

Trend Study 14-18-04

Study site name: Kigalia Point .

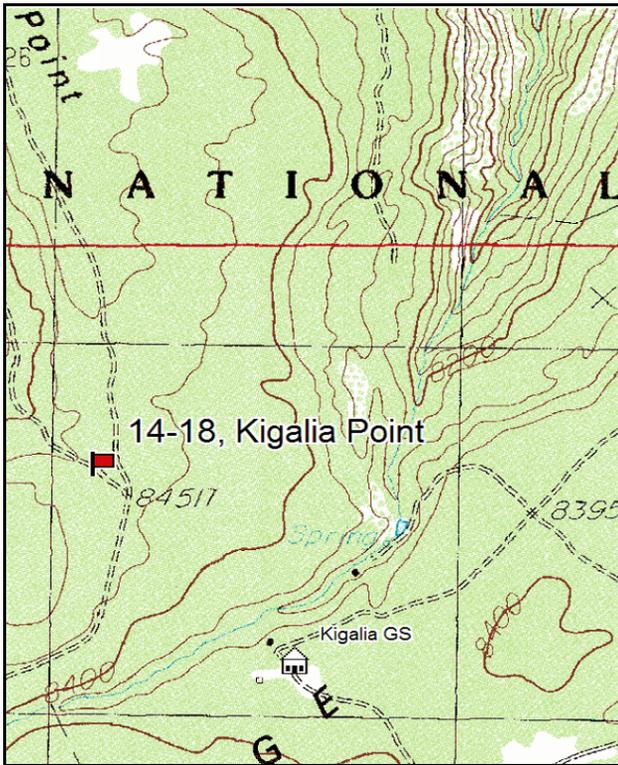
Vegetation type: Logged Ponderosa Pine .

Compass bearing: frequency baseline 252 degrees magnetic.

Frequency belt placement: line 1 (11& 71ft), line 2 (34ft), line 3 (59ft), line 4 (95ft).

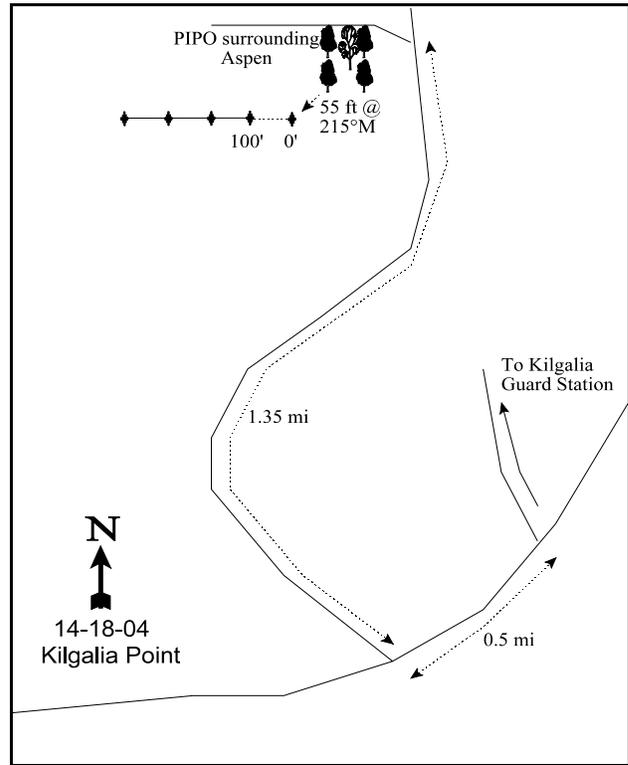
LOCATION DESCRIPTION

From the turnoff to the Kigalia Guard Station on the main Elk Ridge-Bears Ears Road, proceed southwest for 0.50 miles to the Kigalia Point Road. Turn right on this road and travel north for 1.35 miles to a small clearing in the ponderosa pine-aspen forest with a faint road turning off to the left. Park here and walk 0.05 miles down the faint road (just past the west end of the clearing) to where four clustered ponderosa with a large aspen growing in the middle of them are located on the left side of the road. Walk 55 feet southwest (@ 215°M) from these trees to a red painted fence post, 22 inches high. The baseline samples the same area as line 1 of the 1981 line intercept transect. The baseline runs west at 267°M. Two-hundred foot stake is 120 feet due to rocks, so just lay tape straight and string belt.



