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Puzzle Caching FUNdamentals

by

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(SSO JOAT)



Central Kenai Peninsula,
Anchorage, Wasilla, and Valdez

16 September 2010

*Dedicated to the Memory of fellow
Puzzle Meister, Doug "CohoFive"*



Tonight's Topics:



- ▶ What is an “Unknown” Cache?
- ▶ Approaching a Puzzle Cache
- ▶ Methods of Solving Puzzles
- ▶ Logging a Puzzle Cache
- ▶ Hiding a Puzzle Cache
- ▶ Online Puzzle Resources



Pay Attention! There will be a TEST...

What is an “Unknown” Cache?



❖ Several names:

- ➡ Unknown Cache (official Groundspeak label)
- ➡ Mystery Cache (less used Groundspeak label)
- ➡ Puzzle Cache (most used term by geocachers)
- ➡ Challenge Cache (for logging completion of specific tasks)

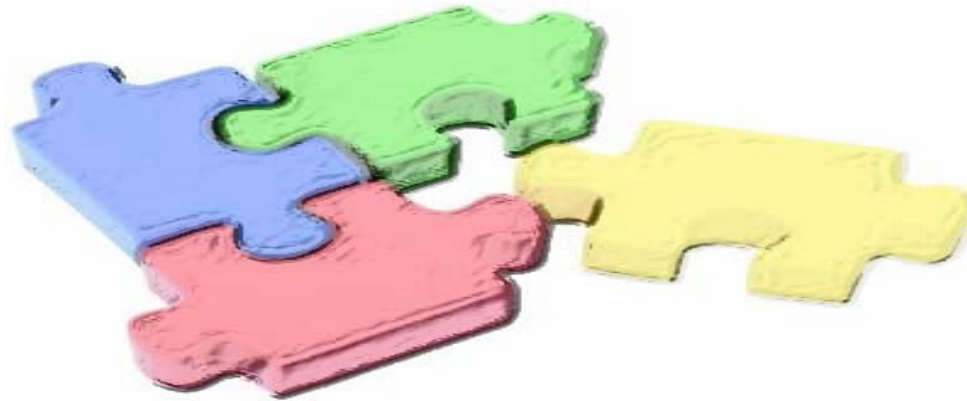


- ❖ Requires something more than just going to the published coordinates to find a container.
- ❖ A Puzzle involves two “hunts”; completing some type of pre-hunt task (e.g. solving a puzzle) followed by a traditional caching expedition.

What is a Puzzle Cache?



THE PUBLISHED COORDINATES OF A TRUE PUZZLE CACHE ARE FAKE!!!



YOU must Figure out the Real Location

Approaching a Puzzle Cache



- Contemplate the exterior of the quadrilateral parallelogram...
- Your goal = **Coordinates!**
- Look at everything that the Cache Owner can change or customize on the Cache Listing:



- Cache Name
- Placed By (Always links to CO)
- Date Placed (Must be in past)
- Related Web Page (Hyperlink)
- Background Image
- Bookmark Lists & Trackables
- Short & Long Descriptions (HTML)
- Hints/Spoiler Info (ROT-13 Encoded)
- Additional Waypoints & Images
- Owner Logs (Notes, Maintenance, etc.)

Names, Dates, Links...

Geocaching > [Hide and Seek A Geocache](#) > Geocache Details GC29RXF

Dancing Fall Angies Date: 06/03/2010

A cache by [SSO JOAT](#) Placed By: SSO JOAT

Size: (Micro) Difficulty: Terrain:

(1 is easiest, 5 is hardest)

[Related Web Page](#) Published Coordinates

N 60° 29.250 W 151° 05.065 [Other Conversions](#)
UTM: 5V E 605260 N 6707236
E 0.8mi from your home coordinates
In Alaska, United States [View Map](#)

Print:
 [No Logs](#) [5 Logs](#) [10 Logs](#) · [Driving Directions](#)

Download: [Read about waypoint downloads](#)


[LOC waypoint file](#) | [GPX file](#) | [Send to My GPS](#) | [Send to My Phone](#)

Attributes


Please note: Use of geocaching.com services is subject to the terms and conditions [in our disclaimer](#).

