astronomical Objects. Only once you have all the telescope equipment installed on the mountaintop can you begin observing these astronomical objects, which you do by seeing and completely passing a sign with the astronomical object's identifier. Upon being observed, the related effect(s) listed in the table come into effect. These effects can be deleted with a DZ instruction or go out of effect as otherwise instructed in the catalogue.

**5. *General Instructions (GIs):*** General Instructions are contained in the six pages labeled General Instructions which you received at the start. They are always in effect, unless deleted.

**6. *Supplementary Instructions (SUPPs):*** Supps are numbered instructions with lettered part(s) that appear on the SUPP/SI pages or are shown to you at a Checkpoint (unless explicitly labeled as an SI all such instructions on the SUPP/SI pages are SUPPs). Whenever you record a number in a blank space in the Route Recording Section of your scoresheet, bring the corresponding SUPP (or SI) on the SUPP/SI page into effect. Once you fully execute a SUPP it is deleted (i.e., if you encounter a CM for a second time on the route, you should not record it on your scoresheet again or re-execute its related SUPP). SUPPs received at CPs come into effect upon receipt and are deleted upon execution. When a SUPP has more than one part, complete the parts of the supp in ascending alphabetical order. When two or more SUPPs are in effect at the same time, complete all parts of the SUPP that came into effect first before completing the parts of the next SUPP that came into effect.

**7. *Route Instructions (RIs):*** RIs are numbered instructions on the Route Instruction pages. Always work on the lowest numbered uncompleted RI. Once you execute an RI, it is deleted.

**8.** Continue as straight as possible.

**9.** Reverse your direction of travel.

## GENERAL INSTRUCTIONS (Continued - Page 4 of 6)

### **SIGNS:**

Only government-erected signs with fewer than 8 words as well as rallye-erected signs are considered signs on today's rallye (**SI:** Note coursemarkers, even though they're viewed through a website on your phone, **ARE** signs. **END SI**). Do not look behind you to see any signs, but signs can appear on your left, on your right, overhead, etc. The surfaces of roads, sidewalks, and curbs are not valid signs, and there are no valid signs on vehicles, buildings, fences, or mailboxes. Separate surfaces on a common support are considered separate signs. In each RI or SUPP part using the word "at" or "onto", everything following "at" or "onto" in that RI or SUPP part must appear on the sign where you are instructed to execute an action.

Do not split words unless instructed to do so. The words Avenue, Drive, Street, Way, Road, Court, Terrace, Circle, Lane, Parkway, and their abbreviations do not exist on signs. The words North, South, East, West, and their abbreviations N, S, E, and W do not exist on signs.

**SI:** Block numbers (as well as words such as "END" when used to indicate the block on a street naming sign), municipality names (except when a street shares the name of a municipality), arrows, and erection dates do not exist on street naming signs. **END SI**.

### **ROUTE:**

All roads used will be paved and public, however, government-erected signs marking private drives are still considered valid signs. Driveways and parking lots exist only at the start and at the finish. **SI:** You will only travel on El Camino Real, Shoreline Blvd, Middlefield Rd, and Central Expressway during a few short traverses and these major streets and their associated signs will not be used for any gimmicks during this rallye. **END SI**.

### **COURSEMARKERS:**

#### **SI:**

CMs for today's rallye will be accessed via a website on your smartphone (see attached instructions for details on setting it up and screenshots of what these look like – there are no gimmicks in the three pages titled "Using the GPS Coursemarker Detector"). There is a valid physical CM at the first CP at Bubb Park. A few tips to keep in mind while using the coursemarker website:

- Although the CMs will be detected virtually on your phone, **they nevertheless are signs for the purposes of the rallye**
- The website indicates how far ahead the CM is from you: note that the location on your phone is only measured periodically and with uncertainty, so you **should treat the CM as having been reached once you're within about 30 feet of it**. When your phone picks up a CM, consider it to be both facing you and in front of you.
- **If a CM appears to be in the middle of an intersection**, consider it to be just on the side of the intersection that you're approaching from

