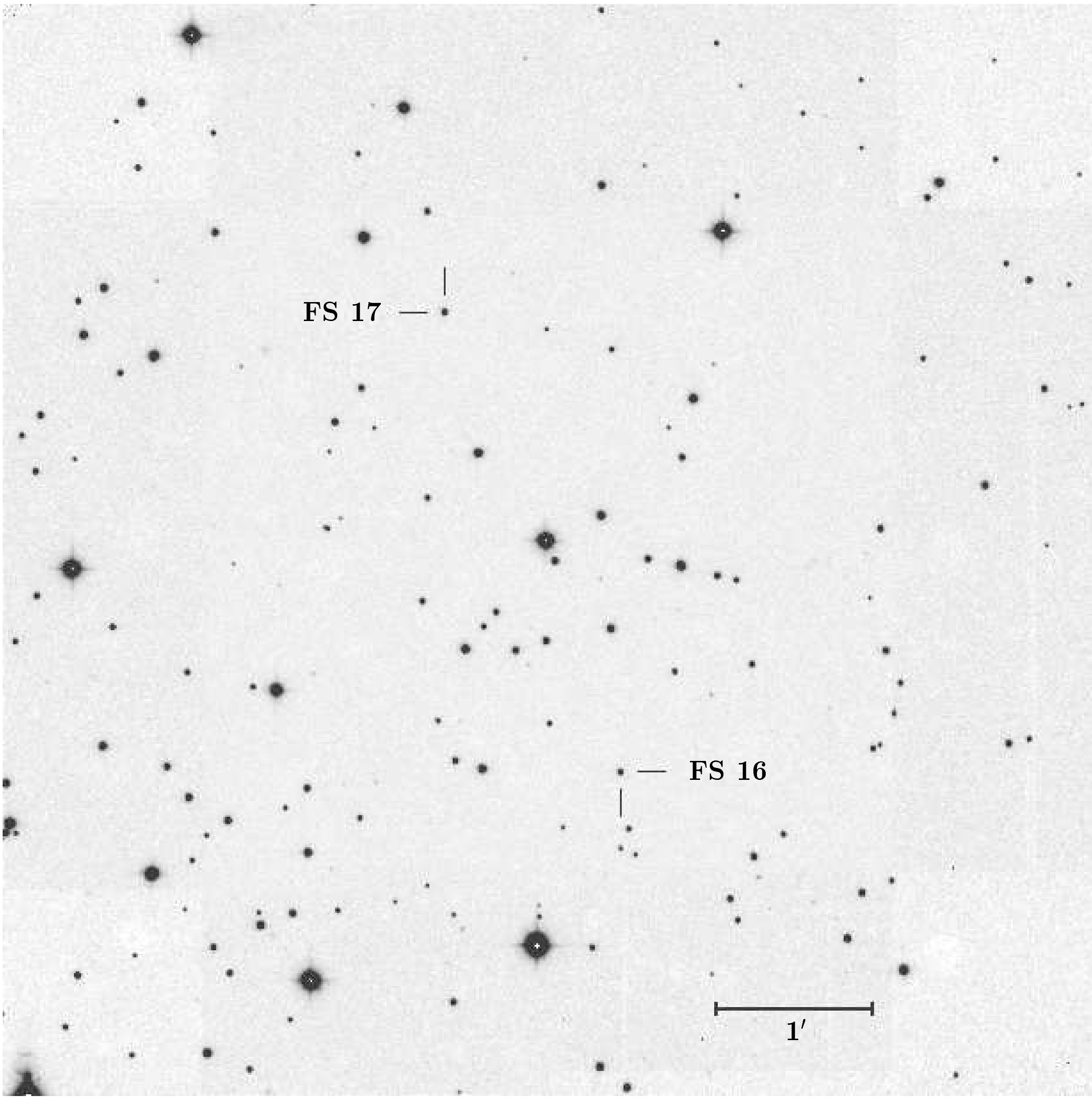
# UKIRT Faint Standard Stars

## K-BAND FINDING CHARTS

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## Introduction

The pointing on modern telescopes is typically good enough to place standard stars somewhere near the middle of the imaging arrays, so one can "point and shoot" and be reasonably assured that the standard will be observed. I still prefer to verify fields as I take data, which was the primary motivation in producing these finding charts. The construction of the $\Omega'$ prime-focus infrared camera for the Calar Alto 3.5m telescope added some additional incentive, as other existing flux standards (e.g. from Elias et al. 1982, AJ, 87, 1029) are too bright for this camera. Finally, enough copies of my loose-leaf stack of finding charts had been requested that it seemed reasonable to produce a more formal compilation...thus this work.

The standards for which these finding charts are provided come from the "UKIRT Faint Infrared Standards" list of Casali (1992, *JCMT UKIRT Newsletter*, 4, 33), and this is the source for most of the data which appears in the following table. The only "new" material here are the finding charts themselves (and, perhaps, the packaging).

The finding charts on the following pages were obtained through K$'$ filters with the MAGIC and $\Omega'$ infrared cameras at the Calar Alto 2.2m and 3.5m telescopes over the course of two years of observing. In several cases, identification of the field from Palomar Observatory Sky Survey (POSS) images was not so straightforward; the intrinsic colors of the stars can significantly alter the relative brightness of the different stars in any given field of view. In addition, proper motions can change the relative positions over the 50 years since the first POSS was produced. It is hoped that these finding charts will thus be useful to the infrared observers.

David Thompson
19 February 1997

**Cover:** This image of FS16 and FS17 shows the field of view of the $\Omega'$ camera on the Calar Alto 3.5m telescope, 6.8 arcminutes square, produced from five offset 5-second images.