Navigation

- [log your visit](#)
- [watch listing](#)
- [edit listing](#)
- [edit attributes](#)
- [waypoints](#)
- [upload images](#)
- [archive listing](#)
- [disable listing](#)
- [ignore listing](#)
- [bookmark listing](#)



POWERED BY Google
Map data ©2010 Google



[What are Attributes?](#)


Image Gallery, Maps, Logs...

Find...



- ...other caches [hidden](#) or [found](#) by this user
- ...nearby [caches of this type, that I haven't found](#)
- ...all nearby [caches, that I haven't found](#)
- ...all nearby [waymarks on Waymarking.com](#)
- ...all nearby [benchmarks](#)
- ...nearby [Hotels](#)

For online maps...

- [Geocaching.com Google Map](#)
- [MyTopo Maps](#)
- [Google Maps](#)
- [MapQuest](#)
- [Bing Maps](#)
- [Yahoo Maps](#)
- [Rand McNally](#)
- [MSR Maps \(Formerly Terraserver\)](#)
- [Open Cycle Maps](#)
- [Open Cycle Maps](#)

 [80-Column Printout](#)
[Edit](#)

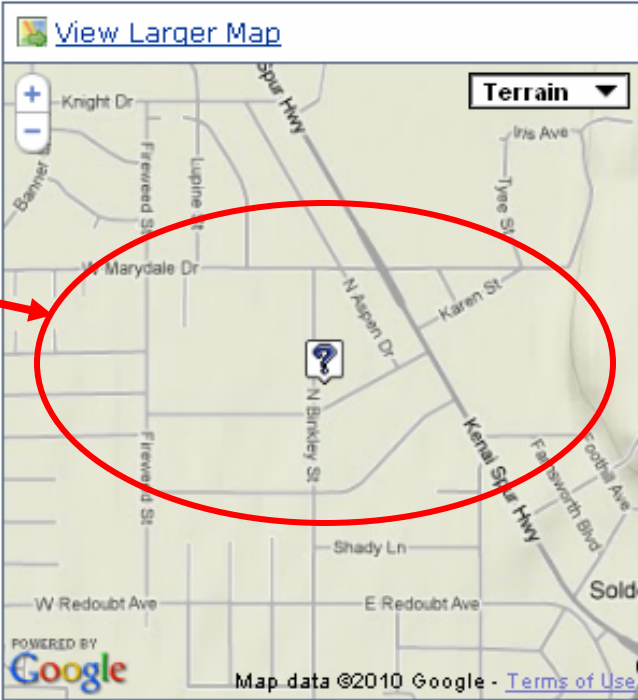
2 Logged Visits · [View the Image Gallery](#)

 1  1

Warning! [Spoilers](#) may be included in the descriptions or links.

Location of Published Coordinates

Images



[View Larger Map](#)

Terrain ▼

Map data ©2010 Google · [Terms of Use](#)

[Notes about Printing Maps](#)

HTML Source Code



```
<div class="UserSuppliedContent">

    <span id="ct100_ContentBody_ShortDescription"><p>The cache is <b>NOT</b>
at the published coordinates.</p>
<!--For demonstration purposes only, this is a comment or remark line. It can be viewed in the
HTML source code, but is not visible on the Cache Listing when viewed in a browser.-->
</span>

</div>

<br />
<div class="UserSuppliedContent">

    <span id="ct100_ContentBody_LongDescription"><p>Can you help Scooby,
Shaggy, Fred, Velma, and Daphne solve this
mystery? So far in this episode, Velma has found a reference to
somewhere around <i>35R35G35B NW 01' Factory Hill</i> but this clue
has only magnified the difficulty of this case. With your help,
it's a good bet that Scooby will be able to sniff this one out by
the end of the show.</p>
<br />
<img src=
"http://img.geocaching.com/cache/0c5b046d-d655-4512-8371-4f70bd14cef9.jpg"
alt="Zoinks Puzzle" /><br />
</div>
```

Remarks

The HTML source may reveal secrets in the "User Supplied" Sections

Control, eh? Invisible Ink!

Normal view:



You can check your answers for this puzzle on Geochecker.com.