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- If you make a U-turn very close to a CM, you **might briefly pick up the same CM again** as it takes the site a few seconds to catch up with your new direction of travel – you can **ignore the repeated detection** when this happens (note: there are no “parallel” CMs on the rallye)
- **The tracking won’t work in the background**, so make sure you keep it open and avoid using your phone for other purposes during the course of the rallye to avoid missing any CMs

**END SI.**

A valid CM is a combination of 1-6 letters from the English alphabet and a 1-6 digit number which is either viewed through the site on your phone or the valid physical CM at the Bubb Park Checkpoint (which is a round paper plate with a letter-number combination and red reflective tape). When you first see a CM, record it on your scoresheet by writing the number on the CM next to the corresponding letter(s) in the Route Recording Section, which will bring into effect any corresponding SUPP or SI that may exist on your SUPP/SI pages. If you encounter a CM for a second time on the route, you should **NOT** record it on your scoresheet again or re-execute its related SUPP. Note that there are some CMs worth negative points (fish) on the route, **so it will not benefit you to record CMs that you don’t have a reason to encounter** (e.g., if happen to see a CM when looking for a place to make a U, driving around the block to revisit something, or are otherwise off course).

**CHECKPOINTS** will be identified by a sign with a ✓. similar to the example at the start. Any CPs will be on the same side of the street as the direction you are traveling. When you encounter a CP, enter the CP by telling the personnel which RI you last executed and hand the CP personnel your score sheet. Answer any questions asked by CP personnel and follow any instructions you receive from them. **SI:** The CP sign at the start is an example only. **End SI.**

### **The Search for Terrestrial Intelligence:**

#### ***Delivering the Telescope Equipment to Lick Observatory***

Today, you are stepping back in time to December 27, 1886. You are a member of the crew that will deliver by horse and wagon a 36” refractor lens and telescope assembly for placement in one of the domes at Lick Observatory. This massive lens will be housed in a 12-ton telescope assembly, making it the largest telescope of its kind in the world at this time. For help on your journey, you will be joined by Captain Richard Floyd, the president of Lick’s trust. Captain Floyd is in a hurry to complete the important delivery and convinces you to skip Church. When you pass Montgomery (the location of Lick’s hotel) along the route you will be joined by James Lick as well.

There are three important pieces of equipment you’ll need to deliver to the observatory: the 36” lens, the telescope assembly, and an eyepiece through which astronomers can make observations. The telescope assembly is a sensitive piece of scientific equipment that can be easily damaged, so you’ll need to avoid speed bumps while you’re carrying it. It will be loaded into your wagon at the first checkpoint at Bubb Park. The large lens, which was fabricated by Alvan Clark & Sons, creates magnified images by gathering and bending light rays, though in doing so it inverts the images of all faraway objects unless an eyepiece is used

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to set things right-side-up. When you see a sign with Clark's name on the route, pay homage to him by turning right at it.

Clark has agreed to have the lens waiting for you to load as soon as you have completed RI 8, and are travelling on Mercy just after your turn from Bush, however Clark still needs to make arrangements for you to pick up the eyepiece. Once the lens has been loaded in your wagon, you begin hauling your cargo up the mountain. To reach the 4265 FT summit, you navigate your horse and wagon up a perilous, newly-constructed mountain road, taking no chances to avoid damaging this fragile scientific equipment. As you wind your way up the mountain and view the lush Santa Clara Valley below you think about what this magnificent piece of equipment will discover in the heavens, though never imagining that in 1969 Lick Observatory will successfully bounce a laser off a target left on the moon by Apollo 11 astronaut Buzz Aldrin, to accurately measure its distance, 238,855 miles, from the earth. Immediately upon reaching the summit, you unload the telescope equipment to the warm praise of Floyd and Lick, allowing you to finally breathe a sigh of relief and take a minute to celebrate after a perilous journey!

### *The ZodiAC Catalogue*

Shortly after you complete RI 16, you will finally have the telescope, lens, and eyepiece installed on the mountaintop and are ready to begin observing the astronomical objects listed in the attached ZodiAC Catalogue of Astronomical Objects (but be wary of the effect these objects will have on those who view them!). When viewing the objects, you will contribute to an extensive history of significant research at the observatory, including the discovery of several moons of Jupiter, the emission spectra and astrophysical jets of galactic nuclei, numerous extrasolar planets, and the efforts at imaging the entire night sky in search of extraterrestrial intelligence.