# UKIRT Faint IR Standard Stars

| Name | Other | $\alpha_{1950}$ | $\delta_{1950}$ | $m_K$ | Notes |
|---|---|---|---|---|---|
| **FS01** | G158-100 | 00:31:22.7 | −12:24:29 | 12.98 | (J-K) +0.46 DG-K |
| **FS02** | SA92-342 | 00:52:36.0 | +00:26:58 | 10.47 | (J-K) +0.25 |
| **FS03** | Feige 1 | 01:01:46.6 | +03:57:34 | 12.82 | (J-K) −0.22 sdB |
| **FS04** | SA93-317 | 01:52:03.7 | +00:28:20 | 10.26 | (J-K) +0.29 |
| **FS05** | Feige 16 | 01:52:04.7 | −07:00:47 | 12.34 | (J-K) −0.01 A0 |
| **FS06** | Feige 22 | 02:27:39.2 | +05:02:34 | 13.37 | (J-K) −0.14 DA3 |
| **FS07** | SA94-242 | 02:54:47.2 | +00:06:39 | 10.94 | (J-K) +0.17 |
| **FS08**[1] | SA94-251 | 02:55:12.9 | +00:04:04 | 8.31 | (J-K) +0.77 K2 |
| **FS09**[1] | SA94-702 | 02:55:38.8 | +00:58:54 | 8.27 | (J-K) +0.88 |
| **FS10**[2] | GD50 | 03:46:17.4 | −01:07:38 | 14.92 | (J-K) −0.17 DA2 |
| **FS11**[2] | SA96-83 | 04:50:25.4 | −00:19:34 | 11.28 | (J-K) +0.08 |
| **FS12** | GD71 | 05:49:34.8 | +15:52:37 | 13.90 | (J-K) −0.22 DA1 |
| **FS13** | SA97-249 | 05:54:33.8 | +00:00:53 | 10.14 | (J-K) +0.38 |
| **FS14**[2] | Rubin 149 | 07:21:41.2 | −00:27:10 | 14.26 | (J-K) −0.15 O9-B2p |
| **FS15** | M67-I-48 | 08:48:21.9 | +11:55:02 | 12.36 | (J-K) +0.42 |
| **FS16** | M67-IV-8 | 08:48:31.0 | +12:00:36 | 12.63 | (J-K) +0.34 |
| **FS17** | M67-IV-27 | 08:48:35.4 | +12:03:26 | 12.27 | (J-K) +0.41 |
| **FS18** | SA100-280 | 08:51:02.1 | −00:25:14 | 10.52 | (J-K) +0.29 |
| **FS19** | G162-66 | 10:31:14.5 | −11:26:08 | 13.80 | (J-K) −0.23 DA2 |
| **FS20** | G163-50 | 11:05:27.6 | −04:53:04 | 13.47 | (J-K) −0.12 DA4 |
| **FS21** | GD140 | 11:34:27.6 | +30:04:35 | 13.13 | (J-K) −0.18 DA |
| **FS33** | GD153 | 12:54:35.1 | +22:18:08 | 14.24 | (J-K) −0.22 DA |
| **FS23** | M3-193 | 13:39:25.7 | +28:44:59 | 12.37 | (J-K) +0.62 |
| **FS24**[3] | SA106-1024 | 14:37:33.3 | +00:14:36 | 10.75 | (J-K) +0.15 Var? |
| **FS25** | SA107-1006 | 15:35:59.9 | +00:24:03 | 9.76 | (J-K) +0.48 |
| **FS26**[1] | SA108-475 | 16:34:26.3 | −00:28:39 | 7.97 | (J-K) +0.86 |
| **FS27** | M13-A14 | 16:38:54.2 | +36:26:56 | 13.12 | (J-K) +0.37 |
| **FS28** | SA109-71 | 17:41:32.5 | −00:23:44 | 10.60 | (J-K) +0.15 |
| **FS35** | G21-15 | 18:24:44.5 | +04:01:17 | 11.76 | (J-K) +0.47 DA |
| **FS34** | EG141 | 20:39:41.9 | −20:15:21 | 12.99 | (J-K) −0.17 DA |
| **FS29** | G93-48 | 21:49:53.0 | +02:09:16 | 13.35 | (J-K) −0.17 DA3 |
| **FS30** | SA114-750 | 22:39:11.3 | +00:56:55 | 12.02 | (J-K) −0.09 |
| **FS31** | GD246 | 23:09:50.4 | +10:30:46 | 14.04 | (J-K) −0.24 DA1 |
| **FS32** | Feige 108 | 23:13:38.2 | −02:06:58 | 13.66 | (J-K) −0.21 DA |

[1] Too bright for $\Omega'$.

[2] Current ID not positive.

[3] Variable star?

## Finding Charts

All of the following images are printed with standard astronomical orientation: north is up, and east to the left. The images are roughly 4 arcminutes square; a scale bar of 1 arcminute length provides a reference in each image. The UKIRT faint standard star in each image is indicated with tick marks.

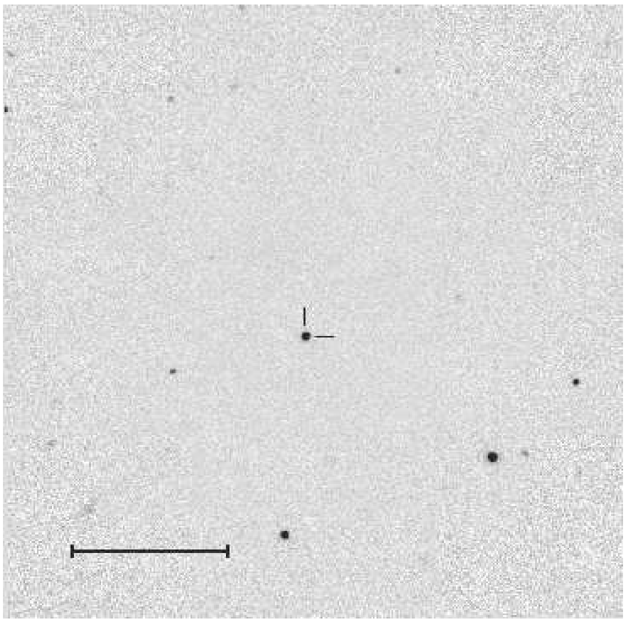
I have thus far been unable to positively identify the fields of FS10, FS11, and FS14, so I would not recommend their use at this time. In addition, a quick search through SIMBAD revealed that FS24 (SA106-1024) was listed as a variable star. In the several observations I have of this standard, the magnitude appeared to be relatively constant and at the magnitude given in Casali (1992), but one should probably avoid using this star for accurate flux calibrations of infrared data.

The finding charts are arranged in **numerical order** by their "faint standard" number. This arrangement should make it easier to find the images quickly.

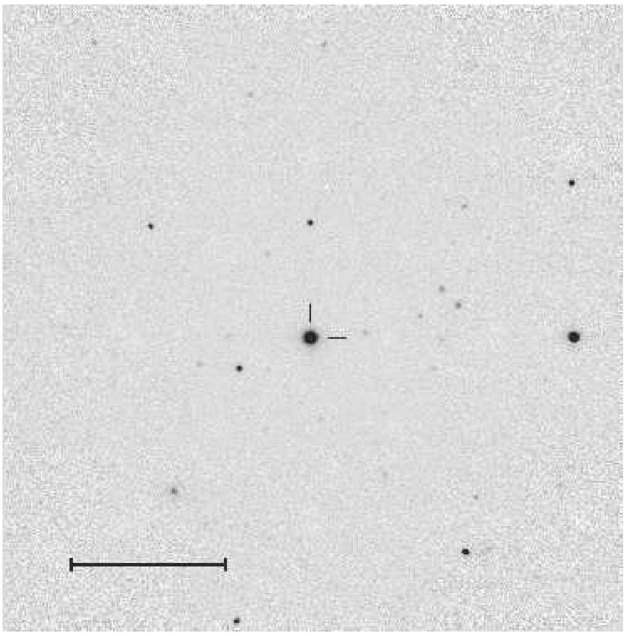
This version is missing finding charts for FS18 and FS26. I have the data for these fields, I just have to reduce it...