Highlighted:

Ctrl-A



You can check your answers for this puzzle on Geochecker.com.

What, did you think I would hide more hints this way? There are plenty of hints hiding around here already.

Solving Puzzles



- ⊕ Compile all information about the puzzle from the cache listing
- ⊕ There is no single method that will let you figure out every puzzle
- ⊕ Solving a puzzle requires deep thought, research, and lots of scratch paper!
- ⊕ Holding this presentation to your brow will **NOT** beam the coordinates into your head



Breaking Things Down



Google Everything



- Thesaurus & Dictionary
- Look up all unusual words
- Specific words are chosen for a purpose as they usually help lead to the solution
- A Google search of the right terms may reveal the puzzle's method or solution

Solving Puzzles



- You know the solution = **Coordinates**
- Look for groups of items that may represent numbers:
 - 15** digits in **60 12.345 150 12.345**
 - 10** digits in just the minutes portion
 - 6** digits in just the fractional minutes
- Don't get stuck on these groups as there are other ways to write out coordinates

Coordinate Systems



This is the same spot, written different ways:

DMM: N 60° 29.190' W 151° 07.715'

DMS: N 60° 29' 11.4" W 151° 7' 42.9"

Decimal: 60.48650 -151.12858

UTM: 5V E 602838 N 6707055

MGRS: 5VPH0283807055

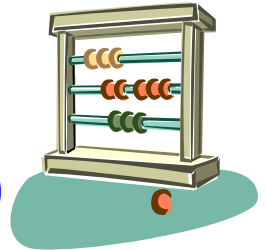
British Grid: 4663879 5099347



DD – DM – DMS



- Switching between Decimal Degrees, DMM, and DMS is a very simple product of **60**
- Starting with **60.48650**, simply multiply everything to the right of the decimal by **60**
- This gives you DMM **60° 29.190'** and then if you multiply the fractional minutes by **60**, that gives you **60° 29' 11.4"** for DMS
- Divide the entire seconds or minutes amount by **60** to go the other way (e.g. **11.4 / 60 = 0.190**)



Map Datums



- And then there are many Map Datums
- The normal Datum is **WGS 84**
- Most all USGS topographical maps for Alaska were done under NAD27
- WGS 84 is: **N 60° 29.190' W 151° 07.715'**
- NAD 27 is: **N 60° 29.220' W 151° 07.558'**

Writing Out Coordinates



- We don't always use numbers
- This: **N 60° 29.190' W 151° 07.715'**
- Becomes this:

North sixty degrees twenty nine point one hundred ninety minutes west one hundred fifty one degrees seven point seven hundred fifteen minutes

Codes & Ciphers



- A very common and popular puzzle style
- You're already familiar with the basic substitution cipher called the Caesar Shift
- Every cache page has the ROT-13 Cipher listed on it:



```
Decryption Key  
A|B|C|D|E|F|G|H|I|J|K|L|M  
-----  
N|O|P|Q|R|S|T|U|V|W|X|Y|Z  
(letter above equals below, and vice versa)
```

Caesar Cipher



For your
eyes only

- ✘ The 26 letters of the alphabet can be shifted any number of positions
- ✘ If you were to shift 2 places, then $A=C$, $B=D$, and $C=E$, and so on through $Z=B$
- ✘ While a 13 place shift gives $A=N$ and $N=A$, any other shift will not result in the same switch both ways

Codes & Ciphers



- ❖ To further hide the words being encrypted, we will often break the words into same sized groups of perhaps 4 or 5 letters:

**nort hsix tyde gree stwe ntyn inep oint
oneh undr edni nety minu tesw esto
nehu ndre dfif tyon edeg rees seve npoi
ntse venh undr edfi ftee nmin utes**

Codes & Ciphers



- ❖ After running the coordinates through a simple Caesar Shift, we get this:

**YZCE SDTI EJOP RCPP DEHP YEJY
TYP A ZTYE ZYPS FYOC POYT YPEJ
XTYF EPDH PDEZ YPSF YOCP OQTQ
EJZY POPR CPPD DPGP YAZT YEDP
GPYS FYOC POQT QEPP YXTY FEPD**