### **MISCELLANY:**

**SI:** Capitalization in an instruction or astronomical object identifier need not exactly match capitalization on signs or of a defined term. There are no gimmicks on spelling, spacing, or punctuation in the GIs. During the rallye, you can reach the rallyemasters via cell phone at the numbers at the top of the first RI page. At noon there will be a short rallye school, during which we will discuss a couple gimmicks and review how the CMs work. The finish is located at Mountain Mikes of Mountain View (1724 Miramonte Ave). The finish opens at 3:00 PM and closes at 4:30 PM. Late score sheets may be penalized 5 points per minute late up to 4:45 PM, at which time they may no longer be accepted. If you disagree with the gimmicks as explained in the critique, you can file a protest. All protests must be turned in by 4:55 PM. Each protest must be submitted in writing, and must include your car number, your class, the problem, and the desired resolution. Honored protests may affect an individual car, an entire class, or the entire rallye. **END SI.**

Please be sure you've filled out the top section of your scoresheet before leaving the start and make sure you keep it up to date throughout the rallye. Thank you for joining us for today's GPS coursemarker rallye and trying out the coursemarker detection website. Enjoy the rallye, keep reaching for the stars, and remember next time you have Ghirardelli chocolate, you have James Lick to thank for it.



# The ZodiAC Catalogue of Astronomical Objects

Identifier	Effect on observer (i.e. You)
Starlite	You will see Starlite when driving on Linda Vista. Because the dim starlite makes it difficult to read, only the first word exists on street naming signs. This effect lasts until you approach the intersection of San Lucas and San Lucas or you see a CM with the number 32 on it (whatever occurs first).
Stardust	This object leaves you thinking about the complex nuclear reactions that fuel stars. As a result, the next CM with two different letters on it that you see splits in half vertically and you record both halves (fortunately, this only happens one time).
Gemini	Observing the constellation of the Gemini twins leaves you with double vision, rendering all letters and numbers on coursemarkers duplicated. Fortunately, it is a short-lived effect that only comes into effect once and resolves after executing one RI.
Moon	On August 1, 1969, a laser was shot to the moon from Lick Observatory and found the distance to the moon was 238,855 miles to the moon. In honor of this experiment, record 1969 next to the letter Z on your scoresheet.
Moon Beam	In the 1969 lunar ranging experiment conducted by Lick Observatory, a laser beam was bounced off a retroreflector placed on the moon by Apollo 11 astronauts, measuring its distance from the earth with centimeter precision. In honor of this experiment, record 11 next to the letter Y on your scoresheet.
M 13	Seeing the Hercules Cluster reminds you of your days of studying Greek mythology, and makes you turn R at Olympus whenever you see it.
M 87	The bright blue jet emitted by the supermassive black hole at the center of this galaxy (first discovered by Lick Observatory astronomers!) is so brilliant it has a blinding effect, causing you to become momentarily disoriented and make a 180-degree turn.
HR 2061	Observing Betelgeuse gives you triple vision, rendering all letters and numbers on coursemarkers repeated three times. Fortunately, this is a short-lived effect and resolves after executing three RIs. Just don't say it three times.
GC 25100	Seeing the teapot-shaped asterism that contains star GC 25100 makes you thirsty, so be sure to ask the next CP personnel you encounter for some tea.
GC 15185	Part of the big dipper, seeing this star reminds you that you need a new ladle for your soup, so be sure to ask the next CP personnel you encounter to lend you one.
Wilkie Way	Not quite the Milky Way, but close enough – gives you a craving for chocolate, so you should ask rallye personnel for some when you reach the finish.
ZodiAC	Seeing the zodiac has you wondering about your fate, making you want to ask CP personnel for your horoscope when you see them.
Polaris	Finding the north star gives you a sense of direction, allowing North and its abbreviations to exist on signs.
Sunshine	Since you work at night for your astronomical observations, you're so happy to get some sunshine that you draw a happy face next to the driver's name on your scoresheet.