For users of $\Omega'$ at Calar Alto, the standards FS08, FS09, FS26, and possibly FS25 (depending on the seeing) are too bright to be used as standards - they saturate in the minimum exposure time for this camera.

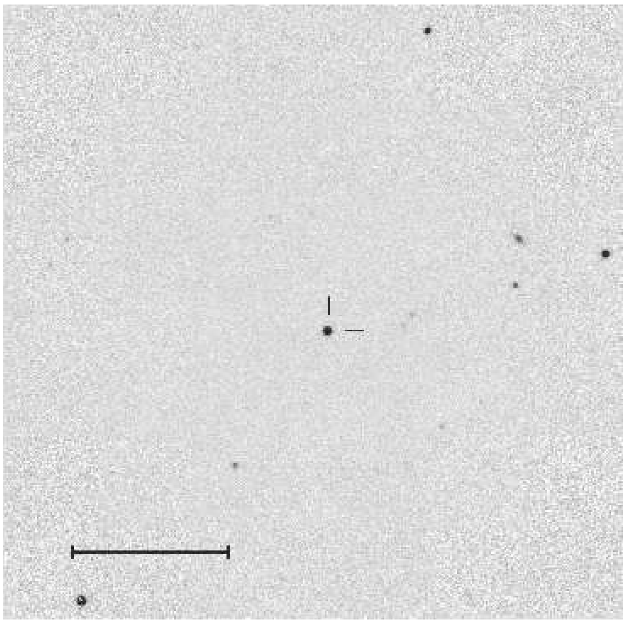
FS 01



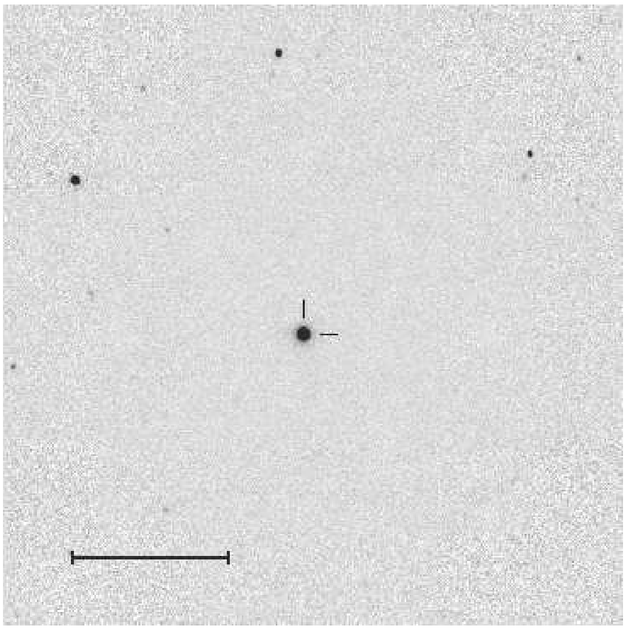