Vigenère Cipher

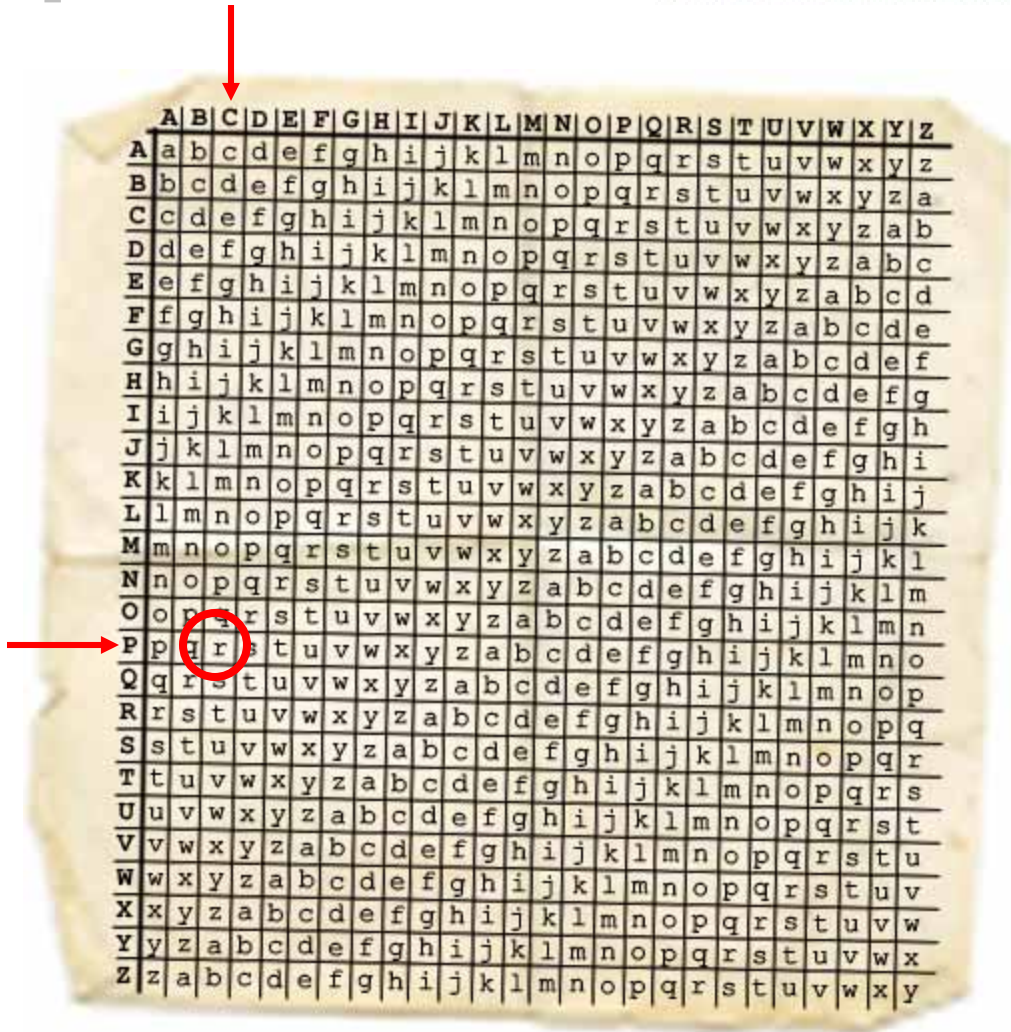


- This is a much more complex substitution cipher that uses all 26 Caesar Shifts to create a “**Tabula recta**” for coding
- The “plain text” to be coded is written over the top of a “keyword” or “key phrase”
- For instance, to encode the phrase, “Puzzles are the best caches” with the keyword “cipher”, you would write it out like this:

**PUZZLESARETHEBESTCACHES
CIPHERCIPHERCIPHERCIPHER**

Vigenère Cipher

To encode each letter, go down the left row headers and find the plain text letter. Go across the top column headers and find the key letter. The junction is the encoded character.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
B	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a
C	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b
D	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c
E	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d
F	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e
G	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f
H	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g
I	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h
J	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i
K	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j
L	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k
M	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l
N	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m
O	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n
P	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Q	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
R	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
S	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
T	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s
U	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t
V	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u
W	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v
X	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w
Y	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x
Z	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y

