Nikon AF Nikkor 180mm f/2.8D ED IF Lens Review

Introduction

Nikon AF Nikkor 180mm f/2.8D ED IF traces its roots to 1970s when the first, non-AI version of the lens was first introduced. The modern version of this lens was released in 1993 to replace the manual, Ai-S version. Strictly speaking, there was at least one other AF version of this lens, the AF-n 180mm f/2.8 ED IF was available from late 1980s to 1993, which followed pretty much identical optical design but did not have the 'D' coupling. The lens currently retails at ~US$750 (as of June 2008), which makes it more or less affordable for mainstream users. Good quality used copies of the lens can be found for ~US$450 on used marketplaces like eBay.

The optical construction of the lens consists of 9 elements in 6 groups, including a single ED glass element designed to reduce various forms of aberration and improve overall image resolution. The optical formula follows internal focusing design, meaning that the size of the lens remains constant during focusing. The build quality of the lens is superb - the barrel is made out of lightweight metal with beautiful finish, the focusing ring is pretty broad to provide comfortable grip and is quite smooth. The focusing ring can actually be locked when the lens is used in AF mode, using a dedicated AF/MF switch on the side of the barrel. The aperture ring is located at the base of the lens and is a little bit hard to operate when the lens is attached to a camera body. The ring is also a little bit sticky, which might annoy some users. All in all, the lens looks a feels quite sturdy, with no wobbling inside or out.

At ~760g (26.8oz) and 78 x 144mm (3.1 x 5.7in), Nikon AF Nikkor 180mm f/2.8D ED IF is about average is size and weight when compared to other telephoto lenses currently available on the market. The lens is not equipped with an AF motor and like with all AF-D type lenses, autofocusing is possible only on cameras that have a special AF pin that locks into a screw slot on the base of the lens mount and rotates lens elements mechanically to achieve the focusing. As of mid 2008, only D40 and D60 series of digital SLR cameras do not contain the AF pin, so the lens will have to be used in manual focus mode. The lens will still support program, aperture priority and shutter priority modes, however, the electronic aperture control is possible only when the aperture ring is locked at f/22 (using a tiny switch right above the ring itself). The ring obviously can be controlled manually and it moves from f/2.8 to f/22 in one full f-stop increments.

The lens sports a DOF scale, which unfortunately is not going to be very useful - it has only two markings for f/16 and f/22, which is disappointing for those of us who plan to use it in manual mode on alternative camera mounts. The lens has the minimum focusing distance of 1.5m (5ft) where it gives the maximum reproduction ration of 1:6.6 and accepts 72mm screw-in type filters. Since the front element does not rotate during focusing, you will be able to use circular polarizers, assuming of course you don't have the built-in lens hood popped out at the same time.

The factory box includes Nikon AF Nikkor 180mm f/2.8D ED IF lens, front and rear caps, CL-38 case, registration and manual card. The lens was originally designed for full frame cameras, so when used on APS-C type bodies with 1.5x crop sensors, the field of view of the lens will be similar to that of a ~270mm prime on a full frame body. Since the lens incorporates both manual focus ring and manual aperture ring, it can be easily adopted to a number of alternative mounts, including Canon EF/EF-S as well as Olympus Four Third using readily available lens adapters. Obviously, once adopted, the lens will have to be operated in a fully manual mode.

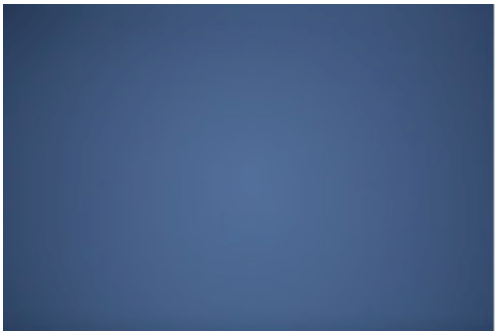
Summary	
Lens Composition	9 elements in 6 groups
Angular Field	~9 degrees
Minimum Focus	1.5m/5ft
Focusing Action	AF/MF
f-stop Scale	f/2.8-f/22, camera/manual
Filter Size	72mm
Lens Hood	Built-in
Weight	760g/26.8oz
Dimensions	78x144mm/3.1x5.7"
Lens Case	CL-38 (included)