FS 02



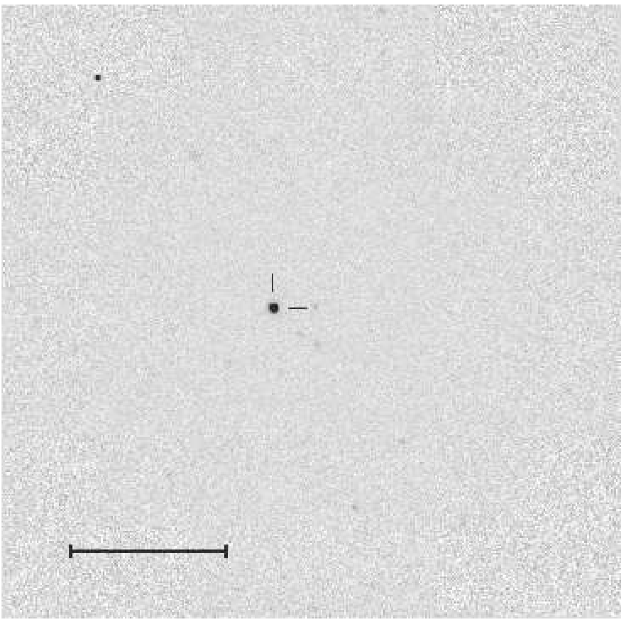
FS 03



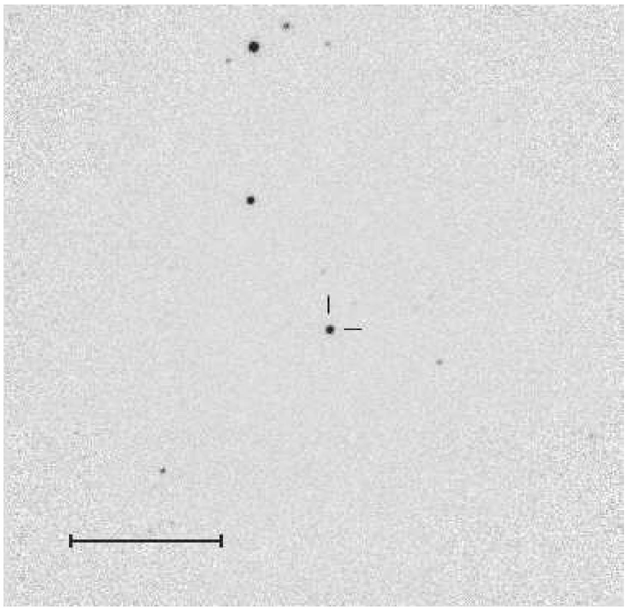
FS 04



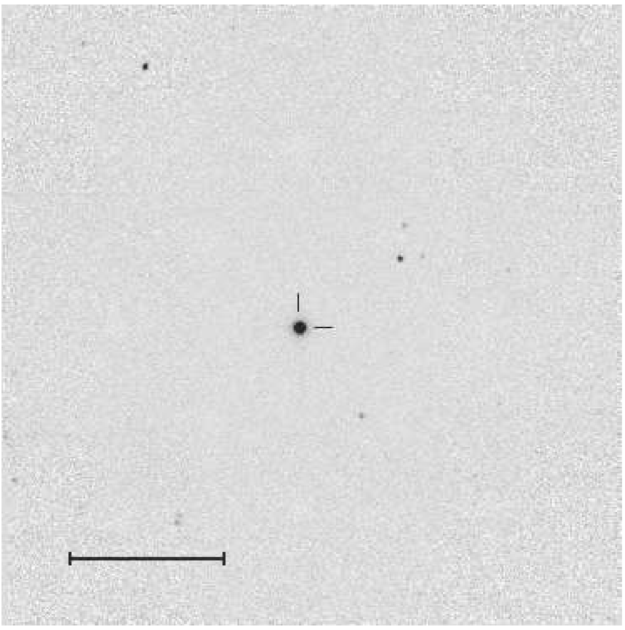
FS 05



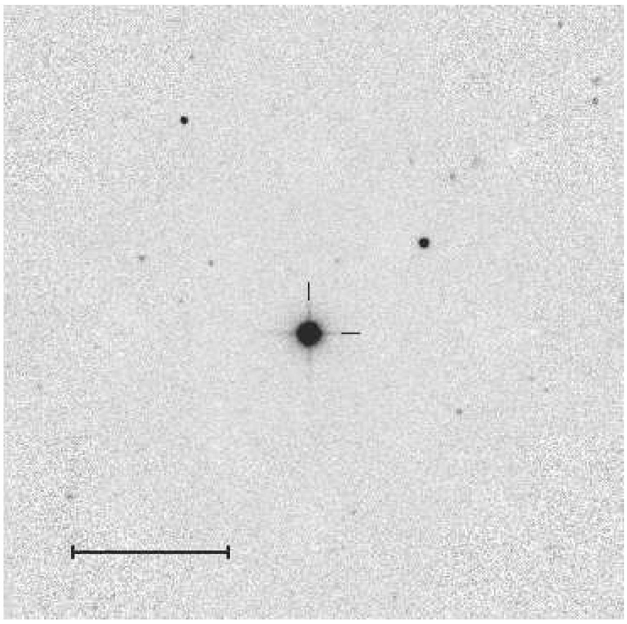
FS 06



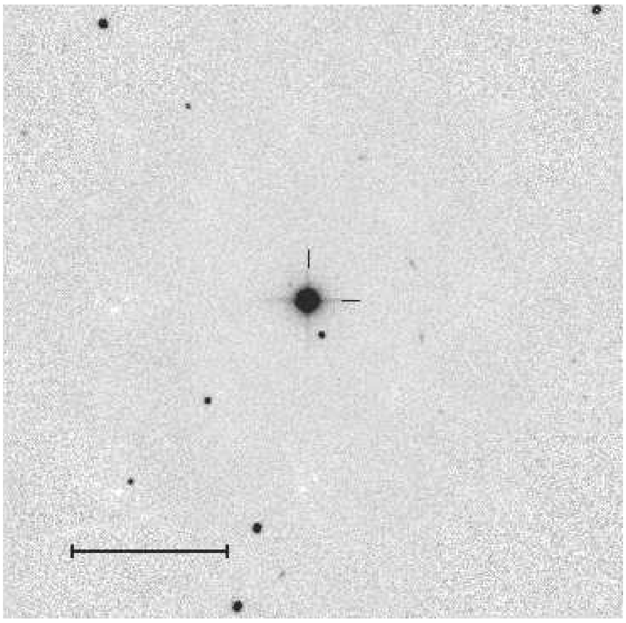
FS 07



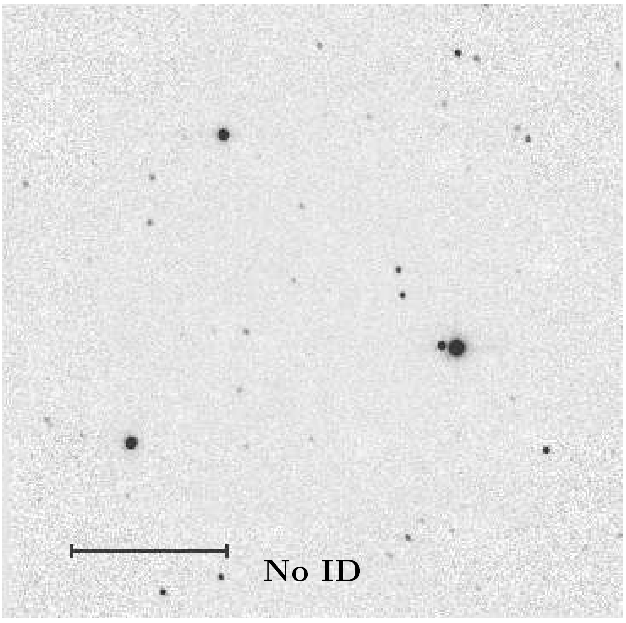