Vigenère Cipher



- After encoding the entire message we have the following:

RCOGPVUIGLXYGJTZXTCKWLW

- By breaking it up into groups, we get this:

RCOGP VUIGL XYGJT ZXTCK WLW

Vigenère Cipher



- To turn the code back into plain text, the recipient needs to know the keyword
- Here is the coded message written over the keyword and ready to decipher:

**RCOGPVUIGLXYGJTZXTCKWLW
CIPHERCIPHERCIPHERCIPHE**

- Simply reverse the encoding process by looking up the junctions in the Tabula

Solving Puzzles



- ④ There are hundreds of websites out there dedicated to describing various types of substitution ciphers
- ④ Almost anything can be used as the substitution for the alphabet to include symbols, fonts, languages, pictures, etc.
- ④ They can be very simple or exceedingly complex, so look for the clues in the puzzle that should point toward the cipher

Image Manipulation



- ✦ *Steganography* – Messages hidden inside the computer code of the image itself
- ✦ Save all images to your computer
- ✦ Look at the Image Properties
- ✦ Open image with a Photo Editor
- ✦ Zoom in and look all over the image for signs of editing, hints, codes, or even coordinates



Image Properties

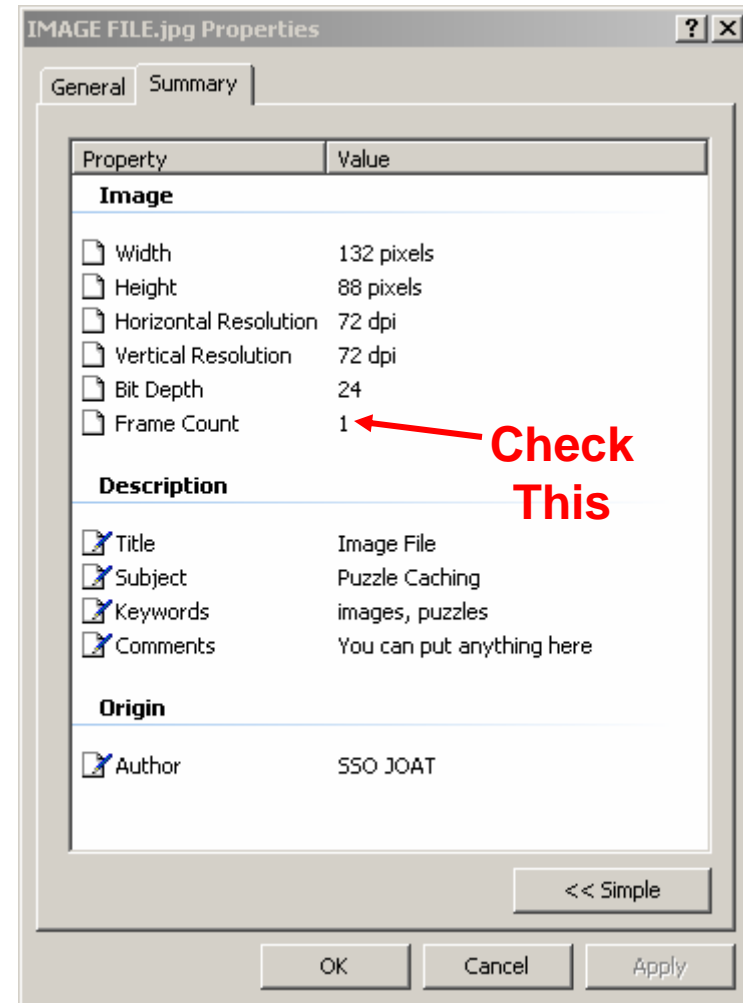
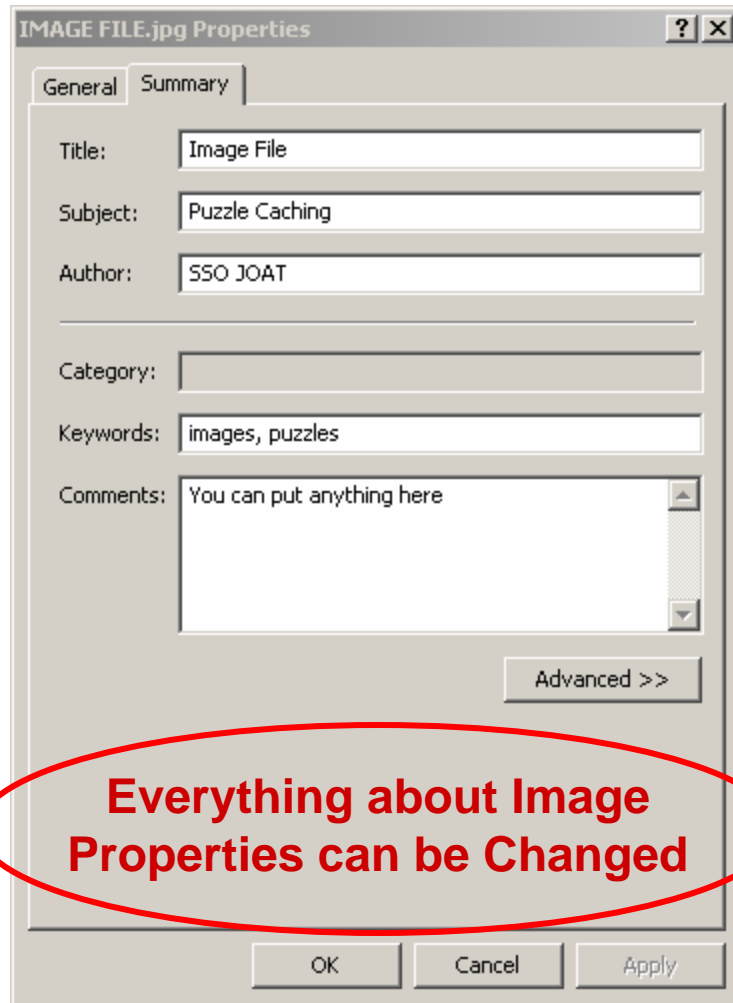