Map Name: Kigalia Point

Township 36S , Range 19E , Section 4



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4170640 N, 603104 E

## DISCUSSION

### Kigalia Point - Trend Study No. 14-18

Kigalia Point is a narrow, two mile long ridge, which extends to the north side of southern end of Elk Ridge. The point drops sharply on all sides to the east, west and north. Elevation of the point is about 8,400 feet along the ridge. The level terrain on top of this extension of the plateau is dominated by Ponderosa pine and quaking aspen with a dense understory and is summer range for wildlife and livestock. In the early 1960's, part of this area was logged to harvest old growth timber as part of an accelerated harvest to minimize beetle damage. In 1964, a small part of the section was thinned. The Forest Service has planned for a shelter-wood cut in approximately 15 to 20 years from site establishment in 1986. A ground fire occurred on the site in probably 1998 and did not effect large, mature trees.

Another major use of this area is cattle grazing. As part of the Kigalia Peavine unit on the Twin Springs allotment, the area is grazed on a three pasture rest-rotation system with a June 1 to October 1 season of use. The stocking rate is 500 head of cattle (2,640 AUMs). In 1992, cattle were grazing the allotment and use was moderate, with grass utilization at about 50%. The area sometimes receives heavy summer deer use. Numerous deer, especially does and fawns, were observed along the transect during past readings. Resting cover is good, but the openness of the forest above 3 to 4 feet does not hide a moving animal. There was some elk use near the edges of the ridge, where elk sign was found on the transect in 1986. Bear sign was also noted that same year. Pellet group data taken on the site in 1999, estimate 5 deer days use/acre (12 ddu/ha), 13 elk (32 edu/ha), and 5 cow days use/acre (12 cdu/ha). Over 20 elk, cows and calves, were seen on the site during the 1999 reading. There were also several deer seen in the area. A bear was seen on the point in 1999. In 2004, 14 deer days use/acre (35 ddu/ha), 2 elk (5 edu/ha), and 10 cow days use/acre (25 cdu/ha) were estimated. Other uses of the forest include mining claims, uranium exploration, and recreation. The area has an extensive network of roads allowing easy access to most of the remote areas.

Typical of high elevation conifer-aspen sites with dense understory vegetation, the soil is rarely exposed and has a well developed layer of litter and organic matter. The mineral soil is moderately deep with an estimated effective rooting depth of nearly 21 inches. It has a loam texture with a moderately acidic pH (6.0). Phosphorus is low at 5.1ppm. Bare ground was highest in 1999, while the site was recovering from fire. Due to the thick herbaceous cover, abundant litter, and level terrain, erosion is not a problem unless the soil is significantly disturbed by such activities as logging and road building.

The frequency baselines, established in 1986, were set up on the old Interagency line intercept study base line. The Ponderosa pine and quaking aspen over story shade most of the study site. Density estimates for Ponderosa pine and aspen were estimated at 66 and 466 trees/acre respectively in 1986. A majority of the aspens were tall enough that no leaves or twigs were available for browsing. These estimates have changed somewhat due to the much increased sample size which gives a more accurate estimate. After the fire in 1998, aspen suckers were abundant in 1999 and aspen density was higher. Point quarter data from 1999, estimate 134 aspen and 50 ponderosa trees/acre. Average diameter of aspen is estimated at 10.3 inches and Ponderosa at 14 inches. In 2004, density was lower, but has probably stabilized. Aspen suckers were rare and showed signs of heavy utilization. Young aspens that were stimulated by the fire were probably grazed by elk and cattle and were not able to establish. Aspen density was 60 trees/acre and Ponderosa density was 44 trees/acre. Diameter of aspen was 9.8 inches. Ponderosa diameter was 15.9 inches.