FS 08



**FS 09**

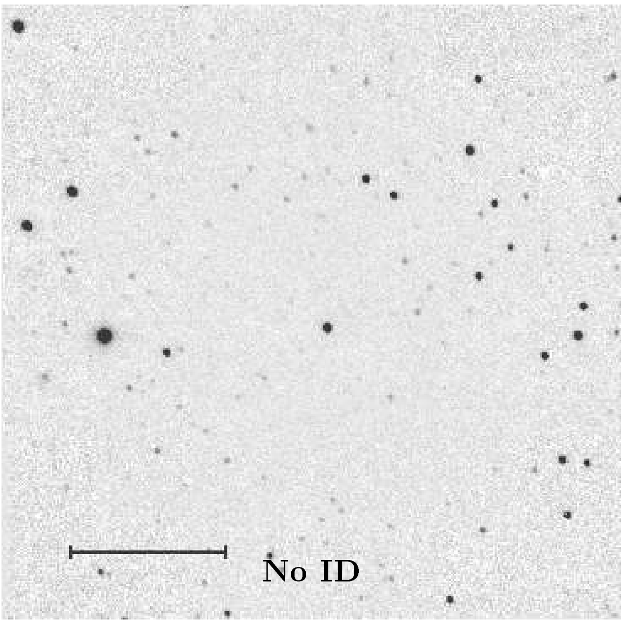


**FS 10**



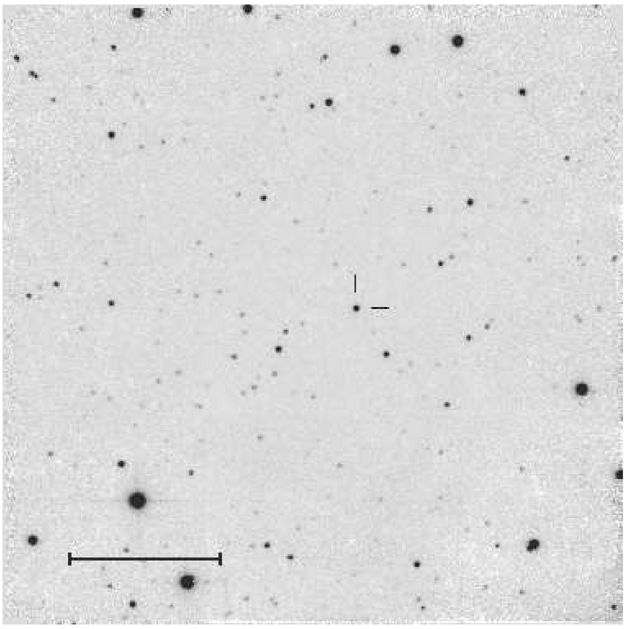
No ID

**FS 11**

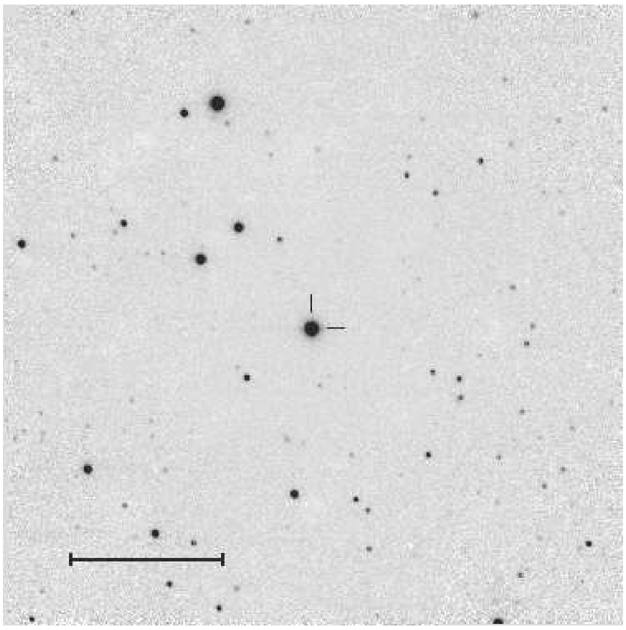


No ID

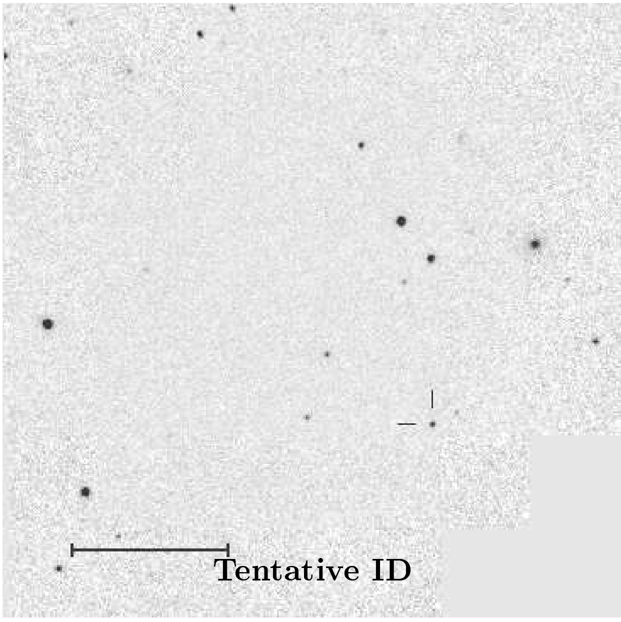
**FS 12**



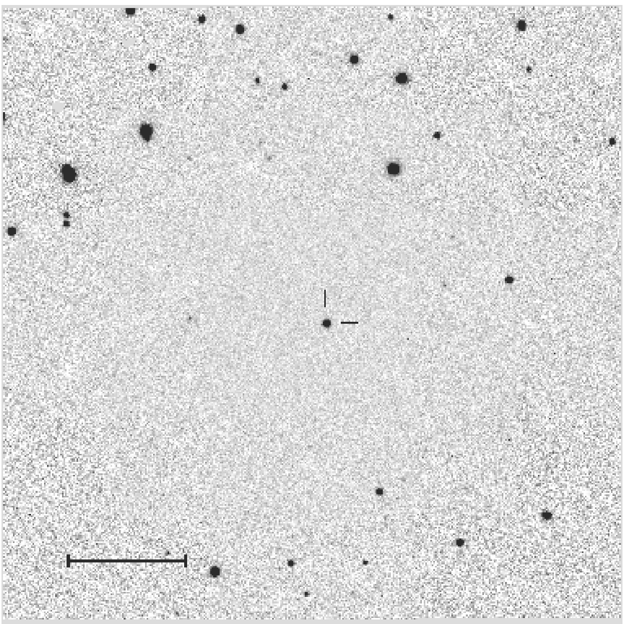