Image Manipulation

It's easy to hide
stuff in Images

Do you see the
Coordinates?



Image Manipulation

Zoom In and
there they are...



Solving Puzzles



- This presentation would have to go on for hours to cover all the possible ways that one could hide coordinates in a puzzle
- Hopefully, this will give some tips and tricks to help you start to break the codes
- Practice is what provides the experience needed to solve most puzzles
- So, get out there and practice!

Solving Puzzles



A few “Rules” about solving puzzles...

- ✓ Never ask for help with a puzzle on public internet forums (e.g. Groundspeak forums)
- ✓ Never post the solution to a puzzle or give the final location anywhere on the internet
- ✓ Finding the final cache without actually solving the puzzle doesn't justify a “find”
- ✓ Working in groups to solve a puzzle is fine, so long as someone in the group hasn't already solved it and is just giving hints

Logging a Puzzle Cache



Solved It Notes

- It is generally OK to post a *Note* to the cache page at the time you solved the puzzle so long as you intend to actually find the cache

Found It Logs

- Only log a *Found It* after you have actually solved the puzzle AND have found the physical cache and signed the log book

Logging a Puzzle Cache



- ✓ **NEVER** post anything in your online cache log that will give even the slightest hint about solving the puzzle or the physical location of the final cache!!!
- ✓ Feel free to ramble on about how much fun the puzzle was to solve, what a great cache and location the final was at, how cool the cache owner is, etc. Just keep all your comments vague so that you don't give anything away.
- ✓ If you post any hints in your log, expect the cache owner to delete your log in short order. Just go back and post a new log that doesn't have any hints. Separately message the puzzle owner to apologize for the mistake and all will be fine.



Hiding a Puzzle Cache



- **Challenge Caches**

- Clearly state the Challenge requirements
- Individual accomplishment; Not a race
- CO must verify completion
 - Bookmark List(s)
 - Profile Info or Pocket Query
- Cache must use the real coordinates



Challenge Examples: Obtaining a certain number of FTFs, 2TF on same day as FTF, EarthCaches in a specific region, find a cache on each page of a Delorme map book, find a cache for each possible D/T rating combination, find every cache in a certain area, etc.