Oak varies from stands of mature and unavailable plants to clumps of young and moderately browsed sprouts. The scattered dense clumps were made up mainly of young plants, most sprouting vigorously, although some insect damage was evident in 1986. The most abundant shrub is mountain snowberry with an estimated density of 19,200 plants/acre in 1986 and 23,880 in 1994. Fifty-seven percent of the snowberry encountered in 1986 were classified as young sprouts, increasing to 63% in 1992. The young, along with the 2.5 foot tall

mature plants, were vigorous and generally only moderately browsed. Ten percent of the snowberry was heavily browsed in 1992 and almost 10% of the plants were also considered in poor vigor. Density of snowberry declined to 6,460 plants/acre in 1999 due to the controlled ground fire which occurred sometime during the fall of 1998. The surviving plants are lightly browsed and in good vigor. Density declined to 5,320 plants/acre in 2004. Vigor was excellent and the population was mostly mature.

The herbaceous understory forms a dense layer under the aspen and snowberry. It is vigorous and diverse, composed of many different perennial grasses and forbs. Fourteen species of grass were sampled on the frequency belts in 1992. The most abundant species are the sod forming, introduced species Kentucky bluegrass and smooth brome. Other prevalent species are timothy, and intermediate wheatgrass. Smooth brome and intermediate wheatgrass increased to their greatest abundance in 2004. No utilization of the grasses was apparent in 1999 or 2004. The more common and preferred species were Kings clover, dandelion, trailing fleabane, and fewflower peavine. Nested frequency and cover of forbs was lower than ever before in 2004. Grass dominance has increased since 1999 as grasses made up 56% of the total herbaceous understory cover compared to 82% in 2004. This is probably due to drought conditions and competition with competitive grasses such as smooth brome.

#### 1986 TREND ASSESSMENT

The lack of significant changes in plant composition and density found by rereading the line intercept transects, plus data from the Interagency study and on-site observations indicate a stable vegetative trend. The possible increases in snowberry and oak density and production are positive changes, as they are the only plants observed to show consistent signs of use. Aspen production is largely unavailable for use. Forbs are abundant and constitute an important part of this summer range. Long term trends indicate a gradual increase in the number and production of woody species, including ponderosa pine, which will eventually cause only minor decreases in the understory herbaceous species because of the structure of ponderosa. Trend will probably remain stable until the area is impacted by future logging operations. The soil is fertile and well protected and also will remain stable until disturbed.

#### 1992 TREND ASSESSMENT

The soil trend is considered stable because percent bare ground is still below 10%. The browse trend for this range is not as critical for it is a summer range. Both Gambel oak and aspen have decreased densities, but this is more reflective of a much larger sampling design than any actual decreases in density. Wood's rose and serviceberry have increased estimated densities, but are still in low numbers. Trend for browse should be considered stable, although it is not critical for this summer range. There are 14 species of grasses which have increased nested frequency values and 18 forb species, which have nested frequency values that have decreased slightly since 1986. The increasing grass component makes up 79% of the herbaceous understory cover. The herbaceous understory is vigorous and productive with a stable to slightly improving trend. The improvements are due mostly to the grasses.

#### TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

#### 1999 TREND ASSESSMENT

A prescribed ground fire burned the area sometime during the fall of 1998. The disturbance significantly changed the ground cover characteristics as well as the browse densities. Many ponderosa pine trees are scorched up to a height of 30 to 40 feet but otherwise unharmed by the fire. Ground cover is still abundant but

litter cover did decline from 83% to 69% and percent bare ground increased from 4% to 13%. Erosion is not a problem however. Trend is considered slightly down however, due to the reduction in protective cover. Trend for browse is down due to a decline in density of all shrub species. However, shrubs are not as important on a summer range as the herbaceous understory. The fire did stimulate sprouting of aspen and snowberry which will increase in the future. Trend for the herbaceous understory is down slightly due to a decline in the sum of nested frequency of perennial grasses. Currently only smooth brome and Kentucky bluegrass are abundant. These species provide 43% and 39% of the grass cover respectively. Frequency of perennial forbs remained stable. This is likely only a temporary setback due to the burn. With the reduction of shrubs on the site, grasses and forbs will recover in the future.