**FS 13**



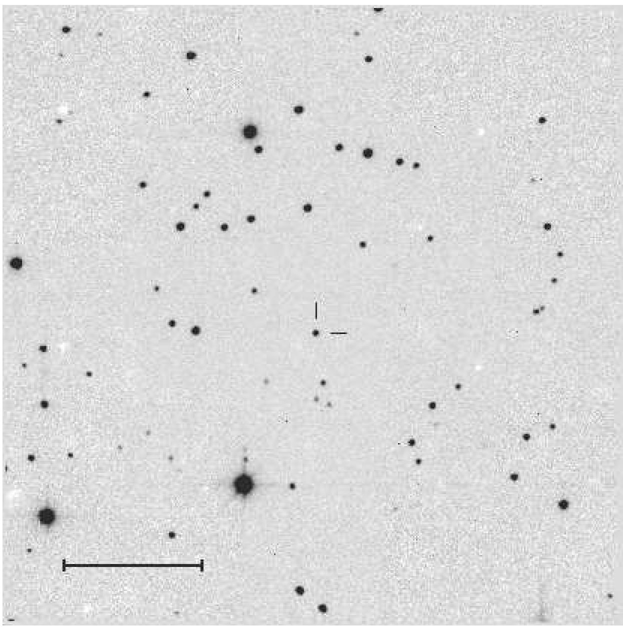
**FS 14**



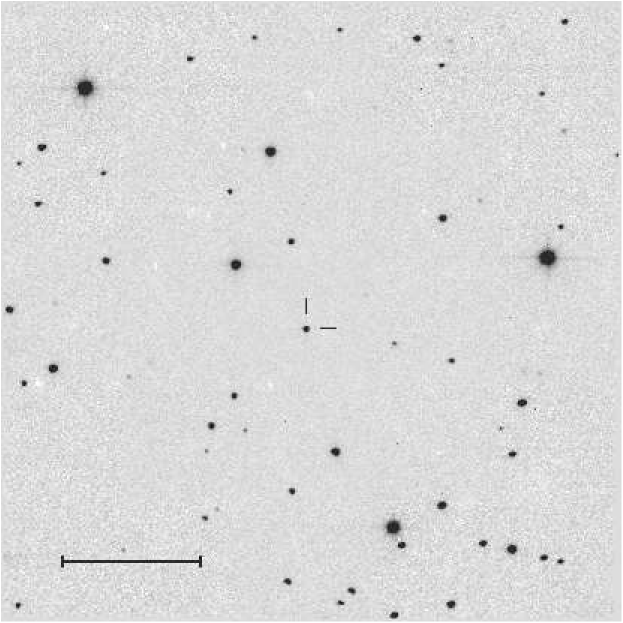

**FS 15**



**FS 16**



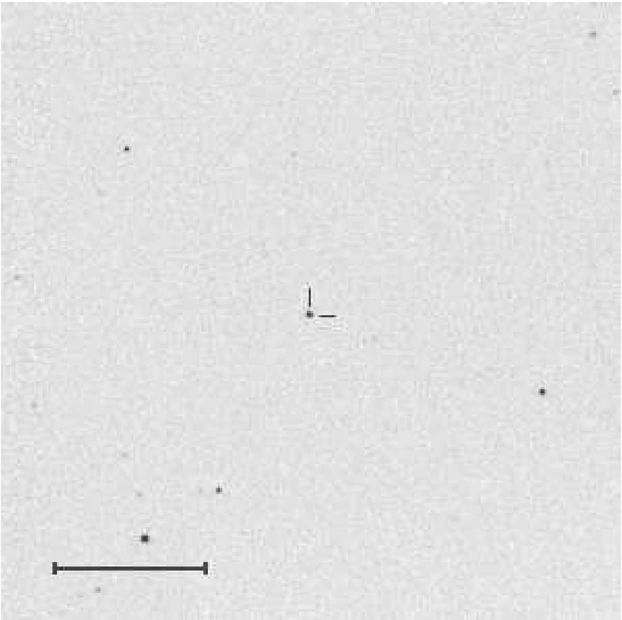
**FS 17**



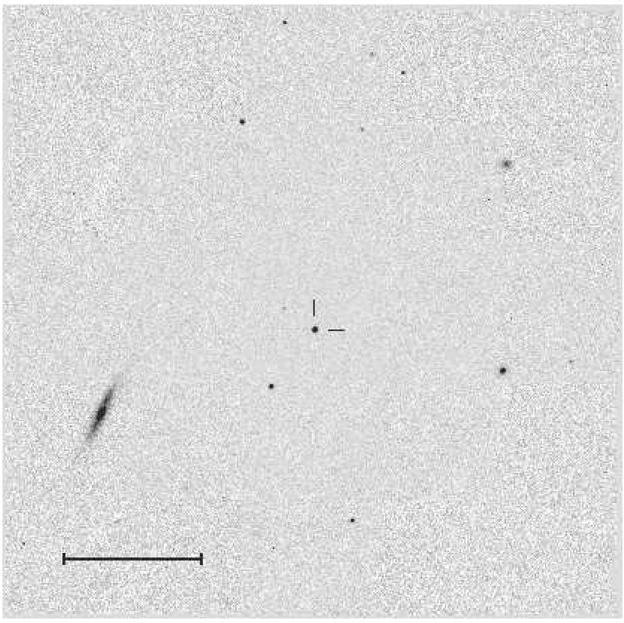
**FS 18**



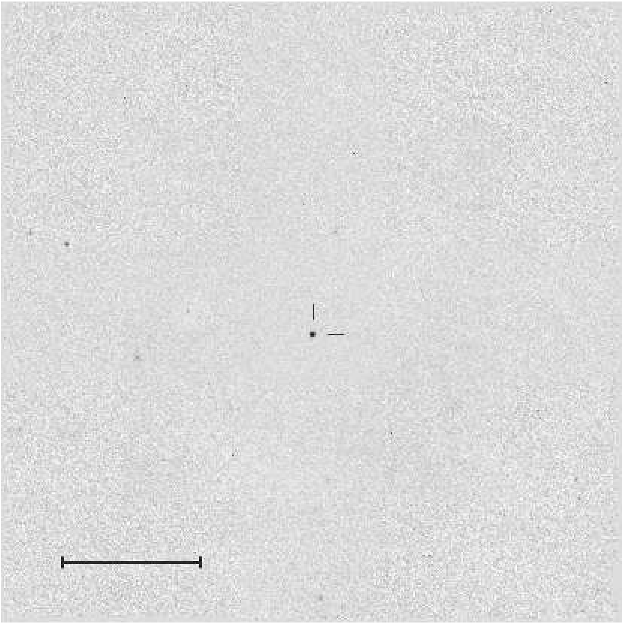
**FS 19**



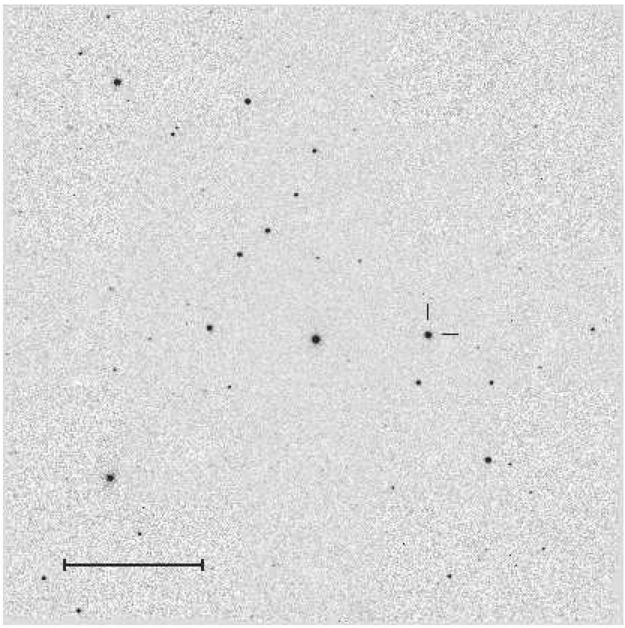