Field Tests

AF Nikkor 180mm f/2.8D ED IF handles pretty much like any AF lens of that era (late 80s, early 90s that is). This means that there's nothing spectacularly different or unexpected here. The only characteristics of the lens worth mentioning here is the focusing operation. Like all AF-D lenses, AF Nikkor 180mm f/2.8D ED IF does not incorporate an autofocusing motor. Nikon decided to follow this rout to make the lens fully compatible with pretty much all of its SLR cameras manufactured since late 70s. The disadvantage here is that the autofocusing operation is still performed by the camera-driven ping, which locks into the dedicated screw slot on the base of the lens mount. And while AF works, and works more or less fine (it was pretty accurate in most situations), the

speed with which the lens is focused leaves a (huge) room for improvement. Furthermore, the lens is quite noisy, and the worst part is that it's noisy not only during AF operation, but also during manual focusing. It is as if the internal elements are rubbing against the inner walls of the barrel or something. This should not necessarily be the deal breaker for majority of photographers, but in the modern age of ultra sonic motors, the pin-operated AF seems pretty archaic.

Nikon AF Nikkor 180mm f/2.8D ED IF very good overall results in the field. Images remained tack sharp throughout the aperture range both in the center as well as around borders - at least visually, there was no noticeable difference between the center and borders. Furthermore, the lens showcased pretty consistent results on APS-C as well as full frame bodies, which is quite remarkable.



Vignetting @ f/4.5 - Full frame vs 1.6x crop

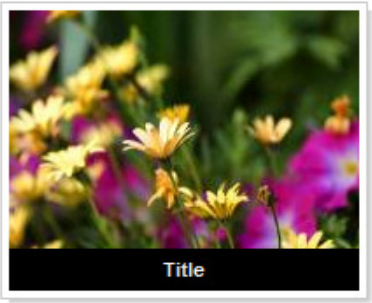
The lens showed moderate level of vignetting at f/2.8 on a full frame body. The degree of vignetting is reduced further with stopped down aperture and by f/5.6 it completely disappears. On an APS-C body the lens shows insignificant amount of vignetting even with wide open aperture and basically no vignetting from f/4 and on. Those of you using Nikon D3 or any other body with an in-camera vignetting correction can easily get rid of this artifact by simply selecting one of the pre-programmed modes. Otherwise, just use a post-processing software.

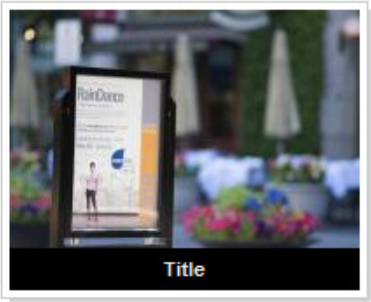
The lens showed very good resistance to flare. Even in situations with a strong light source placed directly within the picture frame, the flare caused only (relatively) minor reduction in contrast, blown out highlights and some traces of vailing (as can be seen from the image below). All in all, not that bad.

ISO 200, 1/500, f/8, 180mm (Nikon D3)

General color reproduction was quite good, with images carrying good amount of contrast throughout the aperture range. Colors were well saturated and textured looked very vivid and lifelike. There was no visible sign of color fringing. As expected from a telephoto prime, AF Nikkor 180mm f/2.8D ED IF did not exhibit any noticeable barrel distortion.

ISO 200, 1/6400, f/2.8, 180mm (100% crop)



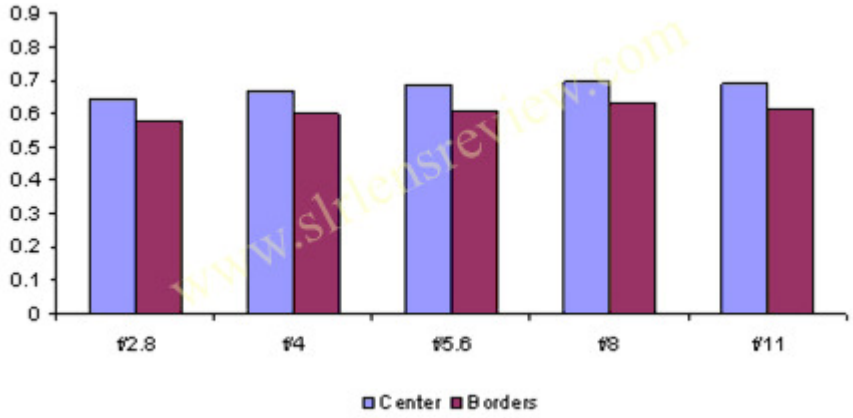


- ## Lab Tests

Please note that MTF50 results for APS-C and Full-Frame cameras as well as cameras from different manufacturers are not cross-comparable despite the same normalized [0:1] range used to report results for all types of cameras.