TREND ASSESSMENT

soil - slightly down (2)

browse - down (1)

herbaceous understory - slightly down (2)

2004 TREND ASSESSMENT

The soil trend is slightly up, as conditions have returned to where they were prior to the fire. Ground cover is very good and there is no threat of erosion. The trend for browse is stable. Aspen density has declined, but this is mostly from the loss of young, sprouting aspens that were not able to become established after the fire. The density has probably stabilized following the fire. The snowberry population has matured and stabilized. This is summer range so the browse component is not as important as the herbaceous understory. The trend for the herbaceous understory is slightly up as perennial grasses have increased and dominate the understory. The dominant species are introduced, sod forming grasses: Kentucky bluegrass and smooth brome. Forbs are declining with the competition from grasses.

TREND ASSESSMENT

soil - slightly up (4)

browse - stable (3)

herbaceous understory - slightly up (4)

HERBACEOUS TRENDS --

Management unit 14 , Study no: 18

T y p e	Species	Nested Frequency				Average Cover %		
		'86	'92	'99	'04	'92	'99	'04
G	Agropyron intermedium	<sub>a</sub> 14	<sub>b</sub> 77	<sub>ab</sub> 51	<sub>c</sub> 118	1.82	1.68	3.97
G	Agropyron trachycaulum	<sub>b</sub> 20	<sub>c</sub> 32	<sub>b</sub> 11	<sub>a</sub> -	1.02	.05	-
G	Bromus anomalus	<sub>a</sub> -	<sub>b</sub> 21	<sub>b</sub> 18	<sub>a</sub> -	.77	.28	-
G	Bromus inermis	<sub>a</sub> 85	<sub>b</sub> 179	<sub>ab</sub> 187	<sub>c</sub> 223	11.11	7.80	11.89
G	Bromus tectorum (a)	-	-	-	1	-	-	.15
G	Carex spp.	<sub>b</sub> 13	<sub>ab</sub> 5	<sub>a</sub> -	<sub>a</sub> -	.04	-	.00
G	Dactylis glomerata	16	39	19	34	1.67	.75	.80
G	Festuca thurberi	-	6	-	-	.53	-	-
G	Juncus spp.	-	7	-	-	.04	-	-
G	Oryzopsis hymenoides	3	-	-	-	-	-	-