**FS 20**



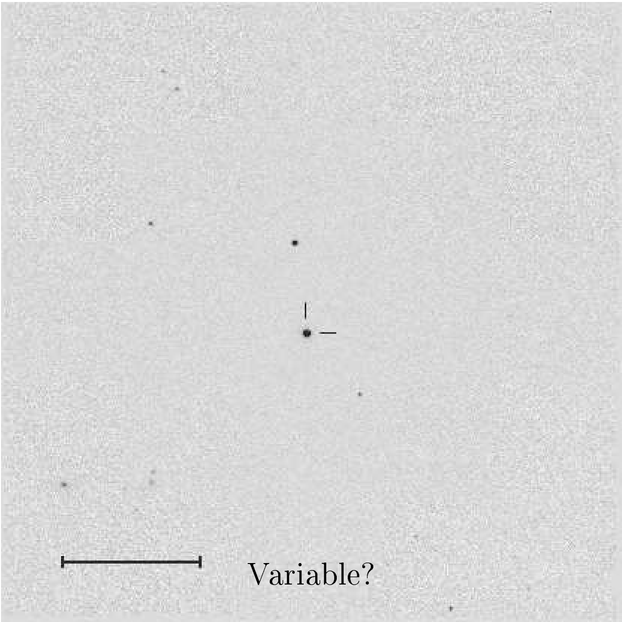
**FS 21**



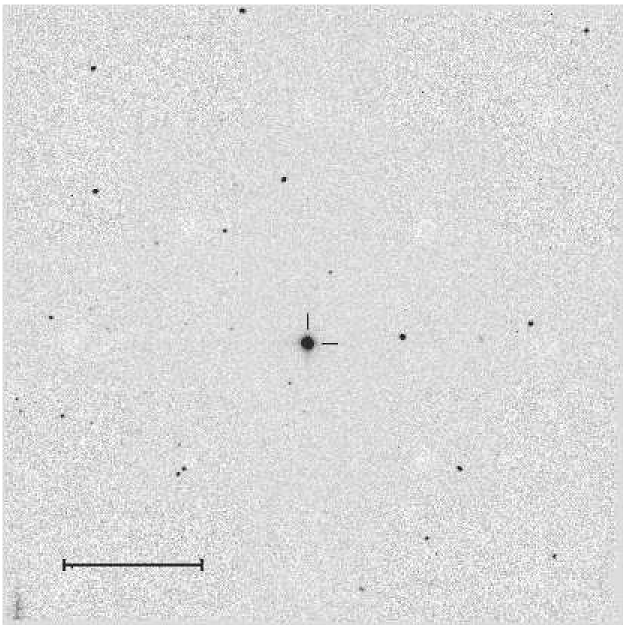
**FS 23**



**FS 24**



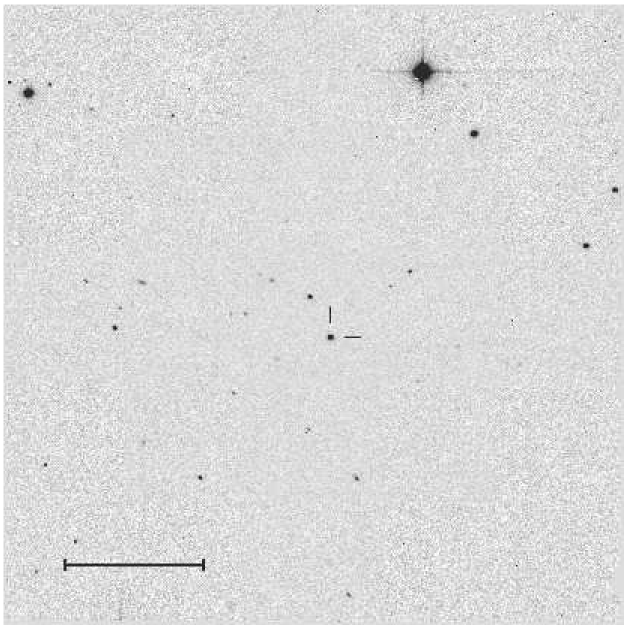

**FS 25**



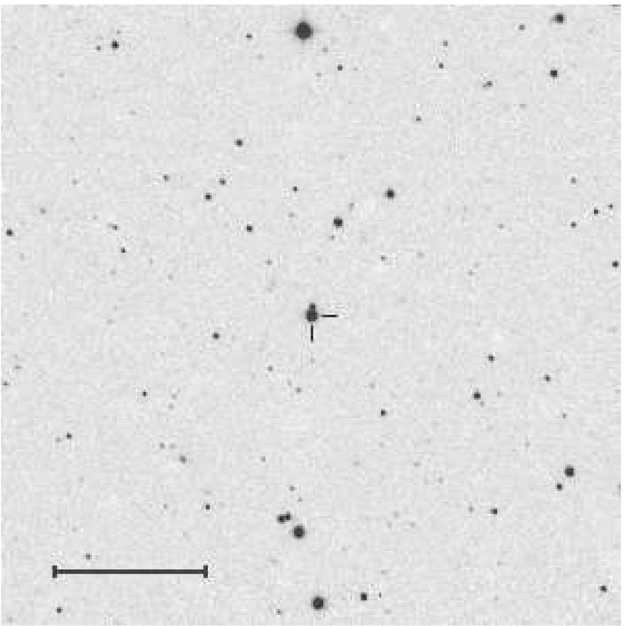
**FS 26**



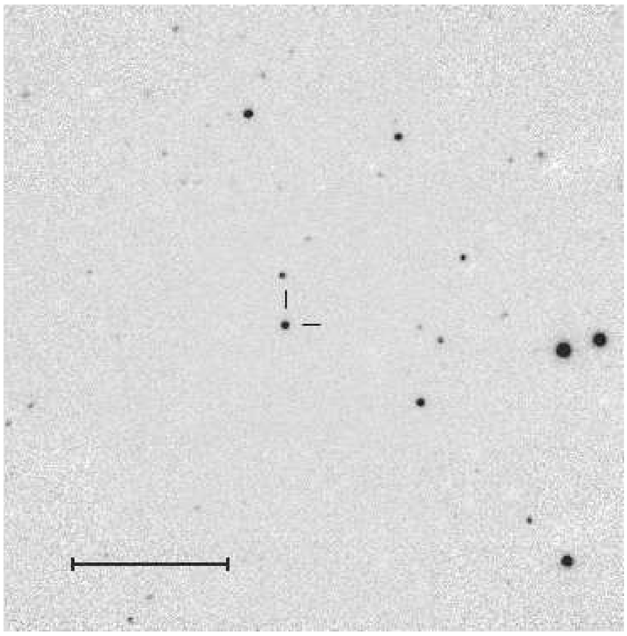