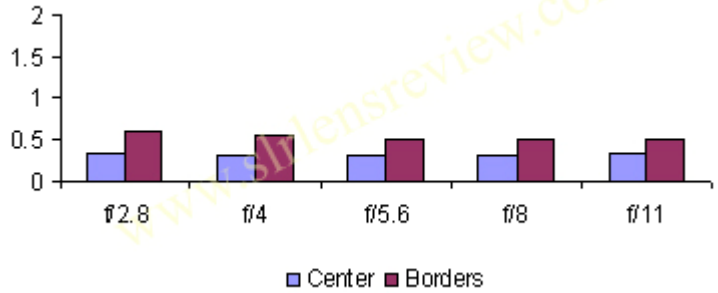
Nikon APS-C: Coming soon...

Nikon FF: Nikon AF Nikkor 180mm f/2.8D ED IF showcased pretty solid overall performance on a full frame Nikon D3. Image quality remained pretty consistent and well balanced throughout the aperture range and across the picture frame. Center image resolution was outstanding straight from f/2.8. Border image quality lagged only slightly at f/2.8, but in general remained quite good throughout the rest of the aperture settings. Conclusion? While the absolute performance numbers are not necessarily the best in the industry, quality is quite good to satisfy the virtual majority of users, even the most demanding ones.



Normalized raw MTF50 @ 180mm

Chromatic aberration on a full frame Nikon D3 was quite low both in the center as well as around borders. CA in the center hovered around ~0.3px across the aperture range, while CA around borders never exceeded ~0.6px even at the widest apertures. Nothing to be worried about here.



Chromatic Aberration (FF) @ 180mm

Here are 100% crops taken with a full frame Nikon D3, comparing image borders at f/2.8 and f/8.