Type	Species	Nested Frequency				Average Cover %		
		'86	'92	'99	'04	'92	'99	'04
G	Phleum alpinum	-	-	3	-	-	.03	-
G	Phleum pratense	<sub>b</sub> 40	<sub>b</sub> 36	<sub>ab</sub> 23	<sub>a</sub> 2	1.06	.34	.03
G	Poa pratensis	<sub>b</sub> 294	<sub>a</sub> 216	<sub>a</sub> 203	<sub>a</sub> 223	16.39	7.03	11.79
G	Sitanion hystrix	<sub>b</sub> 30	<sub>ab</sub> 24	<sub>a</sub> 3	<sub>a</sub> 4	1.31	.06	.06
G	Stipa columbiana	<sub>a</sub> -	<sub>b</sub> 29	<sub>a</sub> -	<sub>a</sub> -	.35	-	-
G	Stipa comata	-	5	-	-	.41	-	-
Total for Annual Grasses		0	0	0	1	0	0	0.15
Total for Perennial Grasses		515	676	518	604	36.56	18.05	28.56
Total for Grasses		515	676	518	605	36.56	18.05	28.71
F	Achillea millefolium	<sub>c</sub> 164	<sub>b</sub> 94	<sub>ab</sub> 59	<sub>a</sub> 41	3.83	1.34	.47
F	Agoseris glauca	-	-	1	-	-	.03	-
F	Antennaria spp.	-	2	-	-	.00	-	-
F	Arenaria congesta	-	3	-	-	.03	-	-
F	Aster spp.	-	-	-	3	-	-	.00
F	Calochortus nuttallii	-	-	-	1	-	-	.00
F	Collomia linearis (a)	-	<sub>a</sub> 3	<sub>ab</sub> 13	<sub>b</sub> 19	.03	.05	.49
F	Comandra pallida	-	-	6	-	-	.01	-
F	Collinsia parviflora (a)	-	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 46	-	-	.19
F	Descurainia pinnata (a)	-	-	-	5	-	-	.03
F	Erigeron flagellaris	<sub>ab</sub> 19	<sub>b</sub> 40	<sub>ab</sub> 19	<sub>a</sub> 11	2.42	.11	.12
F	Erigeron speciosus	1	4	-	-	.06	-	-
F	Geranium spp.	-	1	4	-	.03	.06	-
F	Lathyrus lanszwertii	<sub>a</sub> 8	<sub>b</sub> 65	<sub>b</sub> 78	<sub>b</sub> 85	1.16	4.01	2.25
F	Lomatium spp.	-	8	6	-	.04	.15	-
F	Microsteris gracilis (a)	-	-	-	4	-	-	.01
F	Navarretia intertexta (a)	-	-	-	1	-	-	.00
F	Phacelia spp.	-	-	-	1	-	-	.03
F	Polygonum douglasii (a)	-	<sub>b</sub> 21	<sub>a</sub> 2	<sub>a</sub> 1	.07	.00	.00
F	Senecio canus	2	7	-	-	.01	-	-
F	Senecio multilobatus	-	-	-	1	-	-	.00
F	Stellaria jamesiana	<sub>a</sub> -	<sub>b</sub> 24	<sub>bc</sub> 38	<sub>c</sub> 38	.17	.61	.63
F	Taraxacum officinale	<sub>b</sub> 126	<sub>b</sub> 113	<sub>b</sub> 86	<sub>a</sub> 41	.89	1.66	.25
F	Thlaspi fendleri	-	1	-	-	.03	-	-
F	Thermopsis montana	<sub>bc</sub> 43	<sub>ab</sub> 17	<sub>c</sub> 50	<sub>a</sub> 3	.26	2.84	.15
F	Trifolium kingii	<sub>c</sub> 183	<sub>a</sub> 74	<sub>b</sub> 104	<sub>a</sub> 66	.44	3.07	2.30
F	Unknown forb-perennial	<sub>b</sub> 9	<sub>a</sub> 1	<sub>a</sub> -	<sub>a</sub> -	.00	-	-

Type	Species	Nested Frequency				Average Cover %		
		'86	'92	'99	'04	'92	'99	'04
F	Vicia exigua	<sub>b</sub> 16	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	-	-	-
F	Viola spp.	-	2	-	-	.00	-	-
Total for Annual Forbs		0	24	15	76	0.10	0.05	0.74
Total for Perennial Forbs		571	456	451	291	9.41	13.93	6.25
Total for Forbs		571	480	466	367	9.51	13.98	6.99

Values with different subscript letters are significantly different at alpha = 0.10

#### BROWSE TRENDS --

Management unit 14 , Study no: 18

Type	Species	Strip Frequency			Average Cover %		
		'92	'99	'04	'92	'99	'04
B	Amelanchier alnifolia	1	0	0	-	-	-
B	Pinus ponderosa	8	6	7	17.36	.38	.38
B	Populus tremuloides	5	7	7	7.45	.48	-
B	Quercus gambelii	19	6	12	5.21	.36	.63
B	Rosa woodsii	22	12	4	.36	.10	.03
B	Symphoricarpos oreophilus	91	76	81	22.51	6.27	9.43
Total for Browse		146	107	111	52.91	7.59	10.48

#### CANOPY COVER, LINE INTERCEPT --

Management unit 14 , Study no: 18

Species	Percent Cover	
	'99	'04
Pinus ponderosa	22.20	34.00
Populus tremuloides	8.60	6.00
Quercus gambelii	-	4.19
Rosa woodsii	-	.03
Symphoricarpos oreophilus	-	11.69

POINT-QUARTER TREE DATA --  
Management unit 14 , Study no: 18

Species	Trees per Acre	
	'99	'04
Pinus ponderosa	50	44
Populus tremuloides	134	60