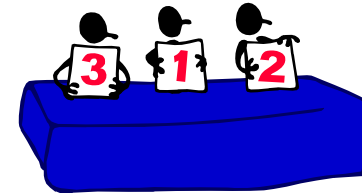
Hiding a Puzzle Cache




? Puzzle Caches

- Must be SOLVABLE by someone else using the information and hints on the cache listing
- There MUST be enough info on the listing to let people figure out what the puzzle is about
- Always triple check your work and even let another puzzle solver check it before publish
- *Design, design, design!* The Puzzle Cache page is extremely important. Put work into it!

Hiding a Puzzle Cache



? Rating a Puzzle Cache

- The Terrain rating is for the final cache location just as if it were a traditional
- The Difficulty rating of a puzzle cache is based on the puzzle itself
- The “baseline” for a puzzle is Difficulty 3
- A really easy puzzle might be 2.5 
- Harder puzzles should be 3.5 and up
- If your puzzle isn't solved, bump up the rating

Resources



- GS Knowledge Books: <http://support.groundspeak.com/>
- Purple Hell: <http://www.purplehell.com/>
- Rumkin Cipher Tools: <http://rumkin.com/tools/cipher/>
- Omniglot Writing: <http://www.omniglot.com/>
- Puzzlehead Blog: <http://www.puzzlehead.org/>
- Online Substitution Cipher Solver:
<http://25yearsofprogramming.com/fun/ciphers.htm>
- Parmstro's Puzzle Guide: <http://parmstro.weebly.com/solving-puzzles.html>
- Florida's Puzzle Solving 101 Cache Series by ePeterso2:
<http://www.geocaching.com/bookmarks/view.aspx?guid=37f3d8f3-62ba-40ac-b0ef-901807ba9c98>
- Puzzle Capital of Alaska Bookmark List for the Central Kenai Peninsula:
<http://www.geocaching.com/bookmarks/view.aspx?guid=3e9b65ac-aebb-465f-9cb1-095a64292485>
- GeocacheAlaska! Forums:
<http://geocachealaska.proboards.com/>



FINAL EXAM!!!



- ◆ I've hidden an Ammo Can in the woods... one with a nice camo paint job!
- ◆ This is an unpublished, yet ready-to-place Ammo Can that is FREE for the FTF! Yes, there is only ONE can, thus only ONE can claim it.
- ◆ I'm only leaving this cache in place for 26 Days. It will be removed at Noon on Oct 12th at which time I will be placing a new Traditional very close to this nifty spot (so please don't place the cache within 700' of this location if you are the one to claim it).
- ◆ In order to claim this Ammo Can in the woods, you must Solve a Puzzle – part of which is hidden right here in this very presentation, the rest of which is hidden somewhere on the internet. What to look for is half the puzzle.
- ◆ When you get home, go to the **Geocache Alaska!** website and download the full sized PDF of this presentation and use the clues on these last slides to find the information in this presentation that will help you solve this Puzzle.
- ◆ If you are able to solve this puzzle, please post a NOTE to the Event cache page where you attended the event. The person who solves the puzzle and actually makes the journey to claim the Ammo Can needs to post a NOTE to their Event cache page ASAP to let everyone know the Exam is over!
- ◆ I will post the solution to this puzzle as a note to each event listing on Oct 13.

FINAL EXAM!!



- ◆ CKNZ=70 : CKND=35 : CKQ2=54 : CKPF=98
- ◆ Haversine will reveal the area, not the spot. Of course, it is up to YOU to figure out the location.
- ◆ The Knave knows where to find the URL
- ◆ A Visionary needs a Key Phrase and a Tabula
- ◆ The Key appears 129 times in this Portable Document with showings at every screen
- ◆ It is its own entity, yet comprised of many others, without whom it could not exist on its own

FINAL EXAM!



A “spoiler” photo for the final cache hide. It’s in the exact center.

If you solve the puzzle, please click this photo and enter the coordinates into the GeoCheck page. This allows me to verify when someone solves it.