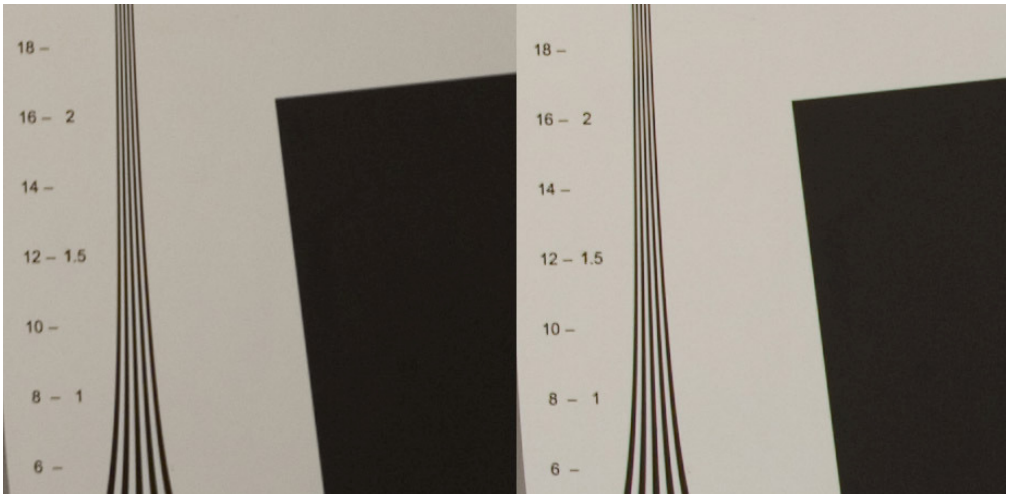


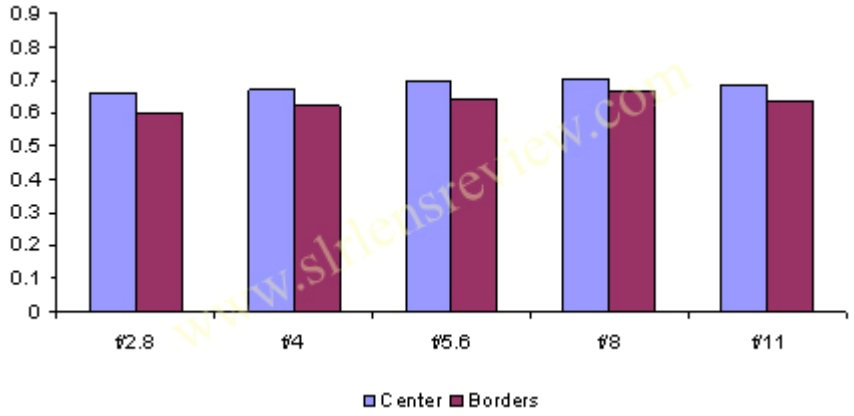
Image borders @ 180mm (100% crop): f/2.8 vs f/8

Canon APS-C: AF Nikkor 180mm f/2.8D ED IF showed very good performance on a cropped camera. Results are quite balanced in general, with only marginally better performance at f/5.6 and f/8, where the lens. But again, improvement in f/5.6-f/8 is pretty small and the quality simply outstanding throughout the tested aperture range. The lens is capable of delivering outstanding 16in prints throughout the aperture range, which is an achievement in its own rights, and pretty decent 24in prints in the f/5.6-f/8 range. Conclusion? The lens passes the tests with flying colors - performance numbers are top notch among telephoto primes, native or adopted.

Height(in)		f/2.8	f/4	f/5.6	f/8	f/11
4	Center	494	501	523	527	514
	Border	451	467	480	498	476
5	Center	395	400	418	422	411
	Border	361	373	384	398	381
8	Center	247	250	261	264	257
	Border	226	233	240	249	238
11	Center	180	182	190	192	187
	Border	164	170	175	181	173
16	Center	124	125	131	132	129
	Border	113	117	120	124	119
19	Center	104	105	110	111	108
	Border	95	98	101	105	100
24	Center	82	83	87	88	86
	Border	75	78	80	83	79

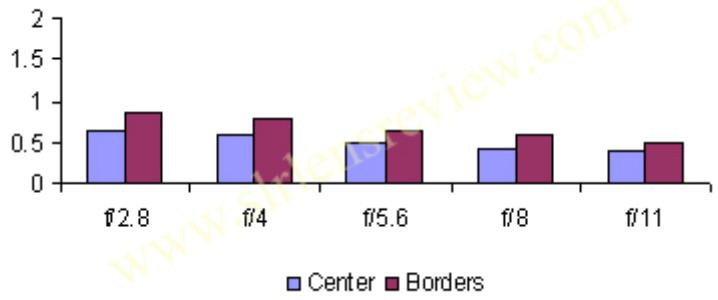
Reference Scale	
150+	Excellent
110+	Good
80+	Fair
60+	Subpar
<60	Poor

MTF50 (Line Width/Inch on the Print) @ 180mm



Normalized raw MTF50 @ 180mm

The lens managed to hold chromatic aberration at bay. CA in the center was ~0.65px, which can be considered insignificant, further dropping to ~0.4px by f/11. CA around borders peaked at f/2.8, where it was hovering ~0.9px, but also dropped with stopped down aperture, reaching ~0.5px by f/11.



Chromatic Aberration (APS-C) @ 180mm

Here are 100% crops taken with an APS-C type Canon Digital Rebel XTi, comparing image borders at f/2.8 and f/8.