**FS 27**



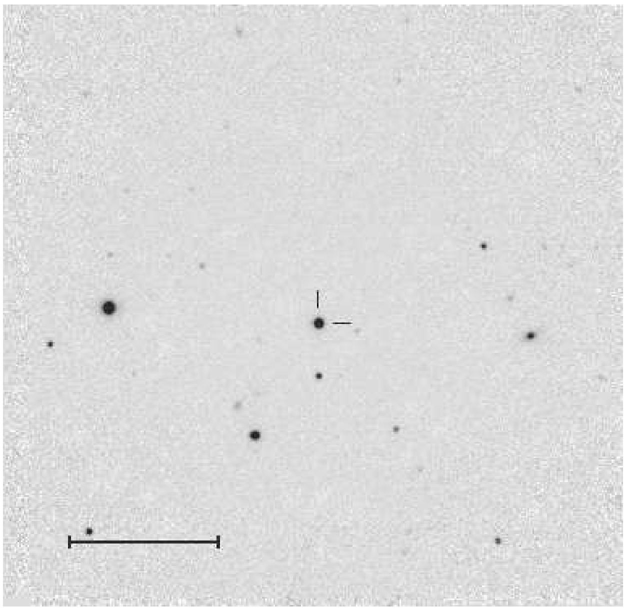
**FS 28**



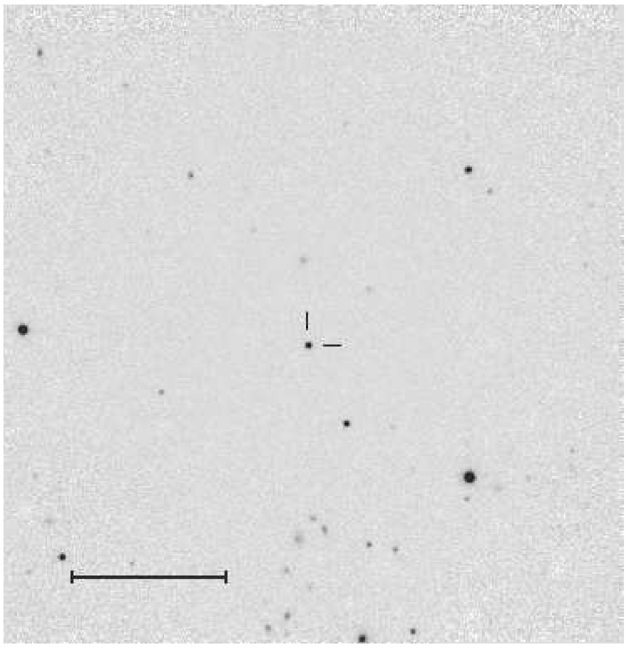
**FS 29**



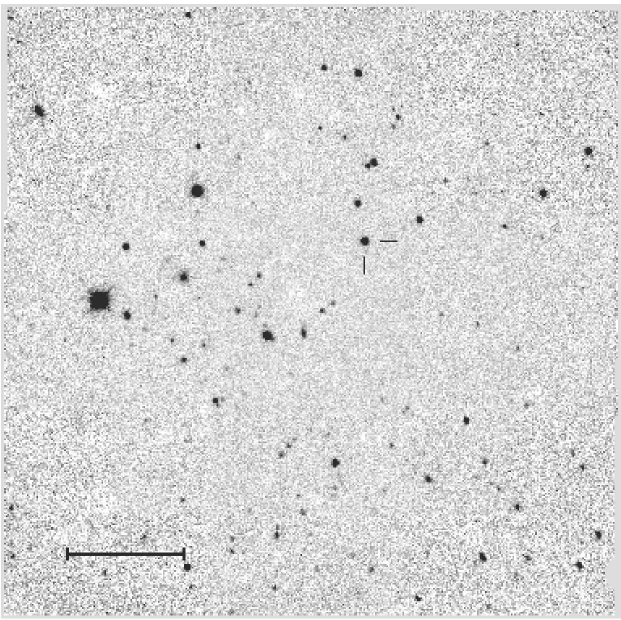
**FS 30**



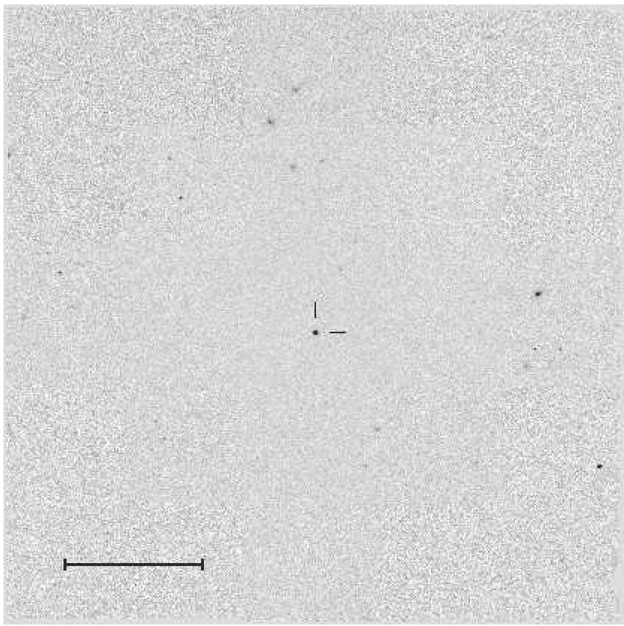
**FS 31**



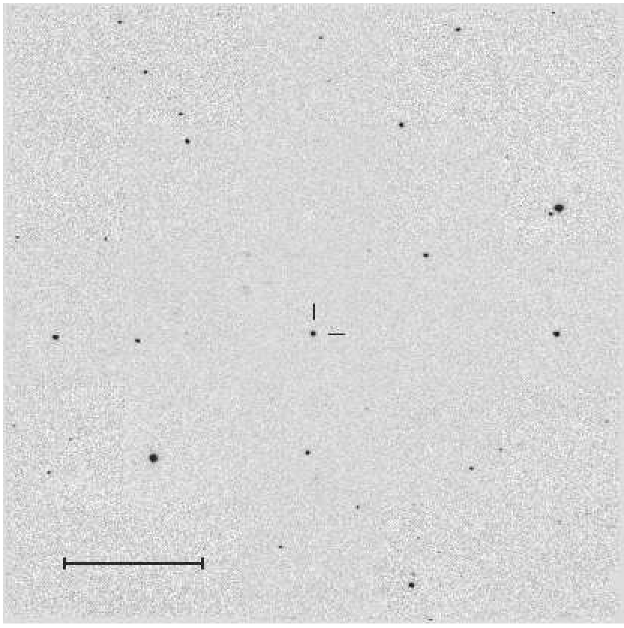
**FS 32**



**FS 33**



**FS 34**



**FS 35**