Discrepancy between DateTime#strftime('%s') and Time#strftime('%s') before 1582-10-15

I found some discrepancy between DateTime#strftime('%s') and Time#strftime('%s') on date before 1582-10-15

Consider this

C:>irb
irb(main):001:0> require 'date'
=> true
irb(main):002:0> Time.at(DateTime.new(0).strftime('%s').to_i)
=> -0001-12-30 09:00:00 +0900
irb(main):003:0> Time.at(DateTime.new(1000).strftime('%s').to_i)
=> 1000-01-06 09:00:00 +0900
irb(main):004:0> Time.at(DateTime.new(1500).strftime('%s').to_i)
=> 1500-01-10 09:00:00 +0900
irb(main):005:0> Time.at(DateTime.new(1582).strftime('%s').to_i)
=> 1582-01-11 09:00:00 +0900
irb(main):006:0> Time.at(DateTime.new(1582,10,4).strftime('%s').to_i)
=> 1582-10-14 09:00:00 +0900
irb(main):007:0> Time.at(DateTime.new(1582,10,5).strftime('%s').to_i)
ArgumentError: invalid date
from (irb):44:in new'
from (irb):44
from c:/usr/bin/irb.bat:19:in'
irb(main):008:0> Time.at(DateTime.new(1582,10,15).strftime('%s').to_i)
=> 1582-10-15 09:00:00 +0900
irb(main):050:0> DateTime.new
=> #

I understand the dates between 1582-10-05 and 1582-10-14 are invalid. But I cannot understand why the discrepancy changes for each year.

Is the discrepancy inevitable and should not use DateTime#strftime('%s') before 1582-10-15?

I think DateTime#strftime('%s') should return same result with Time#strftime('%s') always.

History

#1 - 07/11/2012 01:04 PM - usa (Usaku NAKAMURA)
- Category changed from ext to core
- Status changed from Open to Assigned
- Assignee set to akira (akira yamada)
IMO, this is the problem of Time, not DateTime. I think that this may be a limitation of Time. Anyway, it is that akr judges.

#2 - 07/11/2012 02:23 PM - akr (Akira Tanaka)
2012/7/11 phasis68 (Heesob Park) phasis@gmail.com:

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This is not a bug.

The difference is caused because
Time uses Proleptic Gregorian calendar (doc/NEWS-1.9.2) but
DateTime uses Julian/Gregorian calendar at Italy by default.

I guess you can use DateTime with Proleptic Gregorian calendar (doc/NEWS-1.9.3).
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Tanaka Akira

#3 - 10/28/2012 11:38 PM - akr (Akira Tanaka)
- Status changed from Assigned to Rejected
- Assignee changed from akira (akira yamada) to akr (Akira Tanaka)