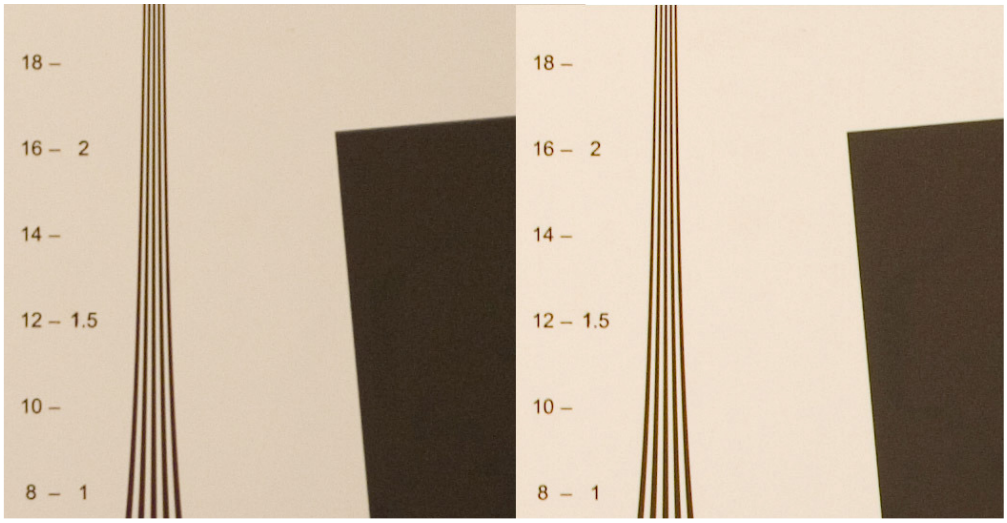
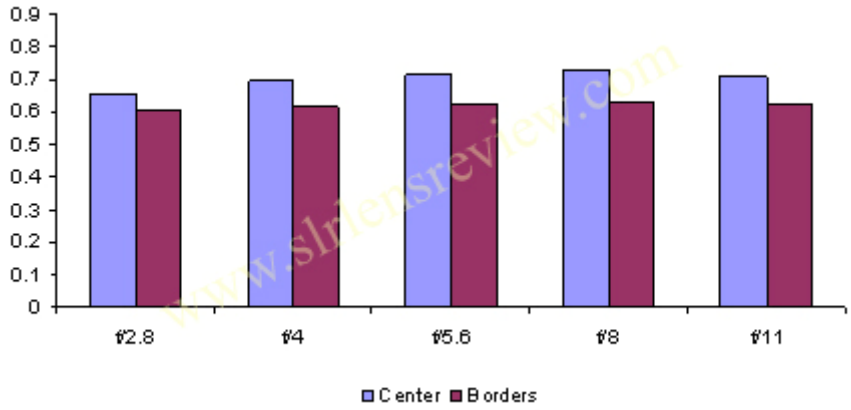


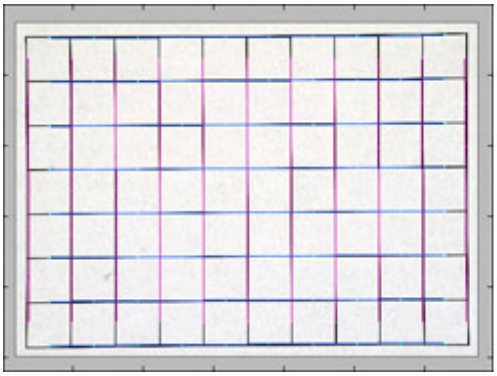
Image borders @ 180mm (100% crop): f/2.8 vs f/8

Canon FF: The lens continued to showcase very solid results even on a full frame Canon 5D. Image quality remained very well balanced throughout the aperture range and across the frame, which is a desirable characteristic in any lens. Quality in the center was outstanding straight from f/2.8, and remained on consistently high level throughout the rest of the tested aperture. Border image quality lagged a little bit, but was still quite solid. Conclusion? Image quality-wise. AF Nikkor 180mm f/2.8D ED IF is as good telephoto lens as it gets - no weaknesses, no peaks or valleys - use it at any aperture and you will get solid results. What else do you need?



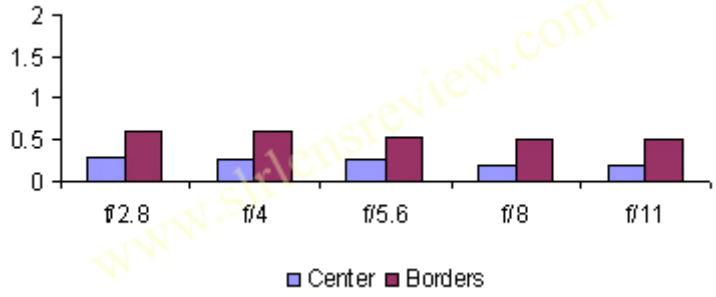
Normalized raw MTF50 @ 180mm

The lens showed pretty minimal barrel distortion on a full frame body - at ~0.8%, distortion is unlikely to cause any problems in general type photography.



