

1. Small part of the movie (150 sec.) that works fine.

```

'moov' - Movie
'mvhd' - Movie Header
  flags $00000000 preferredVolume $0100 createTime 22.11.2010 21:21:05 Uhr
  nextTrackID 2 preferredRate 0.01 modTime 22.11.2010 21:21:05 Uhr
  timeScale 600 posterTime 0
  duration 90115 currentTime 0 reserved 1-3 0
  selectionTime 0
  selectionDuration 0 matrix 0.01 0.00 0.00
  previewTime 0 0.00 0.01 0.00
  previewDuration 0 0.00 0.00 0.01
'iods'
'trak' - Track
'tkhd' - Track Header
'edts' - Edits
'elst' - Edit List
'mdia' - Media
'mdhd' - Media Handler Header
  flags 00000000 createTime 22.11.2010 21:21:05 Uhr quality 0
  timeScale 2500000 modTime 22.11.2010 21:27:14 Uhr language 21956
  duration 37547987
'hdlr' - Handler Description
'minf' - Media Information
  'vmhd' - Video Media Header
  'dinf' - Data Handler Information
    'dref' - Data Reference
  'stbl' - Sample Table
    'stsd' - Sample Descriptions
    'stts' - Sample to Time
      flags $00000000 numEntries 1
      sampCnt sampDur
      3601 104271
    'ctts' - Composition Offsets
    'stss' - Sync Samples
    'stsc' - Sample to Chunk
    'stsz' - Sample Sizes
    'stco' - Chunk Offset Table

```

Länge des Films:

SECONDS = mvhd.duration / mvhd.timeScale 90.115 / 600 = 150,19 sec
 SECONDS = mdhd.duration / mdhd.timeScale 375.479.871 / 2.500.000 = 150,19 sec
 SECONDS = stts.sampCnt * stts.sampDur / mdhd.timeScale 3.601 * 104.271 / 2.500.000 = 150,19 sec

Anzahl der Frames:

NUMBER_OF_FRAMES = stts.sampCnt 3.601

Frame-Rate:

FPS = mdhd.timeScale / stts.sampDur 2.500.000 / 104.271 = 23,976 FPS

Duration:

mdhd.duration = stts.sampCnt * stts.sampDur 3.601 * 104.271 = 375.479.871

2. Whole movie (2h 48min) with the error -2002 in Quicktime-Player and error at PS3.
Wrong entries in the mdhd structure marked with red color.

```

'moov' - Movie
  'mvhd' - Movie Header
    flags 00000000 preferredVolume $0100 createTime 02.11.2010 19:31:32 Uhr
    nextTrackID 3 preferredRate 0.01 modTime 03.11.2010 20:02:25 Uhr
    timeScale 600 posterTime 0 reserved 1-3 0
    duration 6066099 currentTime 0
    selectionTime 0
    selectionDuration 0 matrix 0.01 0.00 0.00
    previewTime 0 0.00 0.01 0.00
    previewDuration 0 0.00 0.00 0.01
  'iods'
  'trak' - Track
    'tkhd' - Track Header
    'edts' - Edits
    'elst' - Edit List
    'mdia' - Media
      'mdhd' - Media Handler Header
        flags 01000000 createTime 01.01.1904 1:00:00 Uhr quality 9632
        timeScale 0 modTime 02.11.2010 2:32:49 Uhr language 38
        duration 23399646
      'hdlr' - Handler Description
      'minf' - Media Information
        'vmhd' - Video Media Header
        'dinf' - Data Handler Information
        'dref' - Data Reference
        'stbl' - Sample Table
        'stsd' - Sample Descriptions
        'stts' - Sample to Time
          flags 00000000 numEntries 1
          smpCnt smpDur
          242399 104271
        'ctts' - Composition Offsets
        'stss' - Sync Samples
        'stsc' - Sample to Chunk
        'stsz' - Sample Sizes
        'stco' - Chunk Offset Table
  
```

Length of the movie:

SECONDS = mvhd.duration / mvhd.timeScale 6.066.099 / 600 = 10.110,16 sec
 SECONDS = mdhd.duration / mdhd.timeScale 25.275.186.129 / 2.500.000 = 10.110,07 sec
 SECONDS = stts.smpCnt * stts.smpDur / mdhd.timeScale 242.399 * 104.271 / 2.500.000 = 10.110,07 s

Frames:

NUMBER_OF_FRAMES = stts.smpCnt 242.399

Frame-Rate:

FPS = mdhd.timeScale / stts.smpDur 2.500.000 / 104.271 = 23,976 FPS

Duration:

mdhd.duration = stts.smpCnt * stts.smpDur 242.399 * 104.271 = 25.275.186.129

Max. Unsigned Long (32 bit) 4.294.967.296

The product of **smpCnt** and **smpDur** is bigger than the max. long value (32 bit), which is only possible for the **duration** field. Only movies with a length shorter than 28 min have correct values in the header.

It should be easy to choose smaller values for mdhd.timeScale = 24.000 and stts.smpDur = 1001.