Average diameter (in)	
'99	'04
14.1	15.9
10.3	9.8

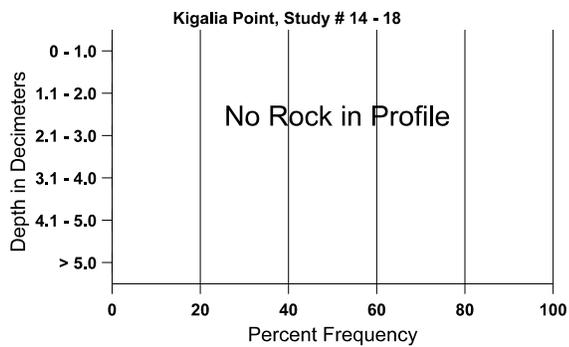
BASIC COVER --  
Management unit 14 , Study no: 18

Cover Type	Average Cover %			
	'86	'92	'99	'04
Vegetation	13.25	74.02	44.20	49.56
Rock	0	.01	.38	.66
Pavement	0	0	0	.03
Litter	83.00	83.83	69.15	62.50
Cryptogams	0	.00	0	0
Bare Ground	3.75	3.93	12.71	2.23

SOIL ANALYSIS DATA --  
Management unit 14, Study no: 18, Study Name: Kigalia Point

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
20.8	44.7 (18.1)	6.0	46.0	36.2	17.8	3.6	5.1	99.2	0.4

### Stoniness Index



PELLET GROUP DATA --

Management unit 14 , Study no: 18

Type	Quadrat Frequency		
	'92	'99	'04
Rabbit	3	-	-
Elk	5	5	3
Deer	16	-	1
Cattle	9	-	2

Days use per acre (ha)	
'99	'04
-	-
13 (32)	2 (5)
5 (12)	14 (35)
5 (12)	10 (25)

BROWSE CHARACTERISTICS --

Management unit 14 , Study no: 18

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<b>Amelanchier alnifolia</b>												
86	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
92	<b>40</b>	-	20	-	20	-	50	0	50	50	50	-/-
99	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
04	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
<b>Artemisia frigida</b>												
86	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
92	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
04	<b>0</b>	-	-	-	-	20	0	0	-	-	0	-/-
<b>Pinus ponderosa</b>												
86	<b>66</b>	-	66	-	-	-	0	0	0	-	0	-/-
92	<b>220</b>	-	20	180	20	-	0	0	9	-	0	-/-
99	<b>180</b>	-	-	180	-	-	0	0	0	-	0	-/-
04	<b>180</b>	-	20	60	100	20	0	0	56	-	0	-/-
<b>Populus tremuloides</b>												
86	<b>466</b>	66	133	333	-	-	0	0	0	-	0	303/61
92	<b>100</b>	80	20	80	-	-	0	0	0	-	0	-/-
99	<b>300</b>	180	200	60	40	20	0	0	13	-	0	-/-
04	<b>160</b>	-	120	-	40	20	25	38	25	25	25	-/-
<b>Quercus gambelii</b>												
86	<b>3932</b>	1666	2866	200	866	-	19	29	22	.50	14	143/39
92	<b>2320</b>	660	2020	240	60	-	62	6	3	.86	.86	-/-
99	<b>440</b>	-	340	40	60	200	5	0	14	9	9	171/59
04	<b>600</b>	-	560	20	20	80	3	0	3	3	3	131/83

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<b>Rosa woodsii</b>												
86	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
92	<b>1400</b>	380	1280	40	80	-	9	4	6	1	1	-/-
99	<b>460</b>	20	460	-	-	40	0	0	0	-	0	-/-
04	<b>100</b>	-	60	20	20	-	0	0	20	-	0	12/3
<b>Symphoricarpos oreophilus</b>												
86	<b>19200</b>	8400	11000	7600	600	-	45	7	3	-	.69	28/20
92	<b>23880</b>	3800	14960	8900	20	-	42	10	0	-	9	-/-
99	<b>6460</b>	640	4580	1060	820	920	11	0	13	.61	.61	18/24
04	<b>5320</b>	-	900	4400	20	-	2	0	0	.37	.37	16/21