Distortion (FF) @ 180mm

Chromatic aberration on a full frame Canon 5D was quite minimal across the frame. CA in the center never exceeded ~0.3px, while CA around borders never exceeded ~0.6px. The results can be considered quite minimal for a telephoto prime.



Chromatic Aberration (FF) @ 180mm

Here are 100% crops taken with a full frame Canon 5D, comparing image borders at f/2.8 and f/8.

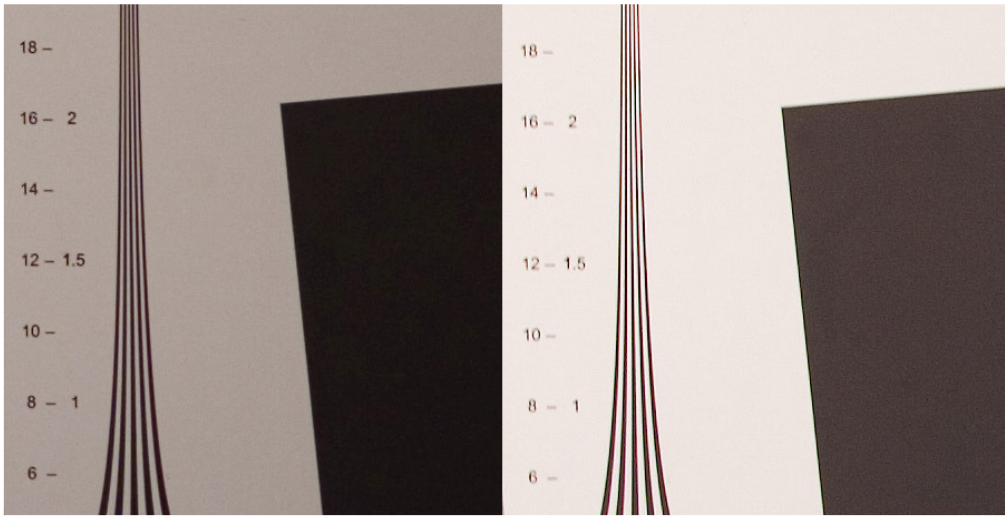


Image borders @ 180mm (100% crop): f/2.8 vs f/8

Alternatives

Nikon currently offers only one other telephoto prime that can be considered an alternative to the AF Nikkor 180mm f/2.8D ED IF reviewed here (an alternative within approximately same focal length range that is). The AF-S VR Nikkor 200mm f/2G IF ED offers superb image and build quality but at a stratospheric price of US$3,800. At that price, it is doubtful the lens would gain a mainstream popularity among photographers. That leaves us with only one other option - AF Micro Nikkor 200mm f/4D IF ED, which also offers superb image quality and at ~US1,300 is much more affordable then its faster, non macro version. That is it. If you want to expand your

selection of alternative telephotos in Nikon F mount, you will either have to consider older, now discontinued manual focus primes, or non Nikon manufactured lenses. Outside of the Nikon camp, you might want to consider at Sigma's APO Macro 180mm f/3.5 EX DG IF HSM or Tamron's SP AF 180mm f/3.5 Di LD IF Macro. The good news however, if that if you're comfortable using manual focus lenses, then you should definitely explore two of Nikon's old-time gems, the precursors of the modern autofocus primes - the Nikon Nikkor 180mm f/2.8 ED AiS and Nikon Nikkor 200mm f/2 AiS. Both of these lenses produce superior image quality and can still be found at reasonable prices on used markets like eBay.

Recommendation

Nikon AF Nikkor 180mm f/2.8D ED IF is simply an outstanding lens. The lens does not seem to have any weak points. Image resolution is very solid on both cropped as well as full frame cameras across the aperture range. Color reproduction is very accurate with well contained color fringing and flare. Match a similarly excellent build quality and you get a winner on your hands. There are two concerns about the lens though. The first one is price - at US$750, the lens is not the most expensive telephoto on the market, but is certainly no bargain either. Secondly, AF performance is quite disappointing, and this is the major drawback in this otherwise excellent prime. The decades old AF-D system is pretty much that - decades old and needs revamping. We admire Nikon's determination for making lenses backward compatible, but in this age we need better performing AF systems.

Source: http://www.slrlensreview.com/web/nikon-slr-lenses-40/telephoto-slr-lenses-165/106-nikon-af-nikkor-180mm-f28d-ed-if-lens-review.html

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